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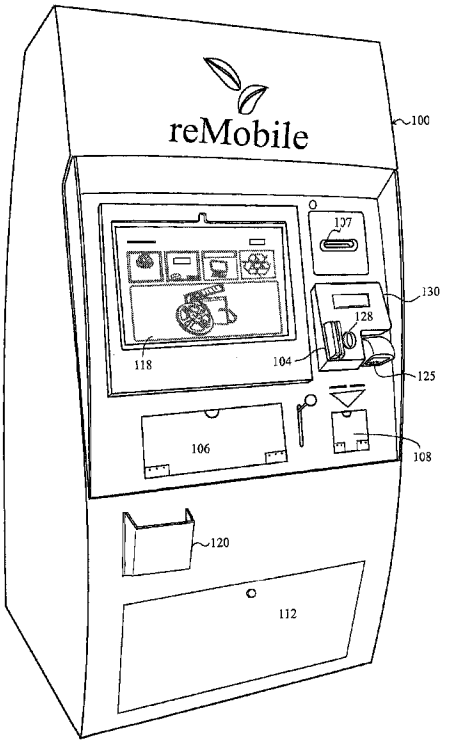
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(57) Abrégé/Abstract:
The system enables one to securely recycle an electronic device in a publicly accessible location. In particular, the embodiment described may be used by a mobile phone owner to submit his/her mobile phone for recycling via an electronic kiosk and receive compensation in some form. The compensation might be dispersed via cash, voucher, credit or debit card, or other magnetic or electronic transaction methods.

ABSTRACT OF THE DISCLOSURE

The system enables one to securely recycle an electronic device in a publicly accessible location. In particular, the embodiment described may be used by a mobile phone owner to submit his/her mobile phone for recycling via an electronic kiosk and receive compensation in some form. The compensation might be dispersed via cash, voucher, credit or debit card, or other magnetic or electronic transaction methods.

SECONDARY MARKET AND VENDING SYSTEM FOR DEVICES

BACKGROUND OF THE SYSTEM

[0001] There has been a large increase in the number of recyclable devices used by the typical consumer. These devices include cell phones, PDA's, mp3 players, GPS devices, cameras, beepers, remote controls, cordless phones, calculators, etc. The rapid pace at which new technology and models of recyclable devices are introduced creates a situation where many consumers upgrade or replace one or more recyclable device on a frequent basis. Often, the consumer does not dispose of the prior recyclable device, but rather just stops using it and begins using the new device. This may happen over several generations of such devices.

[0002] In addition to recyclable devices, there are many other types of devices that have relatively high frequency replacement rates, including portable/mobile electronic devices, such as cell phones, MP3 players, etc., and non-portable electronic devices, such as computers, printers, and the like. In addition to electronic devices, there are content based digital media such as games on CD, DVD, or cartridge, or entertainment mass storage items such as CDs, DVDs, BluRay, etc. There is a need for handling of such items in a ecologically friendly manner, both via recycling or by proper disposal procedures. It has not been convenient for owners of recyclable devices to either recycle such devices or to properly dispose of such devices. There is currently little incentive for a device owner to "do the right thing" with a used device. When the owner just stops using a device and simply puts it in storage, the opportunity for recycling or re-use by another party is lost. If the owner just throws the device away in normal trash containers, the proper recycling or safe disposing of the device is thwarted.

[0003] One particular problem associated with this phenomenon can be illustrated by an example of cell phones. There are more than 3.6 billion mobile phone users in the world with an annual growth of 10% per annum. The replacement rate of mobile handsets is roughly every 18 months as new models with

more features and new standards evolve. Wireless carriers also offer new phones below cost, or free, as incentives to get customers to sign lucrative two-year service contracts ensuring a constant build-up of old mobile phones. Old mobile phones and other mobile devices (pagers, PDAs) present a growing threat to the environment. As of 2007, there are more than 750 million mobile phones waiting to be recycled in the US; either in drawers, or already in the waste stream. Another 150+ million or so will be added this year and even more next year. Once in the waste stream, these devices may leak Lead, Mercury, Cadmium, Arsenic and other toxic substances into the water supply. Municipalities often incinerate their waste, instantly putting these toxic elements into the air, and they return to earth in rain water. A problem that needs to be solved is to make it easy and accessible for the public to recycle or resell their mobile phones and other recyclable devices. Two reasons why mobile phones are not being recycled or resold are difficult access to recycling or reselling facilities, and secondly security concerns about the information stored on the mobile phone. Although this example relates to mobile phones, the same problems apply to all recyclable devices.

BRIEF SUMMARY OF THE SYSTEM

[0004] The system enables one to securely recycle, donate, trade-in, and/or sell portable/mobile electronic devices, such as cell phones, MP3 players, etc., and non-portable electronic devices, such as computers, printers, and the like, as well electronic devices, there are content based digital media such as games on CD, DVD, or cartridge, or entertainment mass storage items such as CDs, DVDs, BluRay, etc. in a publicly accessible location. In an embodiment where mobile phones are recycled, the system described may be used by a mobile phone owner to submit his/her mobile phone for recycling via an electronic kiosk and receive compensation in some manner. The compensation might be dispersed via cash, voucher, credit or debit card, or other magnetic or electronic transaction methods.

[0005] In one embodiment, a method for conducting the collection of previously used recyclable devices, such as mobile phones, GPS receivers, cameras, printers, computers, televisions, stereos, etc. from consumers for the purpose of recycling and refurbishing those devices is a kiosk in a publicly accessible location. The kiosk

displays one or more transaction options. The method may further include interaction between the user and the kiosk display options which may include powering these devices, testing and optical scanning, erasing of the stored data in these devices, determination and acceptance by consumer of compensation for the device's value. The method may further include selection by consumers through interaction with the kiosk a variety of compensation methods including dispensing of cash, or redeemable voucher via coupon, or credit card debiting or crediting, electronic donation to user specified charity or charities, or other electronic payment methods.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] Figure 1 is a perspective diagram of an embodiment of a recycling/vending machine of the system.

[0007] Figure 2 is a diagram illustrating an embodiment of a network implementation of the system.

[0008] Figure 3 is a flow diagram illustrating operation of an embodiment of the system.

[0009] Figure 4 is a flow diagram illustrating the operation of an embodiment of the system.

[0010] Figures 5A-5L illustrate display conditions in an embodiment of the system.

[0011] Figure 6 illustrates an embodiment of the inspection port of the system.

[0012] Figure 7 illustrates another embodiment of the inspection port of the system.

DETAILED DESCRIPTION OF THE SYSTEM

[0013] The system provides a path for consumers and others to sell, recycle, or donate their recyclable electronic devices in a one-stop environment. The system contemplates a network of kiosks in public spaces that can perform a combination of recycling processing steps that receive, identify, visually inspect, electrically test, electrically erase, grade quality, containerize (bag), label, and inventory, recyclable electronic devices. The system can then determine some form of compensation to an owner of the device. This compensation may be in the form of a direct payment, a credit on an account, a donation to a charity, a discount coupon for future purchases, etc. The device owner can accept the offered compensation or reverse the transaction and retrieve the device.

[0014] In the following description, an example is given with respect to mobile phones. However, it should be understood that the system can be implemented with any number of other devices or items, including other recyclable devices, without departing from the spirit and scope of the system. The system applies to, among others, any pre-owned electronic device or other consumer electronic and electric devices.

[0015] Figure 1 illustrates a partially schematic front isometric view of a recycling kiosk 100 configured in accordance with an embodiment of the system. The kiosk 100 in this embodiment is of a typical size and shape of a vending machine, such as a soda machine, coin changing machine, can recycling machine, or other vending machines.

[0016] In one aspect of this embodiment, the recycling kiosk 100 includes a sealable mobile phone input region 106, bill and voucher acceptor/dispenser 107, card reader 109, mobile phone collector for mobile phones to be refurbished 112, mobile phone collection receptacle 108 (quick drop) for mobile phones to be recycled and computing and communications facility (not shown). The couplings from and to a remote computer may be a single coupling to a communications network such as the internet via wired LAN, wireless LAN, cellular or any other proprietary communications system. The Kiosk 100 may include a processing means or computer within the device. This may be a standard PC or other type embedded computer running any operating system such as Linux or MAC OS. The

system may include a storage device that is a standard hard disk drive that will store the executable applications, test software, databases and other software required to operate the recycling kiosk.

[0017] The communications system can be either wired Ethernet to provide connection to the internet or it can use a wireless modem such as GSM, CDMA, 3G and 4G technologies for data communications. This communications system is well known by those knowledgeable of wireless data communications and is commercially available.

[0018] The kiosk 100 also includes a bar code reader 125, bag/package dispenser 120, fingerprint reader 128, and digital signature pad 130. The input region 106 also acts as a phone inspection area. Referring now to Figures 6 and 7, the inspection area can include a one or more cameras 601-604, magnification tools 701 (i.e. magnifying glass), bar code scanners, weight scales, heal detectors, UV reader/detector, and the like.

[0019] The recycling kiosk 100 may further include a user interface device, such as a touch screen 118. The touch screen 108 may implement a keypad, user selection buttons 115A - 115D, soft keys, etc.. The touch screen 118 may be used to enable quick and easy access to various features and functions of the recycling kiosk 100. The display screen 118 may display information in color, monochrome, or "gray-scale," and may be used to display elements of a user interface, advertisements, or other information. The recycling kiosk 100 may accept/dispense various forms of payment, including cash, credit cards, debit cards, chip cards, gift cards from the kiosk's host location or other gift cards, and other magnetic striped cards or electronic payment methods. In one embodiment of the recycling kiosk 100, a telephone handset may be included (not shown) to enable a customer to communicate with advertisers, providers of products advertised on the recycling kiosk, and to access assistance in using the recycling kiosk 100. In other embodiments, a microphone/speaker arrangement may be used. The recycling kiosk may also include a digital camera for use during mobile phone testing and other services. The Kiosk may also use the same or other camera to record the image of the user for purposes of complying with Second Hand Dealer Laws. The kiosk also includes a supply 120 of sealable plastic bags that have pre-printed barcode labels

affixed thereto. The kiosk 100 also includes a bar code reader 125 to scan the bar code and associate it with a phone that is being transacted at the kiosk. The bar coder reader and/or UV detector can be used to scan an identifying bar code or other form of encoded information to identify the product model or product number. The system may use the barcode reader to read the barcoded identification on the inside of the battery pack. UV can be used for reading "invisible" barcodes in use by certain vendors such as Apple and others. The machine's bar code reader, camera, or UV detector is used to identify the product model 1D, IMEI #, and/or FCC ID.

[0020] Further, the consumer may be asked to pre-bag, pre-box or place a barcode label on the CE device at some point before or during the inspection process. The consumer may be instructed to use wheels, slides or levers to drop the CE into a bag, box or directly into a bin. If dropped into a bag or box, the consumer may be instructed to use wheels, slides or levers to seal the outer package.

[0021] Each kiosk 100 will bin phones according to parameters including but not limited to; vendor/model, condition, value, visual quality, physical damage, water damage, locked or unlocked, carrier compatibility, frequency of phone, type of cellular standard supported (CDMA, GSM, etc.), or combinations of these parameters. The inventory of each kiosk bin may then be automatically transmitted from the kiosk to an online web posting whereby auctions, or live auctions can be held allowing buyers to bid and purchase specific bins from specific kiosks in real time. The bins then can be shipped directly from each specific kiosk to the bid winner during the next time the kiosk is serviced. Bins can associated with a single model or group of models. In other cases the bins may be associated with a particular type of phone (e.g. CDMA), or an other grouping that makes sense. Bins may also be associated with devices that are to be recycled for their material value, and should only ship when the bin is full. While other devices are binned to distinguish that they need to ship as quickly as possible because the device has immediate aftermarket re-sale demand and the real-time connection to the kiosk enables real-time inventory tracking and binning of recycled devices.

[0022] In one embodiment, the display of the system displays current purchase prices for different models of mobile phones. This can be used to encourage and provide incentive to customers to bring their used phones to the kiosk for resale or

recycling. The kiosk can be in regular and periodic communication with the server to receive such data and update its display accordingly. The pricing data provided to the kiosk is called the Offer Price to the consumer, and is based upon aftermarket sales prices which vary on a regular basis (i.e., daily) and for each make/model of recycled device. The offer price presented to the consumer is determined by subtracting the recycling fee from the pricing data provided by the aftermarket reseller.

[0023] The kiosk also monitors all of its consumables (paper, ink, etc.) and requests new supplies automatically so that the kiosk can be substantially constantly operational.

[0024] Figure 2 illustrates a network topology 200 configured in accordance with an embodiment of the system. In one aspect of this embodiment, several recycling kiosks 202 may be coupled via communications links 204 or 210 to a communications network 206. While two forms of connecting recycling kiosks are shown in this Figure 2, several embodiments are anticipated. Examples of embodiments of recycling kiosks include various forms of vending machines, Open Mobile Service Interface (OMSI, http://www.omsi-forum.org/) based kiosks, and other retail automated machines. Also coupled to the communications network 206 via a communications link 212 may be a recycling kiosk server 214.

[0025] Transactions selected by customers at the recycling kiosks 202 or 208 may be routed to the recycling kiosk server 214. In another aspect of this embodiment, the recycling kiosk server 214 may be coupled to a database 215. The database 215 may be stored on the same or another recycling kiosk server 214, or may reside in a separate server (not shown). One familiar with the relevant art will understand how software executing on a recycling kiosk server 214 will be able to retrieve data stored in the database 215, whether that database 215 is stored on the same or separate servers. The database 215 may store information including unique identifiers that have been provided to customer vis the Touch Screen user interface or by way of wired or wireless communications tc mobile device relating to vouchers, a personal identification number associated with each unique identifier, a telephone number, a credit amount, an indication of whether the voucher identified has already been used, and other pertinent information relating to providing

recycling services on any recycling kiosk 202 or 208. In one aspect of this embodiment, the database transfers media content or executable applications to be delivered to the users' mobile device by way of wired or wireless communications.

[0026] In yet another aspect of this embodiment, the recycling kiosk server 214 may be coupled via a communications link to a biometrics server 216 and a content server 218. The biometrics server 216 conducts various fraud detection and prevention activities, including prevention of fraudulent credit cards. The content server 218 may perform various activities, including storing user interface content and advertising for use on the recycling kiosks 202 and 208. One familiar with the relevant art will understand how content stored on the content server 218 is transferred via various communications links and protocols to recycling kiosks 202 and 208 for rendering the content.

[0027] The content stored on a content server 218 may include images, Extensible Markup Language ("XML") documents, hypertext markup language ("HTML") documents, audio, video, text, etc., and instructions to enable a recycling kiosk 202 or 208 to render the content correctly. As an example, advertising and other content specifically targeted to consumer demographics on a kiosk or time-of-day basis may be rendered on recycling kiosks 202 and 208 after retrieval from the content server 218. A recycling kiosk 202 located in a department store may display different advertisements than a recycling kiosk 208 located at a convenience store. Additionally, a recycling kiosk 202 located in a department store may show different advertisements during weekdays than during evenings and weekends to target different demographics. Further, a recycling kiosk 202 located in a sporting goods department may show different advertisements than a recycling kiosk 202 located in an electronics department.

[0028] Recycling kiosks may be located in many public or otherwise accessible locations including shopping centers, street sidewalks, gas stations, DVD rental stores, grocery stores, and restaurants in addition to department and convenience stores. The recycling kiosk server 214 may also be coupled via a communications link 222 to a recycling kiosk communications network 224. Multiple service provider systems 228 may also be coupled to the recycling kiosk communications network 224 via communications links 226. Examples of service provider systems

228 include systems operated by eBay, cellular telephone companies, bankcard companies, and aggregators of services from service providers. These various service provider systems 228 may operate independently on different computer systems and may use different communications protocols. The recycling kiosk server 214 may be able to exchange information with multiple service provider systems 228 independently or jointly and in parallel or sequentially despite using the same or different communications protocols or system software.

[0029] A possible use scenario of the embodiment described in Figure 1 and Figure 2 is shown in Figure 3. At step 301 a customer elects to sell or recycle a mobile phone. The customer checks to see if his mobile phone is supported for sale/refurbishing from a list on the screen of the kiosk. The customer activates the on-screen menu system and either enters the phone model directly or goes through a series of menus to determine if the phone is eligible for sale or only for recycling. After identifying the model phone, the customer may optionally at step 301 select a charity to which to donate proceeds and/or identify a fund raising group so that appropriate credit can be given to that group. In other embodiments, these steps can be done at a later time. In one embodiment, the kiosk takes a picture of the customer and associates it with the phone and the transaction, to prevent fraud claims or to identify potential customers who are selling stolen phones.

[0030] At decision block 302 it is determined if the phone is only available for recycling. If yes, (i.e. it is not on the list of phones available for reselling) the customer can insert the mobile phone into receptacle 106 at step 303 and the phone falls into bin 112 for recycling. A tax voucher might be presented through 107 for the recycled phone.

[0031] If the phone is supported for refurbishment/resale the customer is then encouraged to engage the testing/rating operation of the system. At step 304, the system has determined the correct connector to couple to the phone. Connectivity options include and are not limited to cable, standard or proprietary connectors, hard docks, reading removable or external physical memory or other wireless methods like wifi, Bluetooth, RFID, NFC, and the like. In one embodiment, the system includes a plurality of connectors for known phone models. Based on the input from the user as to the identity of the phone model, the system can select the correct

connector and offer it to the customer. In other embodiments, a plurality of connectors is available and identified (by name, color, etc.) and the user is informed as to which one to use. In another embodiment, a universal connector is used to connect to the phone. After the phone is connected, the system presents a cage or cradle in which to place the phone. This is designed so that the phone is in a known or unknown initial position so that it can be visually inspected using photographic or other equipment.

[0032] At step 305 the phone is connected and inserted into 106. If this has been done correctly, the customer is given some indication (e.g. a green light) and the system proceeds to step 306. For instance, the software may direct the consumer to place the device in the "inspection bin" in a certain orientation. The consumer may then be asked to manually change the orientation. Alternatively, the user may be asked to turn wheels or use slides or levers to change the orientation. The consumer may be asked to open a device such as a clam shell phone, open doors or view finders on video cameras, pop open features such as flashes, slide open covers, etc. and then place the item back in the inspection area. The user may also be asked to attach cables. The user may also be asked to attach restraints and/or use wheels, slides and/or levers to invoke restraint on the device.

[0033] At step 306 the phone is tested for operation using diagnostics and operating via, for example, the OMSI interface. The diagnostics may include electrical and physical testing including testing the phone's battery, screen, memory, button functionality and structural integrity.

[0034] In one embodiment, the phone is photographed and analysis software is used to identify scratches, cracks, wear patterns, dents, broken or missing pieces, inclusion of features such as lenses, buttons, connectors, badges, labeling and/or branding. Identification may be done by image comparison or other similar methods where the photograph taken of the phone is normalized and compared to a reference image. Other inspection methods may be used in conjunction with visual and/or electrical testing including weighing each device in the kiosk to determine specific weight and use that data to further refine verification of manufacturer and verification of exact device model. In another embodiment, the photographic image is used to identify the correct manufacturer and model number / product number.

Visual ID could include any combination of the following: calculations based upon measurement, physical (e.g., mm, in, ...), pixel count or other. Identification based upon phone dimensions, location/size of buttons, LCD and other physical characteristics. One camera or multiple cameras may be used to determine height, width, depth as needed. Identification based on OCR (Optical Character Recognition) of identifiers such as Carrier (for phone), brand, model, serial number, other identifiers. Identification based upon barcodes. Consumer may be asked to orient CE on its front, back, side and then asked to change orientation as needed. Consumer may even be asked to remove CE cover(s), batteries and the like in order to gain access to identifiable items, such alphanumeric or barcode data. The system provides a way to use visual inspection with electrical inspection to identify a device, determine its value, and reduce possible fraud. The system can determine a preliminary identification of the phone with the visual system, and then present or light up the correct cable for that phone so the consumer can plug in the correct cable. The system can then confirm by electrical test that the visual identification was indeed correct, then test the phone to determine its functionality and value.

[0035] Identification is made by comparing collected information and comparing that to a database. The correct model identity is used by the kiosk system to determine the correct electrical connector from a database of device specification information for the purpose of performing electrical test, erase or re-programming of the device. For Consumer Electronic devices such as stereos, computers, DVD players, game consoles, etc. that can be evaluated electronically, in addition to or instead of visually identifying the device; it may be necessary to identify the cable connector type for electronic inspection. This can be done by visually identifying the dimensions and shape of a connector receptacle. This could also include identification of the pins or connector points in the receptacle. The kiosk system may automatically connect the electrical interface to the mobile device or instruct the user how to connect the electrical connector to the electronic device. In another embodiment, the image is electronically transferred to a human operator who can do a visual evaluation and grading of the cosmetic condition of the phone. In another embodiment, if the customer does not agree with the assigned grade or rating, the system includes a call button to provide two way communications with a human operator to discuss the rating.

[0036] In another embodiment, a "micro-kiosk" which would have the same facilities for visual/electrical inspection but would not necessarily bin and store the products it evaluates. The micro-kiosk would be used by an operator, perhaps with a group of discrete peripheral devices (computer, camera, a plurality of cable connectors, printer, barcode scanner, fingerprint reader, signature pad, etc.). This system would require an operator, store clerk, or technician, to complete transactions and guard against fraud. It may be a more appropriate solution than a full kiosk for some venues such as floor-space limited retailers, high-customer-clerk-engagement model retailers, and phone processors and/or refurbishers.

[0037] In one embodiment, the system communicates with the carrier associated with the phone to collect any information that could be germane to the device, including, for example, validation or authentication, registered ownership, account status, time in service, etc. In some cases, when the customer's identification information does not match the registered owner information, the system might automatically contact the assumed owner in some manner (automated telephone call, email, text message, etc.) to alert the owner of the phone of the possible transaction.

[0038] Another feature of an embodiment of the system is to determine if there is personal information on the phone. This can be determined by the presence of data in particular storage registers in the memory (e.g. quick-key stored numbers) or by looking at file types (jpegs, mp3's, etc.). or just assuming all non-default storage locations must contain personal data. The customer is offered the chance to erase the data from the phone. One option allows the customer to request that the data be first downloaded and then sent to a location designated by the customer (e.g. email address, web site, etc.). In another embodiment, there is a slot for the customer to enter a memory card (e.g. USB drive, memory stick, etc.) whereupon the system will upload the data to the memory device. In still another embodiment, the system offers a web location from which the user may retrieve the data at some later time if desired. In another embodiment, the user can elect to have the data placed in another phone purchased by the customer at the kiosk or in the location of the kiosk or some other store. The customer can select a user name and password to access the system provided storage location.

[0039] Based on the results of the diagnostics, the system assigns the phone a rating. This rating can be a selection of one of a plurality of categories (e.g. excellent, fair, average, poor), a letter grade (A, B, C, D, F), or a ranking on a numerical scale. The system then accesses a database to determine a real-time value for the phone based on current resale values. The system may use real time or batch connectivity for updating pricing of used devices, connecting to an auction system or pre-auction system.

[0040] This data can be scraped from online sites such as eBay or Craigslist, it may be generated by the system and updated periodically, it may be based on a consumer guide, or any other suitable method for determining a current value for the phone. The value is determined by a current market price obtained via communication to the recycling server 214 using the communications network 206. The recycling server obtains a current market price for the phone from one of the service providers and stores, on a regular basis, market prices on the database. In the embodiment described in Figure 1, a mechanism is available to update audiovisual or other user interface content or other aspects of the recycling kiosks 202 and 208. As an example, when content needs to be updated, the content only needs to be updated at the content server 218. The recycling kiosks 202 and 208 retrieve the updated content via the communications network 206 from the content server 218. As described above, the content used by a recycling kiosk 202 may be the same or different than content used by other recycling kiosks 208 or even another recycling kiosk 202. Once the value is determined, the value is provided at step 307 to the kiosk. The system then offers the customer a price or other remuneration for the phone that is typically less than the resale value. In other embodiments, the system can offer the customer a price or remuneration that is at the current real-time market price.

[0041] At step 308 it is determined if the user wishes to accept the offer. If not, the system proceeds to step 309 and opens the cage door and releases the phone back to the customer. If the user wishes to accept the offer, the system proceeds to step 310. At appoint where the user accepts a price, the system may then lock down the inspection area to prevent further access to the phone by the user. The system may then disconnect any cables that have been attached. At step 310, the user indicates acceptance of the decision by confirming on the keypad or touch-screen. In

one embodiment, the system has a multi-stage process to determine user acceptance so that the customer can back out if a mistake was made. At this point the system can proceed with deleting the personal data from the phone. In addition, once the transaction is confirmed, the system can tag the phone with a transaction number that is associated with the diagnostic data and the transaction itself. This may be a printed adhesive label that is affixed physically to the phone and/or the loading of electronic data corresponding to the transaction number onto the phone itself for traceability purposes.

[0042] At step 311 the system completes any additional testing and diagnostics of the phone, disconnects the cable from the phone, and prints a receipt for the customer. Transfer of funds may be authorized via the kiosk by crediting a customer credit card or account, by dispensing cash, or by dispensing a voucher or coupon. In other embodiments, the system issues a receipt to the customer who then can take it to, for example, a store associated with the location of the kiosk, for payment. If the user has elected to donate the value of the phone to charity, the customer then is issued a donation receipt and settlement is accomplished later with the charity.

[0043] At step 312 the system updates its inventory database and transmits the update via the communications network 206 to the kiosk server 214.

[0044] Each kiosk will bin phones according to parameters including but not limited to; vendor/model, condition, value of device, shipping priority, locked or unlocked, carrier compatibility, frequency of phone, type of cellular standard supported (CDMA, GSM, etc.), or combinations of these parameters. The inventory of each kiosk bin will then be transmitted from the kiosk to and online web posting whereby live auctions can be held allowing buyers to bid and purchase specific bins from specific kiosks in real time. The bins then can be shipped directly from each specific kiosk to the bid winner during the next time the kiosk is serviced.

[0045] The generation of these online offers can be automated. Appropriate text for each model of phone can be prepared in advance. Descriptions of the phone can be also automated based on the perceived condition of the phone. Finally, the inspection photograph(s) can be included in the online offer by electronically communicating them to the kiosk server. The diagnostics and testing information can be provided as part of the offer, as well as information about whether the phone

is locked or unlocked, includes a sim card, expanded memory, or other descriptive information and features.

[0046] In other embodiments, the phones are first collected from the kiosk and then put into a resale channel. In some cases, the phones may be refurbished, reconditioned, or upgraded prior to resale. In another embodiment, the system is able to automatically update the firmware in the device while it is attached to the connector. Any updates or improvements that can be made electronically can be accomplished automatically at the kiosk.

[0047] One use of the kiosks may be to encourage fund raising by charitable or community groups. For example, instead of collecting old cans and bottles for recycling, groups such as the scouts, little league, or other groups could collect recyclable devices such as phones and use the kiosks to raise money. In one embodiment, the group registers with the system and receives a group identification number. Each individual might also receive an individual number. This is to encourage friendly competition among the fundraisers. The system can assign credits to each fundraiser based on the number and value of donated devices that are provided. In addition, the registration process allows the automatic deposit of funds to the charity or fundraising group. Even when the fundraising group is not the entity providing the phone, any customer can still elect to donate any funds to a charity. The customer can be presented with a list of registered charities and fundraising groups and can select one or more to receive all or some of the customer's proceeds.

[0048] Many phones and recyclable devices include proprietary chargers. One embodiment of the system contemplates the ability for the user to plug in the charger and insert the connector into a receptacle so that the charger can be tested as well. The system then tags the charger with the same transaction number and includes its value in the price and resale.

[0049] The system not only rates the cosmetic condition of the phone, but can also rate the condition of the battery. Once connected, the system can determine the ability of the battery to hold a charge, can measure is voltage and current, and assign a rating to the battery as well.

[0050] Figure 4 is a flow diagram illustrating another embodiment of the operation of the system. The flow diagram of Figure 4 is described in conjunction with embodiments of touch screen display images of Figures 5A-5L. At step 401 the operation begins. The display of the kiosk 100 may be as in Figure 5A. An upper part of the screen may include a number of selectable options such as Recycle My Cell Phone 501, Printer Recycle Offer 502, Computer Recycle Offer 503 (This may be a branded or sponsored recycle offer, such as from a single company such as Dell) and Device Recycle Offer 504 (this button may be used for other devices and recyclable items that are not covered by the first three buttons). If desired, an attract loop (i.e. movie) may be provided in a lower region 505 of the display. The attract loop may also be used to teach the user how to use the system.

[0051] In one embodiment, the kiosk can broadcast wifi to push content to wifi enabled phones. The system can make users aware of its existence by alerting them via such wireless transmissions. In addition, the kiosk could play and/or broadcast content for the store location and/or third parties as an additional revenue source.

[0052] After the user selects the type of transaction at step 401, the system moves to the next screen. For purposes of example, we will presume that the user has elected to recycle a cell phone. The user selects the type of cell phone as shown in Figure 5B by choosing smart phone 506 or cell phone 507.

[0053] At step 402 the user chooses a brand of phone, such as by selecting a brand in Figure 5C. If the users' brand is not shown on 5C, a "more" selection is available. In one embodiment, a keyboard is provided and the user can type in the brand, with an optional auto-complete feature provided. At step 403, the user is presented with a number of models for the particular manufacturer, as shown at Figure 5D. The user selects the model at step 403.

[0054] At step 404, the user is instructed to get a bag from bag bin 120. At step 405 the user places the phone in the bag and seals it using a zip lock or some other suitable means. In one embodiment, each bag has pre-printed bar code label affixed thereto. In another embodiment, the kiosk 100 can print out a bar-coded self-adhesive label that the user can place on the bag. At step 406 the user scans the bar code using the bar code reader 125 of the kiosk 100.

[0055] At step 407 the kiosk may automatically bag the device or the user places the sealed bag into the inspection bin 106 of the kiosk 100. At step 408 the user is presented with a default value such as shown in screen 5E. This default value is for a typical phone of that type in unknown condition. The value may be determined by accessing a locally stored database or by accessing a dynamically updated database via network communication between the kiosk and a central location.

[0056] At decision block 409 it is determined if the user wants to accept the initial price. If so, the system proceeds to step 413. If not, the system proceeds to step 410 and a series of questions to determine a possible higher value for the phone. The user is first asked to identify the carrier at step 410 (see Figure 5F). At step 411 the user is asked other questions about the phone such as whether it powers on (Figure 5G), if the display works properly (Figure 5H) and whether the phone is water damaged (Figure 5I).

[0057] At step 412 and Figure 5J, a new value is presented to the user. In some cases, the new value is higher, while in others it may be lower, all depending on the responses provided by the user. During this time, the system may do an automated inspection of the phone via a camera built into the inspection bin. In other instances, the user may be asked to plug the phone into a connector so that an automated electronic analysis of the phone can be accomplished.

[0058] If the user accepts the new value at step 412 or at step 408, the system proceeds to collect personal information from the user at step 413. This may be accomplished by entering a customer loyalty number associated with a retailer where the kiosk is located, swiping a credit/debit card, by swiping a drivers license, or by manual entry using a keyboard presented on the touch screen of the kiosk, such as shown in Figures 5K and 5L.

[0059] At step 414 the user selects one of a plurality of compensation methods, such as store credit, charge card credit, discount coupon, etc. After the user selects a payment method, the user is prompted to enter a fingerprint by placing a thumb or finger on print reader 128 of kiosk 100. At step 416 the user signs an electronic signature pad 130 on kiosk 100 and the transaction completes at step 417.

Additional Embodiment

[0060] In an alternate embodiment, the system provides a network of interconnected kiosks which communicate with centralized servers for the purpose of proving real-time pricing for a plurality of electronic devices that can be recycled using the system, including larger electronic devices such as personal computers, microwaves, or any other recyclable electronic device. The system implements functionality related to pricing, credit, and interaction, but provides a number of different implementations for receiving and transferring the recycled goods. The system may also include a web version that can be an initial entry into the system with physical transfer taking place in other methods.

[0061] As noted above, the system provides an interactive kiosk with touch screen display, primer, storage receptacle, envelopes/bags for storing devices. The User Interface (UI) instructs users how to determine the value of a recycled item or item being returned to a retail store for a trade-in value.

[0062] The machine will use a variety of inspection techniques to determine the value of the device digital media. The inspection techniques include the combination of visual inspection, and electrical testing using standard (USB, HDMI, DVI, etc.) electrical interfaces and proprietary (Apple, Nokia, etc.) electrical interfaces for identification & classification to uniquely identify the manufacturer and model number and software revision. Inspection of digital media such as games or entertainment mass storage devices may include unique interfaces and cabling necessary to digitally test a game cartridge or disc. DVD, BlueRay, or other disc drives may be used to read media discs. The software of the kiosk will verify the legitimacy, functionality and quality of the digital media stored on the mass storage disc or cartridge or tape cassette. In one embodiment, a user can recycle a game in advance of a new game release and receive credit towards the purchase of the new game and in some embodiments, get a preferred opportunity to get the game in advance of those who haven't recycled at the kiosk.

[0063] The system contemplates a number of ways for the user to interact with the system. Where possible, a comprehensive inspection and analysis is performed on the offered device and a price or credit is agreed upon. In another embodiment, a tentative price is agreed on pending an audit of the condition of the device. In one

embodiment, the device may be deposited directly into the kiosk itself. In another embodiment, the system directs the seller to an associated store to hand over the device to appropriate personnel. In a different embodiment, the system provides mailing labels, envelopes, and the like so that the seller can ship the device to another location.

[0064] Small Devices: The kiosk provides a price for a small portable electronic device which is inserted in an envelope and placed into the kiosk for later payment once the device is audited.

Shipping Embodiment/Delayed Compensation

[0065] This is used where the user wants to recycle an electronic device and brings it to a local retailer. At the kiosk, the user selects the type of device to recycle (phone, camera, etc.) from a menu interface. The user answers questions about operating status, scratches, other defects, accessories y/n, etc.

[0066] As described above, the Kiosk displays the estimated value along with payment options including cash, % to a charity donation, retailer gift card, etc. The seller elects to proceed and accepts deal by entering personal information. At that point, the Kiosk prints a label; the user places electronic devices in shipping bag, and places the label on the bag. Alternatively, the bag has a preprinted label already attached. The user then mails or ships the bag to the addressed location. At that point, the device may be audited to determine if the condition, features, and operability of the device matches the determination or input at the Kiosk. If so, the user is credited or paid the original amount. If the device is in worse condition, the user is notified and a lower price is paid.

User inserts bag into kiosk

Large Devices:

[0067] In some cases, such as when the user has a much larger item like a PC, printer, or monitor that won't fit into the kiosk or is difficult to mail or ship, they interact with the kiosk to enter information, determine a value, and print paperwork to give to a clerk in an associated store along with item. In this case, the paper provides all the instructions for the store clerk to follow based upon a pre-defined set

of rules between the retailer, OEM, and the system. The user is credited or paid, and the store handles further shipping or transfer of the item.

Content Media Trade-in/Trade-up Claim

[0068] A network connected kiosk may be used by a consumer for the purpose of determining the functionality and trade-in value of content media such as a digital game, DVD, CD-ROM, BlueRay disk, etc. The items may be cartridges, disc, or other form of digital media used in conjunction with a content player such as a game system, PC, DVD Player and the like.

[0069] The machine must test the media to ensure that it is not a pirated or illegitimate copy of the game and that the game is in good digital / physical condition such that it is still usable and saleable on a secondary market. The information learned during the testing may include (but is not limited to), the maker, the game name and revision, and some qualification that the game is in fact operational.

[0070] The machine may use actual game consoles and/or other computers to test the games and digital media to verify their legitimacy and functionality.

Operation

[0071] The procedure which follows describes the user interaction with the machine for the purpose of 1) establishing value of the device, digital game, or other digital media using internet connectivity to a pricing engine server, and 2) for the purpose of remunerating the user for the agreed upon price provided by the kiosk and the network server. The price may be good for a period of time after the price is established by the kiosk (i.e., 2 weeks).

[0072] User approaches Media Take-back Kiosk and touches screen to start.

[0073] What type of media is being inserted? User selects Console then media identification.

[0074] Display instructs user which connector to plug the media module / disc into (perhaps the machine only presents the correct cable or port based upon the media type).

[0075] User inserts media.

[0076] Kiosks confirms media name, maker, and digital quality (i.e., scratched DVD).

[0077] Kiosks displays trade-in price or may display a promotional offers to apply the proceeds towards the purchase of other media or accessories.

[0078] The kiosk will incorporate multiple connectors, slots, and plugs-in locations to accommodate the wide variety of media form factors (e.g. disks, cartridges, etc.).

[0079] The kiosk will incorporate a collection of individual content playing consoles (i.e., XBOX360, Wii, etc.) used to test the media to verify that it is functional.

[0080] The kiosk will incorporate these capabilities for the purpose of determining the value of a pre-owned consumer media by testing, and inspecting the media. .

[0081] The kiosk is connected to the internet and a real-time pricing system will use the information collected at the kiosk to determine the market price or promotional trade-in value to present to the user. The user then must decide to proceed with the transaction or opt out.

Web Embodiment

[0082] A Web based pricing Kiosk replicates the experience of the kiosk but allows for a user to bring the device with them to the store, and drop it off after getting a price online. The system may print out a receipt, mailing label, etc. for the user to bring to a participating collection center.

[0083] The electronic recycling kiosk collects information that when compiled for the retailer, can be used to substantiate their compliance with States' eWaste and 2nd Hand Dealer Laws.

[0084] The recycling kiosk can be used to take personal information such as a photograph and fingerprint to identify people selling pre-owned goods, and as

needed provide this information to local law enforcement authorities to determine if stolen goods have been moved through the recycling process, and by whom.

[0085] For devices with a USB interface, the Kiosk extracts PID/VID # using the USB interface to determine the make/model and present to the consumer a value based upon a real-time look-up of the current market value.

[0086] The system can use HDMI, DVI, 1394, i-Link interfaces and support for EDID (HDMI ID protocol) and same for DVI. Use these protocols to identify CE devices.

[0087] To prevent or reduce fraud, the system may incorporate a number of tests and analysts such as:

[0088] Weighing the device -this is prone to errors (case, no case, battery, no battery)

[0089] Visually inspecting the device to detect slight design features to detect fakes

[0090] IR, Visible light or laser scan a device to derive an heat absorption / decay signature for a given device. The theory is that the decay signature will be different for every make / model of device and will vary with the orientation of the scan on the same device. Fake or empty devices will not have the proper signature and will not be accepted for immediate payment. In this case, the user has the option to get paid after the phone is inspected by a human.

CLAIMS

1. A kiosk comprising:

an inspection area configured to receive a mobile phone;

a bin operably associated with the inspection area;

a cable-type electrical connector operably associated with the inspection area;

a user interface; and

a processor in communication with the electrical connector, wherein the processor is configured to operate the kiosk according to a method that includes:

obtaining information from a mobile phone via the electrical connector while the mobile phone is within the inspection area,

moving the inspection area into a locked-down state while the mobile phone is within the inspection area,

disconnecting the electrical connector from the mobile phone while the mobile phone is within the inspection area and while the inspection area is in the locked-down state,

presenting, to a user of the kiosk via the user interface, an offer to purchase the mobile phone for a price based at least partially on the obtained information,

receiving an acceptance of the offer from the user, and

moving the mobile phone into the bin after receiving the acceptance.

2. The kiosk according to claim 1 wherein:

the mobile phone includes a battery; and

the processor is configured to perform an electrical inspection of the mobile phone via the electrical connector to determine a status of the battery.

3. The kiosk according to claim 1 wherein the information includes a make and model of the mobile phone.

4. The kiosk according to claim 1 wherein the electrical connector is a USB connector.

5. The kiosk according to claim 1 wherein the processor is configured to contact a phone carrier for the mobile phone to authenticate the mobile phone.

6. The kiosk according to claim 1 wherein the processor is configured to contact a phone carrier for the mobile phone to collect ownership information for the mobile phone.

7. The kiosk according to claim 1 further comprising a cash dispenser configured to dispense cash to the user in exchange for the mobile phone.

8. The kiosk according to claim 1 wherein:

the mobile phone includes a screen; and

the processor is configured to perform an electrical inspection of the mobile phone via the electrical connector to determine a status of the screen.

9. The kiosk according to claim 1 wherein:

the mobile phone includes a memory component; and

the processor is configured to perform an electrical inspection of the mobile phone via the electrical connector to determine a status of the memory component.

10. A method comprising:

receiving, at a kiosk, a mobile phone from a user of the kiosk, wherein the kiosk includes a user interface, an inspection area, a bin operably associated with the inspection area, and a cable-type electrical connector operably associated with the inspection area;

instructing the user, via the user interface, to connect the mobile phone to the electrical connector;

obtaining, by computer, information from the mobile phone via the electrical connector;

causing, by computer, the inspection area to move into a locked-down state while the mobile phone is within the inspection area;

causing, by computer, disconnection of the electrical connector from the mobile phone while the mobile phone is within the inspection area and while the inspection area is in the locked-down state;

presenting, to the user via the user interface, an offer to purchase the mobile phone for a price based at least partially on the obtained information;

receiving an acceptance of the offer from the user; and

causing, by computer, the mobile phone to move into the bin after receiving the acceptance.

11. The method according to claim 10 further comprising contacting, by computer, a phone carrier for the mobile phone to authenticate the mobile phone.

12. The method according to claim 10 wherein:

the mobile phone includes a battery; and

the method further comprises performing, by computer, an electrical inspection of the mobile phone via the electrical connector to determine a status of the battery.

13. The method according to claim 10 further comprising contacting, by computer, a phone carrier for the mobile phone to collect ownership information for the mobile phone.

14. The method according to claim 10 further comprising dispensing, at the kiosk, cash to the user after receiving the acceptance.

15. The method according to claim 10 wherein obtaining the information includes obtaining a make and model of the mobile phone.

16. The method according to claim 10 wherein:

the mobile phone includes a screen; and

the method further comprises performing, by computer, an electrical inspection of the mobile phone via the electrical connector to determine a status of the screen.

17. The method according to claim 10 wherein:

the mobile phone includes a memory component; and

the method further comprises performing, by computer, an electrical inspection of the mobile phone via the electrical connector to determine a status of the memory component.

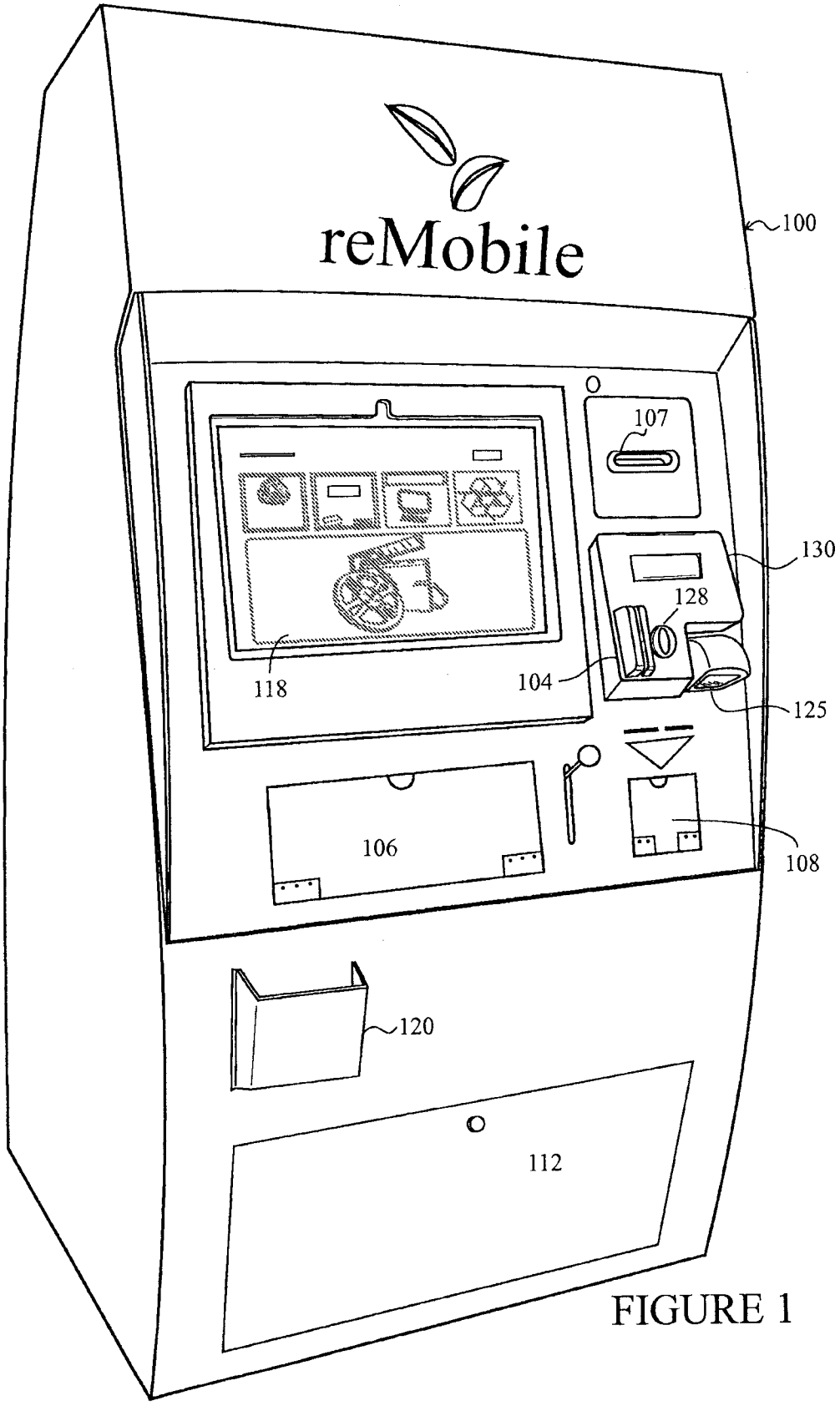


FIGURE 1

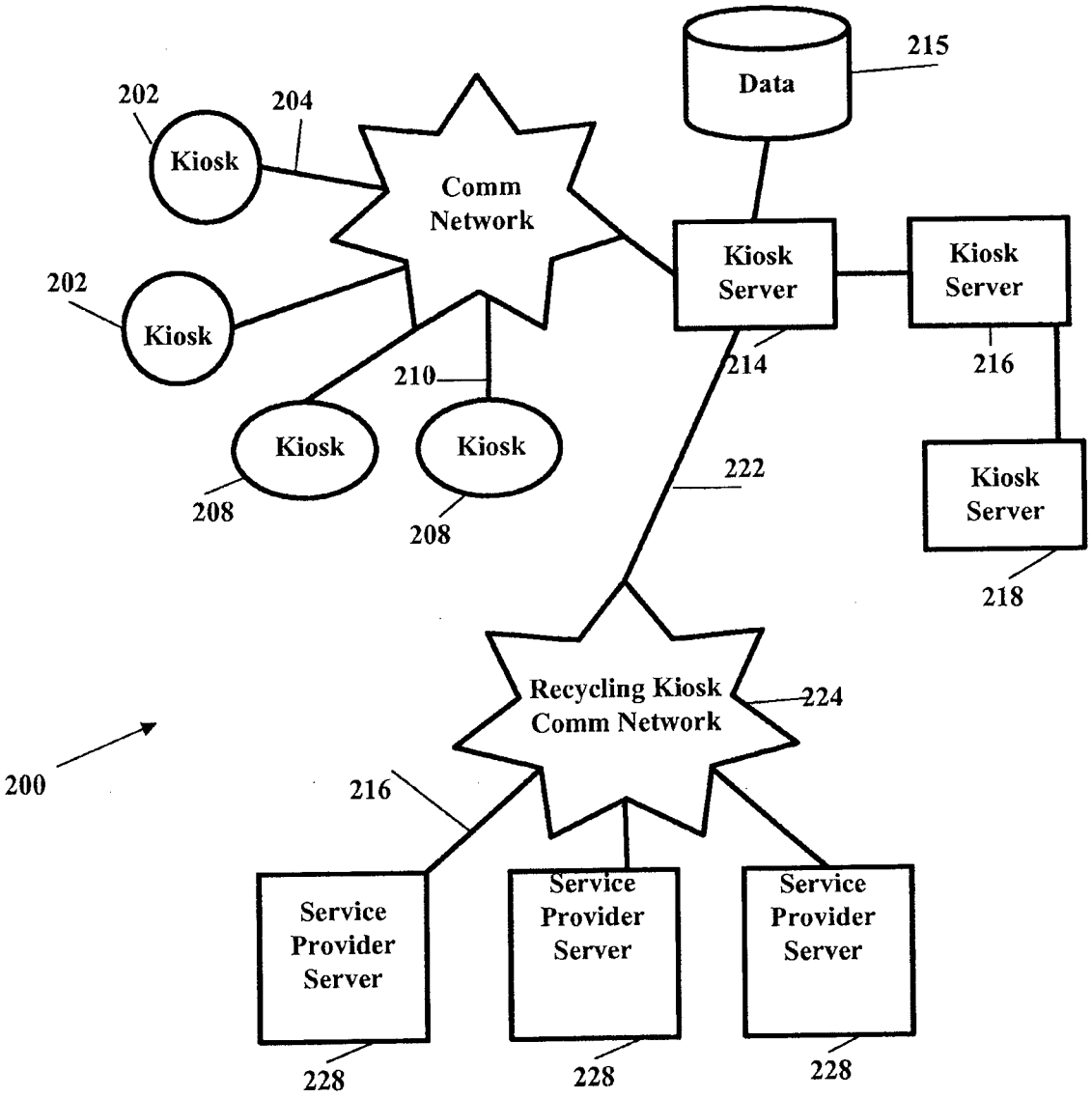

Data
215
202
204
Kiosk
Comm Network
Kiosk Server
Kiosk Server
202
Kiosk
214
216
210
Kiosk
Kiosk
222
Kiosk Server
208
208
218
Recycling Kiosk Comm Network
224
200
216
Service Provider Server
Service Provider Server
Service Provider Server
228
228
228

Figure 2

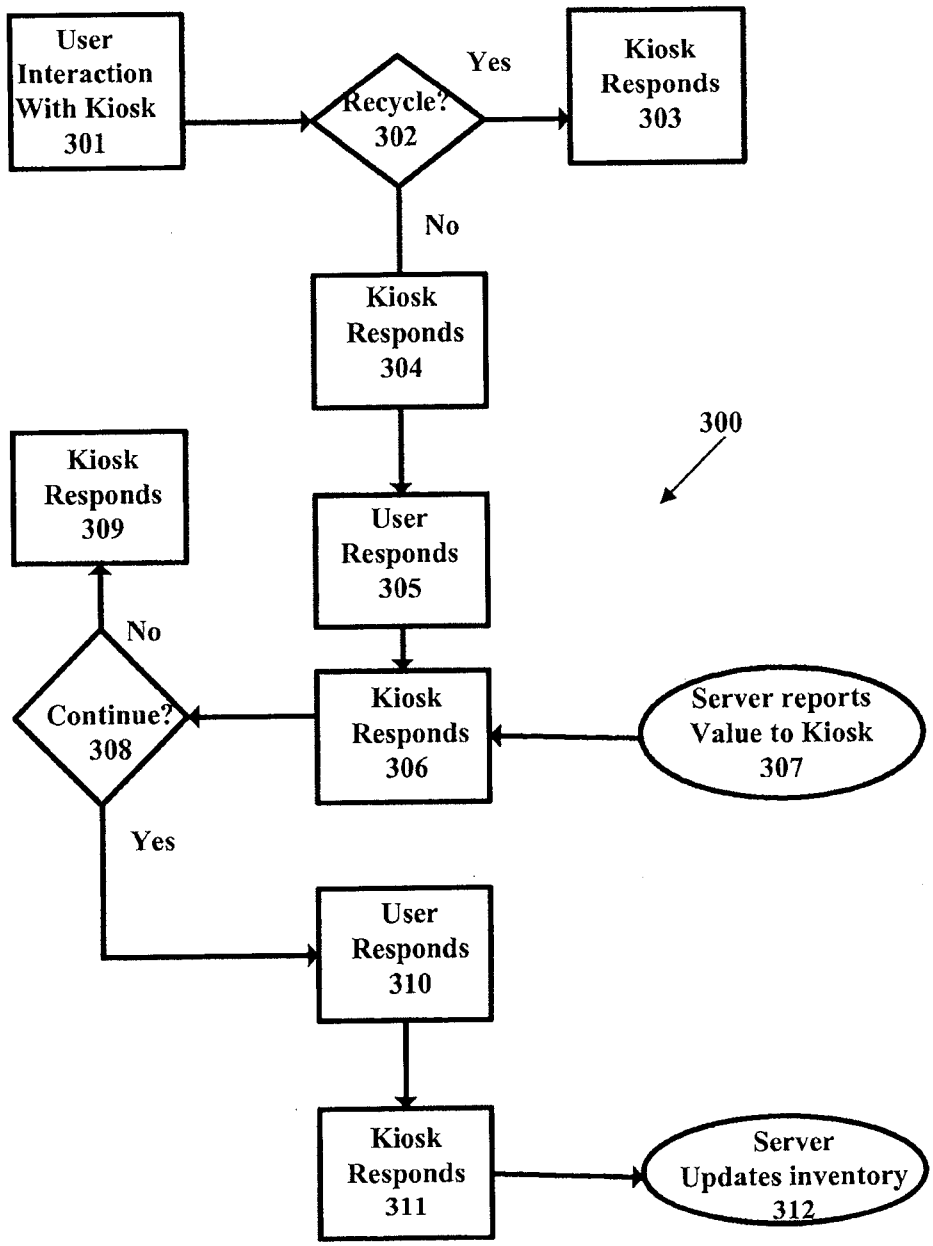

User Interaction With Kiosk 301
Recycle? 302
Yes
Kiosk Responds 303
No
Kiosk Responds 304
300
User Responds 305
Kiosk Responds 306
Server reports Value to Kiosk 307
Continue? 308
No
Kiosk Responds 309
Yes
User Responds 310
Kiosk Responds 311
Server Updates inventory 312

Figure 3

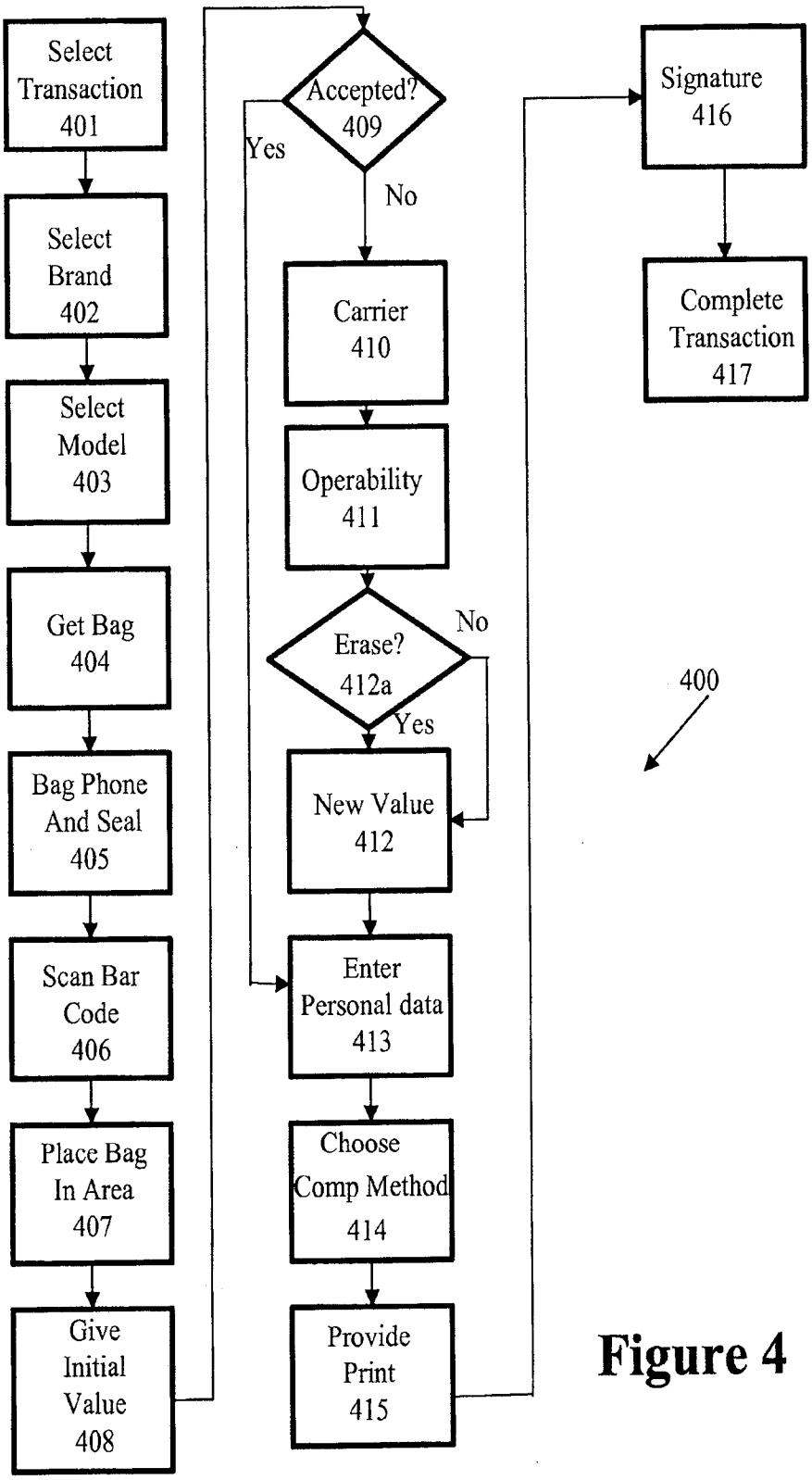

Select Transaction 401
Select Brand 402
Select Model 403
Get Bag 404
Bag Phone And Seal 405
Scan Bar Code 406
Place Bag In Area 407
Give Initial Value 408
Accepted? 409
Yes
No
Carrier 410
Operability 411
Erase? 412a
No
Yes
New Value 412
Enter Personal data 413
Choose Comp Method 414
Provide Print 415
Signature 416
Complete Transaction 417
400

Figure 4

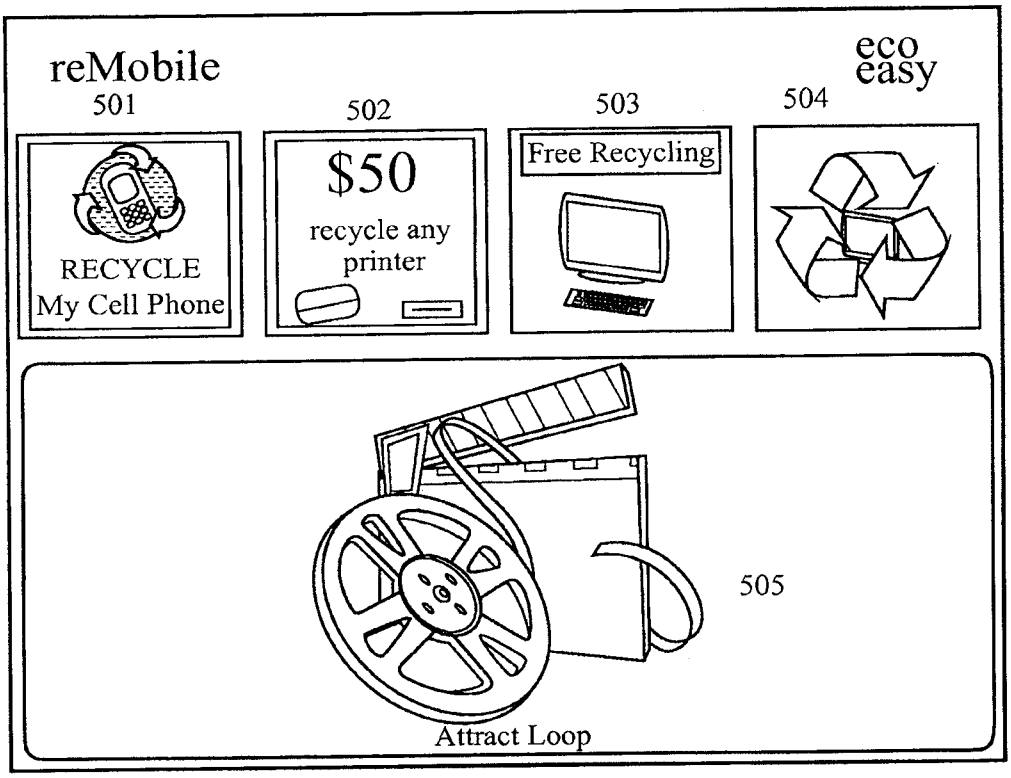


FIGURE 5A

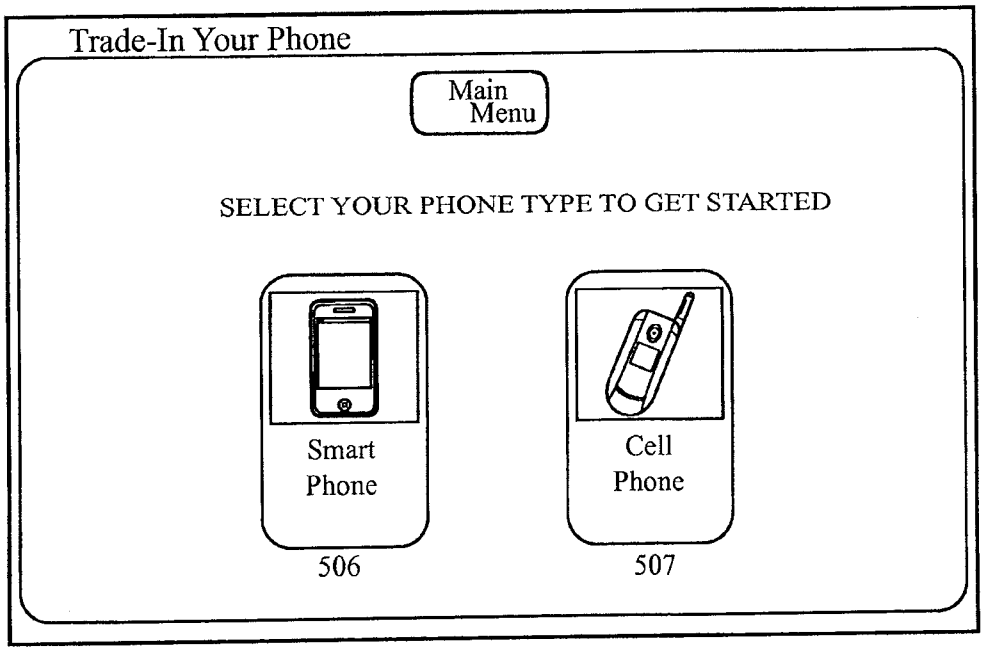


FIGURE 5B

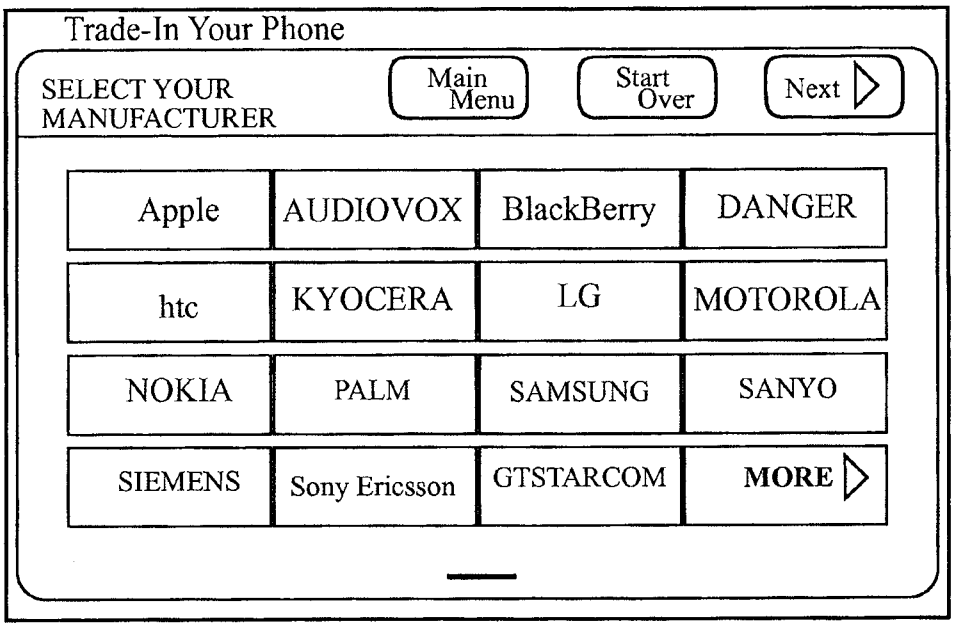


FIGURE 5C

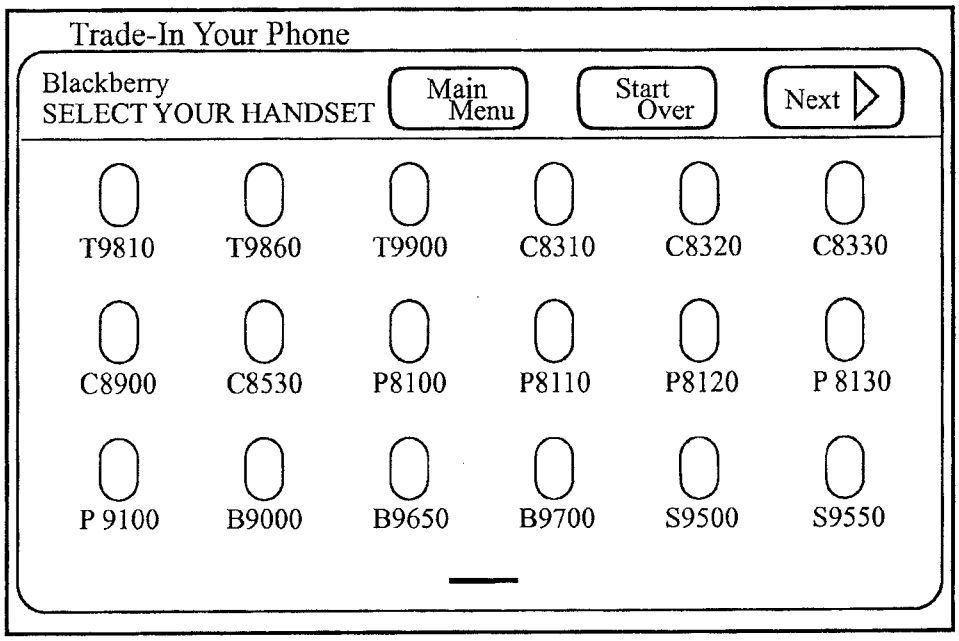


FIGURE 5D

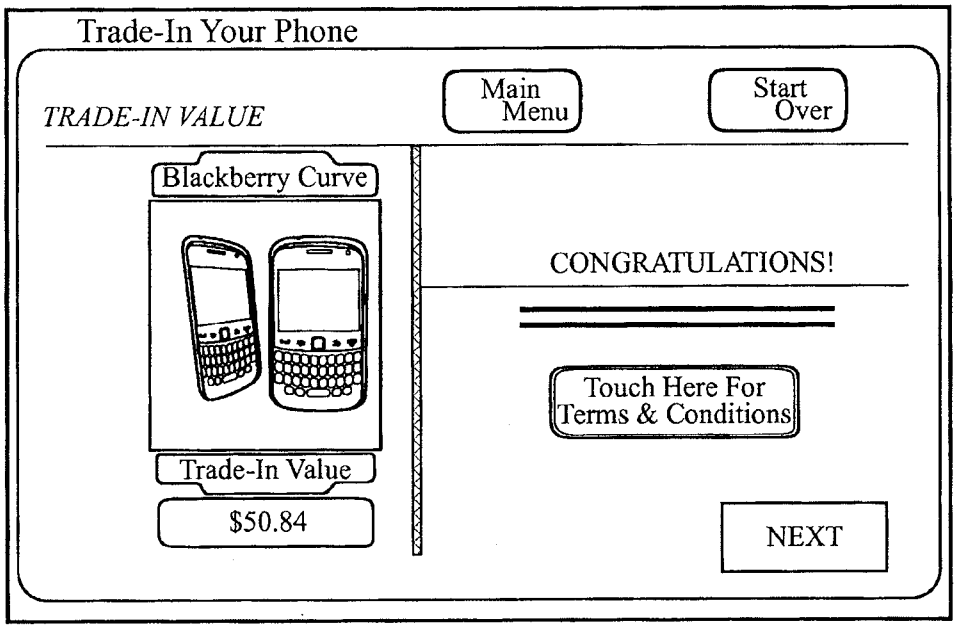


FIGURE 5E

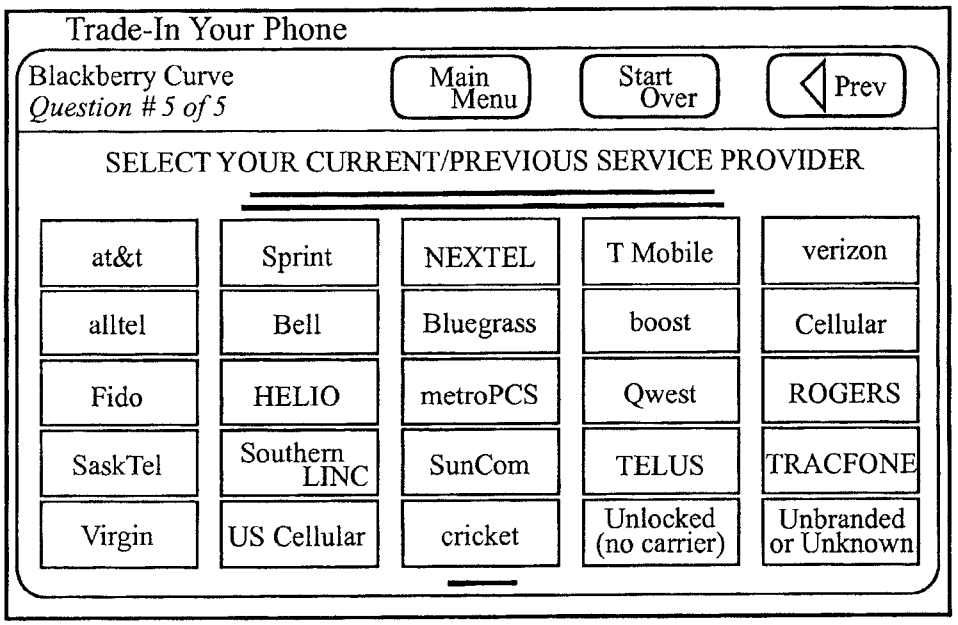


FIGURE 5F

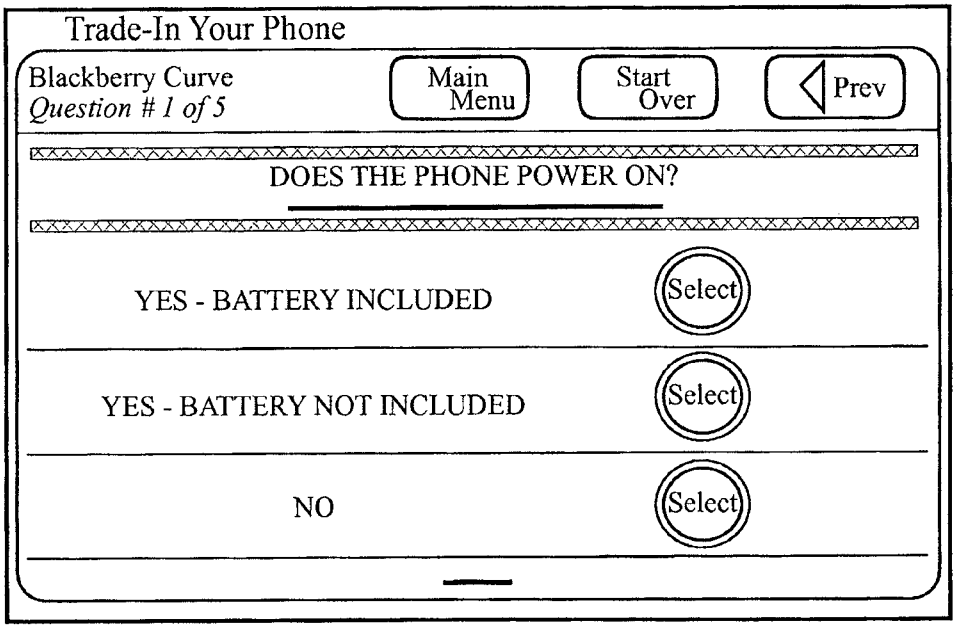


FIGURE 5G

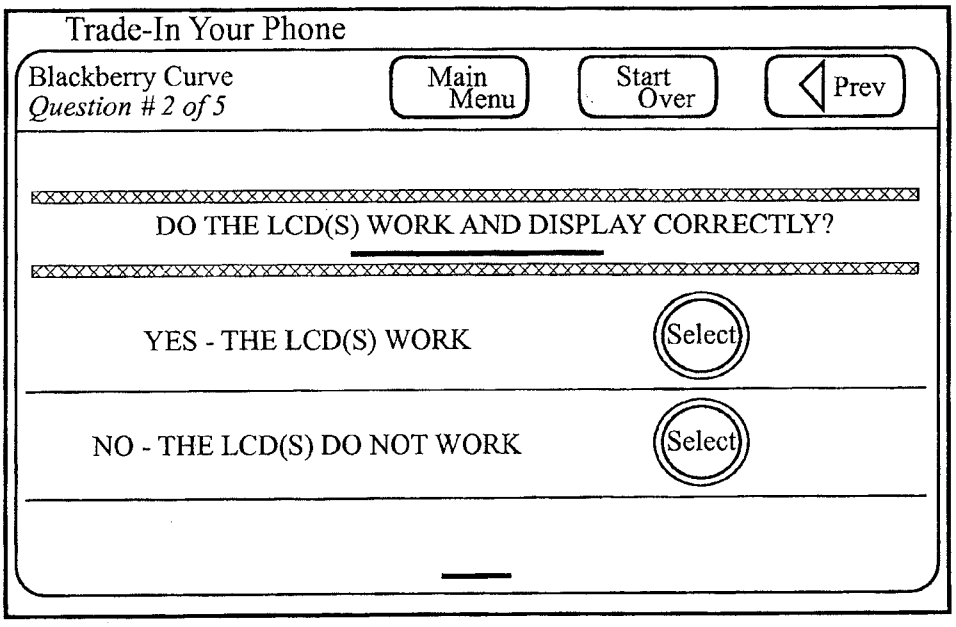


FIGURE 5H

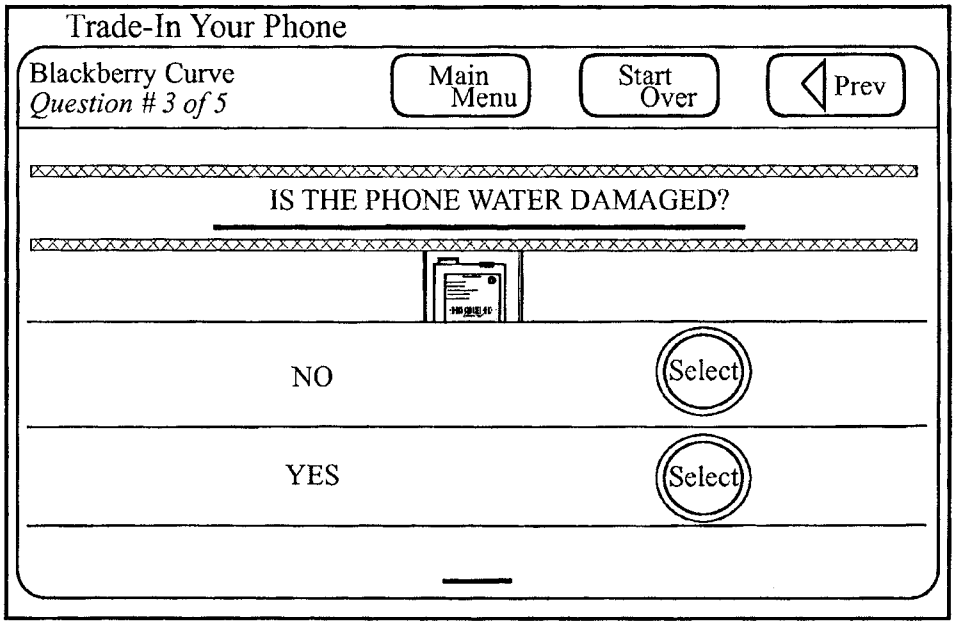


FIGURE 5I

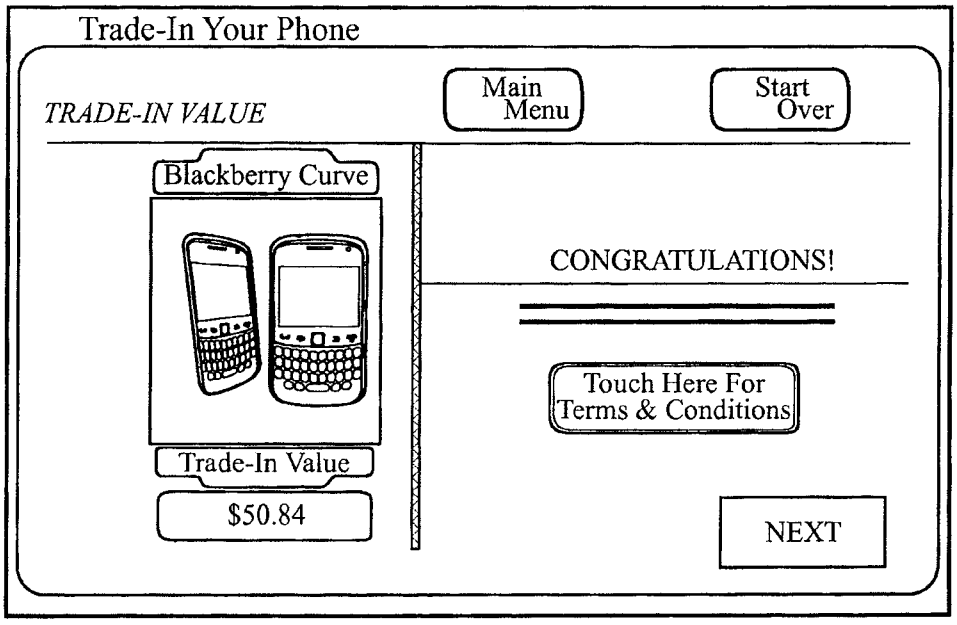


FIGURE 5J

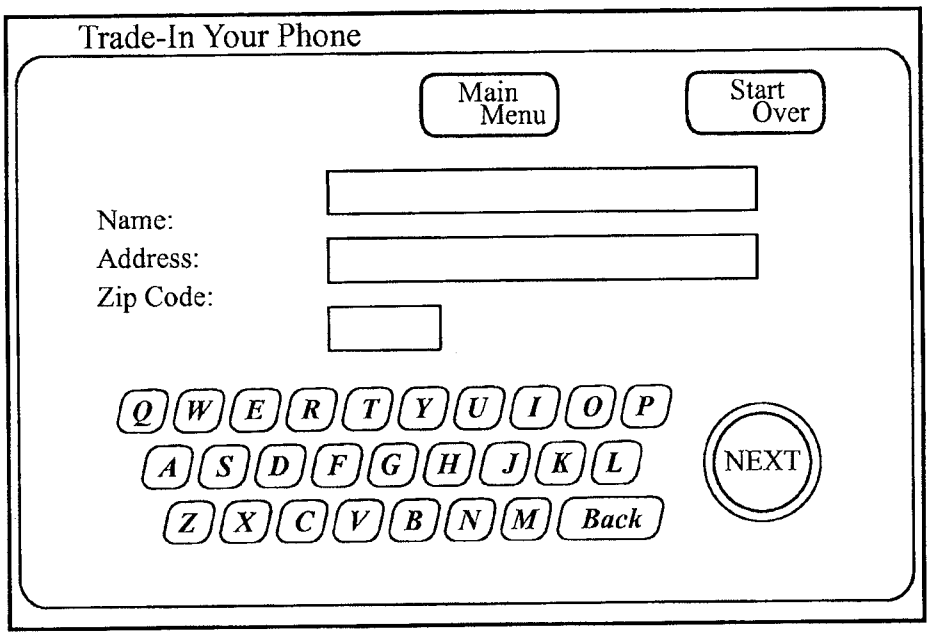


FIGURE 5K

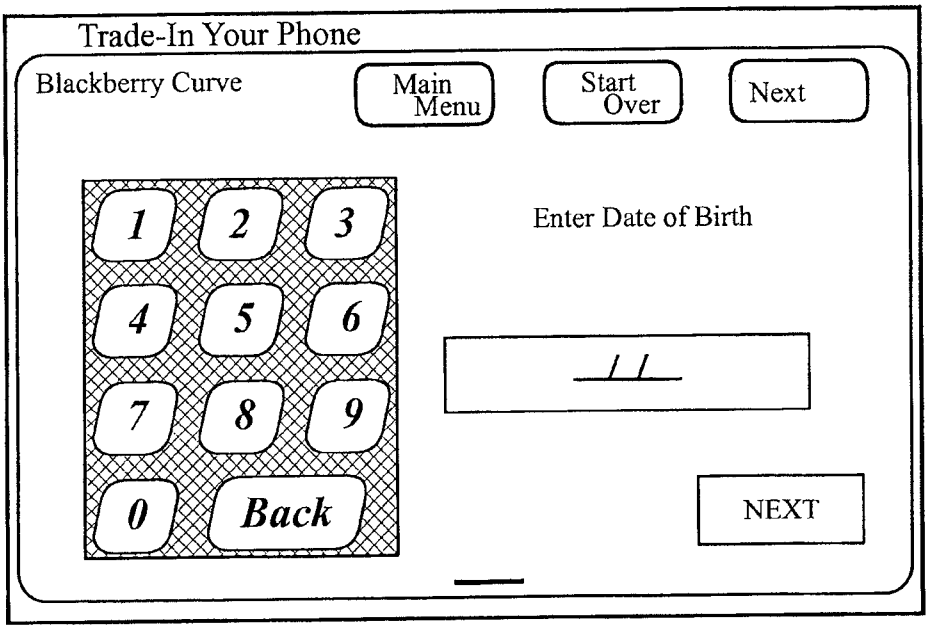


FIGURE 5L

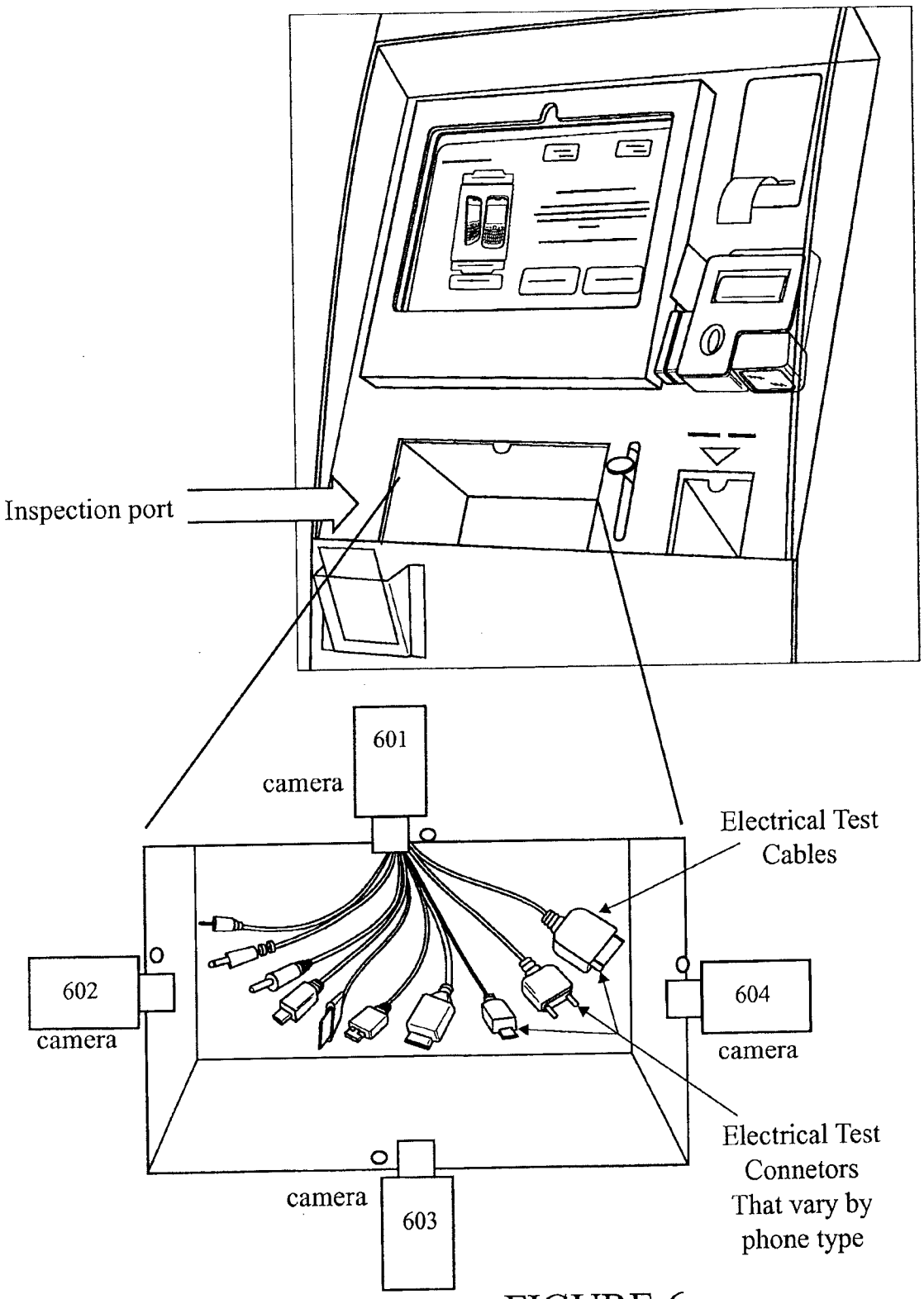

Inspection port
601
camera
Electrical Test
Cables
602
camera
604
camera
camera
603
Electrical Test
Connetors
That vary by
phone type

FIGURE 6

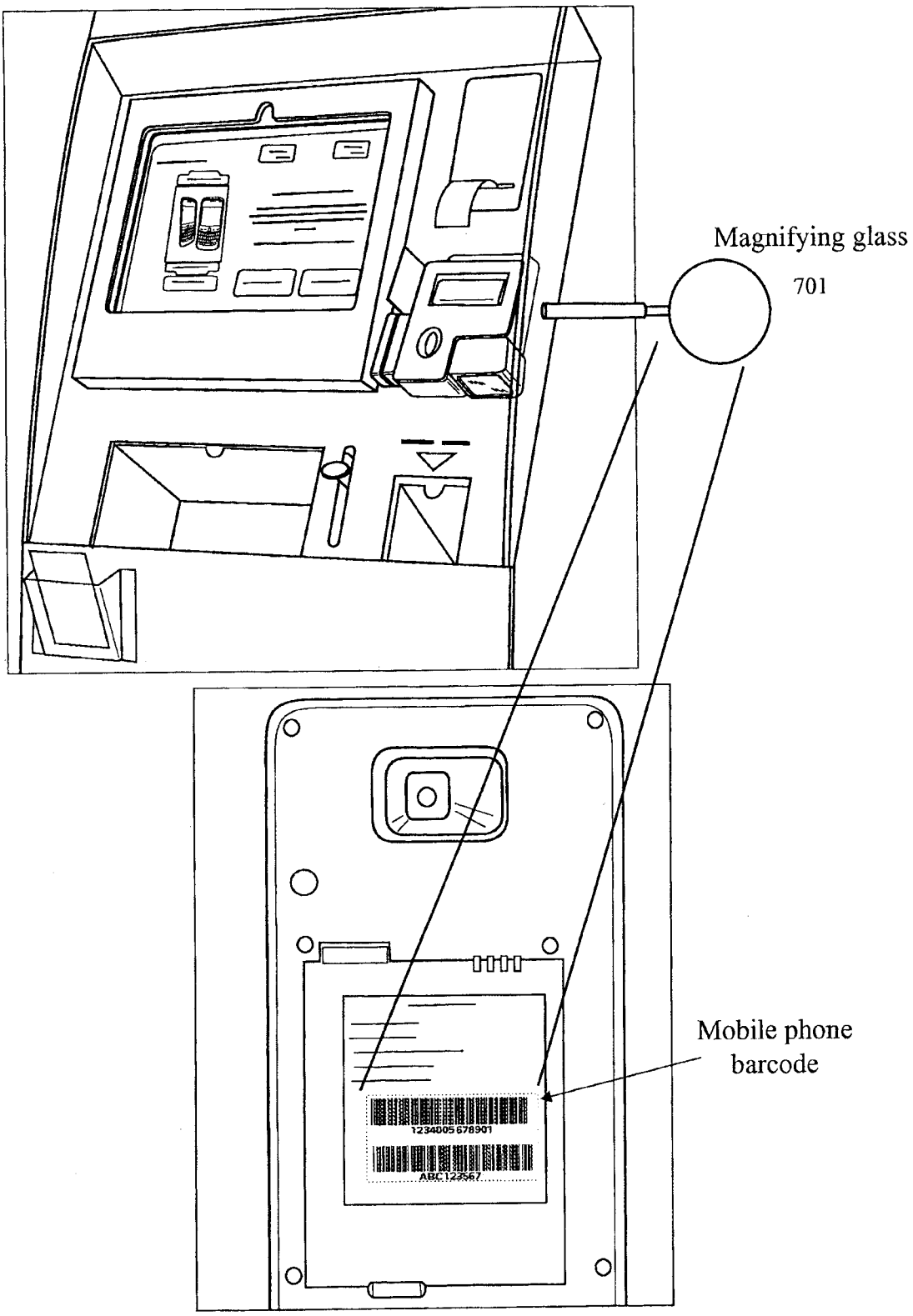
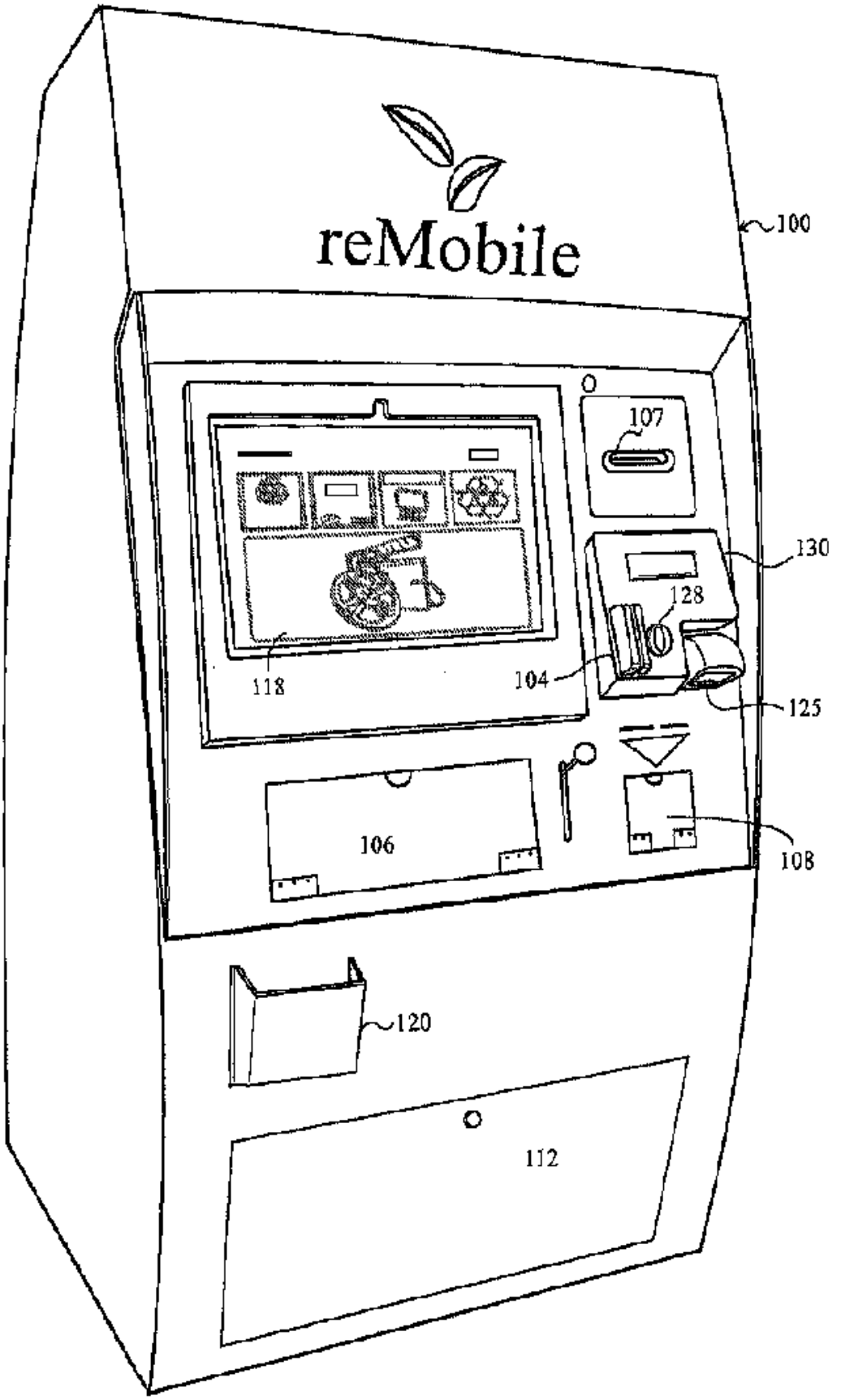

Magnifying glass
701
Mobile phone
barcode
1234005678901
ABC123567

FIGURE 7


reMobile
100
107
130
128
104
125
118
106
108
120
112