METHOD AND APPARATUS FOR IMPLEMENTING A SEARCH SELECTION TOOL ON A BROWSER

BACKGROUND OF THE INVENTION

1. Technical Field:

The present invention relates to the field of information technology. More particularly, the present invention relates to a means for searching information stored in association with network nodes or web site addresses. Still more particularly, the present invention relates to a method and apparatus for creating a user defined search for certain nodes, links, or web site addresses.

2. Description of Related Art:

The worldwide network of computers commonly known as the "Internet" has seen explosive growth in the last several years. Mainly, this growth has been fueled by the introduction and widespread use of so-called "web browsers," which enable simple graphical user interface-based access to network servers, which support documents formatted as so-called "web pages." A browser is a program that is executed on a graphical user interface (GUI), which allows a user to read hypertext by means of the GUI. The browser provides some means of

viewing the contents of web pages (or nodes) and of navigating from one web page to another.

Examples of browsers for the World-Wide Web (WWW) include: Netscape Navigator from Netscape Communications Corporation, 501 East Middlefield Road, Mountain View, CA 94043, U.S.A.; Microsoft Internet Explorer, available from Microsoft Corporation, Redmond, WA; and NCSA Mosaic, first available from National Center for Supercomputing Applications in Urbana, IL, U.S.A. Web browsers act as clients of remote web servers.

The WWW is a massive hypertext system that a computer user accesses using an information access apparatus such as a WWW browser computer application. The WWW browser application communicates with information provider apparatuses, such as WWW server computer applications, to obtain information and services in the form of web pages. These web pages are identified by unique Universal Resource Locators (URL). Typically, a browser application provides bookmark capability for storing URLs for user-selected web pages. This simplifies the user's future access to these bookmarked web pages.

The background of the World Wide Web--WWW browser applications and Uniform Resource Locators--are well described by reference to the first chapter of Instant HTML Web Pages by Wayne Ause, Ziff-Davis Press, ISBN 1-56276-363-6, copyright 1995, pages 1-15, hereby

incorporated by reference as illustrative of the prior art. The URL specification, also incorporated by reference, is described in RFC1738 and can be found on the WWW at http://www.cis.ohiostate.edu/htbin/rfc/rfc1738.html.

Although the invention applies to information access and information provider apparatus, WWW browser and WWW server applications are representative of the technology. As such, this application describes the invention within the context of a preferred embodiment utilizing WWW browser and WWW server applications.

As mentioned above, the WWW is a massive hypertext system. Thus, the information provided to a user often includes references to other related information. These references are via hypertext links. Activating these hypertext links often results in accessing completely different web pages (supplied from completely different WWW server applications on other computer systems) from the web page that contains the link. Thus, a user often follows many links to reach desired information or services.

One difficulty when traversing these links is that the user often loses track of the sequence of links used to arrive at a particular web page. Therefore, the user has difficulty returning to a web page of interest. A bookmark facility addresses this problem by providing a mechanism to store and recall specific web pages of interest. Each bookmark comprises the title of the web page and the URL used to access the web page. Additionally, bookmarks often contain the date the web page was last visited, and the date the web page was bookmarked, along with additional information.

Conventional browsers often provide the user with a search tool for searching the Internet for a user defined search term. However, browser search tools are normally links to a designated search engine at a server.

The actually searching is performed by at the server rather than being performed as a function of the browser itself. The user may also accesses other resources on the Internet for search tools and specialty tools for finding specific information related to a user defined search term.

One problem with current web page documents is that the pages are inadequately hyperlinked. The author of the web page decides which terms are to be hyperlinked. Another problem is that even if a term is linked, the author again decides which resource to link the term to. Conventionally, links are provided to only a single resource so any additional information needed by the reader must be acquired independently by the reader. This is usually accomplished by designing a search strategy for the term or accessing a specialty resource for the desired information

It would be advantageous to provide users with a search tool function on a browser for searching terms on a web page being viewed. It would further be advantageous to provide a user with a configurable search tool for defining a multitude of independent search strategies. It would be even more advantageous to provide the user with a plurality of search tools for simultaneous searching for a term in a web page, using different search configurations. Finally, it would be even more advantageous to provide the user with a means to create pseudo links to a term by defining a plurality of search tools for simultaneous searching for a term in a web page, thereby allowing the user to access related information to the term in much the same manner as a conventional link.

SUMMARY OF THE INVENTION

The present invention discloses a method and apparatus for creating user defined search tools and configuring the tools on a web browser. Initially, the user sets a series of select search preferences, which define a select search tool. The preferences relate to the type of search tool being defined by the user, such as a select search engine search, a universal resource locator (URL) extension search or suffix, or a user defined search string. Once created, the select search tool may be placed on the browser button bar as a search button, or it may be incorporated in an existing search button as a search tool in a drop down menu. By selecting a term, the user effectively creates pseudo links to the selected term by simultaneously or sequentially searching a term using the predefined select search preferences, thus allowing the user to access resources related to the term in much the same manner as a conventional link.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the present invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

Figure 1 depicts a distributed data processing system in which the present invention may be implemented;

Figure 2 is a block diagram illustrating a data processing system that may be implemented as a server in accordance with the present invention;

Figure 3 is a block diagram illustrating a data processing system in which the present invention may be implemented;

Figure 4 illustrates a graphical user interface of a conventional browser;

Figure 5 illustrates a typical web page that might be expected as a result of the searching operation performed in **Figure 4;**

Figure 6 illustrates a browser configured with a preferred embodiment of the present invention for setting suffix preferences related to a user defined select search tool;

Figure 7 illustrates a browser configured with a preferred embodiment of the present invention for setting search engine preferences related to a user defined select search tool;

Figure 8 illustrates a browser configured with a preferred embodiment of the present invention for setting search string preferences related to a user defined select search tool;

Figure 9 is a flowchart depicting the process of setting select search preferences in a web browser;

Figure 10 is a flowchart illustrating a browser implemented process for using the select search tool in accordance with a preferred embodiment of the present invention;

Figure 11 illustrates a web browser containing a select search tool in accordance with one embodiment of the present invention; and

Figure 12 illustrates a web browser containing a select search tool in accordance with an alternative embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the figures, **Figure 1** depicts a distributed data processing system in which the present invention may be implemented. Distributed data processing system **100** is a network of computers in which the present invention may be implemented. Distributed data processing system **100** contains a network **102**, which is the medium used to provide communications links between various devices and computers connected together within distributed data processing system **100**. Network **102** may include permanent connections, such as wire or fiber optic cables, or temporary connections made through telephone connections.

In the depicted example, server **104** is connected to network **102** and with storage **106** is connected to server **104**. In addition, clients **108**, **110**, and **112** also are connected to a network **102**. These clients **108**, **110**, and **112** may be, for example, personal computers or network computers. For purposes of this application, a network computer is any computer, coupled to a network, which receives a program or other application from another

computer coupled to the network. In the depicted example, server **104** provides data, such as boot files, operating system images, and applications to clients **108, 100** and **112.** Clients **108**, **110** and **112** are clients to server **104**. Distributed data processing system **100** may include additional servers, clients, and other devices not shown. In the depicted example, distributed data processing system **100** is the Internet with network **102** representing a worldwide collection of networks and gateways that use the TCP/IP suite of protocols to communicate with one another. At the heart of the Internet is a backbone of high-speed data communication lines between major nodes or host computers, consisting of thousands of commercial, government, educational and other computer systems that route data and messages. Of course, distributed data processing system **100** also may be implemented as a number of different types of networks, such as for example, an intranet, a local area network (LAN), or a wide area network (WAN). **Figure 1** is intended as an example, and not as an architectural limitation for the present invention.

Referring to **Figure 2**, a block diagram depicts a data processing system that may be implemented as a server, such as server **104** in **Figure 1**,

in accordance with the present invention. Data processing system **200** may be a symmetric multiprocessor (SMP) system including a plurality of processors **202** and **204** connected to system bus **206**. Alternatively, a single processor system may be employed. Also connected to system bus **206** is memory controller/cache **208**, which provides an interface to local memory **209**. I/O bus bridge **210** is connected to system bus **206** and provides an interface to I/O bus **212**. Memory controller/cache **208** and I/O bus bridge **210** may be integrated as depicted.

Peripheral component interconnect (PCI) bus bridge **214** connected to I/O bus **212** provides an interface to PCI local bus **216**. A number of modems **218-220** may be connected to PCI bus **216**. Typical PCI bus implementations will support four PCI expansion slots or add-in connectors. Communications links to network computers **108-112** in **Figure 1** may be provided through modem **218** or network adapter **220** connected to PCI local bus **216** through add-in boards.

Additional PCI bus bridges **222** and **224** provide interfaces for additional PCI buses **226** and **228**, from which additional modems or network

adapters may be supported. In this manner, server **200** allows connections to multiple network computers. A memory-mapped graphics adapter **230** and hard disk **232** may also be connected to I/O bus **212** as depicted, either directly or indirectly.

Those of ordinary skill in the art will appreciate that the hardware depicted in **Figure 2** may vary. For example, other peripheral devices, such as optical disk drives and the like, also may be used in addition or in place of the hardware depicted. The depicted example is not meant to imply architectural limitations with respect to the present invention.

The data processing system depicted in **Figure 2** may be, for example, an IBM RISC/System 6000 system, a product of International Business Machines Corporation in Armonk, New York, running the Advanced Interactive Executive (AIX) operating system.

With reference now to **Figure 3**, a block diagram illustrates a data processing system that may be implemented as a client, such as client **108** in **Figure 1**, in accordance with the present invention. Data processing system **300** is an example of a client computer. Data processing system **300** employs a peripheral component interconnect (PCI) local bus architecture. Although

the depicted example employs a PCI bus, other bus architectures such as Micro Channel and ISA may be used. Processor **302** and main memory **304** are connected to PCI local bus **306** through PCI bridge **308**. PCI bridge **308** also may include an integrated memory controller and cache memory for processor **302**. Additional connections to PCI local bus **306** may be made through direct component interconnection or through add-in boards. In the depicted example, local area network (LAN) adapter **310**, SCSI host bus adapter **312**, and expansion bus interface **314** are connected to PCI local bus **306** by direct component connection. In contrast, audio adapter **316**, graphics adapter **318**, and audio/video adapter **319** are connected to PCI local bus **306** by add-in boards inserted into expansion slots. Expansion bus interface **314** provides a connection for a keyboard and mouse adapter **320**, modem **322**, and additional memory **324**. SCSI host bus adapter **312** provides a connection for hard disk drive **326**, tape drive **328**, and CD-ROM drive **330**. Typical PCI local bus implementations will support three or four PCI expansion slots or add-in connectors.

An operating system runs on processor **302** and is used to coordinate and provide control of various components within data processing system **300**

in **Figure 3**. The operating system may be a commercially available operating system such as OS/2, which is available from International Business Machines Corporation. "OS/2" is a trademark of International Business Machines Corporation. An object oriented programming system such as Java may run in conjunction with the operating system and provides calls to the operating system from Java programs or applications executing on data processing system **300**. "Java" is a trademark of Sun Microsystems, Inc. Instructions for the operating system, the object-oriented operating system, and applications or programs are located on storage devices, such as hard disk drive **326**, and may be loaded into main memory **304** for execution by processor **302.**

Those of ordinary skill in the art will appreciate that the hardware in **Figure 3** may vary depending on the implementation. Other internal hardware or peripheral devices, such as flash ROM (or equivalent nonvolatile memory) or optical disk drives and the like, may be used in addition to or in place of the hardware depicted in **Figure 3**. Also, the processes of the present invention may be applied to a multiprocessor data processing system.

For example, data processing system **300**, if optionally configured as a

network computer, may not include SCSI host bus adapter **312**, hard disk drive **326**, tape drive **328**, CD-ROM **330**, and DVD-ROM **332** as shown in **Figure 3**. In that case, the computer, to be properly called a client computer, must include some type of network communication interface, such as LAN adapter **310**, modem **322**, or the like. As another example, data processing system **300** may be a stand-alone system configured to be bootable without relying on some type of network communication interface, whether or not data processing system **300** comprises some type of network communication interface. As a further example, data processing system **300** may be a Personal Digital Assistant (PDA) device which is configured with ROM and/or flash ROM in order to provide non-volatile memory for storing operating system files and/or user-generated data.

In any event, the above-described examples are not meant to imply architectural limitations.

The Internet, an example of an "internetwork," is a set of computer networks, possibly dissimilar, joined together by means of gateways that handle data transfer and the conversion of messages from the sending network to the protocols used by the receiving network (with packets if

necessary). When capitalized, the term "Internet" refers to the collection of networks and gateways that use the TCP/IP suite of protocols.

Those of ordinary skill in the art will appreciate that the hardware in **Figure 3** may vary depending on the implementation. For example, other peripheral devices, such as optical disk drives and the like, may be used in addition to or in place of the hardware depicted in **Figure 3**. The depicted example is not meant to imply architectural limitations with respect to the present invention. For example, the processes of the present invention may be applied to multiprocessor data processing systems.

Figure 4 illustrates a graphical user interface of a conventional browser. Browser **400** may be used for implementing a preferred embodiment of the present invention. Browser **400** is an application that includes a graphical user interface, which allows a user to easily navigate through a node network, such as WWW. Essentially, browser **400** is a multi-function graphical user interface; but one of its most important functions is accessing web pages of a prescribed format, such as hypertext transfer protocol (HTTP). The graphical user interface of browser **400** consists of a number of menus, buttons, and text fields. Only the more important features of browser **400** are illustrated in this example. It is well known in the art that browsers consist of and are configured with many other features not shown in this example. File menus **402-406** are standard menu buttons on most application interfaces. By selecting file menu **402**, the user exposes a pull-down menu, which may include such features as open page capabilities, saving, routing, printing, and closing functions. Edit menu **404** allows the user access to the browser's editing features, such as cut, paste and copy operations, find

operations, and searching operations. Selecting edit menu **404** also normally exposes a preference option, which allows the user to select certain preferences or options associated with browser **400**. View menu **406** allows the user to configure the graphical user interface of the browser, including hiding or viewing certain tool bars, navigators and buttons. Go menu **408**, when pressed by the user, exposes a menu of navigation tools, such as forward, back, or home. By pressing the go button and selecting one of these features, the user navigates through a series of web pages or nodes which have recently been visited, or a home or start-up site, which is normally defined by the user in the preference selection of the edit button. Buttons **410-416** are also navigation buttons. In fact, the functions of button **410** and button **412** are normally found in the go button **408** menu. Reload button **414** allows the user to reload the currently viewed page, in case of an error in loading or for a page which is constantly being updated by the source and yet provides no automatic updating feature to the browser. Stop button **416** ends the loading process of the current web page with whatever portion of the page that has been loaded up to the time stop button **416** is initiated. Bookmarks button **418**, when pressed by the user, exposes the bookmarks and edit tools needed to save and maintain a list of favorite web pages or network nodes identified by the user. Finally, location text field **420** allows the user to manually identify a web page by its unique address, allowing the browser to access the address identified in the text.

Browser **400** represents a means for implementing direct linked selection of cached, previously visited links in nested web pages. As a user visits a web page, such as Formula One Search Engine page **422**, in the conventional manner, the user has available numerous hypertext links

embedded on the web page from which to choose. Links **424** illustrate hypertext links that were created by the web page creator. The user can quickly navigate to the web pages associated with hypertext links **424** by merely clicking on hot spots associated with the hypertext links with pointer **430**. Browser **400** then automatically navigates to the address of the web page associated with the hypertext link. In the example in **Figure 4**, however, the user entered a text string in search text entry field **428**, rather than jumping to another web page or manually addressing the web page in location entry field **420**.

Figure 5 illustrates a typical web page that might be expected as a search result from the searching operation performed in **Figure 4**. Web page **510** depicts the Formula One Search Engine Results page, which displays the search results obtained from the search request performed by the user in **Figure 4**. Web page **510** also contains embedded hypertext links, as described above. In this case, U.S. Patent Law link **504** provides a hypertext link for the user to immediately access information about U.S. patent law. The next link, Patent and Trademark Office Home Page link **506**, provides a means for the user to immediately access the U.S. Patent and Trademark Office home page. In this case, the user has manipulated pointer **502** over link **506** and activated the link. Activating a hypertext link usually entails clicking the mouse button, but may also be activated with the enter key or any another user interface for executing commands.

Note that link **506** differs in appearance from link **504** in that the characters of link **506** are bolder, and the underlining of the characters in link **506** is double rather than single. Conventionally, a user is directed to links on a web page by the color or font characteristics of the characters in the text of

the link. Typically, hypertext links in a web page are displayed in a predetermined color shade that is different from normal text, indicating an active but unused hypertext link. After activation, or after the link has been accessed once, the color shade of the link changes to a second color, indicating to the user that the web page associated with the link has been selected or opened at least once. Thus, the user is provided an easy means to identify hypertext links on a web page and also discriminate links that have been used from those that have not been used.

Note also on browser **500** that location field entry **512** displays the address of web page **510**. In the example depicted in **Figure 5**, the user has positioned pointer **502** over link **506,** which provides a link to the Patent and Trademark Office home page. By executing an enter command (clicking the pointer) with pointer **502** positioned over link **506,** browser **500** will jump to or open the page identified by the link.

Figure 6 illustrates a browser configured with a preferred embodiment of the present invention for setting suffix preferences related to a user defined select search tool. Browser **600** is similar in many aspects to the browser described in **Figure 4**. In the depicted example, the user has selected edit button **602**, which exposes drop-down menu **604** comprising a series of edit functions, including preference item **606**. The user has again made a selection, illustrated by the highlighted state of preferences item **606**. The selection of preferences item **606** has exposed a second layer drop-down menu **608**, which includes a plurality of preference options including font, cache, colors, and select search **610**. Select search **610** is invoked by the user in order to define a search item within a search menu or to define a search button on browser **600** button bar. In this case, the user has invoked

select search item **610**, exposing three options for configuring a select search tool.

In a preferred embodiment of the present invention, the select search tool may be configured in one of three ways. The first is by configuring suffix search selections using suffix option item **612**. The second is by defining search engine strategy using search engine option item **614** in browser **600**. The final method is by defining a search string strategy using search string option item **616**, also as depicted in browser **600**. Clearly, other possible methods for defining a user search may be implemented, or combinations of the above may be used for defining a select search tool. In the depicted example, however, the user selected suffix option item **612**, which has opened QuickSite dialog box **622**.

QuickSite dialog box **622** is used for entering specific preference options related to the suffix search. QuickSite dialog box **622** is roughly divided up into two options. The first option is query suffix options **618**, and the second is QuickSite placement options **620**. Initially, the user is provided with a list of query suffix options for known universal resource locator (URL) extensions. The most common of these are .com, .edu, .int, .gov, .net, and .org. The user may select one or all of the URL extensions. Additionally, the user is provided with a menu option for selecting all of the above URL extensions, as well as a dialog box for defining suffixes not listed or to be created in the future.

QuickSite placement option **620** provides the user with a means for placing the select search tool on browser **600**. In one embodiment of the present invention, the user defined select search tools are placed in an expansion menu of an existing search button. In another option, the user

defined select search tools are placed on the tool bar of browser **600** as individual QuickSite buttons or icons. After the user chooses the selection options, the user enters the selection options into the browser preferences by hitting enter button **625**.

Figure 7 illustrates a browser configured with a preferred embodiment of the present invention for setting search engine preferences related to a user defined select search tool. This illustration depicts that browser **700** is similar to browser **600** in that the user has selected edit item **702**, expanding drop-down menu **704**; and the user has further selected preferences item **706**. The selection of preferences item **706** has exposed second layer drop-down menu **708**, and the user has further selected select search item **710**, exposing suffix option item **712**, search engine item **714**, and search string item **716**.

In the depicted example, the user has selected search engine option item **714**, exposing QuickSite dialog box **722**. In this example, QuickSite dialog box **722** provides the user with a series of search engine options **718**, and QuickSite placement options **720**. In the depicted example, search engine options **718** include such famous search engines as the 'Formula One' engine, 'Intuition' engine, 'PTO Patent Search' engine, 'PTO Trademark Search' engine, and 'Yippie' engine. Each of the above mentioned search engines may be selected separately or in combination with any other search engine listed. Additionally, the user is provided with a means for selecting all the search engines provided or for defining additional search engines not provided in search engine options **718**.

QuickSite placement option **720** provides the user with a means for placing the select search tool on browser **700**. In one embodiment of the present invention, the user defined select search tools are placed in an

expansion menu of an existing search button. In another option, the user defined select search tools are placed on the tool bar of browser **700** as individual QuickSite buttons. After the user chooses the selection options, the user enters the selection options into the browser preferences by hitting enter button **725**.

Figure 8 illustrates a browser configured with a preferred embodiment of the present invention for setting search string preferences related to a user defined select search tool. This illustration depicts that browser **800** is similar to both browser **600** and browser **700** in that the user has selected edit item **802**, expanding drop-down menu **804**, and the user has further selected preferences item **806**. The selection of preferences item **806** has exposed second layer drop-down menu **808**, and the user has further selected select search item **810**, exposing suffix option item **812**, search engine item **814**, and search string item **816**.

In the depicted example, the user has selected search string option **816**, which has caused QuickSite dialog box **822** to open in the browser viewing area. QuickSite dialog box **822** is roughly divided into two sections. The first section contains search string option entry area **818**, and the second contains QuickSite placement options **820**.

In the depicted example, the user has entered a search string in search string entry area **818**. Here, the user search will access the Yippie site for stock and commodity quotes related to a search term. In the depicted example, the user has created a search string of http://quote yippie.com/quotes?symbols=$1&detail=t. QuickSite placement option **820** provides the user with a means for placing the select search tool on browser **800**.

In one embodiment of the present invention, the user defined select

search tools are placed in an expansion menu of an existing search button. In another option, the user defined select search tools are placed on the tool bar of browser **800** as individual QuickSite buttons or icons. After the user chooses the selection options, the user enters the selection options into the browser preferences by hitting enter button **825**.

Figure 9 is a flowchart depicting the process of setting select search preferences in a web browser. The process is a hierarchical flow of determinations as to whether an event is to take place and, once that determination has been made, allowing the event to proceed. The process begins at step **902**, where it is determined whether the user intends to create a suffix search. If the user intends to create a suffix search, the suffix search parameters are entered (step **904**), as discussed above with reference to **Figure 6**. The process then flows to decision step **906**. In the event the user does not intend to create a suffix search, the process flows directly to step **906**.

Next, a determination is made as to whether the user intends to create a search engine search (step **906**). If the user intends to create a search engine search, search engine parameters are entered (step **908**), as depicted above in **Figure 7**. The process then flows to decision **910**. If the user does not intend to create a search engine search, the process flows directly from step **906** to decision step **910**.

At decision **910**, a determination is made as to whether a search string search is to be created. If the user intends to create a search string search, the search string search parameters are entered at step **912**, as described above with respect to **Figure 8**. The process then flows to decision step **914**. If the user does not intend to create a search string search, the process flows

directly from decision step **910** to decision step **914**.

At step **914**, the determination is made as to whether the above-defined select search parameters will be applied to define a QuickSite button. If the user intends to create a QuickSite button from any or all of the preferences defined above, a QuickSite button is created on the browser (step **916**). The process then flows to decision **918**. If, on the other hand, the user does not intend to create a QuickSite button, the process flows directly from decision **914** to decision **918**.

At decision **918**, a determination is made as to whether a QuickSite menu item should be added to a search button. If the user intends to create a drop-down menu on the search button, including one or all of the above-defined select search options, the QuickSite menu item is created for a search button on the browser (step **920**). The process then ends. If the user does not intend to create a QuickSite menu item or button on a browser, the process ends directly after decision step **918**.

Figure 10 is a flowchart illustrating a browser implemented process for using the select search tool in accordance with a preferred embodiment of the present invention. The process begins with the browser receiving a search request (step **1002**). A determination is then made as to whether a search term has been encountered (step **1004**). As with a conventional search engine, the select search tool provides a search term entry box for entering a term to be searched. If the browser detects that the user has entered a term in the search term entry box, the browser retrieves the search term found in the entry box over any text that may be selected in the document found within the viewing area of the browser (step **1006**). The process then flows to decision step **1012**.

Returning to decision step **1004**, if no search term is found in the menu entry box, the browser then looks to the document in the viewing area for a user-selected word or phrase (step **1008**). If no selected text can be found in the document in the viewing area, an error is returned to the user requesting a search term or phrase (step **1009**). If, on the other hand, the browser detects selected text within the document body, the browser retrieves the selected text (step **1010**), and the process flows to decision step **1012**.

As discussed above, the search selection options may be invoked separately or simultaneously. At decision **1012**, a determination is made as to whether a search engine search has been requested by the user. If a search engine search has not been requested by the user, the process flows directly to decision step **1018**. If a search engine search has been requested by the user, the browser selects the next search engine from the search engine preferences and, using the next search engine, retrieves a list of web pages which includes the selected search terms (step **1014**).

Next, a determination is made as to whether another search engine has been selected in the user defined preferences (step **1016**). If another search engine has been selected in the user defined preferences, the process returns to step **1014** where, for the next search engine selected in the preferences, a list of web pages including the selected terms is retrieved. The process again flows to decision **1016** and iterates between decision step **1016** and step **1014** until no other search engines remain in user defined preferences.

At this point, the process flows to decision step **1018**, where a determination is made as to whether a suffix search has been requested by the user for specific URL extensions. If a suffix search has not been

requested, the process flows to step **1022**. If a suffix search has been requested, the select search tool retrieves a list of the web pages which includes the suffixes selected in the user defined preferences (step **1020**). The process then flows to step **1022**, where a determination is made as to whether a user defined search string search has been requested. If no user defined search string search has been requested, the process ends. If, on the other hand, a user defined search string search has been requested, the select search tool retrieves a list of web pages including the search string results for the selected term (step **1024**). The process then ends.

Figure 11 illustrates a web browser containing a select search tool in accordance with one embodiment of the present invention. **Figure 11** illustrates the configuration of a graphical user interface associated with web browser **1100**. The graphical user interface associated with web browser **1100** is similar in many aspects to a conventional graphical user interface, such as that available in web browser **400**, with the exception of the select search tool features. These features include a series of QuickSite buttons **1104**, **1106**, **1108** and **1110**. Additionally, a search term entry box **1112** is provided on the browser menu bar for the user to enter search terms.

In the depicted example, browser content area **1122** contains a passage from the Manual of Patent Examination Procedures (MPEP). The word "obviousness" **1102** has been selected by the user in a conventional manner using a mouse, keypad, or some other device. As indicated by italicized highlighting in the illustration, the user has selected QuickSite I button **1104**, QuickSite II button **1106**, and QuickSite III button **1108**, representing selection tool options which have been previously defined by the user and placed on the browser menu in accordance with the process

described above. Thus, as depicted in the example using browser **1100**, the user intends to simultaneously perform three user defined searches for the search term "obviousness" **1102**.

Figure 12 illustrates a web browser containing a select search tools in accordance with an alternative embodiment of the present invention. The graphical user interface of browser **1200** is similar to the graphical user interface of browser **1100**. However, browser **1200** depicts the search button menu item options of the select search tool.

Note that browser **1200** contains QuickSite search buttons **1204**, **1206** and **1208**, which are identical to those in browser **1100**. However, in the depicted example, rather than identifying the search term in content area **1222** of the web browser, the user has instead entered the search term "obviousness" in search term dialog box **1212**. In further deference to the example described above, the user has selected the select search tool from search button **1210**, which exposes drop-down menu **1214,** including select search tools which are identical to those available as buttons or icons on the button bar of browser **1100**.

Drop-down menu **1214** includes search select tools QuickSite I item **1216**, QuickSite II item **1218**, QuickSite III item **1220**, and QuickSite IV item **1224**. The user has selected QuickSite IV item **1224** from drop-down menu **1214**, indicating that the user desires to search the term "obviousness" entered in search term entry box **1212** using the select search tool defined as QuickSite IV. The select search tool will respond by returning a list of web pages. Thus, as depicted in the example using browser **1200**, the user intends to perform a user defined search for the search term "obviousness."

In another example, suppose content area **1222** contained the partial

phrase "Contenders for the prize include IBM, Microsoft and ..." and the author has not provided any links to the text. QuickSite I search button **1204** is enabled to do a QuickSite search with the suffix ".com"; QuickSite II search button **1206**, is enabled to do a QuickSite search through an on-line news service; and QuickSite III search button **1208** is enabled to do a QuickSite search with the string "http://quote.yahoo.com/quotes?symbols=$1&detailed=t ". By manually selecting or highlighting the text "IBM" in the phrase and pressing each of the Quicksite buttons, the user would be presented with: the web page "www.IBM.com" in response to executing QuickSite I search button **1204**; a page showing recent news items about the IBM Corporation in response to executing QuickSite II search button **1206**; and a stock quote and chart of the recent performance of IBM stock in response to executing QuickSite III search button **1208**

Similarly menu items QuickSite I item **1216**, QuickSite II item **1218**, and QuickSite III item **1220** might be enabled identically to QuickSite I search button **1204**, QuickSite II search button **1206**, and QuickSite III respectively. When the user then selects the text "IBM" and selects each of the Quicksite menu items, the user is again presented with: the web page "www.IBM.com" in response to selecting QuickSite I item **1216**; a page showing recent news items about the IBM Corporation in response to selecting QuickSite II item **1218**; and a stock quote and chart of the recent performance of IBM stock in response to selecting QuickSite III item **1220.**

While, up to this point, the preferred embodiments describing the present invention have all related to a browser, the functionality defining a browser, *i.e.*, program for reading hypertext, is not necessary for implementing the present invention. In other embodiments of the present invention, any

document viewer may be improved by providing a search selection tool. The present invention allows the user to effectively create pseudo links to a selected term by searching a term using the predefined select search preferences and thus allowing the user to access resources related to the term in much the same manner as a conventional link. Searching may be performed nearly simultaneously with or sequentially among different search selection tools.

It is important to note that, while the present invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will appreciate that the processes of the present invention are capable of being distributed in the form of a computer readable medium of instructions and a variety of forms, and that the present invention applies equally regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media include recordable-type media such as floppy discs, hard disk drives, RAM, CD-ROMs, and transmission-type media, such as digital and analog communications links.

The description of the present invention has been presented for purposes of illustration and description but is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. This embodiment was chosen and described in order to best explain the principles of the invention and the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.

CLAIMS:

What is claimed is:

1. A data processing implemented method for implementing a search selection tool comprising:

receiving a user defined search selection preference;

incorporating the user defined search selection preference in a search selection tool; and

associating the search selection tool with a browser.

2. The method recited in claim 1, further comprising:

selecting the search selection tool;

selecting a search term; and

creating a list of resources based on the search selection tool for the selected search term.

3. The method recited in claim 1, wherein the user defined search selection preference relates to a search engine search.

4. The method recited in claim 1, wherein the user defined search selection preference relates to a universal resource locator extension.

5. The method recited in claim 1, wherein the user defined search selection preference relates to a user defined search string.

6. The method recited in claim 1, wherein the step of associating the

search selection tool with a browser comprises creating a search selection tool button on the browser, representing the search selection tool.

7. The method recited in claim 1, wherein the step of associating the search selection tool with a browser comprises creating a search selection tool entry in a search menu on the browser, representing the search selection tool.

8. The method recited in claim 1, wherein the step of associating the search selection tool with a browser comprises creating a search selection icon on the browser, representing the search selection tool.

9. A data processing implemented method for implementing a search selection tool, comprising:

receiving a data stream including at least one term using a browser;

selecting a term in the data stream;

performing a first predefined search on the selected term using a first search selection tool associated with the browser;

receiving a data stream in response to performing the first predefined search;

performing a second predefined search on the selected term using a second search selection tool associated with the browser; and

receiving a data stream in response to performing the second predefined search.

10. The method recited in claim 9 further comprises:

selecting a second term in the data stream;

performing a first predefined search on the second selected term using the first search selection tool associated with the browser;

receiving a data stream in response to performing the first predefined search;

performing a second predefined search on the second selected term using the second search selection tool associated with the browser; and

receiving a data stream in response to performing the second predefined search.

11. A data processing implemented method for implementing a search selection tool, comprising:

receiving a user defined search selection preference;

incorporating the user defined search selection preference in a search selection tool;

associating the search selection tool with a document viewer;

viewing a document with the document viewer;

selecting a term in the document; and

performing a user defined search on the selected term using the search selection tool associated with the browser.

12. A data processing system for implementing a search selection tool, comprising:

receiving means for receiving a user defined search selection preference;

incorporating means for incorporating the user defined search

selection preference in a search selection tool; and

associating means for associating the search selection tool with a browser.

13. The system recited in claim 12, further comprising:

selecting means for selecting the search selection tool;

selecting means for selecting a search term; and

creating means for creating a list of resources based on the search selection tool for the selected search term.

14. The system recited in claim 12, wherein the user defined search selection preference relates to a search engine search.

15. The system recited in claim 12, wherein the user defined search selection preference relates to a universal resource locator extension.

16. The system recited in claim 12, wherein the user defined search selection preference relates to a user defined search string.

17. The system recited in claim 12, wherein the associating means for associating the search selection tool with a browser comprises creating a search selection tool button on the browser, representing the search selection tool.

18. The system recited in claim 12, wherein the associating means for associating the search selection tool with a browser comprises creating a search selection tool entry in a search menu on the browser, representing the

search selection tool.

19. The system recited in claim 12, wherein the associating means for associating the search selection tool with a browser comprises creating a search selection icon on the browser, representing the search selection tool.

20. A data processing system for implementing a search selection tool, comprising:

receiving means for receiving a data stream including at least one term using a browser;

selecting means for selecting a term in the data stream;

performing means for performing a first predefined search on the selected term using a first search selection tool associated with the browser;

receiving means for receiving a data stream in response to performing the first predefined search;

performing means for performing a second predefined search on the selected term using a second search selection tool associated with the browser; and

receiving means for receiving a data stream in response to performing the second predefined search.

21. The system recited in claim 20 further comprises:

selecting means for selecting a second term in the data stream;

performing means for performing a first predefined search on the second selected term using the first search selection tool associated with the browser;

receiving means for receiving a data stream in response to performing the first predefined search;

performing means for performing a second predefined search on the second selected term using the second search selection tool associated with the browser; and

receiving means for receiving a data stream in response to performing the second predefined search.

22. A data processing system for creating and using a search selection tool, comprising:

receiving means for receiving a user defined search selection preference;

incorporating means for incorporating the user defined search selection preference in a search selection tool;

associating means for associating the search selection tool with a document viewer;

viewing means for viewing a document with the document viewer;

selecting means for selecting a term in the document; and

performing means for performing a user defined search on the selected term using the search selection tool associated with a browser.

23. A computer program product for implementing a search selection tool, comprising:

receiving instructions for receiving a user defined search selection preference;

incorporating instructions for incorporating the user defined search selection preference in a search selection tool; and

associating instructions for associating the search selection tool with a browser.

24. A computer program product for implementing a search selection tool, comprising:

receiving instructions for receiving a user defined search selection preference;

incorporating instructions for incorporating the user defined search selection preference in a search selection tool;

associating instructions for associating the search selection tool with a document viewer;

viewing instructions for viewing a document with the document viewer;

selecting instructions for selecting a term in the document; and

performing instructions for performing a user defined search on the selected term using the search selection tool associated with a browser.

METHOD AND APPARATUS FOR IMPLEMENTING A SEARCH SELECTION TOOL ON A BROWSER

ABSTRACT

Initially, the user sets a series for select search preferences, which defines a select search tool (610). The preferences relate to the type of search tool being defined by the user, such as a select search engine search (614), a universal resource locator (URL) extension search or suffix (612), or a user defined search string (616). Once created, the select search tool may be placed on the browser (600) button bar as a search button, or it may be incorporated in an existing search button as a search tool in a drop down menu. By selecting a term the user effectively creates pseudo links to the selected term by simultaneously or sequentially searching a term using the predefined select search preferences, thus allowing the user to access resources related to the term in much the same manner as a conventional link.

FIG 6

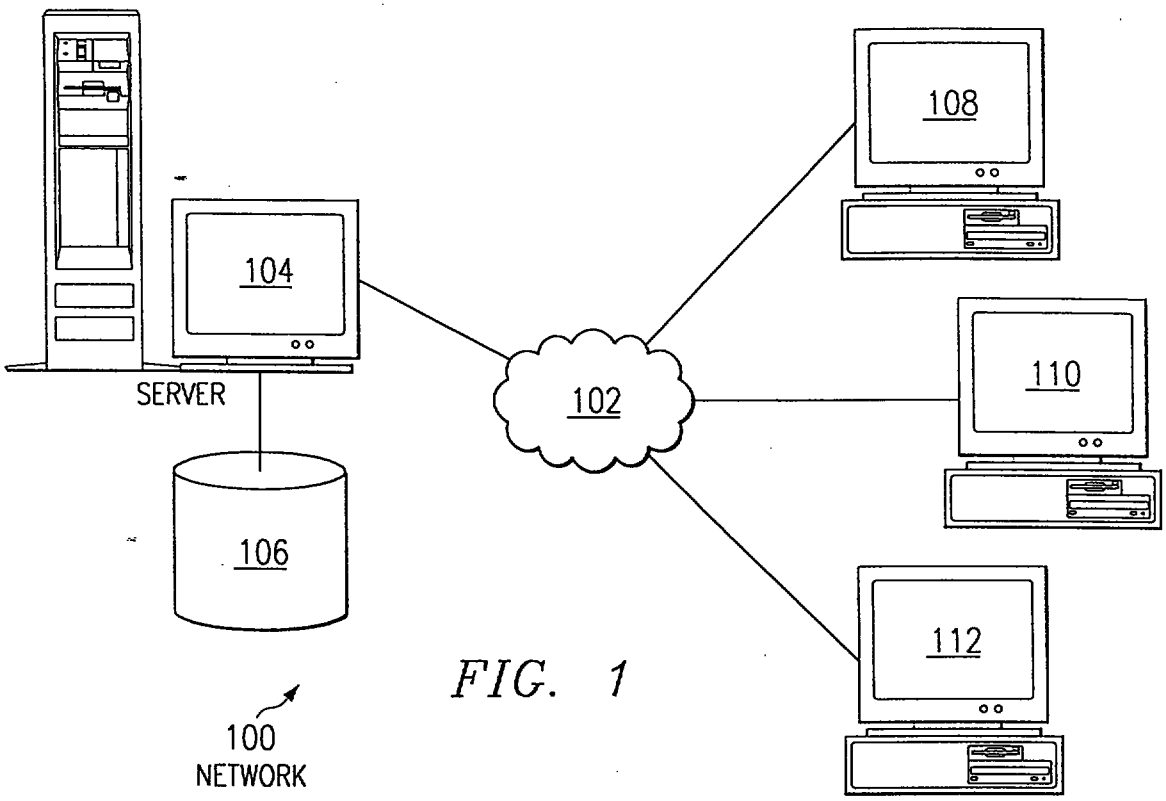

108
104
110
SERVER
102
106
112
100
NETWORK

FIG. 1

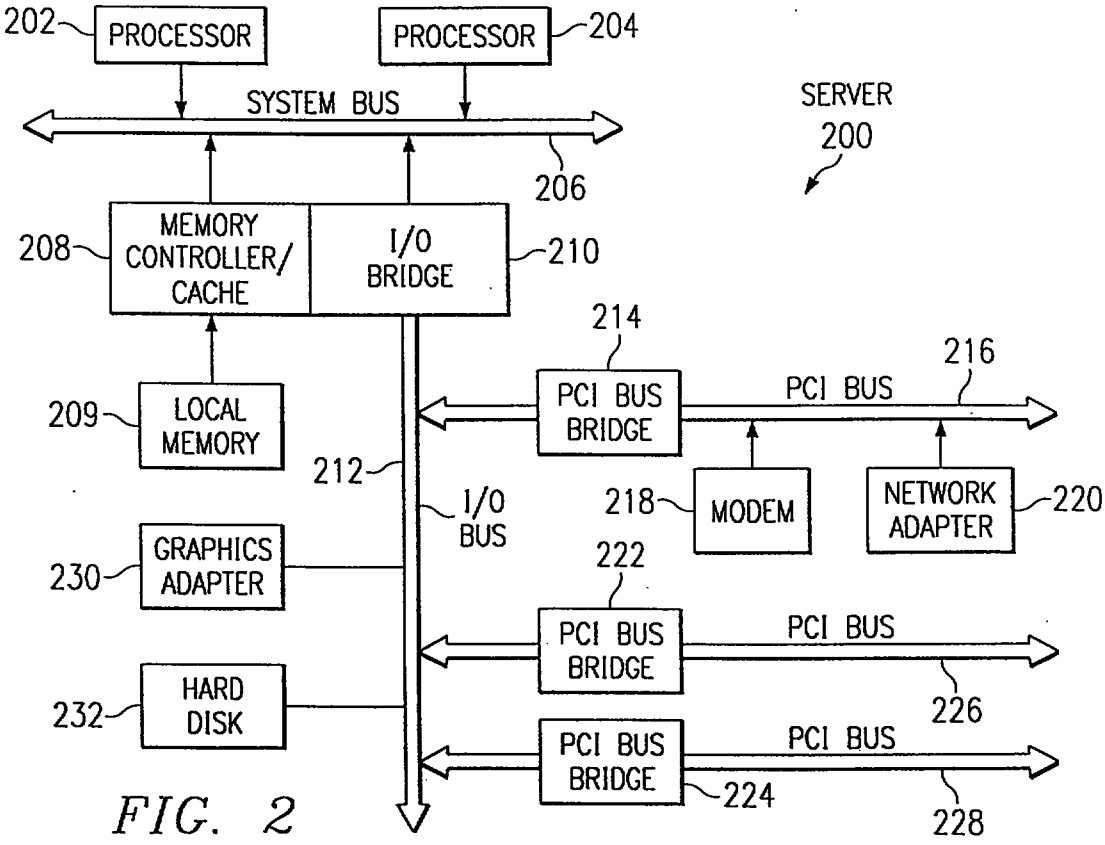

202
PROCESSOR
PROCESSOR
204
SYSTEM BUS
206
SERVER
200
208
MEMORY CONTROLLER/ CACHE
I/O BRIDGE
210
214
216
209
LOCAL MEMORY
PCI BUS BRIDGE
PCI BUS
212
I/O BUS
218
MODEM
NETWORK ADAPTER
220
230
GRAPHICS ADAPTER
222
PCI BUS BRIDGE
PCI BUS
226
232
HARD DISK
PCI BUS BRIDGE
PCI BUS
224
228

FIG. 2

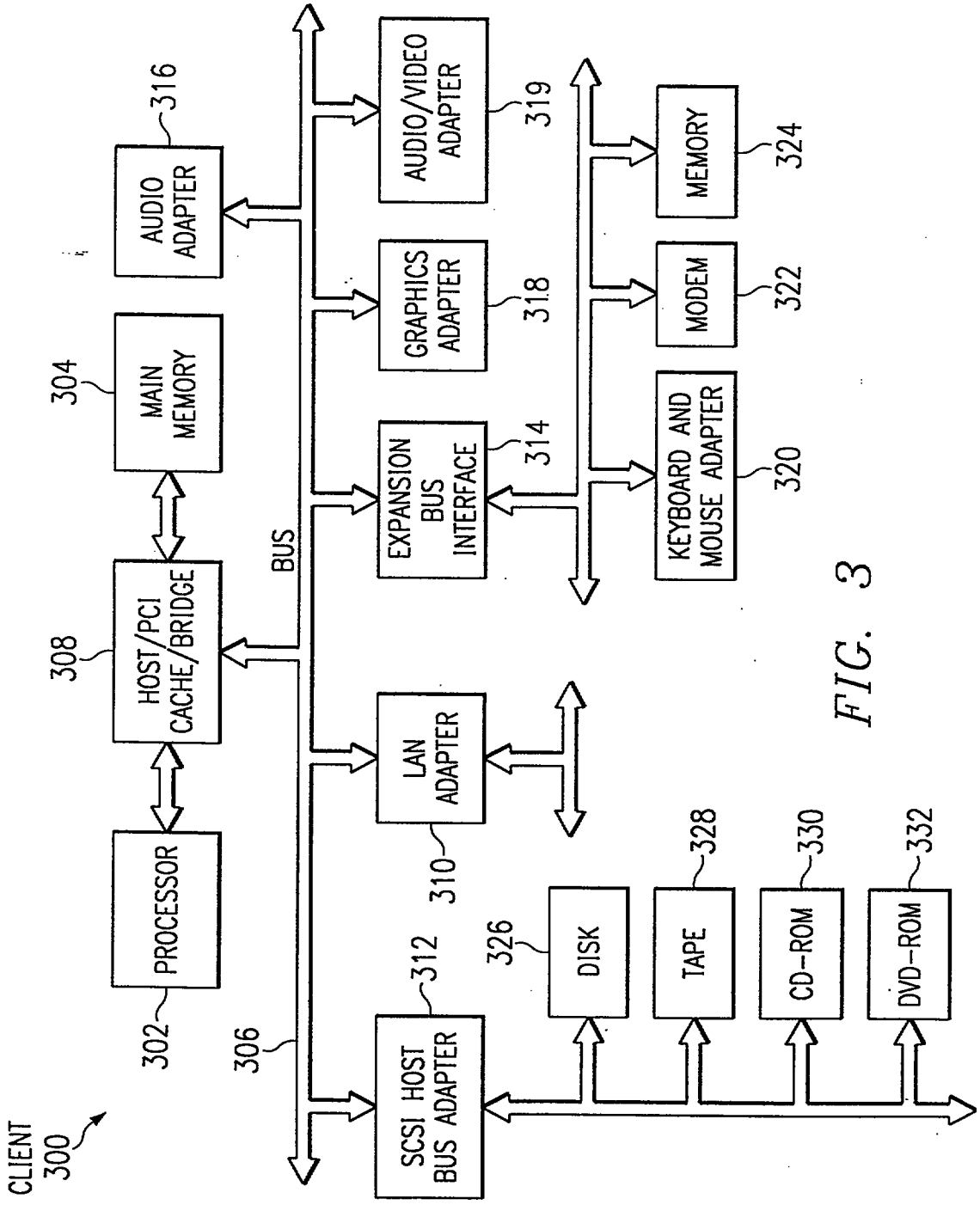

CLIENT
300
PROCESSOR
302
HOST/PCI
CACHE/BRIDGE
308
MAIN
MEMORY
304
AUDIO
ADAPTER
316
BUS
306
SCSI HOST
BUS ADAPTER
312
LAN
ADAPTER
310
EXPANSION
BUS
INTERFACE
314
GRAPHICS
ADAPTER
318
AUDIO/VIDEO
ADAPTER
319
KEYBOARD AND
MOUSE ADAPTER
320
MODEM
322
MEMORY
324
DISK
326
TAPE
328
CD-ROM
330
DVD-ROM
332

FIG. 3

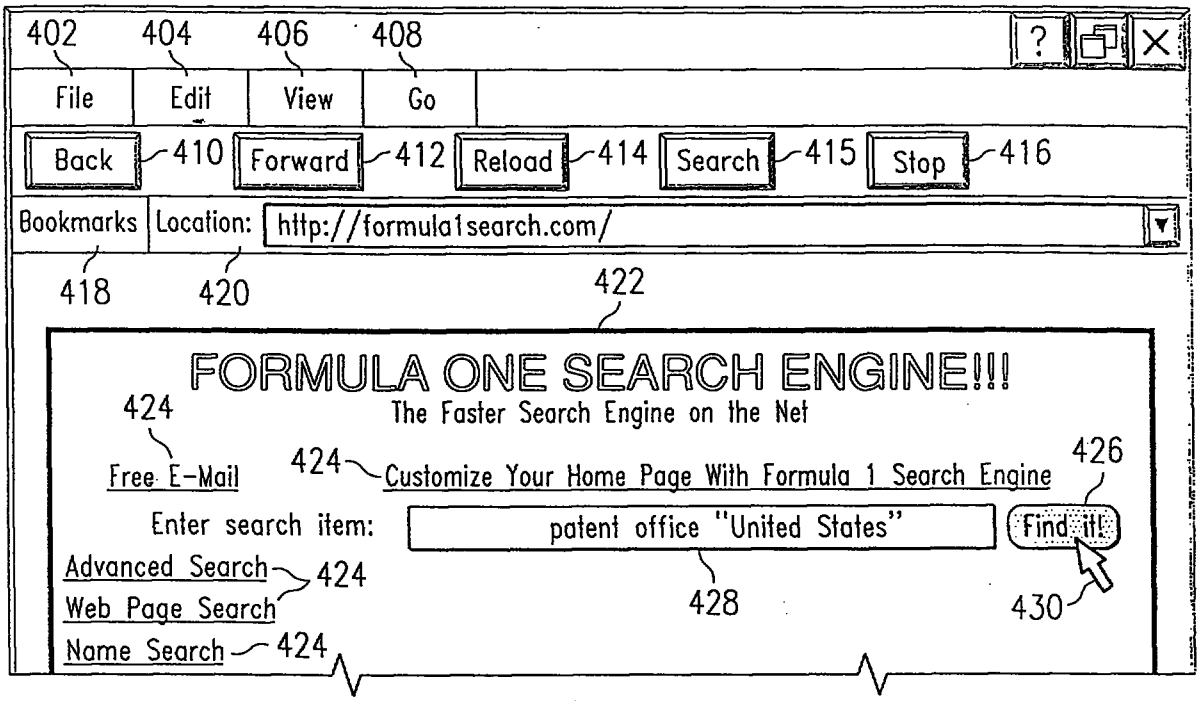


FIG. 4
(PRIOR ART)

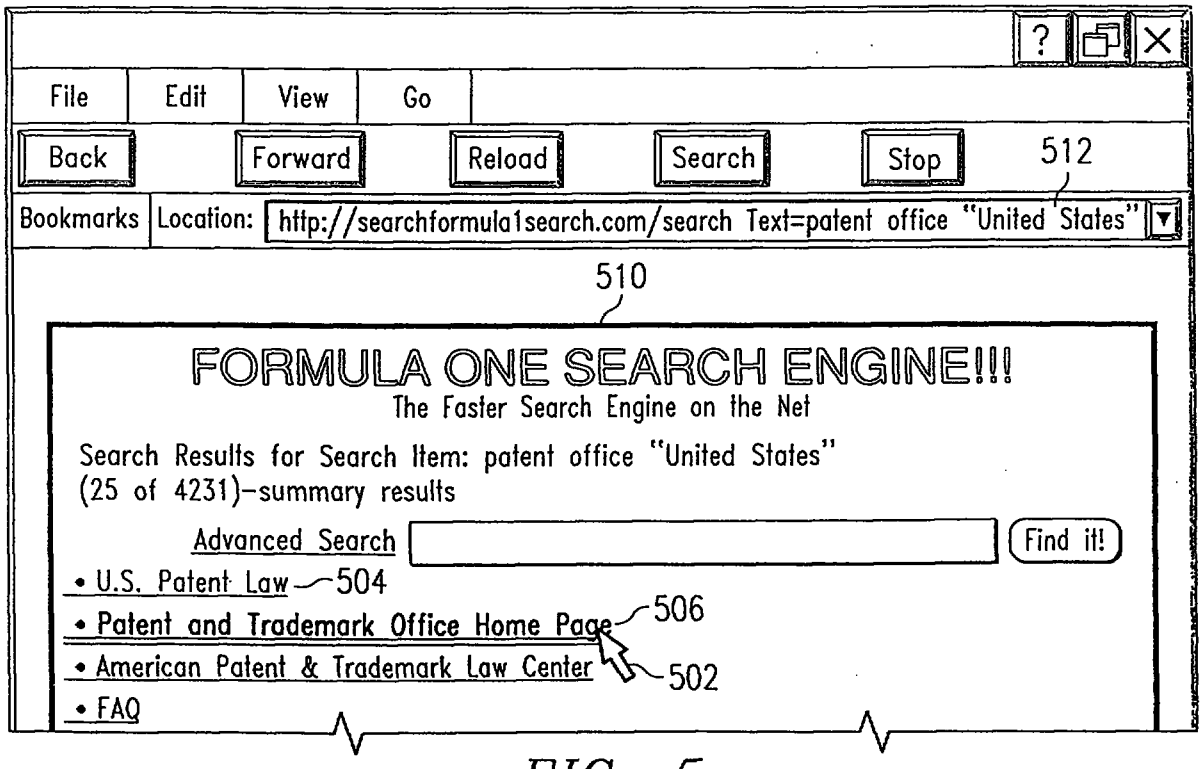


FIG. 5
(PRIOR ART)

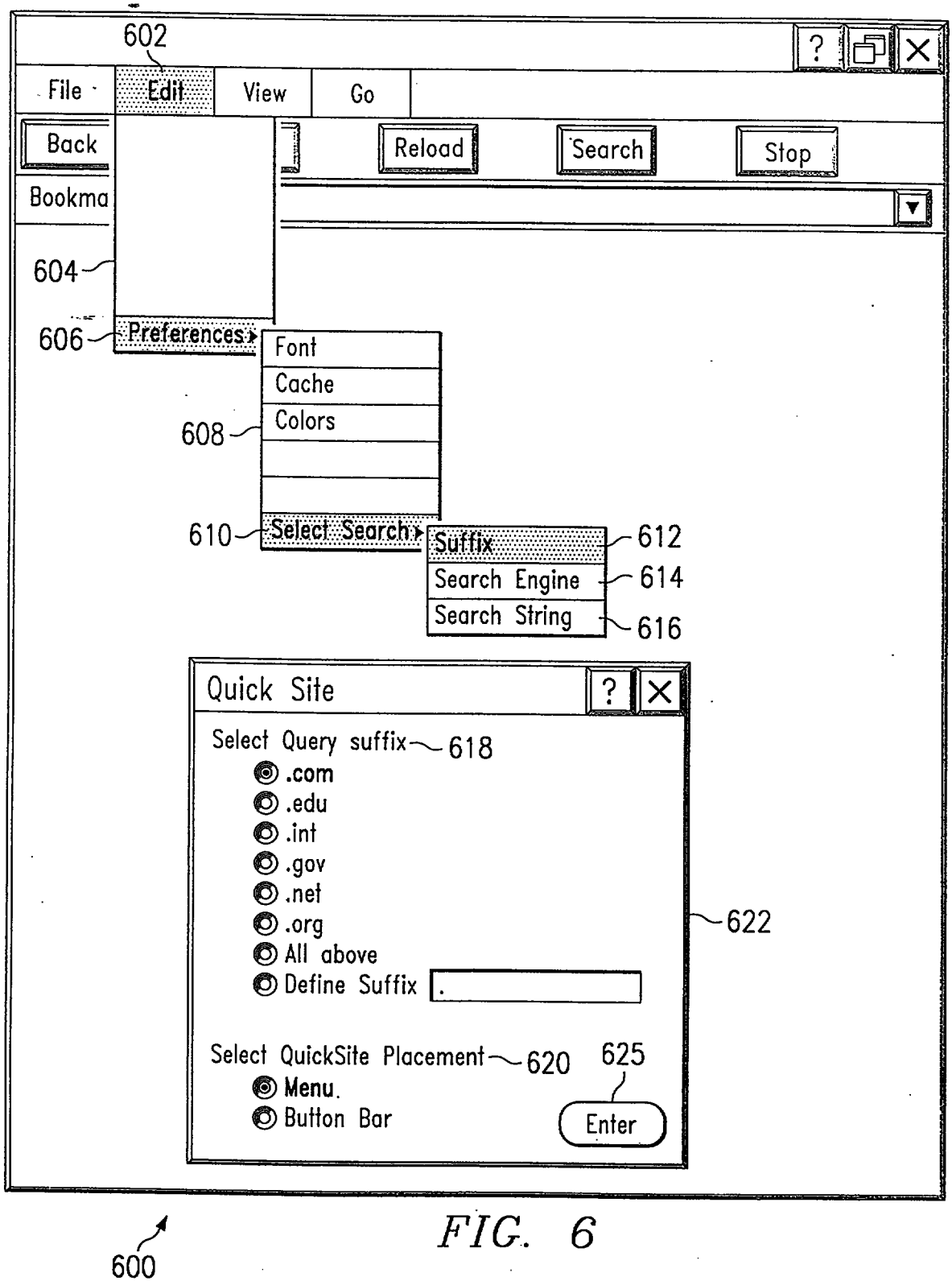

602
File
Edit
View
Go
Back
Reload
Search
Stop
Bookma
604
606
Preferences
Font
Cache
608
Colors
610
Select Search
Suffix
Search Engine
Search String
612
614
616
Quick Site
Select Query suffix
618
.com
.edu
.int
.gov
.net
.org
All above
Define Suffix
622
Select QuickSite Placement
620
625
Menu
Button Bar
Enter
600

FIG. 6

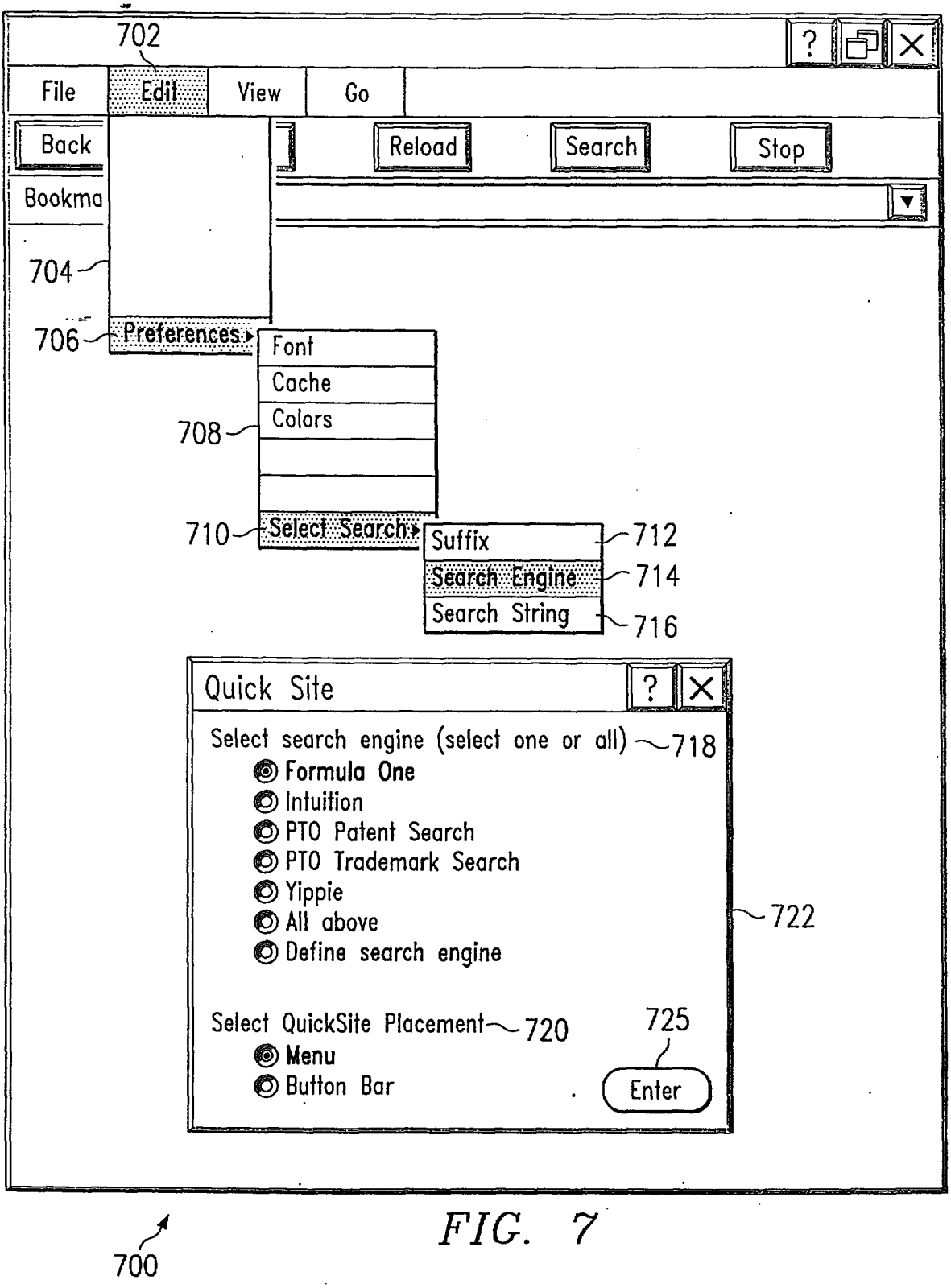

702
File
Edit
View
Go
Back
Reload
Search
Stop
Bookma
704
706
Preferences
Font
Cache
Colors
708
710
Select Search
Suffix
Search Engine
Search String
712
714
716
Quick Site
Select search engine (select one or all)
718
Formula One
Intuition
PTO Patent Search
PTO Trademark Search
Yippie
All above
Define search engine
722
Select QuickSite Placement
720
725
Menu
Button Bar
Enter
700

FIG. 7

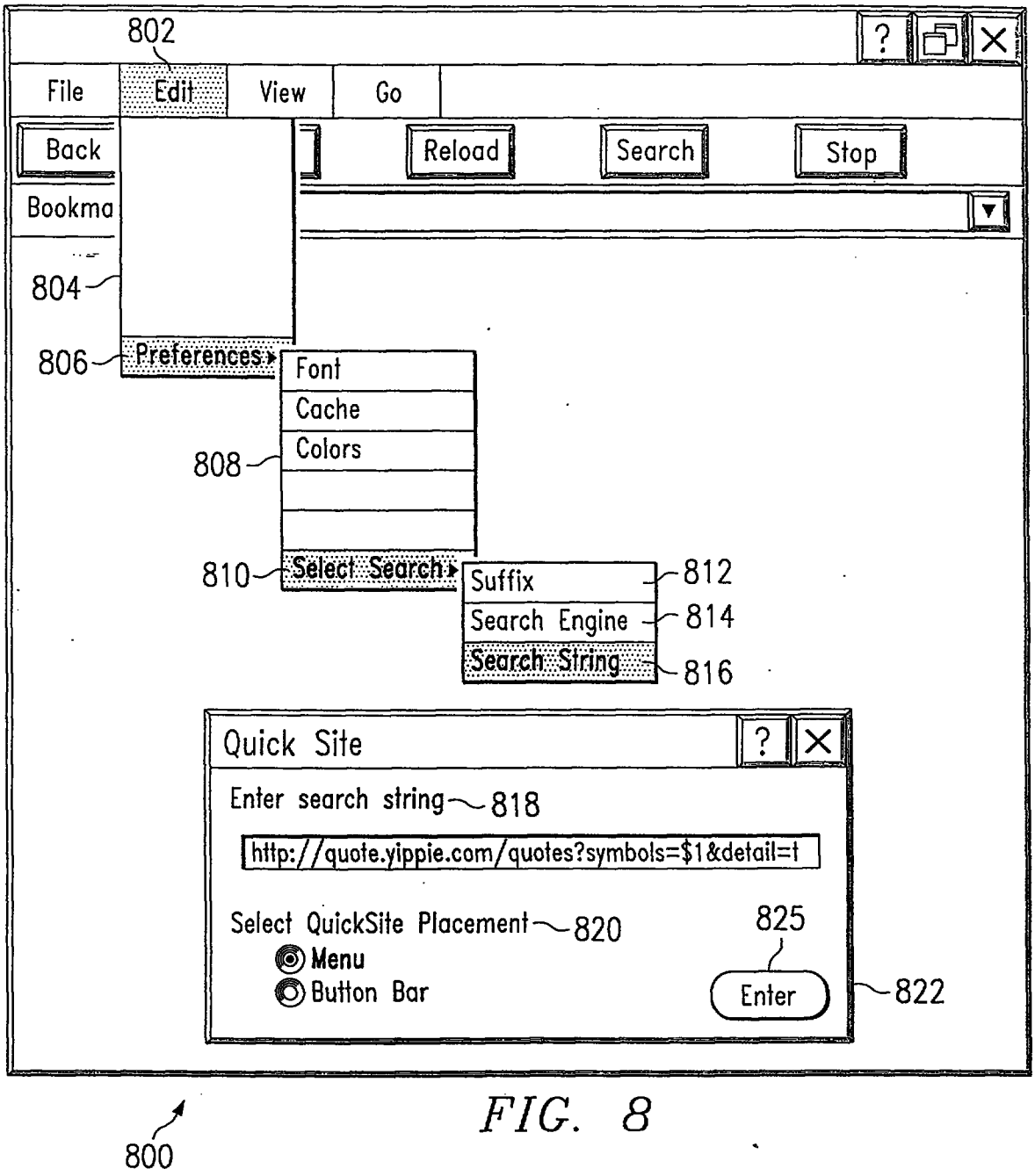

802
File
Edit
View
Go
Back
Reload
Search
Stop
Bookma
804
806
Preferences
Font
Cache
Colors
808
810
Select Search
Suffix
Search Engine
Search String
812
814
816
Quick Site
Enter search string
818
http://quote.yippie.com/quotes?symbols=$1&detail=t
Select QuickSite Placement
820
Menu
Button Bar
825
Enter
822
800

FIG. 8

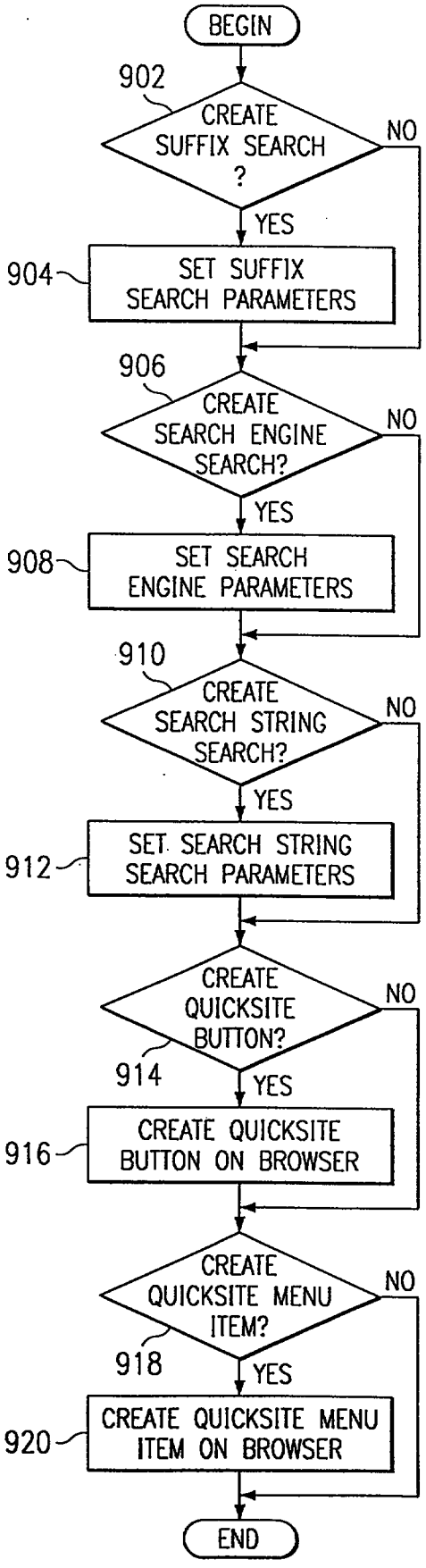

BEGIN
902
CREATE SUFFIX SEARCH ?
NO
YES
904
SET SUFFIX SEARCH PARAMETERS
906
CREATE SEARCH ENGINE SEARCH?
NO
YES
908
SET SEARCH ENGINE PARAMETERS
910
CREATE SEARCH STRING SEARCH?
NO
YES
912
SET SEARCH STRING SEARCH PARAMETERS
CREATE QUICKSITE BUTTON?
NO
914
YES
916
CREATE QUICKSITE BUTTON ON BROWSER
CREATE QUICKSITE MENU ITEM?
NO
918
YES
920
CREATE QUICKSITE MENU ITEM ON BROWSER
END

FIG. 9

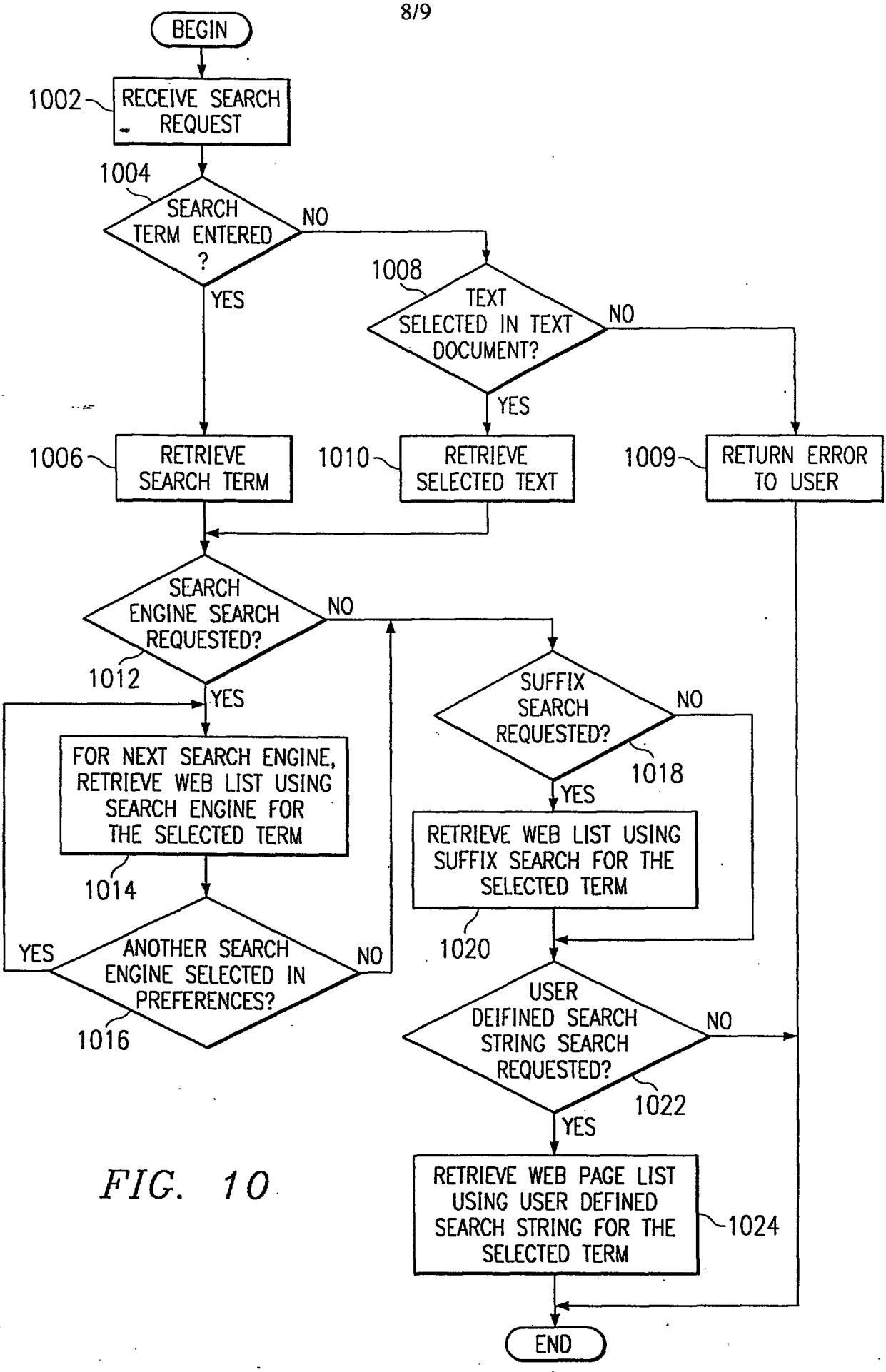

BEGIN
1002
RECEIVE SEARCH REQUEST
1004
SEARCH TERM ENTERED ?
NO
YES
1008
TEXT SELECTED IN TEXT DOCUMENT?
NO
YES
1006
RETRIEVE SEARCH TERM
1010
RETRIEVE SELECTED TEXT
1009
RETURN ERROR TO USER
SEARCH ENGINE SEARCH REQUESTED?
NO
1012
YES
FOR NEXT SEARCH ENGINE, RETRIEVE WEB LIST USING SEARCH ENGINE FOR THE SELECTED TERM
1014
ANOTHER SEARCH ENGINE SELECTED IN PREFERENCES?
YES
NO
1016
SUFFIX SEARCH REQUESTED?
NO
1018
YES
RETRIEVE WEB LIST USING SUFFIX SEARCH FOR THE SELECTED TERM
1020
USER DEIFINED SEARCH STRING SEARCH REQUESTED?
NO
1022
YES
RETRIEVE WEB PAGE LIST USING USER DEFINED SEARCH STRING FOR THE SELECTED TERM
1024
END

FIG. 10

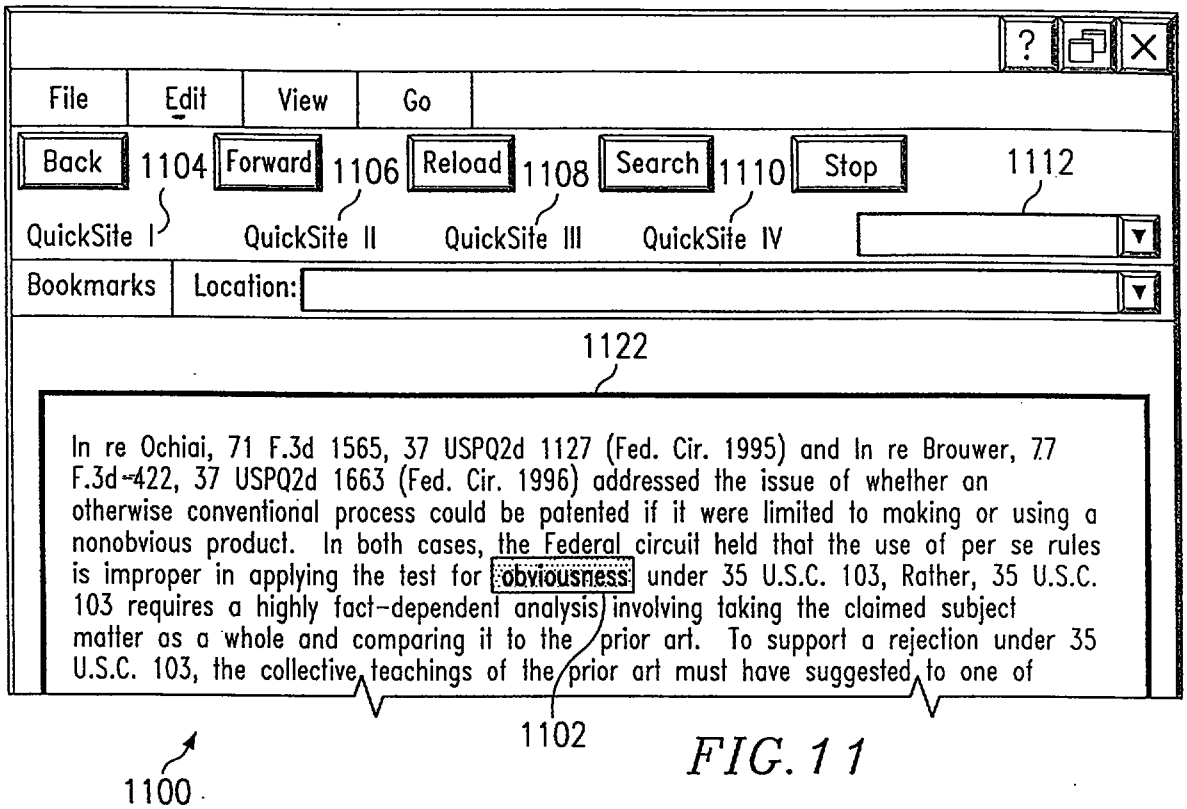

File
Edit
View
Go
Back
1104
Forward
1106
Reload
1108
Search
1110
Stop
1112
QuickSite I
QuickSite II
QuickSite III
QuickSite IV
Bookmarks
Location:
1122
In re Ochiai, 71 F.3d 1565, 37 USPQ2d 1127 (Fed. Cir. 1995) and In re Brouwer, 77 F.3d 422, 37 USPQ2d 1663 (Fed. Cir. 1996) addressed the issue of whether an otherwise conventional process could be patented if it were limited to making or using a nonobvious product. In both cases, the Federal circuit held that the use of per se rules is improper in applying the test for obviousness under 35 U.S.C. 103, Rather, 35 U.S.C. 103 requires a highly fact-dependent analysis involving taking the claimed subject matter as a whole and comparing it to the prior art. To support a rejection under 35 U.S.C. 103, the collective teachings of the prior art must have suggested to one of
1102
1100

FIG. 11

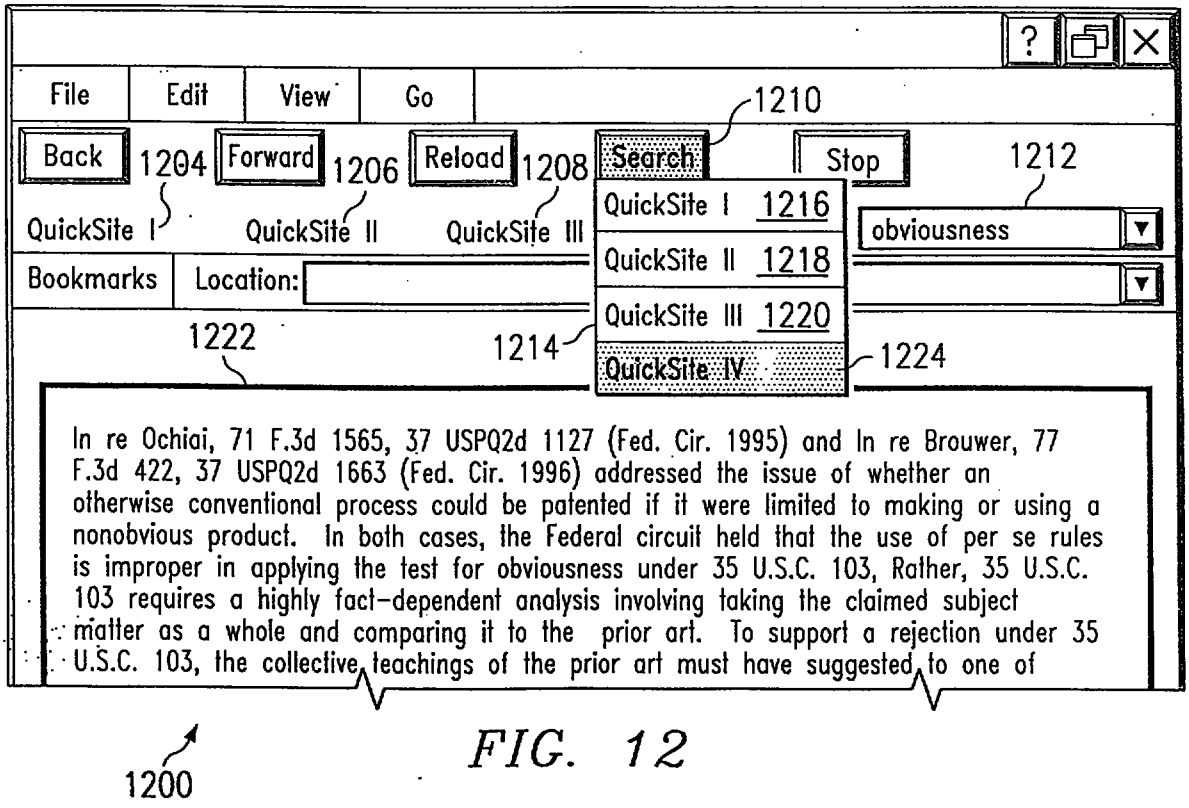

File
Edit
View
Go
1210
Back
1204
Forward
1206
Reload
1208
Search
Stop
1212
QuickSite I
QuickSite II
QuickSite III
QuickSite I 1216
QuickSite II 1218
QuickSite III 1220
QuickSite IV
obviousness
Bookmarks
Location:
1222
1214
1224
In re Ochiai, 71 F.3d 1565, 37 USPQ2d 1127 (Fed. Cir. 1995) and In re Brouwer, 77 F.3d 422, 37 USPQ2d 1663 (Fed. Cir. 1996) addressed the issue of whether an otherwise conventional process could be patented if it were limited to making or using a nonobvious product. In both cases, the Federal circuit held that the use of per se rules is improper in applying the test for obviousness under 35 U.S.C. 103, Rather, 35 U.S.C. 103 requires a highly fact-dependent analysis involving taking the claimed subject matter as a whole and comparing it to the prior art. To support a rejection under 35 U.S.C. 103, the collective teachings of the prior art must have suggested to one of
1200

FIG. 12