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(54) **TRACKING USER MICRO-INTERACTIONS WITH WEB PAGE ADVERTISING**

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(75) Inventors: **Thomas M. Middleton III**, Hingham, MA (US); **Gregory T. White**, Bedford, MA (US)

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Correspondence Address:  
**HAMILTON, BROOK, SMITH & REYNOLDS, P.C.**  
**530 VIRGINIA ROAD**  
**P.O. BOX 9133**  
**CONCORD, MA 01742-9133 (US)**

(57) **ABSTRACT**

In connection with display of advertising within Web pages, an applet is downloaded to the user's Web browser to track the user's interactions with the Web page. Tracked user interactions include mouse cursor position, time displayed on page, time of mouse cursor hovering over the advertisement, and so on. At an appropriate time, such as when the display of the Web page is terminated, the applet forwards logged interaction information from the client to a remote server, the remote server being typically controlled by an advertiser, rating service or the like. As a result, the advertiser may track consumer response to advertising impressions on a Web page without requiring the user to download other pages. This allows advertisers to track user response to specific elements of the Web page as well as to better infer information about the user's interests in an effort to qualify the user prior to presenting subsequent advertising.

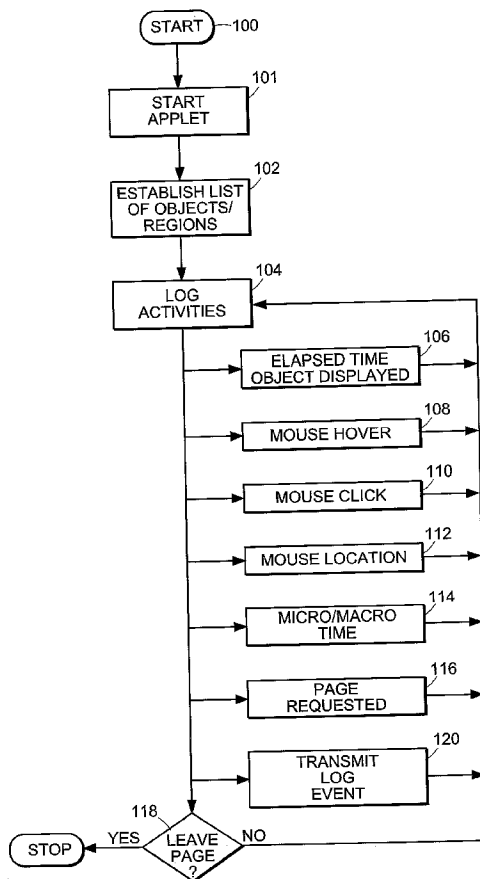
(73) Assignee: **Enliven, Inc.**, Waltham, MA

(21) Appl. No.: **10/100,631**

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**Related U.S. Application Data**

(63) Continuation of application No. 09/146,012, filed on Sep. 2, 1998, now Pat. No. 6,393,407.



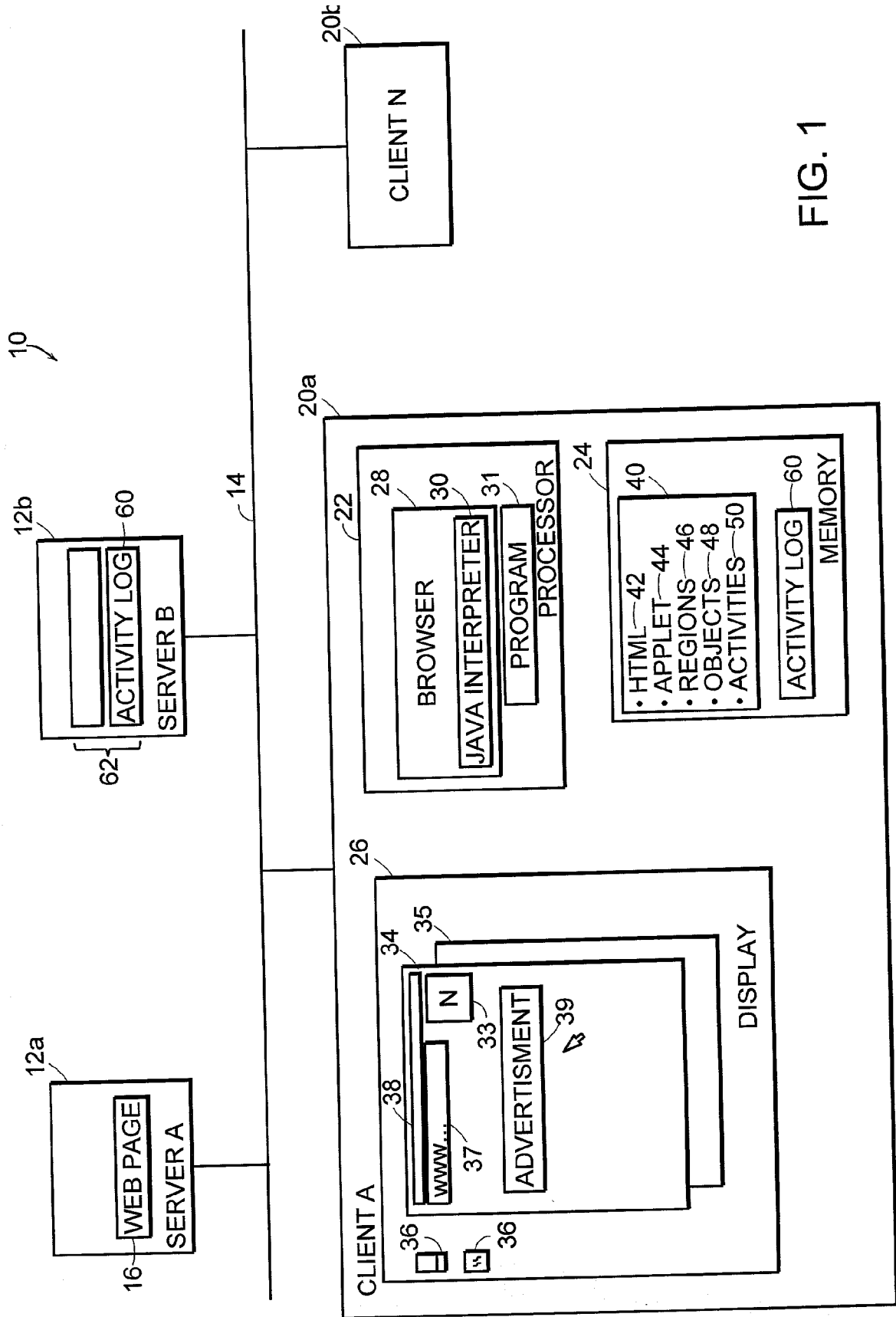


FIG. 1

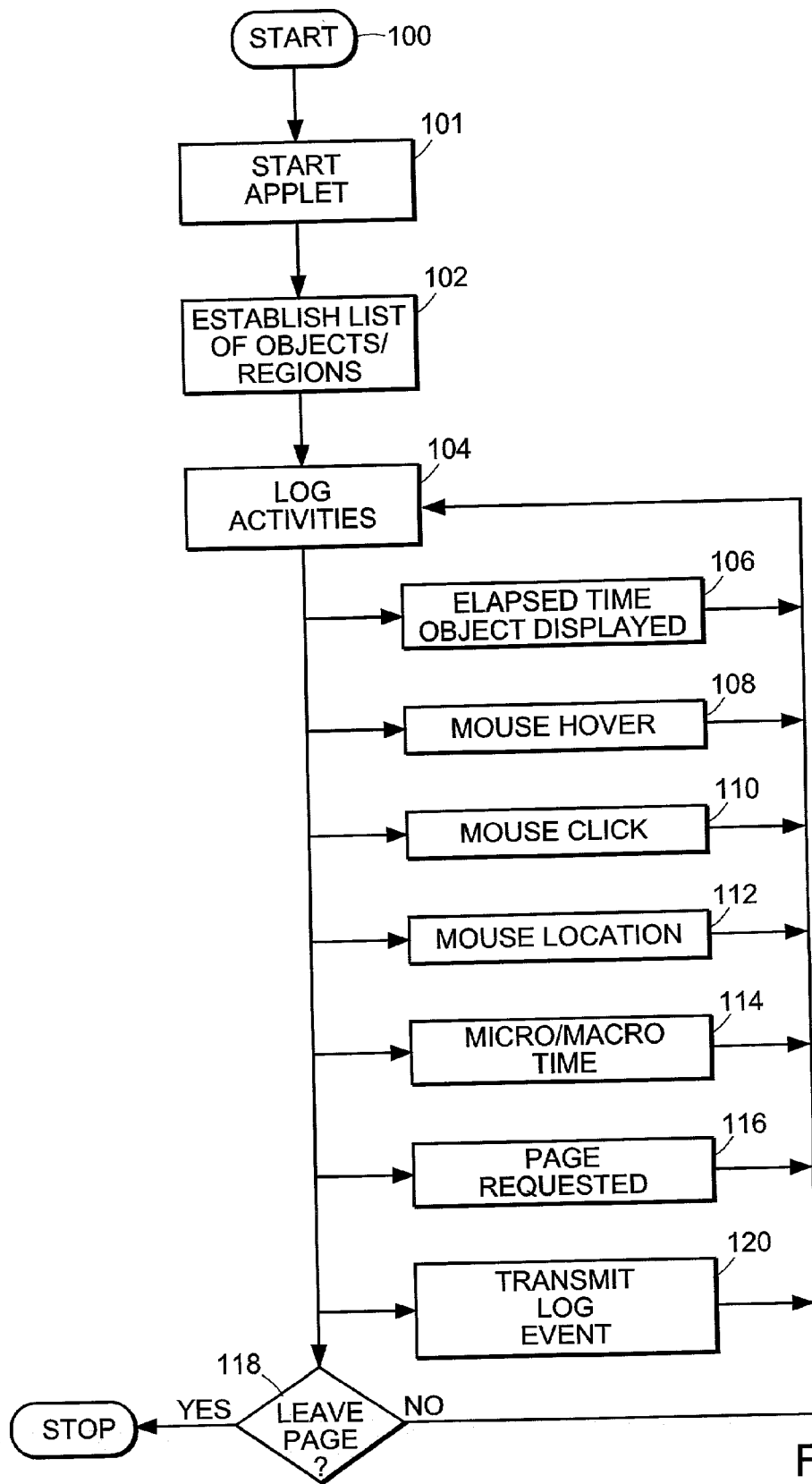


FIG. 2

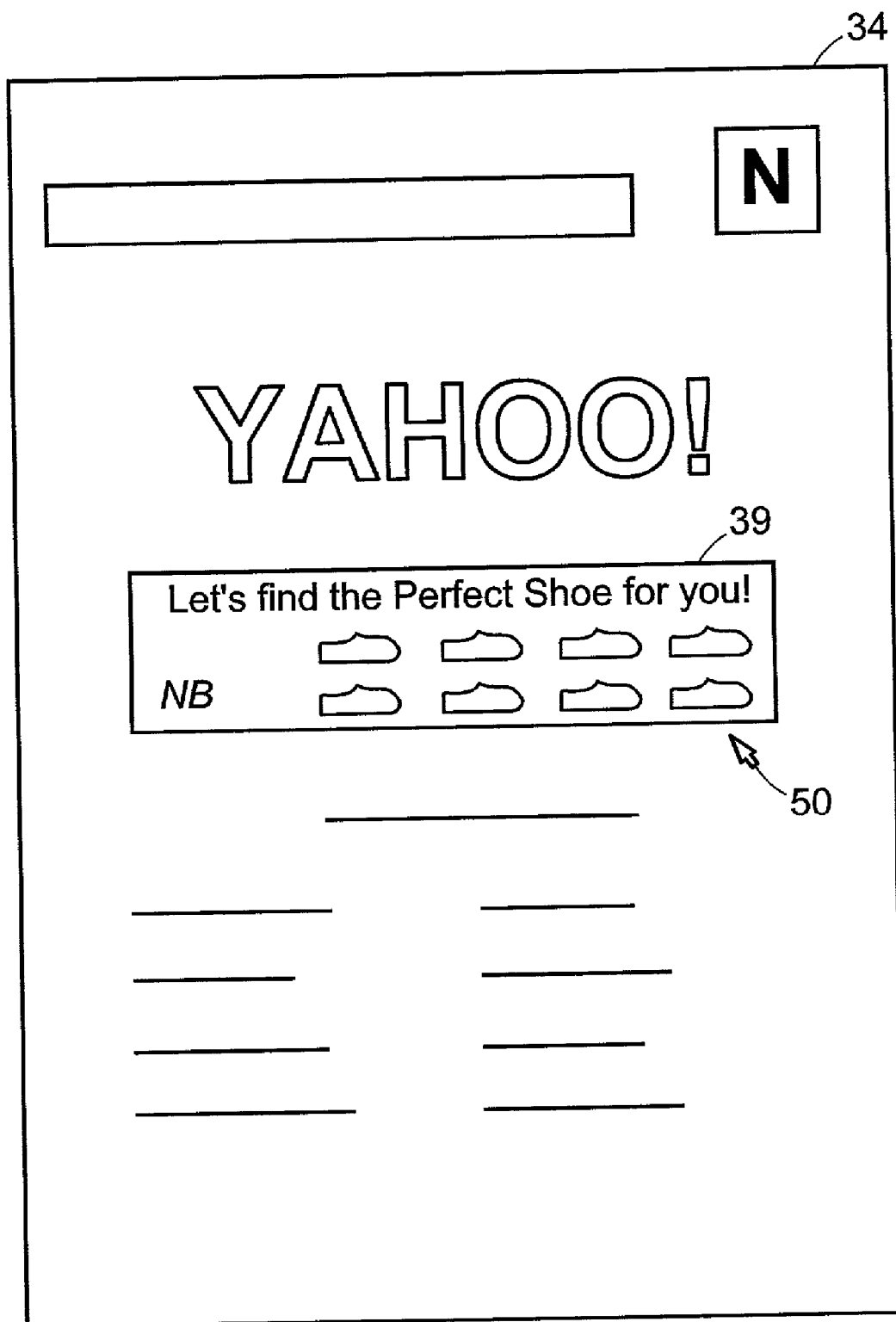


FIG. 3

## TRACKING USER MICRO-INTERACTIONS WITH WEB PAGE ADVERTISING

### RELATED APPLICATIONS

[0001] This application is a continuation of U.S. application Ser. No. 09/146,012, filed Sep. 2, 1998 which claims the benefit of U.S. Provisional Application No. 60/058,655, filed on Sep. 11, 1997.

[0002] The entire teachings of the above applications are incorporated herein by reference.

### BACKGROUND OF THE INVENTION

[0003] Distributed computing environments are becoming a very popular mechanism for publishing information of various types. In such an environment, a network of several different types of computers is used in order to share access to information. Certain computers, known as servers, contain databases and other repositories of information. Other computers in the network, known as clients, act as interfaces for the human users to retrieve and display information.

[0004] One particularly well known example of a distributed computing environment is the World Wide Web. In this environment, the Web server computers presently in use typically store data files, or so-called Web pages, in a format known as Hypertext Markup Language (HTML). Web pages are transferred between Web servers and clients using a communication protocol known as Hypertext Transfer Protocol (HTTP). HTML permits the Web servers, or sites, to handle container or document files which reference other files of varying formats. Using HTML, a given Web page may include content information in various formats. An HTML format file may also refer to other files, by including reference information, known as a Uniform Reference Locator (URL), which specifies the location of remote Web servers at which the other files may be located.

[0005] Certain Web servers, such as those maintained by on-line service providers such as America On Line (AOL™) or Microsoft Network (MSN™), are an increasingly popular way for people to obtain information of interest on the World Wide Web. (AOL™ is a trademark of America On Line, Inc. of Dulles, Va. MSN™ is a trademark of Microsoft Corporation of Redmond, Wash.) Indeed, certain Web sites host search engines such as AltaVista™, Yahoo™, and InfoSeek™ and thus are exclusively devoted to guiding users through the Web. (AltaVista™ is a trademark of Digital Equipment Corporation of Maynard, Mass.; Yahoo™ is a trademark of Yahoo! Corporation of Santa Clara, Calif.; and InfoSeek™ is a trademark of InfoSeek Corporation of Sunnyvale, Calif.) These sites are so popular that their operators provide their services free of charge to users of the Web, and support themselves typically by selling advertising space on their Web pages. Thus, an advertiser, for example, a running shoe manufacturer, may contract with a search service such as Yahoo, or an on-line service, such as AOL, to periodically present its ads on their Web pages in much the same manner that commercials are traditionally purchased from television broadcasters.

[0006] Certain tools are presently in use by the providers of such services and advertisers, typically in order to calculate advertising rates. For example, the Web servers at such sites may count the number of times that the Web page containing the advertisement is displayed.

[0007] Alternatively, an advertiser may count the number of visits that its own Web page receives as a result of linking from the original Web page advertisement, i.e., the number of times that users request the URL of the advertiser's Web site via the original Web page on which the advertisement was displayed. In the usual model of user interaction with a Web page, this occurs whenever the user clicks (i.e., selects by a mouse input device) on a hypertext item. In many instances, objects such as graphical images or "GIFs" may be clicked on to activate the hypertext links.

[0008] Advertisers, however, would like not only to count a number of "impressions," or how many times their advertisement is seen, but also to find a way to track how effective their ads are in attracting consumers' interest in their products.

[0009] Advertisers would also like to find a way to more precisely gauge a user's interest in a product, as well as to entice those users who are casually browsing through the World Wide Web, without actually requiring users to download the advertiser's Web page. In this manner, interest in a particular product or promotion could be gauged directly from data surrounding the initial presentation of the advertisement.

### SUMMARY OF THE INVENTION

[0010] Briefly, the present invention is a technique for tracking user interactions with the elements that comprise a Web page advertisement. As a result, an advertiser may understand (make inferences as to) what motivates users to pay initial attention to and/or otherwise interact with Web page advertising.

[0011] The invention, in particular, tracks any sort of user "micro-interaction" with the advertisement. The user interactions which are tracked, for example, may include mouse movement, mouse clicks, and other mouse activity such as it relates to elements in the ad. These elements may include various display items such as graphics, pictures, or words, or may include user prompting items such as menus, buttons, or slides. Elements also may include defined regions of the advertisement.

[0012] The activities monitored may include how long an object is displayed, which objects are selected by a user, which items are considered by a user according to the amount of time the cursor hovers over the items, measuring the time of presentation of an element in various ways, and/or activating hyperlinks.

[0013] The tracked interactions are preferably logged to a local memory by a downloadable Web browser applet embedded in the Web page, such as a program written in an interpretive language such as Java™. (Java™ is a trademark of Sun Microsystems Corporation of Sunnyvale, Calif.)

[0014] The logged interactions as stored in the local memory file are then sent to a remote server at appropriate times. For example, in the preferred embodiment, the logged interaction information may be included in a "dummy" HTTP GET message sent by the client to the server at the time the applet is taken down, such as when the user requests that a next page be displayed.

[0015] The logged interaction information may be flushed in other ways, such as by sending a POST message to the server either periodically or upon occurrence of certain events.

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