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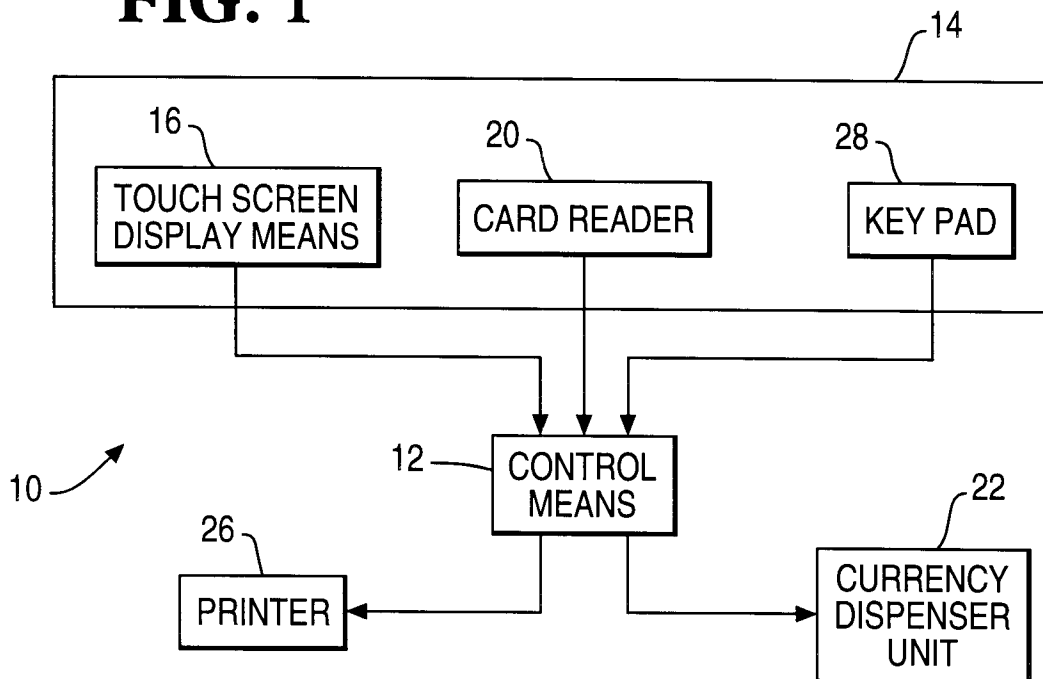
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DE ES FR GB IT(30) Priority: **06.12.1994 GB 9424558**(71) Applicant: **NCR International, Inc.**
Dayton, Ohio 45479 (US)(72) Inventor: **Johnson, Graham I.**
Tayport, Fife, Dundee, DD6 9AA (GB)(74) Representative: **Robinson, Robert George et al**
International Intellectual Property Department,
NCR LIMITED,
915 High Road,
North Finchley
London N12 8QJ (GB)(54) **An automated teller machine**

(57) An automated teller machine (ATM) (10) incorporating a control means (12) and a user interface (14) having a touch screen display means (16). The ATM (10) is arranged to present a display (30) on the display means (16) presenting two or more service options to a user. Decisions regarding the available service options

are input by touching areas (32-44) of the display (30). The requests for decisions are presented in the form of a grammatical sentence which guides the user through the transaction. Also, amendments can be made simply by returning to the service option concerned and re-entering the amended decision.

FIG. 1
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Description

This invention relates to an automated teller machine (ATM) and in particular to an ATM with a touch screen display means.

Known ATMs, whether operated by a touch screen or by keys or by a combination of both, can provide a variety of services including: withdrawal of currency; deposit of an envelope containing currency or documents; printing of a receipt, a statement or an account balance; and ordering of a statement, a replacement cheque book or an account paying-in book.

In order to provide these services an ATM commonly incorporates: a control means; and a user interface having a card reader which receives a user identification card when in use, a user input means and an alpha numeric display means. An ATM also commonly incorporates a cash dispenser unit having at least one currency cassette connected via feed and stacking means to a dispensing slot. A printer is also incorporated into an ATM in order to print, for example, a receipt, an account balance or a statement for a user.

In use, known ATMs present service options to a user on a series of separate displays which are shown to the user sequentially on the display means, either automatically by the ATM or on request by the user. Even a relatively simple transaction such as a request for a statement to be printed, followed by a cash withdrawal, requires a considerable degree of sequential interaction between the ATM and the user.

The sequential interaction between an ATM and a user with a series of displays being presented to the user in a single ATM transaction, some repeatedly (such as the menu display) if different services are required, is time consuming and can be confusing. Also, because the interaction is sequential, if a display has been removed from the display and thereafter the user realises that an error has been made in the input decision, for example if the wrong amount of currency was entered, the error can not be corrected as a user can not access a previously shown display, and the entire transaction must be aborted and repeated from the beginning.

It is an object of the present invention to alleviate the problems discussed above.

According to a first aspect of the present invention there is provided an automated teller machine including a user interface having a touch screen display means, and control means arranged to cause a display to be presented on said display means, which display provides two or more service options to a user, characterized in that decisions relating to two or more service options can be input by touching areas of a single display on said display means.

According to a second aspect of the present invention there is provided a method of operating an automated teller machine incorporating a control means, a user interface and a touch screen display means, the display means providing two or more service options to a user,

the method being characterized by presenting said two or more service options to a user in the form of a grammatical sentence on a single display, and inputting decisions relating to said service options by touching areas of said display.

An embodiment of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig. 1 is a block diagram of an ATM in accordance with the present invention;

Fig.2 is a perspective view of the ATM of Fig. 1, illustrating the user interface of the ATM; and

Fig.3 is an enlarged view of a display on a touch screen display means of the ATM of Figs. 1 and 2.

With reference to Figs. 1 and 2, there is illustrated an ATM 10 in accordance with the present invention incorporating a control means 12 in the form of a central processor unit (CPU), and a user interface 14 incorporating a touch screen display means 16. It should be understood that, in addition to providing a user with an alphanumeric and graphical display, the touch screen display means 16 also serves as an input means whereby the user can enter information into the ATM 10 by touching the screen of the display means 16. The interface 14 also incorporates a card reader 20 for receiving a user identification card which is used in a known manner in association with a personal identification number (PIN) in order to enable a user to obtain access to the ATM 10. The PIN number is entered by the user via a key pad 28 included in the user interface 14.

The ATM 10 also incorporates a conventional currency dispenser unit 22 (Fig. 1) arranged to store bank notes in two or more currency cassettes (not shown) and to transport notes withdrawn from one or more of the cassettes to a currency dispensing slot 24 in the ATM front panel 17 (Fig.2) when a cash withdrawal has been requested by the user.

The ATM 10 further incorporates a conventional printer 26 for printing a receipt, a statement or an account balance for the user of the ATM 10, and presenting the printed receipt or document to the user through a slot 27 in the front panel 17.

With reference to Fig.3 there is illustrated an enlarged view of a display 30 which is presented on the screen of the display means 16 in the course of a user transaction.

The display 30 presents information to the user regarding a plurality of service options, and the touch screen display means 16 enables the user to input decisions regarding the plurality of service options by touching areas 32-44 of the display 30 (i.e. touching areas of the screen of the display means 16) corresponding to the aforementioned service options. The display 30 is configured to present users with the following service options: withdrawal or transfer of selected sums of money from and to selected accounts; printing receipts,

statements and account balances; and ordering cheque books and paying-in books.

The operation of the ATM 10 in accordance with the present invention will now be described with reference to Figs 1,2 and 3.

In order to access the ATM 10 the user inserts a user identification card (not shown) into the card reader slot 21 (Fig.2). The card reader 20 within the ATM 10 reads the card and transmits information read from the card to the control means 12 (Fig. 1). The information will include an encrypted PIN number which must be entered by the user to enable access to the ATM 10. The control means 12 then causes the display means 16 to present a display (not shown) requesting that the user inputs the required PIN number, in order to confirm that the user is authorised to use the card.

The PIN number is then input by the user via the key pad 28. Assuming the PIN number has been input correctly, the control means 12 then causes the display means 16 to display the aforementioned display 30 (Fig. 3).

The display 30 presents information to and requests input from the user in the form of a sentence, thus leading the user logically through the transaction and making the user's interaction with the ATM 10 simpler and more easily understood.

The aforementioned sentence begins with the phrase "*I would like*" and then presents the user with the first service option which is a choice between withdrawal or transfer of currency. The user selects the desired option by touching an appropriate portion 321 or 322 of the area 32 of the display 30, and the touch screen display means 16 transmits the request for the desired service to the control means 12.

The user then moves to the next part of the sentence and inputs the amount of currency to be withdrawn or transferred by touching the appropriate portions of the area 34 of the display 30 (Fig.3). If the user makes an error at this point the amount can be amended by touching an area 341 of the display 30 representing a "clear button" and re-entering the amount.

The user will then read along the sentence which continues with the phrase "*from my*" and which gives a service option of different accounts held by the customer, namely deposit and current accounts. The user then inputs the desired account by touching the appropriate portion 361 or 362 of the area 36 of the display 30 corresponding to the desired account .

If the service selected in the beginning was to transfer currency the user will move to the next service option which reads "*to my*" and gives a choice of accounts to which the currency can be transferred, which again are deposit and current accounts. The user will then input the account to which the currency should be transferred by touching a portion 381 or 382 of the area 38 of the display 30 corresponding to the desired account.

If the service choice in the beginning was not to transfer currency then the user ignores this service

choice. Also, once a user has chosen an appropriate account he then moves to the next service option which states "*and print a*" and gives a choice of documents which can be printed by the printer 26 (Fig. 1), namely a receipt, a statement or an account balance. If the user requires any of these documents he touches a portion 401,402 or 403 of the area 40 of the display 30 corresponding to the desired option. If the user does not require this service, he ignores the option and moves on to the next service option. Also, once the user has made a choice of a document to be printed he then moves to the next service option.

The next service option states "*and order a*" and gives options of consumable items which can be ordered from the financial institution which operates the ATM 10, these items being cheque books and account paying-in books. If the user wishes to order a consumable item, he touches a portion 421 or 422 of the area 42 of the display 30 corresponding to the desired item. If the user does not require this service, he again ignores the service option.

The user will then review the entire transaction which is visible as the full transaction is presented on the single display 30. If there is any error or if the user chooses to amend any part of the transaction such as changing the sum of money involved he simply touches the appropriate area or areas of the display 30 so as to input the amended decisions. Once the user is satisfied that the transaction is correct he touches the display 30 at the area 44 displaying the legend "OK", and the complete transaction is then processed by the ATM 10.

For example, if the user wishes to print a statement and withdraw £120 from his deposit account, the transaction would proceed as follows:

Step 1: Display 1 -ATM Requests the entry of a user identification card.

Step 2: User inserts card.

Step 3: Display 2 -ATM requests the user's personal identification (PIN) number.

Step 4: User inputs PIN number.

Step 5: Display 3 -ATM presents the aforementioned display 30.

Step 6: User reads the first service option in the display sentence, touches the area 321 of the display 30 displaying the word "WITHDRAW", and then touches in sequence the portions of the area 34 of the display 30 displaying the numbers "1", "2" and "0". The user then reads on to the next service option (type of account), touches the area 361 of the display 30 displaying the word "DEPOSIT", then reads on to the next service option (print a document), and touches the area 402 of the display 30

displaying the word "STATEMENT". The user then checks the transaction, and assuming he is satisfied that there are no errors, he touches the area 44 of the display 30 so as to cause the transaction to be processed by the ATM 10.

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Step 7: ATM presents the identification card to the user.

Step 8: The user removes the identification card, after which the ATM 10 presents £120 in bank notes and a statement to the user through the slots 24 and 27 in the front panel 17.

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The embodiment of the invention described above relates to an ATM 10 which is designed to dispense currency and provide particular financial information and services. However, the invention is also applicable to an ATM which provides other services including depositing envelopes, the provision of more complex financial information or the sale of tickets, etc.

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The invention has the advantage of simplicity and ease of use, as well as allowing correction of errors and in general faster transactions than would be possible with know ATMs.

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Claims

1. An automated teller machine (10) including a user interface (14) having a touch screen display means (16), and control means (12) arranged to cause a display (30) to be presented on said display means (16), which display (30) provides two or more service options to a user, characterized in that decisions relating to two or more service options can be input by touching areas (32-44) of a single display on said display means (16).
2. An automated teller machine (10) according to claim 1, characterized in that said single display (30) provides all the available service options to the user, once the user has gained access to the automated teller machine (10).
3. An automated teller machine (10) according to claim 1 or claim 2, characterized in that decisions can be input by touching appropriate areas (32-44) of said display (30) in any order.
4. An automated teller machine (10) according to any one of the preceding claims, characterized in that said decisions can be amended after being input by returning to the appropriate area (32-43) of said display (30) and re-entering the information.
5. An automated teller machine (10) according to any one of the preceding claims, characterized in that

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said display (30) presents a logical, sequential request for decisions relating to all of the services provided by the automated teller machine (10) in the form of a grammatical sentence.

6. A method of operating an automated teller machine (10) incorporating a control means (12), a user interface (14) and a touch screen display means (16), the display means (16) providing two or more service options to a user, the method being characterized by presenting said two or more service options to a user in the form of a grammatical sentence on a single display (30), and inputting decisions relating to said service options by touching areas (32-44) of said display (30).
7. A method according to claim 6, characterized in that said decisions can be amended after being input by returning to the appropriate area (32-43) of said display (30) and re-entering the decisions.

FIG. 1

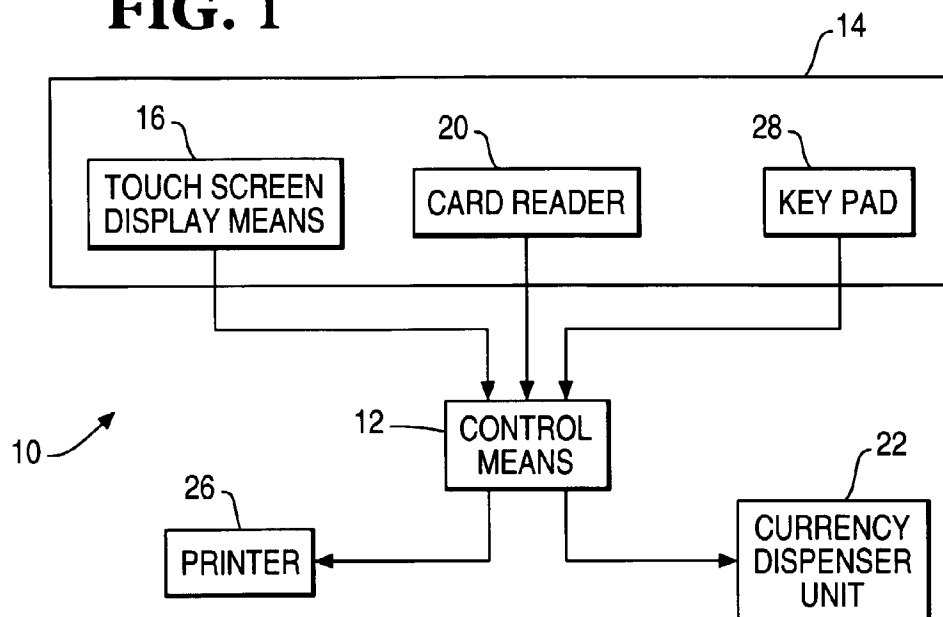


FIG. 2

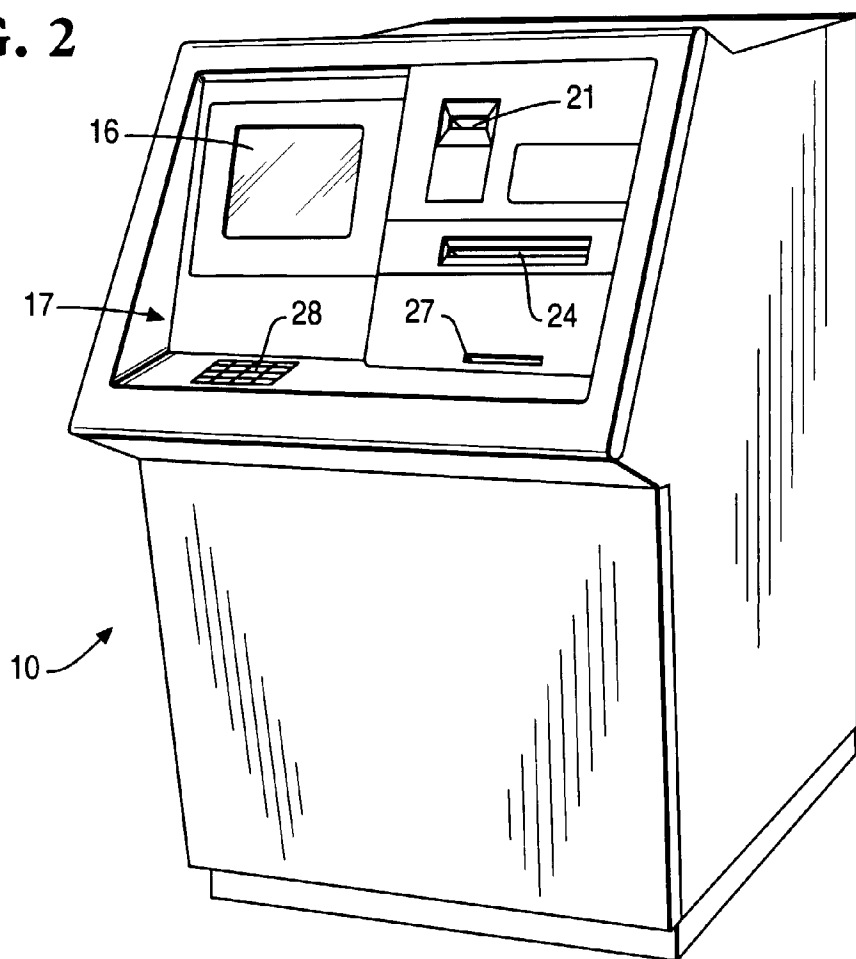


FIG. 3