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IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TYLER DIVISION

SOVERAIN SOFTWARE LLC,	)	
	)	
Plaintiff,	)	
	)	Civil Action No. 6:04cv528
v.	)	
	)	Hon. Leonard E. Davis
AMAZON.COM, INC. and	)	
THE GAP, INC.,	)	JURY TRIAL DEMANDED
	)	
Defendants.		

COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff Soverain Software LLC, for its Complaint against Defendants Amazon.com, Inc., and The Gap, Inc. (collectively "Defendants"), alleges as follows.

INTRODUCTION

1. This is an action arising under 35 U.S.C. § 271 for Defendants' infringement of one or more of Soverain Software LLC's United States Patent Nos. 6,195,649 and 6,205,437 (collectively, the "Patents in Suit").

THE PARTIES

2. Plaintiff Soverain Software LLC ("Soverain") is a Delaware limited liability company with its principal place of business at 120 South Riverside Plaza, Suite 430, Chicago, IL 60606.

3. Defendant Amazon.com, Inc. ("Amazon") is a Delaware corporation with its principal place of business at 1200 12th Avenue, Suite 1200, Seattle, Washington 98144. Amazon.com does business principally through the website www.amazon.com. Defendant Amazon.com, Inc. may be served by serving the Secretary of State of the State of Texas pursuant to the Texas Long Arm Statute, Texas Civil Practice & Remedies Code §§ 17.044 and asking the

Secretary of State to serve Amazon.com, Inc. at its principal place of business at 1200 12th Avenue, Suite 1200, Seattle, WA 98144 via Certified Mail - Return Receipt Requested.

4. Defendant The Gap, Inc. ("Gap") is a Delaware corporation with its principal place of business at Two Folsom Street, San Francisco, CA 94105. Defendant Gap does business principally through retail stores including those known as The Gap and through websites, including www.gap.com. Defendant The Gap, Inc. may be served by serving its registered agent for service, Corporation Service Company, 701 Brazos Street, Suite 1050, Austin, TX 78701.

JURISDICTION AND VENUE

5. This action arises under the patent laws of the United States, Title 35, United States Code. The jurisdiction of this Court over the subject matter of this action is proper under 28 U.S.C. § 1338.

6. Venue is proper in this Court pursuant to 28 U.S.C. §§ 1391(b) and (c) and 1400(b).

7. Personal jurisdiction exists over Defendants because they do business in Texas and infringing acts have occurred here.

PATENTS IN SUIT

8. Plaintiff Soverain is the owner of all right, title and interest in United States Patent No. 6,195,649 entitled "Digital Active Advertising" ("the '649 patent"). The '649 patent was duly and properly issued by the United States Patent and Trademark Office on February 27, 2001. The '649 patent was assigned to Plaintiff Soverain. A copy of the '649 patent is attached hereto as Exhibit A.

9. Plaintiff Soverain is the owner of all right, title and interest in United States Patent No. 6,205,437 entitled "Open Network Payment System For Providing For Real-Time

Authorization of Payment and Purchase Transactions" ("the '437 patent"). The '437 patent was duly and properly issued by the United States Patent and Trademark Office on March 20, 2001. The '437 patent was assigned to Plaintiff Soverain. A copy of the '437 patent is attached hereto as Exhibit B.

INFRINGEMENT OF THE PATENTS IN SUIT BY AMAZON

10. In violation of 35 U.S.C. § 271, Defendant Amazon has infringed and continues to infringe the '649 and '437 patents by: (a) making, using, offering for sale or selling within the United States, or by importing into the United States, products or processes that practice inventions claimed in those patents; (b) inducing others to make, use, offer for sale or sell within the United States, or import into the United States, products or processes that practice inventions claimed in those patents; or (c) contributing to the making, using, offering for sale or selling within the United States, or importing into the United States, products or processes that practice inventions claimed in those patents.

11. On information and belief, Defendant Amazon has had notice of the '649 and '437 patents as early as October 6, 2004.

12. On information and belief, the continued infringement by Defendant Amazon of the '649 and '437 patents is deliberate and willful.

13. Plaintiff Soverain has been damaged by the infringement of its patents by Defendant Amazon and will continue to be damaged by such infringement.

14. Plaintiff Soverain has suffered and continues to suffer irreparable harm and will continue to do so unless Defendant Amazon is enjoined therefrom by this Court.

INFRINGEMENT OF THE PATENTS IN SUIT BY GAP

15. In violation of 35 U.S.C. § 271, Defendant Gap has infringed and continues to infringe the '649 patent by: (a) making, using, offering for sale or selling within the United

States, or by importing into the United States, products or processes that practice inventions claimed in that patent; (b) inducing others to make, use, offer for sale or sell within the United States, or import into the United States, products or processes that practice inventions claimed in that patent; or (c) contributing to the making, using, offering for sale or selling within the United States, or importing into the United States, products or processes that practice inventions claimed in that patent.

16. On information and belief, Defendant Gap has had notice of the '649 patent as early as October 6, 2004.

17. On information and belief, the continued infringement by Defendant Gap of the '649 patent is deliberate and willful.

18. Plaintiff Soverain has been damaged by the infringement of its patent by Defendant Gap and will continue to be damaged by such infringement.

19. Plaintiff Soverain has suffered and continues to suffer irreparable harm and will continue to do so unless Defendant Gap is enjoined therefrom by this Court.

RELIEF REQUEST

Wherefore, Plaintiff Soverain respectfully requests that this Court enter judgment against Defendants Amazon and Gap as follows:

A. That each of the Patents in Suit is valid and enforceable;

B. That each of the '649 and '437 patents has been infringed by Defendant Amazon.

C. That the '649 patent has been infringed by Defendant Gap.

D. That infringement of the Patents in Suit by Defendants Amazon and Gap has been willful;

E. An injunction against further infringement of the Patents in Suit by Defendants;

F. An award of damages adequate to compensate Plaintiff Soverain for the patent infringement that has occurred, together with pre-judgment interest and costs;

G. An award of all other damages permitted by 35 U.S.C. § 284, including increased damages up to three times the amount of compensatory damages found;

H. That this is an exceptional case and an award to Plaintiff Soverain of its costs and reasonable attorneys' fees incurred in this action as provided by 35 U.S.C. § 285; and

I. Such other relief as this Court deems just and proper.

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December 8th, 2004

ATTORNEYS FOR SOVERAIN SOFTWARE LLC

CERTIFICATE OF SERVICE

This is to certify that a true and correct copy of the above and foregoing document has been forwarded to all attorneys of record herein by facsimile transmission and by first class mail, return receipt requested on this 8th day of December, 2004.

Of Counsel

UNITED STATES PATENT NO. 6,195,649

EXHIBIT A

TO SOVERAIN'S COMPLAINT FOR PATENT INFRINGEMENT

US006195649B1

(12) **United States Patent**
Gifford

(10) **Patent No.: US 6,195,649 B1**
(45) **Date of Patent: *Feb. 27, 2001**

(54) **DIGITAL ACTIVE ADVERTISING**

(75) Inventor: **David K. Gifford**, Weston, MA (US)

(73) Assignee: **Open Market, Inc.**, Cambridge, MA (US)

(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **09/033,143**

(22) Filed: **Mar. 2, 1998**

Related U.S. Application Data

(63) Continuation of application No. 08/563,745, filed on Nov. 29, 1995, now Pat. No. 5,724,424, which is a continuation of application No. 08/168,519, filed on Dec. 16, 1993, now abandoned.

(51) **Int. Cl.**[7] **G06F 17/60**
(52) **U.S. Cl.** **705/75**; 705/14; 705/39; 713/181
(58) **Field of Search** 705/26, 1, 35, 705/39, 40, 41, 42, 43, 44, 45, 50, 51, 53, 64, 65, 67, 68, 69, 70, 74, 75, 78; 713/176, 181

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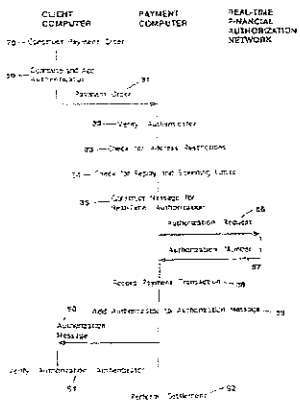
Primary Examiner—Tod R. Swann
Assistant Examiner—Susanna Meinecke-Díaz
(74) *Attorney, Agent, or Firm*—Fish & Richardson PC

(57) **ABSTRACT**

A complete system for the purchasing of goods or information over a computer network is presented. Merchant computers on the network maintain databases of digital advertisements that are accessed by buyer computers. In response to user inquiries, buyer computers retrieve and display digital advertisements from merchant computers. A digital advertisement can further include a program that is interpreted by a buyer's computer. The buyer computers include a means for a user to purchase the product described by a digital advertisement. If a user has not specified a means of payment at the time of purchase, it can be requested after a purchase transaction is initiated. A network payment system performs payment order authorization in a network with untrusted switching, transmission, and host components. Payment orders are backed by accounts in an external financial system network, and the payment system obtains account authorizations from this external network in real-time. Payment orders are signed with authenticators that can be based on any combination of a secret function of the payment order parameters, a single-use transaction identifier, or a specified network address.

12 Claims, 16 Drawing Sheets



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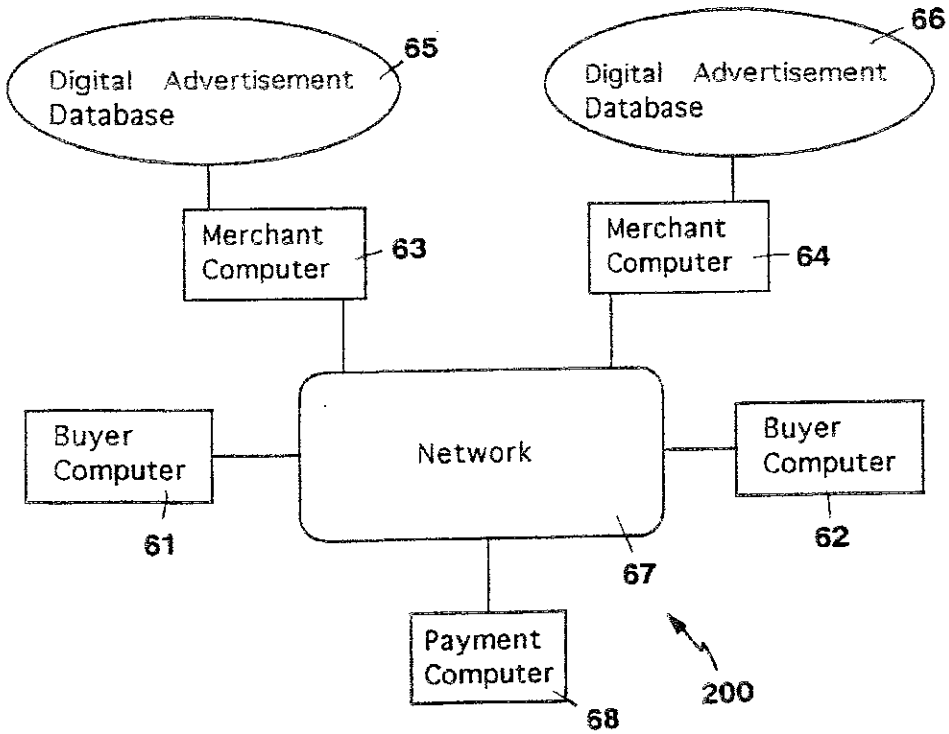
Digital Advertisement Database
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Merchant Computer
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Buyer Computer
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Payment Computer
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200

FIG. 1

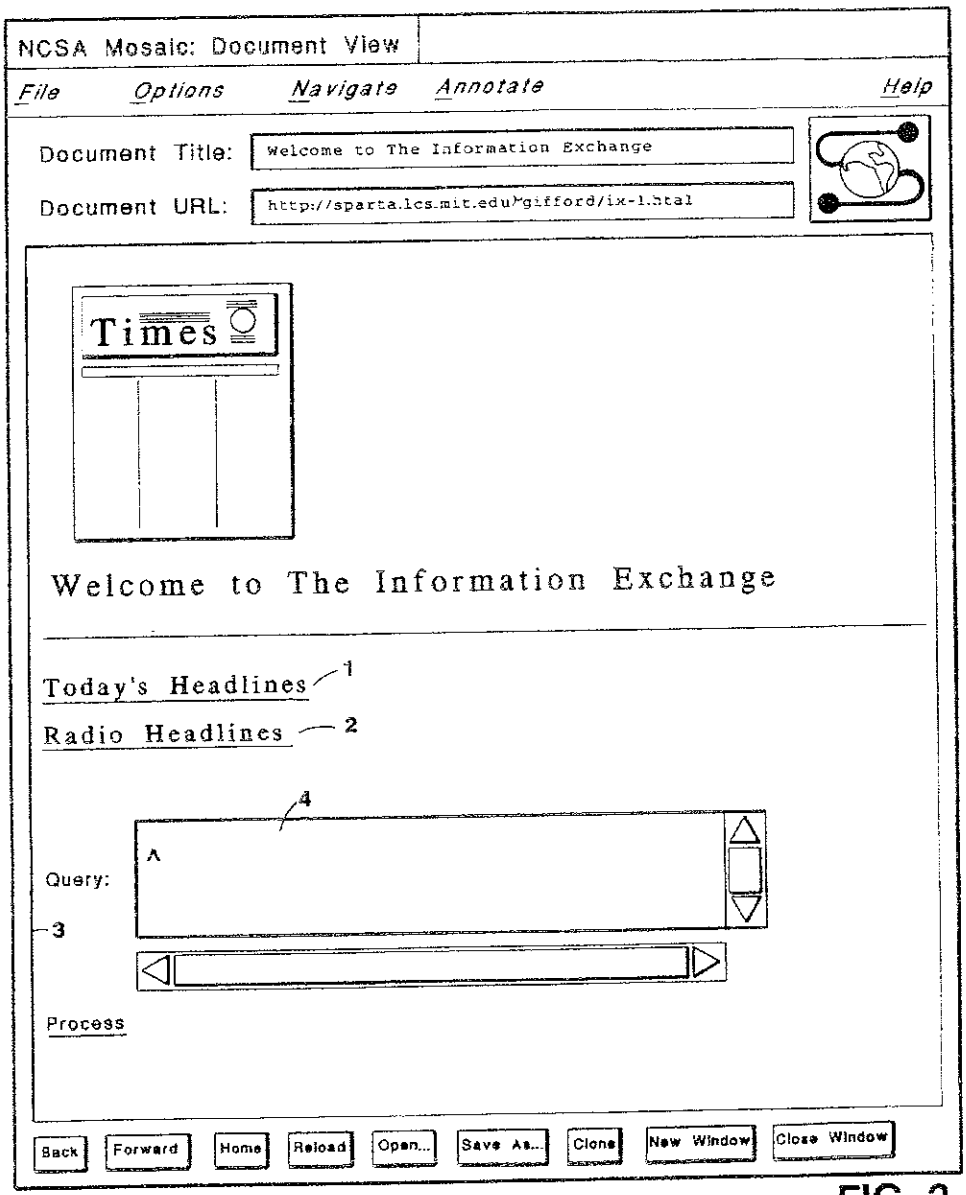

NCSA Mosaic: Document View
File
Options
Navigate
Annotate
Help
Document Title:
Welcome to The Information Exchange
Document URL:
http://sparta.lcs.mit.edu/gifford/ix-1.html
Times
Welcome to The Information Exchange
Today's Headlines
1
Radio Headlines
2
4
Query:
A
3
Process
Back
Forward
Home
Reload
Open...
Save As...
Clone
New Window
Close Window

FIG. 2

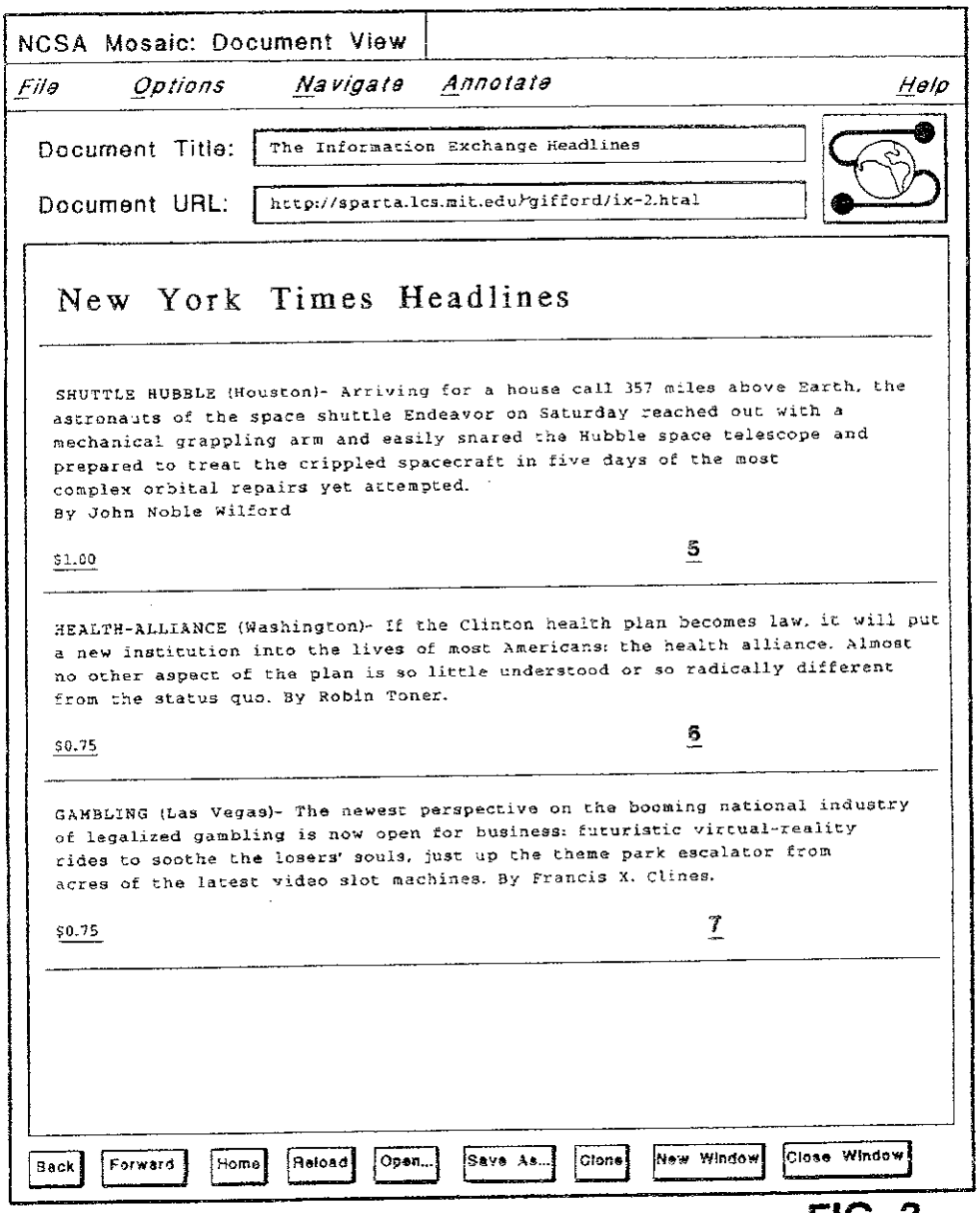

NCSA Mosaic: Document View
File
Options
Navigate
Annotate
Help
Document Title:
The Information Exchange Headlines
Document URL:
http://sparta.lcs.mit.edu/gifford/ix-2.html
New York Times Headlines
SHUTTLE HUBBLE (Houston)- Arriving for a house call 357 miles above Earth, the astronauts of the space shuttle Endeavor on Saturday reached out with a mechanical grappling arm and easily snared the Hubble space telescope and prepared to treat the crippled spacecraft in five days of the most complex orbital repairs yet attempted.
By John Noble Wilford
$1.00
5
HEALTH-ALLIANCE (Washington)- If the Clinton health plan becomes law, it will put a new institution into the lives of most Americans: the health alliance. Almost no other aspect of the plan is so little understood or so radically different from the status quo. By Robin Toner.
$0.75
6
GAMBLING (Las Vegas)- The newest perspective on the booming national industry of legalized gambling is now open for business: futuristic virtual-reality rides to soothe the losers' souls, just up the theme park escalator from acres of the latest video slot machines. By Francis X. Clines.
$0.75
7
Back
Forward
Home
Reload
Open...
Save As...
Clone
New Window
Close Window

FIG. 3

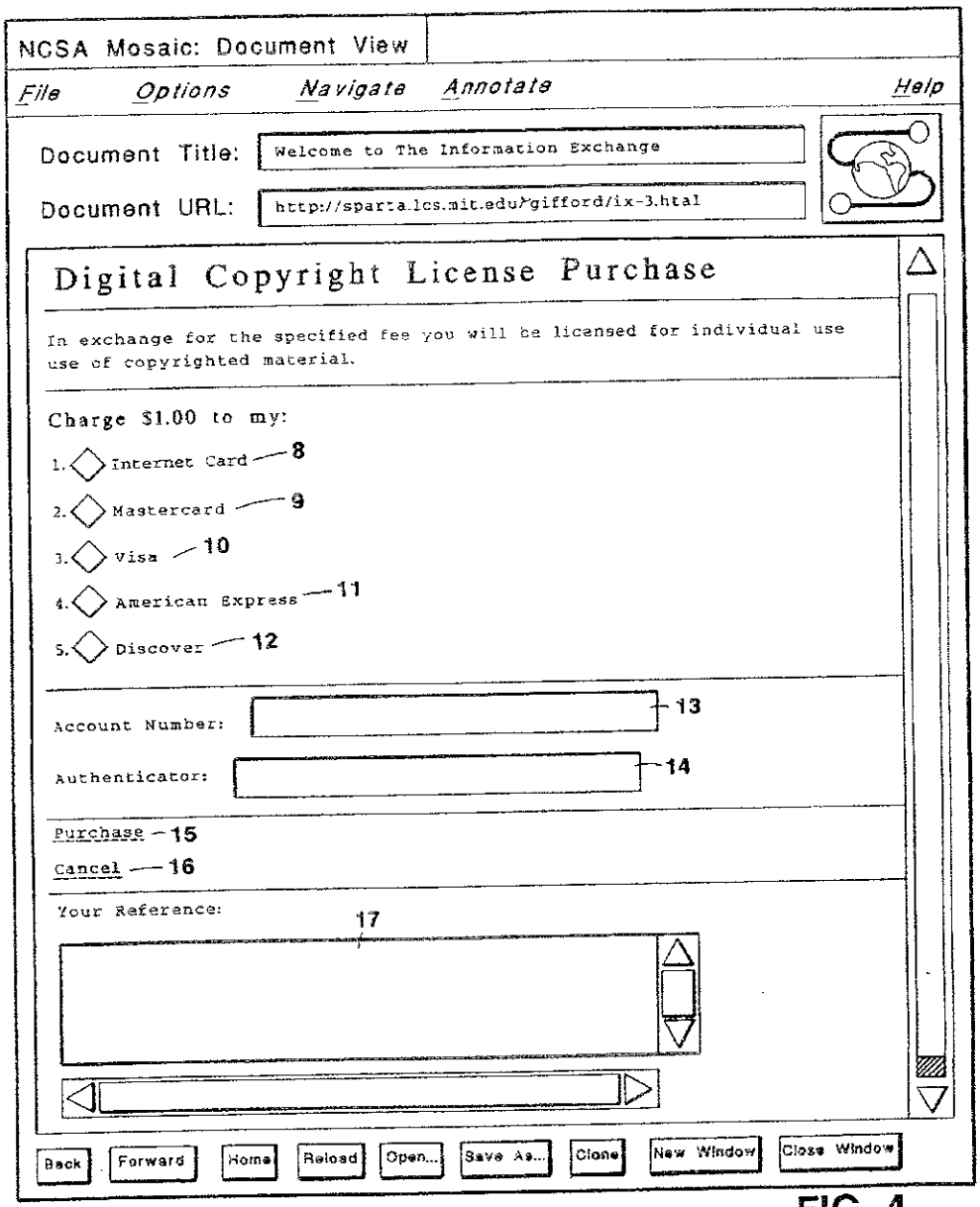

NCSA Mosaic: Document View
File
Options
Navigate
Annotate
Help
Document Title:
Welcome to The Information Exchange
Document URL:
http://sparta.lcs.mit.edu/gifford/ix-3.html
Digital Copyright License Purchase
In exchange for the specified fee you will be licensed for individual use use of copyrighted material.
Charge $1.00 to my:
1. Internet Card
2. Mastercard
3. Visa
4. American Express
5. Discover
8
9
10
11
12
Account Number:
Authenticator:
13
14
Purchase
Cancel
15
16
Your Reference:
17
Back
Forward
Home
Reload
Open...
Save As...
Clone
New Window
Close Window

FIG. 4

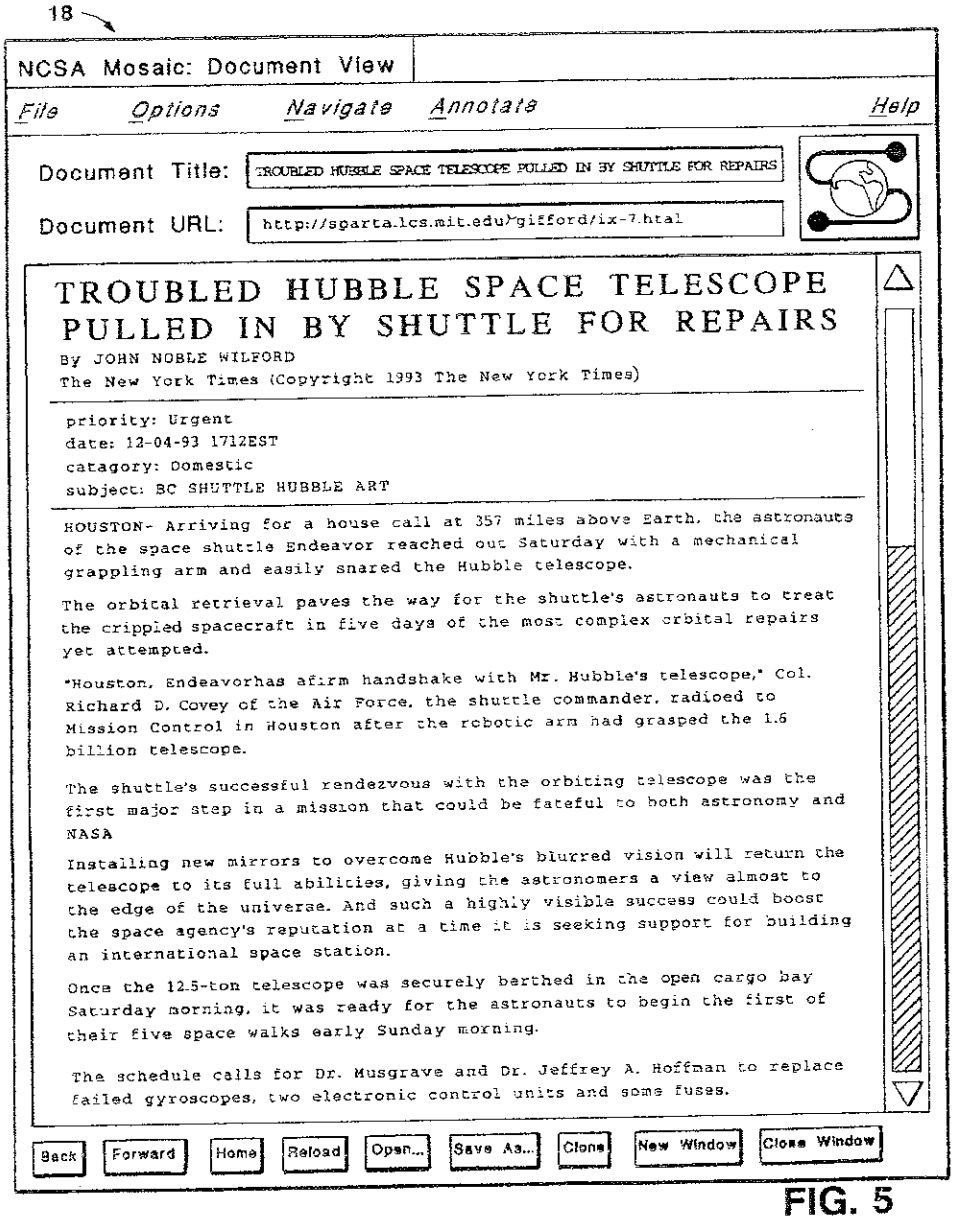

18
NCSA Mosaic: Document View
File
Options
Navigate
Annotate
Help
Document Title:
TROUBLED HUBBLE SPACE TELESCOPE PULLED IN BY SHUTTLE FOR REPAIRS
Document URL:
http://sparta.lcs.mit.edu/gifford/ix-7.html
TROUBLED HUBBLE SPACE TELESCOPE PULLED IN BY SHUTTLE FOR REPAIRS
By JOHN NOBLE WILFORD
The New York Times (Copyright 1993 The New York Times)
priority: Urgent
date: 12-04-93 1712EST
catagory: Domestic
subject: BC SHUTTLE HUBBLE ART
HOUSTON- Arriving for a house call at 357 miles above Earth, the astronauts of the space shuttle Endeavor reached out Saturday with a mechanical grappling arm and easily snared the Hubble telescope.
The orbital retrieval paves the way for the shuttle's astronauts to treat the crippled spacecraft in five days of the most complex orbital repairs yet attempted.
"Houston, Endeavorhas afirm handshake with Mr. Hubble's telescope," Col. Richard D. Covey of the Air Force, the shuttle commander, radioed to Mission Control in Houston after the robotic arm had grasped the 1.6 billion telescope.
The shuttle's successful rendezvous with the orbiting telescope was the first major step in a mission that could be fateful to both astronomy and NASA
Installing new mirrors to overcome Hubble's blurred vision will return the telescope to its full abilities, giving the astronomers a view almost to the edge of the universe. And such a highly visible success could boost the space agency's reputation at a time it is seeking support for building an international space station.
Once the 12.5-ton telescope was securely berthed in the open cargo bay Saturday morning, it was ready for the astronauts to begin the first of their five space walks early Sunday morning.
The schedule calls for Dr. Musgrave and Dr. Jeffrey A. Hoffman to replace failed gyroscopes, two electronic control units and some fuses.
Back
Forward
Home
Reload
Open...
Save As...
Clone
New Window
Close Window

FIG. 5

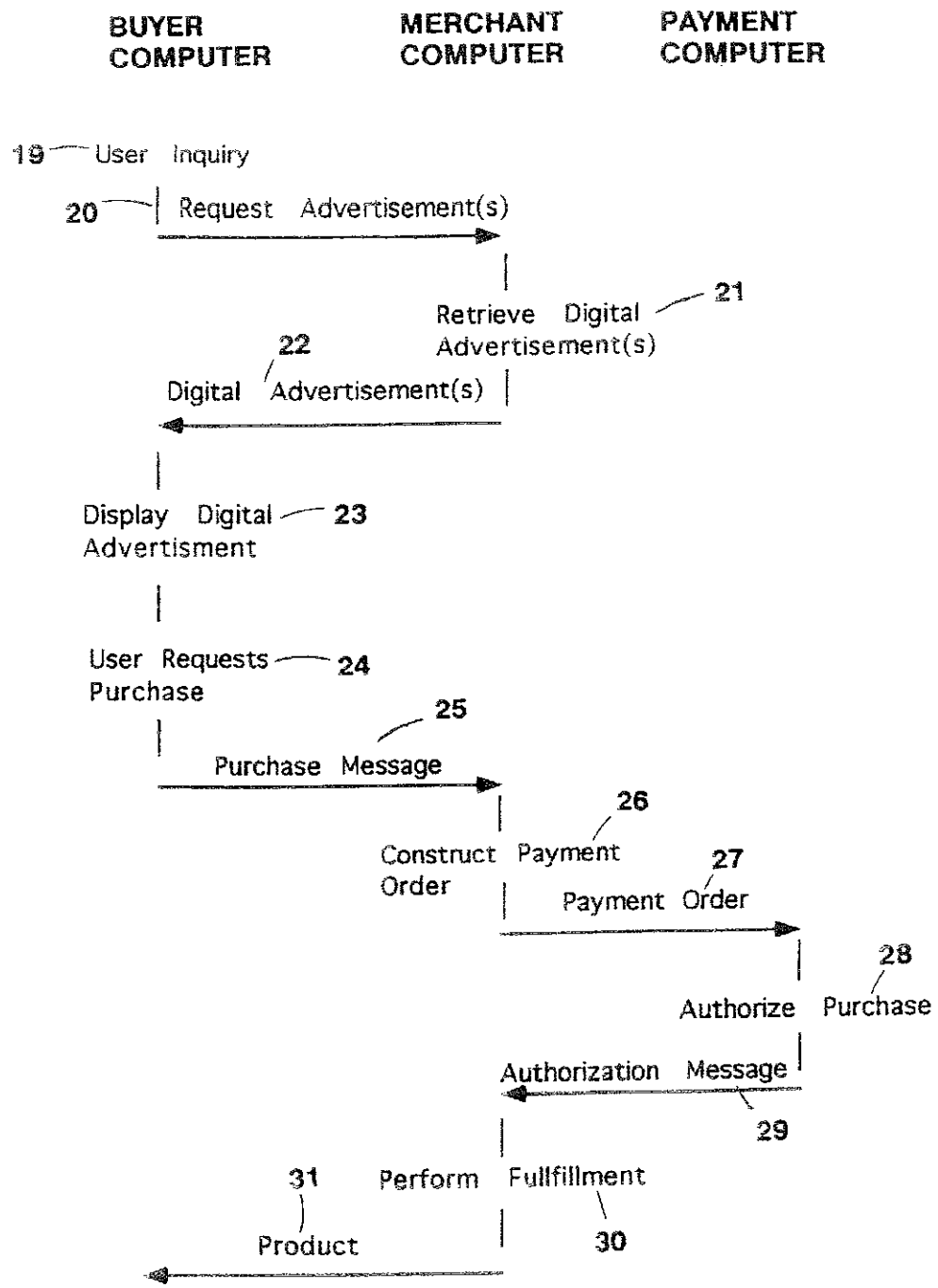

BUYER COMPUTER
MERCHANT COMPUTER
PAYMENT COMPUTER
19
User Inquiry
20
Request Advertisement(s)
Retrieve Digital Advertisement(s)
21
22
Digital Advertisement(s)
Display Digital Advertisment
23
User Requests Purchase
24
25
Purchase Message
26
Construct Order
Payment
27
Payment Order
28
Authorize Purchase
Authorization Message
29
31
Perform Fullfillment
30
Product

FIG. 6

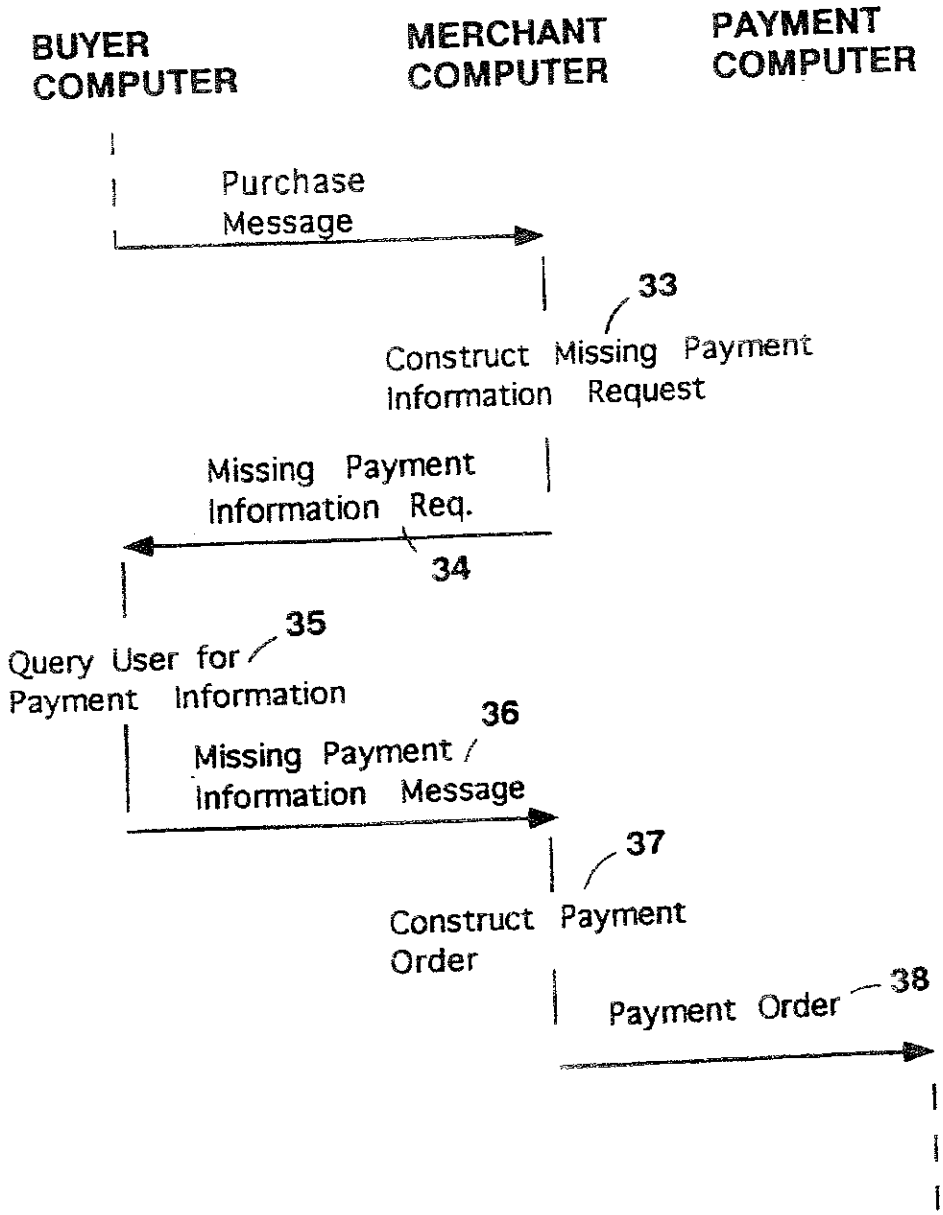

BUYER COMPUTER
MERCHANT COMPUTER
PAYMENT COMPUTER
Purchase Message
33
Construct Missing Payment Information Request
Missing Payment Information Req.
34
35
Query User for Payment Information
36
Missing Payment Information Message
37
Construct Payment Order
Payment Order
38

FIG. 7

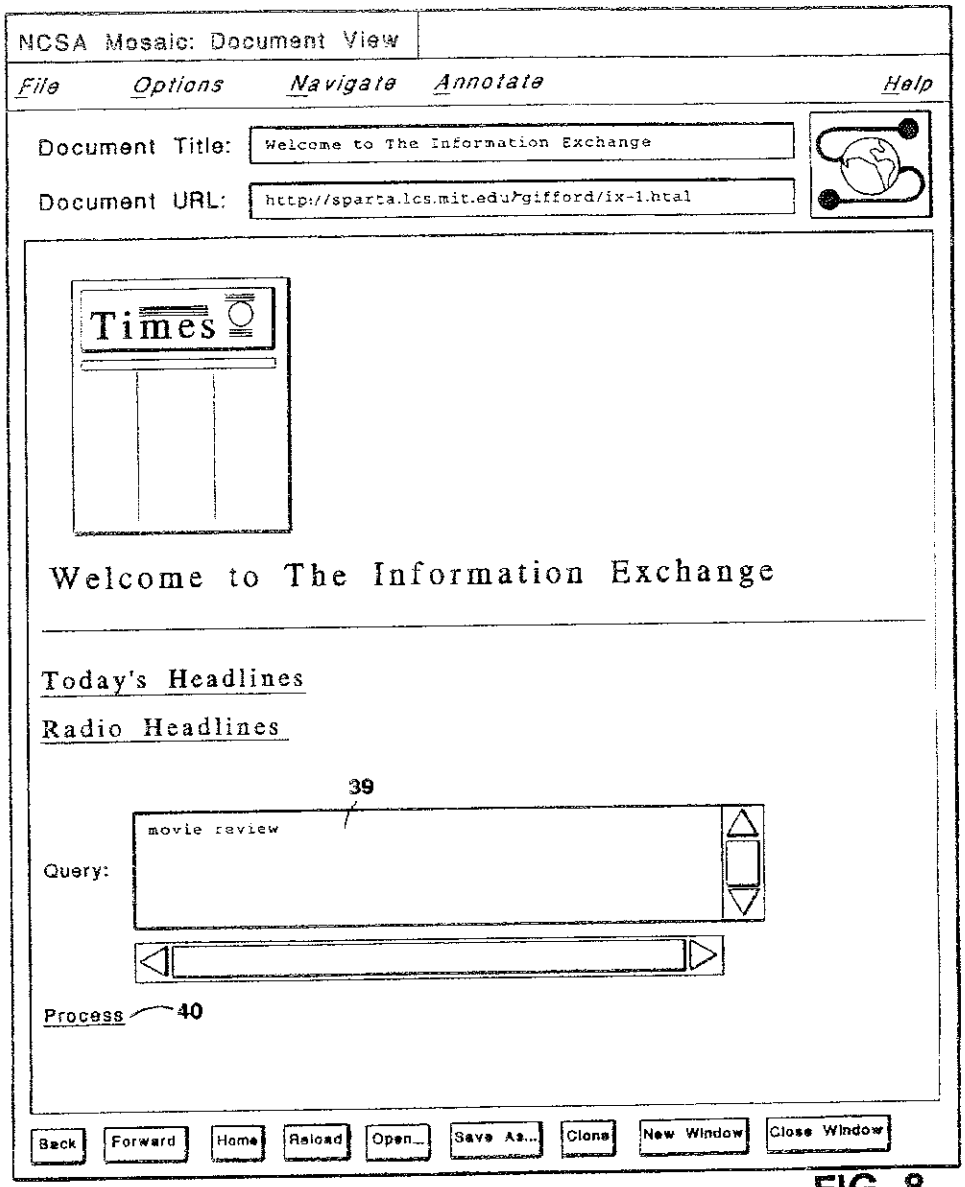

NCSA Mosaic: Document View
File
Options
Navigate
Annotate
Help
Document Title:
Welcome to The Information Exchange
Document URL:
http://sparta.lcs.mit.edu/gifford/ix-1.html
Times
Welcome to The Information Exchange
Today's Headlines
Radio Headlines
39
movie review
Query:
Process
40
Back
Forward
Home
Reload
Open...
Save As...
Clone
New Window
Close Window

FIG. 8

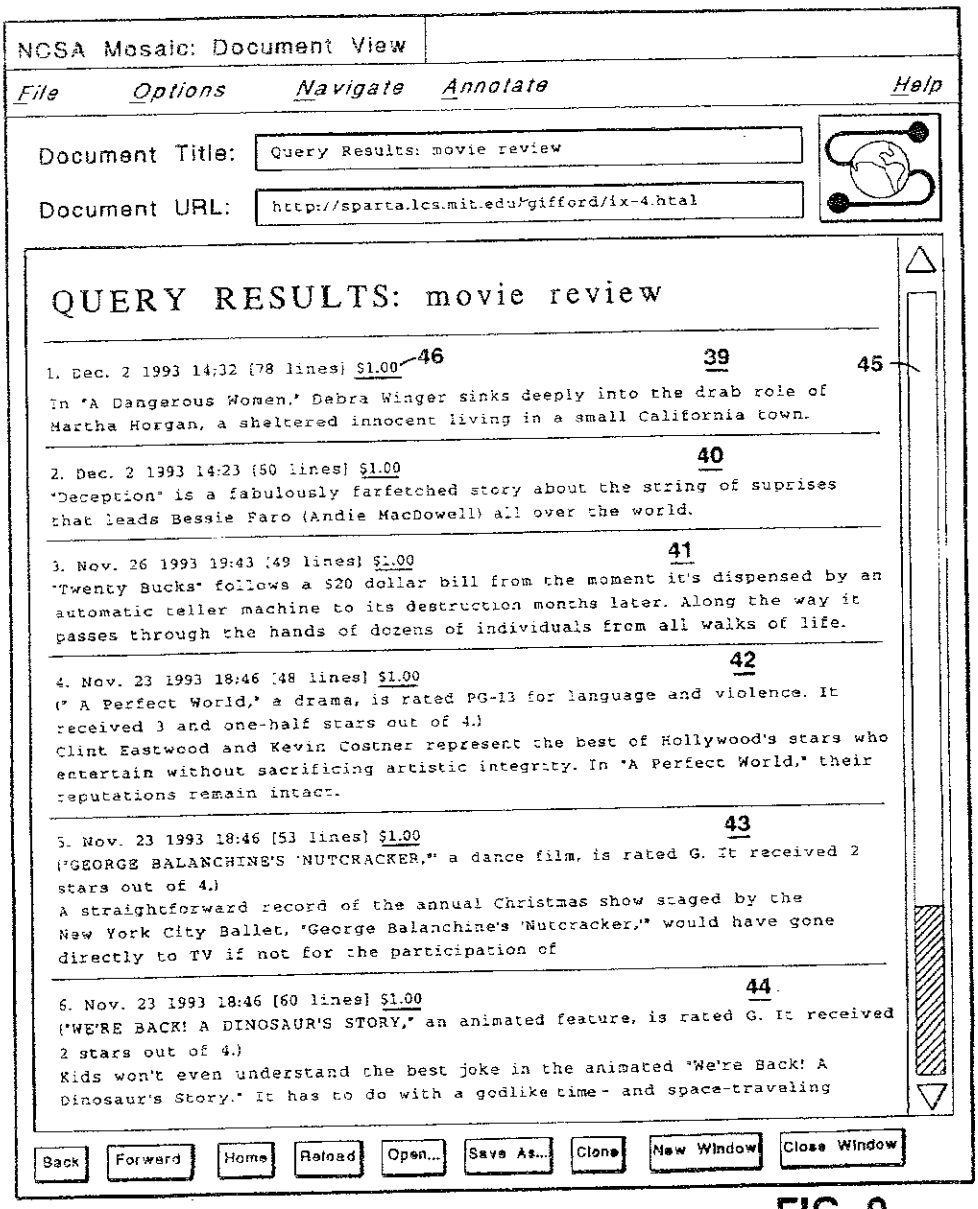

NCSA Mosaic: Document View
File
Options
Navigate
Annotate
Help
Document Title:
Query Results: movie review
Document URL:
http://sparta.lcs.mit.edu/gifford/ix-4.html
QUERY RESULTS: movie review
1. Dec. 2 1993 14:32 (78 lines) $1.00
46
39
45
In "A Dangerous Women," Debra Winger sinks deeply into the drab role of Martha Horgan, a sheltered innocent living in a small California town.
2. Dec. 2 1993 14:23 (50 lines) $1.00
40
"Deception" is a fabulously farfetched story about the string of suprises that leads Bessie Faro (Andie MacDowell) all over the world.
3. Nov. 26 1993 19:43 (49 lines) $1.00
41
"Twenty Bucks" follows a $20 dollar bill from the moment it's dispensed by an automatic teller machine to its destruction months later. Along the way it passes through the hands of dozens of individuals from all walks of life.
4. Nov. 23 1993 18:46 (48 lines) $1.00
42
(" A Perfect World," a drama, is rated PG-13 for language and violence. It received 3 and one-half stars out of 4.)
Clint Eastwood and Kevin Costner represent the best of Hollywood's stars who entertain without sacrificing artistic integrity. In "A Perfect World," their reputations remain intact.
5. Nov. 23 1993 18:46 (53 lines) $1.00
43
("GEORGE BALANCHINE'S 'NUTCRACKER,'" a dance film, is rated G. It received 2 stars out of 4.)
A straightforward record of the annual Christmas show staged by the New York City Ballet, "George Balanchine's 'Nutcracker,'" would have gone directly to TV if not for the participation of
6. Nov. 23 1993 18:46 (60 lines) $1.00
44
("WE'RE BACK! A DINOSAUR'S STORY," an animated feature, is rated G. It received 2 stars out of 4.)
Kids won't even understand the best joke in the animated "We're Back! A Dinosaur's Story." It has to do with a godlike time- and space-traveling
Back
Forward
Home
Reload
Open...
Save As...
Clone
New Window
Close Window

FIG. 9

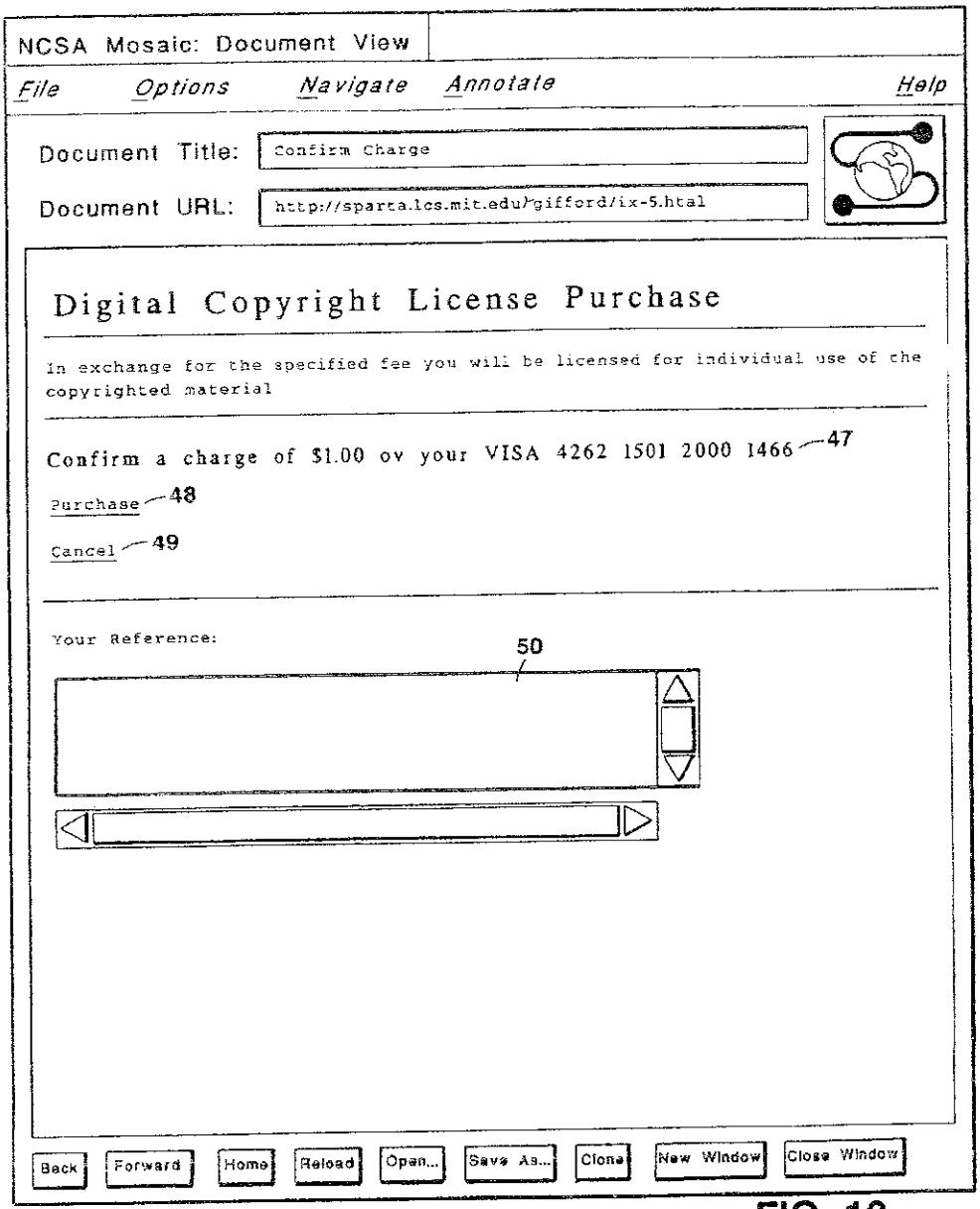
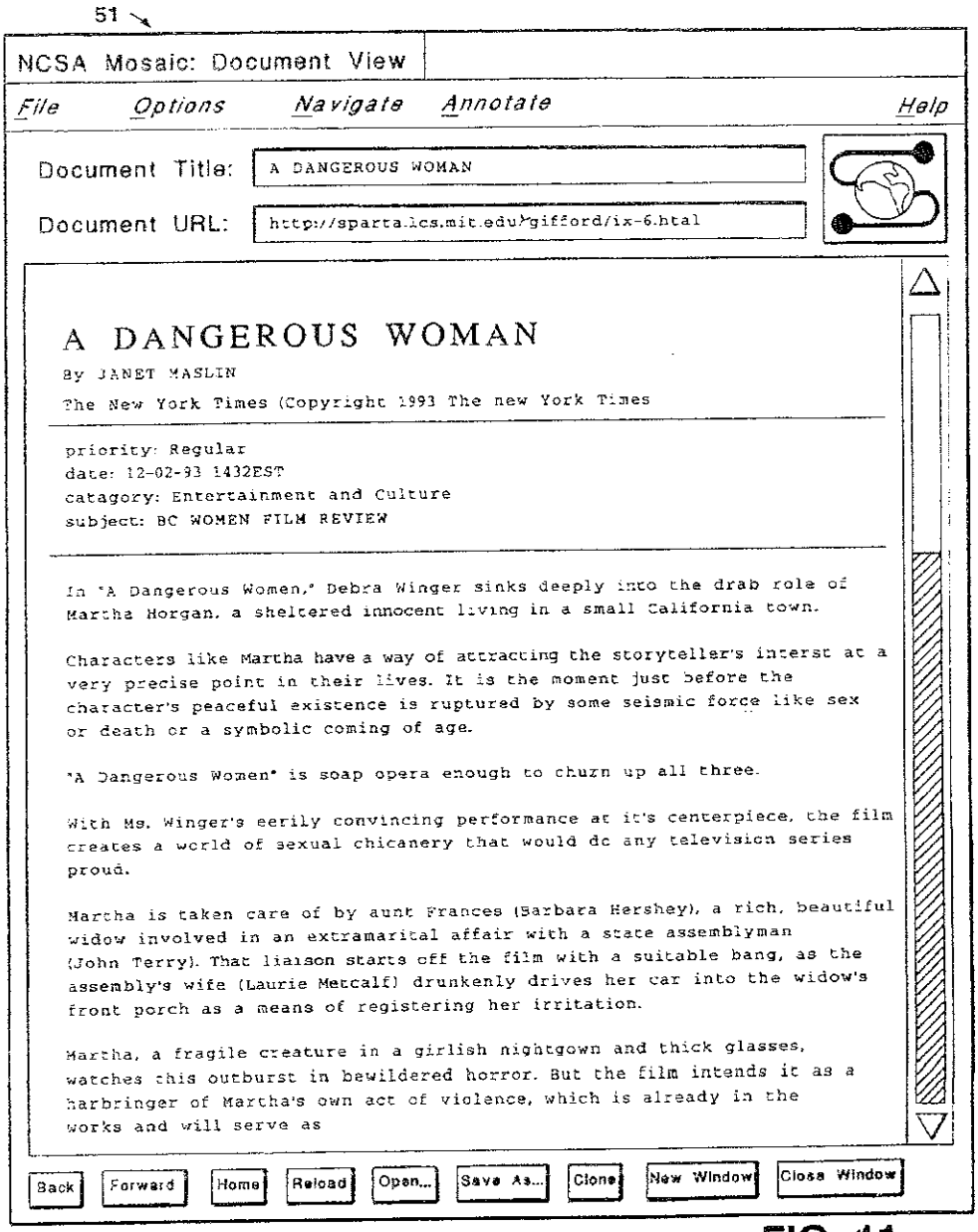

NCSA Mosaic: Document View
File
Options
Navigate
Annotate
Help
Document Title:
Confirm Charge
Document URL:
http://sparta.lcs.mit.edu/gifford/ix-5.html
Digital Copyright License Purchase
In exchange for the specified fee you will be licensed for individual use of the copyrighted material
Confirm a charge of $1.00 ov your VISA 4262 1501 2000 1466
47
Purchase
48
Cancel
49
Your Reference:
50
Back
Forward
Home
Reload
Open...
Save As...
Clone
New Window
Close Window

FIG. 10


51
NCSA Mosaic: Document View
File
Options
Navigate
Annotate
Help
Document Title:
A DANGEROUS WOMAN
Document URL:
http://sparta.lcs.mit.edu/gifford/ix-6.html
A DANGEROUS WOMAN
By JANET MASLIN
The New York Times (Copyright 1993 The new York Times
priority: Regular
date: 12-02-93 1432EST
catagory: Entertainment and Culture
subject: BC WOMEN FILM REVIEW
In "A Dangerous Women," Debra Winger sinks deeply into the drab role of Martha Horgan, a sheltered innocent living in a small California town.
Characters like Martha have a way of attracting the storyteller's interst at a very precise point in their lives. It is the moment just before the character's peaceful existence is ruptured by some seismic force like sex or death or a symbolic coming of age.
"A Dangerous Women" is soap opera enough to churn up all three.
With Ms. Winger's eerily convincing performance at it's centerpiece, the film creates a world of sexual chicanery that would dc any television series proud.
Martha is taken care of by aunt Frances (Barbara Hershey), a rich, beautiful widow involved in an extramarital affair with a state assemblyman (John Terry). That liaison starts off the film with a suitable bang, as the assembly's wife (Laurie Metcalf) drunkenly drives her car into the widow's front porch as a means of registering her irritation.
Martha, a fragile creature in a girlish nightgown and thick glasses, watches this outburst in bewildered horror. But the film intends it as a harbringer of Martha's own act of violence, which is already in the works and will serve as
Back
Forward
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Reload
Open...
Save As...
Clone
New Window
Close Window

FIG. 11

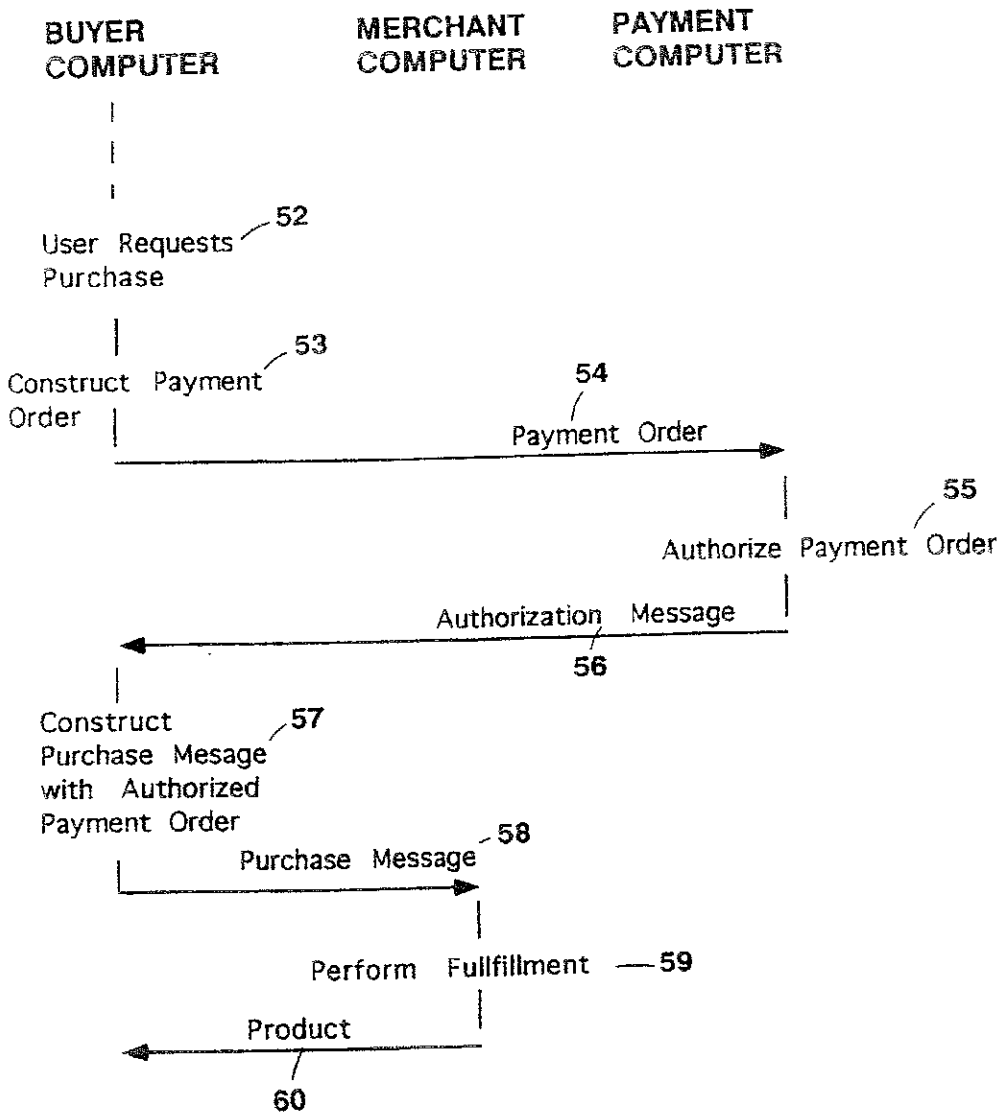
BUYER COMPUTER
MERCHANT COMPUTER
PAYMENT COMPUTER
User Requests Purchase
52
Construct Payment Order
53
Payment Order
54
Authorize Payment Order
55
Authorization Message
56
Construct Purchase Mesage with Authorized Payment Order
57
Purchase Message
58
Perform Fullfillment
59
Product
60

FIG. 12

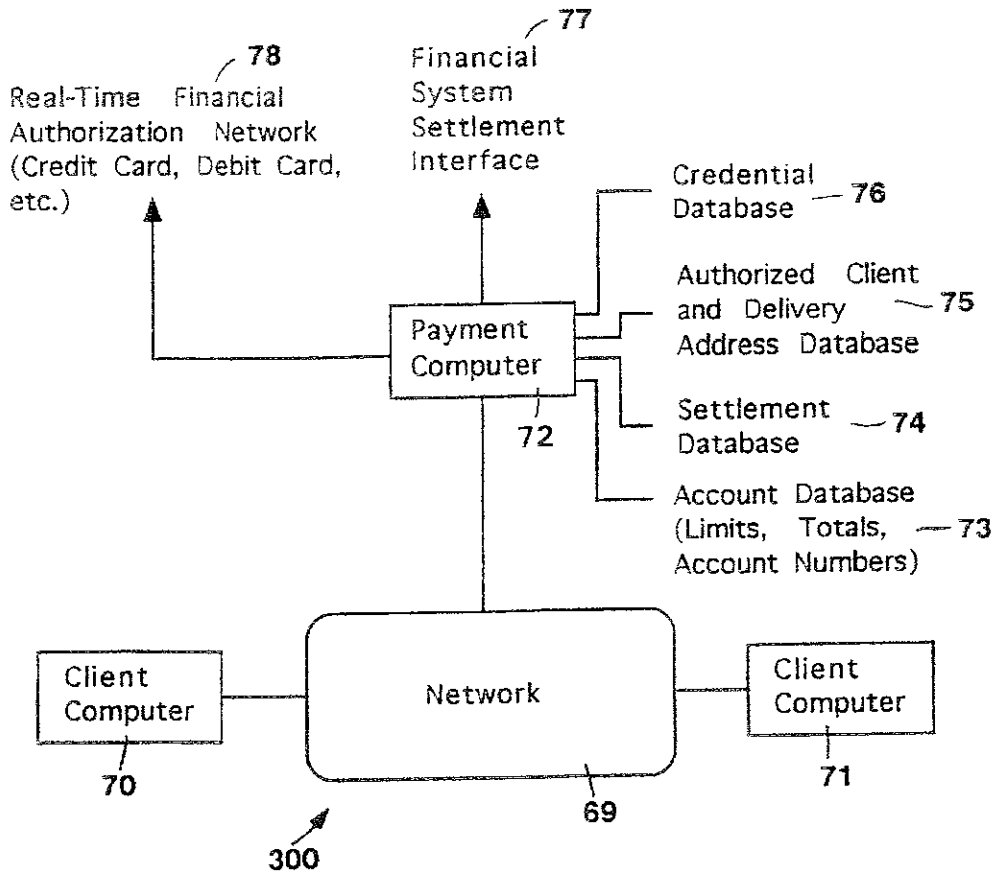
78
Real-Time Financial Authorization Network (Credit Card, Debit Card, etc.)
77
Financial System Settlement Interface
Credential Database 76
Authorized Client and Delivery Address Database 75
Payment Computer
72
Settlement Database 74
Account Database (Limits, Totals, Account Numbers) 73
Client Computer
70
Network
69
Client Computer
71
300

FIG. 13

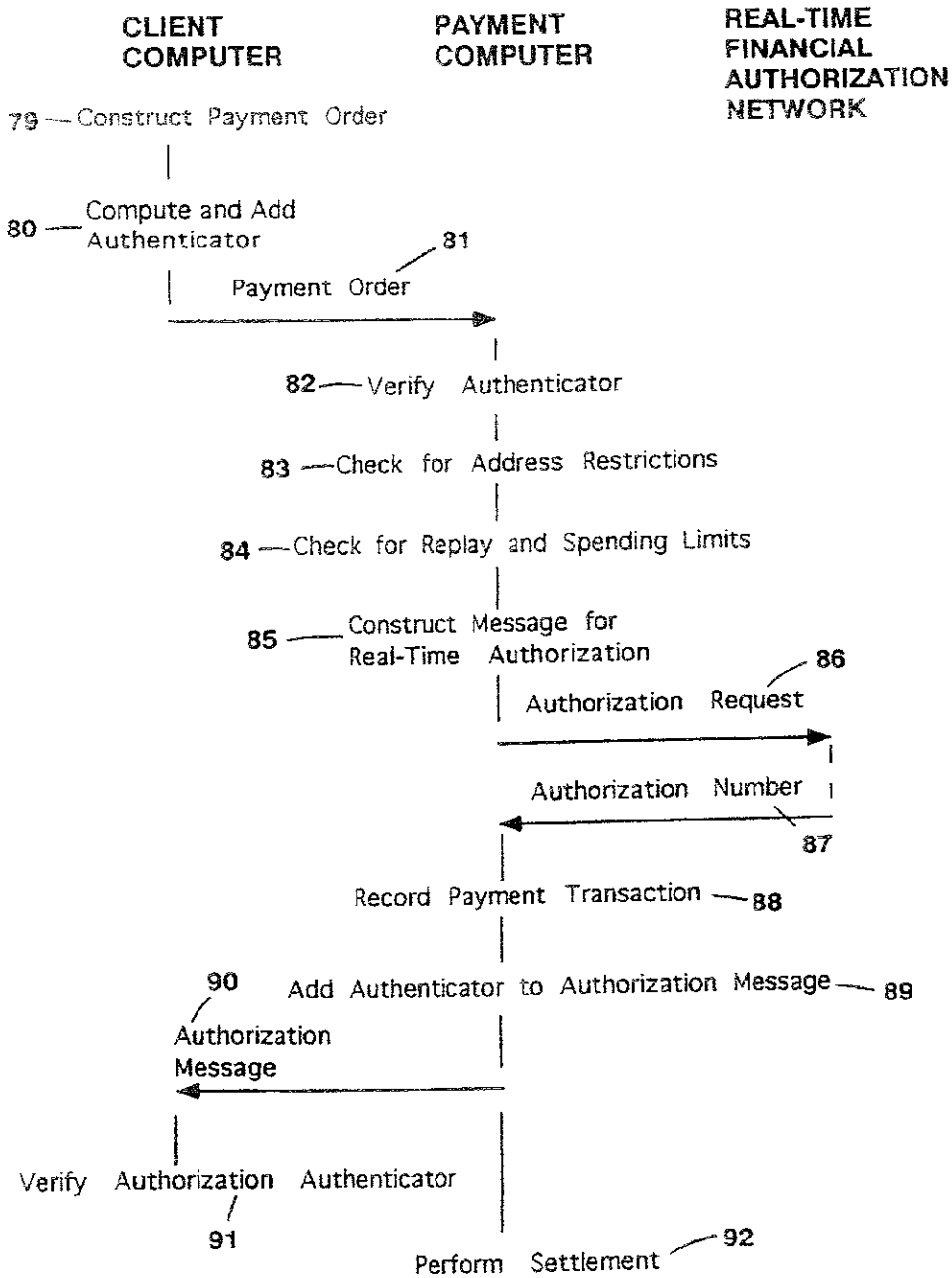
CLIENT COMPUTER
PAYMENT COMPUTER
REAL-TIME FINANCIAL AUTHORIZATION NETWORK
79 Construct Payment Order
80 Compute and Add Authenticator
81
Payment Order
82 Verify Authenticator
83 Check for Address Restrictions
84 Check for Replay and Spending Limits
85 Construct Message for Real-Time Authorization
86
Authorization Request
Authorization Number
87
Record Payment Transaction 88
90
Add Authenticator to Authorization Message 89
Authorization Message
Verify Authorization Authenticator
91
Perform Settlement 92

FIG. 14

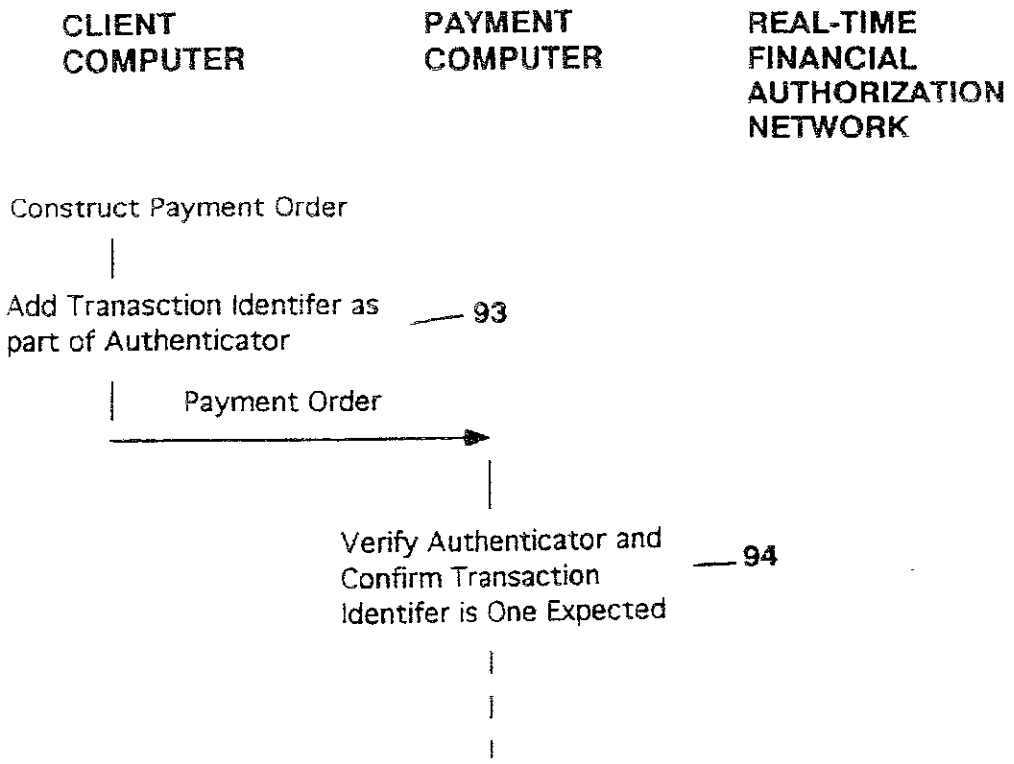
CLIENT COMPUTER
PAYMENT COMPUTER
REAL-TIME FINANCIAL AUTHORIZATION NETWORK
Construct Payment Order
Add Tranasction Identifer as part of Authenticator
93
Payment Order
Verify Authenticator and Confirm Transaction Identifer is One Expected
94

FIG. 15

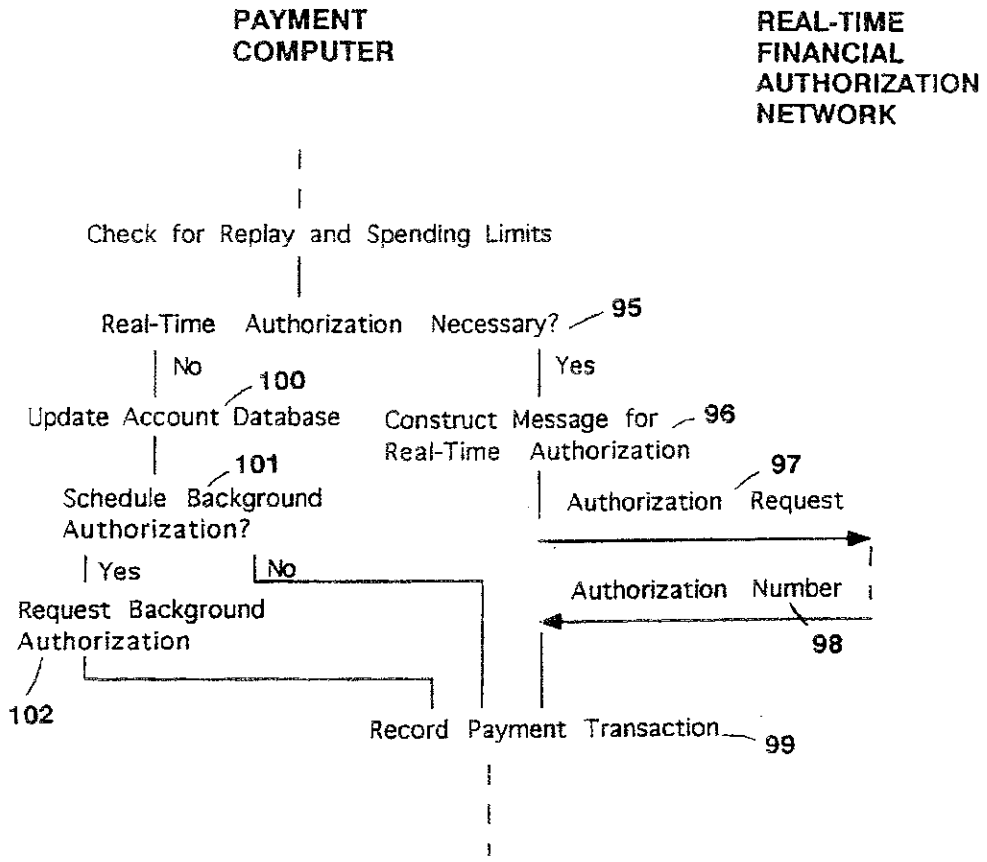
PAYMENT COMPUTER
REAL-TIME FINANCIAL AUTHORIZATION NETWORK
Check for Replay and Spending Limits
Real-Time Authorization Necessary?
95
No
Yes
100
Update Account Database
Construct Message for Real-Time Authorization
96
101
Schedule Background Authorization?
97
Authorization Request
Yes
No
Authorization Number
98
Request Background Authorization
102
Record Payment Transaction
99

FIG. 16

DIGITAL ACTIVE ADVERTISING

This is a Continuation of application Ser. No. 08/563,745, filed Nov. 29, 1995, now U.S. Pat. No. 5,724,424, which is a Continuation of application Ser. No. 08/168,519, filed Dec. 16, 1993, now abandoned.

BACKGROUND OF THE INVENTION

The recent rapid growth of information applications on international public packet-switched computer networks such as the Internet suggests that public computer networks have the potential to establish a new kind of open marketplace for goods and services. Such a marketplace could be created with a network sales system that comprises a plurality of buyer and merchant computers, means for the users of the buyer computers to display digital advertisements from the merchant computers, and means for the users to purchase products described by the advertisements.

A network based sales system will need to allow users to preview products at little or no cost, and will need to make a large number of product advertisements available in a convenient manner. In addition, the shopping system will need to include easy-to-use facilities for a user to purchase desired products using a merchant independent payment method. In addition the network sales will need to allow new buyers and merchants to enter the market.

A central requirement for a marketplace is a payment mechanism, but at present no merchant independent payment mechanism is available for computer networks that permits users to utilize conventional financial instruments such as credit cards, debit cards, and demand deposit account balances. We expect that both retail payment and wholesale payment mechanisms will be required for networks, with consumers using the retail mechanism for modest size purchases, and institutions using the wholesale mechanism for performing settlement between trading partners. For wide acceptance the retail mechanism will need to be a logical evolution of existing credit-card, debit-card, and Automated Clearing House facilities, while for acceptance the wholesale mechanism will need to be an evolved version of corporate electronic funds transfer.

These problems of have been approached in the past by network based sales systems wherein, for example, each merchant maintains an account for each user. A user must establish an account with each merchant in advance in order to be able to utilize the merchant. The prior art network based sales systems are not designed to allow users to use their existing credit card and demand deposit accounts for payment, nor are they designed to allow for programs to be included in digital advertisements.

According, therefore, it is a primary objective of this invention to provide a user interactive network sales system in which the user can freely use any merchant of choice and utilize existing financial instruments for payment. Other objects include a network sales system which provides a high-quality user interface, which provides users with a wide variety and large volume of advertisements, which is easily extensible to new services, and which is easily expanded to new applications within the existing infrastructure of the system.

Still other objects of the invention are to provide a network payment system that will authorize payment orders and remove part of the risk of fraud from merchants.

An unavoidable property of public computer networks is that they are comprised of switching, transmission, and host computer components controlled by many individuals and organizations. Thus it is impossible for a network payment system to depend upon a specified minimum required degree of software, hardware, and physical security for all of the components in a public network. For example, secret keys stored in a given user's personal computer can be compromised, switches can be tampered with to redirect traffic, and transmission facilities can be intercepted and manipulated.

The risk of performing retail payment in a public network is compounded by statutes that make a payment system operator in part liable for the security lapses of its users. Existing Federal statutes in the United States, including the Electronic Funds Transfer Act and the Consumer Credit Protection Act, require the operator of a payment mechanism to limit consumer liability in many cases. Payment system operators may have other fiduciary responsibilities for wholesale transactions. Similar responsibilities exist in other countries for retail and wholesale transactions.

In existing credit card payment systems, a credit card's issuing bank takes on the fraud risk associated with misuse of the card when a merchant follows established card acceptance protocols. Acceptance protocols can include verifying a card holder's signature on the back of their card and obtaining authorization for payments over a certain value. However, in network based commerce a merchant can not physically examine a purchasers credit card, and thus the fraud risk may revert to the merchant in so called "card not present" transactions. Many merchants can not qualify to take this risk because of their limited financial resources. Thus the invention is important to allow many merchants to participate in network based commerce.

Other objects of the invention include utilizing existing financial instruments such as credit cards, debit cards, and demand deposit accounts for merchant payments.

Existing network payment systems do not connect to the financial system for authorization and are not compatible with conventional financial instruments. Existing network payment systems include the Simple Network Payment Protocol [Dukach, S., SNPP: A Simple Network Payment Protocol, MIT Laboratory for Computer Science, Cambridge, Mass., 1993.], Sirbu's Internet Billing Server [Sirbu, M. A., Internet Billing Service Design and Prototype Implementation, Information Networking Program, Carnegie-Mellon University, 1993], and NetCash [Medvinsy, G., and Newman, B. C., NetCash: A Design for Practical Electronic Currency on the Internet, Proc. 1st ACM Conf. on Comp. and Comm. Security, November, 1993].

A further object of the invention is to allow users in an untrusted network environment to use conventional financial instruments without requiring modification to existing financial system networks.

The following definitions apply to the present invention. A principal is a person, company, institution, or other entity that is authorized to transact business as part of a network payment system. A payment order describes the identity of a sender, a payment amount, a beneficiary, and a sender unique once. A sender is a principal making a payment. A beneficiary is a principal to be paid by the payment system. A sender unique nonce is an identifier that is used only once by a given sender. An example of sender unique nonces are unique timestamps. An external account is an account that can be used to settle a payment order for either a sender or a beneficiary in the external financial system. Examples of external accounts include demand deposit accounts and credit card accounts. An external device is a physical object that is kept in the possession of a user for the purpose of identifying the user.

A network payment system is a service that authorizes and executes digital payment orders that are backed by external accounts. A payment system authenticates a payment order, checks for sufficient funds or credit, and then originates funds transfer transactions to carry out the payment order. A payment system acknowledges acceptance or rejection of a payment order. More than one payment system may exist on a given network, and a given payment system may operate on more than one host to increase its reliability, availability, and performance. An authenticator is a digital value that is appended to a payment order and becomes part of the payment order that authenticates the payment order as genuine.

SUMMARY OF THE INVENTION

The invention relates to a network sales system for enabling users to purchase products using a plurality of buyer computers that communicate over a network with a plurality of merchant computers. Each merchant computer has a database of digital advertisements. Each digital advertisement includes a price and a product abstract. Buyer computers request, display, and respond to digital advertisements from merchant computers. Users can purchase products with their buyer computers after they have specified an account to pay for the purchase. A network payment service is used to authorize the purchase before merchant fulfillment is performed.

In a particular aspect of the invention, the merchant computer can request account information when it is not provided by the buyer computer. In another aspect of the invention, the buyer computer can present to a merchant a pre-authorized payment order that is obtained from a network payment system.

In another aspect of the invention, an electronic sales system contains digital advertisements that include programs. The programs are executed on behalf of a user by a buyer computer, and can lead to a purchase request directed to a merchant computer that performs product fulfillment.

In another aspect of the invention a network payment system executes payment orders. A payment order includes a sender, a beneficiary, a payment amount, and a nonce identifier. A payment order is signed by a client computer with an authenticator that is checked by the payment system. Payment orders are backed by accounts in the banking system, and are authorized by the network payment system by sending messages into a financial authorization network that knows the status of these accounts. The payment system accomplishes settlement by sending messages into an existing financial system network.

In another aspect, payment orders are authenticated based on the delivery address they specify. In another aspect, the payment system will specify in its authorization legal delivery addresses. In another aspect, authenticators for payment orders are based on one-time transaction identifiers that are known only to the user and the payment system. In another aspect, payment orders for a given sender are only accepted from certain client computer network addresses. In another aspect, the network payment system sends messages into a financial authorization system in real-time before the network payment system will authorize a payment order.

BRIEF DESCRIPTION OF THE DRAWINGS

Other objects, features, and advantages of the invention will appear from the following description taken together with the drawings in which:

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

FIG. **2** is a screen snapshot of a buyer computer display of an overview page from a merchant computer;

FIG. **3** is a screen snapshot of a buyer computer display of a page of digital advertisements from a merchant computer;

FIG. **4** is a screen snapshot of a buyer computer display of an account query page;

FIG. **5** is a screen snapshot of a buyer computer display of a fulfillment page;

FIG. **6** is a flow chart illustrating the processing of a sale between a buyer computer and a merchant computer;

FIG. **7** is a flow chart illustrating the alternate processing of payment order means for obtaining missing payment information;

FIG. **8** is a screen snapshot of a buyer computer display of an overview page from a merchant computer that contains a query input by the user;

FIG. **9** is a screen snapshot of a buyer computer display of digital advertisements in response to a user's query;

FIG. **10** is a screen snapshot of a buyer computer screen of a purchase confirmation;

FIG. **11** is a screen snapshot of a buyer display of a fulfillment page like FIG. **5**;

FIG. **12** is a flow chart illustrating an alternate processing of a sale between a buyer computer and a merchant computer where a payment order is pre-authorized;

FIG. **13** is a block diagram of a typical network payment system in accordance with the invention;

FIG. **14** is a flow chart illustrating the authentication, authorization, and settlement of a payment order;

FIG. **15** is a flow chart illustrating an alternate processing of the authentication and verification of a payment order where transaction identifiers are used; and

FIG. **16** is a flow chart illustrating an alternate processing of the authorization of a payment order where real-time approval from the financial authorization network may not be obtained.

DESCRIPTION OF A PARTICULAR PREFERRED EMBODIMENT

A network sales system **200** as shown in FIG. **1** employs a network **67** to interconnect a plurality of buyer computers **61** and **62**, merchant computers **63** and **64**, each merchant computer with respective digital advertisement databases **65** and **66**, and a payment computer **68**. A user of the system employs a buyer computer to retrieve advertisements from the merchant computers, and to purchase goods of interest. A payment computer is used to authorize a purchase transaction.

A digital advertisement includes a product description and a price. In digital advertisement database **65** prices and descriptions may be stored separately, and one price may apply to many product descriptions.

In an alternate embodiment, the network sales system further includes external devices that are kept in the possession of users so that the users can authenticate themselves when they use a buyer computer.

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, and Appendix D describes how documents are named with Uniform Resource Locators (URLs) in the network of computers. A document is defined to be any type of digital data broadly construed, such as multimedia documents that include text, audio, and video, and documents that contain programs.

FIG. 2 shows an overview screen that has been retrieved from a merchant computer by a buyer computer and displayed by the buyer computer. It includes links 1, 2, and 3 that when activated by a user cause the buyer's computer to take specified actions. In the case of link 1, the document shown in FIG. 3 is retrieved from a merchant computer and displayed. In the case of link 2, a short audio segment is retrieved from a merchant computer and played. In the case of link 3, the query that can be entered into the query dialog box 4 is sent to a merchant computer, and a document is retrieved from the merchant computer and displayed.

FIG. 3 shows a document that contains three digital advertisements. The digital advertisements have been retrieved from the merchant computer after the activation of link 3. The merchant computer may set the prices contained in the advertisements based on the on the identity of the user as determined, for example, by the network address of the requesting buyer computer. The document includes links 5, 6, and 7 that are used to purchase the products described by the advertisements. For example, if link 5 is activated the missing payment information document shown in FIG. 4 is retrieved from the merchant computer and displayed.

FIG. 4 is a missing payment information document that is used to gather user account information for the requested purchase in an HTML form. Radio buttons 8, 9, 10, 11, 12 are used to select a means of payment, dialog box 13 is used to enter an account number, dialog box 14 is used to enter an optional authenticator for the account, purchase button 15 is used to send the account information to the merchant computer and proceed with the purchase, link 16 is used to abort the purchase and return to the document shown in FIG. 2, and dialog box 17 is used to enter optional user information that is associated with the purchase and ultimately used by a financial institution as part of a textual billing identifier for the purchase transaction. If provided, this additional information is included in the payment order for the purchase.

FIG. 5 is a fulfillment document 18 that is produced once valid account information is provided to the missing payment information document in FIG. 4 and purchase button 15 is activated.

FIG. 6 is a flowchart that more fully describes the information flow in the purchase transaction shown in FIGS. 2 to 5. An initial user inquiry 19 from activating link 1 results in the HTTP request 20 for a specific document with a specified URL. The URL specifies the name of the merchant computer. The merchant computer retrieves the document given the URL at 21, and returns it to the buyer computer at 22. The buyer computer displays the resulting HTML document at 23. When the user activates link 5, an HTTP request 25 is sent to the merchant computer requesting the document.

In an alternate embodiment, document 22 is executed at 23 as a program. A program is defined as a set of instructions that can exhibit conditional behavior based upon user actions or the environment of the buyer computer. As is known to those skilled in the art, there are many techniques for representing programs as data. The program can be interpreted or it can be directly executed by the buyer computer. The program when executed will cause the buyer computer to interact with the user leading to the user purchase request 24, and the purchase message 25.

The merchant computer then attempts to construct a payment order at 26 using the information it has gathered about the user. The buyer computer may have previously supplied certain credentials using fill out forms or other account identification means such as providing the network address of the buyer computer in the normal course of communication. If the buyer computer is able to construct a complete payment order at 26 the payment order is sent to a payment computer for authorization at 27. If a payment order can be constructed, processing continues at 28.

Alternatively, the buyer computer may construct the payment order at 24 and send it to the merchant computer at 25. In this case, the payment order assembly steps at 26, at the merchant computer, may only need to forward the payment order from the buyer computer.

A payment order includes user account information, merchant account information, an amount, and a nonce identifier that has not been previously used for the same user account. Variations of payment orders can be constructed, including payment orders that specify user or merchant identifiers in place of account information, payment orders that specify a valid time period, payment orders that specify foreign currencies, and payment orders that include comment strings. Part of the process of constructing a payment order is creating a corresponding authenticator using one of the authenticator methods described below.

In the illustrated embodiment of FIGS. 3 and 4, the merchant computer does not have sufficient information to construct a payment order at 26 and thus at 33 (FIG. 7) constructs and returns a missing payment information document in response to request 25. Operation 33 includes in the constructed document appropriate form fields based on what information the merchant computer has already collected from the user. The document is returned to the buyer computer at 34 and is displayed at 35. When the user presses the purchase button 15, the contents of the form are transmitted to the merchant computer, at 36, to a specific URL name, using an HTTP request. Based on the supplied form fields, the merchant computer constructs a complete payment order. Alternatively, the buyer computer may construct the payment order at 35 and send it to the merchant computer as part of step 36. In this case, the payment order assembly steps 37 at the merchant computer simply passes on the payment order from the buyer computer. The payment order is sent to the payment computer in a message at 38.

In either case, the flowchart continues in FIG. 6 where the payment computer checks the authorization of the payment order at 28. If the payment system authorizes the request, an authorization message at 29 is returned to the buyer computer, and the merchant computer checks at 30 that the authorization message came from the payment computer using the authenticator mechanism described below. Assuming that the authorization message is valid, the merchant computer performs fulfillment at 30, returning the purchased product in response at 31. In our example in FIG. 5 the response at 31 is document 18 that was the logical target of link 5. If the payment system does not authorize the payment order then response 31 is a rejection of the user's purchase request.

In an alternate embodiment, step 30 can encrypt the document using a key that is known to the buyer computer. As is known to those skilled in the art, the key can be communicated to the merchant computer using convention key distribution protocols. In this manner the document will be protected from disclosure to other users.