

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
17 July 2008 (17.07.2008)

PCT

(10) International Publication Number
WO 2008/083745 A1

(51) International Patent Classification:

G01C 21/36 (2006.01)

(21) International Application Number:

PCT/EP2007/008735

(22) International Filing Date: 5 October 2007 (05.10.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/879,523	10 January 2007 (10.01.2007)	US
60/879,549	10 January 2007 (10.01.2007)	US
60/879,553	10 January 2007 (10.01.2007)	US
60/879,577	10 January 2007 (10.01.2007)	US
60/879,599	10 January 2007 (10.01.2007)	US
60/879,529	10 January 2007 (10.01.2007)	US
60/879,601	10 January 2007 (10.01.2007)	US

(71) Applicant (for all designated States except US): TOM-TOM INTERNATIONAL B.V. [—/NL]; Rembrandtplein 35, NL-1017 CT Amsterdam (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): GEELEN, Pieter [NL/NL]; Rembrandtplein 35, NL-1017 CT Amsterdam (NL). TERTOOLEN, Simone [NL/NL]; Voorstraat 95 bb, NL-2624 JM Delft (NL).

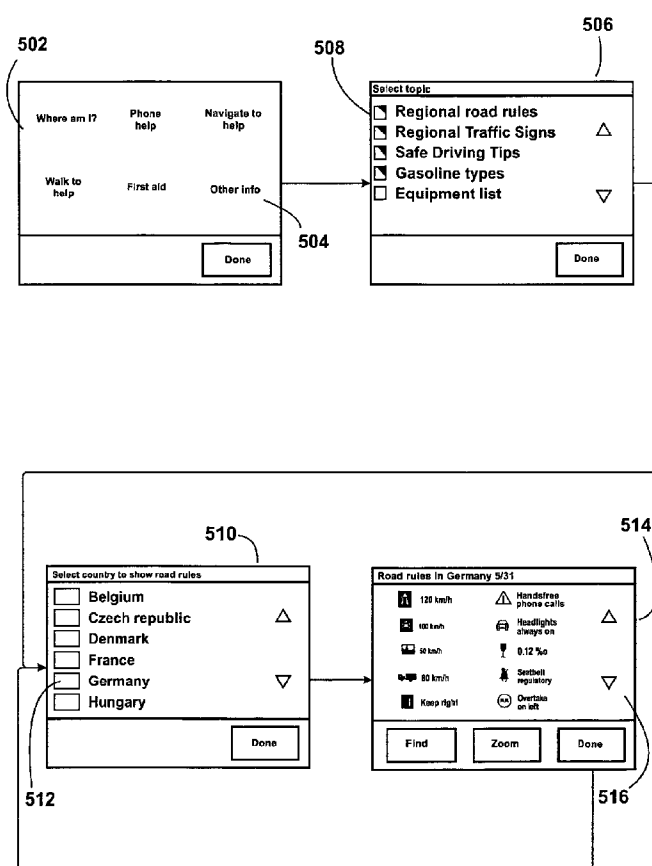
(74) Agent: DENMARK, J.C.; TomTom International B.V., Rembrandtplein 35, 1017 CT Amsterdam (NL).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH,

[Continued on next page]

(54) Title: A NAVIGATION DEVICE AND METHOD FOR PROVIDING REGIONAL TRAVEL INFORMATION IN A NAVIGATION DEVICE



(57) Abstract: A method and device are disclosed for providing regional travel information in a navigation device. In at least one embodiment, the method includes storing regional travel information in the navigation device; providing at least one travel information category in response to receipt of a request for information from a user of the navigation device; accessing stored regional travel information in response to receipt of an indication of a selection of at least one of the provided travel information categories by the user; and providing the accessed regional travel information to the user. In at least one embodiment, the navigation device includes an output device to provide information; an input device to receive an input; memory to store regional travel information; and a processor to access the regional information stored in memory and to provide accessed regional travel information through the output device in response to receipt of the input.



GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

— *with international search report*

**A NAVIGATION DEVICE AND METHOD FOR PROVIDING REGIONAL
TRAVEL INFORMATION IN A NAVIGATION DEVICE**

Field

The present application generally relates to navigation devices and methods of providing travel information in navigation devices.

Background

Navigation devices were traditionally utilized mainly in the areas of vehicle use, such as on cars, motorcycles, trucks, boats, etc. Alternatively, if such navigation devices were portable, they were further transferable between vehicles and/or useable outside the vehicle, for foot travel for example. These devices are typically tailored to produce a route of travel based upon an initial position of the navigation device and a selected/input travel destination (end position) noting that the initial position could be entered into the device, but is traditionally calculated via GPS Positioning from a GPS receiver within the navigation device. These device typically provide a user with a map information.

SUMMARY

The inventors discovered that users of a navigation device may benefit from having access to travel information about various regions including the region in which the user is located or through which the user is or may in the future be traveling. Thus, the inventors of the present application developed a method and implementation on a navigation device, to provide regional travel information to a user.

In at least one embodiment of the present application, a method of providing travel information in a navigation device is disclosed. The method includes storing regional travel information in the navigation device and providing at least one travel information category in response to receipt of a request for information from a user of the navigation device. The method further includes accessing stored regional travel information in response to receipt of an

indication of a selection of at least one of the provided travel information categories by the user and providing the accessed regional travel information to the user.

In at least another embodiment of the present application, a navigation device includes an output device to provide information and an input device to receive an input. The navigation device also includes memory to store regional travel information and a processor to access the regional information stored in memory and to provide accessed regional travel information through the output device in response to receipt of the input.

In at least another embodiment of the present application, a navigation device includes a means for providing information and a means for receiving an input. The navigation device also includes a means for storing regional travel information and a means for accessing the stored regional travel information and for providing accessed regional travel information through the means for providing information in response to receipt of the input.

BRIEF DESCRIPTION OF THE DRAWINGS

The present application will be described in more detail below by using example embodiments, which will be explained with the aid of the drawings, in which:

Figure 1 illustrates an example view of a Global Positioning System (GPS);

Figure 2 illustrates an example block diagram of electronic components of a navigation device of an embodiment of the present application;

Figure 3 illustrates an example block diagram of a server, navigation device and connection therebetween of an embodiment of the present application;

Figures 4A and 4B are perspective views of an implementation of an embodiment of the navigation device 200.

Figure 5 illustrates an example of sequence of travel information screens an embodiment of the present application;

Figure 6 illustrates an example of a language selection screen of an embodiment of the present application;

Figure 7 illustrates an example of a multi-page regional travel information display of an embodiment of the present application;

Figure 8 illustrates an example of a single file multi-page regional travel information display of an embodiment of the present application;

DETAILED DESCRIPTION OF THE EXAMPLE EMBODIMENTS

The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of the present invention. As used herein, the singular forms “a”, “an”, and “the” are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms “includes” and/or “including”, when used in this specification, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

In describing example embodiments illustrated in the drawings, specific terminology is employed for the sake of clarity. However, the disclosure of this patent specification is not intended to be limited to the specific terminology so selected and it is to be understood that each specific element includes all technical equivalents that operate in a similar manner.

Referencing the drawings, wherein like reference numerals designate identical or corresponding parts throughout the several views, example embodiments of the present patent application are hereafter described. Like numbers refer to like elements throughout. As used herein, the term “and/or” includes any and all combinations of one or more of the associated listed items.

Figure 1 illustrates an example view of Global Positioning System (GPS), usable by navigation devices, including the navigation device of embodiments of the present application. Such systems are known and are used for a variety of purposes. In general, GPS is a satellite-radio based navigation system capable of determining continuous position, velocity, time, and in some instances direction information for an unlimited number of users.

Formerly known as NAVSTAR, the GPS incorporates a plurality of satellites which work with the earth in extremely precise orbits. Based on these precise orbits, GPS satellites can relay their location to any number of receiving units.

The GPS system is implemented when a device, specially equipped to receive GPS data, begins scanning radio frequencies for GPS satellite signals. Upon receiving a radio signal from a GPS satellite, the device determines the precise location of that satellite via one of a plurality of different conventional methods. The device will continue scanning, in most instances, for signals until it has acquired at least three different satellite signals (noting that position is not normally, but can be determined, with only two signals using other triangulation techniques). Implementing geometric triangulation, the receiver utilizes the three known positions to determine its own two-dimensional position relative to the satellites. This can be done in a known manner. Additionally, acquiring a fourth satellite signal will allow the receiving device to calculate its three dimensional position by the same geometrical calculation in a known manner. The position and velocity data can be updated in real time on a continuous basis by an unlimited number of users.

As shown in Figure 1, the GPS system is denoted generally by reference numeral 100. A plurality of satellites 120 are in orbit about the earth 124. The orbit of each satellite 120 is not necessarily synchronous with the orbits of other satellites 120 and, in fact, is likely asynchronous. A GPS receiver 140, usable in embodiments of navigation devices of the present application, is shown receiving spread spectrum GPS satellite signals 160 from the various satellites 120.

The spread spectrum signals 160, continuously transmitted from each satellite 120, utilize a highly accurate frequency standard accomplished with an extremely accurate atomic clock. Each satellite 120, as part of its data signal transmission 160, transmits a data stream indicative of that particular satellite 120. It is appreciated by those skilled in the relevant art that the GPS receiver device 140 generally acquires spread spectrum GPS satellite signals 160 from at least three satellites 120 for the GPS receiver device 140 to calculate its two-dimensional position by triangulation. Acquisition of an additional signal, resulting in signals 160 from a total of four satellites 120, permits the GPS receiver device 140 to calculate its three-dimensional position in a known manner.

Figure 2 illustrates an example block diagram of electronic components of a navigation device 200 of an embodiment of the present application, in block component format. It should be noted that the block diagram of the navigation device 200 is not inclusive of all components of the navigation device, but is only representative of many example components.

The navigation device 200 is located within a housing (not shown). The housing includes a processor 210 connected to an input device 220 and a display screen 240. The input device 220 can include a keyboard device, voice input device, touch panel and/or any other known input device utilized to input information; and the display screen 240 can include any type of display screen such as an LCD display, for example. In at least one embodiment of the present application, the input device 220 and display screen 240 are integrated into an integrated input and display device, including a touchpad or touchscreen input wherein a user need only touch a portion of the display screen 240 to select one of a plurality of display choices or to activate one of a plurality of virtual buttons.

In addition, other types of output devices 250 can also include, including but not limited to, an audible output device. As output device 250 can produce audible information to a user of the navigation device 200, it is equally understood that input device 240 can also include a microphone and software for receiving input voice commands as well.

In the navigation device 200, processor 210 is operatively connected to and set to receive input information from input device 240 via a connection 225, and operatively connected to at least one of display screen 240 and output device 250, via output connections 245, to output information thereto. Further, the processor 210 is operatively connected to memory 230 via connection 235 and is further adapted to receive/send information from/to input/output (I/O) ports 270 via connection 275, wherein the I/O port 270 is connectible to an I/O device 280 external to the navigation device 200. The external I/O device 270 may include, but is not limited to an external listening device such as an earpiece for example. The connection to I/O device 280 can further be a wired or wireless connection to any other external device such as a car stereo unit for hands-free operation and/or for voice activated operation for example, for

connection to an ear piece or head phones, and/or for connection to a mobile phone for example, wherein the mobile phone connection may be used to establish a data connection between the navigation device 200 and the internet or any other network for example, and/or to establish a connection to a server via the internet or some other network for example.

The navigation device 200, in at least one embodiment, may establish a "mobile" network connection with the server 302 via a mobile device 400 (such as a mobile phone, PDA, and/or any device with mobile phone technology) establishing a digital connection (such as a digital connection via known Bluetooth technology for example). Thereafter, through its network service provider, the mobile device 400 can establish a network connection (through the internet for example) with a server 302. As such, a "mobile" network connection is established between the navigation device 200 (which can be, and often times is mobile as it travels alone and/or in a vehicle) and the server 302 to provide a "real-time" or at least very "up to date" gateway for information. The establishing of the network connection between the mobile device 400 (via a service provider) and another device such as the server 302, using the internet 410 for example, can be done in a known manner. This can include use of TCP/IP layered protocol for example. The mobile device 400 can utilize any number of communication standards such as CDMA, GSM, WAN, etc. As such, an internet connection may be utilized which is achieved via data connection, via a mobile phone or mobile phone technology within the navigation device 200 for example. For this connection, an internet connection between the server 302 and the navigation device 200 is established. This can be done, for example, through a mobile phone or other mobile device and a GPRS (General Packet Radio Service)-connection (GPRS connection is a high-speed data connection for mobile devices provided by telecom operators; GPRS is a method to connect to the internet).

The navigation device 200 can further complete a data connection with the mobile device 400, and eventually with the internet 410 and server 302, via existing Bluetooth technology for example, in a known manner, wherein the data protocol can utilize any number of standards, such as the GSRM, the Data Protocol Standard for the GSM standard, for example.

The navigation device 200 may include its own mobile phone technology within the navigation device 200 itself (including an antenna for example, wherein the internal antenna of the navigation device 200 can further alternatively be used). The mobile phone technology within the navigation device 200 can include internal components as specified above, and/or can include an insertable card, complete with necessary mobile phone technology and/or an antenna for example. As such, mobile phone technology within the navigation device 200 can similarly establish a network connection between the navigation device 200 and the server 302, via the internet 410 for example, in a manner similar to that of any mobile device 400.

For GRPS phone settings, the Bluetooth enabled device may be used to correctly work with the ever changing spectrum of mobile phone models, manufacturers, etc., model/manufacture specific settings may be stored on the navigation device 200 for example. The data stored for this information can be updated in a manner discussed in any of the embodiments, previous and subsequent.

Figure 2 further illustrates an operative connection between the processor 210 and an antenna/receiver 250 via connection 255, wherein the antenna/receiver 250 can be a GPS antenna/receiver for example. It will be understood that the antenna and receiver designated by reference numeral 250 are combined schematically for illustration, but that the antenna and receiver may be separately located components, and that the antenna may be a GPS patch antenna or helical antenna for example.

Further, it will be understood by one of ordinary skill in the art that the electronic components shown in Figure 2 are powered by power sources (not shown) in a conventional manner. As will be understood by one of ordinary skill in the art, different configurations of the components shown in Figure 2 are considered within the scope of the present application. For example, in one embodiment, the components shown in Figure 2 may be in communication with one another via wired and/or wireless connections and the like. Thus, the scope of the navigation device 200 of the present application includes a portable or handheld navigation device 200.

In addition, the portable or handheld navigation device 200 of Figure 2 can be connected or “docked” in a known manner to a motorized vehicle such as a car or boat for example. Such a navigation device 200 is then removable from the docked location for portable or handheld navigation use.

Figure 3 illustrates an example block diagram of a server 302 and a navigation device 200 of the present application, via a generic communications channel 318, of an embodiment of the present application. The server 302 and a navigation device 200 of the present application can communicate when a connection via communications channel 318 is established between the server 302 and the navigation device 200 (noting that such a connection can be a data connection via mobile device, a direct connection via personal computer via the internet, etc.).

The server 302 includes, in addition to other components which may not be illustrated, a processor 304 operatively connected to a memory 306 and further operatively connected, via a wired or wireless connection 314, to a mass data storage device 312. The processor 304 is further operatively connected to transmitter 308 and receiver 310, to transmit and send information to and from navigation device 200 via communications channel 318. The signals sent and received may include data, communication, and/or other propagated signals. The transmitter 308 and receiver 310 may be selected or designed according to the communications requirement and communication technology used in the communication design for the navigation system 200. Further, it should be noted that the functions of transmitter 308 and receiver 310 may be combined into a signal transceiver.

Server 302 is further connected to (or includes) a mass storage device 312, noting that the mass storage device 312 may be coupled to the server 302 via communication link 314. The mass storage device 312 contains a store of navigation data and map information, and can again be a separate device from the server 302 or can be incorporated into the server 302.

The navigation device 200 is adapted to communicate with the server 302 through communications channel 318, and includes processor, memory, etc. as previously described with regard to Figure 2, as well as transmitter 320 and receiver 322 to send and receive signals and/or data through the

communications channel 318, noting that these devices can further be used to communicate with devices other than server 302. Further, the transmitter 320 and receiver 322 are selected or designed according to communication requirements and communication technology used in the communication design for the navigation device 200 and the functions of the transmitter 320 and receiver 322 may be combined into a single transceiver.

Software stored in server memory 306 provides instructions for the processor 304 and allows the server 302 to provide services to the navigation device 200. One service provided by the server 302 involves processing requests from the navigation device 200 and transmitting navigation data from the mass data storage 312 to the navigation device 200. According to at least one embodiment of the present application, another service provided by the server 302 includes processing the navigation data using various algorithms for a desired application and sending the results of these calculations to the navigation device 200.

The communication channel 318 generically represents the propagating medium or path that connects the navigation device 200 and the server 302. According to at least one embodiment of the present application, both the server 302 and navigation device 200 include a transmitter for transmitting data through the communication channel and a receiver for receiving data that has been transmitted through the communication channel.

The communication channel 318 is not limited to a particular communication technology. Additionally, the communication channel 318 is not limited to a single communication technology; that is, the channel 318 may include several communication links that use a variety of technology. For example, according to at least one embodiment, the communication channel 318 can be adapted to provide a path for electrical, optical, and/or electromagnetic communications, etc. As such, the communication channel 318 includes, but is not limited to, one or a combination of the following: electric circuits, electrical conductors such as wires and coaxial cables, fiber optic cables, converters, radio-frequency (rf) waves, the atmosphere, empty space, etc. Furthermore, according to at least one various embodiment, the communication channel 318 can include

intermediate devices such as routers, repeaters, buffers, transmitters, and receivers, for example.

In at least one embodiment of the present application, for example, the communication channel 318 includes telephone and computer networks. Furthermore, in at least one embodiment, the communication channel 318 may be capable of accommodating wireless communication such as radio frequency, microwave frequency, infrared communication, etc. Additionally, according to at least one embodiment, the communication channel 318 can accommodate satellite communication.

The communication signals transmitted through the communication channel 318 include, but are not limited to, signals as may be required or desired for given communication technology. For example, the signals may be adapted to be used in cellular communication technology such as Time Division Multiple Access (TDMA), Frequency Division Multiple Access (FDMA), Code Division Multiple Access (CDMA), Global System for Mobile Communications (GSM), etc. Both digital and analogue signals can be transmitted through the communication channel 318. According to at least one embodiment, these signals may be modulated, encrypted and/or compressed signals as may be desirable for the communication technology.

The mass data storage 312 includes sufficient memory for the desired navigation applications. Examples of the mass data storage 312 may include magnetic data storage media such as hard drives for example, optical storage media such as CD-Roms for example, charged data storage media such as flash memory for example, molecular memory, etc.

According to at least one embodiment of the present application, the server 302 includes a remote server accessible by the navigation device 200 via a wireless channel. According to at least one other embodiment of the application, the server 302 may include a network server located on a local area network (LAN), wide area network (WAN), virtual private network (VPN), etc.

According to at least one embodiment of the present application, the server 302 may include a personal computer such as a desktop or laptop computer, and the communication channel 318 may be a cable connected between the personal computer and the navigation device 200. Alternatively, a personal

computer may be connected between the navigation device 200 and the server 302 to establish an internet connection between the server 302 and the navigation device 200. Alternatively, a mobile telephone or other handheld device may establish a wireless connection to the internet, for connecting the navigation device 200 to the server 302 via the internet.

The navigation device 200 may be provided with information from the server 302 via information downloads which may be periodically updated upon a user connecting navigation device 200 to the server 302 and/or may be more dynamic upon a more constant or frequent connection being made between the server 302 and navigation device 200 via a wireless mobile connection device and TCP/IP connection for example. For many dynamic calculations, the processor 304 in the server 302 may be used to handle the bulk of the processing needs, however, processor 210 of navigation device 200 can also handle much processing and calculation, oftentimes independent of a connection to a server 302.

The mass storage device 312 connected to the server 302 can include volumes more cartographic and route data than that which is able to be maintained on the navigation device 200 itself, including maps, etc. The server 302 may process, for example, the majority of the devices of a navigation device 200 which travel along the route using a set of processing algorithms. Further, the cartographic and route data stored in memory 312 can operate on signals (e.g. GPS signals), originally received by the navigation device 200.

As indicated above in Figure 2 of the application, a navigation device 200 of an embodiment of the present application includes a processor 210, an input device 220, and a display screen 240. In at least one embodiment, the input device 220 and display screen 240 are integrated into an integrated input and display device to enable both input of information (via direct input, menu selection, etc.) and display of information through a touch panel screen, for example. Such a screen may be a touch input LCD screen, for example, as is well known to those of ordinary skill in the art. Further, the navigation device 200 can also include any additional input device 220 and/or any additional output device 240, such as audio input/output devices for example.

Figures 4A and 4B are perspective views of an actual implementation of an embodiment of the navigation device 200. As shown in Fig. 4A, the navigation device 200 may be a unit that includes an integrated input and display device 290 (a touch panel screen for example) and the other components of figure 2 (including but not limited to internal GPS receiver 250, microprocessor 210, a power supply, memory systems 220, etc.).

The navigation device 200 may sit on an arm 292, which itself may be secured to a vehicle dashboard/window/etc. using a large suction cup 294. This arm 292 is one example of a docking station to which the navigation device 200 can be docked.

As shown in Fig. 4B, the navigation device 200 can be docked or otherwise connected to an arm 292 of the docking station by snap connecting the navigation device 292 to the arm 292 for example (this is only one example, as other known alternatives for connection to a docking station are within the scope of the present application). The navigation device 200 may then be rotatable on the arm 292, as shown by the arrow of Fig. 4B. To release the connection between the navigation device 200 and the docking station, a button on the navigation device 200 may be pressed, for example (this is only one example, as other known alternatives for disconnection to a docking station are within the scope of the present application).

According to various embodiments of the present application, a method for providing regional travel information in a navigation device 200 includes storing regional travel information in the navigation device 200. A region is generally some defined geographic area. A region can include a state, a nation, a group of states, a group of nations, a continent, or any other predetermined geographic or geopolitical area. A user of the navigation device 200 is provided with at least one travel information category in response to receiving a request for information from the user. Alternatively, the user may be provided with a plurality of travel information categories and the user may select one of the plurality of categories for which the user desires to receive information. When the navigation device 200 receives an indication of a selection of one of the travel information categories by the user, the navigation device 200 accesses

the stored regional travel information and provides the accessed regional travel information to the user.

Although aspects of the embodiments of the present application have been, and will be, described with regard to the method of the present application, at least one embodiment of the present disclosure is directed to a navigation device 200. The navigation device 200 includes an output device to provide information, an input device 220 to receive an input, memory 230 to store regional travel information and a processor 210 to access the regional information stored in memory 230 and to provide accessed regional travel information through the output device 250 in response to receipt of the input. Thus, such a navigation device 200 may be used to perform various aspects of the method described above, as would be understood by one of ordinary skill in the art. Further explanation is omitted for the sake of brevity.

Regional travel information includes many types of information about a region including, but not limited to, regional statistics, medical information, road rules, traffic signs, driving tips, gasoline types, unit conversion tables, regional travel related phrases, and equipment lists.

Regional statistics include statistical information relating to the region selected by the user. The user can view statistical information relating to any country or region shown on a map on the navigation device 200. Statistics can include selected statistics about a region from sources such as the CIA fact book.

Medical information includes various types of medical information relevant to a region. For example, medical information can include general first aid information, required regional vaccinations, dangerous regional flora and fauna, and regional signs for pharmacies, doctors and hospitals

Road rules and driving tips consist of regional information relating to regional driving laws. Specifically, this can include laws about driving licenses, general speed limits, specific fines, seat belt laws, hands free calling laws, legality of devices mounted on the windshield

Regional road sign information includes images and localized descriptions of road signs that are used in a region. Test explaining the meaning of each road sign is displayed in the selected user interface language.

Gasoline types available in a region are an additional category of regional travel information and include information relating to the types of fuel that are available in a region. This information includes fuel types, applicable vehicles for each fuel type, and the regional and user interface language name of each fuel type.

Equipment lists include suggested equipment lists for various types of trips. Some examples include mountain trips, desert trips, trips in snowy weather, trips when traveling with a baby, and long distance trips.

Unit conversion tables are another category of regional travel information that is provided in some embodiments. Unit conversion tables can include conversion tables for distance units, speed, currencies, temperatures, weights, volumes, pressure, and GPS coordinate system.

The regional travel information can also include regional travel related phrases. The information includes regionally localized translations of common travel related phrases. In some embodiments, the navigation device is operable to produce an audible pronunciation of the phrases. The common travel related phrases can relate to any of the regional travel information categories discussed above, general conversation or any other situations in which a traveler may find herself.

In one implementation of at least one embodiment, the navigation device 200 is configured to receive input and provide information in a plurality of languages. The method can further include determining if the regional travel information is available in the language selected by the user. If the information is not available in the language selected by the user, the method further includes prompting the user to select a language from a group of languages in which the regional travel information is available, as shown, for example, in the display illustrated in Figure 6.

The region for which regional travel information is accessed and provided varies depending upon the user selections and the various embodiments. In at least one embodiment, the regional travel information is related to the region in which the navigation device 200 is located. As the navigation device 200 uses a GPS system, the navigation device 200 is operable to know in what region it is currently located. In such embodiments, the default regional travel

information relates to the current location of the navigation device 200 . Alternatively or additionally, the user may select the region for which regional travel information is provided. Thus a user can view information about a region to which the user will travel in the future or about which the user is simply interested regardless of the region in which the user is located. In other embodiments, the navigation device 200 provides the user with a group of regions for which travel information is available arranged in order of geographic proximity to the current location of navigation device 200 . Alternatively, the regions may be arranged in alphabetical order.

The regional travel information may be stored in any format that the navigation device 200 is operable to store, access and provide to the user. In some embodiments, the regional travel information is stored as a hypertext markup language (HTML) file. In such embodiments, providing the regional travel information includes displaying the HTML file on the display device of the navigation device 200 .

Figure 5 provides one implementation of at least one embodiment. Figure 5 illustrates a series of example displays. By selecting a help option, not shown, the help display 502 provides a group of options to a user. Although help display 502 illustrates text only options, the options may include icons, sounds or other enhancements. If the user selects the other info option 504, the regional travel information categories display 506 is displayed. As shown in Figure 5 this display can include a plurality of travel information categories. The regional travel information display 506 may include more or fewer categories than those illustrated in Figure 5. When the user selects a category, such as regional road rules 508, the region selection display 510 is displayed to the user. Although the regions displayed on the region selection display illustrated in Figure 5 are countries, as discussed above, the regions displayed may alternatively be states, continents or other geographic or geopolitical regions. As discussed above, there are numerous ways in which the regions may be arranged according to various embodiments of the present disclosure. Additionally, the regional selector may include the flag or other symbol for a region in close proximity to the name of the region. When the user selects a country, such as Germany 512, the information display 514 is displayed. The

content of the information display 514 depends on the category selected. In Figure 5, the information display 514 displays the road rules information for Germany as selected by the user. This information includes graphical symbols and text conveying various road rule information to the user as discussed above. As can be seen on displays 506, 510 and 514, if the information displayed cannot fit on the display device, scroll arrows 516 are present to allow the user to scroll up and/or down through the information.

As illustrated in Figure 6, if the user selects a regional travel information category or region for which there is no information available in the selected user interface language, the navigation device 200 will present the user with a language selection display 600. The language selection display 600 allows the user to select an alternative language in which to display the requested information. Moreover, the language selection display 600 displays only the languages in which the selected information is available. In Figure 6, the selected information is available in four languages. However, the information may be available in more or fewer languages. After the user selects the alternate language, the selected regional travel information is displayed as discussed above.

Figure 7 illustrates another implementation of at least one embodiment of a multi-page information display 700 of the present disclosure. The information display includes a first page 702 displaying information and a second page 704 displaying additional information. As can be seen in Figure 7, a user may scroll between the pages using the scroll bar 706. The second page 704 also includes additional navigation options 710 and 712, to allow the user to select additional and/or related information to be displayed without needing to return to an earlier menu of options first. In such an embodiment, a separate file is used for a regional travel information category for a region in each language. Thus, for example, as illustrated in Figure 7, road rules for the Netherlands displayed in English would be one file. Similar separate files would exist for the road rules information about Norway in English or about the Netherlands displayed in German.

An alternative implementation of at least one embodiment is illustrated in Figure 8. Figure 8 illustrates a multi-page information display 800. This

information display 800, however, includes a single file containing all of the information in a single regional travel information category for all of the available regions in one language. Figure 8 illustrates four pages, 802, 804, 806 and 808, of the multi-page information display 800. The user has the option of scrolling through the pages of information using the scrollbar 812, or skipping ahead to the next available region using the next region option 810. As the user scrolls from display 802 to 804 and 806, information related to one regions, e.g. the Netherlands, is displayed. All of the displays contain a display of a navigation option 810 which would allow the user to skip to the information display of the next available region. If the user continues to scroll past the end of the information about the first region, the display 808 containing the information related to the next available region, e.g. Norway, is displayed.

The methods of at least one embodiment expressed above may be implemented as a computer data signal embodied in the carrier wave or propagated signal that represents a sequence of instructions which, when executed by a processor (such as processor 304 of server 302, and/or processor 210 of navigation device 200 for example) causes the processor to perform a respective method. In at least one other embodiment, at least one method provided above may be implemented above as a set of instructions contained on a computer readable or computer accessible medium, such as one of the memory devices previously described, for example, to perform the respective method when executed by a processor or other computer device. In varying embodiments, the medium may be a magnetic medium, electronic medium, optical medium, etc.

Even further, any of the aforementioned methods may be embodied in the form of a program. The program may be stored on a computer readable media and is adapted to perform any one of the aforementioned methods when run on a computer device (a device including a processor). Thus, the storage medium or computer readable medium, is adapted to store information and is adapted to interact with a data processing facility or computer device to perform the method of any of the above mentioned embodiments.

The storage medium may be a built-in medium installed inside a computer device main body or a removable medium arranged so that it can be separated from the computer device main body. Examples of the built-in medium include,

but are not limited to, rewriteable non-volatile memories, such as ROMs and flash memories, and hard disks. Examples of the removable medium include, but are not limited to, optical storage media such as CD-ROMs and DVDs; magneto-optical storage media, such as MOs; magnetism storage media, including but not limited to floppy disks (trademark), cassette tapes, and removable hard disks; media with a built-in rewriteable non-volatile memory, including but not limited to memory cards; and media with a built-in ROM, including but not limited to ROM cassettes; etc. Furthermore, various information regarding stored images, for example, property information, may be stored in any other form, or it may be provided in other ways.

As one of ordinary skill in the art will understand upon reading the disclosure, the electronic components of the navigation device 200 and/or the components of the server 302 can be embodied as computer hardware circuitry or as a computer readable program, or as a combination of both.

The system and method of embodiments of the present application include software operative on the processor to perform at least one of the methods according to the teachings of the present application. One of ordinary skill in the art will understand, upon reading and comprehending this disclosure, the manner in which a software program can be launched from a computer readable medium in a computer based system to execute the functions found in the software program. One of ordinary skill in the art will further understand the various programming languages which may be employed to create a software program designed to implement and perform at least one of the methods of the present application.

The programs can be structured in an object-orientation using an object-oriented language including but not limited to JAVA, Smalltalk, C++, etc., and the programs can be structured in a procedural-orientation using a procedural language including but not limited to COBAL, C, etc. The software components can communicate in any number of ways that are well known to those of ordinary skill in the art, including but not limited to by application of program interfaces (API), interprocess communication techniques, including but not limited to report procedure call (RPC), common object request broker architecture (CORBA), Component Object Model (COM), Distributed Component

Object Model (DCOM), Distributed System Object Model (DSOM), and Remote Method Invocation (RMI). However, as will be appreciated by one of ordinary skill in the art upon reading the present application disclosure, the teachings of the present application are not limited to a particular programming language or environment.

The above systems, devices, and methods have been described by way of example and not by way of limitation with respect to improving accuracy, processor speed, and ease of user interaction, etc. with a navigation device 200. Further, elements and/or features of different example embodiments may be combined with each other and/or substituted for each other within the scope of this disclosure and appended claims.

Still further, any one of the above-described and other example features of the present invention may be embodied in the form of an apparatus, method, system, computer program and computer program product. For example, of the aforementioned methods may be embodied in the form of a system or device, including, but not limited to, any of the structure for performing the methodology illustrated in the drawings.

Example embodiments being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the present invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

What is claimed is:

1. A method of operating a navigation device so as to provide travel information characterized by the steps of:
 - storing regional travel information in the navigation device;
 - providing at least one travel information category in response to receipt of a request for information from a user of the navigation device;
 - accessing stored regional travel information in response to receipt of an indication of a selection of at least one of the provided travel information categories by the user; and
 - providing the accessed regional travel information to the user.
2. The method of claim 1, wherein the travel information includes at least one of regional statistics, medical information, road rules, traffic signs, driving tips, gasoline types, unit conversion tables, regional travel related phrases, and equipment lists.
3. The method of any preceding claim, wherein the navigation device is configured to receive an input and provide information in a plurality of languages selectable by the user.
4. The method of claim 3, further comprising determining if travel information is available in a language selected by the user.
5. The method of claim 4, further comprising prompting the user to select a language from a group of languages in which travel information is available, if travel information is determined not to be available in the language selected by the user.
6. The method of any preceding claim, including the further steps of determining the current location of the navigation and establishing whether the travel information available is for a region which includes said location.

7. The method of claim 6, wherein user selectable regions are arranged in order of geographic proximity to a location of the navigation device.
8. The method of any preceding claim, wherein the navigation device includes a display device and the providing includes displaying visually on the display device.
9. The method of any preceding claim, wherein the at least one travel information category includes a plurality of travel information categories, selection of a travel information category includes selection of one of the plurality of travel information categories and the plurality of travel information categories include at least one of regional statistics, medical information, road rules, traffic signs, driving tips, gasoline types, unit conversion tables, regional travel related phrases, and equipment lists.
10. The method of claim 9, wherein providing travel information includes displaying an HTML file containing travel information on the display device.
11. A computer program comprising computer program code means adapted to perform all the steps of any of claims 1-10 when run on a computer.
12. A computer program as claimed in claim 11 when embodied on or in a computer readable medium.
13. A navigation device adapted to perform any of the method steps of claims 1-10 and comprising:
 - an output device to provide information;
 - an input device to receive an input;
 - memory to store regional travel information; and

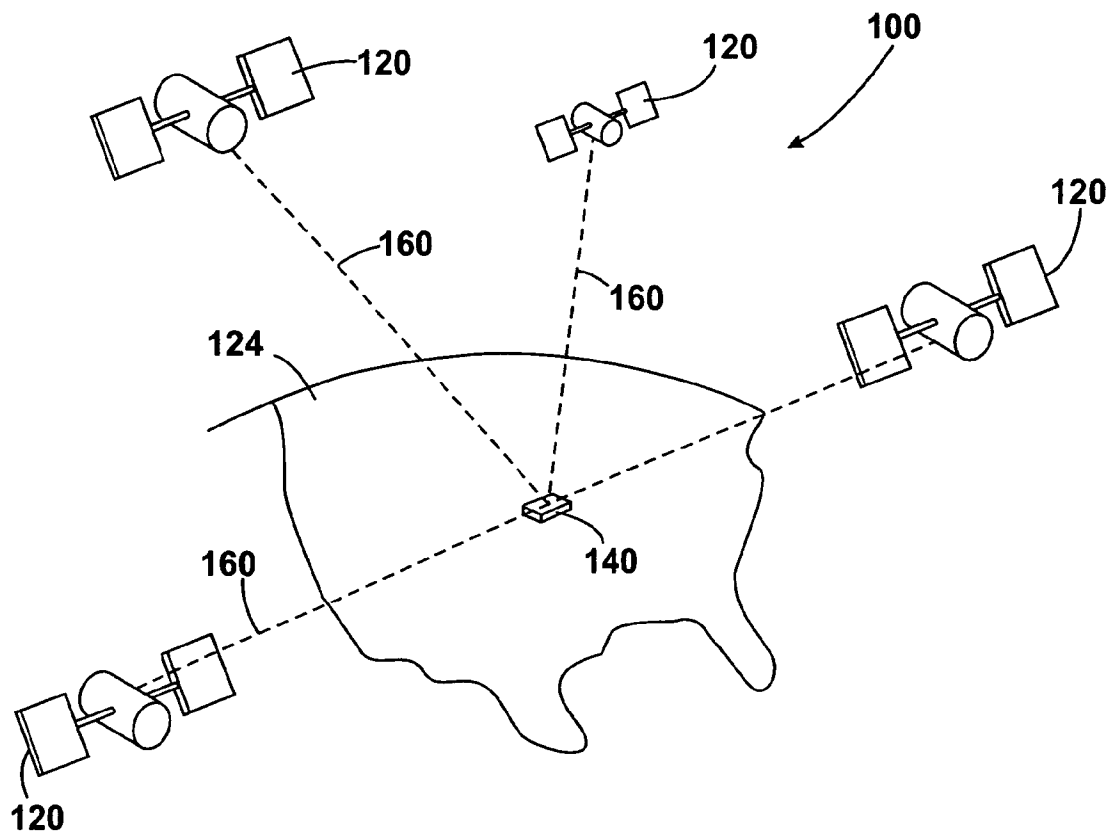
a processor to access the regional information stored in memory and to provide accessed regional travel information through the output device in response to receipt of the input.

14. The navigation device of claim 13, wherein regional information is stored in memory in HTML format.

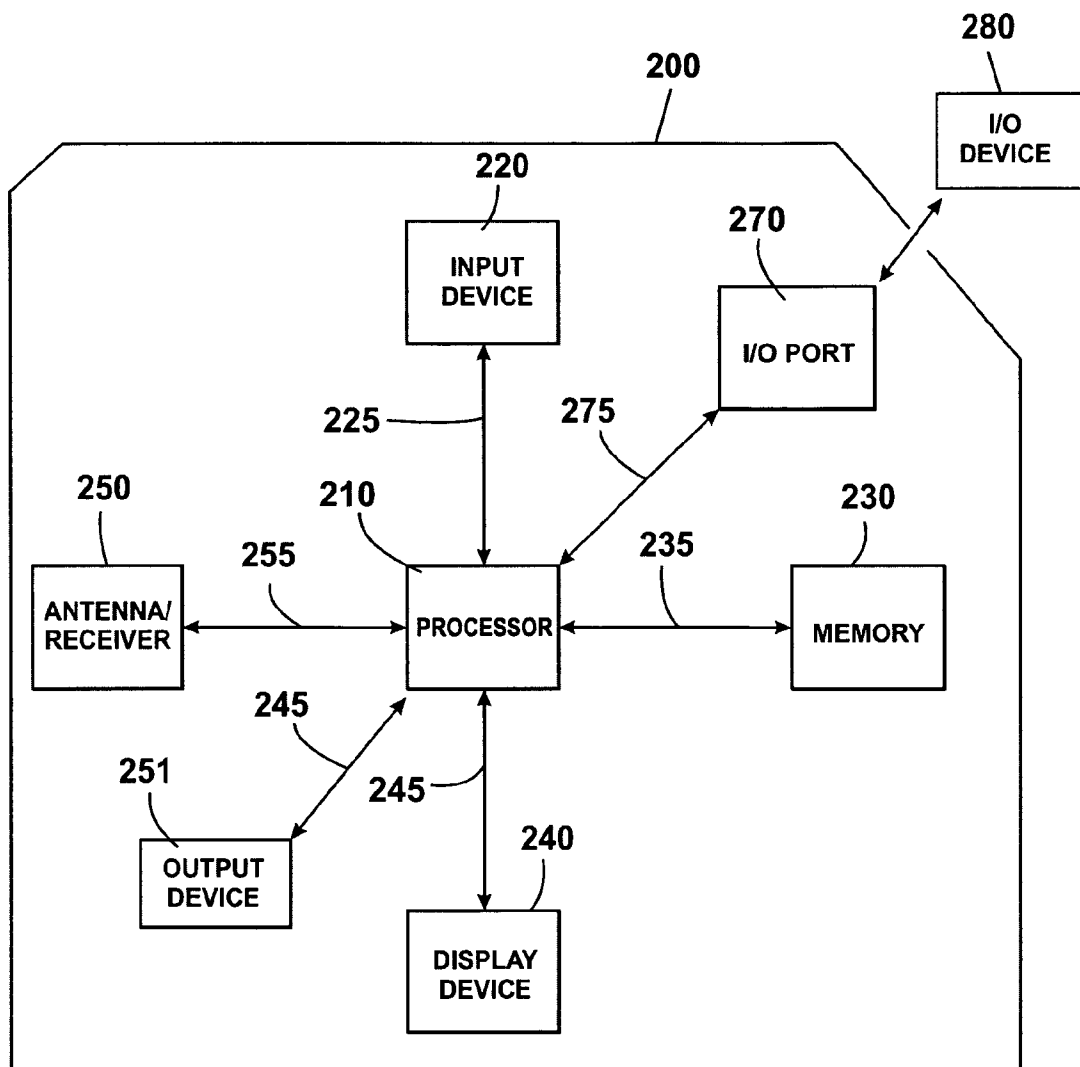
15. The navigation device of claim 13 or 14, wherein the input device comprises a touch sensitive screen.

16. The navigation device of any of claims 13-15, wherein the output device is a display device.

1/9

*Fig. 1*

2/9

*Fig. 2*

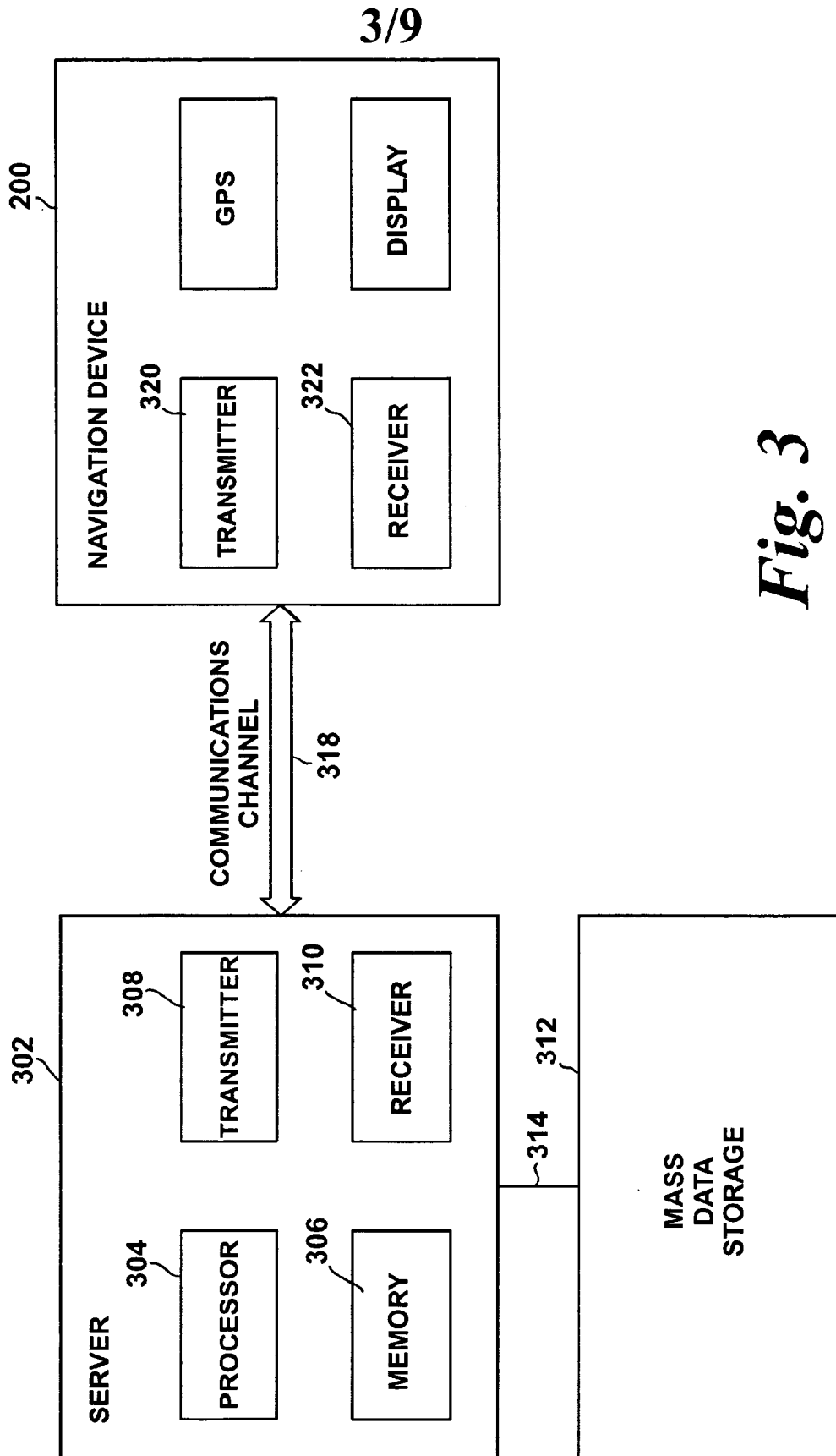


Fig. 3

4/9

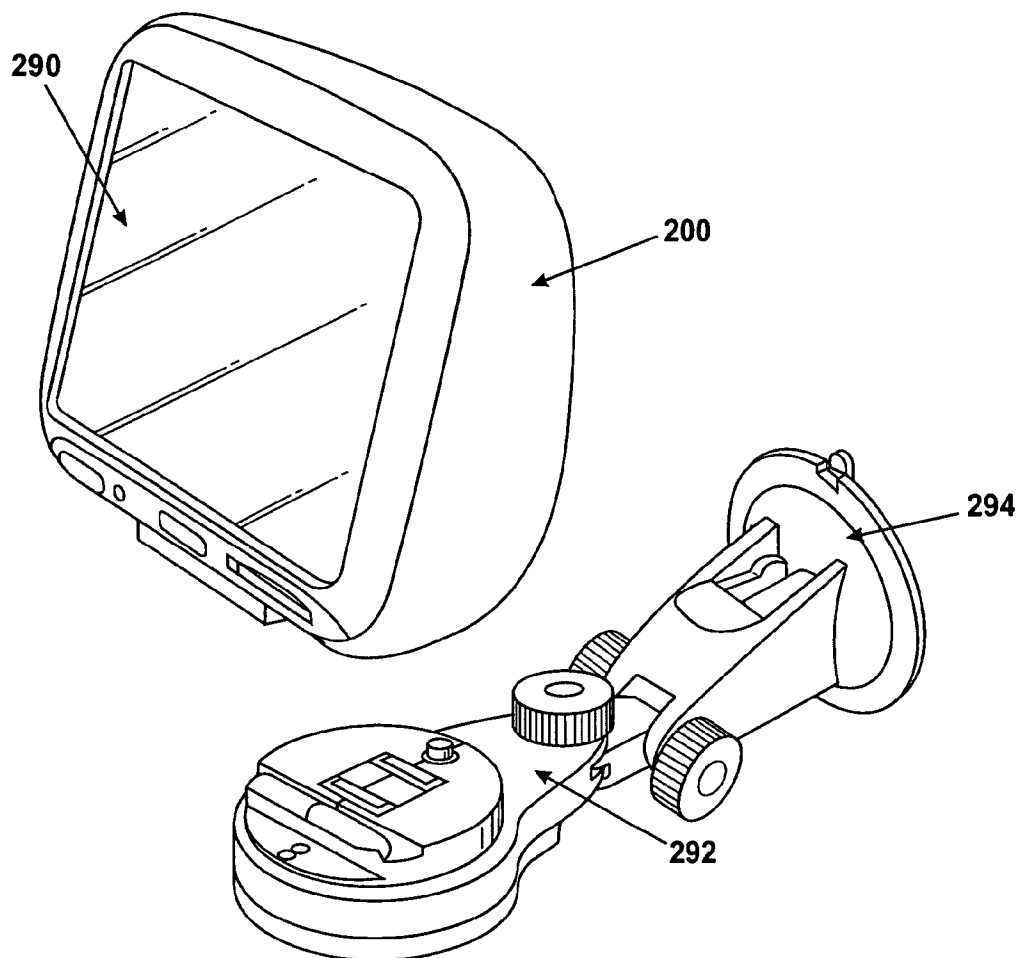


Fig. 4A

5/9

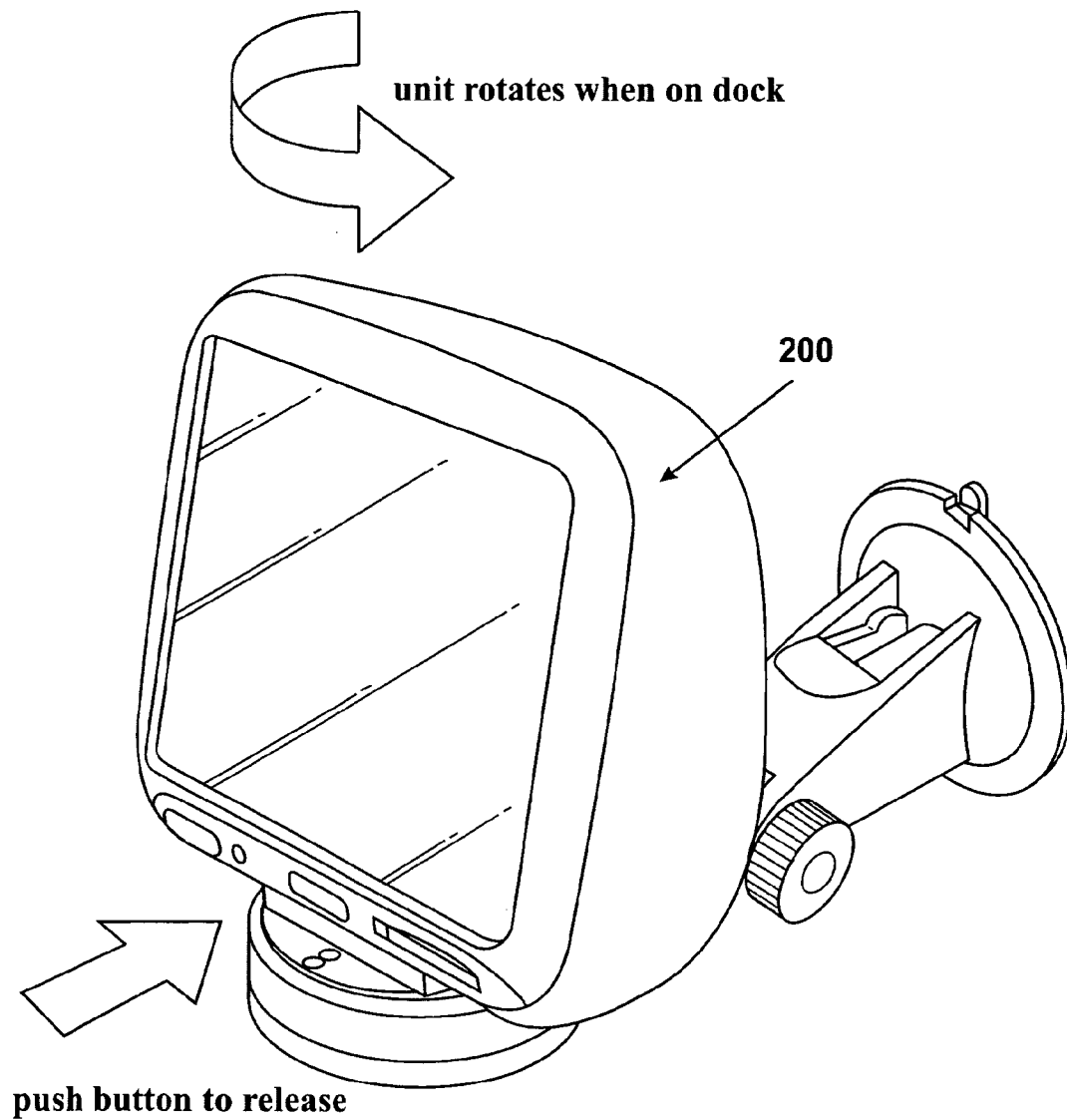
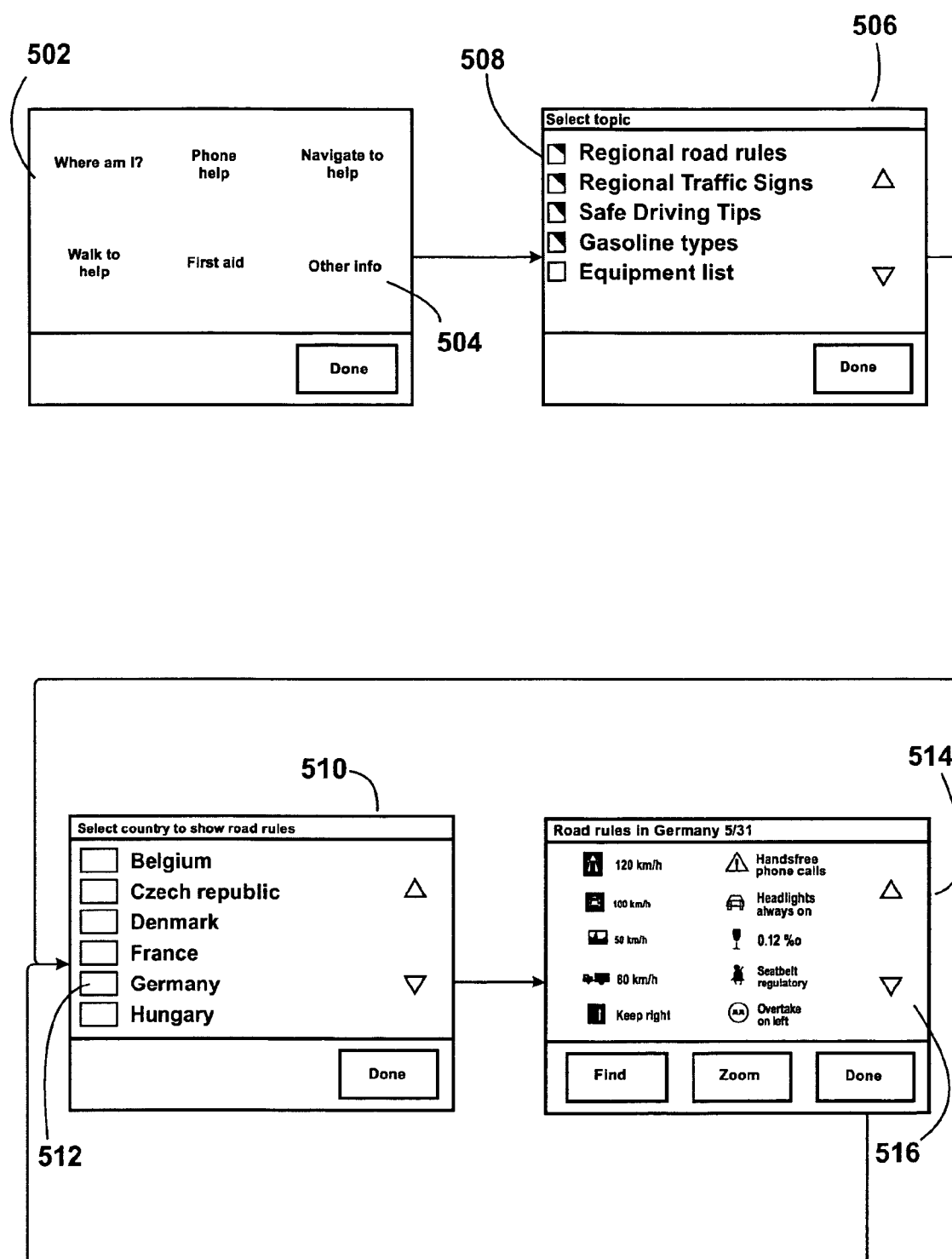


Fig. 4B

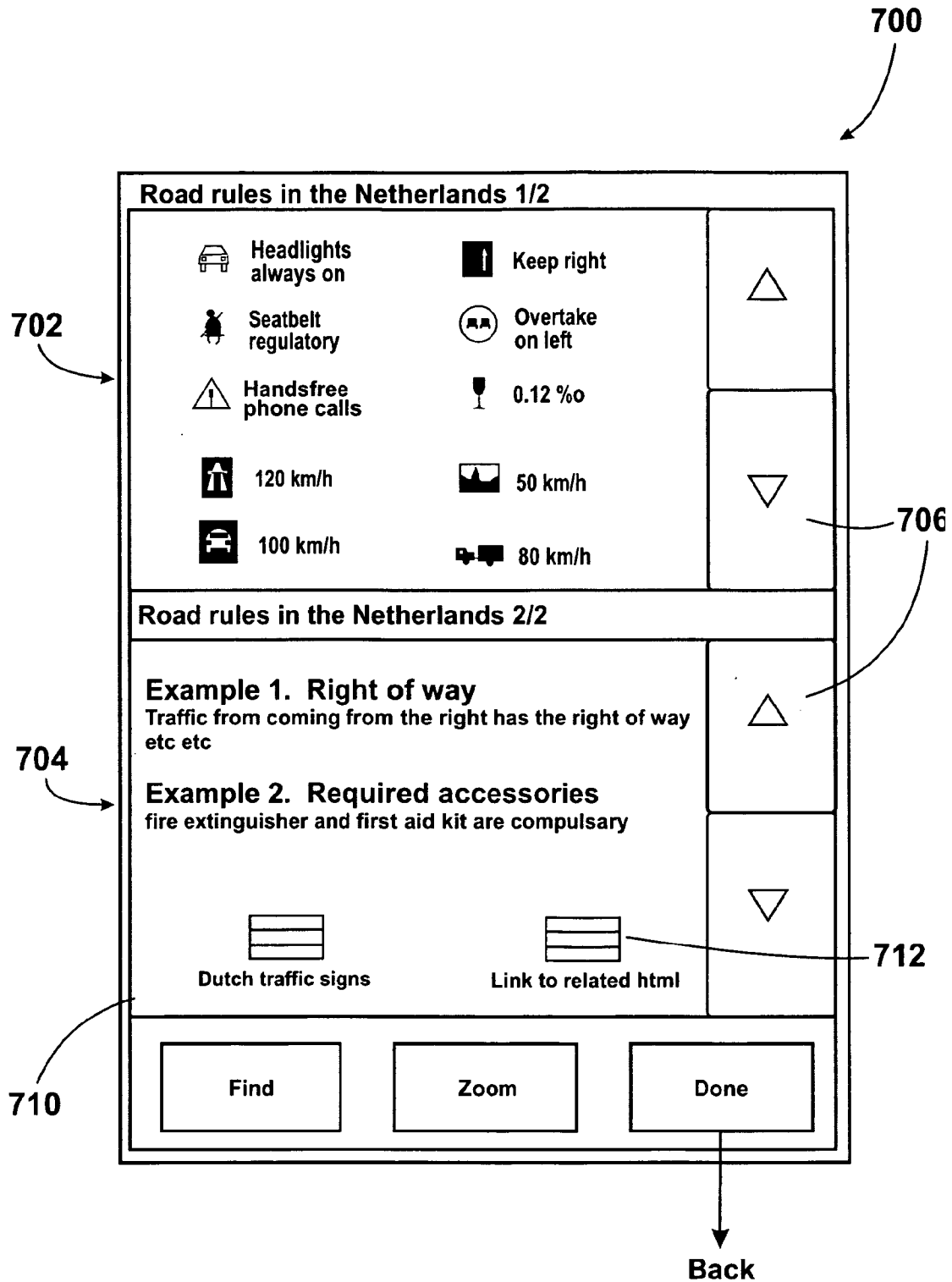
6/9

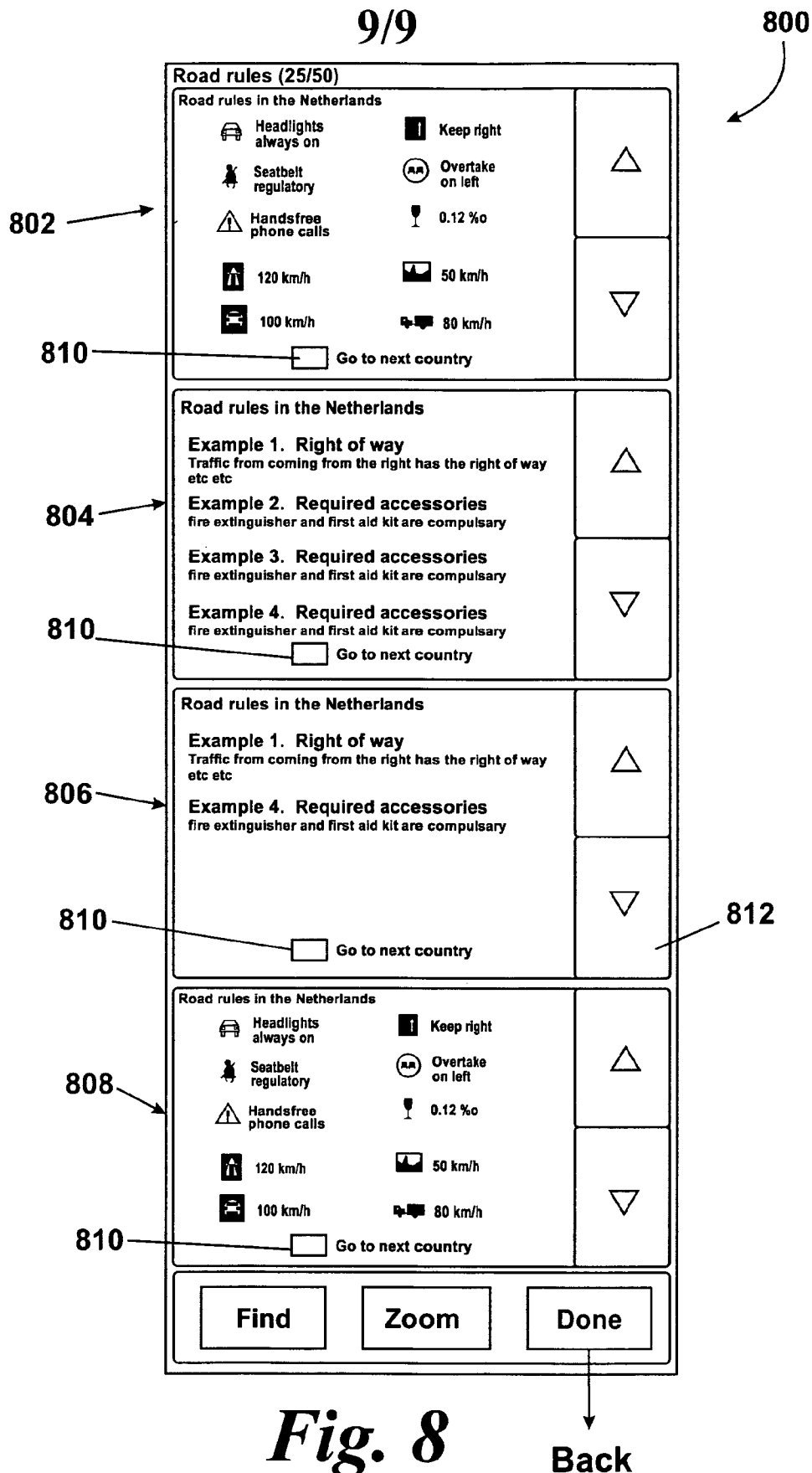
**Fig. 5**

7/9

***Fig. 6***

8/9

*Fig. 7*

*Fig. 8*

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2007/008735

A. CLASSIFICATION OF SUBJECT MATTER
INV. G01C21/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G01C G08G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, IBM-TDB, INSPEC, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 174 685 A (VISTEON GLOBAL TECH INC [US]) 23 January 2002 (2002-01-23) paragraphs [0012], [0018]; figures 1,4 paragraphs [0020] - [0024]; figure 5	1-16
X	US 2004/102898 A1 (YOKOTA TATSUO [US] ET AL) 27 May 2004 (2004-05-27) paragraphs [0042] - [0044], [0046]; figure 3 paragraphs [0058] - [0060]; figure 6 paragraphs [0067], [0068]; figures 8B,8C	1-16
X	US 2006/253247 A1 (DE SILVA ANDREW S [US] ET AL) 9 November 2006 (2006-11-09) paragraphs [0033] - [0039]; figure 3 paragraphs [0049] - [0053]	1-16

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

- *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 when the document is taken alone
- *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.
- *G* document member of the same patent family

Date of the actual completion of the international search

1 February 2008

Date of mailing of the international search report

18/02/2008

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Jakob, Clemens

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2007/008735

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 1174685	A	23-01-2002	NONE	
US 2004102898	A1	27-05-2004	NONE	
US 2006253247	A1	09-11-2006	JP 2006313156 A	16-11-2006