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(71) Applicant *(for all designated States except US)*: **T1 VISIONS, LLC** [US/US]; 16905 Pennington Drive, Huntersville, NC 28078 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **FEDOR, Adam, S.** [US/US]; 3766 Britting Avenue, Boulder, CO 80305 (US). **FELDMAN, Michael, R.** [US/US]; 8538 Camberly Road, Huntersville, NC 28078 (US). **MORRIS, James, E.** [US/US]; 308 Inland Cove Ct., Lake Wylie, SC 29710 (US). **WOOTEN, Jennifer, L.** [US/US]; 224 Kyle Road, Winston-salem, NC 27104 (US).

(74) Agent: **MORSE, Susan, S.**; Lee & Morse, P.C., 3141 Fairview Park Drive, Suite 500, Falls Church, VA 22042 (US).

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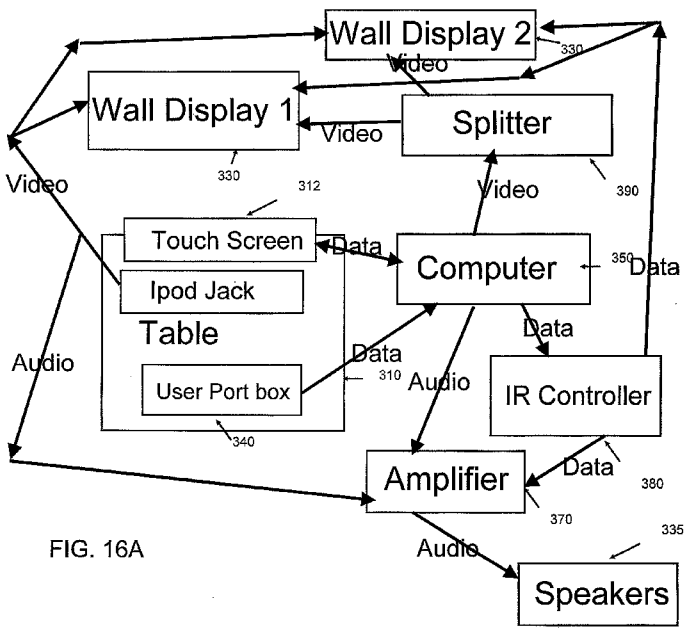


FIG. 16A

(57) Abstract: A table system includes a touch screen integrated in a table top, a computer system in communication with the touch screen, the touch screen being configured to serve as a primary input to the computer and to display multiple active sections at different orientations corresponding to different seating locations on the table top simultaneously, and a secondary screen, located away from the touch screen, in communication with the computer system, the secondary screen being configured to continuously display media files stored on the computer system at a single orientation and to be viewed from the different seating locations simultaneous with use of the touch screen, the touch screen configured to display representations of media files to be displayed on the secondary screen and to serve as selection input for the media files.

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MULTIMEDIA, MULTIUSER SYSTEM AND ASSOCIATED METHODS

BACKGROUND OF THE INVENTION

Cross-Reference to Related Application

[0001] The present application claims priority under 35 U.S.C. § 119(e) to U.S. Provisional Application Serial No. 60/994,458, entitled "Multimedia Restaurant and Booth", filed on September 20, 2007, and to U.S. Provisional Application Serial No. 61/272,591, entitled "Multimedia, Multiuser System and Associated Methods", filed October 9, 2009, and is a continuation-in-part of U.S. Patent Application No. 12/650,684 filed on December 31, 2009, which is a continuation-in-part of U.S. Patent Application Serial No. 12/588,774 filed on October 27, 2009, entitled "Multimedia, Multiuser System and Associated Methods," which is a continuation-in-part of U.S. Patent Application Serial No. 12/222,670, filed on August 13, 2008, entitled "Multimedia Restaurant System, Booth and Associated Methods," which are hereby incorporated by reference in their entirety for all purposes.

1. Field of the Invention

[0002] Embodiments may be directed to a multimedia, multiuser system and a table therefore, in which at least some of the stations in a setting include the table, which controls video and audio inputs for at least two displays.

2. Description of the Related Art

[0003] Current systems use an integrated touch screen/display device, i.e., the same display surface is used to control media filed and to display media files. However, such a system involves numerous compromises in performance for both the touch screen interface and the display itself.

SUMMARY OF THE INVENTION

[0004] Embodiments are therefore directed to multimedia, multiuser system including a touch screen, and associated methods, which substantially overcome one or more of the disadvantages of the related art.

[0005] Embodiments may include a table system having a touch screen integrated in a table top, a computer system in communication with the touch screen, the touch screen being configured to serve as a primary input to the computer and to display multiple active sections at different orientations corresponding to different seating

locations on the table top simultaneously, and a secondary screen, located away from the touch screen, in communication with the computer system, the secondary screen being configured to continuously display media files stored on the computer system at a single orientation and to be viewed from the different seating locations simultaneous with use of the touch screen, the touch screen configured to display representations of media files to be displayed on the secondary screen and to serve as selection input for the media files.

[0006] The computer system may include a multi-processor computer having at least a first processor dedicated to display media files on the secondary screen and at least a second processor, different from the first processor, dedicated to the touch screen.

[0007] The computer system may be a single computer having a separate programming thread for playing media files on the secondary screen, the separate programming having a higher priority than operations of the touch screen other than touch detection in order to ensure continuous playing of media file on the secondary screen.

[0008] The computer system may include a first computer directly connected to the touch screen and a second computer directly connected to the secondary screen, the media files being stored on the second computer, wherein the first and second computers are in communication. The touch screen may be configured to serve as the input of the first computer and the first computer may be configured to serve as the input of the second computer.

[0009] Embodiments may include a multiuser, multi-interface computing surface, having a computer system, and a touch screen adapted to serve as a primary input to the computer system, the touch screen divided into at least two simultaneously active sections having different orientations, touches in the at least two simultaneously active sections having independent effects on a display within the at least two simultaneously active sections, each simultaneously active section having an independent interface adapted to select independent applications in each simultaneously active section.

[0010] The touch screen may be integrated into a table top.

[0011] The computer system may be configured to perform a first action in response to a first touch in a first section of the touch screen, and perform a second action in response to a second touch in a second section of the touch screen without affecting the first action, even when the first and second touches are nearly simultaneous. The computer system may be configured to perform a third action in the first section in response to a third touch in the first section of the touch screen, the third action replacing the first action, but not affecting the second action.

[0012] The first touch may be a gesture and the second touch may be a tap, the tap occurring after the gesture begins but before the gesture is complete, the computer system being configured to complete the second action before completing the first action

[0013] The first action may include navigating a menu and the second action may include a continuous action. The continuous action may include one of drawing and playing a game.

[0014] An action in response to a touch within a section may be confined to that section.

[0015] The touch screen may include a control section configured to alter a number of sections displayed on the touch screen.

[0016] The touch screen may be configured as a single touch screen.

[0017] The computer system may be adapted to be in communication with a secondary screen to be viewed at a same orientation of all users of the touch screen. The computer system may be adapted to continuously send media files to the secondary screen in response to a selection input through the touch screen. The touch screen may be configured to be used for navigation and the secondary screen is configured to display the media files sent by the computer system.

[0018] A touch in a section rotates an orientation of that section. A touch in a section plays a media file in that section.

[0019] [0009] At least one of the above and other features may be realized by providing a table system, including a touch screen including a touch detection surface and a display, electronics for the touch detection surface and the display being protected from environmental contaminants, the touch detection surface and the

display being greater than 12 inches in diagonal, a mount for the touch screen, the mount being adapted to secure the touch screen at a dining height, a touch screen thickness is small enough to allow users legs to fit under the touch screen, and a computer, the touch screen serving as an input device for the computer and the computer is configured to supply a continuous video signal to the display. The touch detection surface may be configured to receive an object thereon without interference with detection by the touch detection surface, to send a first input to the computer in response to a first touch the computer configured to perform a first action on the touch screen in response thereto and, when a second touch occurs at a different location on the touch screen while the first action is being performed on the touch screen, to send a second input to the computer in response to the second touch, the computer being configured to perform a second action in response thereto, so that first and second actions are performed simultaneously.

[0020] [0010] A ratio of the touch screen thickness to the diagonal of the display may be less than 0.4. A total thickness of the touch screen and the mount may be less than 12 inches, e.g., less than 7 inches. The table system may be in one of a restaurant, a night club, a meeting place, a private venue, a clinic, and an educational venue.

[0021] [0011] The computer may be secured under the mount.

[0022] [0012] The table system may include a secondary screen in communication with the computer and having a display controlled by the touch screen. The touch screen may be configured to allow selection of items from a menu. The computer may be configured to display selected items on the secondary screen. An image on the secondary screen may be different from that on the display.

[0023] [0013] The first touch may be a gesture and the second touch may be a tap performed while the gesture is being performed, wherein the tap does not affect the performance of the first touch. The touch detection surface may use a sub-surface detection mechanism. The touch detection surface may provide enhanced single user operation.

[0024] [0014] The touch detection surface may be configured to be divided into at least two sub-screens. The first and second touches may occur in different sub-

screens. A third touch in the first sub-screen during performance of the first touch may interrupt the performance of the first touch.

[0025] Embodiments may be directed to a table system including a touch screen including a touch detection surface and a display, electronics for the touch detection surface and the display being protected from environmental contaminants, the touch detection surface and the display being greater than 12 inches in diagonal, a ratio of a touch screen thickness to the diagonal of the display is less than 0.4, and a computer, the touch screen serving as an input device for the computer and the computer is configured to supply a continuous video signal to the display. The touch screen may be configured to receive an object thereon without interference with detection by the touch detection surface, to send a first input to the computer in response to a first touch the computer configured to perform a first action on the touch screen in response thereto and, when a second touch occurs at a different location on the touch screen while the first action is being performed on the touch screen, to send a second input to the computer in response to the second touch, the computer being configured to perform a second action in response thereto, so that first and second actions are performed simultaneously.

[0026] Embodiments may be directed to a table system including a touch screen including a touch detection surface and a display, electronics for the touch detection surface and the display being protected from environmental contaminants, a computer, the touch screen serving as an input device for the computer, the computer configured to store media files and to supply computer is configured to supply a continuous video signal to the display, and a secondary screen located such that the secondary screen can be viewed by users near the touch screen, the secondary screen being in communication with the computer, the secondary screen configured to display a different image that that on the display, wherein, when the touch detection surface is touched in particular locations when the touch screen is in a particular state, the computer is configured to send the particular media file to the secondary screen and the secondary screen is configured to display the particular media file. The touch screen may be configured to receive an object thereon without interference with detection by the touch detection surface, to send a first input to the computer in

response to a first touch the computer configured to perform a first action on the touch screen in response thereto and, when a second touch occurs at a different location on the touch screen while the first action is being performed on the touch screen, to send a second input to the computer in response to the second touch, the computer being configured to perform a second action in response thereto, so that first and second actions are performed simultaneously.

[0027] Communication between the touch screen, computer and the secondary screen is may be configured so that tapping on the touch screen in particular locations when the touch screen is in a particular state allows the user to select or change a source supplying an image to the secondary screen.

[0028] The media displayed on the secondary screen may be changed by the computer sending a signal to the secondary screen to change the input on the secondary screen that is displayed on the secondary screen. Sources for the secondary screen may include at least two of the following: television signal, video signal from the computer, and a video signal from a separate portable electronic device. Media displayed on the secondary screen may be changed by the computer sending a signal to an audio video matrix switcher to switch the video signal sent to the secondary screen. The change in the video signal sent to the secondary screen may cause a change in the television channel displayed on the secondary screen. The location selected on the touch screen may be a button that corresponds to content being displayed on the particular television channel sent to the secondary screen.

[0029] The computer may send continuous video information to the secondary screen for displaying media files stored on the computer. The continuous video signal supplied by computer to the touch screen may include a visual representation of a media file stored on the computer and touching this visual representation causes the playing of this media file on the secondary screen. The media file may be a photo, a video or a text message.

[0030] The system may include a camera in communication with the computer such that when a picture is taken with the camera it is sent to the computer and a program on the computer that detects when a picture from a camera has been sent to the computer. The computer may be configured to detect that a picture has been sent to

the computer from the camera and display a small visual representation of the image on the touch screen and when this visual representation is selected the image is displayed on the secondary screen in much higher resolution than on the touch screen.

[0031] The system may include at least one other secondary screen in communication with the computer. The system may include a splitter configured to send the same video signal to all secondary screens. The computer may be configured to send different continuous video signals to the secondary screens. A user may select a media file to be displayed on a first secondary screen and a second media file to be displayed on a second secondary screen. The secondary screens may be located in a room that contains multiple tables, the secondary screens being visible to throughout the room.

[0032] The computer may be configured to display buttons indicating various events on the touch screen, and, in response to selection of a button, to send a selected video signal selected to the secondary screen. The computer may be configured to display related data to the event displayed on the secondary screen. A keyboard may be displayed on the touch screen to serve as a keyboard input to the computer.

[0033] The media file may be text and/or an image associated with a food item and may be used to order a food or drink item. The computer may be configured to receive media files from the internet in real time. The media files may be fantasy sports information associated with live sporting events being displayed. The media files may be displayed on the touch screen and the live sporting events may be displayed on the secondary screen.

[0034] The system may include an amplifier with multiple inputs, the amplifier being connected to speakers external to the secondary screen. The computer may be configured to switch inputs of the amplifier that are connected to the speakers in response to selection on the touch screen. The computer may be configured to allow selection of audio from one media source and video from another media source. The video source for the secondary screen may be a television channel and the audio source may be a music media file.

[0035] The system may include a table in addition the table having the touch screen, wherein the secondary screen is also viewable from the table. The system may

include speakers in a room containing the table and the touch screen and an amplifier connected to speakers in the room so that the sound emanating from the speakers can be heard at both the table and the touch screen. Users sitting at the multiple tables may view lists of media and information on the media by selecting particular media in a list. Communication between the touch screen, the computer, the secondary screen, and the amplifier may be configured so that tapping on the touch screen in particular locations when the touch screen is in a particular state allows the user to influence at least one of a display on the secondary screen and sound on the speakers. The user may request to play a particular media that acts as a vote. More than one table may be configured with a touch screen, and the media displayed on the secondary screen and speakers may be affected by the electronic votes submitted by at least two tables. Votes submitted by the tables may cause the media to be submitted in a queue to be played in a particular order. More votes for particular media result in that media being moved up in the queue to be played sooner. A central computer may be in communication with the computers at each table and may determine the media queue based on the votes submitted by each table. The central computer may be configured to control the media played on the secondary screen and the speakers based at least in part on the submitted information from the tables. Tables without touch screens may vote on media with electronic portable devices. Some tables in the room or in a nearby room may be configured to privately view media at the table and voting may include tallying information regarding a number of times particular media is played privately.

[0036] At least two tables may each have an associated camera and the camera may be configured to send pictures to locations within the computer on each table wirelessly and link the pictures with the associated name or number of each table.

BRIEF DESCRIPTION OF THE DRAWINGS

[0037] The above and other features and advantages will become more apparent to those of ordinary skill in the art by describing in detail exemplary embodiments thereof with reference to the attached drawings, in which:

[0038] FIG. 1 illustrates a floor plan of a restaurant system, including a plurality of booths, in accordance with an embodiment;

[0039] FIG. 2A illustrates a plan view of a booth in accordance with an embodiment;

[0040] FIG. 2B illustrates a partial perspective view of a booth in accordance with an embodiment;

[0041] FIG. 2C illustrates a schematic perspective view of an I/O port in accordance with an embodiment;

[0042] FIG. 2D illustrates a schematic sectional view of an I/O port in accordance with an embodiment;

[0043] FIG. 3 illustrates a flow diagram of ordering using the table touch screen of the booth of FIG. 2 in accordance with an embodiment;

[0044] FIGS. 4A to 4F illustrate examples of menus to be displayed in accordance with an embodiment;

[0045] FIGS. 5A and 5B illustrate flowcharts for eat lower level menus in accordance with an embodiment;

[0046] FIG. 6A to 6D illustrate an example of a generic item menu of the eat lower level menu in accordance with an embodiment;

[0047] FIG. 6E and 6F illustrate an example of a search categories generic item menu of the eat lower level menu in accordance with an embodiment;

[0048] FIG. 7 illustrates a wall display after ordering in accordance with an embodiment;

[0049] FIG. 8 illustrates a flowchart for the drink lower level menu in accordance with an embodiment;

[0050] FIG. 9A to 9F illustrate examples of a generic item menu of the drink lower level menu in accordance with an embodiment;

[0051] FIG. 10 illustrates a wall display after ordering in accordance with an embodiment;

[0052] FIG. 11 illustrates a flowchart for the connect lower level menu in accordance with an embodiment;

[0053] FIG. 12A to 12I illustrate an example of a generic item menu of the connect lower level menu in accordance with an embodiment;

[0054] FIG. 12J illustrates a schematic plan view of a configuration for connecting user devices to the booth;

[0055] FIG. 12K illustrates a schematic relational view of the configuration of FIG. 12J;

[0056] FIG. 12L illustrates a flowchart for a sub-menu of the connect lower level menu;

[0057] FIG. 13 illustrates a network system in accordance with an embodiment;

[0058] FIGS. 14A-14C illustrate variations on the booth of FIG. 2 in accordance with embodiments;

[0059] FIG. 15A illustrates a plan view of a room in accordance with an embodiment;

[0060] FIG. 15B illustrates a side view of the room of FIG. 15A;

[0061] FIG. 16A and 16B illustrate alternative schematic relational views for the room of FIGS. 15A and 15B;

[0062] FIGS. 17A to 17I illustrate screen shots for different stages of use of the connection table in accordance with embodiments; and

[0063] FIGS. 18A to 18E illustrate screen shots for different stages of use of the point of service display in accordance with embodiments.

DETAILED DESCRIPTION OF EMBODIMENTS

[0064] Example embodiments will now be described more fully hereinafter with reference to the accompanying drawings; however, they may be embodied in different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art.

[0065] As used herein, the term "user" may refer to either a customer at a venue or a venue employee.

Multimedia Restaurant System Overview

[0066] As illustrated in FIG. 1, a multimedia restaurant system 100 may include multimedia booths 200, conventional tables 120, and individual computer stations 140 arranged in a floor plan. The multimedia restaurant system 100 may also include

other conventional amenities, e.g., a reception area 150, a bar 160, a kitchen/office 170, restrooms 180, and a separator 190 obscuring a view of the kitchen/office 170 and the restrooms 180 from the remainder of the restaurant.

Multimedia Booths

[0067] As illustrated in FIGS. 2A and 2B, each multimedia booth 200 may include a table 210, seating 220, and at least one wall 230. One side 202 or a portion thereof may be open and may serve as an entrance to the booth 200. At least one side 204, 206 of the booth 200 may have seating 220, e.g., chairs or benches. Another side 208 of the booth 220 may include the wall 230 that has a wall display 232 thereon. The wall display 232 may be viewable from all positions in the seating 220.

[0068] All closed sides, e.g., 204, 206, 208, may be built so that they are higher than normal restaurant booths and/or have less open space to reduce the sound coming from any locations in the restaurant outside of the booth 200, and may be treated with additional known sound proofing and/or audio enhancing techniques. For example, typical heights of backs of the seating stations are between 36-42 inches, while embodiments envision increased privacy without being too enclosed and may include having heights of backs 222 of the seating 220 greater than about 50 inches, e.g., 54 inches. These backs 222 may include the cushioning for the seating 220. Additionally, a partition 224, e.g., a transparent partition, may extend upwards from the back 222, e.g., up to the ceiling.

[0069] Further, closed sides adjacent seating 220, e.g., sides 204, 206, may include speakers 275 associated with each seating therein. These speakers may be designed so that the sound emanating from the speakers may be louder inside the booth 200 and quieter outside the booth 200, including neighboring booths. Alternatively, the speakers 275 may be incorporated into the seat backs of the seating 220. Alternatively or additionally, speakers 275 may be above the seating 220, in the ceiling, in the side walls 204, 206, and/or in the wall display 232. The speakers 275 may be directional speakers with the sound directed toward locations near ears of those seated in seating 220 in the booth 200.

[0070] Alternatively, the closed sides, e.g., 204, 206, 209, may have conventional restaurant heights. The displays in these booths may be solely for visual purposes, e.g., no audio may be output.

[0071] The table 210 may be suitable both for eating and interacting with electronic media, and may include a table display 212, e.g., a touch screen. Interacting with electronic media may include any of the following: viewing photos on an electronic display, editing photos, viewing videos, editing videos, listening to personal music, ordering food, obtaining information about food, searching the web, telephone conferencing, paying for food or other services, video conferencing, playing video games, and so forth. The table display 212 may cover most of the table 210, as indicated by the outline on the table 210, and/or may be divided into a plurality of regions, individual positions 214a to 214f, e.g., corresponding to seating positions, a central position 216 and a host position 218.

[0072] As illustrated in FIG. 2A, each booth 200 may include two displays, i.e., the table display 212 and the wall display 232. Both displays may be connected to a booth computer 250. The table display 212 may serve as an input device for the wall display 232. As discussed in detail below, the wall display 232 may display customizable environments. The booth computer 250 may include a box containing a processor and other components, e.g., storage devices, graphics cards and I/O ports. such as in typical computers, e.g., a Mac mini® or Mac pro® made by Apple, Inc. The booth computer 250 may include two graphics cards and two video cards for respectively driving the table display 212 and the wall display 232. The booth computer 250 may include an amplifier to allow further control of audio/video outputs to the wall display 232. Alternatively, the amplifier may be external to the booth computer 250, as discussed below in FIG. 2J. The booth computer 250 may be built into the wall display 232.

[0073] The booth 200 may further include a storage area 260 for a user's device and connection jacks to enable direct hard wired connection of the user's device to the booth computer 250 or the wall display 232. The storage area 260 may be a shelf between the end of the table 210 and the wall display 232. For example, the storage area 260 may be a shelf so the user's device may be stored horizontally or vertically.

In the case of horizontal storage, the shelf may be arranged so the user may use the keyboard or other input mechanism of the user's device. For example the storage area 260 may be between 6 inches and 14 inches wide, may be a same height as or higher than the table 210. This makes the storage area 260t wide enough to place a user's device up to the size of a typical laptop on the storage area 260 to the side of the wall display 232. Additionally or alternatively, as illustrated in FIG. 2B, the storage area 260 may include an access door 262, e.g., a hinged or sliding door, providing access to cables via an I/O port box 240 allowing connection to the booth computer 250 and/or the wall display 232.

[0074] An infrared (IR) transmitter may be connected to the booth computer 250, as discussed below with reference to FIG. 12J. The IR transmitter may be hidden from view from the user. The IR transmitter may be stored underneath the seating stations 220 and located near the booth computer 250 so that the IR transmitter may be directly connected to the booth computer. The IR transmitter may be controlled by the booth computer 250 to send IR signals to the wall display 232 in a manner that emulates the remote control for the wall display 232. The IR transmitter may also be configured to send IR signals to the amplifier or the amplifier can be connected directly to the booth computer. In this manner a user can control functions normally provided by conventional remote controls by tapping the table display. Inputs to the display may be routed to the booth computer 250 that may operate the IR transmitter to effectively operate as a remote control.

[0075] The user I/O port box 240 may be on at least one of a side of the table 210, under the table 210, on the wall 200, in the wall 200, on the storage area 260, or under the storage area 260. As illustrated in FIGS. 2B, the booth 200 may include more than one I/O port box, e.g., the I/O port box 240 under the table 210 and the I/O port box 240 under the storage area 260.

[0076] As illustrated in FIGS. 2C and 2D, each user I/O port may include a USB port 244, power outlets 246, and multiple cables, e.g., a VGA cable 247 and an Ipod®/Iphone® cable 248, a door 242 covering the multiple cables, and a removable section 243 through which the cables may extend. Additionally or alternatively, each user I/O port box 240 may include external ports for various types memory cards or

other storage devices, a digital video interface (DVI) cable, an audio cable, a docking station for a laptop, a wireless connection, an Ethernet connection, blue tooth or wifi, and so forth. When a user's device is connected, this connection may allow the laptop to use the wall display 232 as a display, but may not connect to the booth computer 250 itself.

[0077] Alternatively or additionally, a USB card reader may be an external device that is connected to the booth computer 250. This external USB card reader may be mounted on the wall near the wall display 232 (e.g., under the wall display 232 and above the table). This external USB card reader may be connected to a USB port on the booth computer 250 and may allow any flash memory, camera memory, thumb drive, and so forth, to be connected to the booth computer 250.

[0078] As illustrated in FIG. 2A, the table display 212 may include first through sixth individual positions 214a – 214f. Initially, the table display 212 and/or the wall display 242 may be in a logo mode, in which a still logo, a moving logo, nothing (blank screen), video animation of the logo, or other still image or video may be displayed. Initially, the table display 212 may display a single screen over an entire surface thereof.

[0079] Once the table display 212 has been touched in any of the individual positions 214a-214f, that individual position may display an initial menu mode (IMM). Other individual positions that have not been touched may continue to display individual images present in the logo mode, or may also display the IMM. Additionally or alternatively, touching the host position 216 may display the IMM in all individual positions.

[0080] Alternatively, an entirety of the table display 212 may be centered on the location of the touch that activates the screen. As a further alternative, display of the table display 212 may be re-positioned or re-sized by dragging the window within the table display 212.

[0081] The table display 212 may be set in to any of several "functional modes." Functional mode examples include single person mode, two person mode, four person mode, six person mode, full mode, and so forth. The examples described above assumed six person seating. In the four person mode, the table display 212 may be

divided into quadrants. In two person mode, the table display 212 may be divided into halves, e.g., one region may be oriented towards the person on the left side of the table 210 and the other region to the person on the right side, and so forth. In the full mode and in the two person mode, a button may be provided to allow rotation of the display. Tapping this rotate button may cause the display to be rotated so that if the person viewing the display is on the other side, the display can be rotated to the correct orientation, or, if two people are sitting on opposite sides of the table, one person may rotate their display to show to the other person.

[0082] When a region is in IMM, if the table display 212 is not touched within a particular individual region after a short period of time (the IMM timeout period), then the corresponding region may revert back to the logo mode. If all regions are in logo mode, then an image or video covering a large portion or substantially all of the table display 212 may be displayed. Otherwise, if at least one region is activated, then the regions that are not activated may display the logo mode.

[0083] The automatic abandonment of IMM may allow the following operations to be realized. First, if a user accidentally touches the table display 212, the IMM menu may disappear after the IMM timeout period. Second, if a glass or plate is placed on a region in Logo mode, the corresponding region may be placed in IMM mode, but after a short period of time revert back to the logo mode. Third, if a user decides not to enter anything electronically, then their menu will disappear.

[0084] The regions not being used may remain in the logo mode. Then, any time a region in the logo mode is accidentally activated, the region may only be activated for the IMM Timeout Period and then revert back to the logo mode. This may not the case for lower level menus. For example, if a region in the IMM is accidentally touched in a position corresponding to a lower level menu, that region of the table display 212 may display that lower level menu and the corresponding timeout period may be significantly longer or non-existent. Every time the screen is "tapped" the computer may interpret such as tap as receiving a mouse click, i.e., each tap is a click. When a section goes past the timeout period with no clicks it goes in to logo mode. If the table display 212 is in the logo mode, the table display 212 may return to a previous section displayed, before going to sleep. Then, if there are no clicks

registered for a short timeout period, the table display 212 may go back to sleep. The long timeout period may only be used if the table display 212 wakes up and then there is a click registered that triggers an action. That is, if the click happens outside of any positions corresponding to an action, the click may be ignored. A click on a position that causes the menu to move or change the table display 212 in some manner may be considered an action.

[0085] All of the above may assist in providing a user interface that is easy to use and intuitive to understand. Displaying multiple screens at one time may be confusing to users. Therefore, display of minimal information needed to prompt a user for input may be provided.

[0086] The table display 212 in the table 210 may allow glasses and dishes to be placed on it and may be easily cleaned. One such touch screen may sense vibrations in the glass when the glass is tapped. Such a vibration table may be thinner than other types of touch screens. However, such a touch screen may have difficulty in distinguishing between a finger tap and a tap that occurs when an object is placed on the screen. However, an object that is placed on the glass and remains on the touch screen will not continuously trigger the touch screen sensor.

[0087] The table 210 may have a hole therein to receive the table display 212, which may be flush with an upper surface of the table 210. Alternatively, the table 210 may be made of a transparent material, e.g., glass. A projector may be placed underneath the table 210 to from the table display 212 on the underside of the table 210. The table 210 may be a touch screen display, e.g., either single touch or multi-touch. Alternatively, the table display 212 may be mounted in one section of the table 210, or a top of the table 210 may be transparent in one section of the table 210. If the table 210 or a section of the table 210 is transparent, then the table display 212 may be projected on to the underside of the table 210, or a display, e.g., an LCD display may be mounted underneath the table 210 and viewed through the transparent table 210 or portion thereof.

[0088] Any of the above configurations of the table display 212 may allow conventional dining table, e.g., having an upper surface height of about 30 to 36 inches, and seating heights to be realized. In other words, a seated user typically will

be able to fit their knees under the table. In particular, in accordance with embodiments, a touch screen may be integrated into a table top or other mount mechanism, and the touch screen may control media, may allow interaction with others on a table, and may allow objects to be placed thereon, without affecting operation of the touch screen in areas adjacent to the object. For this application, a touch screen with the following characteristics are desired: thin screen, large area, robust surface, ability to place objects on screen and have the screen still function, high display resolution, high detection resolution, ability to withstand hot and cold temperature objects, ability to withstand spillage of liquids on surface, and ability to be used by multiple users simultaneously.

[0089] The desire for a large surface area limits many options for the technology to be used for the touch screen. For small touch screens (less than about 10 inch diagonal), capacitive technology, e.g., technology used in the Iphone®, may be employed.

[0090] For larger touch screens, the most popular technology employed is based on disruption of a field between transmitters and receivers placed around the edges of the touch screen (e.g., LEDs and detectors). The problem with this approach is that if an object is placed on such a touch screen, the object blocks the transmit and detect mechanism for the entire row and column in which the object is located, i.e., the object disrupts the field and that portion of the touch screen may no longer be employed. This limits use in an environment where objects, e.g., glasses, cups, plates, etc., are to be placed on the touch table.

[0091] Another approach for large touch screens is to use cameras to view objects on the table, either from under the table or above. If placed above the table, then the touch table is not self-contained. This means that the table can not be moved without also moving and aligning the camera. Also, the view from the camera to the table cannot be obstructed. This makes this solution impractical for use in the environments described herein. Typically a single camera is used. If a single camera is used the camera is typically placed a distance from the screen, further away than the largest dimension of the touch surface. This results in a thickness of the table larger than the thickness of the largest dimension of the touch screen active area.

Microsoft® Surface® uses multiple cameras and IR transmitters to alleviate this problem, resulting in a table thickness of 21 inches or approximately 0.7 times the 30 inch diagonal of the touch screen.

[0092] One alternative for a touch screen that overcomes one or more of the disadvantages noted above for previous touch screen/display limitations is a touch screen using a surface detection scheme rather than the use of a camera. Such a touch screen may be usable in settings where people gather to interact, e.g., work, learn, have fun, etc. A touch screen for such settings may have one or more of the following features: thin screen, large area, robust surface, ability to place objects on screen and have the screen still function, high display resolution, high detection resolution, ability to withstand hot and cold temperature objects, ability to withstand spillage of liquids on surface, ability to be used by multiple users simultaneously, etc.

[0093] A thin screen may be desirable for many applications in which the touch screen is to be integrated into a table top where people can sit and place their legs underneath. This requires a thickness of table of less than 12 inches and preferably less than 8 inches thick.

[0094] For example, an ordinary flat panel display may be attached to a flat thin piece of glass (cover glass) to the surface. The electronics for the touch screen may be in a periphery of the display. The display/cover may be dropped into a table having a corresponding section removed or may be used with any mechanism to place the touch screen at a desired height. "Surface detection" scheme as used herein is to mean a scheme that detects touch location with components located on or near the cover glass. "Sub-surface detection" scheme as used herein is to mean a scheme in which the detection mechanism occurs below the top surface of the glass. Examples include acoustic waves, vibration waves, bending waves, etc., that travel within the solid body, e.g., 3M® MicroTouch® system using dispersive signal technology (DST). These sub-surface detection schemes have the advantages of robustness, since conventional high quality glass can be used with electronic detection mechanisms incorporated around the edges underneath. This makes the top surface very robust and easily cleaned.

[0095] In one embodiment, a surface detection scheme may be used in conjunction with a conventional LCD flat panel display, e.g., an NEC MultiSync LCD3210 having a 32 inch diagonal display with a thickness of 5.5 inches. The thickness of the cover glass may be 1.5 inches, making the total thickness of the LCD and cover glass sandwich about 7 inches thick. This unit may be mounted to be flush with the top of the table, so the table thickness is also about 7 inches. In another embodiment, a Samsung 40 inch LCD display is used which is back lit by LEDs and is only 1.2 inches thick. With this technique the total thickness of the touch screen table top is only 2.7 inches thick for a 40 inch diagonal display or a ratio of table thickness to touch screen diagonal of 0.07.

[0096] In yet another embodiment, the touch screen may be integrated into a coffee table. For example, an NEC 42 inch LCD flat panel display may be used. The total thickness of the touch screen (including the LCD and touch electronics) was 6.7 inches. The total thickness of the table was 19 inches. The ratio of the touch screen thickness to diagonal was 0.16 and the ratio of the table thickness to the touch screen diagonal was 0.45.

[0097] As an alternative to a flat panel display, other displays may be used, e.g., front projection, rear projection, dlp, OLED, other similar technologies that will form an image from the computer on the touch screen

[0098] In each of the above examples the area of the screen that is displayed is approximately the same as the area that is able to detect touches. That is, the surface detection screen area covers the entire area or nearly the entire area of the image displayed on the touch screen by the LCD display or related projection display.

[0099] When the computer used in the table is sufficiently small, e.g., a Macintosh mini, which is only 2 inches in height, the computer may be mounted to the bottom of the table without increasing the table thickness so as to interfere with seating.

[00100] These sub-surface detection schemes provide numerous advantages. However, these sub-surface detection schemes are not inherently multi-touch. This makes it difficult to use these technologies for multiple users. In other words, taps on the touch screen generate signals sequentially. Typically, signals generated may be touch initiated (or a mouse down click), location of the touch, and touch removed (or

mouse up). In single touch technologies, only one signal is generated at a time, as opposed to a true multi-touch screen, in which many signals may be transmitted by the touch screen simultaneously to the computer. With other single touch technologies, for example resistive technology, two simultaneous taps produce a tap at a location midway between the two points. With sub-surface detection schemes, a tap will be detected at the correct location, but only either the first or second location, i.e., not both.

[00101] For this reason, if two touches on the screen occur in quick succession in a sub-surface detection scheme, it is difficult to determine whether one person has tapped the screen with his finger and moved his finger to another position, or if two people have tapped the screen. In the first case, one action should be performed by the computer, while, in the second case, two actions should be preformed.

[00102] However, in accordance with embodiment, enhanced single touch operations may be realized with a sub-surface detection scheme, such that when two users touch simultaneously in different sub-screens, only a single signal is provided to the computer. One solution may divide the screen into multiple regions or sub-screens, e.g., four quadrants as shown in FIG. 12J or six sextants as shown in FIG. 2A. If the two taps are performed in one sub-screen, then the computer may interpret the two taps as coming from one user. This could be a click and drag or a change in the button that is tapped. In either case one action would be performed. If the taps occur in two different sub-screens, then the computer may interpret these two taps as coming from two different users and two actions may be performed simultaneously, each within the corresponding sub-screen.

[00103] This becomes especially difficult to manage when two or more users are tapping the screen in different sub-screens and one or more users is performing a gesture or continuous action, e.g., a click and drag operation, such as drawing a line in a picture. As used herein, a gesture is an action that includes movement in addition to a tap, e.g., a swipe, drawing of a line, or using two fingers to expand a picture or box, and so forth. In this case, the touch screen using sub-screen detection will oscillate back and forth between the sub-screens and give multiple "false" mouse up and mouse down signals. The false signals are due only to the oscillation of the

virtual mouse between the various sub-screens. To operate in an enhanced single user mode, e.g., that allows gestures such as drawing to be performed, the software needs to recognize these false mouse up and mouse down signals and reject them. In addition, there will be gaps in a continuous drawing of a line on screen that occurs when the signals are transferred to the computer from other sub-screens. However, the software may be designed to recognize this as a continuous action, by noting that a tap in a different sub-screen is from a different user. For example, if a click and drag occurs within a first sub-screen, followed by a click (mouse down) in a second sub-screen, and then a click and drag in the first sub-screen, the software may interpolate between the two click and drags in the first sub-screen. Thus, continuous touch may be performed uninterrupted by a first user while still allowing other users to control the computer to perform additional actions.

[00104] For example, if a first user performs a first touch in a first sub-screen and a second user performs a second touch in a second sub-screen while the first touch is still being performed, the second touch may cause a "gap" in the performance of the first touch. In other words, the second touch in the second sub-screen may interrupt the first touch. If continuity of the first touch is important, e.g., the first touch is drawing; such an interrupt may cause gaps, odd lines, or other errors. However, by recognizing that the second sub-screen is different from the first sub-screen, the first touch will not be interrupted, even though the second touch was performed during the first touch. Thus, the computer may be configured to perform an action in response to the second touch while not interrupting the first touch.

[00105] Additionally, a number of sub-screens may be chosen and changed by the user. Buttons are placed as in FIG. 2A to change the number of users at the table. If the 2 user mode is chosen then the screen is divided in to two sub-screens. It may be advantageous to have a different number of sub-screens for different scenarios. For example, if six people sit at a table and each wants to order their own food, the screen may be placed in 6 person mode. Then, if they want to view a long list, for example of music videos to play, they can switch to 2 person mode. Some games may be better suited to 2 person, 4 person or 6 person mode or to a single screen mode.

[00106] The table display 212 may serve as a control screen for the wall display 232. A user may use the table display 212 to determine the images to be shown on the wall display 232. That is, the table display 212 may be used for typing, editing and finding files, moving files, various control functions, and so forth. The wall display 232 may be used for viewing and displaying images, videos, text, and so forth. Alternatively, multiple users may use the table display 212. Touch screen controls may be built into both the table display 212 and the wall display 232.

[00107] As a further alternative, the table display 212 may be mounted on top of the table 210, such that the table 210 does not need to be transparent. Thus, the table display 212 may be mounted vertically, may be a pop-up display, or may be built into the top of the table 210.

[00108] The table display 212 and the wall display 232 may be electronic displays, e.g., LCDs, plasma screens, projection displays or DLPs, i.e., any display technologies that may be used for flat panel TV's or computer monitors.

Booth States

[00109] The booth 200 may have a plurality of states associated therewith to aid in the restaurant flow. The states may only be viewable by restaurant staff, e.g., at a point of service (POS) station. States may be indicated by a number and/or a color: Examples of states may include:

[00110] 0: Booth ready, no one seated;

[00111] 1: Customers seated, orders not yet placed

[00112] 2: Order placed, customers waiting for food;

[00113] 3: Food delivered, customer not yet paid (at this point, customers may order more food, sending state of table back to state 2);

[00114] 4: Bill delivered, customer not yet paid;

[00115] 5: Bill paid, customers have yet left; and

[00116] 6: Customers have left, table not yet cleaned.

[00117] If a booth 200 stays in one state for too long, notification may be sent to the responsible server and/or manager, e.g., to their cell phone, pager or personal digital assistant. For example, as long as all states of the booth 200 have been in a given state for a time duration less that a specified practical time, which may vary in

accordance with how busy restaurant is, the particular state the booth is in, etc., the booth will be OK, e.g., may be "green". Once a booth has been in a state for longer than this specified time, the booth may switch to a warning state, e.g., may be "yellow" state. The yellow state may result in notification to the server. After another specified period in a warning state, the booth may switch to a critical state, e.g., may be "red". The red state may result in notification to the manager. These stat discussed in detail below with reference to FIGS. 18A to 18E.

[00118] When customers are ready to place an order, they may hit a button, e.g., submit order or call server. This button may be on the table 210 separate from the table display 212 or on the wall 208 separate from the wall display 232. Additionally or alternatively, a submit order option may be placed on one or more of the menus discussed below, e.g., on the menu in FIG. 4A. Once a server comes by and verifies the order with the customers and enters it into the POS, the server may lock the order, as discussed with reference to FIG. 4E below. At this point, all the selected items so far would be become part of order 1 for the booth 200 and would become uneditable. Selecting an item after this point would become part of order 2 for the booth 200. Choosing selected items may then display two lists: order 1 and order 2, with only order 2 being alterable by the customers. Alternatively, just order 2 may be displayed, with an option to view previous order lists.

Mode Overview

[00119] The use of the booth 200 generally will be discussed with reference to FIGS. 3-4F. FIG. 3 illustrates a flowchart of general ordering operations and FIGS. 4A to 4F illustrate examples of menus to be displayed.

[00120] As illustrated in FIG. 3, the table display 212 may default to the logo mode in operation 302. When the table display 212 is touched in operation 304, a corresponding location of the touch is determined. If the touch is in a position corresponding to a seating, the IMM may be appropriately displayed. If the touch is in a location other than a position, e.g., host or central, other menus may be displayed as discussed below. Then, in operation 310, occurrence of another touch is monitored. If another touch corresponds to selection of a lower level menu, the operation proceeds to the appropriate lower level in operation 312. If no touch is

sensed, then the operation may proceed to operation 314 to determine whether a time out period has expired. If not, the operation may return to operation 310 to determine if another touch is sensed. If the time out period has expired, the operation may return to the logo mode of operation 302.

[00121] FIG. 4A illustrates an example of an IMM. In the IMM of FIG. 4A, the options "eat", "drink" and "connect" may be presented. Further, "ready" and "?' may be provided in a separate portion of the menu from the three main options. When users have a question, they may hit the "?", which may remotely indicate to the assigned server that the booth 200 has a question or may visually indicated on the wall display 232 that the booth 200 has a question. For example, the wall display 232 may display, in a bottom portion thereof, a seat indicator for each position in the booth 200, as illustrated in FIG. 7. For example, these seat # may initially all be red, indicating there is no need to bother the customers in the booth 200. When "?" is selected by a customer, that seat # or all seat # may change to yellow, indicating assistance is requested. When "ready" is selected by a customer, that seat # or all seat # may change to green, indicating readiness to order. Use of visual cues on the wall display may allow any restaurant worker to attend to that booth 200.

[00122] FIG. 4B illustrates an example of an eat lower level menu. FIG. 4C illustrates an example of a drink lower level menu. FIG. 4D illustrates an example of a connect lower level menu. In all FIGS. 4A to 4D, the back arrow will return the display to a previous page, e.g., IMM for the lower level menus and the logo mode from the IMM. These lower level menus will be described in detail below.

[00123] FIG. 4E illustrates an example of a host menu appearing when the host position 218 is touched. The host menu may be protected to only allow restaurant workers access. When the host touches this location various buttons may be displayed near the edge of the table 210, as illustrated in FIG. 4E, such as reset, # persons functional mode, rotate, place order and clear cache. The rotate button may allow rotation of the orientation of the menus to either side or to the end of the table 210. The reset button may erase any files that were copied onto a hard drive of the booth computer 250 during the session, sets the screen mode to logo mode, erases any food items selected and prepares the table 210 for the next customers. The place

order button may allow the server to send the order to the kitchen for processing. The clear cache button may only erase all files copied onto the hard drive of the booth computer 250.

[00124] FIG. 4F illustrates an example of a central position menu, indicating how items may be displayed using the central position. In the particular example shown in FIG. 4F, images displayed in various seating positions may be dragged to the central position 216 to be displayed there and may be clicked again to display this image on the wall display 232.

[00125] Eat mode

[00126] Once a corresponding category of the eat lower level menu of FIG. 4B has been touched, a sub-menu corresponding to that category may appear, as illustrated in FIGS. 5A to 7. FIGS. 5A and 5B illustrate flowcharts for the eat lower level menu. FIGS. 6A to 6F illustrates examples of eat sub-menus to be displayed. FIG. 7 illustrates the wall display 232 after completion of the operation in FIG. 5A.

[00127] As illustrated in FIG. 5A, in operation 510, a category in the eat lower level is selected in operation 520. This may result in the sub-menu of FIG. 6A being displayed. As can be seen therein, "select" and "info" buttons may be next to each item Dish1 to Dishm, allowing each item to be selected or more information about each dish may be retrieved. Also, the ordered items may be listed on a bottom portion of the table display 212. Further, the ordered items may be displayed on the wall display 232, as illustrated in FIG. 7. If there are too many items to display at once, only some of these items may be displayed and up/down scroll button may be provided adjacent the list.

[00128] When an item is selected in operation 522, that item may be highlighted and added to the ordered items, as illustrated in FIG. 6B. When information about an item is selected in operation 524, the individual information for that item, here Dish3, may be displayed as shown in FIG. 6C. An image of that item may also be displayed. The individual information may include nutrition and ingredients, which, when touched, will display the corresponding detailed information. In addition, quantity ordered may be displayed on this screen along with buttons to increase or decrease the quantity ordered.

[00129] Alternatively, selecting a single item may cause that particular item to be highlighted, and select and info buttons, not originally displayed, to appear adjacent that item, e.g., next to the item or below it, thereby simplifying the initial sub-menu display. In addition, a short description for each item may be displayed. This may cause other items on the screen to shift position in order for all of this additional information to be displayed for the selected item. Then, if the select button is tapped, the item would be added to the selected items list and the screen may revert back to a list of the items, i.e., removal of the select and info buttons. When the info button is tapped, then a screen similar to that of FIG. 6C could be displayed as described below.

[00130] When the back button is touched in operation 526, the previous sub-menu/menu may be displayed. For example, when the back button is touched in the display may switch from the display of FIG. 6C back to the tapas sub-menu in FIG. 6B. When the back button is touched when the tapas sub-menu in FIGS. 6A or 6B, the display may return to the eat lower level menu of FIG. 4B. Alternatively or additionally, a home button may be provided to return the display to the IMM of FIG. 4A.

[00131] The other menu category displays may function in a similar manner. When selected items is touched, all items ordered from that position and/or all items ordered by the table and corresponding quantity ordered may be displayed, as illustrated in FIG. 6D. The quantity may be altered on this display by touching the up/down buttons therein.

[00132] As illustrated in FIG. 5B, when the search by category is touched, another sub-menu of available searches may appear, as illustrated in FIG. 6E. Such available search options may include New, Specials, Top 5, cuisine, Dietary, and so forth. Touching one of these may display a list, as illustrated in FIG. 6F when Top 5 is selected, which may allow the corresponding dishes to be selected or for more information to be obtained. The Top 5 may include the top 5 highest rated, top 5 most frequently ordered, etc., and may be updated in real time. Alternatively, when a more detailed search category, e.g., cuisine or dietary, is selected, an intermediate display of the various sub-categories may be displayed before a corresponding display of items.

For example, touching cuisine may display vegetarian, seafood, spicy, Italian, Caribbean, Spanish, South American, Asian, fusion, and so forth. Touching dietary may display vegetarian, vegan, low fat, low carbohydrate, low calorie, and so forth.

[00133] Drink mode

[00134] Once a corresponding category of the drink lower level menu of FIG. 4C has been touched, a sub-menu corresponding to that category may appear, as illustrated in FIGS. 8 to 10. FIG. 8 illustrates a flowchart for the drink lower level menu. FIGS. 9A to 9F illustrates examples of drink sub-menus to be displayed. FIG. 10 illustrates the wall display 232 after completion of the operation in FIG. 8.

[00135] In operation 810, a category in the drink lower level may be selected in operation 820. This may result in a generic drink sub-menu of FIG. 9A being displayed. As can be seen therein, "select" and "info" buttons may be next to each item Drink1 to Drinkk, allowing each item to be selected or more information about each dish may be retrieved. Also, the ordered items may be listed on a bottom portion of the table display 212 (not shown). Further, the ordered items may be displayed on the wall display 232, as illustrated in FIG. 10. If there are too many items to display at once, only some of these items may be displayed and up/down scroll button may be provided adjacent the list.

[00136] When an item is selected in operation 822, that item may be highlighted and added to the ordered items, as illustrated in FIG. 9B. When information about an item is selected in operation 824, individual information for that item, here Drink 1, may be displayed as shown in FIG. 9C. An image of that item may also be displayed. The individual information include alcohol percentage, calories, a description of beverage, may give history of the beverage. A "video" button may be provided on this menu for a video, e.g., a video supplied by the beverage manufacturer.

[00137] The drink sub-menu may include "recommend". When a user touches recommend in operation 826, the recommend page may be displayed. This page may recommend a drink according to dish(es) ordered. For example the recommend page may display more than one drink; here three drinks as illustrated in FIG. 9D, within that category. A "select", "info" and "why" button may be provided next to each drink. The "why" button may explain why that drink was recommended. For

example, any time a particular dish is ordered, several beverages may be recommended. Data for orders may be tracked at the restaurant. Any time a gazpacho is ordered, the most drink in that category also ordered by the same person or table at the same sitting may be stored and displayed, drinks based on expert opinions may be displayed, surveys may be performed to ask customers how well they like particular beverages with particular food items, and so forth.

[00138] In any of the above cases, for each food item ordered, several beverages may be identified or a beverage suitable for all food items ordered may be displayed. Each beverage may be given a "score." The score may be +1 or 0. When all food items are ordered, the Eat menu may display a button for wine recommendations. If this button is pressed, the menu may list the wine recommendations as described above in order from highest to lowest score.

[00139] Alternatively, several of the above methods may be used to determine the recommended beverages. For example, the recommend page may list drinks as recommended by the chef, most ordered, highest ranked, by other experts, type, and so forth, as illustrated in FIG. 9E. In addition, the recommendation page may also include a "refine recommendation" button to narrow or change choices or options. For example, if several drinks are displayed on the recommendation page, the "refine recommendations" button may be touched to limit the drinks to particular preferences, e.g., wines may be limited to red, white, sweet, dry, French, Australian, etc., beers may be limited to hoppy, less hoppy, dark, wheat, German, British, etc.

[00140] When the back button is touched in operation 826, the previous sub-menu/menu may be displayed. For example, when the back button is touched in the display may switch from the display of FIG. 9C back to the beer sub-menu in FIG. 9B. When the back button is touched when the beer sub-menu in FIGS. 9A or 9B, the display may return to the drink lower level menu of FIG. 4C. Alternatively or additionally, a home button may be provided to return the display to the IMM of FIG. 4A.

[00141] The other menu category displays may function in a similar manner. When selected items is touched, all items ordered from that position and/or all items ordered by the table and corresponding quantity ordered may be displayed on the table

display, as illustrated in FIG. 9F and/or on the wall display 232, as illustrated in FIG. 10. The quantity may be altered on this display by touching the up/down buttons therein.

[00142] Order Processing

[00143] When customers order food or drinks, the order may go directly to the kitchen, i.e. the table serves as the point of service (POS). Alternatively, the order may be displayed on a computer and manually entered into the POS by the server and then sent to the kitchen. Alternatively, the table computer may send the order directly to the POS. Then, the server may view the order and send the order to the kitchen through the POS. This final option provides an advantage in that the server has ability to send only a portion of the items ordered at a time and check to make sure the items are correct. Alternatively, a separate computer that receives inputs whenever anyone places an order at a table may be used, as will be discussed in detail below with reference to FIGS. 18A to 18E.

[00144] Connect Mode

[00145] Once a corresponding category of the connect lower level menu of FIG. 4D has been touched, a sub-menu corresponding to that category may appear, as illustrated in FIGS. 11 to 12L. FIG. 11 illustrates a flowchart for the connect lower level menu. FIGS. 12A to 12I illustrate examples of drink sub-menus to be displayed. FIG. 12J and 12K illustrate an example of a layout for realizing connection of user devices with the booth 200 FIG. 12L illustrates a flowchart for one of the sub-menus.

[00146] Selecting "community" in operation 1110, may bring up a number of local, e.g., within walking distance, options for additional activities, as illustrated in FIG. 12A. Such activities may include movies, retail stores, other restaurants, theaters, museums, and other events. Selecting any one of these activities may display available associated events, as illustrated in FIG. 12B. "Select" may allow a corresponding purchase of that event to be transacted, where appropriate, e.g., movie, theater or museum tickets, may allow a reservation or addition to a wait list to be entered, e.g., in another restaurant, and/or may display a map providing location of that activity. "Info" may display the information as illustrated in FIG. 12C. Such

information may include hours, description, which may include location, menus, reviews, and current information. Such current information may include any special offers, daily specials, current wait time, current availability, etc.

[00147] As a particular example, selecting movies may provide a selection of movies playing at nearby theaters. Selecting info and then description may play a trailer and selecting hours may show times at each theater. Selecting select may provide options to order or purchase tickets for specific show times.

[00148] As another example, selecting restaurants may bring up a list of nearby restaurants. Selecting "info" and then description may display the menu. Selecting "info" and then "current" may indicate availability/current wait time. Selecting "select" may allow for ordering food items for pick up, delivery or for eating in at the nearby restaurant, for making a reservation at the nearby restaurant.

[00149] Selecting retail stores may display a list of nearby retail stores. Touching "info" connected with an individual store may display information about the store.

[00150] Touching "surroundings" in FIG. 4D may display the menu indicated in FIG. 12D, which may include "lighting", "virtual windows" and "music for virtual windows." Touching "lighting" may allow control of brightness and/or color of ambient lighting in the booth. Touching "virtual windows" may result in display of FIG. 12E, in which an ambient environment may be selected for the booth to be displayed on the wall display, e.g., moon, ocean, Paris, Half Dome, Venice, and so forth. These may be still images or video. Touching "virtual music" may allow music appropriate for the selected "virtual window" to be played, and may default to the general restaurant music if no "virtual window" has been selected.

[00151] Touching "entertainment" may produce a display as illustrated in FIG. 12F. Entertainment options for the booth may include, e.g., "television," "music," "social network," "games," and "video." Touching one of these options may display more detailed options. For example, touching "music," may allow provide a display as illustrated in FIG. 12G and may include browse genres, playlists, search collection, satellite radio, purchase new, and so forth.

[00152] Selecting "My Devices" may bring up a menu as illustrated in FIG. 12H, e.g., displaying computer, music, photos, video, and so forth. If a user plugs in any

devices into the USB port or the SIM card port or firewire port (for example cameras, flash thumb drives, SIM cards or other memory devices) any recognizable files may be immediately copied onto the booth computer 250. Recognizable files may include photos with standard formats (e.g. jpeg or tiff), videos with standard formats (e.g. mpeg, mov), and music with standard formats (e.g. wav or mp3). After copying these files, the booth computer 250 may immediately eject the USB storage device, allowing users to unplug their devices soon after they insert them, without causing damage to their devices or interrupting operation of the booth computer 250.

[00153] Selecting any of music, video, photos or presentation may bring up a list of the corresponding media files. For example, selecting photos may bring up a list of the photos that have been copied on to the booth hard drive. The list may be displayed in a "flow" mode so that large versions of each photo may be displayed in the front and smaller versions on either side. Two quick touches on a large photo in the center may cause the photo to be displayed on the wall display 232. A single touch and drag may allow other photos to be placed in the center large photo position. Once in the center large photo position, a single touch may display on the wall display 232. Alternatively, photos dragged off of the table display 212 in the direction of the wall display 232 could be displayed on the wall display 232. Additionally, a print option may be provided for the photos. This printing may be occur remotely, so that the restaurant may control and charge for the printing.

[00154] Users may connect their own devices to the wall display 232 and/or the booth computer 250. This may be done through a docking station, cables, and so forth, or the user may select "my devices" and then select the particular device to be connected from the "my devices" menu, as illustrated in FIG. 12H. If the device is not connected at this point, then table display 212 may list instructions for connecting a cable to the user's device, as illustrated in FIG. 12I. This cable may be located on the storage portion 260 next to the wall display 232 or in a cabinet 262 in the wall behind a sliding door. For example, when the user's device is a laptop, one of end of this cable may be connected to the wall display 232, while the other end would be available to attach to the user's laptop, as illustrated above in connection with FIGS. 2C and 2D.

[00155] For example, if the wall display 232 is an LCD flat screen TV, the cable may be an RGB video cable. One end of the RGB video cable may be attached before hand to one of the video inputs of the wall display 232, e.g., Video 2 input. Another video input may be attached to the computer, e.g., Video 1 input.

[00156] An example of a layout for the interconnection of my devices with the booth 200 is illustrated in FIGS. 12J and 12K. As shown therein, the booth 200 may include the booth computer 250 under one of the seating stations 220, here a bench. An amplifier 270 and an IR transmitter 280 may also under this seating station. The I/O port box 240 may be located in the wall, e.g., under the storage portion 260, and cables extending therefrom may be accessible via the door 262.

[00157] As illustrated in FIG. 12K, the wall display 232 may receive outputs from the amplifier 270, the booth computer 250, and the I/O port box 240. The I/O port box 240 may include, e.g., a VGA cable, an Iphone®/Ipod® cable, an audio cable, and so forth, for connecting the user's devices to the booth 200. The I/O port box may also include a USB multi-device box that may be connected to the booth computer 250. The table display 212 may be in communication with the booth computer 250. The amplifier 270 may receive outputs from the booth computer 250 and the I/O port box 240. Additionally, an A/V switch 290 from an external source, e.g., satellite or cable, may further provide outputs, e.g., a video output to the wall display 232 and an audio output to the amplifier 270. The A/V switch 290 may be at a central location and may be used for multiple booths. The IR transmitter 280 may be used by the booth computer 250 to enable a user to send signals to control any inputs for the wall display 232 or the amplifier 270.

[00158] Once the cable is connected to the user's device, the user may tap a button on the table display 212, e.g., the toggle button in FIG. 12I, to indicate that their device is connected. For example, when the user's device is a laptop, the booth computer 250 may be signaled to change the view on the wall display 232 to the Video 1 input. The IR transmitter 280 may be controlled by the booth computer 250 to act as a remote control and switch the input on the wall display 232 to the video 1 input connected through a cable provided in the booth 200, e.g., a VGA cable shown in FIG. 12K, thereby displaying the contents on the user's laptop on the wall display 232. The

toggle button may be tapped again to change the video input to the wall display 232 back to the video output coming from the booth computer 250.

[00159] This method allows users to connect laptops to the multimedia booth, without actually connecting their laptop to the booth computer 250. This may reduce security issues associated with direct computer to computer communication. Also, it allows displaying of information on personal laptops of specialized programs that may not be available on the booth computer 250.

[00160] Additionally, user's devices other than a laptop, e.g., USB fobs, mp3 players, and so forth, may also be directly connected to the booth computer 250. For some devices, e.g., those that may play readily without delay from the device itself, the files may not be copied onto the booth computer 250.

[00161] Further, when the audio signal runs through the amplifier 270, the audio and video may be totally separate. In other words, various video signals may be layered with various audio signals.

[00162] Selecting "other tables" may allow sending messages to other tables in the restaurant. Further, cameras may be placed at each table 210 to allow sending or viewing images at other tables.

[00163] Selecting "my $0.02" may continue to a flowchart as illustrated in FIG. 12H. This display, for example, "preferences," "recommend," "history," "registered," "survey," and so forth. Touching preferences may allow a user to enter personal preferences regarding, for example, "eat", "drink" "entertainment", "surroundings." If the user is not registered, these may only be stored for this dining session. "recommend" may allow either "general" or "personal" recommendations, either of which may then display for example, "eat", "drink" "entertainment", "surroundings." When "general" is selected, most popular items in the respective categories may be listed. When "personal" is selected, items in the respective categories may be listed in accordance with currently entered preferences or stored preferences, if the user is registered. Alternatively or additionally, when "personal" is selected, a user may enter a comparative mode and may enter a favorite item in this or another restaurant and get recommendations for this or another restaurant based on that information. Alternatively or additionally, when "personal" is selected, either an individual mode

or a "friends" mode may be selected, allowing recommendations based on input from friends. These "friends" may be automatically associated with a registered user whenever another registered user dines with them, or may be actively allowed by an individual user.

[00164] Thus, such recommendations may include personalized recommendations, i.e., based on the individual's past behavior, social recommendations, i.e., based on the past behavior of similar users, and/or item recommendation, i.e., based on the thing selected.

[00165] When "history" is selected, similar categories, for example, "eat", "drink" "entertainment", "surroundings" may be displayed. These categories may display current session history, or, if the user is registered, may display overall history.

[00166] When "registered" is selected, a user may touch "yes" or "no." If "yes," the user will be prompted to enter a user name and password. If "no", the user may select whether to register or not. If "no", the user may still enter a user name for use in the current session to personalize the experience. If "yes", the user will be prompted to create a user name and password. Alternatively or additionally, the booth 200 may include a card reader, e.g., magnetic or radio frequency, a 1D or 2D barcode scanner, or an ID camera may be positioned under the table to allow a user's identity to be determined from a source, e.g., a credit card, driver's license, passport, frequent diner card, and so forth. These identification mechanisms may also be used for payments. The use of cards may allow the "registered" option to disappear from the my $0.02 sub-menu.

[00167] When "survey" is selected, a number of available surveys may be presented. The user may select for the survey to be anonymous, or, if registered, may link their user information. Such surveys may include this restaurant's food, drink, atmosphere, etc., local restaurants' food, drink, atmosphere, etc., or any of the community or entertainment options available.

[00168] Restaurant Wide Connectivity

[00169] As illustrated in FIG. 13, each booth computer 250 may be connected to the A/V switch 290 and a restaurant server 1300, which may be centrally located within the restaurant. All audio signals may be supplied from various sources (e.g., the A/V

switch 290, user devices via the I/O port box 240, the booth computer 259, and so forth) to amplifiers 270 in each booth 200 on an individual basis. All video signals may be supplied from the various sources to the wall display 232. The server 1300 may also be connected to wait stations/kitchen to forward information entered from each booth to the wait staff. Further, the restaurant server 1300 may insure a minimum amount of money is spent in each booth for a particular duration of use. For example, the first half an hour may be free. Before the end of this half hour, an initial inquiry as to whether the customers are ready to order or not may be made. If not, then an amount of time remaining may appear and count down on either one or both of the displays. After this initial time period is up and no order or indication of readiness to order has occurred, the electronics for that booth may be shut down. The timer may be invisible to the customers until the issue of payment for use of the booth needs to be raised.

[00170] Camera

[00171] As also illustrated in FIG. 13, one or more cameras 600 may be used in connection with the touch screen 212. The camera 600 may be a web camera that is physically connected to the table computer 250 associated with the touch screen 212. The touch screen 212 may then be used to take photos with this camera as in a photo booth application.

[00172] Alternatively, the camera 600 may have wireless capability. Such a camera may be used to send live pictures to the computer in real time. This may be achieved using a wireless memory card, e.g., an Eye-Fi® wireless memory card. Photos from the wireless camera may be designed to directly download in to the computer 250 in the booth. A specific camera may be tied to a specific location on the computer or on another computer.

[00173] For example the wireless capability may include a wireless transmitter card and a wireless receiver card that are frequency matched. The wireless transmitter card may be placed in any camera that accepts the cards format, e.g., an SD card. The wireless receiver card may be a USB card that can be placed in the USB drive of the table computer 250. This wireless receiver card may then be configured so that the

images received from the camera 250 may be placed in a particular folder on the table computer.

[00174] A software program may then be used to monitor the contents of this folder and display all the pictures in this folder as icons on the touch screen. Selecting an icon for a given picture may then cause the computer to display this photo on the secondary screen.

[00175] Alternatively, multiple cameras 600 may be used, with each camera sending pictures to different locations. For example, if there are three connection tables 210 are used, each table may have its own portable camera with a different wireless SD card. Each SD card may have a different receiver card. Each of the three receiver cards may be inserted in to the USB drives of table computers 250 located at each connection table 220. Each table 220 may then be given access to three folders, each folder corresponding to the camera for each table 220. Selecting table 1 from a menu file would allow the users to access the photos from the camera used by table 1 in the manner described above. Similarly, selecting table 2 would allow the users to access the photos used by the users at table 2.

[00176] Alternative booth configurations

[00177] The booths may be configured in numerous layouts in addition to that illustrated FIG. 2. Alternative examples are illustrated in FIGS. 14A to 14C.

[00178] In an embodiment FIG. 14A, the entrance to a booth 200A is on the side of the booth 200A, providing more privacy for the customers in the booth 200A. Further, as illustrated in FIG. 14A, a touch display 212A may be a separate portable unit that is used at a table 210A, and may be used by any of the users at the restaurant booth. Seating 220A may be on three sides of the table 210A.

[00179] In an embodiment, illustrated in FIG. 14B, a booth 200B may be designed for a smaller number of patrons, e.g., one or two people, and a longer side of a table 210B may be against a wall having the wall display 232B. The seating 220B may be provided on only one side of the table 210B. This configuration may provide all or most of the customers view the wall display 232B directly across from them (without having to turn their head as in FIGS. 2 and 14A).

[00180] Alternatively, in any of the embodiments mentioned above, the booth and/or table can be curved to provide better viewing angles. For example, as illustrated in FIG. 14C, a booth 200C may be curved to allow more customers better viewing angles of the wall display 232. In other words, any or all of the booth 200C, seating, 220C, a table 210C and a table display 212C may be curved in such a manner as to allow customers to sit and look at the wall display 232 without having to turn their heads and or bodies as much as in a conventional rectangular shaped restaurant booth.

Single display booths

[00181] While the above discussion assumes that both the table display 212 and the wall display 232 are present in the booth 200, booths may also be configured having only the table display 212 or the wall display 232.

[00182] For example, if only the table display 212 is employed, images that would have been displayed on the wall display may be displayed on at least one sub-screen of the table display. For example, in FIG. 2A, sections of the table display labeled positions 3 to 6 may be used as described above regarding the table display 212. However, positions 1 and 2 may be used to display images (either still or video) similar to that which was displayed on the wall display previously.

[00183] For example, a user may attach a memory device, e.g., an usb flash drive or an SD card, to a port attached to the booth 200. The photos in this device may then be copied on to the hard drive in the booth computer 250. These photos may then be viewed in positions 3 to 6 in "flow" mode as described above or other modes that allow viewing of multiple photos within a given section. Each photo may be represented as text or as an image that is smaller than the sub-screen. For example, a first user may be viewing multiple small photos in position 3 and a second user may be viewing photos in position 4. Images on the table display 212 that are dragged in to the sub-screens of the table display corresponding to positions 1 and 2 may be displayed in a large format over the entire section. Alternatively, any image moved to position 1 or position 2 may be display in both of these positions, with two different orientations, corresponding to the viewing positions for these two locations. Tapping on a small icon of an image in positions 3 to 6 may result in displaying the image in positions 1 and 2 with the two different orientations. Images may be dragged into a

folder. Dragging this folder to position 1 or position 2, or double tapping on this folder, may cause a slide show to be displayed in position 1 and position 2. Changing the functional mode to a single user may cause the slide show to be displayed over the entire table display 212.

[00184] Alternatively, if only the wall display 232 is employed, the electronic menus provided on the table screen 212 may now be provided on the wall screen 232. The wall screen 232 may be controlled by a device, e.g., the remote control 285, illustrated in FIG. 12J, rather than the table display 212. This device may also allow sources of the audio/video information to be controlled.

[00185] Room Configurations

[00186] Alternatively or additionally to displays for the booth 220, the connection table 210 may be used to drive displays and/or audio for an entire room, whether an entire venue or a sub-venue, e.g., a private room. FIG. 15A illustrates a plan view and FIG. 15B illustrates a side view of a room 300 having such a configuration according to an embodiment.

[00187] As illustrated in FIGS. 15A and 15B, the room 300 may include a connection table 310 having a touch screen 312, at least two seating areas, here curved couches 320, two wall displays 330, and a connection computer 350 connected to the connection table 310, the wall displays 330, and speakers 335. A conventional table 315 may be provided for seating areas that are not adjacent to the connection table 310. While two curved couches are illustrated, any desired seating configuration may be employed. Further, while the two wall displays 330 and pairs of speakers 335 are illustrated as being an opposite sides of the room 300, more than two wall displays 300 and/or pairs of speakers 335 may be employed and/or in different positions.

[00188] As illustrated in FIG. 16A, the room 300 may be configured to allow the connection table 310 to control the wall displays 330 and the speakers 335. In particular, the wall displays 330 may receive outputs from the connection computer 350 and an I/O port box 340. The speakers 335 may receive outputs from an amplifier 370. The I/O port box 340 may include, e.g., a VGA cable, an Iphone®/Ipod® cable, an audio cable, and so forth, for connecting the user's devices to the connection table 310. The I/O port box 340 may also include a USB multi-

device box that may be connected to the connection computer 350. The table touch screen 312 may be in communication with the connection computer 350. The amplifier 370 may receive outputs from the connection computer 350 and the I/O port box 340, including the audio cable and the audio portion of the an Iphone®/Ipod® cable. Additionally, an A/V switch 390 from an external source, e.g., satellite or cable, may further provide outputs, e.g., a video output to the wall displays 330 and an audio output to the amplifier 370. An IR transmitter 380 may be used by the connection computer 350 to enable a user to send signals to control any inputs for the wall displays 330 or the amplifier 370.

[00189] When displaying television channels on the secondary screens, several options are available. One option is to use a dedicated receiver for each electronic table. Alternatively, multiple receivers may be used, where the number of receivers is less than the total number of displays in the venue. These receivers may be satellite or cable or other receivers that obtain signals from an outside source. The receivers may be connected to the AV box (matrix switch) 290 (shown in FIG. 13). An output from the AV box 290 may go to each connection booth 310 in the venue, where the output may be displayed on the secondary screen. Outputs from the AV box 290 may also be connected to other displays in the venue. For example, a venue may have 4-6 electronic tables and 5-10 additional screens located at various places throughout the venue that are visible to a number of tables.

[00190] The computer 350 may display a list of the available television channels on the touch screen 312 when a user selects the appropriate button (e.g., one marked television). In some cases it may be desirable to display the name of the television channel on the touch screen or the content being broadcast at the particular time that it is being viewed.

[00191] It may be desirable to display a continuous full motion video on the wall displays 330. However, this may be difficult when using the same computer for both the wall displays 330 and the touch screen 312, as a great deal of processing power may be needed to drive the touch screen 312. This difficultly may be increased if the touch screen 312 and/or wall screens 330 have a high resolution and/or if the touch screen 312 is receiving inputs from multiple users.

[00192] One solution using the single computer 350 includes using a separate programming thread dedicated to driving the secondary screen. This thread is given a very high priority. Any operation on the touch screen 312 that may take a significant amount of processing time is given lower priority than the one for the wall displays 330. However, detection of a tap on the touch screen 312, which does not take a lot of processor time, may not be given a lower priority, since if taps are not detected within a fraction of a second of when they occur, the touch screen 312 may not function properly. Alternatively, the computer 350 may be a multi-processor computer having one processor dedicated to driving the wall displays 330.

[00193] An alternative to having a single connection computer 350 includes providing two computer 352, 354, i.e., a first computer 352 for the touch screen 312 and a second computer 354 for the wall display 330, as illustrated in FIG. 16B. The first computer 352 may be located near the secondary screen or integrated with the touch screen 312, e.g., the first computer 352 may be located inside the table or under a bench or on the underside of the table, etc., and may be directly connected to the touch screen. The second computer 354 may be located near, e.g., behind, the secondary screen 330 and may be directly connected to the secondary screen. The first and second computer 352, 354 may be connected, e.g., through the Ethernet, through a wireless router, or through a dedicated connection, as indicated by the dashed line between the first and second computers. Media files to be played on the secondary screen 330 may be stored on the second computer 354.

[00194] For example, consider displaying of music videos. When the music videos are stored on the second computer 354, the second computer 354 may initially send the first computer 352 thumbnails of images and associated text, e.g., names of the songs, albums, bands, composers, and so forth, to the first computer 352, which may store this information. When a user taps music videos on the touch screen 312, a list of music videos, along with some or all of the information stored in the first computer 352 may be displayed on the touch screen 312. When a user taps a thumbnail of a particular song, a signal may be sent from the first computer 352 to the second computer 354 to start playing the music videos from the particular folder and from the particular music video selected.

[00195] The central computer 1300 of FIG. 13 may be used to determine channel settings for each receiver. This may be automated or may be performed by a manager of the venue. For example, for a sports bar, the manager may program each receiver to display a different sporting event. The central computer 1300 may be connected to the satellite receivers, e.g., by ethernet or by infrared connections, to change the channel of each receiver to the desired channels. This information may be sent to the computer 250, 350 located at each connection table 210, 310. In this manner, the computer 350 may display the channel on the touch screen 212, 312. In addition, the central computer 1300 (or the computer 250, 350 at each connection table 210, 310) may contact a website that returns the content being played on each channel at a given time and may store this information and/or send it to each connection table 310. In this manner, the computer 250, 350 at each connection table 210, 310 may display the content being broadcast on each channel on the touch screen 212, 312. For example, the touch screen 212, 312 may display a list of the sporting events being shown on each receiver at the current time. Choosing a sporting event would then cause the computer 250, 350 to send a signal to the AV box 290 to send the appropriate input to the secondary screen 232, 330 at the corresponding table.

[00196] In this manner, the secondary screens 232, 300 at the connection tables 210, 310 may be controlled by the touch screens 212, 312 at the table and the 5-10 additional screens in the example mentioned above may be controlled by other devices, e.g. the central computer 1300.

[00197] The computer 250, 350 may also be connected to the internet and may display a web browser or a portion thereof on the touch screen 212, 312. Information from various websites may also be displayed on the touch screen 212, 312 or on the secondary screen 232, 330. For example, fantasy sports information may be displayed on the touch screen 212, 312 and/or on a secondary screen 232, 330. If a sporting event is selected by a user to be displayed on a secondary screen 232, 330, then information from a sports fantasy website that relates to the sporting event being displayed may be then displayed on the touch screen 212, 312 or on a secondary screen 232, 330.

[00198] Additionally, user's devices other than a laptop, e.g., USB fobs, mp3 players, and so forth, may also be directly connected to the connection computer 350. For some devices, e.g., those that may play readily without delay from the device itself, the files may not be copied onto the connection computer 350.

[00199] Thus, the single connection table 310 may be used to control the audio and video for the whole room 300. The connection table 310 may also perform all of the other functions discussed above with reference to other tables according to embodiments, e.g., ordering food, drinks, etc. If universal control of audio and video for the entire room 300 is desired and more than one connection table 310 is provided therein, these inputs may be queued.

[00200] Queuing

[00201] If queuing is employed, a list of popular songs to be played in a particular order may be generated as an ordinary playlist initially. By choosing a playlist selection on a table, the users of the table may view this playlist on either the touch screen 312 or the secondary screen 330. This playlist may be a default playlist to start initially, before anyone has submitted a song to this playlist (or queue). Once someone at a table chooses a media for selectionm they may have the option to submit the media selection (e.g. song, music video, movie trailer) to the playlist. If no one else in the venue has submitted a selection to the playlist, this selection may move to the top of the list to be the next item played. Subsequent selections made by others in the venue may be submitted to the playlist in a similar manner and the system can act as a jukebox with a display to show the media selections in the queue. Users that made a particular selection may be able to cancel the selection prior to playing (removing from the queue) or during playing of the selection.

[00202] A voting mechanism may be applied in addition to the queue described above. This voting mechanism may work similar to the above, except that, in addition to the above procedure, users at tables may vote on media selections in the queue. If multiple votes for a particular media selection in the playlist are received, then this media selection may be moved up in the queue.

[00203] A central computer, e.g., server 1300, may be used to track the votes for particular media. The votes for media for multiple sessions in the past may be used to

generate the initial playlist. In addition, data used by tracking the history of selections made in booths 200 with private screens and private sound systems within the venue may also be used to determine the initial playlist. The votes for particular media on the playlist can be tracked directly by the central computer. The computers located at each table may be in communication with the central computer 1300 and submit their selections to the central computer. The central computer 1300 may then send the resulting playlist back to each computer 250 at the individual tables. The central computer 1300 may also use the data of the selections made to find similar music to play and automatically add such similar selections to the playlist. For example, if the majority of the media items selected are hip-hop music videos, the central computer may add more hip-hop videos to the playlist.

[00204] There is an issue with conventional jukebox systems, that sometimes people select a few very popular songs very often. These songs then get played so often, that they tend to annoy others in the venue. One advantage of the system described herein, is that the central computer may generate a playlist of songs and prevent songs from being played too frequently. In addition, similar songs may be added as described above. Users at the individual tables may be able to view the playlist and vote on selections only in the playlist, rather than all the songs stored on the computer. For example, users may be able to request adding a media selection to the playlist, but may only vote on moving items up on the playlist if they are already on the playlist sent to the connect table 200 as generated by the central computer 1300.

[00205] In addition to the above, there may be a room with a booth with a private secondary screen, but not private speakers. That is the speakers may be configured with one set of speakers for the entire room (communal speakers). There may be communal visual displays (televisions or LCD screen) as well. A user at such a booth may be able to make selections containing video only for display on the private display in the manner described previously. They may also be able to submit requests to the playlist or vote on items in the playlist as described previously. They may also be able to make a selection referring to the communal audio and video (e.g., "house music video") and cause the private display to display the video corresponding to the communal speakers.

[00206] Detailed Table Screen Shots

[00207] FIGS. 17A to 17I illustrate screen shots for different stages in use of the connection table in accordance with embodiments.

[00208] Initially, as illustrated in FIG. 17A, the touch screen212 may be asleep and locked so that users don't accidentally trigger the screen, e.g., cause food to be ordered, or media accidentally started/ stopped when something is placed on the table.

[00209] Then, when a user touches the screen, a "tap here to start" box may appear on the screen, as illustrated in FIG. 17B. If the touch was intentional, the user may touch the region in which the "tap here to start" box is present. In response to such a touch, as illustrated in FIG. 17C, a "tap again" box may appear. Once the "tap again" box has been touched, a home screen appear, as illustrated in FIG. 17D. Thus, reaching the full display may require two taps in a defined location within a short period of time in order to view the home screen.

[00210] Additionally or alternatively, when the screen is asleep, every time the screen is tapped, a small circle that grows in size where the tap occurred may be displayed to cue users that the screen is active and to provide feedback on the location where the tap was registered.

[00211] As illustrated in FIG. 17E, "My Media" and "My Plate" pop-down menus may be included. The "My Media" menu allows a user to view the title of the audio and/or video selections that are currently being played. The "My Media" menu may allow overall control of the media on the table and to display information. The "My Media" menu also has a "lock" feature. If a media selection is locked, then that media selection can not be overridden by another media selection until that media selection concludes or is unlocked. When a media selection is unlocked then choosing another media selection in the manner described previously results in the new media selection to be played on the speakers and/or the secondary screens. The "My Media" menu may allow users to adjust volume and stop the audio and/or the video of a selection without taking up an entire quadrant of the screen and, when in the unlocked state, without locking other users from being able to select other content. The 'My Media" menu allows a user to select content displayed in the audio and video sections of my media as illustrated in FIGS. 17F and 17G. If another user hits a different media

source, the audio and/or video currently being played is replaced, as well as the identification in the now playing section in my media as long as the media is in the unlocked state. A user may stop playback of now playing content by choosing a different source or hitting the x button in my media by either the audio or video section.

[00212] For example, in the entertainment section from the menu of FIG. 11, choices may include television channels, photos, and music videos. If one user chooses a television channel, the audio for that television channel will be sent by the matrix switcher to the amplifier and the video to one of the secondary screens. In the "My Media" menu, the television channel will be displayed in the audio section and in the video section. At this point the "My media" menu will indicate that the selection is unlocked if the computer is set to have unlock as the default selection. In this case if a user makes another selection, for example a music video, for another media file on the computer, then the computer will play the media file and switch the input to the secondary screen to the input that is connected to the computer 350. The computer 350 will also switch the input to the amplifier to the input that the computer is connected to and the media file, in this case the music video selected, will be played throughout the room on the speakers and on the secondary screens. Subsequent selections may also change both the video and audio in the room as long as both the content remains unlocked. If a user hits the x on the audio section, the amplifier input may be switched to an unused input so that no sound is transmitted to the speakers, but the video will still play on the secondary screens. In this case, if an audio only selection is selected (e.g. a music selection from the computer or an mp3 player music selection) then only audio on the speakers will change to the selection but not the video. This may be achieved by the computer sending a signal to the amplifier to change the input to the corresponding selection, but keeping the input on the television to the previous selection.

[00213] Once users are satisfied with their selections, the "My Media" drop down menu illustrated in FIG. 17D may be used to lock the selection. Once locked, choosing another selection will not cause any change to the audio or video until the completion of the selection. This is advantageous, as users will often choose a media

selection and then stop using the touch screen, but continue to place objects, e.g., dishes, glassware, flatware, etc., on the table. Sometimes, these objects will trigger media selections. Without the ability to lock media, these objects may inadvertently change the media being played. Once a media selection is locked, the pop-down menu may be closed so that at least three taps in three different locations on the screen would be required to change the selection. For example, once the "My Media" menu is closed, media may be changed after 1) one tap to open the "My Media" menu, 2) one tap to unlock the media selection, and 3) one tap to choose a new media selection.

[00214] The "My Media" menu shows what is playing in the booth: both the audio and the video. The audio and/or the video may be blocked. The volume may also be controlled. The media may be placed in a lock state or an unlock state. Thus, if both audio and video are locked, new selections will not later what is being played. If either one is locked, then only the unlocked source will be altered. If neither is locked, the new selection will alter both media.

[00215] As illustrated in FIG. 17H, a hidden control panel may be included to allow a server to place the screen in 1, 2, 4 or 6 person mode, e.g., to the 2 person mode illustrated in FIG. 17I. The default mode may be 4 person mode. Additionally or alternatively, other buttons may be provided to allow users to toggle between the various modes within a single session.

[00216] The computer may also store various media files, e.g., photos (video only), songs (audio only), movies (audio and video) and music videos. In a preferred embodiment, when a particular selection of a category is made on the touch screen, thumbnails or small icons representing the media in that category are displayed on the touch screen.

[00217] For example, if music videos are selected, thumbnails representing each of the music videos stored on the computer are displayed on the touch screen. Tapping or selecting a particular thumbnail will cause the computer to play that particular music video on the secondary screen and on the speakers through the amplifier.

[00218] Alternatively or additionally, selecting a particular thumbnail in a section may play that music video only in that section. The orientation of the video may have the same orientation as the corresponding section of the screen and be confined to

play within the section. Thus, the video is suitable for viewing by the particular user's location and multiple user's may each watch different videos, with each video played within each user's section.

[00219] Typically, the resolution of the entire touch screen may be a standard television screen resolution for example 1900x1280 pixels. Thus, if the touch screen is in a four person mode, then each section will have one quarter of this resolution. If multiple pictures and videos are displayed on the touch screen simultaneously, border regions may be provided between the media displays so that they do not interfere with each other. For this reason, the videos or images displayed within each section may have a size smaller than the entire area of each section and so the resolution of each video displayed within a section will typically be less than 1/4 of the resolution of the screen.

[00220] For this reason, when a video is displayed on a touch screen, it may be down sampled to lower resolution as it is played. If two computers are used (one for the touch screen and one for the secondary screen) then the videos and images on the computer that drives the touch screen can be down sampled to occupy less storage space on the computer and facilitate faster and more efficient playing of the videos. Either way, for this reason, it is typically easier for the computer to handle playing of a video on the touch screen than on the secondary screen. However, the other techniques described previously (using different programming threads or different processors for each section) may be used to ensure efficient smooth playing of videos on the touch screen.

[00221] Within each touch screen, there may be a button to publish the video to a secondary screen. Tapping this button may cause playing the video that is being played within a section of the touch screen to also be played on the secondary screen.

[00222] In this manner, the touch screen may be used to display and list information for the user to explore, but once selected or published, media may be actually played on a different screen. This allows the user to browse through items on the touch screen, but once a selection is made the screen is freed up for other uses, e.g. placing plates, cups and silverware on the screen.

[00223] This function may be further enhanced by locking the media to be played and putting the screen to sleep. This may be realized by using the "My Media" drop down menu, to lock the media. Then, the "My Media" drop down menu may be closed. At this point, no tapping on the screen can change the media being played until the music video selected is complete or unless a "My Media" drop down menu is opened and the media file is unlocked. In addition, the touch screen 212 may be put to sleep using the back arrows to back out of the menu to the home screen. From there, another back button tap puts the screen in to sleep mode for additional security.

[00224] Thus, in contrast to conventional "windows" on a computer display, in which there is typically one window in the foreground that is "active" and the rest are in the background, sections in accordance with embodiments may be simultaneously active. In other words, tapping a section on the touch screen does not bring that section to the foreground and put others in the background, because our system is designed for multiusers and to have multiple sections active simultaneously. For example, a first user may choose "eat" from the high level menu in a first section and be viewing the menu and tapping the screen within this section to view information on food and to order items. At the same time that the first user is performing this task, a second user may be using the interface in a second section. The second user may, for example, be playing a game or drawing a picture. In this case, when the first user taps buttons and navigates through the menu, changes to the touchscreen occur within the first section. For example, different menus are displayed within this first section. Similarly, the second user can tap and navigate through menu items and play games. The menu items and video that affects the touch screen is confined for the most part within this second section. The second user can be performing these actions at the same time the first user is performing actions in the first section. A touch is not required to bring one to the foreground.

[00225] Having simultaneously active windows helps greatly in implementing a multi-user system. For example, if 2 taps occur within one section in quick succession, it is assumed that the 2 tapas came from the same user. If they occur in quick succession, the computer may be designed to reject the second tap, because it may be assumed that this was an accident. Alternatively, the second tap could cancel

the action of the first tap and initiate the action of the second tap. For example, if a list of navigational items (e.g. eat, drink, connect) is displayed in a first section and a user taps a first item (e.g. "eat") that action may cause the corresponding menu to be displayed in that section (the "eat" menu). If a second item (e.g. "connect") is tapped quickly, during the transition from one display within that section to another (before the section has completed a changed in its display), the second tap may cancel the display of the information of the first item and instead display the information of the second tap. On the other hand, if these 2 actions occur in different sections, then the information for each item may be displayed in each section. For example, if the first user taps "eat" within a first section and a second user taps "connect" within a second section, the computer will interpret this as actions from 2 different users. Therefore the eat menu can be displayed in the first section and the connect menu can be displayed in the second section, even if the tap in the second section occurs before the first section's display has changed. This is achieved by setting pre-defined boundaries between the sections that are communicated to the computer and stored in memory prior to the occurrence of the taps.

[00226] Detailed POS Screen Shots

[00227] FIGS. 18A to 18E illustrate screen shots for different stages in use of the POS computer in accordance with embodiments. This separate POS computer, e.g., the server 1300 of FIG. 13, may monitor a status of all the tables.

[00228] For example, as illustrated in FIG. 18A, two rectangles may be associated with each table, e.g., an upper rectangle contains items that have been ordered by the table but not yet entered in to the POS (submitted but not locked), and a bottom rectangle contains items that have been submitted and locked. When new items are input to the separate computer, the upper rectangle may be highlighted, e.g., in yellow, as illustrated in FIG. 18B. Thus, a glance at the screen alerts the servers that there is something that they need to do. After a period of time, e.g., two minutes, if the items have not been locked, the items are highlighted in red, as illustrated in FIG. 18C. When the server hits the lock button, the items may be sent by the table computer to the POS computer electronically. The servers may send only a portion of the order to the POS. As most venues will not have all electronic tables, e.g., only

10% - 20% of the tables may be electronic, the remaining tables may need a conventional POS.

[00229] As a further alternative, each server waiting on electronic tables may carry a portable device, e.g., a pager, an Iphone ®, or an Ipod ® Touch. The information may then be sent directly to the server's portable device, and the server may use this portable device to send the items to the POS or directly to the kitchen. This portable device may display the same images as the POS computer, but may show only the tables that server is responsible for or may display only tables with items to be acted upon. This may reduce a number of conventional POS computers needed, may allow servers to interact more with customers, may reduce bottlenecks at the POS computers, etc.

[00230] Other Venues

[00231] While the above discussion has been focused on a restaurant, e.g., bars, night clubs, school cafeterias, any food and/or drink setting, as the venue in which the booths/connection tables have been deployed, these booths/connection tables may also be deployed in other venues. For example, the booths/connection tables may be used in health care venues, such as hospitals, health clinics, etc., schools, e.g., classrooms, other public venues, e.g., community centers, government buildings, etc., or even private venues, e.g., members only clubs, homes, etc. Of course, the options being controlled may vary accordingly.

[00232] Exemplary embodiments of the present invention have been disclosed herein, and although specific terms are employed, they are used and are to be interpreted in a generic and descriptive sense only and not for purpose of limitation. Accordingly, it will be understood by those of ordinary skill in the art that various changes in form and details may be made without departing from the spirit and scope of the present invention as set forth in the following claims.

WHAT IS CLAIMED IS:

1. A table system, comprising:

a touch screen integrated in a table top;

a computer system in communication with the touch screen, the touch screen being configured to serve as a primary input to the computer and to display multiple active sections at different orientations corresponding to different seating locations on the table top simultaneously; and

a secondary screen, located away from the touch screen, in communication with the computer system, the secondary screen being configured to continuously display media files stored on the computer system at a single orientation and to be viewed from the different seating locations simultaneous with use of the touch screen, the touch screen configured to display representations of media files to be displayed on the secondary screen and to serve as selection input for the media files.

2. The table system as claimed in claim 1, wherein the computer system includes a multi-processor computer having at least a first processor dedicated to display media files on the secondary screen and at least a second processor, different from the first processor, dedicated to the touch screen.

3. The table system as claimed in claim 1, wherein the computer system is a single computer having a separate programming thread for playing media files on the secondary screen, the separate programming having a higher priority than operations of the touch screen other than touch detection in order to ensure continuous playing of media file on the secondary screen.

4. The table system as claimed in claim 1, wherein the computer system includes a first computer directly connected to the touch screen and a second computer directly connected to the secondary screen, the media files being stored on the second computer, wherein the first and second computers are in communication.

5. The table system as claimed in claim 4, wherein the touch screen is

configured to serve as the input of the first computer and the first computer is configured to serve as the input of the second computer.

6. A multiuser, multi-interface computing surface, comprising:

a computer system; and

a touch screen adapted to serve as a primary input to the computer system, the touch screen divided into at least two simultaneously active sections having different orientations, touches in the at least two simultaneously active sections having independent effects on a display within the at least two simultaneously active sections, each simultaneously active section having an independent interface adapted to select independent applications in each simultaneously active section.

7. The multiuser, multi-interface computing surface as claimed in claim 6, wherein the touch screen is integrated into a table top.

8. The multiuser, multi-interface computing surface as claimed in claim 6, wherein the computer system is configured to:

perform a first action in response to a first touch in a first section of the touch screen; and

perform a second action in response to a second touch in a second section of the touch screen without affecting the first action, even when the first and second touches are nearly simultaneous.

9. The multiuser, multi-interface computing surface as claimed in claim 8, wherein the computer system is configured to perform a third action in the first section in response to a third touch in the first section of the touch screen, the third action replacing the first action, but not affecting the second action.

10. The multiuser, multi-interface computing surface as claimed in claim 8, wherein the first touch is a gesture and the second touch is a tap, the tap occurring

after the gesture begins but before the gesture is complete, the computer system being configured to complete the second action before completing the first action.

11. The multiuser, multi-interface computing surface as claimed in claim 8, wherein the first action includes navigating a menu and the second action includes a continuous action.

12. The multiuser, multi-interface computing surface as claimed in claim 11, wherein the continuous action includes one of drawing and playing a game.

13. The multiuser, multi-interface computing surface as claimed in claim 6, wherein an action in response to a touch within a section is confined to that section.

14. The multiuser, multi-interface computing surface as claimed in claim 6, wherein the touch screen includes a control section configured to alter a number of sections displayed on the touch screen.

15. The multiuser, multi-interface computing surface as claimed in claim 1, wherein the touch screen is configured as a single touch screen.

16. The multiuser, multi-interface computing surface as claimed in claim 6, wherein the computer system is adapted to be in communication with a secondary screen to be viewed at a same orientation of all users of the touch screen.

17. The multiuser, multi-interface computing surface as claimed in claim 16, wherein the computer system is adapted to continuously send media files to the secondary screen in response to a selection input through the touch screen.

18. The multiuser, multi-interface computing surface as claimed in claim 17, wherein the touch screen is configured to be used for navigation and the

secondary screen is configured to display the media files sent by the computer system.

19. The multiuser, multi-interface computing surface as claimed in claim 6, wherein a touch in a section rotates an orientation of that section.

20. The multiuser, multi-interface computing surface as claimed in claim 6, wherein a touch in a section plays a media file in that section.

21. A table system, comprising:

a touch screen including a touch detection surface and a display, electronics for the touch detection surface and the display being protected from environmental contaminants;

a computer, the touch screen serving as an input device for the computer, the computer configured to store media files and to supply a continuous video signal to the display, wherein the touch detection surface is configured to

receive an object thereon without interference with detection by the touch detection surface,

to send a first input to the computer in response to a first touch the computer configured to perform a first action on the touch screen in response thereto, and

when a second touch occurs at a different location on the touch screen while the first action is being performed on the touch screen, to send a second input to the computer in response to the second touch, the computer being configured to perform a second action in response thereto, so that first and second actions are performed simultaneously; and

a secondary screen located such that the secondary screen can be viewed by users near the touch screen, the secondary screen being in communication with the computer, the secondary screen configured to display a different image than that on the display, wherein, when the touch detection surface is touched in particular locations when the touch screen is in a particular state, the computer is configured to

send the particular media file to the secondary screen and the secondary screen is configured to display the particular media file.

22. The system as claimed in claim 21, wherein the communication between the touch screen, computer and the secondary screen is configured so that tapping on the touch screen in particular locations when the touch screen is in a particular state allows the user to select or change a source supplying an image to the secondary screen.

23. The system as claimed in claim 21, wherein the computer sends continuous video information to the secondary screen for displaying media files stored on the computer.

24. The system as claimed in claim 23, wherein the continuous video signal supplied by the computer to the touch screen includes a visual representation of a media file stored on the computer and touching this visual representation causes the playing of this media file on the secondary screen.

25. The system as claimed in claim 21, further comprising a camera in communication with the computer, such that when a picture is taken with the camera it is sent to the computer, and a program on the computer that detects when a picture from a camera has been sent to the computer.

26. The system as claimed in claim 25, wherein, the computer is configured to:

detect that a picture has been sent to the computer from the camera, and

display a small visual representation of the image on the touch screen, and when this visual representation is selected, the image is displayed on the secondary screen in much higher resolution than on the touch screen.

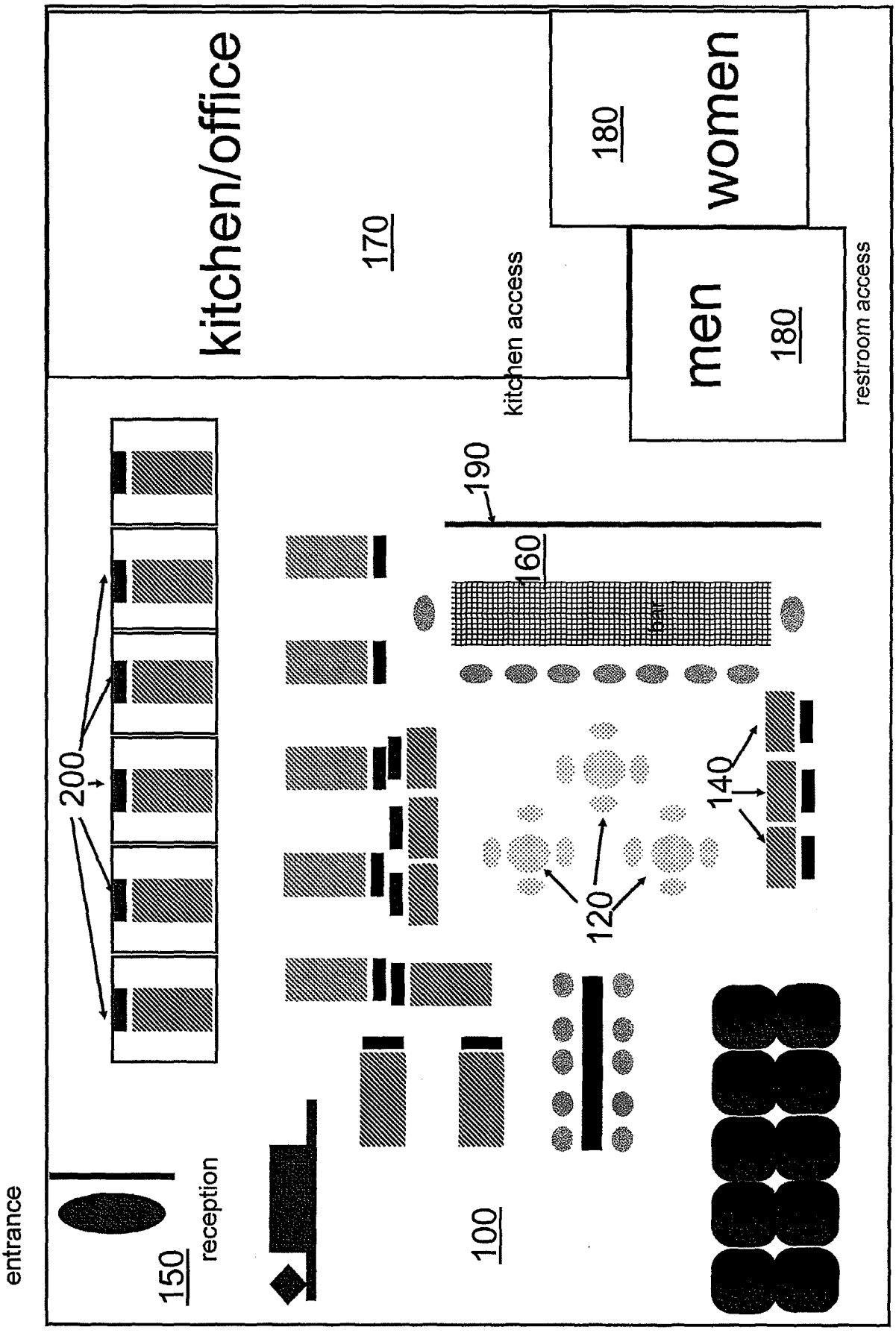

entrance
150
reception
100
200
120
140
160
bar
190
kitchen access
kitchen/office
170
180
men
180
women
restroom access

FIG. 1

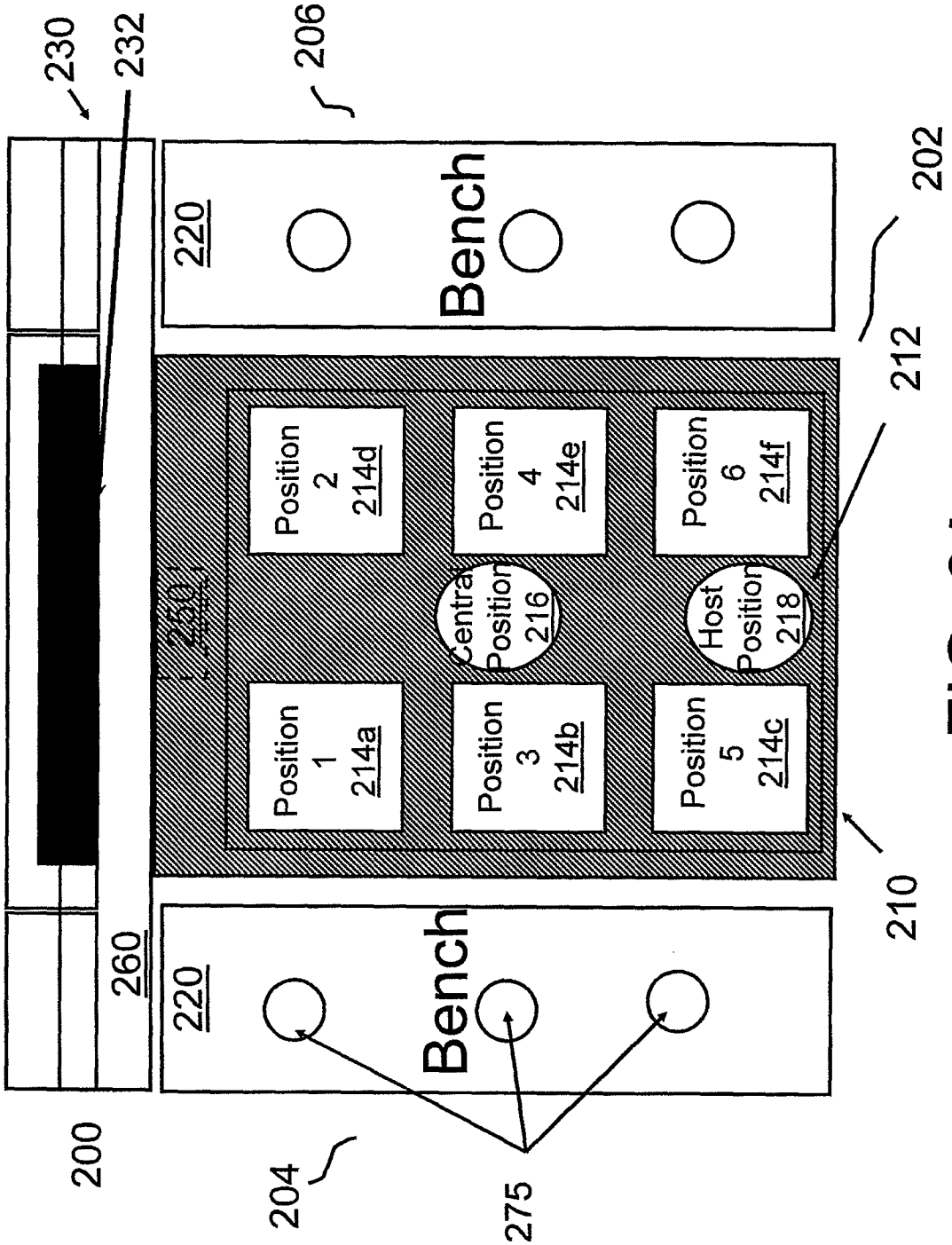

208
230
232
206
220
Bench
202
212
Position 2 214d
Position 4 214e
Position 6 214f
Central Position 216
Host Position 218
Position 1 214a
Position 3 214b
Position 5 214c
250
220
Bench
260
210
200
204
275

FIG. 2A

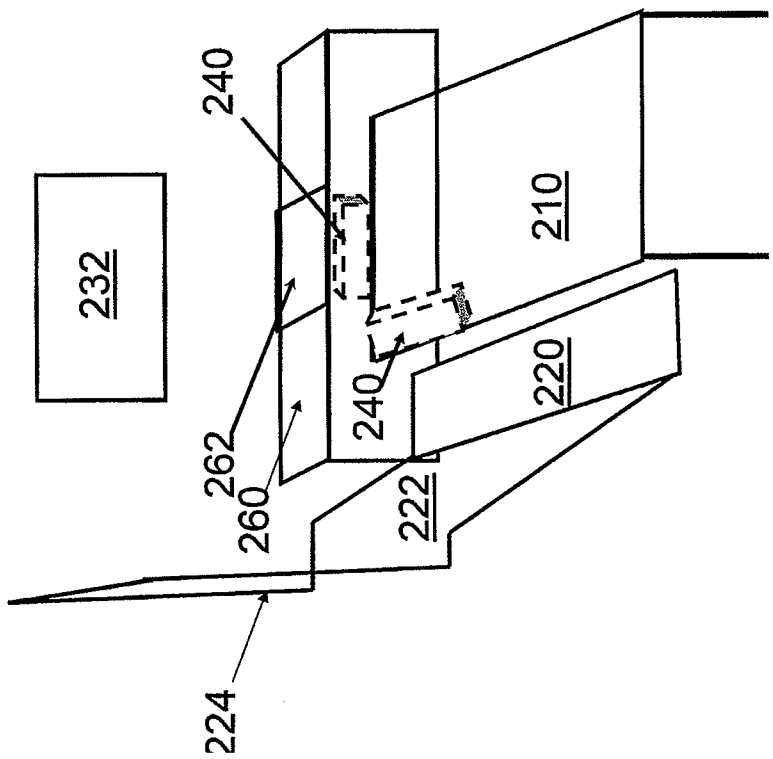


FIG. 2B

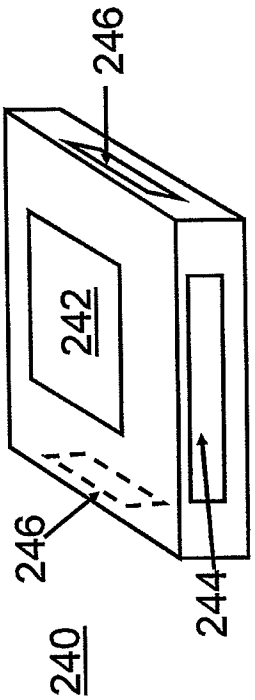


FIG. 2C

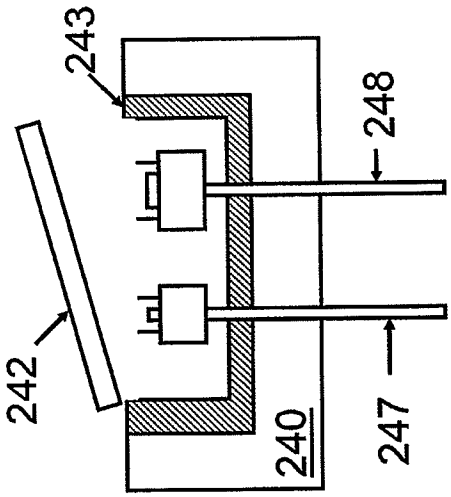


FIG. 2D

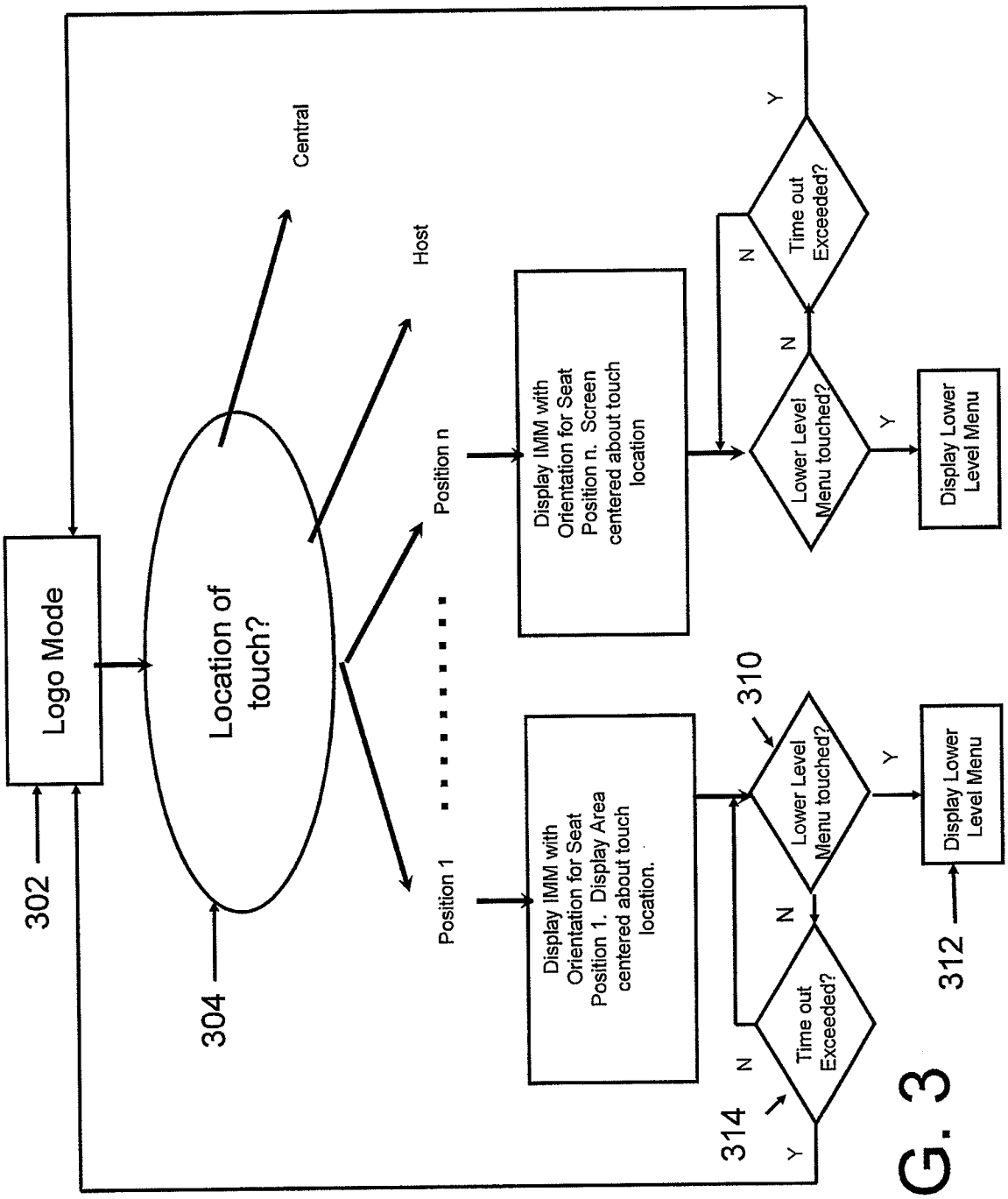

Logo Mode
302
Location of touch?
304
Central
Host
Position n
Position 1
Display IMM with Orientation for Seat Position n. Screen centered about touch location
Display IMM with Orientation for Seat Position 1. Display Area centered about touch location.
Lower Level Menu touched?
310
Time out Exceeded?
314
Display Lower Level Menu
312
Y
N

FIG. 3

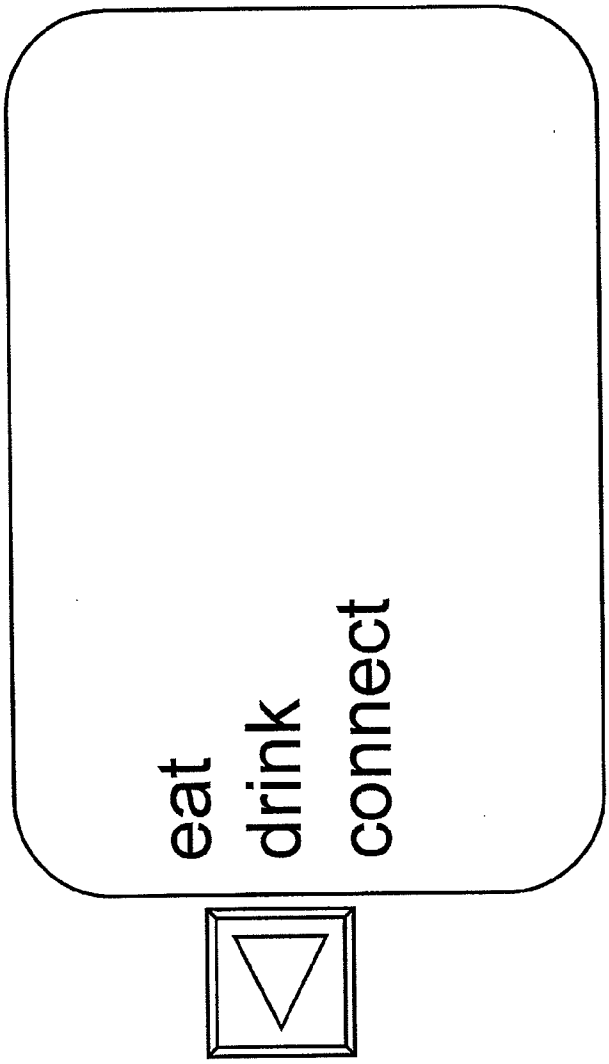

eat
drink
connect

FIG. 4A

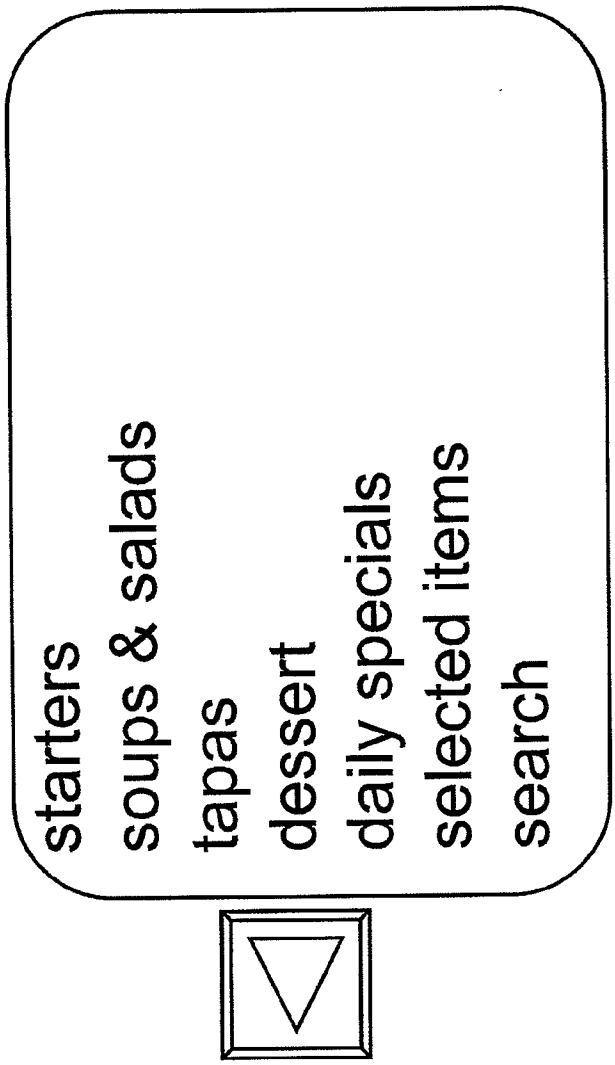

starters
soups & salads
tapas
dessert
daily specials
selected items
search

FIG. 4B

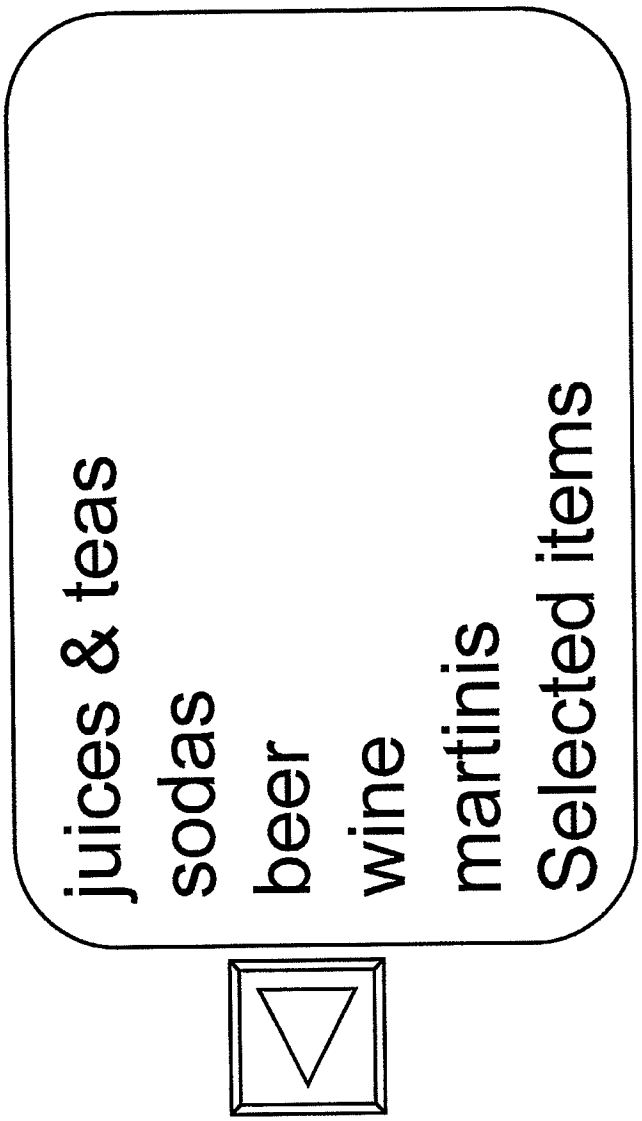

juices & teas
sodas
beer
wine
martinis
Selected items

FIG. 4C


community
Surroundings
entertainment
my devices
Other tables
My $0.02

FIG. 4D

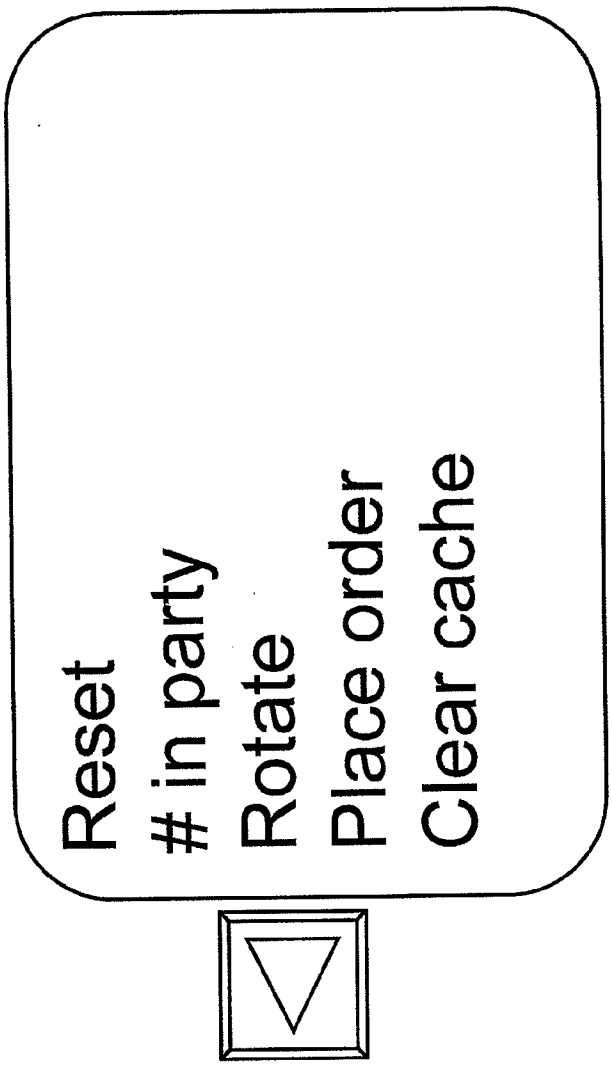

Reset
in party
Rotate
Place order
Clear cache

FIG. 4E

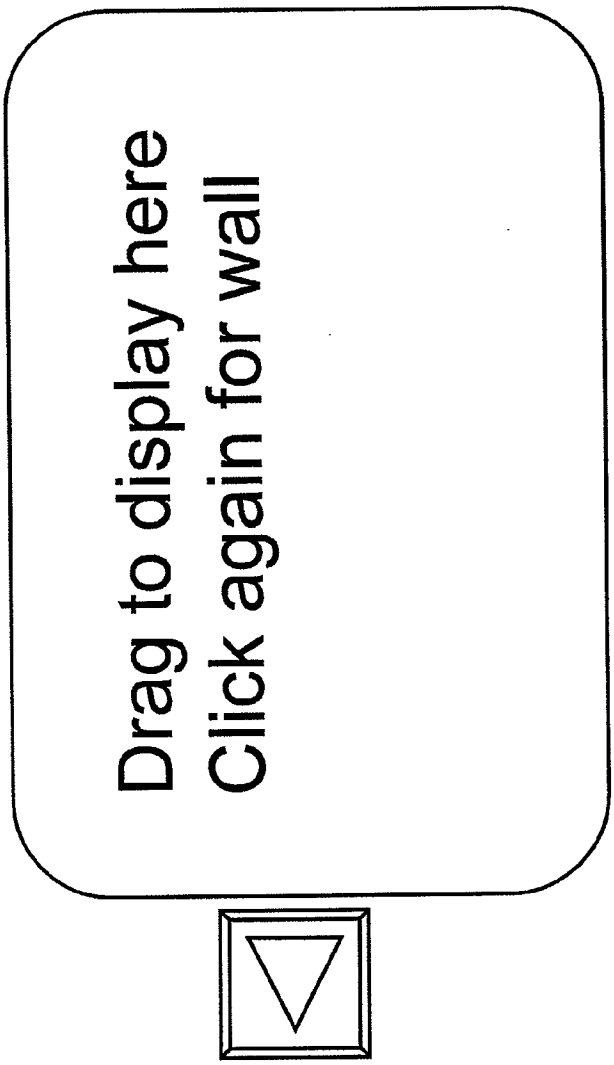

Drag to display here
Click again for wall

FIG. 4F

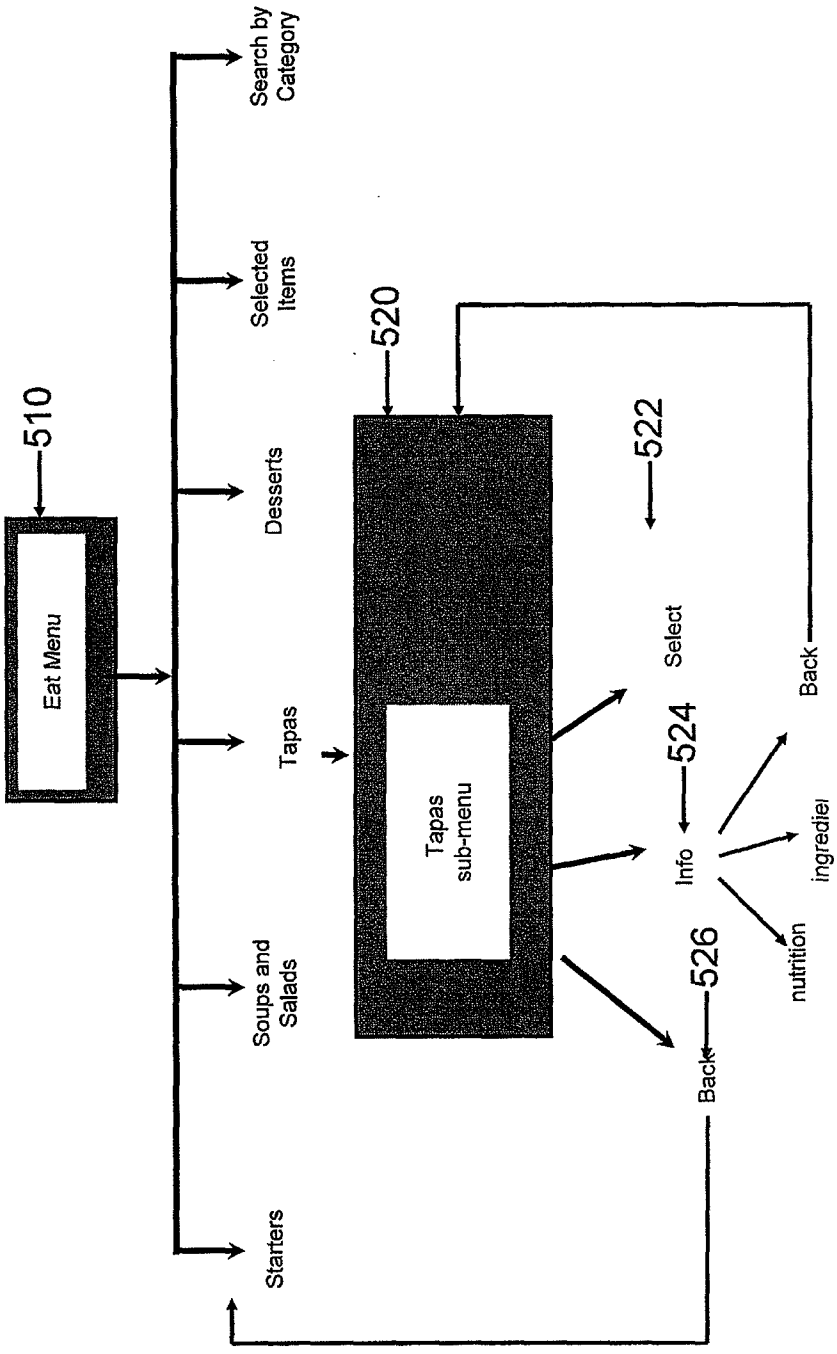

510
Eat Menu
Search by Category
Selected Items
Desserts
Tapas
Soups and Salads
Starters
520
Tapas sub-menu
522
Select
Back
524
Info
ingredie
nutrition
526
Back

FIG. 5A

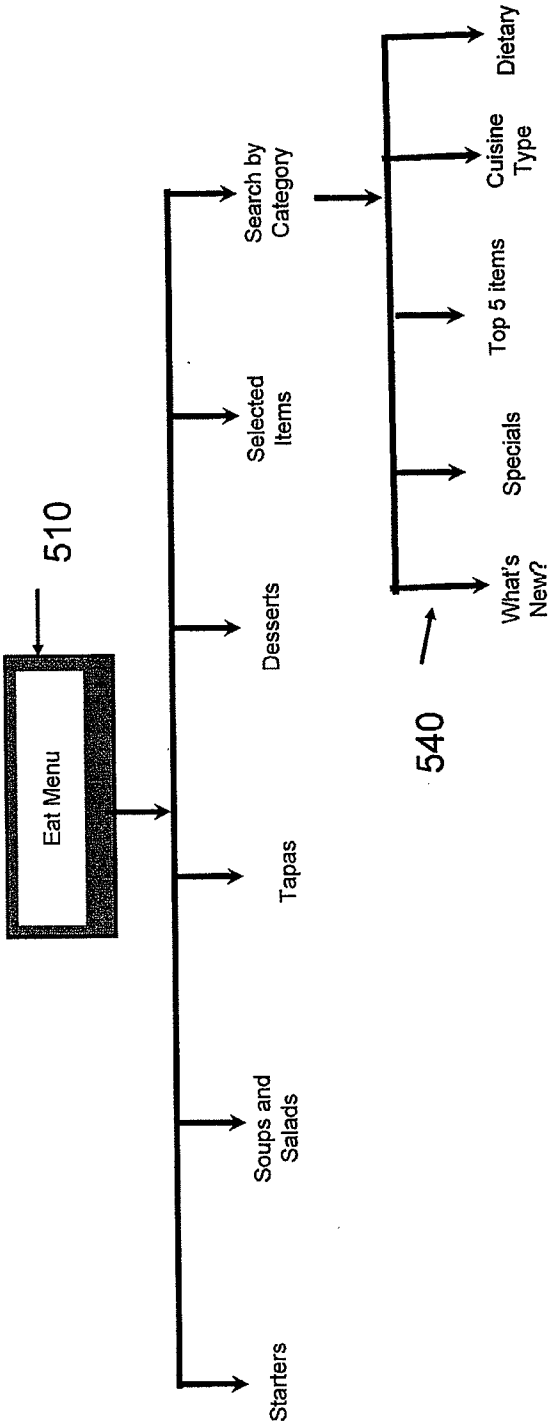

510
Eat Menu
Starters
Soups and Salads
Tapas
Desserts
Selected Items
Search by Category
540
What's New?
Specials
Top 5 items
Cuisine Type
Dietary

FIG. 5B

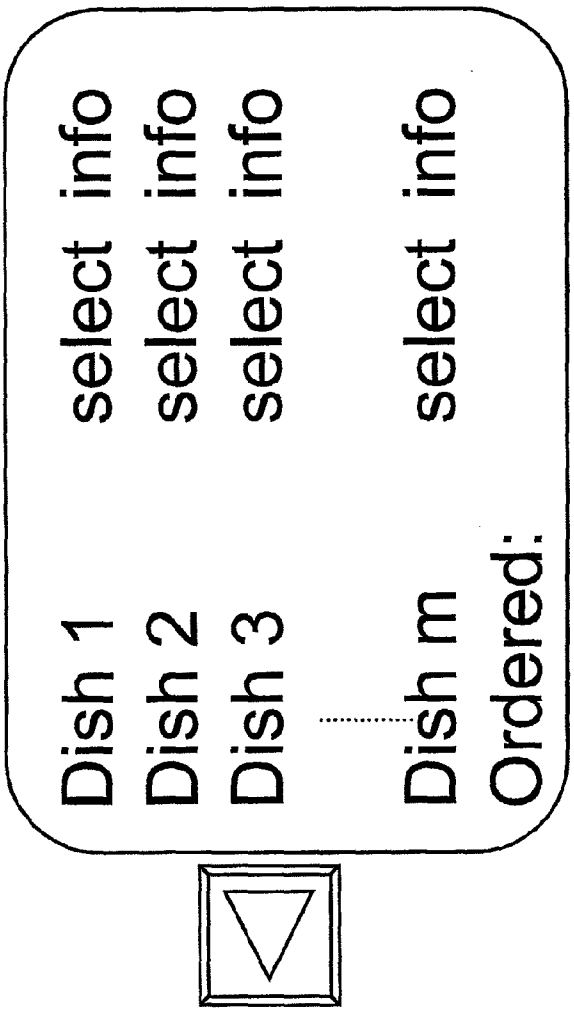

Dish 1 select info
Dish 2 select info
Dish 3 select info
Dish m select info
Ordered:

FIG. 6A

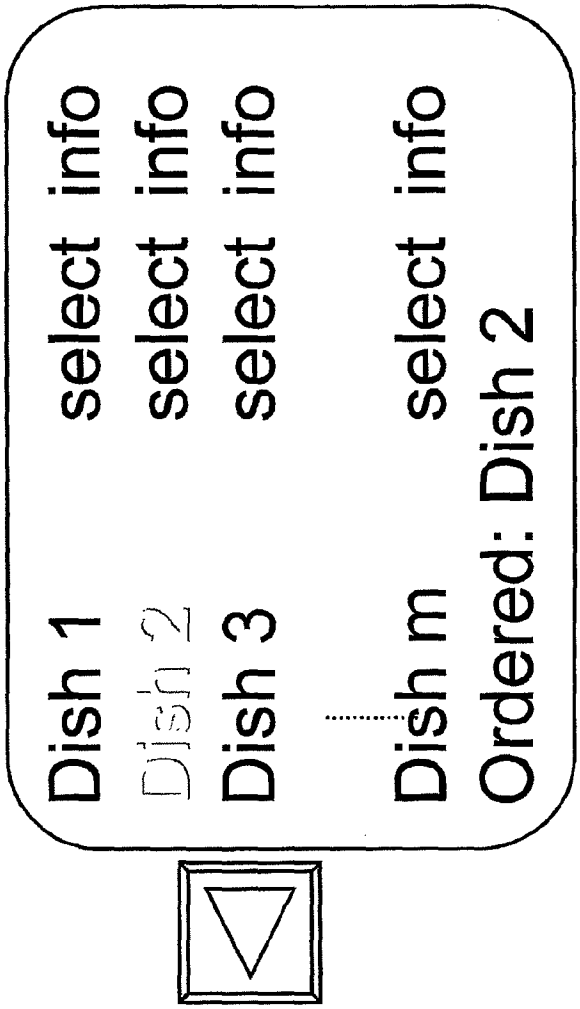

Dish 1 select info
Dish 2 select info
Dish 3 select info
Dish m select info
Ordered: Dish 2

FIG. 6B

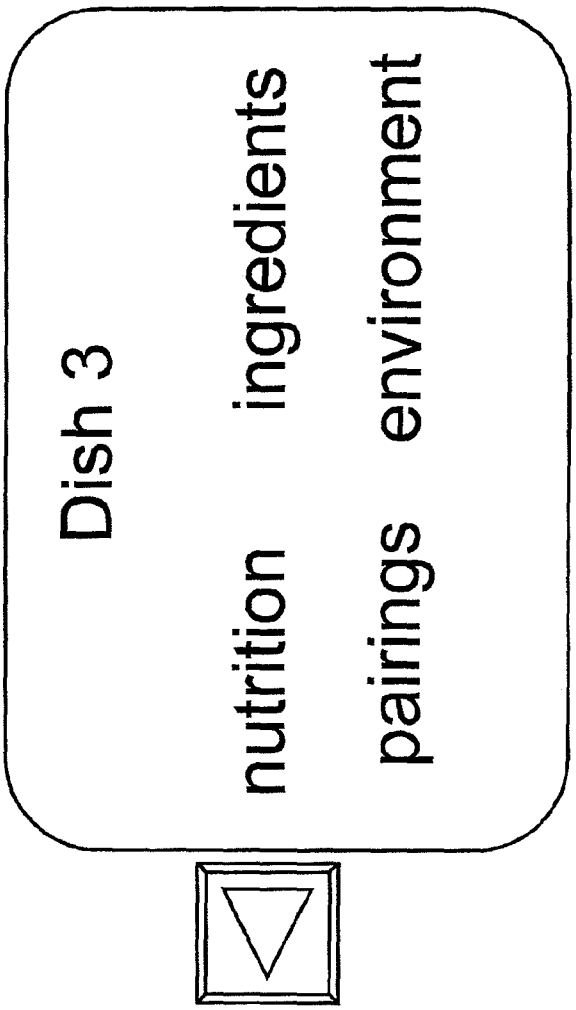

Dish 3
nutrition
ingredients
pairings
environment

FIG. 6C

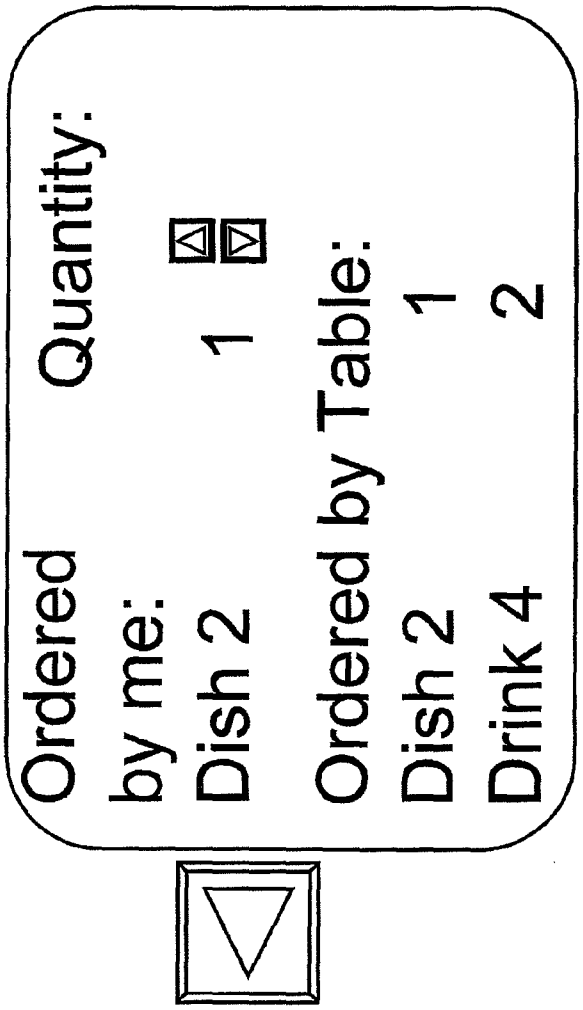

Ordered by me:
Quantity:
Dish 2
1
Ordered by Table:
Dish 2
1
Drink 4
2

FIG. 6D

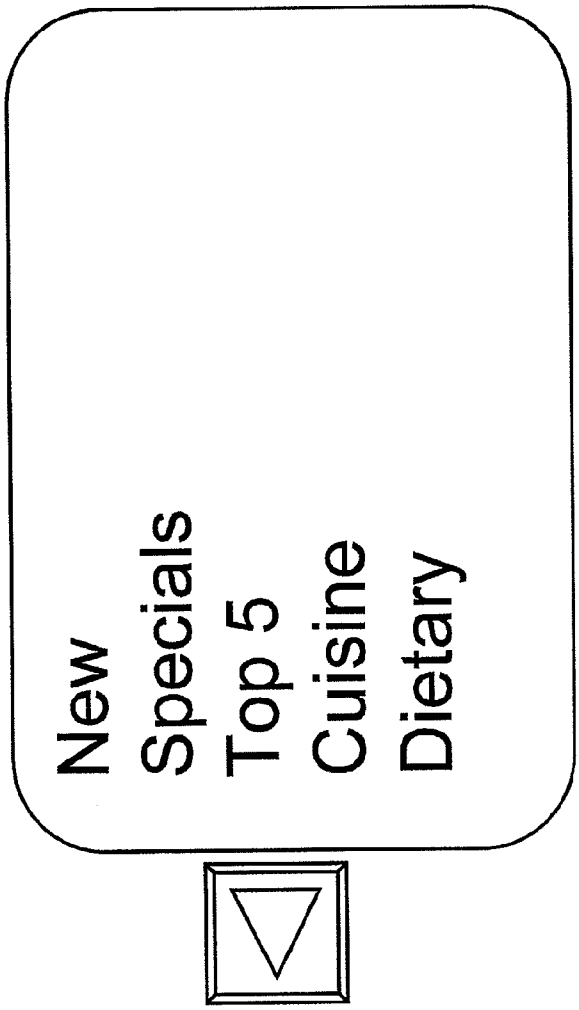

New
Specials
Top 5
Cuisine
Dietary

FIG. 6E

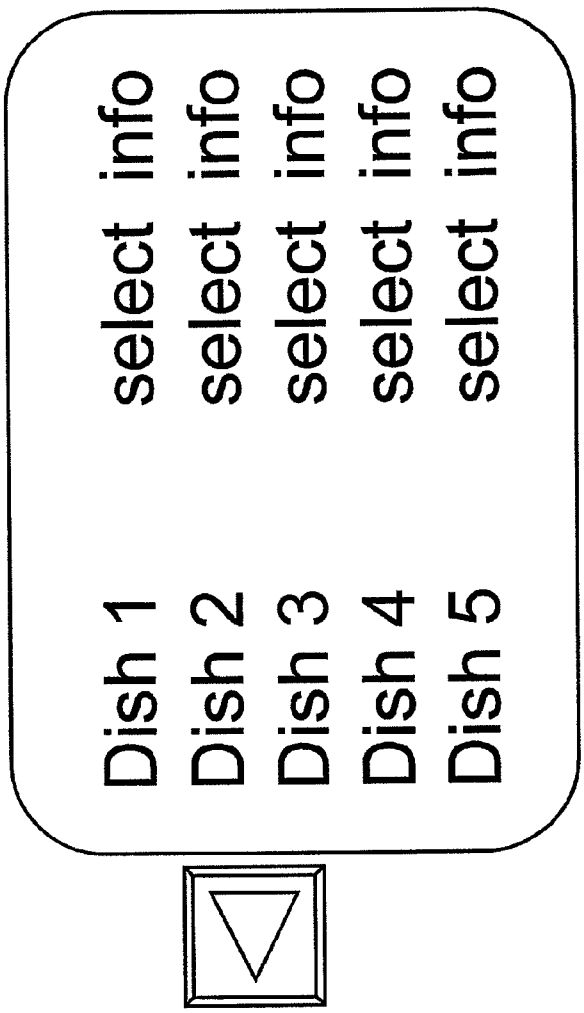

Dish 1 select info
Dish 2 select info
Dish 3 select info
Dish 4 select info
Dish 5 select info

FIG. 6F

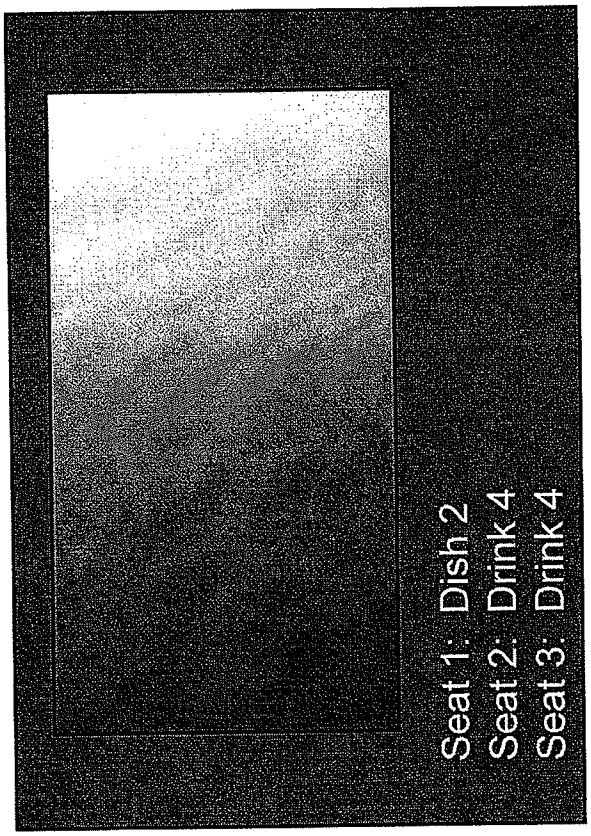


FIG. 7

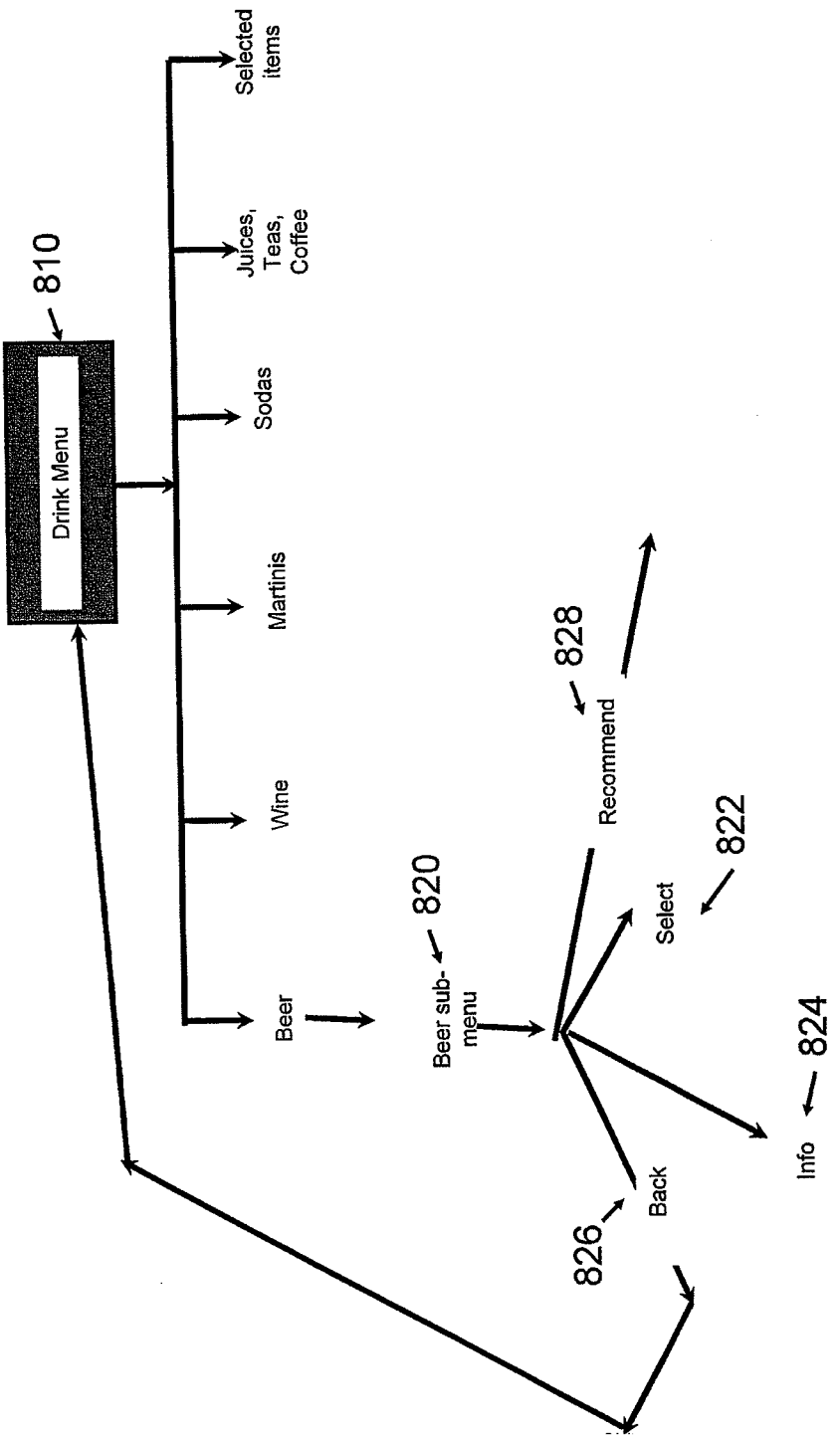

810
Drink Menu
Selected items
Juices, Teas, Coffee
Sodas
Martinis
Wine
Beer
820
Beer sub-menu
828
Recommend
822
Select
824
Info
826
Back

FIG. 8

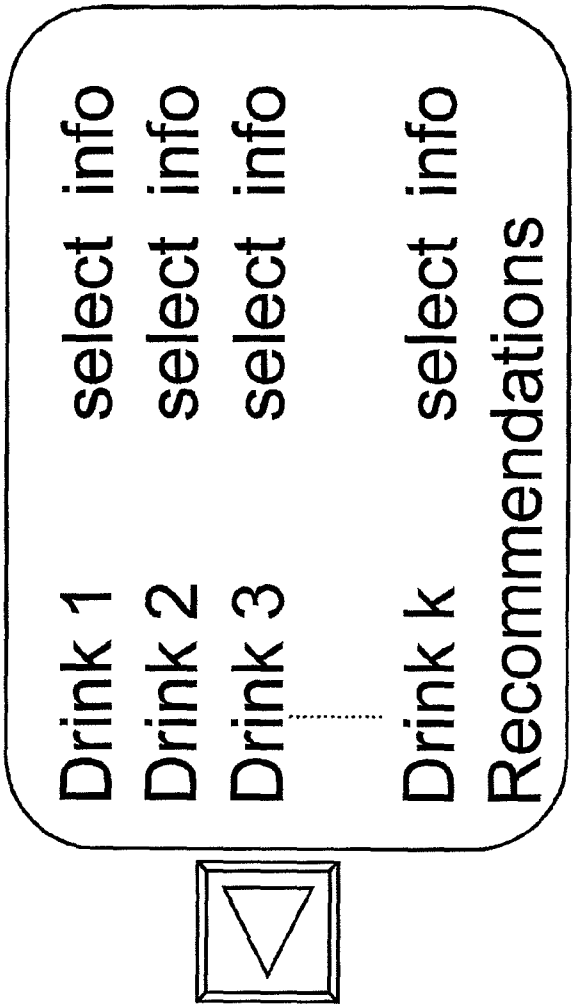

Drink 1 select info
Drink 2 select info
Drink 3 select info
Drink k select info
Recommendations

FIG. 9A

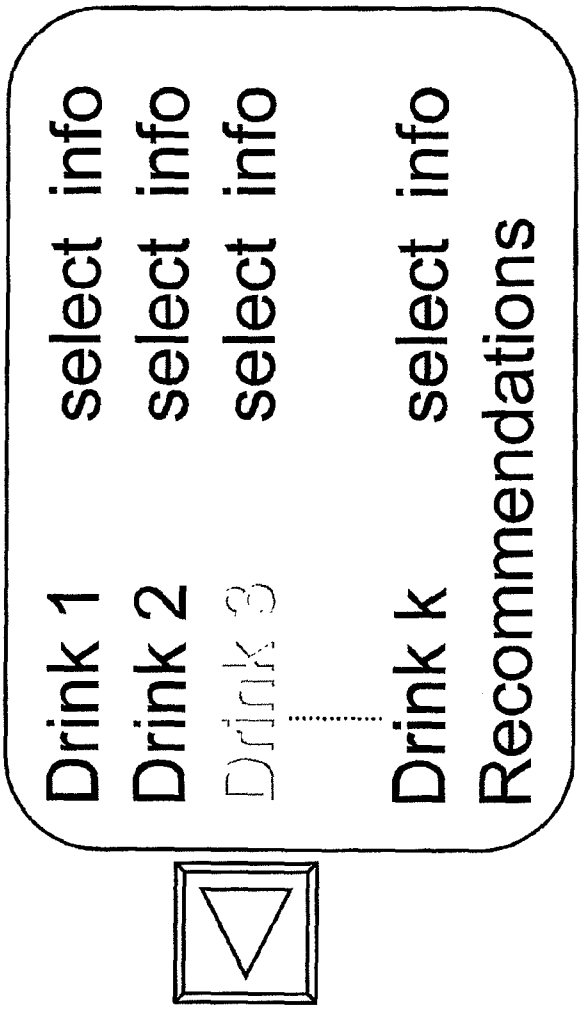

Drink 1 select info
Drink 2 select info
Drink 3 select info
Drink k select info
Recommendations

FIG. 9B

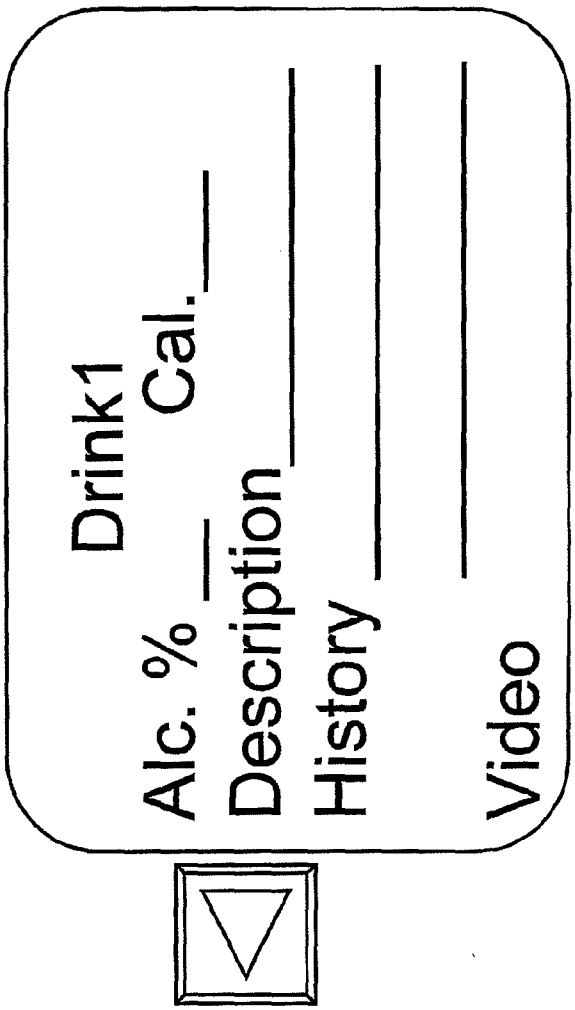

Drink1
Alc. %__ Cal.__
Description_____
History _____
Video

FIG. 9C

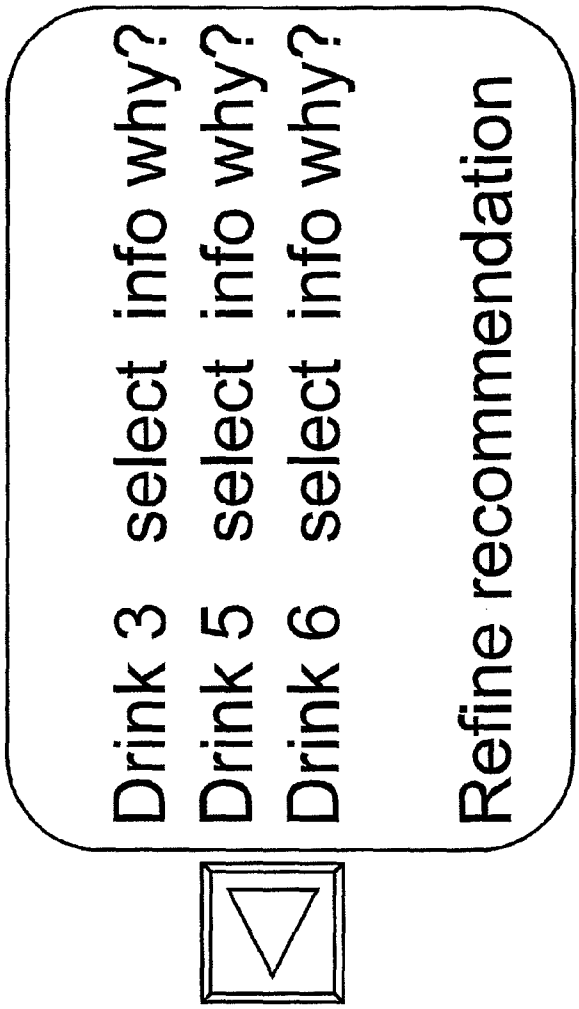

Drink 3 select info why?
Drink 5 select info why?
Drink 6 select info why?
Refine recommendation

FIG. 9D

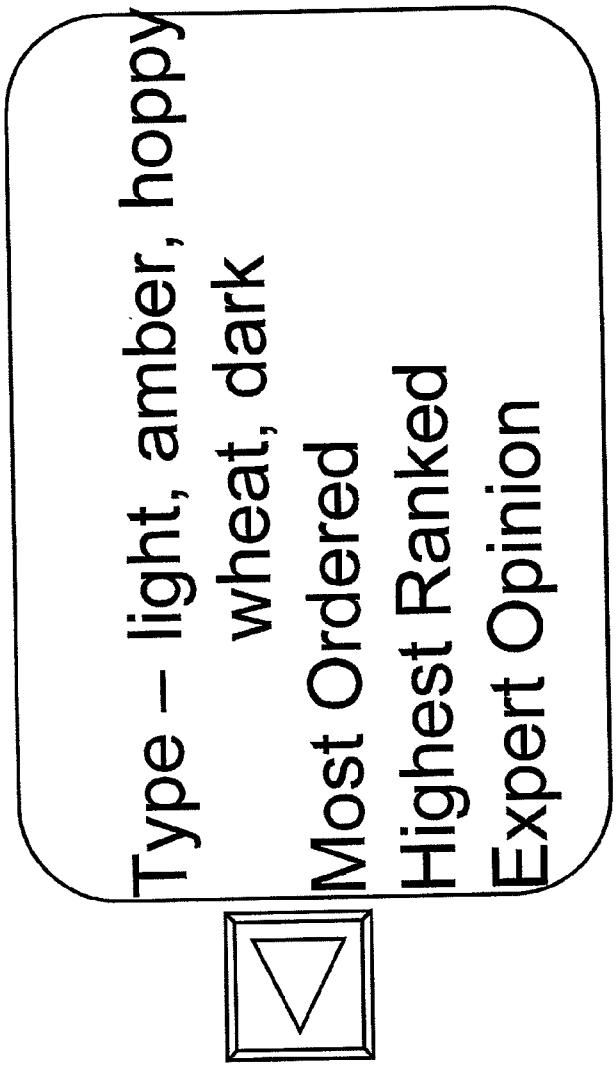

Type – light, amber, hoppy wheat, dark
Most Ordered
Highest Ranked
Expert Opinion

FIG. 9E

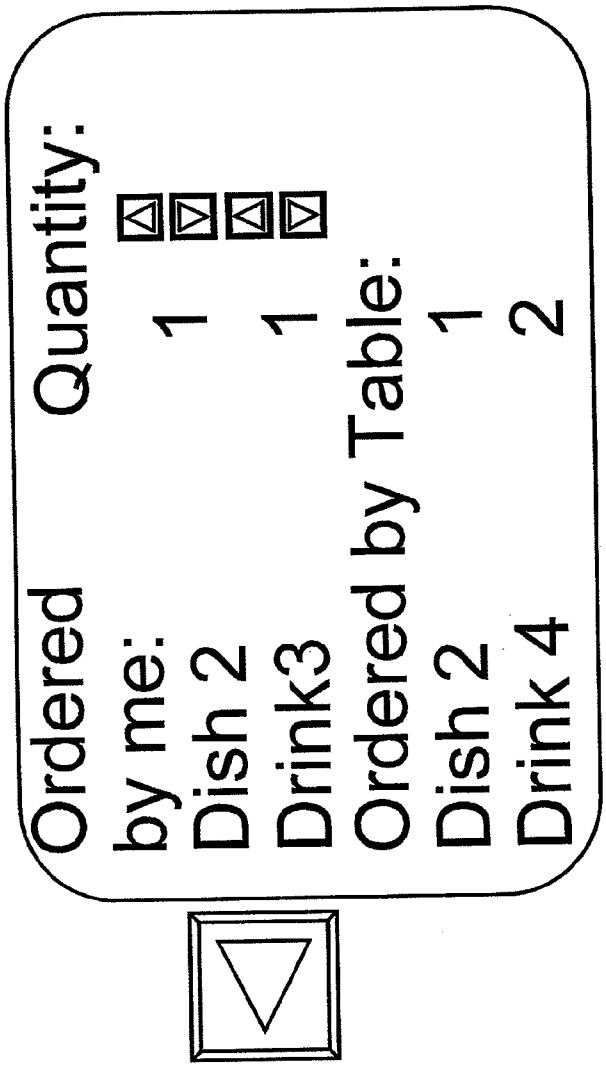

Ordered by me:
Quantity:
1
Dish 2
1
Drink3
1
Ordered by Table:
Dish 2
1
Drink 4
2

FIG. 9F

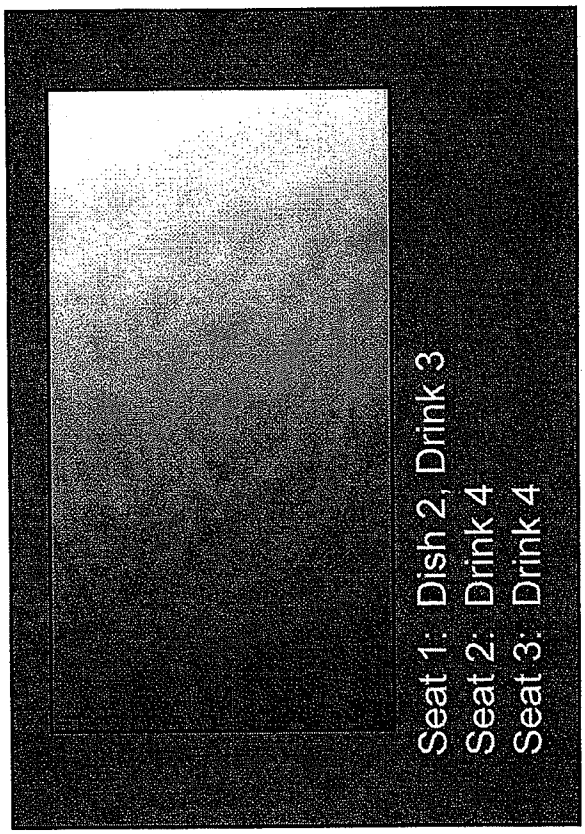


FIG. 10

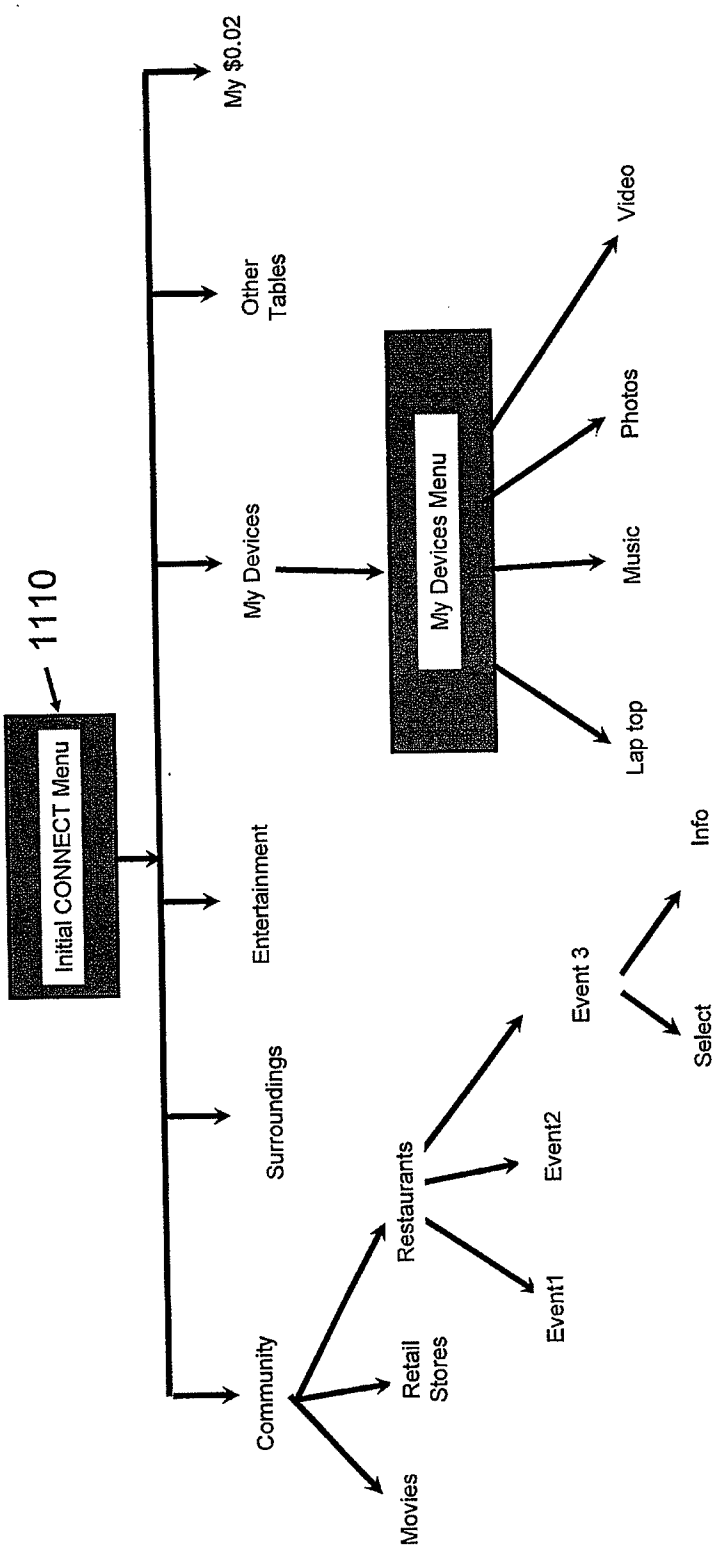

1110
Initial CONNECT Menu
My $0.02
Other Tables
My Devices
My Devices Menu
Video
Photos
Music
Lap top
Entertainment
Surroundings
Community
Restaurants
Retail Stores
Movies
Event1
Event2
Event 3
Info
Select

FIG. 11

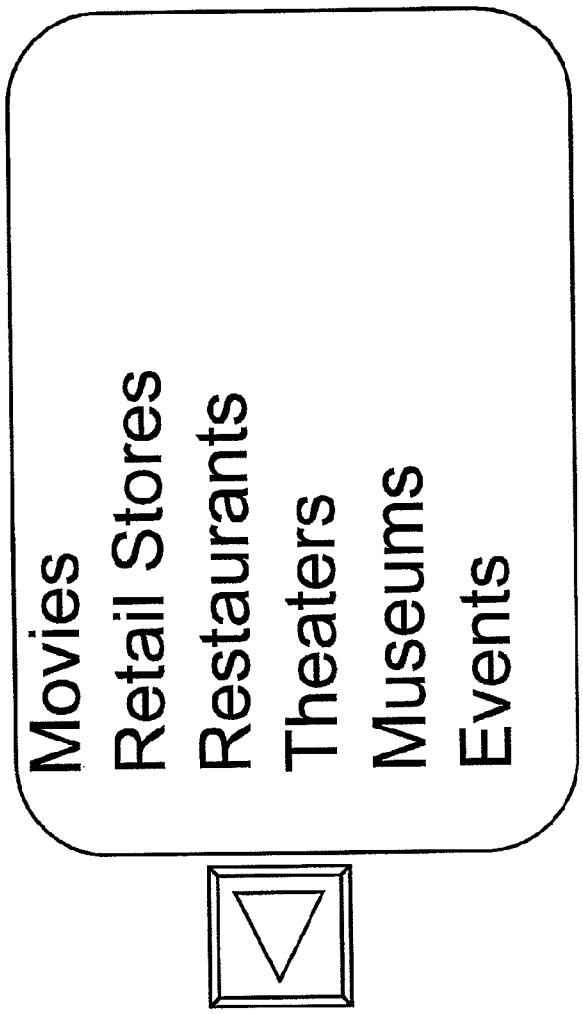


FIG. 12A

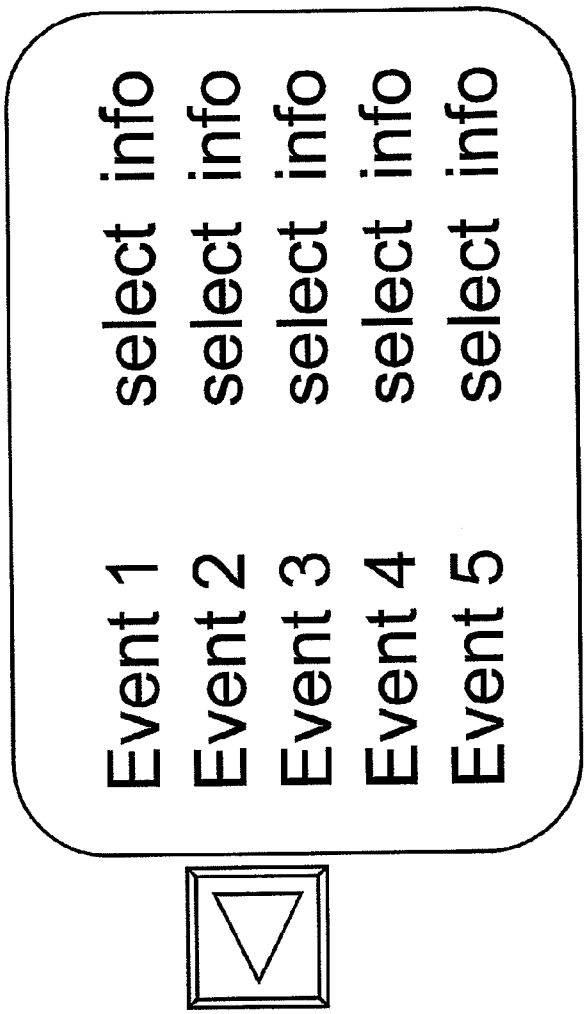


FIG. 12B

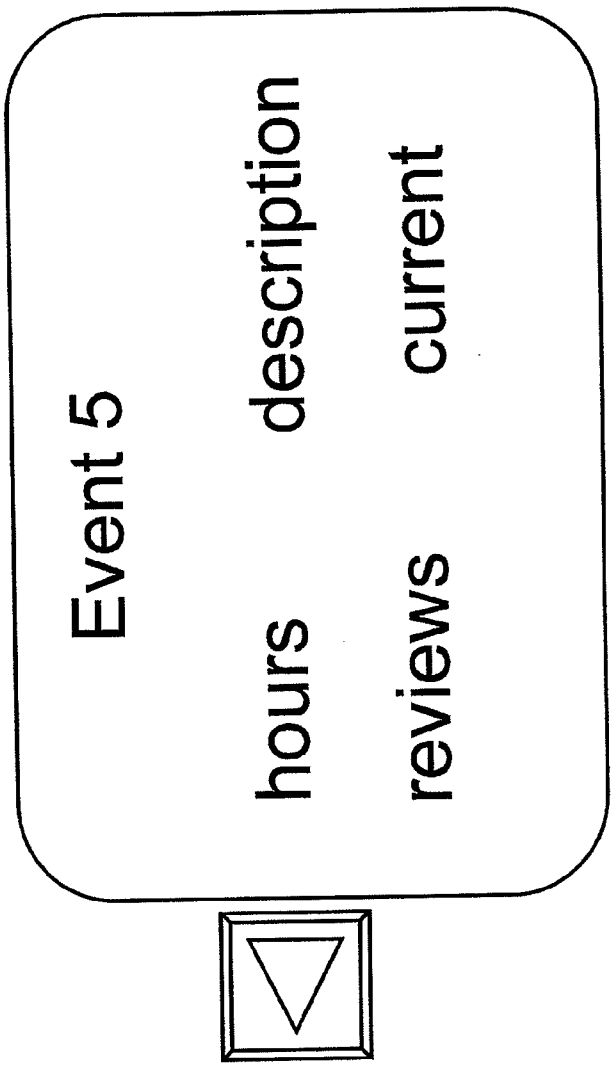


FIG. 12C

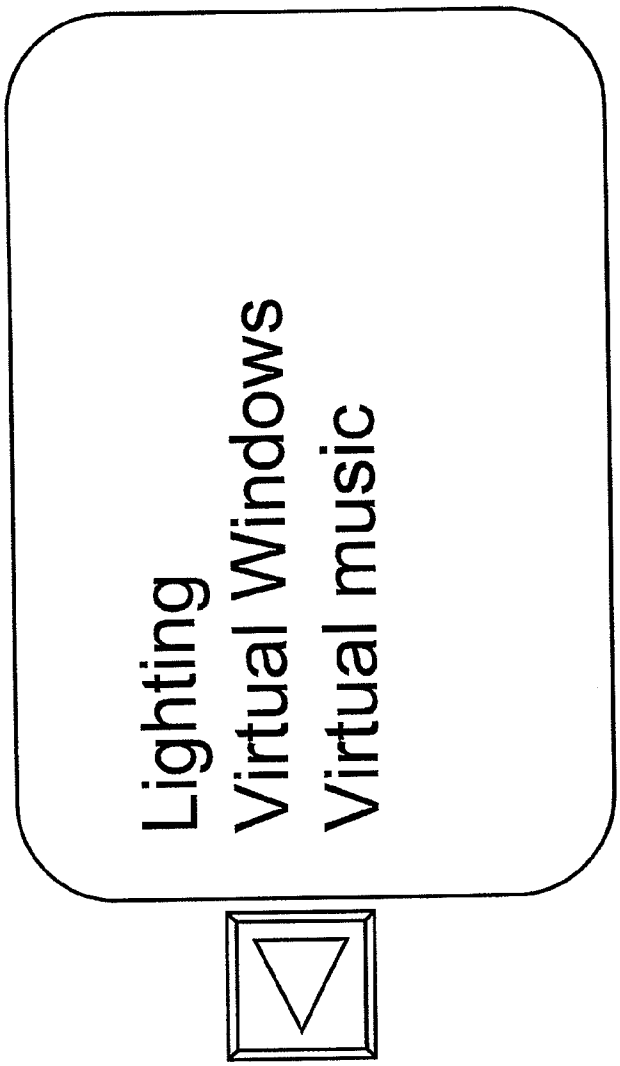


FIG. 12D

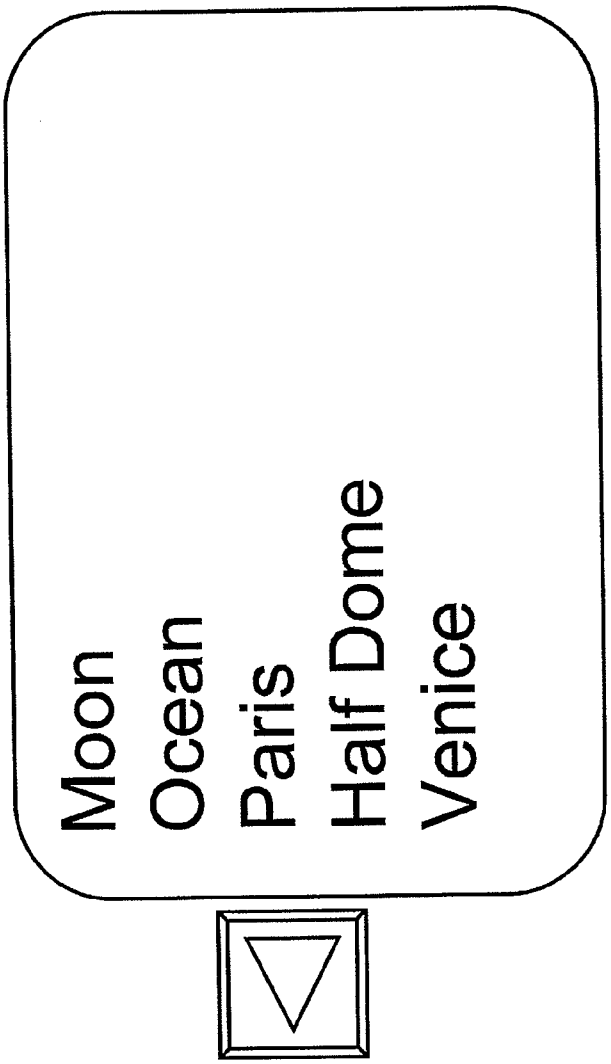


FIG. 12E

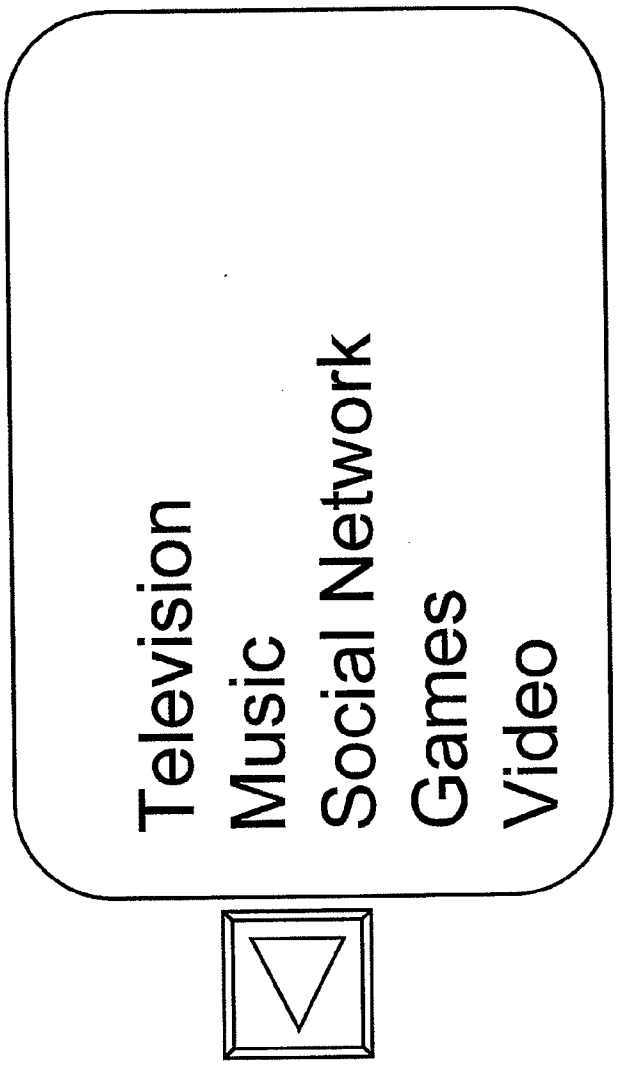


FIG. 12F

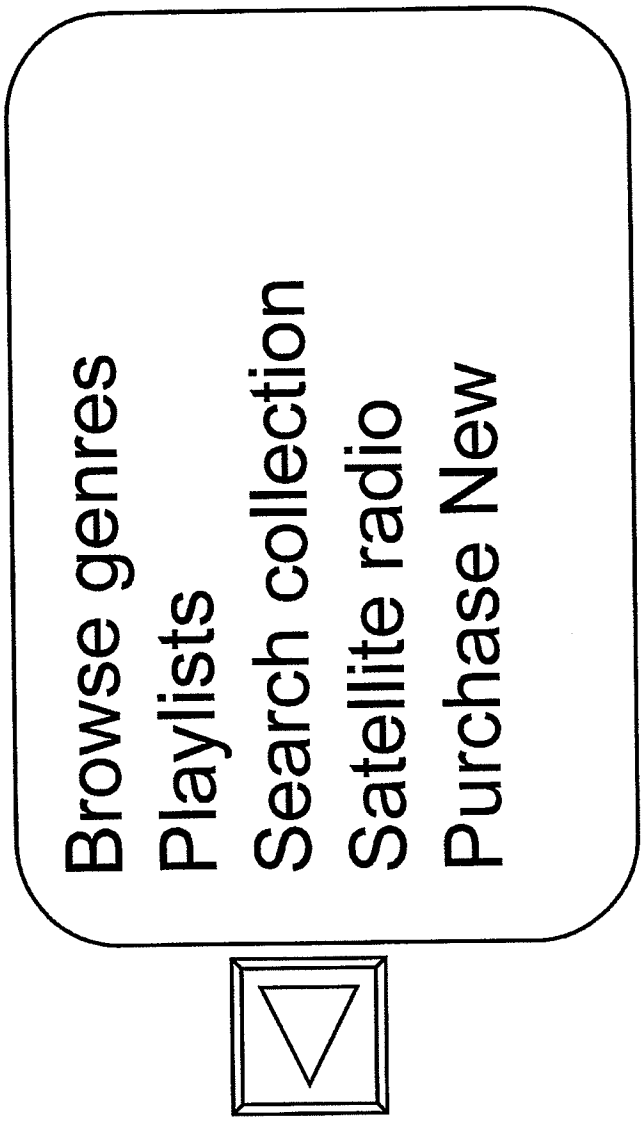


FIG. 12G

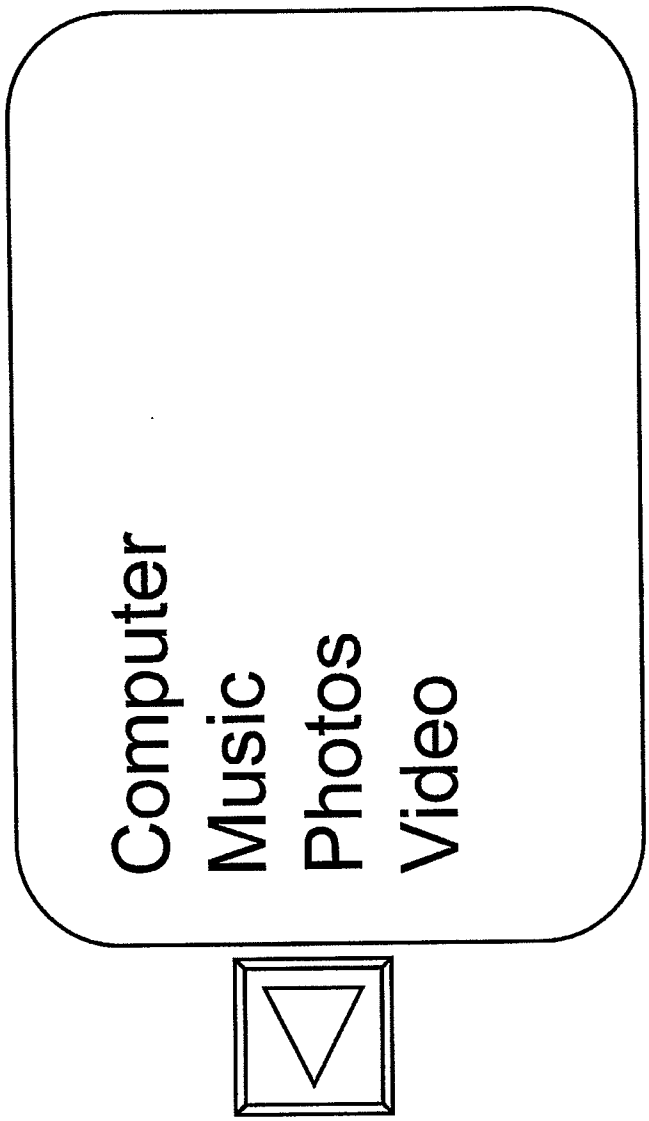


FIG. 12H

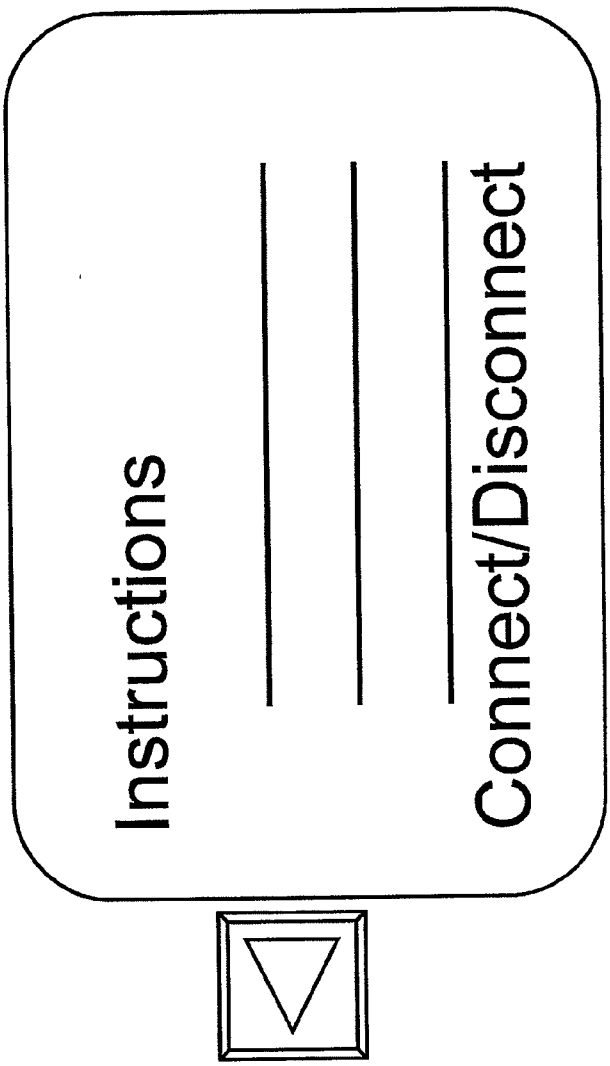


FIG. 12I

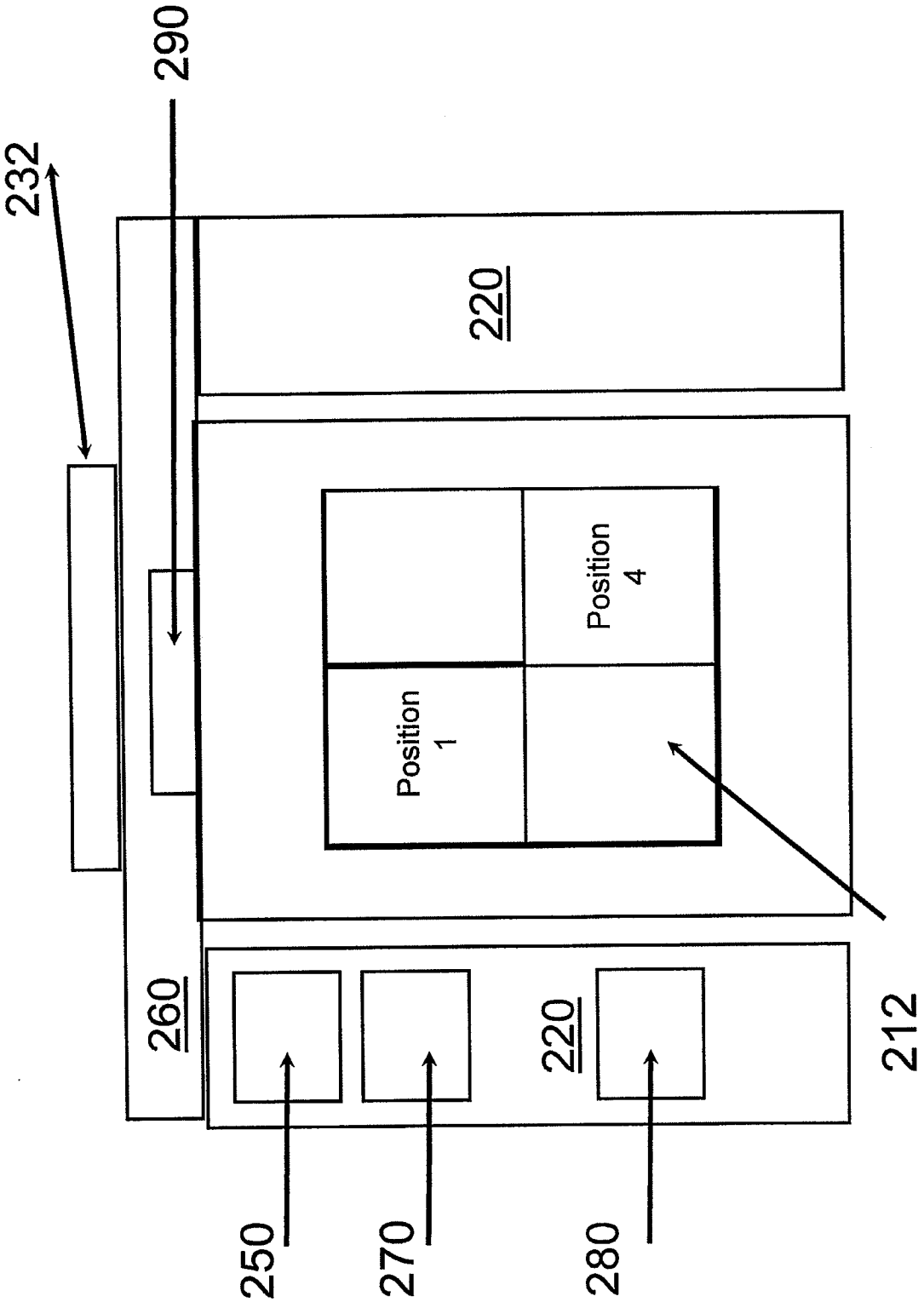


FIG. 12 J

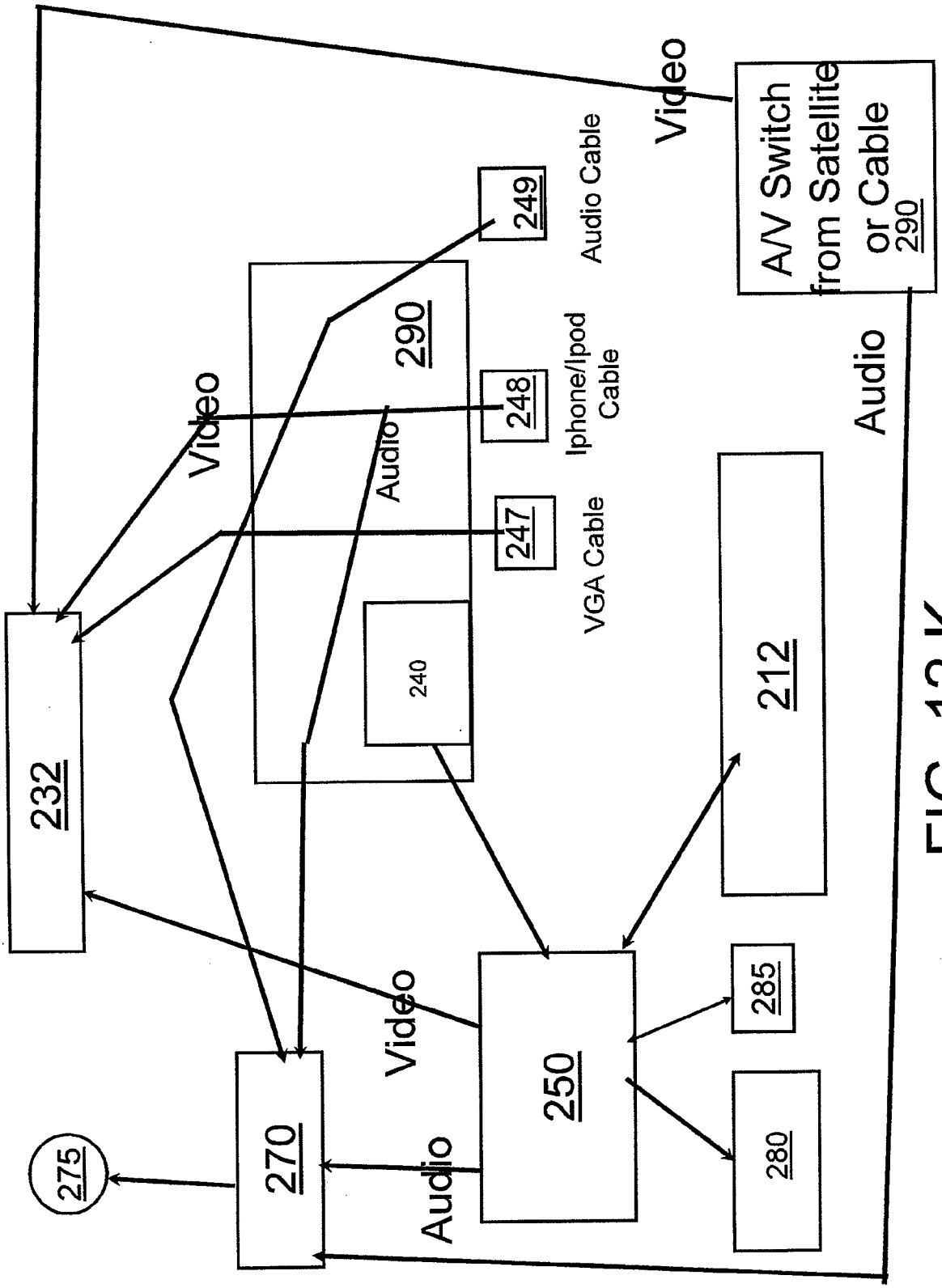

A/V Switch from Satellite or Cable
290
Video
Audio
Audio Cable
249
290
Video
Audio
248
Iphone/Ipod Cable
247
VGA Cable
240
232
212
250
285
280
270
275
Video
Audio

FIG. 12 K

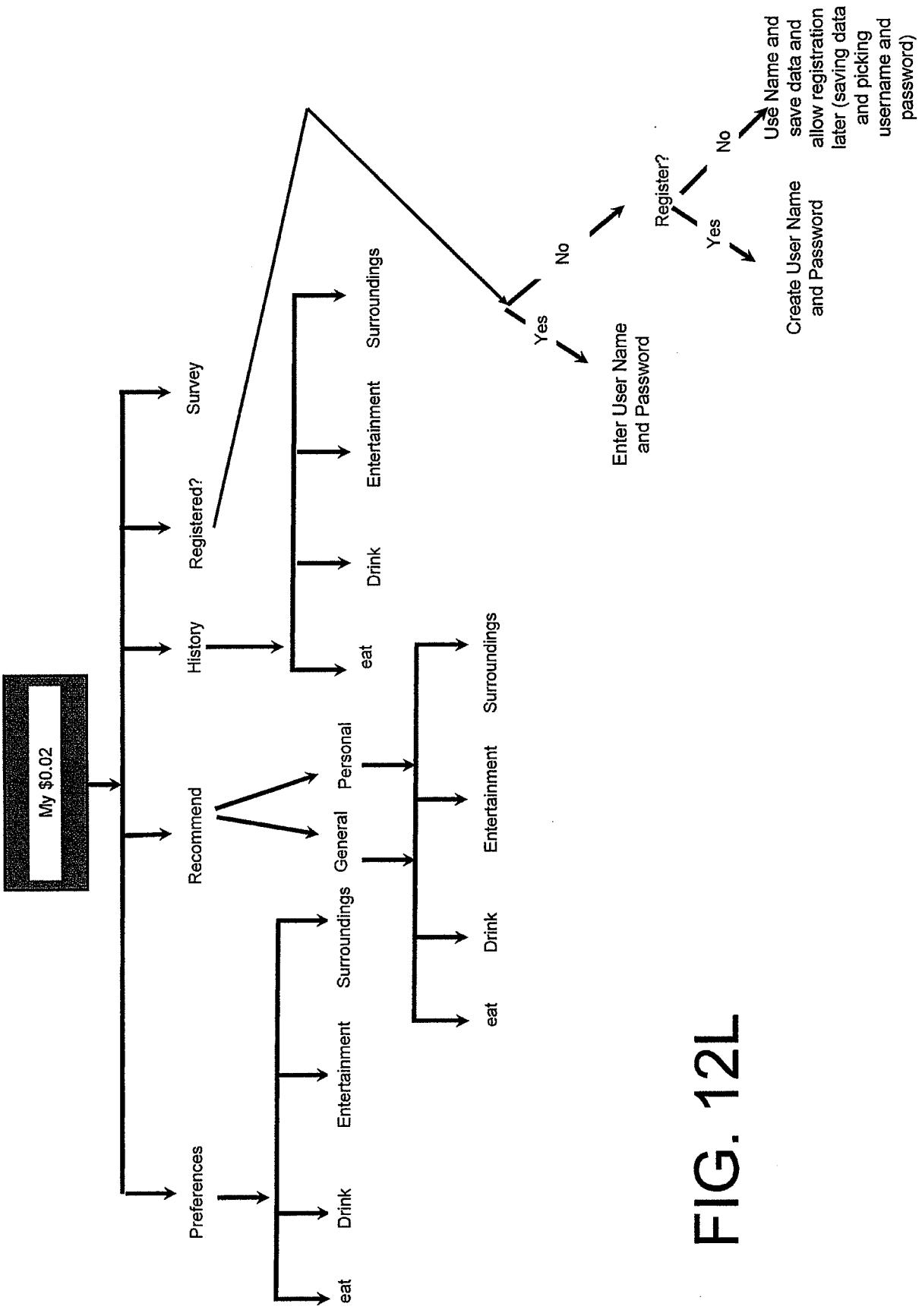

My $0.02
Preferences
Drink
eat
Entertainment
Surroundings
Recommend
General
Personal
Surroundings
Entertainment
Drink
eat
History
eat
Drink
Entertainment
Surroundings
Registered?
Yes
No
Enter User Name and Password
Register?
Yes
No
Create User Name and Password
Use Name and save data and allow registration later (saving data and picking username and password)
Survey

FIG. 12L

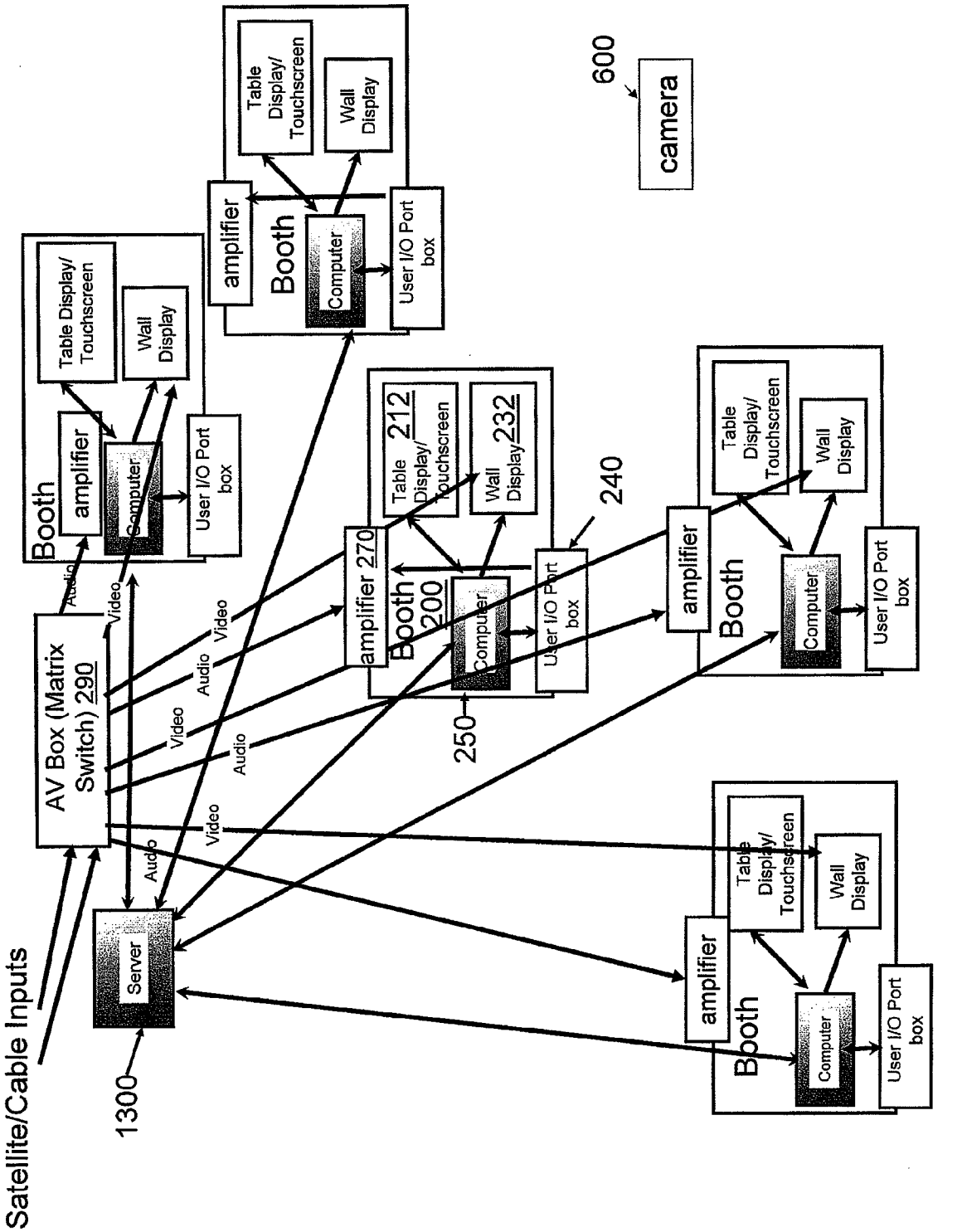

Satellite/Cable Inputs
1300
Server
AV Box (Matrix Switch) 290
Audio
Video
Booth
amplifier
Computer
User I/O Port box
Table Display/ Touchscreen
Wall Display
amplifier 270
Booth 200
Table 212 Display/ Touchscreen
Wall Display 232
240
250
600
camera

FIG. 13

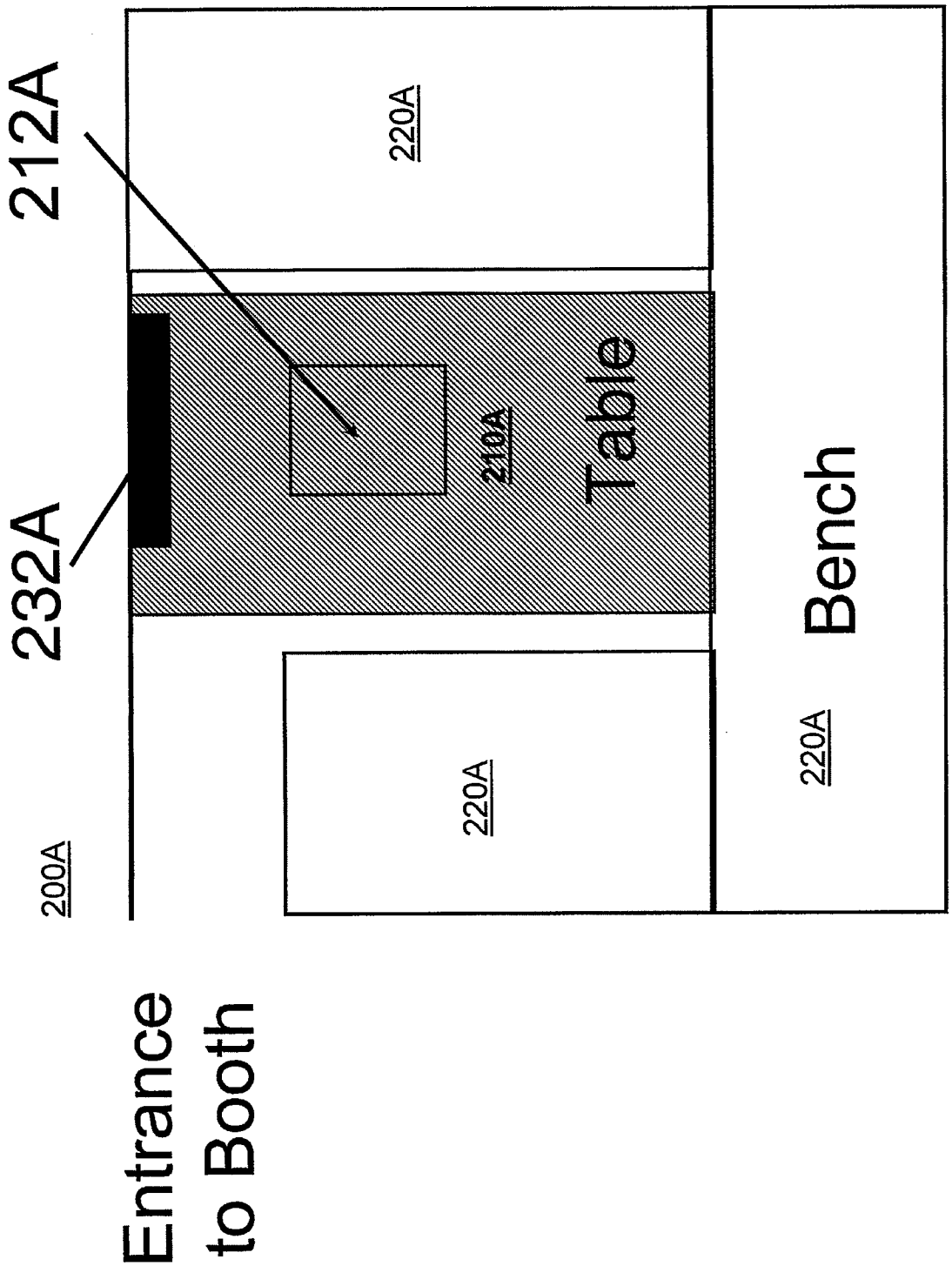

212A
232A
220A
210A
Table
Bench
220A
220A
200A
Entrance to Booth

FIG. 14A

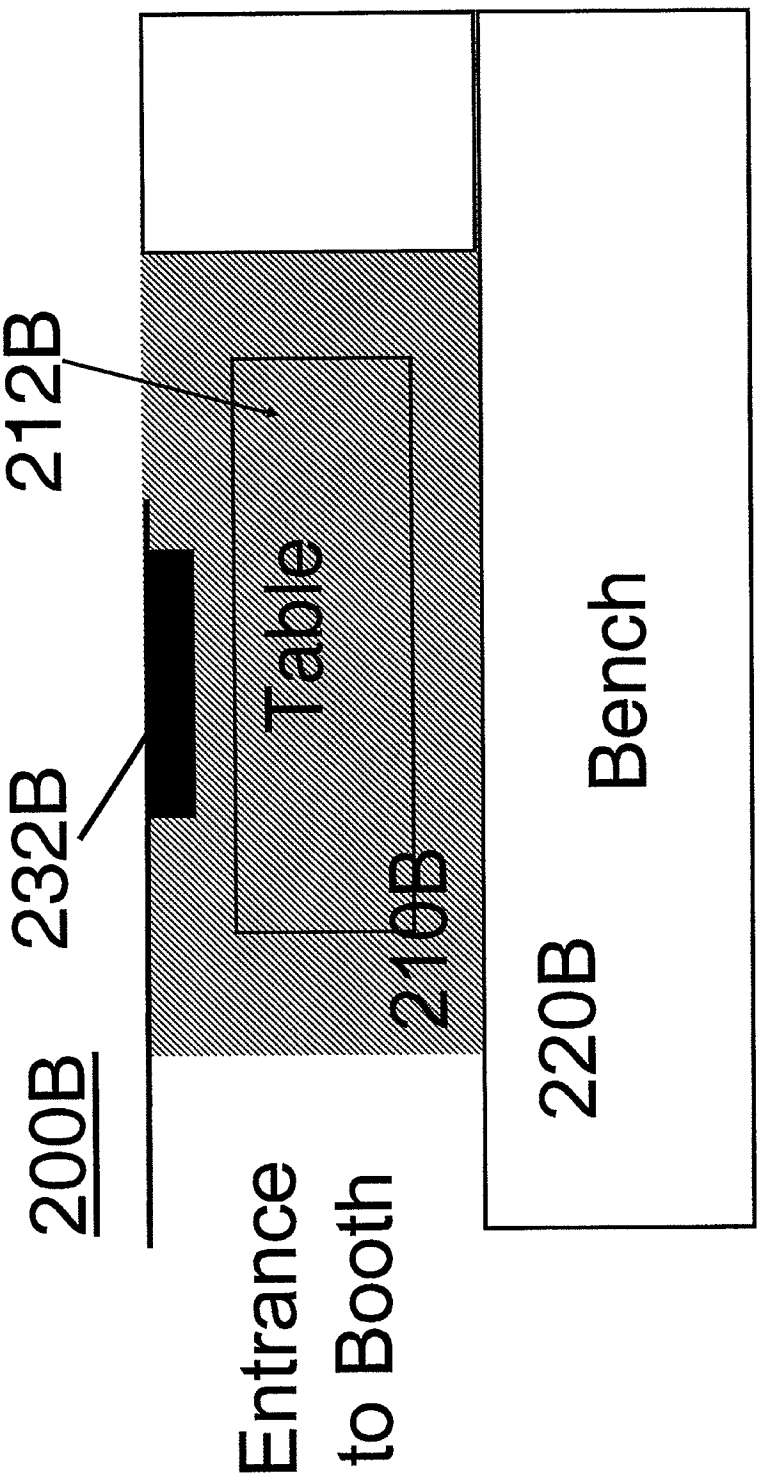


FIG. 14B

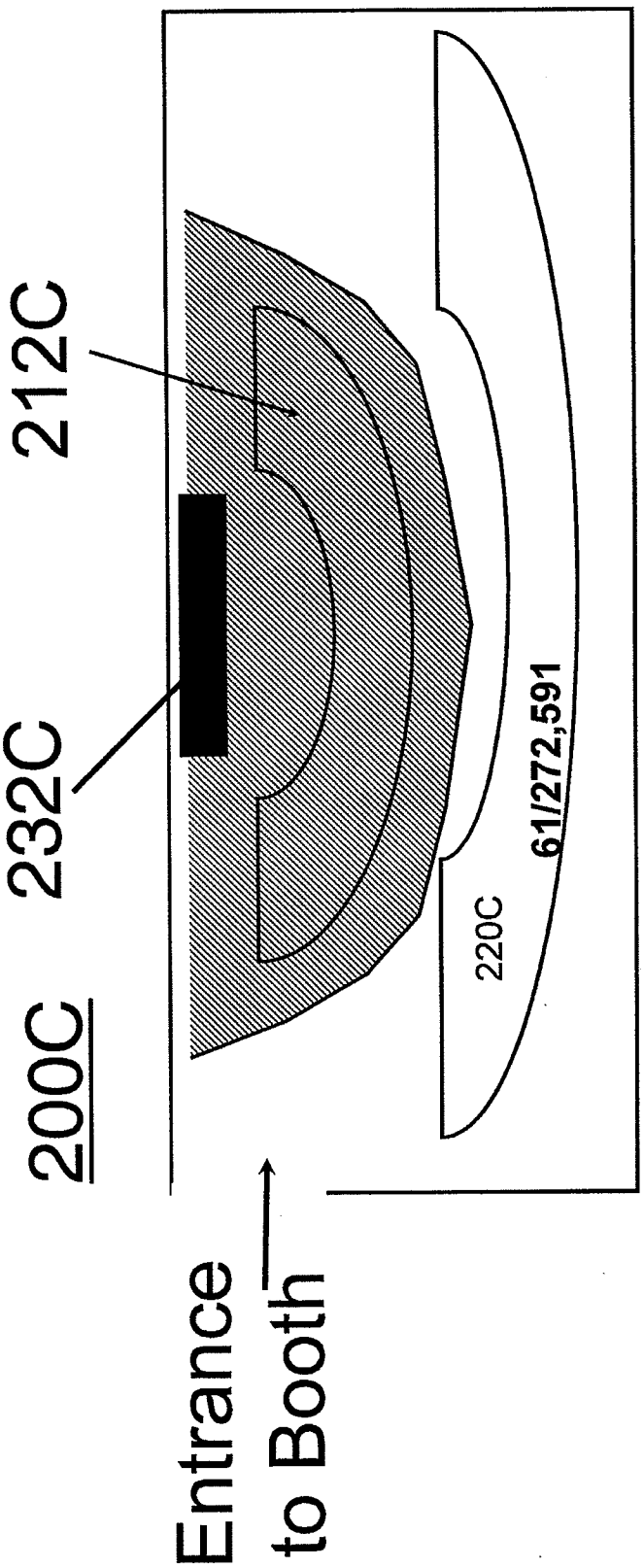


FIG. 14C

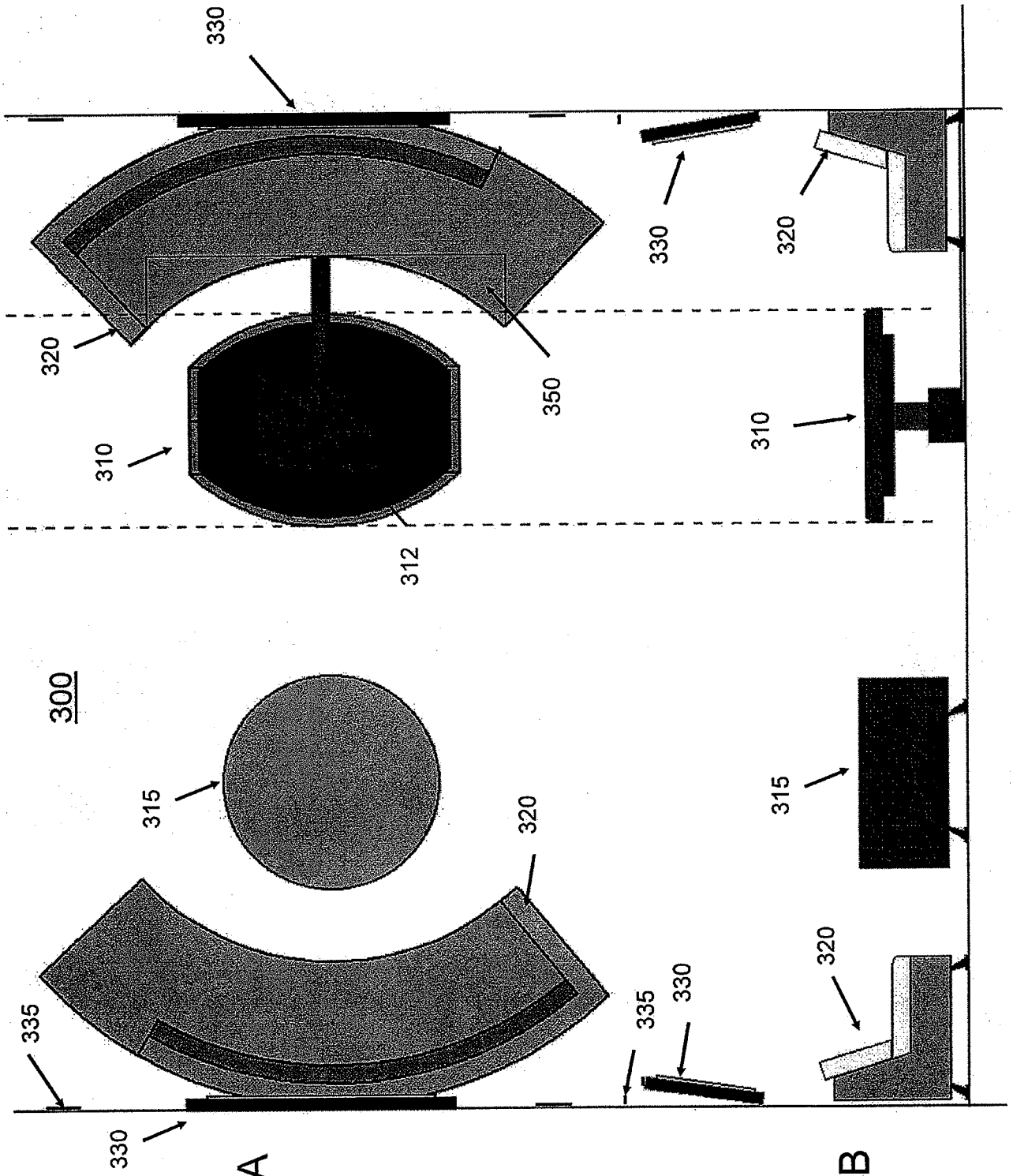


FIG. 15A

FIG. 15B

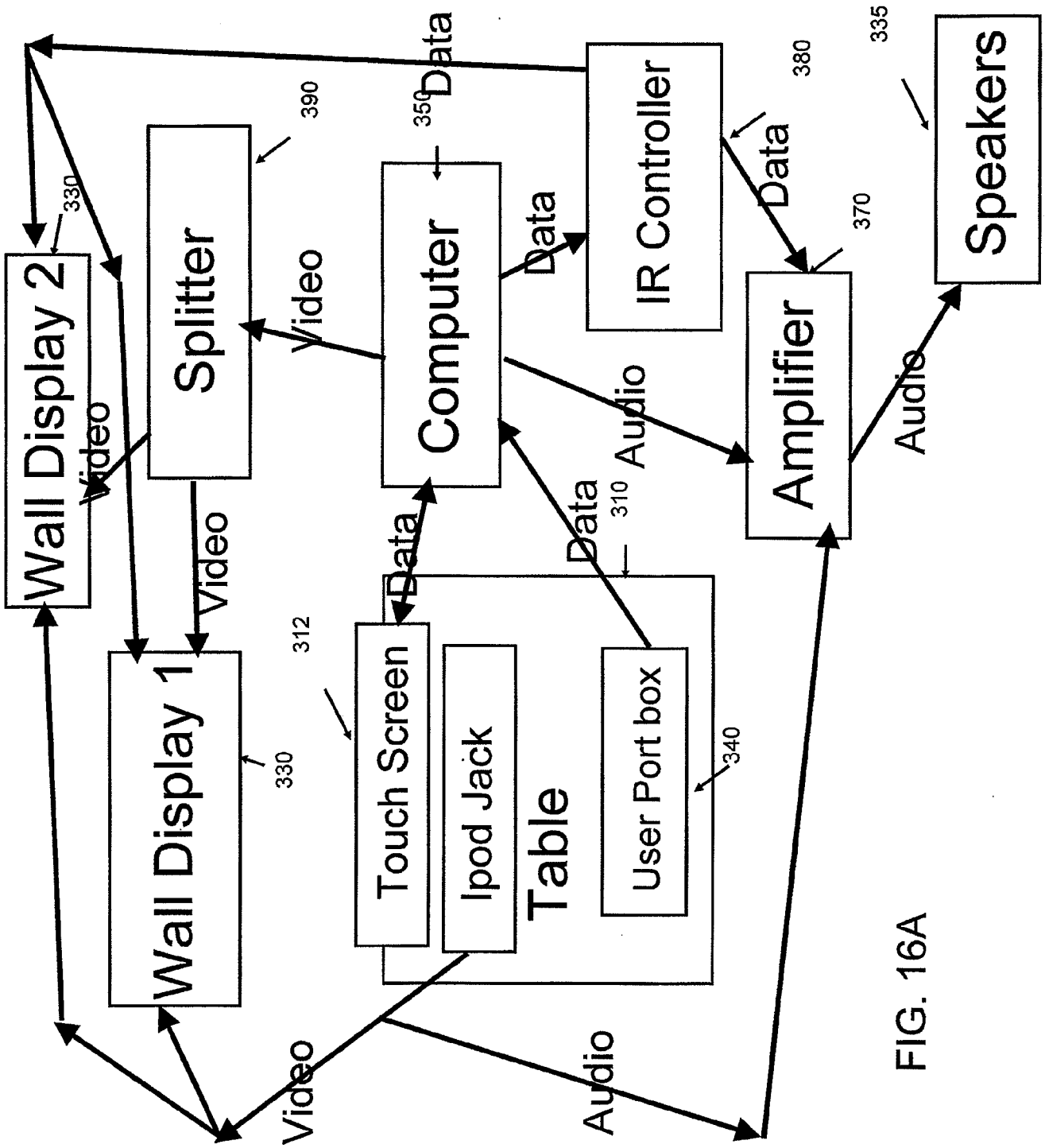

Wall Display 2
330
Video
Splitter
390
Video
Video
Wall Display 1
330
Video
Computer
350
Data
Data
Data
Data
310
Touch Screen
312
Ipod Jack
Table
User Port box
340
IR Controller
380
Data
Amplifier
370
Audio
Audio
Audio
Speakers
335

FIG. 16A

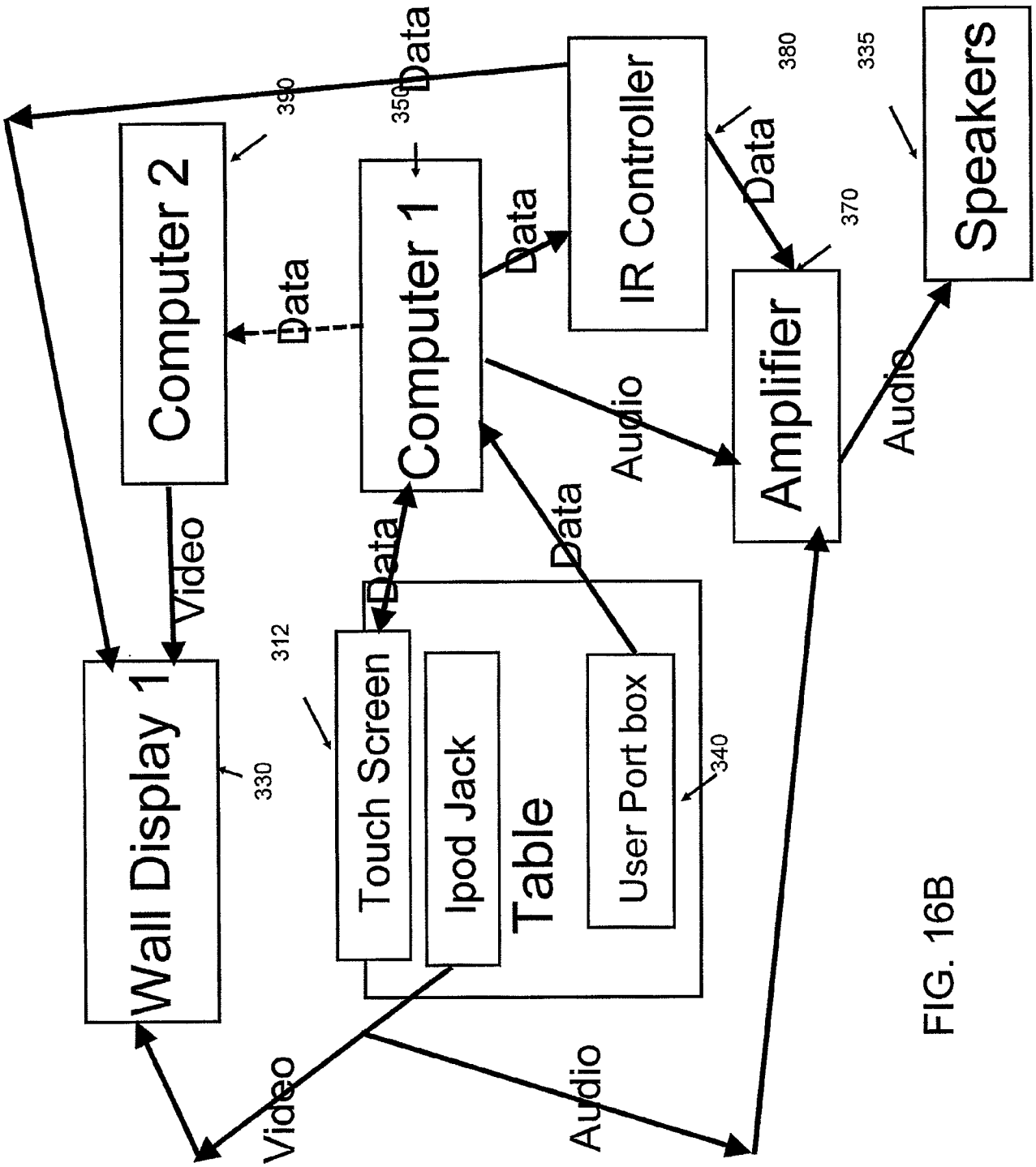

Computer 2
390
Data
350
Computer 1
Data
IR Controller
380
335
Speakers
Data
370
Amplifier
Audio
Audio
Video
Data
Data
Wall Display 1
330
312
Touch Screen
Ipod Jack
Table
User Port box
340
Video
Audio

FIG. 16B

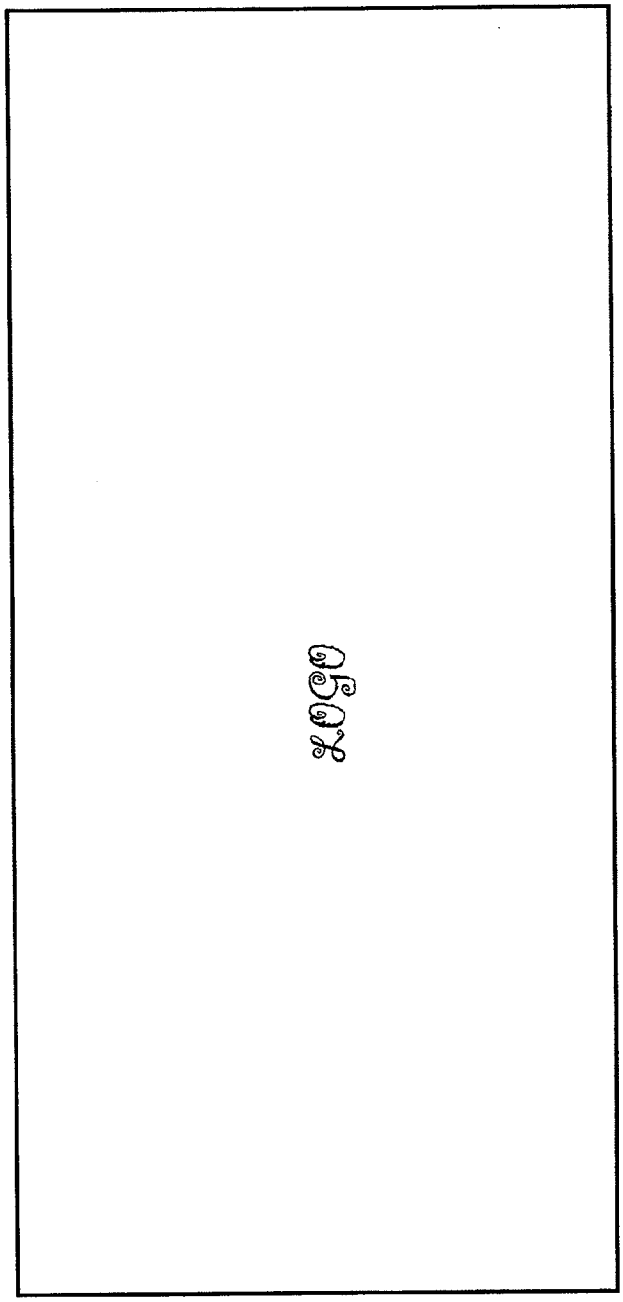


FIG. 17A

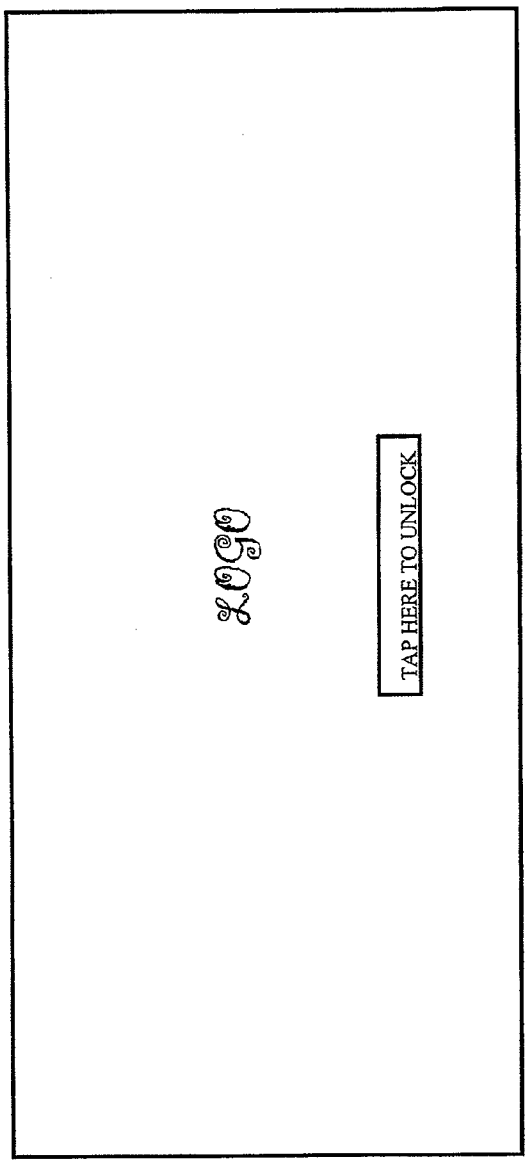


FIG. 17B

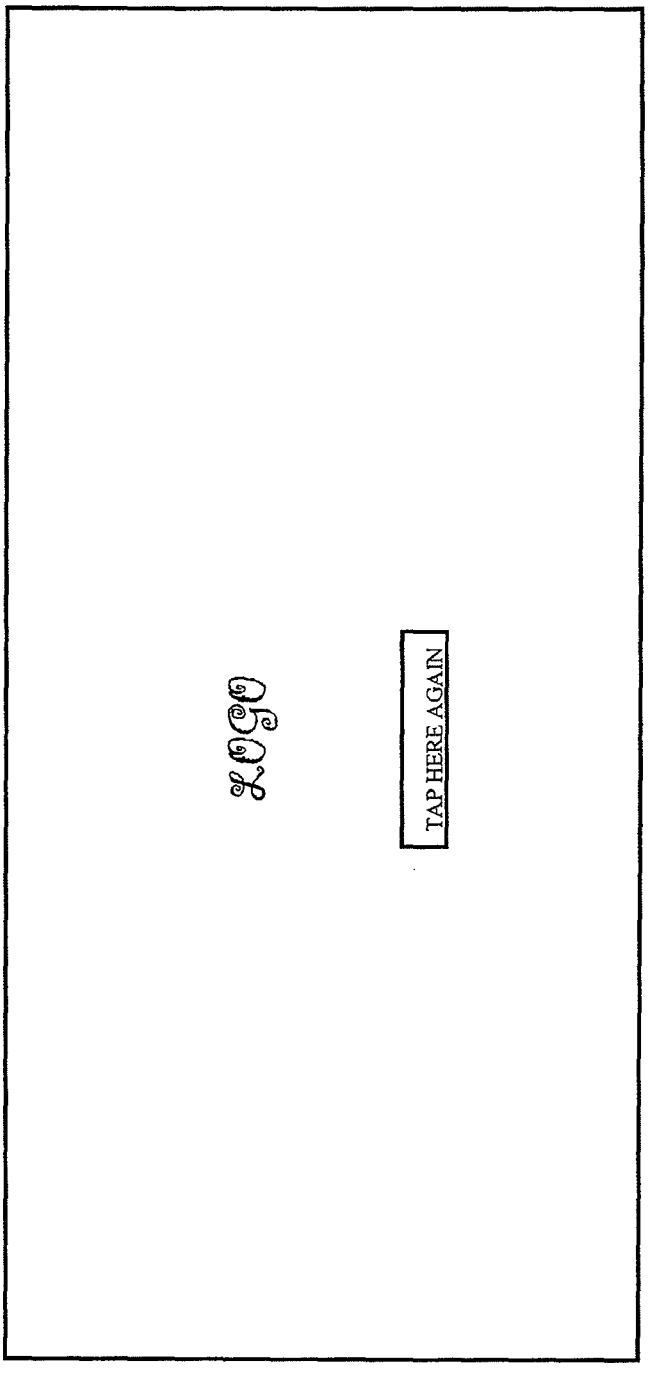


FIG. 17C

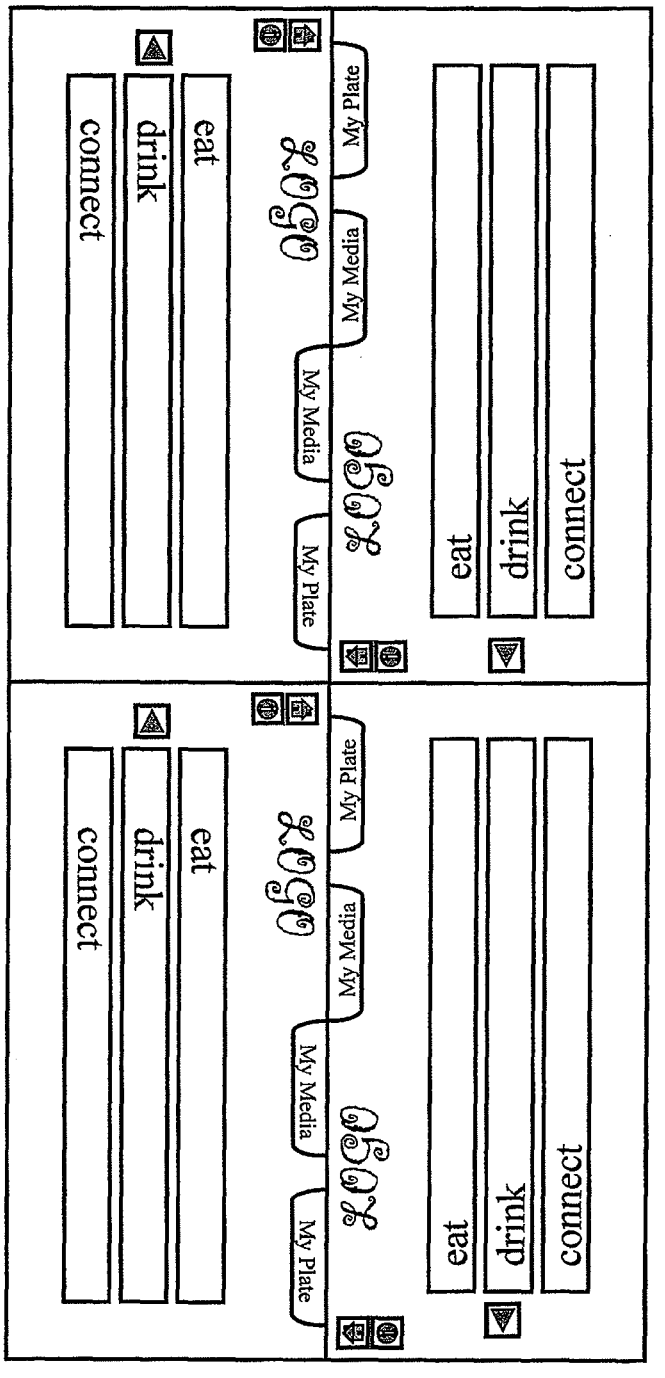


FIG. 17D

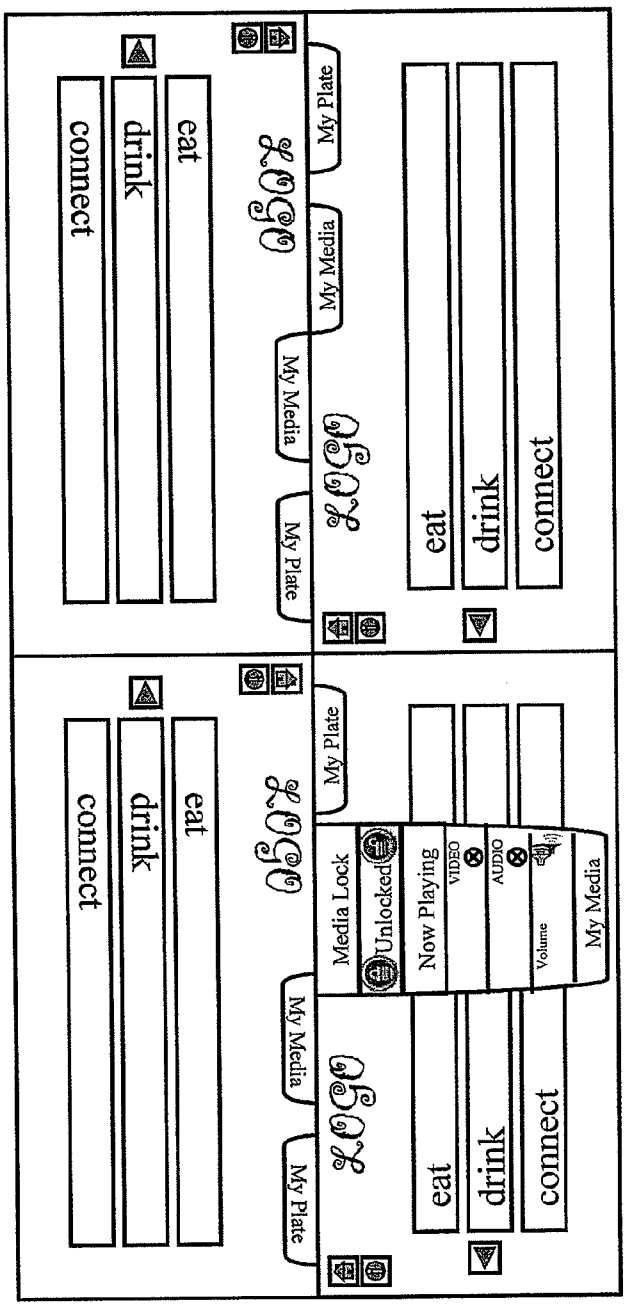


FIG. 17E

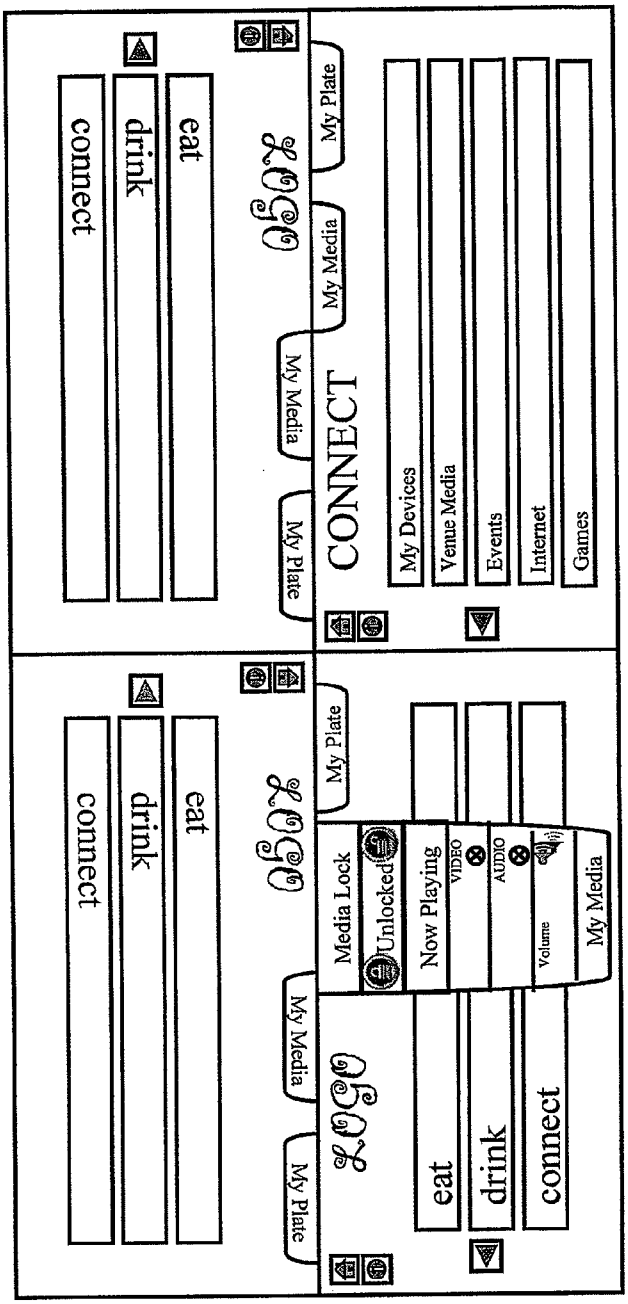


FIG. 17F

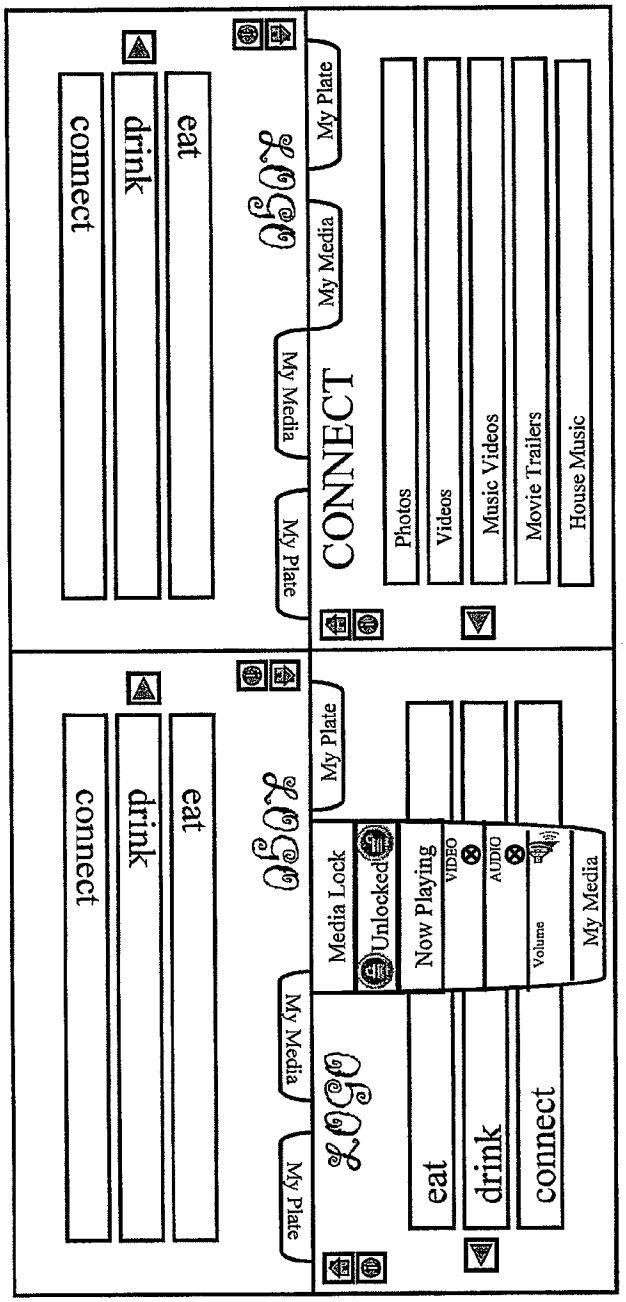


FIG. 17G

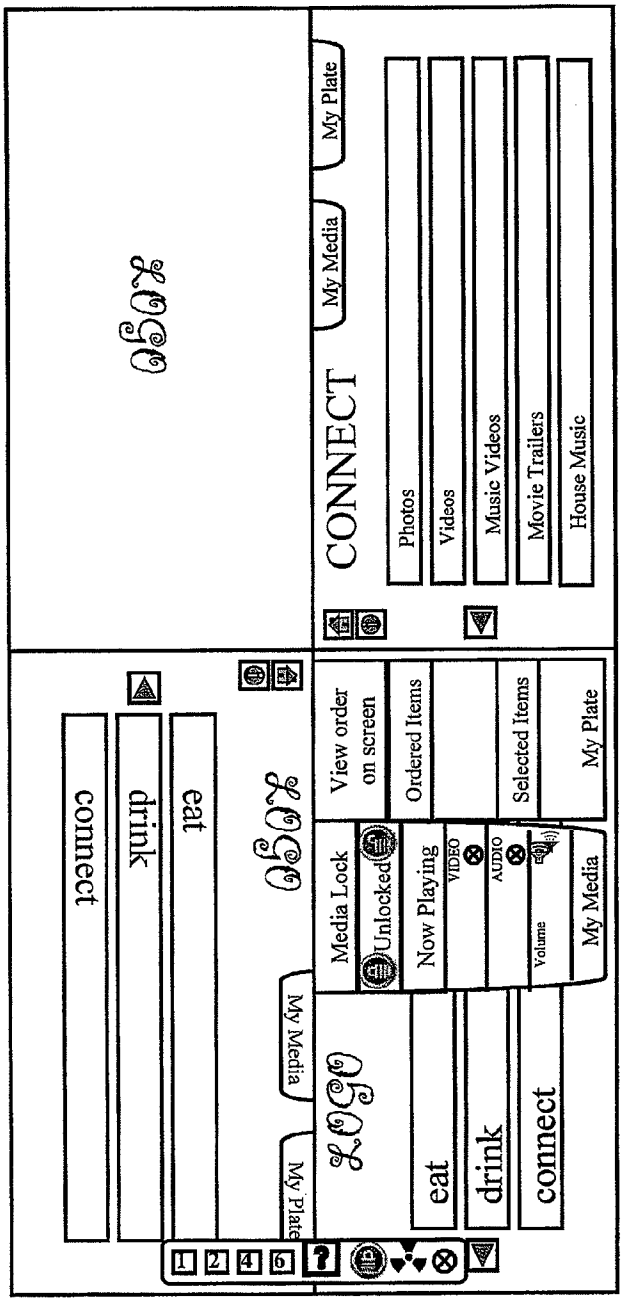


FIG. 17H

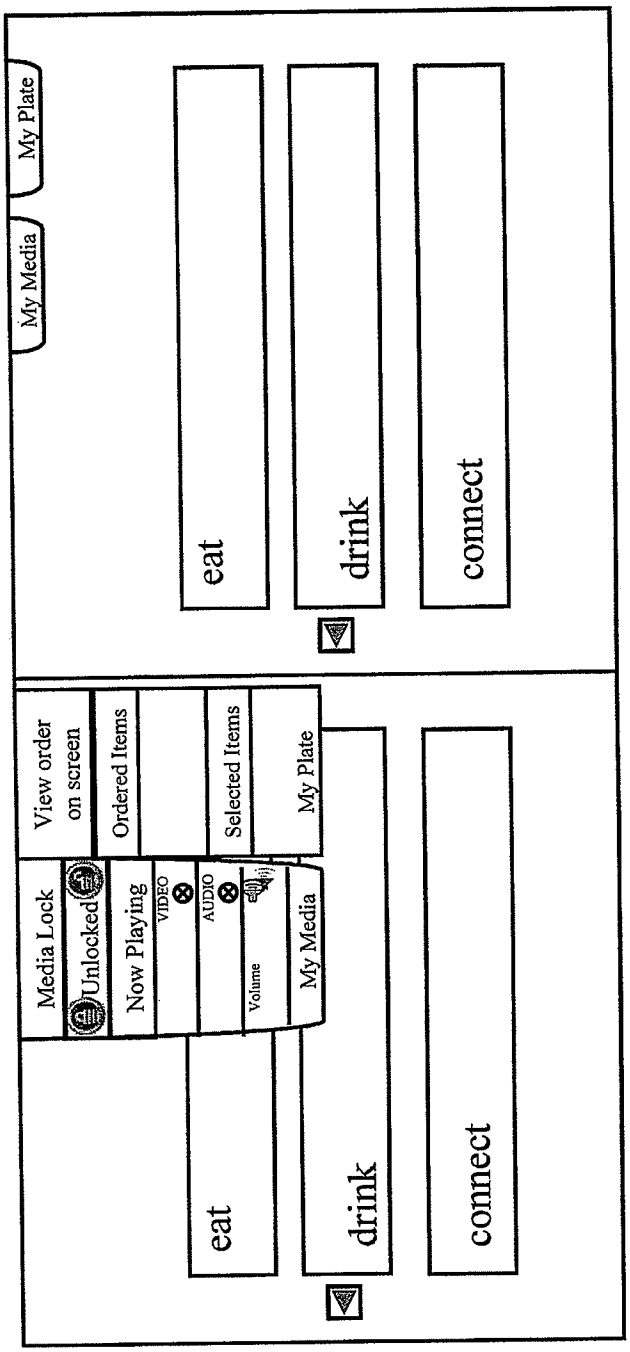

My Media
My Plate
eat
drink
connect
View order on screen
Ordered Items
Selected Items
My Plate
Media Lock
Unlocked
Now Playing
VIDEO
AUDIO
Volume
My Media
eat
drink
connect

FIG. 17I

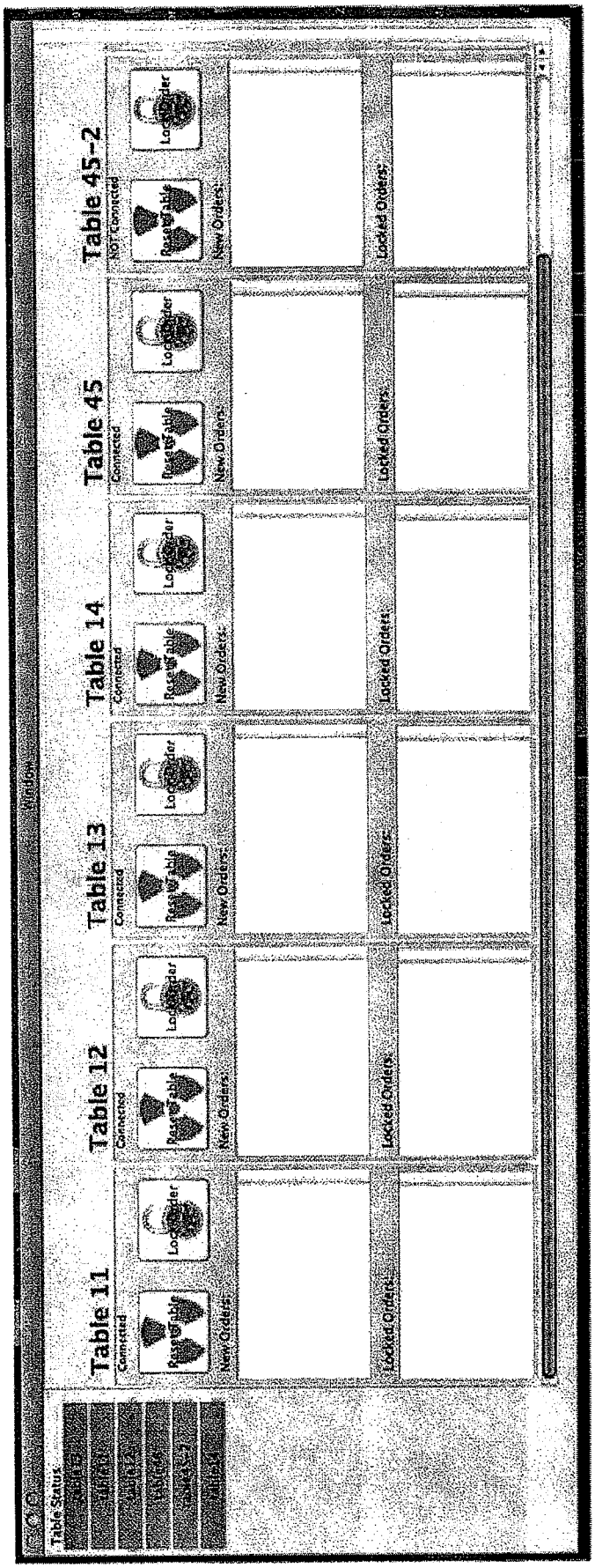

Window
Table Status
Table 11
Table 12
Table 13
Table 14
Table 45
Table 45-2
Connected
NOT Connected
Reserve Table
Lock Order
New Orders:
Locked Orders:

FIG. 18A

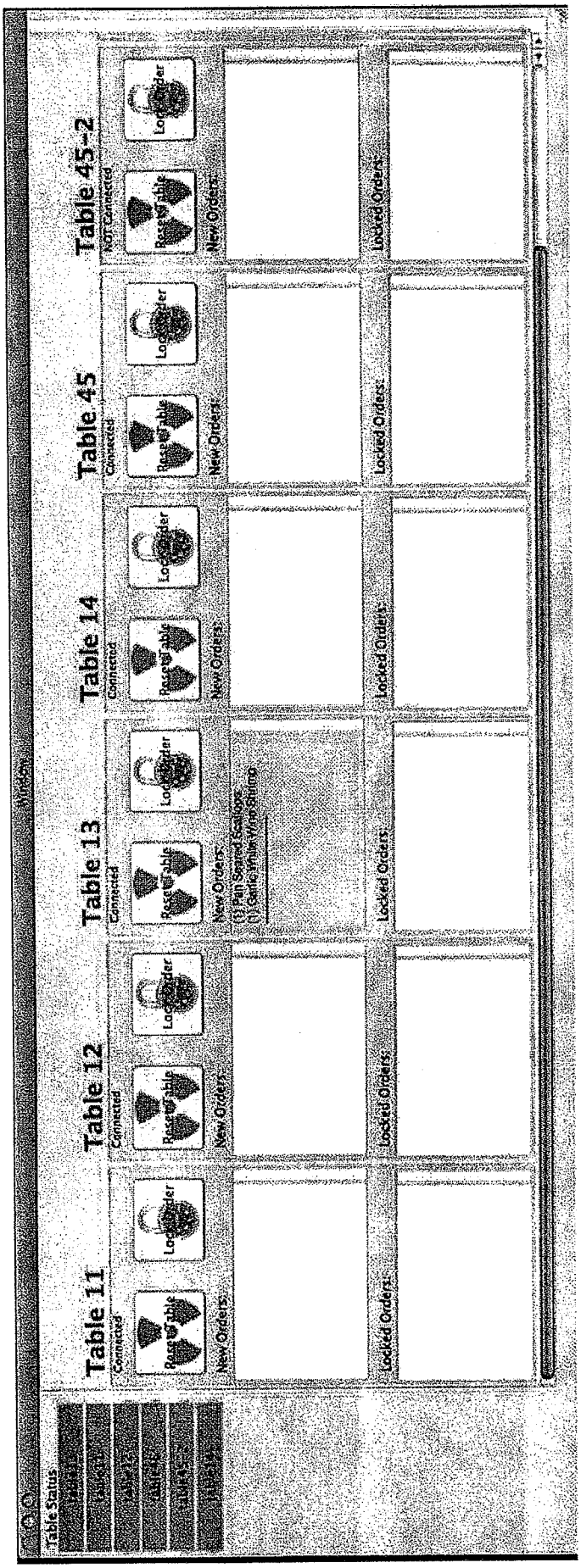

Table Status
Table 11
Table 12
Table 13
Table 14
Table 45
Table 45-2
Connected
Not Connected
Reset Table
Lock Order
New Orders:
Locked Orders:

FIG. 18B

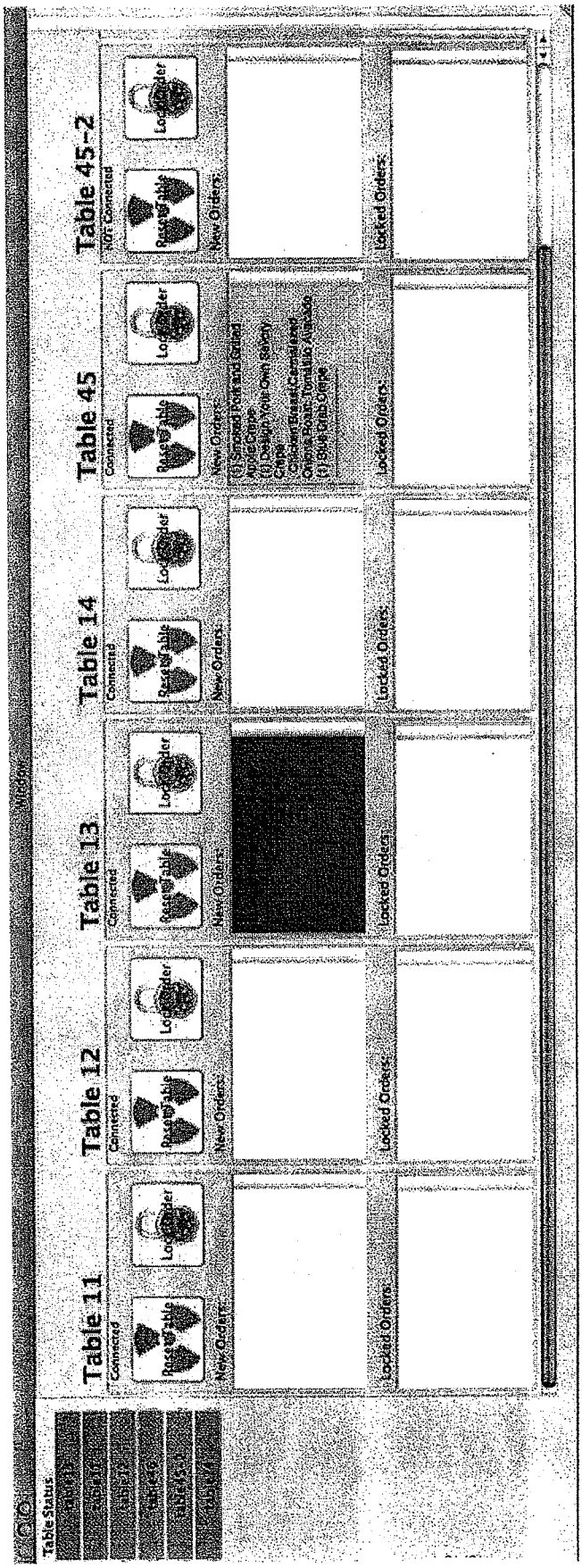

Table Status
Table 11
Table 12
Table 13
Table 14
Table 45
Table 45-2
Connected
Not Connected
Pass to Table
Lock Order
New Orders:
Locked Orders:

FIG. 18C

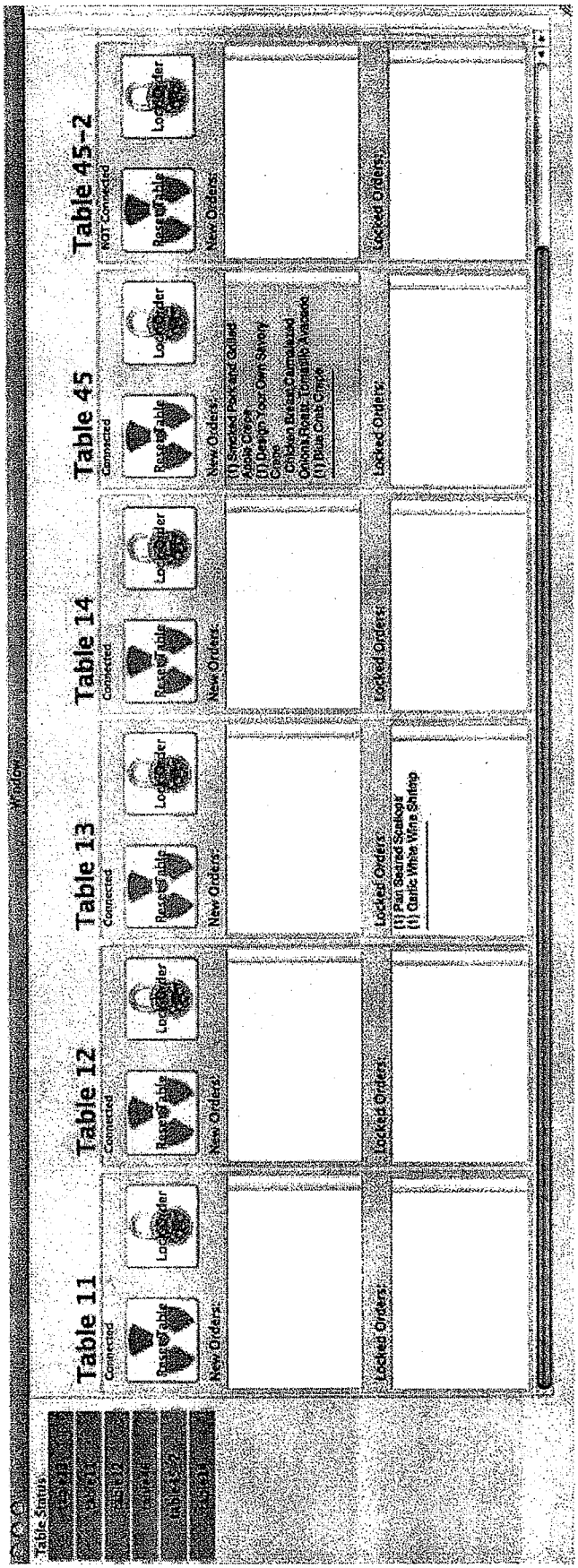

Table Status
Table 11
Table 12
Table 13
Table 14
Table 45
Table 45-2
Connected
Not Connected
Request Bill
Locate Server
New Orders:
Locked Orders:
(1) Pan Seared Seafood
(1) Garlic White Wine Shrimp
(1) Smoked Pork and Grilled
Asian Slaw
(1) Design Your Own Skewer
Glaze
Chicken Breast Cornbread
Onions Roast Tomatillo Avocado
(1) Blue Crab Cake

FIG. 18D

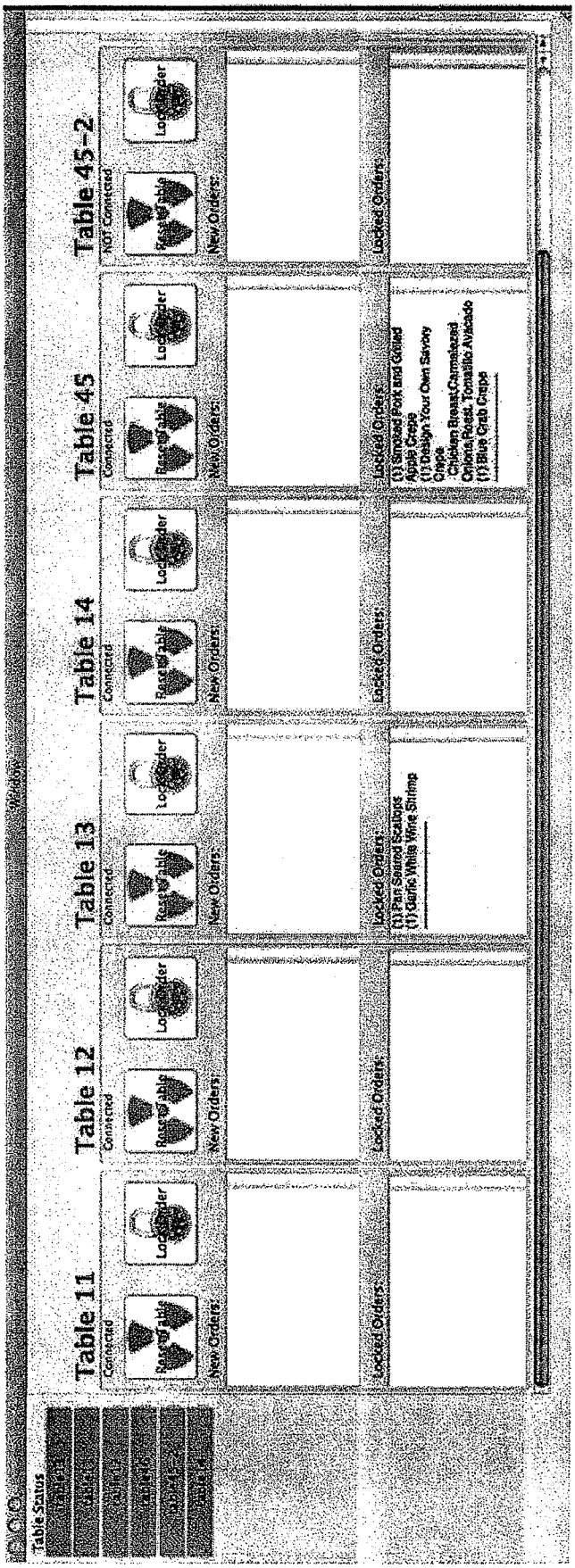

Table Status
Table 11
Table 12
Table 13
Table 14
Table 45
Table 45-2
Connected
Not Connected
Reset Table
Lock Order
New Orders:
Locked Orders:
(1) Pan Seared Scallops
(1) Garlic White Wine Shrimp
(1) Smoked Pork and Grilled Apple Crepe
(1) Design Your Own Savory Crepe
Chicken Breast,Carmelized Onions,Roast Tomatillo Avocado
(1) Blue Crab Crepe

FIG. 18E

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 10/52308

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G06F 3/041 (2010.01)
USPC - 345/173
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC: 345/173

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 345/156, 173; 712/220; 715/702, 810, 863

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST: (PGPB,USPT,EPAB,JPAB); Google Scholar
Search Terms: table, tabletop, touchscreen, touch display, touch monitor, touch sensitive, touchscreen table, touchscreen tabletop, computer, input, display section, display region, orient, orientation, second screen, communicate, display media, select media, processor

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2006/0125799 A1 (HILLIS et al.) 15 June 2006 (15.06.2006), abstract and para [0024]-[0030], [0033], [0035], [0038]-[0039], [0046]-[0048], [0050], [0052]-[0059], [0063], [0067], [0069]-[0071], [0076], [0081]-[0082], [0089], [0092]-[0095], [0096], [0098]-[0100], [0112], [0116].	1-11, 13-15, 19, 21-22, 25 --- 12, 16-18, 20, 23-24, 26
Y	US 2009/0143141 A1 (WELLS et al.) 04 June 2009 (04.06.2009), abstract and para [0016], [0031]-[0039], [0087], [0121]-[0122], [0159], [0161]-[0162], [0234], [0247]-[0265], [0265], [0281], [0312], [0413], [0818]-[0819], [1042], [1292].	12, 16-18, 20, 23-24, 26
A	US 2007/0257891 A1 (ESENTHER et al.) 08 November 2007 (08.11.2007), entire document.	1-26

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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