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(54) Abstract Title: **Self-service checkout**

(57) A self-service checkout comprises an aperture 36 for receipt of one or more items after a cover 34 is opened, a means, e.g. touch screen monitor 20, for a user to input data, a card reader 22 for accepting payment and a printer issuing a receipt 52. Once an item to be purchased is within the apparatus it is labelled or bagged (e.g. from bag roll generator 70), matching it to the user, and conveyed to a remote storage area for subsequent collection by the user or for delivery to the user.

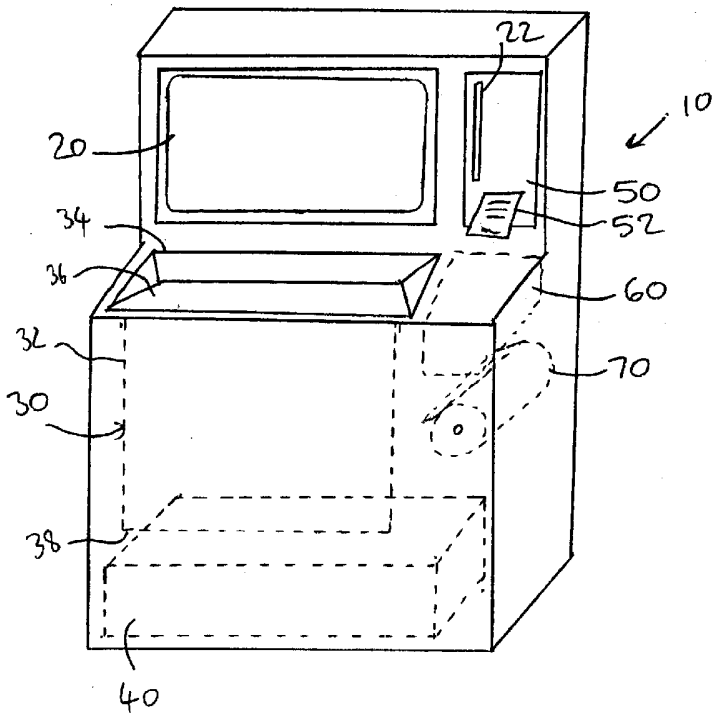

FIG. 1

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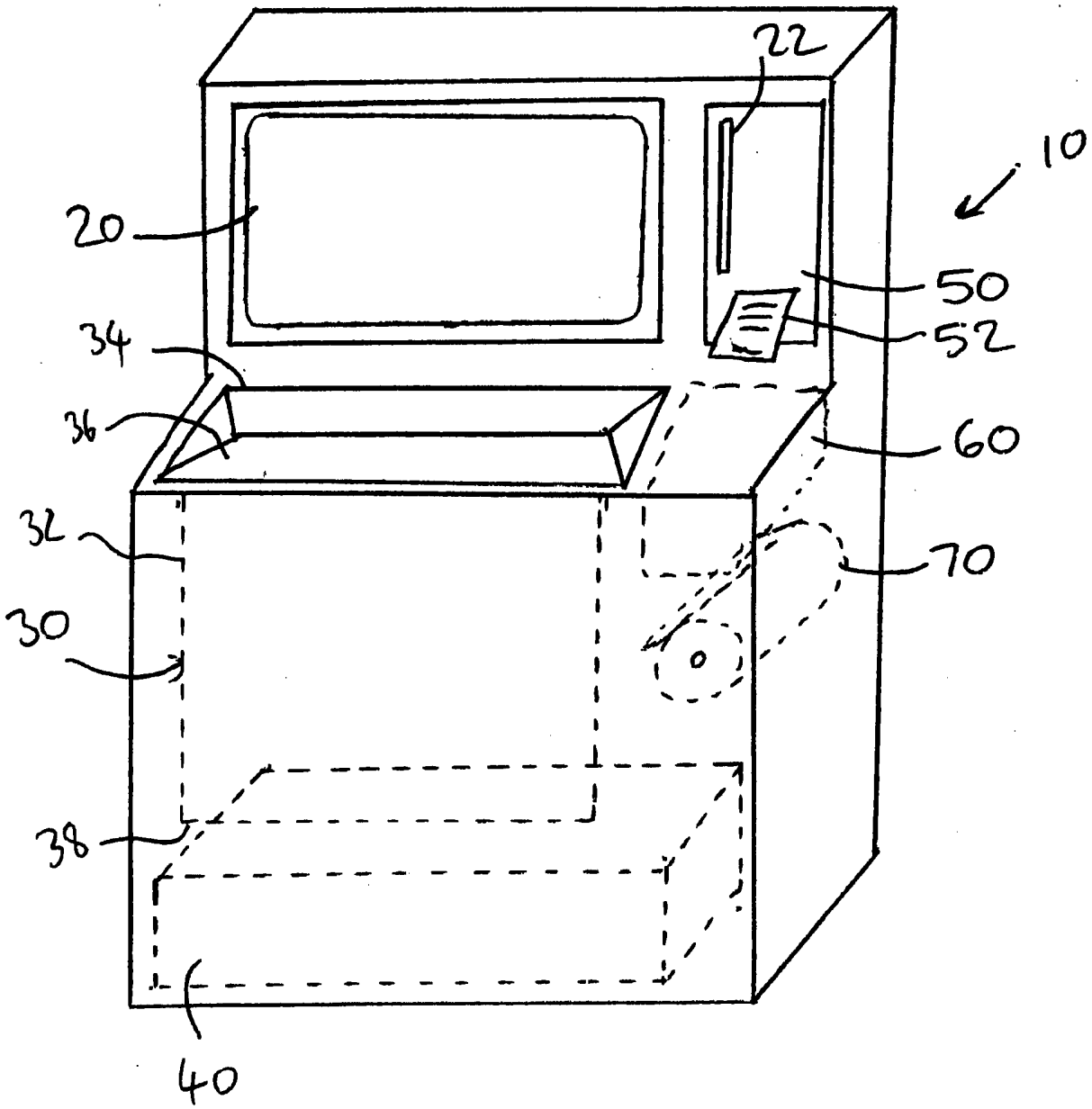

FIG. 1

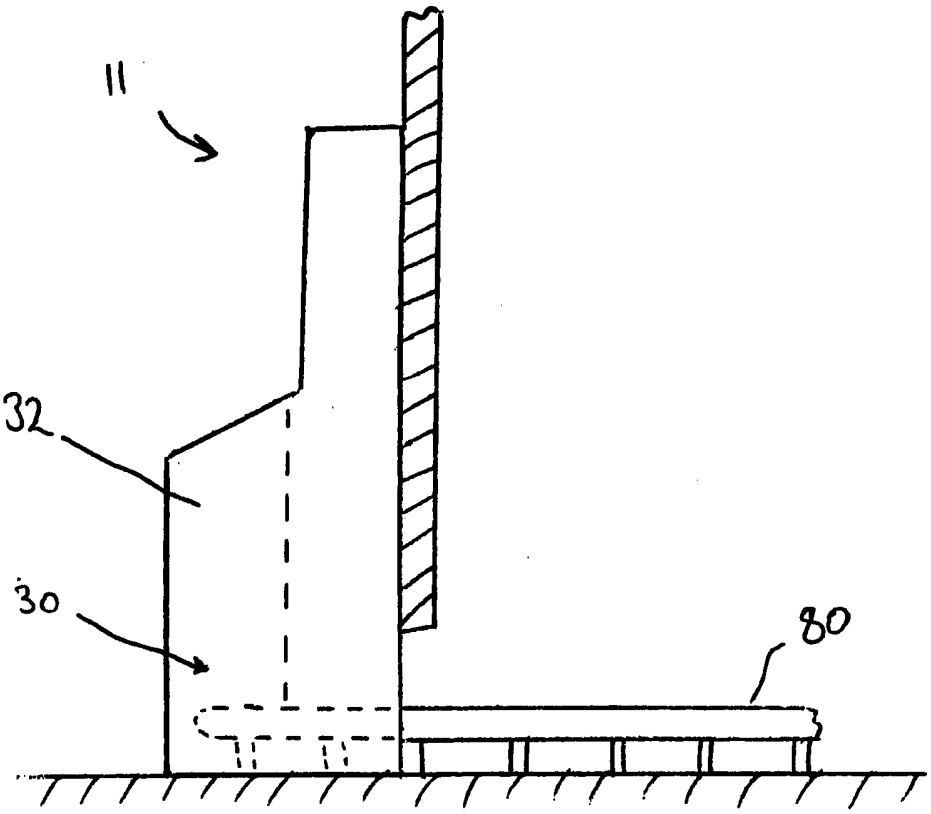

FIG. 2

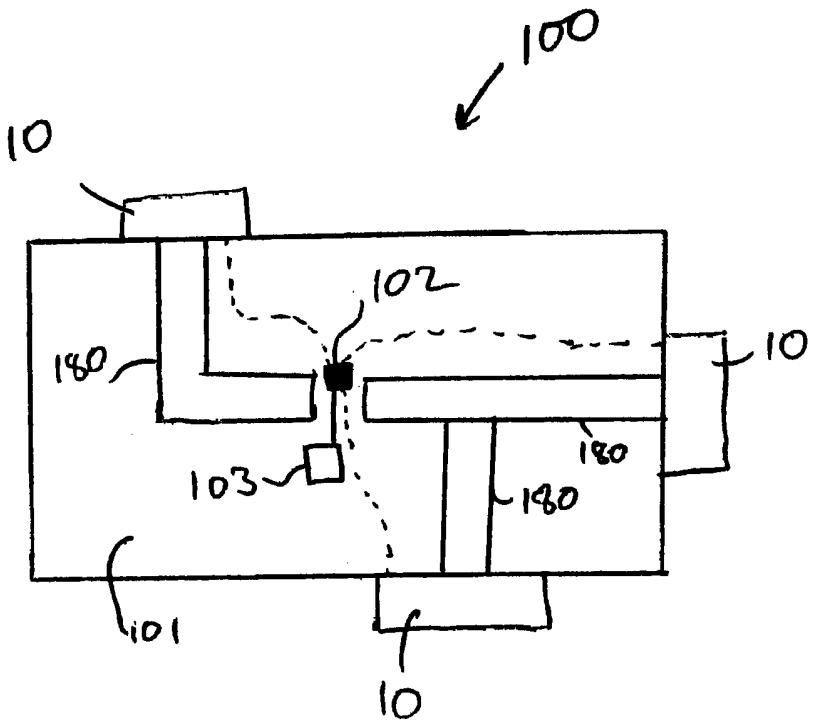

FIG. 3

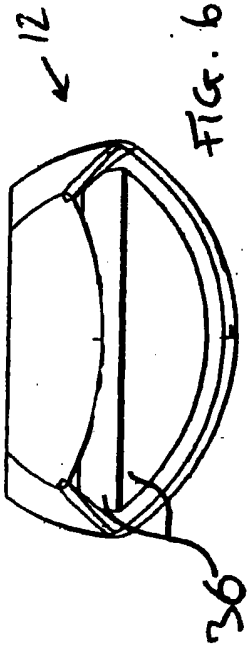

FIG. 6

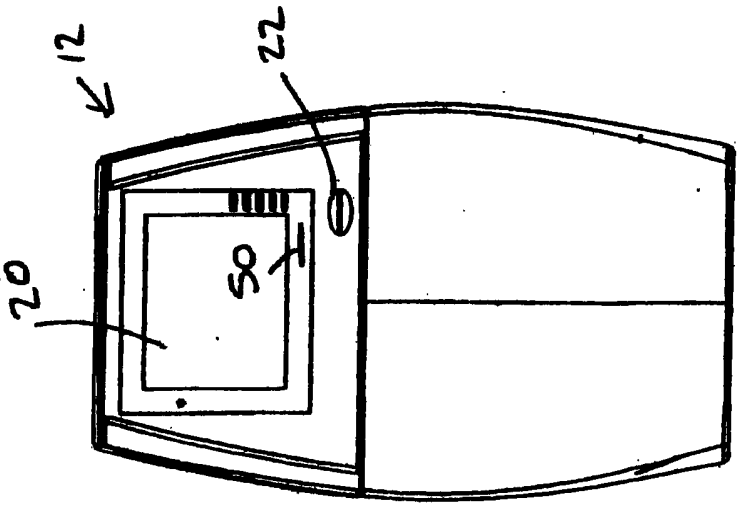

FIG. 4

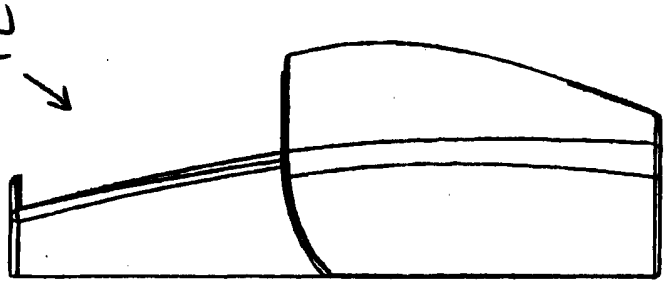

FIG. 5

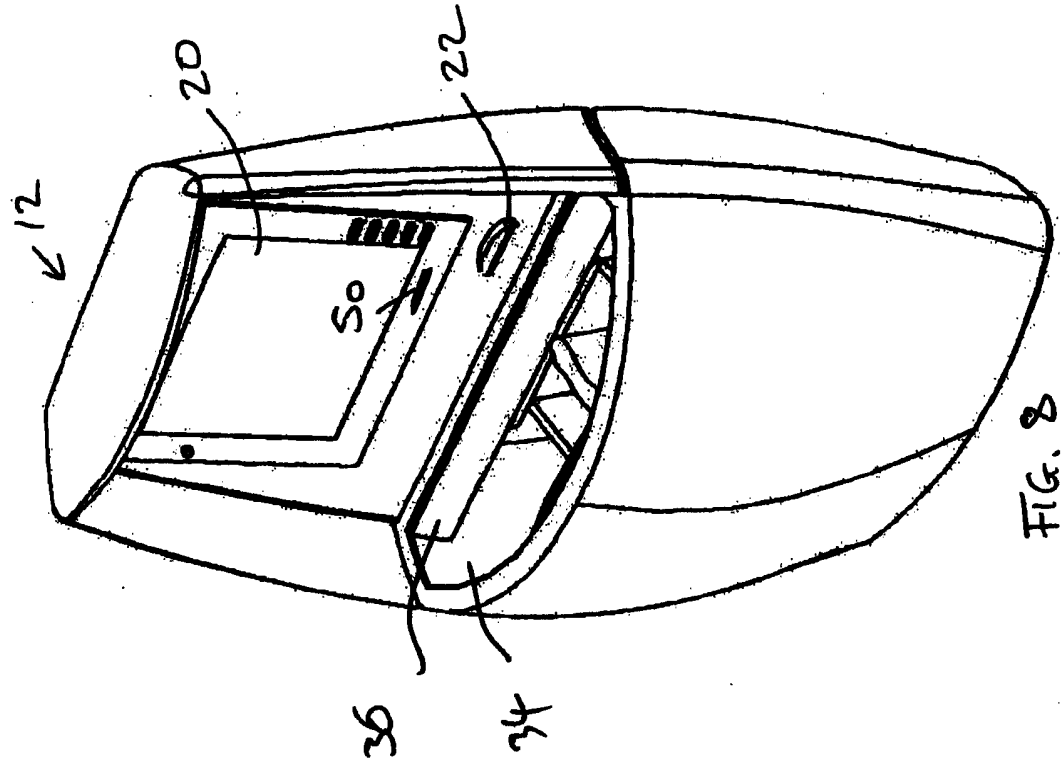

FIG. 8

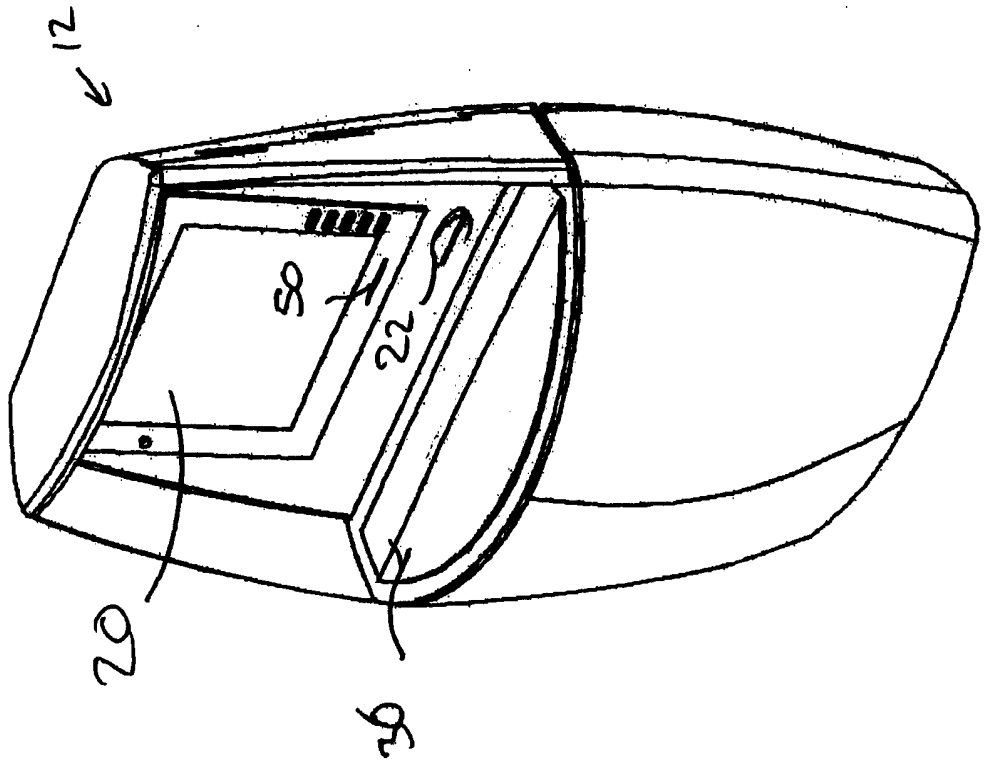

FIG. 7

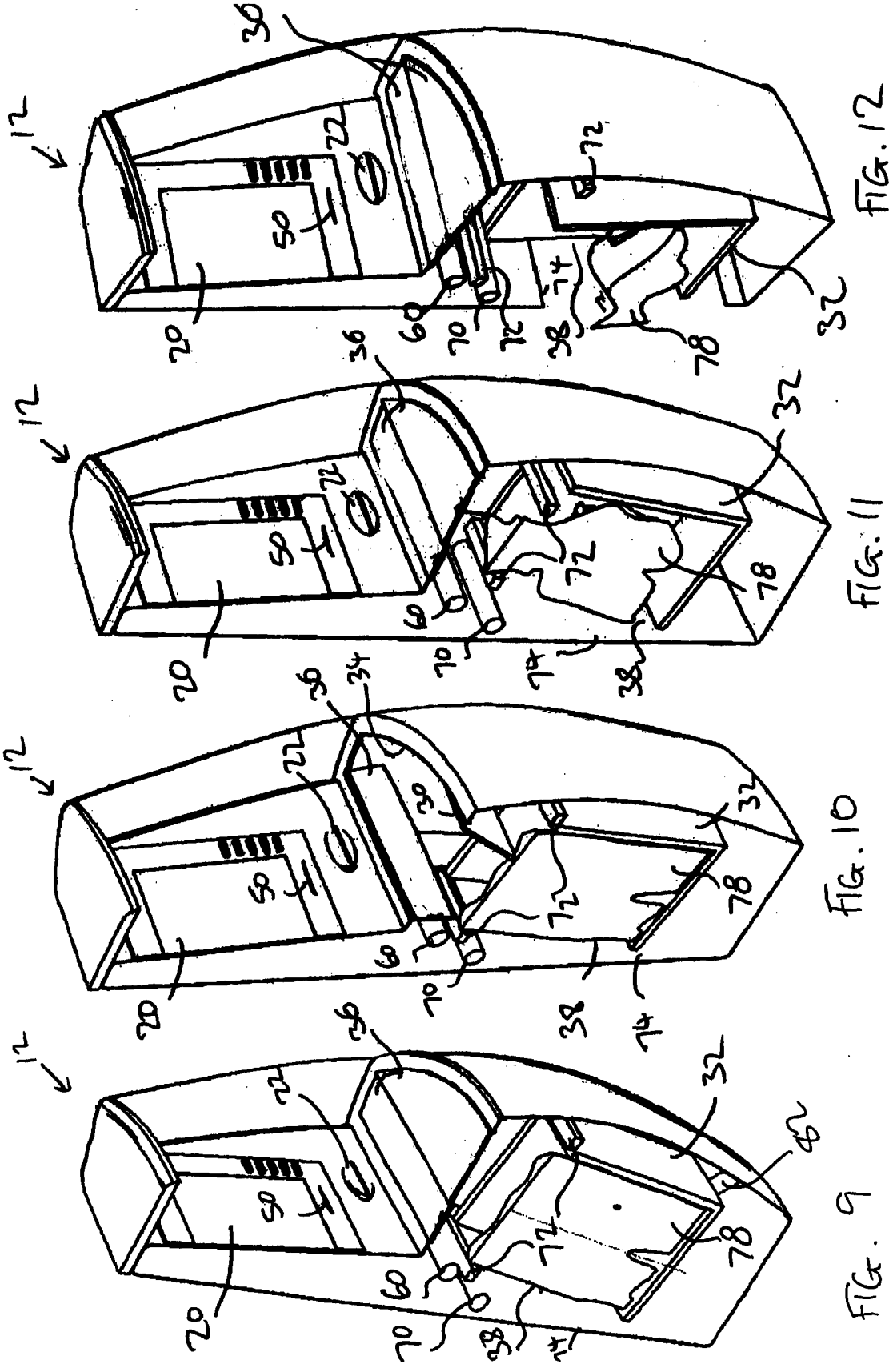

FIG. 9

FIG. 10

FIG. 11

FIG. 12

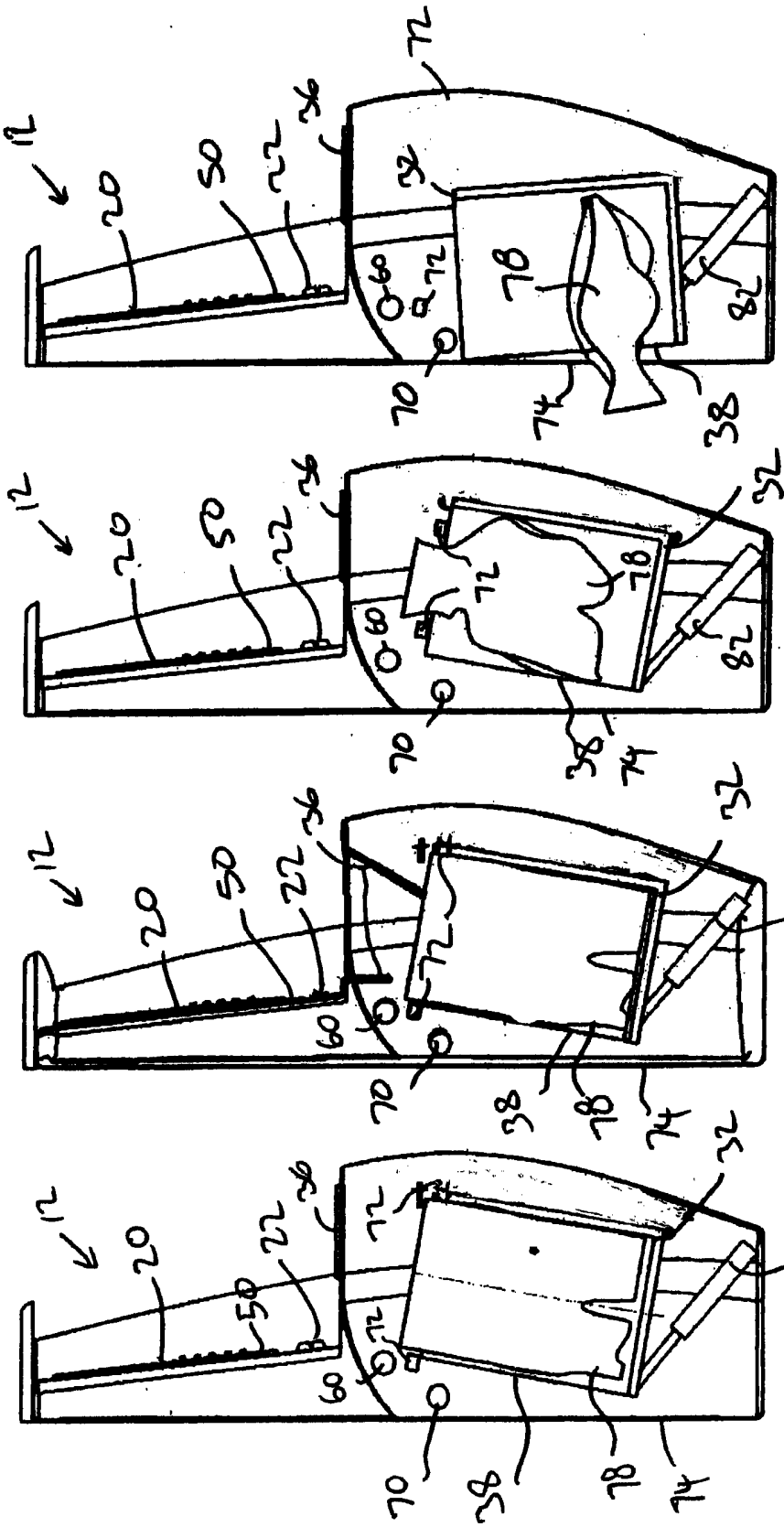

FIG. 16

FIG. 15

FIG. 14

FIG. 13

Improvements in and Relating to Self-Service Checkouts

Field of the Invention

The present invention relates to self-service checkout apparatus, and to self-service checkout systems. In particular, but not exclusively the present invention relates to self-service checkout apparatus and systems for use in a department store or shopping mall.

Background to the Invention

After selecting items within a shop, a customer typically presents the selected items at a checkout to enable the total cost of the items to be calculated and payment to be made. Typically, a checkout assistant performs the task of checking the selected items and taking payment using a checkout apparatus. However, a checkout assistant can normally only check goods of one customer at a time. In some shops the lack of sufficient checkout apparatus and/or checkout assistants can lead to long delays. Delays are inconvenient for customers, and may make customers unwilling to purchase from the shop. Diverting staff from other duties to serve as checkout assistants during busy periods prevents other work taking place.

In addition, staffed checkouts may take up a large amount of floor space. This is particularly the case if enough checkouts are provided to avoid delays at peak times, as outside peak times some checkouts stand idle. Furthermore as staffed checkouts normally contain an amount of cash they may pose a security problem.

It is therefore an aim of preferred embodiments of the present invention to provide a convenient alternative to staffed checkouts.

It is also an aim of preferred embodiments of the invention to overcome or mitigate at least one problem of the prior art, whether expressly disclosed herein or not.

Summary of the Invention

According to a first aspect of the present invention there is provided a self-service checkout apparatus comprising a data input means for enabling a user to input user data, an item collection means for receiving one or more items deposited by a user, a means to enable transportation of one or more items from the apparatus to a remote storage area, in use, and a means to enable matching of an item or items deposited by a user with at least part of the data inputted by the user on the data input means.

Thus a self-service checkout is provided in which a user may deposit his or her item or items, input user data into the apparatus, the item or items being transportable to a storage area remote from the apparatus for subsequent delivery to the user or collection by the user, and in which the item or items deposited by the user is matched to the user by incorporation of user data on the item or items, or labelling of the item or items with user data.

The data input means may comprise means to input personal user data and/or user transaction data. Personal user data may include a user name, address, telephone number, fax number, e-mail address, personal identification

number, password, loyalty or bonus card or scheme details, customer number and user operating key, for example. User transaction data may include payment details such as credit, debit or charge card details, number of items deposited, cost of an item deposited, total cost of all items deposited, approximate total cost of item or items deposited, approximate desired delivery time of items to the user or approximate collection time of items by a user, and the like for example.

Personal and transaction data are not considered to be mutually exclusive, and, for example, payment details such as credit and debit card details may be considered both personal and transaction data, as may names, addresses, contact details, passwords, customer numbers and the like.

The data input means may comprise a keyboard, mouse, keypad or the like for example. Alternatively or additionally the data input means may comprise a means to record a payment card, such as a credit card, debit card, customer identification card, or charge card, for example. The payment and insertion means may comprise a slot or channel into or through which a payment card may be passed.

The data input means is preferably operably connected to a display means. The display means may comprise a display screen or monitor. The display screen may comprise an LCD screen, a TFT screen or any other suitable screen.

In some embodiments the display means may comprise the data input means and thus the display means may comprise a

touch screen data input means, so that in use a user may input data through touching the display means.

By "touch screen" we generally mean a screen which displays visual indicia such as icons, letters, numbers, symbols or mixtures thereof which may be affected to generate data corresponding to the indicia upon pressure by a user's body part, preferably a finger or thumb, on the indicia.

In preferred embodiments the data input means comprises a keyboard and means to read a payment card, or a touch screen and means to read a payment card.

The apparatus may comprise a data storage means. The data storage means may comprise means to store at least part of a user's data inputted into the data input means. The data storage means may comprise any suitable means, such as magnetic, optical, magneto-optical, chemical, electrical, electro-optical, and electro magnetic means for example. The data storage means may comprise a computer hard drive or hard disk.

Suitably the data storage means enables a user or the apparatus to retrieve data primarily inputted to the data input means, upon subsequent use or uses of the apparatus. Thus, for example a user may input his or her name, address, payment details and the like, along with a user identification indicia on a first use of the apparatus, and on subsequent uses of the apparatus, input of the user identification indicia, enables the apparatus to retrieve the other user details inputted during the first use.

The apparatus may comprise means to generate a user identification indicia upon first use of the apparatus by a user. The user identification indicia may comprise a username, user password, user personal identification number, or any mixture thereof, for example.

The apparatus may comprise a means to generate a transaction receipt for a user. The transaction receipt generation means may comprise a printer or the like. The printer may be any suitable printer such as a laser printer, bubble-jet printer, electrostatic printer and the like, for example.

The transaction receipt generation means may generate a receipt which indicates part or all of the data inputted by a user.

The item collection means may comprise an item collection surface. The item collection surface may comprise a movable surface. The movable surface may comprise a conveyor belt or the like for example.

The item collection means may comprise a receptacle having an opening therein for depositing an item or items into the receptacle. The receptacle may comprise a cover over the opening, movable between a first position in which the opening is covered by the cover to prevent items being deposited in the receptacle, and a second position in which the opening is not covered, and items can be deposited. The cover may be movable manually between the first and second positions by a user. Alternatively the cover may be effected to move to the first, open position upon input of user data on the data input means. The

cover may be locked in the second closed position until input of user data on the data input means, at which time the cover may unlock to enable manual movement of the cover.

The receptacle may comprise an item support surface on which items deposited are supported. The item support surface may be fixedly connect to, or integral with, the receptacle.

The receptacle may comprise an exit opening through which items deposited may be removed from the receptacle. The exit opening is preferably operably connected to the means to transport an item or items from the apparatus to a remote storage area.

The receptacle may comprise a separate, movable item support surface, preferably in the form of a conveyor belt. The item support conveyor belt may be arranged to enable movement of items in the receptacle towards and preferably through the exit opening of the receptacle.

The means to enable transportation of an item or items to a remote storage area may comprise a movable member arranged to receive goods from the item collection means and move them to a remote storage area.

The movable member preferably comprises a conveyor belt. The conveyor belt may comprise the item collection conveyor belt of the item collection means, if present.

The movable member may comprise a member mounted on locomotion means, such as wheels, castors or the like, for example.

The transportation means may comprise means to eject items on the item collection means out of apparatus, such as pushing means, pivoting of the item collection means or the like, for example.

The item collection means is preferably operably cooperable with the transport means to enable transportation of the item or items on the item collection means to a remote storage area. The transport means may transport the item collection means *per se*, or may be arranged to receive an item or items from the item collection means and transport the item or items to the remote storage area. The item collection means may comprise means to enable movement of an item or items from the item collection means to the transport means, which may comprise a member capable of pushing, pulling, lifting or urging an item or items onto the transport means, or alternatively or additionally may comprise a movable item collection support surface, such as a conveyor belt, for example.

In some embodiments of the invention the item collection means comprises an item collection conveyor belt or other movable member which also serves as a means to transport an item or items to a remote storage area.

There may be more than one means to transport an item or items to a remote storage area, for example, a plurality of conveyor belts in operable communication.

The conveyor belt may comprise a fixedly connected item collection means in the form of a fixed item collection surface or receptacle which may be transported to a remote storage area upon movement of the conveyor belt.

The means to enable matching of an item or items with at least part of the data inputted by a user may comprise means to label the item or items with the data.

The means to label the item or items may comprise a means to connect a label bearing the data on the item or items. The label may comprise a label printed or stamped with indicia corresponding to the data. The label may for example comprise an adhesive label which may be adhered to the item or items. The label may comprise paper, card, plastics or any suitable material. The label may comprise indicia corresponding directly to the data or may comprise indicia comprising coded data which may be decoded by any suitable means. For example the indicia may be in the form of a barcode which may be subsequently scanned and decoded by a suitable barcode scanner.

The label may be connected to the item or items by any suitable manner such as by adhesion, as described above, by connecting with any suitably means, such as a tie, clip, or the like for example, or by inserting the label into the item or items. For example the label may simply be a sheet of paper, card or plastics which can be inserted in an item, such as a shopping bag, for later viewing by an operator in the remote storage area, or the label may be adhered to the item, which is particularly

suitable for boxed or packaged items, or items having large surface areas.

The labelling means may be mounted on the item collection means or on the means to transport the item or items to a remote storage area. When the means to transport the item or items to a remote storage area comprises a conveyor belt or other movable means, the labelling means may be located in any suitable position adjacent to the transport means, including at the distal end thereof.

Alternatively the labelling means may be a separate means, movable remote from the apparatus. Thus the labelling means may be locatable in any desired position remote from the apparatus, such as to a remote storage area to which items deposited in the apparatus are to be transported, in use. The use of a separate labelling means enables a storage area operator to label items transported to the storage area manually, or the separate labelling means may be arranged to automatically label items deposited in the storage area when they arrive.

The self-service checkout apparatus may comprise a scanning means for scanning data tags on an item or items deposited in the item collection means. The scanning means may be located on the item collection means.

The scanning means preferably comprises a barcode scanning apparatus, capable of scanning and storing barcode data located on an item or items. The barcode scanning apparatus may comprise a 2D barcode scanning apparatus, able to scan items oriented in any orientation, and preferably able to scan a plurality of items in a single

scan regardless of their orientation. The barcode scanning apparatus may be operably connected to the means to match an item or items to at least part of the data inputted by a user on the data input means. Thus, the barcode scanning apparatus may be arranged to transmit data to the means to match an item or items to at least part of the data inputted by a user. For example if the matching means comprise a labelling means the barcode scanning apparatus may transmit data or identity of each item, price of each item, number of each item and the like which may be collated or calculated, and incorporated into a label.

The scanning means may comprise a means to read radio frequency identification tags (RFID's), such as an RFID interrogator or reader, as are well known in the art.

The scanning means may comprise any combination of means arranged to scan RFID's, barcodes and 2D barcodes. This is especially useful when there is a mixture of items to be scanned which have a variety of item identifiers such as RFID's, barcodes, etc.

Preferably the apparatus further comprises a transaction processor, operably connected to the data input means and preferably the scanning means.

The transaction processor may be arranged to receive data inputted from the data input means and generate a user bill or apply the inputted data to a user account for later billing to the user.

Preferably the apparatus comprises a scanning means and the transaction processor is arrange to collate data from the data input means and scanner means and generate a user bill or apply the data to a user account for later billing to the user.

The transaction processor may be coupled to the item matching means. Thus the item matching means may utilise data from the transaction processor in matching items to data inputted by a user on the data input means. For example if the item matching means comprises a labelling means, the transaction processor may generate a user bill based on data received from the data input means and scanning means and transmit the user bill to the labelling means, which may match the label the item or items deposited by a user with the user bill.

According to a second aspect of the invention there is provided a self-service checkout system comprising a plurality of self-service checkout apparatus of the first aspect of the invention operably connected to a transaction processor, the transaction processor being in operable connection with the data input means of each checkout apparatus.

Preferably the transaction processor is also operably connected to the means to match an item or items to at least part of the data inputted by a user on the data input means.

Preferably each checkout apparatus comprises a scanning means and the transaction processor is operably connected to each scanning means.

Preferably each checkout apparatus in the system is operably connected to a shared remote storage area.

Thus a user may operate a plurality of checkout apparatus and deposit different items in each, wherein the transaction processor of the system will receive data indicating that different checkout apparatus have received items deposited by the same user, and generate a single user bill to be added to the user's account, debited from their account or payment card or the like, for example. The transaction processor may be operably connected to a delivery processor to enable warehouse and/or delivery staff to collate a plurality of items deposited on a plurality of checkout apparatus by a single user, and deliver and store all of the items together. Suitably the delivery processor is located in a remote storage area to which all of the checkout apparatus are connected.

Preferably the checkout apparatus is/are located in a retail establishment, such as a shop, department store or shopping mall. The checkout system is preferably located such that a plurality of checkout apparatus are located in a plurality of shops or departments, such as in a shopping mall or department store.

Brief Introduction to the Drawings

For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 shows a perspective view of self-service checkout apparatus according to a first preferred embodiment of the invention;

Figure 2 shows a side view of a self-service checkout apparatus according to a second preferred embodiment of the invention;

Figure 3 shows a schematic plan view of a self-service checkout system according a third preferred embodiment of the invention;

Figures 4, 5 and 6 show front, side and plan views of a fourth preferred embodiment of the invention;

Figures 7 shows a perspective view of the embodiment of Figures 4-6 before use;

Figure 8 shows a perspective view of the embodiment of Figures 4-6 in operation;

Figures 9-12 show cut away perspective views of the embodiment of Figures 4-6 before and at progressing stages of use; and

Figures 13-16 show cut away side views of the embodiment of Figures 4-6 before and at progressing stages of use corresponding to the stages of Figures 9-12.

Description of Preferred Embodiments

Figure 1 shows a self-service checkout apparatus 10. The apparatus comprises a data input means in the form of a touch screen monitor 20 and a card reader 22, an item collection means 30, a removal box 40 to enable goods deposited in the collection means to be transported to a remote storage area, a first receipt printer 50 and a second receipt printer 60. Also shown in Figure 1 is a bag roll generator 70.

To use the self-service checkout apparatus 10 a user first provides input data via the touch screen monitor 20 and/or the card reader 22.

In preferred embodiments the touch screen monitor 20 will display a message such as "please touch screen to start". By touching the screen the self-service checkout apparatus 10 is activated and is arranged to display a suitable welcome message on the touch screen monitor 20, e.g. "Welcome to the Self-service Checkout. Please present a card payment type for your shopping"

The self-service checkout apparatus 10 will then display on the touch screen monitor 20 the card types a retailer operating the self-service checkout apparatus 10 has chosen to accept for payment. The self-service checkout apparatus 10 will also show graphically on the touch screen monitor 20 how the card is to be presented to the card reader 22.

Once a card has been presented to the card reader 22, the self-service checkout apparatus 10 is arranged to verify that the cards of the type presented are accepted by the retailer. Once this is confirmed the self-service

checkout apparatus 10 will move onto the next stage of user data entry.

If the card is not of an accepted type, the card will be rejected. The touch screen monitor will display the message "The card type you presented is not accepted at this retailer. Please present an alternative card for payment", or similar. The process will not move forward until an acceptable card has been read.

The self-service checkout apparatus 10 can then move onto user data entry. The data provided by the user comprises personal user data and user transaction data. The personal user data may include a user name, address, telephone number, fax number, e-mail address, personal identification number, password, loyalty or bonus card or scheme details, customer number and user operating key, for example. The personal user data may be any suitable data to identify the user, and may conveniently be entered into the self-service checkout 10 through the touch screen monitor 20 or the card reader 22. The touch screen monitor 22 comprises display means providing a user visual feedback of the data entered.

The user transaction data includes payment details from a credit, debit or charge card read by the card reader 22. The user can additionally enter other transaction data, such as the number of items deposited, cost of an item deposited, total cost of all items deposited, approximate total cost of item or items deposited, approximate desired delivery time of items to the user or approximate collection time of items by a user. Data relating to the items deposited may conveniently be read from the items

using a barcode scanner (not shown) provided on the self-service checkout apparatus.

At the start of the day it is envisaged that a number of collection slots will be available for users to select from, as predetermined by the retailer. As the slots are selected by the customers using the self-service checkout apparatus 10, the retailer can allocate its labour resources to complete the transactions in a time scale to meet user expectations. The retailer may also have the option of adding more resources and making available more collection slots dependent on the level of use.

In the event there are no collection times available then the user is informed by the self-service checkout apparatus 10 using the monitor 20. The customer can elect to have the goods delivered or to terminate the transaction and proceed to a regular checkout to pay for the goods.

The self-service checkout 10 comprises a data storage means in the form of a hard disk to store at least part of a user's data inputted into the data input means. Storing user identification indicia on a first use of the apparatus by a user enables subsequent retrieval of any other user details inputted during the first use. For example, a user may be required to generate a password on first use of the apparatus, with that password linked to all other user details entered at the first use.

The first receipt generator 50 is arranged to generate a transaction receipt 52 for a user and comprises a printer.

The transaction processor is arranged to receive data inputted from the data input means 20,22 and generate a user bill or apply the inputted data to a user account for later billing to the user.

Alternatively, the items from the collection means 30 can be transported to a remote storage area and processed manually to correctly identify all the items deposited by the user. This data can be passed to the transaction processor to generate a user bill. A postal or courier delivery, or user pickup can then be arranged either by a warehouse worker, or automatically based on the input user data.

If a user has elected to collect their shopping, they return to the shop and present their receipt to a shop worker. The shop worker can then locate the shopping that has been processed. It is not necessary for the customer to have to go back to the normal checkout queue in order to retrieve their shopping. In larger shops the retailer may have a dedicated collection point. If desired the customer can go to the self-service checkout apparatus 10 and determine the status of their shopping. Using the barcode reader of the self-service checkout apparatus, the customers' receipt can be scanned, and/or other user data can be input as previously described. Details of their shopping can then be shown on the touch screen monitor 20. If the transaction has been processed the value of the transaction can be shown, and if the transaction is to be collected then the status can be shown as "Available for collection". Alternatively, if the transaction is to be delivered then the status can be shown as "Ready for Delivery".

Once the user has entered the personal user data and the user transaction data the first receipt generator provides a receipt which indicates some or all of the data inputted by the user.

Once the user has completed the input data and the user's transaction is completed the item collection means 30 opens to allow the user to deposit items to be bought. The item collection means 30 comprises a bag provided from the bag generator 70 and a receptacle 32 having an opening 34 therein. The receptacle 32 comprises a cover 36 over the opening 34, movable between a first position in which the opening 34 is covered by the cover 36 to prevent items being deposited in the receptacle 32, and a second position in which the opening 34 is not covered, and items can be deposited. The cover 36 is locked in the first, closed position until input of user data on the data input means 20,22, at which time the cover 36 is automatically actuated to move to the second, open position.

A predetermined time after opening the cover 36 is arranged to close. However, other triggers such as a sensor within the receptacle 32 or the removal of the transaction receipt 52 may cause the cover 36 to be closed. In an alternative embodiment the cover 36 is manually operable to open and close when user data is input, and is locked closed until user data is input and after items have been deposited by a user.

The receptacle 32 comprises an exit opening 38 through which the bag provided from the bag roll generator 70 and containing the items deposited may be removed from the receptacle 32. The exit opening is operably connected to

the means to transport an item or items from the apparatus to a remote storage area.

In the Figure 1 the means to transport an item or items to a remote storage area is the removal box 40, which can be removed from the back of the apparatus 10 by a shop worker. The apparatus 10 is intended to be arranged with its back built into a wall or similar partition, allowing users easy access to the front of the apparatus 10 and allowing warehouse workers easy access to the removal box 40.

The second receipt printer 60 is arranged to print a receipt for each bag removed from the apparatus 10 to enable matching of the bag with at least part of the data inputted by a user. In particularly preferred embodiments the second receipt printer 60 produces means to label the bag containing the item or items with the data with an adhesive sticker including a barcode which may be subsequently scanned and decoded by a suitable barcode scanner.

The apparatus 10 may comprise a scanning means (not shown) for scanning data tags on an item or items deposited on the item collection means 30, for example bar code scanning means and especially a 3D barcode scanning means which enables scanning of a plurality of items deposited in the apparatus 10 in a single scan. If this is the case the apparatus may further comprise a transaction processor (not shown), operably connected to the data input means 20,22 and the scanning means.

A user may decide to collect goods that were previously to have been delivered. In this instance the customer can ask for the change by amending the options shown on the self-service checkout apparatus 10.

The actions of the retailer in processing transactions carried out on the self-service checkout apparatus 10 will now be described in more detail.

To process a transaction the retailer first retrieves the bag containing the goods. On the outside of the bag is a label or other identification from the second receipt generator. Alternatively the bags provided from the bag roll generator 70 may comprise a sequential reference which is linked to the transaction by the self-service checkout apparatus 10, with the receipt from the second receipt printer 60 included in the bag.

The first check is to ensure that the transactions are processed in the correct order according to a schedule. At any point in time when the retailer wishes to process transactions, the self-service checkout is arranged to produce a list of bag reference numbers and the associated referenced receipt, in the order in which they are to be processed.

The retailer is able to locate bags by reference to the sequential bag reference number on the outside of the bags or by reference to the label from the second receipt generator.

In order for the self-service checkout apparatus 10 to process self-service checkout transactions on the

retailer's Epos (Electronic point of sale) systems, the two systems can ideally communicate with respect to product, price look up, stock and transaction/payment files. However, in this regard the self-service checkout does not necessarily need to have Epos capability so long as it operably coupled to an Epos system.

One preferred set up is as follows:

The retailer's Epos system would have a separate system/menu to process transactions originating on the self-service checkout apparatus 10. At the start of processing each transaction the bag reference would by keyed or scanned. The system would instruct opening of a bag/location and scanning the copy user receipt to match the user to their shopping. Once the bag reference and receipt are matched the transaction can be processed as normal. The items purchased are then scanned and totalled by the retailer's staff, and the transaction is moved onto the payment tender.

During this process the Epos communicates with the self-service checkout apparatus and obtains the payment card details and the authorisation obtained with it. If the authorised amount is less that the transaction value then the Epos system would complete the transaction and a final value is presented for payment to the retailer's bank.

If the card authorisation does not cover the value of the transaction then the payment is not processed. The details are fed back to the self-service checkout apparatus 10 and the self-service checkout apparatus 10 contacts the card payment centre to obtain an

authorisation for the exact amount of the transaction value.

It is possible for some transaction processing to be completed during trading hours when the self-service checkout apparatus may be being used. This will involve online access for card authorisation, which will suitably take priority over any secondary authorisations requested by the Epos system. In this instance the transaction requiring the secondary authorisation will be pending, and will be held. The Epos system can them move onto the next transaction.

Once the payment of a transaction is complete the retailer's staff can move onto removing security tags from the goods, packaging etc. and placing the goods into a suitable container for delivery or collection.

It is likely that a chosen courier who will make the deliveries will want the retailer to use specific packing materials and labelling to track the items in transit. The choice of packing materials and labelling will be driven by software that will manage the user and courier data, with the self-service checkout apparatus and Epos system linked to a delivery processor system that will store delivery information and manage barcode labelling to help track the packages. In a preferred embodiment the external system would be an on-line link into couriers' business depots, so that the couriers can determine the volume of transactions/packages they are likely to be required to pick up from the retailer on any given day.

Once transactions are processed by the retailer in the retailer's warehouse or storage area, the shopping can be separated into delivery items and collection items.

Figure 2 shows a side view of a self-service checkout apparatus 11 according to a second preferred embodiment of the invention. The apparatus 11 is similar to the first embodiment shown in Figure 1; however, the receptacle 32 comprises an item support surface on which items deposited are supported. The item support surface is in the form of a conveyor belt 80 arranged to enable movement of items in the receptacle towards and preferably through the exit opening of the receptacle 32.

The apparatus 11 further comprises means to transport an item or items to a remote storage area, the means to transport an item including a movable member arranged to receive goods from the item collection means and move them to a remote storage area. In the embodiment shown in Figure 2 the movable member comprises the item collection conveyor belt 80 of the item collection means 30.

The item collection means 30 is coupled with the transport means to enable transport of the item or items on the item collection means to a remote storage area.

The conveyor belt 80 can be coupled to further means to transport an item or items to a remote storage area, for example, a plurality of conveyor belts in operable communication.

One or more self-service checkout apparatus 10 may be operably connected to a single transaction processor, the

transaction processor being in operable connection with the data input means of each checkout apparatus to provide a self-service checkout system. Figure 3 shows a schematic plan view of a self-service checkout system 100 according a third preferred embodiment of the invention.

In the system 100 of Figure 3 each checkout apparatus 10 is operably connected to a shared remote storage area 101. This allows a user to operate a plurality of checkout apparatus 10 situated at different locations and deposit different items in each, wherein a transaction processor 102 of the system will receive data indicating that different checkout apparatus 10 have received items deposited by the same user, and generate a single user bill to be added to the user's account, debited from their account or payment card or the like, for example.

Items deposited in any apparatus 10 of the system 100 are transported from the item collection means by an item collection conveyor belt 180 which serves as a means to transport an item or items to within the remote storage area 101. The item collection conveyor belt 180 comprises a plurality of conveyor belts in operable communication.

The transaction processor 102 is operably connected to a delivery processor 103 to enable warehouse and/or delivery staff to collate a plurality of items deposited on a plurality of checkout apparatus 10 by a single user, and deliver or store all of the items together. For convenience the delivery processor 103 is be located in the remote storage area 101 to which all of the checkout apparatus 10 are connected.

Figures 4-16 show a self-service checkout apparatus 12 according to a fourth preferred embodiment of the invention. The apparatus 12 is similar to that shown in Figure 1, with like elements identified by like reference numerals where appropriate. However, the item collection means of the apparatus 12 comprises a number of variations over that of the first embodiment.

In particular, the removal box 40 is not present, and the arrangement of the receptacle 32 is different. As shown in Figures 9-16 the receptacle 32 comprises a rectangular shape defined by a box having an open top and back. The open back comprises an exit opening 38. The receptacle 32 is pivotally mounted within the apparatus 12, and its rotational position is controlled by an actuator 82, preferably a hydraulic or pneumatic piston.

Before use a bag 78 is provided from the bag roll generator 70 and held open at the top of the receptacle 32. Once goods have been deposited in the bag 78 through the opening 34 a receipt is produced by the second receipt printer 60 and also deposited in the bag 78. The bag is then sealed, preferably heat sealed, by sealing members 72. Sliding doors 74 (which forms part of the means to enable transportation to a remote area, with the pivotal receptacle 32) at the back of the apparatus 12 open, and the sealed bag 78 containing the receipt from the second receipt printer 60 and the goods is then moved from the apparatus 12 by pivoting the receptacle 32 under motive force from the actuator 82. Following this procedure the sliding doors 74 close to prevent pilferage from the apparatus 12 by warehouse workers during deposit of goods by a shopper, and a fresh bag is provided from the bag

roll generator 70. The apparatus 12 may include further means to enable transportation of items in the form of a conveyor or movable member (not shown) connected in the region of the sliding doors 74. In this embodiment it is envisaged that the bags provided from the bag roll generator 70 will have sequential numbers and barcodes marked on their exteriors, allowing each bag to be linked to an individual transaction and facilitating subsequent processing of the bag once it has left the apparatus 12.

The checkout apparatus 10,12 is intended to be located in a retail establishment, such as a shop, department store or shopping mall such that a plurality of checkout apparatus 10 are located in a plurality of shops or departments.

Self-service checkout apparatus and systems as described provide a number of advantages, both for shoppers and for shopkeepers. The advantages include ease of use; prevention of delays; reduction in wasted floor space; spreading workload to better match capacity with available staff resources; flexibility of functionality etc. The system can be used along side traditional checkouts, and is particularly suited to use in a shopping mall or department store where multiple items may be purchased during a single visit to the mall or store and subsequent collection/delivery allows shoppers to continue browsing without having to carry around earlier purchases.

When the self-service checkout apparatus is not being used as a transaction processing terminal is can be put to other uses. For example, the apparatus can be used by customers to look up prices of items using a bar code

reader, and/or check the availability and future availability of stock and facilitate a loyalty bonus scheme by making vouchers and latest member offers available. Also, the apparatus can be used to display advertising on the screen.

Attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings) may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiment(s). The invention extends to any novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any

novel one, or any novel combination, of the steps of any method or process so disclosed.

CLAIMS

1. A self-service checkout apparatus comprising a data input means for enabling a user to input user data, an item collection means for receiving one or more items deposited by a user, a means to enable transportation of one or more items from the apparatus to a remote storage area, in use, and a means to enable matching of an item or items deposited by a user with at least part of the data inputted by the user on the data input means.

2. A self-service checkout apparatus as claimed in Claim 1 wherein the data input means comprises means to input personal user data and/or user transaction data.

3. A self-service checkout apparatus as claimed in Claim 2 wherein the personal user data is one or more of a user name, address, telephone number, fax number, e-mail address, personal identification number, password, loyalty or bonus card or scheme details, customer number and user operating key.

4. A self-service checkout apparatus as claimed in Claim 2 or 3 wherein the user transaction data is one of payment details, number of items deposited, cost of an item deposited, total cost of all items deposited, approximate total cost of item or items deposited, approximate desired delivery time of items to the user, and approximate collection time of items by a user.

5. A self-service checkout apparatus as claimed in any preceding claim wherein the data input means comprises a keyboard, mouse, keypad or touch screen.

6. A self-service checkout apparatus as claimed in any preceding claim wherein the data input means comprises a means to record details of credit card, debit card, customer identification card or charge card.

7. A self-service checkout apparatus as claimed in any preceding claim wherein the data input means is operably connected to a display means.

8. A self-service checkout apparatus as claimed in any preceding claim further comprising a data storage means.

9. A self-service checkout apparatus as claimed in any preceding claim further comprising means to generate a user identification indicia on first use of the apparatus by a user.

10. A self-service checkout apparatus as claimed in any preceding claim comprising a means to generate a transaction receipt for a user.

11. A self-service checkout apparatus as claimed in any preceding claim wherein the item collection means comprises an item collection surface.

12. A self-service checkout apparatus as claimed in any preceding claim wherein the item collection means comprises a receptacle having an opening therein for depositing an item or items into the receptacle.

13. A self-service checkout apparatus as claimed in Claim 12 wherein the receptacle comprises a cover over the

opening, moveable between a first position in which the opening is covered by the cover to prevent items being deposited in the receptacle, and a second position in which the opening is not covered, and items can be deposited.

14. A self-service checkout apparatus as claimed in Claim 12 or 13 wherein the receptacle comprises an exit opening through which items deposited may be removed from the receptacle.

15. A self-service checkout apparatus as claimed in any one of Claims 12 to 14 wherein the receptacle comprises a separate, moveable item support surface.

16. A self-service checkout apparatus as claimed in any preceding claim wherein the means to enable transportation of an item or items to a remote storage area comprises a moveable member arranged to receive goods from the item collection means and move them to a remote storage area.

17. A self-service checkout apparatus as claimed in Claim 16 wherein the transportation means comprises means to eject items from the item collection means out of the apparatus.

18. A self-service checkout apparatus as claimed in any preceding claim wherein the item collection means is operably co-operable with the transportation means to enable transportation of an item or items on the item collection means to a remote storage area.

19. A self-service checkout apparatus as claimed in Claim 18 wherein the transportation means transports the item collection means *per se* or is arranged to receive an item or items from the item collection means and transport the item or items to the remote storage area.

20. A self-service checkout apparatus as claimed in Claim 18 or 19 wherein the item collection means comprises means to enable movement of an item or items from the item collection means to the transportation means.

21. A self-service checkout apparatus as claimed in any preceding claim wherein the item collection means comprises an item collection conveyor belt or a moveable member which serves as a means to transport an item or items to a remote storage area.

22. A self-service checkout apparatus as claimed in any preceding claim wherein the means to enable matching of an item or items with at least part of the data inputted by a user comprises means to label the item or items with the data.

23. A self-service checkout apparatus as claimed in Claim 22 wherein the means to label the item or items comprises a means to connect a label bearing the data onto the item or items.

24. A self-service checkout apparatus as claimed in Claim 23 wherein the label comprises a label printed or stamped with indicia corresponding to at least part of the data.

25. A self-service checkout apparatus as claimed in Claim 24 wherein the indicia is in the form of a barcode which can be subsequently scanned and de-coded by a suitable barcode scanner.

26. A self-service checkout apparatus as claimed in any preceding claim further comprising a scanning means for scanning data tags on an item or items deposited in the item collection means.

27. A self-service checkout apparatus as claimed in Claim 26 wherein the scanning means comprises a barcode scanning apparatus, capable of scanning and storing barcode data located on an item or items.

28. A self-service checkout apparatus as claimed in Claim 26 or 27 wherein the scanning means comprises a means to read Radio Frequency Identification Tags (RFID).

29. A self-service checkout apparatus as claimed in any preceding claim further comprising a transaction processor, operably connected to the data input means.

30. A self-service checkout apparatus as claimed in Claim 29 wherein the transaction processor is arranged to receive data inputted from the data input means and generate a user bill and apply the inputted data to a user account for later billing to the user.

31. A self-service checkout apparatus as claimed in Claim 29 or 30 wherein the transaction processor is coupled to the item matching means.

32. A self-service checkout system comprising a plurality of self-service checkout apparatus of any one of Claims 1 to 31, operably connected to a transaction processor, the transaction processor being in operable connection with the data input means of each self-service checkout apparatus.

33. A self-service checkout system as claimed in Claim 32 wherein the transaction processor is further operably connected to the means to match an item or items to at least part of the data inputted by a user on the data input means.

34. A self-service checkout system as claimed in Claim 32 or 33 wherein each checkout apparatus comprises a scanning means and the transaction processor is operably connected to each scanning means.

35. A self-service checkout system as claimed in any one of Claims 32 to 34 wherein each checkout apparatus in the system is operably connected to a shared remote storage area.

36. A self-service checkout apparatus or system as substantially described herein with reference to the accompanying drawings.

INVESTOR IN PEOPLE

Application No: GB0425803.4 **Examiner:** Tom Sutherland

Claims searched: 1 - 35 **Date of search:** 31 March 2005

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1 - 8 at least	WO2003/007256 A (BEHEERMAATCHAPPIJ) Whole document.
X	1 - 35	WO 2003/003322 A (PRODUCTIVITY SOLUTIONS) Whole document relevant.
X	1 - 34	US 6477514 B1 (GIL et al) Whole document relevant.
X	1 - 8, 10 - 12, 14 - 22 at least.	US 5233532 A (RAMSDEN) Whole document relevant.
A	-	WO 2001/22376 A (VIERA)
A	-	US 5525786 A (DUMONT)

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC^{07}

A47F

The following online and other databases have been used in the preparation of this search report

EPODOC, WPI