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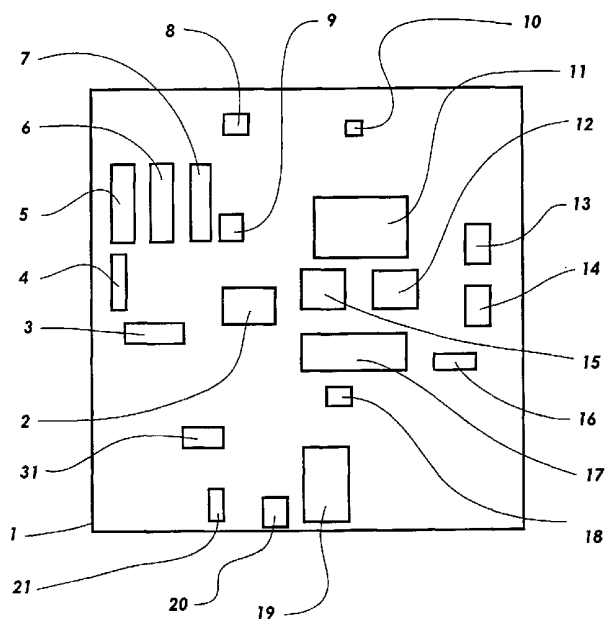
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(54) Title: METHOD AND APPARATUS FOR AUTOMATED PAYMENT TRANSACTIONS



(57) Abstract: A method and apparatus for automated payment transactions for retail purchases and bill payments. An identifying code on the receipt for a retail order is scanned by the customer identifying the order and the required payment amount. The customer, through a touch monitor (25), selects the form or forms of payment desired and then makes the required payment through the use of a coupon acceptor (5), a currency acceptor (6), a coin acceptor (9), a check acceptor (15), a credit card/debit card/EBT card acceptor (14), a biometric card acceptor (13) or a datacard acceptor (4). Identification verification for fraud prevention may be accomplished by a biometric acceptor (12), which may verify the customers fingerprint or other biometric characteristic.



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METHOD AND APPARATUS FOR AUTOMATED PAYMENT TRANSACTIONS

FIELD OF THE INVENTION

5 The present invention is in the field of methods and apparatuses for automated payment transactions and in particular in the field of methods and apparatuses for automated retail purchase payment transactions and bill payment transactions.

BACKGROUND OF THE INVENTION

 Limited automation payment terminals for payment with cash or credit card are
10 generally well known, but, except for certain limited applications, are not yet in widespread common use. Generally, such equipment comprises a credit/debit card reader and/or a currency/coin acceptor and a coin dispenser. Many public telephones now provide for payment with coins, currency or credit/debit cards. Similarly, some vending machines and certain self service facilities such as car washes accept coin,
15 currency and credit/debit cards. Many grocery stores now have customer activated credit/debit card readers at each check out stand, which require varying degrees of cashier assistance or interaction. Similarly, many automobile service stations and convenience stores now have self service credit/debit card readers built into the fuel pump controls.

20 The inventor for the present invention has a prior issued patent, U.S. Patent No. 4,787,467 to Johnson, for an automated check out system that can be used in any retail setting. That invention provides for a customer to self scan the bar code of each merchandise item to be purchased and then to self-pay with cash or credit/debit card. Merchandise verification is accomplished by monitoring merchandise item weight.
25 Other inventions disclosed in the prior art references provide varying levels of

automation and security in the transaction payment setting.

Increasing automation and security of the payment process offers a number of potential advantages, including increasing customer convenience by reducing transaction time, reducing labor costs, increasing profits, reducing prices to consumers, 5 reducing customer theft, reducing employee theft, reducing fraud losses, increasing collectability of credit/debit/EBT card purchases, increasing collectability of check purchases, and reducing risk to store personnel in certain applications.

None of the limited automation systems in use today provide the full automation transaction capabilities and the theft and fraud prevention capabilities needed in the 10 modern transaction setting. Full automation transaction capability would provide for the acceptance of personal checks, credit/debit/EBT/data cards, biometric cards, wireless transfer, currency, coin, and coupons, and provide for the utilization of interactive touch or speech commands, merchandise bar codes, biometric verification of the customer, wireless data transfer, and personal identification card and facial image 15 recording.

An objective of the present invention is to provide a fully automated payment transaction method and apparatus for retail purchase and bill payment transactions.

It is a further objective of the present invention to provide a fully automated payment transaction method and apparatus which further reduces or eliminates the need 20 for a cashier or clerk for retail purchase payment and bill payment transactions.

It is a further objective of the present invention to reduce the need for service personnel related to transaction facilities.

It is a further objective of the present invention to provide a transaction payment method and apparatus which provides increased security against theft and fraud losses.

SUMMARY OF THE INVENTION

The present invention provides a method and apparatus for fully automated payment transactions. The method and apparatus of the present invention is used to provide for complete payment flexibility and complete automation in retail purchases, payments for retail purchases, and bill payment, while at the same time reducing theft and fraud. The present invention can eliminate some or all of the services normally provided at retail sale businesses by checkers, cashiers, and attendants. Similarly, the present invention can eliminate some or all of the services normally completed by clerks and other service personnel at businesses and institutions in receiving and processing payments, and in performing related support services. The present invention can further eliminate or reduce the services normally provided by clerks, cashiers and attendants for tax payment receiving and processing.

In a retail purchase setting, the transaction center of the present invention provides for the identification of the customer's order through the customer scanning a bar code on the customer's receipt or inputting an order code to a touch screen, or through direct link between the check out apparatus and the transaction center. A self purchase apparatus may be incorporated into the present invention which provides for the customer to self process the customer's purchases and determine the amount owed for the purchases. The transaction center provides for payment by coupons, currency, coin, check, credit card, debit card, EBT card, biometric card, as well as any other method accepted by the retail business operator ("user"). The customer selects the method or methods of payment by interaction with the transaction center through a

touch monitor or through interactive audio with speech recognition, or merely proceeds with the activation of payment options by inserting coupons, currency, coin, check and/or cards in the appropriate acceptor mechanisms. In addition, the transaction center provides for transaction validation and fraud prevention through identification
5 card input and recording, biometric input and recording, facial image input and recording, and/or signature verification. If payment is entirely or partially by check, the transaction center will print the name of the payee and the correct amount on the check after a signed check is inserted into the check acceptor. The check can be retained in the transaction center or can be returned to the customer as a processed and canceled
10 check.. The transaction center will also dispense currency and/or coin change when payment is by currency and/or coin or a "change back" transaction is authorized when payment is by check or card..

In a retail purchase setting, the transaction center may also incorporate a self purchase apparatus. This apparatus provides for the customer to self process the
15 customer's purchases by scanning each item selected by the customer and placing the item in a receiving cart, basket or bag which is situated on a confirmation scale. The incremental increase in the total weight of items in the receiving cart, basket or bag is compared to the known weight of the item scanned, thereby confirming the inclusion of the correct item in the customer's order. Product anti-theft "markers" may also be
20 deactivated by a signal emitted by the scanner as the product is scanned and the scan is accepted. Alternatively, more elaborate anti-theft components may provide for automatic deactivation of each item in the customer's order after the receiving basket or bag is moved from the confirmation scale to a deactivation scale after the last item is scanned. As the total weight of the order is confirmed by the deactivation scale, each

item scanned in the customer's order is then deactivated by a signal emitted from automatic deactivation sensors. Payment is then made through the transaction center as described above and an electronic order removal gate is opened, thereby allowing the removal of the order from the deactivation scale. A customer exit gate may also be
5 opened allowing the customer to exit the self purchase station with the order.

For bill payment, the transaction center similarly provides for customer to complete the transaction without the assistance of a clerk or attendant. Transaction centers may be located at the business or institution holding or managing the account of the customer, or transaction centers at retail businesses may provide for payment
10 transactions involving any number of participating businesses or institutions. Bill payment transaction capability may be incorporated into a transaction center at a retail business which is also used for retail purchase payment transactions. The customer may initiate a payment transaction or account inquiry by scanning a bar code from the customer's bill for customer, payee and account identification, or may input this
15 information by interaction with the transaction center through a touch monitor or through auditory interaction and speech recognition. Currency, coin, checks and/or cards are inserted in designated acceptors for payment and the payment is completed as directed by the customer. The transaction center may provide for transaction validation and fraud prevention through identification card input and recording, biometric input
20 and recording, facial image input and recording and/or signature verification. Obligations that can be paid through these embodiments of the transaction center include tax obligations of the customer.

Biometric cards for account debiting or crediting and/or credit purchases, and biometric input and imaging for the use of biometric cards and for transaction

validation and fraud prevention, may utilize fingerprints, hand prints, hand geometry, facial geometry, thermal patterns, retina patterns, or DNA data.

Examples of additional options that can be incorporated into a transaction center are multi media interaction and display mechanisms, event ticket purchase and
5 dispensing mechanisms, data transmission and receipt mechanisms. Transaction centers may also be utilized for the direct purchase or rental of unlimited types of goods or services. Transaction centers may also be used for vending machine applications for all types of products, including controlled products such as tobacco and alcoholic
10 beverages. Biometric verification through the use of the biometric acceptor can be used to prevent underage purchases of controlled products.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a schematic of an embodiment of a transaction center apparatus of the present invention.

Fig. 2 is a schematic of a self purchase station of the present invention.

15 DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

A preferred embodiment of the transaction center 1 of the present invention is shown in Fig. 1. The transaction center of the present invention can be utilized for customer retail payment transactions and bill payment transactions. The embodiment of the transaction center shown in Fig. 1 may also incorporate a self purchase station
20 as shown in Fig. 2.

Referring to Fig. 1, this preferred embodiment of the transaction center 1 may be utilized for retail sale transactions or bill payment transactions, and is comprised of transaction bar code scanner 2, receipt printer 3, data card acceptor 4, coupon acceptor
5, currency acceptor 6, identification acceptor 7, audio speakers 8, coin acceptor 9,

transaction CCD camera 10, transaction touch monitor 11, biometric acceptor 12, biometric card acceptor 13, credit/debit/EBT card acceptor 14, check acceptor 15, coin dispenser 16, currency dispenser 17, wireless transfer acceptor 18, transaction computer 19, alarm controls 20, electronic controls 21, and fax/scanner mechanism 31.

5 The transaction center 1 may incorporate the self purchase station 22 of the present invention for which a preferred embodiment is shown in Fig. 2, which is comprised of conveyor system 24, purchase touch monitor 25, audio speakers 26, product scanner and deactivation mechanism 27, confirmation scale 28, product automatic deactivation sensors 29, purchase CCD camera 30, deactivation scale 32, self purchase computer 33, order
10 removal gate 36, customer exit gate 37, product sensor 38, biometric sensor 40 and receipt bar code printer 41.

The transaction center may also incorporate a media rental center 39, with or without a self purchase station as shown in Fig. 2.

Referring again to Fig. 1, it should be noted that audio prompts from the audio
15 speakers and/or video prompts from the touch monitor may be inserted at any time during the payment process. Similarly, interactive audio and/or video interaction may be inserted at any time. For this reason the audio and video insertions are not mentioned for every stage in this description. This is intended to improve the clarity of the description of this complex payment method and the related apparatus as described below. A reference to a
20 “prompt” in the description means an audio prompt from the audio speakers and/or a video prompt from the touch monitor as directed by the transaction computer.

A. Transaction Initiation

For the preferred embodiment shown in Fig. 1, a customer commences a transaction at the transaction center 1 by scanning, at the transaction bar code scanner 2, bar codes located on one or more of the customer's receipts or on a bill received by the customer, or selects a desired process from a menu located on a touch monitor 11. Receipts may have
5 been generated by a self purchase station 22 as shown in Fig. 2. If a bill received by the customer does not contain a bar code, the customer can input identifying account information to the transaction center through the transaction touch monitor or by audio interaction.

When the receipts or bills are scanned or a process is selected from a menu on the
10 transaction touch monitor, the transaction computer 19 will retrieve the customer's orders or account information and activate the pertinent programs and transaction center components. If desired processes are selected from the touch monitor, the transaction computer will prompt the customer through a series of steps in order to finish the desired services or selections. If receipts are scanned, the transaction computer may prompt the
15 customer to place each order on a scale to verify the weight of the order.

The transaction computer may also determine the elapsed time between the time the receipt was printed for the customer order and the time the payment transaction at the transaction center was initiated. If a selected maximum for the elapsed time is exceeded, the transaction center may interrupt or stop the payment transaction, subject to review by
20 an attendant.

B. Coupon Acceptance

At this point, for a retail purchase payment, the transaction computer prompts the customer to insert coupons into the coupon acceptor 5, if the customer has any. The customer may either select a “yes” or a “no” option by interacting with the transaction touch monitor or by audio interaction or may insert coupons into the coupon acceptor without interacting with the transaction center. If the customer selects “no”, or the pre-specified time limit for this step elapses, the transaction computer will continue to the next step in the payment process. If coupons are inserted, the coupon acceptor will automatically scan the UPC number or bar code or other identifier located on the coupon. Then the transaction computer will compare the UPC number or other code of the coupon to the UPC number or other code for the product that was previously scanned by the customer for the customer’s order which resulted in the receipt being generated. If the coupon item is included in the customer’s order, then the coupon amount is credited against the customer’s transaction amount by the transaction computer. When all coupons have been inserted, the customer can end the coupon acceptance step by interacting with the touch monitor or by audio interaction, or the transaction computer will default to the next process after a pre-specified time limit has elapsed. If no UPC number, bar code or other identifier is contained on the coupon, a computer match may be attempted from the product description contained on the coupon, the user may allow credit for such coupons without a computer match to a purchased product, or attendant involvement may be necessary.

C. Payment.

When the coupon process is complete for a retail purchase transaction, the transaction computer proceeds to the payment process. Likewise, for a bill payment transaction, after the account or accounts of the customer have been identified by the customer and the customer has selected the account or accounts for payment and has input
5 the payment amount, the transaction computer proceeds to the payment process. At this point the customer has the option to select from several different forms of payments. The customer may either select the desired forms of payment by interacting with the touch monitor or by audio interaction or may merely insert the desired form or forms of payment into the appropriate acceptor mechanisms and then select the amount of payment for each
10 selected form of payment. The preferred embodiment shown in Fig. 1 provides the following mechanisms for payment: currency acceptor 6, coin acceptor 9, check acceptor 15, credit/debit/EBT card acceptor 14, data card acceptor 4, and biometric card acceptor 13.

1. Currency and coin acceptors.

15 If cash is to be used for payment or partial payment, the customer may select either payment by cash on the touch monitor or by audio interaction or may merely insert currency into the currency acceptor 6 and/or coin acceptor 9. If currency and/or coins are to be used for the full payment amount, the customer must insert an adequate amount of currency and coins to the respective acceptors, whether it be local or foreign currency,
20 equaling or exceeding the customer's total. If foreign cash is accepted by the respective acceptors, the transaction computer will automatically perform an exchange rate conversion on the cash received. The transaction computer will then compare the total

currency and coin received to the transaction total. The transaction computer will then prompt the customer to insert more currency and/or coin, so as to equal or exceed the amount owed, or, if permitted by the transaction center, to select another form of payment for the unpaid balance. The transaction computer will then prompt the customer to take
5 any dispensed change, if applicable. The transaction is then recorded onto a recordable CDROM by the transaction computer.

If the transaction center is being used with the self purchase station shown in Fig. 2, upon confirmation of full payment, the order removal gate 36 and the customer exit gate 37 are opened for the customer to leave with the purchased items.

10 2. Check Acceptor

If a check is to be used for payment, the customer may either select 'payment by check' on the touch monitor or by audio interaction or the customer may merely insert a signed, blank check into the check acceptor 15. The check acceptor will read the customer's check number and check code numbers into the transaction computer. The
15 check code numbers represent the customer's bank account number and bank routing number. A bad check evaluation using a link to a bad check data base can be performed to determine if the customer has a history of issuing bad checks. If the customer's bank is one that permits immediate check verification, the check may be cleared immediately for the amount of the check transaction. If the check is accepted by the transaction center, the
20 name of the user and the amount of the check is printed on the check and the check amount is electronically posted to the user's account. The check can then be retained by the transaction center or can be returned to the customer with processing information printed

thereon as a "canceled" check. If the check is to be returned to the customer, an electronic record of the check is recorded by the transaction computer and the customer is prompted to confirm that the electronic record of the check can be used for all purposes by the user in obtaining payment on the check. The customer will then be prompted to place a finger,

5 hand, face or other biometric feature onto or near the biometric acceptor 12, by which the customer's live fingerprint or other biometric will be captured and stored by the transaction computer. The transaction computer, or alternatively an employee of the user, has the discretion to either accept the biometric or reject it by analyzing the biometric. If the biometric is rejected, the customer will be prompted to place the biometric feature on or

10 near the biometric acceptor again until a print or image of a desired quality is accepted by the transaction computer or the employee. When the biometric print or image is accepted, an image is then taken of the customer's face by the CCD camera 10. The customer is then prompted to insert a driver's licence or other form of ID into the identification (ID)

acceptor 7. The ID acceptor will read into the transaction computer, if applicable, any type

15 or form of data on the ID, including but not limited to magnetic stripe, bar code, data chip and other data. The ID acceptor will then take a visual image of the customers ID using a CCD camera that is integrated with the ID acceptor. The transaction computer or the user employee, compares the live image of the ID, live image of the customer, fingerprint information, and/or data given to the transaction center, to previously stored customer

20 information such as ID, photo images, fingerprint, and any other data located in a customer database. When all information is given to the transaction computer and the transaction is completed, all of the transaction information is recorded onto the transaction computer's

CDROM and/or hard drive. Again, if the transaction center is used with the self purchase station, the order removal gate and the customer exit gate are opened for the customer to leave with the purchased items.

3. Credit Card/Debit Card/EBT Card Acceptor

5 If a credit card, debit card, or electronic benefit transaction (EBT) card, each of which is hereafter referred to alternatively as "credit card", is used for payment, the customer may either select 'payment by credit card', 'payment by debit card' or 'payment by EBT card' on the touch monitor or by audio interaction or the customer may merely insert or swipe a credit card through the credit card reader of the credit/debit/EBT card
10 acceptor 14. If applicable the customer may enter a PIN by interaction with the touch monitor or the audio interaction mechanism. The customer will then be prompted to place a finger, hand, face or other biometric feature onto or near the biometric acceptor 12, by which the customer's live fingerprint or other biometric will be captured and stored by the transaction computer. The transaction computer, or alternatively an employee of the user,
15 has the discretion to either accept the biometric or reject it by analyzing the biometric. If the biometric is rejected, the customer will be prompted to place the biometric feature on or near the biometric acceptor again until a print or image of a desired quality is accepted by the transaction computer or the employee. When the biometric print or image is accepted, an image is then taken of the customer's face by the CCD camera 10. The customer is then
20 prompted to insert a driver's licence or other form of ID into the identification (ID) acceptor 7. The ID acceptor will read into the transaction computer, if applicable, any type or form of data on the ID, including but not limited to magnetic stripe, bar code, data chip

and other data. The ID acceptor will then take a visual image of the customers ID using a CCD camera that is integrated with the ID acceptor. The transaction computer or the user employee compares the live image of the ID, live image of the customer, fingerprint information, and/or data given to the transaction center, to previously stored customer
5 information such as ID, photo images, fingerprint, and any other data located in a customer database. If the customer has previously scanned a driver's licence or other form of ID, the customer's image from the ID may be compared by the transaction computer with an image retrieved using the customer's EBT card number. The two images may be compared by the transaction computer or by an attendant on a monitoring screen for acceptance or
10 rejection of the transaction. This may be accomplished at a checkout location or at a remote payment or security location.

When all information is given to the transaction computer and the transaction is completed, all of the transaction information is recorded onto the transaction computer's CDROM and/or hard drive. Again, if the transaction center is used with the self-purchase
15 apparatus, the order removal gate and the customer exit gate are opened for the customer to leave with the purchased items.

4. Data Card Acceptor.

If a data card is used for payment, the customer either may select 'payment by data card' on the touch monitor or by audio interaction, or may merely insert or swipe a data
20 card through the data card acceptor 4. If applicable the customer may enter a PIN via the data card acceptor 4 or by interacting with the touch monitor. The customer will then be prompted to place a finger, hand, face or other biometric feature onto or near the biometric

acceptor 12, by which the customer's live fingerprint or other biometric will be captured and stored by the transaction computer. The transaction computer, or alternatively an employee of the user, has the discretion to either accept the biometric or reject it by analyzing the biometric. If the biometric is rejected, the customer will be prompted to
5 place the biometric feature on or near the biometric acceptor again until a print or image of a desired quality is accepted by the transaction computer or the employee. When the biometric print or image is accepted, an image is then taken of the customer's face by the CCD camera 10. The customer is then prompted to insert a driver's licence or other form of ID into the identification (ID) acceptor 7. The ID acceptor will read into the transaction
10 computer, if applicable, any type or form of data on the ID, including but not limited to magnetic stripe, bar code, data chip and other data. The ID acceptor will then take a visual image of the customers ID using a CCD camera that is integrated with the ID acceptor. The transaction computer or the user employee, compares the live image of the ID, live image of the customer, fingerprint information, and/or data given to the transaction center,
15 to previously stored customer information such as ID, photo images, fingerprint, and any other data located in a customer database. When all information is given to the transaction computer and the transaction is completed, all of the transaction information is recorded onto the transaction computer's CDROM and/or hard drive. Again, if the transaction center is used with the self purchase station, the order removal gate and the customer exit
20 gate are opened for the customer to leave with the purchased items.

5. Biometric Card Acceptor.

If a biometric card is to be used for payment, the customer either may select 'payment by biometric card' on the touch monitor or by audio interaction, or may merely insert or swipe a biometric card through the biometric card acceptor 13. The customer will then be prompted by to place a finger, hand, face or other biometric feature onto or near the biometric acceptor 12, by which the customer's live fingerprint or other biometric will be captured and stored by the transaction computer. The transaction computer will use algorithms and a methodology, such as that described in U.S. Patent No. 5,598,474 to Johnson, to compare the customer's fingerprint or other biometric to the biometric code information contained on the customer's biometric card. If the biometric matches, the customer's checking account or other designated account is debited for the transaction amount. The transaction computer, or alternatively an employee of the user, has the discretion to either accept the biometric or reject it by analyzing the biometric. If the biometric is rejected, the customer will be prompted to place the biometric feature on or near the biometric acceptor again until a print or image of a desired quality is accepted by the transaction computer or the employee. When the biometric print or image is accepted, an image is then taken of the customer's face by the CCD camera 10. The customer is then prompted to insert a driver's licence or other form of ID into the identification (ID) acceptor 7. The ID acceptor will read into the transaction computer, if applicable, any type or form of data on the ID, including but not limited to magnetic stripe, bar code, data chip and other data. The ID acceptor will then take a visual image of the customers ID using a CCD camera that is integrated with the ID acceptor. The transaction computer or the user employee, compares the live image of the ID, live image of the customer, fingerprint

information, and/or data given to the transaction center, to previously stored customer information such as ID, photo images, fingerprint, and any other data located in a customer database. When all information is given to the transaction computer and the transaction is completed, all of the transaction information is recorded onto the transaction computer's
5 CDROM and/or hard drive. Again, if the transaction center is used with the self purchase station, the order removal gate and the customer exit gate are opened for the customer to leave with the purchased items.

The transaction computer can also be linked to a law enforcement data base, allowing for the biometric of the customer to be used to alert proper law enforcement
10 authorities and any onsite attendants if the customer is a criminal or has a criminal history. The transaction center can also send personal information of the customer in question, via phone, cable, satellite, fiber optics, wireless mediums, or the like either to either local or remote store monitoring stations, or to local or remote authorities. The information can also be stored on storage medium for later use or reference .

15 6. Wireless Transfer Acceptor

If wireless transfer is to be used for payment, the customer either may select 'wireless transfer' on the touch monitor or by audio interaction, or the transaction computer may receive by the wireless transfer acceptor 18, the customer's account information by means of a wireless data transfer component in the possession of the customer. The
20 customer will then be prompted to place a finger, hand, face or other biometric feature onto or near the biometric acceptor 12, by which the customer's live fingerprint or other biometric will be captured and stored by the transaction computer. The transaction

computer, or alternatively an employee of the user, has the discretion to either accept the biometric or reject it by analyzing the biometric. If the biometric is rejected, the customer will be prompted to place the biometric feature on or near the biometric acceptor again until a print or image of a desired quality is accepted by the transaction computer or the employee. When the biometric print or image is accepted, an image is then taken of the customer's face by the CCD camera 10. The customer is then prompted to insert a driver's licence or other form of ID into the identification (ID) acceptor 7. The ID acceptor will read into the transaction computer, if applicable, any type or form of data on the ID, including but not limited to magnetic stripe, bar code, data chip and other data. The ID acceptor will then take a visual image of the customers ID using a CCD camera that is integrated with the ID acceptor. The transaction computer or the user employee, compares the live image of the ID, live image of the customer, fingerprint information, and/or data given to the transaction center, to previously stored customer information such as ID, photo images, fingerprint, and any other data located in a customer database. When all information is given to the transaction computer and the transaction is completed, all of the transaction information is recorded onto the transaction computer's CDROM and/or hard drive. Again, if the transaction center is used with the self purchase station, the electronic gate is opened in order for the customer to leave with the purchased items.

C. Time and Attendance Monitor.

The biometric acceptor 12 can be used in conjunction with transaction computer and transaction computer software as a time and attendance package. Employees can clock in or out by using the biometric acceptor 12. Any time management program package can

be added to enhance the productivity of user employees.

D. Security Monitor.

The biometric acceptor 12 may also be used for door security for the transaction center and any internal security mechanisms of the transaction center. Alarm controls 20
5 may be incorporated into the transaction center to advise an on-site operator, local command center or remote command center of security concerns or events. Such events may include, for example, overdue accounts, customers or employee's wanted by the law, unauthorized opening of the transaction center door, unauthorized access to internal security mechanisms, attempts at vandalism, and unauthorized use of any payment method.

10 E. Fax/Scanner Mechanism

A fax/scanner mechanism 31 can be used in conjunction with the biometric card acceptor and/or the biometric acceptor, the CCD camera, the audio speakers, and the touch monitor in order to properly verify and identify the customer for the uses of transmitting and/or validating of any contract, form or other document. The customer may either fax
15 the confidential or non-confidential documents, forms or contracts, or the customer may scan in confidential or non-confidential documents, forms or contracts for the purpose of transmitting the documents electronically.

F. Self purchase station.

The self purchase station 22 shown in Fig. 2 may be utilized as an integral part of
20 the transaction center for retail purchase situations or may be operated as a detached component from which a customer order is receipted for subsequent processing by the transaction center for payment. The self purchase station is an option for the retail store

which is utilizing the transaction center for payment transactions.

Preferred embodiments of the self purchase station are comprised of a conveyor 24, purchase touch monitor 25, audio speakers 26, product scanner and manual deactivation mechanism 27, confirmation scale 28, product automatic deactivation sensors 29, purchase
5 CCD camera 30, deactivation scale 32, self purchase computer 33, order removal gate 36, customer exit gate 37, product sensor 38, biometric sensor 40, and receipt bar code printer 41. An apparatus which is similar to the self purchase station shown in Fig. 2 is disclosed in prior U.S. Patent No. 4,787,467 to Johnson, the applicant for the present invention.

For those preferred embodiments of the present invention utilizing a self purchase
10 station, the transaction center can be directly linked to the self purchase station as illustrated in Fig. 2, or can be linked by way of any mode of electronic data communication to the self purchase station.

The self purchase station may have one or two sets of scales. Purchase items are removed from a merchandise cart, basket or bag 23 and placed on the conveyor, in stores or
15 lines handling large orders. Convenience stores and express lines may not utilize conveyor systems. The customer then passes each item from the conveyor or the merchandise cart, basket or bag over the product scanner and places it in a receiving cart, basket or bag 34. A confirmation scale 28 is used to confirm, by product weight, the placement of a scanned item into the receiving basket or bag, rather than a different item, thereby reducing theft
20 losses. For preferred embodiments of the self purchase station, if the weight of the item placed into the receiving cart, basket or bag does not match the known weight of the scanned item, further scanning will not be permitted and the order removal gate and the

customer exit gate will remain locked until the customer, with or without the assistance of an attendant, has resolved the discrepancy in an acceptable manner. The product scanner can also include a product deactivation mechanism to deactivate anti-theft markers on the item as the item is scanned, if the scan is accepted by the purchase computer.

5 The scanner is de-actuated by the purchase computer after each product is scanned, until the purchase computer confirms that an item of the correct weight is placed into the receiving cart, basket or bag on the confirmation scale, and confirms that the anti-theft wireless marker signal for the scanned product is deactivated, if manual deactivation is incorporated with the scanner. If the item weight does not match, the scanner is not re-
10 actuated until the customer resolves the weight discrepancy in a manner directed through interaction with the purchase computer or an attendant resolves the weight discrepancy or overrides the de-actuation. Once all the customer's purchases have been scanned and verified and the order totaled, the receiving cart, basket or bag is relocated to a deactivation cart, basket or bag position 35 on the deactivation scale. The total weight of the order is
15 then compared with the computed total order weight from the sum of the weights of the items. If the weight matches the computed weight, the order removal gate and the customer exit gate are will be unlocked. Rather than deactivating the anti-theft markers at the time of scanning each item, an automatic product deactivation mechanism can deactivate all anti-theft markers of items in the cart, basket or bag which are included in the
20 customer's order. If the self purchase station is integrated with the transaction center, payment will be made at the self purchase station through the transaction center as described above, before the order removal gate and the customer exit gate are unlocked and

the purchased items are deactivated.. If the self purchase station is detached from the transaction center, the customer takes the deactivated purchases and a receipt from the self purchase station to the transaction center, scans the bar code from the receipt and makes payment through the transaction center as described above.

5 One or more automatic product deactivation sensors 29 can be placed at any location on the self purchase station, but for the preferred embodiment shown in Fig. 2, they are located immediately before the deactivation scale in order to eliminate any problem with un-scanned products being placed in the receiving cart, basket or bag before it is placed on the deactivation scale, and/or just after the order removal gate, thereby
10 eliminating any product being thrown into the receiving cart, basket or bag after the order has been totaled.. When the cart, basket or bag of products is placed on the deactivation scale, and under the deactivation sensor of the deactivation mechanism, the deactivation mechanism reads each product's wireless code and transmits it to the purchase computer, automatically deactivating the products. The purchase computer then retrieves the weights
15 of all the products deactivated and confirms that all the products have been properly read into the computer. Once the weights are verified and the product deactivation process is completed, the order removal gate and the customer exit gate are opened, permitting the customer to leave with the order. The last automatic product deactivation sensor may be used to continue to monitor the order to detect any non-deactivated products in the cart,
20 basket or bag.

If any product is not in the previously scanned order, then a central monitoring station or an attendant station as well as the customer may be alerted via camera, audio

speaker, or touch monitor with instructions regarding steps or options to alleviate the problem, such as scanning the product or removing the un-scanned product from the cart, basket or bag. Once the deactivation of each product in the order is verified, the transaction can be completed and the gates are opened. Again, the last automatic product
5 deactivation system may be used to continue to monitor the order to ensure that no non-deactivated products are subsequently placed in the cart, basket or bag.

The transaction center, the deactivation scale, the customer exit gate, and the automatic product deactivation sensors can be integrated with the self purchase apparatus as shown in Fig. 2 or can be detached from the self purchase apparatus and located in the
10 vicinity of the self purchase apparatus or at a remote location, such as an exit site, in the retail store. For detached configurations, the final confirmation of the order, payment, deactivation, and the unlocking of the customer exit gate is accomplished at the detached location, allowing the customer to leave with the purchased items.

For the order removal gate and the customer exit gate, any type of restraining
15 device may be used. Such devices include turnstiles, doors and gates. Motorized drives and other devices to enhance the operation of these gates may be used.

G. Media Rental

A transaction center 1, with or without a self purchase station 2 may also include a media rental center 39 for the rental of videos, computer games, CD's and the like. The
20 retail store may require a formal membership with a signed membership agreement or membership terms can be agreed to by the customer through interaction with the transaction center. Once membership has been established, rentals can be fully automated.

A bar code on the video or other media rental is merely scanned and payment proceeds as with other purchase transactions. Membership verification is accomplished merely by insertion of any of the accepted forms of payment and biometric verification by the biometric acceptor. If payment by cash is desired, membership verification will be
5 accomplished by the biometric acceptor alone. The store may also issue a membership card to the customer which includes biometric data for customer verification and a preselected payment form identification. A bar code or other identifier on the media item is scanned which identifies the media item and the price and other terms of the rental for the transaction record. The customer may be directed by the transaction center to place the
10 media item in the cart, basket or bag along with items being purchased by the customer for weight verification. Alternatively, a conveyor may provide for passing the media item through a scanner and to a point of exit to be picked up by the customer.

H. Surveillance Monitor.

A surveillance camera may be utilized at any location near a transaction center or
15 self purchase apparatus. Video recordings or time lapse photographs from the surveillance cameras may be stored along with other transaction data for a particular transaction.

Other embodiments and other variations and modifications of the embodiments described above will be obvious to a person skilled in the art. Therefore, the foregoing is intended to be merely illustrative of the invention and the invention is limited only by the
20 following claims.

Claims

What is claimed is:

1. Apparatus for automated processing of payment transactions for retail customer orders comprising:
 - 5 a) identifying means for identifying a retail order based upon a unique code assigned to the order and determining the order amount owed by the customer for the order;
 - b) selecting means for the customer to select one or more forms of payment of the order amount;
 - 10 c) accepting means for accepting payment from the customer in the forms selected by the customer; and
 - d) confirming means for confirming that payment in the order amount has been made by the customer.
- 15 2. Apparatus as recited in claim 1 further comprising computing means for the identifying means, selecting means, accepting means and confirming means.
- 3 Apparatus as recited in claim 2 wherein the computing means comprises a transaction computer.
- 20 4. Apparatus as recited in claim 1 wherein the identifying means comprises a transaction bar code scanner.

5. Apparatus as recited in claim 1 wherein the selection means comprises a transaction touch monitor.

6. Apparatus as recited in claim 1 wherein the selection means comprises an
5 interactive audio mechanism with speech recognition.

7. Apparatus as recited in claim 1 wherein the accepting means comprises a coupon acceptor, a currency acceptor, a coin acceptor, a check acceptor, a credit card/debit card/EBT card acceptor, a biometric acceptor, a currency dispenser, and a coin dispenser.
10

8. Apparatus as recited in claim 7 further comprising a biometric card acceptor.

9. Apparatus as recited in claim 7 further comprising a data card acceptor.

10 Apparatus as recited in claim 1 further comprising an identification card
15 acceptor.

11. Apparatus as recited in claim 1 further comprising a facial image recording means for recording a facial image of the customer.
20

12. Apparatus as recited in claim 11 wherein the facial image recording means comprises a CCD camera.

13. Apparatus as recited in claim 1 further comprising automatic deactivation sensors for deactivating wireless anti-theft devices on each product of the order.

14. Apparatus as recited in claim 1 wherein the accepting means further
5 comprises a dispensing means for dispensing the amount of any excess payment in currency and/or coin.

15. Apparatus as recited in claim 1 wherein the confirmation means comprises a receipt printer.
10

16. Apparatus as recited in claim 1 further comprising a fax/scanner mechanism.

17. Apparatus as recited in claim 1 further comprising a self purchase means for the customer to check out the order.
15

18. Apparatus as recited in claim 17 wherein the self purchase means comprises a self purchase apparatus.

19. Apparatus as recited in claim 18 wherein the self purchase apparatus comprises a product scanner, a confirmation scale, a product anti-theft device deactivation mechanism, one or more electronic gates, a biometric sensor, a self purchase computer, a receipt bar code printer, and a means for customer interaction with the self purchase
5 apparatus.

20. Apparatus as recited in claim 19 further comprising a purchase customer image means for recording a facial image of the customer.

10 21. Apparatus as recited in claim 20 wherein the purchase customer image means comprises a purchase CCD camera.

22. Apparatus as recited in claim 19 wherein the customer interaction means comprises a purchase touch monitor.

15 23. Apparatus as recited in claim 19 wherein the customer interaction means comprises an audio interaction mechanism with speech recognition.

24. Apparatus as recited in claim 19 further comprising an automatic product
20 anti-theft device deactivation sensors and a deactivation scale.

25. Apparatus as recited in claim 1 further comprising bill payment means.

26. Apparatus as recited in claim 25 wherein the bill payment means comprises an account identifying mechanism, a required payment identification mechanism, and a payment acceptance mechanism.

5 27. Apparatus as recited in claim 1 further comprising a media rental center.

28. Apparatus as recited in claim 18 further comprising a media rental center.

29. Apparatus for automated processing of payment transactions for retail
10 customer orders comprising:
 a) transaction computer;
 b) transaction bar code scanner;
 c) transaction touch monitor whereby the customer selects one or more
 forms of payment of the order amount; and
15 d) payment acceptance mechanism whereby the customer makes
 payment of the order amount in the selected forms of payment, the
 payment acceptance mechanism comprising coupon acceptor,
 currency acceptor, coin acceptor, check acceptor, credit card/debit
 card/EBT card acceptor, biometric acceptor, currency dispenser, and
20 coin dispenser.

30. Apparatus as recited in claim 29 wherein the payment acceptance mechanism further comprises a data card acceptor.

31. Apparatus as recited in claim 29 further comprising record means for
5 producing a transaction record.

32. Apparatus as recited in claim 29 wherein the record means comprises a transaction printer.

10 33. Apparatus as recited in claim 29 further comprising an interactive audio mechanism with speech recognition.

34. Apparatus as recited in claim 29 further comprising a biometric card acceptor.

15

35. Apparatus as recited in claim 29 further comprising an identification card acceptor.

36. Apparatus as recited in claim 29 further comprising facial image recording
20 means for recording a facial image of the customer.

37. Apparatus as recited in claim 36 wherein the facial image recording means comprises a CCD camera.

38. Apparatus as recited in claim 29 further comprising automatic deactivation
5 sensors for deactivating wireless anti-theft devices on each product of the order.

39. Apparatus as recited in claim 29 further comprising a fax/scanner mechanism.

10 40. Apparatus as recited in claim 29 further comprising a self purchase apparatus, the self purchase apparatus comprising a product scanner, a confirmation scale, product anti-theft device deactivation sensors, one or more electronic gates, a biometric sensor, a self purchase computer, a receipt bar code printer and customer interaction means for customer interaction with the self purchase apparatus.

15

41. Apparatus as recited in claim 40 further comprising facial image recording means for recording a facial image of the customer.

42. Apparatus as recited in claim 41 wherein the facial image means comprises a
20 purchase CCD camera.

43. Apparatus as recited in claim 40 wherein the customer interaction means comprises a purchase touch monitor.
44. Apparatus as recited in claim 40 wherein the customer interaction means
5 comprises an audio interaction mechanism with speech recognition.
45. Apparatus as recited in claim 40 further comprising automatic product anti-theft device deactivation sensors and a deactivation scale.
- 10 46. Apparatus as recited in claim 29 further comprising bill payment means.
47. Apparatus as recited in claim 46 wherein the bill payment means comprises an account identifying mechanism, a required payment identification mechanism, and a payment acceptance mechanism.
- 15 48. Apparatus as recited in claim 29 further comprising a media rental center.
49. Apparatus as recited in claim 40 further comprising a media rental center.
- 20

50. Apparatus for automated processing of bill payment transactions of a customer with an account owner or servicer, the apparatus comprising:

- a) identifying means for identifying a customer based upon a unique code or account number assigned to the customer and identifying each account of the customer with the account owner or servicer;
- b) transaction selecting means for the customer to select one or more payment transactions for one or more of the customer's accounts with the account owner or servicer;
- c) payment form selecting means for the customer to select one or more forms of payment for the selected transactions;
- d) accepting means for accepting payments in the forms selected by the customer; and
- e) confirming means for confirming the payments transactions and the transaction amounts made by the customer.

15

51. Apparatus as recited in claim 50 further comprising computing means for the identifying means, transaction selecting means, payment form selecting means, accepting means and confirming means.

20

52. Apparatus as recited in claim 51 wherein the computing means comprises a transaction computer.

53. Apparatus as recited in claim 50 wherein the identifying means comprises a transaction bar code scanner.

54. Apparatus as recited in claim 50 wherein the transaction selecting means
5 comprises a transaction touch monitor.

55. Apparatus as recited in claim 50 wherein the transaction selecting means comprises an interactive audio mechanism with speech recognition.

10 56. Apparatus as recited in claim 50 wherein the payment form selecting means comprises a transaction touch monitor.

57. Apparatus as recited in claim 50 wherein the payment form selecting means comprises an interactive audio mechanism with speech recognition.

15

58. Apparatus as recited in claim 50 wherein the accepting means comprises a currency acceptor, a coin acceptor, a check acceptor, a credit card/debit card/EBT card acceptor, a biometric acceptor, a currency dispenser, and a coin dispenser.

20 59. Apparatus as recited in claim 58 further comprising a biometric card acceptor.

60. Apparatus as recited in claim 58 further comprising a data card acceptor.

61. Apparatus as recited in claim 50 further comprising an identification card acceptor.

5

62. Apparatus as recited in claim 50 further comprising facial image recording means for recording a facial image of the customer.

63. Apparatus as recited in claim 62 wherein the facial image recording means
10 comprises a CCD camera.

64. Apparatus as recited in claim 50 wherein the accepting means further
comprises a dispensing means for dispensing the amount of any excess payment in
currency and/or coin.

15

65. Apparatus as recited in claim 50 wherein the confirming means comprises a
receipt printer.

20

66. Apparatus for automated processing of bill payment transactions of a customer with an account owner or servicer, the apparatus comprising:

- a) transaction computer;
- b) identifying means for identifying a customer based upon a unique
5 code or account number assigned to the customer and identifying
each account of the customer with the account owner or servicer;
- c) transaction touch monitor whereby the customer selects one or more
payment transactions for one or more of the accounts of the
customer and selects one or more forms of payment for the selected
10 payment transactions;
- d) payment acceptance mechanism whereby the customer makes
payment of the transaction amount for each selected payment
transaction in the selected forms of payment, the payment
acceptance mechanism comprising a currency acceptor, a coin
15 acceptor, a check acceptor, a credit card/debit card/EBT card
acceptor, a biometric acceptor, a currency dispenser, and a coin
dispenser; and
- e) confirming means for confirming for the customer the payments
transactions and the transaction amounts made by the customer.

20

63. Apparatus as recited in claim 62 wherein the payment acceptance mechanism further comprises a data card acceptor.

64. Apparatus as recited in claim 62 wherein the confirming means comprises a transaction printer.

5 65. Apparatus as recited in claim 62 wherein the identifying means comprises a bar code scanner.

66. Apparatus as recited in claim 62 further comprising an interactive audio mechanism with speech recognition.

10 67. Apparatus as recited in claim 62 further comprising a biometric card acceptor.

68. Apparatus as recited in claim 62 further comprising an identification card acceptor.

15

69. Apparatus as recited in claim 62 further comprising facial image recording means for recording a facial image of the customer.

70. Apparatus as recited in claim 69 wherein the facial image recording means
20 comprises a CCD camera.

71. Method for automated processing of payment transactions for retail customer orders comprising:

- 5 a) a step of identifying a retail order based upon a unique code assigned to the order and determining the order amount owed by the customer for the order;
- b) a step of selecting one or more forms of payment of the order amount;
- c) a step of accepting payment from the customer in the forms selected by the customer; and
- 10 d) a step of confirming that payment in the order amount has been made by the customer.

72. Method as recited in claim 71 wherein the steps utilize a transaction computer.

15

73. Method as recited in claim 71 wherein the step of identifying a retail order is accomplished by scanning a bar code on a customer receipt by a transaction bar code scanner.

20 74. Method as recited in claim 71 wherein the step of selecting one or more forms of payment is accomplished through use of a transaction touch monitor.

75. Method as recited in claim 71 wherein the step of selecting one or more forms of payment is accomplished through use of an interactive audio mechanism with speech recognition.

5 76. Method as recited in claim 71 wherein the step of accepting one or more forms of payment is accomplished through use of a coupon acceptor, a currency acceptor, a coin acceptor, a check acceptor, a credit card/debit card/EBT card acceptor, a biometric acceptor, a currency dispenser, and a coin dispenser.

10 77. Method as recited in claim 76 wherein the step of accepting one or more forms of payment is further accomplished through use of a biometric card acceptor.

78. Method as recited in claim 76 wherein the step of accepting one or more forms of payment is further accomplished through use of a data card acceptor.

15

79 Method as recited in claim 71 further comprising a step of scanning information from an identification card of the customer through use of an identification card acceptor.

20 80. Method as recited in claim 71 further comprising a step of recording the facial image of the customer.

81. Method as recited in claim 80 wherein the step of recording the facial image of the customer is accomplished through the use of a CCD camera.

82. Method as recited in claim 71 further comprising a step of automatically
5 deactivating wireless anti-theft devices on each product of the order.

83. Method as recited in claim 71 further comprising a step of dispensing the amount of any excess payment in currency and/or coin.

10 84. Method as recited in claim 71 wherein the step of confirming that payment in the order amount has been made by the customer is accomplished by printing a receipt.

85. Method as recited in claim 71 further comprising a step of the customer checking out the customer's order.

15

86. Method as recited in claim 85 wherein the step of the customer checking out the customer's order is accomplished through use of a self purchase apparatus.

20

87. Method as recited in claim 86 wherein the step of the customer checking out the customer's order is accomplished through use of a self purchase apparatus comprising a product scanner, a confirmation scale, product anti-theft automatic deactivation sensors, one or more electronic gates, a self purchase computer, a biometric sensor, a receipt bar
5 code printer, and a mechanism for customer interaction with the self purchase apparatus.

88. Method as recited in claim 87 further comprising a step of recording a facial image of the customer.

10 89. Method as recited in claim 88 wherein the step of recording a facial image of the customer is accomplished through the use a purchase CCD camera.

90. Method as recited in claim 87 wherein customer interaction is accomplished through use of a purchase touch monitor.

15 91. Method as recited in claim 87 wherein customer interaction is accomplished through use of an audio interaction mechanism with speech recognition.

92. Method as recited in claim 87 further comprising a step of automatically
20 deactivating product anti-theft devices.

93. Method as recited in claim 71 further comprising a step of accepting customer bill payments.

94. Method as recited in claim 93 wherein the step of accepting customer bill payments comprises identifying a customer based upon a unique code or account number assigned to the customer and identifying each account of the customer with the account owner or servicer; determining the amount to be paid on an account, and accepting payment in the forms and in the amounts selected by the customer.

95. Method as recited in claim 71 further comprising a step of renting media to the customer.

96. Method as recited in claim 86 further comprising a step of renting media to the customer.

97. Method for automated processing of bill payment transactions of a customer with an account owner or servicer, the method comprising:

- 5 a) a step of identifying a customer based upon a unique code or account number assigned to the customer and identifying each account of the customer with the account owner or servicer;
- b) a step of selecting one or more payment transactions for one or more of the customer's accounts with the account owner or servicer;
- c) a step of selecting one or more forms of payment for the selected transactions;
- 10 d) a step of accepting payments in the forms selected by the customer; and
- e) a step of confirming the payments transactions and the transaction amounts made by the customer.

15 98. Method as recited in claim 97 wherein the steps utilize a transaction computer.

99. Method as recited in claim 97 wherein the step of identifying a customer based upon a unique code or account number assigned to the customer and identifying each
20 account of the customer with the account owner or servicer comprises scanning a code on a customer bill.

100. Method as recited in claim 97 wherein the step of selecting one or more forms of payment is accomplished through use of a transaction touch monitor.

101. Method as recited in claim 97 wherein the step of selecting one or more
5 forms of payment is accomplished through use of an interactive audio mechanism with speech recognition.

102. Method as recited in claim 97 wherein the step of accepting one or more forms of payment is accomplished through use of a currency acceptor, a coin acceptor, a
10 check acceptor, a credit card/debit card/EBT card acceptor, a biometric acceptor, a currency dispenser, and a coin dispenser.

103. Method as recited in claim 102 wherein the step of accepting one or more forms of payment is further accomplished through use of a biometric card acceptor.
15

104. Method as recited in claim 102 wherein the step of accepting one or more forms of payment is further accomplished through use of a data card acceptor.

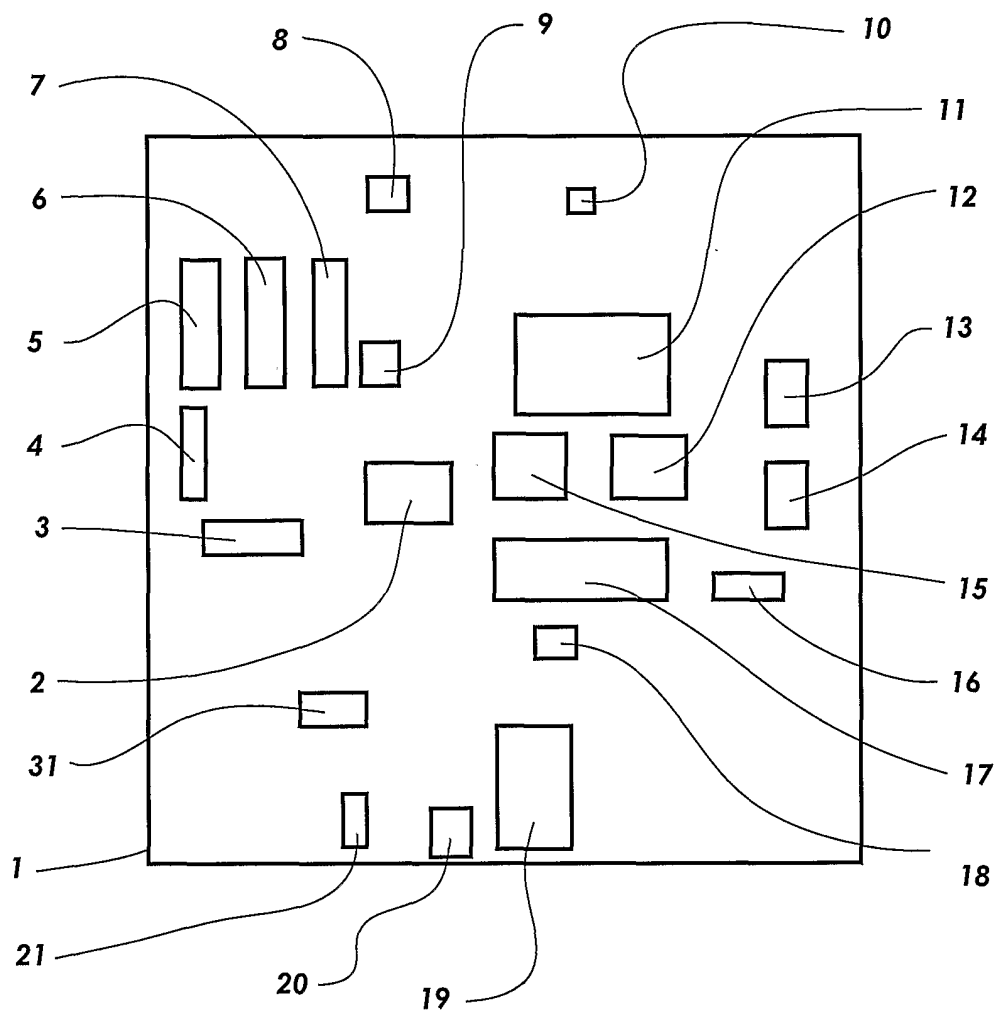
105. Method as recited in claim 97 wherein the step of accepting one or more
20 forms of payment is further accomplished through use of a data card acceptor.

106. Method as recited in claim 97 further comprising a step of recording the facial image of the customer.

107. Method as recited in claim 106 wherein the step of recording the facial
5 image of the customer is accomplished through the use of a CCD camera.

108. Method as recited in claim 100 further comprising a step of dispensing the amount of any excess payment in currency and/or coin.

109. Method as recited in claim 97 wherein the step of confirming payments is
10 accomplished by printing a receipt.

**FIG. 1**

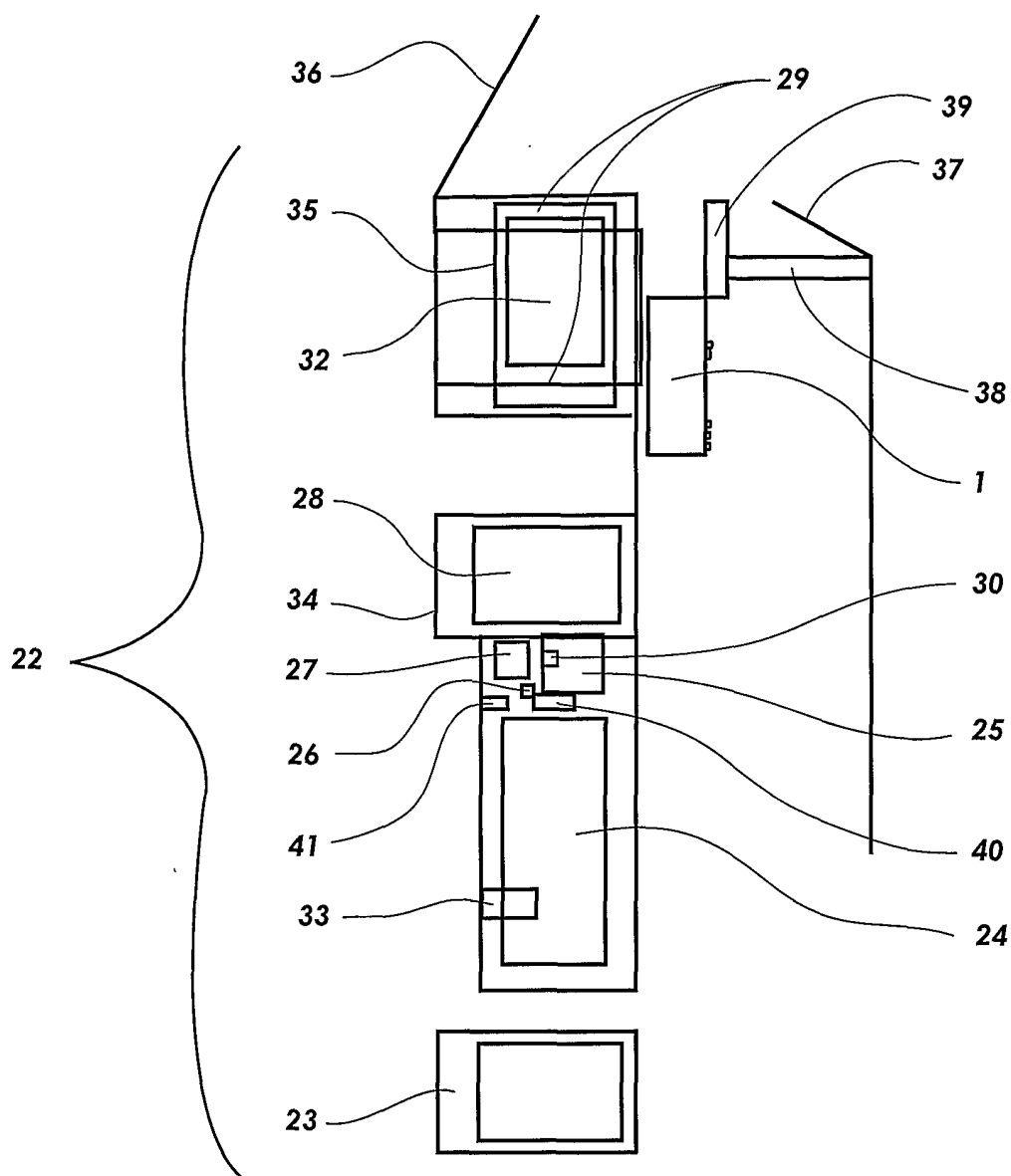


FIG. 2

INTERNATIONAL SEARCH REPORT

Inte. application No.
PCT/US01/07887

A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : G06F 17/60 US CL : 705/35 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 705/35, 36 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DIALOG, EAST, WEST		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y,P	US 6,236,972 B1 (SHKEDY) 22 May 2001, see entire document.	1-109
Y	US 5,983,204 A (DEBE) 9 November 1999, see entire document.	1-109
A	US 5,855,008 A (GOLHABER et al.) 29 December 1998, see entire document.	1-109
A	US 5,794,207 A (WALKER et al.) 11 August 1998, see entire document.	1-109
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family	
Date of the actual completion of the international search 04 JUNE 2001		Date of mailing of the international search report 22 JUN 2001
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer KELLY O'HARA <i>Peggy Hanod</i> Telephone No. (703) 308-3900