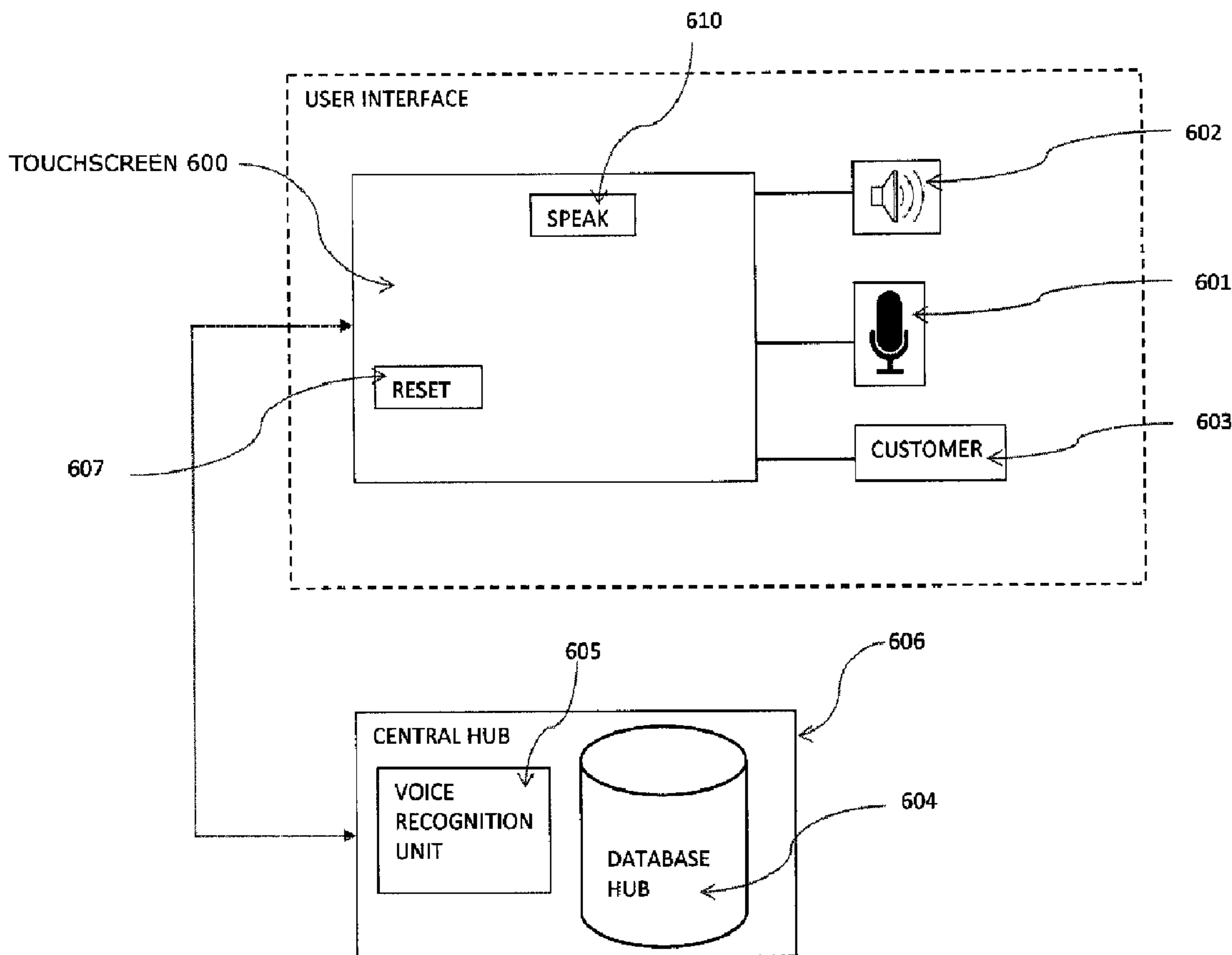




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(54) Titre : SYSTEME POUR REPERER DES PRODUITS DE REVENTE AU MOYEN D'UNE CARTE TRIDIMENSIONNELLE
(54) Title: SYSTEM FOR LOCATING RETAIL PRODUCTS USING A THREE-DIMENSIONAL MAP



(57) **Abrégé/Abstract:**

Information regarding products or merchandise in a facility is obtained using a touchscreen or a tablet or a mobile computing device or a smartphone (herein referred to in general as a terminal), information may be fed into the terminal by typing or voice



(57) **Abrégé(suite)/Abstract(continued):**

recognition, and the terminal is able to generate search results indicating the aisle and sub-aisle numbers in which a product is located, the cost of the product, the number of such products in stock, and to show related advertising on the side, such as coupons and promotions, as well as a three dimensional map reaching from any chosen location to the destination (product location). A product or merchandise database may be linked to an inventory management system or business intelligent system of the facility or may be generated from an imported database (updated frequently from the inventory management system or business intelligent system of the facility). Also, a strip printer may be connected to the terminal for printing product information, aisle information and/or coupons.

ABSTRACT

Information regarding products or merchandise in a facility is obtained using a touchscreen or a tablet or a mobile computing device or a smartphone (herein referred
5 to in general as a terminal), information may be fed into the terminal by typing or voice recognition, and the terminal is able to generate search results indicating the aisle and sub-aisle numbers in which a product is located, the cost of the product, the number of such products in stock, and to show related advertising on the side, such as coupons and promotions, as well as a three dimensional map reaching from any chosen location
10 to the destination (product location). A product or merchandise database may be linked to an inventory management system or business intelligent system of the facility or may be generated from an imported database (updated frequently from the inventory management system or business intelligent system of the facility). Also, a strip printer may be connected to the terminal for printing product information, aisle information
15 and/or coupons.

TITLE

SYSTEM FOR LOCATING RETAIL PRODUCTS USING A THREE-DIMENSIONAL
MAP

5 TECHNICAL FIELD

[0001] The technology generally relates to a system, methodologies and apparatus for communicating with customers or store employees for identification of products inside a retail store, generating three dimensional maps to product locations, tracking products with integration to inventory management systems or business intelligence tools showing available items in stock, redeeming coupons, and enhancing a customer's shopping experience by assisting the customer in finding and accessing products in a time-saving and cost effective manner.

BACKGROUND

15 [0002] Today's consumers shop at a variety of modern day retail stores for items such as groceries, clothing, home improvement items, etc. Such retail stores include, for example, Wal-Mart®, Home Depot®, Target®, Fortinos® or any large supermarkets. It is often difficult for shoppers to find particular products. Even large signs, store directory or physical printed floor plans may not help. The retailers cannot print or display each and every product located in the store on big signs or small brochures.

[0003] A customer may make an enquiry about a particular product to a sales associate. However, the sales associate may not remember the location of that particular product among the hundreds of other products located in the store.

25 Furthermore, with growing competition, sales associates are often required to cover more areas of facilities. Moreover, facility re-configurations may prompt additional customer enquiries, while employee turnover/seasonal hires may prevent employees from being able to adequately assist customers. Further, customer enquiries may distract employees from other general duties and waste time.

[0004] Other inventions have involved shopping carts with terminals and identification of customers by several means, making the whole process complex. For example, in U.S. Pat. No. 4,882,724, relay units are mounted in shopping carts that
5 communicate wirelessly to a central computer system, and a map displays the locations of selected products. The customer has to direct the shopping cart around the store for alerted locations, thus always requiring the use of the shopping cart. In another example, U.S. Pat. No. 5,729,697 uses computers mounted into shopping carts. Again, the customer is required to use the shopping cart. Furthermore, the cost implementing
10 a shopping cart with a computer will be high. In another example, in U.S. Pat. No. 5,250,789, a computer unit is mounted in each cart and customers must use the cart. In another example, U.S. Pat. No. 5,295,064 requires using a cart and computer mounted on it to receive a display of a map.

15 [0005] U.S. Pat. No. 5,887,271 describes the use of a kiosk and a smart card by customer, and displays a map of the store layout with locations of discounted products.

[0006] U.S. Pat. No. 7,406,437 involves the use of a customer token and does not provide an entire layout of the store for complete orientation. In today's world,
20 customers using the system may want to experience the same feeling as walking through the store. Furthermore, not all customers will be sufficiently familiar with computers to make use of the system described in this patent.

[0007] U.S. Pat. No. 7,819,315 involves the use of a normal computer with a
25 QWERTY keyboard, and the display of a path to the location of a product in the form of a two dimensional map.

SUMMARY

[0008] This document proposes a simplified technique for searching for product

information that even a child could use to retrieve main aisle and sub-aisle information.

As described in this document, the simplified technique can be implemented using

current computer systems, smartphone and current technologies. The simplified

technique involves a three dimensional interactive map. This document also proposes

5 printing the retrieved product and location information. The simplified technique

involves a simple step of reorganizing facilities in terms of aisle numbers and sub-aisle

numbers eg. Aisle 1000, 1010, 1010.10, 1010.20, 1010.30,1020, 1030 etc.

Alternative identifications of aisles and sub-aisles are also contemplated. For example,

aisle 1, 2, 3, ..., sub-aisle 1A, 1B, 1C, ..., 2A, 2B, ... and shelf 1A.1, 1A.2, 1A.3, ... In

10 another example, aisle A, B, C, ..., sub-aisle A1, A2, A3, ..., B1, B2, B3, ... and shelf A1.1,

A1.2, A1.3,

[0009] This document describes a system for locating products in a retail store or

a warehouse with the help of three dimensional interactive maps. Accordingly, the

15 various embodiments described herein are based on a touchscreen product, a first user

interface integrated with inventory management systems or business intelligent tools.

Using any one of a number of touchscreen terminals or kiosks located near customer

access points, a customer may input a name or phrase, the system will search its

database using logical algorithms to find the exact or closest match for the customer's

20 query. The exact product location is displayed on an interactive three dimensional map,

showing its aisle number and sub-aisle location.

[0010] This document describes product identification by typing a product or

related name through a virtual touchscreen keypad, the touchscreen acting as an input

25 and output device. The location of the touchscreen kiosk identifies the starting point for

the customer's path, for example, by displaying an indication "you are here". As an

output, the touchscreen may display the algorithmic search results. The customer may

select a particular item, the item may then be highlighted and the interactive three

dimensional map may display a map from the "you are here" location to the product

location. The particular selection may be stored in the system. The output window has the option of deleting the selected item and reselecting another item to find the location of the other item on the map. Now, the customer may search for another item through the same procedure. The output window may save the old selection, such that each
5 new selection adds to a list of items. After all searches are done, the customer may print the retrieved information, for example, using a small printer attached to the touchscreen terminal. The customer's overall search may be stored in the purchase history to evaluate the purchasing patterns of the customer and to identify products that have been searched for but are not available in the store.

10

[0011] The technology described herein includes an input means, integrated data processing software, a three dimensional model for the map, a search database for product locations and an output means. The technology works on internet which reduces the cost of hardwiring for communication using the latest technology. The
15 input means may include means for typing a query or voice recognition. Data processing software processes the input from the database identifying the product location. The database may be locally available and may be supported by inventory management systems or supported by business intelligent systems. The three dimensional model further may identify the location of a product on the floor by
20 identifying the aisle and exact location in the aisle as an output.

[0012] With the described technology, it may be possible to direct customers to their desired products by identifying the exact locations of the products by providing a three dimensional overview for the entire layout of the store. The three dimensional
25 map may also highlight reduced-price items, increasing the probability that the customer will purchase goods other than items of their interest, increasing sales for the store and providing more customer satisfaction.

BRIEF DESCRIPTION OF DRAWINGS

[0013] Fig 1 shows a block diagram of an example system for locating retail products;

[0014] Fig 2 shows an example floor plan of a store in which the system for
5 locating retail products may be implemented;

[0015] Fig 3a and Fig 3b show the front elevation views of the kiosks or terminals at which persons desiring product location information may obtain such information;

10 [0016] Fig 4 shows the screen view of the user-interface presented at the kiosk or terminal;

[0017] Fig 5 is a flow chart of an example method for using the example system; and

[0018] Fig 6 is a block diagram showing components of the system that utilizes
15 voice recognition and voice response technology.

DETAILED DESCRIPTION

[0019] The technology described herein is applicable to all types of facilities that contain more than one product or item (or have more than one item of interest to
20 customers) and have these items located at different positions in the facility. For example, such facilities may include home improvement stores, department stores, or office merchandise stores and virtually all other stores. Such facilities may also include any big buildings like museums, science centres, warehouses or even homes.

25 [0020] Referring to Fig 1, 110 is an office place from which the system for locating retail products using a three-dimensional map may be controlled and monitored. It includes a touchscreen terminal or kiosk, for example with a Wi-Fi connection to the server or central hub 115. The central hub 115 may include a cloud server or any other server implementing the technology and also the database provided by the store where

the kiosks are implemented. Database hub 120a may also be coupled, for example through Wi-Fi, to the customer kiosks to update the database from time to time depending upon the POS (point of sale) software provided by the client. The database can also be uploaded to the central hub or cloud server 115 by system 110. In one
5 example, the central hub or server 115 is a central computer database in which information regarding the location of all or at least some of the items within a facility (such as the store 200 illustrated in Fig. 2) is stored. The product location information may include where the product is placed in the store, and the interactive three dimensional layout of the store. It may also include the current stock of that product
10 available in the store and information about any sale on that item. The three dimensional layout of the store may also provide information about the location where the customer is currently standing in the store, as well as the locations of restrooms, exit doors and different floors.

15 [0021] The central hub 115 may receive inventory information in variety of ways. Information may be provided to central hub from the overall inventory database hub 120a of the store, with which the central hub is configured to communicate. The location information may then be provided to the touchscreen terminals 125a, 125b, 125c. The touchscreen terminals 125a, 125b, 125c may act as input and output devices.
20 Each touchscreen terminal 125 may incorporate a virtual keyboard to enter an inquiry or means for voice recognition or both.

[0022] In one example, the touchscreen terminals 125a, 125b, 125c may be positioned at multiple locations within the store. Each touchscreen terminal 125 may be
25 capable of receiving multiple enquiries from a customer and showing the locations of items and/or information about items with the path to those locations from the point where the touchscreen is installed, on an interactive three dimensional map. The touchscreen may also be capable of indicating to a customer that a particular item is not available in the store. In addition to that, the touchscreen terminal may be capable of

showing the item which most closely matches the enquiry in case the customer enters a wrong spelling. The customer may have an option to print out the list of enquiries made by him/her along with the respective locations. For each customer using the technology, an identification code may be generated. A customer may access his/her shopping list by entering the identification code.

[0023] Fig 2 represents a layout of an example store 200 in which the present technology is implemented. Store 200 is retail store with various specialities such as a bakery section 205, a dairy section 206, a deli section 207, and a frozen foods section 204. The layout of the store 200 include a number of aisles 206a – 206i, checkout counters 213a – 213c and may include an administration room 201 with the database hub 120a, a break area 202, a storage area 203, a restroom 209, a janitor closet 212 and an electrical room 211. Items of interest to consumers may be located in different aisles in the store 200. While the store 200 may be organised to facilitate the customers' searches for desired products / items, the customer may still have to walk and look around the store to find the desired products.

[0024] Referring to Fig. 2, in one example, multiple touchscreen kiosks or terminals 210a – 210i (such as terminals 125a – 125c illustrated in Fig 1) are positioned at multiple locations within store 200. Touchscreen terminals 210 are capable of providing the information on the location of any item of interest in an interactive three dimensional map on the screen of the terminal depending upon the enquiries entered by the customer.

[0025] Each of the touchscreen terminals 210a-210i may be connected to the central hub 115 (Fig. 1), for example, through the internet or a Wi-Fi connection or a cellular wireless data plan. Each of the touchscreen terminals 210a-210i may in turn receive the inventory database from the administration room 201 where the database terminal (120a of Fig 1) is positioned in the store 200. In addition to being individually

coupled to the database terminal 120a, each of the touchscreen terminals 210a-210i may be, but need not be, coupled to one another.

[0026] Database terminal 120a is a central computer database of the store 200 which is able to store all the inventory information of the items within the store 200, together with the locations of all or at least some of the items within the store 200. The product location information can include where the item is placed or stored. Central hub 115 may be configured to communicate with the database terminal 120a in a variety of ways, either directly or indirectly.

10

[0027] The communication between the database terminal 120a and central hub 115 will take place according to the business intelligence tool used by the store. In direct communication, the inventory information may be downloaded directly to the central hub 115 using software stored in a memory of the central hub 115. In indirect communication, the inventory information may be downloaded periodically to the central hub 115.

15

[0028] The communication between the central hub 115 and touchscreen terminals 210a -210i may take the form of any communication protocol known today.

20

The communication may take place through the internet. For example, a customer may request the information on any one of touchscreen terminals 210a – 210i. Central hub 115 in turn receives the request, then performs a search of its database received from the database terminal 120a and finally, if the requested information is found, the central hub 115 sends a message back to the respective touchscreen terminal 210. The

25

information is in the form of an interactive three dimensional map with the path to that item from the position of the respective touchscreen terminal 210.

[0029] Fig. 3a and Fig. 3b are two exemplary front elevation views of the touchscreen terminals that may be positioned at various locations in the store. The

touchscreen terminal shown in Fig 3a is mounted on a stand 301 and a small printer 302b is installed in the stand 301. The touchscreen terminal provides a standalone user interface. It can be positioned at an entrance to the store, in front of an aisle, in between shelves, in the middle of an aisle, in front of a checkout counter or virtually anywhere in
5 the store.

[0030] The touchscreen terminal shown in Fig. 3b is mounted on the end of the shelving structure. It can instead be mounted on the walls or any other structure at the ends of the aisles and at the front of the checkout counter, for example. It may be
10 comparatively thin and may not protrude far off the structure onto which it is mounted, such that it is not an obstruction to the customer. Aisle 12 and aisle 13 are shown in the Fig 3b, and are subdivided into more categories. For example, aisle 12 is subdivided into sub-aisles like 12.1a, 12.1b, 12.1c and so on.

15 [0031] The sizes of the touchscreen terminals may vary depending upon the requirements and specifications provided by the store. They may be placed within the points of purchase displays, at which certain products are situated and or promoted with advertisements. Advertisements may be shown at top, bottom or sides of terminal. Advertisements will be integrated geo-specifically (means local area
20 businesses), keyword specifically (when people search products or from their shopping list, advertisement will be prompted related to that product) and time specifically (advertisers allocation is also time specific as on TV channel). Upon touch or clicking the advertisement by the user, it can prompt and direct the user to make a phone call or visit the website of the advertiser.

25

[0032] Fig. 4 shows the screen view displayed on a touchscreen terminal with a three dimensional map of the store 200. In one example, as soon as the customer touches the box 401, a virtual keyboard may appear at the bottom of the screen. The customer may enter the name of the item of his interest in box 401 using the virtual

keyboard and may then click on "Go" button 410. A customer ID may be created in box 402. Alternatively a customer may identify himself / herself to the system through use of a magnetic-stripe card or token or smart card on which the customer ID is stored and through use of an appropriate card or token reader at the terminal. Alternatively, the customer may identify himself/herself to the system by presenting a QR code or bar code in which the customer ID is stored to an appropriate reader in the terminal. All the items matching that particular name may be listed in the box 404. For example, the customer may enter "cake" in box 401. All different types of cakes available in the store may then be listed in the box 404 i.e black forest cake, banana cake, chocolate cake, sponge cake and so on. The customer may select the cake which he/she desires by touching that cake within the list in the box 404. Once the selection is done in the box 404, the location of that item may appear in the three dimensional map in box 403 along with the path to reach that location from the point of the particular touchscreen terminal from which the customer is making the enquiry. The path may be provided in a visual three dimensional map of the portion of the store layout with a generated path marked thereon in box 403. The names of the departments containing the customer's items of interest may be highlighted to attract the customer to follow the generated path. By directing customers to the vicinity of products that interest the customer, the potential for generating revenue from the customer's visit may be increased. The information about that item may also appear in the box 408 along with the aisle number, location within the aisle (sub-aisle number) and the current stock (number of such items available in store).

[0033] The customer interest data generator and the corresponding path generator may be implemented using software residing in the central hub 115 which is downloaded into the touchscreen terminals 210a – 210i. In the beginning of interaction with the customers, the touchscreen terminals 210a – 210i may use the customer data entered through the virtual keyboard appearing on the terminals (or through the voice recognition means) to generate the customer data queries and send them to the central

hub 115 for processing through the hardwired or Wi-Fi internet connection. The central hub 115 may have access to the inventory by periodically loading information from the database hub 120a, or it may be in direct communication with the database hub 120a. In response, the present technology searches the database for the identified customer data.

5 The software may use these data to locate and generate the paths. It may send this information over the communication network to the corresponding touchscreen terminals 210a – 210i.

[0034] The database hub 120a may provide data regarding the inventory of the
10 items located or stored in the store as well as the purchases made by the customer during the store visit. These data may be provided to the central hub 115 for storage and processing at the time of enquiry. These data may be used to generate the maps of the products that the customer requests during the store visit.

15 [0035] A customer can make more than one enquiry and all the information may appear box 408 as a list. The customer can delete any item in list appearing in the box 408 by selecting that item in box 408 and clicking on box 406 which is a delete button. Once the customer has finished his enquiries, he/she can print the information
20 appearing in the box 408 by clicking on the box 407 which is a print button. The touchscreen can be reset by clicking on button 405 which is a reset button. Each user interface (touchscreen) terminal can reset by itself if it remains idle for a particular amount of time. All the information of the particular searches may be saved under the ID created in the beginning of that particular inquiry in box 402, such that a customer can save his/her shopping list under that ID.

25

[0036] FIG. 5 is a flowchart of an example method for constructing a path that includes the locations for products that may guide a customer in a three dimensional interactive map.

[0037] The method starts as in step 501. At 502, a customer touches the box 401 (as shown in Fig. 4) of the touchscreen 400 to enter a query, and a virtual keyboard appears at the bottom centre of the touchscreen so that the customer can enter the query. At 503, the customer enters the name of the product of interest in box 401 using the virtual keyboard and clicks on the "Go" button 410 on touchscreen 400. At 504, the kiosk creates an identification number for the search. In step 505 and step 506, the query is sent to the central hub to search the database for the identified customer enquiry. If products matching the query are found in the database, then the touchscreen 400 displays those products at 507. For example, the customer may enter the query "cake" in the box 401 as shown at 503. Box 404 may then show all the types of cakes available in the store, such as black forest cake, sponge cake, banana cake, fruit cake, chocolate cake etc., as shown at step 507, and the process may continue to step 510 which is connected to step 511 (Fig. 5A). In case the query does not match any product in the database, the process may proceed to step 509, which is connected to step 521 (Fig. 5b). In this case, the touchscreen 400 may display a message informing the customer that the product cannot be found, such as "Sorry, the product cannot be found", as shown at 522. At 523, the query of the product which is not present in the database may be stored in a "not found" category in the central hub. This category helps the store to know which products are of interest to customers but are not available in their store. The process may then proceed from step 524 to step 516 (Fig. 5a) which in turn proceeds to 515 where the customer can again enter the another query or product name of his interest. The process again starts as in step 514 which proceeds to step 508 (Fig. 5).

25 [0039] If the product of interest is found in the list displayed in box 404, the customer can select that item of interest by clicking on it as shown at 512 (Fig. 5a). At 513, the touchscreen 400 may display any information about that product, such as the product name, price, location, availability, and so on, along with the three dimensional interactive map in box 403 and the path to that item from the touchscreen.

[0040] Once the customer has determined at 515 that he/she has completed his/her search and does not wish to enter another query, he/she can click on the box 405 which is a reset button as shown in step 517. The touchscreen may display a message such as "Enjoy your shopping", as shown at 518. The customer may then use the "Print" button 407 as shown at 519 to print the search results displayed in box 408. Step 520 is a connected to step 531 (Fig. 5c), where storage of the search results takes place. At 532, all the searches made by that particular customer may be stored under the ID created at the beginning of the search. The customer can later retrieve his/her previous searches as shown at 533 by entering the identification number in box 402 of touchscreen 400. The process concludes at step 534.

[0041] Fig. 6 is a block diagram showing the integration of voice recognition and voice response technology in the proposed system to interface with the customer desiring the location information of the product of interest. The system may include the touchscreen 600 with the voice recognition button "Speak" 610, a microphone 601, and a speaker 602, which may be embedded in the touchscreen 600. The touchscreen terminal 600 may be in direct communication with the central hub 604 through the internet. Touchscreen terminal may have voice recognition software and a response unit that receives the voice input or "product of interest" from the microphone 601.

[0042] Upon clicking the "Speak" button 610, speaker 602 can relay an instruction or a message to the customer, such as "Please state the name of the product that you wish to locate". A customer can inquire about the location of a product by stating the name of the product in the microphone 601 of the touchscreen terminal 600. A voice recognition unit 605 located in the central hub 606 may in turn process the signal from the microphone to determine the word or words stated by the customer. Upon determining the word or words of the stated enquiry, the voice recognition unit 605 provides a signal to central hub 606 requesting the location of the product stated in the

enquiry. The central hub 606 searches the database hub 604 for the relevant information.

[0043] Upon finding the relevant location information of the product, it is
5 provided back to touchscreen 600 in the form of a three dimensional interactive map along with the price and availability information. The touchscreen 600 relays that information via the voice recognition unit 605 to the enquiring customer through speaker 602. Voice recognition can employ software to determine that the proper signal is sent to the speaker 602.

10

[0044] In the case that the voice recognition unit 605 is incapable of recognising the word or words spoken by a customer, it may immediately respond to the customer via the speaker 602 indicating that it does not recognise the requested product. In another case where the voice recognition unit 605 understands the word or words
15 spoken by the customer but the central hub cannot not find the relevant information for the product, it may respond back to the customer via the speaker 602 indicating that the product cannot not be found.

[0045] To avoid the voice recognition unit receiving interference from ambient
20 noise in the store, the "Speak" button 610 on the touchscreen 600 may be used to activate the voice recognition unit 605. The voice recognition feature can be configured to remain in an active state until the touchscreen is reset by the reset button 607, at which point the voice recognition feature may return to a latent or inactive state. It can switch from an active to a latent state also after predetermined period of time.

25

[0046] Product location enquiries input by a customer to the above mentioned system may be stored and processed to obtain information regarding customer preferences. The storage and processing of the information may be performed at the central hub. By utilizing such information, stores can obtain useful information

regarding customer preferences, databases of the products of high demand, products of interest to customers that are not available in the store and the number of particular products sold by the store. It also helps a store to calculate the difference between the number of enquiries made by the customer for particular products and the number of particular products actually sold. The customer preferences can change once the customer comes to learn the price of the product of interest. Additionally, a customer looking for a product of interest will also be able to see other products on sale in that location.

10 [0047] Product location enquiry information is stored in the central hub along with the identification number of the customer making the enquiry. The customer can access that list by entering the identification number on touchscreen, thereby helping the customer to create a shopping. The list can also be stored in one or more mobile devices of the customer.

15

[0048] While only a few examples of this technology are mentioned and discussed, many changes, substitutions and modifications are possible in these examples without materially deviating from the features and advantages of the technology. The technology described herein is capable of being implemented in stores, libraries, public buildings, etc. and also capable of providing a variety of information.

20

What is claimed is:

1. A system for providing information to a user of a facility regarding items within the facility, the system comprising:

5 a central hub able to access an inventory database storing information about items in the facility; and

one or more user terminals situated at different locations within the facility and able to communicate directly or indirectly with the central hub, wherein each user terminal comprises:

10 a microprocessor;

a user interface coupled to the microprocessor that is able to provide information to the user regarding the one or more products; and

a memory coupled to the microprocessor, the memory storing code which, when executed by the microprocessor, results in:

15 receiving input from a user via the user interface that is indicative of an item of interest to the user;

transmitting a first signal indicative of the input to the central hub;

receiving from the central hub a second signal indicative of

information about the item of interest; and

20 displaying the information about the item of interest via the user interface.

2. The system of claim 1, wherein the information comprises one or more of location information, quantity information, price information, and sale information.

25

3. The system of claim 2, wherein the location information comprises an aisle identifier corresponding to an aisle in which the item of interest is located.

4. The system of claim 3, wherein the location information further comprises a sub-

aisle identifier corresponding to a sub-aisle location in which the item of interest is located.

5. The system of claim 2, wherein the quantity information comprises an indication
5 that the facility does not stock the item of interest, a memory of the central hub is able to store an indication of the item of interest to assist the facility in tracking items of interest that are out of stock.

6. A system for providing product location information in two dimensional map or
10 three dimensional map or without a map regarding location of products within a store to customer within the store comprising of: number of user interface (touchscreen or any other visual display) providing product location informations situated at respective positions within a store which are configured to receive input signals from customer and providing output signals to a customer.

15 Each of the user interface has microprocessor and memory integrated in it.
Each of the user interface communicates with hub directly or indirectly wherein hub provides the inventory database to each of the user interface.

7. The system of claim 6, wherein each of the user interface is a standalone device
20 or a device mounted on the structure (can be aisle or wall) or a handheld device or a smartphone.

8. The system of claim 7, wherein a user interface is configured to be at least one of
the fixed at the front of aisle or back of the aisle of the store, fixed at the checkout
25 counter, fixed on the walls, fixed on the shelves or a handheld device or a smartphone.

9. The system of claim 6, wherein the user interface includes visual display with virtual keyboard embedded in it. The keyboard is activated at the time of entering the name of the product or entering the customer ID. The input signal is keying in action

and output signal is a visual output.

10. The system of claim 6, wherein first user interface includes:

a receiver is configured to receive the input signal in the form of voice

5 a speaker is configured to provide signal indicative to the first input signal in the form of synthesized voice.

11. The system of claim 10, wherein the voice recognition and response unit is a programme stored in the central hub or the individual user interface to process the

10 input signal being voice, process it and provide the output signal. It is configured to receive the input signal from the customer only for a predetermined period of time after the speak button is triggered.

12. The system claim 6, wherein user interface uses a gesture technology to convert

15 the human gesture to text relating to a product inquiry. Typing the product name is replaced by human gesture to interpret the product. Just as speech recognition can transcribe speech to text, gesture recognition software can transcribe the symbols represented through sign language into text.

20 13. The system in claim 6, wherein communication between hub and at least one of the user interfaces, includes at least one wired and one wireless communication link.

14. The system in claim 6, wherein the user interface is capable of providing the deals in the store and also the coupons of the products of the store with subject to

25 product location inquiry, s can products and pay for products at the terminal. It is also capable of providing all the deals going in the store. It will minimise the printing cost of the store to print the sale paper every week.

15. The system in claim 6, wherein system keeps the track of the first inquiry being

made relating a first product and first product being sold. It can be used in the business intelligence tool regarding the requirements of a customer.

16. The system in claim 6, wherein the user interface recognises the finger print of a customer entering the inquiry and stores that finger print under customer ID. In this way, the shopping list/inquiry list of a customer can be stored in the central hub. It can be accessed through relative finger print.

17. The system in claim 6, wherein a customer can email the inquiry to his/her smartphones by just entering the email address on to the user interface.

18. The system in claim 12, wherein the at least some of the product location information, new product information which are added into the store, some of the products removed from the store and additional product-related information stored within central hub and at least one database is updated over time to reflect changes in inventory occurring within the store.

19. The system in claim 6, wherein the first user interface is capable of providing a plurality of output signals that indicate at least one of the following :

20 Indication of at least one type of product that is located in an aisle with which the first user interface is associated

Indication of promotions on products in that particular aisle

Indication of alternative product if that particular product is not available

How to proceed to the restroom within the store

25 How to proceed to the nearest exit from the point where the customer is accessing the user interface

Additional information about the products such as quantity available of that

product, location (sub aisle), price, sale price relating to that product and

information linking one product to another product in a cross referential manner.

Also, information about Advertisements may be shown at top, bottom or sides of terminal. Advertisements will be integrated geo-specifically (means local area businesses), keyword specifically (when people search products or from their shopping list, advertisement will be prompted related to that product) and time specifically (advertisers allocation is also time specific as on TV channel). Upon touch or clicking the advertisement by the user, it can prompt and direct the user to make a phone call or visit the website of the advertiser.

20. The system in claim 18, wherein a customer can print information regarding products inquired by him/her through the printer attached to the user interface.

21. The system in claim 6, wherein the user interface is integrated with self checkout. Customer can select the product of his interest on user interface and get the location of the product. He can also checkout at any of the user interface or the same user interface which are integrated with self checkout system.

Application number / Numéro de demande: 2807398

Figures: 1-2-3A-3B-4

Pages: _____

Unscannable items received with this application
(Request original documents in File Prep. Section on the 10th floor)

Documents reçu avec cette demande ne pouvant être balayés
(Commander les documents originaux dans la section de la préparation
des dossiers au 10^{ième} étage)

FIG 5

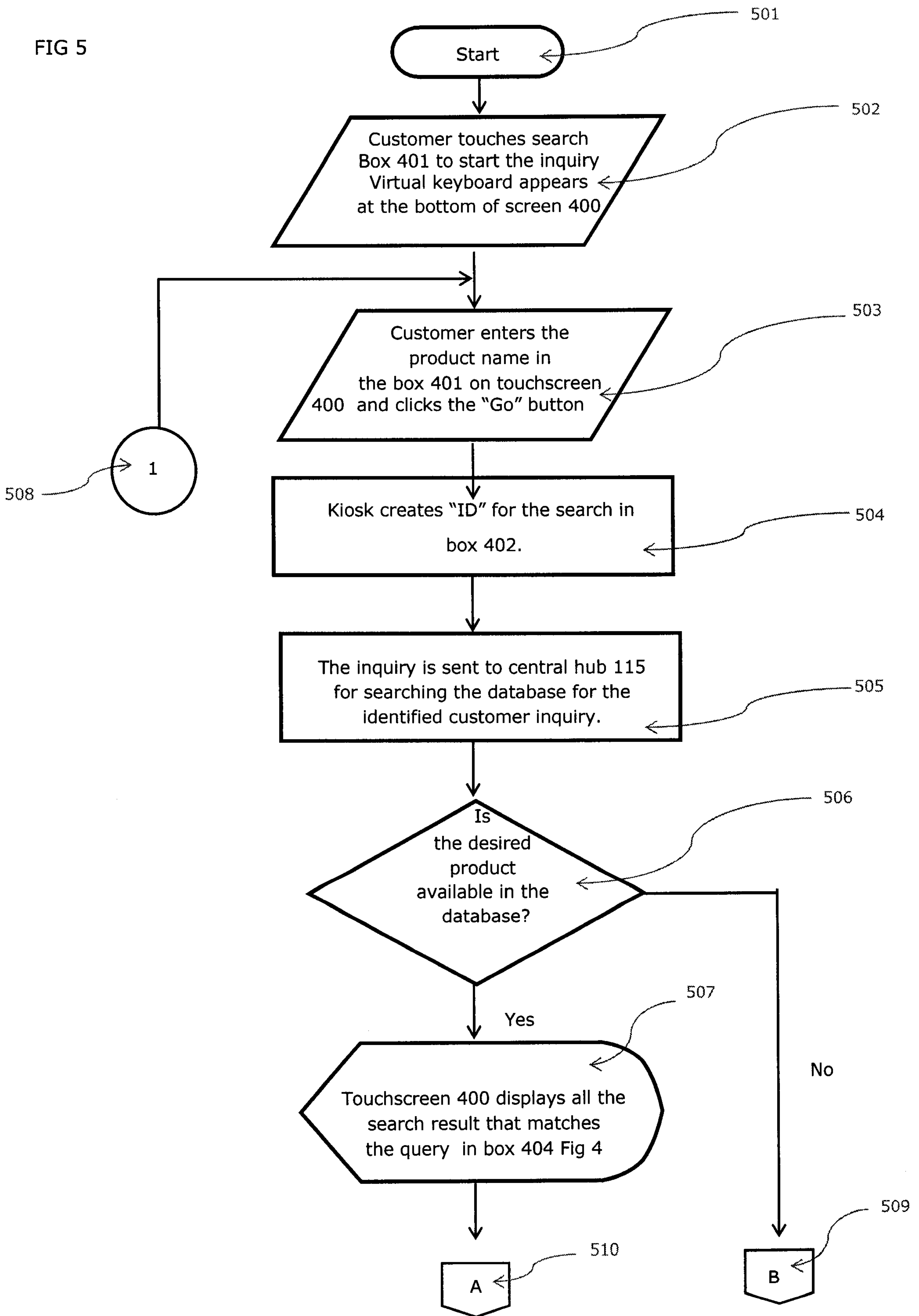


FIG 5a

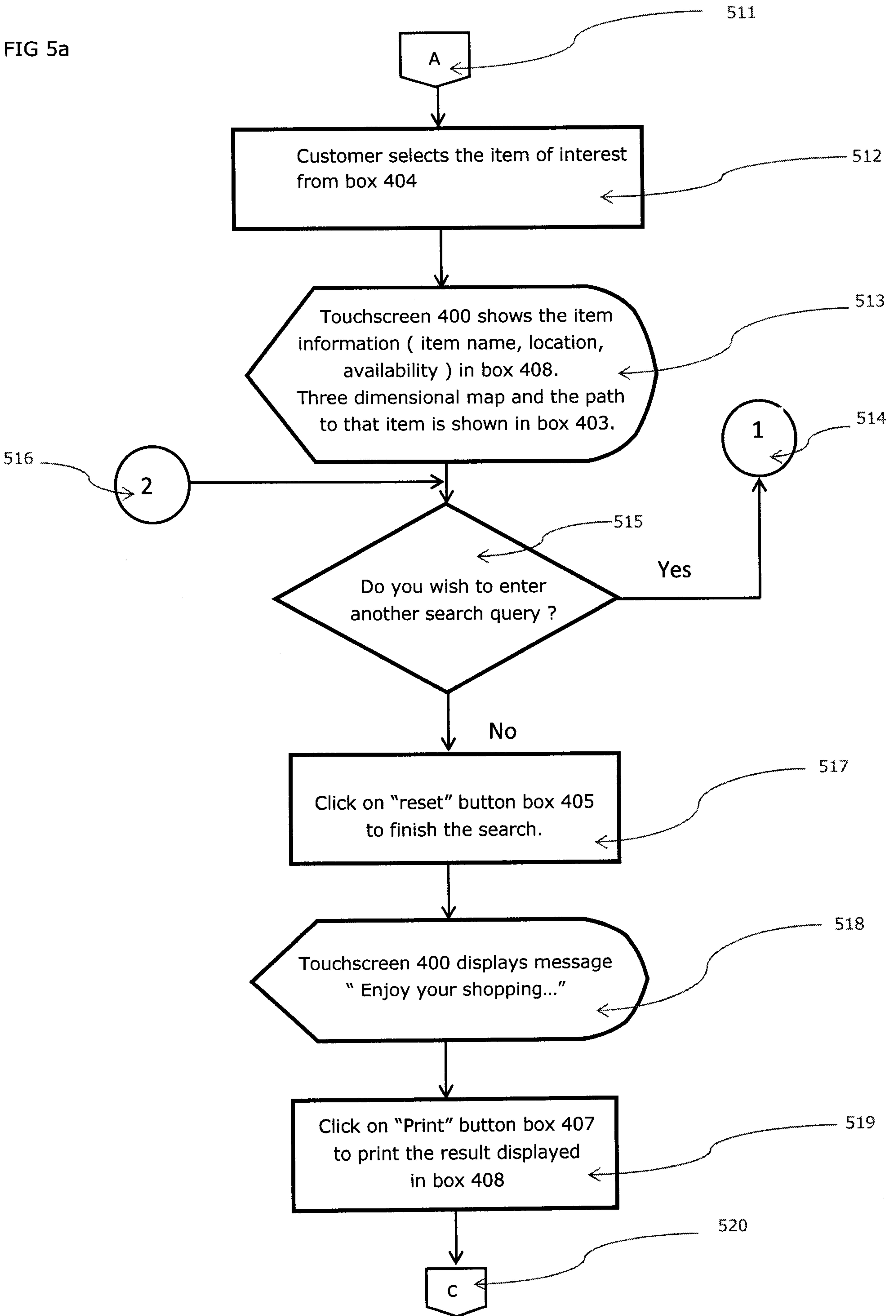


FIG 5b

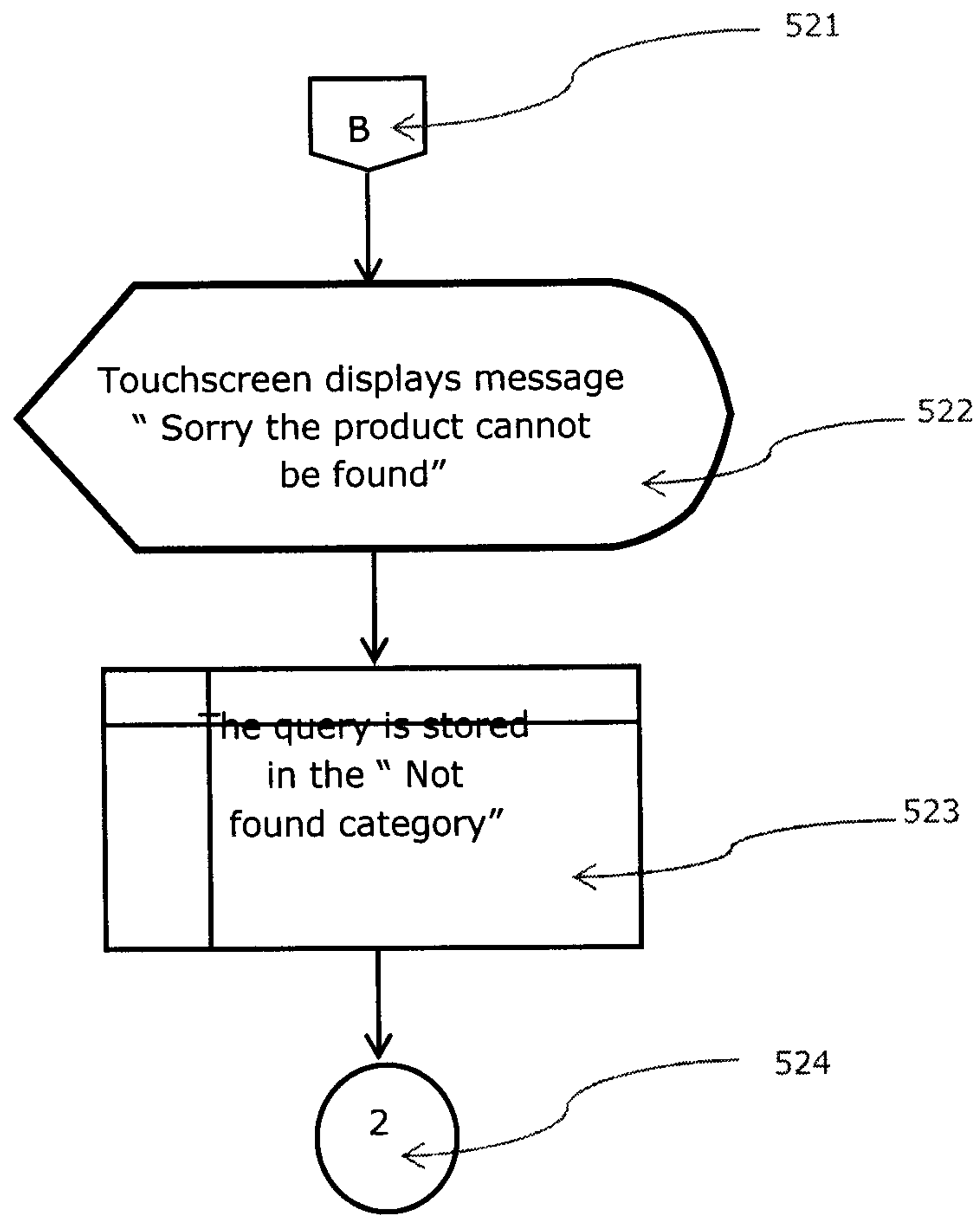
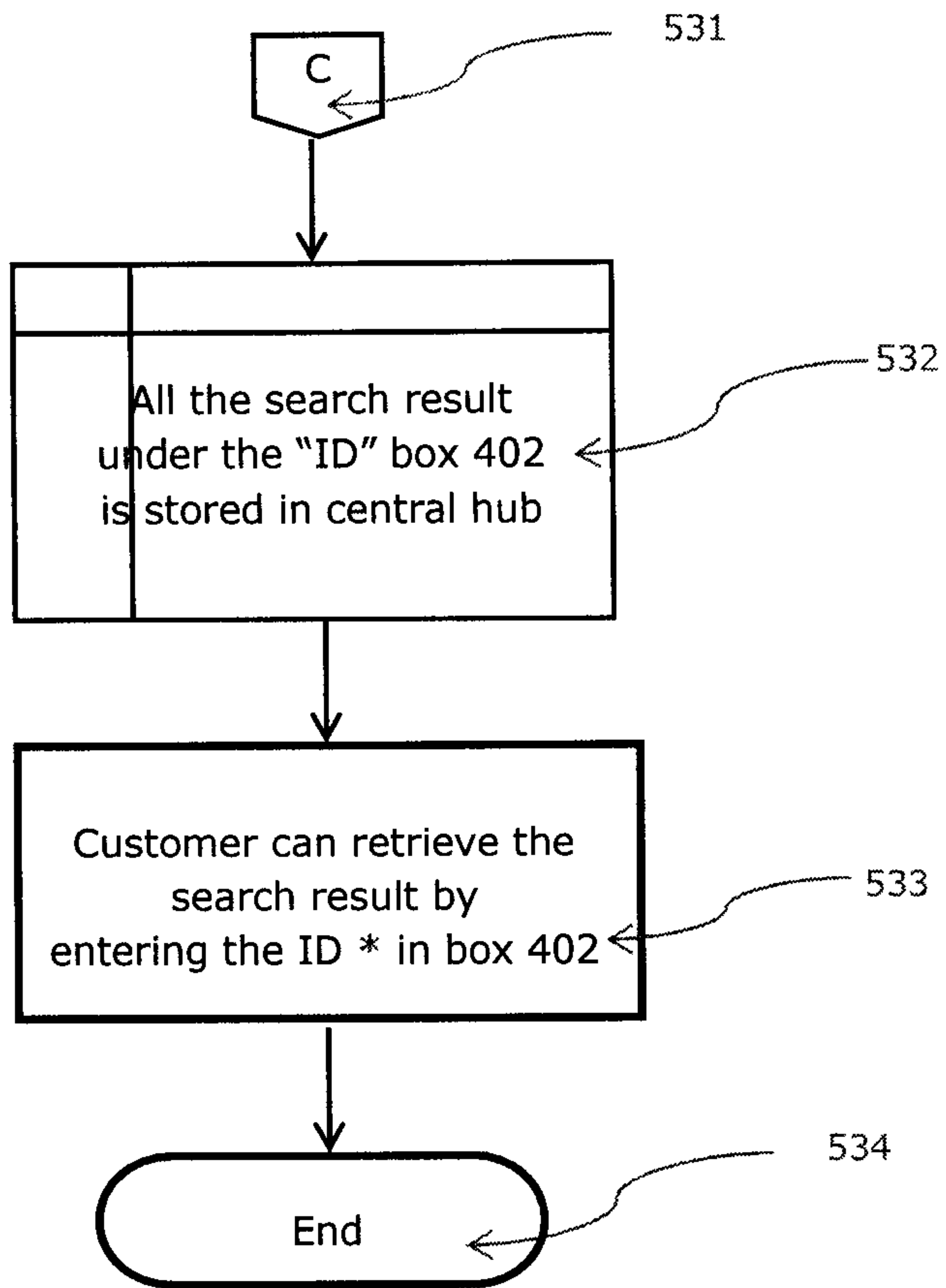


FIG 5c



* Customer can edit the search result under the search ID.

FIG 6

