

[54] MULTIMODAL NATURAL LANGUAGE INTERFACE FOR CROSS-APPLICATION TASKS

[75] Inventor: David Edward Johnson, Peekskill, N.Y.

[73] Assignee: International Business Machines Corporation, Armonk, N.Y.

[21] Appl. No.: 354,987

[22] Filed: Dec. 13, 1994

[51] Int. Cl.⁶ G06F 9/45

[52] U.S. Cl. 395/759; 395/700

[58] Field of Search 364/419.08, 419.01, 364/419.02, 419.03, 419.04; 395/155, 156, 161, 375, 934, 700, 759

[56] References Cited

U.S. PATENT DOCUMENTS

4,736,296	4/1988	Katayama	364/419
5,252,951	10/1993	Tennenbaum	345/156
5,282,265	1/1994	Rohra Suda	364/419.08
5,301,326	4/1994	Linnett	395/700
5,321,608	6/1994	Namba	364/419.08
5,377,103	12/1994	Lamberti	364/419.08
5,390,281	2/1995	Luciw	364/419.08
5,442,780	8/1995	Tanashi	364/419.08

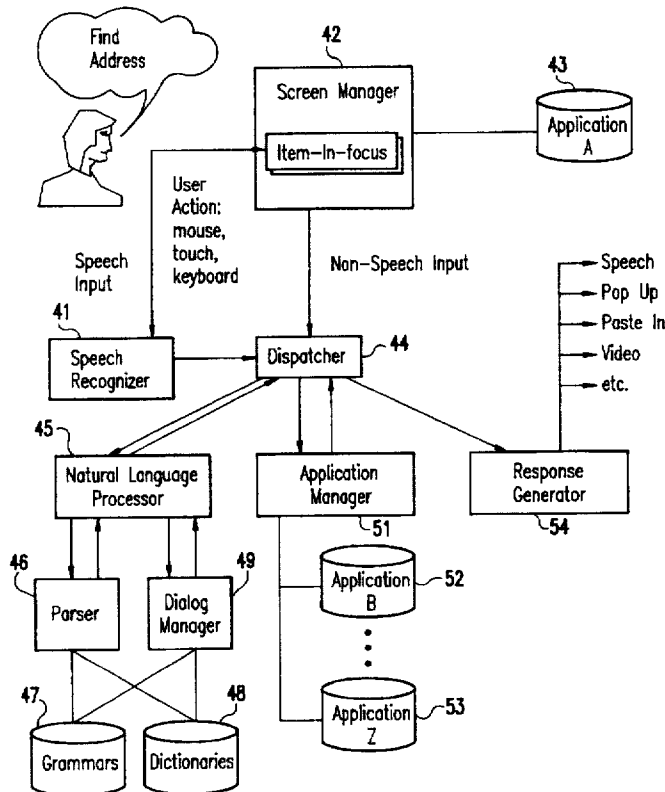
Primary Examiner—Jeffery Hofsass
Assistant Examiner—Albert K. Wong

Attorney, Agent, or Firm—Whitham, Curtis, Whitham & McGinn; Stephen J. Kaufman

[57] ABSTRACT

A multimodal natural language interface interprets user requests combining natural language input from the user with information selected from a current application and sends the request in the proper form to an appropriate auxiliary application for processing. The multimodal natural language interface enables users to combine natural language (spoken, typed or handwritten) input selected by any standard means from an application the user is running (the current application) to perform a task in another application (the auxiliary application) without either leaving the current application, opening new windows, etc., or determining in advance of running the current application what actions are to be done in the auxiliary application. The multimodal natural language interface carries out the following functions: (1) parsing of the combined multimodal input; (2) semantic interpretation (i.e., determination of the request implicit in the pars); (3) dialog providing feedback to the user indicating the systems understanding of the input and interacting with the user to clarify the request (e.g., missing information and ambiguities); (4) determination of which application should process the request and application program interface (API) code generation; and (5) presentation of a response as may be applicable. Functions (1) to (3) are carried out by the natural language processor, function (4) is carried out by the application manager, and function (5) is carried out by the response generator.

8 Claims, 7 Drawing Sheets



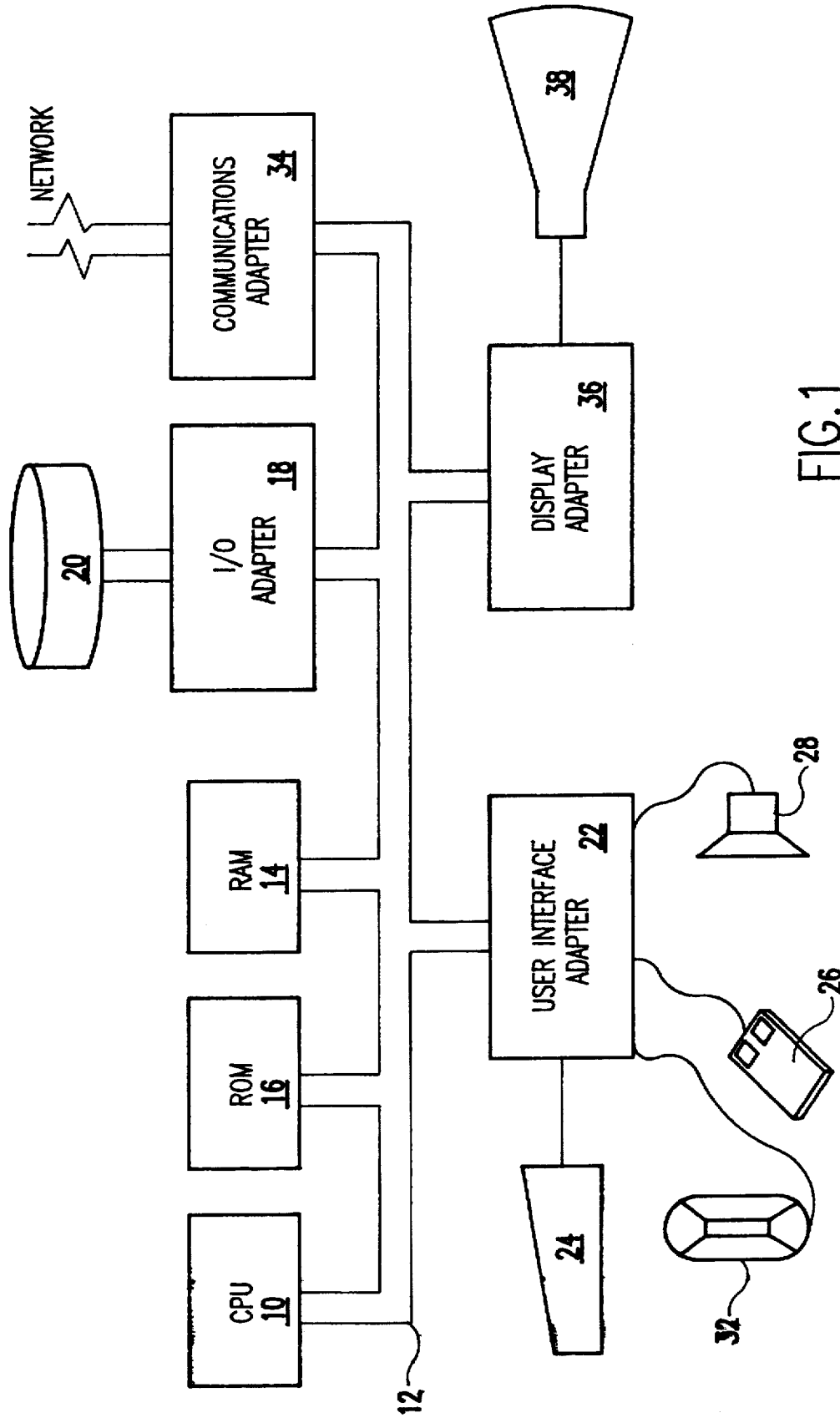


FIG. 1

PRIOR ART

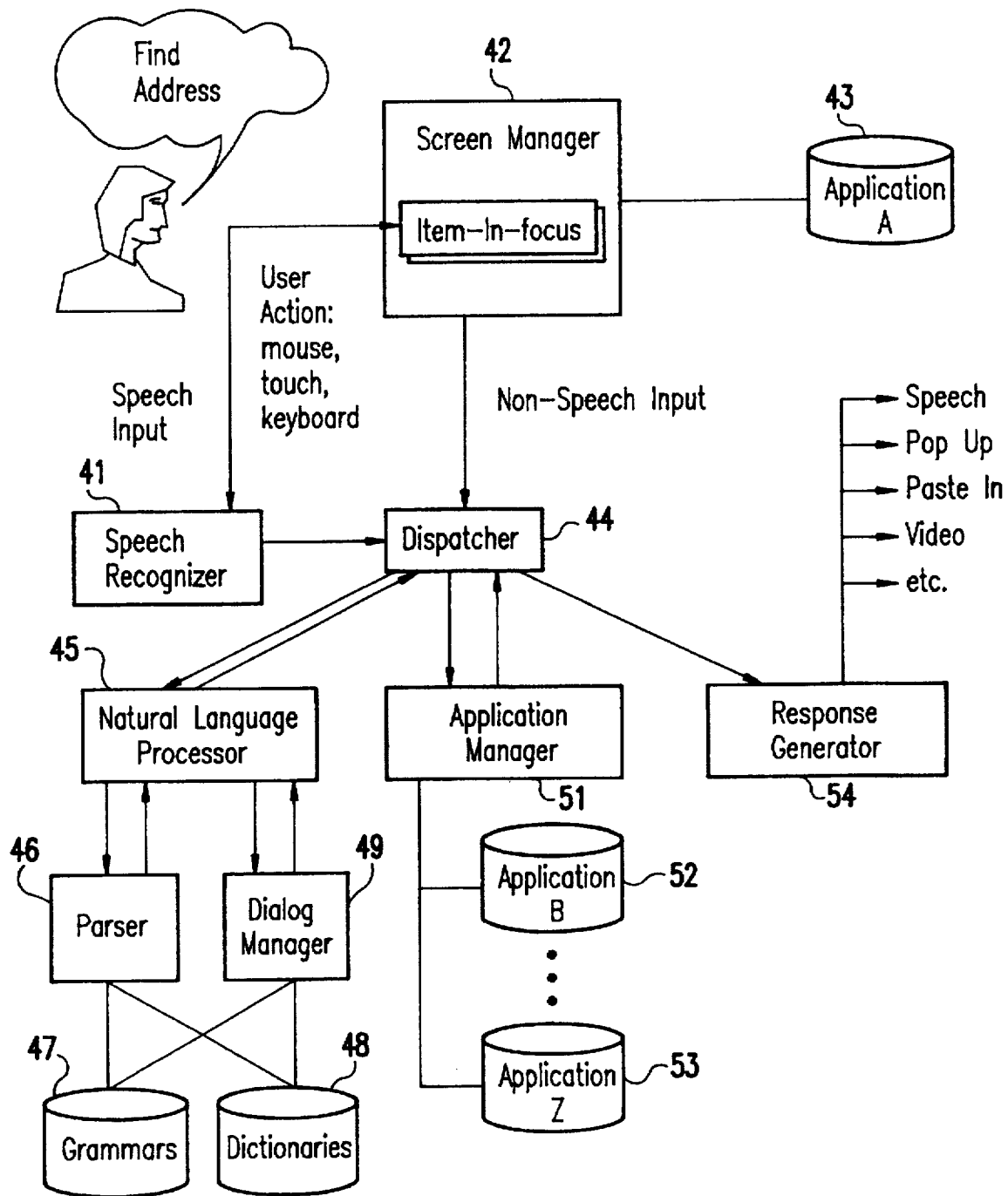


FIG.2

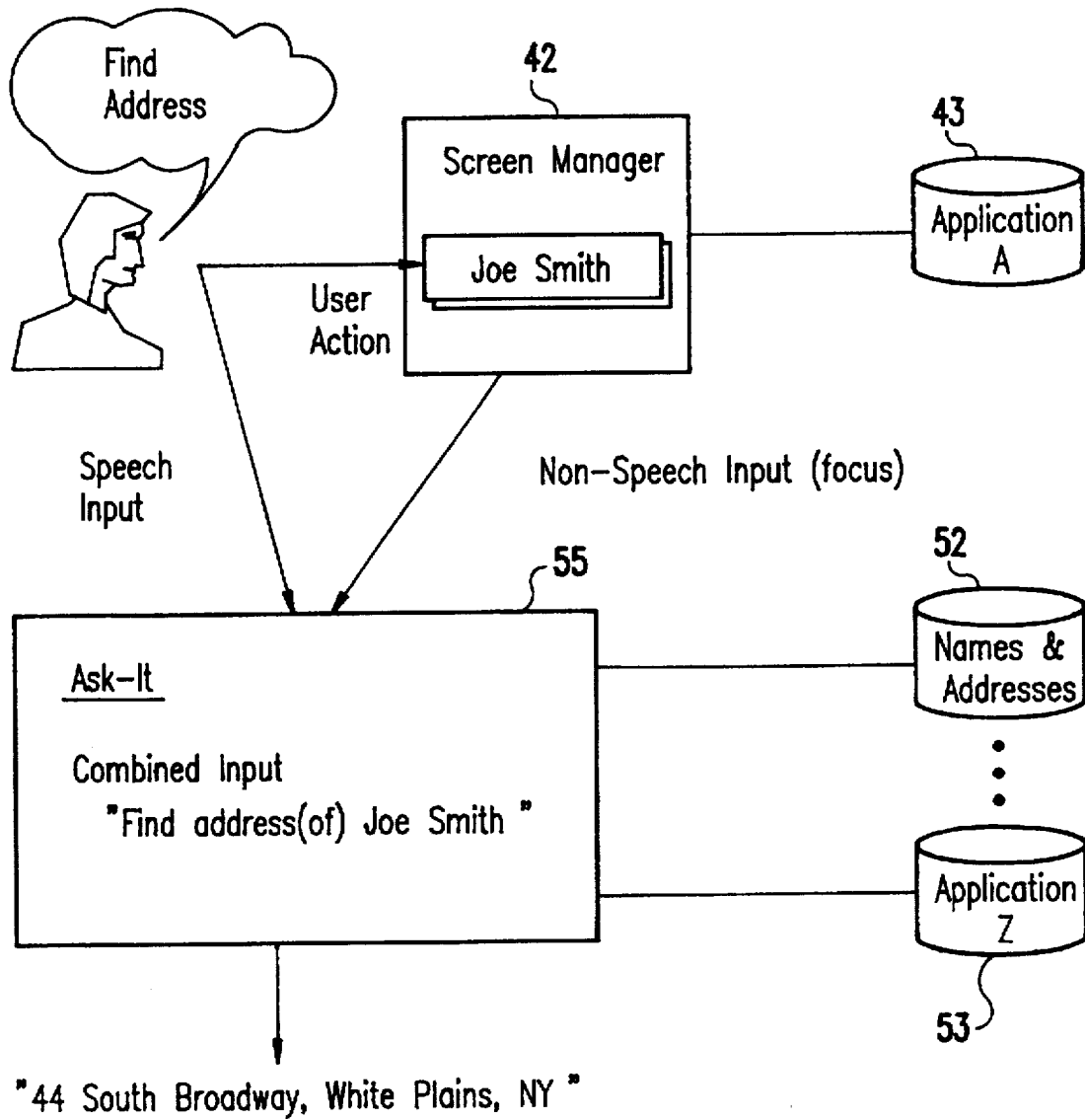
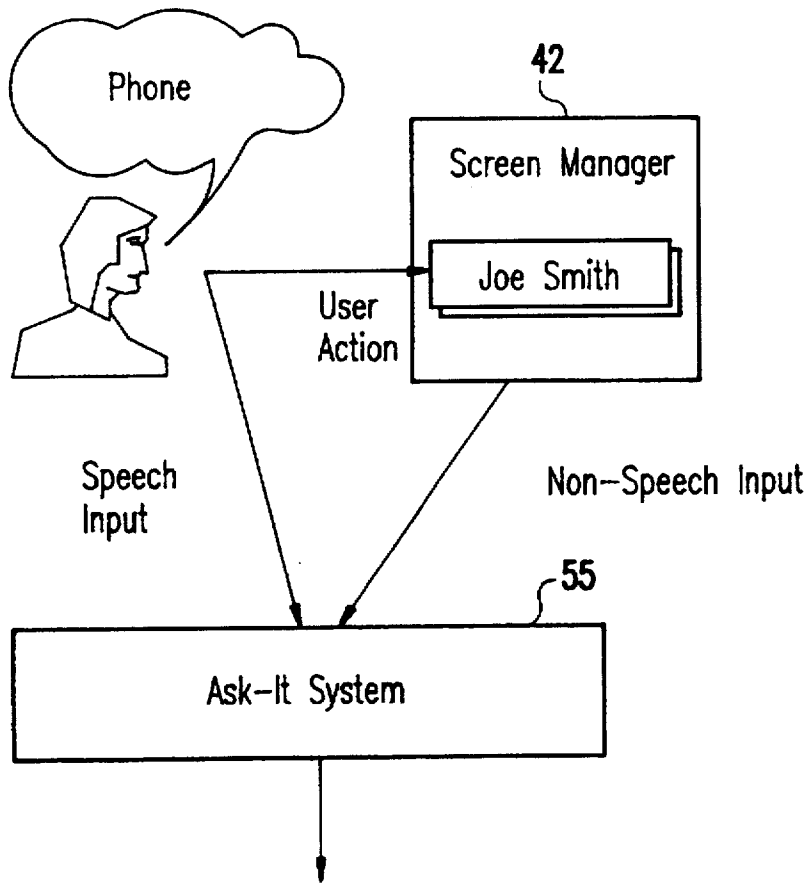


FIG.3



Kind of
Answers:

1. 609-921-9521
2. There are 2 such names. Do you mean:
 1. Joe A. Smith
 2. Joe B. Smith?Please select one.
3. There is no Joe Smith in your phonebook.
Should I look elsewhere?

FIG.4

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.