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Ogram

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[54] **FINANCIAL TRANSACTION SYSTEM**

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[52] **U.S. Cl.** **705/26; 235/381; 340/825.35**

[58] **Field of Search** **235/375, 379, 235/380, 381; 340/825.3, 825.31, 825.34, 825.35; 705/1, 26, 27; 902/2**

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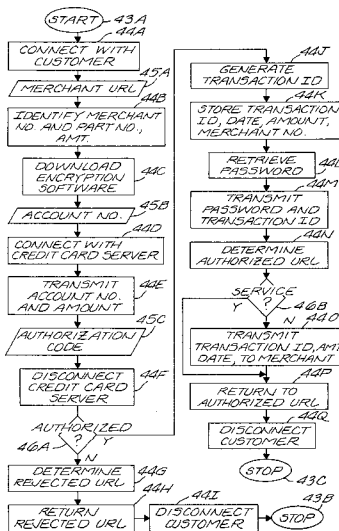
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Primary Examiner—Edward R. Cosimano

[57] **ABSTRACT**

An automated payment system particularly suited for purchases over a distributed computer network such as the Internet. In such a distributed computer network, a merchant or vending computer contains certain promotional information which is communicated to a customer's computer. Based upon the promotional information, the operator of the customer's computer decides to purchase the services or goods described by the promotional information. The customer's computer is linked to a payment processing computer and the customer's credit card number and the amount of the goods or services is transmitted to the payment processing computer. The payment processing computer automatically contacts a bank for verification of the credit card and amount; the bank transmits an authorization to the payment processing computer. The payment processing computer communicates a self-generated transaction indicia, and in some embodiments a password, to the customer's computer. In the embodiment where a password is used, the customer's computer uses the password with the merchant's computer in obtaining access to protected information or to establish shipping instructions.

26 Claims, 8 Drawing Sheets



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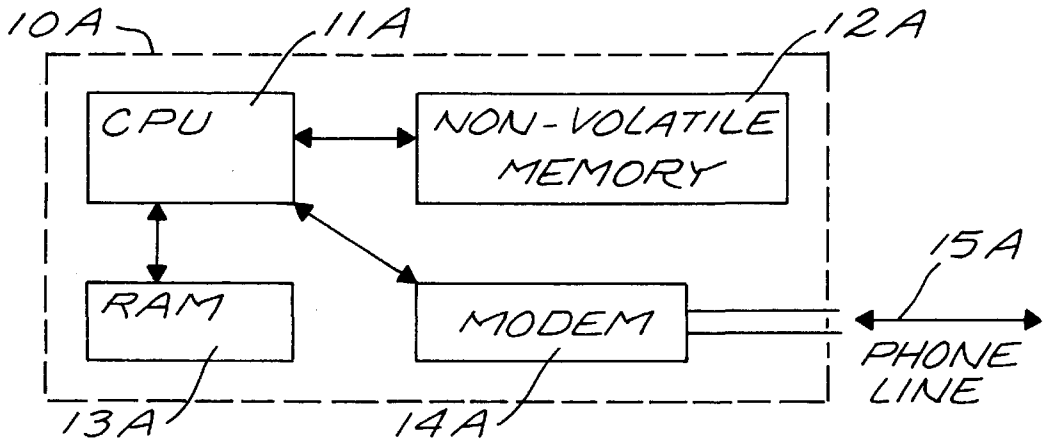


FIG. 1A

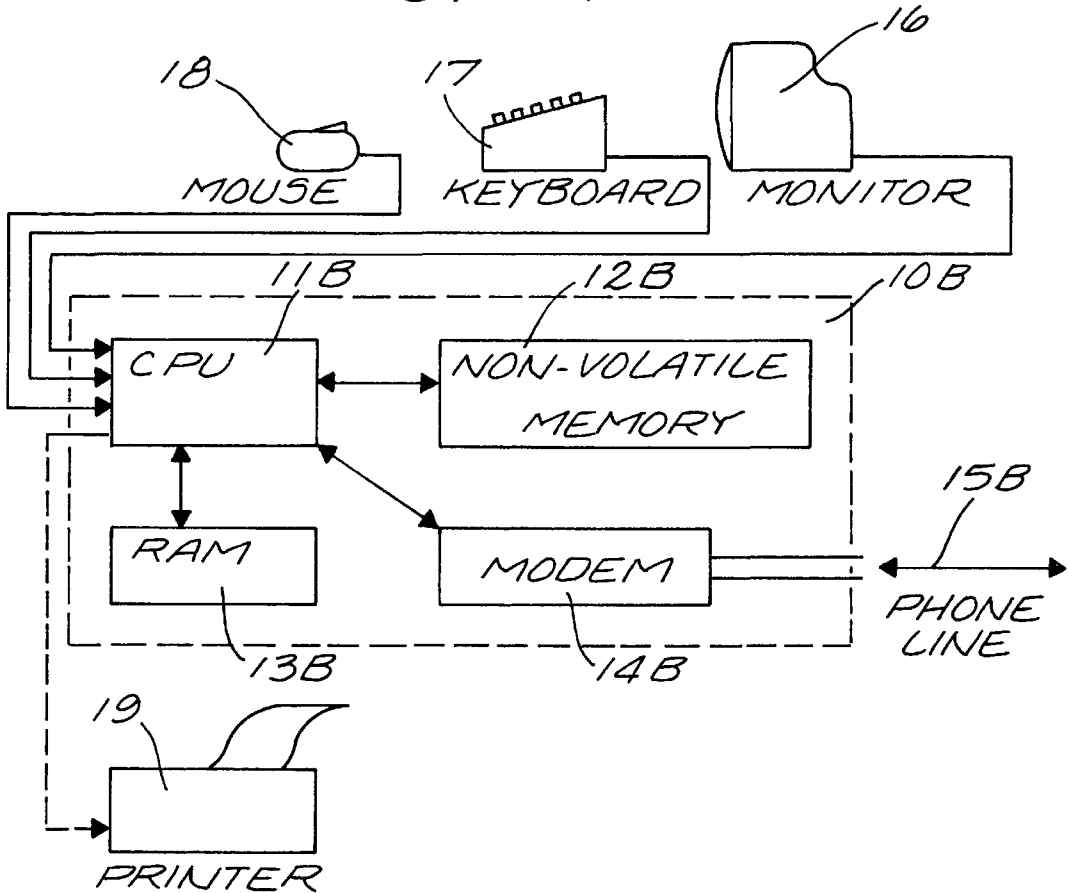


FIG. 1B

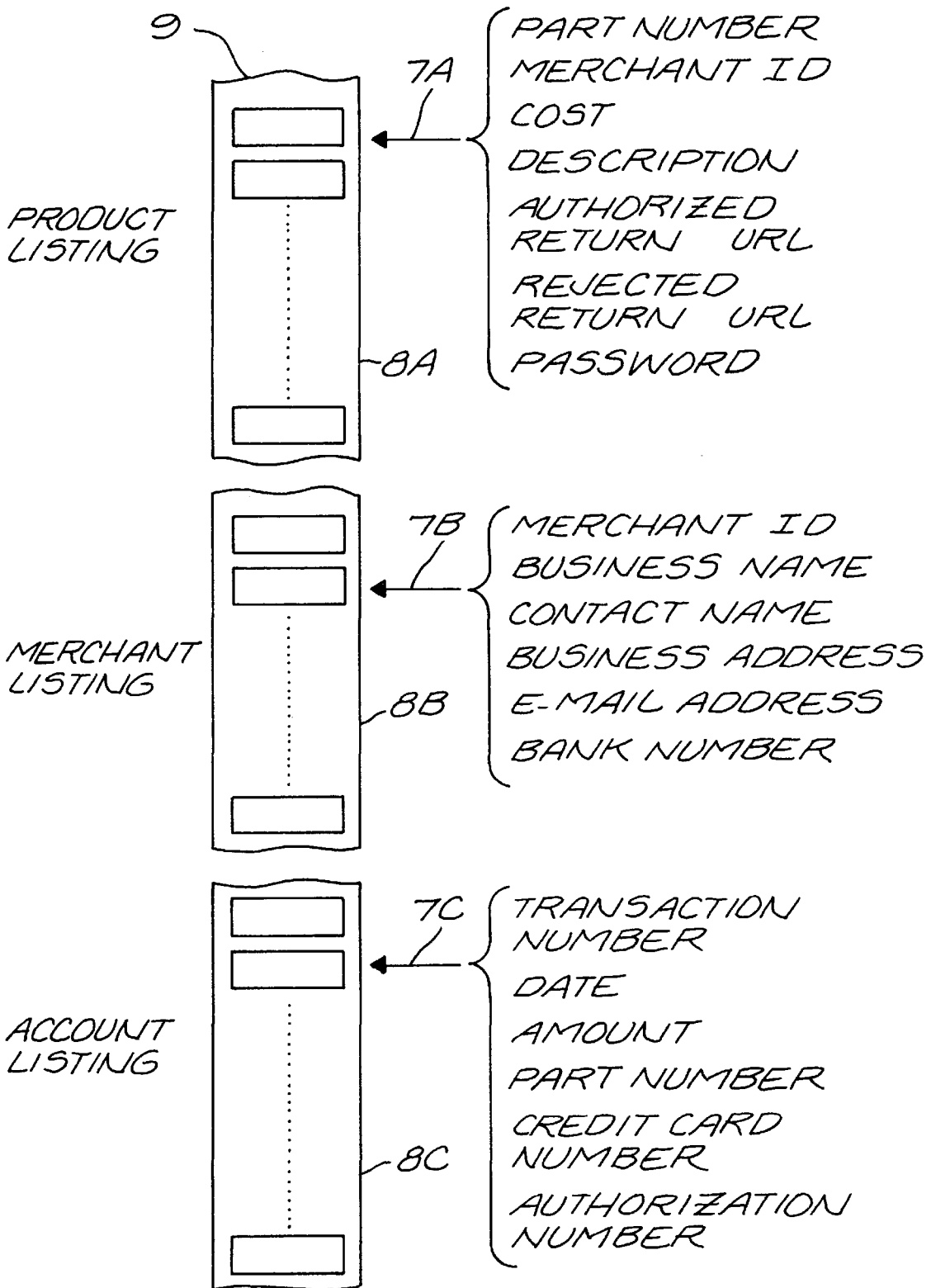
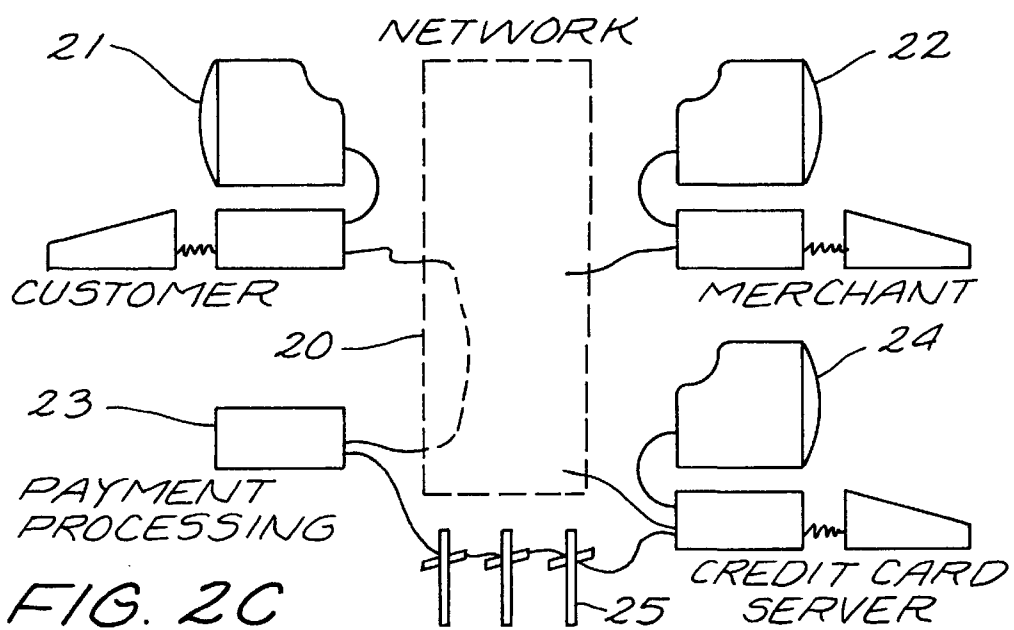
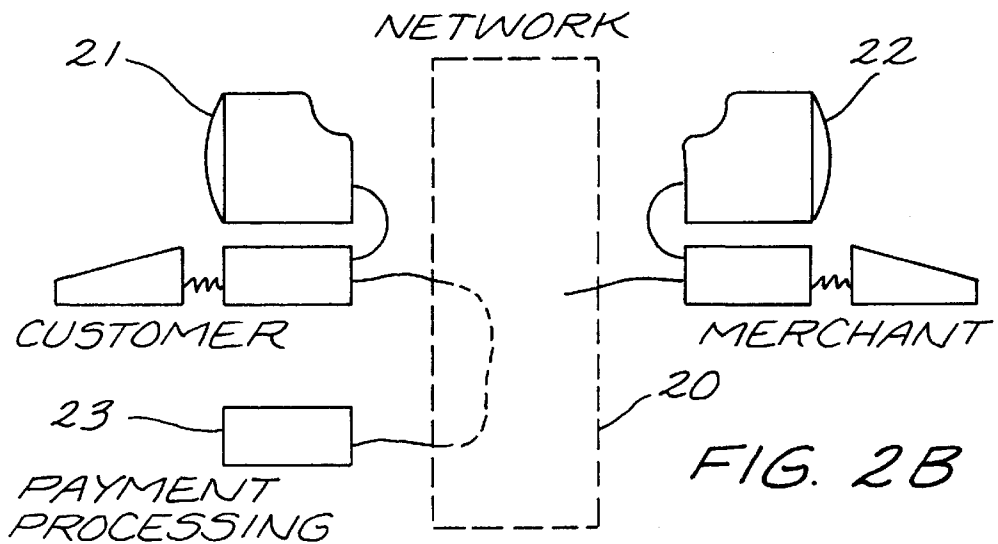
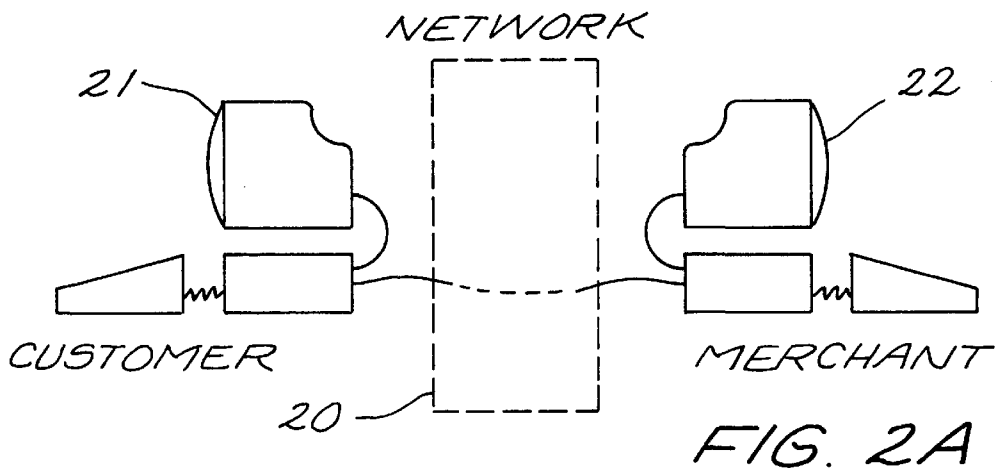
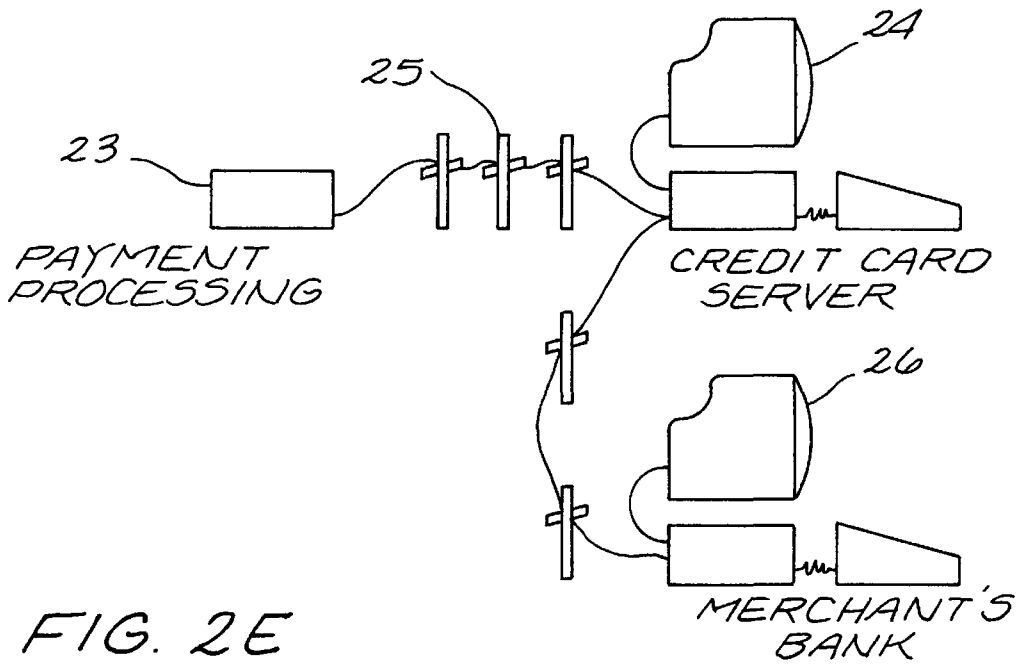
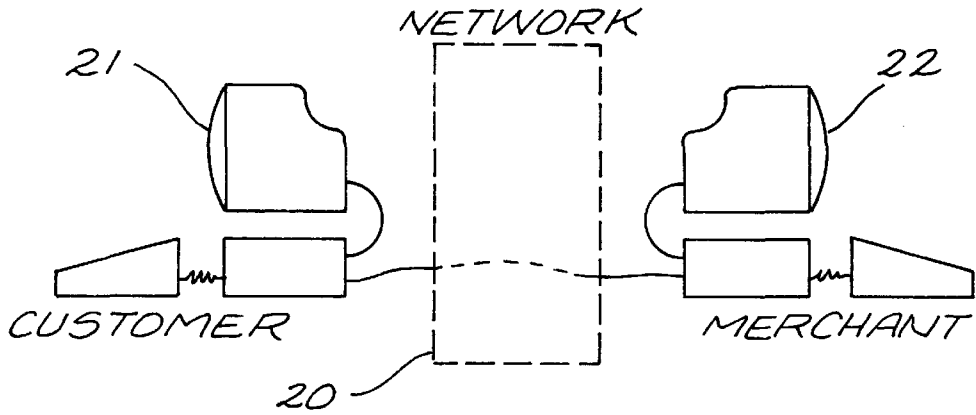
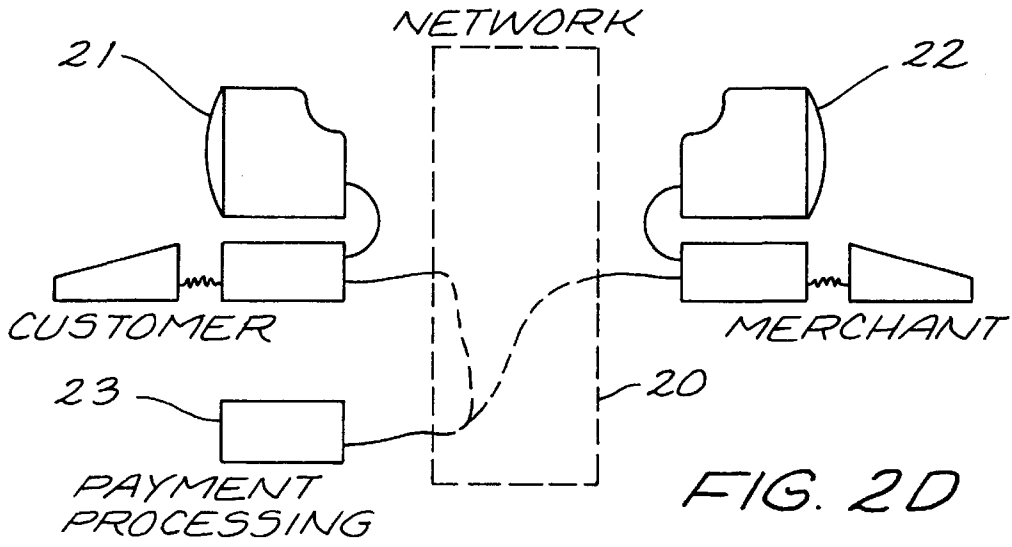


FIG. 1C





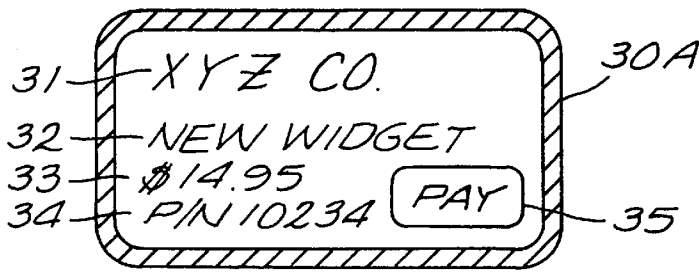


FIG. 3A

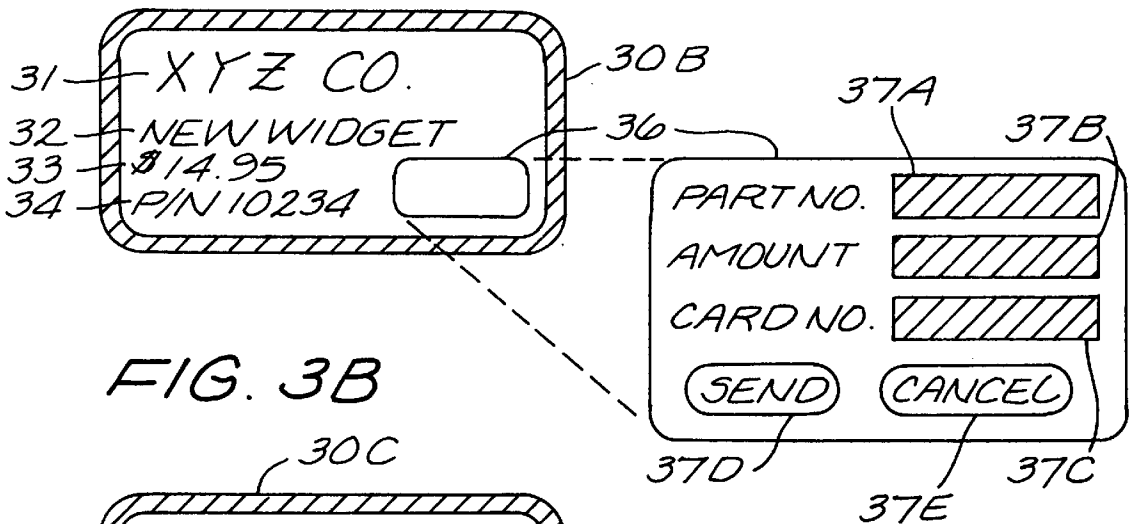


FIG. 3B

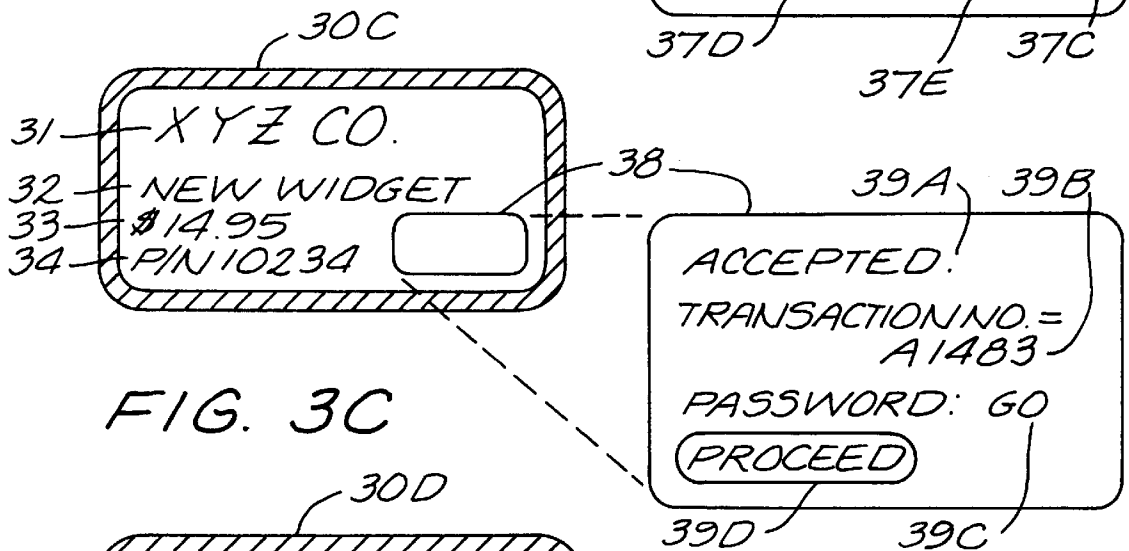


FIG. 3C

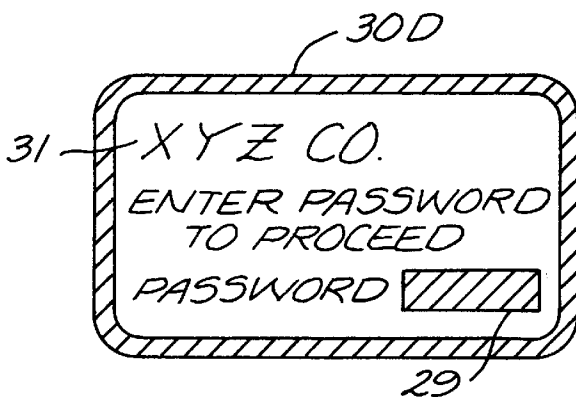


FIG. 3D

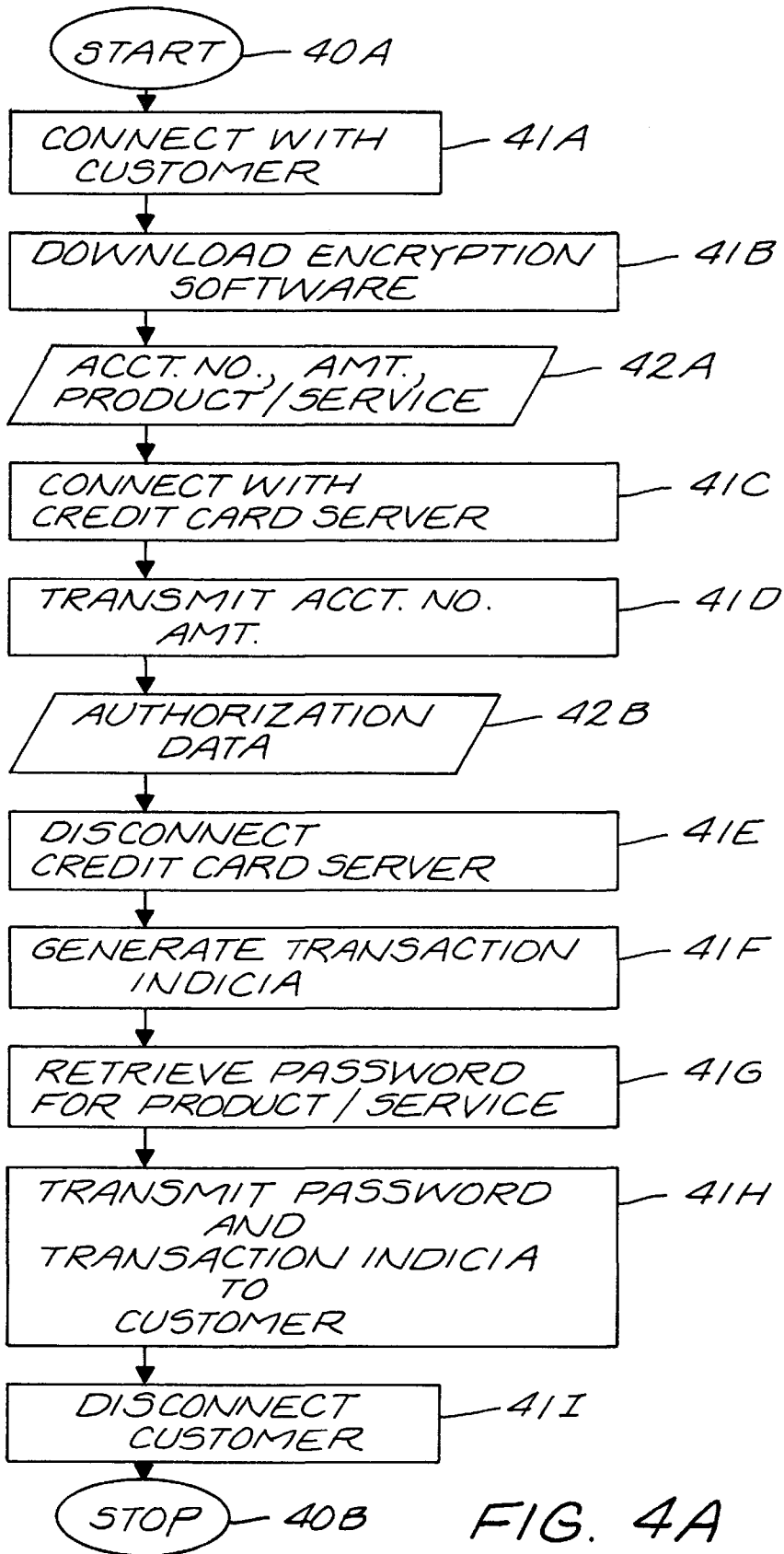


FIG. 4A

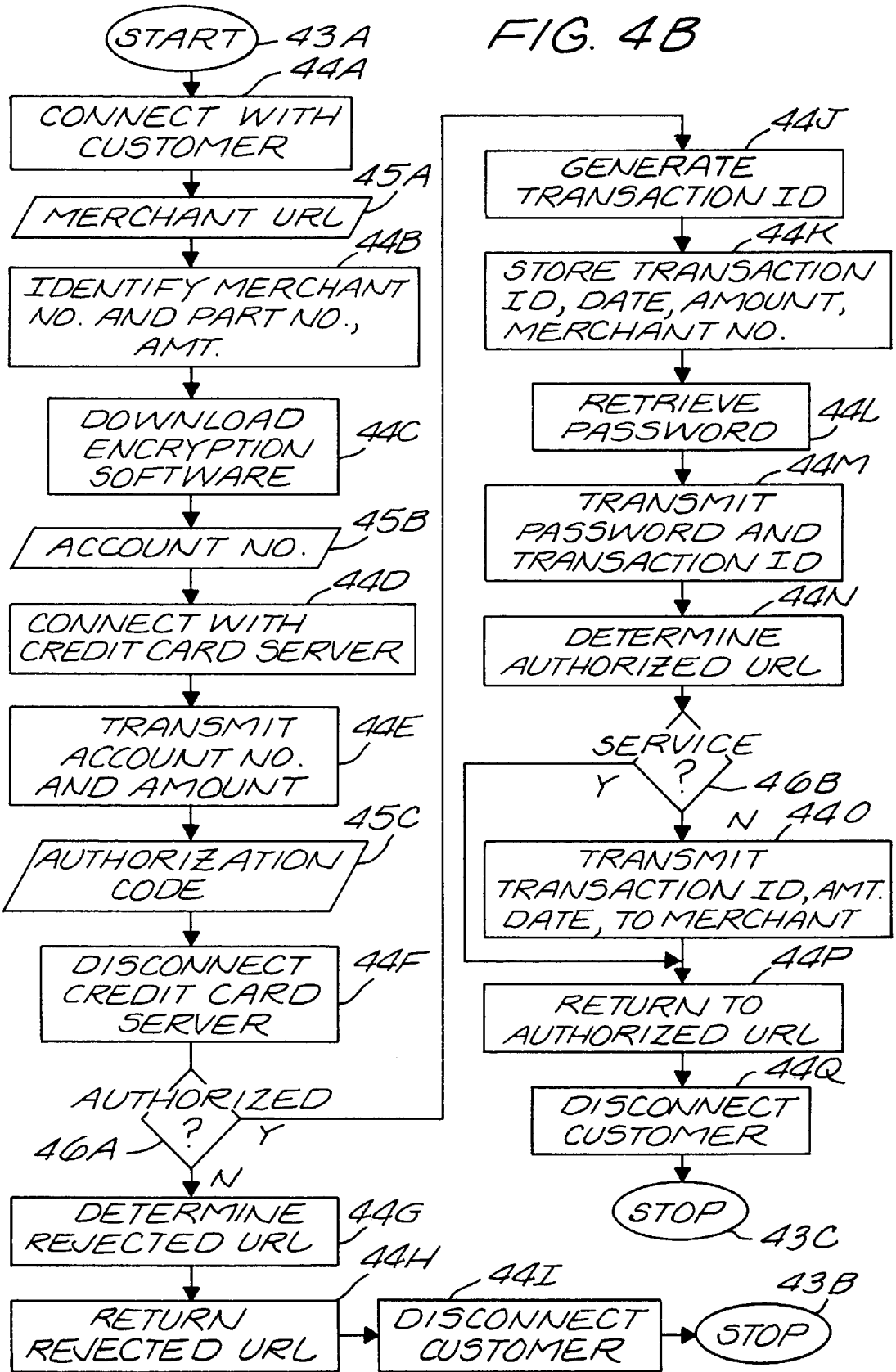
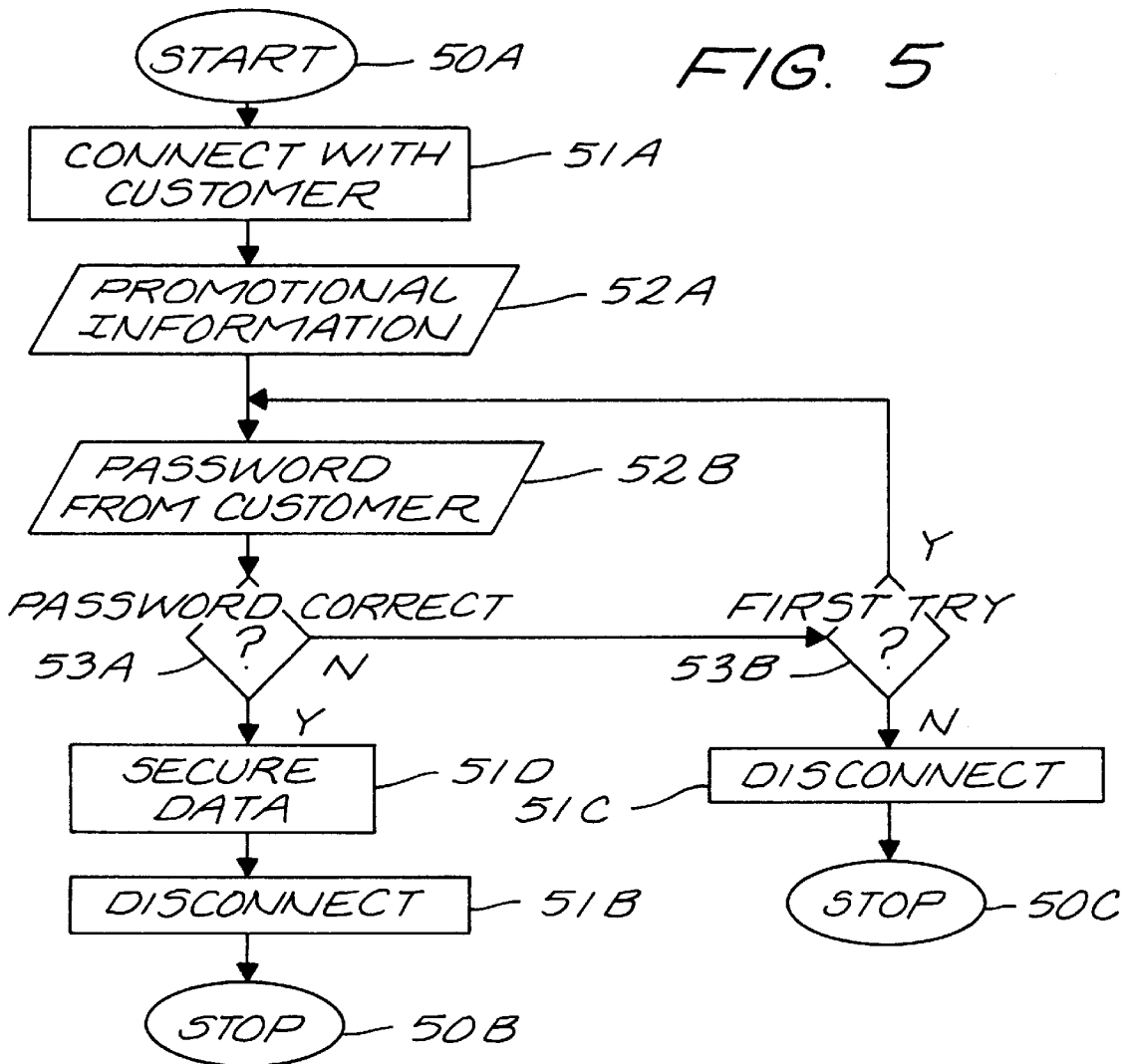


FIG. 5



FINANCIAL TRANSACTION SYSTEM

BACKGROUND OF THE INVENTION

This invention relates generally to financial transactions and more particularly to transactions involving credit or debit cards.

The time is fast approaching where a significant amount of commerce will be conducted using distributed networks of computers such as the Internet. The reason this groundswell of commerce will occur is the ability of a single merchant to economically reach a vast number of potential customers at substantially no costs. Further, the customers are able to review a great number of vendors and their products with the ease of a few key strokes and clicks of the mouse.

Although there are vast numbers of merchants already using such networks, the sales volume has been particularly low due to a variety of reasons. One reason which has depressed commerce on the networks, is the difficulty with which customers can pay for their purchases.

A variety of techniques have been developed to cure this problem ranging from accepting phone orders to the establishment of another currency called "E-Cash".

Phone orders in response to merchant promotional materials creates a variety of problems. One major problem is the requirements for phone lines and personnel to receive and process the phone orders. Another hurdle is the simple fact that most customers have a single phone line to their residence and this line is used by the computer for accessing the network; the customer has to disconnect from the network to make the phone order.

Although E-Cash is a viable alternative, it is faced with some enormous problems which will be difficult or impossible to address. These include: counterfeiting problems; government reluctance to accept the concept; difficulties in getting access for handling E-Cash; and, the low number of users and merchants which can use E-Cash.

It is clear from the foregoing that there is a need for an efficient methodology and system to accept payment over distributed computer networks.

SUMMARY OF THE INVENTION

The present invention contemplates a totally automated system for securing payment via a distributed network of computers. In this context, the invention creates an automated payment system particularly suited for purchases over a network such as the Internet.

Although the present invention is described relative to the Internet, its application is not so limited and is intended to be used on any distributed computer system in which merchants and consumers interact for the purpose of supplying and purchasing goods or services.

In such a distributed computer network, a merchant or vending computer contains certain promotional information which is communicated to a customer's computer. This information is intended to give the customer sufficient information to make a decision on if the goods/services are acceptable.

As used within this discussion, the term "merchant computer" signifies a computer system which is used for the purpose of selling goods or services. The vendor itself does not necessarily own the computer; in some situations, the computer is operated on behalf of the merchant or vendor.

Based upon the promotional information, the consumer/operator of the customer's computer decides to purchase the services or goods described by the promotional information.

It is at this point where the present invention is particularly powerful as it provides a simple, easy, methodology and linkage for the customer to pay for the goods/services.

In this context, the customer's computer is linked to a payment processing computer and the customer's credit card number and the amount of the goods or services is transmitted to the payment processing computer. For security reasons, an encrypting software package is first downloaded to the customer's computer so that the credit card number is secure from "hackers" who might also be on the network.

Although the term "credit card" is used, the invention covers the use of any type of financial guarantee card such as automatic debit accounts, checking account numbers, savings account numbers, and other such devices obvious to those of ordinary skill in the art.

The payment processing computer automatically contacts a bank for verification of the credit card and amount; the bank transmits an authorization to the payment processing computer. This authorization, usually in the form of a number, is stored within the payment processing computer's memory for later reference.

The link or connection with the bank is terminated by the payment processing computer and the payment processing computer turns its attention to the customer's computer. The payment processing computer communicates a self-generated transaction indicia, and in some embodiments a password, to the customer's computer.

The transaction indicia is generated by the payment processing computer for proper record keeping. The transaction indicia is also used by the customer to verify that an order has been generated and accepted.

The password is defined by the merchant's computer for the payment processing computer to pass along to the customer's computer. The password is used by the customer's computer to gain access to restricted material within the merchant's computer.

As example, assume the merchant's computer is supplying information as to genealogy. As an initial process, the customer enters the name being researched and receives a preliminary report on the genealogy (the promotional material). To proceed though, and get the actual data, the customer must pay to access this further information.

To do so, the customer links with the payment processing computer, and in the manner outlined above, receives back the transaction indicia and the password. The payment processing computer links the customer computer back to the merchant computer; the customer provides the password to the merchant's computer and is given access to the full genealogy report.

As outlined in this example, in the embodiment where a password is used, the customer's computer uses the password with the merchant's computer in obtaining access to protected information or to establish shipping instructions.

The re-linking of the customer computer to the merchant computer is accomplished in a variety of ways. In the preferred embodiment, the payment processing computer obtains the merchant's address or Unique Recognition Location (URL) from the customer computer when the customer connects with the payment processing computer. This URL is used in a variety of ways, to identify the merchant, to establish the amount of the product/service, and to establish the return URL when the payment processing computer is done with its task for the customer computer.

By selective use of the URL on the merchant's part, the URL transmits a tremendous amount of information to the

payment processing computer. As example, assume the URL for the home-page of the merchant is: <http://merchant.com/widget>.

When the merchant is selling a single product (a widget), this URL is easy to match to the product. When the merchant wants to sell a variety of widgets, then for a blue widget, the URL might be: <http://merchant.com/widget/blue>.

In some embodiments, the customer's computer is not linked back to the originating URL of the Merchant computer but rather to another URL. The return URL is stored in the payment processing computer and is used when the Merchant wants the customer/consumer to be passed back to a different location (i.e. where the restricted access information is accessible, or to inform the consumer that their card has been rejected).

The invention, together with various embodiments thereof, will be more fully explained by the accompanying drawings and the following descriptions.

DRAWINGS IN BRIEF

FIGS. 1A and 1B are block diagrams of the two computer configurations used in the preferred embodiment.

FIG. 1C is a graphical representation of the preferred memory organization for the computer illustrated in FIG. 1A.

FIGS. 2A, 2B, 2C, 2D, and 2E graphically illustrate the connections and disconnections of the preferred embodiment.

FIGS. 3A, 3B, 3C, and 3D are frontal views of one embodiment of a consumer's display screen.

FIG. 4A is a flow-chart of the preferred embodiment's payment processing operation.

FIG. 4B is a flow-chart of an alternative embodiment's payment processing operation.

FIG. 5 is a flow-chart of the operation of the merchant's computer.

DRAWINGS IN DETAIL

FIGS. 1A and 1B are block diagrams of the two computer configurations used in the preferred embodiment.

FIG. 1A illustrates the configuration of the preferred payment processing computer. As shown, computer 10A is a simple layout of a Central-Processing-Unit (CPU) 11A which uses both non-volatile memory 12A and Random-Access-Memory (RAM) 13A.

Communication to and from CPU 11A is via modem 14A which communicates with other computers via the network connected by phone line 15A.

Computer 10B, illustrated in FIG. 1B, shows the preferred computer configuration used for the merchant computer and the customer computer. Again, CPU 11B is connected to memories RAM 13B and non-volatile memory 12B. In the case of the merchant computer, the promotional material is stored on non-volatile memory 12B and is retrieved and communicated by CPU 11B using modem 14B and phone line 15B.

This system is able to communicate with an operator via monitor 16 for visual information. Monitor 16 is used for the perusal of the promotional material by the customer.

Keyboard 17 is used to communicate operator commands to CPU 11B. In like fashion, mouse input device 18 is also used for operator input to CPU 11B.

Optional printer 19 is used to create a hard copy of the material being displayed to the operator/customer via monitor 16.

The differences between the computers shown in FIG. 1A and 1B are pronounced since the payment processing computer of FIG. 1A does not require input or direction from a human operator. Rather, in the preferred embodiment, the payment processing computer runs totally automatically and collects all of the data and information it requires for its operation automatically from the computers with which it is linked and with what is stored in its memory.

FIG. 1C is a graphical representation of the preferred memory organization for the computer illustrated in FIG. 1A.

Memory 9, located preferably in non-volatile memory 12A, has three sections. The first section 8A is the product listing reference which is composed of multiple groupings. This data remains relative constant and is defined by the merchant. Each grouping, such as 7A, includes data identifying:

- Part Number
- Merchant Identification
- Cost of Product/Service
- Description of the Product/Service
- Authorized Return URL
- Rejected Return URL
- Password

The second section is for defining the merchant's information. Each grouping 7B within section 8B contains relative constant information such as:

- Merchant Identification
- Business Name
- Contact Name within the Business
- Business Address
- E-Mail address for the Business

- Bank Checking Number for the Business

The third section 8C is an accounting listing which is constantly up-graded as new payments are processed. This section is used for making full accounting to the various merchants. Grouping 7C within section 8C contain:

- Transaction Number
- Date of transaction
- Amount of the transaction
- Part number involved in transaction
- Credit Card Number
- Authorization Number

The authorization number is the indicia received from the bank indicating that the credit card charge has been accepted.

The use of memory 9 allows the payment processing computer to have access to the necessary information to handle the linkage and perform the proper accounting.

FIGS. 2A, 2B, 2C, 2D, and 2E graphically illustrate the connections and disconnections of the preferred embodiment.

Referring to FIG. 2A, in a typical fashion, a consumer via customer computer 21 enters the network 20 and searches through various merchant computers until the consumer locates the merchant of choice and connects with merchant computer 22. Merchant computer 22 communicates the promotional material via network 20 to customer computer 21.

When the consumer decides to buy the service or product from merchant 22, as shown in FIG. 2B, the link with merchant computer 22 is broken and customer computer 21 links with the payment processing computer 23. In the

change from merchant computer 22 to payment processing computer 23, an indicia of the URL or the product being promoted by merchant computer 22 is communicated to the payment processing computer 23.

The indicia as a URL of the last site is available through normal network operations and its handling is obvious to those of ordinary skill in the art. The product number is easily combined with the URL; thereby making the product number also available to the payment processing computer 23.

In some embodiments, the originating URL is crossed checked to a memory data base to achieve the product number. In this embodiment, the merchant structures its material so that only a single product/service is associated with a specific URL.

Using the product number (or developing the product number from the merchant's URL), the payment processing computer is able to cross reference its own memory (as described earlier) to achieve other important information including: the amount of the product/service, a description of the product/service, the name and address of the merchant, and other which will be used in later operations.

The payment processing computer 23 accepts from the customer computer 21, the credit card account number which is to be debited the amount of the product.

As shown in FIG. 2C, in this embodiment, while maintaining linkage with the customer computer 21, the payment processing computer 23 establishes a link via phone lines 25 with the credit card server computer 24. The credit card account number and amount is communicated to the credit card server computer 24 which responds to the payment processing computer 23 with an authorization indicia. This authorization indicia gives the acceptance or denial of the charge.

If a product is to be shipped, and if the charge has been authorized, as shown in FIG. 2D, the payment processing computer 23 connects with the merchant computer 22 and directs the merchant to ship the product to the consumer.

The Merchant's Bank Computer contains deposit data in its memory. The deposit data and the credit data is adjusted based upon the amount data received from the Merchant Computer.

As shown in FIG. 2E, since the payment processing computer 23 has identified the product number, it is able to retrieve from its memory the URL for reconnecting the customer computer 21 with the merchant computer 22. In this manner, the entire operation is totally transparent to the consumer since they feel they have been continuously working with the merchant computer 22.

Further, using the URL's from its memory, the payment processing computer 23 is able to link the customer computer 21 to the merchant computer 22 at an address which is different from where the consumer was originally connected. In this manner, the payment processing computer 23 is able to direct the consumer to different locations which are consistent with the authorization indicia (accept/reject) on their credit card.

As example, assume, the credit card was authorized, then the consumer could be reconnected to an area which has restricted access so that the consumer can gain the information paid for; if on the other hand, the credit card was rejected, the connection would be to a page indicating such and possibly asking for another card number.

In this manner, the payment processing computer 23 is able to control the operation and interface between the customer computer 21 and the merchant computer 22.

Periodically, the payment processing computer 23 connects via the phone lines 25 with the credit card server 24

and instructs it to transfer the appropriate amount of funds to the merchant's bank computer 26 so that the merchant has access to the funds paid for his product/service provided to the consumer.

FIGS. 3A, 3B, 3C, and 3D are frontal views of one embodiment of a consumer's display screen.

Screen 30A is designed to provide the promotional information so that the consumer is attracted to purchase the product. In screen 30A is the name of the merchant company (XYZ CO.) 31, the name of the product (widget) 32, the price (\$14.95) 33, and the part number (#10234) 34.

Also located on screen 30A is a software key 35 which allows the consumer to pay for the product. In this embodiment, by activating this software key 35 (typically through a click of the mouse), screen 30A is changed to screen 30B which is identical except that the software key 35 has been replaced with an order window 36.

Order window 36 allows the consumer to complete the necessary information to order the product. This includes the part number 37A, the amount 37B, and the credit card number 37C. When the consumer is ready, the software key "Send" 37D or the software key "Cancel" 37E is activated. In the case of a cancel, the screen returns to screen 30A.

In a "send" 37D, mode, the payment processing computer contacts the bank computer and determines if the credit card is valid and if the amount is available. If the charge is authorized, the screen changes to 30C in which the order window 36 has been replaced with authorization window 38 which shows that the charge has been accepted 39A, the transaction no. (A1483) 39B, and the password ("GO") 39C which the consumer is to use with the merchant.

When this information has either been printed or committed to memory, the consumer activates software key 39D to "Proceed" to screen 30D. At this point, the consumer is able to enter the password 29 so that the restricted access is lifted. In the genealogy example, it is at this point the consumer gains access to the full report.

FIG. 4A is a flow-chart of the preferred embodiment's payment processing operation.

After start 40A, a connection is made with the customer computer 41A and the encryption software is downloaded to the customer computer 41B. Encryption software is preferably used for transmittal of the credit card number so that the integrity of the card is not jeopardized.

The consumer computer then communicates, and the payment processing computer accepts, the account number, the amount, and the identification of the product or service, 42A. A connection is made with the credit card server 41C and the account number and amount is transmitted 41D to the credit card server over the established phone lines. In response to this query, the authorization data is received 42B and the connection with the credit card server 41E is broken.

A transaction indicia is generated 41F. This transaction indicia is not the authorization data but serves as an internal monitoring system for the payment processing computer so that the accounting is kept accurate.

From the memory, the password is withdrawn 41G for the product so ordered; and, the password and transaction indicia is transmitted to the customer computer 41H.

At this point, the connection with the customer computer is terminated 41I and the program stops 40B.

FIG. 4B is a flow-chart of an alternative embodiment's payment processing operation.

After start 44A, the program connects with the customer computer 41A and at the same time obtains the merchant URL 45A. Using the merchant URL, the payment processing computer searches its memory and identifies the merchant number, the part number, and the purchase amount 44B.

The encryption software is downloaded into the customer computer **45B** and the credit card account number is received **45B**. A connection is then made with the credit card server computer **44D** and the account number and the amount is transmitted **44E**. This inquiry results in an authorization code **45C** being received and the connection with the credit card server being broken **44F**.

A check is then made to see if the credit card purchase was authorized **46A**.

If the credit card purchase was denied, the URL to use for a rejection is withdrawn from memory **41G** and the Customer computer is connected to the merchant computer at this URL **44H** leaving the payment processing computer able to disconnect **44I** and stop **43B**.

Should the credit card purchase be accepted, **46A**, then the program generates a transaction identification **44J**. This transaction identification is stored along with the date, amount of purchase, and the merchant number **44K**.

The password is retrieved from memory **41L** and it, together with the transaction identification, is transmitted to the customer computer **44M**.

From memory, the authorized URL is withdrawn **44N**.

A determination, based upon stored data, is made as to the character of the product (service or goods) **46B**. If the product relates to goods which are to be shipped, a shipping order including the transaction identification, the amount, the date, and address of the customer, is communicated to the merchant **44O** to satisfy the order. If the product is a "service", the program skips to step **44P**.

The customer computer is then connected to the authorized URL **44P** and the connection with the customer computer is terminated **44Q** allowing the program to stop **43C**.

FIG. 5 is a flow-chart of the operation of the merchant's computer.

After start **50A**, the merchant computer connects with the customer computer **51A** and communicates the promotional material **52A**. The password is received from the customer **52B** and is checked to see if it is the correct password **53A**.

If the password is incorrect, a determination is made on if it is the customer's first try **53B**; if it is, then the customer is given another chance to enter the correct password **52B**. If the customer has tried twice to enter the correct password, the connection with the customer is terminated **51C** and the program stops **50C**.

If the password is correct, **53A**, then the secure or restricted access data is communicated to the customer's computer **51D** and the connection with the customer's computer is terminated **51B**. The program then stops **50B**.

In this manner, secure information is selectively transmitted to a customer's computer upon the presentation of a password.

It is clear from the foregoing that the present invention creates a highly improved system for acceptance and processing of payments over a distributed computer network.

What is claimed is:

1. A financial transaction system comprising:

- a) a first bank computer containing financial data therein, said financial data including customer account numbers and available credit data, said first bank computer including means for generating an authorization indicia in response to queries containing a customer account number and amount;
- b) a merchant computer containing promotional data;
- c) a customer computer being linked with said merchant computer and receiving said promotional data; and,
- d) a financial processing computer remote from said merchant computer and having means for:

- 1) receiving customer account data and amount data from said customer computer,
- 2) querying said first bank computer with said customer account data and said amount data,
- 3) receiving an authorization indicia from said first bank computer,
- 4) communicating a self-generated transaction indicia to said customer computer, and,
- 5) communicating the self-generated transaction indicia to said merchant computer.

2. The financial transaction system according to claim 1 wherein said financial processing computer further includes means for communicating said transaction indicia to said merchant computer and wherein said merchant computer generates a shipping order in response to said transaction indicia.

3. The financial transaction system according to claim 1 wherein said bank computer further includes deposit data indicative of amounts owed to depositors and further includes means for adjusting said credit data and said deposit data based upon said customer account number and said amount data.

4. The financial transaction system according to claim 3 further including a second bank computer and wherein said first bank computer includes means, responsive to transfer data from said financial processing computer, for adjusting deposit data in said first bank computer and in said second bank computer.

5. The financial transaction system according to claim 1 wherein said merchant computer further includes:

- a) memory means containing secured data; and,
- b) means for transmitting the secured data to said customer computer in response to a password.

6. The financial transaction system according to claim 5 wherein said password and said transaction indicia are communicated to said customer computer via said merchant computer.

7. The financial transaction system according to claim 6 wherein said customer account data and said amount data are communicated to said financial processing computer via said merchant computer.

8. The financial transaction system according to claim 1 wherein the payment processing computer further includes means for connecting said customer computer, after receipt of said authorization indicia, to a merchant computer at a selected return address.

9. The financial transaction system according to claim 8 wherein the payment processing computer further includes:

- a) memory means for storage of said selected return address; and,
- b) automated means for retrieving said selected return address from said memory means.

10. The financial transaction system according to claim 8 wherein the payment processing computer further includes means for identifying an originating address at a merchant computer, said originating address being the address where said customer computer had been connected to said merchant computer.

11. The financial transaction system according to claim 10 wherein said means for identifying an originating address includes means for receiving indicia indicative of said originating address via said customer computer.

12. The financial transaction system according to claim 11 further including memory means containing data indicative of amount and wherein said means for establishing an amount includes means for withdrawing from said memory means the amount based upon said originating address.

13. An automated payment processing computer comprising:

- a) automated means for receiving customer account data from a customer computer;
- b) automated means for establishing an amount data for a customer selected product;
- c) automated means for querying a bank computer with said customer account data and said amount data and receiving an authorization indicia and payment from said bank computer; and,
- d) automated means for communicating a self-generated transaction indicia to a remote merchant computer.

14. The payment processing computer according to claim 13 further including automated means for communicating a self-generated transaction indicia to said customer computer.

15. The payment processing computer according to claim 14 further including means for adjusting deposit data in said bank computer based upon said account data and said amount data.

16. The payment processing computer according to claim 14 further including means for communicating said transaction indicia to said merchant computer.

17. The payment processing computer according to claim 13 further including automated means for connecting said customer computer, after receipt of said authorization indicia, to a merchant computer.

18. The payment processing computer according to claim 17 further including:

- a) memory means for storage of a selected return address for connecting said customer computer to said merchant computer; and,
- b) automated means for retrieving said selected return address from said memory means.

19. The payment processing computer according to claim 17 further including automated means for identifying an originating address at a merchant computer where said customer computer had been connected.

20. The payment processing computer according to claim 19 wherein said means for identifying an originating address includes means for receiving indicia indicative of said originating address via said customer computer.

21. The payment processing computer according to claim 20 wherein said memory means includes data indicative of

amount and wherein said means for establishing an amount includes means for withdrawing from said memory means the amount based upon said originating address.

22. An internet payment system comprising:

- a) a first link between a customer computer and a vending computer for communicating promotional information from said vending computer to said customer computer;
- b) a second link, initiated by said customer computer, between said customer computer and a payment processing computer, remote from said vending computer, for communicating credit card information and amount from said customer computer to said payment processing computer;
- c) a third link, initiated by said payment processing computer with a credit card server computer for communicating said credit card information and said amount from said payment processing computer to said credit card server computer, and for communicating, in response, an authorization indicia from said credit card server computer to said payment processing computer; and,
- d) a fourth link between said payment processing computer and said customer computer for communicating a transactional indicia.

23. The internet payment system according to claim 22 further including a fifth link between the payment processing computer and said vending computer for communicating said transactional indicia.

24. The internet payment system according to claim 22 further including a fifth link between said customer computer and said vending computer for communicating said transactional indicia.

25. The internet payment system according to claim 24 wherein said fifth link includes means for communicating restricted access data from said vending computer to said customer computer in response to said transactional indicia.

26. The internet payment system according to claim 25 wherein said transactional indicia includes a transaction number and a password.

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