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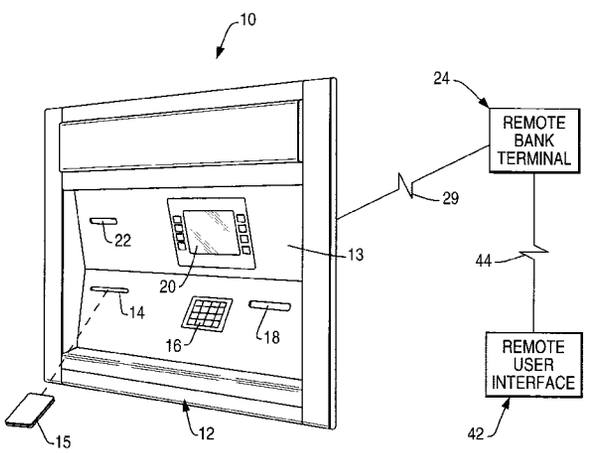
(54) Method of processing a financial transaction and a self-service banking system therefor

(57) A self-service banking system (10) is provided for enabling a customer to initially develop a financial transaction with a financial institution from a location other than an automated teller machine (ATM) and then to complete the financial transaction from an ATM after the developed financial transaction has been authorized by the financial institution. The system comprises a touch tone telephone (42) having a touch tone key pad for enabling a customer to develop the financial transaction to a point ready for authorization by the financial institution. A first processing unit (24) is associated with the financial institution and is provided for authorizing the financial transaction developed by the customer. An ATM (12) includes (i) a card reader (14) for receiving and processing a card which identifies the customer, and (ii) a second processing unit (30) cooperating with the first processing unit (26) to complete the financial transaction developed by the customer and authorized by the first processing unit when the card reader receives and processes the card which identifies the customer. Preferably, the second processing unit includes a Voice Information System (VIS) (40) which cooperates with the touch tone telephone (42) to allow the customer develop a desired financial transaction. The first processing unit (24) includes a remote processor (26) located at the financial institution. The second processing unit (30) includes a local processor (32) located at the ATM (12).

FIG. 1



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Description

The present invention relates to processing financial transactions, and is particularly directed to a method of processing a financial transaction and a self-service banking system therefor.

A bank customer desiring to carry out a financial transaction at an automated teller machine (ATM) initially inserts a customer identifying card into a card entry slot of a card reader. After the card reader receives the card, the customer enters a personal identification number (PIN) to validate the card. After the card is validated, the customer can select the desired financial transaction to be carried out including depositing items, withdrawing cash, and transferring funds without the presence of a bank employee. The selected financial transaction is then authorized by the customer's bank before the customer can complete the financial transaction.

The customer identifying card and the customer's knowledge of the PIN are key elements which provide a certain level of security for the customer's account.

However, when the customer has cash in hand after carrying out the selected financial transaction at the ATM, the customer may feel at risk of attack by dishonest persons. If the customer is especially concerned about security at the ATM, the customer may wish to have another person, such as a relative or friend, carry out the desired financial transaction at the ATM. A disadvantage is that the PIN needs to be revealed to that person.

It is the object of the invention to provide an arrangement in which a transaction can be processed without entry of a PIN at an ATM.

According to the invention, a method of processing a financial transaction with a financial institution, characterized by the steps of:

(a) receiving at the financial institution from a customer at a location other than an automated teller machine (ATM) financial transaction data to develop the financial transaction to a point ready for authorization by the financial institution;
(b) authorizing the developed financial transaction of step (a);
(c) receiving at an ATM a card which identifies the customer; and
(d) completing the authorized transaction of step (b) when the financial institution receives a request from a person located at the ATM of step (c) to complete the authorized transaction.

Also according to the invention, a self-service financial system for processing a financial transaction with a financial institution, characterized by :

means other than an automated teller machine (ATM) for enabling a customer to develop the financial transaction to a point ready for authorization by the financial institution;
first processing means associated with the financial institution and for authorizing the financial transaction developed by the customer; and
an ATM including (i) a card reader for receiving and processing a card which identifies the customer, and (ii) second processing means cooperating with the first processing means to complete the financial transaction developed by the customer and authorized by the first processing means when the card reader receives and processes the card which identifies the customer.

Preferably, the means other than an ATM includes a touch tone telephone having a touch tone key pad. The second processing means includes a Voice Information System (VIS) which cooperates with the touch tone telephone to allow the customer develop a desired financial transaction. The first processing means includes a remote processor located at the financial institution. The second processing means includes a local processor located at the ATM.

The invention will be described by way of example with reference to the accompanying drawings, wherein:

Fig. 1 is a perspective view of a self-service banking system embodying the present invention;
Fig. 2 is a block representation of the self-service banking system of Fig. 1; and
Figs. 3 and 4 are flowcharts depicting operation of the self-service banking system of Figs. 1 and 2 in accordance with the present invention.

The present invention is directed to a method of processing a financial transaction in accordance with user selected choices selectable by an authorized card user at a location other than at an automated teller machine (ATM). The user selectable choices include the type of transaction desired and specific options associated with the selected type of transaction. A self-service banking system 10 embodying the present invention is illustrated in Fig. 1.

Referring to Fig. 1, the self-service banking system 10 comprises an automated teller machine (ATM) 12 which includes a user interface in the form of a front panel 13. The front panel 13 includes a card reader 14, a key pad 16, a cash dispenser 18, a CRT display 20, and a receipt printer 22. The card reader 14 has a card slot through which a customer can insert a customer identifying card 15. As is well known, the card 15 includes a memory which stores identifying information including an encrypted version of the customer's PIN and account information relating to the customer. The cash dispenser 18 has a cash slot through which cash currency notes stored inside the ATM 12 can be delivered to the customer during the transaction. The receipt printer 22 has a receipt slot through which a receipt of the transaction

is delivered to the customer upon completion of the transaction.

Referring to Figs. 1 and 2, the ATM 12 further comprises a controller unit 30 which communicates with components of the front panel 13. The controller unit 30 includes a local processor 32, and a local memory 34 connected via bus line 36 to the local processor. The local processor 32 receives input signals on lines 31,33 from the card reader 14 and the key pad 16, respectively, and provides output signals on lines 35,37,39 to the cash dispenser 18, the display 20, and the receipt printer 22, respectively, to control the amount of cash dispensed by the cash dispenser 18, the information displayed on the display 20, and the information printed by the receipt printer 22.

The banking system 10 further comprises a remote bank terminal 24 which includes a remote bank processor 26 and a remote bank memory 28 connected via bus line 27 to the remote bank processor 26. The remote bank processor 26 and the remote bank memory 28 may be located at a bank branch or a central bank location. The remote bank processor 26 communicates with the local processor 32 via a communication link 29. The remote bank terminal 24 further includes a Voice Information System (VIS) 40 which communicates with the remote bank processor 26 via line 41. The VIS 40 provides pre-recorded voice prompts in response to touch tones when keys on a touch tone key pad of a standard touch tone telephone are depressed. A touch-tone telephone uses a push button dial and a form of dialing over a telephone network where the digits in the number are identified by tones of differing pitch. The structure and operation of the VIS 40 are known and, therefore, will not be described in detail.

The banking system 10 further comprises a remote user interface 42 in the form of a conventional touch tone telephone having a touch tone key pad. The touch tone telephone 40 is connected via a standard public switched telephone network (PST) 44 to the VIS 40 of the remote bank terminal 24. The structure and operation of the touch tone telephone 42 and the VIS 40 over the PST 44 are known and, therefore, will not be described in detail.

In accordance with the present invention, a customer is able to select and carry out a portion of a desired financial transaction from a location other than an ATM, and then later complete the transaction at an ATM. More specifically, with reference to Figs. 1 and 2, the customer is able to select and carry out a portion of a desired financial transaction from the touch tone telephone 42 which is remote from the ATM 12 and the remote bank terminal 24, and then later complete the transaction at the ATM.

Referring to Fig. 3, a flowchart 100 depicts operation of the banking system 10 in accordance with the present invention when a customer initially selects and carries out a portion of a desired financial transaction from the touch tone telephone 42. In step 102, the VIS 40 receives a phone call over the PST 44 from the customer calling from the touch tone telephone 42. The VIS 40 provides a menu of pre-recorded voice prompts in a known manner in step 104 to allow the customer to supply financial data to build a portion of the desired financial transaction, as shown in step 106. After the customer develops the desired financial transaction, the remote bank processor 26 processes the data supplied by the customer and data retrieved from the remote bank memory 28 to authorize the desired financial transaction, as shown in step 108. When the desired financial transaction is authorized, the remote bank processor 26 stores financial data in the remote bank memory 28 relating to the authorized transaction. This financial data stored in the remote bank memory 28 is indicative of the existence of a pre-authorized transaction associated with the particular customer.

Referring to Fig. 4, a flowchart 200 depicts operation of the banking system 10 in accordance with the present invention when a person at the ATM 12 desires to complete the financial transaction which was developed by the customer in the flowchart of Fig. 3. The person at the ATM 12 desiring to complete the financial transaction may be the customer who developed the financial transaction in the flowchart of Fig. 3. Alternatively, the person at the ATM 12 desiring to complete the financial transaction may be a relative or a friend of the customer.

In step 202, the person at the ATM 12 inserts the customer identifying card 15 into the card slot of the card reader 14. The customer identifying card 15 contains data about the customer who developed the financial transaction in the flowchart of Fig. 3. The card reader 14 reads the customer data contained on the card 15. The local processor 32 processes the customer data and communicates with the remote bank processor 26 to determine if a financial transaction associated with the customer identified on the customer identifying card was previously authorized, as shown in step 204. If the determination in step 204 is negative, then the program proceeds to step 206 in which a menu is displayed on the CRT display 20 to allow the person at the ATM 12 to enter a PIN via the key pad 16.

A determination is then made in step 208 to determine if the correct PIN has been entered by the person at the ATM 12. If the determination in step 208 is negative, the program proceeds to step 210 to display an error message and to prompt the person at the ATM 12 to try entering the PIN again via the key pad 16. If the correct PIN is entered in step 208, then the program proceeds to step 212 in which typical menus are displayed on the display 20 to enable the person at the ATM 12 to select a desired financial transaction. The selected financial transaction is then authorized by the remote central bank terminal 24 before the person at the ATM 12 can complete the transaction. After the selected transaction is completed, the receipt printer 22 prints a receipt of the transaction and delivers the receipt

through the slot of the receipt printer 22. The card 15 is then returned to the person at the ATM 12 in step 214. It should be apparent that steps 206, 208, 210, 212, 214, as just described, corresponds to typical everyday usage of the ATM 12.

However, if the determination in step 204 is affirmative, then the program proceeds to step 220 in which the person at the ATM 12 is prompted with a menu to allow the person to choose if the pre-authorized transaction which is stored in the remote bank memory 28 of the remote bank terminal 24, as previously described, should be completed. A determination is made in step 222 as to whether the person at the ATM 12 desires to complete the pre-authorized transaction which was developed earlier by the customer identified on the customer identifying card 15. If the determination in step 222 is negative, then the program proceeds to step 206 to prompt the person at the ATM 12 to enter a PIN number, as already described hereinabove.

If the determination in step 222 is affirmative, then the program proceeds to step 224 to complete the pre-authorized transaction which is stored in the remote bank memory 28 of the remote bank terminal 24. For example, the pre-authorized transaction may have been a cash withdrawal. In this case, completion of the pre-authorized transaction would include dispensing the amount of the withdrawn cash to the person at the ATM 12. As another example, the pre-authorized transaction may have been a bill payment. In this case, completion of the pre-authorized transaction would include receiving an envelope containing the bills and payment therefor from the person at the ATM 12. The card 15 is then returned to the person at the ATM 12, as shown in step 214. Such an arrangement requires a depository (not illustrated).

A number of advantages result by providing a self-service banking system in accordance with the present invention. One advantage is that a customer can build a desired financial transaction at a relatively secure location, such as in the privacy of the home or in the a car, and then later complete the transaction at the ATM 12. This reduces any fears that the customer may have about starting and completing an entire transaction at an ATM Another advantage is that if the customer is especially concerned about going to an ATM to complete a transaction, the customer can allow someone else, such as a relative or friend, to complete the transaction at an ATM without having to reveal the PIN to that person. The customer need only provide that person with the customer identifying card to allow the person to complete the transaction at an ATM. Still another advantage is that the person at an ATM is not required to enter a PIN to complete the transaction. Since the person at the ATM is not required to enter a PIN, the possibility of an onlooker learning of the PIN is eliminated.

Claims

1. A method of processing a financial transaction with a financial institution, characterized by the steps of:

   (a) receiving (102) at the financial institution from a customer at a location other than an automated teller machine (ATM) financial transaction data to develop the financial transaction to a point ready for authorization by the financial institution;
   (b) authorizing (108) the developed financial transaction of step (a);
   (c) receiving (202) at an ATM a card which identifies the customer; and
   (d) completing (224) the authorized transaction of step (b) when the financial institution receives a request from a person located at the ATM of step (c) to complete the authorized transaction.

2. A method according to claim 1, characterized by the further step of:

   (e) returning the card to the person located at the ATM.

3. A self-service financial system (10) for processing a financial transaction with a financial institution, characterized by :

   means (40,42) other than an automated teller machine (ATM) for enabling a customer to develop the financial transaction to a point ready for authorization by the financial institution;
   first processing means (26) associated with the financial institution and for authorizing the financial transaction developed by the customer; and
   an ATM (12) including (i) a card reader (14) for receiving and processing a card which identifies the customer, and (ii) second processing means (30) cooperating with the first processing means (24) to complete the financial transaction developed by the customer and authorized by the first processing means when the card reader (14) receives and processes the card which identifies the customer.

4. A self-service banking system according to claim 3, wherein the means other than an ATM includes a touch tone telephone (42) having a touch tone key pad.

5. A self-service banking system according to claim 4, wherein the first processing means (24) includes a Voice Information System (VIS) (40) which cooperates with the touch tone telephone (42) to allow the

customer develop a desired financial transaction.

6. A self-service banking system according to claim 5, wherein (i) the first processing means (24) includes a remote processor (26) located at the financial institution, and (ii) the second processing means (30) includes a local processor (32) located at the ATM (12).

FIG. 1

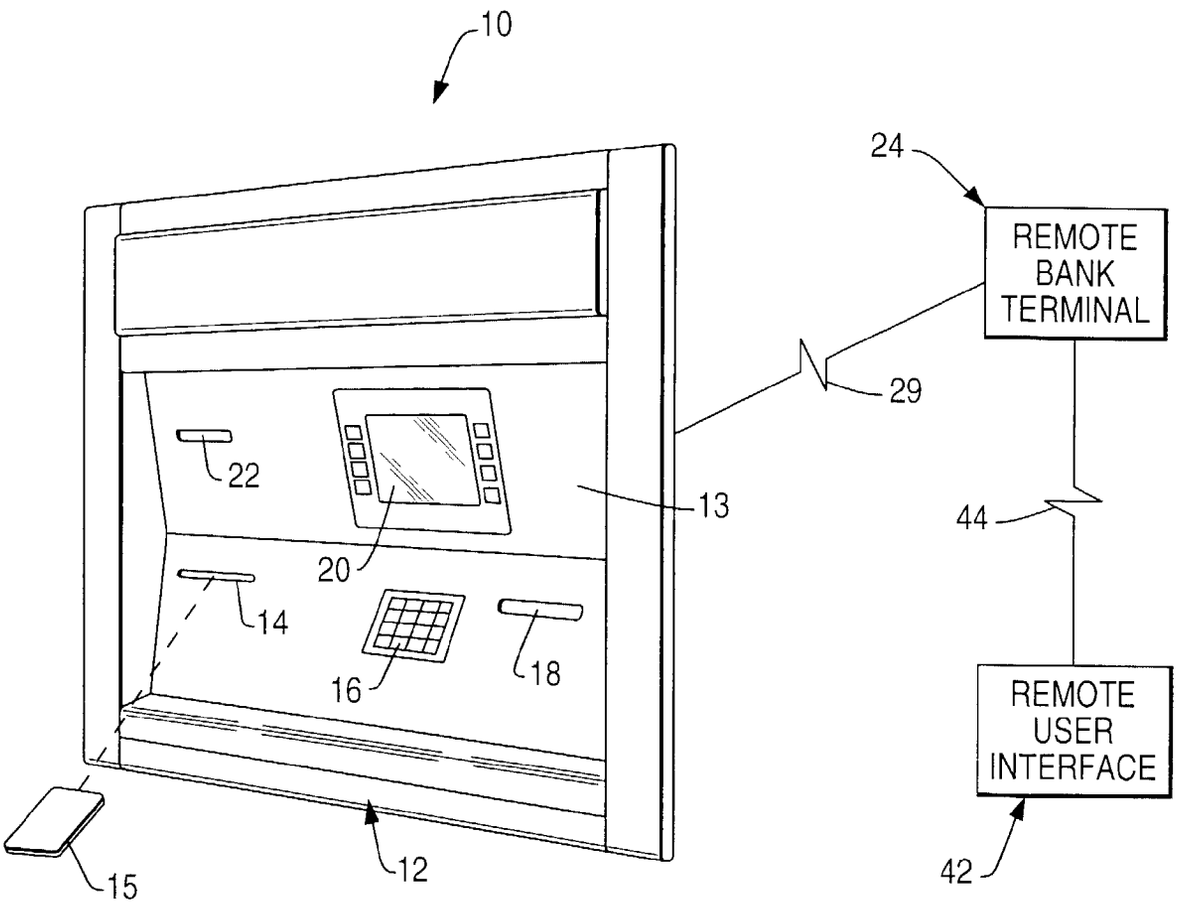

10
24
REMOTE BANK TERMINAL
29
22
13
20
44
14
16
18
REMOTE USER INTERFACE
15
12
42

FIG. 2

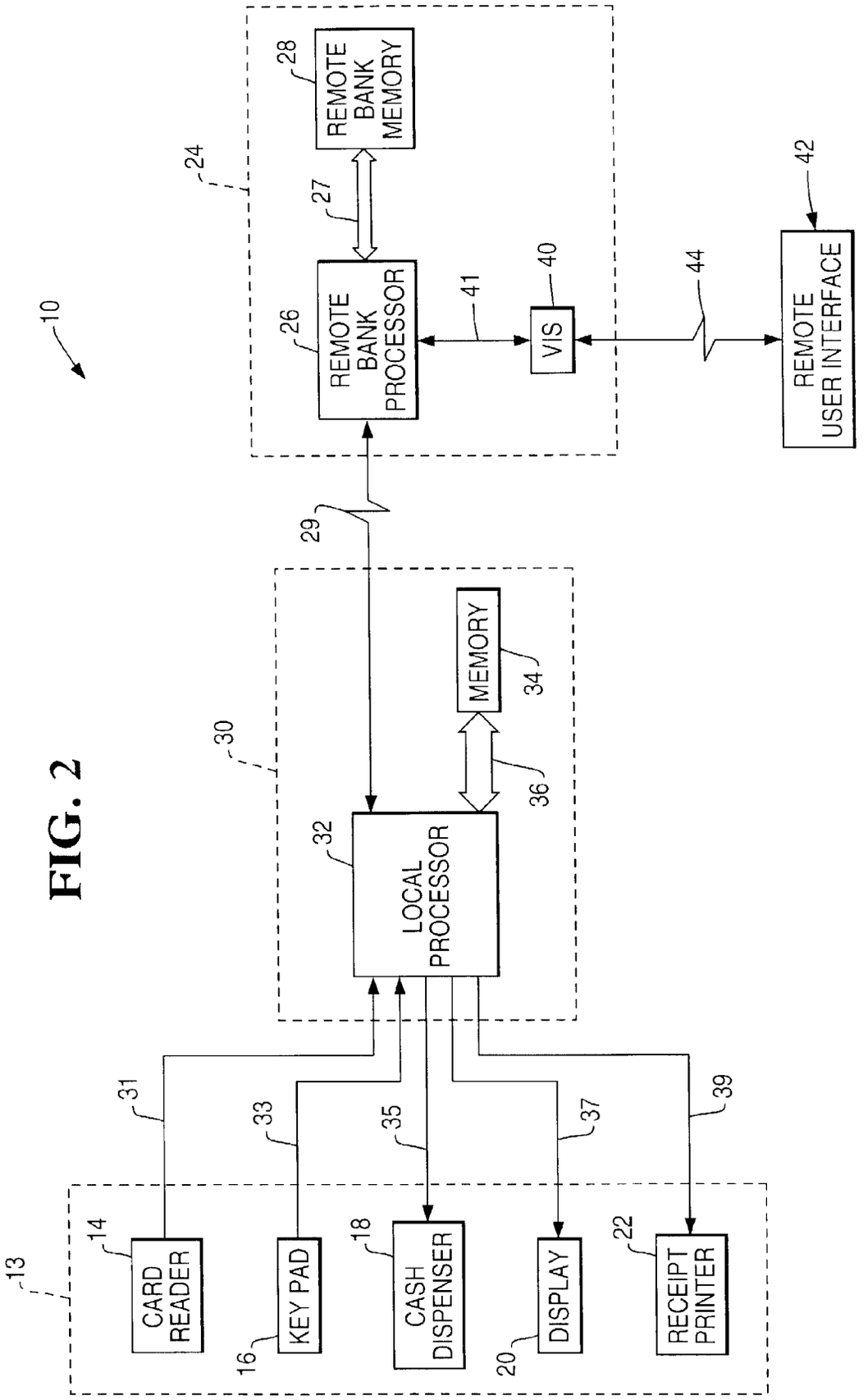

10
13
14
CARD READER
16
KEY PAD
18
CASH DISPENSER
20
DISPLAY
22
RECEIPT PRINTER
31
33
35
37
39
30
32
LOCAL PROCESSOR
34
MEMORY
36
29
24
26
REMOTE BANK PROCESSOR
27
28
REMOTE BANK MEMORY
41
40
VIS
44
42
REMOTE USER INTERFACE

FIG. 3

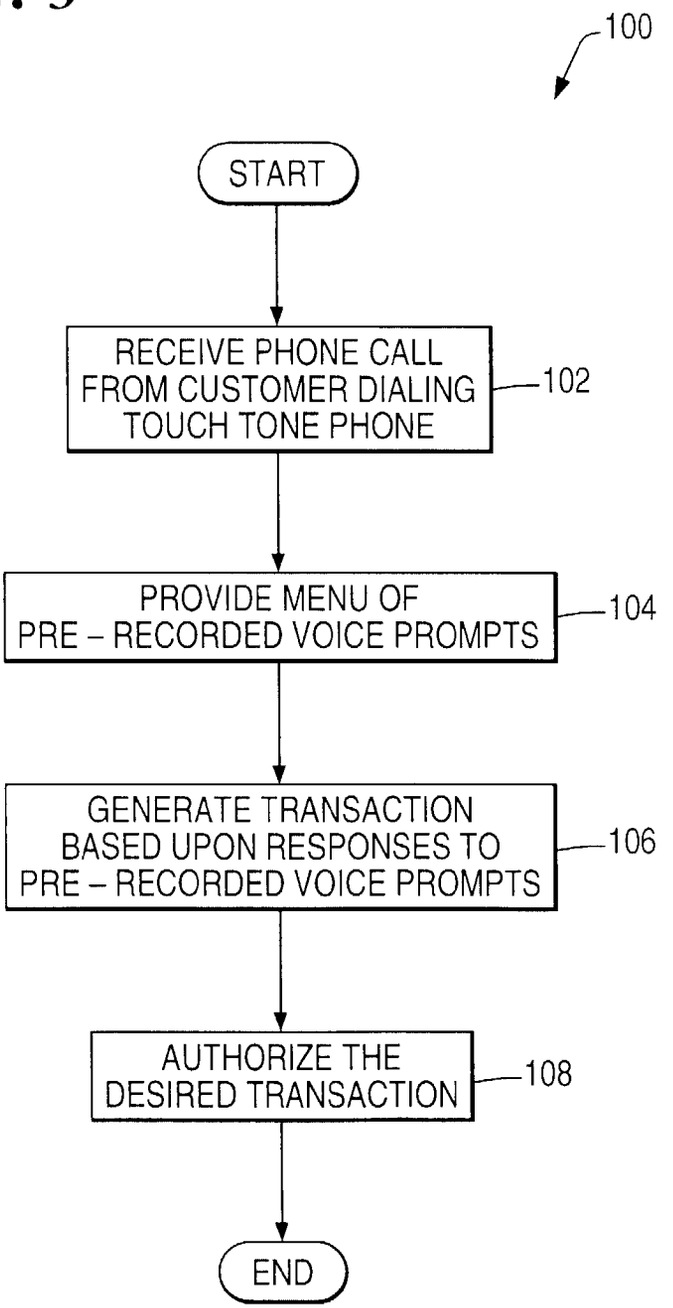
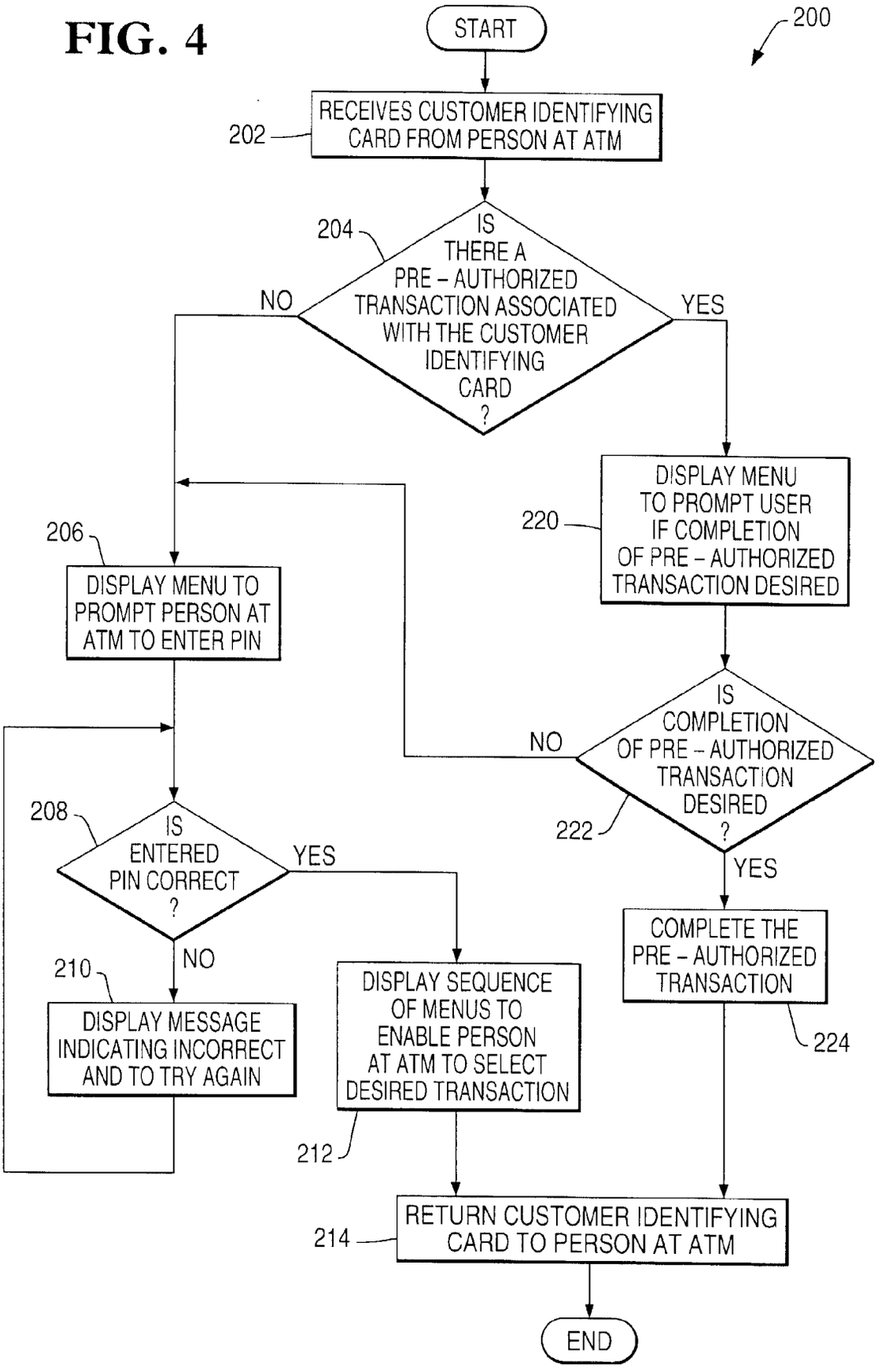

100
START
RECEIVE PHONE CALL FROM CUSTOMER DIALING TOUCH TONE PHONE
102
PROVIDE MENU OF PRE – RECORDED VOICE PROMPTS
104
GENERATE TRANSACTION BASED UPON RESPONSES TO PRE – RECORDED VOICE PROMPTS
106
AUTHORIZE THE DESIRED TRANSACTION
108
END

FIG. 4


START
200
RECEIVES CUSTOMER IDENTIFYING CARD FROM PERSON AT ATM
202
IS THERE A PRE – AUTHORIZED TRANSACTION ASSOCIATED WITH THE CUSTOMER IDENTIFYING CARD ?
204
NO
YES
DISPLAY MENU TO PROMPT PERSON AT ATM TO ENTER PIN
206
DISPLAY MENU TO PROMPT USER IF COMPLETION OF PRE – AUTHORIZED TRANSACTION DESIRED
220
IS COMPLETION OF PRE – AUTHORIZED TRANSACTION DESIRED ?
222
NO
YES
IS ENTERED PIN CORRECT ?
208
YES
NO
DISPLAY MESSAGE INDICATING INCORRECT AND TO TRY AGAIN
210
DISPLAY SEQUENCE OF MENUS TO ENABLE PERSON AT ATM TO SELECT DESIRED TRANSACTION
212
COMPLETE THE PRE – AUTHORIZED TRANSACTION
224
RETURN CUSTOMER IDENTIFYING CARD TO PERSON AT ATM
214
END