US005715314A

United States Patent [19]

Payne et al.

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[45] **Date of Patent: Feb. 3, 1998**

[54] **NETWORK SALES SYSTEM**

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[73] Assignee: **Open Market, Inc.**, Cambridge, Mass.

[21] Appl. No.: **328,133**

[22] Filed: **Oct. 24, 1994**

[51] **Int. Cl.**[6] **H04L 9/00**

[52] **U.S. Cl.** **380/24**; 380/23; 380/25; 380/49; 380/50

[58] **Field of Search** 380/4, 21, 23, 380/24, 25, 49, 50; 364/401, 406, 408, 284.4; 235/379, 380; 395/200.01, 200.02, 200.09, 925

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Primary Examiner—Bernarr E. Gregory

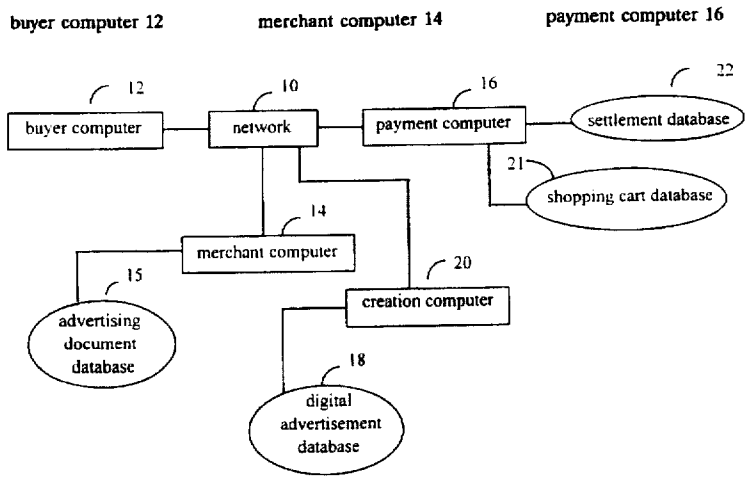
Attorney, Agent, or Firm—Fish & Richardson P.C.

[57] **ABSTRACT**

A network-based sales system includes at least one buyer computer for operation by a user desiring to buy a product, at least one merchant computer, and at least one payment computer. The buyer computer, the merchant computer, and the payment computer are interconnected by a computer network. The buyer computer is programmed to receive a user request for purchasing a product, and to cause a payment message to be sent to the payment computer that comprises a product identifier identifying the product. The payment computer is programmed to receive the payment message, to cause an access message to be created that comprises the product identifier and an access message authenticator based on a cryptographic key, and to cause the access message to be sent to the merchant computer. The merchant computer is programmed to receive the access message, to verify the access message authenticator to ensure that the access message authenticator was created using the cryptographic key, and to cause the product to be sent to the user desiring to buy the product.

48 Claims, 25 Drawing Sheets

Microfiche Appendix Included
(1 Microfiche, 34 Pages)



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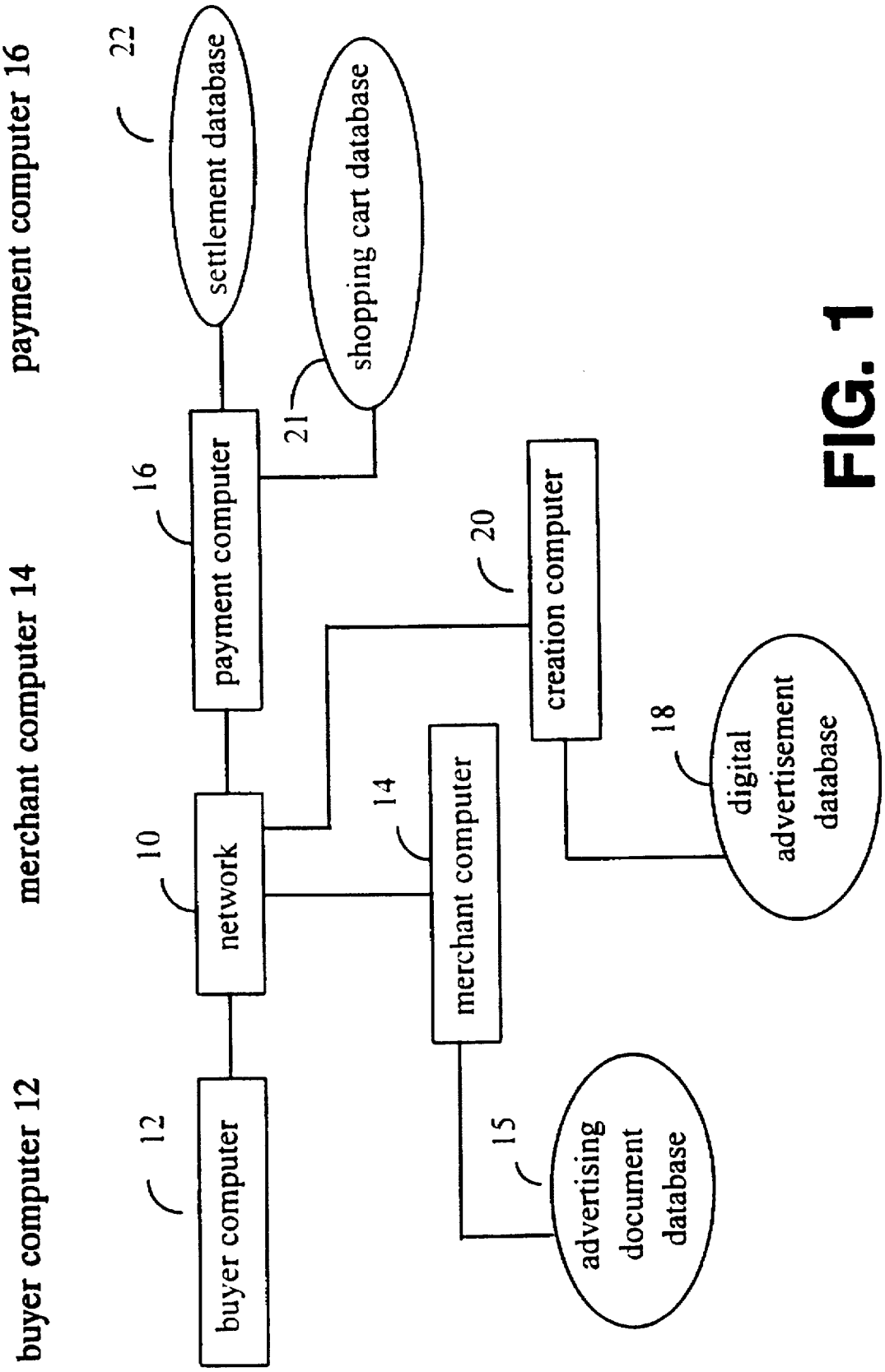

buyer computer 12
merchant computer 14
payment computer 16
12
buyer computer
10
network
16
payment computer
22
settlement database
21
shopping cart database
14
merchant computer
20
creation computer
15
advertising document database
18
digital advertisement database

FIG. 1

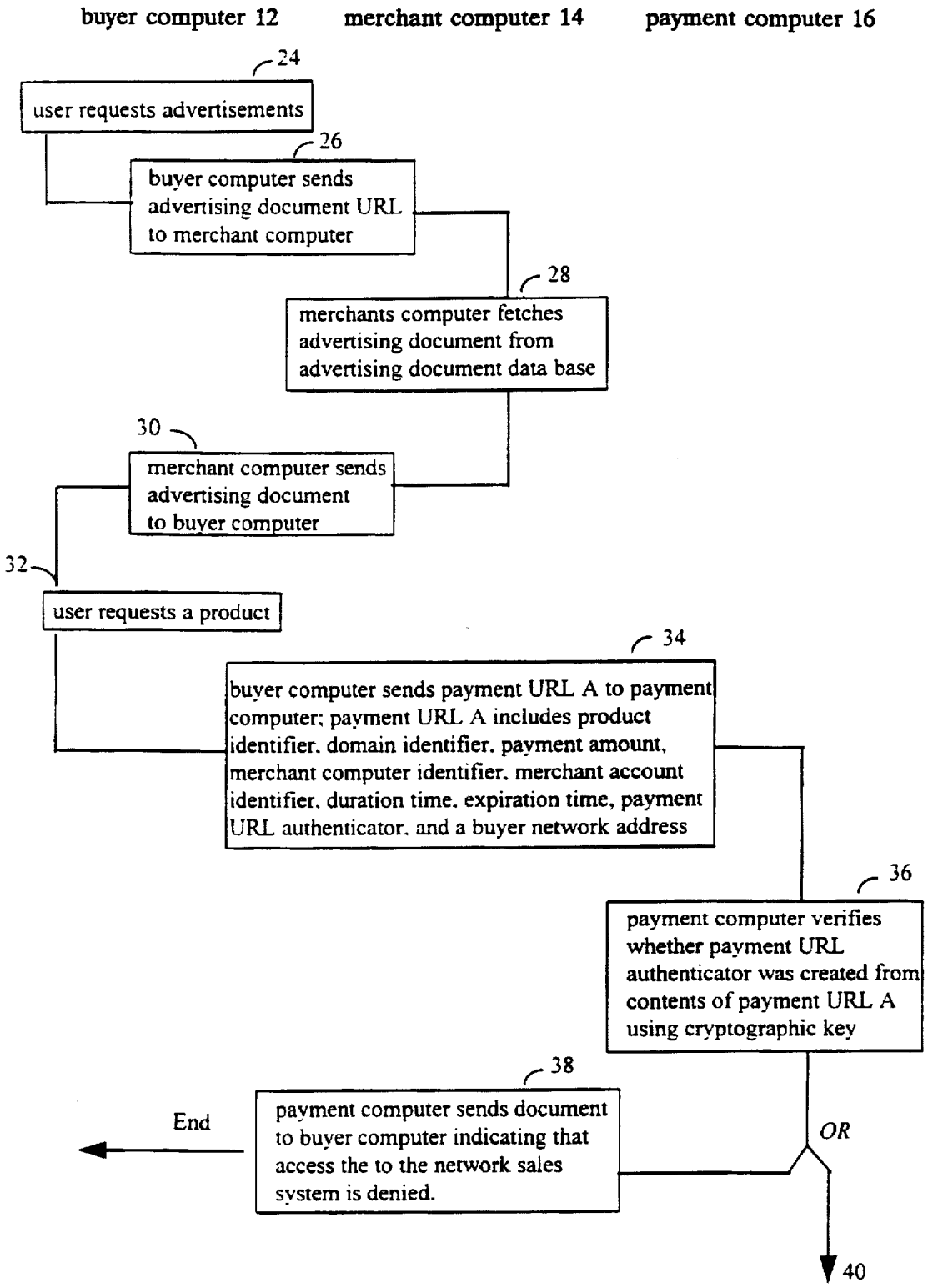

buyer computer 12
merchant computer 14
payment computer 16
24
user requests advertisements
26
buyer computer sends advertising document URL to merchant computer
28
merchants computer fetches advertising document from advertising document data base
30
merchant computer sends advertising document to buyer computer
32
user requests a product
34
buyer computer sends payment URL A to payment computer; payment URL A includes product identifier, domain identifier, payment amount, merchant computer identifier, merchant account identifier, duration time, expiration time, payment URL authenticator, and a buyer network address
36
payment computer verifies whether payment URL authenticator was created from contents of payment URL A using cryptographic key
38
payment computer sends document to buyer computer indicating that access the to the network sales system is denied.
End
OR
40

FIG. 2A

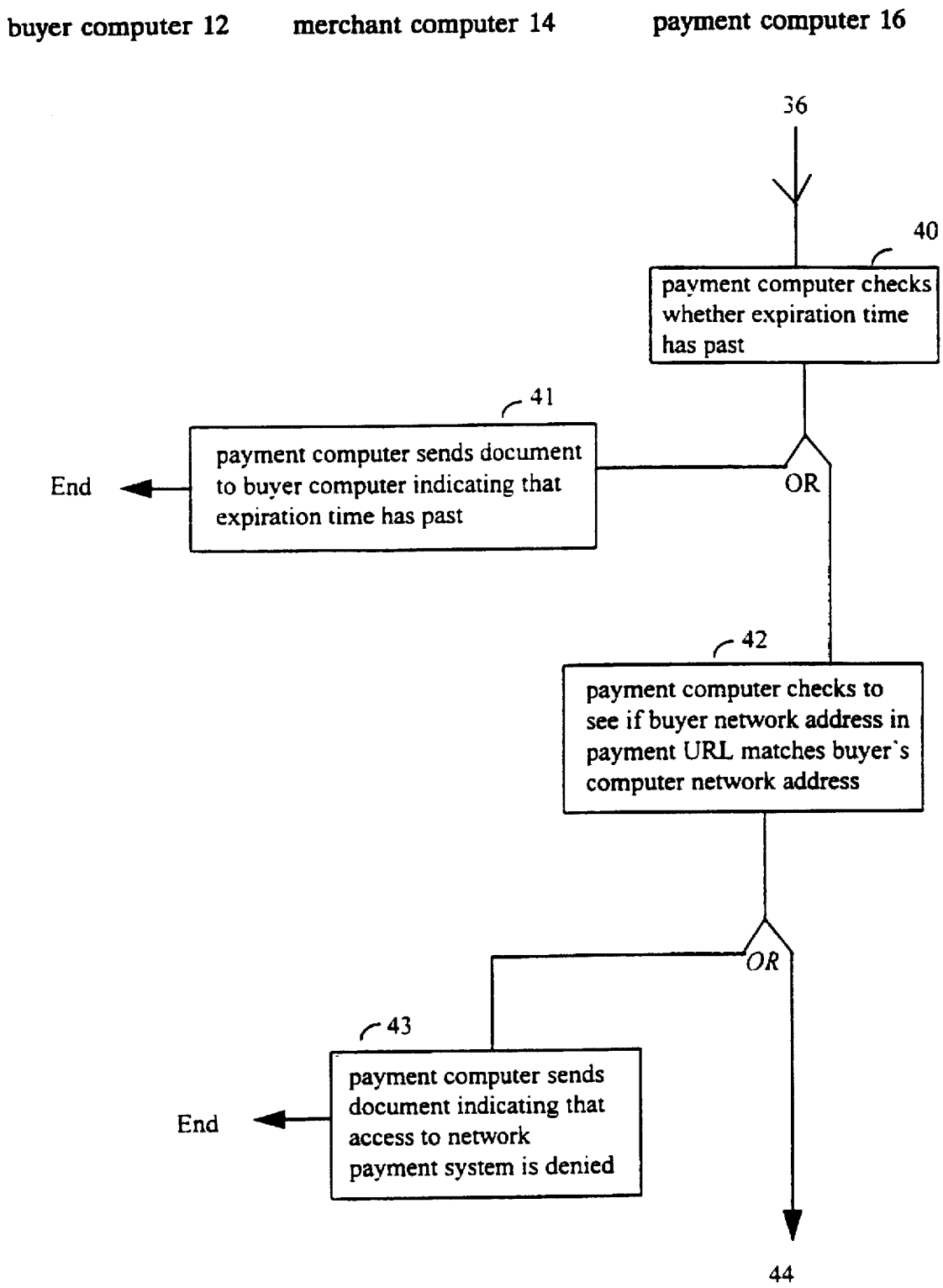

buyer computer 12
merchant computer 14
payment computer 16
36
40
payment computer checks whether expiration time has past
41
payment computer sends document to buyer computer indicating that expiration time has past
End
OR
42
payment computer checks to see if buyer network address in payment URL matches buyer's computer network address
OR
43
payment computer sends document indicating that access to network payment system is denied
End
44

FIG. 2B

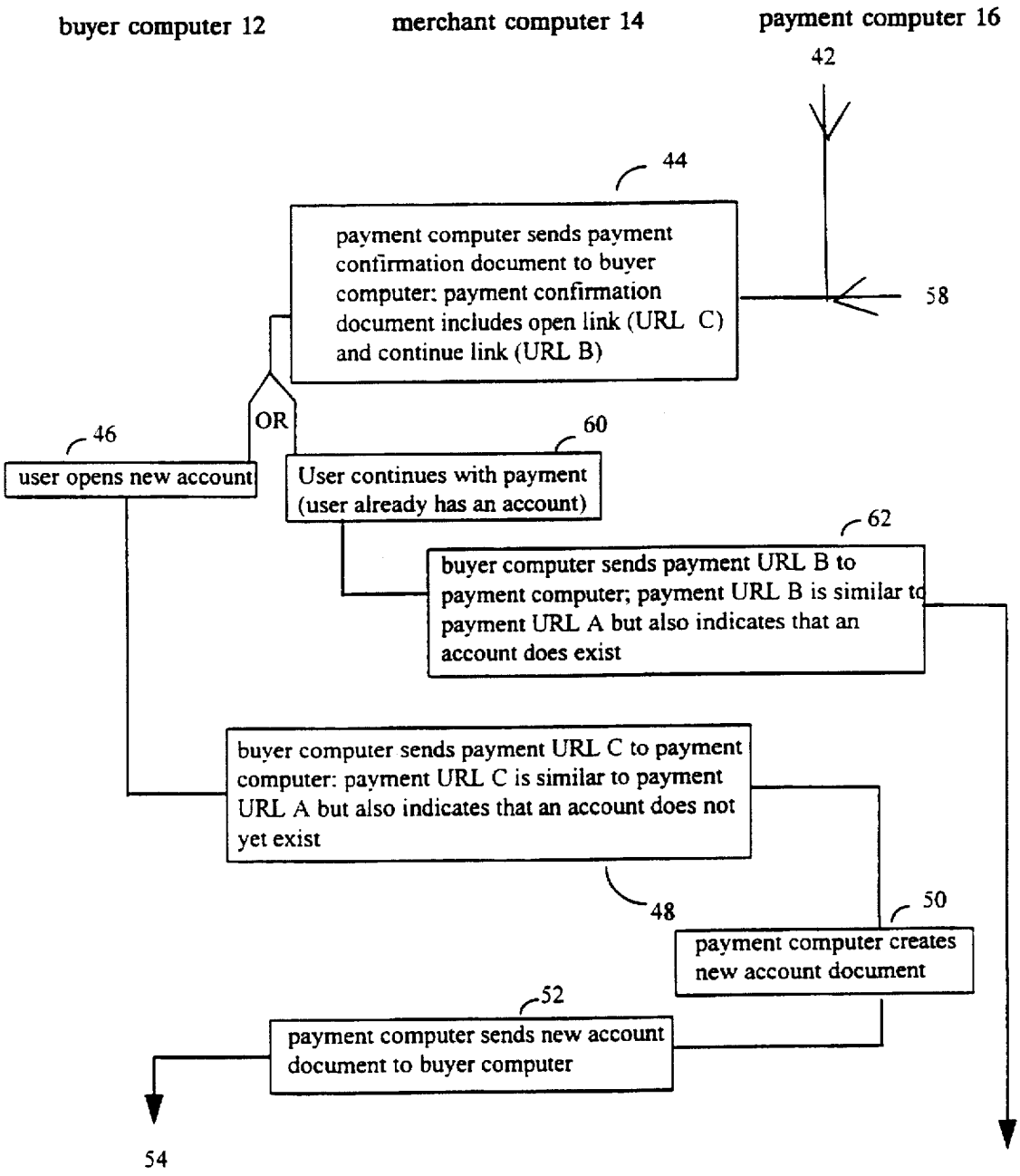

buyer computer 12
merchant computer 14
payment computer 16
42
44
payment computer sends payment confirmation document to buyer computer; payment confirmation document includes open link (URL C) and continue link (URL B)
58
OR
46
user opens new account
60
User continues with payment (user already has an account)
62
buyer computer sends payment URL B to payment computer; payment URL B is similar to payment URL A but also indicates that an account does exist
buyer computer sends payment URL C to payment computer: payment URL C is similar to payment URL A but also indicates that an account does not yet exist
48
50
payment computer creates new account document
52
payment computer sends new account document to buyer computer
54
64

FIG. 2C

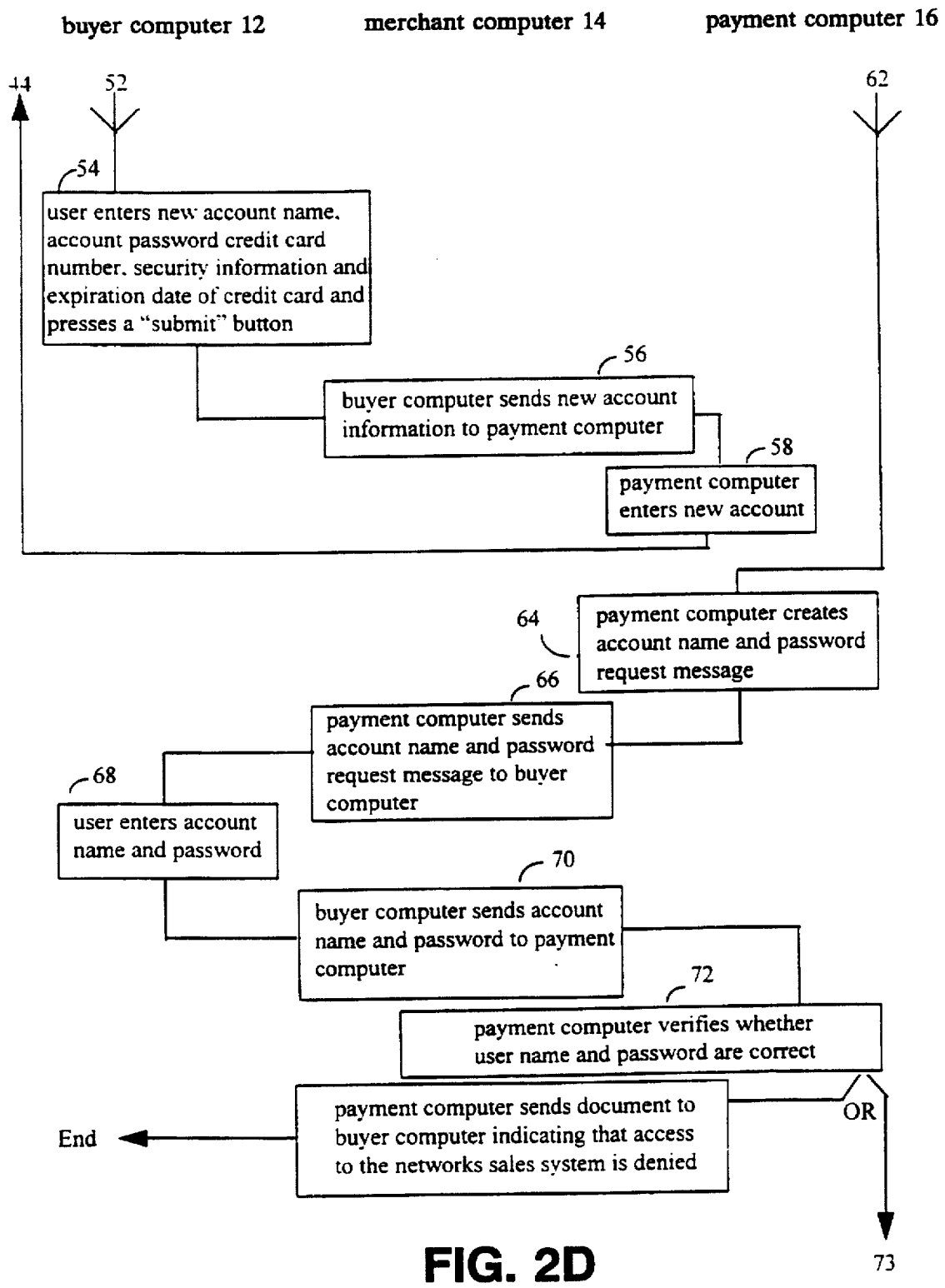

buyer computer 12
merchant computer 14
payment computer 16
44
52
62
54
user enters new account name, account password credit card number, security information and expiration date of credit card and presses a "submit" button
56
buyer computer sends new account information to payment computer
58
payment computer enters new account
64
payment computer creates account name and password request message
66
payment computer sends account name and password request message to buyer computer
68
user enters account name and password
70
buyer computer sends account name and password to payment computer
72
payment computer verifies whether user name and password are correct
OR
payment computer sends document to buyer computer indicating that access to the networks sales system is denied
End
73

FIG. 2D

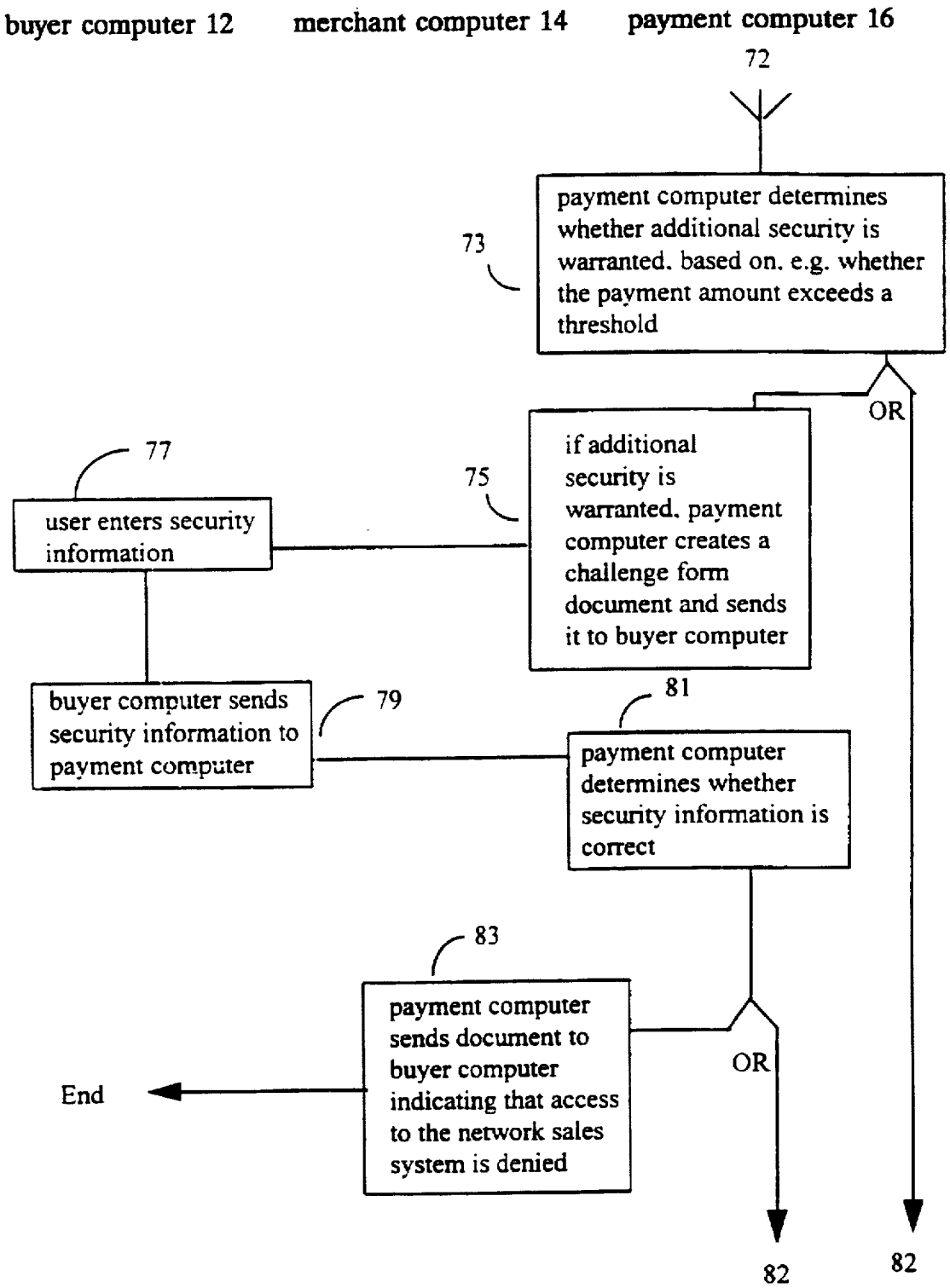

buyer computer 12
merchant computer 14
payment computer 16
72
payment computer determines whether additional security is warranted, based on, e.g. whether the payment amount exceeds a threshold
73
OR
77
75
if additional security is warranted, payment computer creates a challenge form document and sends it to buyer computer
user enters security information
buyer computer sends security information to payment computer
79
81
payment computer determines whether security information is correct
83
payment computer sends document to buyer computer indicating that access to the network sales system is denied
OR
End
82
82

FIG. 2E

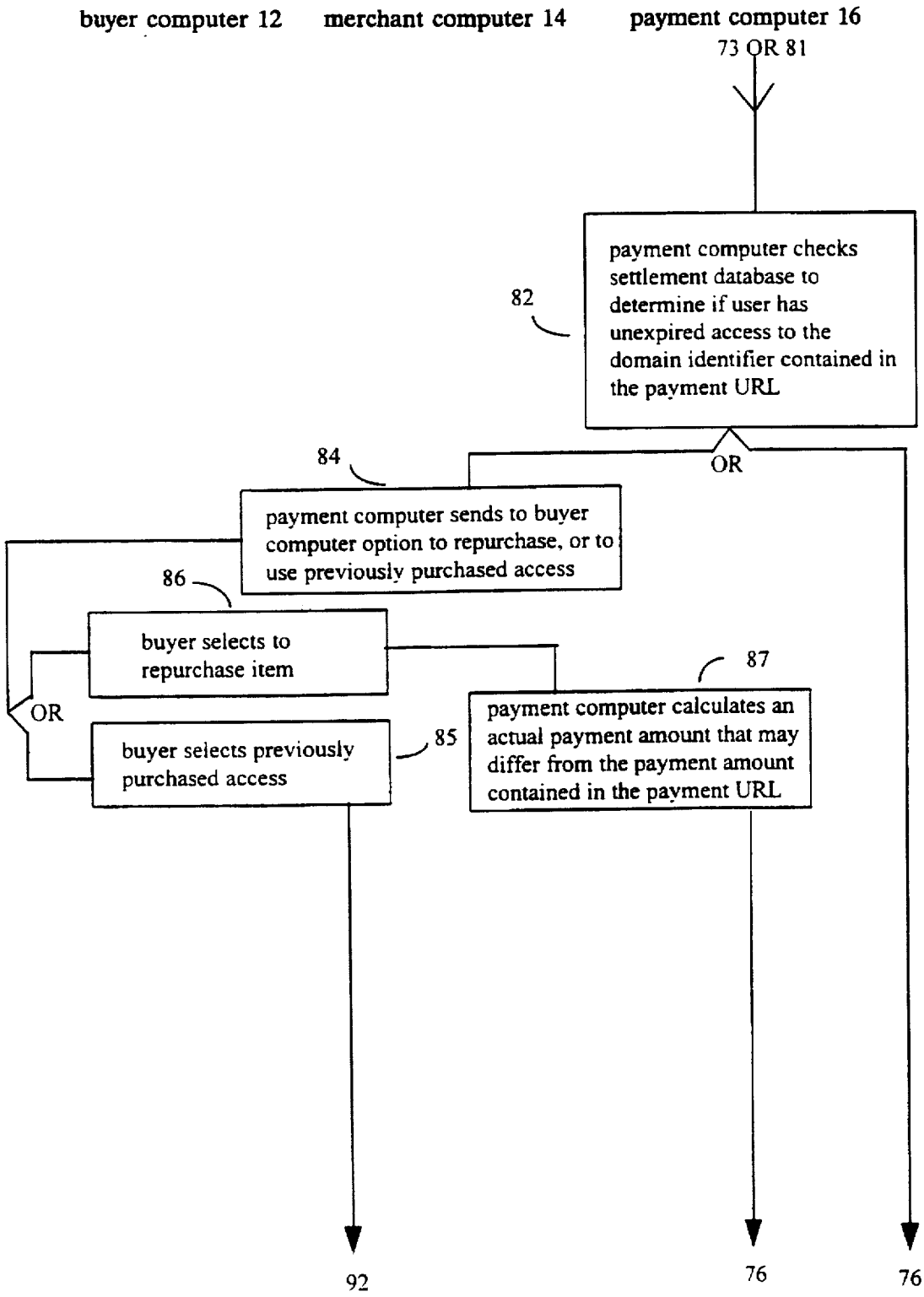

buyer computer 12
merchant computer 14
payment computer 16
73 OR 81
82
payment computer checks settlement database to determine if user has unexpired access to the domain identifier contained in the payment URL
OR
84
payment computer sends to buyer computer option to repurchase, or to use previously purchased access
86
buyer selects to repurchase item
OR
buyer selects previously purchased access
85
87
payment computer calculates an actual payment amount that may differ from the payment amount contained in the payment URL
92
76
76

FIG. 2F

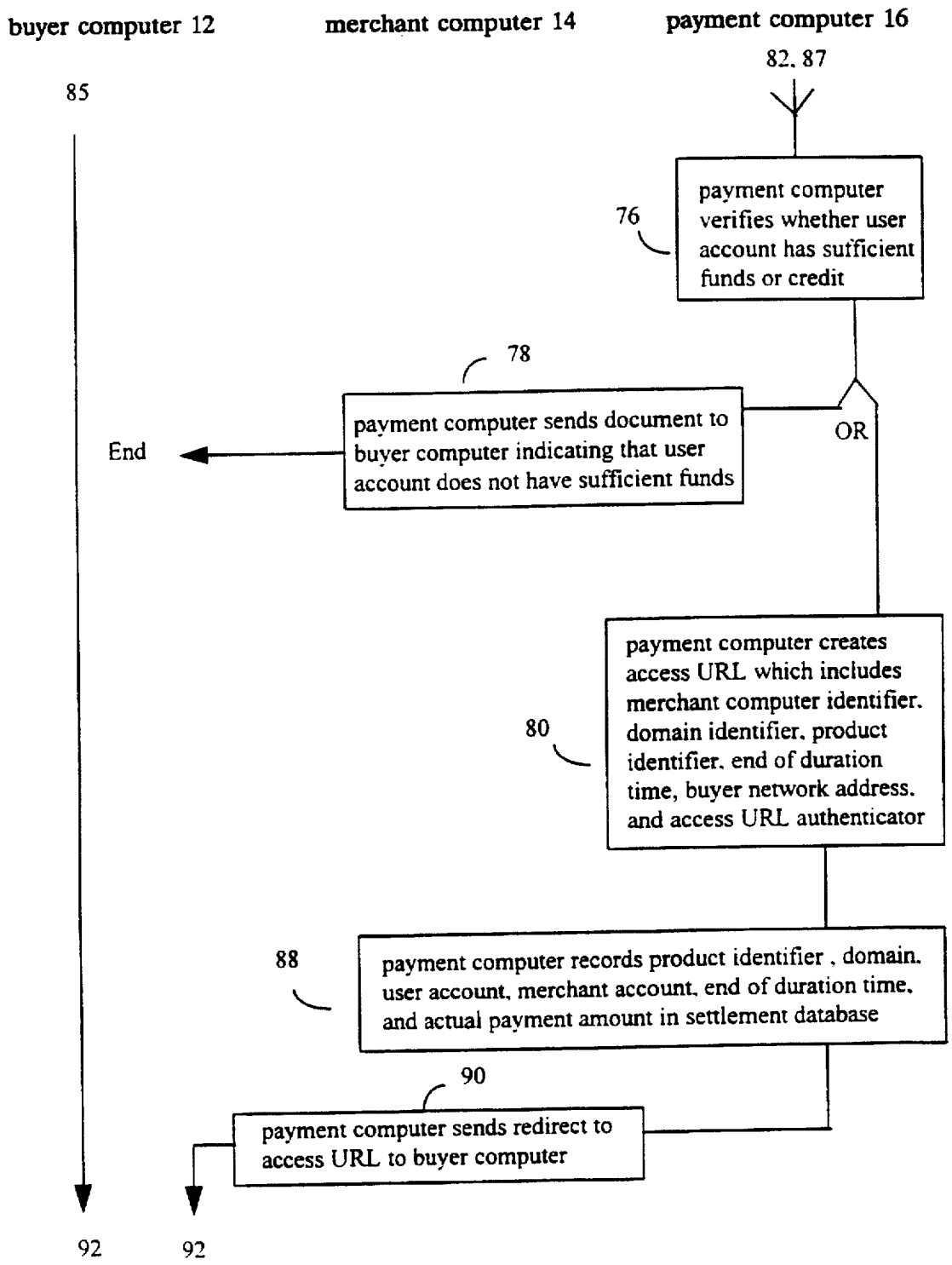

buyer computer 12
merchant computer 14
payment computer 16
82, 87
85
payment computer verifies whether user account has sufficient funds or credit
76
78
payment computer sends document to buyer computer indicating that user account does not have sufficient funds
End
OR
payment computer creates access URL which includes merchant computer identifier, domain identifier, product identifier, end of duration time, buyer network address, and access URL authenticator
80
88
payment computer records product identifier, domain, user account, merchant account, end of duration time, and actual payment amount in settlement database
90
payment computer sends redirect to access URL to buyer computer
92
92

FIG. 2G

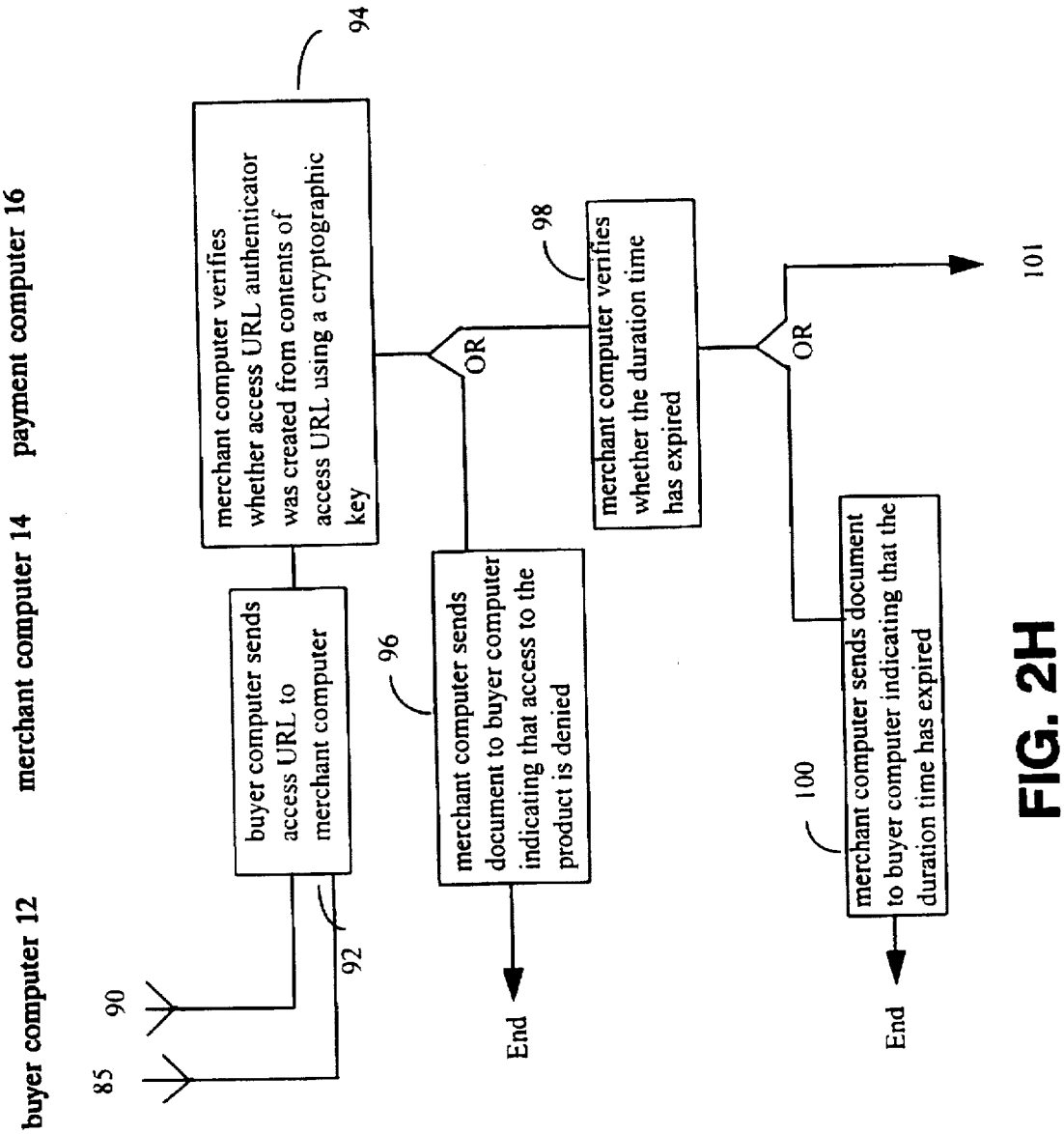

buyer computer 12
merchant computer 14
payment computer 16
85
90
buyer computer sends access URL to merchant computer
92
merchant computer verifies whether access URL authenticator was created from contents of access URL using a cryptographic key
94
OR
merchant computer sends document to buyer computer indicating that access to the product is denied
96
End
merchant computer verifies whether the duration time has expired
98
OR
merchant computer sends document to buyer computer indicating that the duration time has expired
100
End
101

FIG. 2H

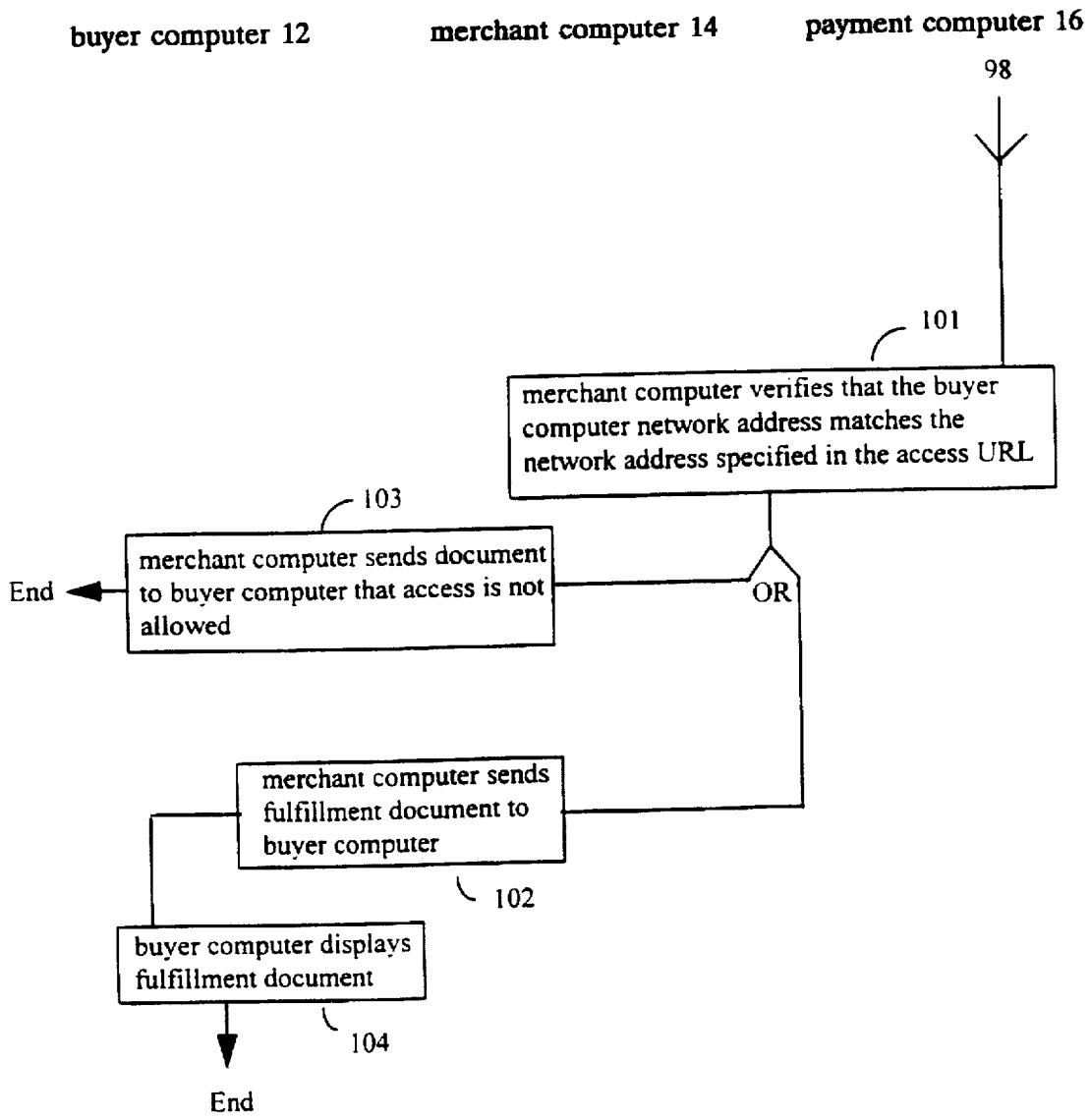

buyer computer 12
merchant computer 14
payment computer 16
98
101
merchant computer verifies that the buyer computer network address matches the network address specified in the access URL
103
merchant computer sends document to buyer computer that access is not allowed
End
OR
merchant computer sends fulfillment document to buyer computer
102
buyer computer displays fulfillment document
104
End

FIG. 2I

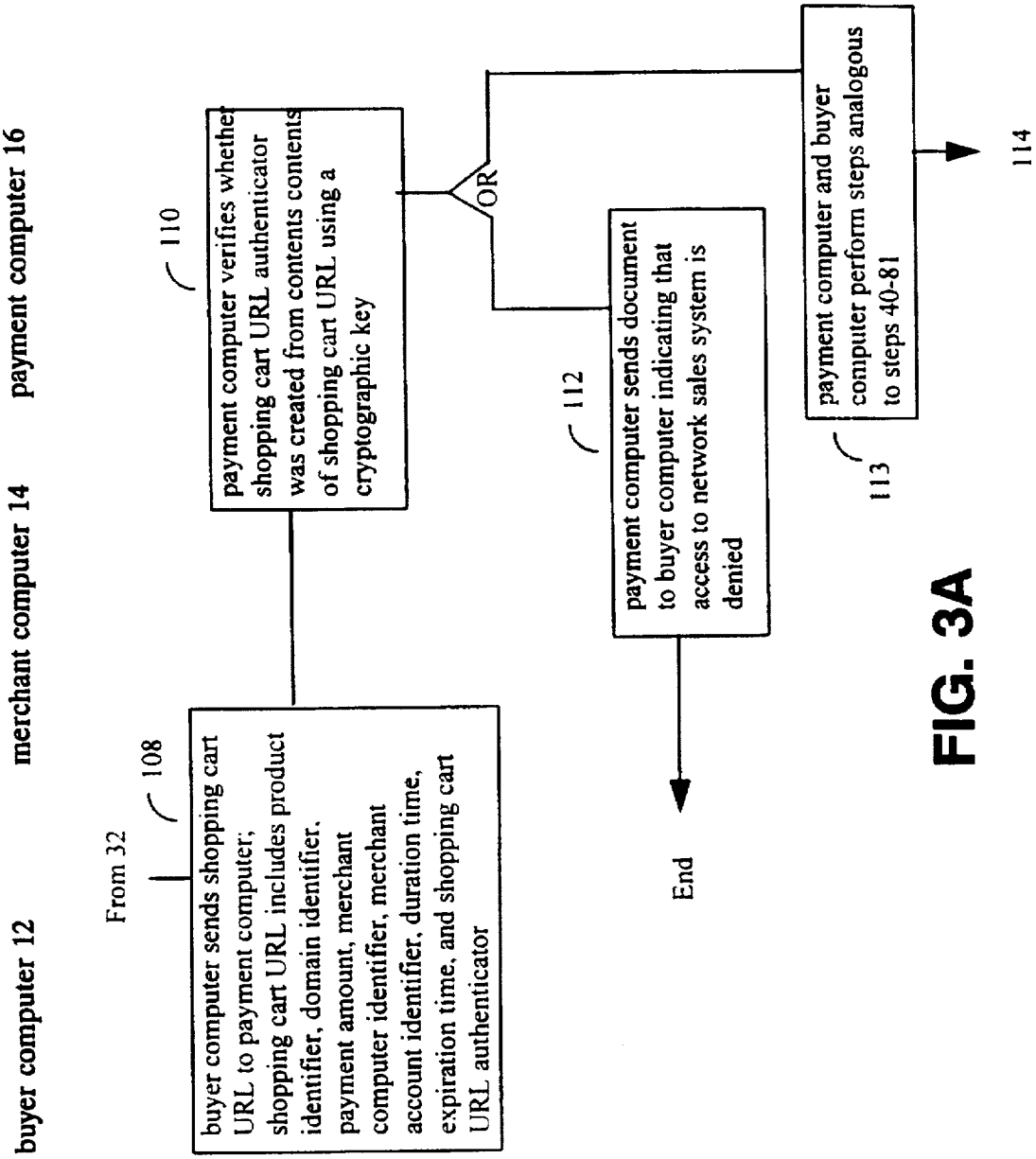

buyer computer 12
merchant computer 14
payment computer 16
From 32
108
buyer computer sends shopping cart URL to payment computer; shopping cart URL includes product identifier, domain identifier, payment amount, merchant computer identifier, merchant account identifier, duration time, expiration time, and shopping cart URL authenticator
110
payment computer verifies whether shopping cart URL authenticator was created from contents contents of shopping cart URL using a cryptographic key
OR
112
payment computer sends document to buyer computer indicating that access to network sales system is denied
End
113
payment computer and buyer computer perform steps analogous to steps 40-81
114

FIG. 3A

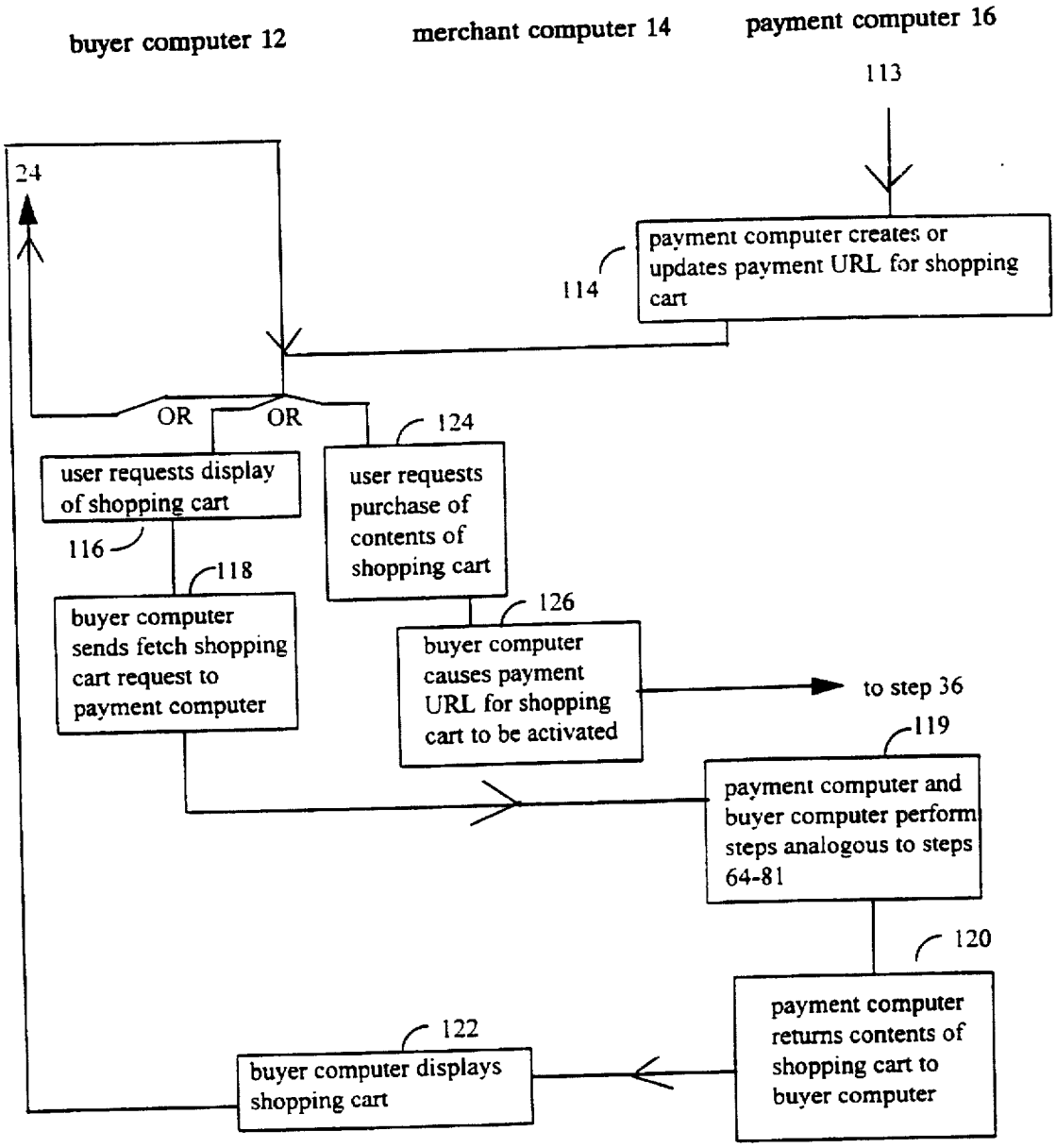

buyer computer 12
merchant computer 14
payment computer 16
113
24
payment computer creates or updates payment URL for shopping cart
114
OR
OR
124
user requests display of shopping cart
user requests purchase of contents of shopping cart
116
118
buyer computer sends fetch shopping cart request to payment computer
126
buyer computer causes payment URL for shopping cart to be activated
to step 36
119
payment computer and buyer computer perform steps analogous to steps 64-81
120
payment computer returns contents of shopping cart to buyer computer
122
buyer computer displays shopping cart

FIG. 3B

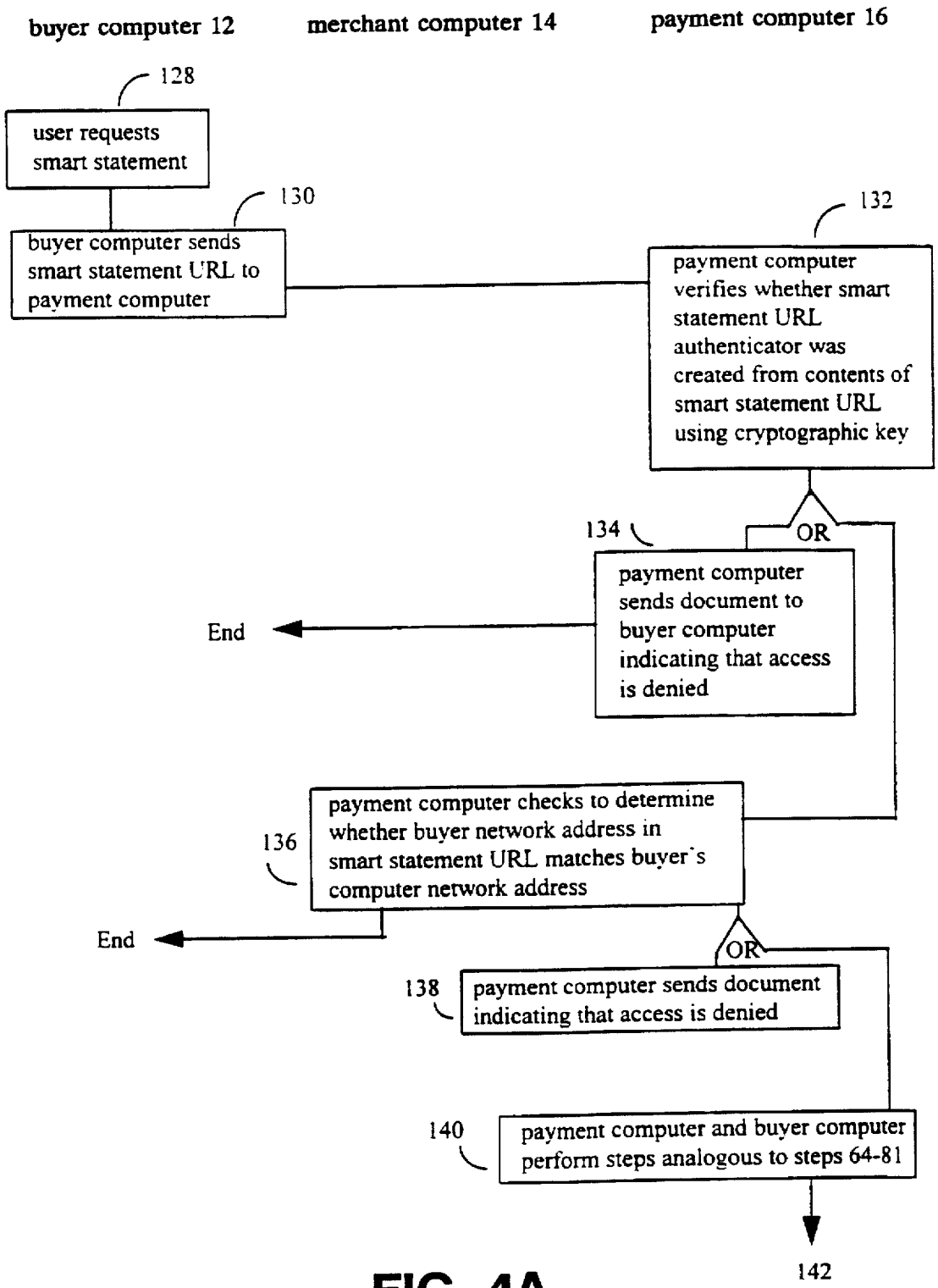

buyer computer 12
merchant computer 14
payment computer 16
128
user requests smart statement
130
buyer computer sends smart statement URL to payment computer
132
payment computer verifies whether smart statement URL authenticator was created from contents of smart statement URL using cryptographic key
OR
134
payment computer sends document to buyer computer indicating that access is denied
End
payment computer checks to determine whether buyer network address in smart statement URL matches buyer's computer network address
136
End
OR
138
payment computer sends document indicating that access is denied
140
payment computer and buyer computer perform steps analogous to steps 64-81
142

FIG. 4A

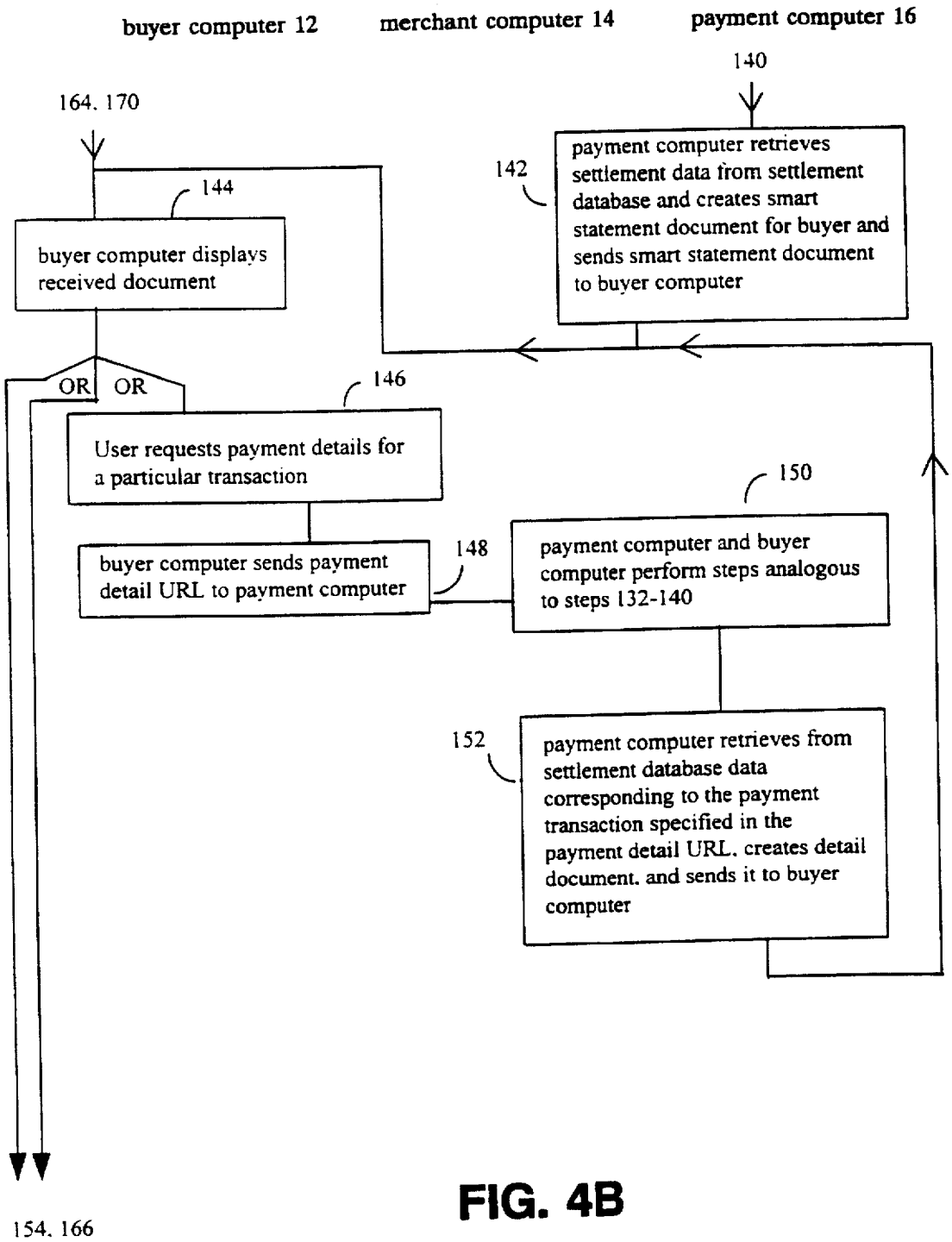

buyer computer 12
merchant computer 14
payment computer 16
140
164, 170
142
payment computer retrieves settlement data from settlement database and creates smart statement document for buyer and sends smart statement document to buyer computer
144
buyer computer displays received document
OR
OR
146
User requests payment details for a particular transaction
150
148
buyer computer sends payment detail URL to payment computer
payment computer and buyer computer perform steps analogous to steps 132-140
152
payment computer retrieves from settlement database data corresponding to the payment transaction specified in the payment detail URL, creates detail document, and sends it to buyer computer
154, 166

FIG. 4B

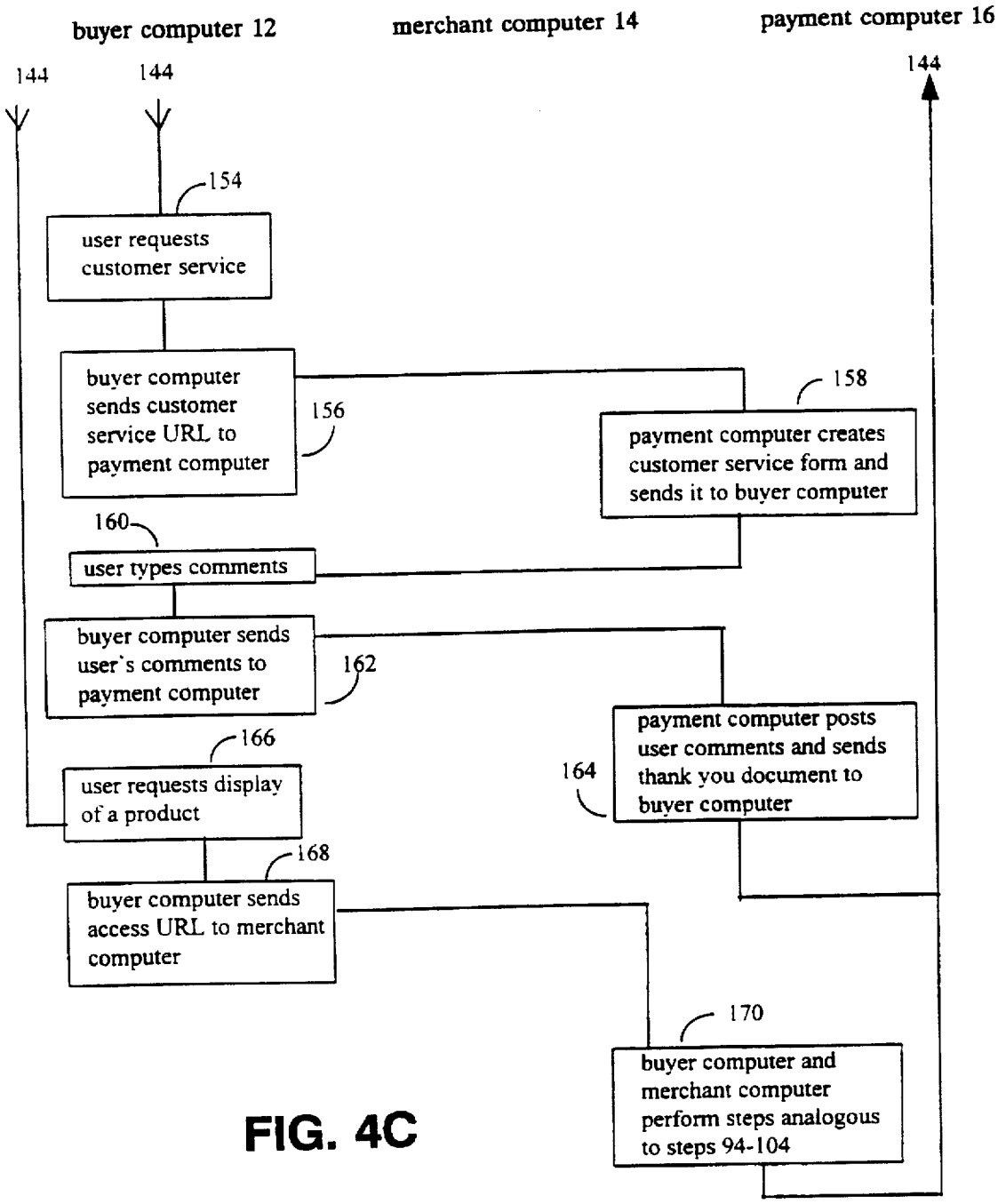
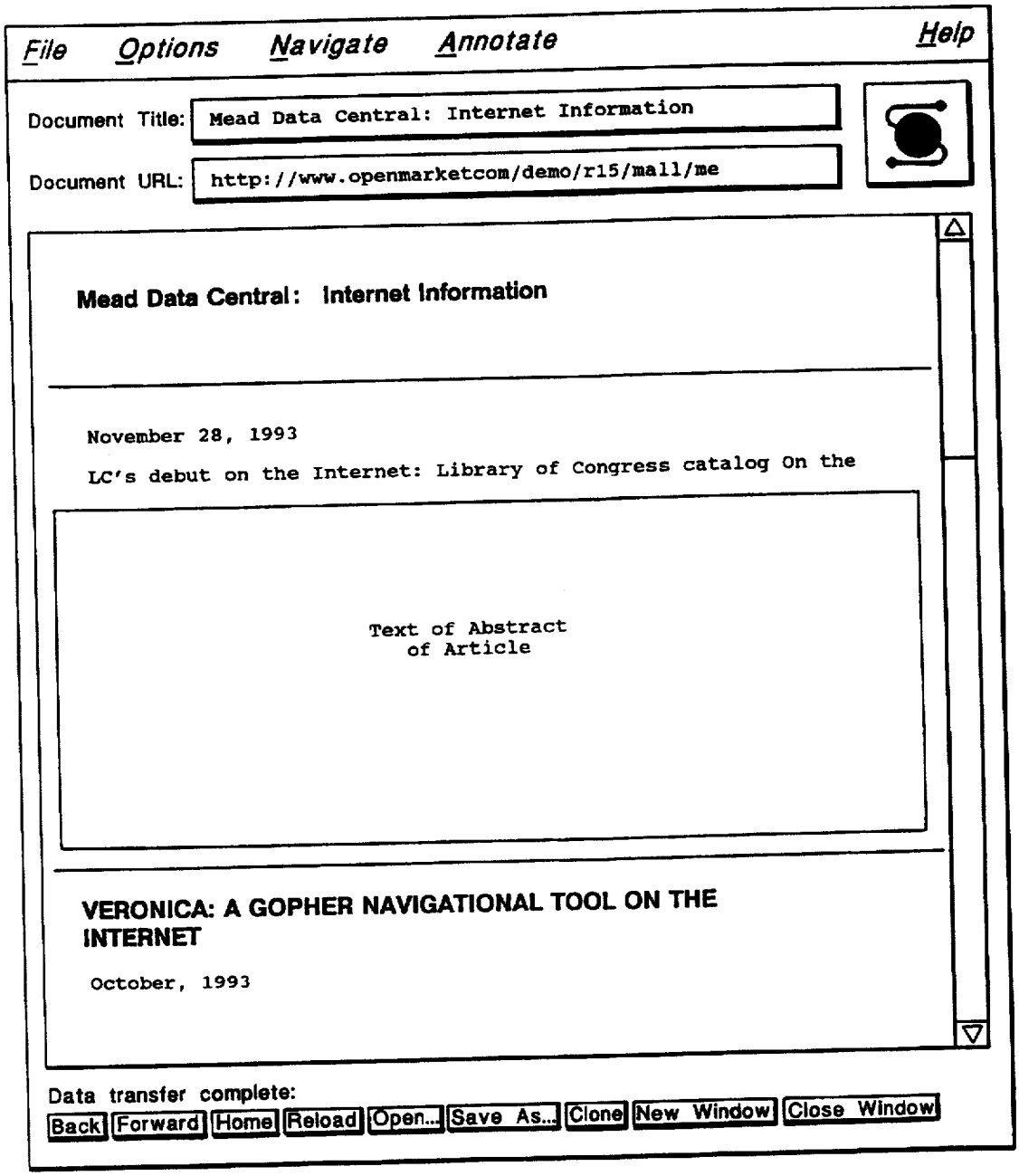

buyer computer 12
merchant computer 14
payment computer 16
144
144
144
154
user requests customer service
buyer computer sends customer service URL to payment computer
156
158
payment computer creates customer service form and sends it to buyer computer
160
user types comments
buyer computer sends user's comments to payment computer
162
payment computer posts user comments and sends thank you document to buyer computer
164
166
user requests display of a product
168
buyer computer sends access URL to merchant computer
170
buyer computer and merchant computer perform steps analogous to steps 94-104

FIG. 4C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Annotate
Help
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Mead Data Central: Internet Information
Document URL:
http://www.openmarketcom/demo/r15/mall/me
Mead Data Central: Internet Information
November 28, 1993
LC's debut on the Internet: Library of Congress catalog On the
Text of Abstract
of Article
VERONICA: A GOPHER NAVIGATIONAL TOOL ON THE INTERNET
October, 1993
Data transfer complete:
Back
Forward
Home
Reload
Open...
Save As...
Clone
New Window
Close Window

FIG. 5

File Options Navigate Annotate Help

Document Title: Open Market Payment

Document URL: http://payment.openmarket.com/ben/nph-payment

Open Market Payment

You have selected an item that requires payment

Merchant: Test Merchant
Description: Mead Data Central Article
Amount:2.85(US currency)

If you have an Open Market account click on "continue" below and you will be prompted for your account name and password. If you do not have an account, you can establish one on-line and return to this page to continue your purchase.

Open an account on-line

Continue with payment transaction.

*NOTE:*For demonstrations use the account name **testuser@openmarket.com** with the password **testuser**.

Open Market, Inc.

Data transfer complete:

Back Forward Home Reload Open... Save As... Clone New Window Close Window

FIG. 6

File Options Navigate Annotate Help

Document Title: Establish OpenMarket Account

Document URL: http://payment.openmarket.com/service/destabli.

Card Number:

Expiration Date: (format MM/YY)

Check the appropriate boxes:

☐ I am the owner of the above credit card.

☐ The above address is also the billing address for this credit card.

Your OpenMarket account statement is available on-line. At your option you may a copy of your statement automatically sent to your e-mail address at weekly or monthly intervals. **Please choose a statement option.**

◇ Weekly statements ◇ Monthly statements ◇ No e-mail statements

Account name and password

Please choose an account name and password for your OpenMarket account. We suggest using an account name that is unique and easy to remember such as your e-mail address. Your password should be 8 characters or longer.

Account Name

Password

Back Forward Home Reload Open... Save As... Clone New Window Close Window

FIG. 7

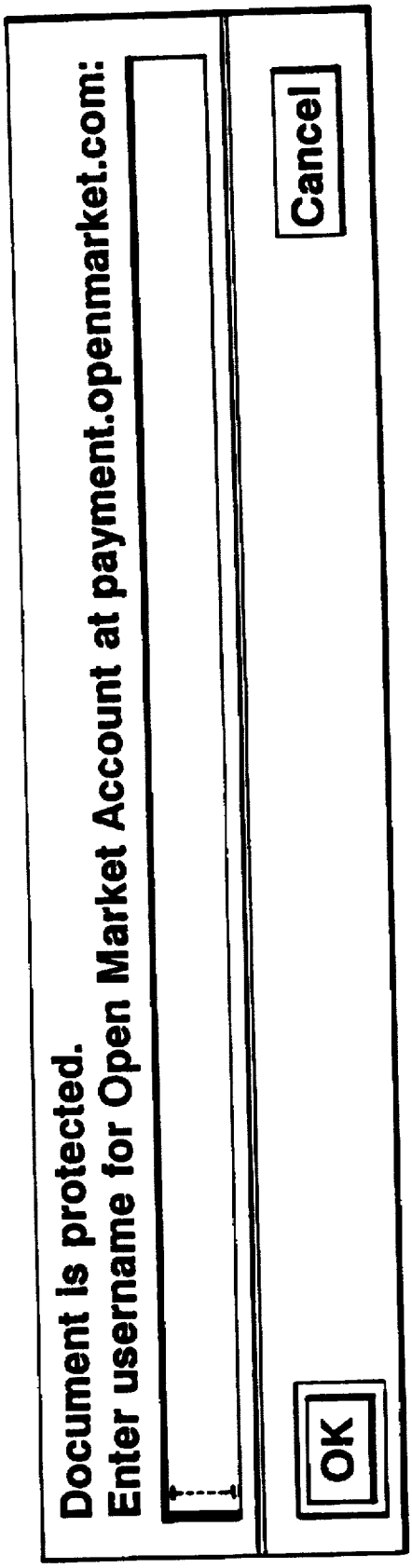
Document is protected.
Enter username for Open Market Account at payment.openmarket.com:
OK
Cancel

FIG. 8

File Options Navigate Annotate Help

Document Title: Open Market Payment

Document URL: http://payment.openmarket.com/ben/nph-payment

Open Market Payment

You have selected an item that you have purchased recently.

Merchant: Test Merchant
Description: Mead Data Central Article
Amount: 2.85(US currency)

This could happen because you would like to buy the item again or it may have happened by accident.

You can:

- Go directly to the previous item
- Go ahead and buy the item again

Open Market, Inc.

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FIG. 9

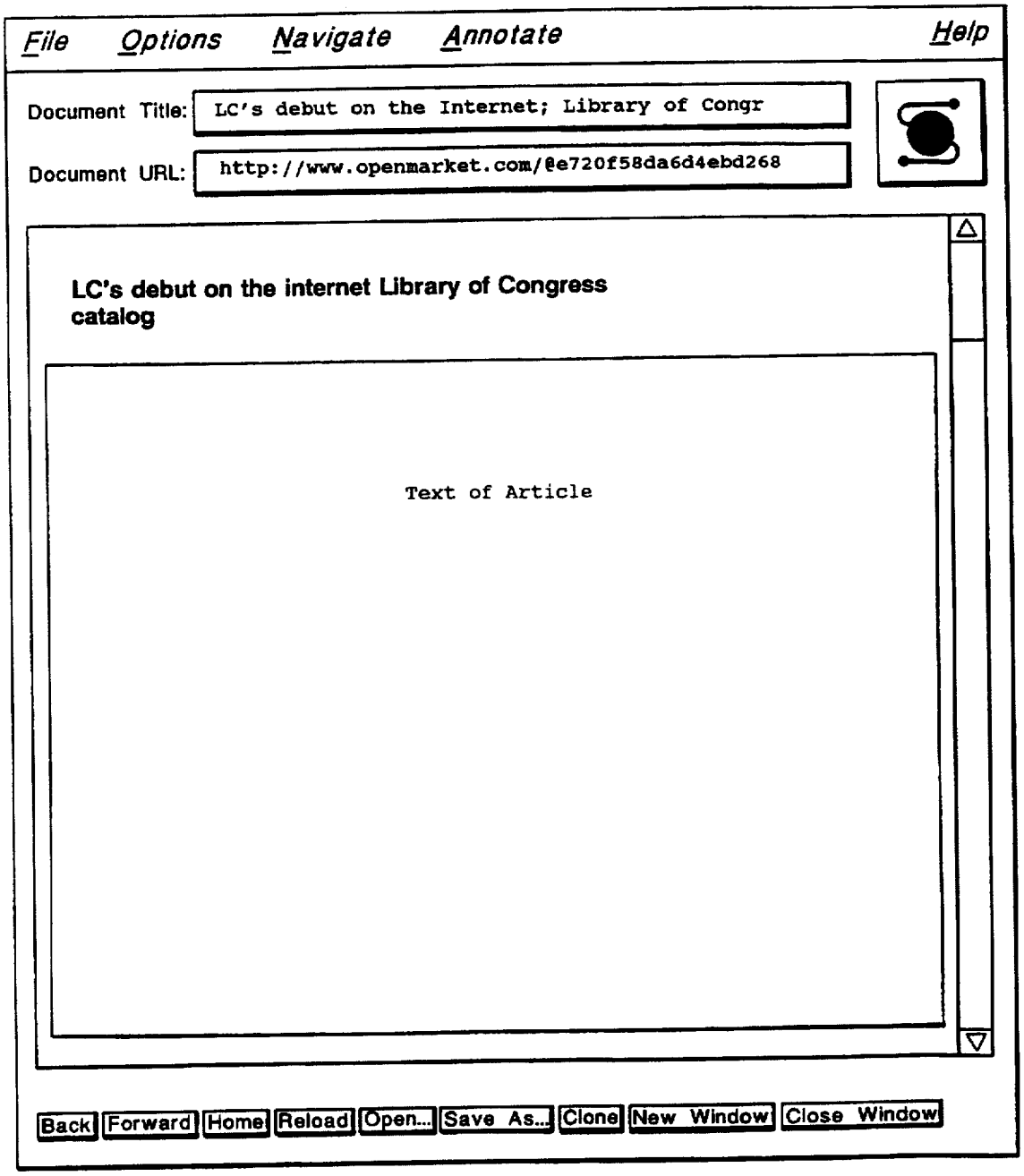
File
Options
Navigate
Annotate
Help
Document Title:
LC's debut on the Internet; Library of Congr
Document URL:
http://www.openmarket.com/@e720f58da6d4ebd268
LC's debut on the internet Library of Congress catalog
Text of Article
Back
Forward
Home
Reload
Open...
Save As...
Clone
New Window
Close Window

FIG. 10

File Options Navigate Annotate Help

Document Title: Smart Statement for Test User

Document URL: http://payment.openmarket.com/in/nph-stateme

Information about the item.

Transactions in October 1994

Mon Oct 3 **Test Merchant** Dilbert subscription 20 seconds amount $0.10
Tue Oct 4 **Test Merchant** Mead Data Central Article amount $2.95
Tue Oct 4 **Test Merchant** Mead Data Central Article amount $2.95
Tue Oct 4 **Test Merchant** Mead Data Central Article amount $2.95
Tue Oct 4 **Test Merchant** N.Y. Times Article amount $0.50
Tue Oct 4 **Test Merchant** Mead Data Central Article amount $2.95
Wed Oct 5 **Test Merchant** Mead Data Central Article amount $2.95
Wed Oct 5 **Test Merchant** Mead Data Central Article amount $2.95
Wed Oct 5 **Test Merchant** Mead Data Central Article amount $2.95
Wed Oct 5 **Test Merchant** Mead Data Central Article amount $2.95
Wed Oct 5 **Test Merchant** Mead Data Central Article amount $2.95
Wed Oct 5 **Test Merchant** Mead Data Central Article amount $2.95
Wed Oct 5 **Test Merchant** Mead Data Central Article amount $2.95

Your total is 33.05.

Previous Statements

- September 1994
- August 1994

Return to your Newest Statement

Feedback

You can send us comments and suggestions here.

Back Forward Home Reload Open... Save As... Clone New Window Close Window

FIG. 11

File Options Navigate Annotate Help

Document Title: Smart Statement Detail

Document URL: http://payment.openmarket.com/@c632f154cc8021

Smart Statement Detail

This is the detailed information about a particular transaction from your Smart Statement

Transaction Information

url: http://www.openmarket.com/demos/aug15/mall/mead-fingerprint/mkarticle.cgo
transaction_log_id: 50254.0
currency: US
transaction_date: 781377633
initiator: 1.0
expiration: 2592000
description: Mead Data Central Article
amount: 2.95
beneficiary: 3.0
ip_address: 199.170.183.13
transaction_type.p
domain: mead.internet-1

Merchant Information

telephone: 617-621-9501
address_1: Open Market, Inc.
address_2: 215 First Street
fax: 617-621-1703
address_3: Cambridge, MA
email: testmerchant@openmarket.com
principal_name: Test Merchant

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FIG. 12

File Options Navigate Annotate Help

Document Title: Smart Statement Detail

Document URL: http://payment.openmarket.com/@c632f154cc8021

```
url: http://www.openmarket.com/demos/aug15/mall/mead-fingerprint/mkarticle.cgo
transaction_log_id: 50254.0
currency: US
transaction_date: 781377633
initiator: 1.0
expiration: 2592000
description: Mead Data Central Article
amount: 2.95
beneficiary: 3.0
ip_address: 199.170.183.13
transaction_type.p
domain: mead.internet-1
```

Merchant Information

```
telephone: 617-621-9501
address_1: Open Market, Inc.
address_2: 215 First Street
fax: 617-621-1703
address_3: Cambridge, MA
email: testmerchant@openmarket.com
principal_name: Test Merchant
home_url:
country: US
postal_code: 02142
```

Feedback

You can send us comments and suggestions here.

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FIG. 13

File Options Navigate Annotate Help

Document Title: Open Market Feedback

Document URL: http://payment.openmarket.com/ben/feedback.cg

Or if you prefer, you can send your comments via electronic mail to **feedback@openmarket.com** or via FAX to +1.617.621.1703. If you would like a reply please include your e-mail address.

Your Open Market accound name (optional):

Your E-mail address (optional):

Subject:

Your comments:

Submit Feedback

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FIG. 14

NETWORK SALES SYSTEM

REFERENCES TO APPENDICES

Microfiche appendices A–G, 4 sheets of 192 images total, are being submitted with the present application.

A claim of copyright is hereby made by Open Market, Incorporated with respect to the software code contained in the microfiche appendices, as of the date of first issuance of a U.S. patent based on this application. The copyright owner has no objection to the facsimile reproduction by anyone of the microfiche appendices as they appear in the Patent and Trademark office patent file or records, but reserves all other copyright rights whatsoever.

This invention relates to user-interactive network sales systems for implementing an open marketplace for goods or services over computer networks such as the Internet.

U.S. patent application Ser. No. 08/168,519, filed Dec. 16, 1993 by David K. Gifford and entitled "Digital Active Advertising," the entire disclosure of which is hereby incorporated herein in its entirety by reference, now abandoned, describes a network sales system that includes a plurality of buyer computers, a plurality of merchant computers, and a payment computer. A user at a buyer computer asks to have advertisements displayed, and the buyer computer requests advertisements from a merchant computer, which sends the advertisements to the buyer computer. The user then requests purchase of an advertised product, and the buyer computer sends a purchase message to the merchant computer. The merchant computer constructs a payment order that it sends to the payment computer, which authorizes the purchase and sends an authorization message to the merchant computer. When the merchant computer receives the authorization message it sends the product to the buyer computer.

The above-mentioned patent application also describes an alternative implementation of the network sales system in which, when the user requests purchase of an advertised product, the buyer computer sends a payment order directly to the payment computer, which sends an authorization message back to the buyer computer that includes an unforgeable certificate that the payment order is valid. The buyer computer then constructs a purchase message that includes the unforgeable certificate and sends it to the merchant computer. When the merchant computer receives the purchase request it sends the product to the buyer computer, based upon the pre-authorized payment order.

SUMMARY OF THE INVENTION

In one aspect, the invention provides a network-based sales system that includes at least one buyer computer for operation by a user desiring to buy a product, at least one merchant computer, and at least one payment computer. The buyer computer, the merchant computer, and the payment computer are interconnected by a computer network. The buyer computer is programmed to receive a user request for purchasing a product, and to cause a payment message to be sent to the payment computer that comprises a product identifier identifying the product. The payment computer is programmed to receive the payment message, to cause an access message to be created that comprises the product identifier and an access message authenticator based on a cryptographic key, and to cause the access message to be sent to the merchant computer. The merchant computer is programmed to receive the access message, to verify the access message authenticator to ensure that the access message authenticator was created using the cryptographic key, and to cause the product to be sent to the user desiring to buy the product.

The invention provides a simple design architecture for the network sales system that allows the merchant computer to respond to payment orders from the buyer computer without the merchant computer having to communicate directly with the payment computer to ensure that the user is authorized to purchase the product and without the merchant computer having to store information in a database regarding which buyers are authorized to purchase which products. Rather, when the merchant computer receives an access message from the buyer computer identifying a product to be purchased, the merchant computer need only check the access message to ensure that it was created by the payment computer (thereby establishing for the merchant computer that the buyer is authorized to purchase the product), and then the merchant computer can cause the product to be sent to the buyer computer who has been authorized to purchase the product.

In another aspect, the invention features a network-based sales system that includes at least one buyer computer for operation by a user desiring to buy products, at least one shopping cart computer, and a shopping cart database connected to the shopping cart computer. The buyer computer and the shopping cart computer are interconnected by a computer network. The buyer computer is programmed to receive a plurality of requests from a user to add a plurality of respective products to a shopping cart in the shopping cart database, and, in response to the requests to add the products, to send a plurality of respective shopping cart messages to the shopping cart computer each of which includes a product identifier identifying one of the plurality of products. The shopping cart computer is programmed to receive the plurality of shopping cart messages, to modify the shopping cart in the shopping cart database to reflect the plurality of requests to add the plurality of products to the shopping cart, and to cause a payment message associated with the shopping cart to be created. The buyer computer is programmed to receive a request from the user to purchase the plurality of products added to the shopping cart and to cause the payment message to be activated to initiate a payment transaction for the plurality of products added to the shopping cart.

In another aspect, the invention features a network-based link message system that includes at least one client computer for operation by a client user and at least one server computer for operation by a server user. The client computer and the server computer are interconnected by a computer network. The client computer is programmed to send an initial link message to the server computer. The server computer is programmed to receive the initial link message from the client computer and to create, based on information contained in the initial link message, a session link message that encodes a state of interaction between the client computer and the server computer. The session link message includes a session link authenticator, computed by a cryptographic function of the session link contents, for authenticating the session link message. The server computer is programmed to cause the session link message to be sent to the client computer. The client computer is programmed to cause the session link message to be sent to a computer in the network that is programmed to authenticate the session link message by examining the session link authenticator and that is programmed to respond to the session link message based on the state of the interaction between the client computer and the server computer.

In another aspect, the invention features a network-based sales system that includes a merchant database having a

plurality of digital advertisements and a plurality of respective product fulfillment items, at least one creation computer for creating the merchant database, and at least one merchant computer for causing the digital advertisements to be transmitted to a user and for causing advertised products to be transmitted to the user. The creation computer and the merchant computer are interconnected by a computer network. The creation computer is programmed to create the merchant database, and to transmit the digital advertisements and the product fulfillment items to the merchant computer. The merchant computer is programmed to receive the digital advertisements and product fulfillment items, to receive a request for a digital advertisement from a user, to cause the digital advertisement to be sent to the user, to receive from the user an access message identifying an advertised product, and to cause the product to be sent to the user in accordance with a product fulfillment item corresponding to the product.

In another aspect, the invention features a hypertext statement system that includes a client computer for operation by a client user and one or more server computers for operation by a server user. The client computer and the server computers are interconnected by a computer network. At least one of the server computers is programmed to record purchase transaction records in a database. Each of the purchase transaction records includes a product description. The server computer is programmed to transmit a statement document that includes the purchase transaction records to the client computer. The client computer is programmed to display the product descriptions, to receive a request from the client user to display a product corresponding to a product description displayed by the client computer, and to cause a product hypertext link derived from a purchase transaction record to be activated. At least one of the server computers is programmed to respond to activation of the product hypertext link by causing the product to be sent to the client computer.

In another aspect, the invention features a network payment system that includes at least one buyer computer for operation by a user desiring to buy a product and at least one payment computer for processing payment messages from the buyer computer. The buyer computer and the payment computer are interconnected by a computer network. The buyer computer is programmed to cause a payment message to be sent to the payment computer. The payment message includes a product identifier identifying the product that the user desires to buy. The payment computer is programmed to receive the payment message, to cause an access message to be created to enable the user to access the product, and to record a purchase transaction record in the settlement database. The buyer computer is programmed to cause a request for purchase transaction records to be sent to the payment computer. The payment computer is programmed to receive the request for purchase transaction records and to cause a document derived from the purchase transaction records to be sent to the buyer computer.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a block diagram of a network sales system in accordance with the present invention.

FIG. **2** (**2**-A through **2**-I) is a flowchart diagram illustrating the operation of a purchase transaction in the network sales system of FIG. **1**.

FIG. **3** (**3**-A through **3**-B) is a flowchart diagram illustrating the use of a shopping cart for the purchase of products in connection with the network sales system of FIG. **1**.

FIG. **4** (**4**-A through **4**-C) is a flowchart diagram illustrating the operation of a smart statement in the network sales system of FIG. **1**.

FIG. **5** is a screen snapshot of an advertising document that the merchant computer sends to the buyer computer in FIG. **2**.

FIG. **6** is a screen snapshot of a confirmation document that the payment computer sends to the buyer computer in FIG. **2**.

FIG. **7** is a screen snapshot of a new account document that the payment computer sends to the buyer computer in FIG. **2**.

FIG. **8** is a screen snapshot of an account name prompt that the buyer computer creates in FIG. **2**.

FIG. **9** is a screen snapshot of a document that the payment computer sends to the buyer computer in FIG. **2** and that provides an option either to repurchase or to use a previously purchased access.

FIG. **10** is a screen snapshot of a fulfillment document that the merchant computer sends to the buyer computer in FIG. **2**.

FIG. **11** is a screen snapshot of a smart statement document that the payment computer sends to the buyer computer in FIG. **4**.

FIGS. **12** and **13** are screen snapshots of a transaction detail document that the payment computer sends to the buyer computer in FIG. **4**.

FIG. **14** is a screen snapshot of a customer service form that the payment computer sends to the buyer computer in FIG. **4**.

DETAILED DESCRIPTION

With reference to FIG. **1**, a network sales system in accordance with the present invention includes a buyer computer **12** operated by a user desiring to buy a product, a merchant computer **14**, which may be operated by a merchant willing to sell products to the buyer or by a manager of the network sales system, a payment computer **16** typically operated by a manager of the network sales system, and a creation computer **20** typically operated by the merchant. The buyer, merchant, payment, and creation computers are all inter-connected by a computer network **10** such as the Internet.

Creation computer **20** is programmed to build a "store" of products for the merchant. A printout of a computer program for use in creating such a "store" in accordance with the present invention is provided as Appendix F.

The products advertised by merchant computer **14** may be, for example, newspaper or newsletter articles available for purchase by buyers. Creation computer **20** creates a digital advertisement database **18** that stores advertising documents (which may for example be in the form of summaries of newspaper or newsletter articles, accompanied by prices) and product fulfillment items (which may be the products themselves if the products can be transmitted over the network, or which may be hard goods identifiers if the products are hard goods, i.e., durable products as opposed to information products). Creation computer **20** transmits contents of the advertising document database **18** to merchant computer **14** to enable the merchant computer to cause advertisements and products to be sent to buyers. Merchant computer **14** maintains advertising documents locally in advertising document database **15**. In an alternative embodiment, the creation computer does not have a local digital advertisement database, but instead updates a remote

advertising document database on a merchant computer. These updates can be accomplished using HTML forms or other remote database technologies as is understood by practitioners of the art.

Payment computer **16** has access to a settlement database **22** in which payment computer **16** can record details of purchase transactions. The products may be organized into various "domains" of products, and payment computer **16** can access settlement database **22** to record and retrieve records of purchases of products falling within the various domains. Payment computer **16** also has access to a shopping cart database **21** in which a "shopping cart" of products that a user wishes to purchase can be maintained as the user shops prior to actual purchase of the contents of the shopping cart.

With reference to FIG. **2**, a purchase transaction begins when a user at buyer computer **12** requests advertisements (step **24**) and buyer computer **12** accordingly sends an advertising document URL (universal resource locator) to merchant computer **14** (step **26**). The merchant computer fetches an advertising document from the advertising document database (step **28**) and sends it to the buyer computer (step **30**). An example of an advertising document is shown in FIG. **5**. Details of URLs and how they are used are found in the microfiche Appendix G.

The user browses through the advertising document and eventually requests a product (step **32**). This results in the buyer computer sending payment URL A to the payment computer (step **34**). Payment URL A includes a product identifier that represents the product the user wishes to buy, a domain identifier that represents a domain of products to which the desired product belongs, a payment amount that represents the price of the product, a merchant computer identifier that represents merchant computer **14**, a merchant account identifier that represents the particular merchant account to be credited with the payment amount, a duration time that represents the length of time for which access to the product is to be granted to the user after completion of the purchase transaction, an expiration time that represents a deadline beyond which this particular payment URL cannot be used, a buyer network address, and a payment URL authenticator that is a digital signature based on a cryptographic key. The payment URL authenticator is a hash of other information in the payment URL, the hash being defined by a key shared by the merchant and the operator of the payment computer.

In an alternative embodiment, step **34** consists of the buyer computer sending a purchase product message to the merchant computer, and the merchant computer provides payment VRL A to the buyer computer in response to the purchase product message. In this alternative embodiment, payment URL A contains the same contents as above. The buyer computer then sends the payment URL A it has received from the merchant computer to the payment computer.

When the payment computer receives the payment URL it verifies whether the payment URL authenticator was created from the contents of the payment URL using the cryptographic key (step **36**). If not, the payment computer sends a document to the buyer computer indicating that access to the network sales system is denied (step **38**). Otherwise, the payment computer determines whether the expiration time has past (step **40**). If it has, the payment computer sends a document to the buyer computer indicating that the time has expired (step **41**). Otherwise, the payment computer checks the buyer computer network address to see if it matches the one specified in the payment URL (step **42**). If it does not match, the payment computer sends a document to the buyer computer indicating that access to the network payment system is denied (step **43**). Otherwise, the payment computer sends a payment confirmation document to the buyer computer, the payment confirmation document including an "open" link and a "continue" link (step **44**).

An example of a confirmation document is shown in FIG. **6**. The confirmation document asks the user to click on a "continue" button if the user already has an account with the payment computer, or to click on an "open" button if the user does not already have an account and wishes to open one.

If the user clicks on the "open" button (step **46**), the buyer computer sends payment URL C to the payment computer (step **48**), payment URL C being similar to payment URL A but also indicating that the user does not yet have an account. The payment computer creates a new account document (step **50**) and sends it to the buyer computer (step **52**). An example of a new account document is shown in FIG. **7**. When the user receives the new account document he enters the new account name, an account password, a credit card number, the credit card expiration date, and security information such as the maiden name of the user's mother (step **54**), and presses a "submit" button (not shown in FIG. **7**). The buyer computer sends the new account information to the payment computer (step **56**), which enters the new account in the settlement database (step **58**).

If the user clicks on the "continue" button (step **60**), the buyer computer sends payment URL B to the payment computer (step **62**), payment URL B being similar to payment URL A but also indicating that the user already has an account. The payment computer then instructs the buyer computer to provide the account name and password (steps **64** and **66**), and the buyer computer prompts the user for this information by creating an account name prompt (example shown in FIG. **8**) and a similar password prompt. The user enters the information (step **68**) and the buyer computer sends the account name and password to the payment computer (step **70**).

The payment computer verifies whether the user name and password are correct (step **72**). If they are not correct, the payment computer sends a document to the buyer computer indicating that access to the network sales system is denied (step **74**). Otherwise, the payment computer determines whether additional security is warranted, based on, e.g., whether the payment amount exceeds a threshold (step **73**). If additional security is warranted, the payment computer creates a challenge form document and sends it to the buyer computer (step **75**). The user enters the security information (step **77**), the buyer computer sends the security information to the payment computer (step **79**), and the payment computer determines whether the security information is correct (step **81**). If it is not correct, the payment computer sends a document to the buyer computer indicating that access to the network sales system is denied (step **83**).

If the security information is correct, or if additional security was not warranted, the payment computer checks the settlement database to determine whether the user has unexpired access to the domain identifier contained in the payment URL (step **82**). If so, the payment computer sends to the buyer computer a document providing an option either to repurchase or to use the previously purchased access (step **84**). An example of such a document is shown in FIG. **9**. The

user can respond to the recent purchase query document by choosing to access the previously purchased document (step **85**) or to go ahead and buy the currently selected product (step **86**).

If the user chooses to access the previously purchased document, the buyer computer skips to step **92** (see below). If the user chooses to buy the currently selected product, the payment computer calculates an actual payment amount that may differ from the payment amount contained in the payment URL (step **87**). For example, the purchase of a product in a certain domain may entitle the user to access other products in the domain for free or for a reduced price for a given period of time.

The payment computer then verifies whether the user account has sufficient funds or credit (step **76**). If not, the payment computer sends a document to the buyer computer indicating that the user account has insufficient funds (step **78**). Otherwise, the payment computer creates an access URL (step **80**) that includes a merchant computer identifier, a domain identifier, a product identifier, an indication of the end of the duration time for which access to the product is to be granted, the buyer network address, and an access URL authenticator that is a digital signature based on a cryptographic key. The access URL authenticator is a hash of other information in the access URL, the hash being defined by a key shared by the merchant and the operator of the payment computer. The payment computer then records the product identifier, the domain, the user account, the merchant account, the end of duration time, and the actual payment amount in the settlement database (step **88**).

The payment computer then sends a redirect to access URL to the buyer computer (step **90**), which sends the access URL to the merchant computer (step **92**). The merchant computer verifies whether the access URL authenticator was created from the contents of the access URL using the cryptographic key (step **94**). If not, the merchant computer sends a document to the buyer computer indicating that access to the product is denied (step **96**).

Otherwise, the merchant computer verifies whether the duration time for access to the product has expired (step **98**). This is done because the buyer computer can request access to a purchased product repeatedly. If the duration time has expired, the merchant computer sends a document to the buyer computer indicating that the time has expired (step **100**). Otherwise the merchant computer verifies that the buyer computer network address is the same as the buyer network address in the access URL (step **101**), and if so, sends a fulfillment document to the buyer computer (step **102**), which is displayed by the buyer computer (step **104**). An example of a fulfillment document is shown in FIG. **10**. Otherwise, the merchant computer sends a document to the buyer computer indicating that access is not allowed (step **103**).

With reference now to FIG. **3**, when the merchant computer sends the advertising document to the buyer computer, the user may request that a product be added to a shopping cart in the shopping cart database rather than request that the product be purchased immediately. The buyer computer sends a shopping cart URL to the payment computer (step **108**), the shopping cart URL including a product identifier, a domain identifier, a payment amount, a merchant computer identifier, a merchant account identifier, a duration time, an expiration time, and a shopping cart URL authenticator that is a digital signature based on a cryptographic key. The shopping cart URL authenticator is a hash of other information in the shopping cart URL, the hash being defined by a key shared by the merchant and the operator of the payment computer.

The payment computer verifies whether the shopping cart URL authenticator was created from the contents of the shopping cart URL using a cryptographic key (step **110**). If not, the payment computer sends a document to the buyer computer indicating that access to the network sales system is denied (step **112**). Otherwise, before any modification to a user's shopping cart is allowed, user authentication is performed (step **113**) in a manner analogous to steps **40–81**. Once the user is authenticated, the payment computer creates or updates a payment URL for the shopping cart (step **114**).

The user then either requests more advertisements (step **24** in FIG. **2**) and possibly adds another product to the shopping cart, requests display of the shopping cart (step **116**), or requests purchase of the entire contents of the shopping cart (step **124**). If the user requests display of the shopping cart (step **116**), the buyer computer sends a fetch shopping cart request to the payment computer (step **118**), and the payment computer and buyer computer (step **119**) perform steps analogous to steps **64–81**. The payment computer returns the contents of the shopping cart to the buyer computer (step **120**), which displays the contents of the shopping cart (step **122**). If the user requests that the entire contents of the shopping cart be purchased (step **124**) the buyer computer causes the payment URL for the shopping cart to be activated (step **126**) and the payment URL is processed in a manner analogous to the processing of payment URLs for individual products (beginning with step **36** in FIG. **2**).

With reference now to FIG. **4**, a user can request display of a "smart statement" that lists purchase transactions for a given month (step **128**). When the buyer computer receives such a request, it sends a smart statement URL to the payment computer (step **130**).

When the payment computer receives the smart statement URL, it verifies whether the smart statement URL authenticator was created from the contents of the smart statement URL using a cryptographic key (step **132**). If not, the payment computer sends a document to the buyer computer indicating that access is denied (step **134**). Otherwise, the payment computer checks to determine whether the buyer network address in the smart statement URL matches the buyer computer's actual network address (step **136**). If not, the payment computer sends a document to the buyer computer indicating that access is denied (step **138**). Otherwise (step **140**), the payment computer and buyer computer perform a set of steps analogous to steps **64–81** in FIG. **2** (payment computer requests account name and password, user provides the requested information, and payment computer verifies the information).

In an alternative embodiment steps **132–138** are omitted.

After verification of account information is complete, the payment computer retrieves the requested settlement data from the settlement database, creates a smart statement document for the buyer, and sends the smart statement document to the buyer computer (step **142**). An example of a smart statement document is shown in FIG. **11**. Each purchase transaction record in the smart statement document includes the data of the transaction, the name of the merchant, an identification of the product, and the payment amount for the product. The smart statement document also includes a transaction detail URL for each purchase transaction (these URLs, or hypertext links, are discussed below and are not shown in FIG. **11**). The smart statement docu-

ment also identifies previous statements that the user may wish to have displayed.

The buyer computer displays the retrieved document (step **144**), and the user may request transaction details for a particular transaction listed on the smart statement (step **146**). If so, the buyer computer sends a transaction detail URL (or "payment detail URL") to the payment computer (step **148**). The transaction detail URL includes a transaction identifier, a buyer network address, and a transaction detail URL authenticator. When the payment computer receives the transaction detail URL, it performs (step **150**) a set of steps analogous to steps **132–140** (verification of URL authenticator, buyer network address, and account information). The payment computer then retrieves from the settlement database data corresponding to the payment transaction specified in the transaction detail URL, creates a transaction detail document, and sends it to the buyer computer (step **152**).

An example of a transaction detail document is shown in FIGS. **12** and **13**. The document displays a number of items of information about the transaction, including the transaction date, end of the duration time ("expiration"), a description of the product, the payment amount, the domain corresponding to the product, an identification of the merchant, and the merchant's address.

The smart statement document and the transaction detail document both include customer service URLs (hypertext links) that allow the user to request customer service (i.e., to send comments and suggestions to the payment computer). When the user requests customer service (step **154**), the buyer computer sends the customer service URL to the payment computer (step **156**), which creates a customer service form and sends it to the buyer computer (step **158**). An example of a customer service form is shown in FIG. **14**. The user types comments into the customer service form (step **160**), and the buyer computer sends the user's comments to the payment computer (step **162**). The payment computer then posts the user comments and sends a thank you document to the buyer computer (step **164**).

A user may request display of a product included in the smart statement. When the user requests that the product be displayed (step **166**), the buyer computer sends the access URL contained in the smart statement document to the merchant computer (step **168**), and the buyer computer and merchant computer perform a set of steps analogous to steps **94–104** in FIG. **2** (authentication of access URL, verification whether duration time has expired, verification of buyer network address, and transmission of fulfillment document to buyer computer).

Whenever the present application states that one computer sends a URL to another computer, it should be understood that in preferred embodiments the URL is sent in a standard HTTP request message, unless a URL message is specified as a redirection in the present application. The request message includes components of the URL as described by the standard HTTP protocol definition. These URL components in the request message allow the server to provide a response appropriate to the URL. The term "URL" as used the present application is an example of a "link," which is a pointer to another document or form (including multimedia documents, hypertext documents including other links, or audio/video documents).

When the present application states that one computer sends a document to another computer, it should be understood that in preferred embodiments the document is a success HTTP response message with the document in the body of the message. When the present application states that a server sends an account name and password request message to the client, it should be understood that in preferred embodiments the account name and password request message is an unauthorized HTTP response. A client computer sends account name and password information to a server as part of a request message with an authorization field.

The software architecture underlying the particular preferred embodiment is based upon the hypertext conventions of the World Wide Web. Appendix A describes the Hypertext Markup Language (HTML) document format used to represent digital advertisements, Appendix B describes the HTML forms fill out support in Mosaic 2.0, Appendix C is a description of the Hypertext Transfer Protocol (HTTP) between buyer and merchant computers, Appendix D describes how documents are named with Uniform Resource Locators (URLs) in the network of computers, and Appendix E describes the authentication of URLs using digital signatures.

A printout of a computer program for use in creating and operating such a "store" in accordance with the present invention is provided as Appendix F. A printout of a computer program for use in operating other aspects of the network sales system in accordance with the present invention is provided in the microfiche appendix G.

There has been described a new and useful network-based sales system. It is apparent that those skilled in the art may make numerous modifications and departures from the specific embodiments described herein without departing from the spirit and scope of the claimed invention.

What is claimed is:

1. A network-based sales system, comprising:

at least one buyer computer for operation by a user desiring to buy a product;

at least one merchant computer; and

at least one payment computer;

said buyer computer, said merchant computer, and said payment computer being interconnected by a computer network;

said buyer computer being programmed to receive a user request for purchasing a product, and to cause a payment message to be sent to said payment computer that comprises a product identifier identifying said product;

said payment computer being programmed to receive said payment message, to cause an access message to be created that comprises said product identifier and an access message authenticator based on a cryptographic key, and to cause said access message to be sent to said merchant computer; and

said merchant computer being programmed to receive said access message, to verify said access message authenticator to ensure that said access message authenticator was created using said cryptographic key, and to cause said product to be sent to said user desiring to buy said product.

2. A network-based sales system in accordance with claim **1**, wherein said payment message and said access message each comprises a universal resource locator.

3. A network-based sales system in accordance with claim **1**, wherein said payment computer is programmed to identify said merchant computer upon receipt of said payment message from said buyer computer.

4. A network-based sales system in accordance with claim **1**, wherein said access message comprises a buyer network address.

5. A network-based sales system in accordance with claim 4, wherein:

said product can be transmitted from one computer to another; and

said merchant computer causes said product to be sent to said user by transmitting said product to said buyer network address only.

6. A network-based sales system in accordance with claim 4, wherein said merchant computer is programmed to verify whether said buyer network address in said access message matches the actual network address of said buyer computer.

7. A network-based sales system in accordance with claim 1, wherein said payment message comprises a buyer network address.

8. A network-based sales system in accordance with claim 7, wherein said payment computer is programmed to verify whether said buyer network address in said payment message matches the actual network address of said buyer computer.

9. A network-based sales system in accordance with claim 1, wherein said access message authenticator comprises a cryptographic function of contents of said access message based on said cryptographic key.

10. A network-based sales system in accordance with claim 1, wherein said payment computer is programmed to verify said payment message authenticator to ensure that said payment message authenticator was created using said cryptographic key.

11. A network-based sales system in accordance with claim 10, wherein said payment message authenticator comprises a cryptographic function of contents of said payment message based on said cryptographic key.

12. A network-based sales system in accordance with claim 1, wherein said payment message comprises a payment amount.

13. A network-based sales system in accordance with claim 1, wherein said payment message comprises a merchant account identifier that identifies a merchant account.

14. A network-based sales system in accordance with claim 1, wherein said buyer computer is programmed to transmit a user account identifier to said payment computer that identifies a user account.

15. A network-based sales system in accordance with claim 14, wherein:

said payment message comprises a payment amount; and

said payment computer is programmed to ensure that said user account has sufficient funds or credit to cover said payment amount.

16. A network-based sales system in accordance with claim 14, wherein:

said payment message comprises a payment amount and a merchant account identifier that identifies a merchant account; and

said payment computer is programmed to record said payment amount, said user account, and said merchant account in a settlement database.

17. A network-based sales system in accordance with claim 16, wherein:

said payment message comprises a domain identifier; and

said payment computer is programmed to record said domain identifier and said user account in a settlement database.

18. A network-based sales system in accordance with claim 17, wherein said payment computer is programmed to check said settlement database, upon receipt of said payment message, to determine whether said user account has previously purchased a product associated with said domain identifier.

19. A network-based sales system in accordance with claim 18, wherein said payment computer is programmed to determine an actual payment amount for said product identified by said product identifier in said payment message based on whether said user account has previously purchased a product associated with said domain identifier.

20. A network-based sales system in accordance with claim 1, wherein said buyer computer is programmed to transmit a user authenticator to said payment computer and said payment computer is programmed to verify said user authenticator.

21. A network-based sales system in accordance with claim 20, wherein said user authenticator comprises a password.

22. A network-based sales system in accordance with claim 20, wherein:

said buyer computer is programmed to transmit security information to said payment computer;

said payment computer is programmed to transmit a challenge form to said buyer computer under a predetermined condition, said challenge form asking for said security information previously transmitted by said buyer computer to said payment computer;

said payment computer is programmed to respond to said challenge form by querying said user for said security information and transmitting said security information to said payment computer; and

said payment computer is programmed to verify authenticity of said security information.

23. A network-based sales system in accordance with claim 22, wherein:

said payment message comprises a payment amount; and

said predetermined condition comprises receipt of a payment amount in said payment message that exceeds a threshold.

24. A network-based sales system in accordance with claim 1, wherein said payment message comprises a merchant computer identifier that identifies said merchant computer.

25. A network-based sales system in accordance with claim 24, wherein said access message comprises said merchant computer identifier.

26. A network-based sales system in accordance with claim 1, wherein said payment message comprises a duration time that specifies a length of time for which access to said product is to be granted.

27. A network-based sales system in accordance with claim 26, wherein said payment computer is programmed to use said duration time to compute an end of duration time and to cause said end of duration time to be included in said access message.

28. A network-based sales system in accordance with claim 27, wherein said merchant computer is programmed to verify, upon receipt of said access message, that said end of duration time has not past.

29. A network-based sales system in accordance with claim 1, wherein said payment message comprises an expiration time after which said payment message can no longer be used.

30. A network-based sales system in accordance with claim 29, wherein said payment computer is programmed to verify, upon receipt of said payment message, that said expiration time has not past.

31. A network-based sales system in accordance with claim 1, wherein:

said payment computer is programmed to cause said access message to be sent to said buyer computer; and

said buyer computer is programmed to cause said access message received from said payment computer to be sent to said merchant computer.

32. A network-based sales system, comprising:

at least one buyer computer for operation by a user desiring to buy a product;

at least one merchant computer; and

at least one payment computer;

said buyer computer, said merchant computer, and said payment computer being interconnected by a computer network;

said buyer computer being programmed to receive a user request for purchasing a product, and to cause a payment URL to be sent to said payment computer that comprises a product identifier identifying said product, a payment amount, and a payment URL authenticator comprising a cryptographic function of contents of said payment URL based on a cryptographic key;

said payment computer being programmed to receive said payment URL, to verify said payment URL authenticator to ensure that said payment URL authenticator was created using said cryptographic key, to ensure that said user has sufficient funds or credit to cover said payment amount, to identify said merchant computer operated by said merchant willing to sell said product to said buyer, to cause an access URL to be created that comprises said product identifier and an access URL authenticator comprising a cryptographic function of contents of said access URL based on a cryptographic key, and to cause said access URL to be sent to said buyer computer;

said buyer computer being programmed to cause said access URL received from said payment computer to be sent to said merchant computer; and

said merchant computer being programmed to receive said access URL, to verify said access URL authenticator to ensure that said access URL authenticator was created using said cryptographic key, and to cause said product to be sent to said user desiring to buy said product.

33. A method of operating a payment computer in a computer network comprising at least one buyer computer for operation by a user desiring to buy a product, at least one merchant computer, and at least one payment computer, the method comprising the steps of:

receiving, at said payment computer, a payment message that said buyer computer has caused to be sent to said payment computer in response to a user request for purchasing a product, said payment message comprising a product identifier identifying said product;

causing an access message to be created that comprises said product identifier and an access message authenticator based on a cryptographic key; and

causing said access message to be sent to said merchant computer, said merchant computer being programmed to receive said access message, to verify said access message authenticator to ensure that said access message authenticator was created using said cryptographic key, and to cause said product to be sent to said user desiring to buy said product.

34. A network-based sales system, comprising:

at least one buyer computer for operation by a user desiring to buy products;

at least one shopping cart computer; and

a shopping cart database connected to said shopping cart computer;

said buyer computer and said shopping cart computer being interconnected by a computer network;

said buyer computer being programmed to receive a plurality of requests from a user to add a plurality of respective products to a shopping cart in said shopping cart database, and, in response to said requests to add said products, to send a plurality of respective shopping cart messages to said shopping cart computer each of which comprises a product identifier identifying one of said plurality of products;

said shopping cart computer being programmed to receive said plurality of shopping cart messages, to modify said shopping cart in said shopping cart database to reflect said plurality of requests to add said plurality of products to said shopping cart, and to cause a payment message associated with said shopping cart to be created; and

said buyer computer being programmed to receive a request from said user to purchase said plurality of products added to said shopping cart and to cause said payment message to be activated to initiate a payment transaction for said plurality of products added to said shopping cart;

said shopping cart being a stored representation of a collection of products, said shopping cart database being a database of stored representations of collections of products, and said shopping cart computer being a computer that modifies said stored representations of collections of products in said database.

35. A network-based sales system in accordance with claim 34, wherein said shopping cart computer is programmed to cause said payment message to be created before said buyer computer causes said payment message to be activated.

36. A network-based sales system in accordance with claim 34, wherein said buyer computer is programmed to receive a request from said user to display said plurality of products added to said shopping cart.

37. A network-based sales system in accordance with claim 36, wherein said buyer computer is programmed to transmit a fetch shopping cart request to said payment computer in response to receipt of said request from said user.

38. A network-based sales system in accordance with claim 37, wherein:

said payment computer is programmed to respond to said fetch shopping cart request by transmitting a message to said buyer computer indicating said plurality of products added to said shopping cart; and

said buyer computer is programmed to display said plurality of products added to said shopping cart.

39. A method of operating a shopping cart computer in a computer network comprising at least one buyer computer for operation by a user desiring to buy products, at least one shopping cart computer, and a shopping cart database connected to said shopping cart computer, said method comprising the steps of:

receiving, at said shopping cart computer, a plurality of shopping cart messages sent to said shopping cart computer by said buyer computer in response to receipt of a plurality of requests from a user to add a plurality of respective products to a shopping cart in said shopping cart database, each of said shopping cart messages comprising a product identifier identifying one of said plurality of products;

modifying said shopping cart in said shopping cart database to reflect said plurality of requests to add said plurality of products to said shopping cart; and

causing a payment message associated with said shopping cart to be created;

said buyer computer being programmed to receive a request from said user to purchase said plurality of products added to said shopping cart and to cause said payment message to be activated to initiate a payment transaction for said plurality of products added to said shopping cart;

said shopping cart being a stored representation of a collection of products, said shopping cart database being a database of stored representations of collections of products, and said shopping cart computer being a computer that modifies said stored representations of collections of products in said database.

40. A network-based link message system, comprising:

at least one client computer for operation by a client user; and

at least one server computer for operation by a server user;

said client computer and said server computer being interconnected by a computer network;

said client computer being programmed to send an initial link message to said server computer;

said server computer being programmed to receive said initial link message from said client computer, to create, based on information contained in said initial link message, a session link message that encodes a state of interaction between said client computer and said server computer, said session link message comprising a session link authenticator, computed by a cryptographic function of said session link contents, for authenticating said session link message, and to cause said session link message to be sent to said client computer;

said client computer being programmed to cause said session link message to be sent to a computer in said network that is programmed to authenticate said session link message by examining said session link authenticator and that is programmed to respond to said session link message based on said state of said interaction between said client computer and said server computer.

41. A network-based link message system in accordance with claim **40**, wherein:

said client computer comprises a buyer computer for operation by a user desiring to buy a product;

said server computer comprises a payment computer for operation by a manager of said network-based link message system; and

said network-based link message system further comprises a merchant computer for operation by a merchant willing to sell said product to said buyer.

42. A network-based link message system in accordance with claim **41**, wherein said computer that is programmed to authenticate said session link message comprises said merchant computer.

43. A network-based link message system in accordance with claim **41**, wherein said initial link message comprises a payment message to said payment computer that comprises a product identifier identifying said product.

44. A network-based link message system in accordance with claim **43**, wherein said session link message comprises an access message that comprises said product identifier to be created.

45. A network-based link message system in accordance with claim **44**, wherein said merchant computer is programmed to respond to said access message by causing said product to be sent to said user desiring to buy said product.

46. A network-based link message system in accordance with claim **40**, wherein said initial link message and said session link message comprise universal resource locators.

47. A network-based link message system in accordance with claim **40**, wherein:

said session link authenticator comprises a cryptographic function of contents of said session link message based on a cryptographic key; and

said computer to which said client computer is programmed to cause said session link message to be sent is programmed to verify that said session link authenticator was created using said cryptographic key.

48. A method of operating a server computer in a network-based link message system comprising at least one client computer for operation by a client user and at least one server computer for operation by a server user, said client computer and said server computer being interconnected by a computer network, said method comprising the steps of:

receiving, at said server computer, an initial link message sent to said server computer by said client computer;

creating, based on information contained in said initial link message, a session link message that encodes a state of interaction between said client computer and said server computer, said session link message comprising a session link authenticator, computed by a cryptographic function of said session link contents, for authenticating said session link message; and

causing said session link message to be sent to said client computer;

said client computer being programmed to cause said session link message to be sent to a computer in said network that is programmed to authenticate said session link message by examining said session link authenticator and that is programmed to respond to said session link message based on said state of said interaction between said client computer and said server computer.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
Certificate

Patent No. 5,715,314 Patented: February 3, 1998

On petition requesting issuance of a certificate for correction of inventorship pursuant to 35 U.S.C. 256, it has been found that the above identified patent, through error and without any deceptive intent, improperly sets forth the inventorship.

Accordingly, it is hereby certified that the correct inventorship of this patent is: Andrew C. Payne, Lincoln, MA; Lawrence C. Stewart, Burlington, MA; and G. Winfield Treese, Wayland, MA.

Signed and Sealed this Sixth Day of April 2004.

THOMAS H. TARCZA
Supervisory Patent Examiner
Art Unit 3662

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(12) **EX PARTE REEXAMINATION CERTIFICATE** (5932nd)

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(54) **NETWORK SALES SYSTEM**

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(73) Assignee: **Soverain Software LLC**, Chicago, IL (US)

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(58) **Field of Classification Search** ..... None
See application file for complete search history.

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Primary Examiner—Michael O'Neill

(57) **ABSTRACT**

A network-based sales system includes at least one buyer computer for operation by a user desiring to buy a product, at least one merchant computer, and at least one payment computer. The buyer computer, the merchant computer, and the payment computer are interconnected by a computer network. The buyer computer is programmed to receive a user request for purchasing a product, and to cause a payment message to be sent to the payment computer that comprises a product identifier identifying the product. The payment computer is programmed to receive the payment message, to cause an access message to be created that comprises the product identifier and an access message authenticator based on a cryptographic key, and to cause the access message to be sent to the merchant computer. The merchant computer is programmed to receive the access message, to verify the access message authenticator to ensure that the access message authenticator was created using the cryptographic key, and to cause the product to be sent to the user desiring to buy the product.

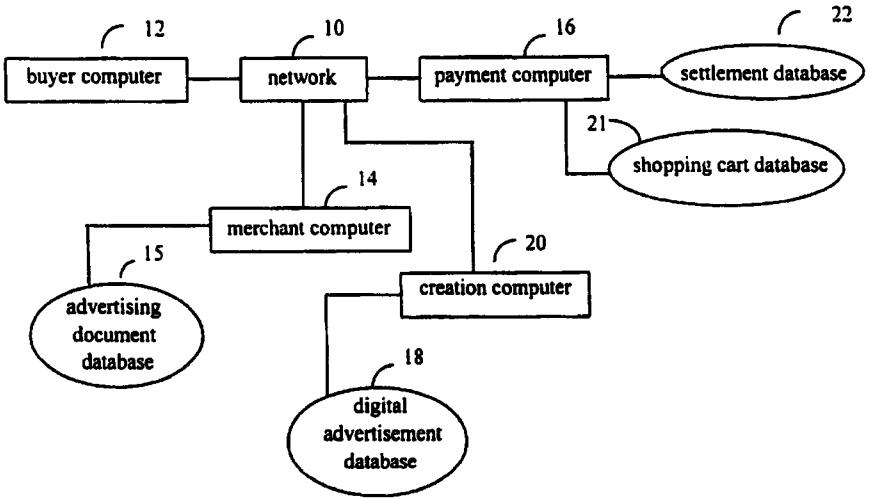

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Exhibit 5 of Geringer Declaration: Excerpts of Deposition of Andrew Payne.

Exhibit 6 of Geringer Declaration: E–mail from Andrew Payne to Winfield Treese, et al. (Jun. 15, 1994).

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EX PARTE REEXAMINATION CERTIFICATE ISSUED UNDER 35 U.S.C. 307

THE PATENT IS HEREBY AMENDED AS INDICATED BELOW.

Matter enclosed in heavy brackets [ ] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–48** is confirmed.

New claims **49–168** are added and determined to be patentable.

49. A network-based sales system in accordance with claim 34, wherein the buyer computer activates the payment message by transmitting a message to the shopping cart computer that causes the payment message to be activated.

50. A network-based sales system in accordance with claim 34, wherein the network is a public packet switched network.

51. A network-based sales system in accordance with claim 34, wherein the network is an Internet.

52. A network-based sales system in accordance with claim 34, further comprising:

a merchant computer that is interconnected with the buyer computer and shopping cart computer by the computer network; and

an advertising document database;

wherein the merchant computer is programmed to fetch an advertising document from the advertising document database.

53. A network-based sales system in accordance with claim 52, wherein the merchant computer is programmed to send one or more advertising documents to the buyer computer.

54. A network-based sales system in accordance with claim 53, wherein the merchant computer is programmed to provide a product requested by the user.

55. A network-based sales system in accordance with claim 54, wherein the merchant computer is programmed to respond to payment orders from the buyer computer without the merchant computer having to communicate directly with the shopping cart computer to ensure that the user is authorized to purchase the product;

wherein the merchant computer is programmed to respond to payment orders from the buyer computer without the merchant computer having to store information in a database regarding which buyers are authorized to purchase which products.

56. A network-based sales system in accordance with claim 53, wherein the advertisement documents are in the form of summaries of newspaper or newsletter articles;

wherein prior to a user's product request, the merchant computer sends an advertising document to the buyer computer.

57. A network-based sales system in accordance with claim 34, wherein the buyer computer transmits an initial link that comprises information from which the shopping cart computer can create a session link message;

wherein the session link is transmitted from the shopping cart computer to the buyer computer;

wherein the session link message includes a session link authenticator for use by a computer to authenticate the session link message.

58. A network-based sales system in accordance with claim 57, wherein the session link authenticator is a cryptographic function of the session link contents.

59. A network-based sales system in accordance with claim 58, wherein the buyer computer is programmed to cause the session link message to be sent to a computer in the network which is programmed to authenticate the session link message by examining the session link authenticator and which is programmed to respond to the session link message based on state of the interaction between the buyer computer and the shopping cart computer.

60. A network-based sales system in accordance with claim 34, wherein at least one of the requests comprises a shopping cart URL.

61. A network-based sales system in accordance with claim 60, wherein the shopping cart URL comprises a domain identifier.

62. A network-based sales system in accordance with claim 60, wherein the shopping cart URL comprises a merchant identifier.

63. A network-based sales system in accordance with claim 60, wherein the shopping cart URL comprises a merchant account identifier.

64. A network-based sales system in accordance with claim 60, wherein the shopping cart URL comprises a payment amount.

65. A network-based sales system in accordance with claim 60, wherein the shopping cart URL comprises a product identifier.

66. A network-based sales system in accordance with claim 60, wherein the shopping cart URL comprises a duration time.

67. A network-based sales system in accordance with claim 60, wherein the shopping cart URL comprises an expiration time.

68. A network-based sales system in accordance with claim 67, wherein the shopping cart computer transmits a document to the buyer computer indicating that the expiration time has passed.

69. A network-based sales system in accordance with claim 60, wherein the URL comprises a buyer network address.

70. A network-based sales system in accordance with claim 69, wherein the buyer computer network address is verified by matching it with a network address specified in the shopping cart URL.

71. A network-based sales system in accordance with claim 70, wherein if the computer network address verification fails, then the shopping cart computer sends a document to the buyer computer indicating that access is not allowed.

72. A network-based sales system in accordance with claim 60, wherein the shopping cart URL comprises an authenticator based on a cryptographic key;

wherein the authenticator is a function of contents of the shopping cart URL:

wherein the shopping cart computer verifies whether the shopping cart URL authenticator was created from the contents of the shopping cart URL using a cryptographic key.

73. A network-based sales system in accordance with claim 72, wherein if the verification fails, the shopping cart

computer transmits a document to the buyer computer indicating that access is denied.

74. A network-based sales system in accordance with claim 34, wherein the buyer computer activates the payment message by transmitting a message to the shopping cart computer that causes the payment message to be activated;

wherein the shopping cart computer transmits a payment confirmation document to the buyer computer.

75. A network-based sales system in accordance with claim 74, wherein the payment confirmation document includes an open link and a continue link.

76. A network-based sales system in accordance with claim 75, wherein the shopping cart computer opens a new account in response to the user selecting the open link.

77. A network-based sales system in accordance with claim 76, wherein the buyer computer sends a payment URL to the shopping cart computer that indicates that an account does not yet exist.

78. A network-based sales system in accordance with claim 77, wherein the shopping cart computer creates a new account document.

79. A network-based sales system in accordance with claim 78, wherein the shopping cart computer transmits the new account document to the buyer computer.

80. A network-based sales system in accordance with claim 79, wherein the new account document comprises a challenge form that requests account information to be entered by the user.

81. A network-based sales system in accordance with claim 80, wherein the account information comprises a new account name and account password.

82. A network-based sales system in accordance with claim 80, wherein the account information comprises: a new account name, an account password, a credit card number, and an expiration date of the credit card.

83. A network-based sales system in accordance with claim 80, wherein the account information comprises security information.

84. A network-based sales system in accordance with claim 34, wherein the shopping cart computer, in response to the plurality of shopping cart messages, causes an account name and password request message to be transmitted to the buyer computer.

85. A network-based sales system in accordance with claim 34, further comprising:

a merchant computer that is interconnected with the buyer and shopping cart computers by the computer network; and

an advertising document database;

wherein the merchant computer is programmed to fetch an advertising document from the advertising document database;

wherein the advertising document database is local to the merchant computer.

86. A network-based sales system in accordance with claim 85, wherein a creation computer updates the remote advertising document database on the merchant computer.

87. A network-based sales system in accordance with claim 85, wherein the buyer computer transmits a purchase product message to the merchant computer, and, in response, the merchant computer provides a payment URL to the buyer computer.

88. A network-based sales system in accordance with claim 87, wherein the buyer computer transmits the payment URL to a payment computer.

89. A network-based sales system in accordance with claim 88, wherein the payment computer is the shopping cart computer.

90. A network-based sales system in accordance with claim 88, wherein the payment URL comprises an authenticator based on a cryptographic key;

wherein the authenticator is a function of contents of the payment URL.

91. A network-based sales system in accordance with claim 90, wherein the payment computer verifies whether the payment URL authenticator was created from the contents of the payment URL using a cryptographic key;

if the verification fails, the payment computer transmits a document to the buyer computer indicating that access is denied.

92. A network-based sales system in accordance with claim 88, wherein the payment URL further comprises an expiration time.

93. A network-based sales system in accordance with claim 92, wherein the payment computer transmits a document to the buyer computer indicating that the expiration time has passed.

94. A network-based sales system in accordance with claim 88, wherein the payment URL comprises a buyer network address.

95. A network-based sales system in accordance with claim 94, wherein the buyer computer network address is verified by matching it with the network address specified in the payment URL;

if the verification fails, then the shopping cart computer sends a document to the buyer computer indicating that access is not allowed.

96. A network-based sales system in accordance with claim 88, wherein the payment computer transmits a payment confirmation document to the buyer computer;

wherein the payment confirmation document includes an open link and a continue link;

wherein in response to the user selecting the continue link, the payment computer instructs the buyer computer to provide an account name and password that have previously been provided by the buyer computer to the payment computer.

97. A network-based sales system in accordance with claim 96, wherein the buyer computer prompts the user for the account name and password by creating an account name prompt and a password prompt.

98. A network-based sales system in accordance with claim 97, wherein the payment computer verifies that the account name and password entered by the user match a previously provided account name and password.

99. A network-based sales system in accordance with claim 98, wherein if the verification fails, then the payment computer sends a document to the buyer computer indicating that access is not allowed.

100. A network-based sales system in accordance with claim 98, wherein if a payment amount exceeds a threshold, then the user is prompted for security information;

wherein the payment computer verifies that the security information matches a previously provided account name and password;

if the verification fails, then the payment computer sends a document to the buyer computer indicating that access is not allowed.

101. A network-based sales system in accordance with claim 98, further comprising a settlement database that is in communication with the payment computer;

wherein the settlement database is used to determine whether the user has unexpired access to a domain identified in the payment message;

wherein the user is presented with an option to repurchase or to use the unexpired access.

102. A network-based sales system in accordance with claim 101, wherein the purchase of a product in a certain domain by a user account entitles access to other products in the domain for free or at a reduced price.

103. A network-based sales system in accordance with claim 98, wherein the payment computer verifies whether the user account has sufficient funds or credit that satisfies a payment amount specified in the payment message,

if the verification fails, then the payment computer sends a document to the buyer computer indicating that the user has insufficient funds.

104. A network-based sales system in accordance with claim 98, wherein the payment computer records an end of duration time in a settlement database.

105. A network-based sales system in accordance with claim 98, wherein the payment computer creates an access URL including an access URL authenticator that is a digital signature generated based on a cryptographic key;

wherein the access URL authenticator is a hash of other information in the access URL;

wherein the payment computer sends a redirect to the access URL to the buyer computer;

wherein the buyer computer sends the access URL to a merchant computer.

106. A network-based sales system in accordance with claim 105, wherein the merchant computer verifies whether the access URL authenticator was created from said other information in the access URL using the cryptographic key;

if the verification fails, then the merchant computer sends a document to the buyer computer indicating that access is not allowed.

107. A network-based sales system in accordance with claim 105, wherein the merchant computer verifies whether a duration time for access has expired;

if the verification fails, then the merchant computer sends a document to the buyer computer indicating that the duration time has expired.

108. A network-based sales system in accordance with claim 105, wherein the merchant computer verifies that a buyer computer network address is the same as a buyer network address contained in the access URL;

if the verification fails, then the merchant computer sends a document to the buyer computer indicating that access is not allowed.

109. The method of claim 39, wherein the buyer computer activates the payment message by transmitting a message to the shopping cart computer that causes the payment message to be activated.

110. The method of claim 39, wherein the network is a public packet switched network.

111. The method of claim 39, wherein the network is an Internet.

112. The method of claim 39, wherein a merchant computer is interconnected with the buyer computer and shopping cart computer by the computer network;

wherein the merchant computer is programmed to fetch an advertising document from an advertising document database.

113. The method of claim 112, wherein the merchant computer is programmed to send one or more advertising documents to the buyer computer.

114. The method of claim 113, wherein the merchant computer is programmed to provide a product requested by the user.

115. The method of claim 114, wherein the merchant computer is programmed to respond to payment orders from the buyer computer without the merchant computer having to communicate directly with the shopping cart computer to ensure that the user is authorized to purchase the product;

wherein the merchant computer is programmed to respond to payment orders from the buyer computer without the merchant computer having to store information in a database regarding which buyers are authorized to purchase which products.

116. The method of claim 113, wherein the advertisement documents are in the form of summaries of newspaper or newsletter articles;

wherein prior to a user's product request, the merchant computer sends an advertising document to the buyer computer.

117. The method of claim 39, wherein the buyer computer transmits an initial link that comprises information from which the shopping cart computer can create a session link message;

wherein the session link is transmitted from the shopping cart computer to the buyer computer;

wherein the session link message includes a session link authenticator for use by a computer to authenticate the session link message.

118. The method of claim 117, wherein the session link authenticator is a cryptographic function of the session link contents.

119. The method of claim 118, wherein the buyer computer is programmed to cause the session link message to be sent to a computer in the network which is programmed to authenticate the session link message by examining the session link authenticator and which is programmed to respond to the session link message based on state of the interaction between the buyer computer and the shopping cart computer.

120. The method of claim 39, wherein at least one of the requests comprises a shopping cart URL.

121. The method of claim 120, wherein the shopping cart URL comprises a domain identifier.

122. The method of claim 120, wherein the shopping cart URL comprises a merchant identifier.

123. The method of claim 120, wherein the shopping cart URL comprises a merchant account identifier.

124. The method of claim 120, wherein the shopping cart URL comprises a payment amount.

125. The method of claim 120, wherein the shopping cart URL comprises a product identifier.

126. The method of claim 120, wherein the shopping cart URL comprises a duration time.

127. The method of claim 120, wherein the shopping cart URL comprises an expiration time.

128. The method of claim 127, wherein the shopping cart computer transmits a document to the buyer computer indicating that the expiration time has passed.

129. The method of claim 120, wherein the URL comprises a buyer network address.

130. The method of claim 129, wherein the buyer computer network address is verified by matching it with a network address specified in the shopping cart URL.

131. The method of claim 130, wherein if the computer network address verification fails, then the shopping cart computer sends a document to the buyer computer indicating that access is not allowed.

132. The method of claim 120, wherein the shopping cart URL comprises an authenticator based on a cryptographic key;

wherein the authenticator is a function of contents of the shopping cart URL;

wherein the shopping cart computer verifies whether the shopping cart URL authenticator was created from the contents of the shopping cart URL using a cryptographic key.

133. The method of claim 132, wherein if the verification fails, the shopping cart computer transmits a document to the buyer computer indicating that access is denied.

134. The method of claim 39, wherein the buyer computer activates the payment message by transmitting a message to the shopping cart computer that causes the payment message to be activated;

wherein the shopping cart computer transmits a payment confirmation document to the buyer computer.

135. The method of claim 134, wherein the payment confirmation document includes an open link and a continue link.

136. The method of claim 135, wherein the shopping cart computer opens a new account in response to the user selecting the open link.

137. The method of claim 136, wherein the buyer computer sends a payment URL to the shopping cart computer that indicates that an account does not yet exist.

138. The method of claim 137, wherein the shopping cart computer creates a new account document.

139. The method of claim 138, wherein the shopping cart computer transmits the new account document to the buyer computer.

140. The method of claim 139, wherein the new account document comprises a challenge form that requests account information to be entered by the user.

141. The method of claim 140, wherein the account information comprises a new account name and account password.

142. The method of claim 140, wherein the account information comprises: a new account name, an account password, a credit card number, and an expiration date of the credit card.

143. The method of claim 140, wherein the account information comprises security information.

144. The method of claim 39, wherein the shopping cart computer, in response to the plurality of shopping cart messages, causes an account name and password request message to be transmitted to the buyer computer.

145. The method of claim 39, wherein a merchant computer is interconnected with the buyer and shopping cart computers by the computer network;

wherein the merchant computer is programmed to fetch an advertising document from an advertising document database;

wherein the advertising document database is local to the merchant computer.

146. The method of claim 145, wherein a creation computer updates the remote advertising document database on the merchant computer.

147. The method of claim 145, wherein the buyer computer transmits a purchase product message to the merchant computer, and, in response, the merchant computer provides a payment URL to the buyer computer.

148. The method of claim 147, wherein the buyer computer transmits the payment URL to a payment computer.

149. The method of claim 148, wherein the payment computer is the shopping cart computer.

150. The method of claim 148, wherein the payment URL comprises an authenticator based on a cryptographic key;

wherein the authenticator is a function of contents of the payment URL.

151. The method of claim 150, wherein the payment computer verifies whether the payment URL authenticator was created from the contents of the payment URL using a cryptographic key;

if the verification fails, the payment computer transmits a document to the buyer computer indicating that access is denied.

152. The method of claim 148, wherein the payment URL further comprises an expiration time.

153. The method of claim 152, wherein the payment computer transmits a document to the buyer computer indicating that the expiration time has passed.

154. The method of claim 148, wherein the payment URL comprises a buyer network address.

155. The method of claim 154, wherein the buyer computer network address is verified by matching it with the network address specified in the payment URL;

if the verification fails, then the shopping cart computer sends a document to the buyer computer indicating that access is not allowed.

156. The method of claim 148, wherein the payment computer transmits a payment confirmation document to the buyer computer;

wherein the payment confirmation document includes an open link and a continue link;

wherein in response to the user selecting the continue link, the payment computer instructs the buyer computer to provide an account name and password that have previously been provided by the buyer computer to the payment computer.

157. The method of claim 156, wherein the buyer computer prompts the user for the account name and password by creating an account name prompt and a password prompt.

158. The method of claim 157, wherein the payment computer verifies that the account name and password entered by the user match a previously provided account name and password.

159. The method of claim 158, wherein if the verification fails, then the payment computer sends a document to the buyer computer indicating that access is not allowed.

160. The method of claim 158, wherein if a payment amount exceeds a threshold, then the user is prompted for security information;

wherein the payment computer verifies that the security information matches a previously transmitted account name and password;

if the verification fails, then the payment computer sends a document to the buyer computer indicating that access is not allowed.

161. The method of claim 158, wherein a settlement database is used to determine whether the user has unexpired access to a domain identified in the payment message;

wherein the user is presented with an option to repurchase or to use the unexpired access.

162. The method of claim 161, wherein the purchase of a product in a certain domain by a user account entitles access to other products in the domain for free or at a reduced price.

163. The method of claim 158, wherein the payment computer verifies whether the user account has sufficient funds or credit that satisfies a payment amount specified in the payment message,

if the verification fails, then the payment computer sends a document to the buyer computer indicating that the user has insufficient funds.

164. The method of claim 158, wherein the payment computer records an end of duration time in a settlement database.

165. The method of claim 158, wherein the payment computer creates an access URL including an access URL authenticator that is a digital signature generated based on a cryptographic key;

wherein the access URL authenticator is a hash of other information in the access URL;

wherein the payment computer sends a redirect to the access URL to the buyer computer;

wherein the buyer computer sends the access URL to a merchant computer.

166. The method of claim 165, wherein the merchant computer verifies whether the access URL authenticator was created from said other information in the access URL using the cryptographic key;

if the verification fails, then the merchant computer sends a document to the buyer computer indicating that access is not allowed.

167. The method of claim 165, wherein the merchant computer verifies whether a duration time for access has expired;

if the verification fails, then the merchant computer sends a document to the buyer computer indicating that the duration time has expired.

168. The method of claim 165, wherein the merchant computer verifies that a buyer computer network address is the same as a buyer network address contained in the access URL;

if the verification fails, then the merchant computer sends a document to the buyer computer indicating that access is not allowed.

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(12) EX PARTE REEXAMINATION CERTIFICATE (9300th)

United States Patent

Payne et al.

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(45) Certificate Issued: Sep. 11, 2012

(54) **NETWORK SALES SYSTEM**

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(51) **Int. Cl.**

G06Q 10/00	(2006.01)
G06Q 20/00	(2006.01)
G07F 7/00	(2006.01)

(52) **U.S. Cl.** **705/78**; 705/26.35; 705/75; 713/162

(58) **Field of Classification Search** 380/24
See application file for complete search history.

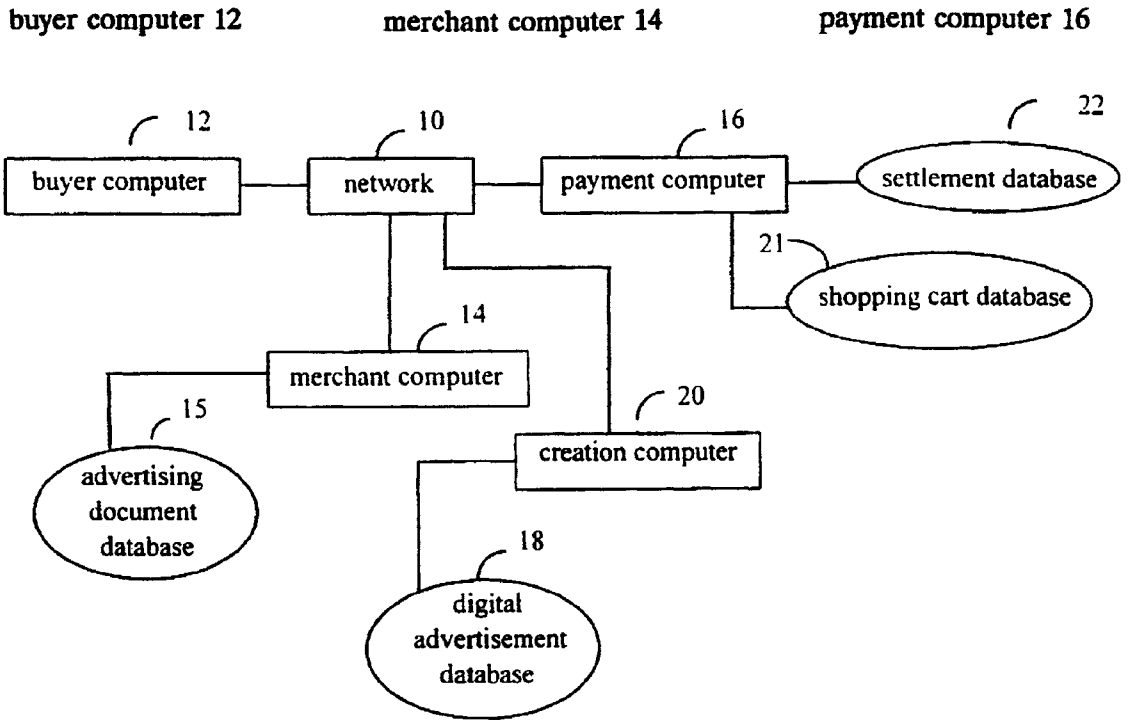
(56) **References Cited**

To view the complete listing of prior art documents cited during the proceedings for Reexamination Control Numbers 90/011,443 and 90/007,287, please refer to the USPTO's public Patent Application Information Retrieval (PAIR) system under the Display References tab.

Primary Examiner—Deandra M. Hughes

(57) **ABSTRACT**

A network-based sales system includes at least one buyer computer for operation by a user desiring to buy a product, at least one merchant computer, and at least one payment computer. The buyer computer, the merchant computer, and the payment computer are interconnected by a computer network. The buyer computer is programmed to receive a user request for purchasing a product, and to cause a payment message to be sent to the payment computer that comprises a product identifier identifying the product. The payment computer is programmed to receive the payment message, to cause an access message to be created that comprises the product identifier and an access message authenticator based on a cryptographic key, and to cause the access message to be sent to the merchant computer. The merchant computer is programmed to receive the access message, to verify the access message authenticator to ensure that the access message authenticator was created using the cryptographic key, and to cause the product to be sent to the user desiring to buy the product.



EX PARTE REEXAMINATION CERTIFICATE ISSUED UNDER 35 U.S.C. 307

NO AMENDMENTS HAVE BEEN MADE TO THE PATENT

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **34**, **35**, **36**, **39**, **49**, **50**, **51**, **84**, **109**, **110**, **111**, **134** and **144** is confirmed.

Claims **1-33**, **37-38**, **40-48**, **52-83**, **85-108**, **112-133**, **135-143**, and **145-168** were not reexamined.

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