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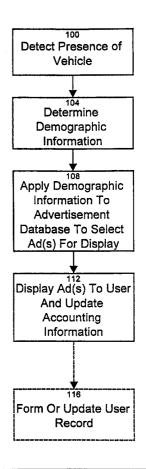
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(54) Title: METHOD AND SYSTEM OF DIRECTED ADVERTISING

(57) Abstract

A system and method of providing directed advertising to consumers. The system and method acquire demographic information to associate one or more demographic groups to a consumer and an advertisement appropriate to the associated groups is selected and displayed to the consumer. A record is maintained for the advertiser as to the demographic group associated with the consumer to whom the ad was shown, and the advertisers can define desired demographics of consumers for their ads and desired times for showing of the ad, etc.



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Method and System Of Directed Advertising

FIELD OF THE INVENTION

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The present invention relates to a method and system of performing directed advertising. More specifically, the present invention relates to a method and system for determining demographic characteristics about a potential viewer for an advertisement and selecting and displaying an advertisement appropriate for those demographics.

BACKGROUND OF THE INVENTION

Advertising has always been an important source of revenue in many businesses, including newspapers, television and radio. More recently, much interest has directed to placing of banner advertisements and the like on web pages to fund Internet-based businesses.

While billions of dollars are spent each year in North America on advertising, one of the problems with advertising is that it is difficult to direct advertisements to an intended audience. To date, many ads have been non-directed in that a site for the ad, whether it be a billboard, a newspaper page or any other site, is selected and the ad placed with the knowledge that some proportion of those individuals who will view the ad are unlikely to have much interest in the product or service offered in the ad. For example, an ad for a new car placed in a newspaper will likely be ignored by the significant proportion of the readers of the newspaper who are not in the market for a new car, including those who cannot drive. Despite the probability that many consumers that view an undirected ad may well not be interested in the product or service offered, the cost of placing such ads are often based upon the total size of the expected audience for the ad. For example, the advertising charges of most newspapers usually reflect, to at least some extent, the total circulation of the newspaper.

Prior attempts to direct ads to appropriate consumers have had mixed results. In some cases, an ad can be placed in a site that explicitly will have an appropriate audience of consumers. For example, an ad for skiing equipment can be placed in a magazine directed to skiing.

Advertisers also buy mailing lists from such magazines or other focused consumer lists to direct ads to consumers appropriate to their product or service. Similarly, an ad for automobile related products or services can be displayed at a service station.

These solutions still suffer from disadvantages. For example, many magazines and other products no longer make their mailing lists available for purchase, due to consumer objections to this practice. Also, while the relationship between skiing equipment and a skiing magazine is clear, other products may not be susceptible to such a clear relationship. For example, it is difficult to know to what extent banking services would be of interest to a consumer reading the skiing magazine. Similarly, it is difficult to know the success rate when placing advertisements for nonautomotive products at a service station.

More recently, much interest has been expressed in banner advertising and other ads on web pages. Such ads often can easily be related to the subject matter of the particular web page being viewed. However, while it is relatively easy to determine the number of times a page containing a banner ad has been displayed to consumers, it is difficult for an advertiser to determine if the intended audience is actually viewing the ad.

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The consumers which advertisers most prefer their ad be shown to are those who intend to make a purchase in the category of product offered by the ad. For example, placing an ad for a new car before a consumer who actively intends to purchase a new car is much more likely to result in a sale than that same ad placed before a consumer without a drivers license. The next most desirable consumer are those who are making a purchase in a related area, e.g. - an ad for purchasing car ... insurance can be shown to the above-mentioned consumer who actively intends to purchase a new car. Generally, the least desirable consumer are those who are not intending to make any purchases as it appears a characteristic of human nature that a consumer who is making any purchase is more likely to make another, discretionary, purchase at the same time than a consumer who is not making any purchase. This, for example, is the reason why most stores place items subject to impulse buying adjacent checkout/cashier counters, e.g.. chewing gum and news magazines are often located near checkouts at convenience and grocery stores.

Clearly, it is desired to have a system and method for advertisers to better deliver their advertisements to consumers with the greatest likelihood of purchasing their product and where the 30 for the product.

delivery of that ad is accomplished in a manner effective in reducing the overall cost of advertising

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a novel system and method of providing directed advertising which obviates or mitigates at least some of the disadvantages of the prior art.

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According to a first aspect of the present invention, there is provided a system for the selection and display of directed advertisements to a consumer, comprising:

- a consumer acquisition device to obtain an identifying characteristic of a consumer;
- a database of consumer demographic information responsive to said identifying characteristic to associate a demographic group to said consumer;

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an advertisement database storing a plurality of advertisements arranged according to at least one demographic characteristic;

a control device to apply said demographic group associated to said consumer by said database of consumer demographic information to said advertisement database to select at least one advertisement indicated by said at least one demographic characteristic as being appropriate for said demographic group associated to said consumer; and

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a display to present said selected at least one advertisement to said consumer.

According to another aspect of the present invention, there is provided a method of providing directed advertising to a consumer, comprising the steps of:

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- (I) determining the presence of a consumer;
- (ii) associating a demographic group to said consumer;
- (iii) selecting an advertisement from a database of available advertisements, said selection being accomplished in accordance with said associated demographic group;
 - (iv) displaying said selected advertisement to said consumer; and

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(v) creating a record of the selected advertisement and the associated demographic group.

The present invention provides a system and method of providing directed advertising to consumers. The system and method associates at least one demographic group to a consumer and an appropriate advertisement for the associated demographic group is selected and displayed to the consumer. A record is maintained for the system operator and/or advertiser as to the demographic group or groups associated with the consumer to whom the ad was shown. Advertisers can define desired demographic groups of consumers for their ads and desired times for showing of the ad, etc.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the present invention will now be described, by way of example only, with reference to the attached Figures, wherein:

Figure 1 shows a schematic representation of an embodiment of a directed advertising system in accordance with the present invention;

Figure 2 shows a schematic representation of a laser scanning system to identify vehicles; and

Figure 3 shows a flowchart of a method of performing directed advertising in accordance with the present invention.

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DETAILED DESCRIPTION OF THE INVENTION

In Figure 1 an embodiment of a directed advertising system in accordance with the present invention is indicated generally at 20. System 20 includes a consumer acquisition device 24 which operates with a control device 28 and a consumer database 32 to identify a consumer. Once a consumer has been identified, as discussed below in more detail, an advertisement database 36 is consulted by control device 28 and an appropriate advertisement is selected from database 36, any necessary accounting entries are placed in an accounting database 38 and the ad is displayed to the consumer on display 40.

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Specifically, in a presently preferred embodiment of the invention, system 20 operates at automotive service stations, especially at self service station pumps, and consumer acquisition device 24 is employed to acquire information about the vehicle at the gas pumps.

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In one embodiment of the present invention, acquisition device 24 can comprise a CCD camera which is positioned to image the license plate of the vehicle at the pumps. In this case, an optical character recognition process is performed on the acquired image of the license plate to obtain the plate number and state/province which issued the plate. Control device 28, which can be a ruggedized personal computer or the like or other computer device, can then access the appropriate motor vehicle registry, via any suitable telecommunications link, to determine information relating to the vehicle. Ideally, this information will comprise demographic information relating to the owner of the vehicle, such as age, sex, residence address, etc. It is contemplated that, while a motor vehicle registry or other information service may be unable to

provide specific information (e.g., name, address, age) regarding the registered owner of a vehicle due to privacy laws, etc., they may be permitted to provide information in terms of demographic categories applicable to the vehicle and its owner (e.g., sports car, male, age 35-45, etc.)

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In some jurisdictions, such information may well not be made available at all by the motor vehicle registry authorities or other information service for reasons of privacy, etc. In such cases, the obtained information may well be limited to vehicle type information (e.g.. - convertible, sport utility vehicle, etc), to vehicle make (e.g.. Mustang convertible or Ford Explorer), to vehicle date of manufacture (e.g.. 1995, 1996, etc.) or no information at all may be made available.

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In cases where limited or no information is available from a motor vehicle registry or other similar source, acquisition device 24 can comprise a laser scanning unit, such as that manufactured and sold by SICK Optic-Electronic, Inc, 6900 W. 110th Street, Bloomington, MN 55438 USA under the model number LMS 210. Such a laser scanning unit can be placed in the canopy over the gas pumps, or at another suitable location, to perform a scan of the vehicle at the gas pumps. As indicated in Figure 2, the unit laser scans the vehicle to determine "edges" 44 of the vehicle scanned representing the location of height changes or other discontinuities in the vehicle profile, the overall length of the vehicle, etc. The set 48 of edges 44 for a vehicle under consideration is compared by control device 28 with a database of sets of edges for vehicles in consumer database 32 to determine the type and/or model, etc. of the vehicle at the gas pumps.

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In another embodiment, acquisition device 24 can comprise a CCD camera which acquires an image of the vehicle at the gas pump and an image recognition system that is employed to determine the type of vehicle, etc. Such image recognition systems are known and will not be further discussed herein.

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The information directly acquired by system 20, rather than from a motor vehicle registry or the like, can be in a variety of configurations. For example, control device 28 may categorize scanned vehicles in broad categories such as "coupe", "convertible", "pickup truck", "sport utility vehicle", etc. Alternatively, more specific categories can be employed, if more detailed databases of edge sets 48 or vehicle image recognition systems are employed, such as those identifying specific makes of automobiles. It is also contemplated that additional information can be directly

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acquired from the user at the gas pump. For example, the grade of gasoline selected, the method of payment and/or information acquired from the credit card, debit card or smart card used to effect payment can all be combined with other information available to system 20 to better associate a demographic group with the gas pump user. In fact, it is contemplated that in most circumstances a combination of information will be available to system 20 which will then employ this information to associate at least one representative demographic group to the user.

Once a determination of at least some information relating to the vehicle, or preferably relating to the owner of the vehicle, at the gas pumps is made by acquisition device 24 and control device 28, this demographic information is used to examine advertisement database 36.

Advertisement database 36 includes all of the advertisements presently registered with system 20 and each of these advertisements has one or more appropriate demographic categorizations applied to it. For example, if system 20 does have access to motor vehicle registry information or if vehicle image recognition is employed, demographic categorizations can be made by way of vehicle make and model. An ad can therefore be categorized according to demographics indicated by vehicle make and model, e.g., an ad for a luxury cruise can be categorized as being applicable to those driving certain high end vehicles, such as Cadillacs, Mercedes Benz', etc. If the motor vehicle registry information or similarly provided information includes detailed demographic information, such as age, sex, annual income, etc., then the luxury cruise ad can be categorized as being applicable to females between forty five and sixty with household incomes of over \$100,000.

One or more advertisements are then selected from database 36, corresponding to the appropriate determined information and categorizations, and are displayed to the person at the gas pump. For example, acquisition device 24 and control device 28 can have determined that the vehicle is a Mercedes Benz and one or more advertisements in database 36 can include categorizations that they are suitable for drivers of high end luxury vehicles such as Mercedes Benz. One of these ads is then selected by control device 28 and the ad is displayed on display 40 to the person operating the gas pump.

Display 40 can be an LCD or other flat panel display, a cathode ray tube or other suitable display device, and can include a sound system to play an accompanying sound track for any ad that is being displayed. Display 40 can include an input device such as a membrane touch pad,

keyboard or display 40 itself can be a touchscreen display. Display 40 can be integrally mounted in the gas pump or can be placed at a position easily viewed by the person operating the gas pump and, ideally, also by a passenger in the vehicle.

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In a presently preferred embodiment of the invention, display 40 comprises both the display for the advertisements and also the display on which the current dispensed amount of fuel and current price are displayed to the user. These amounts relating to the current fuel sale transaction are overlayed onto the displayed ad, without obscuring important parts of the ad, and thus the user is likely to observe the ad while operating the gas pump.

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System 20 can also allow a user to interact with an ad being shown via the input device. In this manner, an ad can prompt the user to touch the screen for more information regarding the advertised product, etc. and system 20 will respond appropriately by, for example, displaying a related advertisement containing the requested additional information. System 20 can also include a printer (not shown) or can use a printer available in the gas pump, etc. and, when an ad is shown to a user, a prompt can be provided on the screen to have the user touch the screen to cause system 20 to generate and print a coupon for a discount, rebate, or other promotional offer relating to the advertised goods. Such coupons or promotional offers can include bar codes which identify the source of the coupon allowing advertisers to further track the success of their ads. Further, the coupon, etc. can be printed such that it is valid only in an establishment in the neighborhood surrounding the gas station and/or can vary in its value depending upon the amount of fuel purchased.

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If more than one ad in advertisement database 36 is categorized to match the information determined about the vehicle at the gas pumps and/or its owner, as will often be the case, control device 28 can select one of the matching ads according to one or more additional criteria. For example, each ad can include a desired range of times for display, such as an ad for hot coffee and donuts which the advertiser may wish to have displayed only between 5:00 AM and 9:00 AM.

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It is contemplated that, in many circumstances, charges to advertisers for use of system 20 will include a per showing charge for each time their respective ad is run. Accordingly, advertisement database 36 can include an indication of a maximum and/or preferred minimum

number of times that the ad is to be run each day. It is also contemplated that this per showing charge can vary with the time of day, day of the week, etc. or change depending upon the desirability of the demographics of the user. It may be the case that several advertisers are most interested in having their ads shown to particular demographic groups. For example, males between the ages of thirty and forty five may be a particularly desirable demographic group for many advertisers. The showing cost for ads displayed to users in this demographic grouped can therefore be priced higher than the showing cost for other, less desirable demographic groups. An advertiser can therefore indicate the showing charge rates they are willing to pay for a particular demographic group. In any event, control device 28 will select which ad, of potentially many available ads, to display to a user based upon all of the relevant ad selection criteria.

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Accounting database 38 maintains records of the ads shown and, if desired, the demographic group they were shown to, the time of day and day of the week they were shown, etc. This allows advertisers to be billed on a per showing basis, if desired, and also provides advertisers with information regarding the demographic groups that have viewed the ad. In cases where an interactive option is included with the ad, e.g.. - where an ad includes a "Press here for more information" button that results in a second, related ad being displayed, accounting information database 38 can also store this information. This allows advertisers to better determine the success of their ads and also allows the operator of system 20 to charge an additional premium when a user responds to such an interactive ad.

As mentioned above, control device 28 can be a ruggedized personal computer or any other suitable computing device. Control device 28 can include an image acquisition board, if an analog CCD camera is employed with system 20 or a suitable I/O port if a laser scanner is employed. Further, system 20 can include one or more telecommunications links 52 to allow communication with motor vehicle registry offices or the like and/or to allow new advertisements to be loaded into advertisement database 28 and/or accounting information from database 38 to be uploaded to a centralized advertiser billing center or other location.

The actual advertisements to be displayed can either be loaded into system 20 via one of telecommunications links 52 and stored on a Winchester drive or the like within control device 28, or can be provided on a CD ROM or DVD disk which is physically loaded into an appropriate

player in system 20 at appropriate intervals. While the latter is less desired as it requires a physical loading into system 20, it does generally permit ads of longer length and/or greater video and audio quality to be provided by system 20 without requiring inordinate amounts of temporary data storage to be included in system 20. Databases 32, 36 and 38 can be stored locally in system 20, on a Winchester style drive or other suitable storage device, or can be located at a centralized site and accessed, as needed, via one of communications links 52.

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Figure 3 shows a flowchart of a directed advertising display process in accordance with an embodiment of the present invention. As will be apparent those of skill in the art, the process of steps 100 through 112 can be run in parallel for each gas pump at a service station.

The process commences at step 100, wherein the presence of a vehicle at the gas pump is detected. This can be accomplished in a variety of manners, including an inductive sensor embedded in the pavement in front of the gas pump, by acquisition of an image from a CCD camera or the like, by the pump being activated by the gas purchaser, by an infrared sensor, etc.

After the presence of a vehicle is detected at step 100, at step 104 an identifying characteristic, from which one or more demographic groups can be associated to the consumer, is determined. As discussed above, this can be achieved in a variety of manners, including: imaging the license plate of the vehicle and accessing an information service to retrieve relevant demographic information; laser scanning the profile of the vehicle to determine the type of vehicle and/or the make or model by examining a database of such scans; acquiring an image the vehicle and determining the make and model by performing an image recognition process; or by obtaining credit card, debit card or smart card information from the consumer as part of the authorization process for starting the gas pump. The actual types of available identifying characteristics (i.e. - consumer information or vehicle information) can vary between systems and/or can vary between consumers.

For example, information may be available for license plates in a particular state, but may not be available for out of state license plates. In such a case, system 20 can employ vehicle recognition techniques for the out of state cars and consumer (i.e. - owner) recognition techniques for in state vehicles and databases 32, 36 and 38 can include appropriate classifications to accommodate each technique. Also, a consumer may pay for his purchase with cash, rather than

with the other methods mentioned above, and this information represents another identifying characteristic which can be employed. At least one demographic group is then associated with the consumer based upon the identifying characteristic information that is available.

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If the means of payment is intended to form part of the identifying characteristic of the consumer, step 104 will not complete until the means of payment is determined by, for example, swiping the magnetic stripe on a credit card to authorize operation of the gas pump.

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At step 108, the demographic group or groups which are associated with the consumer, as determined at step 104, are is applied to advertising database 36. As mentioned above, advertising database 36 can include a variety of demographic groups, or classification schemes, so that appropriate selections of entries in database 36 can be achieved for any set of demographic data obtained in step 104. Accordingly, one or more advertisements are selected from advertising database 36 for display to the consumer filling the vehicle at the gas pump.

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At step 112, the selected ad or ads are displayed to the consumer while the consumer is dispensing gas. As each ad is displayed, an appropriate set of accounting information is added to accounting database 38. This information can include the particular ad being shown, the demographic group associated with the consumer to which it is shown, the date and time of day it is shown, etc. The display of the selected ad or ads can be delayed, if desired, until the consumer commences pumping gas, to attempt to ensure that the consumer's attention is directed to the display.

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Once step 112 is completed, and the consumer has completed his gas purchase and viewed one or more ads, the process is complete and restarts when another user arrives at the gas pump.

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Optionally, an additional step 116 can be performed, if desired, wherein a user record for the consumer or vehicle is created and/or updated. In such a case, a record is created the first time each consumer or vehicle visits the gas pump and is updated at each subsequent visit. This user record, which can be stored in accounting information database 38 or in another suitable database in system 20, will maintain a record of the purchases made by a particular consumer, or by the occupant of the vehicle in cases wherein only the vehicle can be identified, as well as the ads which have been shown to the consumer, the interactive ads that the consumer responded to, etc. It is also

contemplated that this user information can be centralized, allowing the operator of a series of gas stations to maintain a single record for a consumer who visits any one of the gas stations. It is contemplated that such user records will further improve the selection of advertisements to be shown to the consumer on subsequent visits to the gas station or stations.

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While the above description of the present invention discusses a gas station environment, the present invention is not so limited and can be employed in a variety of other environments. For example, any drive through service such as a fast food restaurant drive through can employ the present invention.

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The above-described embodiments of the invention are intended to be examples of the present invention and alterations and modifications may be effected thereto, by those of skill in the art, without departing from the scope of the invention which is defined solely by the claims appended hereto.

We claim:

1. A system for the selection and display of directed advertisements to a consumer, comprising:

a consumer acquisition device to obtain an identifying characteristic of a consumer; a database of consumer demographic information responsive to said identifying characteristic to associate a demographic group to said consumer;

an advertisement database storing a plurality of advertisements arranged according to at least one demographic characteristic;

a control device to receive and apply said demographic group associated to said consumer by said database of consumer demographic information to said advertisement database to select at least one advertisement indicated by said at least one demographic characteristic as being appropriate for said demographic group associated to said consumer; and

a display to present said selected at least one advertisement to said consumer.

- 2. The system as claimed in claim 1 wherein said control device controls said consumer acquisition device and said database of consumer demographic information to obtain said demographic group associated with said consumer.
- 3. The system as claimed in claim 1 wherein said identifying characteristic of said consumer is determined from a vehicle in which said consumer arrives at a vending location.
- 4. The system as claimed in claim 3 wherein said identifying characteristic is determined by imaging the license plate of said vehicle and determining the license plate number from said image, said identifying characteristic consumer being retrieved from a database with said license plate number.
- 5. The system as claimed in claim 3 wherein said identifying characteristic for said consumer is determined from the type of said vehicle.

6. The system as claimed in claim 1 wherein said control device further considers the time of day when selecting said advertisement for display to said consumer.

- 7. The system as claimed in claim 1 wherein said control device records accounting information regarding the advertisement displayed to said consumer, said accounting information including an identifier of the particular advertisement displayed and the demographic group associated with said consumer.
- 8. The system as claimed in claim 1 further including means to detect the commencement of a purchase by said consumer, said display presenting said selected at least one advertisement to said consumer when said commencement is detected.
- 9. The system as claimed in claim 1 wherein information necessary for said consumer to complete said commenced purchase is shown to said consumer overlaid on said display.
- 10. The system as claimed in claim 1 wherein said identifying characteristic for said consumer is determined from information provided by said consumer to complete a purchase.
- 11. The system as claimed in claim 10 wherein said provided information comprises credit card information.
- 12. The system as claimed in claim 10 wherein said provided information comprises debit card information.
- 13. The system as claimed in claim 10 wherein said provided information comprises smart card information.
- 14. The system as claimed in claim 1 further comprising at least one telecommunication link.
- 15. The system as claimed in claim 14 wherein the contents of said advertisement database can be modified via said at least one telecommunications link.

16. The system as claimed in claim 14 wherein said control device records accounting information regarding the advertisement displayed to said consumer, said accounting information including an identifier of the particular advertisement displayed and the demographic group of the consumer and said accounting information can be accessed through said at least one telecommunication link.

- 17. The system as claimed in claim 14 wherein said identifying characteristic is determined by said consumer acquisition device in combination with information received over said at least one telecommunication link from a remote database.
- 18. A method of providing directed advertising to a consumer, comprising the steps of:
 - (I) determining the presence of a consumer;
 - (ii) associating at least one demographic group to said consumer;
- (iii) selecting an advertisement from a database of available advertisements, said selection being accomplished in accordance with said at least one associated demographic group;
 - (iv) displaying said selected advertisement to said consumer; and
 - (v) creating a record of the selected advertisement and the associated demographic group.
- 19. The method claimed in claim 18 wherein step (ii) includes the steps of:
 - (a) determining at least one identifying characteristic for said consumer; and
- (b) applying said at least one identifying characteristic to a database of demographic groups to associate at least one demographic group to said consumer.
- 20. The method claimed in claim 19 wherein said at least identifying characteristic in step (a) is obtained by examining a vehicle in which said consumer arrives at a vending location.
- 21. The method claimed in claim 20 wherein said examination of said vehicle includes imaging the license plate of said vehicle to determine the registration number thereon and to apply said registration number access a database of consumer identifying characteristics.

22. The method claimed in claim 20 wherein said examination of said vehicle includes laser scanning the vehicle to obtain a scan profile and applying said scan profile to access a database of consumer identifying characteristics.

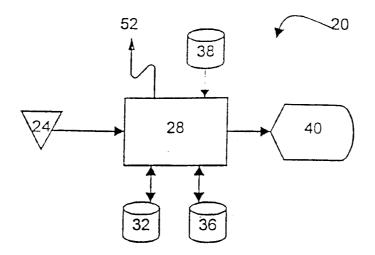


Fig. 1

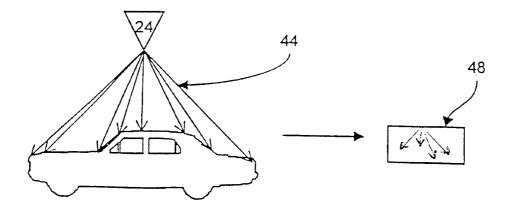


Fig. 2

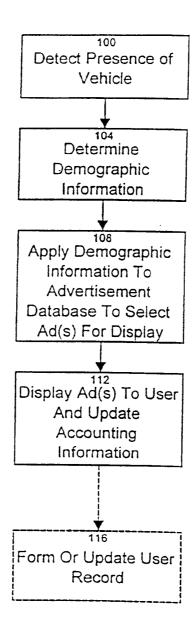


Fig. 3