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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/053,540	11/02/2001	Suzy Brown	4407P005

CONFIRMATION NO. 6075

23623
TUROCY & WATSON, LLP
127 Public Square
57th Floor, Key Tower
CLEVELAND, OH 44114

POA ACCEPTANCE LETTER

OC00000049896706

Date Mailed: 09/20/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/12/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/hgray/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

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10/053,540	11/02/2001	Suzy Brown	4407P005

CONFIRMATION NO. 6075

44955
SQUIRE, SANDERS & DEMPSEY (US) LLP
275 BATTERY STREET, SUITE 2600
SAN FRANCISCO, CA 94111-3356

POWER OF ATTORNEY NOTICE

OC000000049896683

Date Mailed: 09/20/2011

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 09/12/2011.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/hgray/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

PTO/SB/80 (04-05)
Approved for use through 11/30/2005. OMB 0651-0035
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:

☑ Practitioners associated with the Customer Number: 23623

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:

☑ The address associated with Customer Number: 23623

OR

☐ Firm or Individual Name	Turocy & Watson, LLP		
Address	127 Public Square, 57th Floor, Key Tower		
City	Cleveland	State Ohio	Zip 44114
Country	United States		
Telephone	(216) 696-8730	Email watson@thepatentattorneys.com	

Assignee Name and Address:

Camberlane Consulting L.L.C.
160 Greentree Drive, Suite 101
Dover, Delaware, 19904

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature	Dattie Smith	Date	8-8-2011
Name	Dattie Smith	Telephone	
Title	Authorized Person for Camberlane Consulting L.L.C.		

DECLARATION REGARDING AUTHORITY TO SIGN ON BEHALF OF A LEGAL ENTITY
(37 C.F.R. 3.73(b)(2)(i))

I, Dottie Smith (whose title is supplied below), hereby declare that I am authorized to sign on behalf of Camberlane Consulting L.L.C.

Dottie Smith

Dottie Smith, Authorized Person for Camberlane Consulting L.L.C.

8-8-2011

[date]

PTO/SB/47 (03-09)
Approved for use through 03/31/2012. OMB 0651-0016
U.S. Patent and Trademark Office; U. S. DEPARTMENT OF COMMERCE

"FEE ADDRESS" INDICATION FORM

Address to:
Mail Stop M Correspondence
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

- OR -

Fax to:
571-273-6500

INSTRUCTIONS: The issue fee must have been paid for application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. **When to check the first box below**: If you have a Customer Number to represent the fee address. **When to check the second box below**: If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

☑ Customer Number: 23623

OR

☐ The attached Request for Customer Number (PTO/SB/125) form.

PATENT NUMBER (if known)	APPLICATION NUMBER
6909356	10053540

Completed by (check one):

☐ Applicant/Inventor — /Thomas E. Watson/ (Signature)

☑ Attorney or Agent of record 43243 (Reg. No.) — Thomas E. Watson (Typed or printed name)

☐ Assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96) — 216-696-8730 (Requester's telephone number)

☐ Assignee recorded at Reel _____ Frame_____ — 2011-09-12 (Date)

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more that one signature is required, see below*.

☐ *** Total of _____forms are submitted.**

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt

EFS ID:	10931565
Application Number:	10053540
International Application Number:	
Confirmation Number:	6075
Title of Invention:	METHOD AND APPARATUS FOR ASSOCIATING THE MOVEMENT OF GOODS WITH THE IDENTITY OF AN INDIVIDUAL MOVING THE GOODS
First Named Inventor/Applicant Name:	Suzy Brown
Customer Number:	44955
Filer:	Thomas Edward Watson
Filer Authorized By:	
Attorney Docket Number:	4407P005
Receipt Date:	12-SEP-2011
Filing Date:	02-NOV-2001
Time Stamp:	21:50:04
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73(b).	373B.pdf	473867 941a6ff49a1bda53062b956eabcbcba59d756c8d	no	2

Warnings:	
Information:	

2	Assignee showing of ownership per 37 CFR 3.73(b).	supp373B.pdf	480139 f7fd327b1974a6271c4e9bb1a749346ac6758b05	no	2
Warnings:					
Information:					
3	Power of Attorney	VSEEPOA.pdf	969248 237af57e28eefdddcc04494e2b9039a62678c845	no	2
Warnings:					
Information:					
4	Change of Address	feeaddressform.pdf	315315 3d391dfd1a33e884799ce681cb3cc75f9e1fc8be	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	2238569	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Suzy Brown, David Kucharczyk

Application No./Patent No.: 6909356 Filed/Issue Date: 06/21/2005

Titled: METHOD AND APPARATUS FOR ASSOCIATING THE MOVEMENT OF GOODS WITH THE IDENTITY OF AN INDIVIDUAL MOVING THE GOODS

CAMBERLANE CONSULTING L.L.C. , a Limited Liability Company
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;

2. ☐ an assignee of less than the entire right, title, and interest in (The extent (by percentage) of its ownership interest is _____ %); or

3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy therefore is attached.

OR

B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: Suzy Brown, David Kucharczyk To: ATLANTES SERVICES, INC.
   The document was recorded in the United States Patent and Trademark Office at
   Reel 012818 , Frame 0625, or for which a copy thereof is attached.

2. From: ATLANTES SERVICES, INC. To: VISTANT CORPORATION
   The document was recorded in the United States Patent and Trademark Office at
   Reel 013362 , Frame 0667, or for which a copy thereof is attached.

3. From: VISTANT CORPORATION To: SEECONTROL, INC.
   The document was recorded in the United States Patent and Trademark Office at
   Reel 0161164 , Frame 0667, or for which a copy thereof is attached.

☒ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Thomas E. Watson/ 2011-09-12
Signature Date

Thomas E. Watson Attorney 43243
Printed or Typed Name Title

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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PTO/SB/96 (07-09)
Approved for use through 07/31/2012. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Applicant/Patent Owner: Suzy Brown, David Kucharczyk

Application No./Patent No.: 6909356 Filed/Issue Date: 06/21/2005

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(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.

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3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

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OR

B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: SEECONTROL, INC. To: COMERICA BANK
   The document was recorded in the United States Patent and Trademark Office at
   Reel 021138 , Frame 0754, or for which a copy thereof is attached.

2. From: COMERICA BANK To: SEECONTROL INC.
   The document was recorded in the United States Patent and Trademark Office at
   Reel 024698 , Frame 0271, or for which a copy thereof is attached.

3. From: SEECONTROL, INC. To: CAMBERLANE CONSULTING L.L.C.
   The document was recorded in the United States Patent and Trademark Office at
   Reel 026875 , Frame 0769, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (*i.e.*, a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Thomas E. Watson/ 2011-09-12
Signature Date

Thomas E. Watson Attorney 43243
Printed or Typed Name Title

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
10/053,540	6909356	2632	9200

Correspondence Address / Fee Address Change

The following fields have been set to Customer Number 44955 on 01/30/2007

- Correspondence Address
- Maintenance Fee Address

The address of record for Customer Number 44955 is:
SQUIRE, SANDERS & DEMPSEY L.L.P.
1 MARITIME PLAZA, SUITE 300
SAN FRANCISCO,CA 94111

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
10/053,540	11/02/2001	Suzy Brown	4407P005

CONFIRMATION NO. 6075

OC000000019507738

30256
SQUIRE, SANDERS & DEMPSEY L.L.P
600 HANSEN WAY
PALO ALTO, CA 94304-1043

Date Mailed: 07/06/2006

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/14/2006.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

MY-HOA NGUYEN
PTOSS (703) 305-0677

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

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10/053,540	11/02/2001	Suzy Brown	4407P005

CONFIRMATION NO. 6075

OC000000019507732

08791
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

Date Mailed: 07/06/2006

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/14/2006.

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MY-HOA NGUYEN
PTOSS (703) 305-0677

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PTO/SB/82 (04-05)
Approved for use through 11/30/2005. OMB 0651-0035
Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

REVOCATION OF POWER OF ATTORNEY WITH NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS

Application Number	10/053,540
Filing Date	November 2, 2001
First Named Inventor	Suzy BROWN
Art Unit	2632
Examiner Name	Thomas J. Mullen
Attorney Docket Number	4407P005

I hereby revoke all previous powers of attorney or authorizations of agent given in the above-identified application:

☐ A Power of Attorney is submitted herewith.

OR

☒ I hereby appoint the practitioners at Customer Number : 30256

☒ Please change the correspondence address for the above-identified application to:

☒ The address associated with Customer Number: 30256

OR

☐ Firm *or* Individual Name			
Address			
City		State	ZIP
Country			
Telephone		Email	

I am the:

☐ Applicant/Inventor.

☒ Assignee of record of the entire interest. See 37 CFR 3.71.
Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)

SIGNATURE of Applicant or Assignee of Record

Signature			
Name	Garrett V. Gafke		
Date	June 5, 2006	Telephone	(650) 312-1100 x108

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/96 (09-04)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: SeeControl, Inc.

Application No./Patent No.: 6,909,356 Filed/Issue Date: June 21, 2005

Entitled: METHOD AND APPARATUS FOR ASSOCIATING THE MOVEMENT OF GOODS WITH THE IDENTITY OF AN INDIVIDUAL MOVING THE GOODS

SeeControl, Inc., a corporation
(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest; or
2. ☐ an assignee of less than the entire right, title, and interest

The extent (by percentage) of its ownership interest is _____ %

in the patent application/patent identified above by virtue of either:

A. ☐ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

OR

B. ☒ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as shown below:

1. From: Brown et al. To: Atlantes Services, Inc.
   The document was recorded in the United States Patent and Trademark Office at Reel 012818, Frame 0625, or for which a copy thereof is attached.

2. From: Atlantes Services, Inc. To: Vistant Corporation
   The document was recorded in the United States Patent and Trademark Office at Reel 013362, Frame 0667, or for which a copy thereof is attached.

3. From: Vistant Corporation To: SeeControl, Inc.
   The document was recorded in the United States Patent and Trademark Office at Reel 016164, Frame 0667, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet.

☐ Copies of assignments or other documents in the chain of title are attached.

[**NOTE**: A separate copy (i.e., a true copy of the original document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, if the assignment is to be recorded in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

Signature	June 5, 2006 Date
Garrett V. Gafke Printed or Typed Name	(650) 312-1100 x108 Telephone Number
President/CEO Title	

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Electronic Acknowledgement Receipt

EFS ID:	1079266
Application Number:	10053540
Confirmation Number:	6075
Title of Invention:	METHOD AND APPARATUS FOR ASSOCIATING THE MOVEMENT OF GOODS WITH THE IDENTITY OF AN INDIVIDUAL MOVING THE GOODS
First Named Inventor:	Suzy Brown
Customer Number:	8791
Filer:	Song Zhu
Filer Authorized By:	
Attorney Docket Number:	4407P005
Receipt Date:	14-JUN-2006
Filing Date:	02-NOV-2001
Time Stamp:	19:42:21
Application Type:	Utility
International Application Number:	

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)	Multi Part	Pages
1	Power of Attorney (may include Associate POA)	POA.pdf	88857	no	1

Warnings:					
Information:					
2	Assignee showing of ownership per 37 CFR 3.73(b).	Statement.pdf	86160	no	1
Warnings:					
Information:					
			Total Files Size (in bytes):	175017	

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (703) 746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

08791 7590 02/11/2005

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

05/17/2005 AKELECH2 00000104 10053540

01 FC:1501 1400.00 OP
02 FC:1504 300.00 OP
03 FC:8001 30.00 OP

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

Geneva Walls	(Depositor's name)
	(Signature)
May 10, 2005	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,540	11/02/2001	Suzy Brown	7384.P005	6075

TITLE OF INVENTION: METHOD AND APPARATUS FOR ASSOCIATING THE MOVEMENT OF GOODS WITH THE IDENTITY OF AN INDIVIDUAL MOVING THE GOODS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$300	$1700	05/11/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
MULLEN, THOMAS J	2632	340-005200

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 BLAKELY, SOKOLOFF TAYLOR & ZAFMAN LLP.
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: SeeControl, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Menlo Park, CA

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:
- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☒ Advance Order - # of Copies 10

4b. Payment of Fee(s):
- ☒ A check in the amount of the fee(s) is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number 02-2666 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date May 10, 2005

Typed or printed name Tarek N. Fahmi Registration No. 41,402

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

08791 7590 02/11/2005

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER	
MULLEN, THOMAS J	
ART UNIT	PAPER NUMBER
2632	

DATE MAILED: 02/11/2005

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,540	11/02/2001	Suzy Brown	4407P005	6075

TITLE OF INVENTION: METHOD AND APPARATUS FOR ASSOCIATING THE MOVEMENT OF GOODS WITH THE IDENTITY OF AN INDIVIDUAL MOVING THE GOODS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$300	$1700	05/11/2005

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 12/04) Approved for use through 04/30/2007.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (703) 746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

08791 7590 02/11/2005

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12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,540	11/02/2001	Suzy Brown	4407P005	6075

TITLE OF INVENTION: METHOD AND APPARATUS FOR ASSOCIATING THE MOVEMENT OF GOODS WITH THE IDENTITY OF AN INDIVIDUAL MOVING THE GOODS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1400	$300	$1700	05/11/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
MULLEN, THOMAS J	2632	340-005200

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

☐ Issue Fee

☐ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

☐ A check in the amount of the fee(s) is enclosed.

☐ Payment by credit card. Form PTO-2038 is attached.

☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.
NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,540	11/02/2001	Suzy Brown	4407P005	6075

08791 7590 02/11/2005

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER	
MULLEN, THOMAS J	

ART UNIT	PAPER NUMBER
2632	

DATE MAILED: 02/11/2005

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 484 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 484 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571) 272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

PTOL-85 (Rev. 12/04) Approved for use through 04/30/2007.

Notice of Allowability	Application No.	Applicant(s)	
	10/053,540	BROWN ET AL.	
	Examiner	Art Unit	
	Thomas J. Mullen, Jr.	2632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the amendment filed 1/10/05*.

2. ☒ The allowed claim(s) is/are *2-5,7,9-12,14-16,18-20,22,24-28,30-34,36-38,41-44 and 46-76*.

3. ☒ The drawings filed on *06 August 2004* are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

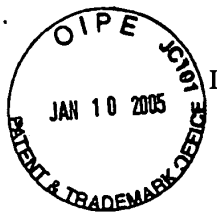
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Thomas J. Mullen, Jr.
Primary Examiner
Art Unit: 2632
571-272-2965

AF/2632



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/053,540

Applicant: Suzy Brown, et al.

Filed: November 2, 2001
TC/A.U.: 2632
Examiner: Mullen, Thomas J.

Docket No.: 6326P005
Customer No.: 08791

Confirmation No.: 6075

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
on January 4, 2005
Date of Deposit

Patricia A. Balero
Name of Person Mailing Correspondence

Signature 1/4/05
Date

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

Enter
TM
2-2-05

SUPPLEMENTAL AMENDMENT UNDER 37 CFR 1.116
EXPEDITED PROCEDURE – ART UNIT 2632

Sir:

In response to the Final Office Action of October 13, 2004, and the Advisory Action of December 22, 2004, please enter the following amendments under Rule 116:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims, which begins on page 3 of this paper.

Remarks/Arguments begin on page 14 of this paper.

Issue Classification	Application No.	Applicant(s)	
	10/053,540	BROWN ET AL.	
	Examiner	Art Unit	
	Thomas J. Mullen, Jr.	2632	

ISSUE CLASSIFICATION

ORIGINAL						CROSS REFERENCE(S)							
CLASS				SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)							
340				5.2	340	5.92	572.1						
INTERNATIONAL CLASSIFICATION					705	28							
G	0	5	B	19/00									
				/									
				/									
				/									
				/									

(Assistant Examiner) (Date)

(Legal Instruments Examiner) (Date)

Thomas J Mullen Jr
THOMAS MULLEN
ART UNIT 2632
(Primary Examiner) (Date) 2/2/05

Total Claims Allowed: 65

O.G. Print Claim(s)	O.G. Print Fig.
1	2

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1	27	31	50	61		91		121		151		181
2	2	28	32	51	(62)		92		122		152		182
3	3	29	33	52	63		93		123		153		183
4	4	30	34	53	64		94		124		154		184
5	5		35	54	65		95		125		155		185
	6	31	36	55	66		96		126		156		186
6	7	32	37	56	67		97		127		157		187
	8	33	(38)	57	68		98		128		158		188
7	9		39	58	69		99		129		159		189
8	10		40	59	70		100		130		160		190
9	11	34	41	60	71		101		131		161		191
10	12	17	42	61	72		102		132		162		192
	13	18	43	62	73		103		133		163		193
11	14	19	44	63	74		104		134		164		194
12	15	1	(45)	64	75		105		135		165		195
13	16	35	(46)	65	76		106		136		166		196
	17	36	47		77		107		137		167		197
14	18	37	48		78		108		138		168		198
15	19	38	49		79		109		139		169		199
16	20	39	50		80		110		140		170		200
	21	40	51		81		111		141		171		201
20	(22)	41	52		82		112		142		172		202
	23	42	53		83		113		143		173		203
21	24	43	54		84		114		144		174		204
22	25	44	55		85		115		145		175		205
23	26	45	56		86		116		146		176		206
24	27	46	57		87		117		147		177		207
25	28	47	58		88		118		148		178		208
	29	48	59		89		119		149		179		209
26	30	49	60		90		120		150		180		210

Search Notes

Application No.	Applicant(s)	
10/053,540	BROWN ET AL.	
Examiner	**Art Unit**	
Thomas J. Mullen, Jr.	2632	

SEARCHED			
Class	Subclass	Date	Examiner
340	5.2 5.8 5.92 539.1 572.1 666	5/1/2004	TM
235	462.01		
348	143		
705	28		
	UPDATE	10/4/2004	TM
	"	2/2/2005	TM

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
340	**5.2** **5.92** 572.1	2/2/2005	**TM**
705	28		

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
EAST	5/1/2004	TM

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application No.	10/053,540
Filing Date	November 2, 2001
First Named Inventor	Suzy Brown
Art Unit	2632
Examiner Name	Thomas J. Mullen
Total Number of Pages in This Submission	16
Attorney Docket Number	6326P005

ENCLOSURES ***(check all that apply)***

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☒ Amendment / Response
  - ☒ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
  - ☐ PTO/SB/08
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Basic Filing Fee
  - ☐ Declaration/POA
- ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s)
- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Other Enclosure(s) *(please identify below):*

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Tarek N. Fahmi, Reg. No. 41,402 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	
Date	January 4, 2005

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Typed or printed name	**Patricia A. Balero**		
Signature		Date	**January 4, 2005**

Based on PTO/SB/21 (04-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wlr) 06/04/2004.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

AF/2632

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/053,540

Applicant: Suzy Brown, et al.

Filed: November 2, 2001
TC/A.U.: 2632
Examiner: Mullen, Thomas J.

Docket No.: 6326P005
Customer No.: 08791

Confirmation No.: 6075

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
on January 4, 2005
Date of Deposit

Patricia A. Balero
Name of Person Mailing Correspondence

Signature 1/4/05
Date

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

SUPPLEMENTAL AMENDMENT UNDER 37 CFR 1.116
EXPEDITED PROCEDURE – ART UNIT 2632

Sir:

In response to the Final Office Action of October 13, 2004, and the Advisory Action of December 22, 2004, please enter the following amendments under Rule 116:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims, which begins on page 3 of this paper.

Remarks/Arguments begin on page 14 of this paper.

Amendments to the Specification:

Please replace paragraph **[0030]** with the following amended paragraph:

[0030] In addition, the server 230 may contain a program written in JAVA, C++, HTML, Perl, or SQL, for example, or in a combination of these programming languages or in any other programming languages utilized singularly or in combination, to correlate the movement of objects in inventory and the association of the movement of the objects in inventory with the identity. The server 230 may log this information as a record of an event in the storage area 210 using the DBMS. A user (not shown in this view) may access a record of an event in the storage area 210 using one or more client computers (~~not shown in this view~~ see, e.g., user interface 270) coupled to the server 230 through the Internet, a corporate intranet, a Wide Area Network (WAN), a Local Area Network (LAN), or any other system of interconnections (see, e.g., communication link 260) enabling two or more computers to exchange information. In this manner, the user may access information regarding objects in inventory (e.g., to determine the presence and/or absence of objects in inventory, the location of an object in inventory, to reserve an object in inventory, etc.). The user may also obtain a one-time access code to unlock the locking mechanism controller 240 to the storage area 210.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Listing of Claims:

1. (Cancelled)

2. (Currently Amended) The method of claim ~~1~~ 45 wherein the entity is identified by a controller associated with the controlled space, the controller being configured to unlock a locking mechanism to allow the entity to have access to the controlled space provided the entity is authorized to do so.

3. (Currently Amended) The method of claim ~~1~~ 45 further comprising notifying ~~a~~ the user of the addition, removal, return, defective status, or ~~other~~ movement ~~or status~~ of the objects.

4. (Currently Amended) The method of claim 3 further comprising notifying the user of whether or not the addition, removal, return, defective status, or ~~other~~ movement ~~or status~~ of the objects is authorized or not.

5. (Original) The method of claim 4 wherein authorization is determined according to the identity information.

6. (Cancelled)

7. (Currently Amended) The method of claim ~~1~~ 45 wherein the wireless tracking system includes at least one tag affixed to one or more of the objects and the entity, each tag configured to communicate via a wireless link with the wireless tracking system.

8. (Cancelled)

9. (Currently Amended) The method of claim ~~1~~ 45 wherein the wireless tracking system includes barcode labels affixed to one or more of the objects.

10. (Currently Amended) The method of claim ~~1~~ 45 wherein the wireless tracking system includes video cameras monitoring the controlled space.

11. (Currently Amended) The method of claim ~~1~~ 45 wherein the wireless tracking system includes one or more mechanical devices, including at least one device that registers an absence of a weight ~~or~~ of an object in a predefined location.

12. (Currently Amended) The method of claim ~~1~~ 45 wherein the addition, removal, return, defective status, or ~~other~~ movement ~~or status~~ of the objects to/from/within the controlled space is entered into the computer system by the entity using an input device.

13. (Cancelled)

14. (Currently Amended) The method of claim ~~13~~ 45 wherein the server is communicatively coupled to the computer system via one of a wireless communication link, or a network communication link~~, and a telephone communication link~~.

15. (Currently Amended) The method of claim ~~13~~ 45 wherein ~~a~~ the user accesses information regarding the addition, removal, return, defective status, or ~~other~~ movements ~~or status~~ of objects to/from/within the controlled space associated with the identity information in the server through one or more client computers communicatively coupled to the server through a network.

16. (Original) The method of claim 15 wherein the network comprises the Internet.

17. (Cancelled)

18. (Currently Amended) The method of claim ~~17~~ 45 wherein the notification is transmitted to the user via a wireless communication link, or a network communication link~~, and/or a telephone communication link~~.

19. (Currently Amended) The method of claim ~~17~~ 45 wherein objects are automatically replenished as a result of the notification.

20. (Currently Amended) The method of claim ~~17~~ 45 wherein a party is automatically billed as a result of the notification.

21. (Cancelled)

22. (Currently Amended) A machine-readable storage medium embodying a sequence of instructions executable by a machine to perform a method for automatically associating an identity of an entity with a movement of one or more objects in a controlled-access location, the method comprising:

identifying, at a controller associated with the controlled-access location, an entity attempting to enter the controlled-access location;

determining whether the entity is authorized to enter the controlled-access location based upon the entity identification;

unlocking a locking mechanism to allow the entity to have access to the controlled-access location if the entity is authorized, wherein the entity may add, remove, return, move and/or update status of objects to/from/within the controlled-access location; and

monitoring the location, movement, and status change of the entity~~,~~ and the objects~~, and the objects affected by the entity~~ within the controlled-access location using a wireless tracking system, wherein the movement of the objects within/to/from the controlled-access location is entered into a computer system by the entity using an input device.

23. (Cancelled)

24. (Previously Presented) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes tags affixed to the entity and the objects configured to communicate via a wireless link with a monitoring device.

25. (Previously Presented) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes tags configured to be activated through contact with a reader device.

26. (Previously Presented) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes barcode labels which are scanned as the objects are added to or removed from the controlled-access location.

27. (Previously Presented) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes video cameras monitoring the controlled-access location.

28. (Currently Amended) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes one or more mechanical devices, including at least one device that is configured to register an absence ~~or~~ of a weight of an object in a predefined location.

29. (Cancelled)

30. (Previously Presented) The machine-readable storage medium of claim 22 wherein the method further comprises re-locking the locking mechanism, and automatically locking out all other entities until the wireless tracking system has accounted for all remaining objects in the controlled-access location.

31. (Currently Amended) The machine-readable storage medium of claim 22 further comprising automatically associating the movement and/or status change of the objects with the identity of the entity, wherein data pertaining to the association and corresponding movement

and/or status change of the objects is transmitted to a server through one or more of a wireless interface, or a network interface~~, or a telephone interface~~.

32. (Previously Presented) The machine-readable storage medium of claim 31 wherein the method further comprises allowing access to information in the server regarding the movement of the objects associated with the identity of the entity through one or more client computers coupled to the server through a network.

33. (Original) The machine-readable storage medium of claim 32 wherein the network comprises the Internet.

34. (Previously Presented) The machine-readable storage medium of claim 31 wherein the server is configured to automatically notify a user via one or more of a wireless interface, or a network interface~~, or a telephone interface~~ regarding an event corresponding to the movement and/or status change of the objects.

35. (Cancelled)

36. (Original) The machine-readable storage medium of claim 34 wherein objects are automatically replenished or returned as a result of the notification.

37. (Original) The machine-readable storage medium of claim 34 wherein a party is automatically billed as a result of the notification.

38. (Currently Amended) A computer system, comprising:

a processing unit;

a memory coupled to the processing unit; and

a process executed from the memory causing the processing unit to (i) automatically associate an identity of an entity with movement and/or status changes of objects to/from/within a controlled space, ~~and to~~ (ii) monitor the location and movement of the entity and

objects within the controlled space via a wireless tracking system coupled to the computer system, and (iii) associate the identity of the entity with the movement or status changes of the objects according to information which is entered into the computer system by the entity using an input device coupled to the computer system.

39. (Cancelled)

40. (Cancelled)

41. (Previously Presented) The computer system of claim 38 wherein the process further causes the processing unit to transmit information regarding the association of the movement or status changes of objects to/from/within controlled space with the identity of the entity to a server coupled to the computer system.

42. (Currently Amended) The method of claim ~~13~~ 45 wherein the server automatically decrements or increments inventory levels or changes the status of objects in response to data transmitted to the server.

43. (Currently Amended) The method of claim ~~13~~ 45 wherein the server automatically correlates received information pertaining to the movement or status changes of objects with received associated identity information corresponding to the entity responsible for the movements or status changes of the objects.

44. (Currently Amended) The method of claim ~~17~~ 45 wherein an access code is automatically generated as a result of the notification.

45. (New) A method, comprising:

obtaining identity information regarding an entity which enters a controlled space;

monitoring, using a wireless tracking system communicatively coupled to a computer system, locations and movements of the entity and objects within the controlled space;

automatically associating, using the computer system, the identity information

regarding the entity with status information regarding additions, removals, returns, defective status, or movements of the objects to/from/within the controlled space; and

transmitting the status information and the associated identity information to a server communicatively coupled to the computer system and configured to automatically notify a user of the status information, wherein at least one of the objects is automatically returned or picked up as a result of such notification.

46. (New) A method, comprising:

obtaining identity information regarding an entity which enters a controlled space;

monitoring, using a wireless tracking system communicatively coupled to a computer system, locations and movements of the entity and objects within the controlled space;

automatically associating, using the computer system, the identity information regarding the entity with status information regarding additions, removals, returns, defective status, or movements of the objects to/from/within the controlled space; and

transmitting the status information and the associated identity information to a server communicatively coupled to the computer system and configured to automatically notify a user of the status information, wherein an access code for the controlled space is automatically generated as a result of such notification.

47. (New) The method of claim 46 wherein the entity is identified by a controller associated with the controlled space, the controller being configured to unlock a locking mechanism to allow the entity to have access to the controlled space provided the entity is authorized to do so.

48. (New) The method of claim 46 further comprising notifying the user of the addition, removal, return, defective status, or movement of the objects.

49. (New) The method of claim 48 further comprising notifying the user of whether or not the addition, removal, return, defective status, or movement of the objects is authorized or not.

50. (New) The method of claim 49 wherein authorization is determined according to the identity information.

51. (New) The method of claim 46 wherein the wireless tracking system includes at least one tag affixed to one or more of the objects and the entity, each tag configured to communicate via a wireless link with the wireless tracking system.

52. (New) The method of claim 46 wherein the wireless tracking system includes barcode labels affixed to one or more of the objects.

53. (New) The method of claim 46 wherein the wireless tracking system includes video cameras monitoring the controlled space.

54. (New) The method of claim 46 wherein the wireless tracking system includes one or more mechanical devices, including at least one device that registers an absence of a weight of an object in a predefined location.

55. (New) The method of claim 46 wherein the addition, removal, return, defective status, or movement of the objects to/from/within the controlled space is entered into the computer system by the entity using an input device.

56. (New) The method of claim 46 wherein the server is communicatively coupled to the computer system via one of a wireless communication link, or a network communication link.

57. (New) The method of claim 46 wherein a user accesses information regarding the addition, removal, return, defective status, or movements or of objects to/from/within the controlled space associated with the identity information in the server through one or more client computers communicatively coupled to the server through a network.

58. (New) The method of claim 57 wherein the network comprises the Internet.

59. (New) The method of claim 46 wherein the notification is transmitted to the user via a wireless communication link, or a network communication link.

60. (New) The method of claim 46 wherein objects are automatically replenished as a result of the notification.

61. (New) The method of claim 46 wherein a party is automatically billed as a result of the notification.

62. (New) A method, comprising:

obtaining identity information regarding an entity which enters a controlled space;

monitoring, using a wireless tracking system communicatively coupled to a computer system, locations and movements of the entity and objects within the controlled space; and

automatically associating, using the computer system, the identity information regarding the entity with status information regarding additions, removals, returns, defective status, or movements of the objects to/from/within the controlled space, which status information is entered into the computer system by the entity using an input device.

63. (New) The method of claim 62 wherein the entity is identified by a controller associated with the controlled space, the controller being configured to unlock a locking mechanism to allow the entity to have access to the controlled space provided the entity is authorized to do so.

64. (New) The method of claim 62 further comprising notifying the user of the addition, removal, return, defective status, or movement of the objects.

65. (New) The method of claim 64 further comprising notifying the user of whether or not the addition, removal, return, defective status, or movement of the objects is authorized or not.

66. (New) The method of claim 65 wherein authorization is determined according to the identity information.

67. (New) The method of claim 62 wherein the wireless tracking system includes at least one tag affixed to one or more of the objects and the entity, each tag configured to communicate via a wireless link with the wireless tracking system.

68. (New) The method of claim 62 wherein the wireless tracking system includes barcode labels affixed to one or more of the objects.

69. (New) The method of claim 62 wherein the wireless tracking system includes video cameras monitoring the controlled space.

70. (New) The method of claim 62 wherein the wireless tracking system includes one or more mechanical devices, including at least one device that registers an absence of a weight of an object in a predefined location.

71. (New) The method of claim 62 wherein the server is communicatively coupled to the computer system via one of a wireless communication link, or a network communication link.

72. (New) The method of claim 62 wherein a user accesses information regarding the addition, removal, return, defective status, or movements or of objects to/from/within the controlled space associated with the identity information in the server through one or more client computers communicatively coupled to the server through a network.

73. (New) The method of claim 72 wherein the network comprises the Internet.

74. (New) The method of claim 62 wherein the notification is transmitted to the user via a wireless communication link, or a network communication link.

75. (New) The method of claim 62 wherein objects are automatically replenished as a result of the notification.

76. (New) The method of claim 62 wherein a party is automatically billed as a result of the notification.

REMARKS/ARGUMENTS

Reconsideration of this application, as amended, is respectfully requested.

This supplemental amendment addresses issues raised by the Advisory Action dated December 22, 2004 and follows a teleconference between Examiner Mullen and the undersigned attorney on January 4, 2005. During that telephone conversation, Examiner Muller agreed to waive the requirement for canceling at least as many claims as are added in this amendment, inasmuch as such claims recite subject matter previously indicated as being allowable, if the remaining objections were adequately addressed. To that end, it was further agreed the undersigned would replace the previously proposed claims 45, 46 and 62 to address comments made in the Advisory Action. In addition, previously proposed claims 3, 34 and 42-44 have been amended to address objections raised in the Advisory Action.

1. Amendments affecting the objections to the drawings/specification

The objections to the drawings under 37 CFR 1.83(a) have been obviated by canceling the objectionable subject matter from the claims (see claims 14, 18, 31, 34 and 35, as amended).

The objections to the drawings under 37 CFR 1.84(p)(5) have been obviated by appropriate amendments to the specification. Reference numbers 260 and 270 are now recited in paragraph [0030] of the specification, as amended. These amendments do not introduce any new subject matter into the application because they merely add reference designations to subject matter previously recited in the specification as filed. The amendments obviate the need for replacement drawing sheets.

2. Amendments affecting the objections to & rejections of the claims.

The objections to claims 11, 28 and 31-37 under 37 CFR 1.75(a) have been obviated by appropriate amendments as requested in the Final Office Action.

The rejection of claims 22 and 24-37 under 35 USC 112, second paragraph, have been obviated by appropriate amendment of claim 22.

Regarding the remaining rejections of the claims, new claim 45 recites the subject matter of former claim 21 (including the claims from which former claim 21 depended), corrected for informalities, which subject matter was indicated as being allowable. Claims 2-5, 7, 9-12, 14-16

and 18-20 have been amended to depend from new claim 45 and should therefore be likewise allowable.

New claim 46 recites the subject matter of former claim 44 (including the claims from which it depended), corrected for informalities, which subject matter was indicated as being allowable. New claims 47-61 depend from new claim 46 and recite subject matter found in claims 2-5, 7, 9-12, 14-16 and 18-20 and should likewise be allowable.

New claim 62 recites the subject matter of former claim 12 (including the claim from which it depended), which subject matter was indicated as being allowable. New claims 63-76 depend from new claim 62 and recite subject matter found in claims 2-5, 7, 9-12, 14-16 and 18-20 and should likewise be allowable.

For all of the foregoing reasons, the claims are believed to be allowable. If there are any additional fees due in connection with this communication, please charge our deposit account no. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: January 4, 2005

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PTO/SB/06 (08-03)
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PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 10/053540

CLAIMS AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE	SMALL ENTITY FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY FEE
BASIC FEE (37 CFR 1.16(a))				$____	OR		$____
TOTAL CLAIMS (37 CFR 1.16(c))	minus 20 =	*	X $____ =		OR	X $____ =	
INDEPENDENT CLAIMS (37 CFR 1.16(b))	minus 3 =	*	X $____ =		OR	X $____ =	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(d))			+ $____ =		OR	+ $____ =	
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL		OR	TOTAL	

CLAIMS AS AMENDED – PART II

1-10-05

AMENDMENT A

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
Total (37 CFR 1.16(c))	* 65	Minus	** 65	=	X $____ =		OR	X $____ =	
Independent (37 CFR 1.16(b))	* 5	Minus	*** 5	=	X $____ =		OR	X $____ =	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ $____ =		OR	+ $____ =	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
Total (37 CFR 1.16(c))	*	Minus	**	=	X $____ =		OR	X $____ =	
Independent (37 CFR 1.16(b))	*	Minus	***	=	X $____ =		OR	X $____ =	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ $____ =		OR	+ $____ =	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT C

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
Total (37 CFR 1.16(c))	*	Minus	**	=	X $____ =		OR	X $____ =	
Independent (37 CFR 1.16(b))	*	Minus	***	=	X $____ =		OR	X $____ =	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ $____ =		OR	+ $____ =	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/06 (08-03)
Approved for use through 7/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD
Substitute for Form PTO-875

Application or Docket Number: 10/053540

CLAIMS AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE	SMALL ENTITY FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY FEE
BASIC FEE (37 CFR 1.16(a))				$	OR		$740.
TOTAL CLAIMS (37 CFR 1.16(c))	44 minus 20 =	* 24	X $ =		OR	X $18 =	432.
INDEPENDENT CLAIMS (37 CFR 1.16(b))	3 minus 3 =	*	X $ =		OR	X $ =	
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(d))			+ $ =		OR	+ $ =	
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL		OR	TOTAL	

CLAIMS AS AMENDED – PART II

AMENDMENT A — 8-6-04

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
Total (37 CFR 1.16(c))	* 40	Minus	** 44	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(b))	* 2	Minus	*** 3	= 1	X $ =		OR	X $86 =	86.
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ $ =		OR	+ $ =	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT B — 9-10-04

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
Total (37 CFR 1.16(c))	* 40	Minus	** 44	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(b))	* 4	Minus	*** 4	=	X $ =		OR	X $ =	
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ $ =		OR	+ $ =	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT C — 11-26-04

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE	SMALL ENTITY ADDITIONAL FEE	OR	OTHER THAN SMALL ENTITY RATE	OTHER THAN SMALL ENTITY ADDITIONAL FEE
Total (37 CFR 1.16(c))	* 66	Minus	** 44	= 22	X $ =		OR	X $18 =	396.
Independent (37 CFR 1.16(b))	* 5	Minus	*** 4	= 1	X $ =		OR	X $88 =	88.
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(d))					+ $ =		OR	+ $ =	
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,540	11/02/2001	Suzy Brown	4407P005	6075

8791 7590 12/22/2004

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER	
MULLEN, THOMAS J	
ART UNIT	**PAPER NUMBER**
2632	

DATE MAILED: 12/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Advisory Action	Application No.	Applicant(s)	
	10/053,540	BROWN ET AL.	
	Examiner	Art Unit	
	Thomas J. Mullen, Jr.	2632	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 26 November 2004 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

PERIOD FOR REPLY [check either a) or b)]

a) ☐ The period for reply expires _____months from the mailing date of the final rejection.

b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1.☐ A Notice of Appeal was filed on _____. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.

2.☒ The proposed amendment(s) will not be entered because:

(a) ☒ they raise new issues that would require further consideration and/or search (see NOTE below);

(b) ☐ they raise the issue of new matter (see Note below);

(c) ☒ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

(d) ☒ they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: *SEE ATTACHED*.

3.☐ Applicant's reply has overcome the following rejection(s): _____.

4.☒ Newly proposed or amended claim(s) *22,24-28 and 30-33* would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

5.☐ The a)☐ affidavit, b)☐ exhibit, or c)☐ request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.

6.☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.

7.☒ For purposes of Appeal, the proposed amendment(s) a)☒ will not be entered or b)☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____.

Claim(s) objected to: *12,21,29,40 and 44*.

Claim(s) rejected: *1-5,7,9-11,13-20,22,24-28,30-38 and 41-43*.

Claim(s) withdrawn from consideration: _____.

8.☐ The drawing correction filed on _____ is a)☐ approved or b)☐ disapproved by the Examiner.

9.☐ Note the attached Information Disclosure Statement(s)(PTO-1449) Paper No(s). _____.

10.☐ Other: _____

NEW ISSUES REQUIRING FURTHER CONSIDERATION AND/OR SEARCH

Newly presented claims 45, 46 and 62 supposedly correspond to previously presented claims 21, 44 and 12 (respectively), rewritten in independent form; however, each of the newly proposed claims lacks at least the "obtaining" step of original claim 1 (from which claims 21, 44 and 12 depend, directly or indirectly), i.e. "obtaining identity information regarding an entity which enters a controlled space".

OTHER ISSUES

(i) The proposed amendment presents 32 additional claims (45-76) without cancelling a corresponding number of finally rejected claims.

(ii) The proposed amendment cancels claims 13 and 17 (among others), yet includes claims 42-44 each of which depends from one of these cancelled claims; thus, the scope (or proper dependency) of claims 42-44 cannot be determined.

(iii) Regarding the objection to the drawings set forth in the final rejection as to the subject matter of claims 14, 18, 31 and 34 not being shown, the proposed amendment removes the "telephone communication link" or "telephone interface" from claims 14, 18 and 31, but not from claim 34.

(iv) In proposed claims 45 and 46, next-to-last line in each claim, "the status" is indefinite as there are two prior recitations of "status" (i.e. "status information" and "defective status"), and it is unclear which is intended.

(v) Also in proposed claim 45, next-to-last line, it is unclear whether "an item" refers to one or more of the "objects" previously recited.

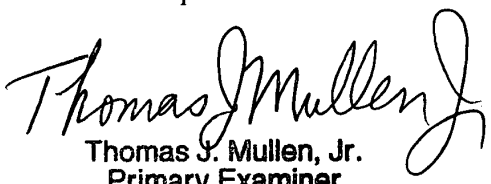
(vi) In proposed claim 3, it appears that "other movement or status" should be simply --movement--, in view of the corresponding changes (or new recitations) in claims 4, 12, 15, 48-49 and 64-65.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Mullen, Jr. whose telephone number is 571-272-2965. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 4 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Wu, can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

TJM



Thomas J. Mullen, Jr.
Primary Examiner
Art Unit 2632

AF $

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application No.	10/053,540
Filing Date	November 2, 2001
First Named Inventor	Suzy Brown
Art Unit	2632
Examiner Name	Thomas J. Mullen
Total Number of Pages in This Submission	17
Attorney Docket Number	6326P005

ENCLOSURES ***(check all that apply)***

- ☒ Fee Transmittal Form
  - ☒ Fee Attached
- ☒ Amendment / Response
  - ☒ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
  - ☐ PTO/SB/08
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Basic Filing Fee
  - ☐ Declaration/POA
- ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s)
- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Other Enclosure(s) *(please identify below):*

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Tarek N. Fahmi, Reg. No. 41,402 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	
Date	November 22, 2004

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Typed or printed name	**Patricia A. Balero**		
Signature		Date	**November 22, 2004**

Based on PTO/SB/21 (04-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wlr) 06/04/2004.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

FEE TRANSMITTAL for FY 2004

Effective 10/01/2004. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT ($) 572.00

Complete if Known	
Application Number	10/053,540
Filing Date	November 2, 2001
First Named Inventor	Suzy Brown
Examiner Name	Thomas J. Mullen
Art Unit	2632
Attorney Docket No.	6326P005

METHOD OF PAYMENT *(check all that apply)*

☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account

Deposit Account Number: 02-2666

Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

The Commissioner is authorized to: *(check all that apply)*

☐ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) or underpayment of fees as required under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20.

☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	790	2001	395	Utility filing fee	
1002	350	2002	175	Design filing fee	
1003	550	2003	275	Plant filing fee	
1004	790	2004	395	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($)

2. EXTRA CLAIM FEES

			Extra Claims		Fee from below		Fee Paid
Total Claims	66	- 44* =	22	X	18.00	=	$396.00
Independent Claims	5	- 3* =	2	X	88.00	=	$176.00
Multiple Dependent						=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	88	2201	44	Independent claims in excess of 3
1203	300	2203	150	Multiple Dependent claim, if not paid
1204	88	2204	44	**Reissue independent claims over original patent
1205	18	2205	9	**Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 572.00

***or number previously paid, if greater, For Reissues, see below*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
2053	130	2053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	430	2252	215	Extension for reply within second month	
1253	980	2253	490	Extension for reply within third month	
1254	1,530	2254	765	Extension for reply within fourth month	
1255	2,080	2255	1,040	Extension for reply within fifth month	
1404	340	2401	170	Notice of Appeal	
1402	340	2402	170	Filing a brief in support of an appeal	
1403	300	2403	150	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,370	2453	685	Petition to revive - unintentional	
1501	1,370	2501	685	Utility issue fee (or reissue)	
1502	490	2502	245	Design issue fee	
1503	660	2503	330	Plant issue fee	
1460	130	2460	130	Petitions to the Commissioner	
1807	50	1807	50	Prosessing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	790	1809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	
1801	790	2801	395	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($)

SUBMITTED BY

Complete (if applicable)

Name (Print/Type)	Tarek N. Fahmi	Registration No. (Attorney/Agent)	41,402	Telephone	(408) 947-8200
Signature				Date	11/22/04

Based on PTO/SB/17 (10-03) as modified by Blakely, Sokoloff, Taylor & Zafman (wlr) 02/10/2004.
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Application No.: 10/053,540

Applicant: Suzy Brown, et al.

Filed: November 2, 2001
TC/A.U.: 2632
Examiner: Mullen, Thomas J.

Docket No.: 6326P005
Customer No.: 08791

Confirmation No.: 6075

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on November 22, 2004
Date of Deposit

Patricia A. Balero
Name of Person Mailing Correspondence

Signature 11.22.04
Date

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

AMENDMENT UNDER 37 CFR 1.116
EXPEDITED PROCEDURE – ART UNIT 2632

Sir:

In response to the Final Office Action of October 13, 2004, please enter the following amendments under Rule 116:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims, which begins on page 3 of this paper.

Remarks/Arguments begin on page 14 of this paper.

11/30/2004 MAHMED1 00000043 10053540

01 FC:1201 176.00 OP
02 FC:1202 396.00 OP

Amendments to the Specification:

Please replace paragraph **[0030]** with the following amended paragraph:

[0030] In addition, the server 230 may contain a program written in JAVA, C++, HTML, Perl, or SQL, for example, or in a combination of these programming languages or in any other programming languages utilized singularly or in combination, to correlate the movement of objects in inventory and the association of the movement of the objects in inventory with the identity. The server 230 may log this information as a record of an event in the storage area 210 using the DBMS. A user (not shown in this view) may access a record of an event in the storage area 210 using one or more client computers (~~not shown in this view~~ see, e.g., user interface 270) coupled to the server 230 through the Internet, a corporate intranet, a Wide Area Network (WAN), a Local Area Network (LAN), or any other system of interconnections (see, e.g., communication link 260) enabling two or more computers to exchange information. In this manner, the user may access information regarding objects in inventory (e.g., to determine the presence and/or absence of objects in inventory, the location of an object in inventory, to reserve an object in inventory, etc.). The user may also obtain a one-time access code to unlock the locking mechanism controller 240 to the storage area 210.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Listing of Claims:

1. (Cancelled)

2. (Currently Amended) The method of claim ~~1~~ 45 wherein the entity is identified by a controller associated with the controlled space, the controller being configured to unlock a locking mechanism to allow the entity to have access to the controlled space provided the entity is authorized to do so.

3. (Currently Amended) The method of claim ~~1~~ 45 further comprising notifying ~~a~~ the user of the addition, removal, return, defective status, or other movement or status of the objects.

4. (Currently Amended) The method of claim 3 further comprising notifying the user of whether or not the addition, removal, return, defective status, or ~~other~~ movement ~~or status~~ of the objects is authorized or not.

5. (Original) The method of claim 4 wherein authorization is determined according to the identity information.

6. (Cancelled)

7. (Currently Amended) The method of claim ~~1~~ 45 wherein the wireless tracking system includes at least one tag affixed to one or more of the objects and the entity, each tag configured to communicate via a wireless link with the wireless tracking system.

8. (Cancelled)

9. (Currently Amended) The method of claim ~~1~~ 45 wherein the wireless tracking system includes barcode labels affixed to one or more of the objects.

10. (Currently Amended) The method of claim ~~1~~ 45 wherein the wireless tracking system includes video cameras monitoring the controlled space.

11. (Currently Amended) The method of claim ~~1~~ 45 wherein the wireless tracking system includes one or more mechanical devices, including at least one device that registers an absence of a weight ~~or~~ of an object in a predefined location.

12. (Currently Amended) The method of claim ~~1~~ 45 wherein the addition, removal, return, defective status, or ~~other~~ movement ~~or status~~ of the objects to/from/within the controlled space is entered into the computer system by the entity using an input device.

13. (Cancelled)

14. (Currently Amended) The method of claim ~~13~~ 45 wherein the server is communicatively coupled to the computer system via one of a wireless communication link, or a network communication link~~, and a telephone communication link~~.

15. (Currently Amended) The method of claim ~~13~~ 45 wherein ~~a~~ the user accesses information regarding the addition, removal, return, defective status, or ~~other~~ movements ~~or status~~ of objects to/from/within the controlled space associated with the identity information in the server through one or more client computers communicatively coupled to the server through a network.

16. (Original) The method of claim 15 wherein the network comprises the Internet.

17. (Cancelled)

18. (Currently Amended) The method of claim ~~17~~ 45 wherein the notification is transmitted to the user via a wireless communication link, or a network communication link~~, and/or a telephone communication link~~.

19. (Currently Amended) The method of claim ~~17~~ 45 wherein objects are automatically replenished as a result of the notification.

20. (Currently Amended) The method of claim ~~17~~ 45 wherein a party is automatically billed as a result of the notification.

21. (Cancelled)

22. (Currently Amended) A machine-readable storage medium embodying a sequence of instructions executable by a machine to perform a method for automatically associating an identity of an entity with a movement of one or more objects in a controlled-access location, the method comprising:

identifying, at a controller associated with the controlled-access location, an entity attempting to enter the controlled-access location;

determining whether the entity is authorized to enter the controlled-access location based upon the entity identification;

unlocking a locking mechanism to allow the entity to have access to the controlled-access location if the entity is authorized, wherein the entity may add, remove, return, move and/or update status of objects to/from/within the controlled-access location; and

monitoring the location, movement, and status change of the entity~~,~~ and the objects~~, and the objects affected by the entity~~ within the controlled-access location using a wireless tracking system, wherein the movement of the objects within/to/from the controlled-access location is entered into a computer system by the entity using an input device.

23. (Cancelled)

24. (Previously Presented) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes tags affixed to the entity and the objects configured to communicate via a wireless link with a monitoring device.

25. (Previously Presented) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes tags configured to be activated through contact with a reader device.

26. (Previously Presented) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes barcode labels which are scanned as the objects are added to or removed from the controlled-access location.

27. (Previously Presented) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes video cameras monitoring the controlled-access location.

28. (Currently Amended) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes one or more mechanical devices, including at least one device that is configured to register an absence ~~or~~ of a weight of an object in a predefined location.

29. (Cancelled)

30. (Previously Presented) The machine-readable storage medium of claim 22 wherein the method further comprises re-locking the locking mechanism, and automatically locking out all other entities until the wireless tracking system has accounted for all remaining objects in the controlled-access location.

31. (Currently Amended) The machine-readable storage medium of claim 22 further comprising automatically associating the movement and/or status change of the objects with the identity of the entity, wherein data pertaining to the association and corresponding movement

and/or status change of the objects is transmitted to a server through one or more of a wireless interface, or a network interface~~, or a telephone interface~~.

32. (Previously Presented) The machine-readable storage medium of claim 31 wherein the method further comprises allowing access to information in the server regarding the movement of the objects associated with the identity of the entity through one or more client computers coupled to the server through a network.

33. (Original) The machine-readable storage medium of claim 32 wherein the network comprises the Internet.

34. (Previously Presented) The machine-readable storage medium of claim 31 wherein the server is configured to automatically notify a user via one or more of a wireless interface, a network interface, or a telephone interface regarding an event corresponding to the movement and/or status change of the objects.

35. (Cancelled)

36. (Original) The machine-readable storage medium of claim 34 wherein objects are automatically replenished or returned as a result of the notification.

37. (Original) The machine-readable storage medium of claim 34 wherein a party is automatically billed as a result of the notification.

38. (Currently Amended) A computer system, comprising:

a processing unit;

a memory coupled to the processing unit; and

a process executed from the memory causing the processing unit to (i) automatically associate an identity of an entity with movement and/or status changes of objects to/from/within a controlled space, ~~and to~~ (ii) monitor the location and movement of the entity and

objects within the controlled space via a wireless tracking system coupled to the computer system, and (iii) associate the identity of the entity with the movement or status changes of the objects according to information which is entered into the computer system by the entity using an input device coupled to the computer system.

39. (Cancelled)

40. (Cancelled)

41. (Previously Presented) The computer system of claim 38 wherein the process further causes the processing unit to transmit information regarding the association of the movement or status changes of objects to/from/within controlled space with the identity of the entity to a server coupled to the computer system.

42. (Currently Amended) The method of claim 13 wherein the server automatically decrements or increments inventory levels or changes the status of objects in response to data transmitted to the server.

43. (Currently Amended) The method of claim 13 wherein the server automatically correlates received information pertaining to the movement or status changes of objects with received associated identity information corresponding to the entity responsible for the movements or status changes of the objects.

44. (Original) The method of claim 17 wherein an access code is automatically generated as a result of the notification.

45. (New) A method, comprising:

automatically associating, using a computer system communicatively coupled to a wireless tracking system configured to monitor locations and movements of an entity and objects within a controlled space, identity information regarding the entity with status information regarding additions, removals, returns, defective status, or movements of the objects

to/from/within the controlled space; and

transmitting the status information and the associated identity information to a server communicatively coupled to the computer system and configured to automatically notify a user of the status of the objects, wherein an item is automatically returned or picked up as a result of such notification.

46. (New) A method, comprising:

automatically associating, using a computer system communicatively coupled to a wireless tracking system configured to monitor locations and movements of an entity and objects within a controlled space, identity information regarding the entity with status information regarding additions, removals, returns, defective status, or movements of the objects to/from/within the controlled space; and

transmitting the status information and the associated identity information to a server communicatively coupled to the computer system and configured to automatically notify a user of the status of the objects, wherein an access code for the controlled space is automatically generated as a result of such notification.

47. (New) The method of claim 46 wherein the entity is identified by a controller associated with the controlled space, the controller being configured to unlock a locking mechanism to allow the entity to have access to the controlled space provided the entity is authorized to do so.

48. (New) The method of claim 46 further comprising notifying the user of the addition, removal, return, defective status, or movement of the objects.

49. (New) The method of claim 48 further comprising notifying the user of whether or not the addition, removal, return, defective status, or movement of the objects is authorized or not.

50. (New) The method of claim 49 wherein authorization is determined according to the identity information.

51. (New) The method of claim 46 wherein the wireless tracking system includes at least one tag affixed to one or more of the objects and the entity, each tag configured to communicate via a wireless link with the wireless tracking system.

52. (New) The method of claim 46 wherein the wireless tracking system includes barcode labels affixed to one or more of the objects.

53. (New) The method of claim 46 wherein the wireless tracking system includes video cameras monitoring the controlled space.

54. (New) The method of claim 46 wherein the wireless tracking system includes one or more mechanical devices, including at least one device that registers an absence of a weight of an object in a predefined location.

55. (New) The method of claim 46 wherein the addition, removal, return, defective status, or movement of the objects to/from/within the controlled space is entered into the computer system by the entity using an input device.

56. (New) The method of claim 46 wherein the server is communicatively coupled to the computer system via one of a wireless communication link, or a network communication link.

57. (New) The method of claim 46 wherein a user accesses information regarding the addition, removal, return, defective status, or movements or of objects to/from/within the controlled space associated with the identity information in the server through one or more client computers communicatively coupled to the server through a network.

58. (New) The method of claim 57 wherein the network comprises the Internet.

59. (New) The method of claim 46 wherein the notification is transmitted to the user via a wireless communication link, or a network communication link.

60. (New) The method of claim 46 wherein objects are automatically replenished as a result of the notification.

61. (New) The method of claim 46 wherein a party is automatically billed as a result of the notification.

62. (New) A method, comprising monitoring, using a wireless tracking system communicatively coupled to a computer system, locations and movements of an entity and objects within a controlled space; and automatically associating, using the computer system, identity information regarding the entity with status information regarding additions, removals, returns, defective status, or movements of the objects to/from/within the controlled space, which status information is entered into the computer system by the entity using an input device.

63. (New) The method of claim 62 wherein the entity is identified by a controller associated with the controlled space, the controller being configured to unlock a locking mechanism to allow the entity to have access to the controlled space provided the entity is authorized to do so.

64. (New) The method of claim 62 further comprising notifying the user of the addition, removal, return, defective status, or movement of the objects.

65. (New) The method of claim 64 further comprising notifying the user of whether or not the addition, removal, return, defective status, or movement of the objects is authorized or not.

66. (New) The method of claim 65 wherein authorization is determined according to the identity information.

67. (New) The method of claim 62 wherein the wireless tracking system includes at least one tag affixed to one or more of the objects and the entity, each tag configured to communicate via a wireless link with the wireless tracking system.

68. (New) The method of claim 62 wherein the wireless tracking system includes barcode labels affixed to one or more of the objects.

69. (New) The method of claim 62 wherein the wireless tracking system includes video cameras monitoring the controlled space.

70. (New) The method of claim 62 wherein the wireless tracking system includes one or more mechanical devices, including at least one device that registers an absence of a weight of an object in a predefined location.

71. (New) The method of claim 62 wherein the server is communicatively coupled to the computer system via one of a wireless communication link, or a network communication link.

72. (New) The method of claim 62 wherein a user accesses information regarding the addition, removal, return, defective status, or movements or of objects to/from/within the controlled space associated with the identity information in the server through one or more client computers communicatively coupled to the server through a network.

73. (New) The method of claim 72 wherein the network comprises the Internet.

74. (New) The method of claim 62 wherein the notification is transmitted to the user via a wireless communication link, or a network communication link.

75. (New) The method of claim 62 wherein objects are automatically replenished as a result of the notification.

76. (New) The method of claim 62 wherein a party is automatically billed as a result of the notification.

REMARKS/ARGUMENTS

Reconsideration of this application, as amended, is respectfully requested.

1. Amendments affecting the objections to the drawings/specification

The objections to the drawings under 37 CFR 1.83(a) have been obviated by canceling the objectionable subject matter from the claims (see claims 14, 18, 31, 34 and 35, as amended).

The objections to the drawings under 37 CFR 1.84(p)(5) have been obviated by appropriate amendments to the specification. Reference numbers 260 and 270 are now recited in paragraph [0030] of the specification, as amended. These amendments do not introduce any new subject matter into the application because they merely add reference designations to subject matter previously recited in the specification as filed. The amendments obviate the need for replacement drawing sheets.

2. Amendments affecting the objections to & rejections of the claims.

The objections to claims 11, 28 and 31-37 under 37 CFR 1.75(a) have been obviated by appropriate amendments as requested in the Office Action.

The rejection of claims 22 and 24-37 under 35 USC 112, second paragraph, have been obviated by appropriate amendment of claim 22.

Regarding the remaining rejections of the claims, new claim 45 recites the subject matter of former claim 21 (including the claims from which former claim 21 depended), which subject matter was indicated as being allowable. Claims 2-5, 7, 9-12, 14-16 and 18-20 have been amended to depend from new claim 45 and should therefore be likewise allowable.

New claim 46 recites the subject matter of former claim 44 (including the claims from which it depended), which subject matter was indicated as being allowable. New claims 47-61 depend from new claim 46 and recite subject matter found in claims 2-5, 7, 9-12, 14-16 and 18-20 and should likewise be allowable.

New claim 62 recites the subject matter of former claim 12 (including the claim from which it depended), which subject matter was indicated as being allowable. New claims 63-76 depend from new claim 62 and recite subject matter found in claims 2-5, 7, 9-12, 14-16 and 18-20 and should likewise be allowable.

For all of the foregoing reasons, the claims are believed to be allowable. If there are any additional fees due in connection with this communication, please charge our deposit account no. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: November 22, 2004

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EXAMINER	
MULLEN, THOMAS J	
ART UNIT	**PAPER NUMBER**
2632	

DATE MAILED: 10/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO 90C (Rev 10/03)

Office Action Summary	Application No.	Applicant(s)	
	10/053,540	BROWN ET AL.	
	Examiner	Art Unit	
	Thomas J. Mullen, Jr.	2632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2004 and 10 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7,9-22,24-38 and 40-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7,9-11,13-20,22,24-28,30-38 and 41-43* is/are rejected.

7)☒ Claim(s) *12,21,29,40 and 44* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 August 2004* is/are: a)☐ accepted or b)☒ objected to (in part) by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The amendments filed 8/6/04 and 9/10/04 have been fully considered. The proposed drawing changes are approved, EXCEPT as set forth in paragraphs 2-3 below.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following elements must be shown or the feature(s) canceled from the claim(s):

"telephone communication link/interface" (claims 14, 18, 31 and 34--note specification paragraph 29, lines 14-16); and

"dedicated channel" and "pre-existing inventory control system" (claim 35--note specification paragraph 31, lines 4-6).

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 260, 270 (in Fig. 2 as amended).

A corrected drawing sheet in compliance with 37 CFR 1.121(d), or (preferably) an amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b), is required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

TM 10-4-04

4. Claims ~~1-37~~ 11, 28 and 31-37 are objected to under 37 CFR 1.75(a) for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 11, line 3, it appears that "weight o**r**" should be --weight o**f**-- (see paragraph 24, line 8 in the specification).

In claim 28, line 3, it appears that "absence or" should be --absence of-- (see paragraph 24, line 8 in the specification).

In claim 31, the dependency of the claim (if any) is unclear, since "22" (line 1) was deleted in the response.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 22 and 24-37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 22, last 3 lines, it is unclear what is meant by "the objects affected by the entity", as to how an object is "affected by" the entity, and as to how these "objects" are to be distinguished from the other ones of the collectively recited "objects" which are not so "affected".

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

8. Claims 1-5, 7, 10, 13-14, 22, 24, 27, 30-31, 38 and 41-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Ghaffari et al (US 5708423).

Note in Ghaffari et al (Fig. 1), "machine" (reader 56, local control 60, host 66), which is a "data processing system (that) automatically maintains records of respective locations of a plurality of objects in real time...(by) maintain(ing) a data record with respect to each of the objects indicating the present location in (a) building of each of the objects" (Abstract). Each object has secured thereto an "object marker" 54 which "transmits an identification signal that is unique to the respective object" (Abstract). Sensor devices (in the form of "portal antennas" 52) are "installed at respective doorways of (the) building" (Abstract), and enable the reader 56 to detect not only the presence of an object at the portal or doorway (according to its "identification

signal") but also the "direction in which the object is being moved through the doorway" (Abstract). The reader 56, responsive to such detection, is capable of controlling an "electro-mechanical door lock...installed as a locking device for a door...which selectively prevents passage through the portal" (col. 4, lines 43-51). See also col. 15, lines 6-17, regarding the selective door locking/unlocking at the portal. Ghaffari et al teaches that the reader 56 may also be responsive to devices identifying an "entity", such as a "biometric" (e.g. fingerprint or palm geometry) reading unit, "ID badge" reader, etc (col. 4, lines 51-54), and may also determine whether or not passage of either a "person" (entity) or an "asset" (object) through the portal/doorway is "authorized" (col. 4, lines 54-57). The reader "exchange(s) data" with control module 60 (col. 4, line 58 to col. 5, line 12), the control module 60 having a "database" associated therewith which "stores information (including) the identification codes of markers (54) that are authorized for passage through the portal (52)...(and) identification codes representative of individuals authorized to move the markers and associated objects through the portal (52)". The control module 60 in turn uploads specific "passage"-occurrence information to host computer 66 (col. 5, lines 29-42), "enabling the host 66 to maintain a virtually real-time record of the movements of articles to which markers (54) are attached".

Thus, reader 56, local control 60 and host 66 in combination constitute (or include) a "machine-readable storage medium" (e.g., a hard drive or floppy disk or CD-ROM, inherently associated with at least one of elements 56, 60 or 62 or with the "database") or "processing unit/memory" in a "computer system", such storage medium/processing unit/memory capable of performing a "method" or "process" for automatically associating an "identity of an entity" with the "movement of one or more objects in a controlled-access location", wherein the "biometric" (e.g. fingerprint or palm geometry) reading unit, "ID badge" reader, etc (discussed above) determines the "identity of an entity"; the reader 56 in combination with portal antennas 52 (discussed above) determines the "movement of one or more objects"; and the "controlled access location" or "controlled space" corresponds to the "building" (discussed above--see Fig. 3), having a plurality of "asset control" or "movement tracking" zones separated by the above-described "portals" (52-1, 52-2, etc. in Fig. 3). See col. 13, line 50 to col. 14, line 37 regarding the "zones". As discussed above, if an association between the "entity" (passing from a first "zone" into a second "zone") and a given "object" is determined by the reader 56 (in combination

with antennas 52 at the portal) to be "authorized", an "electro-mechanical door lock" is selectively unlocked to allow the entity to have access to the controlled-access location (i.e., the "second zone" discussed above).

Further regarding claims 1, 22 and 38 as amended, the reader 56, local control 60 and host 66 in combination constitute a "wireless tracking system coupled to a computer system", which is associated with the controlled-access location (or "building") defined by the different "zones" (Fig. 3), so as to "indicat(e) the present location in the building of each of the objects" (Abstract); i.e., the tracking system coupled to the computer system "monitor(s) the location and movement of the entity and objects within the controlled space", and is "wireless" as to the detection of the objects via portal antennas 52.

Regarding claim 2, reader 56 corresponds to the "controller associated with the controlled space", for unlocking the "locking mechanism" discussed above.

Regarding claims 3-5, Ghaffari et al determines "authorization" status of the person and/or object at the portal, as discussed above, and further teaches providing various "notifications" regarding movement or status of objects, i.e. "events" that may be "displayed on a monitor...in a facility security office" (col. 5, lines 16-21); note also e.g. the "alarm" steps 262 and 292 in the flow charts of Figs. 16B and 17B, respectively.

Regarding claims 7 and 24, markers 54 are "tags" which communicate via a "wireless link" (see Fig. 14 and col. 11, line 4 to col. 12, line 22, regarding the components and operation of the marker 54).

Regarding claims 10 and 27, note video camera 62 (Fig. 1 and col. 5, lines 16-24).

Regarding claim 30, it is implied in Ghaffari et al that when the electro-mechanical door lock is selectively operated to allow passage of an authorized person and/or object, such lock would subsequently be "re-locked" after such passage (either when the door re-closes or after a predetermined time period, as is understood in the art), such that "all other entities" would implicitly be "automatically lock(ed) out" until further authorization is granted (at that portal or some other portal); also, since host 66 maintains "a virtually real-time record of the movements of articles" as discussed above, the system thus "account(s) for all remaining objects in the controlled-access location" prior to such further authorization.

Regarding claims 13-14, 31 and 41, host 66 is implicitly a "server", note that it may be connected to (and thus receive specific "passage"-occurrence information from) "several hundred (local control) modules (60)" (col. 5, lines 40-42).

Regarding claim 42, Ghaffari et al additionally teaches that "reports" may be generated, including data of "present and past locations of objects", for the purpose of "inventorying assets", etc (col. 5, lines 43-49); since host 66 maintains "a virtually real-time record of the movements of articles" as discussed above, the system thus inherently "decrements or increments inventory levels or changes in status of objects" in response to data transmitted to the server/host 66.

Regarding claim 43, as discussed above Ghaffari et al teaches "correlating" the movement or status of objects with the "responsible" entity.

9. Claims 9, 11, 25-26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghaffari et al.

Athough the marker 54 in Ghaffari et al is apparently operable at selected radio frequencies (see again Fig. 14 and col. 11, line 4 to col. 12, line 22, regarding the components and operation of the marker 54), one skilled in the art would have recognized that any of the wide variety of known tags or markers may be usable in the Ghaffari et al system, such as the contact-based or barcode types recited in claims 8-9 and 25-26; therefore, it would have been obvious to use the Ghaffari et al system with contact-based or barcode type "tags", in order to increase the flexibility of applying such systems to pre-existing "controlled-access locations" and/or already-tagged sets of inventory. Regarding claims 11 and 28, it would have been obvious to implement weight sensors or other types of location/object-specific sensors in combination with the portal sensors in Ghaffari et al, in order to provide a more detailed or specific account of the movement of particular objects within the inventory.

10. Claims 15-20 and 32-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghaffari et al, further in view of Lucas (US 2001/0051905).

Ghaffari et al additionally teaches that "reports" may be generated, including data of "present and past locations of objects", for the purpose of "inventorying assets", etc (col. 5, lines 43-49). Ghaffari et al fails to teach that access to information in host computer 66 may be

granted to "client computers" coupled to the server/host 66 through a "network". However, at the time of the invention it was well known to provide remote, network-based access to inventory-related data at a facility; for example, Lucas discloses a system and method "which allows third-parties to monitor company inventory via the Internet and World Wide Web...and automatically order needed items" from suppliers, manufacturers, or distributors based on such information (this system is described as a "vendor managed inventory", or VMI, system--see paragraphs 7 and 17-18 in the Lucas specification). It would have been apparent to those skilled in the art that third parties accessing the Internet from "client computers" in Lucas (note "Customer Inventory System" 130--Fig. 1 and paragraph 19) may contact the "server" (such as host 66 in Ghaffari et al) and make inventory-related decisions associated with building 208 of Ghaffari et al, thus enhancing the functionality of the Ghaffari et al "inventory" system. Therefore, it would have been obvious to combine the teachings of Ghaffari et al and Lucas, as in claims 15-16 and 32-33. Regarding claims 17-18 and 34, Lucas further teaches "automatically contacting" (or notifying) the suppliers, manufacturers, or distributors as needed (paragraph 9 in Lucas). Regarding claim 35, note "Customer Inventory System" 130 in Lucas discussed above. Regarding claims 19 and 36, the "automatically order(ing) needed items" in Lucas, discussed above, corresponds to objects being "automatically replenished". Regarding claims 20 and 37, Lucas further teaches aspects of "automatic billing" (see e.g. paragraph 92, last 5 lines).

11. Claims 12, 21, 29, 40 and 44 would be allowable if rewritten to overcome the objection(s) under 37 CFR 1.75(a) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. Applicant's arguments filed 8/6/04 have been fully considered but they are not persuasive.

Applicant argues that Ghaffari et al "cannot tell a user where the object (or entity) is within the controlled space", because Ghaffari et al "can only monitor movement in a sensor equipped doorway and not within the controlled space". However, as set forth in the rejection above, the "controlled space" in Ghaffari et al is a building (note the floor plan 208 thereof in Fig. 3), and the doorway sensors (52,56), positioned at doorways within the building, enable the

system to determine in which room, or "zone", the object and entity are presently located (see the last 2 lines of the Abstract, and col. 13, line 50 to col. 14, line 37 regarding the "zones"), by detecting both the presence and the direction of movement of the objects/entities (as discussed in paragraph 8 above). In other words, each doorway separates two zones (the doorways and zones being collectively within the "controlled space", i.e. the building), and since the system determines direction of movement through the doorway (e.g. from zone A to zone B), the system is thus capable of determining at any given time in which zone of the building an "entity" and an associated "object" are located --i.e., where the object or entity is within the controlled space.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Mullen, Jr. whose telephone number is 571-272-2965. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 4 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Wu, can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

TJM

Thomas J. Mullen, Jr.
Primary Examiner
Art Unit 2632

Index of Claims

Application No.	Applicant(s)
10/053,540	BROWN ET AL.
Examiner	**Art Unit**
Thomas J. Mullen, Jr.	2632

√	Rejected	–	(Through numeral) Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

Claim		Date								
Final	Original	5/03/04	10/4/04							
	1	✓	✓							
	2		✓							
	3		✓							
	4		✓							
	5		✓							
	6									
	7		✓							
	8									
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Search Notes	Application No.	Applicant(s)	
	10/053,540	BROWN ET AL.	
	Examiner	Art Unit	
	Thomas J. Mullen, Jr.	2632	

SEARCHED			
Class	Subclass	Date	Examiner
340	5.2	5/1/2004	TM
	5.8		
	5.92		
	539.1		
	572.1		
235	462		
	UPDATE	10/4/2004	TM

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
EAST (inventory, tracking, books, merchandise, cargo, rental, person, user, client, customer, shopper, employee, identifier)	5/1/2004	TM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/053,540

Applicant: Suzy Brown, et al.

Filed: November 2, 2001
TC/A.U.: 2632
Examiner: Mullen, Thomas J.

Docket No.: 6326P005
Customer No.: 08791

Confirmation No.: 6075

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on September 10, 2004
Date of Transmission

Carrie Boccaccini
(Typed or printed name of person transmitting paper)

Signature 9/10/04
Date

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

SUPPLEMENTAL AMENDMENT

Sir:

In supplement to the Response filed to the Office action of May 3, 2004, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims, which begins on page 2 of this paper.

Remarks begin on page 10 of this paper.

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP

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FACSIMILE COVER SHEET

Deliver to: Thomas J. Mullen, USPTO
Art Group: 2632
Facsimile No.: 703-872-9306
Date:
From: Tarek N. Fahmi, Reg. No. 41,402
Our Docket No.: 6326P005
Number of pages 11 including this sheet.
Application No.: 10/053,540
Filing Date: 11/2/2001
Docket Due Date(s):

Enclosed are the following documents:

☐ Amendment: ____ (___pgs)	☐ Issue Fee Transmittal
☐ Appeal Brief (in triplicate) (___pgs)	☐ Notice of Appeal
☐ Application: ____	☐ Petition for: ____
(___pgs) w/cover & abstract)	☐ Request for Continued Examination (RCE)
☐ Assignment & Cover Sheet (___pgs)	☐ Reply Brief (___pgs)
☒ Certificate of Facsimile	☐ Request & Certification Under 35 USC 122(b)(2)(B)(i)
☐ Continued Prosecution Application (CPA)	☐ Request to Rescind Previous Nonpublication Request
☐ Declaration & POA (___pgs)	☐ Response to Notice of Missing Parts & Formalities Letter
☐ Drawings: ___sheets, ___ figures	☐ Response to Written Opinion (___pgs)
☐ Extension of Time: ____	☐ Terminal Disclaimer
☐ Fee Transmittal (in duplicate)	☐ Transmittal of Publication Fee Due
☐ IDS & PTO/SB/08 (pgs)	☒ Transmittal Letter
☒ Other Supplemental Amendment (9 pgs)	

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8A)

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Carrie Boccaccini 9/10/04
Carrie Boccaccini Date

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	10

Application No.	10/053,540
Filing Date	November 2, 2001
First Named Inventor	Suzy Brown
Art Unit	Unassigned
Examiner Name	Unassigned
Attorney Docket Number	6326P005

ENCLOSURES ***(check all that apply)***

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment / Response
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
  - ☐ PTO/SB/08
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Basic Filing Fee
  - ☐ Declaration/POA
  - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s)
- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) *(please identify below):*

Supplemental Amendment

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Tarek N. Fahmi, Reg. No. 41,402 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	
Date	9/10/04

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Signature		Date	9/10/04

Based on PTO/SB/21 (04-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wr) 06/04/2004
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Listing of Claims:

1. (Previously Presented) A method, comprising:

obtaining identity information regarding an entity which enters a controlled space;

monitoring the location and movement of the entity and objects within the controlled space using a wireless tracking system coupled to a computer system; and

automatically associating, using the computer system, the identity information with the addition, removal, return, defective status, or other movement or status of objects to/from/within the controlled space.

2. (Original) The method of claim 1 wherein the entity is identified by a controller associated with the controlled space, the controller being configured to unlock a locking mechanism to allow the entity to have access to the controlled space provided the entity is authorized to do so.

3. (Previously Presented) The method of claim 1 further comprising notifying a user of the addition, removal, return, defective status, or other movement or status of the objects.

4. (Previously Presented) The method of claim 3 further comprising notifying the user of whether or not the addition, removal, return, defective status, or other movement or status of the objects is authorized or not.

5. (Original) The method of claim 4 wherein authorization is determined according to the identity information.

6. (Cancelled)

7. (Previously Presented) The method of claim 1 wherein the tracking system includes at least one tag affixed to one or more of the objects and the entity, each tag configured to communicate via a wireless link with the wireless tracking system.

8. (Cancelled)

9. (Currently Amended) The method of claim 1 wherein the wireless tracking system includes barcode labels affixed to one or more of the objects.

10. (Currently Amended) The method of claim 1 wherein the wireless tracking system includes video cameras monitoring the controlled space.

11. (Currently Amended) The method of claim 1 wherein the wireless tracking system includes one or more mechanical devices, including at least one device that registers an absence of a weight or an object in a predefined location.

12. (Previously Presented) The method of claim 1 wherein the addition, removal, return, defective status, or other movement or status of the objects to/from/within the controlled space is entered into the computer system by the entity using an input device.

13. (Previously Presented) The method of claim 1 wherein information pertaining to the addition, removal, return, defective status, or other movement or status of the objects to/from/within the controlled space and the associated identity information is transmitted to a server communicatively coupled to the computer system.

14. (Previously Presented) The method of claim 13 wherein the server is communicatively coupled to the computer system via one of a wireless communication link, a network communication link, and a telephone communication link.

15. (Previously Presented) The method of claim 13 wherein a user accesses information regarding the addition, removal, return, defective status, or other movements or status of objects to/from/within the controlled space associated with the identity information in the server through one or more client computers communicatively coupled to the server through a network.

16. (Original) The method of claim 15 wherein the network comprises the Internet.

17. (Previously Presented) The method of claim 13 wherein the server automatically notifies a user of the addition, removal, return, defective status, or other movement or status of objects.

18. (Previously Presented) The method of claim 17 wherein the notification is transmitted to the user via a wireless communication link, a network communication link, and/or a telephone communication link.

19. (Original) The method of claim 17 wherein objects are automatically replenished as a result of the notification.

20. (Original) The method of claim 17 wherein a party is automatically billed as a result of the notification.

21. (Original) The method of claim 17 wherein an object is automatically returned or picked up as a result of the notification.

22. (Currently Amended) A machine-readable storage medium embodying a sequence of instructions executable by a machine to perform a method for automatically associating an identity of an entity with a movement of one or more objects in a controlled-access location, the method comprising:

identifying, at a controller associated with the controlled-access location, an entity attempting to enter the controlled-access location;

determining whether the entity is authorized to enter the controlled-access location based upon the entity identification;

unlocking a locking mechanism to allow the entity to have access to the controlled-access location if the entity is authorized, wherein the entity may add, remove, return, move and/or update status of objects to/from/within the controlled-access location; and

monitoring the location, movement, and status change of the entity, the objects, and the objects affected by the entity within the controlled-access location using a wireless tracking system.

23. (Cancelled)

24. (Currently Amended) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes tags affixed to the entity and the objects configured to communicate via a wireless link with a monitoring device.

25. (Currently Amended) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes tags configured to be activated through contact with a reader device.

26. (Currently Amended) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes barcode labels which are scanned as the objects are added to or removed from the controlled-access location.

27. (Currently Amended) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes video cameras monitoring the controlled-access location.

28. (Currently Amended) The machine-readable storage medium of claim 22 wherein the wireless tracking system includes one or more mechanical devices, including at least one device that is configured to register an absence or a weight of an object in a predefined location.

29. (Original) The machine-readable storage medium of claim 22 wherein the movement of the objects within/to/from the controlled-access location is entered into a computer system by the entity using an input device.

30. (Currently Amended) The machine-readable storage medium of claim 22 wherein the method further comprises re-locking the locking mechanism, and automatically locking out all other entities until the wireless tracking system has accounted for all remaining objects in the controlled-access location.

31. (Previously Presented) The machine-readable storage medium of claim further comprising automatically associating the movement and/or status change of the objects with the identity of the entity, wherein data pertaining to the association and corresponding movement and/or status change of the objects is transmitted to a server through one or more of a wireless interface, a network interface, or a telephone interface.

32. (Previously Presented) The machine-readable storage medium of claim 31 wherein the method further comprises allowing access to information in the server regarding the movement of the objects associated with the identity of the entity through one or more client computers coupled to the server through a network.

33. (Original) The machine-readable storage medium of claim 32 wherein the network comprises the Internet.

34. (Previously Presented) The machine-readable storage medium of claim 31 wherein the server is configured to automatically notify a user via one or more of a wireless interface, a network interface, or a telephone interface regarding an event corresponding to the movement and/or status change of the objects.

35. (Original) The machine-readable storage medium of claim 34 wherein the network interface comprises a dedicated channel and the notification is sent to a pre-existing inventory control system in an organization.

36. (Original) The machine-readable storage medium of claim 34 wherein objects are automatically replenished or returned as a result of the notification.

37. (Original) The machine-readable storage medium of claim 34 wherein a party is automatically billed as a result of the notification.

38. (Previously Presented) A computer system, comprising:

a processing unit;

a memory coupled to the processing unit; and

a process executed from the memory causing the processing unit to automatically associate an identity of an entity with movement and/or status changes of objects to/from/within a controlled space and to monitor the location and movement of the entity and objects within the controlled space via a wireless tracking system coupled to the computer system.

39. (Cancelled)

40. (Original) The computer system of claim 38 wherein the process further causes the processing unit to associate the identity of the entity with the movement or status changes of objects to/from/within the controlled space according to information which is entered into the computer system by the entity using an input device coupled to the computer system.

41. (Previously Presented) The computer system of claim 38 wherein the process further causes the processing unit to transmit information regarding the association of the movement or status changes of objects to/from/within controlled space with the identity of the entity to a server coupled to the computer system.

42. (Currently Amended) The method of claim 13 wherein the server ~~computer system~~ automatically decrements or increments inventory levels or changes the status of objects in response to data transmitted to the server.

43. (Previously Presented) The method of claim 13 wherein the server automatically correlates received information pertaining to the movement or status changes of objects with received associated identity information corresponding to the entity responsible for the movements or status changes of the objects.

44. (Original) The method of claim 17 wherein an access code is automatically generated as a result of the notification.

REMARKS

Reconsideration of this application, as amended, is respectfully requested. This Supplemental Amendment includes amendments to claims 9-11, 22, 24-28, 30 and 42 to correct antecedent basis issues. The above amendments are supported by the Specification as filed and the arguments and remarks in response to the Office Action of May 3, 2004 stand as previously filed. Accordingly, no new matter is added.

If there are any additional fees due in connection with this communication, please charge our deposit account no. 02-2666.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: Sept. 10, 2004

Tarek Fahmi
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JFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/053,540

Applicant: Suzy Brown, et al.

Filed: November 2, 2001
TC/A.U.: 2632
Examiner: Mullen, Thomas J.

Docket No.: 6326P005
Customer No.: 08791

Confirmation No.: 6075

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on August 3, 2004
Date of Deposit

Carrie Boccaccini
Name of Person Mailing Correspondence

Signature Date 8/3/04

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

AMENDMENTS

Sir:

In response to the Office action of May 3, 2004, please amend the above-identified application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims, which begins on page 5 of this paper.

Amendments to the Drawings begin on page 13 of this paper.

Remarks/Arguments begin on page 14 of this paper.

An **Appendix** including amended drawing figures is attached following page 16 of this paper.

Amendments to the Specification:

Please replace paragraph **[0024]** with the following amended paragraph:

Of course, the objects in inventory 112, 114, 116, etc., may be monitored by virtually any other system and/or method utilized for object tracking well-known in the art of inventory control. For example, in other embodiments, objects in inventory 112, 114, 116, etc., may be monitored through the use of barcode labels 126, 128, and 130 placed on the objects in inventory 112, 114, 116, ~~etc~~. respectively, and scanned by barcode scanners as the objects in inventory 112, 114, 116, etc., are brought into or removed from the storage room 110, by video cameras 134 and 136 monitoring the storage room 110, by mechanical devices 138, 140 and 142 (for example, devices that register the weight or the absence of the weight of an item in a predefined location), by electronic tablets that capture human writing, or by any other means that can positively differentiate the presence or absence of the tracked item.

Please replace paragraph **[0027]** with the following amended paragraph:

Referring now to Figure 2 there is shown a schematic diagram illustrating a remote inventory management system communicating the ingress or egress of objects in inventory to ~~a server~~ computer system 200 according to an embodiment of the present invention. In one embodiment, the storage area 210 includes ~~an~~ a tracking system 220, such as a wireless RFID system , ~~220~~ which communicates with a server 230 via a ~~wireless~~ communications link 235 (e.g., a radio modem that may support communication within a public or private wireless network). When the identity of an entity (not shown in this view) is interpreted and accepted by a locking mechanism controller 240 the entity is allowed access to the storage area 210. A sensor 250 may monitor the door 245 as it opens and closes. Thus, every time an action happens in the storage area 210 (e.g., an entity enters the storage area 210, the sensor indicates that the door has opened, the RFID

system 220 indicates that objects in inventory have been removed, etc.), the information is transmitted to the server 230 via the wireless link 235.

Please replace paragraph **[0028]** with the following amended paragraph:

Note that these accesses and/or movements of goods may be authorized or not. The action is recorded/reported in either case. Further, the wireless link 235 may be replaced and/or augmented by a wired communication link. In addition to the movement of goods, status (e.g., defective, return, etc.) may also be monitored.

Please replace paragraph **[0033]** with the following amended paragraph:

Referring now to Figure 3 there is shown a flow chart 300 illustrating a remote inventory management system implementing inventory management solutions through a server computer system according to an embodiment of the present invention. In one embodiment, information regarding the ingress and egress or other movement of objects in inventory is transmitted by the remote inventory management system to a server and maintained in the server. Thus, when objects in inventory are depleted or otherwise moved (see step 310), this information may be transmitted (step 320) from the server to a user or client computer system through network interfaces, wireless interfaces, or telephone interfaces such as those described in the embodiment illustrated by Figure 1A. Upon receiving this information, the user may take steps to replenish (step 330) the objects in inventory. Similarly, the user or other consuming party may be automatically billed (step 335) for the objects in inventory, or the objects may be automatically returned (step 340) to inventory. The auto-replenishment (step 330), auto-billing (step 335), and auto-return (step 340) of objects in inventory may be made on a continual or batch mode basis and may be made exclusive of one another. Further, an access code may be generated automatically as a result of the notification (step 345).

Please replace paragraph **[0035]** with the following amended paragraph:

In the present embodiment, the components of the remote inventory management system 400 include a central processing unit (CPU) or other controller (e.g., an ASIC or FPGA) 422 containing or having an associated memory 424. The CPU 422 is coupled to a serial or other interface 426 which provides the communication path for the CPU 422 to an RFID reader 428 (which communicates via a radio modem 430 to RFID tags 432, 434, 436, etc.), a barcode scanner 440, a magnetic stripe or electronic card reader 442, and/or other peripheral devices 444 useful for the tracking of the ingress and egress or other movement of objects in inventory. The CPU 422 is also configured to receive inputs from an access code entry unit 446 and to unlock a locking mechanism controller 448 upon the interpretation and the acceptance of an access code by the CPU 422. Also coupled to the CPU 422 are Input/Output (I/O) devices including a keyboard (or other input device) 450 and a liquid crystal display (LCD) device (or other display) 452 which, in some cases, may be part of the access code entry unit 446 (e.g., to indicate to an entity an improper use of a magnetic stripe or electronic card reader, improper entry of an access code, etc.). A network connector 454 (e.g., wired or wireless network) may also be provided to allow for communication through network 455 with client ~~computers~~ computer(s) 456 and/or ~~servers~~ server(s) 458. Of course, there are many possible variations of the present embodiment.

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Listing of Claims:

1. (Currently Amended) A method, comprising:

obtaining identity information regarding an entity which enters a controlled space;

monitoring the location and movement of the entity and objects within the controlled space using a wireless tracking system coupled to a computer system; and

automatically associating, using [[a]] the computer system, the identity information with the addition, removal, return, defective status, or other movement or status of objects to/from/within the controlled space.

2. (Original) The method of claim 1 wherein the entity is identified by a controller associated with the controlled space, the controller being configured to unlock a locking mechanism to allow the entity to have access to the controlled space provided the entity is authorized to do so.

3. (Currently Amended) The method of claim 1 further comprising notifying a user of the addition, removal, return, defective status, or other movement or status of the objects.

4. (Currently Amended) The method of claim 3 further comprising notifying the user of whether or not the addition, removal, return, defective status, or other movement or status of the objects is authorized or not.

5. (Original) The method of claim 4 wherein authorization is determined according to the identity information.

6. (Cancelled)

7. (Currently Amended) The method of claim [[6]] 1 wherein the tracking system includes ~~tags~~ at least one tag affixed to one or more of the objects and/~~or~~ the entity, ~~the tags~~ each tag configured to communicate via a wireless link with the wireless tracking system. ~~a monitoring unit~~.

8. (Cancelled)

9. (Currently Amended) The method of claim [[6]] 1 wherein the tracking system includes barcode labels affixed to one or more of the objects.

10. (Currently Amended) The method of claim [[6]] 1 wherein the tracking system includes video cameras monitoring the controlled space.

11. (Currently Amended) The method of claim [[6]] 1 wherein the tracking system includes one or more mechanical devices, including at least one device that registers an absence ~~or~~ of a weight ~~of~~ or an object in a predefined location.

12. (Currently Amended) The method of claim [[6]] 1 wherein the addition, removal, return, defective status, or other movement or status of the objects to/from/within the controlled space is entered into the computer system by the entity using an input device.

13. (Currently Amended) The method of claim 1 wherein ~~the association of~~ information pertaining to the addition, removal, return, defective status, or other movement or status of the objects to/from/within the controlled space ~~with~~ and the associated identity information is transmitted to a server ~~computer system through a communication interface~~ communicatively coupled to the computer system.

14. (Currently Amended) The method of claim 13 wherein the ~~communication interface comprises one or more of:~~ server is communicatively coupled to the computer system via one of a wireless communication link, a network communication link, and a telephone communication link.

15. (Currently Amended) The method of claim 13 wherein a user accesses information regarding the addition, removal, return, defective status, or other movements or status of objects to/from/within the controlled space associated with the identity information in the server ~~computer system~~ through one or more client computers communicatively coupled to the server ~~computer system~~ through a network.

16. (Original) The method of claim 15 wherein the network comprises the Internet.

17. (Currently Amended) The method of claim 13 wherein the server automatically notifies a ~~designated person regarding~~ user of the addition, removal, return, defective status, or other movement or status of objects.

18. (Currently Amended) The method of claim 17 wherein the notification is transmitted to the user via a wireless communication link, a network communication link, and/or a telephone communication link.

19. (Original) The method of claim 17 wherein objects are automatically replenished as a result of the notification.

20. (Original) The method of claim 17 wherein a party is automatically billed as a result of the notification.

21. (Original) The method of claim 17 wherein an object is automatically returned or picked up as a result of the notification.

22. (Currently Amended) A machine-readable storage medium embodying a sequence of instructions executable by ~~the~~ a machine to perform a method for automatically associating an identity of an entity with ~~the~~ a movement of one or more objects in a controlled-access location, the method comprising:

identifying, at a controller associated with the controlled-access location, an entity attempting to enter the controlled-access location; ~~and~~

determining whether the entity is authorized to enter the controlled-access location based upon the entity identification;

unlocking a locking mechanism to allow the entity to have access to the controlled-access location if ~~provided~~ the entity is authorized, wherein the entity may add, remove, return, move and/or update status of objects to/from/within the controlled-access space; and ~~to do so, such authorization being determined during or according to the results of the identifying process.~~

monitoring the location, movement, and status change of the entity, the objects, and the objects affected by the entity within the controlled-access location using a wireless tracking system.

23. (Cancelled)

24. (Currently Amended) The machine-readable storage medium of claim 22 wherein the tracking system includes tags affixed to the entity and the objects configured to communicate via a wireless link with a monitoring device.

25. (Original) The machine-readable storage medium of claim 22 wherein the tracking system includes tags configured to be activated through contact with a reader device.

26. (Original) The machine-readable storage medium of claim 22 wherein the tracking system includes barcode labels which are scanned as the objects are added to or removed from the controlled-access location.

27. (Currently Amended) The machine-readable storage medium of claim 22 wherein the tracking system includes video cameras monitoring the controlled-access location ~~locator~~.

28. (Original) The machine-readable storage medium of claim 22 wherein the tracking system includes one or more mechanical devices, including at least one device that is configured to register an absence or a weight of an object in a predefined location.

29. (Original) The machine-readable storage medium of claim 22 wherein the movement of the objects within/to/from the controlled-access location is entered into a computer system by the entity using an input device.

30. (Original) The machine-readable storage medium of claim 22 wherein the method further comprises re-locking the locking mechanism, and automatically locking out all other entities until the tracking system has accounted for all remaining objects in the controlled-access location.

31. (Currently Amended) The machine-readable storage medium of claim ~~22 wherein the automatic association of~~ further comprising automatically associating the movement and/or status change of the objects with the identity of the entity, wherein data pertaining to the

association and corresponding movement and/or status change of the objects is transmitted to a server ~~computer system~~ through one or more of a wireless interface, a network interface, or a telephone interface.

32. (Currently Amended) The machine-readable storage medium of claim 31 wherein the method further comprises allowing access to information in the server regarding the movement of the objects associated with the identity of the entity through one or more client computers coupled to the server ~~computer system~~ through a network.

33. (Original) The machine-readable storage medium of claim 32 wherein the network comprises the Internet.

34. (Currently Amended) The machine-readable storage medium of claim 31 wherein the server ~~computer system~~ is configured to automatically notify a user via one or more of a wireless interface, a network interface, or a telephone interface regarding an event ~~involving~~ corresponding to the movement and/or status change of the objects.

35. (Original) The machine-readable storage medium of claim 34 wherein the network interface comprises a dedicated channel and the notification is sent to a pre-existing inventory control system in an organization.

36. (Original) The machine-readable storage medium of claim 34 wherein objects are automatically replenished or returned as a result of the notification.

37. (Original) The machine-readable storage medium of claim 34 wherein a party is automatically billed as a result of the notification.

38. (Currently Amended) A computer system, comprising:

a processing unit;

a memory coupled to the processing unit; and

a process executed from the memory causing the processing unit to automatically associate an identity of an entity with movement and/or status changes of objects to/from/within a controlled space and to monitor the location and movement of the entity and objects within the controlled space via a wireless tracking system coupled to the computer system.

39. (Cancelled)

40. (Original) The computer system of claim 38 wherein the process further causes the processing unit to associate the identity of the entity with the movement or status changes of objects to/from/within the controlled space according to information which is entered into the computer system by the entity using an input device coupled to the computer system.

41. (Currently Amended) The computer system of claim 38 wherein the process further causes the processing unit to transmit information regarding the association of the movement or status changes of objects to/from/within controlled space with the identity of the entity to a server ~~computer system~~ coupled to the computer system.

42. (Currently Amended) The method of claim 13 wherein the server computer system automatically decrements or increments inventory levels or changes the status of objects in response to data transmitted to the server ~~computer system~~.

43. (Currently Amended) The method of claim 13 wherein the server ~~computer system~~ automatically correlates received information pertaining to the movement or status changes of objects with ~~the~~ received associated identity information corresponding to the entity responsible for ~~these~~ the movements or status changes of the objects. ~~updates in response to the data transmitted to the server computer system.~~

44. (Original) The method of claim 17 wherein an access code is automatically generated as a result of the notification.

Amendments to the Drawings:

The following replacement sheets are respectfully submitted in response to the Examiner's suggested amendments as discussed in the Office Action of May 3, 2004. The replacement sheets are supported by the Specification as filed. Accordingly, no new matter is added.

Attachment: Replacement Sheets

Annotated Sheets Showing Changes

REMARKS/ARGUMENTS

Reconsideration of this application, as amended, is respectfully requested. The following remarks are responsive to the Office Action of May 3, 2004. Claims 1-5, 7, 9-22, 24-38, and 40-44 remain in the application. Claims 1, 3, 4, 7, 9-15, 17, 18, 22, 24, 27, 31, 32, 34, 38, and 41-43 have been amended. Claims 6, 8, 23, and 39 have been cancelled. The above amendments are supported by the Specification as filed. Accordingly, no new matter is added.

35 U.S.C. 102(b) – Belka et al U.S. No. 5777884 (hereinafter "Belka")

Belka describes and article inventory tracking and control system for removal of articles from a secure facility, such as books from a library or videocassettes from a video store. Specifically, Belka discusses authenticating and authorizing the user and desired transaction by a scanning a user identification card and item associated with the transaction, wherein the transaction is the checking in or checking out the item into or from the secure facility. Further, Belka's description of the sensing system is limited to the item (e.g., videocassette) either being in the correct receiving compartment (e.g., videocassette case) as determined by sensors at the receiving compartment being triggered by the insertion or removal of the item equipped with a corresponding sensor trigger.

In contrast, the present claims include the feature of monitoring the location and movement of the entity and objects within the controlled space using a wireless tracking system coupled to a computer system. Belka merely describes authenticating and authorizing a user to insert or remove objects from their corresponding compartments. The controlled space described in Belka are merely compartments, therefore Belka cannot possibly monitor the location and movement of the entity and objects within the controlled space. Further, Belka only discusses close proximity magnetic sensors and bar code readers and does not describe monitoring using a wireless tracking system. Consequently, the present claims as recited are patentable over and not anticipated by Belka.

35 U.S.C. 102(b) and 103(a)—Ghaffari et al U.S. No. 5708423 (hereinafter "Ghaffari")

Ghaffari describes system that maintains records of respective locations of a plurality of objects. Each object has a marker that transmits an identification signal that is unique to the respective object. Sensor devices are installed at respective doorways of a building. Each sensor device only receives the identification signal transmitted from the object marker as the respective object is moved through the doorway.

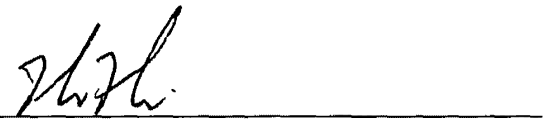
However, because the sensors described in Ghaffari only receive an identification signal from the object marker as the respective object is moved through the doorway, Ghaffari does not disclose monitoring the location and movement of the entity and objects within the controlled space using a wireless tracking system coupled to a computer system, as recited in the present claims. In other words, Ghaffari can only tell a user that the object may be somewhere within the controlled space. Ghaffari cannot tell a user where the object (or entity) is within the controlled space because Ghaffari's sensors can only monitor movement in a sensor equipped doorway and not within the controlled space. Therefore, the present independent claims as recited are patentable over and not anticipated or rendered obvious by Ghaffari. Because dependent claims include all the features of the claims from which they depend, dependent claims 9, 11, 25-26, and 28 are also not obvious and therefore patentable over Ghaffari.

Adding what is disclosed in Lucas in combination with Ghaffari does not render the present claims obvious. Lucas describes a method for parties to remotely monitor inventory via the Internet and automatically order depleted inventory. Specifically, Lucas discusses an interactive human interface for tracking inventory counts, inventory consumption rates, and ordering of critical products via a web-based or PC-based system. Although Lucas may track persons removing items from inventory, Lucas, alone or in combination with Ghaffari, does not discuss monitoring the location and movement of the entity and objects within the controlled space using a wireless tracking system coupled to a computer system, as recited in the present independent claims. Because dependent claims include all the features of the claims from which they depend, dependent claims 15-20, and 32-37 are also not obvious and therefore patentable over Ghaffari in view of Lucas.

For all of the foregoing reasons, the claims are patentable over the references cited in the Office Action. If there are any additional fees due in connection with this communication, please charge our deposit account no. 02-2666.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 8/3, 2004



Tarek Fahmi
Reg. No. 41,402

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Seventh Floor
Los Angeles, CA 90025-1026
(408) 947-8200

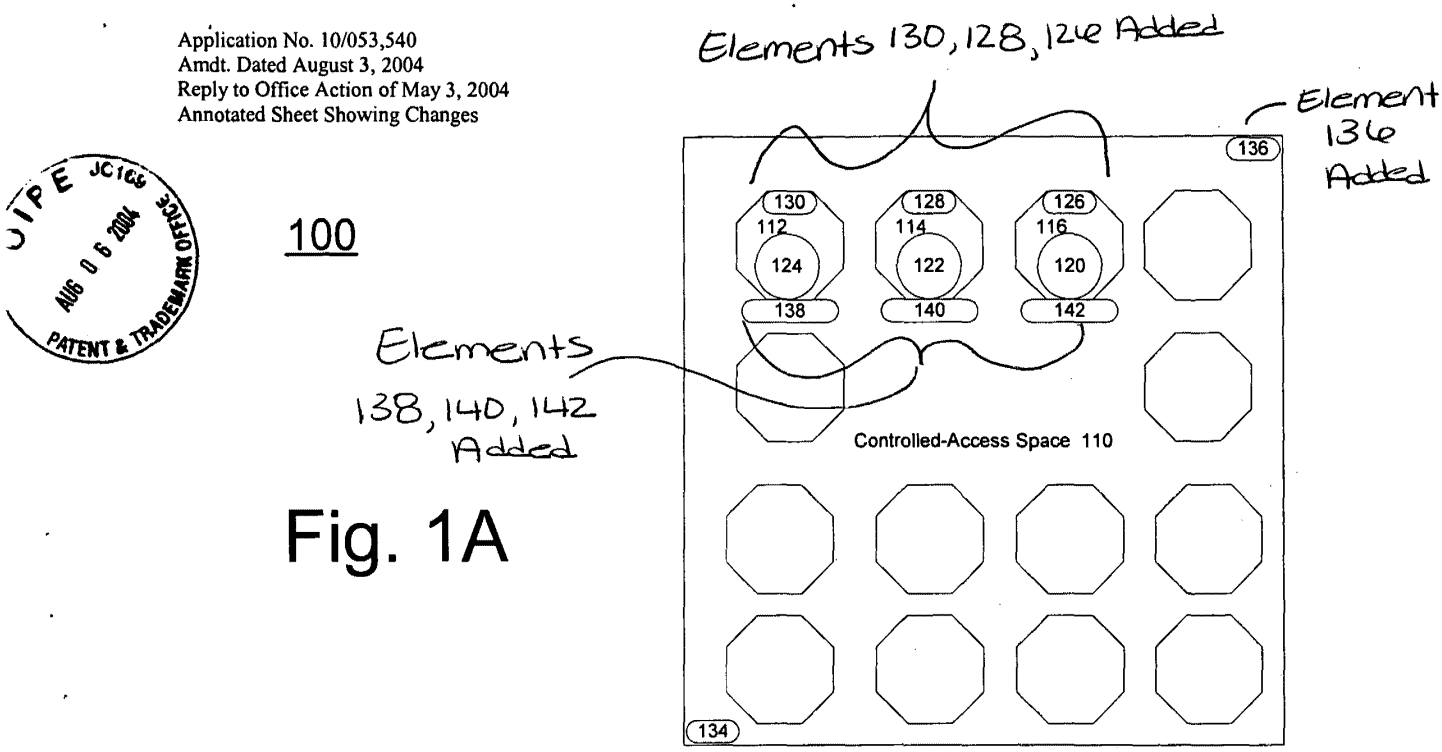


Fig. 1A

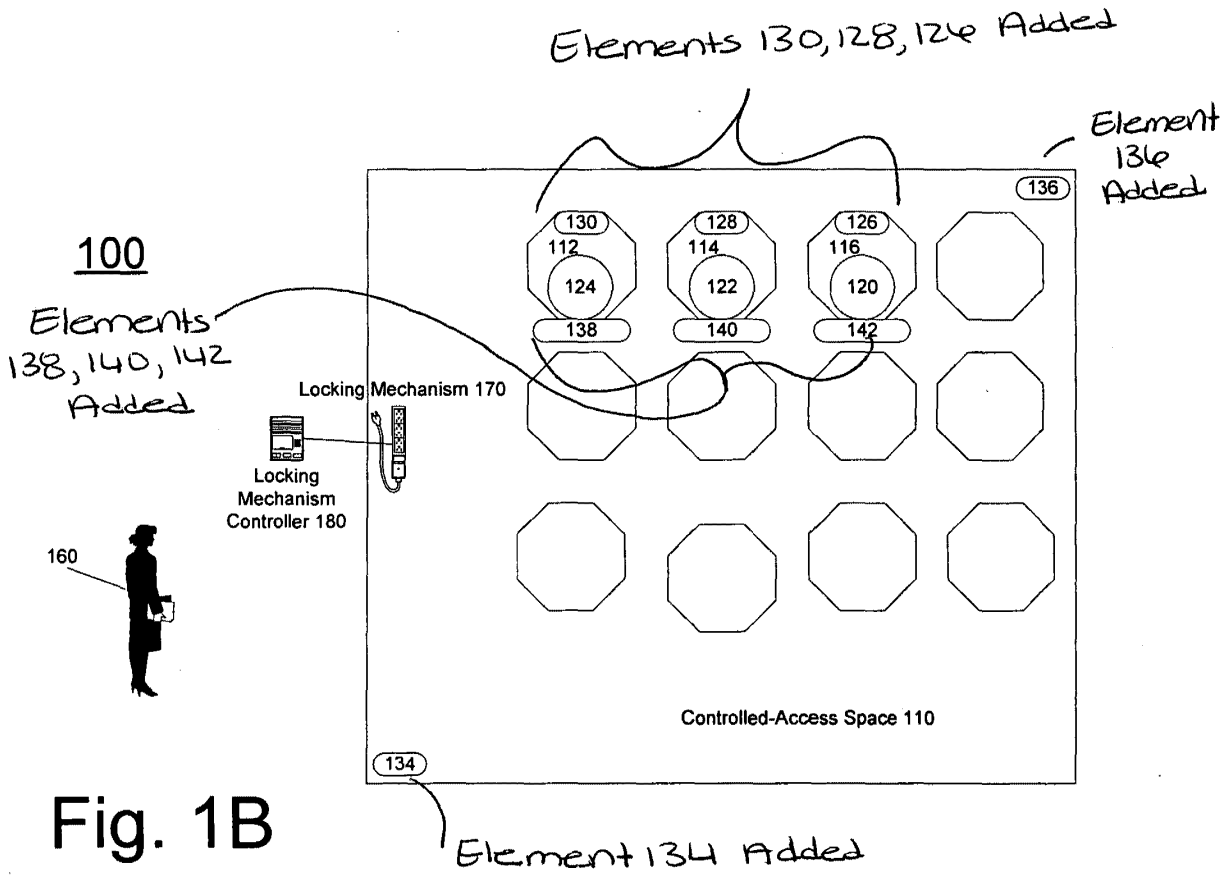
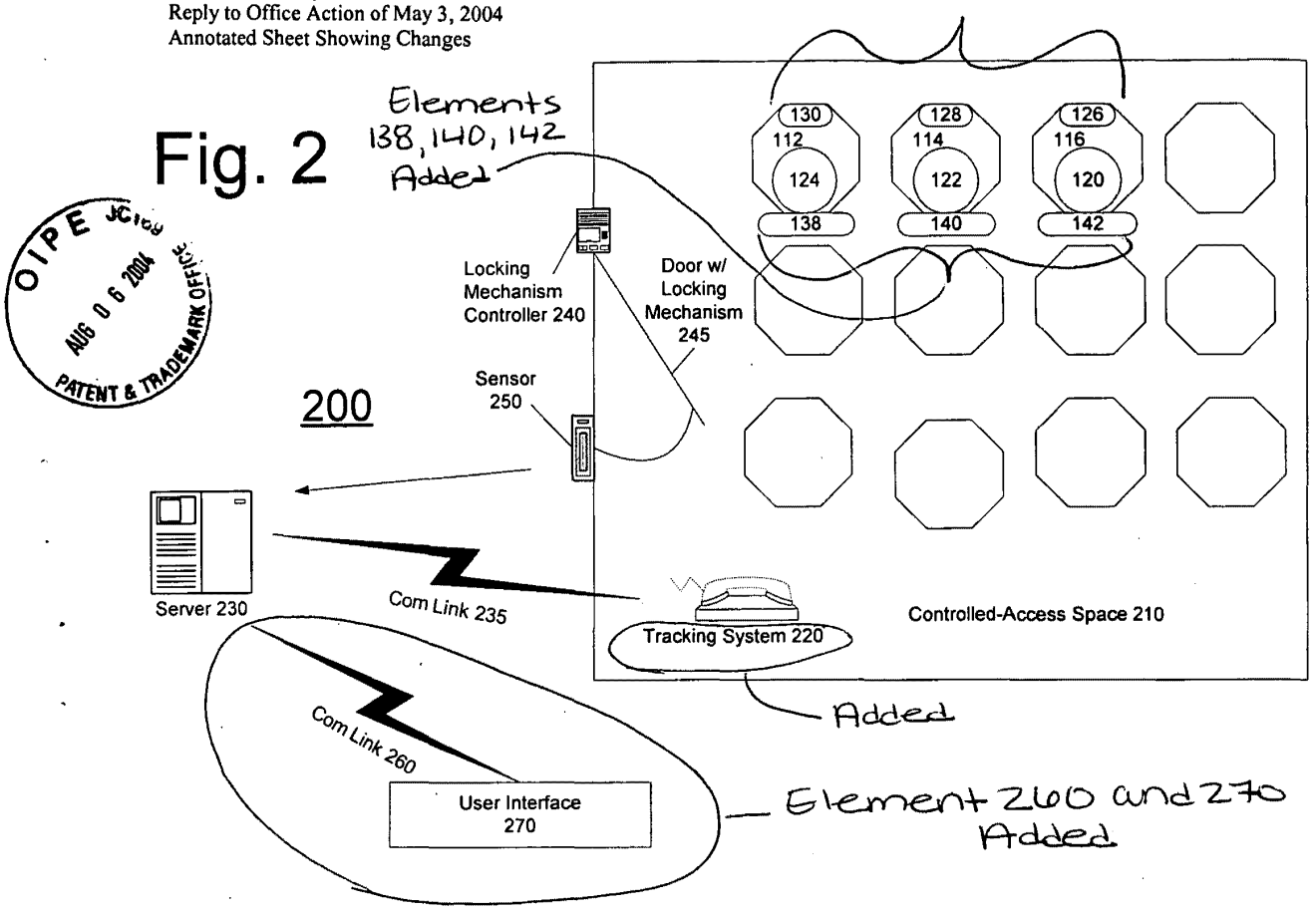


Fig. 1B

Elements 130, 128, 126 Added

Fig. 2

Elements 138, 140, 142 Added



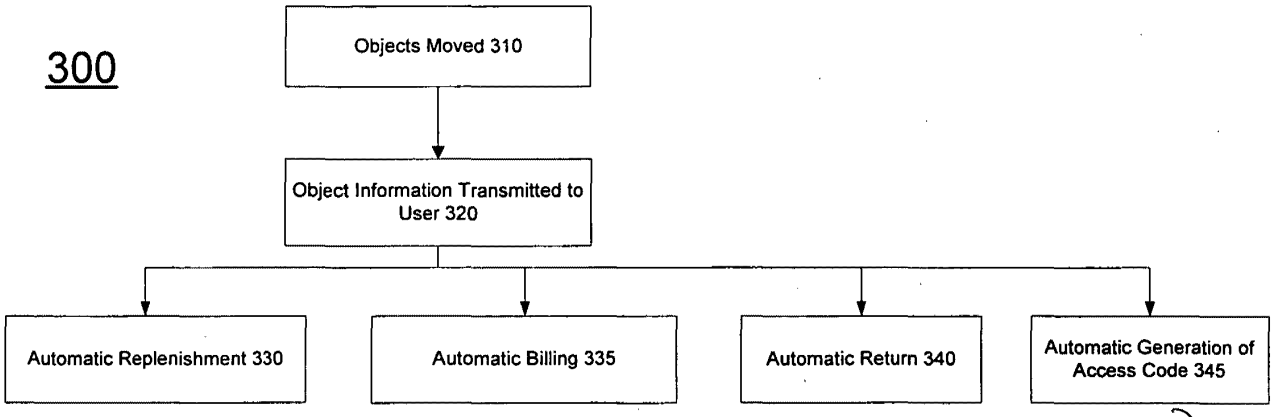


Fig. 3

Element 345 Added

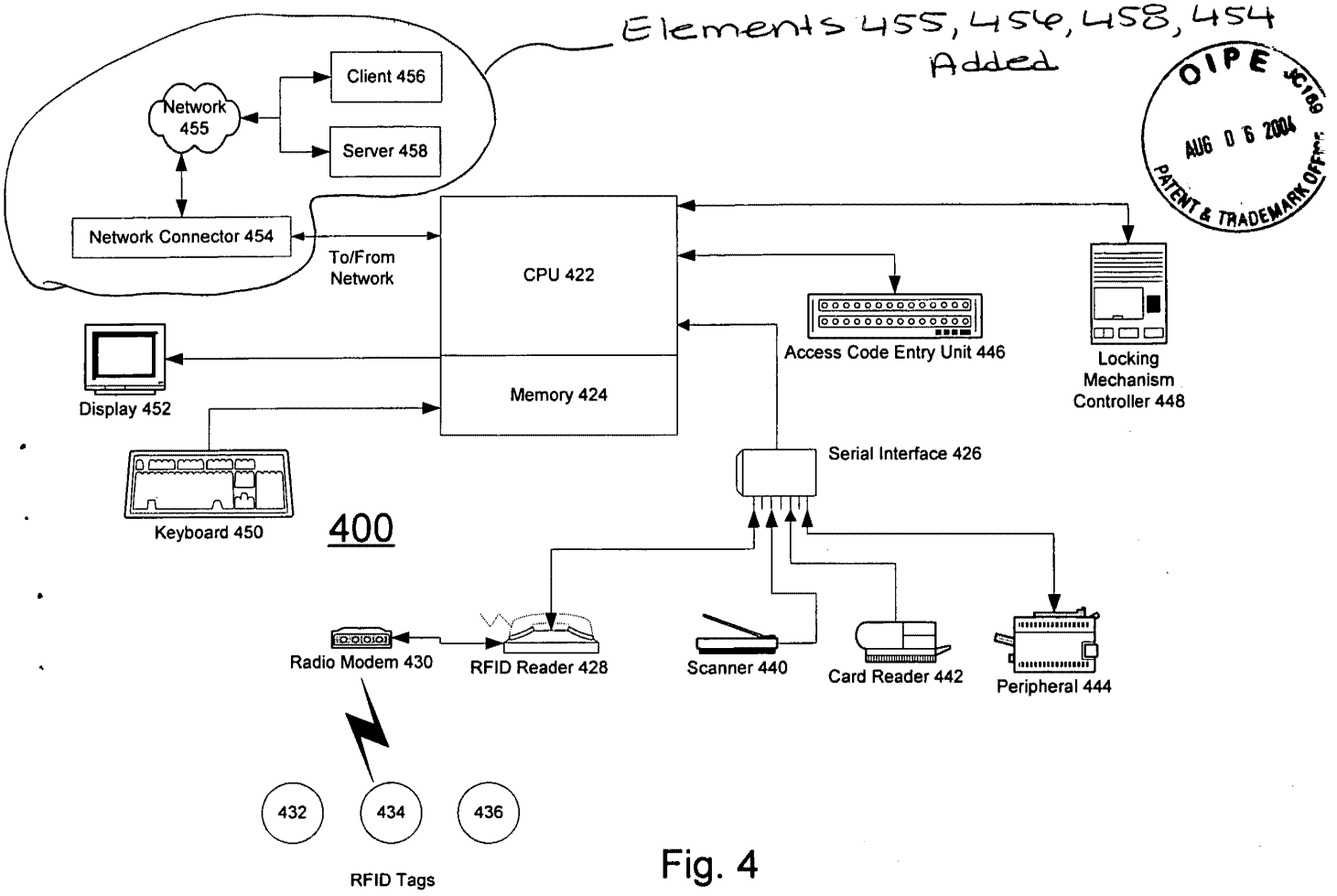


Fig. 4

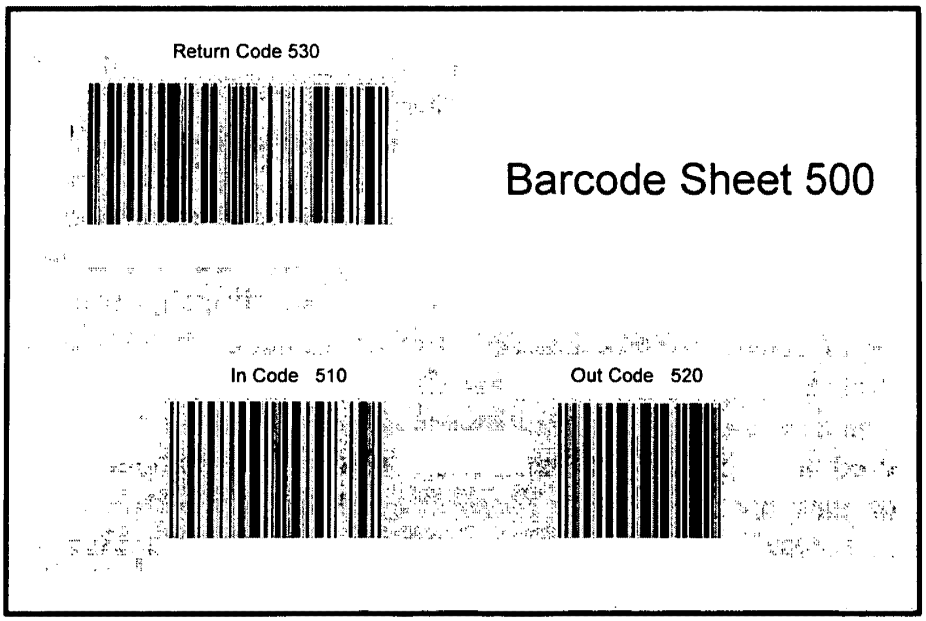


Fig. 5

Application No. 10/053,540
Amdt. Dated August 3, 2004
Reply to Office Action of May 3, 2004
Annotated Sheet Showing Changes

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application No.	10/053,540
Filing Date	November 2, 2001
First Named Inventor	Suzy Brown
Art Unit	2632
Examiner Name	Mullen, Thomas J.
Total Number of Pages in This Submission	20
Attorney Docket Number	4407P005

ENCLOSURES *(check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☒ Amendment / Response
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
  - ☐ PTO/SB/08
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Basic Filing Fee
  - ☐ Declaration/POA
- ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☒ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s)
- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☐ Other Enclosure(s) *(please identify below):*

Postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Tarek N. Fahmi, Reg. No. 41,402 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	
Date	8/3/04

CERTIFICATE OF MAILING/TRANSMISSION

Typed or printed name	Carrie Boccaccini		
Signature		Date	August 3, 2004

Based on PTO/SB/21 (04-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wlr) 06/04/2004.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

100

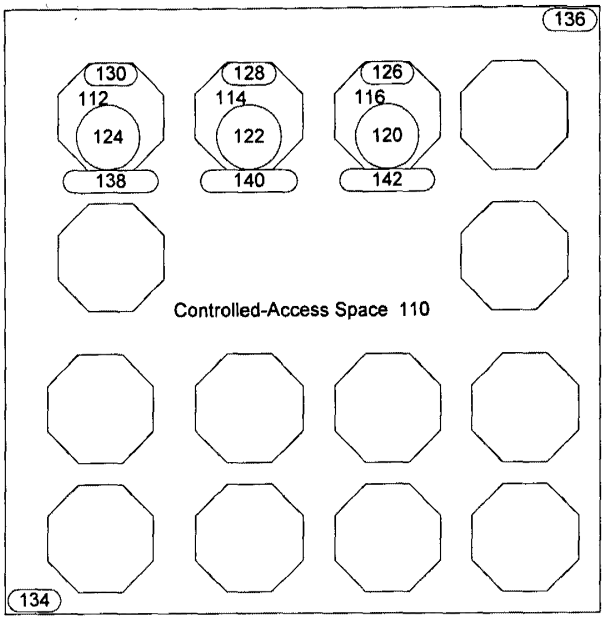


Fig. 1A

100

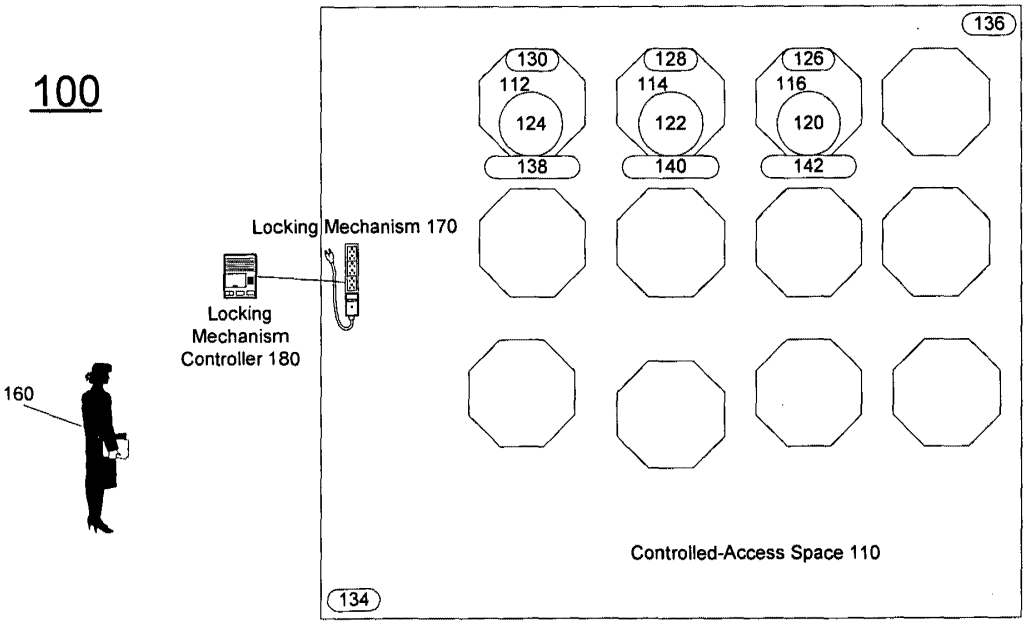
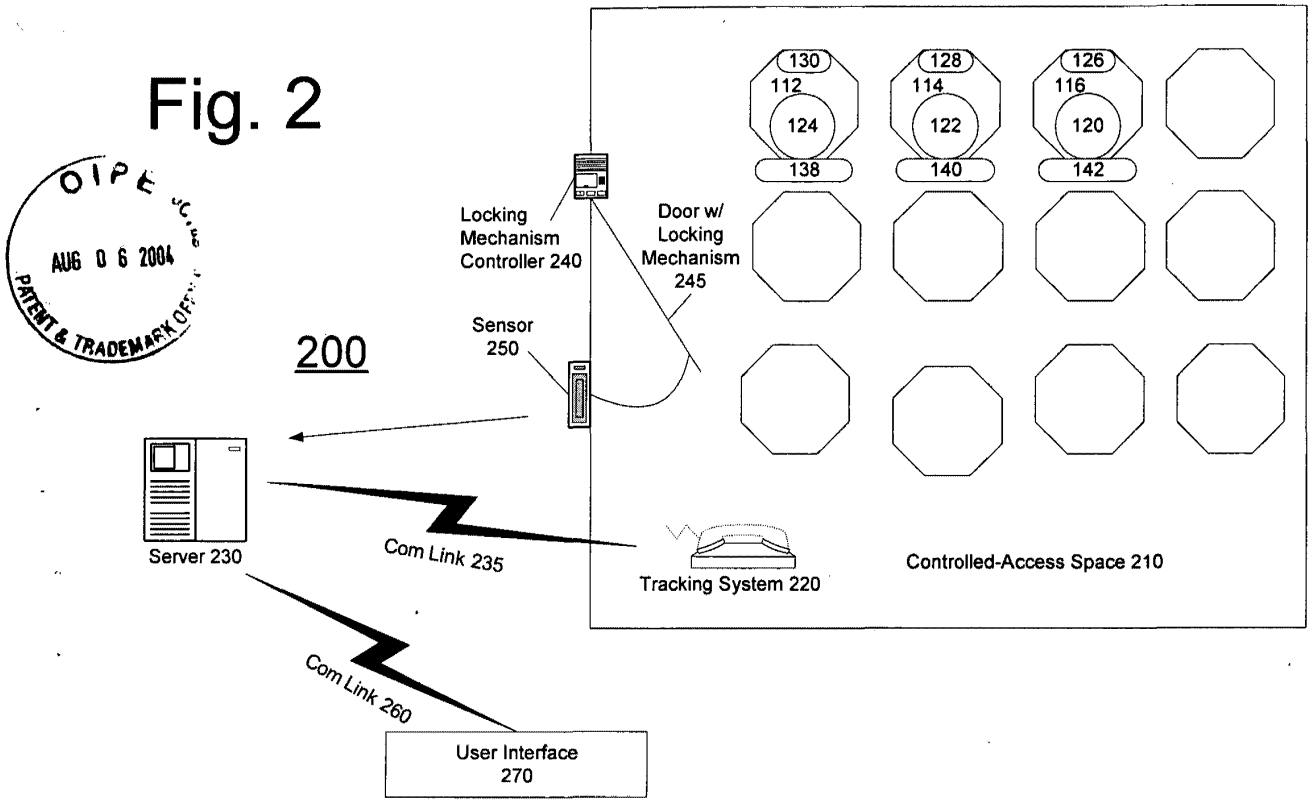


Fig. 1B

Fig. 2



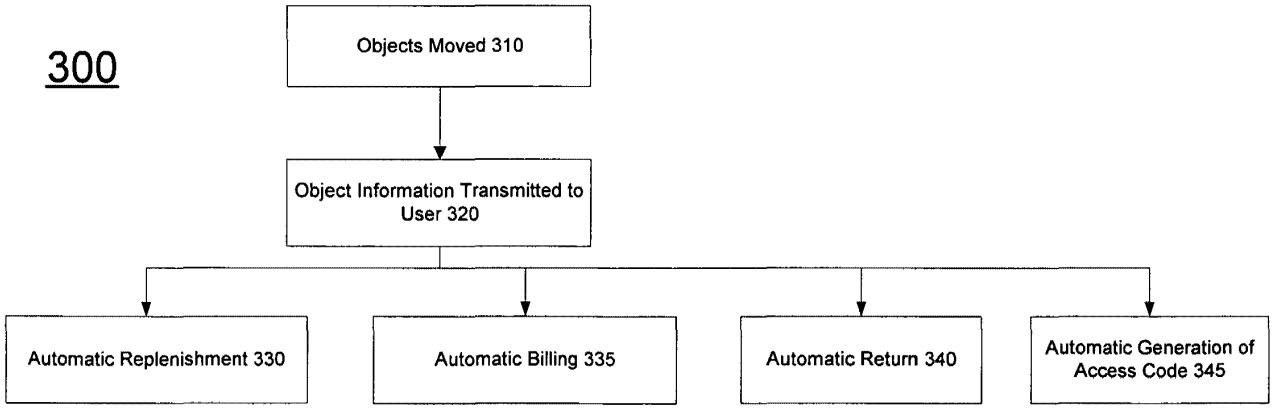


Fig. 3

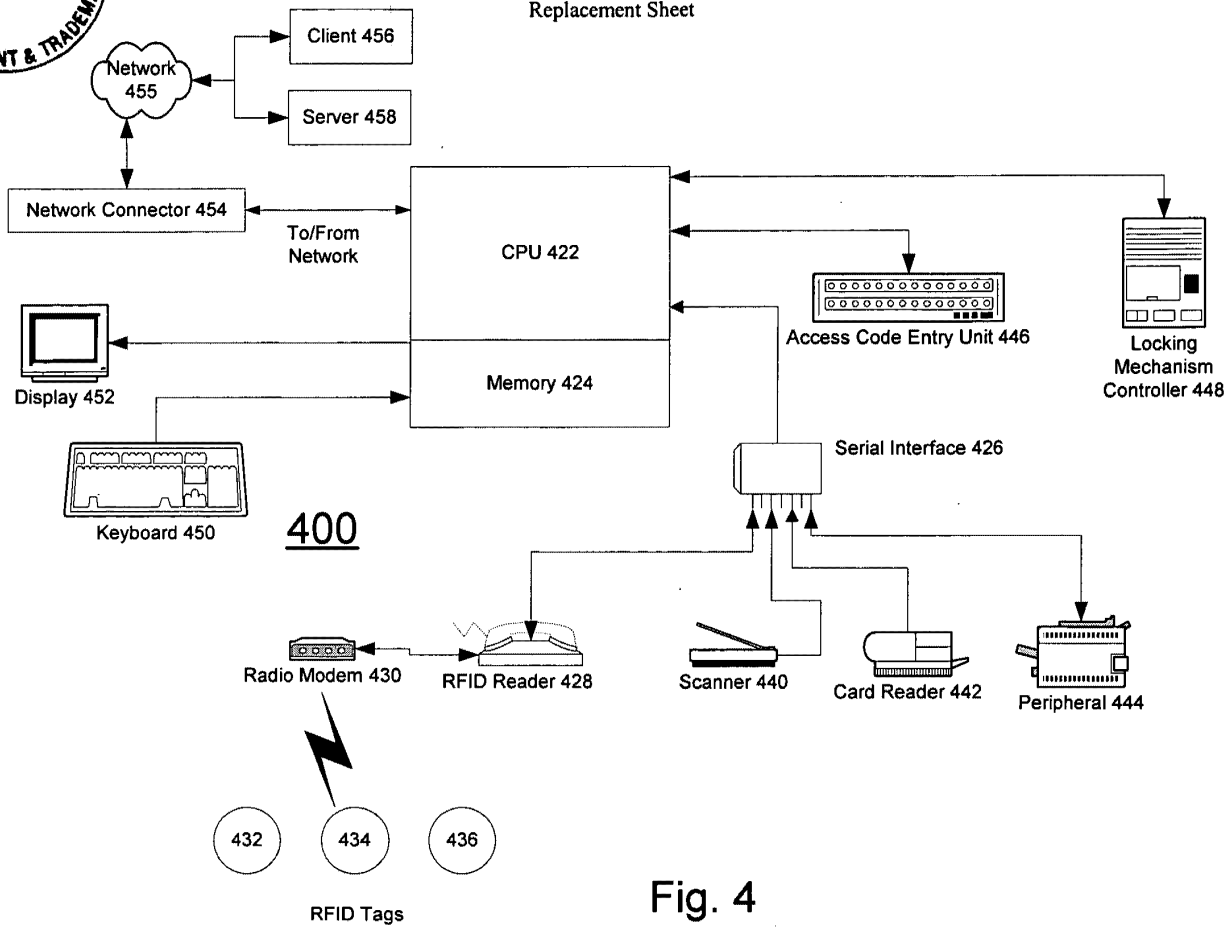


Fig. 4

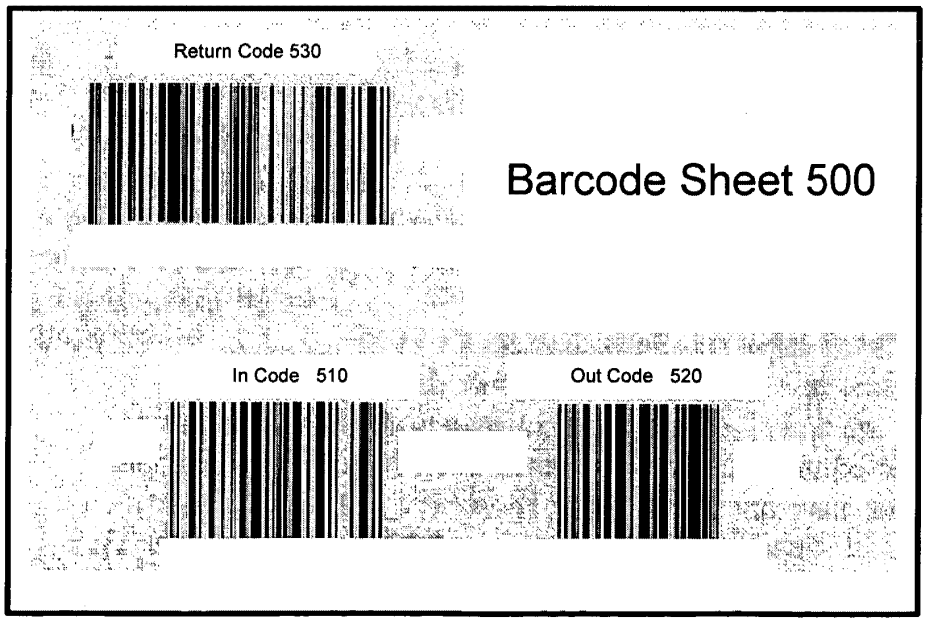


Fig. 5

2632
IFW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/053,540

Applicant: Suzy Brown, et al.

Filed: November 2, 2001
TC/A.U.: 2632
Examiner: Mullen, Thomas J.

Docket No.: 6326P005
Customer No.: 08791

Confirmation No.: 6075

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
on August 3, 2004
Date of Deposit

Carrie Boccaccini
Name of Person Mailing Correspondence

Signature Date 8/3/04

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

AMENDMENTS

Sir:

In response to the Office action of May 3, 2004, please amend the above-identified application as follows:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims, which begins on page 5 of this paper.

Amendments to the Drawings begin on page 13 of this paper.

Remarks/Arguments begin on page 14 of this paper.

An **Appendix** including amended drawing figures is attached following page 16 of this paper.

For all of the foregoing reasons, the claims are patentable over the references cited in the Office Action. If there are any additional fees due in connection with this communication, please charge our deposit account no. 02-2666.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 8/3, 2004

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/053,540	11/02/2001	Suzy Brown	4407P005	6075

8791 7590 05/03/2004

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

EXAMINER	
MULLEN, THOMAS J	

ART UNIT	PAPER NUMBER
2632	

DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	10/053,540	BROWN ET AL.	
	Examiner	Art Unit	
	Thomas J. Mullen, Jr.	2632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-44 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-11,13-20,22-28 and 30-43 is/are rejected.

7)☒ Claim(s) 12,21,29 and 44 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 02 November 2001 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 454 (see p. 16 of the specification).

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following elements must be shown or the feature(s) canceled from the claim(s):

"computer system" (claim 1),

"barcode labels affixed to...objects" (claims 9 and 26),

"video cameras" (claims 10 and 27),

"mechanical devices"/"weight (sensor)" (claims 11 and 28),

"network communication link/interface" and "telephone communication link/interface" (claims 14 and 31),

"client computers" (claims 15 and 32),

"network/Internet" (claims 15-16 and 32-33),

"user"/"designated person" notification via "wireless communication link/interface", "network communication link/interface" or "telephone communication link/interface" of claims 17-18 and 34, and "dedicated channel" and "pre-existing inventory control system" of claim 35 (these "links", "interfaces", "channels", etc. are to be distinguished from the communication link 235 between system 100 and server 230), and

"an access code (being) automatically generated" (claim 44).

Regarding the above-noted elements in claims 1, 9-11 and 26-28, all that is shown with respect to the "controlled-access space" 110,210 in Figs. 1A, 1B and 2 are the objects (112-116), tags (120-124), locking mechanism 170, locking mechanism controller (180,240), door/door sensor (245,250) and "RFID system" 220. Note that the claimed "computer system" (claim 1, line 4) is distinguished from the "server computer system" in claim 13, lines 3-4, and thus the first-recited "computer system" apparently refers to some system other than system 200/230 in Fig. 2; likewise, the "computer system" is distinguished in claim 6 from the "tracking system", which appears to correspond to the "RFID system" 220.

Regarding the above-noted elements in claims 15-18 and 32-35, it appears that neither the "server computer system" 200 (Fig. 2) nor the "remote inventory management system" 400 (Fig.

4) corresponds to, or includes, any of these elements. In particular, neither block 320 (in the flow chart of Fig. 3) nor the "To/From Network" arrow in Fig. 4 is an adequate representation of an overall network communication system having potentially many client computers/locations (see specification paragraph 34, lines 9-10) networked with the server 230 of computer system 200 (Fig. 2), which in turn communicates with the "RFID system" 220 (or other "computer system") within controlled access space 110,120.

Regarding the above-noted elements in claims 14 and 31, link 235 in Fig. 2 is described in the specification simply as a "wireless link".

Regarding the above-noted element in claim 44, it appears that a block should be added to the flow chart in Fig. 3 to show the access code-generation function (see in the specification, paragraph 33, last 2 lines).

No new matter should be entered.

A proposed drawing correction or corrected drawings, or appropriate amendment to the specification, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The disclosure is objected to because of the following informalities: specification paragraph 28, line 2, after "action" should be inserted --is--.

Appropriate correction is required.

3. Claims 1-37 are objected to under 37 CFR 1.75(a) for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In each of claims 1, 3, 4, 6, 12, 13, 15 and 17, the use of the term "defective" is grammatically inconsistent with the other terms in the phrase "the addition, removal, return, defective, or other movements or status of objects"; i.e., it appears that "defective" should be --defectiveness--, --defective status--, etc.

In claim 11, line 2, it appears that "absence or" should be --absence of--.

In claim 17, line 1, "the server" lacks clear antecedent basis (note "server computer system" in claim 13, line 3).

In claim 18, line 1, "the user" lacks clear antecedent basis (note "entity", claim 1; "designated person", claim 17; etc).

In claim 22, line 2, "the machine" lacks clear antecedent basis (i.e., the term "machine" is merely used on line 1 as part of an adjective, "machine-readable").

In claims 24-28, "the tracking system" lacks antecedent basis (note the dependency of these claims, and note intervening claim 23).

In claim 27, "locator" should be --location--.

In claim 32, line 2, "the server" lacks clear antecedent basis (note "server computer system" in claim 31, line 3).

In claim 43, it is unclear how "movements or status updates" is considered related to the prior recitations of "movement or status" (see e.g. claim 13, line 2).

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 3-5, 38 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by Belka et al (US 5777884).

Note in Belka et al (Fig. 1), processor 110; central database 130; user ID code reader 116 ("card reader", col. 2, line 56); and article ID code reader 118 ("barcode scanner", col. 2, line 56). Belka teaches using processor 110 in combination with central database 130 to associate, with respect to a "controlled space" (e.g., library, rental store, etc.--Abstract) having predetermined "objects" (e.g., "books, videos, audiocassettes"--col. 1, line 15), identity information regarding an entity (note "user identification and information data"--col. 2, lines 59-60) with "article identification and information data" (col. 2, lines 60-61); i.e., the entity's/user's identity information is associated with the "addition, removal, return", etc. of objects (i.e., "movement or status changes") which are returned to or removed from the "controlled space". See col. 2, line 57 to col. 3, line 38. As would be understood by those skilled in the art, the

combination of the "processor" 110 and the "central database" 130 inherently constitutes a "computer system" having "memory" and which executes a "process" from the memory (processor 110 implicitly using a "machine-readable storage medium" for this purpose, e.g. the hard drive, a floppy disk, a CD-ROM) to form the "association" discussed above.

Regarding claim 3, Belka et al further discloses a computer monitor 112, via which "the system prompts the user through the transaction process" (col. 2, last line to col. 3, first line), and thus the monitor 112 implicitly displays or "notifies" the user of the "addition, removal, return", etc. of one or more objects ("books, videos, audiocassettes", as noted above).

Regarding claims 4-5, Belka et al further teaches distinguishing between "authorized" and "unauthorized" transactions (i.e. unauthorized "user" or "article"), and providing an appropriate notification thereof (see col. 3, lines 28-34).

Regarding claim 40, Belka et al further discloses a keyboard 111, i.e. an "input device" through which the user carries out the "transaction process" discussed above; it is inherent that the association between the entity identity and the "movement or status changes of objects" is at least partly carried out "according to information which is entered...by the entity" using the keyboard 111.

6. Claims 1-7, 10, 13-14, 22-24, 27, 30-31, 38-39 and 41-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Ghaffari et al (US 5708423).

Note in Ghaffari et al (Fig. 1), "machine" (reader 56, local control 60, host 66), which is a "data processing system (that) automatically maintains records of respective locations of a plurality of objects in real time...(by) maintain(ing) a data record with respect to each of the objects indicating the present location in (a) building of each of the objects" (Abstract). Each object has secured thereto an "object marker" 54 which "transmits an identification signal that is unique to the respective object" (Abstract). Sensor devices (in the form of "portal antennas" 52) are "installed at respective doorways of (the) building" (Abstract), and enable the reader 56 to detect not only the presence of an object at the portal or doorway (according to its "identification signal") but also the "direction in which the object is being moved through the doorway" (Abstract). The reader 56, responsive to such detection, is capable of controlling an "electro-mechanical door lock...installed as a locking device for a door...which selectively prevents

passage through the portal" (col. 4, lines 43-51). See also col. 15, lines 6-17, regarding the selective door locking/unlocking at the portal. Ghaffari et al teaches that the reader 56 may also be responsive to devices identifying an "entity", such as a "biometric" (e.g. fingerprint or palm geometry) reading unit, "ID badge" reader, etc (col. 4, lines 51-54), and may also determine whether or not passage of either a "person" (entity) or an "asset" (object) through the portal/doorway is "authorized" (col. 4, lines 54-57). The reader "exchange(s) data" with control module 60 (col. 4, line 58 to col. 5, line 12), the control module 60 having a "database" associated therewith which "stores information (including) the identification codes of markers (54) that are authorized for passage through the portal (52)...(and) identification codes representative of individuals authorized to move the markers and associated objects through the portal (52)". The control module 60 in turn uploads specific "passage"-occurrence information to host computer 66 (col. 5, lines 29-42), "enabling the host 66 to maintain a virtually real-time record of the movements of articles to which markers (54) are attached".

Thus, reader 56, local control 60 and host 66, in combination, constitute (or include) a "machine-readable storage medium" (e.g., a hard drive or floppy disk or CD-ROM, inherently associated with at least one of elements 56, 60 or 62 or with the "database") or "processing unit/memory" in a "computer system", such storage medium/processing unit/memory capable of performing a "method" or "process" for automatically associating an "identity of an entity" with the "movement of one or more objects in a controlled-access location", wherein the "biometric" (e.g. fingerprint or palm geometry) reading unit, "ID badge" reader, etc (discussed above) determines the "identity of an entity"; the reader 56 in combination with portal antennas 52 (discussed above) determines the "movement of one or more objects"; and the "controlled access location" or "controlled space" corresponds to the "building" (discussed above--see Fig. 3), having a plurality of "asset control" or "movement tracking" zones separated by the above-described "portals" (52-1, 52-2, etc. in Fig. 3). See col. 13, line 50 to col. 14, line 37 regarding the "zones". As discussed above, if an association between the "entity" (passing from a first "zone" into a second "zone") and a given "object" is determined by the reader 56 (in combination with antennas 52 at the portal) to be "authorized", an "electro-mechanical door lock" is selectively unlocked to allow the entity to have access to the controlled-access location (i.e., the "second zone" discussed above).

Regarding claim 2, reader 56 corresponds to the "controller associated with the controlled space", for unlocking the "locking mechanism" discussed above.

Regarding claims 3-5, Ghaffari et al determines "authorization" status of the person and/or object at the portal, as discussed above, and further teaches providing various "notifications" regarding movement or status of objects, i.e. "events" that may be "displayed on a monitor...in a facility security office" (col. 5, lines 16-21); note also e.g. the "alarm" steps 262 and 292 in the flow charts of Figs. 16B and 17B, respectively.

Regarding claims 6, 23 and 39, the reader 56, local control 60 and host 66, in combination, constitute a "tracking system" associated with the controlled-access location, or building, defined by the different "zones" (Fig. 3).

Regarding claims 7 and 24, markers 54 are "tags" which communicate via a "wireless link" (see Fig. 14 and col. 11, line 4 to col. 12, line 22, regarding the components and operation of the marker 54).

Regarding claims 10 and 27, note video camera 62 (Fig. 1 and col. 5, lines 16-24).

Regarding claim 30, it is implied in Ghaffari et al that when the electro-mechanical door lock is selectively operated to allow passage of an authorized person and/or object, such lock would subsequently be "re-locked" after such passage (either when the door re-closes or after a predetermined time period, as is understood in the art), such that "all other entities" would implicitly be "automatically lock(ed) out" until further authorization is granted (at that portal or some other portal); also, since host 66 maintains "a virtually real-time record of the movements of articles" as discussed above, the system thus "account(s) for all remaining objects in the controlled-access location" prior to such further authorization.

Regarding claims 13-14, 31 and 41, host 66 is implicitly a "server", note that it may be connected to (and thus receive specific "passage"-occurrence information from) "several hundred (local control) modules (60)" (col. 5, lines 40-42).

Regarding claim 42, Ghaffari et al additionally teaches that "reports" may be generated, including data of "present and past locations of objects", for the purpose of "inventorying assets", etc (col. 5, lines 43-49); since host 66 maintains "a virtually real-time record of the movements of articles" as discussed above, the system thus inherently "decrements or increments inventory levels or changes in status of objects" in response to data transmitted to the server/host 66.

Regarding claim 43, as discussed above Ghaffari et al teaches "correlating" the movement or status of objects with the "responsible" entity.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 8-9, 11, 25-26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghaffari et al.

Athough the marker 54 in Ghaffari et al is apparently operable at selected radio frequencies (see again Fig. 14 and col. 11, line 4 to col. 12, line 22, regarding the components and operation of the marker 54), one skilled in the art would have recognized that any of the wide variety of known tags or markers may be usable in the Ghaffari et al system, such as the contact-based or barcode types recited in claims 8-9 and 25-26; therefore, it would have been obvious to use the Ghaffari et al system with contact-based or barcode type "tags", in order to increase the flexibility of applying such systems to pre-existing "controlled-access locations" and/or already-tagged sets of inventory. Regarding claims 11 and 28, it would have been obvious to implement weight sensors or other types of location/object-specific sensors in combination with the portal sensors in Ghaffari et al, in order to provide a more detailed or specific account of the movement of particular objects within the inventory.

9. Claims 15-20 and 32-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ghaffari et al, further in view of Lucas (US 2001/0051905, eff. date 3/7/00).

Ghaffari et al additionally teaches that "reports" may be generated, including data of "present and past locations of objects", for the purpose of "inventorying assets", etc (col. 5, lines 43-49). Ghaffari et al fails to teach that access to information in host computer 66 may be granted to "client computers" coupled to the server/host 66 through a "network". However, at the time of the invention it was well known to provide remote, network-based access to

inventory-related data at a facility; for example, Lucas discloses a system and method "which allows third-parties to monitor company inventory via the Internet and World Wide Web...and automatically order needed items" from suppliers, manufacturers, or distributors based on such information (this system is described as a "vendor managed inventory", or VMI, system--see paragraphs 7 and 17-18 in the Lucas specification). It would have been apparent to those skilled in the art that third parties accessing the Internet from "client computers" in Lucas (note "Customer Inventory System" 130--Fig. 1 and paragraph 19) may contact the "server" (such as host 66 in Ghaffari et al) and make inventory-related decisions associated with building 208 of Ghaffari et al, thus enhancing the functionality of the Ghaffari et al "inventory" system. Therefore, it would have been obvious to combine the teachings of Ghaffari et al and Lucas, as in claims 15-16 and 32-33. Regarding claims 17-18 and 34, Lucas further teaches "automatically contacting" (or notifying) the suppliers, manufacturers, or distributors as needed (paragraph 9 in Lucas). Regarding claim 35, note "Customer Inventory System" 130 in Lucas discussed above. Regarding claims 19 and 36, the "automatically order(ing) needed items" in Lucas, discussed above, corresponds to objects being "automatically replenished". Regarding claims 20 and 37, Lucas further teaches aspects of "automatic billing" (see e.g. paragraph 92, last 5 lines).

10. Claims 12, 21, 29 and 44 would be allowable if rewritten to overcome the objection(s) under 37 CFR 1.75(a) set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kucharczyk et al (US 6300873), Mufti et al (US 5363425), Worger et al (US 5664113), Loosmore (US 5682142) and Bowers et al (US 5963134) are cited to further show the state of the art.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas J. Mullen, Jr. whose telephone number is 703-305-4382. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 4 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Wu, can be reached on (703) 308-6730. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

TJM

Thomas J. Mullen, Jr.
Primary Examiner
Art Unit 2632

Notice of References Cited	Application/Control No. 10/053,540	Applicant(s)/Patent Under Reexamination BROWN ET AL.	
	Examiner Thomas J. Mullen, Jr.	Art Unit 2632	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-5,777,884	07-1998	Belka et al.	705/22
	B	US-5,708,423	01-1998	Ghaffari et al.	340/5.8
	C	US-2001/0051905	12-2001	Lucas, Michael T.	705/28
	D	US-6,300,873	10-2001	Kucharczyk et al.	340/5.2
	E	US-5,363,425	11-1994	Mufti et al.	340/10.1
	F	US-5,664,113	09-1997	Worger et al.	705/28
	G	US-5,682,142	10-1997	Loosmore et al.	340/10.51
	H	US-5,963,134	10-1999	Bowers et al.	340/10.1
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Index of Claims

Application No.	Applicant(s)	
10/053,540	BROWN ET AL.	
Examiner	**Art Unit**	
Thomas J. Mullen, Jr.	2632	

√	Rejected	–	(Through numeral) Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

Claim		Date
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Search Notes	Application No.	Applicant(s)	
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	Examiner	Art Unit	
	Thomas J. Mullen, Jr.	2632	

SEARCHED			
Class	Subclass	Date	Examiner
340	5.2	5/1/2004	TM
	5.8		
	5.92		
	539.1		
	572.1		
235	462		

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
EAST (inventory, tracking, books, merchandise, cargo, rental, person, user, client, customer, shopper, employee, identifier) . . .	5/1/2004	TM

10/053 540

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	2016	((inventory$3 inventorie$1 track$4) near3 (book$1 material$1 goods merchandise cargo shipment$1 stock pallet$1 rent$3)) and ((person$3 user$1 client$1 shopper$1 customer$1 employee$1 stocker$1 worker$1) near3 (identity identif$7))	USPAT; US-PGPUB	2004/04/30 08:16
2	BRS	L2	1846	((inventory$3 inventorie$1 track$4) near3 (book$1 material$1 goods merchandise cargo shipment$1 stock pallet$1 rent$3)) same (shop$1 shopping retail$3 store business)	USPAT; US-PGPUB	2004/04/30 07:14
3	BRS	L3	351	((inventory$3 inventorie$1 track$4) near3 (book$1 material$1 goods merchandise cargo shipment$1 stock pallet$1 rent$3)) same (notif$7 alert$3 alarm$3 warn$3)	USPAT; US-PGPUB	2004/04/30 07:14
4	BRS	L4	127	((inventory$3 inventorie$1 track$4) near3 (book$1 material$1 goods merchandise cargo shipment$1 stock pallet$1 rent$3)) same (unauthorized theft antitheft steal$3 stolen)	USPAT; US-PGPUB	2004/04/30 07:15
5	BRS	L5	860	1 and (2 3 4)	USPAT; US-PGPUB	2004/04/30 08:01
6	BRS	L6	8	1 and 2 and 3 and 4	USPAT; US-PGPUB	2004/04/30 07:15
7	BRS	L7	102	5151684.URPN.	USPAT	2004/04/30 07:46
8	BRS	L9	96	7 not (arc weld$3).ti.	USPAT; US-PGPUB	2004/04/30 07:46
9	BRS	L8	170	1 and (rf$1id$1 or ((tag$1 marker$1 label) near2 (radio rf wireless)))	USPAT; US-PGPUB	2004/04/30 08:14
10	BRS	L10	73	8 and (2 3 4)	USPAT; US-PGPUB	2004/04/30 08:01
11	BRS	L11	1289	(inventory$3 inventorie$1 track$3) same (rf$1id$1 or ((tag$1 marker$1 label) near2 (radio rf wireless)))	USPAT; US-PGPUB	2004/04/30 08:05
12	BRS	L12	740	(inventory$3 inventorie$1 track$3) near10 (rf$1id$1 or ((tag$1 marker$1 label) near2 (radio rf wireless)))	USPAT; US-PGPUB	2004/04/30 08:05
13	BRS	L13	75724	(person$3 user$1 client$1 shopper$1 customer$1 employee$1 stocker$1 worker$1) near3 (identity identif$7)	USPAT; US-PGPUB	2004/04/30 08:06
14	BRS	L14	527	11 and 13	USPAT; US-PGPUB	2004/04/30 08:06
15	BRS	L15	124	11 same 13	USPAT; US-PGPUB	2004/04/30 08:06
16	BRS	L16	291	12 and 13	USPAT; US-PGPUB	2004/04/30 08:06
17	BRS	L17	8	8 and (drug$1 hospital$1 surgical doctor$1 patient$1 nurse$1).ab,ti,clm.	USPAT; US-PGPUB	2004/04/30 08:14
18	BRS	L18	9794	(identif$7 id) adj (badge$1 bracelet$1 card$1)	USPAT; US-PGPUB	2004/04/30 08:22
19	BRS	L19	172	18 same (rf$1id$1 or ((tag$1 marker$1 label) near2 (radio rf wireless)))	USPAT; US-PGPUB	2004/04/30 08:15
20	BRS	L20	47	19 and (inventory$3 inventorie$1 track$4).ti,ab,clm.	USPAT; US-PGPUB	2004/04/30 08:16
21	BRS	L21	1591	18 near3 (employee$1 worker$1 person$1 user$1)	USPAT; US-PGPUB	2004/04/30 08:23
22	BRS	L22	51	19 and 21	USPAT; US-PGPUB	2004/04/30 08:27
23	BRS	L23	84	20 22	USPAT; US-PGPUB	2004/04/30 08:27
24	BRS	L24	76	23 not (6 7 17)	USPAT; US-PGPUB	2004/04/30 08:28
25	BRS	L25	63	10 not (6 7 17)	USPAT; US-PGPUB	2004/04/30 08:28

04/30/2004, EAST Version: 1.4.1

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	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments	Error Definition	Errors
1	BRS	L1	28	((doorway$1 portal$1) near5 (lock$3 unlock$3)) same (identif$7 id identit$3)	USPAT; US-PGPUB	2004/04/30 10:17			0
2	BRS	L2	2511	((doorway$1 door$1 entry$4 entrance portal$1) near5 (lock$3 unlock$3)) same (identif$7 id identit$3)	USPAT; US-PGPUB	2004/04/30 10:19			0
3	BRS	L3	55376	(code$1 key$1pad$1 reader$1 biometric$1) near5 (access$4 security authoriz$5)	USPAT; US-PGPUB	2004/04/30 10:20			0
4	BRS	L4	295	2 same 3	USPAT; US-PGPUB	2004/04/30 10:21			0
5	BRS	L5	75724	(person$3 user$1 client$1 shopper$1 customer$1 employee$1 stocker$1 worker$1) near3 (identity identif$7)	USPAT; US-PGPUB	2004/04/30 10:22			0
6	BRS	L6	215	4 and 5	USPAT; US-PGPUB	2004/04/30 10:22			0
7	BRS	L7	14310	(inventory$3 inventorie$1 track$4) near3 (book$1 material$1 goods merchandise cargo shipment$1 stock pallet$1 rent$3)	USPAT; US-PGPUB	2004/04/30 10:23			0
8	BRS	L8	19	4 and 7	USPAT; US-PGPUB	2004/04/30 10:23			0

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	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments	Error Definition	Errors
1	BRS	L1	14310	(inventory$3 inventorie$1 track$4) near3 (book$1 material$1 goods merchandise cargo shipment$1 stock pallet$1 rent$3)	USPAT; US-PGPUB	2004/04/29 13:41			0
2	BRS	L2	75153	(person$3 user$1 client$1 shopper$1 customer$1 employee$1) near3 (identity identif$7)	USPAT; US-PGPUB	2004/04/29 13:43			0
3	BRS	L3	75724	(person$3 user$1 client$1 shopper$1 customer$1 employee$1 stocker$1 worker$1) near3 (identity identif$7)	USPAT; US-PGPUB	2004/04/29 13:44			0
4	BRS	L4	123	1 same 3	USPAT; US-PGPUB	2004/04/29 13:44			0
5	BRS	L5	25	4 and librar$3	USPAT; US-PGPUB	2004/04/29 13:46			0
6	BRS	L6	29	4 and warehouse$1	USPAT; US-PGPUB	2004/04/29 13:46			0
7	BRS	L7	41	4 and (shop$1 shopping retail$3 store business).ab,ti,clm.	USPAT; US-PGPUB	2004/04/29 13:46			0
8	BRS	L8	132	1 same librar$3	USPAT; US-PGPUB	2004/04/29 13:46			0
9	BRS	L9	477	1 same warehouse$1	USPAT; US-PGPUB	2004/04/29 13:46			0
10	BRS	L10	1846	1 same (shop$1 shopping retail$3 store business)	USPAT; US-PGPUB	2004/04/29 13:46			0
11	BRS	L13	61	4 and 10	USPAT; US-PGPUB	2004/04/29 13:46			0
12	BRS	L11	5	4 and 8	USPAT; US-PGPUB	2004/04/29 13:47			0
13	BRS	L12	18	4 and 9	USPAT; US-PGPUB	2004/04/29 13:52			0
14	BRS	L14	351	1 same (notif$7 alert$3 alarm$3 warn$3)	USPAT; US-PGPUB	2004/04/29 13:53			0
15	BRS	L15	127	1 same (unauthorized theft antitheft steal$3 stolen)	USPAT; US-PGPUB	2004/04/29 13:53			0
16	BRS	L16	21	4 and (14 15)	USPAT; US-PGPUB	2004/04/29 13:54			0

(19) Europäisches Patentamt
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(51) Int. Cl.[5] : **G07C 9/00**

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(54) **Electronic identification system.**

(57) An identification system comprises an interrogator and a number of transponders. The interrogator includes a transmitter (10) for transmitting an interrogation signal to the transponder, and a receiver (16,18,20,22) for receiving a response signal from the transponder. A micro-processor (28) identifies the transponder from data in the response signal. Each transponder comprises a receiving antenna (30) for receiving the interrogation signal, a code generator (36), a transmitting antenna (32), and a modulator (40) connected to the code generator. On receipt of the interrogation signal the transponder repeatedly transmits a response signal containing data which identifies the transponder. The interrogator detects successful identification of any transponder and briefly interrupts the interrogation signal to indicate the successful identification. Each transponder includes a logic circuit (42) responsive to a respective interruption in the interrogation signal to cease transmission of its own response signal.

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BACKGROUND OF THE INVENTION

This invention relates to an identification system comprising an interrogator and a plurality of transponders.

Interrogator/transponder systems have been used for identifying vehicles, animals, people and other objects. Such systems generally comprise an interrogator comprising a transmitter/receiver and a transponder attached to each object to be identified. The transponder carries a code which uniquely identifies the object in question. Systems of this kind can usually only deal effectively with one transponder at a time. Attempts to mass-produce low cost transponders have generally not been successful, due to the requirement for relatively expensive frequency-critical components in the transponder.

It is an object of the invention to provide transponders which can be produced at a relatively low cost, and an identification system employing such transponders.

SUMMARY OF THE INVENTION

According to the invention there is provided an identification system comprising an interrogator and a plurality of transponders, the interrogator including transmitter means for transmitting an interrogation signal to the transponder, receiver means for receiving a response signal from the transponder, and processor means for identifying the transponder from data in the response signal; each transponder comprising a receiving antenna for receiving the interrogation signal, a code generator, a transmitting antenna, and a modulator connected to the code generator, so that on receipt of the interrogation signal the transponder transmits a response signal containing data which identifies the transponder, the transponder being adapted to repeat the transmission of the response signal to increase the probability of successful reception thereof by the interrogator.

Preferably, the interrogator is adapted to detect successful identification of any transponder and to modify the interrogation signal to indicate the successful identification, each transponder including means responsive to a respective modification of the interrogation signal to cease transmission of its response signal.

The interrogator may be adapted to interrupt the interrogation signal for a predetermined period after successfully identifying a particular transponder, that transponder in turn being adapted to sense the interruption in the interrogation signal and to cease transmission of its response signal in response thereto.

The invention extends to a transponder for use with the identification system, the transponder comprising a receiving antenna for receiving the interrogation signal, a code generator, a transmitting antenna, and a modulator connected to the code generator, the transponder being adapted to transmit a response signal containing data which identifies the transponder, the transponder including control means arranged to cause repeated transmission of the response signal to increase the probability of successful reception thereof by the interrogator.

The control means may be responsive to a respective modification of the interrogation signal to cease transmission of the response signal.

Preferably, the control means is arranged to monitor the received interrogation signal and to disable the modulator on receipt of a predetermined confirmation signal from the interrogator which is received after successful reception of the response signal by the interrogator.

In one version of the transponder the modulator is arranged to divert a portion of the energy of the received interrogation signal to the transmitting antenna, so that on receipt of the interrogation signal, the transponder transmits a response signal comprising a carrier derived from the interrogation signal which is modulated by the output of the code generator.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a simplified block diagram showing an interrogator (reader) and a transponder according to an embodiment of the invention;

Figure 2 is a simplified block diagram of the interrogator of Figure 1;

Figure 3 is a schematic diagram of the amplifier and comparator of the interrogator of Figures 1 and 2;

Figure 4 is a block diagram of a transponder according to an embodiment of the invention;

Figure 5 is a timing diagram illustrating the operation of the interrogator and three transponders;

Figure 6 is a simplified flow chart illustrating the operation of the interrogator;

Figure 7 is a simplified flow chart illustrating the operation of each transponder;

Figures 8 and 9 are schematic illustrations of two applications of embodiments of the invention;

Figure 10 is a functional block diagram of an integrated circuit employed in the transponder;

Figure 11 is a circuit diagram of an embodiment of the transponder;

Figures 12 and 13 are typical waveforms generated by the transponder and interrogator; and

Figure 14 is a table showing the response of the integrated circuit of Figure 10 to different control signals.

DESCRIPTION OF EMBODIMENTS

Figure 1 illustrates, in a very simplified form, an

interrogator (reader) interacting with a transponder according to the invention. Figure 2 illustrates the basic circuitry of the interrogator in greater detail.

The interrogator includes a transmitter 10 which transmits a 915 MHz interrogation signal at a power of approximately 15 W via a transmitting antenna 12. The transponder receives the interrogation signal and responds with a much weaker response signal at the same frequency, which is modulated with a code identifying the transponder and thus the object with which the transponder is associated. (Operation of the transponder is described below.)

The response signal from the transponder is received by a receiving antenna 14 of the interrogator and passed through a microstrip directional coupler 16, which attenuates excessively strong received signals, to an amplifier 18, before being fed to a mixer 20. The received signal has a carrier frequency which is the same as the transmitting frequency of the interrogator. The amplified received signal is mixed with a reference sample from the transmitter 10, and the resulting low frequency output is passed through a bandpass filter 22 and thence to an amplifier 24 and a comparator or threshold detector 26. The comparator squares the amplified output of the bandpass filter, so that its output is a digitally compatible output waveform containing the code transmitted by the transponder. One possible embodiment of a circuit block including the amplifier 24 and the comparator 26 is shown in Figure 3. This output signal is fed to a microprocessor 28 which analyses the received code and checks its validity using conventional circular redundancy checking systems, before outputting the code for further processing.

It will be noted that the amplifier has a second input for use with a second receiver channel. This input is for use in a version of the transponder with a spatial diversity antenna arrangement, in which two otherwise identical receiving antennas are spaced apart by one half wavelength. This ensures that if one antenna does not receive the interrogation signal adequately strongly, due for example to standing wave effects or the like, the second antenna will receive the interrogation signal. This improves the reliability of operation of the transponder system.

The microprocessor 28 is arranged to control the transmitter 10 to interrupt the output of the transmitter immediately after receipt of a valid identification code from a transponder. For example, immediately after receipt of a valid transmission from any transponder, the microprocessor shuts off the transmitter 10 for a brief period, say one millisecond.

Figure 4 illustrates the transponder itself. The transponder includes a receiving antenna 30 and a transmitting antenna 32 which are typically defined by a printed circuit. The antennas 30 and 32 are cross polarised to minimise crosstalk. The receiving antenna is connected via a diode 34 to a charge storage device in the form of a capacitor C, which stores a portion of the energy of the interrogation signal received by the receiving antenna. When the capacitor C has charged sufficiently, it enables an integrated circuit code generator 36, which is pre-programmed with a unique code which is transmitted three times at approximately 1 200 baud. The output signal from the code generator is fed via a flipflop 38 to a modulator 40 which re-directs a portion of the energy received via the receiving antenna 30 to the transmitting antenna 32. The flipflop 38 is controlled by a logic circuit 40.

Because the modulator 40 uses the received interrogation signal as the transmitter source for its output carrier signal, no frequency critical components are required, as would be the case with an actively powered transmitter and modulator circuit. Thus, the transponder can comprise a circuit board on which the receiving and transmitting antennas 30 and 32 are printed, together with one or more integrated circuits providing charge storage, code generation and modulating functions. It is also possible to combine the transmitting and receiving antennas in a single antenna. The modulator 40 is typically a diode which is reverse biased and which is biased into a conducting mode by pulses from the code generator to allow energy transfer from the receiving antenna 30 to the transmitting antenna 32.

Obviously, the receiving antenna 14 of the interrogator receives a strong component of the interrogation signal transmitted by its transmitting antenna 12. However, in view of the fact that mixing of two identical frequency components gives a DC component in the mixer, it is a relatively simple matter to remove this component by means of the bandpass filter 22, so that the received code is not contaminated. Thus, simultaneous transmission and reception on the same frequency is possible, as well as the use of a highly simplified transponder circuit.

In an alternative version of the transponder, the transponder is provided with its own power supply, such as a battery, and can therefore use an input amplifier to improve its sensitivity. This allows the interrogator to transmit at a significantly lower power, for example, at 100 mW instead of 15 W. This is because the interrogation signal does not need to contain sufficient energy to power the transponder in this application. A transmitting power of 100 mW has been found to be adequate for a reading distance of 4m. However, the embodiment illustrated in Figure 4 is particularly advantageous, due to its compatibility with ultra low cost mass production techniques, which facilitates multiple article identification as described below.

When the interrogator receives response signals from several transponders which have been interrogated at the same time, it will occur from time to time that two or more transponders are transmitting during

the same period, notwithstanding the fact that there is a random or pseudo-random delay between transmissions from each transponder, so that the transponders effectively "jam" each other. This will generally prevent correct reception of the code transmitted by either transponder. However, provided that the codes transmitted by the transponders are fixed in length and include error correction bits, such as CRC codes, it is possible for the interrogator to confirm whether or not it has received a valid code. As mentioned above, as soon as a code is validly received, the interrogation signal is interrupted briefly, for a period shorter than the length of a transponder transmission.

The logic circuit 42 in each transponder monitors the presence of the interrogation signal at the output of the receiving antenna 30. As soon as the logic circuit detects the interruption in the interrogation signal following on the completion of the last transmission by the transponder, the flipflop 38 is set, disabling the modulator 40 and thus stopping the transmission from that transponder.

The timing diagram of Figure 5 illustrates the interaction of the interrogator and three transponders, while the flow charts of Figures 6 and 7 illustrate the sequence of operation of the interrogator and the transponders, respectively.

The effect of the above arrangement is that each transponder ceases to transmit as soon as it has successfully transmitted its identification code to the interrogator. As each transponder shuts down, more interference-free time is created within which other transponders in a group of such transponders can transmit their signals to the interrogator. This process continues until all of the transponders have successfully transmitted their identification code to the interrogator. The microprocessor can count the number of transponders identified.

Assuming that all transponders have the same identification code, it is thus possible for the interrogator to count the number of transponders which respond to the interrogation signal in a particular time period. For example, a large number of identical articles can each be provided with a transponder, all the transponders having the same identification code, and a portable interrogator unit can be used to count the articles. This can be done, for example, in a warehouse or other storage area, and obviates the necessity for physically counting stock. The transponders can be fitted to individual articles, or to containers such as boxes, each of which contains a known number of articles. It will be appreciated that it is not even necessary for the articles which are fitted with transponders to be visible for them to be counted in this way. Conveniently, the antennas 30 and 32 (or a single dual-purpose antenna) can be printed on a surface of the container using conductive ink, while the electronic circuitry of the transponder is secured to the surface in electrical contact with the antenna(s). Such an embodiment can be produced very inexpensively using the passive transponder embodiment described above, making it possible to use the transponders in an automatic stock control system for relatively low cost articles.

Because of the low cost of the passive transponders, it is proposed, eventually, that a transponder can be attached to each item of stock in a supermarket, for example, so that a trolley full of groceries can be scanned automatically by an interrogator located at a till, without any handling of the goods by a cashier being required. This is possible because the invention makes it possible both to identify each item in a group of different items, as well as to count the number of each type of item present. Obviously, the cost of the transponders would determine the value of the articles to which they can viably be applied. However, with present day technology, the transponders can be produced at a cost low enough for them to be used economically with medium-priced articles such as domestic appliances, applied to disposable packaging.

In a further development of the invention, the interrogation signal can be modulated intermittently with a code signal corresponding to the identity of one or more transponders, or a designated class of transponders, which are being sought. The logic circuit 42 of each transponder then checks the transmitted code in the interrogation signal, and activates the transponder only if it is one of those transponders corresponding to the transmitted code. Other transponders remain disabled. Once all transponders in a particular category have been identified and/or counted, the interrogation signal is removed to allow the charge storage device in the transponders to discharge, and the code in the interrogation signal is then be changed to allow a new category of transponders to be interrogated.

Two further applications of the transponder are schematically illustrated in Figures 8 and 9. The application illustrated in Figure 8 is for vehicle identification, where one vehicle or several vehicles can he identified at a time. In the application illustrated schematically in Figure 9, the system is used to identify the members of a group of people, who may pass the interrogator simultaneously. In conventional systems, simultaneous interrogation of a number of transponders would result in simultaneous transmission from the transponders, making it impossible to read the transmitted data. However, the code generator of each transponder transmits its unique code three times, with a spacing between transmissions which is pseudo-randomly determined based on the identification code of that transponder itself. This assists in allowing each transponder to have a "quiet time" when it is the only unit radiating.

Another application for the transponders is in identifying personnel, as shown in Figure 9. Tests

have been conducted in which transponders according to the invention were fitted to the battery boxes of miner's cap lamps. In this case, powered versions of the transponders were used, due to the ready availability of battery power. Interrogators are placed at desired locations, for example at the entrances to mine haulages or stopes, and can count personnel entering demarcated areas, as well as identifying each person individually. The individual interrogators are connected to a central computer, which can monitor the movement of personnel in the mine, and which can generate a map or other display, if required, indicating the location of each individual. This is particularly useful in emergencies, allowing rescue parties to know how many individuals are trapped in a certain area after a rock fall, for example.

A prototype system, employing a 915 MHz interrogation signal of 15 W, can effectively read transponders in the form of badges the size of a credit card at a distance of approximately 4 m. 64 bit identification codes were used in the prototype, allowing a large number of uniquely identified transponders to be provided.

A prototype of the transponder was developed using two custom made integrated circuits IC1 and IC2. The first integrated circuit, IC1, is designated type CLA 61061 and is a CMOS Manchester encoder with a pseudo random delay function. This device is designed for the serial transmission of either a 64 bit or a 128 bit word in Manchester II format, at pseudo random intervals. The chip also provides addressing for a memory device in which the word to be transmitted (that is, the identification code) is stored, and logic control of the timing sequence of operation.

The integrated circuit IC2 is designated type */047 and comprises a bipolar analogue PROM, an oscillator, and a power-on-reset circuit on a single chip. The chip also includes a "gap detector" circuit and circuitry for rectifying and modulating an RF carrier. The RF circuitry can be bypassed in part or completely, to make use of special high frequency rectifying diodes. The PROM is a 64 bit memory implemented with aluminium fuses which are selectively blown before packaging of the chip, to store a selected identification code.

Figure 10 is a functional block diagram of the integrated circuit IC1, and Figure 11 illustrates one possible implementation of a transponder using the two integrated circuits. In Figure 11, a capacitor C_{gap} is provided for systems in which the transponder waits for a "gap" or quiet period before responding to an interrogation signal.

In Figure 12, the RFC pulse train includes a set of synchronisation pulses, which can be omitted in applications where it is necessary to save time, or where the coding of the received signal is performed in software (see Figure 13).

On start-up of the integrated circuit IC1, the memory device (IC2) is addressed and the Manchester data sequence is transmitted. The internal pseudo random number generator of the chip IC2 is loaded with the last 16 bits of the data in the memory device, which determine a pseudo random time interval before the Manchester sequence is transmitted again. The maximum length of the interval is a multiple of the length of the time taken to transmit one Manchester sequence. The integrated circuit IC1 has a number of control pins which allow its operation to be modified as required. The pins SA and SB (see Figure 11) control the time interval between data transmission, in accordance with the table of Figure 14. In Figure 14, each "slot" referred to in the third column of the table is equal to the length of a single Manchester sequence transmission.

Start-up of the integrated circuit IC1 can be initiated in one of two ways, determined by the status of the pin GAP. In the first mode, operation starts as soon as the RESET pin goes low, while in the second mode, operation starts after the RESET pin goes low and a rising edge is presented to the ENV pin. This is used to delay transmission from the transponder until a low-going pulse has been presented to the ENV pin by the logic circuit 42, which provides the "gap detection" or "quiet period" detection function referred to above.

The status of the pin MM determines the appearance of the Manchester sequence. If the pin MM is high, the data in the memory device is transmitted as a simple sequence of Manchester bits with no synchronisation pulses. With the pin MM low, the Manchester sequence starts with eight Manchester O's for synchronisation and a command synchronisation sequence before transmitting the data bytes. The pin EK, when high, enables the termination of transmission after three transmissions of the Manchester sequence. If the pin EK is held low, transmission continues until the integrated circuit is powered down or reset. The status of the pin NB determines the length of the sequence that is transmitted. If the pin NB is held low, addressing for 64 bits is provided and 64 bits are transmitted. With the pin NB held high, 128 bits are addressed and transmitted. Both integrated circuits are designed to operate at low voltages of 2V or less, and to draw low currents of less than 1mA.

Claims

1. An identification system characterised in that it comprises an interrogator and a plurality of transponders, the interrogator including transmitter means (10) for transmitting an interrogation signal to the transponder, receiver means (16, 18,20,22) for receiving a response signal from the transponder, and processor means (28) for identifying the transponder from data in the response

signal; each transponder comprising a receiving antenna (30) for receiving the interrogation signal, a code generator (36), a transmitting antenna (32), and a modulator (40) connected to the code generator, so that on receipt of the interrogation signal the transponder transmits a response signal containing data which identifies the transponder, the transponder being adapted to repeat the transmission of the response signal to increase the probability of successful reception thereof by the interrogator.

2. An identification system according to claim 1 characterised in that the interrogator is adapted to detect successful identification of any transponder and to modify the interrogation signal to indicate the successful identification, each transponder including means (38,42) responsive to a respective modification of the interrogation signal to cease transmission of its response signal.

3. An identification system according to claim 2 characterised in that the interrogator is adapted to interrupt the interrogation signal for a predetermined period after successfully identifying a particular transponder, that transponder in turn being adapted to sense the interruption in the interrogation signal and to cease transmission of its response signal in response thereto.

4. An identification system according to claim 3 characterised in that the predetermined period for which the interrogation signal is interrupted is shorter than the response signal of the transponder.

5. An identification system according to any one of claims 1 to 4 characterised in that the transponder includes control means (42) for controlling the transmission of the response signal, the control means being adapted to cause repeated transmissions of the response signal at predetermined intervals.

6. An identification system according to claim 5 characterised in that the predetermined intervals are random or pseudo-random in length.

7. An identification system according to claim 6 characterised in that the length of the random or pseudo-random intervals is derived from the data identifying the transponder.

8. An identification system according to any one of claims 1 to 7 characterised in that the interrogator is adapted to transmit a code identifying a predetermined transponder or category of transponders, each transponder including circuitry (42) for enabling the transponder only on receipt of the code corresponding thereto.

9. An identification system according to any one of claims 1 to 8 characterised in that the modulator (40) of each transponder is arranged to divert a portion of the energy of the received interrogation signal to the transmitting antenna, so that on receipt of the interrogation signal, the transponder transmits a response signal comprising a carrier derived from the interrogation signal which is modulated by the output of the code generator (36).

10. An identification system according to claim 9 characterised in that the interrogator includes a mixer (20) for mixing a reference signal derived from the interrogation signal with the received response signal from the transponder, and filter means (22) for extracting a difference signal from the mixer output which contains the data from the response signal.

11. A transponder for use with the system of any one of claims 1 to 10, characterised in that the transponder comprises a receiving antenna (30) for receiving the interrogation signal, a code generator (36), a transmitting antenna (32), and a modulator (40) connected to the code generator, the transponder being adapted to transmit a response signal containing data which identifies the transponder, the transponder including control means (38,42) arranged to cause repeated transmission of the response signal to increase the probability of successful reception thereof by the interrogator.

12. A transponder according to claim 11 characterised in that the control means (42) is responsive to a respective modification of the interrogation signal to cease transmission of the response signal.

13. A transponder according to claim 11 or claim 12 characterised in that the modulator (40) is arranged to divert a portion of the energy of the received interrogation signal to the transmitting antenna (32), so that on receipt of the interrogation signal, the transponder transmits a response signal comprising a carrier derived from the interrogation signal which is modulated by the output of the code generator (36).

14. A transponder according to claim 12 or claim 13 characterised in that the control means (38,42) is arranged to monitor the received interrogation signal and to disable the modulator (40) on

receipt of a predetermined confirmation signal from the interrogator which is received after successful reception of the response signal by the interrogator.

15. A transponder according to claim 14 characterised in that the control means (42) is adapted to detect an interruption of the interrogation signal of a predetermined period.

16. A transponder according to any one of claims 11 to 15 including charge storage means (C) arranged to store a portion of the energy of the interrogation signal, at least the code generator (36) being arranged to be powered by the charge storage means in operation.

17. A transponder according to any one of claims 14 to 16 characterised in that the control means (42) is adapted to monitor the received interrogation signal for a predetermined code, and to enable the modulator (40) only on receipt of that code.

18. A transponder according to any one of claims 11 to 17 characterised in that at least one of the receiving and transmitting antennas (30,32) is formed on a substrate to which the transponder is applied.

19. A transponder according to claim 18 characterised in that the at least one antenna (30,32) is formed by printing on the substrate with a conductive material.

20. A transponder according to any one of claims 11 to 19 characterised in that the control means (38,42) is adapted to cause repeated transmission of the response signal at predetermined intervals.

21. A transponder according to claim 20 characterised in that the predetermined intervals are random or pseudo-random in length.

22. A transponder according to claim 21 characterised in that the length of the random or pseudo-random intervals is derived from the data identifying the transponder.

23. A transponder according to any one of claims 11 to 22 characterised in that the control means (42) is adapted to monitor the received interrogation signal and to enable transmission of the response signal only after an interruption of the interrogation signal for a predetermined duration.

Fig 1

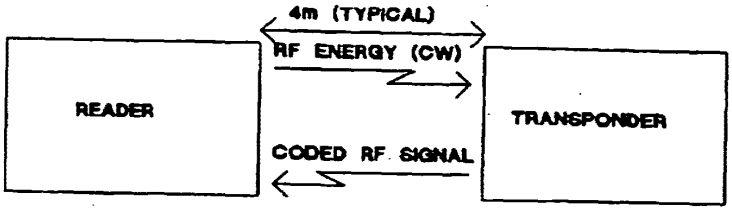
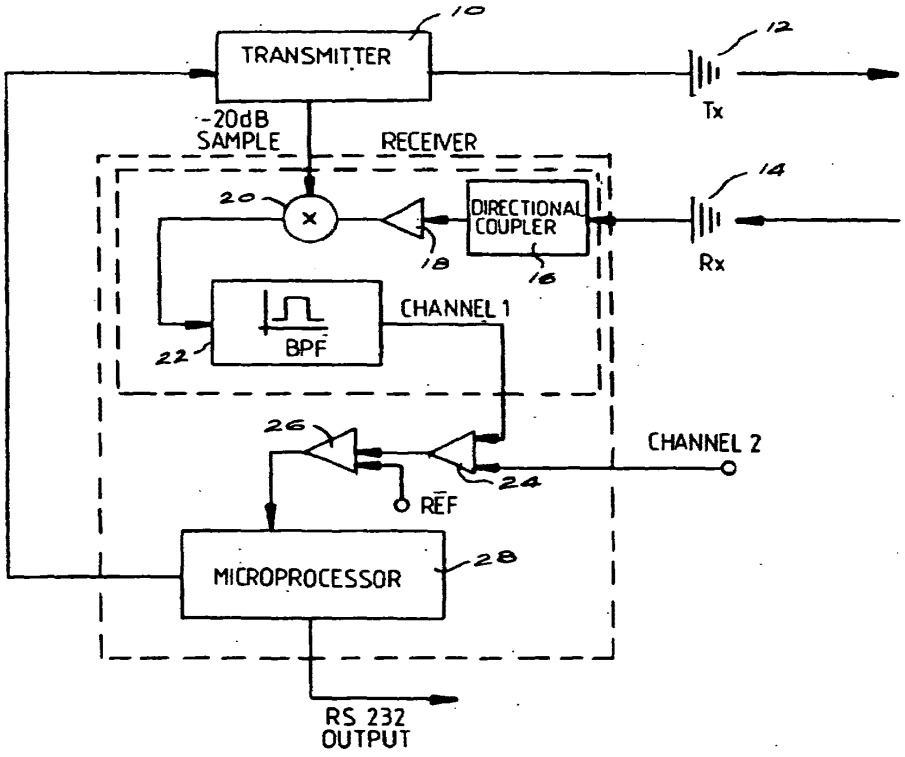

4m (TYPICAL)
RF ENERGY (CW)
READER
TRANSPONDER
CODED RF SIGNAL

Fig 2


10
TRANSMITTER
12
Tx
-20dB
SAMPLE
RECEIVER
14
20
DIRECTIONAL
COUPLER
18
16
Rx
CHANNEL 1
BPF
22
26
CHANNEL 2
24
REF
MICROPROCESSOR
28
RS 232
OUTPUT

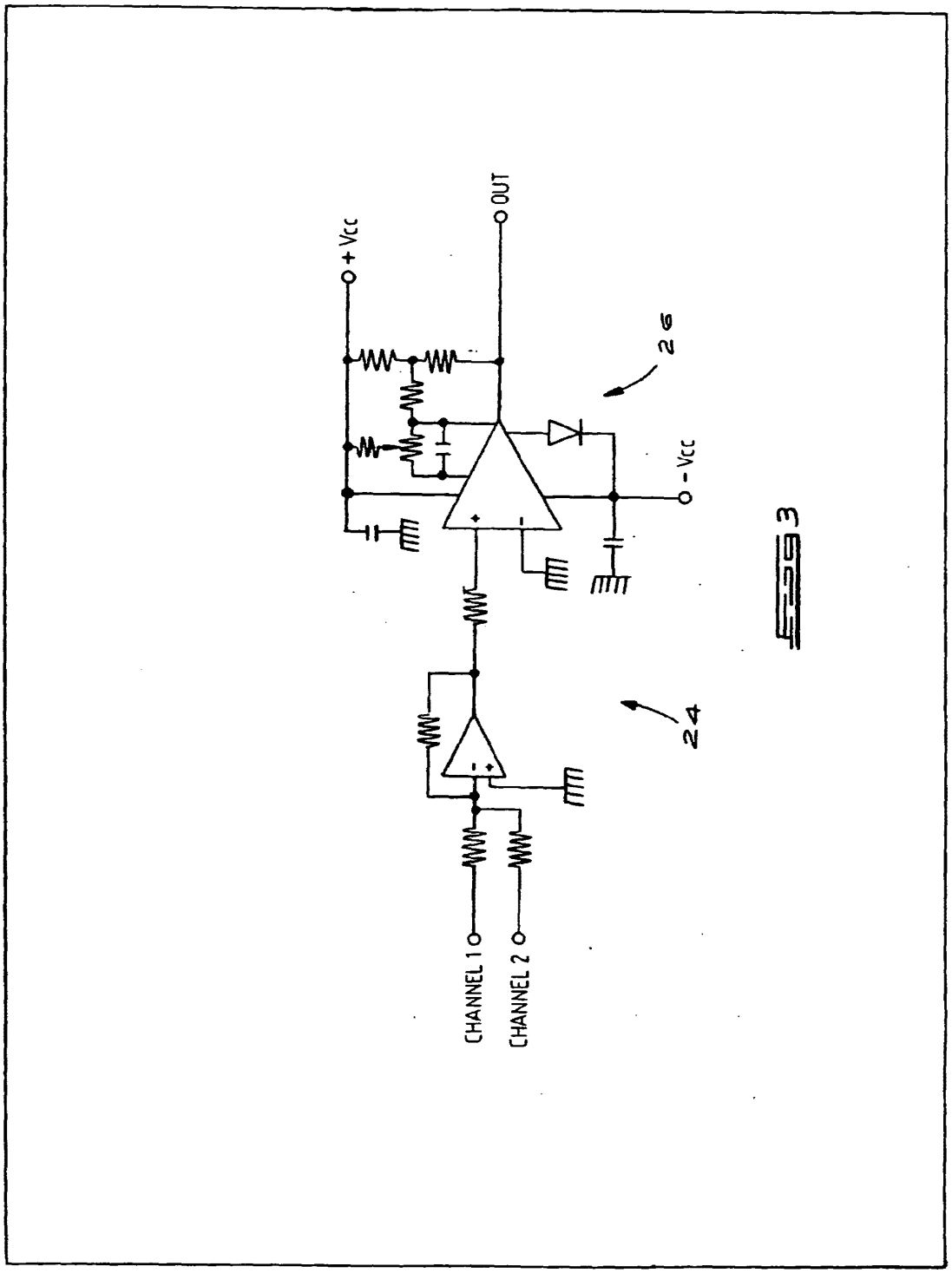


Fig 3

Fig 4

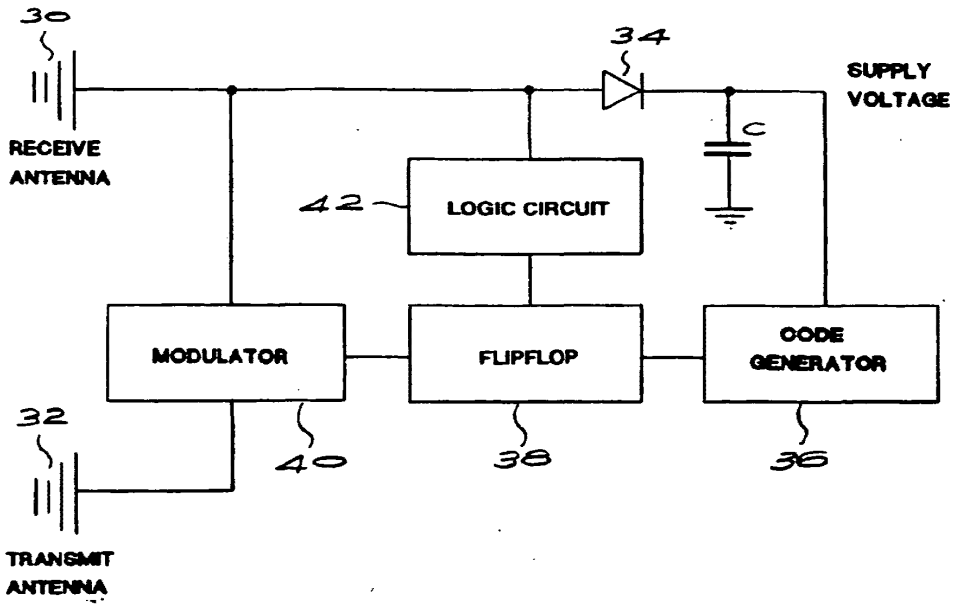
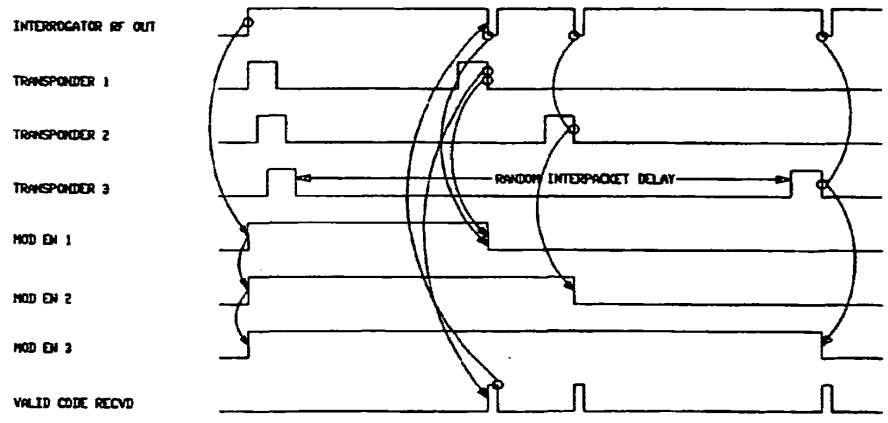

30
34
SUPPLY VOLTAGE
RECEIVE ANTENNA
C
42
LOGIC CIRCUIT
MODULATOR
FLIPFLOP
CODE GENERATOR
32
40
38
36
TRANSMIT ANTENNA

Fig 5


INTERROGATOR RF OUT
TRANSPONDER 1
TRANSPONDER 2
TRANSPONDER 3
MOD EN 1
MOD EN 2
MOD EN 3
VALID CODE RECVD
RANDOM INTERPACKET DELAY

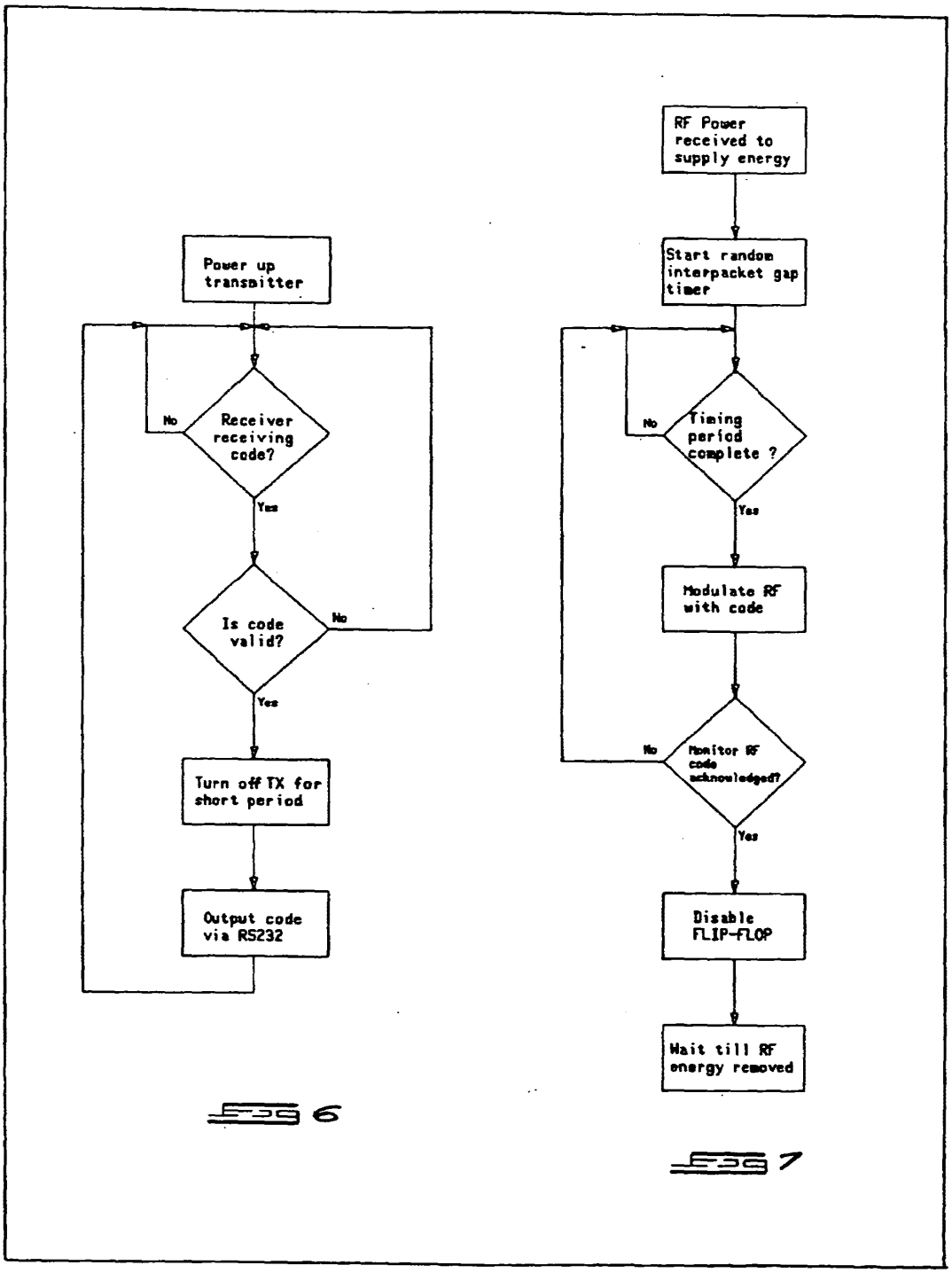
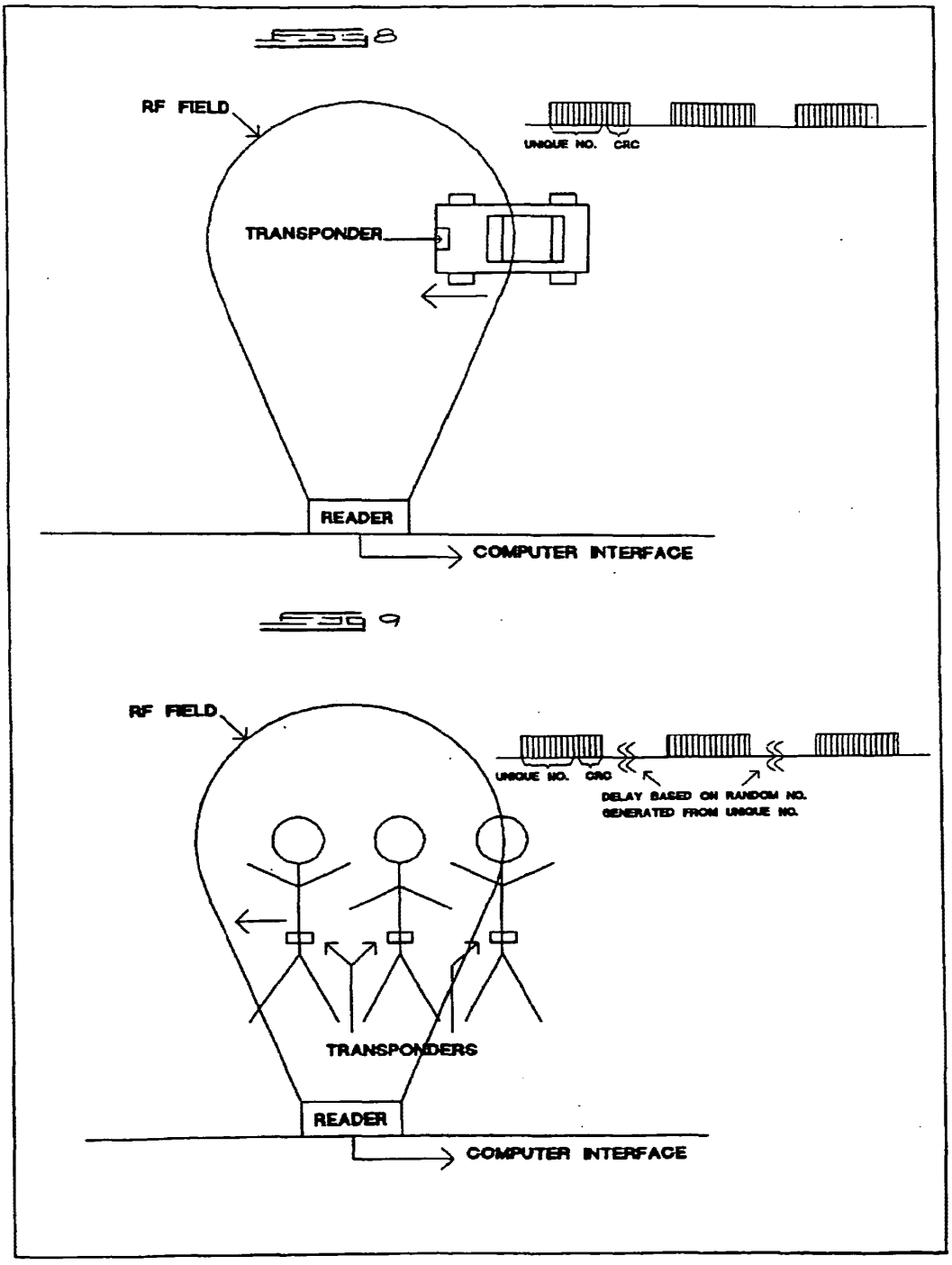

Power up transmitter
Receiver receiving code?
No
Yes
Is code valid?
No
Yes
Turn off TX for short period
Output code via RS232
RF Power received to supply energy
Start random interpacket gap timer
Timing period complete ?
No
Yes
Modulate RF with code
Monitor RF code acknowledged?
No
Yes
Disable FLIP-FLOP
Wait till RF energy removed

FIG 6

FIG 7


RF FIELD
UNIQUE NO.
CRC
TRANSPONDER
READER
COMPUTER INTERFACE
RF FIELD
UNIQUE NO.
CRC
DELAY BASED ON RANDOM NO. GENERATED FROM UNIQUE NO.
TRANSPONDERS
READER
COMPUTER INTERFACE

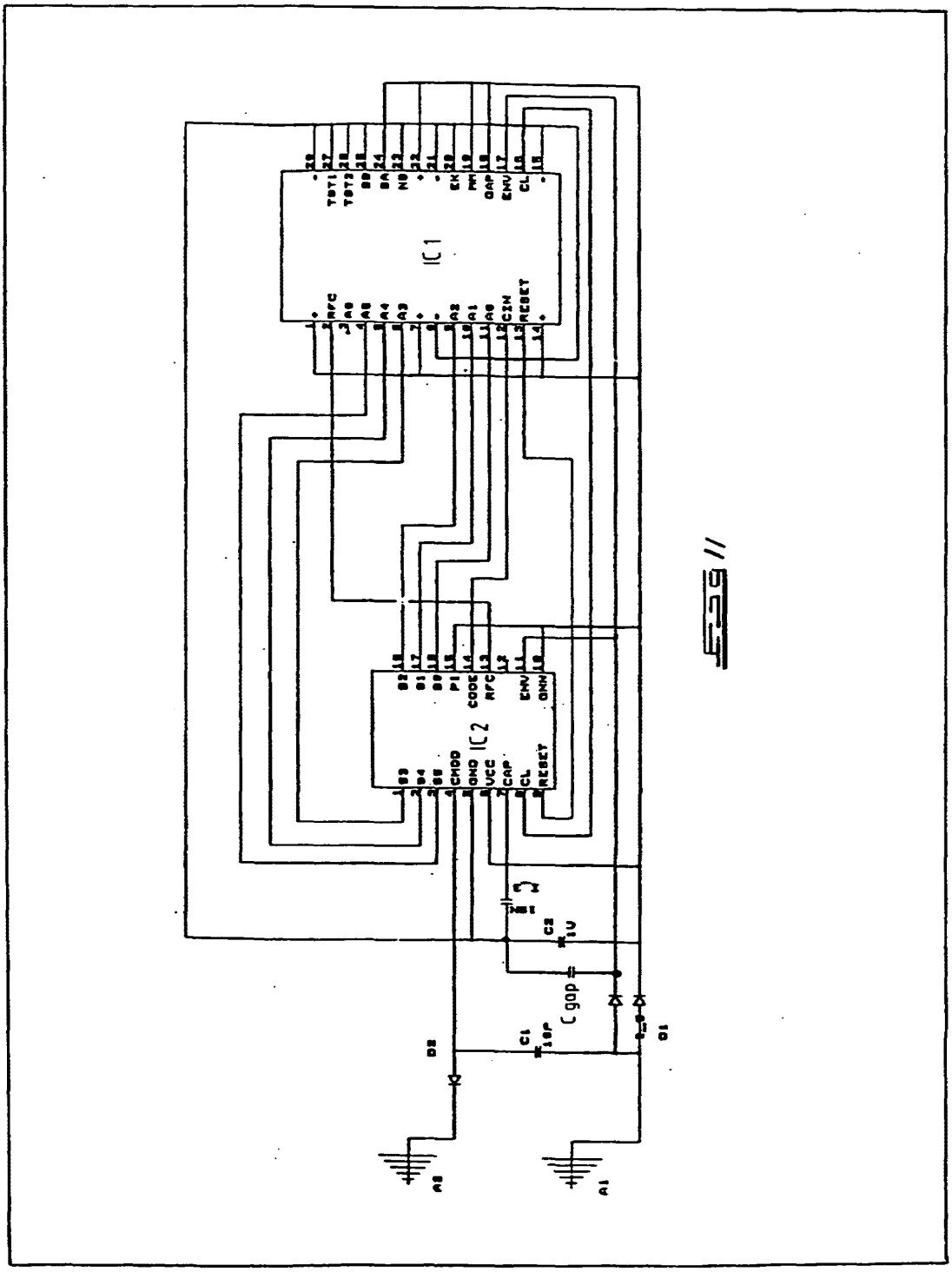
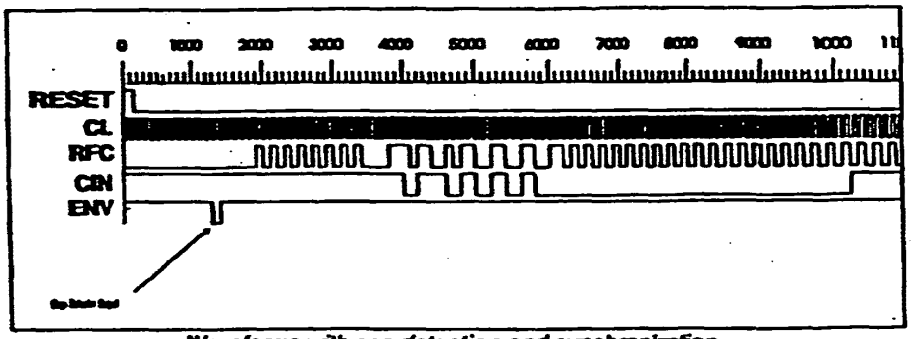
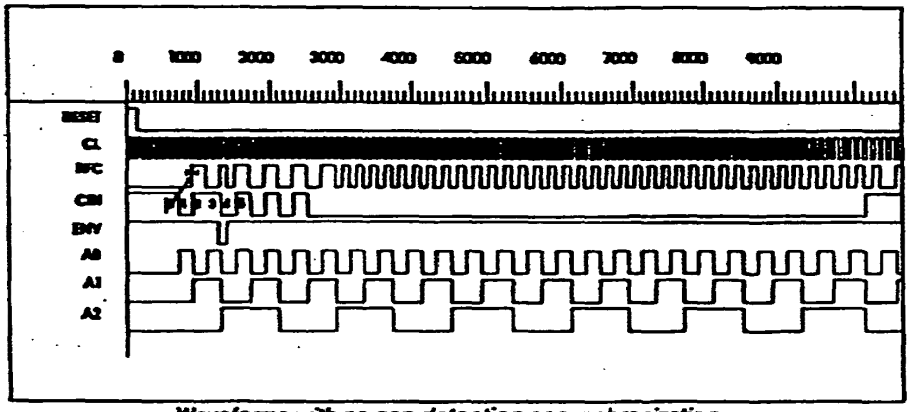


Fig 5



Waveforms with gap detection and synchronization

FIG 12



Waveforms with no gap detection or synchronization

FIG 13

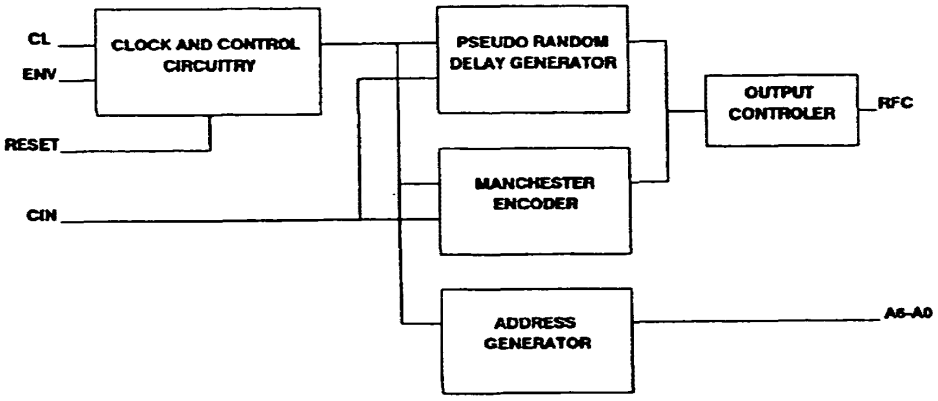


FIG 10

SB	SA	Max. slots between transmissions
0	0	0
0	1	16
1	0	128
1	1	1024

FIG 14

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(54) **Electronic identification system.**

(57) An identification system comprises an interrogator and a number of transponders. The interrogator includes a transmitter (10) for transmitting an interrogation signal to the transponder, and a receiver (16,18,20,22) for receiving a response signal from the transponder. A micro-processor (28) identifies the transponder from data in the response signal. Each transponder comprises a receiving antenna (30) for receiving the interrogation signal, a code generator (36), a transmitting antenna (32), and a modulator (40) connected to the code generator. On receipt of the interrogation signal the transponder repeatedly transmits a response signal containing data which identifies the transponder. The interrogator detects successful identification of any transponder and briefly interrupts the interrogation signal to indicate the successful identification. Each transponder includes a logic circuit (42) responsive to a respective interruption in the interrogation signal to cease transmission of its own response signal.

EP 0 494 114 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 92 30 0041

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 301 127 (TEXAS INSTRUMENTS DEUTSCHLAND) 1 February 1989	1-3,5,8, 9,11, 16-18,20	G07C9/00 G06K7/08
A	* the whole document *	10,13, 19,23	
A	EP-A-0 161 779 (SENELCO LTD) 21 November 1985 * page 2, line 16 - page 7, line 3 * * page 12, line 4 - line 21; figures *	1-6, 8-17,21 23	
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	29 OCTOBER 1992	RAKOTON DRAJAONA C.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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G06F 17/60

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G4T TAE

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(54) Abstract Title
System and method for customer recognition

(57) An electronic shopping system is provided for customer recognition using wireless identification and visual data transmission to point-of-sale terminals and other terminal types located in a commercial establishment. A customer's visual image is taken by camera 24 as a customer enters the establishment and, that customer's identification number is obtained from a customer identification card 10 via interrogator antenna 14. The visual image data is bundled with the customer's demographic profile data, transaction history data and the customer's current accrued store loyalty or incentive points into a customer data record at control unit 20 or network server 28. The customer data record is forwarded to point-of-sale terminals 30, store workstations 32, mobile terminals 34, or other I/O devices capable of displaying multiple customer records. The establishment staff is able to access each of the customer records in order to visually identify customers as they enter the establishment, without the customers needing to announce themselves or otherwise advertise their presence. A customer's visual image can also be acquired as a customer accesses a check-in kiosk terminal prior to beginning a shopping excursion. The acquired customer visual image is bundled with customer preference data and made available to the establishment's staff for visual recognition of each individual customer. Preferably, inlet/outlet sensors 16 are provided at an entrance gate 12.

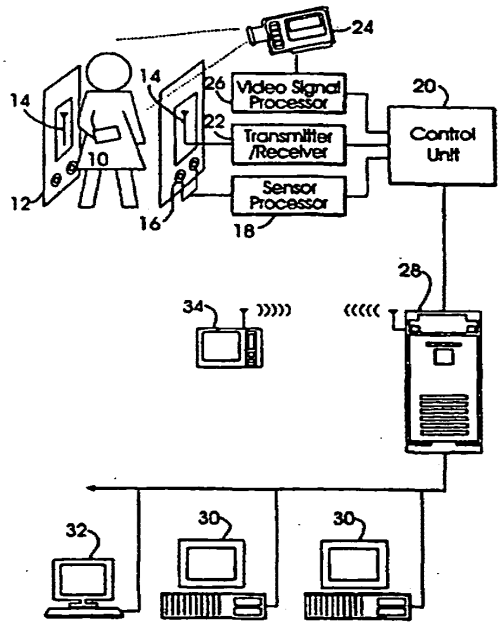

FIG. 1

GB 2 342 208 A

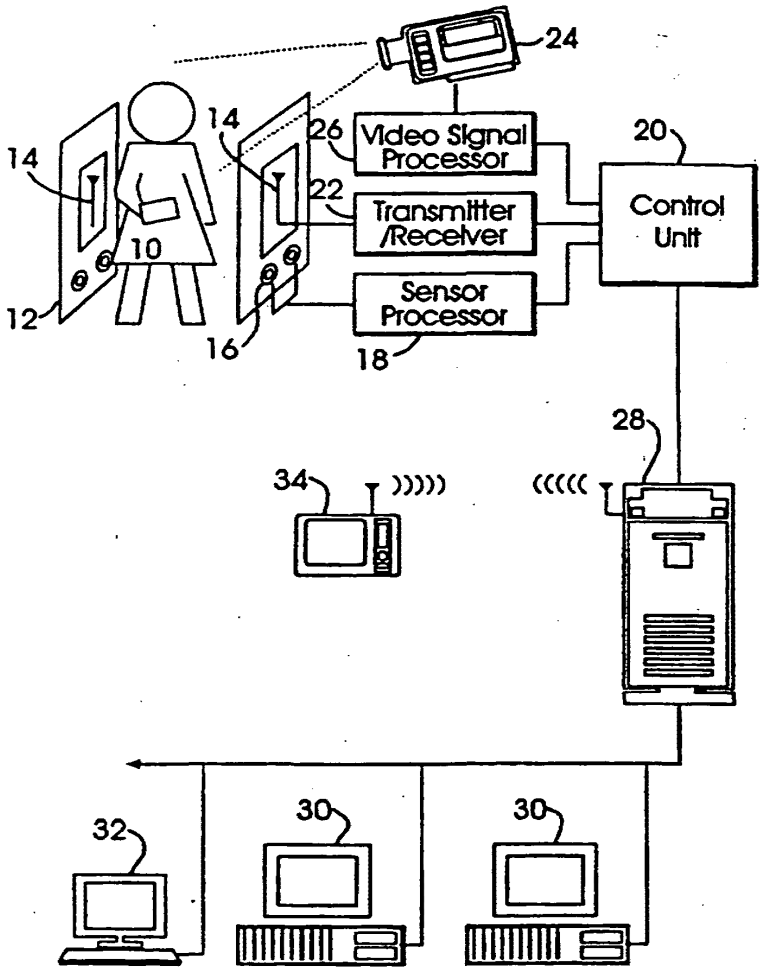
24
14
14
26
Video Signal Processor
20
22
Transmitter /Receiver
Control Unit
10
12
16
Sensor Processor
18
28
34
32
30
30

FIG. 1

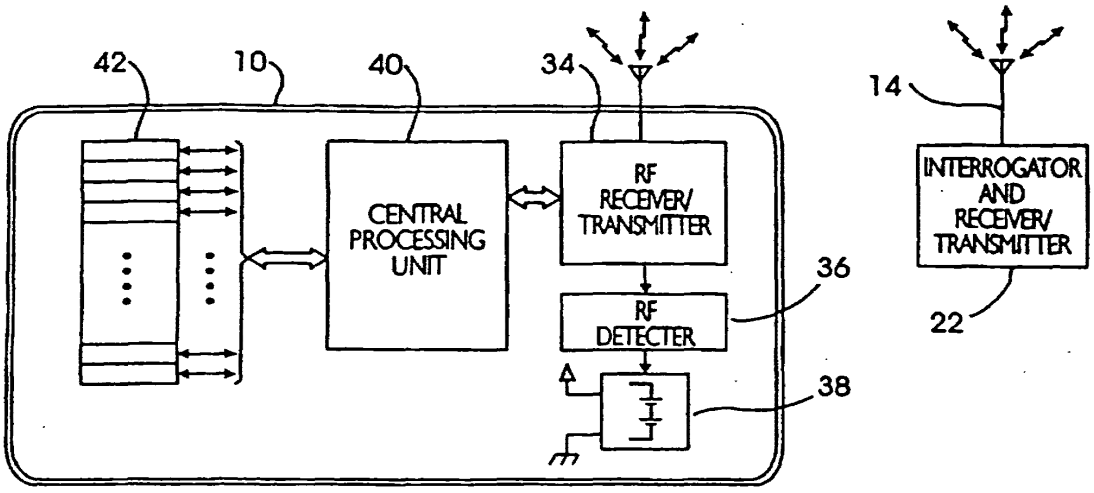
42
10
40
34
14
CENTRAL PROCESSING UNIT
RF RECEIVER/ TRANSMITTER
INTERROGATOR AND RECEIVER/ TRANSMITTER
36
RF DETECTER
22
38

FIG. 2

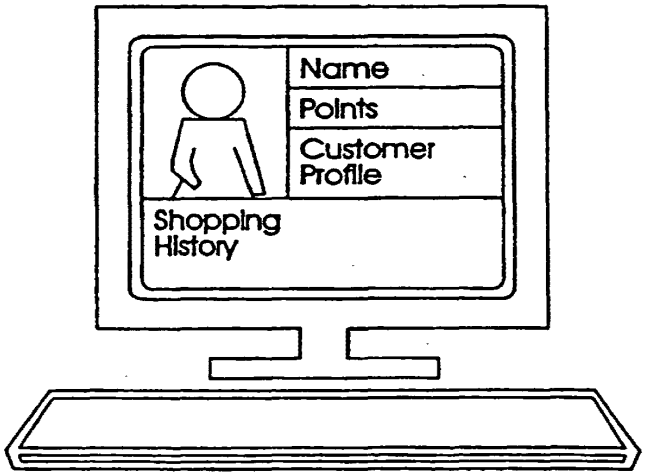
Name
Points
Customer Profile
Shopping History

FIG. 5

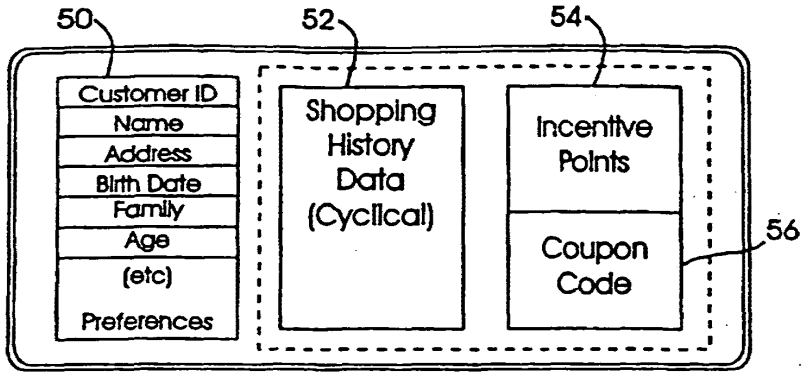
50
52
54
Customer ID
Name
Address
Birth Date
Family
Age
(etc)
Preferences
Shopping History Data (Cyclical)
Incentive Points
Coupon Code
56

FIG. 3

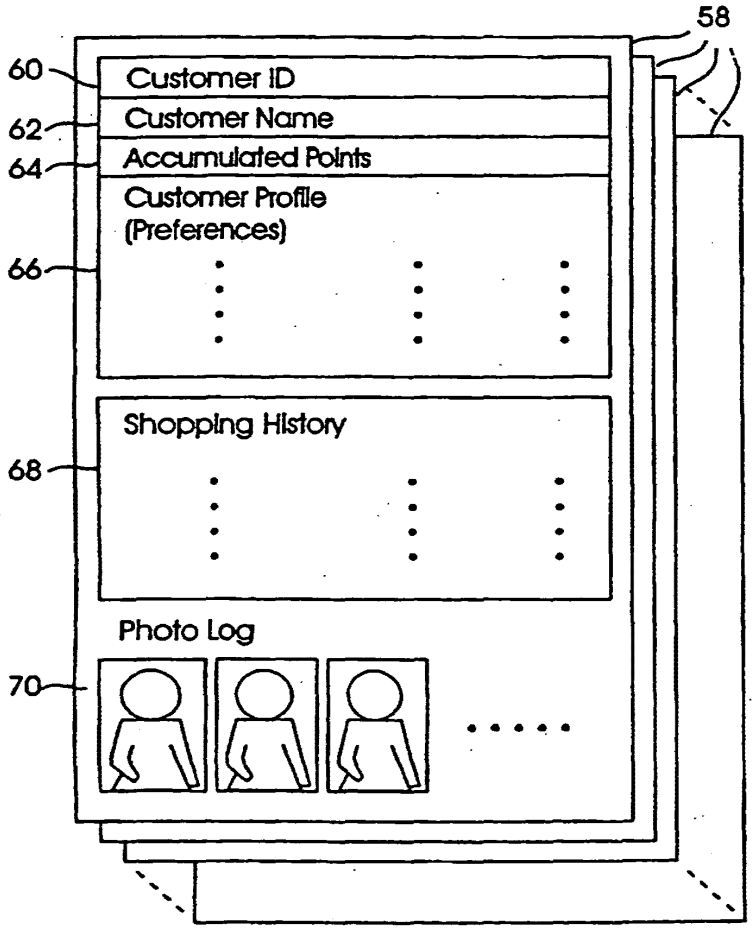
58
60
Customer ID
62
Customer Name
64
Accumulated Points
Customer Profile (Preferences)
66
Shopping History
68
Photo Log
70

FIG. 4

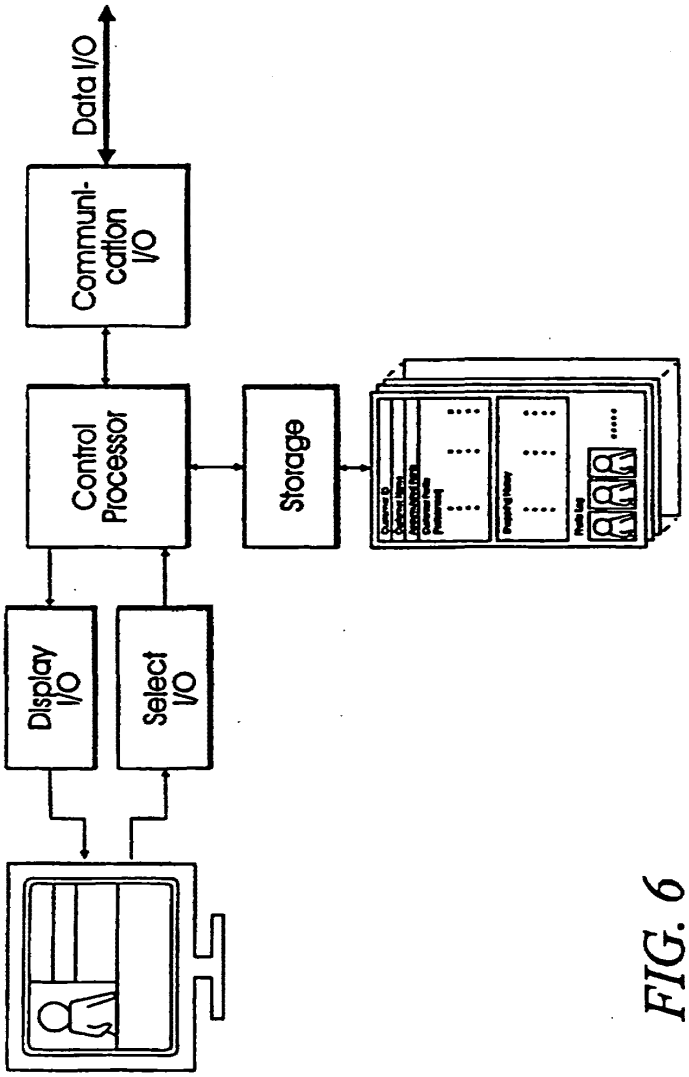
Data I/O
Communi-cation I/O
Control Processor
Storage
Display I/O
Select I/O

FIG. 6

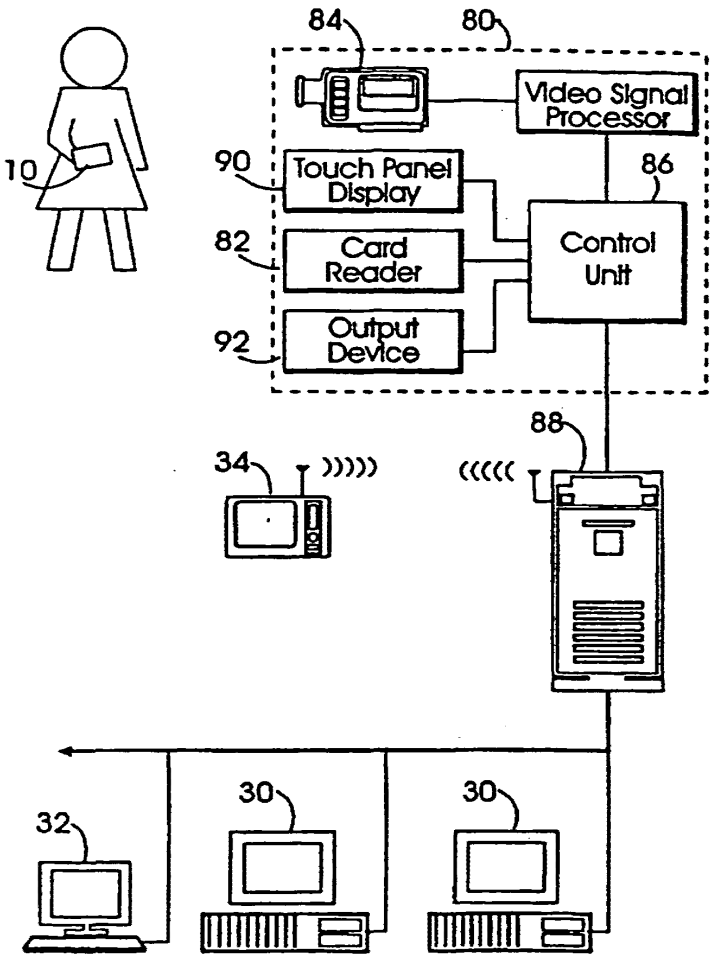
84
80
Video Signal Processor
10
90
Touch Panel Display
86
82
Card Reader
Control Unit
92
Output Device
88
34
30
30
32

FIG. 7

SYSTEM AND METHOD FOR CUSTOMER RECOGNITION

The present invention relates generally to electronic systems for facilitating recognition of customers in a retail or service establishment, by staff of that establishment.

Contemporary retail stores compete fiercely to establish and maintain the store loyalty of their present customers and to attract new customers to their stores by offering various degrees of personalized service which is adapted to meet the particular expectations and needs of each member of a highly diversified clientele. Establishing personalized service, matched to a particularized customer base, particularly in large department stores, requires the taking and maintaining of large amounts of data and the processing of such data so as to compile a shopping profile of each customer.

Most modern retail stores implement some form of computerization or electronic technology in their operations. This typically consists of using point-of-sale (POS) systems for automating checkout procedures and for assisting sales personnel to improve the efficiency of one-to-one merchandising and customer assistance. POS systems generally include one or more automated check-out terminals which are capable of sensing and interpreting a Universal Product Code (UPC) which is printed or

tagged on each item of merchandise to be purchased. Conventionally, a POS terminal, a kiosk terminal or a sales person's hand-held terminal is coupled to a computer system which recognizes and processes the UPC information. The database, accessible by the computer system, includes a list of merchandise items stocked by the store, a UPC for each of these items, and various types of merchandise identification information, including pricing, inventory, style, color, etc., associated with each UPC. When a customer is ready to make a purchase, a store clerk might use an automated POS terminal to read the UPC markings on each of the customer's selections. The computer interprets the UPC, accesses the database to determine the price for each item and maintains a running total of the purchase price.

Many stores also use computerized systems to convey pricing and other information about its merchandise to its customers and to acquire information about the kinds of merchandise purchased by a customer. Frequencies of purchase, the effect of advertising and in-store promotional activities, and other indicia of a customer's shopping habits. A retail store might use this information in order to control the costs of providing personalized services and products to its customers and to provide increased convenience and flexibility to the shopping experience.

Use of customer transaction information additionally might allow a retail store to establish and maintain a shopping history record of purchases by particular customers so as to award loyalty or incentive points to a customer based on the amount and frequency of their transactions. For example, a threshold number of loyalty or incentive points might qualify a customer for participation in a discount program or some similar promotion, in a manner similar to airlines awarding frequent-flyer mileage points for repeat customers. To improve the efficiency of a

store's one-to-one marketing efforts, a retailer often issues a "loyalty" card (customer ID card) to customers which are then requested to present that card during each shopping visit to the retailer.

However acquired, and however used, customer data is conventionally captured during purchase transactions at one or more of a retail store's POS terminals. The data might be transferred to a store platform computer system where it is processed and appended to a particular customer's shopping transaction history. Incentive or loyalty points might be awarded based on the total dollar volume of the transaction. Coupon codes might be analyzed for applicability and the purchase of promotional items might be analyzed to determine the effectiveness of recent advertising. An updated transaction record, including any loyalty or incentive point award, is provided to the POS terminal for immediate applicability to a customer's purchases.

However, electronic shopping systems based on customer ID cards or data cards are most often configured such that the card is presented at a check out terminal in order to record the transaction and allocate any discounts or loyalty or incentive points to the appropriate customer. Accordingly, customer ID or data cards are only used to enhance the efficiency of a retail transaction after a customer has already selected which items they might wish to buy and has already made the purchase decision. Any customer loyalty or incentive system established by the retailer is only able to recognize a particular customer ID card at the checkout counter and could only contain information about items already considered for purchase.

Because of this inherent disadvantageous feature of contemporary ID or data card based electronic shopping systems, store clerks are not able to provide efficient shopping advice and personalized shopping assistance to customers because the

store clerks do not have ready access to a particular customer's transaction history until that customer presents their ID card at a checkout terminal. In order to provide shopping advice and personalized assistance, a store clerk must remember a customer's face and be able to recall that customer's merchandise preferences and some indication of recently purchased items.

In the case of large dollar volume purchasers (VIP customers) a retail store manager might want to personally assist that customer and host the customer's store visit from initially greeting the customer as they enter the store to facilitating their purchase transactions when they are ready to leave. However, it is very difficult to greet such a customer when they arrive at the store in the absence of any advance notice. It is also very difficult to locate such a customer within a store, particularly when the store is very large and has a multiplicity of floors and departments.

Many specialty retail stores attempt to resolve the difficult problem of identifying VIP customers at their time of arrival by stationing specially trained "greeters" at each of the entrances to the stores. Greeters are familiarized with various customers' faces and are able to alert management when a recognized VIP customer enters the store. A store or department manager might then choose to personally assist the VIP customer or, alternatively, introduce the customer to a particularly effective member of the sales force for further personalized service. This type of customer recognition approach, however, is extremely labor intensive and also rather inefficient. Customers can easily be overlooked during a busy period or might be overlooked by a temporary mental lapse on the part of a greeter.

Some retail stores have established an alternative method for recognizing the presence of certain customer types within a facility by establishing wireless customer ID interrogator units

at various locations throughout the facility. As a particular customer enters the radiation field established by an interrogator unit, the interrogator unit is able to identify the customer by accessing the customer's ID card. The customer ID is then transmitted to a store platform computer, for example where it is matched to a customer information entry in a customer database. The customer information might then be analyzed with respect to various threshold indicia, such as the number of loyalty or incentive points accrued to that customer, the customer's transaction frequency and the dollar volume of the customer's purchases. VIP customers can thus be identified as having entered the store and can also be identified as they move from department-to-department within the store.

Even though customer ID card and interrogator systems provide some degree of information to a retail store's workforce about the presence of a desirable customer within the store, such customers can only be located if they are within the interrogation field of an interrogator unit. Conventionally, these interrogator units are only found at store entrances and at a few additional strategic locations within the store. The coverage of such systems is therefore rather sparse. Additional interrogator systems might be added, but at a significantly increased cost. Regardless of the number of interrogator units disposed throughout a store, there still exists the problem of the store's workforce being unable to recognize a particular customer even though the sales force has been alerted that a customer is in the vicinity. If three or four people are all in the vicinity of an interrogator unit, the sales force must be able to recognize which of those people is the customer in question.

Accordingly, there exists a need for an electronic computerized system that is able to collect and store customer recognition information in real-time and make that information

available to a retail store's sales force, such that a store clerk is able to identify customers by sight and obtain customer profile and shopping preference information such that they are able to provide appropriate shopping assistance to that customer. Such a system should be able to determine when customers enter a store and also when they leave. It should be configured such that customer recognition and information data is easily accessible to a salespersons' in-store terminal so that recognition and transaction information may be readily read therefrom.

Embodiments of the invention provide a system which allows a commercial establishment's staff to obtain visual image data of particular customers at the time each customer enters the establishment. Customer recognition is accomplished by issuing each customer with an identification card (a customer ID) which identifies that customer as belonging to a particular commercial establishment's regular customer base. The cards are issued by the commercial establishment and customers are requested to carry the card with them when they patronize that establishment. Each ID card is made unique to each customer through the use of a customer ID number. As a customer enters a particular commercial establishment, the system according to the invention interrogates the customer ID card and accesses the customer ID number contained therein. At the same time, a videographic image is taken of the customer as they enter the establishment.

The customer ID number identifies and corresponds to a customer data record contained in a database hosted in an establishment's network server or host platform computer. The customer record includes the customer name and related customer

information, such as the customer's transactional history, personal profile information including purchase preferences, an accumulated loyalty or incentive point total, and the like. The related customer information is retrieved from the database using the customer ID as an identification key. The customer's name, related customer information and the customer's videographic image are bundled into a customer record and transmitted for display to in-store terminals in order that the establishment's staff is able to identify each customer by their photograph, without the customer having to announce themselves or otherwise affirmatively advertise their presence.

In one aspect of the invention, the customer ID card is a wireless ID card or ID tag that comprises a memory store which includes at least a customer ID and may include related customer information such as the customer's name, transactional history information, profile information, and accumulated loyalty or incentive point totals. The commercial establishment includes entrance gates provided with RF antenna and transceiver systems that are able to interrogate a customer ID card and, if valid, receive the customer ID and additional customer information contained therein. In response to receipt of a valid customer ID, each entrance gate further includes a videographic image collection means, such as a video camera, which captures videographic image of a customer as they enter the establishment. Customer data is bundled together with the customer videographic image and is further transmitted to in-store terminals coupled in a network configuration.

In an additional aspect of the present invention, the customer ID card might be a contact-type IC card, a magnetic stripe card, barcode card, barcode tag, wireless tag or a wireless card. The customer presents the ID card at a check-in kiosk terminal prior to beginning a shopping excursion. The kiosk terminal includes videographic image recording means, such

as a video camera, which captures a current videographic image of the customer. Customer profile information, preference data, transactional history information, and the like, is acquired either from the customer ID card or, alternatively, from a database of such information maintained by the commercial establishment. Each customer's customer related information is bundled together with their current videographic image into a customer data record. A customer data record is then forwarded to in-store terminals so that the establishment's staff is able to recognize and identify a customer as they enter the establishment without the need for the customer to otherwise affirmatively announce their presence.

In an additional aspect of the present invention, a particular customer data record includes a set of historical visual images along with the customer's transactional history, personal preferences, etc. In the case where the customer cannot be recognized or identified from the videographic image taken by the camera during their entrance into an establishment, a substitute videographic image is accessed from the image store and substituted into the customer's data record in each in-store terminal. In this manner, a customer may still be recognized and identified, even if their face, features, clothing, and the like, were obscured for any reason while they entered the establishment. Comparison of a current customer videographic image to that customer's videographic image when their customer ID card was issued also functions to promote card security. An unauthorized user of a particular customer's ID card can be readily identified by merely comparing the original videographic image to the face and features of the person presenting the ID card.

When a customer carrying a valid customer ID card leaves the establishment, the system according to the invention senses their exit, interrogates the ID card, receives the customer

identification number and causes the in-store terminals to delete that customer's record from temporary storage. Thus, only records of customers, carrying a valid customer ID card, that are actually in the establishment, are maintained in temporary storage on each of the in-store terminals. Valuable memory storage space is thus conserved as well as the need for an establishment's staff to maintain an awareness of the presence of the large number of potentially important customers.

In addition to promoting customer recognition and identification, the customer ID card is further useful in assisting each customer in making purchase transactions. The customer ID card is advantageously used in connection with a customer assistance or kiosk terminal which is able to develop and display various personalized assistance recommendations based on an analysis of demographic information, transaction history, and customer profile data read from the customer's ID card, or combination of an ID card and customer data maintained in a database in a store server or host computer. Additionally, each customer's shopping history and personal profile data is processed by an establishment's in-store terminals to thereby develop promotional item recommendations based on a customer's most recent transactions, and to make recommendations for particular co-ordinated items that might match an item recently purchased. In addition, based on each customer's data record, the commercial establishment is able to determine that a particular customer has not made any purchases of items falling within particular categories and is therefore able to generate one-on-one marketing programs specifically directed to that customer in order to remedy the deficiency.

These and other features, aspects and advantages of the present invention will be more fully understood when considered with respect to the following detailed description, appended claims and accompanying drawings wherein:

FIG. 1 is an exemplary simplified semi-schematic block diagram of a first embodiment of a customer recognition system in accordance with the present invention;

FIG. 2 is an exemplary semi-schematic block diagram of a wireless interrogation system including a customer identification IC card for use with the customer recognition system of FIG. 1;

FIG. 3 is an exemplary semi-schematic block diagram of the information storage layout of a customer identification IC card for use with the customer recognition system of FIG. 1;

FIG. 4 is a semi-schematic, conceptual layout diagram detailing the organization of a customer identification, customer information and loyalty system database in accordance with the invention;

FIG. 5 is an exemplary semi-schematic block diagram of an in-store terminal depicting a recognized customer and their associated information;

FIG. 6 is an exemplary semi-schematic block diagram of the construction of an exemplary in-store terminal;

FIG. 7 is an exemplary simplified semi-schematic block diagram of a second embodiment of a customer recognition system, implemented as a check-in kiosk terminal in accordance with the present invention.

In general terms, the present invention is directed to a particular system and method by which a particular customer of

a commercial establishment, such as a retail department store, a hotel, restaurant, financial institution, and the like, is able to be remotely identified as they enter a commercial establishment and whereby the establishment's personnel are alerted to the presence of the customer in a manner allowing them to readily recognize the customer. In addition to providing customer recognition features, the system matches a contemporary videographic image of the customer with a database file containing a historical record of that customer's transactional activity, personal preference information and demographic data. Personal history information relating to that customer is provided to the establishment's personnel making it possible for such personnel to provide appropriate assistance to customers on an immediate basis.

Videographic image data for each customer is made available to the establishment's personnel, and makes it possible for them to recognize and greet each customer on a personal basis. Customers are recognized immediately, by sight, before any transaction is effected. A special customer, such as one who makes large volume purchases, or who has accumulated a large loyalty incentive point award balance, may be looked-for by store management, or senior sales staff, upon their entry into the establishment.. Such customers need not seek for assistance in effecting a transaction. Rather, the system according to the invention, provides a means for assistance to seek for the customer.

In its most general form, the invention contemplates each customer carrying a specially issued customer ID card which is able to be interrogated by wireless interrogation means as the customer enters a retail, or other, establishment. Upon interrogation, the customer ID card automatically responds and provides the system with at least a customer identification number (a customer ID) that is unique to that particular

customer. Once the customer ID is recognized by the system, a videographic image is taken of the customer, and an alert notification is provided to various point-of-sale terminals, store workstation terminals, mobile terminals, and the like, which might populate the establishment. The alert notification might take a variety of forms, and be effected in a variety of ways, but however made, the alert informs the establishment's staff of the presence of the customer. The customer's current videographic image is made available to the establishment staff so that they can recognize the customer without regard to any changes in that customer's personal appearance.

In addition to providing a customer ID in response to an interrogation signal, the customer ID card might also be configured to transmit pertinent data relating to the customer such as the customer's name and demographic profile information, and that customer's shopping transaction history information along with accrued loyalty or incentive points. Demographic profile information, such as a customer's family status, age, gender, and various personnel merchandise preferences such as merchandise color, clothing style, a customer's hair, eye and skin color, preferred trade or brand names, and the like, are all particularly useful to a commercial establishment in determining how best to provide prompt, effective personalized services to a customer considering a transaction. Various items of merchandise being considered for purchase might be compared to previously purchased items and to a customer's physical characteristics, in order to provide a basis for deciding whether or not the considered item would appropriately match the, for example, color and style characteristics of the previously purchased item.

As will be described in greater detail below, customer profile and demographic data might be incorporated into the customer ID card's memory storage and transmitted to a store

server in response to initial interrogation by the system. Alternatively, this information might be maintained in a central database residing in the server, or a central host computer system. A personal profile, demographic data and transactional history record, for each customer, is identified to each customer's personal ID. As that customer enters the establishment, and provides a customer ID in response to interrogation, the ID is matched to that customer's data record, the data is retrieved, and the data record, along with the customer's current videographic image, is forwarded to the floor terminals for use by the staff.

Thus, customer recognition information, along with customer specific preference information, whether received from a wireless customer ID card or from an establishment's server system, are provided to in-store personnel and enable the in-store personnel to identify important, or VIP, customers as soon as they enter a particular establishment. In-store personnel are able to greet a customer with the customer's name and are able to provide appropriate shopping advice and determine what types of promotional items might be presented to this particular customer on the basis of the received customer information.

The system and method according to the invention further allows a transaction history database to be updated and maintained in real-time, thus making a customer's most recent transaction data available to the establishment for the purpose of computing loyalty or incentive points based on a running total of a particular customer's purchases, allocation of in-store promotional coupons, and the like. The system and method according to the invention provides a customer with a convenient, transportable means for conveying accurate shopping transaction data from point-to-point in an multi-department commercial establishment or between stores in a chain. Access to real-time customer transaction information allows a retail facility to use

a customer's latest transaction information for promotional purposes and/or providing prompt, effective personalized recommendation services to a customer considering a transaction.

For in-store shopping, the system and method according to the invention contemplates the storage of a customer's personal information, demographic profile and shopping transaction history data in a convenient and readily transportable form, such as a credit card shaped, smart card-like customer ID card which a customer is able to use to interface with various in-store POS or hand-held terminals when making a purchase transaction. Once a transaction is completed, the transaction data, including the name and other identification information for each item, the price for each item and any other information which is pertinent to a commercial establishment's promotional considerations, is entered into a shopping transaction history file which might be further replicated on the customer's ID card. Item identification information includes such identification indicia that a store's sales personnel might use at some later date in order to fully identify a merchandise item or transaction by its various characteristics. Once this latest transaction information is entered into a customer's transaction data file, the customer may visit other departments in a multi-department store or may visit other stores in a chain and use their ID card to effect other, additional transactions.

It will be appreciated that a retail store or other commercial establishment equipped with the system and method of the present invention, is able to provide a significantly enhanced degree of personalized service to customers that make their purchase transactions using such an ID card. Customer loyalty is promoted and enhanced by providing an effective means for immediately allocating incentive award points, store coupons, and the like, towards a particular purchase. In addition, such a system and method provides for effective, real-time collection

of recent purchased data so that promotional recommendations and compatibility evaluations can be performed with respect to purchase decisions contemplated during subsequent shopping activities.

Considering the foregoing summary of the features of the system and method of the present invention, FIG. 1 depicts a simplified, semi-schematic block diagram of an exemplary embodiment of such a system for recognizing particular customers through wireless identification and visual data transmission. In the exemplary embodiment of FIG. 1, customer recognition is supported by issuing each customer with a smart card-like customer identification card (a customer ID card) 10 suitable for use in connection with the customer recognition system. The customer ID card 10 suitably comprises a personal memory card or data card which looks and feels much like an ordinary credit card and which is able to at least transmit, and preferably transmit and receive, information without recourse to contacts or wires (i.e., wireless transmission). Each customer ID card includes an associated RF receiver/transmitter which communicates customer ID signals and optional data information in response to being interrogated or activated by an RF interrogation system located at the entrance/exit of a commercial establishment.

The customer ID card 10 might also be suitably configured as an ordinary credit card, or other form of personal property, which incorporates an integrated circuit wireless tag chip. The wireless tag is able to function in the same manner as a dedicated wireless customer ID card. The tag might be configured to only transmit a customer ID code upon interrogation by the system, or might be configured to support full two-way wireless communication at the option of the system designer.

However configured, the RF receiver/transmitter of the customer ID card suitably communicates information over an RF frequency band in the range of from about 900 MHz to about 2.4

GHz and may be interrogated by and provide information to any one of a multiplicity of interrogation systems disposed at various entrances or exits throughout the store. Preferably, the RF receiver/transmitter communicates information at an RF frequency of about 2.4 GHz.

As a customer, carrying an appropriate customer ID card (or tag) 10 enters an establishment, they must traverse an entrance/exit gate 12 thereby passing in proximity to an interrogator antenna 14. In a manner well understood by those having skill in the art, the interrogator antenna 14 interacts with the customer ID card 10 and causes the customer ID card to transmit, at least, a customer identification number in response to the interrogation signal. The interrogation sequence might be fully automatic, with an interrogation signal being continuously issued by the antenna 14 or the interrogation sequence might be initiated when a customer activates a sensor 16 disposed in the entrance/exit gate 12. The sensor 16 might be a simple motion sensor or might be an interruptible light beam, an interruptible RF field, and the like. The sensor 16 functions as an IN/OUT sensor and provides a signal to a sensor processor circuit 18 each time a person or persons pass by the sensor to activate it. The sensor processor, in response, issues a signal to a central control unit 20, such as a central processing unit, a microprocessor, or the like which, in a manner to be described in greater detail below, determines whether the person activating the sensor 16 is entering or exiting the establishment.

As a person or persons activates the sensor 16, the sensor processor 18 causes the control unit 20 to issue a signal to a video signal processor circuit 26, or the sensor processor 18 issues a signal directly to the video signal processor, in turn, causing a video camera 24 to make a videographic record of the face and upper body portion of the person or persons activating

the sensor. The videocamera 24 is typically positioned in a fixed location, such that its lens image is framed to cover the area of the entrance/exit gate 12. The videocamera 24 is, thus, able to take videographic image of anyone in close physical proximity to the sensor 16. Videographic image data is processed by the video signal processor circuit 26 and is subsequently routed through the central control unit 20 to a computer network server 28 which, in a manner to be described in greater detail below, bundles the customer's videographic image with particular customer related data pertinent to the customer whose image has just been captured.

If a customer is carrying an appropriate customer ID card (or ID tag) passes in proximity to the antenna 14, the customer ID card 10 transmits at least a unique customer identification number, which is received by the antenna 14 and directed, in turn, to the transmitter/receiver circuit 22. In the case where customer profile, preference and transactional history data is transmitted to the system by a customer's ID card 10, the control unit 20, or the network server 28 bundles this information together with the customer's videographic image data and provides the resulting customer recognition information and data set, as a complete record, to various types of sales and/or service assistance terminals disposed throughout the establishment. Such terminals might suitably comprise point-of-sale terminals 30 if the establishment is a retail facility, for example, or might include work stations 32 or mobile terminals 34 depending on the nature of the establishment and the particular needs of its staff. Regardless of the type of terminals provided, it is sufficient that each of such terminals have the ability to display videographic image data along with text information describing a customer's profile, preferences, demographic and transactional history data.

Returning briefly now to the entrance/exit gate 12, it will be understood that each customer's ID will be transmitted to the antenna 14 and received by the system, each time the customer passes through the entrance/exit gate 12, such as when the customer is leaving the establishment, as well as entering. The system according to the invention is able to differentiate the in/out sensor signals in order to determine whether a customer is entering or leaving by comparing the received customer ID signal to a list of already-received customer IDs. Once a particular customer enters the establishment for the first time, and transmits their unique customer ID, a record of each customer ID is maintained in either the central control unit 20 or in a memory location comprising the network server 28, connected to the central control unit. That customer ID is maintained in memory until such time as that particular customer decides to leave the establishment. Therefore, as each customer passes by the in/out sensors 16 comprising the entrance/exit gate 12, their customer ID number is received by the transmitter/receiver circuit 22 of the system. The received customer ID is compared to the contents of the customer ID table, or record, maintained in memory, to determine if the received customer ID matches any entry therein. If the received customer ID number matches an entry in the table, it is assumed that the corresponding customer has previously entered the store and, is, therefore, leaving. In response, that customer ID number is deleted from the customer ID table and that customer's videographic image (taken when that customer activated the in/out sensor 16) is deleted from the system.

In contrast, if the received customer ID number does not match a corresponding entry in the customer ID table, it is assumed that the customer is newly entering the establishment. In response, the central control unit 20 causes the customer's videographic image to be retained in the system and further

causes the videographic image to be bundled with that customer's personal information. In addition, the central control unit 20 enters that customer ID number into its table, or record, of customer ID numbers corresponding to customers that are currently present within the establishment. Thus, it can be said that the sensors 16 and the sensor processor circuit 18, in combination with the antenna 14, the transmitter/receiver circuit 22 and the central control unit 20, provide means for generating an IN signal when a particular customer enters an establishment and for generating an OUT signal when any particular customer exits the establishment. The IN and OUT signals are used by the central control unit 20 to either bundle the videographic image together with customer data, upon a customer's entering the store, or to delete the videographic image and related customer data upon a customer's leaving the establishment.

A particular feature of the system of the present invention is that videographic images are taken of all persons who enter, or leave, the establishment, regardless of whether or not they possess a customer ID card. If a particular customer is in possession of an appropriate customer ID card, then image and data processing proceed, with the relevant image being used by the system to identify the customer. Thus, it will be understood that the system according to the present invention provides a way of identifying and recognizing specific types of customers as they enter an establishment. This particular feature allows in-store personnel to recognize these certain types of customers even in a crowded environment. Also, the system according to the invention provides a way to recognize when such customers leave the store, thus ensuring that in-store sales personnel do not waste their time searching for VIP customers after they have left.

It should be noted, that the video camera 24 might be activated by receipt of a valid (not already received) customer

ID by the antenna 14. However, because the image frame of the videocamera is fixed in a particular location, it is more visually effective to trigger the video camera when a customer is in a specific location in the entrance/exit gate 12, i.e., by using the in/out sensor 16. Varying RF conditions often skew the distance at which a customer's ID card may be read by the antenna 14. For example, some customer's cards may be read when three feet, or more away from the antenna; some customer's cards must be adjacent the antenna before being correctly read. In addition, the customer ID signal strength might vary in accordance with how the ID card is being carried by the customer. For example, the ID card might be in a customer's back pocket, shirt pocket, or inside a handbag. Thus, different customers might be positioned very differently within the video frame if the video camera were being activated by receipt of a valid customer ID number. Thus, if this alternative is used, rather than using the signal from the in/out sensor 16, the video capture frame size must be adjusted accordingly.

It should also be noted, at this point, that the videographic image data taken by the video camera 24 might comprise either gray scale or color video data. Preferably, the videographic image data will be in color in order to adequately represent a customer's personal appearance, i.e., hair color, clothing color, and the like. Although the camera 24 is described as a video camera, it should be understood by those having skill in the art that the most typical implementation of the system according to the invention will comprise an apparatus to capture a still customer image rather than a full-motion video image. Accordingly, the camera 24 might comprise a digital still camera, a video camera or any other type of device that outputs a digital image.

As was described previously, the central control unit 20 functions to gather the customer ID information and videographic

image data and forward this information to various in-store terminals. In response to a determination that a sensor signal is an IN signal, the central control unit 20 might combine the received customer ID and videographic image data and directly provide these to the various in-store terminal units. Information transmission may be made directly between the central control unit 20 and respective ones of the various in-store terminal units, but is preferably made through an intermediary network server system 28. Because of its utility as a network server, the server 28 is directly coupled to each of its client POS terminals 30, workstations 32 and other terminal systems which have direct hard-wire connections made to the network bus. In addition, the network server 28 is easily configured to host an RF transceiver circuit such that it is able to communicate with a multiplicity of wireless remote terminals 34. Thus, it will be seen that the network server 28 might function either as a communication and/or transmission nexus for the central control unit 20, or as the primary memory host and information processing and routing center.

Turning briefly now to FIG. 2, there is depicted an exemplary wireless customer ID card suitable for use in connection with the customer recognition system of the present invention. As the customer ID card 10 receives an interrogation signal from an interrogation unit, an RF receiver/transmitter 14 activates an RF detector circuit 36 which, in turn, activates a power supply 38 such as a battery or capacitor discharge system. The power supply 38 provides operating power to a central processing unit 40 which controls read/write communications between the ID card 10 and the RF transmitter/receiver 22 provided in the interrogator unit. In order to save energy and prolong battery life, the ID card is normally in an off state. When radiated energy is received from an interrogator, the ID card's power supply is turned on when the card 10 is within a

certain radius of the radiation source (the antenna 14) of the interrogator unit. When the ID card is outside the energy radius of the interrogator, power to all the circuitry on the card is turned off, thereby extending the operating life of the power supply 38 if, for example, the power supply were a battery. A typical activation radius would normally be in the range of a few feet, but might be as large as five meters, depending on the radiative power of the interrogator in the RF receiver/transmitter 34 of the ID card 10.

As an ID card 10 is activated by the antenna 14 and RF transmitter/receiver 22 combination, and power is supplied to the central processing unit 40, the central processing unit accesses a memory store 42 and controls transmission of a customer identification code (a customer ID) or a customer ID and customer profile information by the card to the RF transmitter/receiver unit comprising the interrogator. The memory store 42 suitably comprises an integrated circuit memory, such as an electrically erasable field-programmable read-only memory (EEPROM) or a Flash ROM (FROM). The memory store 42 might also suitably include circuitry for inductively receiving an RF power signal provided by the interrogator, or might include circuitry for receiving battery power from the power supply unit 38 of the customer ID card 10. It should be noted that the central processing unit 40 operates to control operation of the ID card 10 in accordance with pre-programmed operating instructions. The operational code, or firmware for the central processing unit 40 is typically stored in and accessed from an on-chip instruction set ROM which is commonly included in almost all present day integrated circuit processors. It will be evident to one having skill in the art, that under certain circumstances, this on-chip instruction set ROM might, indeed, be used as the memory store 42, in place of a separate solution. The on-chip instruction set ROM would necessarily be required to

have a relatively large storage capacity in excess of that required to hold the processor's operating system instruction set. In addition, on-chip memory is typically implemented as non-erasable read-only-memory (ROM) in order to minimize cost. The non-erasable nature of this memory requires that the information stored therein be fixed in content. For this reason, a memory store 42 separate from the central processing unit 20 is a preferable solution.

As will be described in greater detail below, the size of the memory store 42 depends on the amount of information that is deemed appropriate for the ID card to hold. For example, in one particular embodiment of a customer ID card 10, the memory store 42 is configured to hold a 16 character customer ID which is accessed by the central processing unit 40 and provided to the RF receiver/transmitter 14 which transmits the customer ID to the RF transmitter/receiver portion of the interrogator unit. The customer ID information code is passed by the interrogator unit to a store platform computer or server where, in a manner to be described in greater detail below, it is matched to corresponding customer profile information contained in a database.

In its simplest form, the customer ID card 10 might be nothing more than a radio frequency (RF) tag that comprises a semi-conductor integrated circuit chip having logic, memory and radio frequency sub-circuit components. Semi-conductor chip is bonded to a substrate and is capable of receiving an RF signal through a flexible antenna that is electrically connected to the semi-conductor chip by thin-film connections formed on the substrate. The sub-circuit components, i.e., semiconductor chip, antenna and possibly a power supply are constructed in close proximity to one another such that no unwanted inductance is introduced into the circuit. The circuit uses a simple dipole, loop or folded dipole antenna which is bonded directly to the semiconductor chip, thus further ensuring proximity.

Having reference now to FIG. 3, there is depicted a conceptual diagram of the information storage layout of an exemplary customer ID card useful in practice of the present invention. A generally static information storage area 50 typically comprises a customer ID field which is used by the customer recognition system to identify particular customers on the basis of a unique identification code assigned to each customer when the card is issued. In addition to the customer ID field, the information storage area 50 optionally includes an allocated space which contains general demographic information relating to the specific customer. Such general demographic information would included a customer's name and current address, perhaps a telephone number, a customer's date-of-birth, information relating to the customer's family status, the number of children, and the like. Demographic profile information would also include a customer's merchandise brand preferences as well as personal preference information relating to clothing sizes, preferred colors and/or patterns. These general information records are common to nearly all conventional IC card types. Their record lengths and data structures are generally known beforehand and, while their order might vary from application to application, their formatting is generally fixed. It will be evident to those having skill in the art, that each of the allocated areas are able to be modified in the event that a customer's demographic or profile information should change, i.e., through marriage, an addition to the family, a move to a new address, and the like.

A second information storage area 52 is optionally allocated to the memory store of the IC card and comprises a recirculating information storage area into which a sequential shopping history list may be written which contains a transaction history of the latest items purchased at a particular store. Because of the need to efficiently allocate the limited amount of storage

capacity available to a memory store of an IC card, space allocated for the shopping history storage area 52 is sequentially and cyclically written such that once all of the entry spaces are filled, the next transaction entry is over-written onto the oldest shopping transaction record entry. Thus, the shopping history 52 is being constantly updated to reflect a customer's most recent shopping transactions. An up-to-date audit record of a customer's transaction history is accessible by merely interrogating and reviewing the shopping history storage area 52 of the IC card.

The exemplary customer ID card further comprises certain additional storage areas which are used to record and maintain information relating to, for example, incentive or loyalty point awards, i.e., an incentive point storage area 54, and to store information relating to any coupon codes or special classification metrics (gold card, superclub member, and the like) that might have been awarded to a customer in a special code storage area 56. It will be evident that additional storage areas might be defined in the customer ID card's memory store for recording and maintaining many other different types of information relating to a customer's transactional preferences and information that might be of use to a retail store in analyzing customer preferences, the effects of advertising, and any other information that might be needed to provide specialized, personalized service to various types of particular customers. The particular storage areas and their layouts, as depicted in FIG. 3, should therefore be viewed as exemplary and are in no way intended as limiting the scope of the present invention.

In an alternative embodiment, the various information records relating to particular customers need not be maintained in the memory storage area of a customer ID card, but rather might be maintained as a database of customer related files on

either a store server (28 of FIG. 1) or on a host platform computer to which various store servers might be connected. As illustrated in the embodiment of FIG. 4, the database comprises a series of customer specific records (identified generally at 58) each of which are headed and identified by a unique customer identification number (customer ID) 60 corresponding to the customer ID written to the customer ID card or ID tag. Following the customer ID, each customer data record might include an entry for the customer's name 62 and an entry for each customer's accumulated incentive or loyalty points 64. Also, each customer's record includes a customer profile entry 66 which would comprise the demographic information relating to a customer's date-of-birth, family status, age, gender and the like, as well as information relating to a customer's personal shopping preferences such as preferred brands, colors, patterns, sizes, etc.

In addition to the foregoing, each customer's record would include an information storage area into which a sequential shopping history list is written and which contains a transaction history of each customers visits to that establishment. A shopping or transaction history entry might be aptly described as comprising a sequence of lists, with each list including, for example, a date of purchase entry, a total purchase amount entry, and might advantageously include an item's trade or brand name, an item's generic name and an identification code that would allow an establishment's staff to determine a particular item's color, size, pattern or the like.

Each customer's data record advantageously includes a photo log consisting of a number of historical visual images of the customer. The first image recorded in the photo log might well be an image taken of the customer when that customer's ID card is first prepared and issued. Having such a visual image on record would also serve to maintain the security of customer ID

cards. The issue photo can be accessed by an establishment's staff and compared to the face of a person presenting a customer ID card while making a transaction. If the person presenting the ID card is not the same as the person shown in the photo log image record, the establishment's staff is able to make further inquiries and is able to detect unauthorized use of a customer ID card. The photo log image record is also useful in the event that the system is unable to capture a good video image of a customer as they enter the establishment. For example, the customer might have been looking away from the video camera (24 of FIG. 1) as they enter the establishment or, their face might have been obstructed by an article of clothing, or multiple people were taken at the same time, or the like. This being the case, the establishment's staff, having recourse to that customer's ID number, is able to access that customer's photo log and up-load an acceptable latest visual image.

In operation, a customer embarks on a shopping excursion taking along the customer ID card 10 which serves to identify that customer as they enter a particular establishment. As they enter a particular establishment, the system according to the invention is activated by the customer ID and visual image of the customer, along with the relevant customer data, is bundled by either a central control unit, a store server, or a host platform computer, and provided to various point-of-sale, mobile, or other terminals disposed throughout the sales floor for access by the establishment's staff. When the information is transmitted to a floor terminal, an alert notification might be flashed on the terminal screen, indicating that a customer, having a customer ID card, has entered the establishment. The alert notification might be no more than a text message indicating a "new customer" has arrived, or might be a message stating that "Mrs. Smith" has entered the store. Upon receipt of an alert notification, a staff member can then access the bundled information in order to

call-up the visual image of the new customer, as well as their profile and shopping history data. As indicated in FIG. 5, the entire customer record is available for display on the terminal screen, such that a staff member can gain an immediate impression about the customer and can review their transactional history and preference information in order to prepare to give that customer personalized service.

As illustrated in FIG. 6, each of the terminals are necessarily equipped with sufficient memory storage and display capacity so that a multiplicity of customer information records, including a visual image record, might be temporarily stored on each terminal. Alternatively, in order to provide for a lower cost terminal, a reduced set of information on each customer might be provided to the terminals with the major portion of data relating to each customer being stored in a store server. Upon demand, that portion of each customer's data being stored on the server, is made available to the terminal in conventional fashion. A staff member need only maintain a record of the names of all the customer ID carrying persons within the store. They are able to access each customer's data record, including their visual image, by merely selecting a particular customer name, for example. Customer names, or some other customer identification metric, might be ordered in accordance with a priority scheme that displays customer information in some form of priority order, such as order of importance, frequency of visits, purchase dollar amount, and the like. An establishment's staff is thus able to focus their efforts on those customers exhibiting a high degree of loyalty to that establishment. Because each customer record includes a visual image of the customer, including the customer's face, hair and a portion of their clothing, the establishment's staff can easily distinguish "Mr. Jones" from any one of a number of other customers in the store.

An additional advantageous feature of the present invention may be realized by integrating an RF antenna and a transmitter/receiver circuit into a hand held mobile terminal that can be easily carried and transported by a member of the establishment's sales staff. As a store clerk, carrying such a mobile terminal, approaches a particular customer carrying an appropriate customer ID card, the mobile terminal is configured to receive at least the customer ID number from the card. It should be noted that the mobile terminal might also be configured to receive not only the customer ID number but also the customer's name as well as other, customer specific additional information. Such additional customer information can also be accessed from the server upon receipt of the customer ID number by the mobile terminal. In this fashion, the store clerk's mobile terminal need not maintain a large customer specific information database in internal memory, which the store clerk periodically consults in order to determine whether there are any additions or deletions. The store clerk need only approach a customer which has been recognized on the basis of their videographic image data, in order to obtain all of that customer's personal data from the appropriate data set host machine. Even if a customer's ID card has not been read, and a customer's videographic image data has not been captured, at an entrance gate, a store clerk is able to obtain all of that customer's personal information data by merely approaching a particular customer who is carrying an appropriate ID card. This particular method may be implemented by retail facilities that do not host videographic image capture and an entrance gate wireless ID card interrogation unit and receiver.

The information referred to above allows a number of an establishment's staff to serve particular customers more effectively and in a more personalized and friendly manner. Staff members are able to greet a customer by name and are able

to discuss recently purchased items with that customer. Staff members are enabled to provide advice regarding contemplated purchases in accordance with each customer's individual profile and in accordance with recently purchased items. Staff members are further enabled to put customers at ease by entering into conversation with that customer about their family, their hobbies, and the like. Thus, as will be understood by those having skill in the art, the system according to the present invention provides an establishment staff with the means of identifying and recognizing particular customers immediately upon their entry into a commercial establishment and further provides the establishment's staff with a means for acquiring sufficient information about that customer to more effectively provide efficient and personalized service. Each customer is identified, recognized and personal service is prepared without that customer's needing to either announce themselves or having to make a transaction before the establishment is aware of their presence.

Turning now to FIG. 7, there is depicted a further embodiment of the system according to the present invention, in which a customer's visual image is acquired by a customer activated kiosk terminal 80. Kiosk terminals are becoming particularly prevalent in many commercial establishments, especially check-in kiosk terminals at grocery stores. Such check-in kiosk terminals are commonly implemented in order to provide certain valuable information to customers before they begin shopping. Kiosk terminals are able to tailor their informational display content to a particular customer's needs, once that customer has been identified through use of their customer ID card.

A typical kiosk terminal 80 would comprise a card reader 82 which is configured to read a customer ID card 10 which might be implemented as a magnetic stripe card, a contact-type IC card,

a contactless-type IC card or any other conventional form of ID card or ID tag that is able to be programmed with a customer identification number. As a customer enters an establishment, and accesses the check-in kiosk 80, the kiosk terminal might request the customer to insert or swipe their customer ID card 10 through the card reader 82 in order to identify that customer my means of their ID. In the case where a particular customer has not been issued a customer ID card, or that customer is not a member or participant of that establishment's incentive or loyalty program, the kiosk informational display defaults to a general information program configured for a member of the general public. If the customer has been issued with an ID card, inserting or swiping the ID card through the card reader 82 activates a digital camera 84 which takes a videographic image of the customer and transmits the videographic image, along with the customer ID, to either a system control unit 86 or a store server 88. The control unit 86 or store server 88 uses the customer ID to access that customer's information record contained in a database and bundles that information along with the customer's videographic image for transmission to point-of-sale terminals, mobile terminals, establishment work stations, and the like, in the same manner as described in connection with FIG. 1.

In addition to the card reader 82, camera 84 and control unit 86, each kiosk terminal 80 further includes an input device, such as a touch panel display 90 by means of which customers are able to access the various functions provided by the kiosk terminal. The input device need not be precisely a touch panel display 90 but might alternatively have a keyboard, an entry keypad, or any other conventional form of input device. An output device 92 might comprise a display screen, a printer, a speaker, any combination of the foregoing, or any other type of

output device suitable for providing information either visually or aurally to a particular user of the kiosk.

Once the check-in procedure has been completed, and the customer's visual image is bundled with the customer's data record, the users of the system are able to provide the same type of efficient and personalized service to that customer as was the case in the first embodiment of FIG. 1. A record is maintained on each of the establishment's floor terminals, of all kiosk accessed customers, possessing customer IDs that are present in the store. As a customer leaves a particular establishment, their customer ID is typically read and identified at a POS terminal, a check-out kiosk terminal, or some other form of check-out terminal, and is transmitted to the system's control unit (20 of FIG. 1 or 86 of FIG. 7) which, in turn, transfers this information to the in-store terminals. As the in-store terminals receive a check-out indication signal along with the customer ID, the relevant customer information pertaining to that customer is deleted from each terminal's temporary storage. However, in the case where a customer stops at and accesses multiple POS terminal in an establishment, such as in a department store and/or shopping center, relevant customer information may be retained until the store closes or until such time as a check-out terminal concludes that a customer is leaving the establishment.

Accordingly, there has been brought to the art of electronic shopping systems, a system and method that is able to allow particular customers to be recognized, using wireless identification and visual data transmission, without the need for those customers to announce themselves to an establishment's staff. Customers are identified in accordance with a customer ID which, in turn, corresponds to profile and transactional history information specific to that customer. An establishment's staff is able to affirmatively recognize a

customer by examining a videographic image of that customer, which was automatically captured at the time the customer entered the establishment. A customer's videographic image is bundled with their personalized data and made available to a multiplicity of in-store terminals for access by the establishment's staff. It will be appreciated that an electronic shopping system in accordance with the various embodiments of the invention can be constructed in whole or in part either from special purpose-built hardware or from general purpose computer system components which are controlled by a suitable application program.

While the invention has been described with respect to particular illustrated embodiments, those skilled in the art and technology to which the invention pertains will have no difficulty devising variations which in no way depart from the invention. For example, while the illustrated embodiments have been described in connection with a store server system, coupled to a local network, it will be appreciated that a distributed set of network servers could be employed to like effect and utility without departing from the present invention. In addition, the communication link or links employed between a customer ID card an interrogation or kiosk system, and between the system and a store server, might be either wired or wireless. In this regard, wireless communication, whether between an interrogator and customer ID card, or between an among the various components of the system, might be infrared as well as RF.

Moreover, although the invention has been described in the context of identifying important or VIP customers of retail stores, it may be applied to other categories of attendees at commercial establishments, such as people with physical handicaps or mobility problems, or people such as officials

or celebrities requiring special attention. Although primarily envisaged for use in an electronic shopping system, the invention may also be applicable in service establishments such as banks, theatres, sports arenas, or hospitals, where frequent attendees may be issued with an ID card. The term "facility" is not restricted to a single establishment but may extend, for example, to an entire shopping precinct or complex.

Accordingly, the present invention is not limited to the specific embodiments described above, but rather is defined by the scope of the appended claims.

CLAIMS

1. A customer identification system for use in a retail or service facility, the system comprising:

an entrance/exit sensor, positioned to identify the presence of a customer as the customer moves through the entrance/exit of said facility;

visual image recording means for capturing a visual image of a customer in response to a trigger signal provided by the entrance/exit sensor;

an interrogator unit positioned in proximity to the entrance/exit of said facility, communicating with a portable customer ID card having a memory storage area holding one or more customer indicia, when the ID card is in proximity to the interrogator unit; and

a control unit, coupled to the interrogator unit, sensor and image recording means, for receiving the customer indicia from the interrogator unit and causing the customer indicia to be bundled with that customer's visual image into a customer specific data set.

2. The system according to claim 1, wherein the system is used in a retail facility having an electronic record of purchases made by the customer, and the customer indicia held by the memory storage area comprise a unique customer ID number, associated with a corresponding customer information record, each customer record containing profile entries specific to that customer including personal identification information, demographic information, information relating to a customer's personal shopping preferences and a customer's shopping transactional history.

3. The system according to claim 2, wherein the

customer information record is held in the memory storage area of the ID card, the customer record being transmitted to the interrogator unit and thence to the control unit along with the customer ID number.

4. The system according to claim 2, further including a database of customer specific entries, each entry identified by a corresponding unique customer ID number, each entry containing that customer's information record.

5. The system according to claim 2, 3, or 4, wherein the control unit causes a customer's information record to be bundled with their recorded visual image into a customer specific data set.

6. The system according to claim 5, further comprising:

at least one in-store terminal, the in-store terminal including communication means for receiving customer specific data sets and a display, wherein a customer's recorded visual image is displayed on the in-store terminal such that a sales clerk may recognize that customer from their recorded image, the sales clerk being further able to access each customer specific data set bundled with that customer's recorded visual image so as to be able to efficiently address that customer's shopping needs.

7. The system according to claim 6, wherein the in-store terminal deletes the customer specific data set when the customer is leaving the retail facility.

8. The system according to claim 6, wherein the in-store terminal is coupled to a store server, the store server including storage means for hosting the

data base of customer specific entries, the store server bundling each customer's information record with that customer's recorded visual image into a customer specific data set, in operative response to a command from the control unit.

9. The system according to claim 8, further comprising a multiplicity of in-store terminals, including a plurality of point-of-sale terminals, the multiplicity of in-house terminals coupled to the store server over a local-area-network configuration, the store server transmitting a customer specific data set to each of the in-house terminals connected to the server over the local-area-network configuration.

10. The system according to claim 6, wherein the in-store terminal is a hand-held mobile terminal.

11. The system according to claim 10, wherein the communication means includes an RF antenna and a transmitter/receiver circuit integrated into said hand-held mobile terminal, the mobile terminal configured to receive at least the customer ID from the ID card over the antenna and transmitter/receiver circuit.

12. A method for assisting staff of a retail or service facility to identify particular customers as they enter/leave the facility and to recognize such customers visually, the method comprising:

positioning an entrance/exit sensor in proximity to the entrance/exit of said facility, so as to identify the presence of a customer as the customer moves through the entrance/exit;

capturing a visual image of said customer as

they pass through the entrance/exit of said facility, the customer's image being recorded in response to a trigger signal provided by the entrance/exit sensor;

providing an interrogator unit, positioned in proximity to the entrance/exit of said facility;

providing a portable customer ID card including at least a memory storage area, the memory storage area holding one or more customer indicia, the customer indicia being communicated to the interrogator unit when a customer moves in proximity to the interrogator unit;

receiving the customer indicia; and

bundling the captured visual image of the customer together with the customer indicia into a customer specific data set for use by said staff.

13. The customer recognition method according to claim 12, applied to a retail facility having an electronic record of purchases made by a customer, wherein the customer indicia held by the memory storage area comprise a unique customer ID number, associated with a corresponding customer information record, each information record containing profile entries specific to that customer including personal identification information, demographic information, information relating to a customer's personal shopping preferences and a customer's shopping transactional history.

14. The customer recognition method according to claim 13, further including the step of defining a database comprising customer specific entries, each customer specific entry identified by a corresponding unique customer ID number, each so-identified customer specific entry containing that specific customer's information record.

15. The customer recognition method according to claim 13 or 14, further including the step of bundling a specific customer's information record with that customer's recorded visual image into a customer's specific data set in operative response to a command from the control unit.

16. The customer recognition method according to any of claims 12 to 15, applied to a facility having a plurality of in-house terminals for receiving a customer specific data set, further comprising the step of deleting the customer specific data set from the in-house terminals upon that customer's leaving the facility.

17. The customer recognition method according to claims 13 and 16 in combination, further comprising the steps of:

establishing a list of received customer ID numbers;

comparing a received customer ID number to the customer ID numbers comprising the list; determining whether the received customer ID number matches a customer ID number presently on the list; and

whereby, if the received customer ID number is determined to match a customer ID number presently on the list, it is assumed that the customer has previously entered the store and is, therefore, leaving, that customer's specific data set being deleted in response, if the customer ID number is not determined to be among the customer ID numbers comprising the list, it is assumed that the customer is entering the facility, the customer's visual image and information record being bundled into a customer specific data set in response.

18. A system for use in assisting or identifying customers attending a commercial establishment or amenity, the system comprising:

a portable customer ID card including a memory storage area holding one or more customer indicia;

a kiosk terminal including a customer ID card interface unit, the customer indicia being communicated to the kiosk terminal through the customer ID card interface unit;

visual image recording means for capturing a visual image of a customer, the image recording means capturing a customer's visual image in response to a trigger signal provided by the customer ID card interface unit; and

a control unit, coupled to the interface unit and image recording means, for receiving at least the customer indicia from the interface unit, and combining the customer indicia with that customer's visual image into a customer specific data set.

19. The system according to claim 18, the customer indicia held by the memory storage area comprising a unique customer ID number, associated with a corresponding customer information record having a multiplicity of information fields, each customer record containing profile entries specific to that customer including personal identification information, demographic information, information relating to a customer's personal preferences and a customer's transactional history with said establishment or amenity.

20. The system according to claim 19, the system further including a database of customer specific entries, each entry identified by a corresponding

unique customer ID number, each entry containing that customer's information record.

21. The system according to claim 19 or 20, wherein the control unit causes a customer's information record to be bundled with their recorded visual image into a customer specific data set.

22. A customer recognition system substantially as hereinbefore described with reference to the accompanying drawings.

23. A customer recognition method substantially as hereinbefore described with reference to the accompanying drawings.

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Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
A	EP 0,649,109 A2	(BENTHANANE). See Figs	1,12,18
A	EP 0,636,993 A1	(OLYMPUS). See Figs	1,12,18
A	WO 98/38589 A1	(INFRAMEDIA). See Figs	1,12,18
A	WO 98/18094 A1	(ELDAT COM.). See Figs	1,12,18
A	US 5,745,036	(CHECKPOINT). See Figs	1,12,18
A	JP 080096041	(IBEDEN). See Figs	1,12,18

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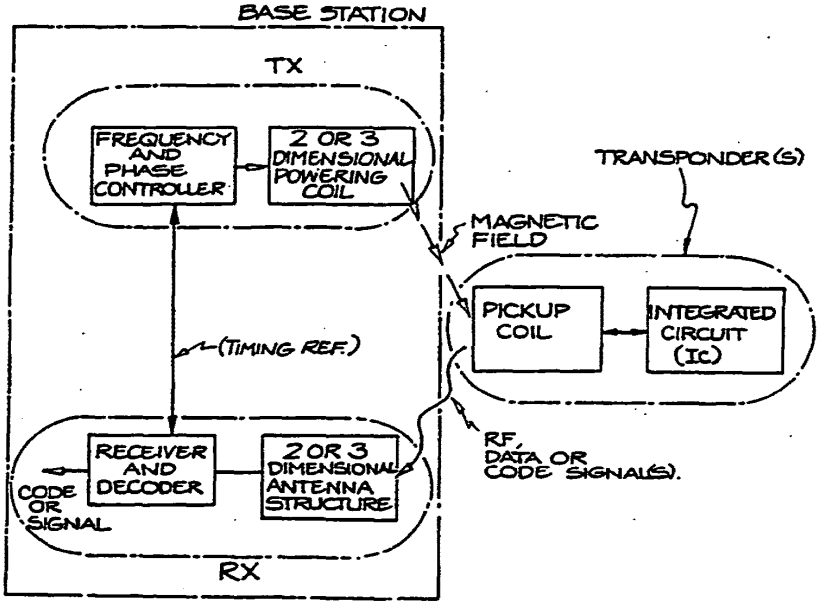

(57) Abstract

A transponder comprising: transponder receiver means adapted to extract powering energy from a surrounding electromagnetic field, transponder transmitter means adapted to transmit at least one unique signal from the transponder, frequency generating means for generating a plurality of predetermined frequencies, each frequency adapted to carry the signal from the transmitter means to an interrogator receiver means adapted to receive said signals to achieve indentification of said transponder. An identification system comprising: a transponder having means to extract powering energy from a surrounding electromagnetic field, and a transmitter means adapted to transmit one or more unique signals, and receiver means adapted to receive said signals and identify said transponder.

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IDENTIFICATION APPARATUS AND METHODS

FIELD OF INVENTION

The present invention relates to a system of multiple device identification. The present invention further relates to a system utilising a plurality of remote devices and/or passive labels, the passive labels being adapted to extract energy from an applied magnetic field, the energy enabling transmission by the label of a signal, unique or coded, to be identified by a receiver, the remote devices being powered so as to transmit said signal, unique or coded. Each label or device can transmit simultaneously. Transmitting and receiving apparatus and methods of the system are also herein contemplated. The present invention in a preferred form is suitable for transponder (or a plurality thereof) identification.

PRIOR ART

Conventional passive identification or transponder systems known to Applicant utilise a system in which a single common carrier frequency is used to transmit data or identification codes from and/or to each transponder. Simultaneous transmission by more than one transponder results in co-interference between the signals so transmitted and prevent correct identification of any of the transmitting transponders i.e. simultaneous transmission gives rise to corrupted signal(s).

Furthermore, the Applicant is aware of AU-A-70052/87 which describes a radio meter reading system that is designed to correctly read signals from several transponders simultaneously. The system utilises a "wake-up" signal from the interrogation station to activate a battery powered transmitter in each transponder. Data containing amongst other things the transponders ID and the meter reading modulates a transmitted carrier signal. The frequency of the transmitted carrier signal is randomly varied using a frequency control voltage derived from a digital pseudo-random generator. The transmitter is designed to keep these carrier frequencies within an allowed band.

The system disclosed is not capable of precisely controlling the carrier frequencies. Consequently, direct coherent detection of the transponder signals is not possible. Powering of the receiving circuitry for detecting the "wake-up" signal requires a battery or other external source of electrical power. Beyond the "wake-up" signal, there is no communication from the interrogator to the transponders.

Australian Patent AU-A-34109/84 discloses a transponder that transmits two or more carrier frequencies modulated with identical data. The carrier frequencies are either harmonics or sub-harmonics of the interrogation powering frequency. The specification is directed to the determination of correct data that has been transmitted when there is coincidence between the data on at least two of the carrier channels. With sufficient harmonic and sub-harmonic channels, external interference is unlikely to eliminate all of the transmitting channels.

This specification does not disclose a device capable of correctly interrogating more than one transponder simultaneously.

All transponders are constrained to transmit identical harmonic and sub-harmonic frequencies and will consequently interfere on all channels if and when two or more transponders are active. The harmonics are generated by a square wave derived from the interrogation signal. Square waves are rich in odd harmonics. There is no possibility of selecting any particular harmonic(s) for transmission, as all harmonics are generated and radiated by square waves.

OBJECT OF THE INVENTION

An object of the present invention is to provide a system wherein a plurality of devices may be simultaneously identified and/or a single device may also be identified.

A further object of the present invention is to provide a system which may be specifically designed to identify devices within an acceptable failure rate criterion.

A further object of the present invention is to provide a system having minimal co-interference and wherein a plurality of devices may be correctly identified by a single receiver even if the devices are in close proximity.

A further object of the present invention is to provide a multiple transponder identification system, each transponder therein being implemented in a single (IC) chip form.

Another object of the present invention is to provide a system adapted to identify many objects such as personnel, livestock, baggage, packages, cargo, stolen goods, vehicles, trains, wagons, shipping containers, security cards and may be used in environments requiring identifying or interrogating capabilities, such as inventory control and computer security.

Another object of the present invention is to provide a system wherein any one or all device(s) and/or transponder(s) therein can be interrogated or altered in response to a radiated magnetic field.

Another object of the present invention is to provide a system comprising disposable and cheap transponders or labels.

SUMMARY OF INVENTION

The present invention provides a system of device identification comprising :

at least two spaced identifiable device and a device identifier wherein :

each identifiable device comprises means forming transmitter means, means forming a device identification code and modulation means, said modulation means and code means being adapted to drive said transmitter means so that said device identification code is transmitted and identified by said device identifier.

The present invention provides a system of multiple transponder identification comprising :

at least two transponders, a magnetic power field generator/radiator and a transponder identification code receiver, wherein

each transponder comprises receiver/transmitter means including an inductive means adapted to simultaneously receive power to operate the transponder and transmit coded modulated signal(s), memory means for storing an identification code, modulation means and control means, said receiver/transmitter means and memory means being adapted to jointly co-operate with said modulation means, when each transponder is under the influence of said power field to transmit an identification code unique to each transponder to said code receiver,

the control means being adapted to co-ordinate operation of said memory, modulation and receiver/transmitter means, and wherein

the code receiver receives each unique code and identifies each respective transponder.

The present invention in another aspect provides a transponder comprising :

transponder receiver means adapted to extract powering energy from a surrounding electromagnetic field,

transponder transmitter means adapted to transmit at least one unique signal from the transponder,

frequency generating means for generating a plurality of predetermined frequencies, each frequency adapted to carry the signal from the transmitter means to an interrogator receiver means adapted to receive said signals to achieve identification of said transponder.

The present invention provides an identification system comprising :

a transponder having means to extract powering energy from a surrounding electromagnetic field, and a transmitter means adapted to transmit one or more unique signals, and

receiver means adapted to receive said signals and identify said transponder.

The present invention also provides an identification system incorporating a transponder as described above.

The present invention also provides an identification system comprising :

a plurality of transponders, each transponder having means to extract energy from a surrounding electromagnetic field and transmitter means adapted to transmit at least one unique signal at at least one frequency selected from a plurality of predetermined frequencies, and

receiver means adapted to receive each of said unique signals and identify said transponder.

The present invention further provides a system for simultaneously identifying a first and second label, each label comprising code storage means, modulation means and an inductive receiver/transmitter means, the system comprising :

magnetic field generator/radiator means for generating a magnetic field from which said first and second labels are adapted to extract power using said inductive means,

each of said first and second labels, when so powered, respectively providing at least one unique code from the code storage means to the modulation means, said modulation means being adapted to provide at least one modulated code to the inductive means for transmission to a label identifying receiver,

each label adapted to modulate said at least one code onto at least one carrier frequency randomly selected from a predetermined finite set of modulation frequencies,

each label being further adapted to re-transmit its said at least one code at another or the same at least one frequency randomly selected from said set of frequencies while each label remains powered,

each label being embodied in a single (IC) chip.

The present invention also provides an identification system comprising :

a transponder adapted to transmit at least one data signal at at least one carrier frequency selected from a plurality of carrier frequencies, said transponder including control means for selecting said at least one selected frequency and, when the data has been transmitted, for re-selecting the or another at least one selected carrier frequency from the plurality of carrier frequencies in accordance with a predetermined probability weighting, the transponder being adapted to continue transmitting the data at the or another at least one selected frequency while the transponder is powered, and receiver means adapted to receive the or said another at least one frequency including demodulator means for obtaining the data.

The present invention further provides an identification system comprising :

a first and a second transponder, said transponders being adapted to continuously transmit respective first and second data signals while each transponder is powered, the first and second data signals having a first and a second respective carrier frequency selected from respective first and second predetermined sets of possible carrier frequencies, said first and second transponders including respective first and second selector means for selecting the first and the second respective carrier frequency from said respective sets of frequencies,

receiver means for receiving the first and second data signals simultaneously,

demodulator means for demodulating the first and second data signals at their respective carrier frequency to obtain a first and second respective transponder identifying code.

The system may further comprise comparison means adapted to disregard corrupted transponder or label codes or signals.

The signal(s) may be at a radio frequency or at any other frequency.

The random selection of carrier or modulation frequency(s) provides improved resistance to interference between labels. Co-interference of labels may be statistically ignored by the identifying receiver.

Each transponder may continue to transmit its transponder identification code while under the influence of the generator or while being powered.

Each transponder may include at least one transmission break during which its transponder identification code is not transmitted.

The transponder identification code receiver may comprise demodulation means adapted to identify each transponder.

The present invention provides for the use of a passive coil label to extract energy from a surrounding applied field and the re-transmission by the passive label of a unique signal to be picked up by a receiver.

Reference herein to transponder(s) or label(s) should be read so as to include any other suitable device.

The present invention will now be described with reference to the accompanying drawings, wherein :

Figures 1A and 1B show an identification system in accordance with the present invention.

Figures 2A, 2B, 3A, 3B and 4A, 4B show embodiments of a transponder suitable for use in the present invention.

Figure 5 shows a circuit for generating the transponder carrier signal.

Figures 6 and 7 show alternative embodiments capable of generating a plurality of carrier frequencies.

Figures 8A and 8B show two circuits for transmitting two or more modulated carrier signals simultaneously and independently of each other.

Figure 9 shows a schematic of a coherent receiver.

Figures 10A and 10B show two circuits for envelope shaping the modulated carrier signal to reduce sideband interference between channels.

Figures 11 and 12 show modulation detection circuits.

The or each, transponder may be embodied in a single (IC) chip form. An external capacitor may be used to store the chip operating voltage. The receiver/transmitter inductive means, preferably a single coil, may also be mounted externally to the chip.

With reference to Figures 1A and 1B, the base station may include a transmitter for generating an ultrasonically oscillating magnetic field. The transponder(s) may contain a tuned pickup coil which may extract power and/or timing and/or other information from the magnetic field. The frequency, magnitude and phase of the magnetic field generated by the base station may be carefully controlled to enable the power picked up by the transponder coil to be adequate for most transponder orientations. A magnetic field radiated in two or three dimensions will aid power and information reception by the transponder(s). Identification codes and/or specially stored or other information may be transmitted from the transponder to a receiver in the base station, conventionally, by an RF or other suitable signal. Programming and/or interrogation of temporary or permanent memory on one or more transponder(s) may be performed conventionally, for example by modulation of the powering field. Concatonated coil(s) may be used to maintain field intensity in a predetermined space through which the transponder(s) will move. Magnetic field concentrator(s) may be used to amplify field intensity.

Furthermore, the transponder(s) may generate one or more carrier frequencies from an available set of carrier frequencies. These carrier frequencies are preferred not to be harmonically related to the frequency of the powering

magnetic field. By allowing each transponder to use any one of a multiplicity of available carrier frequencies, many transponders simultaneously transmitting to the base station may be identified under conditions where co-interference would normally preclude correct identification. Ensuring correct identification may be enhanced by reducing the possibility of more than one transponder simultaneously transmitting at the same frequency. An idle state, during which a transponder does not transmit, may aid correct identification. The number of carrier frequencies and idle states may be contingent upon the particular application. The correct identification of a transponder may be reliant upon the transponders having a carrier frequency or mix of carrier frequencies, free of interference by other transponders, to transmit on. The particular mix of carrier frequencies, idle states and probability weightings may be chosen to maximise the probability of any one transponder having a free channel to transmit, to a receiver, its identification code word. Inclusion of redundant frequency channels may guard against the possibility of chance transponder interference. Signals which may have been corrupted or co-interfered with may be ignored by the receiver, and may thereby enable the system to operate within a predetermined failure rate criterion. Corrupted or co-interfered signals may be determined on a statistical basis or by means of an error detecting code. The transponder(s) may transmit the identifying code at a randomly selected frequency(s), selected from a set of available carrier frequencies, and, once transmission is completed, again re-transmit the code at the same or another frequency(s) selected from the carrier frequency set. The identifying code may be used to modulate the selected frequency(s).

The system of transponder identification according to the present invention may allow for identification of a number of objects by a uniquely coded transmission from a

passive transponder or label attached to each object, identification occurring at substantially the same time.

With reference to Figures 2A, 2B, 3A, 3B, 4A and 4B, power, preferably in the form of a magnetic field, may be transmitted inductively or radiated to the transponder. Each transponder may include one or more pickup or receiver transmitter coils or inductive means. To minimise detailing, further reference herein is made to only single coiled transponder(s). A pickup coil, preferably tuned, may be situated in the transponder to collect or receive the power. After rectification, the power may be utilised by an integrated circuit (IC) within the transponder. The frequency of the powering signal may be used as a universal frequency reference for both the IC and the base station (Figure 1A). Alternatively, an oscillator in the base station may serve as a universal timing reference for the powering signal, base station receiver and transponder IC (Figure 1B). The transponder IC derives its frequency reference from the powering signal (Figures 2A, 2B, 3A, 3B, 4A and 4B). Each transponder may be controlled and/or programmed by modulating the inductive powering field. This modulation may enable data or commands to be transmitted to one or more transponder(s). This modulation may be used, for example, to program data into the transponder, set bit(s) in the transponder which may control the transponder's function e.g. a bit to disable transmission permanently when the transponder is discarded, or control the transponder's activity while it is being inductively interrogated e.g. forcing a change in the transponder's carrier frequency, or generally controlling and/or interrogating other transponder units or functions.

To ensure that the transmission of power and/or signal(s) is as uniform as possible, a two, or if necessary, a three dimensional antenna system may be used. An antenna structure at the base station may receive the transponder's coded carrier transmission. With regard to the IC of a

transponder, it may generate one or more non-harmonically related carrier signals from the frequency of the powering field. The method of generating these carrier signals will be explained further on.

The carrier signals generated by the IC are phase locked to the powering signal. The powering signal is derived from a master oscillator in the base station. Coherent locking of the carrier signals allows direct coherent demodulation of the coded carrier signal by the receiver and demodulator in the base station. Coherent detection is the optimum detection scheme for coded carrier signals. The frequency of the powering field or a carrier signal divided down may be utilised as a clocking signal for the IC. A unique code, preset, programmed or selected in the IC may be used to modulate the carrier signal at a rate determined by the clocking signal. The modulator may produce a modulated RF signal using, typically, phase modulation, amplitude, pulse width, pulse position or other modulation. This code modulated signal may be injected into the transponder pickup coil for inductive transmission to a receiving antenna structure.

The signal(s) received from one or more transponder(s) may be amplified and coherently detected, using a local oscillator locked on to the powering field's frequency or preferably the base stations master time reference oscillator. A multiplicity of coherent detection schemes may be used to detect the received signal(s), all of which are known to those skilled in the art of communication. For example, direct homodyne detection of a transponder carrier may be possible using a local oscillator locked to the transmitted powering field's frequency (Figure 9). The power field's frequency may be used as a universal timing reference. For a preferred modulation scheme (phase modulation), optimum detection may be realised using correlators locked to the powering field's frequency. Either a frequency agile receiver or a multiplicity of

receivers may be tuned to the different possible carrier frequencies contained within the set of carrier frequencies to receive the transmitted signal from the transponder(s).

For those applications where the orientation of the transponder may be random, such as baggage and livestock identification, special antenna structures may be necessary such that the voltage picked up by the transponder(s) coil, which may be dependent upon the cosine of the angle between the transponder coil axis and the direction of the magnetic field, is preferably substantially constant over a large volume of space, and so that rapidly moving transponders may be satisfactorily identified. Ideally, the power transferred to each transponder coil should be independent of transponder orientation.

To provide an isotropic powering field three sets of coils may be orientated along the X,Y and Z axes. The phase and frequency used to drive these coils may be carefully controlled to generate an isotropic powering field and provide a uniform field over a substantial volume of space. Two coils may alternatively be used.

The data transmitted from the transponder may be received by loop antennae set up in two or three dimensions or axes. The data signals from each axis may be detecting separately and may be combined for decoding or decoded separately.

Interference may be cancelled by mounting a set of "interference coils" in proximity of the transponder(s) data or signal receiving coils. The signal from the interference coil may be subtracted from the receiver signal cancelling any interference. Cancellation may be done at the carrier's frequency.

By having one or more transponder(s) select, preferably randomly, from a plurality of possible transmission frequencies, and/or by utilising one or more transmission break(s), during which no transmission from at least one transponder is made, or a combination of these,

the simultaneous identification of a plurality of transponders may be possible. Each transponder in the system of the present invention, when powered, may begin to transmit its code or other information. This transmission may be continuous while the transponder is powered. The transmission may be based on a preferably randomly selected frequency(s), from a possible set of frequencies, or transmission breaks.

A method, of identification for use in a system as described hereinbefore, the system being adapted for any system designed to identify transponder(s) or labels, may include an acceptable failure rate criterion. The correct identification of each transponder may require that each transponder has at least one complete code or data word transmission free of interference from other transponder(s).

For a transponder to be correctly identified it only requires one good read during an interrogation cycle. Alternatively, for the transponder to not be identified requires that all reads are bad, i.e. P (at least one good read) = 1 - P (all reads are bad).

Probability that a read is good requires that no other transponder is using the same carrier frequency, if there are "m" transponders and "n" channels and each transponder's transmissions are independent of all other than this probability is :

$$\left(\frac{n-1}{n}\right)^{2(m-1)}$$

hence the probability that a transmission is bad is :

$$1-\left(\frac{n-1}{n}\right)^{2(m-1)}$$

and the probability that of k code transmissions all are bad is $\left(1-\left(\frac{n-1}{n}\right)^{2(m-1)}\right)^{k}$

This is the probability that a particular transponder will fail to be identified during an interrogation cycle.

By carefully choosing the number of carrier frequencies available to a transponder and/or the availability of a transmission break, the system's failure rate may be matched to the acceptable failure rate.

A carrier generator in each transponder or label may generate carrier frequency(s) for use by the modulation means. The carrier frequency(s) may be generated by one or more voltage controlled oscillators (VCO's) which may be phase locked to the frequency of the inductive powering field. The output carrier frequency may equal $(p + \frac{n}{m})$ x (frequency of inductive power field); where p is a harmonic of the powering field's frequency and the ratio $\frac{n}{m}$ is not an integer (Figures 5 and 6). A circuit for generating the carrier frequency is shown in Figure 5. The circuit is a phase locked loop (PLL) incorporating a frequency divider in the feedback loop. This type of circuit is well known and acts as a frequency multiplier with the output frequency of the VCO (or other similar controlled oscillator) equal to the divider magnitude :

frequency VCO = (pm+n) x frequency time reference.

The VCO output frequency will always be a harmonic of the powering field and potentially would be prone to interference from the field's harmonics. Dividing the VCO output by "m" changes the output frequency such that only every m^{th} carrier frequency coincides with a power field harmonic. In the preferred embodiment these frequencies are not utilised by the transponder. Consequently, the powering field's harmonics may never interfere with the carrier transmissions.

A further advantage of this method of phase coherent carrier generation is that a similarly generated local oscillator signal at the base station can be used to coherently detect and demodulate the carrier signal(s). This oscillator can be phase locked to the powering field

(like the transponder carrier oscillator) or in its preferred form to a master time reference oscillator from which the power field's frequency is derived. Direct homodyne detection of the carrier can be done using identical frequency generating parameters n, m and p as used by the transponder carrier oscillator. Alternatively the carrier signal can be converted to an intermediate frequency (IF) before detection. These coherent detection principles are widely utilised and well understood.

The present invention may provide a system in which control of the selection of a carrier frequency(s) and/or transmission break(s) may be accomplished. Varying degrees of complexity may be implemented by the selection circuitry. In one embodiment, a pulse of modulation, on the powering field, may cause any affected transponders to randomly select a carrier frequency or transmission break. By appropriate coding of this modulation of the powering field, coupled with suitable detection and decoding circuitry on each transponder, more elaborate selection schemes such as, turning off a particular transponder's transmission, forcing some or all transponders off a channel(s), or changing a particular transponder's channel may be implemented. Frequency, phase, amplitude or pulse modulation or any combination of these can be used to modulate the magnetic powering field.

For an arbitrarily modulated oscillating magnetic field, the data rate may be limited by the bandwidth of the transponder's antenna. This may be sufficiently large to allow a data rate of any required number of kilobits per second.

Preferably, the magnetic field may be phase or frequency modulated because these may not appreciably affect the power transmission from the transmitter to the receiving unit. Amplitude, pulse width or pulse position modulation may also be used. Figures 11 and 12 show circuits for detecting this modulation.

The simultaneous action of power transfer and data or command transmission by a magnetic field may allow the remote control of electro-mechanical devices and/or electronic circuits and the remote programming of E^2PROM or conventional CMOS memory with battery backup in a manner similar to that as detailed herein.

Arbitrary probability weightings of selection may also be assigned to each carrier frequency and/or idle state. Alternatively, a transponder may randomly select either a transmission break or carrier frequency. The carrier frequency of the transponder may be altered after each completed code or data word transmission or the transmission of more than one code or data word before reselecting the carrier frequency.

The system may also provide for the simultaneous transmission of more than one carrier frequency by any transponder. Transmission of more than one carrier can be used to increase the communication reliability or to increase the rate of data transmission. Different sets of data or unique signals can be transmitted on different carrier frequencies. A transponder may select a subset of carrier frequencies from the full set of available carrier frequencies. The exact number of carriers transmitted, the size of the full set of carrier frequencies and the method of selection i.e. whether controlled or by random internal selection, would depend upon the particular transponder's application.

It has been shown mathematically, that in a system of "m" labels, each randomly choosing one out of "n" distinct radio channels before each transmission, if a total of "k" transmissions are possible (by any one label) within the available time, the probability of one or more labels failing to be identified, is given by

$$\left(1 - \left(\frac{n-1}{n}\right)^{2(m-1)}\right)^{k}$$

The use of certain, inherently random, natural processes (to generate the random numbers used here to select the transmitting channel), is well known. Examples used in practical equipments include radioactive decay processes, and the so-called "shot noise" generated by quantum mechanical processes within semiconductor diodes.

These processes are, however, somewhat awkward to implement on a semiconductor, VLSI, "chip". The noise-diode approach, in particular, suffers from the risk that the "noise" signal (which is at a low amplitude) will be contaminated by other, stronger electrical signals present on the chip. This could seriously impair the statistical properties of such a signal.

The use of a "Pseudo-Random Binary Sequence" (PRBS) generator, in digital systems, is well known. The device typically comprises a digital shift register (built using any known method), associated with a computing means (typically an arrangement of logical gate circuits), which generates a binary, logical function of the shift register's contents. This value is applied to the serial input of the shift register. As the shift register is clocked, a new binary number appears in the several "bits" of the register.

With a careful choice of register length, and of the mathematical function generated by the said computing means (the "feedback function"), it is possible to generate a sequence having as many as 2^N-1 distinct values (a so-called maximal-length, or "M-" sequence) using a N-bit shift register. Such a sequence can exhibit mathematical properties closely approximating a true, random sequence.

On the face of it, such a device is inherently unsuitable for the present purpose. The reason is that, when the label is first excited by the powering magnetic field, there is no means to determine what will be the

initial contents of said shift register. In practice, the initial value will almost always be a constant value, identical for every label. (The value will be a function of the physical circuit layout on the VLSI chip. This, of course, is the same for every label).

In such a case, every label being initially started at the same number, the feedback function will reproduce identically in every label, and they will continually transmit on the same channel. This defeats the purpose of the system.

A simple modification permits the use of a PRBS generator (so gaining its acknowledged advantages of inherent suitability for VLSI implementation), but avoids the problem aforementioned.

Recall that the labels contain, inter alia, a "memory means" to record their identification codes. Let this memory means be expanded sufficiently to store, besides said identification code, a further number, having as many bits as has the PRBS shift register. Let the control circuitry in the label be so adapted that, whenever the label is first excited by the powering field (i.e. its logic circuitry "starts up"), this additional number is loaded into said PRBS register. This number being loaded, the PRBS generator operates as described.

Let further, the associated programming means (the equipment which initially stores the identification code in said memory means) be further adapted to store also, a randomly generated number (another PRBS circuit would suffice here) in the additional memory space aforementioned.

With a total of "N" binary bits in the PRBS register, we have now a 1 in 2^N-1 chance that two labels will start up at the same point in their PRBS sequences. In that event, the system will fail, since these two will always "track" each other. With a target value for system reliability determined, this rule fixes a minimum length for the PRBS generator. Commonly, the PRBS register will be

given a length equal to the next prime number, larger than the size found above.

The PRBS system is particularly effective, if both the number of bits, N, in the register, and the number of PRBS states, 2^N-1, are both prime. In this case, however many times the register is shifted between channel selections, all possible states will be exhausted before the cycle repeats. An example of such a PRBS circuit comprises a 17-bit register, with the feedback function comprising an exclusive-OR of the 14th and 17th bits. The numbers 17 and 131071 are both prime.

It is desirable that the register should be shifted, between channel selections, a number of places greater than its own length. This ensures that the "randomising" process has been applied to every bit in the register. Any desired subset of the register bits may be used to effect the channel selection.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A transponder comprising :

transponder receiver means adapted to extract powering energy from a surrounding electromagnetic field,

transponder transmitter means adapted to transmit at least one unique signal from the transponder,

frequency generating means for generating a plurality of predetermined frequencies, each frequency adapted to carry the signal from the transmitter means to an interrogator receiver means adapted to receive said signals to achieve identification of said transponder.

2. A transponder as claimed in Claim 1, further comprising

control means for selecting at least one selected frequency from the plurality of predetermined frequencies, said selected frequency(s) being used as carrier(s) for said unique signal.

3. A transponder as claimed in Claim 2, wherein

the control means re-selects the or another at least one selected frequency from the plurality of predetermined frequencies for retransmission of said unique signal.

4. A transponder as claimed in Claim 2 or 3, wherein the selection or the reselection is performed in accordance with a predetermined probability weighting.

5. A transponder as claimed in Claim 3, wherein said transponder continues to retransmit said unique signal while the transponder is powered.

6. A transponder as claimed in Claim 2 or 3, wherein the control means uses a pseudo-random binary sequence (PRBS) logic circuit to randomly select said selected frequency(s).

7. A transponder as claimed in Claim 6, wherein the PRBS is adapted to have an initial value loaded therein when the transponder is first powered, the value being stored in a memory in the transponder.

8. A transponder as claimed in Claim 7, wherein the unique code and value are arbitarily assigned to the transponder before use of the transponder.

9. An identification system incorporating a transponder as claimed in any one of Claims 1 to 8.

10. An identification system comprising :

a transponder having means to extract powering energy from a surrounding electromagnetic field, and a transmitter means adapted to transmit one or more unique signals, and

receiver means adapted to receive said signals and identify said transponder.

11. An identification system comprising :

a plurality of transponders, each transponder having means to extract energy from a surrounding electromagnetic field and transmitter means adapted to transmit at least one unique signal at at least one frequency selected from a plurality of predetermined frequencies, and

receiver means adapted to receive each of said unique signals and identify said transponder.

12. An identification system as claimed in Claim 11, wherein each of said unique signals is received simultaneously.

13. An identification system as claimed in Claim 11, wherein the receiver means includes logic means adapted to ignore incoming unique signals having the same selected frequency.

14. An identification system as claimed in Claim 11, wherein the receiver means is synchronized to the frequency of the electromagnetic field to facilitate demodulation of each unique signal.

15. A system of device identification comprising :

at least two spaced identifiable devices and a device identifier wherein :

each identifiable device comprises means forming transmitter means, means forming a device identification code and modulation means, said modulation means and code means being adapted to drive said transmitter means so that said device identification code is transmitted and identified by said device identifier.

16. A system of multiple transponder identification comprising :

at least two transponders, a magnetic power field generator/radiator and a transponder identification code receiver, wherein

each transponder comprises receiver/transmitter means including an inductive means adapted to simultaneously receive power to operate the transponder and transmit coded modulated signal(s), memory means for storing an identification code, modulation means and control means, said receiver/transmitter means and memory means being adapted to jointly co-operate with said modulation means,

when each transponder is under the influence of said power field, to transmit an identification code unique to each transponder to said code receiver,

the control means being adapted to co-ordinate operation of said memory, modulation and receiver/transmitter means, and wherein

the code receiver receives each unique code and identifies each respective transponder.

17. A system as claimed in Claim 16, wherein each transponder is embodied in a VLSI chip.

18. A system for simultaneously identifying a first and second label, each label comprising code storage means, modulation means and an inductive receiver/transmitter means, the system comprising :

magnetic field generator/radiator means for generating a magnetic field from which said first and second labels are adapted to extract power using said inductive means,

each of said first and second labels, when so powered, respectively providing at least one unique code from the code storage means to the modulation means, said modulation means being adapted to provide at least one modulated code to the inductive means for transmission to a label identifying receiver,

each label adapted to modulate said at least one code onto at least one carrier frequency randomly selected from a predetermined finite set of modulation frequencies,

each label being further adapted to re-transmit its said at least one code at another or the same at least one frequency randomly selected from said set of frequencies while each label remains powered,

each label being embodied in a single (IC) chip.

19. An identification system comprising :

a transponder adapted to transmit at least one data signal at at least one carrier frequency selected from a plurality of carrier frequencies, said transponder including control means for selecting said at least one selected frequency and, when the data has been transmitted, for re-selecting the or another at least one selected carrier frequency from the plurality of carrier frequencies in accordance with a predetermined probability weighting, the transponder being adapted to continue transmitting the data at the or another at least one selected frequency while the transponder is powered, and receiver means adapted to receive the or said another at least one frequency including demodulator means for obtaining the data.

20. An identification system comprising :

a first and a second transponder, said transponders being adapted to continuously transmit respective first and second data signals while each transponder is powered, the first and second data signals having a first and a second respective carrier frequency selected from respective first and second predetermined sets of possible carrier frequencies, said first and second transponders including respective first and second selector means for selecting the first and the second respective carrier frequency from said respective sets of frequencies,

receiver means for receiving the first and second data signals simultaneously,

demodulator means for demodulating the first and second data signals at their respective carrier frequency to obtain a first and second respective transponder identifying code.

21. An identification system as claimed in Claim 18, 19 or 20, further comprising comparison means adapted to disregard corrupted transponder or label codes or signals.

22. A system as claimed in Claim 18, 19 or 20, wherein the transponder or label power is provided by an electromagnetic powering field.

23. A system as claimed in Claim 22, wherein the at least one selected carrier frequency is phase coherently generated using the powering field as a frequency reference.

24. A system as claimed in Claim 23, wherein the at least one carrier frequency is generated using at least one phase-locked loop frequency multiplier, and subsequently divided to obtain a desired carrier frequency.

25. A system as claimed in Claim 24, wherein frequencies generated which correspond to harmonics of the powering field are ignored.

FIGURE. 1A

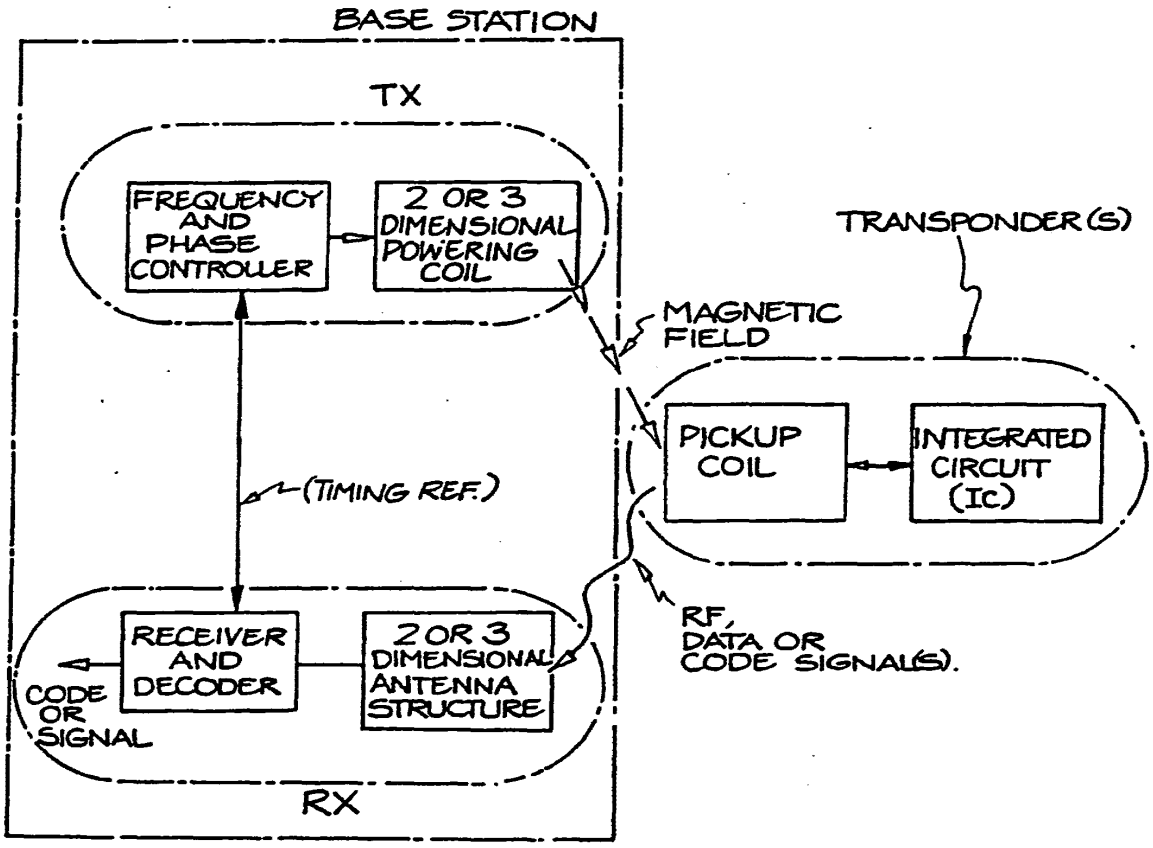
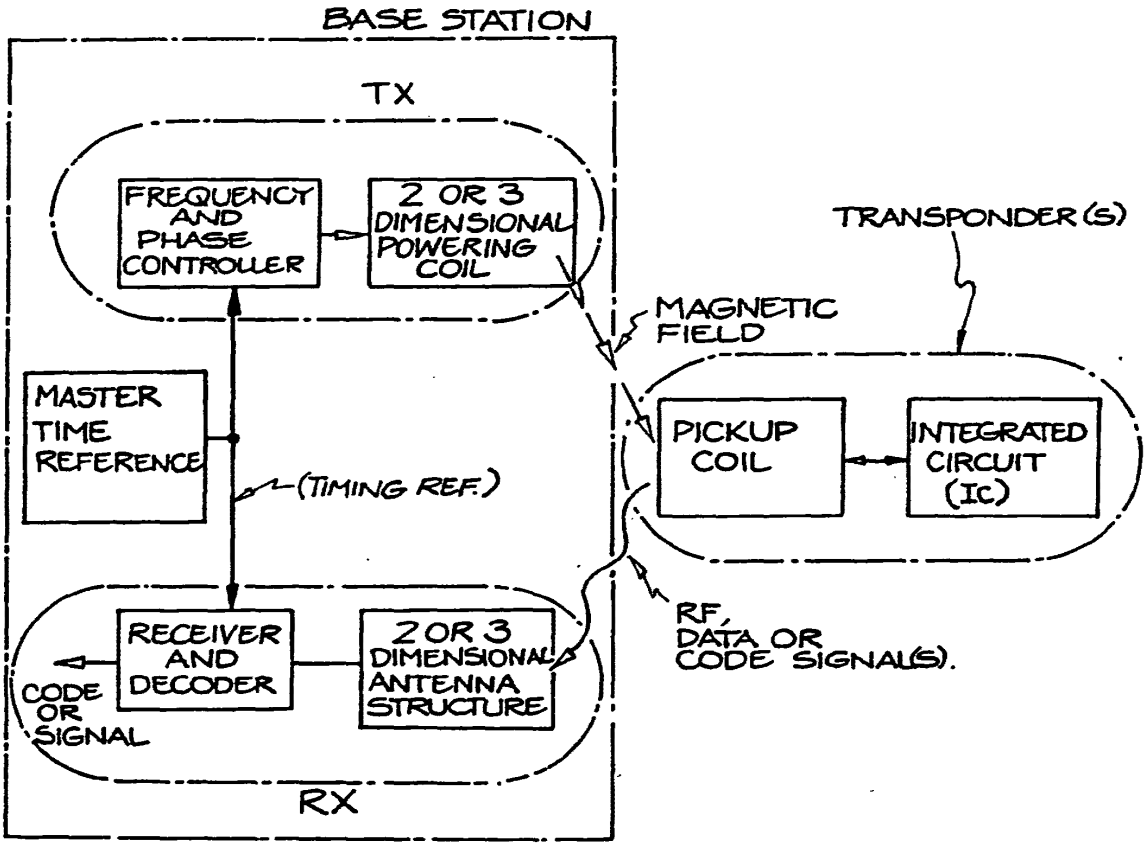

BASE STATION
TX
FREQUENCY AND PHASE CONTROLLER
2 OR 3 DIMENSIONAL POWERING COIL
TRANSPONDER (S)
MAGNETIC FIELD
PICKUP COIL
INTEGRATED CIRCUIT (Ic)
(TIMING REF.)
RF, DATA OR CODE SIGNAL(S).
RECEIVER AND DECODER
2 OR 3 DIMENSIONAL ANTENNA STRUCTURE
CODE OR SIGNAL
RX

FIGURE. 1B


BASE STATION
TX
FREQUENCY AND PHASE CONTROLLER
2 OR 3 DIMENSIONAL POWERING COIL
TRANSPONDER (S)
MAGNETIC FIELD
MASTER TIME REFERENCE
(TIMING REF.)
PICKUP COIL
INTEGRATED CIRCUIT (IC)
RF, DATA OR CODE SIGNAL(S).
RECEIVER AND DECODER
2 OR 3 DIMENSIONAL ANTENNA STRUCTURE
CODE OR SIGNAL
RX

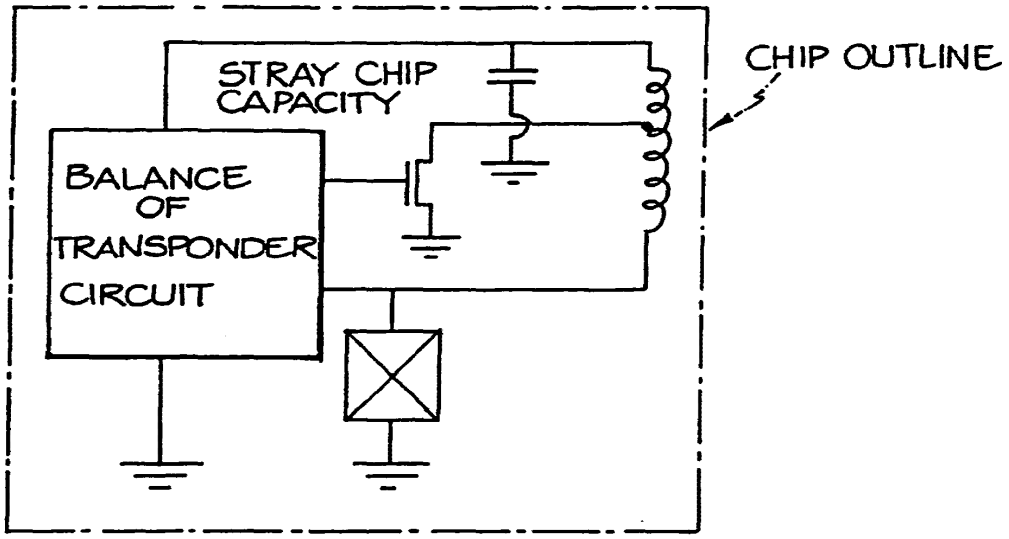
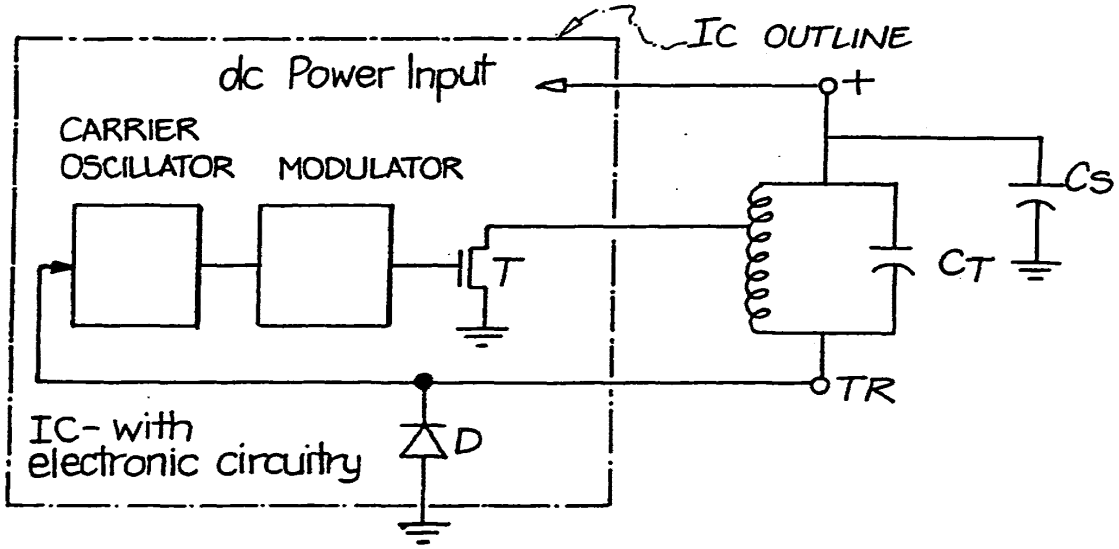


FIGURE.2A

FIGURE.2B



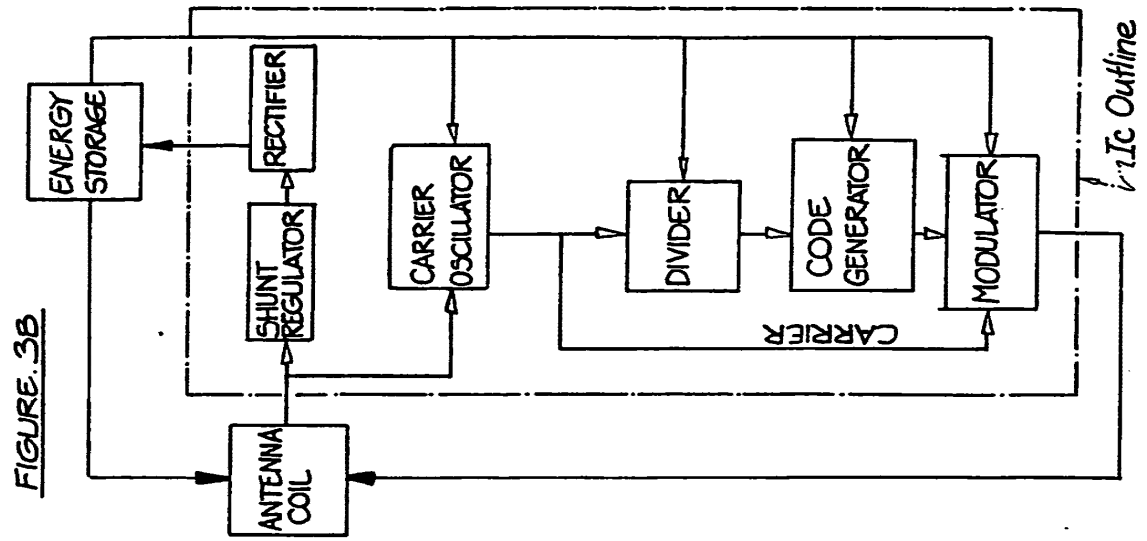


FIGURE. 3B

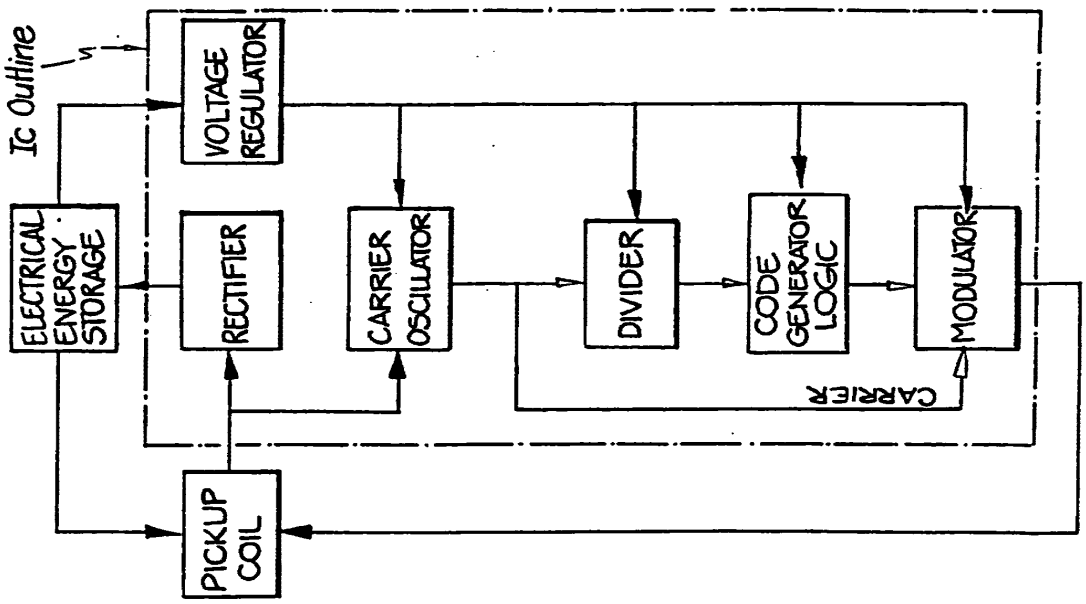
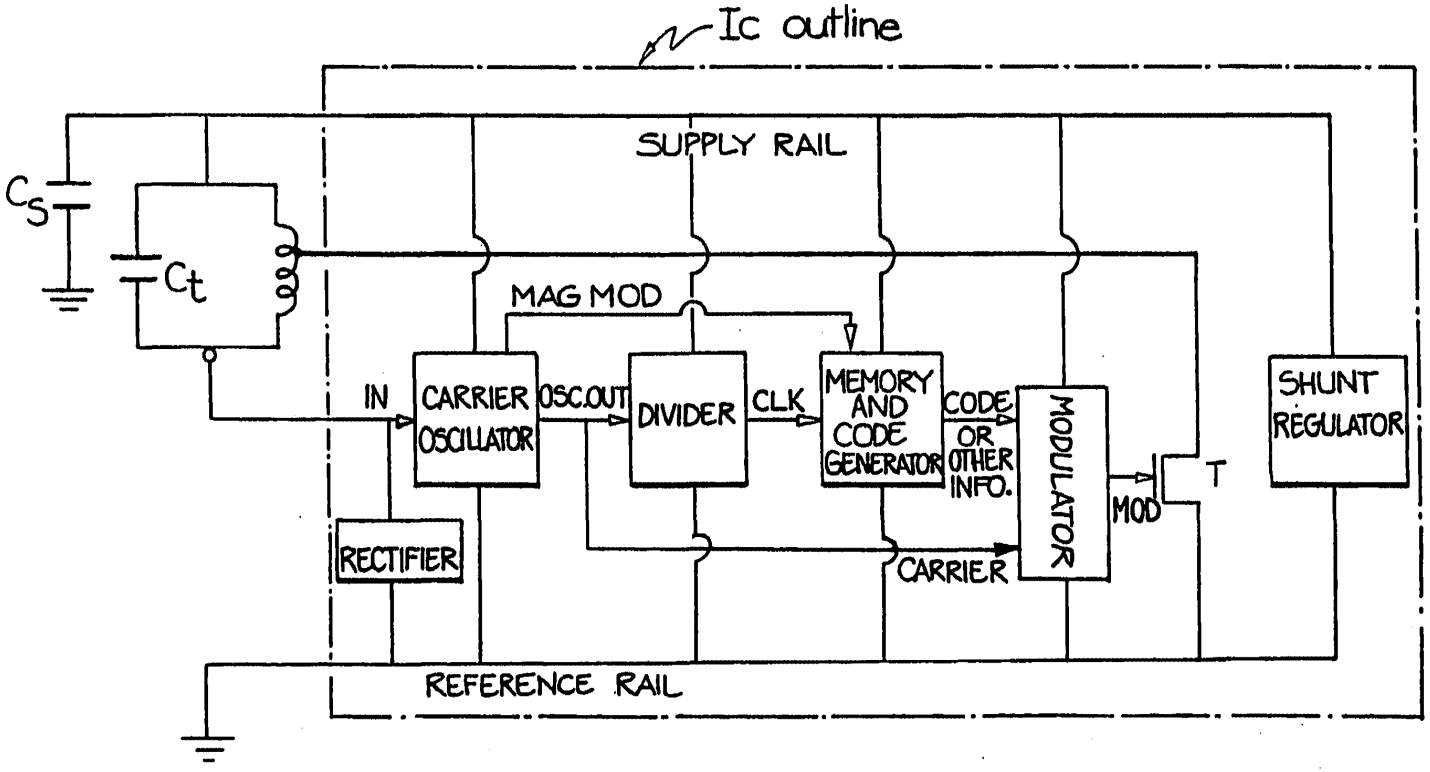


FIGURE. 3A

FIGURE 4A


Ic outline
SUPPLY RAIL
C_S
Ct
MAG MOD
IN
CARRIER OSCILLATOR
OSC.OUT
DIVIDER
CLK
MEMORY AND CODE GENERATOR
CODE OR OTHER INFO.
MODULATOR
T
MOD
SHUNT REGULATOR
RECTIFIER
CARRIER
REFERENCE RAIL

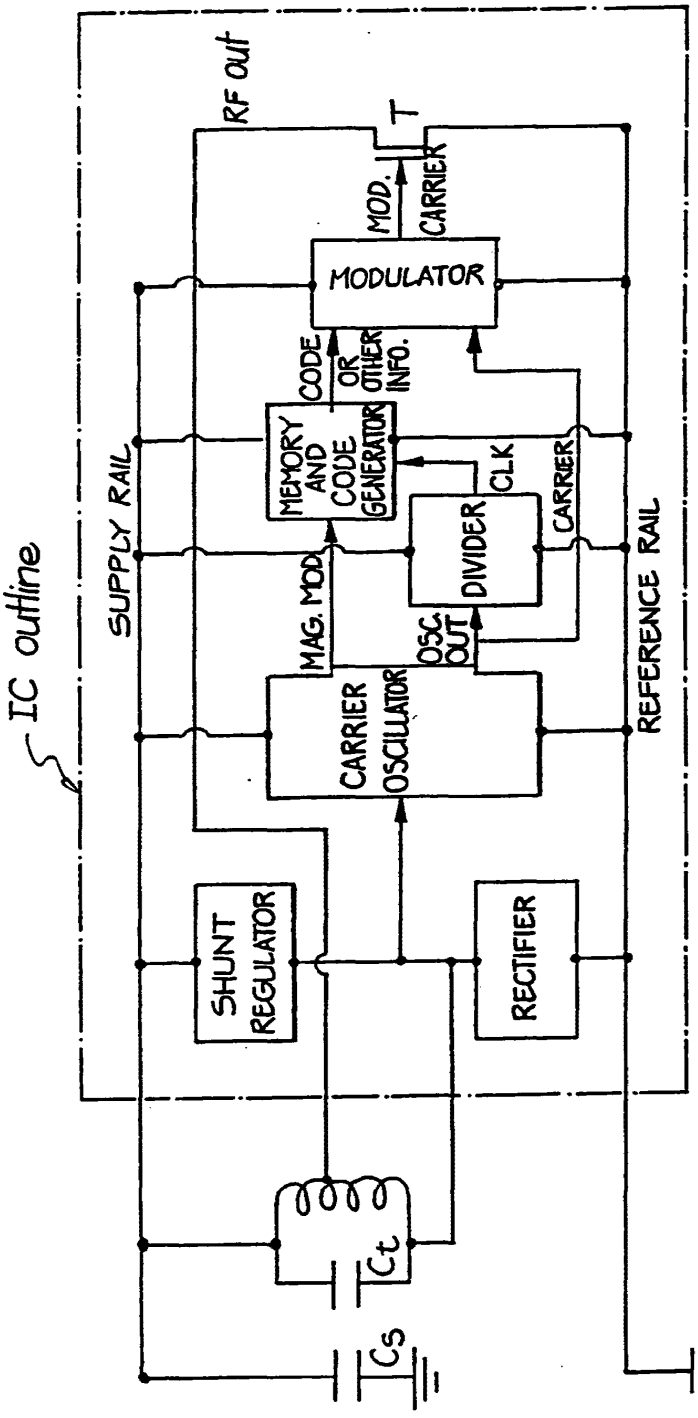

IC outline
SUPPLY RAIL
REFERENCE RAIL
RF out
T
MOD.
CARRIER
MODULATOR
CODE OR OTHER INFO.
MEMORY AND CODE GENERATOR
CLK
CARRIER
DIVIDER
MAG. MOD
OSC. OUT
CARRIER OSCILLATOR
SHUNT REGULATOR
RECTIFIER
Ct
Cs

FIGURE. 4B

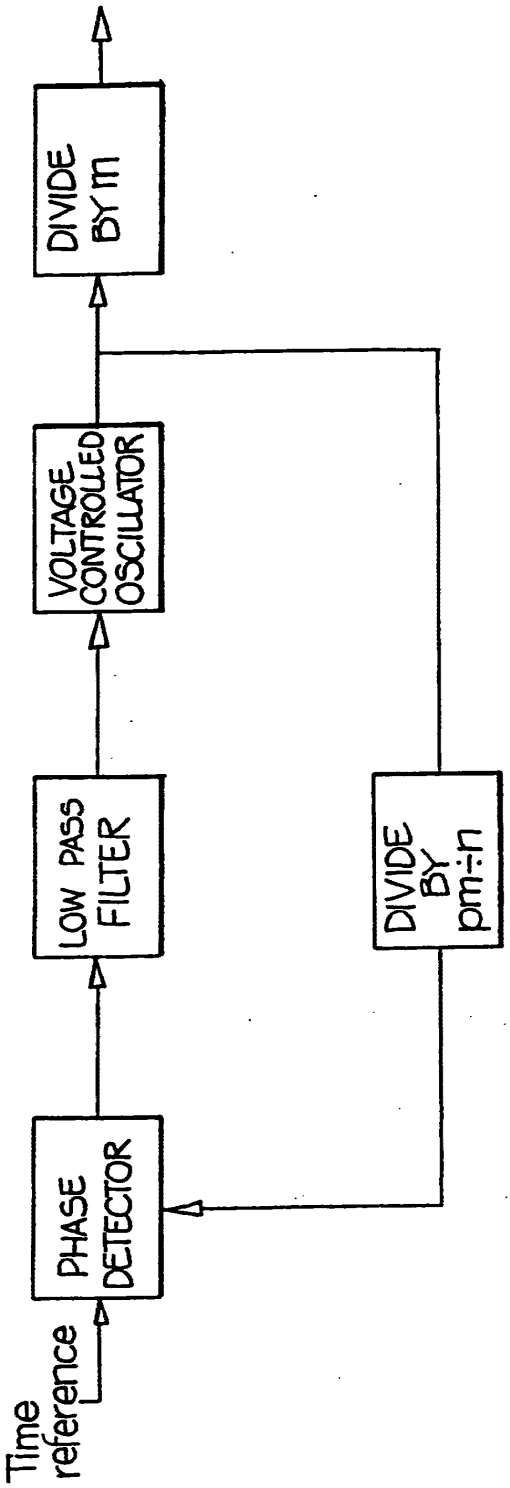
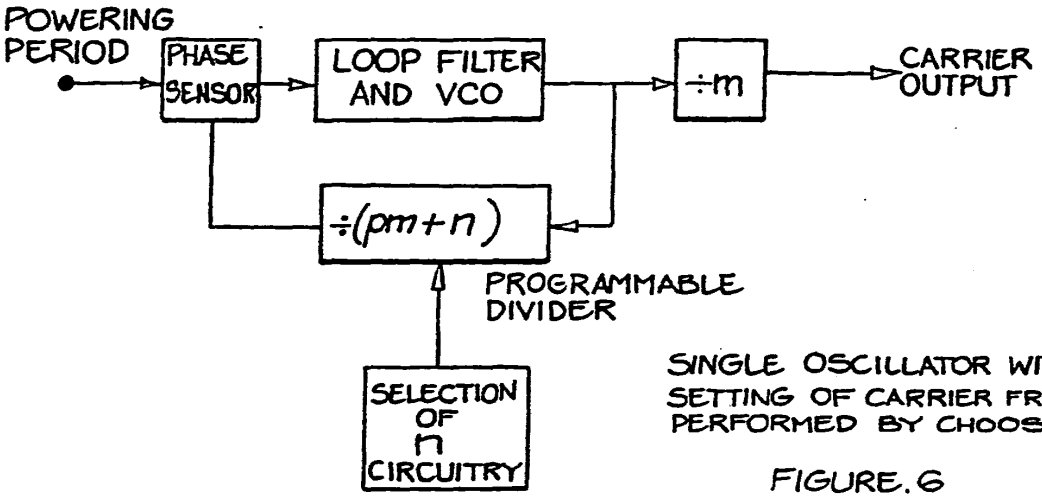
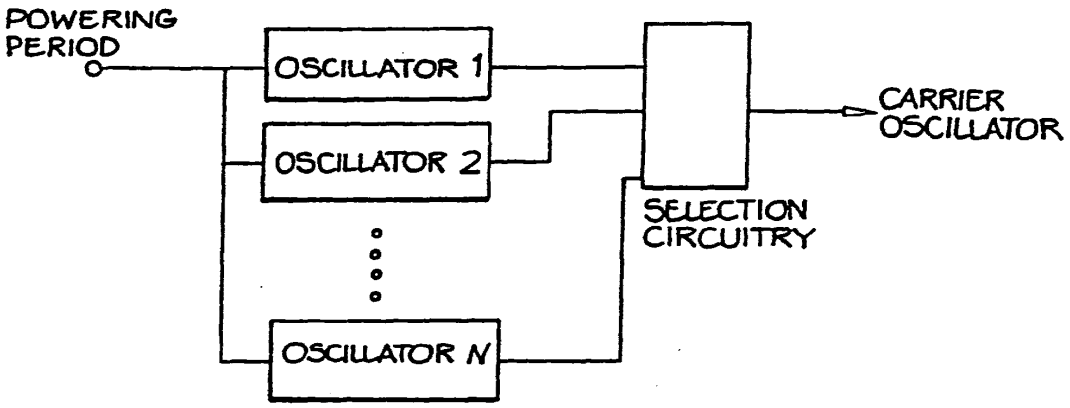

Time reference
PHASE DETECTOR
LOW PASS FILTER
VOLTAGE CONTROLLED OSCILLATOR
DIVIDE BY m
DIVIDE BY pm÷n

FIGURE.5



SINGLE OSCILLATOR WITH SETTING OF CARRIER FREQUENCY PERFORMED BY CHOOSING 'n'

FIGURE. 6



INDIVIDUAL PRESET OSCILLATORS, CARRIER FREQUENCY SELECTED BY CHOOSING OUTPUT FROM (AT LEAST) ONE OSCILLATOR

FIGURE. 7

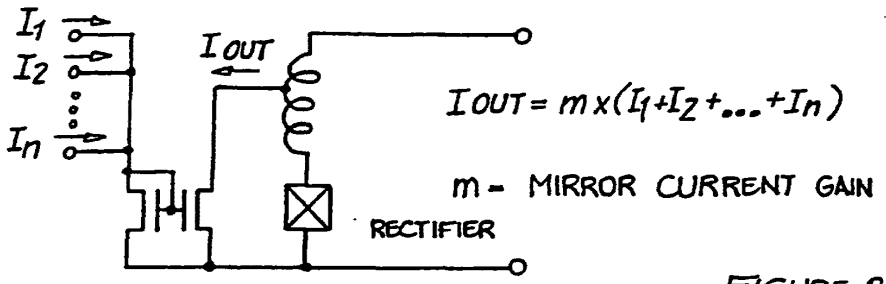


FIGURE.8A

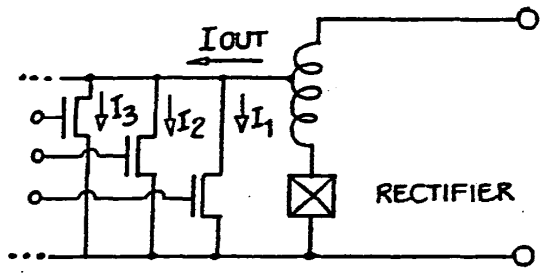


FIGURE.8B

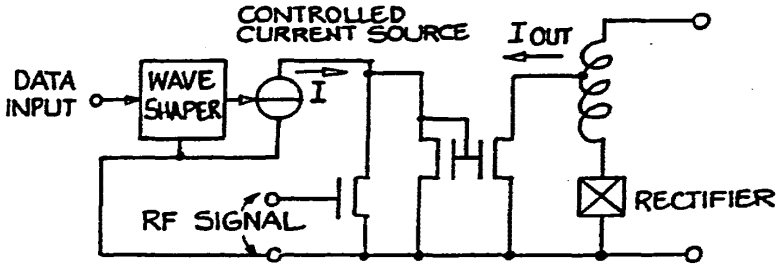


FIGURE 10A

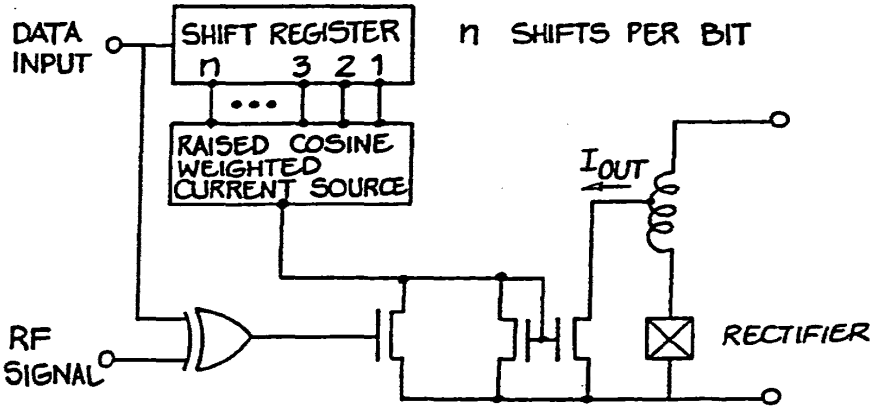


FIGURE.10B

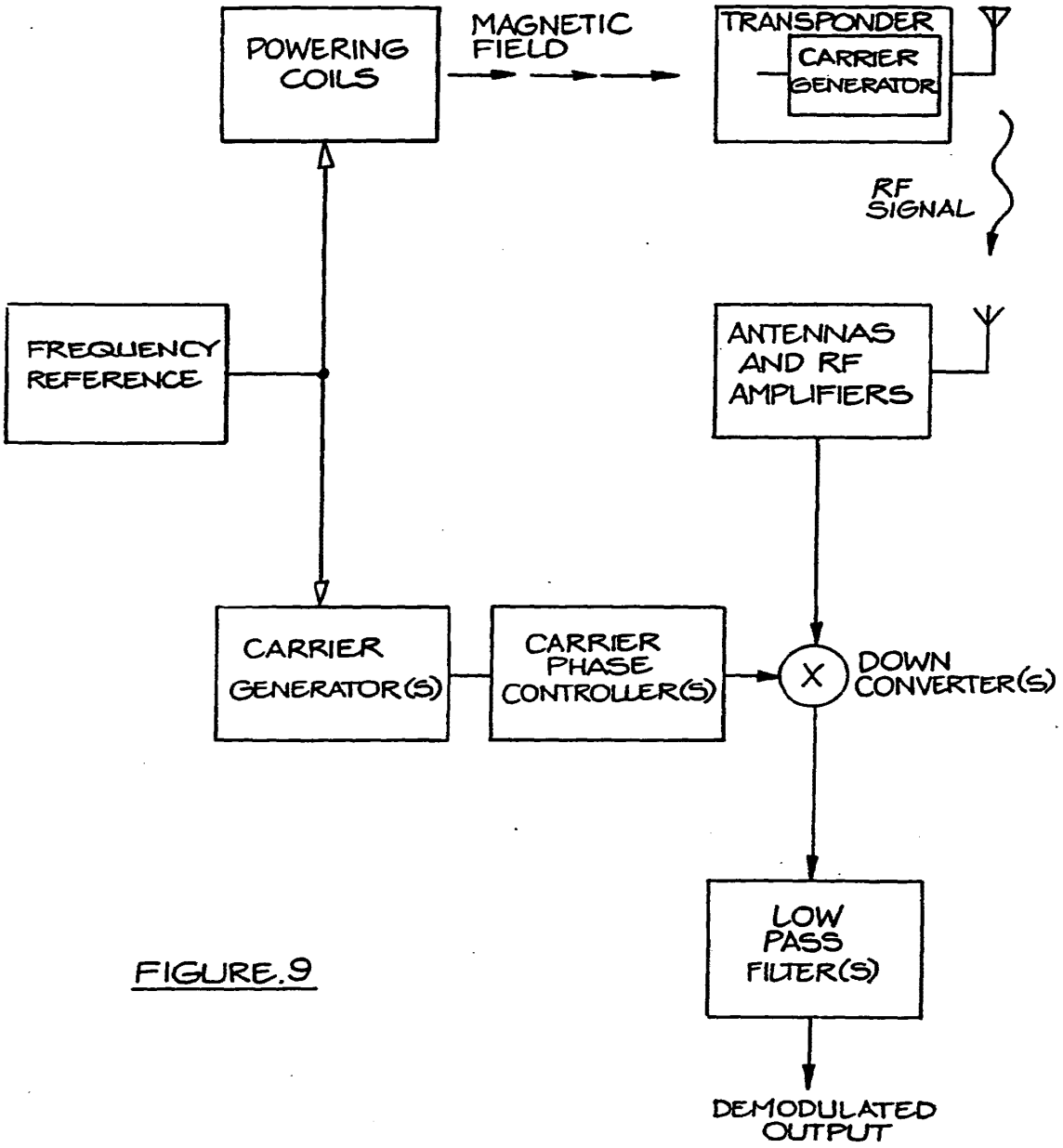

POWERING COILS
MAGNETIC FIELD
TRANSPONDER
CARRIER GENERATOR
RF SIGNAL
FREQUENCY REFERENCE
ANTENNAS AND RF AMPLIFIERS
CARRIER GENERATOR(S)
CARRIER PHASE CONTROLLER(S)
X
DOWN CONVERTER(S)
LOW PASS FILTER(S)
DEMODULATED OUTPUT

FIGURE.9

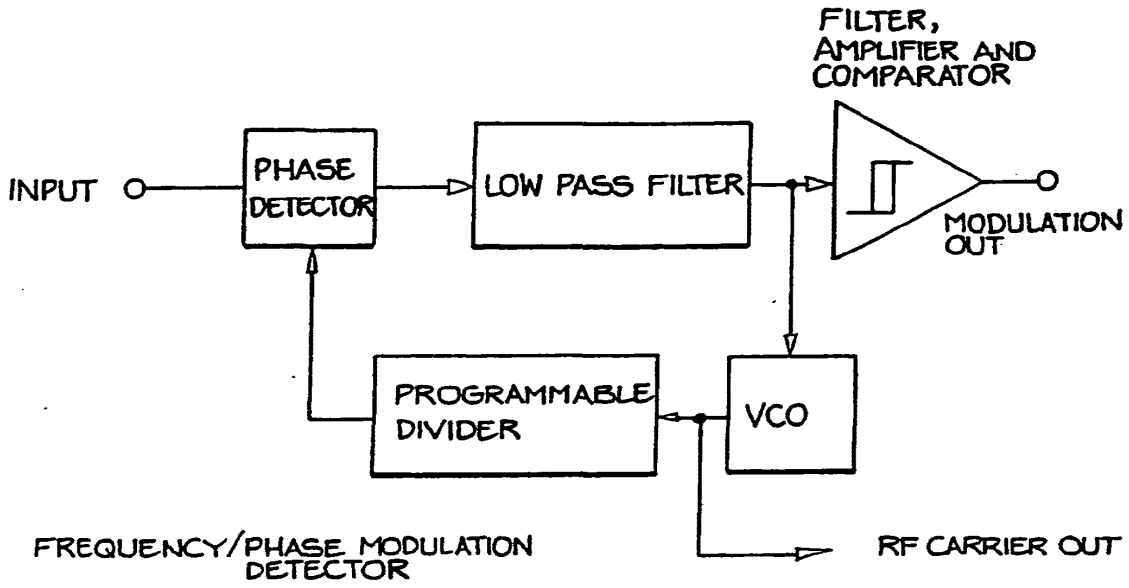


FIGURE. 11

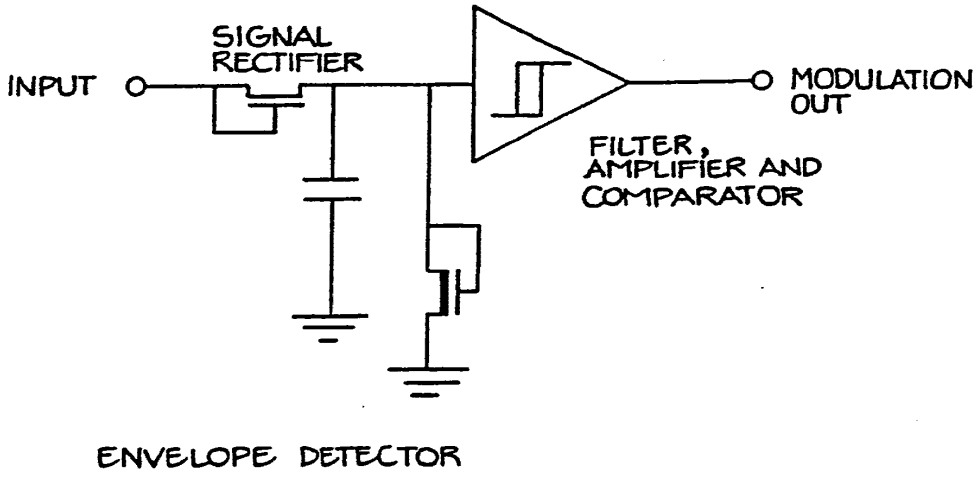


FIGURE. 12

INTERNATIONAL SEARCH REPORT

International Application No PCT/AU 88/00469

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) *

According to International Patent Classification (IPC) or to both National Classification and IPC

Int. Cl.[4] H04B 1/59, 5/00, G08C 19/28

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC	H04B 1/59, 5/00, 5/02, 5/04

Documentation Searched other than Minimum Documentation to the Extent that such Documents are included in the Fields Searched [8]

AU : IPC as above; Australian Classification 05.50

III. DOCUMENTS CONSIDERED TO BE RELEVANT *

Category *	Citation of Document, [11] with indication, where appropriate, of the relevant passages [12]	Relevant to Claim No. [13]
X Y	GB,A, 2163324 (ELECTROMATIC PROPRIETARY LIMITED SOUTH AFRICA) 19 February 1986 (19.02.86)	(10,11) (1,15)
X Y A	GB,A, 2164825 (SATELLITE VIDEO SYSTEMS LTD.) 26 March 1986 (26.03.86)	(10,11) (1,15) (16.18)
X Y	US,A, 3964024 (HUTTON & KRAMER) 15 June 1976 (15.06.76)	(10,11) (1)
X Y A	AU,B, 45334/85 (572321) (SENELCO LIMITED) 29 January 1987 (29.01.87)	(10,11) (1,15) (16.18)
X Y	AU,A, 55902/86 (GENERAL ELECTRIC CO.) 16 October 1986 (16.10.86)	(10,11) (1,15)
X,P Y A	AU,A, 77512/87 (B.I. INCORPORATED) 28 January 1988 (28.01.88)	(10,11) (1,15) (16,18,19)

* Special categories of cited documents: [10]

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
7 March 1989 (07.03.89)	16 MARCH 1989 (16.03.89)
International Searching Authority	**Signature of Authorized Officer**
Australian Patent Office	R. TOLHURST

Form PCT/ISA/210 (second sheet) (January 1985)

FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

V. ☐ OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE [1]

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. ☐ Claim numbers _____, because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claim numbers _____, because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claim numbers _____, because they are dependent claims and are not drafted in accordance with the second and third sentences of PCT Rule 6.4(a).

VI. ☒ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING [2]

This International Searching Authority found multiple inventions in this international application as follows:

(1) An arrangement principally characterised by the transponder being powered by a local induction field.

(2) An arrangement principally characterised by the transponder selecting transmit frequencies from a set according to some rule.

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.

2. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:

3. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:

4. ☐ As all searchable claims could be searched without effort justifying an additional fee, the International Searching Authority did not invite payment of any additional fee.

Remark on Protest

☐ The additional search fees were accompanied by applicant's protest.

☒ No protest accompanied the payment of additional search fees.

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON
INTERNATIONAL APPLICATION NO. PCT/AU 88/00469

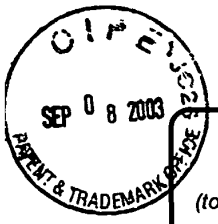
This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report	Patent Family Members		
GB 2163324	AU 46197/85	GB 8420893	GB 8520476
	GB 8813075	GB 2208058	ZA 8506178
GB 2164825	GB 8522951		
US 3964024	CA 1055588	GB 1505093	IT 1055677
AU 55902/86	EP 198642	ES 553816	ES 8900072
	GB 8509135	GB 8607588	GB 2173623
	GB 8817688	GB 2208025	JP 62001052
	NO 861353		
AU 77512/87	EP 274526	WO 8800785	US 4724427

END OF ANNEX/CONTINUED

IFW IMAGE

2632



TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application No.	10/053,540
Filing Date	November 2, 2001
First Named Inventor	Suzy Brown
Group Art Unit	Unassigned
Examiner Name	Unassigned
Total Number of Pages in This Submission	5
Attorney Docket Number	6326P005

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Technology Center 2600

ENCLOSURES *(check all that apply)*

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment / Response
  - ☐ After Final
  - ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☒ Information Disclosure Statement
  - ☒ PTO/SB/08
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Parts/ Incomplete Application
  - ☐ Basic Filing Fee
  - ☐ Declaration/POA
- ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s)
- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group *(Appeal Notice, Brief, Reply Brief)*
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) *(please identify below):*

7 Cited References Including Search Report

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Tarek N. Fahmi, Reg. No. 41,402 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	
Date	9/5/03

CERTIFICATE OF MAILING/TRANSMISSION

Typed or printed name	Carrie Boccaccini		
Signature		Date	9/5/03

Based on PTO/SB/21 (03-03) as modified by Blakely, Sokoloff, Taylor & Zafman (wtr) 08/11/2003.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Docket No.: 6326P005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re the Application of:

SUZY BROWN, ET AL.

Application No.: 10/053,540

Filed: November 2, 2001

For: **Method and Apparatus for Associating the Movement of Goods with the Identity of an Individual Moving the Goods**

Art Group: Unassigned

Examiner: Unassigned

INFORMATION DISCLOSURE STATEMENT UNDER 37 C.F.R. §1.97

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure, enclosed is a copy of Information Disclosure Statement by Applicant (form PTO/SB/08), which is being submitted . It is respectfully requested that the cited references be considered and that the enclosed copy of PTO/SB/08 be initialed by the Examiner to indicate such consideration and a copy thereof returned to applicant(s). Copies of the references cited on PTO/SB/08 are enclosed herewith.

The references were cited in a Search Report dated June 12, 2003 (copy enclosed herewith) from a foreign patent office in a counterpart PCT application.

The submission of this Information Disclosure Statement is not to be construed as a representation that a search has been made in the subject application and is not to be construed as an admission that the information cited in this statement is material to patentability.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: 9/5/03

Tarek N. Fahmi, Reg. No. 41,402

12400 Wilshire Blvd., 7th Floor
Los Angeles, California 90025
(408) 947-8200

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Carrie Boccaccini *Date* 9/5/03

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet | | of | 2

Complete if Known	
Application Number	10/053,540
Filing Date	November 2, 2001
First Named Inventor	Suzy Brown
Art Unit	Unassigned
Examiner Name	Unassigned
Attorney Docket Number	6326P005

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Document Number: Number - Kind Code[2] *(if known)*	Publication Date or Issue Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-6,012,041	01-04-2000	Brewer et al.	
		US-5,038,023	08-06-1991	Saliga	
		US-4,661,806	04-28-1987	Peters et al.	
		US-			
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No.[1]	Foreign Patent Document: Country Code[3] - Number[4] - Kind Code[5] *(if known)*	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T[6]
		EP 0 494 114 A	07-08-1992	Marsh		
		GB 2 342 208 A	04-05-2000	Ogasawara		
		WO 89/05549	06-15-1989	Brooks et al.		

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

[1]Applicant's unique citation designation number (optional). [2]See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. [3]Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). [4]For Japanese patent documents, the indication of the year of reign of the Emperor must precede the serial number of the patent document. [5]Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. [6]Applicant is to place a check mark here if English language Translation is attached.

Based on PTO/SB/08A (08-03) as modified by Blakely, Sokoloff, Taylor & Zafman (wtr) 08/11/2003.

Send To: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Sheet	2	of	2

Complete if Known	
Application Number	10/053,540
Filing Date	November 2, 2001
First Named Inventor	Suzy Brown
Art Unit	Unassigned
Examiner Name	Unassigned
Attorney Docket Number	6326P005

OTHER ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[2]
		PCT International Search Report for PCT/US 01/51184, mailed June 12, 2003, 7 pages.	

Examiner Signature		Date Considered	

*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

[1]Applicant's unique citation designation number. [2]Applicant is to place a check mark here if English language Translation is attached.

Based on PTO/SB/08B (08-03) as modified by Blakely, Sokoloff, Taylor & Zafman (wtr) 08/11/2003.
Send To: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

COPY OF PAPERS
ORIGINALLY FILED

A3

ATTORNEY DOCKET NO.: 4407P005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

SUZY BROWN, ET AL.

Application No.: 10/053,540

Filed: November 2, 2001

For: **Method and Apparatus for Associating the Movement of Goods with the Identity of an Individual Moving the Goods**

Assistant Commissioner for Patents
Attention: Box Missing Parts
Washington, D.C. 20231

RESPONSE TO NOTICE TO FILE MISSING PARTS

Sir:

In response to the Notice to File Missing Parts mailed February 20, 2002, please find enclosed:

- a duly executed Declaration and Power of Attorney and payment in the amount of $130.00 for the surcharge of 37 CFR § 1.16(e);

and

- copy of the Notice to file Missing Parts of Application.

If any additional fee is required, please charge Deposit Account No. 02-2666. An extra copy of the Fee Transmittal is enclosed for deposit account charging purposes.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: April 5, 2002

Tarek N. Fahmi, Reg. No. 41,402

12400 Wilshire Blvd., 7th Floor
Los Angeles, California 90025

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to: Assistant Commissioner for Patents, Attention: Box Missing Parts, Washington, D.C. 20231 on: April 5, 2002.

Sarah M. Montgomery 4/5/02
Date

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/053,540	11/02/2001	Suzy Brown	4407P005

CONFIRMATION NO. 6075

08791
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

FORMALITIES LETTER

OC000000007501045

Date Mailed: 02/20/2002

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is unsigned.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(l) of $130 for a non-small entity, must be submitted with the missing items identified in this letter.
- **The balance due by applicant is $ 130.**

A copy of this notice MUST be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202
PART 2 - COPY TO BE RETURNED WITH RESPONSE

05/01/2002 GGEBREGI 00000044 10053540

01 FC:105 130.00 OP

#3

COPY OF PAPERS
ORIGINALLY FILED

Attorney's Docket No.: 4407P005

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Method and Apparatus for Associating the Movement of Goods with the Identity of an Individual Moving the Goods

the specification of which ☐ is attached hereto.
☒ was filed on 11/02/2001 as
United States Application Number 10/053,540
or PCT International Application Number _____
and was amended on _____
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application. I do not know and do not believe that the claimed invention was in public use or on sale in the United States of America more than one year prior to this application, nor do I know or believe that the invention has been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):

APPLICATION NUMBER	COUNTRY (OR INDICATE IF PCT)	DATE OF FILING (day, **month**, year)	PRIORITY CLAIMED UNDER 37 USC 119
			☐ No ☐ Yes
			☐ No ☐ Yes
			☐ No ☐ Yes

I hereby claim the benefit under Title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below:

APPLICATION NUMBER	FILING DATE
60/245,767	11/03/2000

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

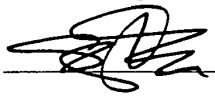
APPLICATION NUMBER	FILING DATE	STATUS (ISSUED, PENDING, ABANDONED)

I hereby appoint the persons listed on Appendix A hereto (which is incorporated by reference and a part of this document) as my respective patent attorneys and patent agents, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Send correspondence to:
Sanjeet K. Dutta, Reg. No. 46,145, BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN, LLP
(Name of Attorney or Agent)
12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 90025 and direct telephone calls to:
Sanjeet K. Dutta, (408) 947-8200.
(Name of Attorney or Agent)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole/First Inventor (given name, family name) **Suzy Brown**

Inventor's Signature  Date 3/18/02

Residence Menlo Park, California USA (*City, State*) Citizenship USA (*Country*)

Mailing Address 823 College Avenue
Menlo Park, California 94025 USA

Full Name of Second/Joint Inventor (given name, family name) **David Kucharczyk**

Inventor's Signature  Date 3/18/02

Residence Santa Fe, New Mexico USA (*City, State*) Citizenship USA (*Country*)

Mailing Address 2442 Cerrillos Road #153
Santa Fe, New Mexico 87505 USA

Appendix A

I hereby appoint BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP, a firm including: Ramin Aghevli, Reg. No. 43,462; William E. Alford, Reg. No. 37,764; Farzad E. Amini, Reg. No. 42,261; W. Thomas Babbitt, Reg. No. 39,591; Jordan M. Becker, Reg. No. 39,602; Michael A. Bernadicou, Reg. No. 35,934; Roger W. Blakely, Jr., Reg. No. 25,831; R. Alan Burnett, Reg. No. 46,149; Daniel J. Burns, Reg. No. 50,222; Gregory D. Caldwell, Reg. No. 39,926; Thomas M. Coester, Reg. No. 39,637; Robert P. Cogan, Reg. No. 25,049; Donna J. Coningsby, Reg. No. 41,684; Florin Alin Corie, Reg. No. 46,244; Sang N. Dang, Reg. No. 51,186; Mimi D. Dao, Reg. No. 45,628; James K. Dawson, Reg. No. 41,701; Stephen M. De Klerk, Reg. No. P46,503; Michael A. DeSanctis, Reg. No. 39,957; Daniel M. DeVos, Reg. No. 37,813; Justin M. Dillon, Reg. No. 42,486; Sanjeet K. Dutta, Reg. No. 46,145; Matthew C. Fagan, Reg. No. 37,542; Tarek N. Fahmi, Reg. No. 41,402; Mark C. Farrell, Reg. No. 45, 988; Thomas S. Ferrill, Reg. No. 42,532; Kyle H. Flindt, Reg. No. 42,539; George L. Fountain, Reg. No. 36,374; Angelo M. Gaz, Reg. No. 45,907; Andre M. Gibbs, Reg. No. 47,593; James Y. Go, Reg. No. 40,621; Mark A. Goldstein, Reg. No. 50,750; Alan E. Heimlich, Reg. No. P48,808; James A. Henry, Reg. No. 41,064; Libby H. Hope, Reg. No. 46,774; Willmore F. Holbrow III, Reg. No. 41,845; Sheryl Sue Holloway, Reg. No. 37,850; George W Hoover II, Reg. No. 32,992; Eric S. Hyman, Reg. No. 30,139; William W. Kidd, Reg. No. 31,772; Walter T. Kim, Reg. No. 42,731; Eric T. King, Reg. No. 44,188; Steven Laut, Reg. No. 47,736; Samuel S. Lee, Reg. No. 42,791; Suk S. Lee, Reg. No. 47,745; Gordon R. Lindeen III, Reg. No. 33,192; Jan C. Little, Reg. No. 41,181; Julio Loza, Reg. No. 47,758; Joseph Lutz, Reg. No. 43,765; Lawrence E. Lycke, Reg. No. 38,540; Michael J. Mallie, Reg. No. 36,591; Andre L. Marais, Reg. No. 48,095; Raul Martinez, Reg. No. 46,904; Paul A. Mendonsa, Reg. No. 42,879; Clive D. Menezes, Reg. No. 45,493; Richard A. Nakashima, Reg. No. 42,023; Thien T. Nguyen, Reg. No. 43,835; Thinh V. Nguyen, Reg. No. 42,034; Robert B. O'Rourke, Reg. No. 46,972; Daniel E. Ovanezian, Reg. No. 41,236; Gregg A. Peacock, Reg. No. 45,001; Marina Portnova, Reg. No. 45,750; Michael A. Proksch, Reg. No. 43,021; Randol W. Read, Reg. No. 43,876; William F. Ryann, Reg. 44,313; James H. Salter, Reg. No. 35,668; William W. Schaal, Reg. No. 39,018; James C. Scheller, Reg. No. 31,195; Jeffrey S. Schubert, Reg. No. 43,098; Maria E. Sobrino, Reg. No. 31,639; Stanley W. Sokoloff, Reg. No. 25,128; Judith A. Szepesi, Reg. No. 39,393; Ronald S. Tamura, Reg. No. 43,179; Edwin H. Taylor, Reg. No. 25,129; Lance A. Termes, Reg. No. 43,184; John F. Travis, Reg. No. 43,203; Thomas J. Treutler, Reg. No. 51,126; Kerry P. Tweet, Reg. No. 45,959; Mark C. Van Ness, Reg. No. 39,865; Thomas Van Zandt, Reg. No. 43,219; Lester J. Vincent, Reg. No. 31,460; Archana B. Vittal, Reg. No. 45,182; Glenn E. Von Tersch, Reg. No. 41,364; John P. Ward, Reg. No. 40,216; Mark L. Watson, Reg. No. 46,322; Thomas C. Webster, Reg. No. 46,154; Linda S. Zachariah, Reg. No. 48,057; and Norman Zafman, Reg. No. 26,250; my patent attorneys, and William E. Hickman, Reg. No. 46,771; Jonathan S. Miller, Reg. No. 48,534; Brent E. Vecchia, Reg. No. 48,011; and Lehua Wang, Reg. No. 48,023; my patent agents, with offices located at 12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 90025, telephone (714) 557-3800; and James R. Thein, Reg. No. 31,710, my patent attorney; with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Title 37, Code of Federal Regulations, Section 1.56
Duty to Disclose Information Material to Patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclosure information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclosure all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made or record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

UNITED STATES PATENT AND TRADEMARK OFFICE

COMMISSIONER FOR PATENTS
UNITED STATES PATENT AND TRADEMARK OFFICE
WASHINGTON, D.C. 20231
www.uspto.gov

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/053,540	11/02/2001	Suzy Brown	4407P005

CONFIRMATION NO. 6075

08791
BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

FORMALITIES LETTER

OC000000007501045

Date Mailed: 02/20/2002

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is unsigned.
- To avoid abandonment, a late filing fee or oath or declaration surcharge as set forth in 37 CFR 1.16(l) of $130 for a non-small entity, must be submitted with the missing items identified in this letter.
- **The balance due by applicant is $ 130.**

A copy of this notice MUST be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202
PART 3 - OFFICE COPY

01-23-02

Please type a plus sign (+) inside this box → +

PTO/SB/05 (11-00)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	4407P005
First Inventor	Suzy Brown, et al.
Title	Method and Apparatus for Associating the Movement of Goods with the
Express Mail Label No.	EL617184548US

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. ☒ Fee Transmittal Form (e.g., PTO/SB/17)
(Submit an original and a duplicate for fee processing)

2. ☐ Applicant claims small entity status.
See 37 CFR 1.27.

3. ☒ Specification [Total Pages 25]
(preferred arrangement set forth below)
- Descriptive title of the Invention
- Cross References to Related Applications
- Statement Regarding Fed sponsored R & D
- Reference to sequence listing, a table, or a computer program listing appendix
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings (if filed)
- Detailed Description
- Claim(s)
- Abstract of the Disclosure

4. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets 3]

5. Oath or Declaration [Total Pages 5]
a. ☐ Newly executed (original or copy)
b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d))
(for continuation/divisional with Box 18 completed)
i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b)

6. ☐ Application Data Sheet. See 37 CFR 1.76

7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)

8. Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
a. ☐ Computer Readable Form (CRF)
b. Specification Sequence Listing on:
i. ☐ CD-ROM or CD-R (2 copies); or
ii. ☐ paper
c. ☐ Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. ☐ Assignment Papers (cover sheet & document(s))
10. ☐ 37 C.F.R. § 3.73(b) Statement (when there is an assignee) ☒ Power of Attorney
11. ☐ English Translation Document (if applicable)
12. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations
13. ☐ Preliminary Amendment
14. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
16. ☐ Request and Certification under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent.
17. ☐ Other: _____

18. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:
☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No: _____
Prior application Information: Examiner Not Yet Assigned Group/Art Unit: Not Yet Assigned

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

18. CORRESPONDENCE ADDRESS

☒ Customer Number or Bar Code Label 08791
PATENT TRADEMARK OFFICE
(Insert Customer No. or Attach bar code label here)
or ☒ Correspondence address below

Name	Sanjeet K. Dutta				
	Blakely, Sokoloff, Taylor & Zafman LLP				
Address	12400 Wilshire Boulevard, Seventh Floor				
City	Los Angeles	State	California	Zip Code	90025-1030
Country	USA	Telephone	(408) 947-8200	Fax	(408) 947-8280

Name (Print/Type)	Sanjeet K. Dutta	Registration No. (Attorney/Agent)	46,145
Signature	Sanjeet Dutta	Date	11/2/01

Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Box Patent Application, Washington, DC 20231

PTO/SB/17 (10-01)
Approved for use through 10/31/2002 OMB 0651-0032
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

FEE TRANSMITTAL for FY 2000

Patent fees are subject to annual revision.

TOTAL AMOUNT OF PAYMENT ($) 1,172.00

Complete if Known	
Application Number	Not Yet Assigned
Filing Date	November 2, 2001
First Named Inventor	Suzy Brown
Examiner Name	Not Yet Assigned
Group/Art Unit	Not Yet Assigned
Attorney Docket No.	4407P005

METHOD OF PAYMENT (check one)

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any overpayments to:

Deposit Account Number: 02-2666

Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

☒ Charge Any Additional Fee(s) Required Under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20

☐ Applicant claims small entity status. See 37 CFR 1.27

2. ☒ **Payment Enclosed:**

☒ Check ☐ Credit card ☐ Money Order ☐ Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	740	201	370	Utility filing fee	740.00
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	80	Provisional filing fee	

SUBTOTAL (1) ($) 740.00

2. EXTRA CLAIM FEES

			Extra Claims		Fee from below		
Total Claims	44	- 20** =	24	X	18.00	=	$432.00
Independent Claims	3	- 3** =	0	X	84.00	=	$0.00
Multiple Dependent						=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple Dependent claim, if not paid
109	84	209	42	**Reissue independent claims over original patent
110	18	210	9	**Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 432.00

***or number previously paid, if greater, For Reissues, see below*

FEE CALCULATION (continued)

3. ADDITIONAL FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet.	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for *ex parte* reexamination	
112	920*	112	920*	*Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	*Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	920	217	460	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	320	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	
121	280	221	140	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive - unavoidable	
141	1,280	241	640	Petition to revive - unintentional	
142	1,280	242	640	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Prosessing fee under 37 CFR 1.17(q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	740	246	370	Filing a submission after final rejection (37 CFR § 1.129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))	
179	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	

Other fee (specify) _____

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($)

SUBMITTED BY

Complete (if applicable)

Name (Print/Type)	Sanjeet K. Dutta	Registration No. (Attorney/Agent)	46,145	Telephone	(408) 947-8200
Signature	Sanjeet Dutta			Date	11/2/01

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APPLICATION FOR UNITED STATES LETTERS PATENT

METHOD AND APPARATUS FOR ASSOCIATING THE MOVEMENT OF GOODS WITH THE IDENTITY OF AN INDIVIDUAL MOVING THE GOODS

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Docket No. 4407P005

EXPRESS MAIL CERTIFICATE OF MAILING

"Express Mail" mailing label number: EL617184548US

Date of Deposit: November 2, 2001

I hereby certify that I am causing this paper or fee to be deposited with the United States Postal Service "Express Mail Post Office to Addressee" service on the date indicated above and that this paper or fee has been addressed to the Assistant Commissioner for Patents, Washington, D. C. 20231

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(Signature of person mailing paper or fee)

METHOD AND APPARATUS FOR ASSOCIATING THE MOVEMENT OF GOODS WITH THE IDENTITY OF AN INDIVIDUAL MOVING THE GOODS

RELATED APPLICATION

[0001] The present application is related to and claims the priority benefit of co-pending U.S. Provisional Application 60/245,767, entitled "Controlled Access Coupled with the Movement of Goods", filed November 3, 2000 by the present inventors.

FIELD OF THE INVENTION

[0002] The present invention relates generally to inventory control and, more particularly, to a system and method for monitoring the existence, location, and movement of objects in inventory as well as providing secure and traceable access to them.

BACKGROUND OF THE INVENTION

[0003] In today's fast-paced world, accurately monitoring the existence, location, and movement of objects in inventory is becoming increasingly important to businesses and other organizations. Although sophisticated systems exist to track objects (e.g., active and passive radio frequency identification (RFID) tags or other wireless devices, barcode scanners, PDAs, etc.), there are limitations with the current approaches.

[0004] One problem involves maintaining the ready availability of supplies that are critical to the proper functioning of an organization. This is particularly true for the growing number of companies whose businesses depend on their equipment being absolutely free from the interruption of service (e.g., failure of networking, computer, or communications equipment, etc.) that the lack of a replacement part may cause. To limit

storage space and expense, businesses often keep inventory levels at a minimum. Suppliers and technicians store spare parts at forward stocking locations, remote depots, and public storage facilities in an attempt to keep inventory close to customers to reduce response times. However, failure by personnel to scan or to properly track and monitor inventory such as communications equipment and computer parts when they are moved from storage areas often results in erroneous information in the inventory system. Thus, supplies may not be tracked in real-time or replenished when necessary. Moreover, many methods do not provide visibility, let alone real-time visibility, into the actual inventory in a given location nor sufficiently control or secure access to valuable inventory. Existing approaches may provide some secure means of access such a locked door or cabinet using physical keys and/or a method for tracking and viewing inventory; however, none couple both of these methods such that a reliable system could know what and when a particular inventory item was removed by a particular person.

[0005] It would be helpful if a system existed to more efficiently track and monitor objects in inventory and to quickly and reliably decrement or increment items in stock while concurrently associating the movement of inventory with a particular person based on data automatically provided to the system rather than relying on a person to re-trace their steps and manually enter inventory changes via paperwork or independent computer interface.

SUMMARY

[0006] The present invention provides a system and method for determining the identity of an entity (e.g., an individual or an automated device) which entered a confined space and automatically associating, using a computer system, the identity with the removal or addition of objects in the confined space. In addition, unauthorized accesses to a controlled space and/or unauthorized movements of goods may be recorded and/or reported.

[0007] In one embodiment, the identity of the entity is determined at a controller associated with the confined space. The controller unlocks a locking mechanism that allows the entity to have access to the confined space. A tracking system coupled to the computer system monitors the movement of the entity and also the addition and/or removal of objects in the confined space. The computer system associates the identity with the addition or removal of objects and transmits this information to a server computer system. A user may access this information using client computers coupled to the server computer system. Similarly, any unauthorized accesses to the space and/or unauthorized movements of goods to/from/within the space may be recorded and/or reported by the computer system.

[0008] In another embodiment, the server computer system notifies a user through a network interface, telephone interface, or wireless interface of the movement of an object (and/or the association of the movement of the object with an identity). Such reports may be made for authorized and/or unauthorized movements. Objects may be automatically replenished or returned or a party may be billed as a result of the notification. For example, in one embodiment, the server computer system automatically notifies an

organization's pre-existing inventory control system that an object has been removed from a confined space (e.g., from inventory) by a particular entity. Based on this information, the inventory control system may automatically take steps to replenish the object that was removed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] The present invention is illustrated by way of example, and not limitation, in the figures of the accompanying drawings in which like reference numerals refer to similar elements and in which:

[0010] **Figure 1A** is a schematic diagram illustrating a storage area configured in accordance with an embodiment of the present invention;

[0011] **Figure 1B** illustrates an example of a locking mechanism controller for the storage area shown in **Figure 1A**;

[0012] **Figure 2** is a schematic diagram illustrating a remote inventory management system communicating the ingress or egress of objects in inventory to a server computer system according to an embodiment of the present invention;

[0013] **Figure 3** is a flow chart illustrating a remote inventory management system automatically implementing inventory management solutions according to an embodiment of the present invention;

[0014] **Figure 4** is a schematic diagram illustrating components of a remote inventory management system according to an embodiment of the present invention; and

[0015] **Figure 5** is an illustration of a barcode sheet used to enter transaction data into a remote inventory management system according to an embodiment of the present invention.

DETAILED DESCRIPTION

[0016] A system and method for associating the movement of goods with the identity of an individual or other entity responsible for or connected with such movement is described below. Although discussed with reference to certain illustrated embodiments, upon review of this specification, those of ordinary skill in the art will recognize that the present invention may find application in a variety of systems. Therefore, in the following description the illustrated embodiments should be regarded as exemplary only and should not be deemed limiting in scope.

[0017] In one embodiment, the present system and method allows for identifying who and/or what entered a confined space by virtue of identity information provided as the entity (i.e., a person or robot) enters the space or by the identity being interpreted and accepted by a controller which unlocks a locking mechanism to allow access to the space. The identity is then associated with the movement, addition or removal of objects in the space. In addition, the present scheme includes communicating information regarding objects in inventory to a server or other device on a demand and/or an on-going basis (any time interval). In another embodiment, the scheme includes communicating information regarding objects in inventory to a server or other device only when there is a change in inventory. Features of the system and method also include tracking the existence, location, and movement of objects in inventory, associating the movement of objects with an identity, and providing this information to an automated system and/or one or more individuals. This information may be used to automatically replenish stock, bill an appropriate party for goods, return objects to storage areas when necessary, and

for other similar services related to the effective management of inventory in an organization.

[0018] In addition, unauthorized accesses to a controlled space may be reported and/or recorded. Such accesses may be deemed unauthorized if an appropriate entry code is not received by the controller. Further, unauthorized movements of goods within/to/from the space may be reported and/or recorded by the server.

[0019] By associating an identity with the movement of objects in inventory, stock may be utilized and maintained in a secure and traceable fashion. The likelihood of theft or improper documentation (e.g., as a result of personnel failing to scan a barcode when removing an item from inventory) is thus markedly decreased.

[0020] Referring now to Figure 1A there is shown a schematic diagram illustrating a storage area 100 configured in accordance with an embodiment of the present invention. While the present invention is explained in the environment of storage room 110, the scope of the invention may also include other environments in which objects are stored and are occasionally removed on a permanent or temporary basis (e.g., video stores, libraries, rental stores, etc.). The storage room 110 may have multiple objects in inventory 112, 114, 116, etc., stored in a variety of ways (e.g., on shelves, in boxes, on tables, etc.). The objects in inventory 112, 114, 116, etc., may be any portable item which an organization desires to monitor so as to prevent unauthorized removal from the storage area 110 and also for inventory management purposes (e.g., so as to replenish items as necessary). For instance, items may include communications equipment (e.g., network routers, computers, facsimile machines, cellular phones, modems, etc.), portable computer media (e.g., computer disks, backup tapes, etc.), general office supplies (such

as printers, paper, staplers, file folders, and the like) or any other valuable items that are necessary for the proper functioning of an organization. Of course, it should be noted that the present scheme is not limited to office equipment. For example, the storage room 110 may be in an organization in the industrial sector and the objects in inventory 112, 114, 116, etc., may be tools in a maintenance depot that are needed for a particular project (e.g., such as to repair an automobile or an airplane, etc.). In addition, it should be appreciated that the storage room 110 may also be a storage container or some other type of enclosure (not shown in this view) in which objects in inventory 112, 114, 116, etc., may be stored.

[0021] The storage room 110 also contains elements to monitor the objects in inventory 112, 114, 116, etc. According to one embodiment, the objects in inventory 112, 114, 116, etc., may be monitored by RFID tags 120, 122, 124, etc. As is well-known in the art, the RFID tags 120, 122, 124, etc., include an RF circuit for use in detecting when an RFID tag is within a zone monitored by a base station (such as a reader, interrogator, or some other device (not shown in this view)). The RFID tags 120, 122, 124, etc., may be mounted on the surface of an item in inventory, enclosed or embedded in the item, or otherwise secured to the item. For example, the RFID tags 120, 122, 124, etc., may be enclosed within the casing of a printed circuit board, cellular phone, facsimile machine, laptop computer, in the packaging material for an item, etc.

[0022] Wherever the RFID tags 120, 122, 124, etc., are located, the reader, interrogator, or other monitoring device utilizes wireless communication techniques to read and/or write information encoded within the RFID tags 120, 122, 124, etc., and to thus determine the location or simply the presence of the objects in inventory 112, 114,

116, etc. The RFID tags 120, 122, 124, etc., may be programmed (at manufacturing) with the model, serial number, or some other form of identification of the object in inventory 112, 114, 116, etc., such that the RFID tags 120, 122, 124, etc. are auto-identifying.

[0023] The RFID tags' unique identity may also be associated with an entity (i.e., human or robot) entering storage room 110. This allows identification information to be input into a remote inventory management system (not shown in this view) automatically or using a keyboard wedge barcode scanner (or other type of input device) connected to the remote inventory management system. Other types of tags may also be used such as infrared (IR), optical, ultrasound, or any other tags that enable communication with the reader, interrogator, or other monitoring device using wireless technology. It should also be appreciated that tags requiring some form of physical contact may also be utilized such as tags that use RF but require contact with a reader's antenna, for example, to activate them.

[0024] Of course, the objects in inventory 112, 114, 116, etc., may be monitored by virtually any other system and/or method utilized for object tracking well-known in the art of inventory control. For example, in other embodiments, objects in inventory 112, 114, 116, etc., may be monitored through the use of barcode labels placed on the objects in inventory 112, 114, 116, etc., and scanned by barcode scanners as the objects in inventory 112, 114, 116, etc., are brought into or removed from the storage room 110, by video cameras monitoring the storage room 110, by mechanical devices (for example, devices that register the weight or the absence of the weight of an item in a predefined location), by electronic tablets that capture human writing, or by any other means that can positively differentiate the presence or absence of the tracked item.

[0025] Referring now to Figure 1B there is shown an example of a locking mechanism controller for the storage room 100 shown in Figure 1A according to an embodiment of the present invention. In one embodiment, the identity of an entity 160 (i.e., a person or a robot) is interpreted and accepted by a locking mechanism controller 180 which unlocks a locking mechanism 170 to allow access to the storage room 110. The identity may be in the form of a name, an assigned re-usable code, an access card, a one-time access code issued to a given entity, or any other form of identification. For instance, in one embodiment the locking mechanism controller 180 is an access code entry unit which includes a keypad (not shown in this view) and is configured to accept user input (e.g., in the form of an identification number). In other embodiments, the locking mechanism controller 180 may operate in connection with other access code entry units such as a special barcode scanner (i.e., specially configured to modulate the laser beam transmitted by its laser diode, thereby transmitting an access code), a voice recognition system, a magnetic stripe or electronic card reader, an IR transmitter device, or any other type of mechanism by which the locking mechanism controller 180 may interpret and accept the identity 160. Of course, any or all these access means (or any other of a variety of access means) may be used in combination. Examples of locking mechanisms and controllers suitable for use with the present invention may be found in U.S. Patent 6,300,873, entitled "Locking Mechanism for use with One Time Access Code, issued October 9, 2001; and/or co-pending U.S. Patent Applications 09/596,333, entitled "Adaptable Low-Power Electronic Locking Mechanism," filed June 16, 2000; and 09/599,034, entitled "Bidirectional Barcode Scanning System," filed June 21, 2000, the complete disclosures of which are incorporated herein by reference.

[0026] In another embodiment, the expression of the identity of entity 160 may be automatic as the entity enters the storage room 110. For example, the entity 160 may have an RFID tag on a badge that is monitored by a reader, interrogator, or some other device (not shown in this view) in a manner described in the embodiment illustrated by Figure 1A.

[0027] Referring now to Figure 2 there is shown a schematic diagram illustrating a remote inventory management system communicating the ingress or egress of objects in inventory to a server computer system 200 according to an embodiment of the present invention. In one embodiment, the storage area 210 includes an RFID system 220 which communicates with a server 230 via a wireless link 235 (e.g., a radio modem that may support communication within a public or private wireless network). When the identity of an entity (not shown in this view) is interpreted and accepted by a locking mechanism controller 240 the entity is allowed access to the storage area 210. A sensor 250 may monitor the door 245 as it opens and closes. Thus, every time an action happens in the storage area 210 (e.g., an entity enters the storage area 210, the sensor indicates that the door has opened, the RFID system 220 indicates that objects in inventory have been removed, etc.), the information is transmitted to the server 230 via the wireless link 235.

[0028] Note that these accesses and/or movements of goods may be authorized or not. The action recorded/reported in either case. Further, the wireless link 235 may be replaced and/or augmented by a wired communication link. In addition to the movement of goods, status (e.g., defective, return, etc.) may also be monitored.

[0029] A program in the server 230 (such as a database management system (DBMS)) maintains a record of the events in the storage area 210. The program thus

associates the ingress and egress (or other movement) of the objects in inventory with a particular entity and may also keep track of other important data regarding the movement of the objects in inventory (such as the date and time of the movement, etc.). Of course, the information regarding the movement of objects in inventory and the association of those objects with an entity identity does not necessarily need to be transmitted to the server 230 via the wireless link 235. As discussed in the embodiments illustrated in Figure 1A, a variety of non-wireless tracking systems (e.g., special barcode scanners, mechanical devices, etc.) may also be used to monitor the objects in inventory and the identity associated with the movement of those objects. This tracking information may be transmitted to the server 230 via network interfaces (dedicated or dial-up interfaces/connections that utilize a public computer network or a private computer network)(not shown in this view) or telephone interfaces (not shown in this view) adapted to provide communication with the server 230 through the public switched telephone network (PSTN). The movement of the objects in inventory may be communicated to the server 230 continuously or on an event-driven or periodic basis (any time interval). For instance, the server 230 may be updated every hour, every 24 hours, every other day, etc.

[0030] In addition, the server 230 may contain a program written in JAVA, C++, HTML, Perl, or SQL, for example, or in a combination of these programming languages or in any other programming languages utilized singularly or in combination, to correlate the movement of objects in inventory and the association of the movement of the objects in inventory with the identity. The server 230 may log this information as a record of an event in the storage area 210 using the DBMS. A user (not shown in this view) may

access a record of an event in the storage area 210 using one or more client computers (not shown in this view) coupled to the server 230 through the Internet, a corporate intranet, a Wide Area Network (WAN), a Local Area Network (LAN), or any other system of interconnections enabling two or more computers to exchange information. In this manner, the user may access information regarding objects in inventory (e.g., to determine the presence and/or absence of objects in inventory, the location of an object in inventory, to reserve an object in inventory, etc.). The user may also obtain a one-time access code to unlock the locking mechanism controller 240 to the storage area 210.

[0031] In addition, the server 230 may automatically notify a user regarding an event in inventory (i.e., the removal or addition of an object in inventory associated with a particular identity) using a network interface, telephone interface, or wireless interface as described in the embodiment illustrated by Figure 1A. For instance, in one embodiment the server 230 may notify an organization's pre-existing inventory system through a dedicated channel (not shown in this view) of an event in inventory (e.g., indicating that the organization now has one less item in stock at a particular location, etc.).

[0032] Upon completion of an event, the locking mechanism controller 240 may lock out all other entrants until the server 230 has taken into account (e.g., via the RFID system) all the objects in inventory in the storage area 210 (this may be referred to as the Lock-out Period). The same entity, however, may be allowed to re-enter the storage area 210 during the Lock-out Period for a designated period of time after leaving the storage area 210 (e.g., 30 seconds) by re-gaining access through the locking mechanism controller 240 (e.g., by using a voice recognition device, a barcode scanner, an electronic card reader, etc.).

[0033] Referring now to Figure 3 there is shown a flow chart 300 illustrating a remote inventory management system implementing inventory management solutions through a server computer system according to an embodiment of the present invention. In one embodiment, information regarding the ingress and egress or other movement of objects in inventory is transmitted by the remote inventory management system to a server and maintained in the server. Thus, when objects in inventory are depleted or otherwise moved (see step 310), this information may be transmitted (step 320) from the server to a user or client computer system through network interfaces, wireless interfaces, or telephone interfaces such as those described in the embodiment illustrated by Figure 1A. Upon receiving this information, the user may take steps to replenish (step 330) the objects in inventory. Similarly, the user or other consuming party may be automatically billed (step 335) for the objects in inventory, or the objects may be automatically returned (step 340) to inventory. The auto-replenishment (step 330), auto-billing (step 335), and auto-return (step 340) of objects in inventory may be made on a continual or batch mode basis and may be made exclusive of one another. Further, an access code may be generated automatically as a result of the notification.

[0034] Referring now to Figure 4 there is shown a schematic diagram illustrating components of the remote inventory management system 400 according to an embodiment of the present invention. Each remote inventory management system 400 has its own unique identity, such that when information regarding the movement of objects in inventory associated with a particular identity (not shown in this view) is transmitted from a location to a server (not shown in this view), the server is able to identify what organization, company, etc., transmitted the information. Moreover, an

organization may contain one or more remote inventory management systems and hundreds (if not thousands) of remote inventory management systems at varying locations may be coupled to the server via a wireless or physical link (not shown in this view).

[0035] In the present embodiment, the components of the remote inventory management system 400 include a central processing unit (CPU) or other controller (e.g., an ASIC or FPGA) 422 containing or having an associated memory 424. The CPU 422 is coupled to a serial or other interface 426 which provides the communication path for the CPU 422 to an RFID reader 428 (which communicates via a radio modem 430 to RFID tags 432, 434, 436, etc.), a barcode scanner 440, a magnetic stripe or electronic card reader 442, and/or other peripheral devices 444 useful for the tracking of the ingress and egress or other movement of objects in inventory. The CPU 422 is also configured to receive inputs from an access code entry unit 446 and to unlock a locking mechanism controller 448 upon the interpretation and the acceptance of an access code by the CPU 422. Also coupled to the CPU 422 are Input/Output (I/O) devices including a keyboard (or other input device) 450 and a liquid crystal display (LCD) device (or other display) 452 which, in some cases, may be part of the access code entry unit 446 (e.g., to indicate to an entity an improper use of a magnetic stripe or electronic card reader, improper entry of an access code, etc.). A network connector 454 (e.g., wired or wireless network) may also be provided to allow for communication with client computers and/or servers. Of course, there are many possible variations of the present embodiment.

[0036] Referring now to Figure 5 there is shown an illustration of a barcode sheet 500 which may be used to enter transaction data into a remote inventory management system

according to an embodiment of the present invention. A barcode scanner (not shown in this view) may be coupled to the CPU 422 as is described in the embodiment illustrated by Figure 4. The barcode scanner may scan the individual barcodes encoded on barcode sheet 500 which barcodes include information regarding an object in inventory (e.g., the model and/or serial number of the object in inventory). A decoder converts the electronic signal representative of the scanned symbol into a computer-readable format (i.e., binary or textual information). The CPU receives the computer readable format of the model and/or serial number or other information regarding the object in inventory encoded in the barcode sheet 500. For example, a user may scan the "in" barcode symbol 510 when adding an object to inventory, scan the "out" barcode symbol 520 when removing an object from inventory, and scan the "return" 530 barcode symbol when returning an object to inventory. The CPU then transmits this information to a server as is described above.

[0037] Thus, a system for providing controlled access to storage locations and coupling such access to the movement of goods into, out of, or within such locations has been described. Although discussed with reference to certain illustrated embodiments, it should be remembered that the broader spirit and scope of the invention is only to be measured in terms of the claims that follow.

CLAIMS

What is claimed:

1. A method, comprising:

obtaining identity information regarding an entity which enters a controlled space; and

automatically associating, using a computer system, the identity information with the addition, removal, return, defective, or other movement or status of objects to/from/within the controlled space.

2. The method of claim 1 wherein the entity is identified by a controller associated with the controlled space, the controller being configured to unlock a locking mechanism to allow the entity to have access to the controlled space provided the entity is authorized to do so.

3. The method of claim 1 further comprising notifying a user of the addition, removal, return, defective, or other movement or status of the objects.

4. The method of claim 3 further comprising notifying the user of whether or not the addition, removal, return, defective, or other movement or status of the objects is authorized or not.

5. The method of claim 4 wherein authorization is determined according to the identity information.

6. The method of claim 1 wherein the identity of the entity which enters the controlled space and the addition, removal, return, defective, or other movements or

status of objects to/from/within the controlled space is monitored using a tracking system coupled to the computer system.

7. The method of claim 6 wherein the tracking system includes tags affixed to one or more of the objects and/or the entity, the tags configured to communicate via a wireless link with a monitoring unit.

8. The method of claim 6 wherein the tracking system includes tags affixed to one or more of the objects and/or the entity, the tags configured to be activated through contact with a reader device.

9. The method of claim 6 wherein the tracking system includes barcode labels affixed to one or more of the objects.

10. The method of claim 6 wherein the tracking system includes video cameras monitoring the controlled space.

11. The method of claim 6 wherein the tracking system includes one or more mechanical devices, including at least one device that registers an absence or a weight of an object in a predefined location.

12. The method of claim 6 wherein the addition, removal, return, defective, or other movement or status of the objects to/from/within the controlled space is entered into the computer system by the entity using an input device.

13. The method of claim 1 wherein the association of the addition, removal, return, defective, or other movement or status of the objects to/from/within the controlled space

with the identity information is transmitted to a server computer system through a communication interface coupled to the computer system.

14. The method of claim 13 wherein the communication interface comprises one or more of: a wireless communication link, a network communication link, and a telephone communication link.

15. The method of claim 13 wherein a user accesses information regarding the addition, removal, return, defective, or other movements or status of objects to/from/within the controlled space associated with the identity information in the server computer system through one or more client computers coupled to the server computer system through a network.

16. The method of claim 15 wherein the network comprises the Internet.

17. The method of claim 13 wherein the server automatically notifies a designated person regarding the addition, removal, return, defective, or other movement or status of objects.

18. The method of claim 17 wherein the notification is transmitted to the user via a wireless communication link, a network communication link, and/or a telephone communication link.

19. The method of claim 17 wherein objects are automatically replenished as a result of the notification.

20. The method of claim 17 wherein a party is automatically billed as a result of the notification.

21. The method of claim 17 wherein an object is automatically returned or picked up as a result of the notification.

22. A machine-readable storage medium embodying a sequence of instructions executable by the machine to perform a method for automatically associating an identity of an entity with the movement of one or more objects in a controlled-access location, the method comprising:

identifying, at a controller associated with the controlled-access location, an entity attempting to enter the controlled-access location; and

unlocking a locking mechanism to allow the entity to have access to the controlled-access location provided the entity is authorized to do so, such authorization being determined during or according to the results of the identifying process.

23. The machine-readable storage medium of claim 22 wherein the identity of the entity which enters the controlled-access location and the movement of the objects in the controlled-access location are monitored using a tracking system associated with the controlled-access location.

24. The machine-readable storage medium of claim 22 wherein the tracking system includes tags configured to communicate via a wireless link with a monitoring device.

25. The machine-readable storage medium of claim 22 wherein the tracking system includes tags configured to be activated through contact with a reader device.

26. The machine-readable storage medium of claim 22 wherein the tracking system includes barcode labels which are scanned as the objects are added to or removed from the controlled-access location.

27. The machine-readable storage medium of claim 22 wherein the tracking system includes video cameras monitoring the controlled-access locator.

28. The machine-readable storage medium of claim 22 wherein the tracking system includes one or more mechanical devices, including at least one device that is configured to register an absence or a weight of an object in a predefined location.

29. The machine-readable storage medium of claim 22 wherein the movement of the objects within/to/from the controlled-access location is entered into a computer system by the entity using an input device.

30. The machine-readable storage medium of claim 22 wherein the method further comprises re-locking the locking mechanism, and automatically locking out all other entities until the tracking system has accounted for all remaining objects in the controlled-access location.

31. The machine-readable storage medium of claim 22 wherein the automatic association of the movement of the objects with the identity of the entity is transmitted to a server computer system through one or more of a wireless interface, a network interface, or a telephone interface.

32. The machine-readable storage medium of claim 31 wherein the method further comprises allowing access to information in the server regarding the movement of the objects associated with the identity of the entity through one or more client computers coupled to the server computer system through a network.

33. The machine-readable storage medium of claim 32 wherein the network comprises the Internet.

34. The machine-readable storage medium of claim 31 wherein the server computer system is configured to automatically notify a user via one or more of a wireless interface, a network interface, or a telephone interface regarding an event involving the movement of the objects.

35. The machine-readable storage medium of claim 34 wherein the network interface comprises a dedicated channel and the notification is sent to a pre-existing inventory control system in an organization.

36. The machine-readable storage medium of claim 34 wherein objects are automatically replenished or returned as a result of the notification.

37. The machine-readable storage medium of claim 34 wherein a party is automatically billed as a result of the notification.

38. A computer system, comprising:

a processing unit;

a memory coupled to the processing unit;

a process executed from the memory causing the processing unit to automatically associate an identity of an entity with movement or status changes of objects to/from/within a controlled space.

39. The computer system of claim 38 wherein the process further causes the processing unit to associate the identity of the entity which enters the controlled space

and the movement or status changes of objects to/from/within the controlled space according to information provided by a tracking system coupled to the computer system.

40. The computer system of claim 38 wherein the process further causes the processing unit to associate the identity of the entity with the movement or status changes of objects to/from/within the controlled space according to information which is entered into the computer system by the entity using an input device coupled to the computer system.

41. The computer system of claim 38 wherein the process further causes the processing unit to transmit information regarding the association of the movement or status changes of objects to/from/within controlled space with the identity of the entity to a server computer system coupled to the computer system.

42. The method of claim 13 wherein the server computer system automatically decrements or increments inventory levels or changes the status of objects in response to data transmitted to the server computer system.

43. The method of claim 13 wherein the server computer system automatically correlates the movement or status of objects with the entity responsible for these movements or status updates in response to the data transmitted to the server computer system.

44. The method of claim 17 wherein an access code is automatically generated as a result of the notification.

ABSTRACT

[0038] A tracking system monitors an entity that enters a controlled space and the addition, removal, or other movement or status changes of objects in the controlled space. A computer system, coupled to the tracking system, automatically associates the addition, removal or other movement or status changes of the objects with the identity of the entity and transmits this information to a server computer system. A user may subsequently access this information through one or more client computers coupled to the server computer system. The server computer system may also automatically notify a user or other computer systems, e.g., through a network interface, wireless interface, or telephone interface, when objects in the controlled space have been moved or the status has been changed and /or whether such movement or status change is authorized or not.

100

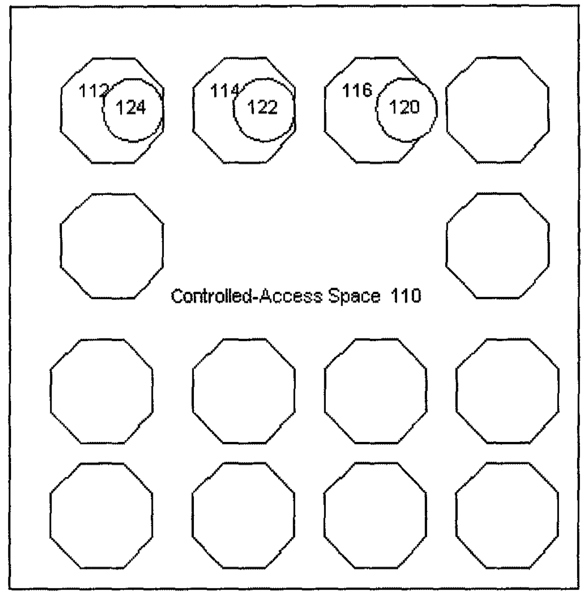


Fig. 1A

100

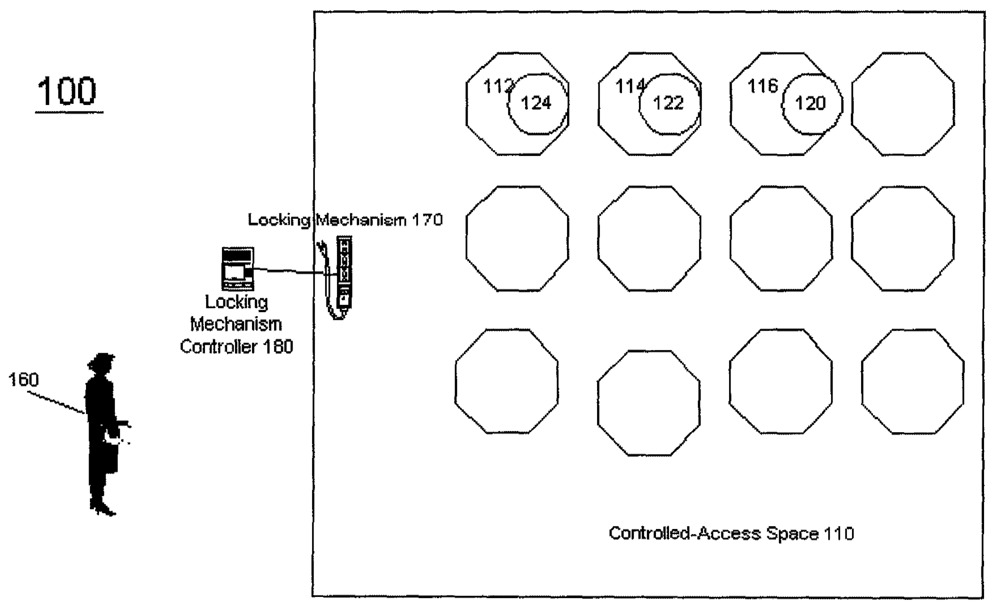
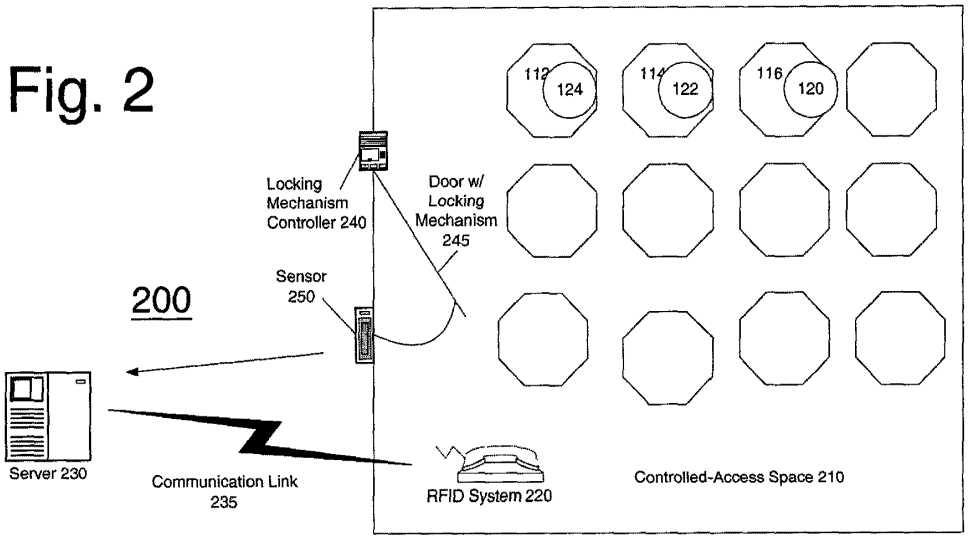


Fig. 1B

Fig. 2


112
124
114
122
116
120
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Door w/ Locking Mechanism 245
Sensor 250
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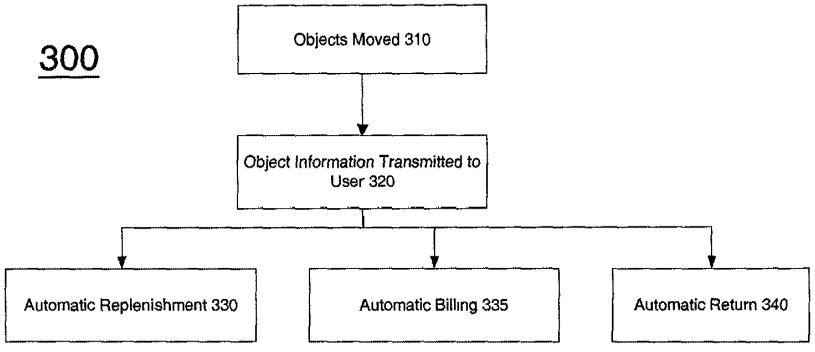
Server 230
Communication Link 235
RFID System 220
Controlled-Access Space 210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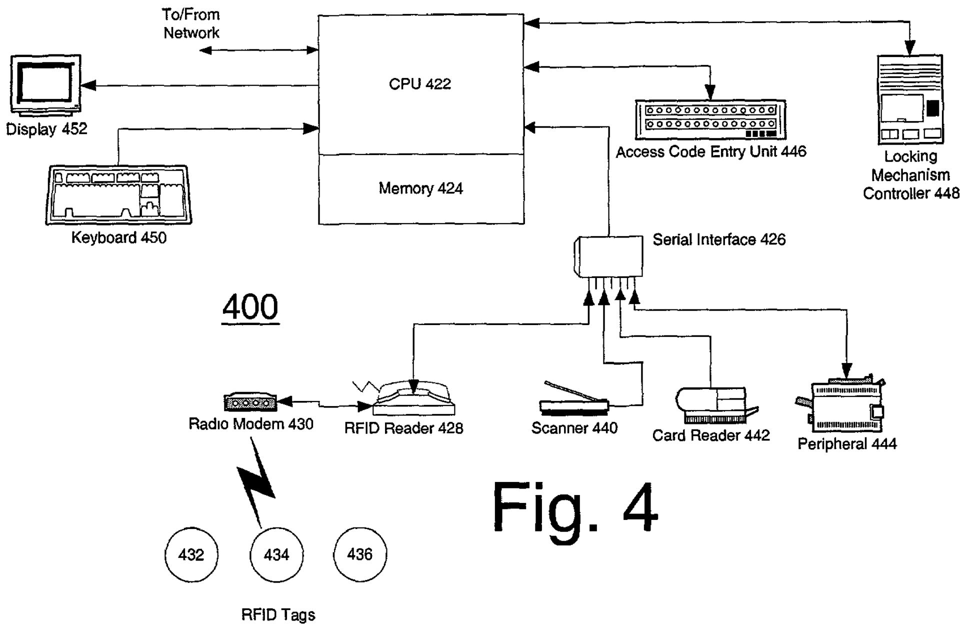
Objects Moved 310
Object Information Transmitted to User 320
Automatic Replenishment 330
Automatic Billing 335
Automatic Return 340

Fig. 3


To/From Network
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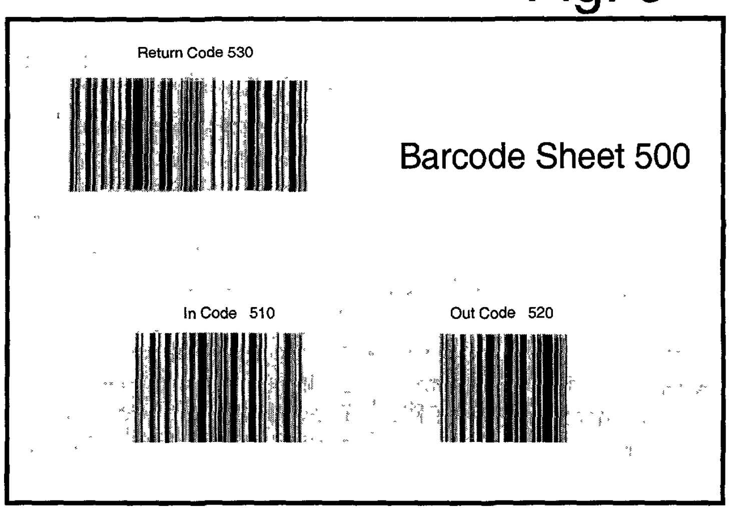
Memory 424
Display 452
Keyboard 450
Access Code Entry Unit 446
Locking Mechanism Controller 448
Serial Interface 426
400
Radio Modem 430
RFID Reader 428
Scanner 440
Card Reader 442
Peripheral 444
432
434
436
RFID Tags

Fig. 4

Fig. 5


Return Code 530
Barcode Sheet 500
In Code 510
Out Code 520

Attorney's Docket No.: 4407P005 Patent

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD AND APPARATUS FOR ASSOCIATING THE MOVEMENT OF GOODS WITH THE IDENTITY OF AN INDIVIDUAL MOVING THE GOODS

the specification of which

_x_ is attached hereto.
___ was filed on (MM/DD/YYYY) _____ as
United States Application Number _____
or PCT International Application Number _____
and was amended on (MM/DD/YYYY) _____.
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application. I do not know and do not believe that the claimed invention was in public use or on sale in the United States of America more than one year prior to this application, nor do I know or believe that the invention has been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
(Number)	(Country)	(Foreign Filing Date - MM/DD/YYYY)	Yes	No
(Number)	(Country)	(Foreign Filing Date - MM/DD/YYYY)	Yes	No
(Number)	(Country)	(Foreign Filing Date - MM/DD/YYYY)	Yes	No

I hereby claim the benefit under title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below:

60/245,767 (Application Number)	November 3, 2000 (Filing Date – MM/DD/YYYY)
(Application Number)	(Filing Date – MM/DD/YYYY)

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Number)	(Filing Date – MM/DD/YYYY)	(Status -- patented, pending, abandoned)
(Application Number)	(Filing Date – MM/DD/YYYY)	(Status -- patented, pending, abandoned)

I hereby appoint the persons listed on Appendix A hereto (which is incorporated by reference and a part of this document) as my respective patent attorneys and patent agents, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

Send correspondence to Tarek N. Fahmi (Name of Attorney or Agent), BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP, 12400 Wilshire Boulevard 7th Floor, Los Angeles, California 90025 and direct telephone calls to Tarek N. Fahmi (Name of Attorney or Agent), (408) 720-8300.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Inventor's Signature ______________________ Date ______________

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Inventor's Signature ______________________ Date ______________

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APPENDIX A

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APPENDIX B

Title 37, Code of Federal Regulations, Section 1.56
Duty to Disclose Information Material to Patentability

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is cancelled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is cancelled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

(1) Prior art cited in search reports of a foreign patent office in a counterpart application, and

(2) The closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

(1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or

(2) It refutes, or is inconsistent with, a position the applicant takes in:

(i) Opposing an argument of unpatentability relied on by the Office, or

(ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

(1) Each inventor named in the application;

(2) Each attorney or agent who prepares or prosecutes the application; and

(3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, which became available between the filing date of the prior application and the *national or PCT* international filing date of the continuation-in-part application.

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

01/28/2002 VTRUONG1 00000305 10053540

01 FC:101	740.00 OP
02 FC:103	432.00 OP

PTO-1556
(5/87)

*U.S. GPO: 2000-468-987/39595

PATENT APPLICATION FEE DETERMINATION RECORD
Effective October 1, 2001

Application or Docket Number: 4417P005

CLAIMS AS FILED - PART I

	(Column 1)	(Column 2)
TOTAL CLAIMS	44	
FOR	NUMBER FILED	NUMBER EXTRA
TOTAL CHARGEABLE CLAIMS	44 minus 20=	* 24
INDEPENDENT CLAIMS	3 minus 3 =	* 0
MULTIPLE DEPENDENT CLAIM PRESENT		☐

* If the difference in column 1 is less than zero, enter "0" in column 2

SMALL ENTITY TYPE ☐		OR	OTHER THAN SMALL ENTITY	
RATE	FEE		RATE	FEE
BASIC FEE	370.00	OR	BASIC FEE	740.00
X$ 9=		OR	X$18=	432
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL		OR	TOTAL	1172

CLAIMS AS AMENDED - PART II

AMENDMENT A	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

SMALL ENTITY		OR	OTHER THAN SMALL ENTITY	
RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT B	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

AMENDMENT C	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA
Total	*	Minus	**	=
Independent	*	Minus	***	=
FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM				☐

RATE	ADDITIONAL FEE		RATE	ADDITIONAL FEE
X$ 9=		OR	X$18=	
X42=		OR	X84=	
+140=		OR	+280=	
TOTAL ADDIT. FEE		OR	TOTAL ADDIT. FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20."
***If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3."
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

CLAIMS ONLY

SERIAL NO.	FILING DATE
10053540	11-02-01

APPLICANT(S)

CLAIMS

	AS FILED		AFTER 1st AMENDMENT		AFTER 2nd AMENDMENT			*		*		*	
	IND.	DEP.	IND.	DEP.	IND.	DEP.		IND.	DEP.	IND.	DEP.	IND.	DEP.
1	1						51						
2		1					52						
3		1					53						
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50							100						
TOTAL IND.	3						TOTAL IND.						
TOTAL DEP.	41						TOTAL DEP.						
TOTAL CLAIMS	44						TOTAL CLAIMS						

* MAY BE USED FOR ADDITIONAL CLAIMS OR ADMENDMENTS

FORM PTO-2022 (1-98)

U.S.DEPARTMENT OF COMMERCE
Patent and Trademark Office

*U.S. GPO: 1998-443-593/89152