US005835881A

United States Patent [19]

Trovato et al.

[11] **Patent Number: 5,835,881**

[45] **Date of Patent: Nov. 10, 1998**

[54] **PORTABLE SYSTEM FOR PROVIDING VOICE DRIVING DIRECTIONS**

[75] Inventors: **Karen I. Trovato**, Putnam Valley; **Daniel L. Pelletier**, Peekskill, both of N.Y.

[73] Assignee: **Philips Electronics North America Corporation**, New York, N.Y.

[21] Appl. No.: **587,266**

[22] Filed: **Jan. 16, 1996**

[51] **Int. Cl.**[6] **G06F 165/00**

[52] **U.S. Cl.** **701/211**; 701/200; 340/988

[58] **Field of Search** ..... 701/200, 201, 701/202, 211, 212, 213, 208; 73/178 R; 340/988, 990, 995

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,570,227	2/1986	Tachi et al.	701/202
4,679,147	7/1987	Tsujii et al.	701/211
4,882,696	11/1989	Nimura et al.	701/211
5,067,081	11/1991	Person	701/202
5,177,685	1/1993	Davis et al.	701/200
5,410,486	4/1995	Kishi et al.	701/211
5,452,212	9/1995	Yokoyama et al.	701/211
5,463,554	10/1995	Araki et al.	701/211
5,475,599	12/1995	Yokoyama et al.	701/211

OTHER PUBLICATIONS

Abstract—Driver performance results from the travtek IVHS camera car evaluation study, 1994.

Abstract—Design of TraVek auditory interface, 1992.

Abstract—Pathfinder status and implementation experience, 1991.

Abstract—Automobile navigation information systems. Legacy of the ancient Chinese south–pointing chariot, 1990.

Abstract—Dynamic route guidance and interactive transport management with ALI–SCOUT, 1991.

Abstract—Route Guidance System for Automobile Drivers by Speech Synthesis, 1987.

Abstract—An Electronic Traffic Pilot for Motorists, 1986.

Abstract—RMS1: the Microsystems'robot. I. Speech recognition, May 1985.

Abstract—'Intelligent' cars are already on the roads of Europe, Aug.–Sep. 1983.

"Communications: Teletrac's Agenda for Location Network Includes IVHS Services", Feb. 1, 1993.

"Turn–On, Tune–In to Latest Traffic News—Industries In Transition", Apr. 1995.

"Car Nav Points the Way to the Future–Japanese Market to Top Y200 Billion by 1995", apr. 1993.

"Greek Start–Up Seeks Capital Infusion for Navigation Roll Out", Mar. 1, 1993.

(List continued on next page.)

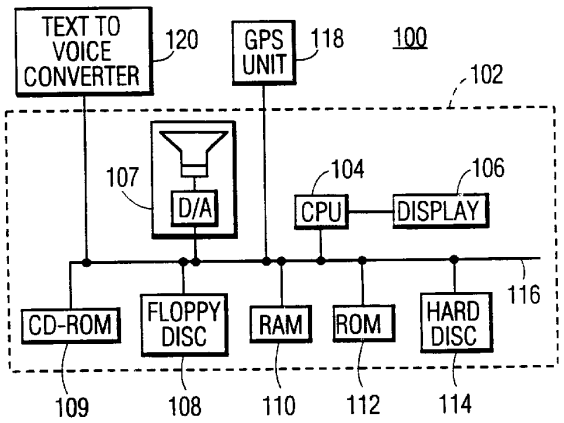
Primary Examiner—Gary Chin

Attorney, Agent, or Firm—Anne E. Barschall; Brian J. Wieghaus; David Schreiber

[57] **ABSTRACT**

A travel direction speaking system that is based on a portable laptop computer. The computer determines a route between an origin and a destination using an electronic map, and prepares driving instructions based on the route. Each driving instruction includes the spatial position (longitude and latitude) of a change in direction at which the driving instruction applies. The system includes a Global Positioning System (GPS) unit that provides the GPS determined position of the laptop computer. The computer compares the GPS position to the spatial position and outputs the corresponding driving instruction when the two positions are inferred to be within a specified range of each other. The range can be determined based distance or on a time period required to travel from the current position to a position at which the instructions should be spoken. The time period accounts for the amount of time required to speak the directions, for the reaction time of the driver at the speed that the laptop computer is moving within a vehicle and for an error in position associated with GPS commercial systems. When the time period has elapsed the directions are spoken. The system also includes a text to voice unit that converts the text driving instructions into a voice signal.

13 Claims, 5 Drawing Sheets



OTHER PUBLICATIONS

"Navigation: Boston Startup Aims Navigation System At Commercial Markets", Jun. 21, 1993.
"Smart Car Passes Test", Apr. 19, 1993.
"AT&T, Lockheed Become Latest Strategic Partners", Apr. 27, 1992.
"Toyota's GPS Voice Navigation System", Jul. 1992.

U.S. Application Entitled: Differential Budding: Method and Apparatus for Path Planning With Moving Obstacles and Goals, Ref. No. 1504–0384.

U.S. Application Entitled: Method and Apparatus for Path Planning, Ref. No. 1504–0355.

U.S. Application Entitled: Improved Very Long Instruction Word Processor Architecture, Ref. No. 1504–0689.

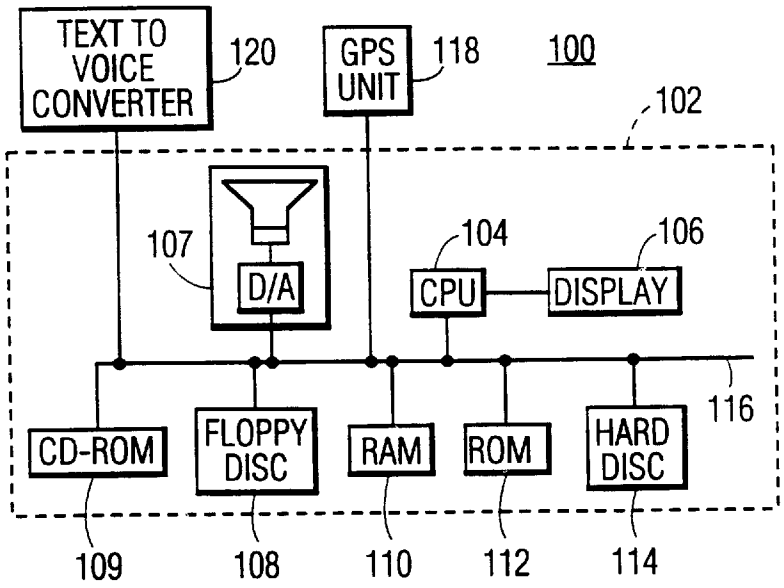


FIG. 1

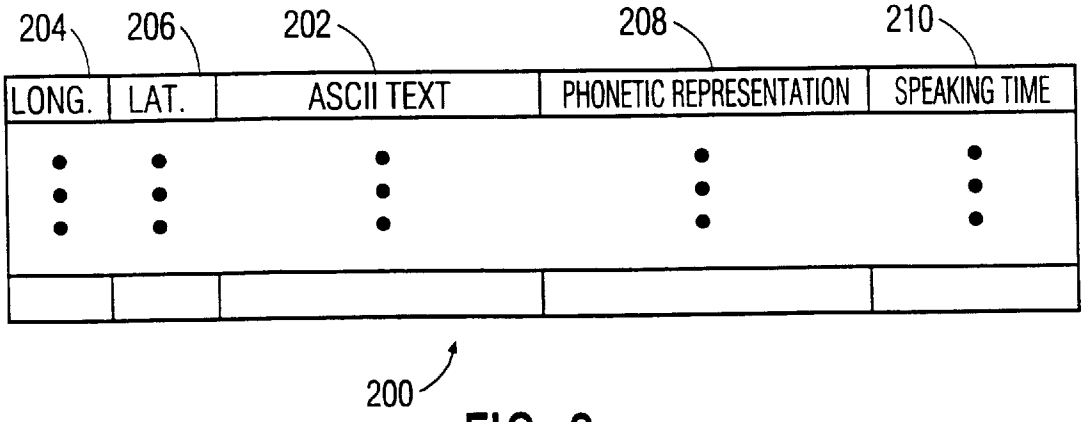


FIG. 2

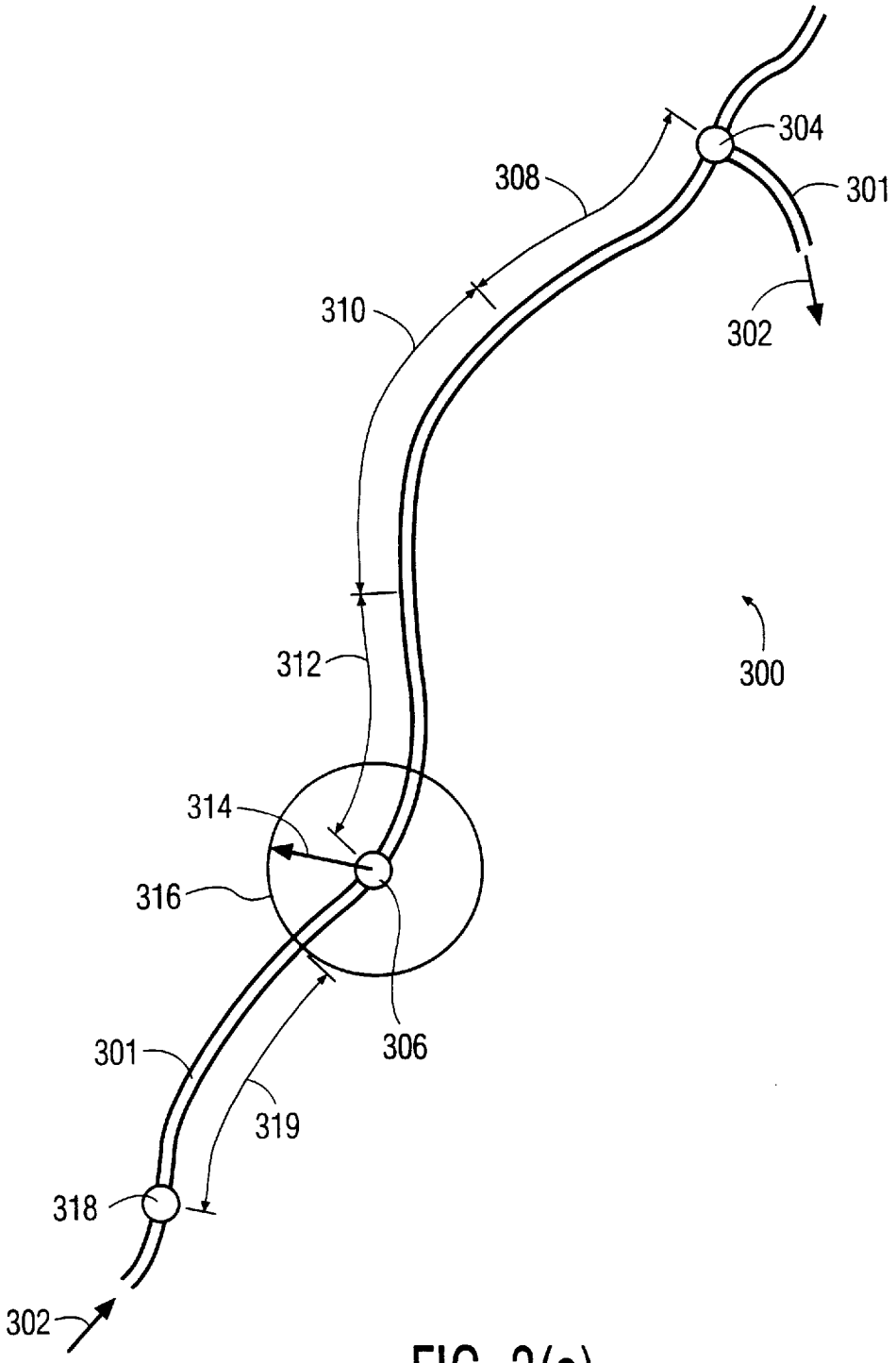


FIG. 3(a)

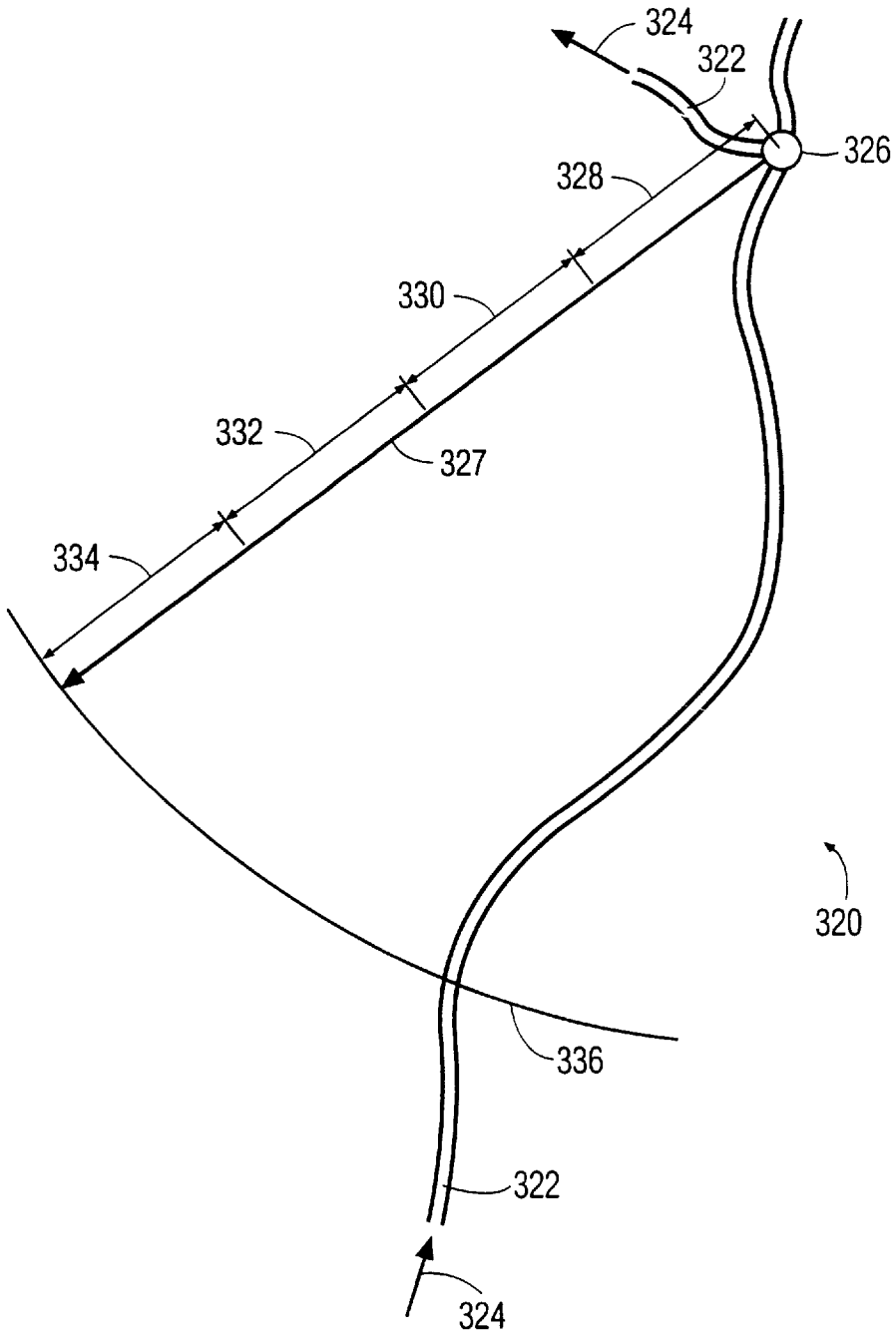


FIG. 3(b)

DOCKET ALARM

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.