

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

DENSO CORPORATION AND CLARION CO. Ltd.
Petitioners

v.

BEACON NAVIGATION GmbH
Patent Owner

Case IPR2013-00026
Patent 6,029,111

Before GLENN J. PERRY, THOMAS L. GIANNETTI and
TREVOR M. JEFFERSON, *Administrative Patent Judges*.

PERRY, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. BACKGROUND

A. Introduction

Petitioners, Denso Corporation (“Denso”) and Clarion Co., Ltd. (“Clarion”), filed a Petition on October 18, 2012 for *inter partes* review of claims 1-28 of U.S. Patent No. 6,029,111 patent (“the ’111 patent”)¹ pursuant to 35 U.S.C. §§ 311-319.

On March 18, 2013 we granted the petition, and instituted this *inter partes* review of claims 1-3, 5, 6, 10-13, 17-20, and 22 on fewer than all of the grounds of unpatentability alleged. Paper 12. During the course of this *inter partes* review, claims 1, 10, and 17 were cancelled as a result of an *ex parte* reexamination,² leaving only claims 2, 3, 5, 6, 11-13, 18-20, and 22 for continued consideration.

Patent Owner, Beacon Navigation GmbH (“Beacon”), filed a Patent Owner Response. Paper 19 (“PO Resp.”). Petitioner filed a reply. Paper 25 (“Pet. Reply”). Patent Owner did not file a motion to amend claims.

Counsel for both Petitioners and Patent Owner were present and presented argument at an oral hearing³ held on December 13, 2013.

The Board has jurisdiction under 35 U.S.C. § 6(c). This final written decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

Petitioner has shown by a preponderance of the evidence that claims 2, 3, 5, 6, 11, 12, 18-20, and 22 are unpatentable.

¹ The ’111 patent issued on February 22, 2000 on an application filed December 28, 1995.

² A Reexamination Certificate issued March 28, 2013 in *ex parte* reexamination 90/012,070, which was initiated prior to institution of this *inter partes* review. Ex. 3001

³ A transcript of the oral hearing is included in the record. Paper 33.

B. The '111 Patent

The '111 patent describes a navigation system in which “information from a Global Positioning System⁴ (GPS) [is used] to obtain velocity vectors, which include speed and heading components, for propagating or ‘dead reckoning’ the vehicle position from a previous position to a current position.” Ex. 1001, 2:28-33.

The '111 patent states that:

GPS position data alone is not accurate enough for certain applications, such as turn-by-turn route guidance in automobile applications, because its error may be 100 [meters] and there is considerable position drift, even when stationary. GPS velocities are much more accurate than the position data, 1 [meter per second] or thereabouts, and can be used to propagate a known position forward and be more accurate over time than the GPS position solution.

Ex. 1001, Abstract; 2:36-43.

The '111 patent invention “uses information from a GPS to obtain velocity vectors, which include speed and heading components.” Ex. 1001, 2:28-31. These velocity vectors are used in place of sensor⁵ signals to add dead reckoning capability to a GPS navigation system and allow a vehicle's current position to be “calculated by adding displacements obtained from the GPS velocities to the previous position.” Ex. 1001, 2:45-47.

Figure 3 of the '111 patent is reproduced below.

⁴ The Global Positioning System (GPS) is a space-based satellite navigation system that provides data to a GPS receiver enabling it to determine its position and velocity.

⁵ *E.g.*, speed sensor (speedometer), accelerometer, odometer (distance), and heading sensor, etc.

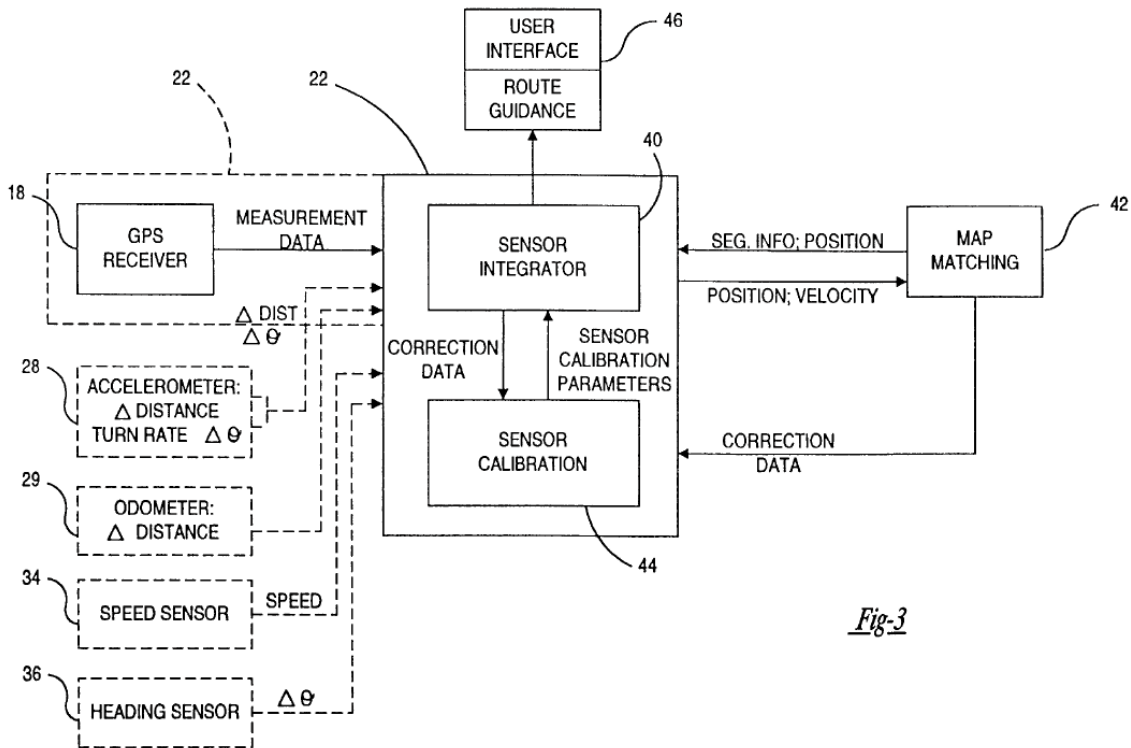


Fig-3

Figure 3 of the '111 patent is a block/data flow diagram of an embodiment of the invention.

GPS receiver 18 provides position information, velocity information, pseudo-ranges, and delta pseudo-ranges to a sensor integrator 40. Sensor integrator 40 uses the velocity information to determine a current position for the vehicle. GPS velocity information is derived from a set of delta ranges. Sensors including accelerometer 28, odometer 29, speed sensor 34, and heading sensor 36 provide input independent of GPS-determined position and velocity. Sensors are calibrated by sensor calibration 44 based on GPS receiver 18 measurement data. *See generally* Ex. 1001, 5:27 to 10:19.

C. Prior Art References Alleged to Support Unpatentability

The following table summarizes the prior art references asserted in instituted grounds:

Name	Description	Date	Exhibit
Maki	5,193,064	Oct. 9, 1990	Ex. 1004
Geier	5,416,712	May 28, 1993	Ex. 1005
Anderson	5,684,476	May 8, 1995	Ex. 1008
Endo ⁶	JP App. No. 1992-121618 (English translation)	April 22, 1992	Ex. 1012

D. Grounds of Unpatentability

The following table summarizes the challenges to patentability:

Claims	Grounds	Reference
Claims 2, 6, and 18	§ 102	Maki
Claims 2, 3, 6, 13, 18, and 20	§ 102	Geier
Claims 2, 3, 5, 11, 12, 18-20, and 22	§ 102	Anderson
Claims 2, 3, 11, 18, and 20	§ 102	Endo

II. CLAIM CONSTRUCTION

A. Principles of Law

In an *inter partes* review, claim terms in an unexpired patent are interpreted according to their broadest reasonable construction in light of the specification of the patent in which they appear. 37 C.F.R. § 42.100(b); Office Patent Trial Practice Guide, 77 Fed. Reg. 48756, 48766 (Aug. 14,

⁶ This reference previously was referred to by Petitioner in *Denso Corp. and Clarion Co. Ltd. v. Beacon Navigation GmbH*, and reflected in our Decision to Institute in IPR2013-00026, Paper 12 (Mar. 18, 2013) as “Yoshinori” which is the inventor’s given name.

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