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OF:

APPLICATION NUMBER: 09/400,413

FILING DATE: September 21, 1999

PATENT NUMBER: 6,384,850

ISSUE DATE: May 07, 2002

By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office



P. R. GRANT
Certifying Officer

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P. R. GRANT
Certifying Officer

(FACE)

SERIAL NUMBER 09/400,413	FILING DATE 09/21/99	CLASS 707	GROUP ART UNIT 2776	ATTORNEY DOCKET NO. 3125-400
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APPLICANT

✓ KEITH R. McNALLY, SANTA CLARA, CA; WILLIAM H. ROOF, SAN DIEGO, CA;
 ✓ RICHARD BERGFELD, CHATSWORTH, CA.

****CONTINUING DOMESTIC DATA*******
 VERIFIED
None

****371 (NAT'L STAGE) DATA*******
 VERIFIED
None

****FOREIGN APPLICATIONS*******
 VERIFIED
None

IF REQUIRED, FOREIGN FILING LICENSE GRANTED 10/14/99 ** SMALL ENTITY **

Foreign Priority claimed 35 USC 119 (a-d) conditions met <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> Met after Allowance Verified and Acknowledged <input checked="" type="checkbox"/>	STATE OR COUNTRY CA	SHEETS DRAWING 7	TOTAL CLAIMS 43	INDEPENDENT CLAIMS 5
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NEW YORK, N.Y. 10154

TITLE

INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS SYSTEM WITH MENU GENERATION

FILING FEE RECEIVED \$730	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT NO. _____ for the following:	<input type="checkbox"/> All Fees <input type="checkbox"/> 1.16 Fees (Filing) <input type="checkbox"/> 1.17 Fees (Processing Ext. of time) <input type="checkbox"/> 1.18 Fees (Issue) <input type="checkbox"/> Other _____ <input type="checkbox"/> Credit
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PATENT APPLICATION SERIAL NO. 09/400413

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

09/29/1999 SEARCH 00000002 09400413

01 FC:201	380.00 OP
02 FC:202	78.00 OP
03 FC:203	207.00 OP

PTO-1556
(5/87)

*U.S. GPO: 1998-433-214/80404



Docket No. 3125-400

Express Mail Label No. EJ917774582US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

UTILITY APPLICATION AND APPLICATION FEE TRANSMITTAL (1.53(b))

ASSISTANT COMMISSIONER FOR PATENTS
Box Patent Application
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of

Named Inventor(s) and
Address(es):

Keith R. McNally, Santa Clarita, CA; William H. Roof, San Diego, CA; Richard
Bergfeld, Chatsworth, CA

For:

INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS
SYSTEM WITH MENU GENERATION

Enclosed are:

[X] 26 page(s) of specification, 1 page(s) of Abstract, 9 page(s) of claims

[X] 7 sheets of drawing [] formal [x] informal

[X] 6 page(s) of Declaration and Power of Attorney

- [X] Unsigned
- [] Newly Executed
- [] Copy from prior application

[] Deletion of inventors including Signed Statement under 37 C.F.R. § 1.63(d)(2)

[] Incorporation by Reference: The entire disclosure of the prior application, from which a copy of the combined declaration and power of attorney is supplied herein, is considered as being part of the disclosure of the accompanying application and is incorporated herein by reference.

[] Microfiche Computer Program (Appendix)

[] _____ page(s) of Sequence Listing

- [] computer readable disk containing Sequence Listing
- [] Statement under 37 C.F.R. § 1.821(f) that computer and paper copies of the Sequence Listing are the same

492242_1

661260-ET400460

- ☐ Claim for Priority
- ☐ Certified copy of Priority Document(s)
 - ☐ English translation documents
- ☐ Information Disclosure Statement
 - ☐ Copy of ____ cited references
 - ☐ Copy of PTO-1449 filed in parent application serial No. _____
- ☐ Preliminary Amendment
- ☒ Return receipt postcard (MPEP 503)
- ☐ Assignment Papers (assignment cover sheet and assignment documents)
 - ☐ A check in the amount of \$40.00 for recording the Assignment.
 - ☐ Assignment papers filed in parent application Serial No. _____
 - ☐ Certification of chain of title pursuant to 37 C.F.R. § 3.73(b).
- ☐ This is a ☐ continuation ☐ divisional ☐ continuation-in-part (C-I-P) of prior application serial no. _____
 - ☐ Cancel in this application original claims _____ of the parent application before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)
 - ☐ A preliminary Amendment is enclosed. (Claims added by this Amendment have been properly numbered consecutively beginning with the number following the highest numbered original claim in the prior application.
- ☐ The status of the parent application is as follows:
 - ☐ A Petition For Extension of Time and a Fee therefor has been or is being filed in the parent application to extend the term for action in the parent application until _____
 - ☐ A copy of the Petition for Extension of Time in the co-pending parent application is attached.
 - ☐ No Petition For Extension of Time and Fee therefor are necessary in the co-pending parent application.
- ☐ Please abandon the parent application at a time while the parent application is pending or at a time when the petition for extension of time in that application is granted and while this application is pending has been granted a filing date, so as to make this application co-pending.
- ☐ Transfer the drawing(s) from the patent application to this application.
- ☐ Amend the specification by inserting before the first line the sentence:
This is a ☐ continuation ☐ divisional ☐ continuation-in-part of co-pending application Serial No. _____
_____ filed _____

I. CALCULATION OF APPLICATION FEE (For Other Than A Small Entity)

	Number Filed		Number Extra	Rate	Basic Fee
Total Claims	43	-20=	23	x\$18.00	\$414.00
Independent Claims	5	- 3=	2	x\$78.00	\$156.00
Multiple Dependent Claims	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no		Additional Fee =	\$260.00	\$0
			Add'l Fee =	NONE	

Total: \$ 1,330.00

- [X] A statement claiming small entity status is attached or has been filed in the above-identified parent application and its benefit under 37 C.F.R. § 1.28(a) is hereby claimed. Reduced fees under 37 C.F.R. § 1.9(F) (50% of total) paid herewith \$ 665.00.
- [X] A check in the amount of \$665.00 in payment of the application filing fees is attached.
- [] Charge Fee(s) to Deposit Account No. 13-4500. Order No. _____. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.
- [X] The Assistant Commissioner is hereby authorized to charge any additional fees which may be required for filing this application, or credit any overpayment to Deposit Account No. 13-4500, Order No. 3125-4002. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

Respectfully submitted,

MORGAN & FINNEGAN, L.L.P.

Dated: September 21, 1999

By: John W. Osborne
 John W. Osborne
 Registration No. 36,231

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FORM: UTL-TRAN.NY
 Rev. 11/13/98

66F260-EPH00460

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Keith R. McNally
William H. Roof
Richard Bergfeld
Group Art Unit : TBA

Serial No. : TBA
Examiner: TBA

Filed : September 21, 1999

For : **INFORMATION MANAGEMENT AND SYNCHRONOUS
COMMUNICATIONS SYSTEM WITH MENU GENERATION**

EXPRESS MAIL CERTIFICATE

Assistant Commissioner for Patents
Washington, D.C. 20231

Express Mail Label No. EJ917774582US

Date of Deposit September 21, 1999

I hereby certify that the following attached paper(s) and/or fee

Application with 43 claims, 7 sheets of drawing figures; one (1) page abstract
Application Fee Transmittal;
Filing Fee in the amount of \$665.00;
Combined Declaration and Power of Attorney (unsigned);
Statement (Declaration) Claiming Small Entity Status; and
Return receipt postcard.

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37

C.F.R. §1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington,
D.C. 20231.

Francisco Garcia

(Typed or printed name of person
mailing paper(s) and/or fee)

Francisco Garcia
(Signature of person mailing
paper(s) and/or fee)

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492111_1

2700 INTERNAL TRANSFER REQUEST FOR S.N.

DATE: <u>2/15/00</u>	FROM: <u>Bourque</u> STEPHEN HONG (print name) <u>PRIMARY EXAMINER</u> / <u>2776</u>
FORWARD TO:	REASON(S):
A. Art Unit: <u>2773</u>	A. You had Parent <input type="checkbox"/> (check box)
B. Class: <u>345</u>	B. See Title <input type="checkbox"/> (check box)
C Subclass: <u>353</u>	C. See Abstract <input checked="" type="checkbox"/> (check box)
	D. See Claim(s): <input checked="" type="checkbox"/> (check box)

FURTHER EXPLANATION IF NEEDED:

user interface; sub-menus generating

DATE: _____	FROM: _____ (print name)
FORWARD TO:	REASON(S):
A. Art Unit: _____	A. You had Parent <input type="checkbox"/> (check box)
B. Class: _____	B. See Title <input type="checkbox"/> (check box)
C Subclass: _____	C. See Abstract <input type="checkbox"/> (check box)
	D. See Claim(s): _____

FURTHER EXPLANATION IF NEEDED:

DATE: _____	FROM: _____ (print name)
FORWARD TO CLASSIFIER	REASON(S):
	A. You had Parent <input type="checkbox"/> (check box)
	B. See Title <input type="checkbox"/> (check box)
	C. See Abstract <input type="checkbox"/> (check box)
	D. See Claim(s): _____

FURTHER EXPLANATION IF NEEDED:

DISPOSITION BY 2700 CLASSIFICATION

DATE: _____	CLASSIFIER: _____
FORWARD TO:	REASON(S):
A. Art Unit: _____	A. You had Parent <input type="checkbox"/> (check box)
B. Class: _____	B. See Title <input type="checkbox"/> (check box)
C Subclass: _____	C. See Abstract <input type="checkbox"/> (check box)
	D. See Claim(s): _____

FURTHER EXPLANATION IF NEEDED:

UNITED STATES PATENT APPLICATION

**OF: KEITH R. McNALLY
WILLIAM H. ROOF
RICHARD BERGFELD**

**FOR: INFORMATION MANAGEMENT AND SYNCHRONOUS
COMMUNICATIONS SYSTEM WITH MENU
GENERATION**

FIELD OF THE INVENTION

This invention relates to an information management and synchronous communications system and method for generation of computerized menus for restaurants and other applications with specialized display and synchronous communications requirements related to, for example, the use of equipment or software with non-PC-standard graphical formats, display sizes and/or applications for use in remote data entry, information management and synchronous communication between host computer, digital input device or remote pager via standard hardwired connection, the internet, a wireless link, smart phone or the like.

BACKGROUND OF THE INVENTION

While computers have dramatically altered many aspects of modern life, pen and paper have prevailed in the hospitality industry, e.g., for restaurant ordering, reservations and wait-list management, because of their simplicity, ease of training and operational speed. For example, ordering prepared foods has historically been done verbally, either directly to a waiter or over the telephone, whereupon the placed order is recorded on paper by the recipient or instantly filled.

1 Although not previously adapted for wide-scale use in the hospitality industry,
2 various forms of digital wireless communication devices are in common use, e.g., digital
3 wireless messengers and pagers. Also in common use are portable laptop and handheld devices.
4 However, user-friendly information management and communication capability not requiring
5 extensive computer expertise has not heretofore been available for use in everyday life such as
6 for restaurant ordering, reservations and wait-list management. Hundreds of millions of dollars
7 have been spent on personal digital assistant ("PDA") development seeking to produce a small,
8 light-weight and inexpensive device that could be adapted to such uses; yet none have yielded a
9 satisfactory solution.

10 One of the inherent shortcomings of PDA type devices is that, as they strive for
11 small size, low weight and low cost, they must compromise the size and clarity of the operator
12 display medium interface itself, which in most cases is one of a variety of LCD (liquid crystal
13 display) type devices. As the size of the display shrinks, the amount of information that may be
14 displayed at any one point or time is commensurately decreased, typically requiring multiple
15 screens and displays to display information to the operator. This reduces the overall utility of the
16 device. Additionally, the smaller display and keyboard results in a non-optimal operator
17 interface, which slows down operation and is thus unacceptable for the time criticality of
18 ordering, reservation and wait-list management and other similar applications. This necessitates
19 many design compromises which in the aggregate have resulted in limited acceptance of PDA
20 type devices in the restaurant and hospitality fields.

21 Many of the negatives prevalent in earlier devices have been eliminated, but, to
22 date, there is still no integrated solution to the ordering/waitlist/reservation problem discussed
23 above. With the advent of the Palm® and other handheld wireless devices, however, the efforts

1 to make such devices ubiquitous have begun to bear fruit at least in some areas, e.g., personal
2 calendars. However, substantial use of such devices in the restaurant and hospitality context has
3 not occurred to date. As discussed above, at least one of the reasons PDAs have not been
4 quickly assimilated into the restaurant and hospitality industries is that their small display sizes
5 are not readily amenable to display of menus as they are commonly printed on paper or displayed
6 on, e.g., large, color desktop computer screens. Another reason is that software for fully
7 realizing the potential for wireless handheld computing devices has not previously been
8 available. Such features would include fast and automatic synchronization between a central
9 database and multiple handheld devices, synchronization and communication between a World
10 Wide Web ("Web") server and multiple handheld devices, a well-defined application program
11 interface ("API") that enables third parties such as point of sale ("POS") companies, affinity
12 program companies and internet content providers to fully integrate with computerized
13 hospitality applications, real-time communication over the internet with direct connections or
14 regular modem dialup connections and support for batch processing that can be done periodically
15 throughout the day to keep multiple sites in synch with the central database. A single point of
16 entry for all hospitality applications to communicate with one another wirelessly has also
17 previously been unavailable. Such a single point of entry would work to keep all wireless
18 handheld devices and linked Web sites in synch with the backoffice server (central database) so
19 that the different components are in equilibrium at any given time and an overall consistency is
20 achieved. For example, a reservation made online would be automatically communicated to the
21 backoffice server and then synchronized with all the wireless handheld devices wirelessly.
22 Similarly, changes made on any of the wireless handheld devices would be reflected
23 instantaneously on the backoffice server, Web pages and the other handheld devices.

66T260-ET400460
1 For the foregoing reasons, paper-based ordering, waitlist and reservations
2 management have persisted in the face of widespread computerization in practically all areas of
3 commerce. At most, computerization of these functions has been largely limited to fixed
4 computer solutions, i.e., desktop or mainframe, because of the problems heretofore faced in
5 configuring wireless handheld devices and maintaining database synchronization for such
6 applications. Specifically, the unavailability of any simple technique for creating restaurant
7 menus and the like for use in a limited display area wireless handheld device or that is
8 compatible with ordering over the internet has prevented widespread adoption of
9 computerization in the hospitality industry. Without a viable solution for this problem,
10 organizations have not made the efforts or investments to establish automated interfaces to
11 handheld and Web site menus and ordering options.

12 A principal object of the present invention is to provide an improved information
13 management and synchronous communications system and method which facilitates user-
14 friendly and efficient generation of computerized menus for restaurants and other applications
15 that utilize equipment with non-PC-standard graphical formats, display sizes and/or applications.

16 A further object of the present invention is to provide an improved information
17 management and synchronous communications system and method which provides for entry,
18 management and communication of information from the operator as well as to and from another
19 computer, Web page menu, remote digital device using a standard hardwired connection, the
20 internet or a wireless link.

21 A further object of the present invention is to provide an improved information
22 management and synchronous communications system which is small, affordable and

1 lightweight yet incorporates a user-friendly operator interface and displays menus in a readily
2 comprehensible format.

3 A further object of the present invention is to provide a synchronous information
4 management and communications system which enables automatic updating of both wireless and
5 internet menu systems when a new menu item is added, modified or deleted from any element of
6 the system.

7 SUMMARY OF THE INVENTION

8 The foregoing and other objects of the present invention are provided by a
9 synchronous information management and communications system and method optimized for
10 simplicity of operation which incorporates menu generation for creation of menus to be used
11 with wireless remote handheld computer and PDA devices, the internet or any application where
12 simple and efficient generation of menus is appropriate. The menu generation approach of the
13 present invention includes a desktop software application that enables the rapid creation and
14 building of a menu and provides a means to instantly download the menu configuration onto,
15 e.g., a handheld device or Web page and to seamlessly interface with standard point of sale
16 ("POS") systems to enable automatic database updates and communication exchanges when a
17 change or input occurs in any of the other system elements. To solve the above and other related
18 problems, an information management and communications system is provided which results in
19 a dramatic reduction in the amount of time, and hence cost, to generate and maintain
20 computerized menus for, e.g., restaurants and other related applications that utilize non-PC-
21 standard graphical formats, display sizes or applications.

22 The menu generation approach of the present invention has many advantages over
23 previous approaches in solving the problem of converting paper-based menus or Windows® PC-

1 based menu screens to small PDA-sized displays and Web pages. In one embodiment, the
2 present invention is a software tool for building a menu, optimizing the process of how the menu
3 can be downloaded to either a handheld device or Web page, and making manual or automatic
4 modifications to the menu after initial creation.

5 The use of wireless handheld devices in the restaurant and hospitality industry is
6 becoming increasingly pervasive as restaurant owners and managers become more aware of the
7 benefits. With the proper wireless handheld system in place, restaurants can experience
8 increased table turns from improved server productivity and shorter order taking and check
9 paying times. Restaurants and POS companies seeking to provide a wireless handheld interface
10 to their desktop-based POS systems or a Web page equivalent face several challenges. These
11 challenges include building a menu using their existing database and transferring the menu onto
12 handheld devices or Web pages that will interface with servers wirelessly or to
13 restaurants/customers over the internet. The menu generation approach of the present invention
14 is the first coherent solution available to accomplish these objectives easily and allows one
15 development effort to produce both the handheld and Web page formats, link them with the
16 existing POS systems, and thus provides a way to turn a complicated, time-consuming task into a
17 simple process.

18 The information management and synchronous communications system of the
19 present invention features include fast synchronization between a central database and multiple
20 handheld devices, synchronization and communication between a Web server and multiple
21 handheld devices, a well-defined API that enables third parties such as POS companies, affinity
22 program companies and internet content providers to fully integrate with computerized
23 hospitality applications, real-time communication over the internet with direct connections or

1 regular modem dialup connections and support for batch processing that can be done periodically
2 throughout the day to keep multiple sites in synch with the central database.

3 The communication module also provides a single point of entry for all hospitality
4 applications, e.g., reservations, frequent customer ticketing, wait lists, etc. to communicate with
5 one another wirelessly and over the Web. This communication module is a layer that sits on top
6 of any communication protocol and acts as an interface between hospitality applications and the
7 communication protocol and can be easily updated to work with a new communication protocol
8 without modifying the core hospitality applications. A single point of entry works to keep all
9 wireless handheld devices and linked web sites in synch with the backoffice server applications
10 so that the different components are in equilibrium at any given time and an overall consistency
11 is achieved. For example, a reservation made online can be automatically communicated to the
12 backoffice server and then synchronized with all the wireless handheld devices wirelessly.
13 Similarly, changes made on any of the wireless handheld devices are reflected instantaneously on
14 the backoffice server Web pages and the other handheld devices.

15 **BRIEF DESCRIPTION OF THE DRAWINGS**

16 The foregoing features and advantages of the present invention can be appreciated
17 more fully from the following description, with references to the accompanying drawings in
18 which:

19 FIG. 1 is a schematic representation of a window displayed on a computer display
20 screen which shows a hierarchical tree menu, modifier window and sub-modifier window in
21 conformity with a preferred embodiment of the present invention.

22 FIG. 2 is a schematic representation of a modifier dialog box in conformity with a
23 preferred embodiment of the present invention.

1 ~~FIG. 3~~ is a schematic representation of a menu category dialog box in conformity
2 with a preferred embodiment of the present invention.

3 ~~FIG. 4~~ is a schematic representation of a menu item dialog box in conformity with
4 a preferred embodiment of the present invention.

5 ~~FIG. 5~~ is a schematic representation of a display customization dialog box in
6 conformity with a preferred embodiment of the present invention.

7 ~~FIG. 6~~ is a schematic representation of a communications control window in
8 conformity with a preferred embodiment of the present invention.

9 ~~FIG. 7~~ is a schematic representation of a point of sale interface on a wireless
10 handheld device for use in displaying page menus created in conformity with a preferred
11 embodiment of the present invention.

12 **DETAILED DESCRIPTION OF THE INVENTION**

13 Most personal computers today run under an operating system that provides a
14 graphical user interface ("GUI") for accessing user applications. A GUI is used in the preferred
15 embodiment of the present invention. Through an interface of windows, pull-down menus, and
16 toolbars, GUI operating systems have simplified PCs and have rendered computer technology
17 more user friendly by eliminating the need to memorize keyboard entry sequences. In addition,
18 GUIs allow users to manipulate their data as they would physical entities. For example, a
19 window can represent a file and the contents of the window can represent the records of the file.
20 The window can be opened, closed, or set aside on a desktop as if it were an actual object. The
21 records of the file can be created, deleted, modified and arranged in a drag-and-drop fashion as if
22 they also were physical objects. The most common GUI operating systems that provide this
23 "object-oriented" environment for personal computers are Microsoft Windows® systems,

1 including Windows CE® for handheld wireless devices and the like. Generally, a particular
2 application program presents information to a user through a window of a GUI by drawing
3 images, graphics or text within the window region. The user, in turn, communicates with the
4 application by "pointing" at graphical objects in the window with a pointer that is controlled by a
5 hand-operated pointing device, such as a mouse, or by pressing keys on a keyboard.

6 The use of menus is conventional in GUIs for software applications. Menus are
7 typically utilized to provide end users of applications with available choices or processing
8 options while using the applications. For example, in a typical desktop or interactive application,
9 selection of a "file" from a menu bar may cause display of a context menu which provides "file"
10 options. File options can have additional subordinate or child options associated with them. If a
11 file option having subordinate options is selected, the child options are displayed in context in a
12 child menu or submenu proximate to the selected parent option. One or more of the child
13 options provided in the child menu may have further subordinate options. Thus, such a menu
14 system comprises cascading sets of menus which are displayable in context to show the
15 parent/child relationships between options of the context menu. A menu system of this type is
16 incorporated into the preferred embodiment of the invention.

17 The preferred embodiment of the present invention uses typical hardware
18 elements in the form of a computer workstation, operating system and application software
19 elements which configure the hardware elements for operation in accordance with the present
20 invention. A typical workstation platform includes hardware such as a central processing unit
21 ("CPU"), e.g., a Pentium® microprocessor, RAM, ROM, hard drive storage in which are stored
22 various system and application programs and data used within the workstation, modem, display
23 screen, keyboard, mouse and optional removable storage devices such as floppy drive or a CD

1 ROM drive. The workstation hardware is configured by software including an operating system,
2 e.g., Windows® 95, 98, NT or CE, networking software (including internet browsing software)
3 and application software components. The preferred embodiment also encompasses a typical file
4 server platform including hardware such as a CPU, e.g., Pentium® microprocessor, RAM, ROM,
5 hard drive, modem, and optional removable storage devices, e.g., floppy or CD ROM drive. The
6 server hardware is configured by software including an operating system, e.g., Windows® 95, 98,
7 NT or CE, networking software (including Web server software) and database software.

8 A computer workstation for use in the preferred embodiment also includes a GUI.
9 As is conventional, the GUI is configured to present a graphical display on the display screen
10 arranged to resemble a single desktop. Execution of an application program involves one or
11 more user interface objects represented by windows and icons. Typically, there may be several
12 windows and icons simultaneously present on the desktop and displaying information that is
13 generated by different applications.

14 The window environment is generally part of the operating system software that
15 includes a collection of utility programs for controlling the operation of the computer system.
16 The computer system, in turn, interacts with application programs to provide higher level
17 functionality, including a direct interface with the user. Specifically, the application programs
18 make use of operating system functions by issuing task commands to the operating system which
19 then performs the requested task. For example, an application program may request that the
20 operating system display certain information on a window for presentation to the user.

21 An aspect of the preferred embodiment of the information management and
22 communications system of the invention is shown in FIG. 1. FIG. 1 shows an example of the
23 GUI provided by the operating system of the preferred embodiment of the present invention.

1 With reference to FIG. 1, the preferred embodiment includes an intuitive GUI 1 from which to
2 build a menu on a desktop or other computer. A hierarchical tree structure 2 is used to show the
3 different relationships between the menu categories 3 (e.g., soups, salads, appetizers, entrees,
4 deserts, etc.), menu items 4 (e.g., green salad, chicken caesar salad, etc.), menu modifiers 5 (e.g.,
5 dressing, meat temperature, condiments, etc.) and menu sub-modifiers 6 (e.g., Italian, French,
6 ranch, bleu cheese, etc.).

7 The procedure followed in configuring a menu on the desktop PC and then
8 downloading the menu configuration onto the POS interface on the handheld device in
9 conformance with the preferred embodiment is as follows.

10 The menu configuration application is launched by clicking on the appropriate
11 icon on the desktop display screen. FIG. 1 will then be displayed. There are three windows on
12 the screen shown in FIG. 1. The left window is the menu tree 7, also called the tree view. The
13 top right window is the Modifiers window 8 and the bottom right window is the Sub-Modifiers
14 window 9. The Sub-Modifiers window lists the sub-modifiers that correspond to the modifier
15 that is selected. The views on the right are referred to as list views. There are several ways of
16 invoking a command, including using the menu options; using the context menu (right mouse
17 click); using the keyboard or using the toolbar icons. For example, if it is desired to add a
18 category to the menu, the following four options are available: (1) clicking on Edit, Add
19 Category; (2) right mouse clicking on Menu, then clicking on Add Category; (3) highlighting
20 Menu, then typing Ctrl + T or (4) clicking on the Add Category icon on the toolbar. To add an
21 item to a category, the following options are available: (1) highlighting the category to which it
22 is desired to add an item and then clicking on Edit > Add Item; (2) right mouse clicking on the

1 desired category and then clicking on Add Item; (3) highlighting the desired category, then
2 typing Ctrl + N or (4) clicking on the Add icon on the toolbar.

3 When building a menu, it should be kept in mind that the menu items are stored
4 using a tree metaphor similar to how files are stored on a PC with folders and subfolders. The
5 menu structure is similar to the Windows® File Explorer in the way the items are organized
6 hierarchically. Below is an example of how an item may be configured:

7 Menu
8 >> Entrees
9 >> Red Meat
10 >> NY Strip
11 >> Vegetables
12 >> Tomato
13 >> Lettuce
14 Meat Temperature
15 >> Medium Rare

16 In the above example, Menu is the root. Entrees is a menu category. Red Meat is an Entree
17 category. NY Strip is a modifier. Vegetable is a modifier. Meat Temperature is a modifier.
18 Medium Rare is a sub-modifier of Meat Temperature.

19 The steps taken in building a menu are as follows:

- 20 1. Add Modifiers;
- 21 2. Add Sub-Modifiers and link them to the Modifiers;
- 22 3. Create Menu categories;
- 23 4. Add menu items to the categories;
- 24 5. Assign Modifiers to the menu items;
- 25 6. Preview the menu on the POS emulator on the desktop PC;
- 26 7. Download the menu database to the handheld device.

27 To add modifiers, a user clicks on the inside of the Modifiers window, then (1)
28 clicks on Edit>Add Modifier; (2) Presses Ctrl + N; (3) right mouse clicks in the Modifiers
29 window, then clicks on Add Modifiers or (4) clicks on the Add icon from the toolbar. If a menu

1 is being built from scratch, the procedure is to enter the Long Name, Short Name, Code and
2 Price in the Modifier dialog box 10 shown in FIG. 2. The Long Name is the full descriptive
3 name of the item. The Short Name is the abbreviated name that will be displayed on the
4 handheld device. The Code is the numeric or alphanumeric code for the item. If there is an
5 existing database, the existing database can be browsed and menu items retrieved from the
6 database. Clicking on the Browse button will bring up the existing database of menu items. The
7 item to be added is then selected and "OK" is clicked. The fields will then be filled with the
8 information from the database. Clicking on OK again will add the item as a modifier. To delete
9 a modifier, the modifier is selected and the Delete key pressed on the keyboard. To edit a
10 modifier, either the modifier is double clicked or the Enter key is pressed.

11 Sub-modifiers represent the last level of modifiers that can be assigned to a menu
12 tree. To add sub-modifiers, the modifier to which sub-modifiers are to be assigned is selected.
13 Then, the focus is set on the sub-modifier window by clicking inside the Sub-Modifier window
14 as follows: (1) clicking on Edit>Add Sub-Modifier; (2) pressing Ctrl + N; (3) right mouse
15 clicking in the Sub-Modifiers window, then clicking on Add Sub-Modifiers or (4) clicking on the
16 Add icon from the toolbar. If a menu is being built from scratch, the procedure is to enter the
17 Long Name, Short Name, Code and Price in a Sub-Modifier dialog box similar to the Modifier
18 dialog box shown in FIG. 2. As with modifiers, the Long Name is the full descriptive name of
19 the item. The Short Name is the abbreviated name that will be displayed on the handheld device.
20 The Code is the numeric or alphanumeric code for the item. As before, if there is an existing
21 database, the existing database can be browsed and menu items retrieved from the database.
22 Clicking on the Browse button will bring up the existing database of menu items. The item to be
23 added is then selected and OK clicked. The fields will then be filled with the information from

1 the database. Clicking on OK again will add the item as a sub-modifier. To delete a sub-
2 modifier, the sub-modifier is selected and the Delete key depressed on the keyboard. To edit a
3 sub-modifier, either the sub-modifier is double clicked or the Enter key is pressed.

4 Menu categories are created from the root. Some examples of categories are
5 Appetizers, Soups, Salads, Entrees, Desserts, etc. The first step is to click on Menu in the menu
6 tree window. Categories are added by (1) clicking on the Add Category icon from the toolbar;
7 (2) clicking on Edit > Add Category or (3) pressing Ctrl + T. As shown in FIG. 3, Menu
8 Category dialog box 11 then appears in which to enter the Long and Short names for the menu
9 category.

10 To add menu items to categories, the menu category which is being built is
11 clicked. For example, if items are being added to Appetizers, the Appetizers branch is clicked
12 on. Then the Edit > Add Item is clicked on or Ctrl + N pressed. As before, if a menu is being
13 built from scratch, the procedure is to enter the Long Name, Short Name, Code, Prep Time,
14 Recipe and Price into the Menu Item dialog box 12 shown in FIG. 4. The Long Name is the full
15 descriptive name of the item. The Short Name is the abbreviated name that will be displayed on
16 the handheld device. The Code is the numeric or alphanumeric code for the item. Prep Time is
17 the time it takes to prepare the meal and Recipe would include preparation methods and
18 ingredients that are used in the preparation of the item. If there is an existing database, the
19 existing database can be browsed and menu items retrieved from the database. Clicking on the
20 Browse button will bring up the existing database of menu items. The item to be added is then
21 selected and OK is clicked. The fields will then be filled with the information from the database.
22 Clicking on OK again will add the item to the category.

1 Once the menu items have been entered, it may be desired to assign some
2 modifiers to the menu items. For example, it may be desired to assign meat temperature to a
3 steak order. To accomplish this, first the modifier to be assigned is selected, then the menu item
4 on the tree view that is to be assigned the modifier is clicked on and then Edit > Assign Modifier
5 is clicked on. Or, the modifier can simply be dragged and dropped onto the menu item to link
6 them. A dialog box is then displayed asking if this modifier is a required modifier. If it is a
7 required modifier, the display icon will be red but if it is a non-required modifier the display icon
8 will be green. As many modifiers as are applicable can be assigned. If any changes are made to
9 the modifiers, those changes will be automatically reflected throughout the menu tree.

10 Once the modifiers have been entered, it may be desired to assign sub-modifiers
11 to the modifiers items. For example, it may be desired to add Honey Mustard as a sub-modifier
12 to Dressing. To accomplish this, first the modifier to be assigned a sub-modifier is selected, then
13 the sub-modifier window is clicked on, then Edit > Add Sub Modifier is clicked on, Ctrl+N
14 entered or the Add icon from the toolbar is clicked on. Or, the sub-modifier can simply be
15 dragged and dropped onto the modifier to link them.

16 When the menu has been completely configured, it can be previewed on a POS
17 emulator on the desktop to verify that the menu is correctly configured before downloading it to
18 the handheld device. To preview, File > Preview Database is clicked on or the Preview Database
19 icon from the toolbar is clicked on. The handheld POS emulator on the desktop can then be run.
20 If the configuration is deemed acceptable, the handheld device is connected to the desktop PC to
21 ensure that a connection has been established; the POS application on the handheld device is
22 exited and File > Download Database is clicked on or the Download Database icon from the
23 toolbar is clicked on. If there is an existing menu database on the handheld device, the system

1 will ask if the existing database should be replaced. Yes is clicked if existing database
2 replacement is desired.

3 A database function enables the creation of, e.g., a breakfast menu, lunch menu
4 and dinner menu and downloading them to a handheld device. Functions available are (1)
5 creating a new database; (2) opening an existing database; (3) saving a database under a different
6 name. To access these functions, File is clicked on the menu bar.

7 The preferred embodiment encompasses customized layout, views and fonts. To
8 set the focus on the view it is desired to change, click inside the desired window. The main
9 customizing dialog box is accessed by clicking on View > Customize View. A dialog box 13, as
10 shown in FIG. 5, will be displayed including tabs that allow the following options: selection of
11 Columns to display in the list view by choosing and arranging the fields to display in the
12 Modifiers and Sub-Modifiers windows; formatting Columns by specifying the column widths
13 and justification; selecting Filter allows restricting the list to display only the items that meet
14 certain criteria. For example, display of modifiers with codes between 500 and 550. Selecting
15 Sort allows sorting the modifiers or sub-modifiers according to any of the available fields such as
16 Name, Code or Price. Selecting Style facilitates choice of font type, style, size, etc. To change
17 the font in a particular window, click on View > Fonts or right mouse click in the desired
18 window and then click on Fonts. To change the size of the windows, drag the borders of the
19 windows to expand or contract the size of the windows. To change the column widths, simply
20 drag the edge of the column headers to increase or decrease the column widths.

21 A communications control program monitors and routes all communications to
22 the appropriate devices. It continuously monitors the wireless network access point and all other
23 devices connected to the network such as pagers, remote devices, internet Web links and POS

software. Any message received is decoded by the software, and then routed to the appropriate device. No user action is needed during operation of the software once the application has been launched. To launch the communications control module, a Wireless Traffic icon is clicked on the desktop PC. When the program loads, the screen shown in FIG. 6 appears. Messages received are logged in the window 14 shown in FIG. 6 with a time stamp. The messages are also logged to a file on the hard drive. This provides a mechanism to monitor all traffic across the network (possibly useful for troubleshooting, or maintenance, but not necessary for normal operation). The program may be minimized so the screen is not displayed on the desktop, but it must be running for proper communications to exist between all devices on the network.

As stated, the preferred embodiment of the present invention includes the use of and compatibility with GUI technology. A drag-and-drop approach is used for organizing the tree structure 2 in the generated menu. Drag-and-drop is also used for assigning modifiers (modifiers can be dragged from the modifiers window 5 and dropped onto the menu item 4 for assignment). In-cell editing results in fast editing of items in building the menus. Customizable fonts enable users to change font types, style and size. Customizable layouts enable users to resize windows, change icons and display preferences. The inventive approach provides for fully persistent storage between sessions, even if a session is improperly or abruptly terminated. Font and the tree state (i.e., which nodes are expanded/collapsed) are stored between sessions. Layout for modifiers and sub-modifiers list views (filter, columns, formatting, font, etc.) are stored between sessions. The last database used is likewise stored between sessions. Splitter views allow the user to see different views at the same time. Each view is displayed on its own section of the screen. Views can be resized via the keyboard or a mouse by simply dragging the splitter in the middle.

1 An automated function is provided to import existing POS databases into the
2 inventive menu generation system and, as discussed above with respect to the detailed example
3 of how to use the preferred embodiment, an automated download procedure is provided to
4 transfer the desktop database onto a handheld device and/or Web page. Also as discussed, the
5 preferred embodiment facilitates preview of the handheld device or Web page version of the
6 POS menu on the desktop before downloading and configuration. Customizable desktop menu
7 generation is contemplated, as discussed above, in the form of customizable fonts, columns,
8 layouts, etc. The inventive approach also includes templates for common modifiers that can be
9 assigned to similar menu items. The preferred embodiment also supports multiple databases,
10 thus providing for the creation and storing of different menu databases on handheld devices such
11 as breakfast, lunch or dinner menus. The user can then select the appropriate database to reflect
12 the time of day.

13 FIG. 7 is a schematic representation of a point of sale interface 15 for use in
14 displaying a page-type menu 16 created using the inventive menu generation approach. As can
15 be seen from FIG. 7, the page menu is displayed in a catalogue-like point-and-click format
16 whereas the master menu, FIG. 1, is displayed as a hierarchical tree structure. Thus, a person
17 with little expertise can "page through" to complete a transaction with the POS interface and
18 avoid having to review the entire menu of FIG. 1 to place an order. A PDA or Web page format
19 could appear like FIG. 7 or the display could be configured for particular requirements since
20 fully customizable menu generation and display are contemplated.

21 The POS interface on the handheld device supports pricing in the database or
22 querying prices from the POS server. The POS device also can be customized with respect to
23 "look and feel" for the particular version. As can be seen in FIG. 7, the POS interface provides

1 for billing, status and payment with respect to orders. A myriad of options can be provided
2 depending on the application.

3 Advanced database functions are provided in the preferred embodiment of the
4 invention, including an automated download process onto handheld devices and/or Web sites. In
5 the preferred embodiment, the menu generation system of the present invention uses an API
6 called ActiveX Data Objects ("ADO") for database access. ADO is useful in a variety of
7 settings. It is built on top of OLE DB and can be used to talk to databases and, in the future, any
8 data source with any OLE DB driver. Advanced querying is supported. The database can be
9 queried on virtually all fields. Queries can be built using SQL syntax for experienced users or
10 can be created using a query builder which guides users through the creating process. Advanced
11 error handling is supported. Errors occurring at run time can be trapped. A descriptive message
12 is displayed to alert the user and provide error information. However, the application does not
13 terminate when the errors happen. The source code is easy to maintain and modify, thus
14 allowing for on time delivery of customized versions of the software. The advanced database
15 functions produce well-designed databases that accommodate growth and scalability

16 The inventive menu generation approach provides a solution for the pervasive
17 connectivity and computerization needs of the restaurant and related markets. The inventive
18 solution includes automatic database management and synchronization, PDA and handheld
19 wireless operating system integration and optimization, wireless communications and internet
20 connectivity, user interface design, and graphics design.

21 In the preferred embodiment, the menu generation approach of the present
22 invention uses Windows CE® as the operating system for the handheld devices. Windows CE®
23 provides the benefits of a familiar Windows 95/98/NT® look and feel, built-in synchronization

1 between handheld devices, internet and desktop infrastructure, compatibility with Microsoft
2 Exchange®, Microsoft Office 9® and TCP/IP quick access to information with instant-on feature.

3 Windows CE® provides a basic set of database and communication tools for
4 developer use. However, interfacing with these tools to provide application specific results can
5 be a complex task. In addition to the menu generation described above, a set of software
6 libraries described herein in conformance with the present invention not only enhances the basic
7 Windows CE® functionality by adding new features but also maximizes the full potential of
8 wireless handheld computing devices. Such features include fast synchronization between a
9 central database and multiple handheld devices, synchronization and communication between a
10 Web server and multiple handheld devices, a well-defined API that enables third parties such as
11 POS companies, affinity program companies and internet content providers to fully integrate
12 with computerized hospitality applications, real-time communication over the internet with direct
13 connections or regular modem dialup connections and support for batch processing that can be
14 done periodically throughout the day to keep multiple sites in synch with the central database.

15 The synchronous communications control module discussed above provides a
16 single point of entry for all hospitality applications to communicate with one another wirelessly
17 or over the Web. This communications module is a layer that sits on top of any communication
18 protocol and acts as an interface between hospitality applications and the communication
19 protocol. This layer can be easily updated to work with a new communication protocol without
20 having to modify the core hospitality applications. The single point of entry works to keep all
21 wireless handheld devices and linked Web sites in synch with the backoffice server (central
22 database) so that the different components are in equilibrium at any given time and an overall
23 consistency is achieved. For example, a reservation made online is automatically communicated

1 to the backoffice server which then synchronizes with all the wireless handheld devices
2 wirelessly. Similarly, changes made on any of the wireless handheld devices will be reflected
3 instantaneously on the backoffice server and the other handheld devices.

4 The software applications for performing the functions falling within the
5 described invention can be written in any commonly used computer language. The discrete
6 programming steps are commonly known and thus programming details are not necessary to a
7 full description of the invention.

8 A simple point-to-point wireless capability is contemplated which permits simple
9 digital messages to be sent from the wireless handheld devices to a receiver in a beeper and/or
10 valet parking base-station. The POS interface of FIG. 7 is representative of the display on a
11 typical wireless device used in conformity with the invention. A simple protocol is used to
12 acknowledge receipt of the message and thus simultaneous communication is not necessary,
13 which reduces the cost of the wireless link. The range of the wireless link is determined by the
14 characteristics of the radio transceiver. Adding a wireless link allows paging of beeper equipped
15 customers directly from the operator interface on the wireless handheld devices and
16 communication to and from various input/output transmitters and receivers to update the status
17 of the order, reservation or other information and thus further reduce the workload on the
18 operator and enable operations to proceed much faster. This link could also be hardwired or
19 otherwise implemented using any two-way messaging transport.

20 A further aspect of the invention is the use of the menus generated in accordance
21 with the described technique to place orders from wireless remote handheld devices or from
22 remote locations through the internet. The World Wide Web is a distributed hypermedia
23 computer system that uses the internet to facilitate global hypermedia communication using

1 specified protocols. One such protocol is the Hypertext Transfer Protocol ("HTTP"), which
2 facilitates communication of hypertext. Hypertext is the combination of information and links to
3 other information. In the context of the Web, hypertext is defined by the Hypertext Mark-up
4 Language ("HTML"). The links or hyperlinks in a HTML document reference the locations of
5 resources on the Web, such as other HTML documents. Another language used in creating
6 documents for use on the Worldwide Web, to display on computer screens, or to create speech
7 style sheets for use in, e.g., telephones, is the Extensible Mark-Up Language ("XML"). XML is
8 a "metalanguage", i.e., a language for describing languages which was developed to eliminate
9 the restrictions of HTML.

10 The Web is a client-server system. The HTML documents are stored on Web
11 server computers, typically in a hierarchical fashion with the root document being referred to as
12 the home page. The client specifies a HTML document or other source on the server by
13 transmitting a Uniform Resource Locator ("URL") which specifies the protocol to use, e.g.,
14 HTTP, the path to the server directory in which the resource is located, and filename of the
15 resource. Users retrieve the documents via client computers. The software running on the user's
16 client computer that enables the user to view HTML documents on the computer's video monitor
17 and enter selections using the computer's keyboard and mouse is known as a browser. The
18 browser typically includes a window in which the user may type a URL. A user may cause a
19 URL to be transmitted by typing it in the designated window on the browser or by maneuvering
20 the cursor to a position on the displayed document that corresponds to a hyperlink to a resource
21 and actuating the mouse button. The latter method is commonly referred to simply as "clicking
22 on the hot-spot" or "clicking on the hyperlink". The hyperlink methodology is contemplated for
23 use in accordance with the preferred embodiment to transmit orders via the internet.

1 Web server application software exists that enables a user to shop for and order
2 merchandise. Such systems are sometimes referred to as electronic merchandising systems or
3 virtual storefronts. Systems that enable a user to choose among several retailers' goods are
4 sometimes referred to as electronic malls. An electronic retailer's or electronic mall operator's
5 Web server provides HTML forms that include images and descriptions of merchandise. The
6 user may conventionally search for an item by entering a key word search query in a box on a
7 form. When a user selects an item, the server may provide a linked form that describes that item
8 in further detail. The user may also conventionally enter ordering information into boxes on the
9 form, such as the type and quantity of the item desired. The information entered by the user is
10 transmitted to the server. The user may select multiple items in this manner and then enter a
11 credit card number to pay for the purchases. The retailer processes the transaction and ships the
12 order to the customer. As can be appreciated, ordering merchandise can also be done from
13 menus. The generation of menus of items or merchandise for sale over the internet is readily
14 accomplished by the menu generation approach of the present invention.

15 Searching for items that the user is interested in purchasing is insufficient in prior
16 merchandising systems. Database management programs use index searching to facilitate rapid
17 searching of large amounts of data. The creator of the database may instruct the program to use
18 specified fields in the database as indexed or key fields. The program locates all terms in the
19 database that appear in the indexed fields and stores them in an index table. Each entry in the
20 index table includes a term and corresponding pointer to the location in the database where the
21 term is found. If a user initiates a search for a term that is present in the index table, the program
22 can locate the instances of that term in the database with exceptional speed. Users who are
23 familiar with the particular database they are searching will generally know which fields are

1 indexed and will know the format of the data in those fields. For example, a user of a database
2 containing the inventory of a bookstore may know that users can search for the names of authors
3 of books and that a user who wishes to do so should enter the author's last name first. A user
4 having such knowledge will therefore be able to search efficiently. Users of electronic
5 merchandising systems, however, are generally end-consumers who have no knowledge of a
6 merchant's database. If, as is very likely, such a user initiates a search for a term that is not
7 present in the index table, the program must sequentially search through all records in the
8 database. Sequential records are typically linked by pointers. Using pointers in this manner is
9 very demanding on server resources, resulting not only in an exceptionally slow search, but also
10 creating a bottleneck for other processes that the server may be executing. The menu generation
11 approach of the present invention can be used to create customized menus from a database that
12 includes every item of merchandise the vendor has for sale. In this manner, customers can scan
13 the generated menu much more readily than they could view the entire database and the
14 necessity of having familiarity with the database is eliminated as well, reducing the need for
15 resource intensive pointers.

16 While the preferred embodiment of the invention is for the generation of
17 restaurant menus and the like, the broad scope of the invention is far greater. For example,
18 menus generated in accordance with the invention can be used in the desktop computing
19 environment in association with the operating system or application programs. One such use is
20 to facilitate the creation of user personalized file structures for general desktop use. Another use
21 is to facilitate the location of customized menus from master menus for use in association with
22 application software to make the execution of the application software more efficient by, e.g.,
23 eliminating the necessity of querying or checking every tree branch in the master menu file

1 structure in response to user input or other criteria and to create handheld/PDA compatible
2 versions of the software.

3 While the preferred embodiment of the invention includes the selection of items
4 from a master menu wherein the master menu is displayed using a graphical user interface, it is
5 to be appreciated that any means for displaying the master menu to the user and generating
6 another menu in response to and comprised of the selections made is encompassed by the
7 contemplated invention. The invention encompasses the selection of nontextual symbols,
8 characters, icons and the like, in addition to text, from a hierarchical tree menu or the like for
9 generation of another menu comprised of such items.

10 It is also within the scope of the invention to generate menus automatically in
11 response to predetermined criteria. For example, in the restaurant menu generation embodiment,
12 a modified menu can be generated to comply with a particular specification or group of criteria
13 such as, e.g., "dinner", "low cholesterol", "low fat", "fish", "chicken", or "vegetarian". In this
14 embodiment, only items from the master menu that satisfy specified parameters will be included
15 in the generated menu. The selection process could involve selection of master menu items
16 based on tags or identifiers associated with the items or by checking every master menu item
17 against a dictionary of items acceptable for inclusion in the modified menu. It should also be
18 appreciated that the invention encompasses any combination of automatic and manual user
19 selection of the items comprising the generated menu. For example, a user might specify criteria
20 which would further control automatic selection or the user could manually select some items
21 with automatic selection of others. The menu generation aspect of the invention is equally
22 applicable to table-based, drive-thru, internet, telephone, wireless or other modes of customer
23 order entry, as is the synchronous communications aspect of the invention.

1 The inventive concept encompasses the generation of a menu in any context
2 known to those skilled in the art where an objective is to facilitate display of the menu so as to
3 enable selection of items from that menu. The restaurant menu generation embodiment is but
4 one example of a use for the inventive concept. Likewise, displaying menus generated in
5 accordance with the invention on PDAs and Web pages to facilitate remote ordering are but a
6 few examples of ways in which such a menu might be used in practice. Any display and
7 transmission means known to those skilled in the art is equally usable with respect to menus
8 generated in accordance with the claimed invention.

9 In the more general situation, menus can be generated in accordance with the
10 present invention in a variety of situations. For example, the usable file structure for a particular
11 data processing application can be dictated by the user or an application program prior to or
12 during the execution of the application program. Efficiencies with respect to computational
13 speed and equipment, e.g., storage and processor, usage can thus be achieved along with the
14 facilitation of display of the generated menu.

15 While the best mode for carrying out the preferred embodiment of the invention
16 has been illustrated and described in detail, those familiar with the art to which the invention
17 relates will recognize various alternative designs and embodiments which fall within the spirit of
18 practicing the invention. The appended claims are intended to cover all those changes and
19 modifications falling within the true spirit and scope of the present invention.

That which is claimed is:

1

Sub A

3

generating menus comprising:

4

a. a central processing unit,

5

b. a data storage device connected to said central processing unit,

6

7

c. an operating system including a graphical user interface,

8

9

d. a first menu stored on said data storage device,

10

e. application software for generating a second menu from said first menu,

11

12

wherein the application software facilitates the generation of the second menu by allowing

13

selection of items from the first menu, addition of items to the second menu and assignment of

14

parameters to items in the second menu using the graphical user interface of said operating

15

system.

16

2. An information management and synchronous communications system in

17

accordance with claim 1, wherein the second menu is a restaurant menu.

18

3. An information management and synchronous communications system in

19

accordance with claim 1, wherein the second menu is capable of being displayed on the display

20

screen of a wireless computing device.

21

4. An information management and synchronous communications system in

22

accordance with claim 3, wherein selections from the second menu are capable of being

23

transmitted to a receiving computer by wireless link.

1 5. An information management and synchronous communications system in
2 accordance with claim 1, wherein the second menu is capable of being displayed on display
3 screens of computers in a network.

4 6. An information management and synchronous communications system in
5 accordance with claim 5, wherein the computer network is the internet.

6 7. An information management and synchronous communications system in
7 accordance with claim 3, wherein selections from the second menu are capable of being
8 transmitted to a receiving computer via the internet.

9 8. An information management and synchronous communications system in
10 accordance with claim 1, wherein the second menu is created in conformity with hypertext
11 markup language or extensible markup language. B

12 9. An information management and synchronous communications system in
13 accordance with claim 1, wherein the second menu overwrites the first menu.

14 10. The information management and synchronous communications system of
15 claim 1, wherein the first menu and the second menu are both capable of being displayed in the
16 same window on the display screen.

17 11. The information management and synchronous communications system of
18 claim 1, wherein the items comprising the second menu are a subset of the items comprising the
19 first menu.

20 12. An information management and synchronous communications system for
21 generating menus comprising:

- 22 a. a microprocessor,
23 b. a display device,
24 c. a data and instruction input device,

- 1 d. a data storage device for storing information and
2 instructions entered through said data and
3 instruction input means of information generated by
4 said microprocessor,
5 e. an operating system,
6 f. a master menu stored on said data storage device for
7 generating a modified menu, and
8 g. application software,

9 wherein said microprocessor, operating system and application software are operative to display
10 the master menu on the display device in response to instructions programmed into said
11 microprocessor, operating system, application software and information and instructions entered
12 through said data input device, and wherein said microprocessor, operating system and
13 application software are operative to create the modified menu from said master menu in
14 response to information and instructions entered through said data and instruction input device.

15 13. The information management and synchronous communications system of
16 claim 12, further comprising means for transferring the modified menu to a digital computing
17 device.

18 14. The information management and synchronous communications system of
19 claim 13, wherein the digital computing device is a wireless handheld device.

20 15. The information management and synchronous communications system of
21 claim 12, further comprising means for downloading the modified menu to the internet or a Web
22 page.

23 16. The information management and synchronous communications system of
24 claim 15, further comprising means for converting the modified menu to hypertext markup
25 language or extensible markup language.

1 17. The information management and synchronous communications system of
2 claim 15, wherein the items comprising the modified menu are a subset of the items comprising
3 the master menu.

4 18. An information management and synchronous communications system in
5 accordance with claim 12, wherein said operating system includes a graphical user interface and
6 wherein said microprocessor, operating system and application software are operative to generate
7 the modified menu by facilitating selection of items from said master menu using the graphical
8 user interface of said operating system. B

9 19. An information management and synchronous communications system in
10 accordance with claim 12, wherein said master menu is organized in a hierarchical tree structure
11 having branches comprising menu items and wherein the modified menu is at least partially
12 generated by selecting items from the branches of the tree structure.

13 20. An information management and synchronous communications system for
14 generating and transmitting menus comprising:

- 15 a. a central processing unit,
16 b. a data storage device connected to said central
17 processing unit,
18 c. an operating system including a graphical user
19 interface,
20 d. a first menu consisting of menu categories, said menu
21 categories consisting of menu items, said first menu
22 stored on said data storage device and displayable in a
23 window of said graphical user interface in a hierarchical
24 tree format,
25 e. a modifier menu stored on said data storage device and
26 displayable in a window of said graphical user
27 interface,

1 f. a sub-modifier menu stored on said data storage device
2 and displayable in a window of said graphical user
3 interface, and

4 g. application software for generating a second menu from
5 said first menu and transmitting said second menu to a
6 wireless handheld computing device or Web page,

7 wherein the application software facilitates the generation of the second menu by allowing
8 selection of categories and items from the first menu, addition of menu categories to the second
9 menu, addition of menu items to the second menu and assignment of parameters to items in the
10 second menu using the graphical user interface of said operating system, said parameters being
11 selected from the modifier and sub-modifier menus.

12 2x. An information management and synchronous communications system in
13 accordance with claim ¹20, wherein the second menu is a restaurant menu.

14 3x. An information management and synchronous communications system in
15 accordance with claim ¹20, wherein the second menu is capable of being displayed on the display
16 screen of a wireless computing device.

17 4x. An information management and synchronous communications system in
18 accordance with claim ³22, wherein selections from the second menu are capable of being
19 transmitted to a receiving computer by wireless link.

20 6x. An information management and synchronous communications system in
21 accordance with claim ¹20, wherein the second menu is capable of being displayed on display
22 screens of computers in a network.

23 7x. An information management and synchronous communications system in
24 accordance with claim ⁶24, wherein the computer network is the internet.

1 ⁵20. An information management and synchronous communications system in
2 accordance with claim ³22, wherein selections from the second menu are capable of being
3 transmitted to a receiving computer via the internet.

4 ⁸27. An information management and synchronous communications system in
5 accordance with claim ¹28, wherein the second menu is created in conformity with hypertext
6 markup language or extensible markup language.

7 ⁹28. An information management and synchronous communications system in
8 accordance with claim ¹20, wherein the second menu overwrites the first menu.

9 ¹⁰29. The information management and synchronous communications system of
10 claim ¹20, wherein the first menu and the second menu are both capable of being displayed in the
11 same window on the display screen.

12 ¹¹30. The information management and synchronous communications system of
13 claim ¹20, wherein the menu categories and items comprising the second menu are subsets,
14 respectively, of the menu categories and items comprising the first menu.

15 31. In a computer system having an input device, a storage device, a video
16 display, an operating system including a graphical user interface and application software, an
17 information management and synchronous communications method comprising the steps of:

- 18 a. outputting at least one window on the video display;
19 b. outputting a first menu in a window on the video
20 display;
21 c. displaying a cursor on the video display;
22 d. selecting items from the first menu with the input
23 device or the graphical user interface;
24 e. inserting the items selected from the first menu into a
25 second menu, the second menu being output in a
26 window;

- 1 f. optionally adding additional items not included in the
2 first menu to the second menu using the input device or
3 the graphical user interface; and
4 g. storing the second menu on the storage device.
5 32. The method of claim 31, further comprising the step of transferring data or
6 instructions representative of the second menu to a remote digital device or Web page.
7 33. The method of claim 32, wherein said data or instructions representative
8 of the second menu are transferred by a wireless link.
9 34. The method of claim 31, wherein the selected items and optional
10 additional items are inserted into a second menu which is displayed in the same window as the
11 first menu. B
12 35. The method of claim 32, comprising the further steps of selecting at least
13 one item from the second menu and transmitting at least one item selected to another computer.
14 36. The method of claim 35, wherein at least one item selected from the
15 second menu is transmitted to another computer by wireless link or the internet.
16 37. The method of claim 32, wherein the second menu is displayed on the
17 remote digital device or Web page in page format.
18 38. The method of claim 31, wherein the second menu overwrites the first
19 menu.
20 39. The method of claim 31, wherein the items comprising the second menu
21 are a subset of the items comprising the first menu.
22 12/40. An information management and synchronous communications system for
23 use with wireless handheld computing devices and the internet comprising:
24 a. a central database containing hospitality applications and data,

- 1 b. at least one wireless handheld computing device on which hospitality
2 applications and data are stored,
3 c. at least one Web server on which hospitality applications and data are
4 stored,
5 d. at least one Web page on which hospitality applications and data are
6 stored,
7 e. an application program interface, and
8 f. a communications control module,

9 wherein applications and data are synchronized between the central data base, at least one
10 wireless handheld computing device, at least one Web server and at least one Web page; wherein
11 the application program interface enables intergration of outside applications with the hospitality
12 applications and wherein the communications control module is an interface between the
13 hospitality applications and any other communications protocol.

14 ¹³~~41~~ The information management and synchronous communications system of
15 claim ¹²~~40~~ wherein the communications control module provides a single point of entry for all
16 hospitality applications and wherein the single point of entry allows the synchronization of at
17 least one wireless handheld computing device and at least one Web page with the central
18 database so that at least one handheld device, at least one Web page and central database are
19 consistent.

20 ¹⁴~~42~~ The information management and synchronous communications system of
21 claim ¹³~~41~~ wherein information entered on at least one Web page and transmitted over the internet
22 is automatically communicated to the central database and at least one wireless handheld
23 computing device.

- 1 13 15
 43. The information management and synchronous communications system of
2 claim ~~41~~ wherein information entered on at least one wireless handheld computing device is
3 automatically communicated to the central database and at least one Web page.

add at >

09400413.092199
661260-ET-400460

ABSTRACT

An information management and synchronous communications system and method facilitates database equilibrium and synchronization with wired, wireless and Web-based systems, user-friendly and efficient generation of computerized menus and reservations for restaurants and other applications that utilize equipment with nonstandard graphical formats, display sizes and/or applications for use in remote data entry, information management and communication with host computer, digital input device or remote pager via standard hardwired connection, the internet, a wireless link or the like.

66T260"EF400460

COMBINED DECLARATION AND POWER OF ATTORNEY FOR
ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL
DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART APPLICATION

As a below name inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS SYSTEM WITH MENU
GENERATION

the specification of which

a. ☒ is attached hereto

b. ☐ was filed on _____ as application Serial No. _____ and was amended on _____ (if applicable).

PCT FILED APPLICATION ENTERING NATIONAL STAGE

c. ☐ was described and claimed in International Application No. _____ filed on _____ and as amended on _____ (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby specify the following as the correspondence address to which all communications about this application are to be directed:

SEND CORRESPONDENCE TO: MORGAN & FINNEGAN, L.L.P.
345 Park Avenue
New York, N.Y. 10154

DIRECT TELEPHONE CALLS TO: _____
(212) 758-4800

☐ I hereby claim foreign priority benefits under Title 35, United States Code § 119(a)-(d) or under § 365(b) of any foreign application(s) for patent or inventor's certificate or under § 365(a) of any PCT international application(s) designating at least one country other than the U.S. listed below and also have identified below such foreign application(s) for patent or inventor's certificate or such PCT international application(s) filed by me on the same subject matter having a filing date within twelve (12) months before that of the application on which priority is claimed:

☐ The attached 35 U.S.C. § 119 claim for priority for the application(s) listed below forms a part of this declaration.

<u>Country/PCT</u>	<u>Application Number</u>	<u>Date of filing (day, month, yr)</u>	<u>Date of Issue (day, month, yr)</u>	<u>Priority Claimed</u>
				<input type="checkbox"/> YES <input type="checkbox"/> NO
				<input type="checkbox"/> YES <input type="checkbox"/> NO
				<input type="checkbox"/> YES <input type="checkbox"/> NO

☐ I hereby claim the benefit under 35 U.S.C. § 119(e) of any U.S. provisional application(s) listed below.

Provisional Application No.

Date of Filing (day, month, yr)

**ADDITIONAL STATEMENTS FOR DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART
OR PCT INTERNATIONAL APPLICATION(S) (DESIGNATING THE U.S.)**

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s) or under § 365(c) of any PCT international application(s) designating the U.S. listed below.

<u>US/PCT Application Serial No.</u>	<u>Filing Date</u>	<u>Status (patented, pending, abandoned)/ U.S. application no. assigned (For PCT)</u>

☐ In this continuation-in-part application, insofar as the subject matter of any of the claims of this application is not disclosed in the above listed prior United States or PCT international application(s) in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or Imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys and/or agents with full power of substitution and revocation, to prosecute this application, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith: John A. Diaz (Reg. No. 19,550), John C. Vassil (Reg. No. 19,098), Alfred P. Ewert (Reg. No. 19,887),

David H. Pfeffer (Reg. No. 19,825), Harry C. Marcus (Reg. No. 22,390), Robert E. Paulson (Reg. No. 21,046), Stephen R. Smith (Reg. No. 22,615), Kurt E. Richter (Reg. No. 24,052), J. Robert Dailey (Reg. No. 27,434), Eugene Moroz (Reg. No. 25,237), John F. Sweeney (Reg. No. 27,471), Arnold I. Rady (Reg. No. 26,601), Christopher A. Hughes (Reg. No. 26,914), William S. Feiler (Reg. No. 26,728), Joseph A. Calvaruso (Reg. No. 28,287), James W. Gould (Reg. No. 28,859), Richard C. Komson (Reg. No. 27,913), Israel Blum (Reg. No. 26,710), Bartholomew Verdirame (Reg. No. 28,483), Maria C.H. Lin (reg. No. 29,323), Joseph A. DeGirolamo (Reg. No. 28,595), Michael P. Dougherty (Reg. No. 32,730), Seth J. Atlas (Reg. No. 32,454), Andrew M. Riddles (Reg. No. 31,657), Bruce D. DeRenzi (Reg. No. 33,676), Michael M. Murray (Reg. No. 32,537), Mark J. Abate (Reg. No. 32,527), Alfred L. Haffner, Jr. (Reg. No. 18,919), Harold Haidt (Reg. No. 17,509), John T. Gallagher (Reg. No. 35,516), Steven F. Meyer (Reg. No. 35,613) and Kenneth H. Sonnenfeld (Reg. No. 33,285) of Morgan & Finnegan, L.L.P. whose address is: 345 Park Avenue, New York, New York, 10154; and Edward A. Pennington (Reg. No. 32,588), Michael S. Marcus (Reg. No. 31,727) and John E. Hoel (Reg. No. 26,279) of Morgan & Finnegan, L.L.P., whose address is 1775 Eye Street, Suite 400, Washington, D.C. 20006.

[] I hereby authorize the U.S. attorneys and/or agents named hereinabove to accept and follow instructions from _____ as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and/or agents and me. In the event of a change in the person(s) from whom instructions may be taken I will so notify the U.S. attorneys and/or agents hereinabove.

Full name of sole or first inventor Keith R. McNally

Inventor's signature* _____ date _____

Residence 21567 Parvin Drive, Santa Clarita, CA 91350

Citizenship USA

Post Office Address _____

Full name of second joint inventor, if any William H. Roof

Inventor's signature* _____ date _____

Residence 13429 Luckett Court, San Diego, CA 92130

Citizenship USA

Post Office Address _____

Full name of third joint inventor, if any Richard Bergfeld

Inventor's signature* _____ date _____

Residence 20719 Nashville Court, Chatsworth, CA 91311

Citizenship USA

Post Office Address _____

[] ATTACHED IS/ARE ADDED PAGE(S) TO COMBINED DECLARATION AND POWER OF ATTORNEY FORM FOR SIGNATURE BY FOURTH AND SUBSEQUENT INVENTORS

* Before signing this declaration, each person signing must:

1. Review the declaration and verify the correctness of all information therein; and
2. Review the specification and the claims, including any amendments made to the claims.

After the declaration is signed, the specification and claims are not to be altered.

To the inventor(s):

The following are cited in or pertinent to the declaration attached to the accompanying application:

Title 37, Code of Federal Regulation, § 1.56

Duty to disclose information material to patentability.

(a) A patent by its very nature is affect with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

Title 35, U.S. Code § 101

Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Title 35 U.S. Code § 102

Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless –

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent,
- (b) the invention was patented or described in a printed publication in this or foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States, or
- (c) he has abandoned the invention, or
- (d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or
- (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent, or
- (f) he did not himself invent the subject matter sought to be patented, or
- (g) before the applicant's invention thereof the invention was made in this country by another had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other ...

Title 35, U.S. Code § 103

Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed

invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Title 35, U.S. Code § 112 (in part)

Specification

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms also enable any person skilled in the art to which it pertains, or with which it is mostly nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Title 35, U.S. Code § 119

Benefit of earlier filing date in foreign country; right of priority

An application for patent for an invention filed in this country by any person who has, or whose legal representatives or assigns have, previously regularly filed an application for a patent for the same invention in a foreign country which affords similar privileges in the case of applications filed in the United States or to citizens of the United States, shall have the same effect as the same application would have if filed in this country on the date on which the application for patent for the same invention was first filed in such foreign country, if the application in this country is filed within twelve months from the earliest date on which such foreign application was filed; but no patent shall be granted on any application for patent for an invention which had been patented or described in a printed publication in any country more than one year before the date of the actual filing of the application in this country, or which had been in public use or on sale in this country more than one year prior to such filing.

Title 35, U.S. Code § 120

Benefit of earlier filing date in the United States

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application.

Please read carefully before signing the Declaration attached to the accompanying Application.

If you have any questions, please contact Morgan & Finnegan, L.L.P.

FORM:COMB-DEC.NY

Rev. 5/21/98

PATENT

Docket No. 3125-40



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Keith R. McNally et al. Group Art Unit: TBA
Serial No. : TBA Examiner: TBA
Filed : September 21, 1999
For : **INFORMATION MANAGEMENT AND SYNCHRONOUS
COMMUNICATIONS SYSTEM WITH MENU GENERATION**

STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
37 CFR §1.97(f) AND §1.27 (c) – SMALL BUSINESS CONCERN

I hereby state that I am

- ☐ the owner of the small business concern identified below:
☒ an official of the small business concern empowered to act on behalf of the concern identified below

NAME OF CONCERN AMERANTH TECHNOLOGY SYSTEMS, INC.

ADDRESS OF CONCERN 12230 El Camino Real, Suite 330; San Diego, California 92130-2090

I hereby state that the above identified small business concern qualifies as a small business concern as defined in 13 CFR §§ 121.3-18, and reproduced in 37 CFR § 1.9(d), for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both. I hereby state that exclusive rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention entitled:

**INFORMATION MANAGEMENT AND SYNCHRONOUS
COMMUNICATIONS SYSTEM WITH MENU GENERATION**

by: Keith R. McNally
William H. Roof;
Richard Bergfeld

inventor(s)

described in

- ☒ the specification filed herewith
☐ application Serial No. _____, filed _____
☐ Patent No. _____, issued _____

492100_1

Docket No. 3125-4002

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below and no rights to the invention are held by any person other than the inventor, who could not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e).

NAME N/A

ADDRESS

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

NAME

ADDRESS

☐ Individual ☐ Small Business Concern ☐ Nonprofit Organization

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. 1.28(b))

NAME OF PERSON SIGNING Keith R. McNally

TITLE OF PERSON IF OTHER THAN OWNER Chief Executive Officer

ADDRESS OF PERSON SIGNING

21567 Parvin Drive, Santa Clarita, California 91350

SIGNATURE

Keith R. McNally

DATE

7-20-99

FORM: SMALL.BUS
Rev. 05/26/98

NOTE: Separate statements are required from each name person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27).

-2-

492100_1

PRINT OF DRAWINGS
AS ORIGINALLY FILED

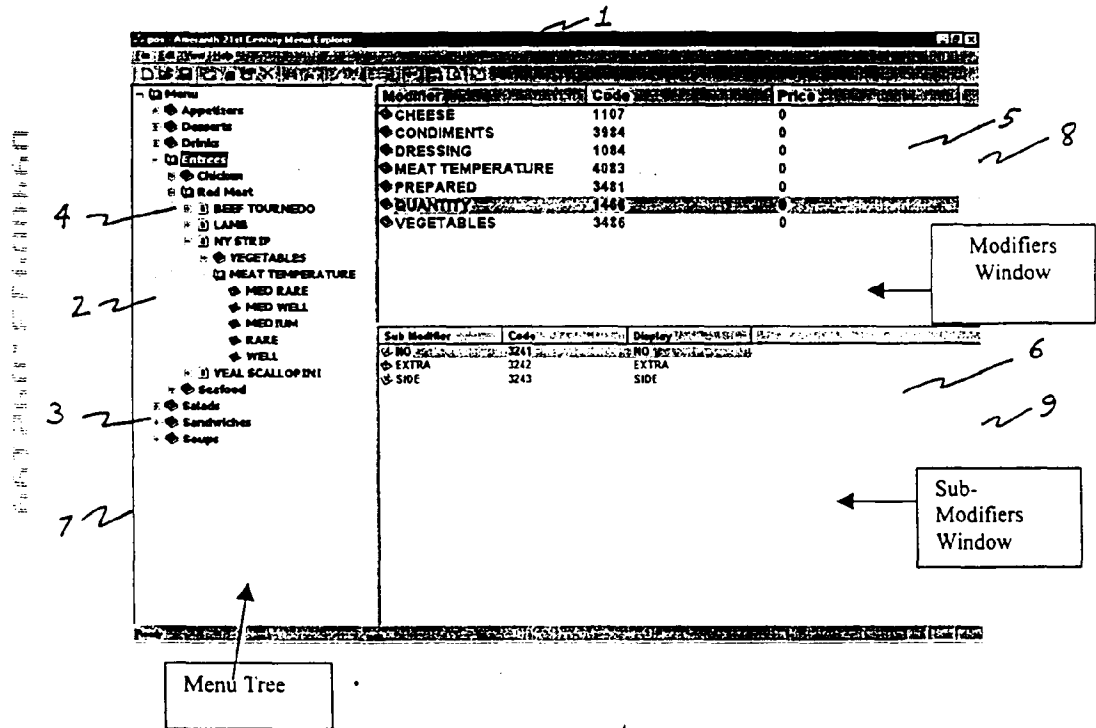


FIGURE 1

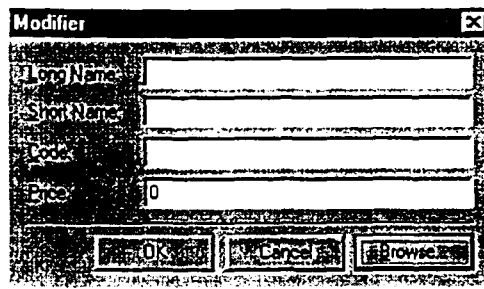


FIGURE 2

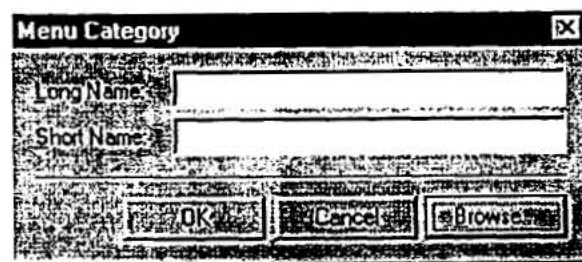


FIGURE 3

The screenshot shows a 'Menu Item' dialog box with the following fields and content:

Long Name	Code
Chicken Alaska	5612

Short Name	Price	Prep Time
ChwAls	12.95	12

Recipe:

Flame broiled brandy marinated Tender Chicken Breast topped with a creamy cilantro sauce. Served with steamed broccoli, carrots and zucchini.

Spices include lemon pepper, paprika, ginger.

At the bottom are buttons for 'OK', 'Cancel', and 'Browse'.

12

FIGURE 4

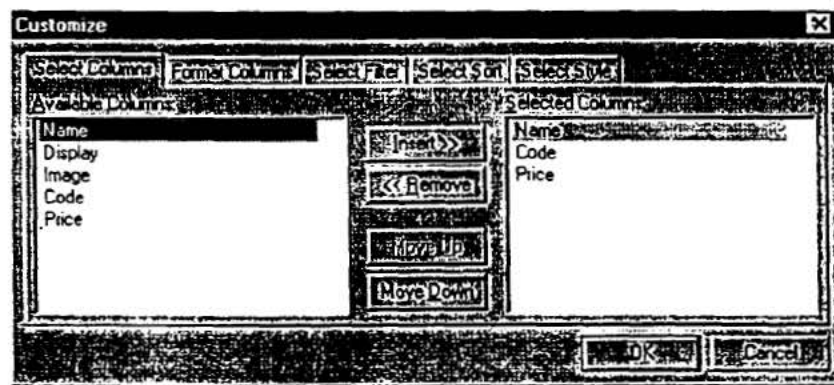


FIGURE 5

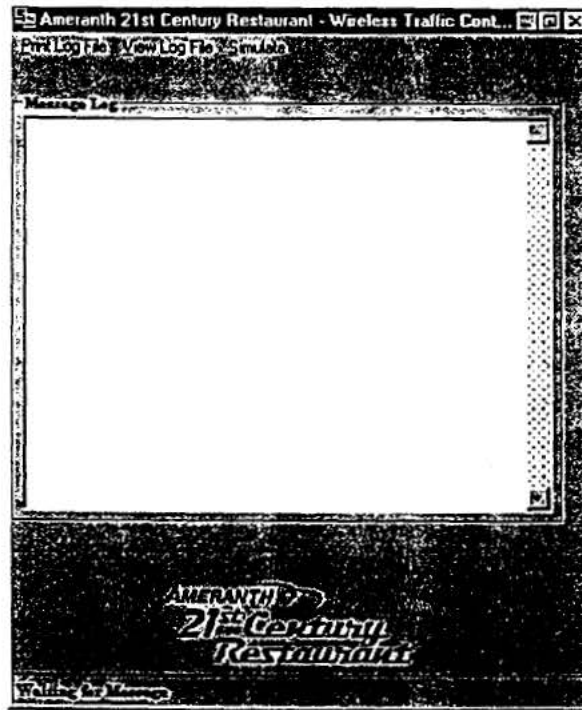


FIGURE 6

POSce System

Login | CHECKS | ORDER | VIEW | PAY

Choose Item: Tbl 67 Gst 2

Add	Deasert	Drinks	Entrees
Salad	Sdwich	Soupe	

Direction

MAIN	PREV	PAGE	MODS
------	------	------	------

Select Guest to Order for:

1	2		
---	---	--	--

Last Selection:

	REMOVE LAST
--	-------------

OK Cancel Quit

15

16

FIGURE 7



UNITED STATES DEPARTMENT OF COMMERCE

Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

#2

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE
--------------------	---------------------	-----------------------	---------------------------

09/400,413

09/21/99

MONALLY

P

3145-400

0912/1014

MORGAN & FINNEGAN LLP
1775 EYE STREET STE 400
WASHINGTON DC 20006

NOT SIGNED

DATE MAILED:

0776

10/14/99

NOTICE TO FILE MISSING PARTS OF APPLICATION
Filing Date Granted

An Application Number and Filing Date have been assigned to this application. The items indicated below, however, are missing. Applicant is given TWO MONTHS FROM THE DATE OF THIS NOTICE within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a). If any of items 1 or 3 through 5 are indicated as missing, the SURCHARGE set forth in 37 CFR 1.16(e) of ☐ \$65.00 for a small entity in compliance with 37 CFR 1.27, or ☐ \$130.00 for a non-small entity, must also be timely submitted in reply to this NOTICE to avoid abandonment.

If all required items on this form are filed within the period set above, the total amount owed by applicant as a ☒ small entity (statement filed) ☐ non-small entity is \$ 15.00.

☐ 1. The statutory basic filing fee is:

- ☐ missing.
☐ insufficient.

Applicant must submit \$_____ to complete the basic filing fee and/or file a small entity statement claiming such status (37 CFR 1.27).

☐ 2. The following additional claims fees are due:

- \$_____ for _____ total claims over 20.
\$_____ for _____ independent claims over 3.
\$_____ for multiple dependent claim surcharge.

Applicant must either submit the additional claim fees or cancel additional claims for which fees are due.

☒ 3. The oath or declaration:

- ☐ is missing or unsigned.
☐ does not cover the newly submitted items.

An oath or declaration in compliance with 37 CFR 1.63, including residence information and identifying the application by the above Application Number and Filing Date is required.

☐ 4. The signature(s) to the oath or declaration is/are by a person other than inventor or person qualified under 37 CFR 1.42, 1.43 or 1.47.

A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

☐ 5. The signature of the following joint inventor(s) is missing from the oath or declaration:

An oath or declaration in compliance with 37 CFR 1.63 listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and Filing Date, is required.

☐ 6. A \$50.00 processing fee is required since your check was returned without payment (37 CFR 1.21(m)).

☐ 7. Your filing receipt was mailed in error because your check was returned without payment.

☐ 8. The application was filed in a language other than English.

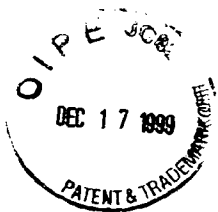
Applicant must file a verified English translation of the application, the \$130.00 set forth in 37 CFR 1.17(k), unless previously submitted, and a statement that the translation is accurate (37 CFR 1.52(d)).

☐ 9. OTHER:

Direct the reply and any questions about this notice to "Attention: Box Missing Parts."

A copy of this notice MUST be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202



sector

#

#3

Docket No. 3125-4002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Keith R. McNally
William H. Roof
Richard Bergfeld
Group Art Unit: 2776

Serial No. : 09/400,413
Examiner: To Be Assigned

Filed : September 21, 1999

For : INFORMATION MANAGEMENT AND SYNCHRONOUS
COMMUNICATIONS SYSTEM WITH MENU GENERATION

RESPONSE TO NOTICE TO FILE MISSING PARTS OF APPLICATION

Assistant Commissioner for Patents
Box Missing Parts
Washington, D.C. 20231

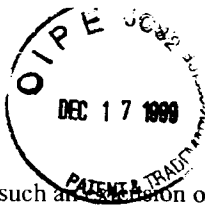
Sir:

In response to the Notification of Missing Requirements Under 35 U.S.C. §371, enclosed are: 1) a copy of the Notification of Missing Requirements Under 35 U.S.C. §371 dated October 14, 1999; 2) an executed Declaration and Power of Attorney; and 3) a check in the amount of \$65.00 for the surcharge.

Applicants have previously filed a Statement (Declaration) Claiming Small Entity Status.

In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby

507015_1



Docket No. 3125-4002

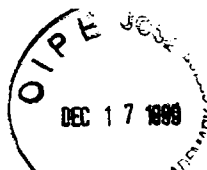
authorized to charge any fee for such an extension of time or credit any over payment for an extension of time to Deposit Account No. 13-4500, Order No. 3125-4002. A DUPLICATE COPY OF THIS PAPER IS ENCLOSED.

Respectfully submitted,

By: John W. Osborne
John W. Osborne
Registration No. 36,231

Date: December 13, 1999

Morgan & Finnegan L.L.P.
345 Park Avenue
New York, NY 10154
(212) 758-4800



#3

COMBINED DECLARATION AND POWER OF ATTORNEY FOR
ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL
DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART APPLICATION

As a below name inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS SYSTEM WITH MENU GENERATION

the specification of which

- a. ☐ is attached hereto
- b. ☒ was filed on September 21, 1999 as application Serial No. 09/400,413 and was amended on _____ (if applicable).

PCT FILED APPLICATION ENTERING NATIONAL STAGE

- c. ☐ was described and claimed in International Application No. _____ filed on _____ and as amended on _____ (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

I hereby specify the following as the correspondence address to which all communications about this application are to be directed:

SEND CORRESPONDENCE TO: MORGAN & FINNEGAN, L.L.P.
345 Park Avenue
New York, N.Y. 10154

DIRECT TELEPHONE CALLS TO: _____
(212) 758-4800

☐ I hereby claim foreign priority benefits under Title 35, United States Code § 119(a)-(d) or under § 365(b) of any foreign application(s) for patent or inventor's certificate or under § 365(a) of any PCT international application(s) designating at least one country other than the U.S. listed below and also have identified below such foreign application(s) for patent or inventor's certificate or such PCT international application(s) filed by me on the same subject matter having a filing date within twelve (12) months before that of the application on which priority is claimed:

☐ The attached 35 U.S.C. § 119 claim for priority for the application(s) listed below forms a part of this declaration.

<u>Country/PCT</u>	<u>Application Number</u>	<u>Date of filing (day, month, yr)</u>	<u>Date of Issue (day, month, yr)</u>	<u>Priority Claimed</u>
				<input type="checkbox"/> YES <input type="checkbox"/> NO
				<input type="checkbox"/> YES <input type="checkbox"/> NO
				<input type="checkbox"/> YES <input type="checkbox"/> NO

☐ I hereby claim the benefit under 35 U.S.C. § 119(e) of any U.S. provisional application(s) listed below.

Provisional Application No.

Date of Filing (day, month, yr)

ADDITIONAL STATEMENTS FOR DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART
OR PCT INTERNATIONAL APPLICATION(S) (DESIGNATING THE U.S.)

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s) or under § 365(c) of any PCT international application(s) designating the U.S. listed below.

<u>US/PCT Application Serial No.</u>	<u>Filing Date</u>	<u>Status (patented, pending, abandoned)/ U.S. application no. assigned (For PCT)</u>

☐ In this continuation-in-part application, insofar as the subject matter of any of the claims of this application is not disclosed in the above listed prior United States or PCT international application(s) in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application(s) and the national or PCT international filing date of this application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or Imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys and/or agents with full power of substitution and revocation, to prosecute this application, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith: John A. Diaz (Reg. No. 19,550), John C. Vassil (Reg. No. 19,098), Alfred P. Ewert (Reg. No. 19,887),

David H. Pfeffer (Reg. No. 19,825), Harry C. Marcus (Reg. No. 22,390), Robert E. Paulson (Reg. No. 21,046), Stephen R. Smith (Reg. No. 22,615), Kurt E. Richter (Reg. No. 24,052), J. Robert Dailey (Reg. No. 27,434), Eugene Moroz (Reg. No. 25,237), John F. Sweeney (Reg. No. 27,471), Arnold I. Rady (Reg. No. 26,601), Christopher A. Hughes (Reg. No. 26,914), William S. Feiler (Reg. No. 26,728), Joseph A. Calvaruso (Reg. No. 28,287), James W. Gould (Reg. No. 28,859), Richard C. Komson (Reg. No. 27,913), Israel Blum (Reg. No. 26,710), Bartholomew Verdirame (Reg. No. 28,483), Maria C.H. Lin (reg. No. 29,323), Joseph A. DeGirolamo (Reg. No. 28,595), Michael P. Dougherty (Reg. No. 32,730), Seth J. Atlas (Reg. No. 32,454), Andrew M. Riddles (Reg. No. 31,657), Bruce D. DeRenzi (Reg. No. 33,676), Michael M. Murray (Reg. No. 32,537), Mark J. Abate (Reg. No. 32,527), Alfred L. Haffner, Jr. (Reg. No. 18,919), Harold Haidt (Reg. No. 17,509), John T. Gallagher (Reg. No. 35,516), Steven F. Meyer (Reg. No. 35,613) and Kenneth H. Sonnenfeld (Reg. No. 33,285) of Morgan & Finnegan, L.L.P. whose address is: 345 Park Avenue, New York, New York, 10154; and Edward A. Pennington (Reg. No. 32,588), Michael S. Marcus (Reg. No. 31,727) and John E. Hoel (Reg. No. 26,279) of Morgan & Finnegan, L.L.P., whose address is 1775 Eye Street, Suite 400, Washington, D.C. 20006.

[] I hereby authorize the U.S. attorneys and/or agents named hereinabove to accept and follow instructions from _____ as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and/or agents and me. In the event of a change in the person(s) from whom instructions may be taken I will so notify the U.S. attorneys and/or agents hereinabove.

Full name of sole or first inventor Keith R. McNally

Inventor's signature* Keith R. McNally

10/25/99
date

Residence 5104 Seagrove Cove, San Diego CA 92130

21567 Parvin Drive, Santa Clarita, CA 91350

Citizenship USA

Post Office Address _____

Full name of second joint inventor, if any William H. Roof

Inventor's signature* William H. Roof

10/25/99
date

Residence 13429 Luckett Court, San Diego, CA 92130

Citizenship USA

Post Office Address _____

Full name of third joint inventor, if any Richard Bergefeld

Inventor's signature* Richard Bergefeld

10/25/99
date

Residence 20719 Nashville ^{Street} Court, Chatsworth, CA 91311

Citizenship USA

-3-

492351_1

Post Office Address _____

[] ATTACHED IS/ARE ADDED PAGE(S) TO COMBINED DECLARATION AND POWER OF ATTORNEY FORM FOR SIGNATURE BY FOURTH AND SUBSEQUENT INVENTORS

* Before signing this declaration, each person signing must:

1. Review the declaration and verify the correctness of all information therein; and
2. Review the specification and the claims, including any amendments made to the claims.

After the declaration is signed, the specification and claims are not to be altered.

To the inventor(s):

The following are cited in or pertinent to the declaration attached to the accompanying application:

Title 37, Code of Federal Regulation, § 1.56

Duty to disclose information material to patentability.

(a) A patent by its very nature is affect with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in patent was cited by the Office or submitted to the Office in the manner prescribed by §§1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

Title 35, U.S. Code § 101

Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Title 35 U.S. Code § 102

Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent,

(b) the invention was patented or described in a printed publication in this or foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States, or

(c) he has abandoned the invention, or

(d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent, or

(f) he did not himself invent the subject matter sought to be patented, or

(g) before the applicant's invention thereof the invention was made in this country by another had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other ...

Title 35, U.S. Code § 103

Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed

invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Title 35, U.S. Code § 112 (in part)

Specification

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms also enable any person skilled in the art to which it pertains, or with which it is mostly nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Title 35, U.S. Code § 119

Benefit of earlier filing date in foreign country; right of priority

An application for patent for an invention filed in this country by any person who has, or whose legal representatives or assigns have, previously regularly filed an application for a patent for the same invention in a foreign country which affords similar privileges in the case of applications filed in the United States or to citizens of the United States, shall have the same effect as the same application would have if filed in this country on the date on which the application for patent for the same invention was first filed in such foreign country, if the application in this country is filed within twelve months from the earliest date on which such foreign application was filed; but no patent shall be granted on any application for patent for an invention which had been patented or described in a printed publication in any country more than one year before the date of the actual filing of the application in this country, or which had been in public use or on sale in this country more than one year prior to such filing.

Title 35, U.S. Code § 120

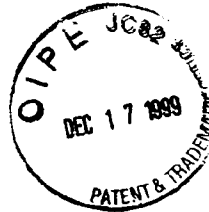
Benefit of earlier filing date in the United States

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application.

Please read carefully before signing the Declaration attached to the accompanying Application.

If you have any questions, please contact Morgan & Finnegan, L.L.P.

FORM:COMB-DEC.NY
Rev. 5/21/98



PATENT

Docket No. 3125-4002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Keith R. McNally
William H. Roof
Richard Bergfeld
Group Art Unit: 2776

Serial No : 09/400,413
Examiner: TBA

Filed : September 21, 1999

For : INFORMATION MANAGEMENT AND SYNCHRONOUS
COMMUNICATIONS SYSTEM WITH MENU GENERATION

TRANSMITTAL OF DECLARATION PURSUANT TO C.F.R. § 1.53

ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

Sir:

Transmitted herewith is a declaration for the above-identified application.

The surcharge, pursuant to 37 C.F.R. § 1.16(e), for filing a declaration on a date later than the
filing date of the application is as follows:

- ☒ Filing by a small entity
\$65.00
- ☐ Filing by other than a small entity
\$130.00
- ☐ Charge surcharge fee to Deposit Account No. 13-4500. Order No. _____
A DUPLICATE COPY OF THIS SHEET IS ATTACHED.
- ☒ A check in the amount of \$ 65.00 to cover the surcharge fee is enclosed.

509083_1


[X] The Assistant Commissioner is hereby authorized to charge any additional fees which may be required by this paper, or credit any overpayment to Deposit Account No. 13-4500. Order No.3125-4002. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

Respectfully submitted,

MORGAN & FINNEGAN, L.L.P.

Dated: December 13, 1999

By:


John W. Osborne
Registration No. 36,231

CORRESPONDENCE ADDRESS:

MORGAN & FINNEGAN, L.L.P.
345 Park Avenue
New York, New York 10154
(212) 758-4800
(212) 751-6849 Facsimile

PATENT
Docket No. 3125-4002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s)	: Keith R. McNally William H. Roof Richard Bergfeld	Group Art Unit: 2776
Serial No	: 09/400,413	Examiner: TBA
Filed	: September 21, 1999	
For	: INFORMATION MANAGEMENT AND SYNCHRONOUS COMMUNICATIONS SYSTEM WITH MENU GENERATION	

CERTIFICATE OF MAILING (37 C.F.R. 1.8a)

ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

Sir:

I hereby certify that the attached:


1. Transmittal of Declaration Pursuant to C.F.R. §1.53;
2. Combined Declaration and Power of Attorney;
3. Response to Notice To File Missing Parts of Application;
4. Notice To File Missing Parts of Application;
5. Check in the amount of \$65.00; and
6. Return postcard.

along with any paper(s) referred to as being attached or enclosed and this Certificate of Mailing are being deposited with the United States Postal Service on date shown below with sufficient postage as first-class mail in an envelope addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Respectfully submitted,

MORGAN & FINNEGAN, L.L.P.

Dated: December 13, 1999


John Osborne
Registration No. 36,231

CORRESPONDENCE ADDRESS:
MORGAN & FINNEGAN LLP
345 Park Avenue
New York, New York 10154
(212) 758-4800
(212) 751-6849 Facsimile



UNITED STATES DEPARTMENT OF COMMERCE

Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NUMBER	FILING/RECEIPT DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO./TITLE
--------------------	---------------------	-----------------------	---------------------------

09/400,413 09/21/99 MCNALLY K 3125-400

0212/1014

MORGAN & FINNEGAN LLP
1775 EYE STREET STE 400
WASHINGTON DC 20006

NOT ASSIGNED

DATE MAILED: 2776

10/14/99

NOTICE TO FILE MISSING PARTS OF APPLICATION

Filing Date Granted

An Application Number and Filing Date have been assigned to this application. The items indicated below, however, are missing. Applicant is given TWO MONTHS FROM THE DATE OF THIS NOTICE within which to file all required items and pay any fees required below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a). If any of items 1 or 3 through 5 are indicated as missing, the SURCHARGE set forth in 37 CFR 1.16(e) of \$65.00 for a small entity in compliance with 37 CFR 1.27, or \$130.00 for a non-small entity, must also be timely submitted in reply to this NOTICE to avoid abandonment.

If all required items on this form are filed within the period set above, the total amount owed by applicant as a ☒ small entity (statement filed) ☐ non-small entity is \$ 65.00.

- ☐ 1. The statutory basic filing fee is:

- ☐ missing.
☐ insufficient.

Applicant must submit \$ _____ to complete the basic filing fee and/or file a small entity statement claiming such status (37 CFR 1.27).

- ☐ 2. The following additional claims fees are due:

\$ _____ for _____ total claims over 20.

\$ _____ for _____ independent claims over 3.

\$ _____ for multiple dependent claim surcharge.

Applicant must either submit the additional claim fees or cancel additional claims for which fees are due.

- ☒ 3. The oath or declaration:

- ☐ is missing or unsigned.
☐ does not cover the newly submitted items.

An oath or declaration in compliance with 37 CFR 1.63, including residence information and identifying the application by the above Application Number and Filing Date is required.

- ☐ 4. The signature(s) to the oath or declaration is/are by a person other than inventor or person qualified under 37 CFR 1.42, 1.43 or 1.47.

A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

- ☐ 5. The signature of the following joint inventor(s) is missing from the oath or declaration:

An oath or declaration in compliance with 37 CFR 1.63 listing the names of all inventors and signed by the omitted inventor(s), identifying this application by the above Application Number and Filing Date, is required.

- ☐ 6. A \$50.00 processing fee is required since your check was returned without payment (37 CFR 1.21(m)).

- ☐ 7. Your filing receipt was mailed in error because your check was returned without payment.

- ☐ 8. The application was filed in a language other than English.

Applicant must file a verified English translation of the application, the \$130.00 set forth in 37 CFR 1.17(k), unless previously submitted, and a statement that the translation is accurate (37 CFR 1.52(d)).

- ☐ 9. OTHER:

Direct the reply and any questions about this notice to "Attention: Box Missing Parts."

A copy of this notice MUST be returned with the reply.

Customer Service Center
Initial Patent Examination Division (703) 308-1202



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Keith R. McNally
William H. Roof
Richard Bergfeld

Group Art Unit: 2776

Serial No : 09/400,413

Examiner: TBA

Filed : September 21, 1999

For : INFORMATION MANAGEMENT AND SYNCHRONOUS
COMMUNICATIONS SYSTEM WITH MENU GENERATION

Assistant Commissioner for Patents
Washington, D.C. 20231

REQUEST TO CHANGE CORRESPONDENCE ADDRESS

Sir.:

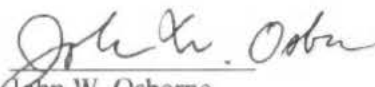
Please change the correspondence address of record in the above-identified application
and direct all future correspondence to:

**John W. Osborne
MORGAN & FINNEGAN, L.L.P.
345 Park Avenue
New York, New York 10154
Telephone No.: (212) 758-4800
Facsimile No.: (212) 751-6849**

Respectfully submitted,
MORGAN & FINNEGAN, L.L.P.

Dated: December 13, 1999

By:


John W. Osborne
Reg. No. 36,231

MORGAN & FINNEGAN, L.L.P.
345 Park Avenue
New York, New York 10154
Tel.(212) 758-4800
Fax.(212) 751-6849

507198_1



0210

GP2776
#4

PATENT

Docket No. 3125-4002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Keith R. McNally
William H. Roof
Richard Bergfeld
Group Art Unit: 2776

Serial No : 09/400,413
Examiner: TBA

Filed : September 21, 1999

For : INFORMATION MANAGEMENT AND SYNCHRONOUS
COMMUNICATIONS SYSTEM WITH MENU GENERATION

CERTIFICATE OF MAILING (37 C.F.R. 1.8a)

ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

Sir:

I hereby certify that the attached:

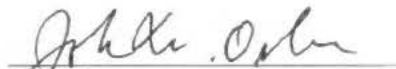
1. Request To Change Correspondence Address; and
2. Return postcard.

along with any paper(s) referred to as being attached or enclosed and this Certificate of Mailing are being deposited with the United States Postal Service on date shown below with sufficient postage as first-class mail in an envelope addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Respectfully submitted,

MORGAN & FINNEGAN, L.L.P.

Dated: December 13, 1999


John Osborne
Registration No. 36,231

CORRESPONDENCE ADDRESS:
MORGAN & FINNEGAN LLP
345 Park Avenue
New York, New York 10154
(212) 758-4800
(212) 751-6849 Facsimile

509073_1



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
-----------------	-------------	----------------------	---------------------

09-280,413 09/21/97 PATRICK

3125-400

EXAMINER

TW02/1129

JOHN W. OSBORNE
MORGAN & FINNEGAN, LLP
345 PARK AVENUE
NEW YORK, NY 10164

NGUYEN, C

ART UNIT

PAPER NUMBER

DATE MAILED:

11/29/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/400,413

Applicant(s)

McNally et al.

Examiner
Cao "Kevin" Nguyen

Group Art Unit
2173



☒ Responsive to communication(s) filed on 9/21/99

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-43 is/are pending in the ap

Of the above, claim(s) _____ is/are withdrawn from consider

☒ Claim(s) 20-30 and 40-43 is/are allowed.

☒ Claim(s) 1-19 and 31-39 is/are rejected

☐ Claim(s) _____ is/are objected

☐ Claims _____ are subject to restriction or election require

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

Art Unit: 2173

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

2. Claims 1-19 and 31-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Cupps et al. (5,991,739).

Regarding claim 1, Cupps discloses an information management and synchronous communications system for generating menus comprising: a central processing unit, a data storage device connected to said central processing unit, an operating system including a graphical user interface (see figure 2), a first menu stored on said data storage device, application software for generating a second menu from said first menu, wherein the application software facilitates the generation of the second menu by allowing selection of items from the first menu, addition of items to the second menu and assignment of parameters to items in the second menu using the graphical user interface of said operating system (see col. 9, lines 42-67).

Art Unit: 2173

Regarding claim 2, Cupps discloses an information management and synchronous communications system, wherein the second menu is a restaurant menu (see col. 5, lines 27-67).

Regarding claim 3, Cupps discloses an information management and synchronous communications system, wherein the second menu is capable of being displayed on the display screen of a wireless computing device (see col. 4, lines 1-55).

Regarding claims 4 and 5, Cupps discloses an information management and synchronous communications system, wherein selections from the second menu are capable of being transmitted to a receiving computer by wireless link.(see figures 1-2).

Regarding claims 6 and 7, Cupps discloses an information management and synchronous communications system in, wherein the computer network is the internet; and selections from the second menu are capable of being transmitted to a receiving computer via the internet (see col. 9, lines 16-65 and figure 8-10).

Regarding claims 8-11, Cupps discloses an information management and synchronous communications system, wherein the second menu is created in conformity with hypertext markup language or extensible markup language (see col. 10, lines 8-56 and figures 7-10).

As claims 12-19 and 31-39 are analyzed as previously discussed with respect to claims 1-11 above.

Art Unit: 2173

Allowable Subject Matter

3. Claims 20-30 and 40-43 are allowed over the prior art of record.

Applicant has claimed uniquely distinct features in the instant invention which are not found in the prior art either singularly or in combination. They are an information management and synchronous communications system for generating and transmitting menus a sub-modifier menu stored on data storage device and displayable in a window of graphical user interface, and application software for generating a second menu from first menu and transmitting second menu to a wireless handheld computing device or Web page. These features are not found or suggested in the prior art.

The present invention is directed to an information management and synchronous communications system for generating and transmitting menus. Each independent claims 20 and 40 are identified the uniquely distinct features "a sub-modifier menu stored on data storage device and displayable in a window of graphical user interface, and application software for generating a second menu from first menu and transmitting second menu to a wireless handheld computing device or Web page". The closest prior art, Cupps (US Patent No. 5,991,739) and Chen (US Patent No. 5,724,069) discloses convention of user interactive interface providing an on-line ordering distribution, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

Art Unit: 2173

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and provided on the attached Form 892.

Response

5. Responses to this action should be mailed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231. If applicant desires to fax a response, (703) 308-6306 may be used for formal communications.

Please label "PROPOSED" or "DRAFT" for informal facsimile communications. For after final responses, please label "AFTER FINAL" or "EXPEDITED PROCEDURE" on the document.

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

Inquires

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cao (Kevin) Nguyen whose telephone number is (703) 305-3972. The examiner can normally be reached on Monday-Friday from 8:30 am to 6:00 pm.

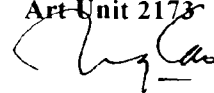
Art Unit: 2173

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John W. Cabeca, can be reached on (703) 308-3116. The fax number for this group is (703) 308-6360.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

PATENT EXAMINER

Art Unit 2173



Cao "Kevin" Nguyen
November 27, 2000

Notice of References Cited

Application No.
09/400,413

Applicant:

McNally et al.

Examiner
Cao "Kevin" Nguyen

Group Art Unit
2173

Page 1 of 1

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	DOCUMENT NO.	DATE	NAME	CLASS	SUBCLASS
A	5,724,069	3/98	CHEN	345	156
B	5,991,739	11/99	CUPPS et al.	705	26
C	5,912,734	6/99	Kinebuchi et al.	345	348
D	5,802,526	4/98	Fawcett et al.	707	104
E					
F					
G					
H					
I					
J					
K					
L					

FOREIGN PATENT DOCUMENTS

	DOCUMENT NO.	DATE	COUNTRY	NAME	CLASS	SUBCLASS
M						
N						
O						
P						
Q						
R						

NON-PATENT DOCUMENTS

	DOCUMENT (including Author, Title, Source, and Pertinent Pages)	DATE
U		
V		
W		
X		



US005724069A

United States Patent [19]

Chen

[11] Patent Number: **5,724,069**[45] Date of Patent: **Mar. 3, 1998**[54] **SPECIAL PURPOSE TERMINAL FOR INTERACTIVE USER INTERFACE**[76] Inventor: **Jack Y. Chen**, 3773 Fox Pointe Rd., Rockford, Ill. 61114[21] Appl. No.: **275,847**[22] Filed: **Jul. 15, 1994**[51] Int. Cl.⁶ **G09G 5/00**[52] U.S. Cl. **345/172; 345/173**[58] Field of Search **345/156, 168, 345/169, 173, 901, 903, 905, 172; 364/708, 709.01, 709.02, 709.11, 709.12, 709.15**[56] **References Cited****U.S. PATENT DOCUMENTS**

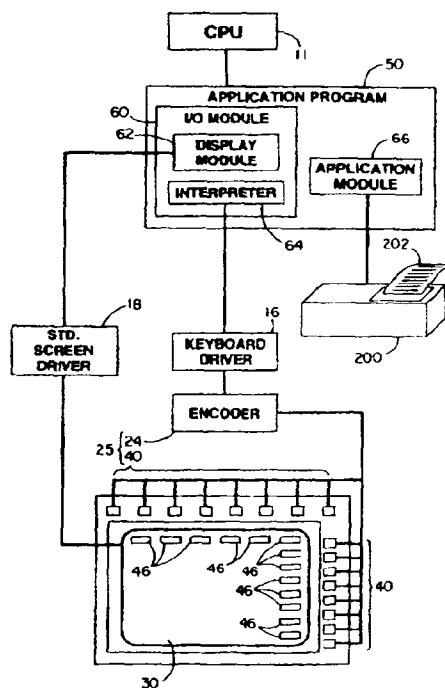
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Primary Examiner—Mark R. Powell
Assistant Examiner—Matthew Luu
Attorney, Agent, or Firm—Leydig, Voit & Mayer, Ltd.

[57] **ABSTRACT**

A special purpose microcomputer-based terminal for interactive user interface. The terminal includes a general purpose microcomputer and an interface module made up of a general purpose display screen and an array of pushbuttons positioned along the sides of the screen. Actuating a pushbutton causes the interface module to generate a standard keystroke signal which is transmitted to the microcomputer through the keyboard port. The input elements of the user interface thus make use of the standard keyboard drivers normally available in a general purpose microcomputer to communicate with the application program. The application program in the computer memory displays on-the-screen selection indicators for available options coordinated to the positions of the pushbuttons, and actuating a button serves to select an option. The application program may present to a user options organized in hierarchal menu tree fashion, and the user may select a path through the menu tree by consecutively actuating the buttons.

18 Claims, 11 Drawing Sheets

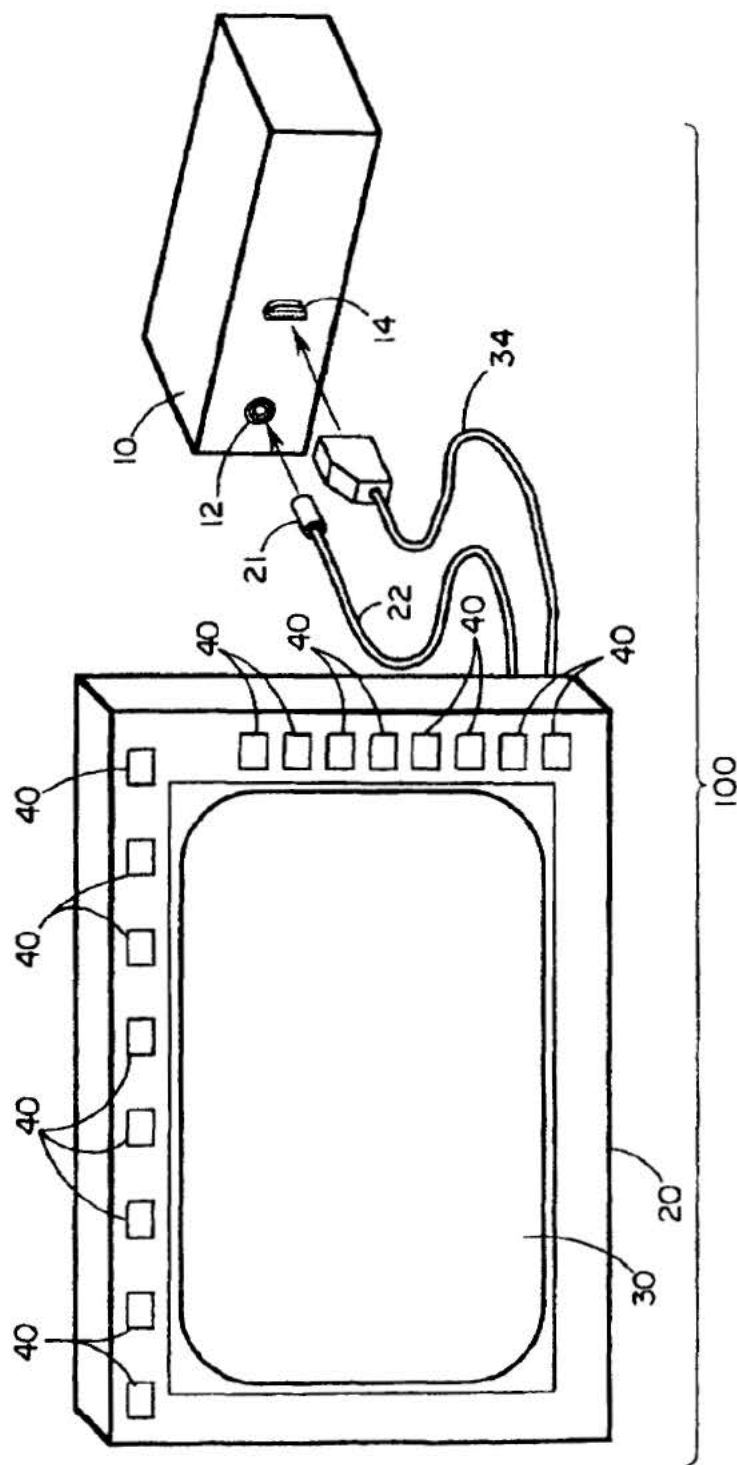


FIG. 1

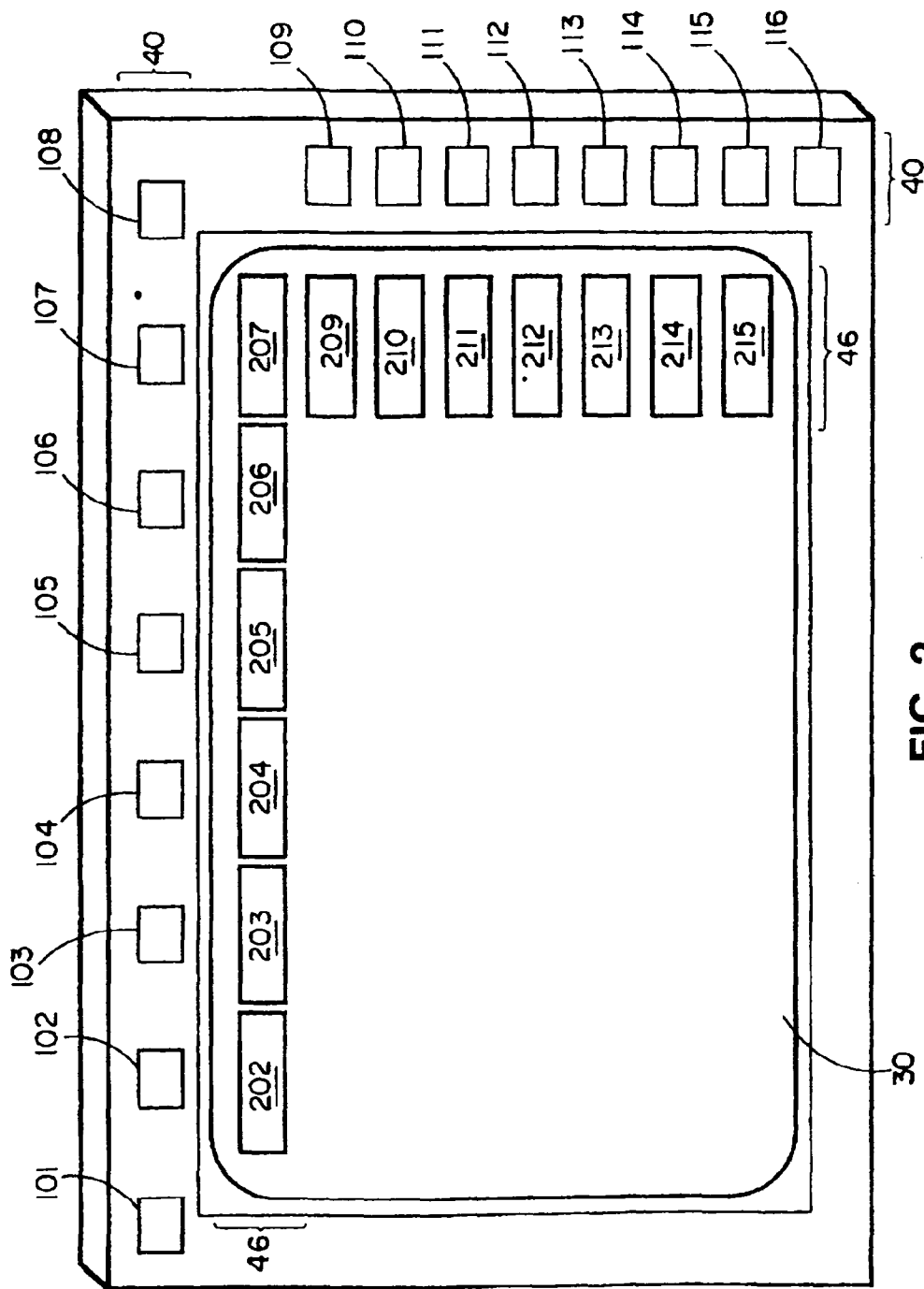


FIG. 2

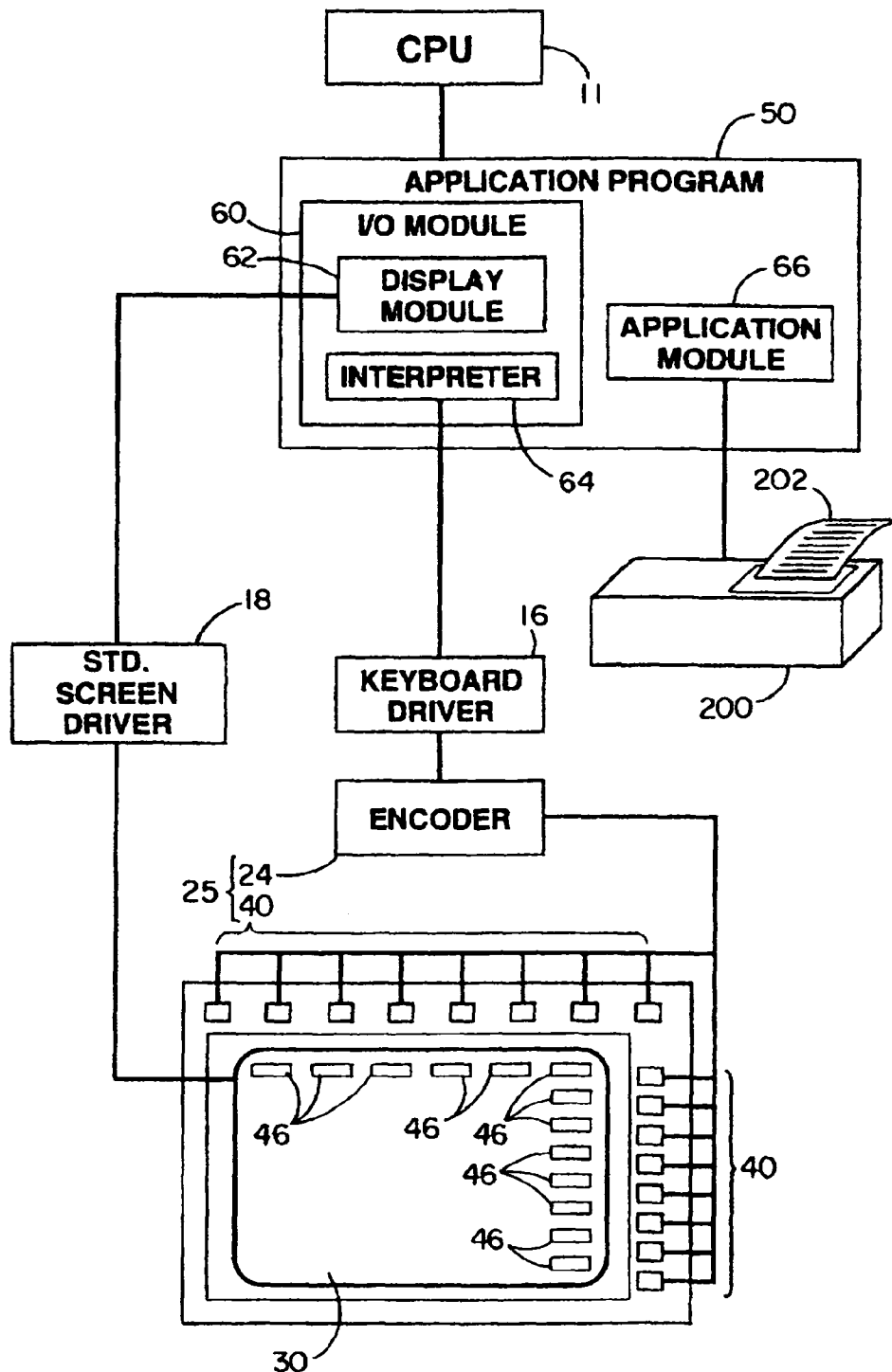


FIG. 3

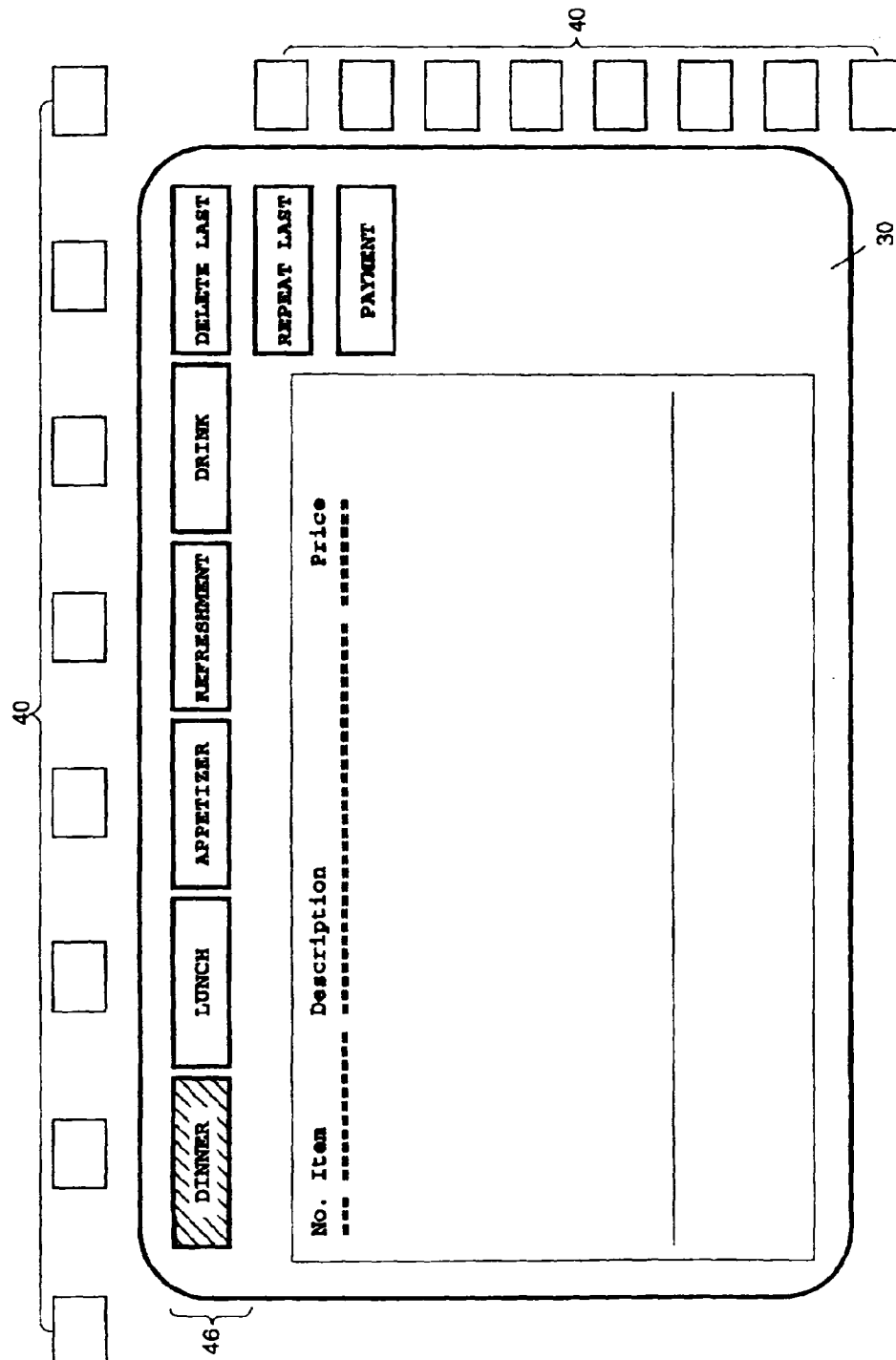


FIG. 4A

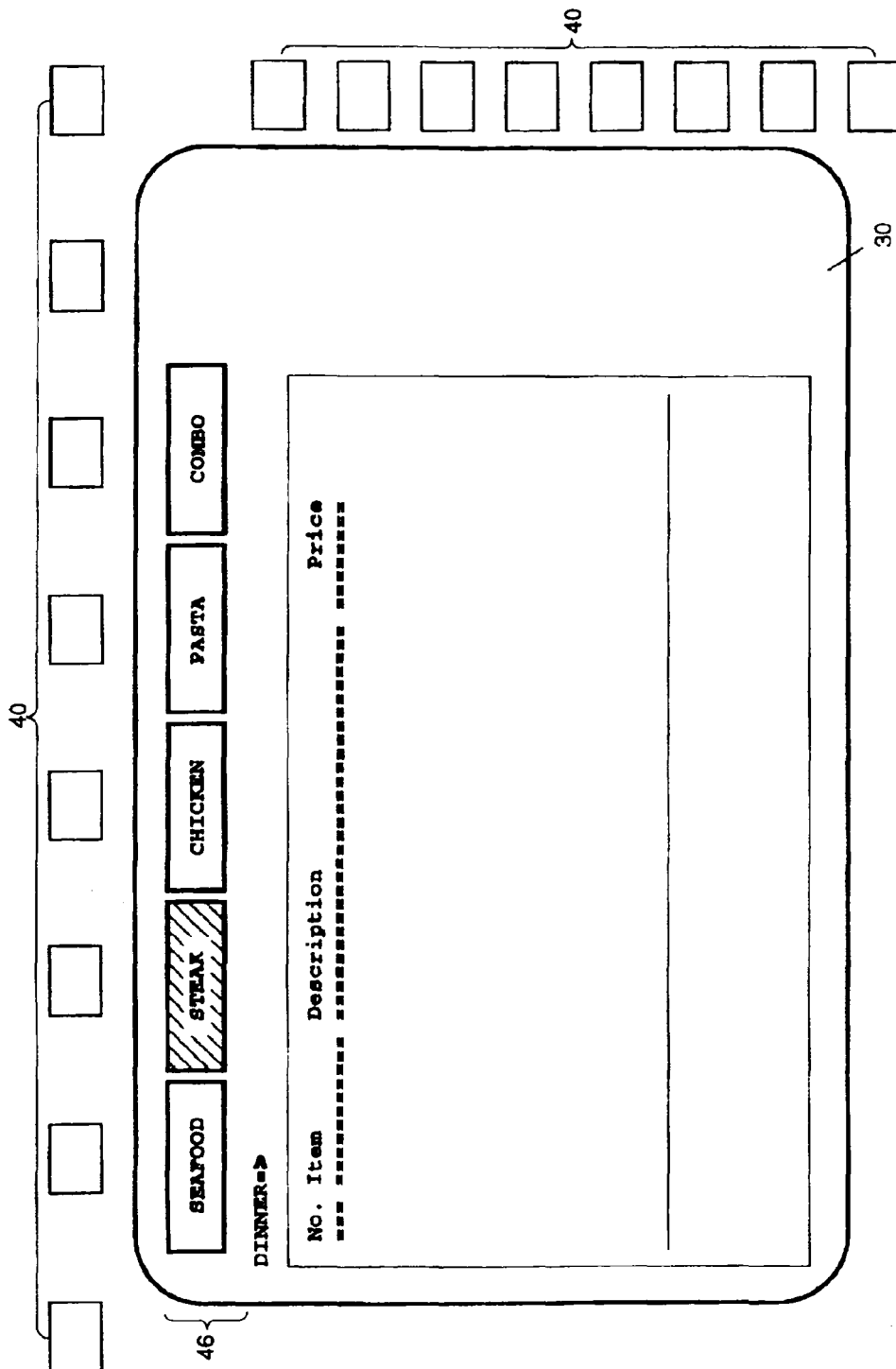
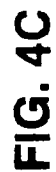


FIG. 4B



46

40

30

WELL MED_WELL MEDIUM MED_RARE RARE

DINNER->STEAK->

No. Item	Description	Price
1	DNYST NEW YORK STRIP	12.95

12.95

FIG. 4D

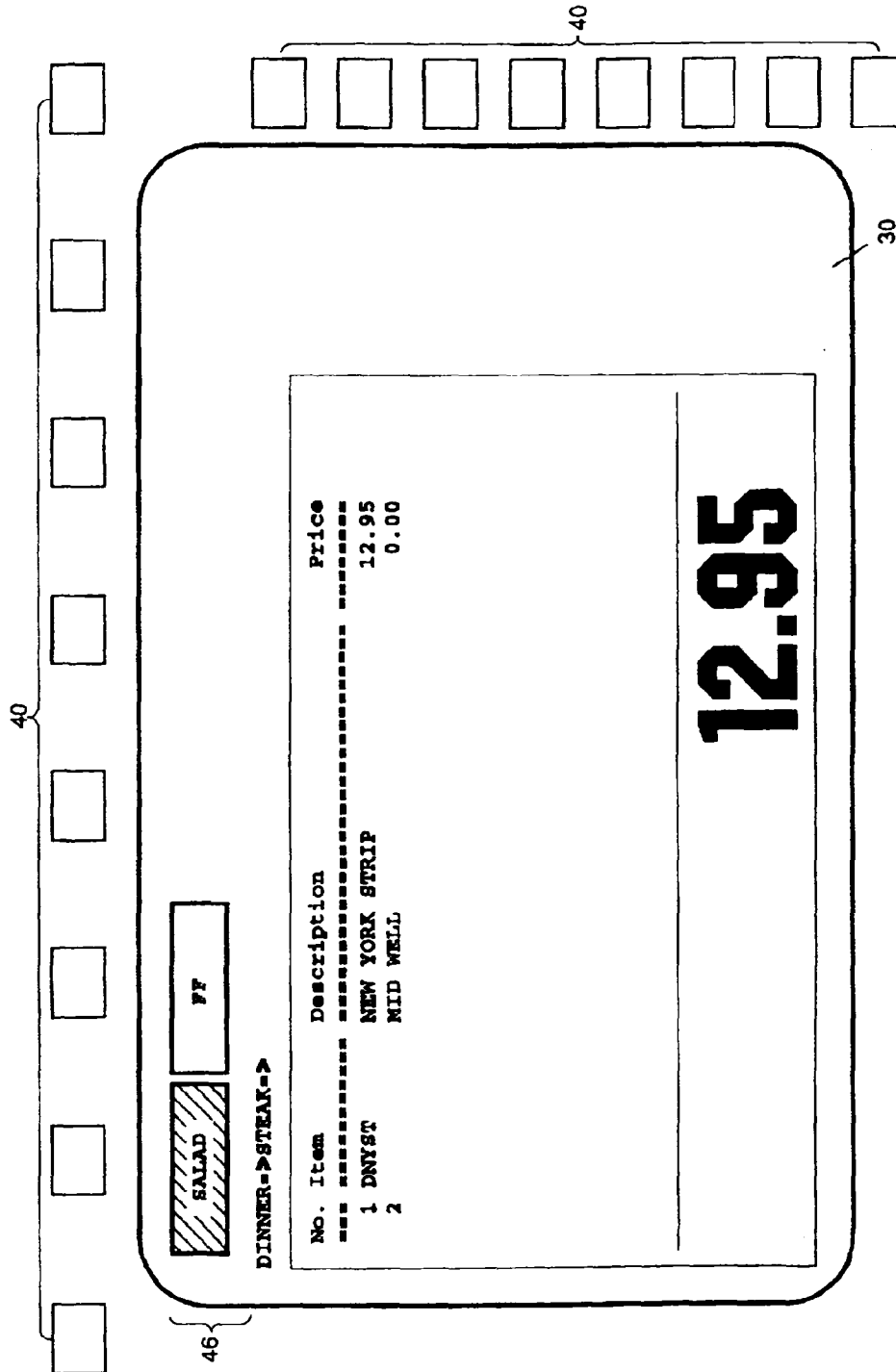


FIG. 4E

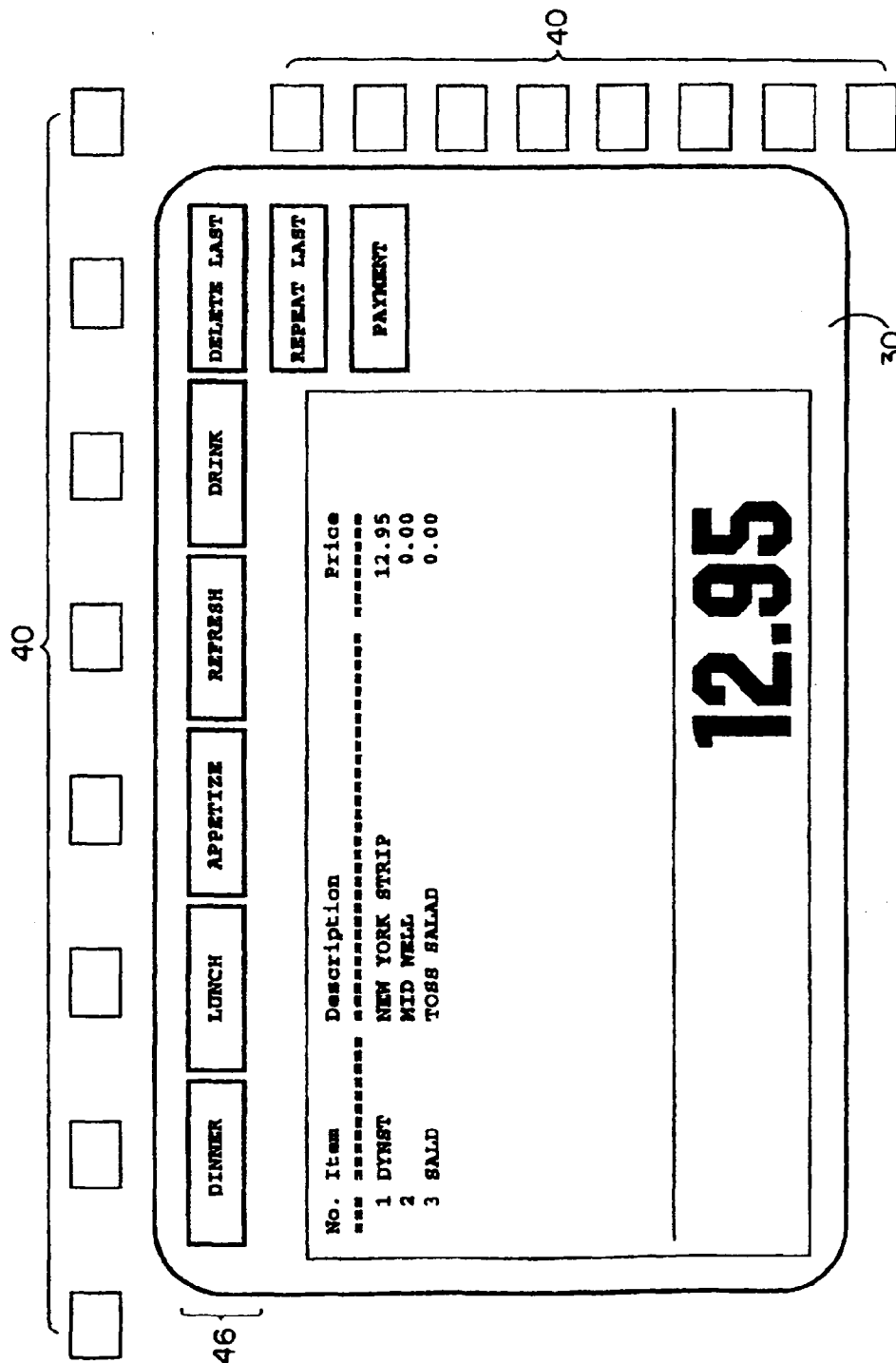


FIG. 4F

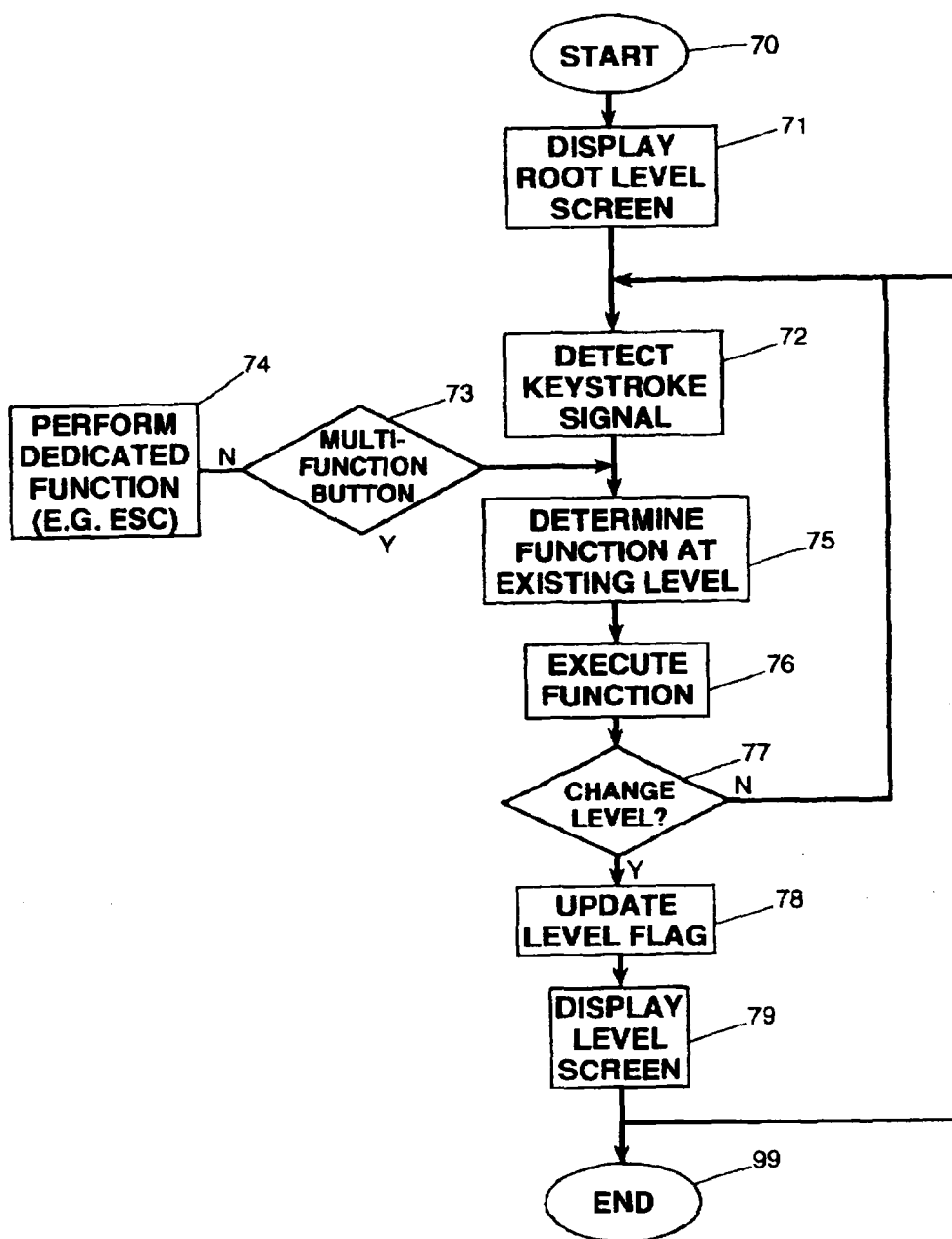


FIG. 5

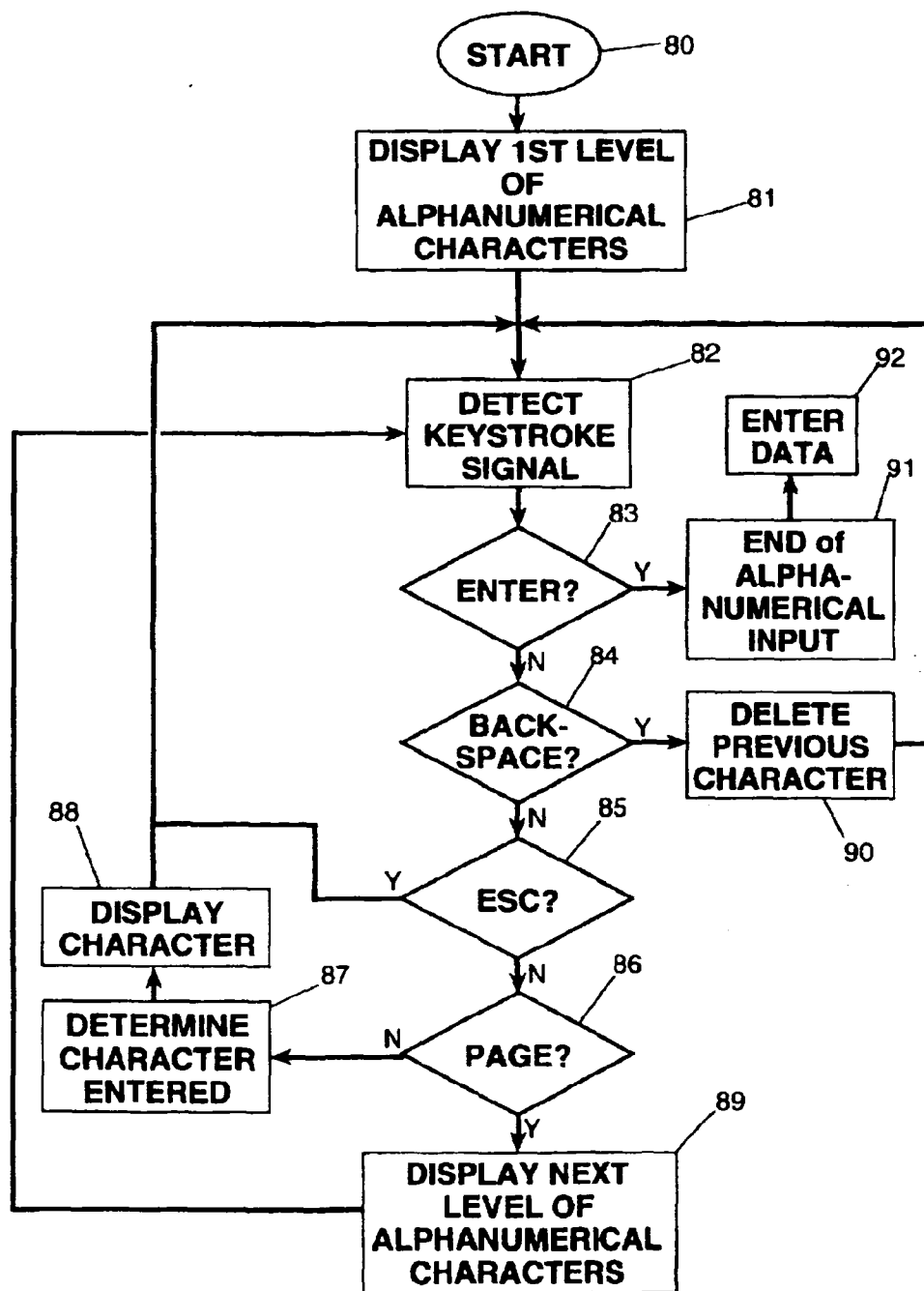


FIG. 6

SPECIAL PURPOSE TERMINAL FOR INTERACTIVE USER INTERFACE

FIELD OF THE INVENTION

The present invention relates generally to a microcomputer-based terminal, and more particularly to a special purpose terminal based on a general purpose microcomputer, and having a simplified user interface.

BACKGROUND OF THE INVENTION

Special purpose microcomputer-based terminals have been widely used in consumer service applications. For example, a department store can use an interactive terminal to provide a customer with information about the prices and selections of goods in the store, or a restaurant can use an interactive terminal for taking orders from a customer. Generally the terminal-user interactive interface is accomplished by the terminal presenting available options on an output device to a user, and the user indicating through an input device the option selected. Many different types of input and output devices may be used. For example, the output device may be a printer or a display screen, and the input device may be a standard keyboard or a mouse. A touch screen may also be used to serve both the input and output (I/O) functions.

Using a standard keyboard in the user interface is quite acceptable for a general purpose terminal, where some computer familiarity is expected, but for a special purpose terminal for the non-computer experienced user, the standard keyboard interface is less than desirable. It may present too many options, it may trigger a computer-phobic reaction, and indeed it may present too many opportunities for a user to affect the computer terminal beyond the intended limited special purpose functions intended.

Heretofore, a particularly attractive user interface for special purpose terminals has been the touch screen. When a touch screen is used as the I/O device of an interface terminal, the application program can be designed to display selection indicators on the screen, and a touch of a selection indicator on the screen will be detected and interpreted by the program as the selection of that option. A touch screen is often preferred to a keyboard or a mouse as the input device because the user actions for using a touch screen, i.e. looking and pointing, are often considered to be simple and intuitive. It is also often desirable to have one device serving both input and output functions instead of using physically separate input and output devices.

A touch screen, however, is not without disadvantages. Special construction and electronics are required for sensing a touch and determining the location of the touch on the screen. Feeding such information into the microcomputer also requires specially designed driver circuits and a specially designed computer interface. These special circuits not only increase the cost of the touch screen interface, but also increase the difficulty of software development because the software must be specially designed to communicate with the driver circuit. The system portability of the interface terminal is also reduced because the touch screen cannot be used with another microcomputer which does not have the special drivers. The special design of the front end (interface and drivers), typically demands that a special purpose terminal with touch screen interface be available for development or modification of application programs.

Another problem with the touch screen is that the screen can get contaminated from contact with hands rather quickly. This problem is especially serious in a restaurant

setting where the device is used for menu selection, because the user of the terminal may also have to handle foods. Devices using a keyboard or a mouse are also not suitable for restaurant applications due to the danger of accidental damage caused by, for example, spilling drink on the keyboard.

SUMMARY OF THE INVENTION

In view of the foregoing, it is a general aim of this invention to provide a special purpose terminal using general purpose computer hardware, to achieve simplicity and directness like that of a touch screen, but to avoid the disadvantages of a touch screen.

In accomplishing that aim, it is an object of the present invention to provide a special purpose terminal using general purpose computer hardware to the maximum extent possible, and to achieve a user interface like that of a touch screen, but without the complication or expense of special purpose drivers or interface circuits normally associated with a touch screen. It is a related object to use the drivers normally associated with a general purpose computer to interface a special purpose user-friendly input device to the general purpose computer.

According to a particular application of the invention, it is an object to provide a user interface device which is suitable for use in an environment like a restaurant where contamination of the device is a concern.

It is a feature of the invention that a standard general purpose microcomputer is operated without a standard keyboard, and a special purpose user interface is connected to the keyboard port of the general purpose computer, the application software of the system serving to assign functions to an array of pushbuttons of the user interface, and to interpret pushbutton actuations according to the assigned functions.

It is a subsidiary feature of the invention that the application programs for the special purpose terminals are designed in several levels, preferably nested in hierarchical menu tree fashion, and the functions are assigned by displaying, on a general purpose display, the functions for the respective pushbuttons, with at least some of the functions changing with changing level. The application then interprets an actuation of a pushbutton according to the level existing at the time of the actuation.

Thus, it is a resulting feature of the invention that an array of conventional pushbuttons can be interfaced to the general purpose microcomputer via a keyboard port, the display driven by the application software to provide touch screen like functionality to the pushbuttons, with the multiple levels of the application assigning multiple functions to the pushbuttons depending on the level. It is a significant feature that this is all accomplished without the need for any special purpose interface boards in the computer and without the need for specially design screens capable of sensing touch.

These and other features of the invention are achieved by providing a special purpose microcomputer-based terminal for interactive user interface. The terminal utilizes a general purpose microcomputer having a display port and a keyboard port. The keyboard port is interfaced to a microcomputer keyboard driver of the type responsive to interpret keystroke signals in a standard format transmitted from a standard alphanumeric keyboard. However, the microcomputer-based terminal does not have a standard alphanumeric keyboard connected to the keyboard port. Instead, a user input module includes a plurality of electrical pushbuttons arranged along at least one side of the display

and an encoder circuit for detecting the actuation of each pushbutton and producing a keystroke signal identifying the actuated pushbutton and compatible with the standard format of the keyboard driver. The user input module is connected to the microcomputer via the keyboard port. A standard general purpose display screen is connected to the display port of the microcomputer. A program memory in the microcomputer contains instructions which (a) assign specific input functions to the pushbuttons, and (b) display pushbutton function assignments on the display screen in positions coordinated to the positions of the pushbuttons. The program memory also contains instructions which respond to signals received from the keyboard driver initiated by actuation of a pushbutton by determining the function specified by the pushbutton actuation and executing the determined function.

In a more particular embodiment, a program memory in the microcomputer contain an input/output module having multiple levels for assigning level-specific functions to the pushbuttons. The input/output module includes a display module for displaying on-the-screen representations of the pushbuttons and the functions assigned to the pushbuttons at each level. The input/output module also includes an interpreter for interpreting a keystroke signal in accordance with the function assigned to the actuated pushbutton at the associated level. The program memory, in addition to the input/output module, also contains an application module for executing the interpreted function assigned to the pushbutton at the interpreted level.

In a particular application, the special purpose terminal is a waiter's terminal for a restaurant in which the multiple levels of the input/output module include a stored series of nested menus including root level menus branching to elemental level menus. The root level menu is adapted to assign the courses of a meal to the function keys, a mid-level menu is adapted to assign selections to the courses specified in the root level menu, and sub-level menus are adapted to refine the selections in the mid-level menus. The application module is adapted to guide the user through the menus in completing a selection of a meal, and to produce, at a printout station, an itemized check.

Other objects and advantages will become apparent from the following detailed description when taken in conjunction with the drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a presently preferred embodiment of the interface terminal of the present invention;

FIG. 2 shows an embodiment of the interface module according to the present invention and graphic representations of the pushbuttons displayed on the screen of the interface module;

FIG. 3 shows a schematic illustration of the functional organization of the terminal of the present invention;

FIGS. 4A-4F illustrate a sequence of screen displays for a restaurant application which presents menu selections organized in a hierarchal menu tree fashion;

FIG. 5 shows a flow chart illustrating the sequence of operation of an application program having multiple levels of functions; and

FIG. 6 shows a flow chart illustrating the process of entering alphanumeric information into a terminal of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

While the invention will be described in connection with certain preferred embodiments, there is no intention to limit

it to those embodiments. On the contrary, the intent is to cover all alternatives, modifications, and equivalents included within the spirit and scope of the invention as defined by the appended claims.

Turning now to the drawings, FIG. 1 shows an embodiment of the interactive interface terminal 100 of the present invention, which comprises an interface module 20 and a microcomputer 10. The microcomputer 10 is a general purpose computer comprising a microprocessor-based CPU. The phrase "general purpose" as used herein means that the microcomputer is of the type generally available for interfacing with a variety of devices and capable of operating a wide range of software applications. It is to be contrasted with "special purpose", which connotes a microcomputer system specially adapted for a limited specific purpose. An example of the former is the wide range of DOS-based computers available from a large number of manufacturers, while an example of the latter might be a terminal dedicated to dispensing lottery tickets.

The general purpose microcomputer 10 conventionally has a keyboard port 12 and a display port 14. A standard alphanumeric keyboard is typically connected to the microcomputer through the keyboard port, often to serve as the primary input device. The general purpose computer used in the terminal of the present invention, however, does not have a standard keyboard connected to the keyboard port 12. The display port 14 allows a standard display screen 30 to be connected to and driven by the microcomputer. The display 30 is illustrated as a CRT, although other forms such as the LCD display can be used.

Internally to the microcomputer 10, the keyboard port 12 is interfaced to a keyboard driver 16 (FIG. 3). The keyboard driver is compatible with a standard alphanumeric keyboard, and includes hardware and software elements. The hardware elements include the necessary integrated circuits and the like which accept signals from the keyboard and process them to produce data words recognizable by the microcomputer system. The software elements include keyboard driver elements, typically resident within the input/output system (e.g., the BIOS), which process the keyboard signal to produce data words which serve as inputs to the microprocessor within the computer system. Both the hardware and software elements are resident in the typical general purpose microcomputer 10 such that it is only necessary to plug a keyboard into the port 12, the hardware and software elements of the keyboard driver being available to immediately accept input from the keyboard.

Generally, a keyboard functions by converting a keystroke into an electrical signal, generally a binary code. To that end, the conventional keyboard itself usually includes a keyboard encoder which performs the ordinary tasks of scanning the keyboard, detecting actuations of any keys, and producing binary coded signals indicating the identity of the key which had been depressed. The code which is produced by the encoder is transmitted to the microcomputer through a signal bus terminated with a connector 21 connected to the keyboard port 12. The keyboard driver 16 (FIG. 3) within the microcomputer receives the code and produces data words accessible to the microcomputer system for determining which key has been actuated, and responding according to the program in operation at the time. Because a keyboard is a standard input device for general purpose microcomputers, most general purpose microcomputers contain a keyboard driver as a standard feature.

In accordance with an important aspect of the present invention, the special purpose interface module 20 makes

5

full use of the keyboard port 12 and its associated drivers in integrating the special purpose user interface of the present invention with a general purpose microcomputer 10. In addition, the interface module 20 of the present invention makes use of a general purpose display screen 30, such as the illustrated CRT, driven from the standard display port 14 through a connection cable 34. It will thus be appreciated that the only truly special purpose features of the present invention are the input interface elements themselves, the remainder being elements which are integral to the readily available, and generally inexpensive available, standard microcomputer system.

Turning in greater detail to the input aspects of the invention, the input module 25 (FIG. 3) comprises a plurality of pushbuttons 40 mounted on a bezel 41 surrounding the screen 30. Preferably, the pushbuttons 40 are arranged in lines along two or more sides of the display screen 30. The interface module 20 in FIG. 1 has eight buttons above the screen 30 and eight buttons along the right side of the screen, forming an inverted "L" shaped array. The number of the pushbuttons and their locations alongside the screen can be varied according to the needs of a specific application. For instance, the pushbuttons can be located along only one side of the screen 30. It is preferred, however, to arrange the pushbuttons 40 in an inverted L-shape forming two lines, one along the top and the other along the right-hand side of the screen 30. In conjunction with the display which is utilized in the assignment of functions to the pushbuttons, the inverted L as illustrated in the figures is most readily suited for ease of operation by a right-handed person. In order to produce signals which are readily interpreted by the keyboard driver of the standard microcomputer, the input module includes an encoder circuit 24 (FIG. 3) which senses the actuation of the pushbuttons and generate keystroke signals which are identical in form to the keystroke signals generated by a standard keyboard. The keystroke signals are transmitted through a signal bus 22 terminated with a connector 21 connected to the keyboard port 12. Because the keystroke signals are compatible with the standard format of the keyboard driver, they can be handled by the keyboard driver, and processed by the BIOS to be made available to the application software being operated in the microcomputer. As a result, no specially designed drivers (either hardware or software) are needed for handling the input from the interface module.

There are significant advantages to using an interface module which can be driven by a general purpose microcomputer without any specially designed drivers. The cost of the terminal system is lower and installation of the system is simpler because no special drivers are required. The interface module is also more portable in the sense that it can be matched with different microcomputers without having to install special drivers. Because the method of interfacing a keyboard to a general purpose microcomputers is fairly standardized, developing an application program which receives input from the keyboard port generally requires less testing and debugging than developing a program receiving input from a specially designed driver circuit. Furthermore, new applications can be developed or existing applications can be modified without the need for a special purpose terminal. Indeed, software development can be performed on a standard microcomputer using a standard keyboard, so long as the software developer knows the particular codes of the keyboard signals which will be used for each of the buttons 40 in the special purpose terminal 100.

In practicing the invention, there is provided, in combination with the array of pushbuttons around the display,

6

means for assigning particular functions to the pushbuttons, and changing the assignment of functions at different levels of the application program. Because the number of pushbuttons should be quite limited in order to keep the user interface reasonably simple and intuitive, it will usually be desirable to assign multiple functions to at least some of the pushbuttons. It is therefore necessary to indicate to a user which function has been assigned to a pushbutton.

FIG. 2 illustrates a preferred means for accomplishing that. The interface module 20 as shown in FIG. 2 has an array of pushbuttons 40 which are individually numbered 101-116. As shown in FIG. 2, the application software operated within the microprocessor causes the display on the screen 30 of a group of graphic representations 46 individually numbered 202-207, 209-215. A graphic representation is a graphic image suggestive of a pushbutton. The graphic representations 46 are positionally juxtaposed to the pushbuttons 40, and indicating the function which is currently assigned to each of the pushbuttons. To further assist the user in selecting a function, information about the functions may also be displayed on the screen. By coordinating representations 46 on the screen 30 to the positions of the pushbuttons 40 along the sides of the screen, the user can clearly tell which pushbutton 40 is assigned to which graphic representation.

FIG. 2 shows the preferred embodiment of the interface module of the present invention which has the pushbuttons 40 arranged in an inverted "L" shape. Because the representations 46 of the pushbuttons are positionally coordinated to the pushbuttons 40, the center of the screen 30 is free for display of application information.

When the user actuates a pushbutton 40, a keystroke signal is sent to the keyboard driver 16 (FIG. 3). The program uses the signal received through the keyboard driver to determine which pushbutton has been actuated, thereby determining which function has been selected. For example, when the pushbutton 202 is actuated, the function assigned to it by the program is selected.

Besides being used to select functions, the pushbuttons can be used for entering alphanumeric data. For example, the function assigned to pushbutton 202 in FIG. 2 may be to input the digit "1". Pressing that button then interpreted by the program as that the digit "1" has been entered.

It may be desirable in some situations to assign permanent functions to some of the pushbuttons, and those functions can either be assigned, insofar as the user interface is concerned, by indicators on the screen 30, or by permanent markings on the buttons 40. In the preferred embodiment of the interface module as shown in FIG. 2, the three pushbuttons 101, 108, 116 located at the upper left, upper right, and lower right corners of the bezel 41 surrounding the screen 40 are generally reserved for those fixed special functions.

FIG. 3 illustrates schematically the functional organization of the terminal of the present invention. The application program 50 in the memory can generally be viewed as functionally comprising two major modules. The first module is the I/O module 60 which is responsible for controlling the course of the computer-user interaction. The course of interaction may be viewed as comprising many levels, and at each level the user is required to make one choice. The operation of the program correspondingly has many levels. At each level the I/O module 60 performs the output function of presenting to the user a set of functions for the user to choose from, and the input function of receiving a keystroke signal from the user indicating which function has been selected. The functions presented to the user are

level-specific, meaning that which functions are presented depends on the level of operation. The I/O module 60 also assigns the level specific functions to the pushbuttons 40 so that the user can press one button to select its assigned function.

The second module in the application program is the application module 66. This module is responsible for carrying out the functions selected by the user. For instance, a selected function can be printing out a check 202 on an attached printer 200, or displaying a road map on the display screen 30.

Based on the input or output functions, The I/O module 60 can be further viewed as comprising a display module 62 and an interpreter 64. The display module 62 performs the output function of displaying on the screen graphic representations 46 of pushbuttons and their respectively assigned level-specific functions. The interpreter 64 performs the input function. The interpreter 64 receives from the keyboard driver 16 a signal identifying the pushbutton 40 that has been pressed, and checks the level-specific function assignments of the pushbuttons 40 to determine which function has been selected by the user. It will be appreciated that each level of interaction involves the operation of the display module 62 and the interpreter 64.

Operating the terminal of the present invention requires simply looking at the screen 30 and pressing a button 40. Due to the visual connection between the buttons and the graphic representations 46, these actions are relatively simple and intuitive, and are very similar to the looking and pointing actions for a touch screen.

While providing ease of operation similar to that of touch screens, the interface module of the present invention has several advantages over a touch screen. First, unlike touch screens which requires special construction and electronic circuits for detecting a touch, electrical pushbuttons are simple devices which are inexpensive and easy to maintain. Second, the present invention utilizes the already existing drivers in the microcomputer, thereby eliminating the need of a specially designed drivers or interfaces.

In many applications, the instructions in the application memory of the microcomputer can be programmed to present to a user functions organized in a hierarchical menu tree fashion. At a given time the program displays on the screen selection indicators for options on one level of the menu tree. After the user selects an option by pressing a button, the program responds by presenting new functions on the next level of the menu tree to the user. Which new options are presented depends on which option has been selected. By consecutive actuations of the buttons, a user can select a path through the menu tree.

Inputting and processing orders from a customer in a restaurant, that is functioning as a special purpose waiter's terminal, represents a currently preferred application for a microcomputer-based terminal according to the present invention. The terminal of the present invention is well suited for such an application, because its interface module is less sensitive to contamination than a touch screen, and is not as susceptible to accidental damage as a standard keyboard. Its simplicity of operation also makes it superior to a interface terminal using a keyboard or a mouse.

When a terminal of the present invention is used as a waiter's terminal for entering orders from customers, the multiple levels of input/output module may include a stored series of nested menus containing options available from a regular restaurant menu. The menus are nested to provide a basic or root level menu branching to elemental level menus,

the elemental menus including, at least in some cases, mid-level menus followed by sub-level menus. This nesting is convenient in order to automatically move from a selection at a root level to the options available at a mid-level, to refinements to the selected options available at sub-level menu. The user need not be concerned with how to get from level to level in order to make the selections. Simply making a selection at one of the higher level menus indexes the level to the next sequential appropriate level, based on the selection already made, so that the sub-items and refinements can be selected.

In greater detail, FIGS. 4A-4F illustrate a series of screens forming at least one branch of a series of nested menus in a waiter's terminal according to the present invention. These figures each show a display screen 30 illustrated at one level of the application software. They also illustrate the multi-function pushbuttons 40 arranged on the bezel 41 surrounding the screen 30, and demonstrate a sequence of steps for selecting a path through the hierarchical menu tree of options.

Beginning with FIG. 4A, the screen 30 shows graphic representations 46 in rectangular boxes for options on the root level of the menu tree, indicating that the user can order dinner, lunch, appetizer, refreshments or drink. The graphic representation labeled DINNER in FIG. 4A is shaded to indicate that it is selected by the user. The same convention is used in FIGS. 4B-4F. The representations labeled DELETE LAST and REPEAT LAST allow the user to change the last selected item, or to duplicate it. Moving now to FIG. 4B, after the user selects the dinner option, the screen shows different types of entree, and steak is selected. FIGS. 4C & 4D show screen displays allowing the user to select the type of steak and how it is cooked. FIG. 4E shows that the user can choose between salad and French fries (FF), and the user chooses salad. After choosing salad the order for dinner is complete, and the screen display in FIG. 4F shows again representations 46 for the options on the root level. The waiter can then enter other selections such as a drink order or another dinner or, alternatively, can actuate the enter pushbutton which enters the order for processing. Displays in the kitchen and other related aspects of the system are not directly related to the present invention and therefore will not be described.

While the I/O module 60 (FIG. 3) of the program for the waiter's terminal handles menu selection, the application module of the program is preferably configured to help guide the user through the menus in completing a selection for a meal. For example, the application program can display on the screen the descriptions of items ordered, their individual and total costs, etc. After the selection for a meal is completed, as illustrated in FIG. 4F, the application module may produce, as illustrated in FIG. 3, a detailed check 202 on a printout station 200 showing the selections, their individual costs and the total cost, etc.

An application program for a waiter's terminal can, of course, have many more levels than the levels illustrated in FIG. 4A-4F. The menu tree formed by the levels shown in FIG. 4A-4B which is can be only a branch of a much larger menu tree structure, with levels above and below it. For instance, before entering the order entry sequence shown in FIG. 4A-4F the program may require the user to indicate whether he is taking a new order or adding a new item to an existing order.

FIG. 5 presents a flow chart illustrating the sequence of operation when using an application program which configures the terminal system as a waiter's terminal. The program

starts at 70 and progresses to a step 71 which displays a root level screen. The root level screen is like that illustrated in FIG. 4A which shows all of the selections which are available at the root level. When a keystroke is detected by the keystroke encoder, and an encoded keystroke signal is passed to the keyboard driver, after passing through the BIOS system, it is presented to the application software as a data word indicating the identity of the pushbutton which has been depressed. This operation is generally indicated in the block identified as 72 in FIG. 5. A test 73 is performed to determine if the pushbutton which had been depressed is one of the multi-function buttons. This is for the case where a number of the pushbuttons are assigned dedicated functions, such as the escape function. If the pushbutton actuation is not a multi-function button, the program branches to a step 74 to service the dedicated function key, such as escape. An escape will exit the application program and return to the basic screen at power up, which in some applications may, for example, be the first screen of the day where the restaurant operator enters the initial information, assigns waiters, and the like.

In normal operation, the step 73 will test positive, and the program will be routed to a step 75 which determines the function for the actuated pushbutton at the existing level of the application program. Assuming that the program is at the root level, and one of the buttons is actuated, the step 75 determines the function at that level, such as by reference to a look-up table. A step 76 is then performed by the standard microprocessor software operating according to the application which is operating in the microprocessor to execute the function. The function may or may not require a change in levels for the displayed function. A test is performed in the step 77 to determine if such a change is required. If it is not, the program branches back to the step 72 to detect the next keystroke. If a level change is required, a step 78 is performed to update the level flag. The step 78 is operated according to the particular requirements of the application software to progress through the menu tree according to the particular selection which has been made. A step 79 is then performed to display the screen for the new level, and the program branches back to the step 72 to detect the next keystroke for next selection. The input/output program continues to cycle in the loop illustrated in FIG. 5 until an enter button is depressed. The actuation of the enter button will typically be detected in the step 73 and will cause a branch to the step 74 which will enter the information which had been input thus far into the portion of the application which will cause the ordered meal or meals to be prepared in the kitchen, bills to be prepared, and the like. Insofar as in the input/output aspects of the program are concerned, however, step 99 indicates that they are at an end.

As a significant but subsidiary feature of the invention, it will sometimes be useful to enter free form alphanumeric information into a special purpose terminal such as that illustrated in FIGS. 1 and 2. Accordingly, for simple entry of free form alphanumeric information, means are provided for dedicating the pushbuttons in level-by-level fashion to portions of the standard alphanumeric character set to allow a user to select and input individual letters or numbers. This entry is accomplished much like making selections in a menu as described above.

When configuring a special purpose terminal to be adaptable to free form alphanumeric display, it is currently preferred to use 16 pushbuttons in the user interface. This allows three buttons to be dedicated to particular functions, such as escape, enter and backspace. That retains the remaining thirteen buttons for multi-function use. One of the thirteen

buttons is preferably dedicated to a paging function which allows the user to control movement from one panel to another. The remaining twelve buttons are utilized for the alphanumeric character set, preferably arranged in three levels. The twenty-six letters of the alphabet and the ten numerals can thus be accommodated in only three panels of the display. The first panel will comprise letters A-L, the second panel will comprise letters M-X and the third panel will comprise letters Y-Z and the numerals 0-9.

The entry of free form alphanumeric information utilizing a system such as that just described will be better understood with reference to the flow chart of FIG. 6. The process begins at a step 80. After selection of the alphanumeric mode, a step 81 is performed which displays the first level of the alphanumeric panel. Thus, the first twelve multi-function buttons will have displays projected on the display screen which show the letters A-L, the thirteenth button will show the page function, and the fourteenth through sixteenth buttons will have the dedicated functions of enter, backspace and escape.

When a pushbutton is actuated, the keyboard encoder will detect the actuation and produce a binary code which identifies the particular button which had been actuated. That signal is passed through the standard keyboard port through the standard keyboard drivers and the BIOS to the application which perform certain tests. First of all, the tests 83, 84 and 85 are performed to determine if any of the dedicated function pushbuttons have been actuated. If they have not, the program branches to a test 86 which determines if the multi-function page pushbutton has been depressed. Assuming that it has not, the program proceeds to a step 87 which interprets the keystroke signal to determine the character which has been entered. A step 88 is then performed to display the character which has been selected, preferably in the central portion of the screen. The program then returns to the step 82 to wait for the next keystroke without altering the display of the first level panel of the alphanumeric characters.

The operator is then free to select another character, or to change panels. Assuming he decides to change panels, the page pushbutton is actuated. The progress of the program proceeds as before, except that the test 86 will test positive following which a step 89 will be performed to display the next level of alphanumeric characters. The user then has a complete set of new functions for the pushbuttons comprising the second level of the alphabet, and can select one of the letters from that panel. He then either selects a particular letter and the program will proceed as first described, or will enter a page command again, following which the third panel will be displayed. The user proceeds as outlined here until a character string is presented on the display which is intended for input into the application program. If the user has made a mistake, the dedicated function backspace key is actuated, and the test 84 will branch to a step 90 which will delete the previous character, return to the panel being displayed and allow the user to enter a new character. When the entry is complete, the user will actuate the enter pushbutton and the test 83 will produce a positive result. A step 91 will then indicate that the alphanumeric input is at an end and will progress to a step 92 which will enter the data word into the application. The manner in which the application uses the data word is not important to an understanding of the present invention. What is important is the ability to use to a limited extent the special purpose, highly customized and generally foolproof special purpose user interface of the present invention in a free form alphanumeric mode.

To facilitate the entry of alphanumeric information, the interface module of the present invention can be configured

11

to allow a standard keyboard to be connected to the keyboard port 12 (FIG. 1) through the interface module. For example, the interface module can be provided with a switching circuit and a connector for connecting a standard alphanumeric keyboard. The switching circuit performs the function of connecting the bus 22 (FIG. 1) to either the encoder 16 (FIG. 3) or the standard keyboard. Once the keyboard is connected to the bus 22 (FIG. 1), it can be used to enter alphanumeric information into an application program. The interface module can also be made to share the bus full time with a standard keyboard. In that case the program in the microcomputer will respond to both a keystroke on the keyboard and the actuation of a pushbutton on the interface module.

It was noted at the outset that the program is preferably divided into an input/output module and an application module. It will be appreciated by those skilled in the art, that this division is used primarily as an aid in understanding the invention, and that the software which implements the input/output modules and the application modules can be and often will be prepared as a single module. What is important is not the fact that separate modules are available, but that the different functions are being performed, and the use of separate modules in describing the invention herein is primarily a tool to aid understanding the different functions, rather than a requirement in how the application program should be segregated.

The mounting of pushbuttons on the bezel of the enclosure which houses the display is preferred, for providing the most ruggedized and professional looking finished product. However, the invention will have application to less permanent arrangements, such as retrofits. In those embodiments, the pushbuttons are arranged in a separate module which is positioned on the exterior of a conventional display. The module can provide a single line of pushbuttons, or can be L-shaped or U-shaped for multiple lines. It will be clear that achieving the positional relationship between buttons and indicators of the invention, does not require the permanency of mounting of the illustrated embodiment.

It will now be appreciated that what has been provided is a special purpose terminal which provides a simple and intuitive way of interactive user interface with simplified hardware requirements. The terminal uses an interface module which has pushbuttons along the sides of a display screen. The signal generated by actuating the buttons can be handled by the keyboard driver in the microcomputer, therefore no special driver is needed. The buttons can be used to select functions presented on the display screen as selection indicators, and by pressing the buttons a user can select a path through a hierarchal menu tree of functions.

What is claimed:

1. A special purpose microcomputer-based terminal for interactive user interface and comprising the combination of:

- a general purpose microcomputer having a display port and a keyboard port, the keyboard port being interfaced to a microcomputer keyboard driver of the type responsive to interpret keystroke signals in a standard format transmitted from a standard alphanumeric keyboard;
- an interactive interface module comprising a general purpose display screen connected to and driven from the display port of the microcomputer, and a user input module including a plurality of electrical pushbuttons arranged along at least one side of the display;
- the user input module including an encoder circuit for detecting the actuation of each pushbutton and produc-

12

ing a keystroke signal identifying the actuated pushbutton and compatible with the standard format of the keyboard driver;

the user input module being coupled to the keyboard port so that the keystroke signals produced by the encoder circuit are transmitted to and processed by the keyboard driver;

a program memory in the microcomputer for assigning level specific functions to individual ones of the pushbuttons and containing instructions which:

(a) assign level-specific input functions to the pushbuttons, and display pushbutton function assignments for a specified level on the display screen in positions coordinated to the positions of the pushbuttons; and

(b) respond to signals received from the keyboard driver circuit initiated by actuation of a pushbutton by determining the function specified by the pushbutton actuation for the specified level and executing the determined function.

2. The terminal as set forth in claim 1 wherein the program memory establishes multiple levels arranged in hierarchal menu tree fashion for receiving inputs from the pushbuttons;

the instructions in the program memory are arranged to assign multiple functions to the pushbuttons corresponding to the multiple levels; and

the instructions in the program memory are arranged to respond to actuation of a pushbutton by executing the function assigned thereto for the level in effect at the time of actuation of the pushbutton.

3. The terminal as set forth in claim 2, wherein the hierarchal menu tree of options contains options available from a restaurant menu, and the multiple levels correspond to respective meal courses and options.

4. The terminal as set forth in claim 3, including a second menu tree of options containing a plurality of levels together making up an alphanumeric character set, the multiple levels presenting sub-sets of the alphanumeric character set, and page means for changing from level to level and sub-set to sub-set.

5. A special purpose microcomputer-based terminal for interactive user interface and comprising the combination of:

a general purpose microcomputer having a display port and a keyboard port, the keyboard port being interfaced to a keyboard driver in the microcomputer of the type responsive to interpret keystroke signals in a standard format transmitted from a standard alphanumeric keyboard;

an interactive interface module comprising a general purpose display screen connected to and driven from the display port of the microcomputer, and a user input module including a plurality of electrical pushbuttons arranged along at least one side of the display;

the user input module including an encoder circuit for detecting the actuation of each pushbutton and producing a keystroke signal identifying the actuated pushbutton and compatible with the standard format of the keyboard driver;

the user input module being coupled to the keyboard port so that the keystroke signals produced by the encoder circuit are transmitted to the keyboard driver;

a program memory in the microcomputer containing:

- (a) an input/output module having multiple levels for assigning level-specific functions to the pushbuttons and including:

13

(i) a display module for displaying on the screen representations of the pushbuttons and the functions assigned to the pushbuttons at each level;
 (ii) an interpreter for interpreting a keystroke signal resulting from a pushbutton actuation in accordance with the function assigned to the actuated pushbutton at the associated level; and
 (b) an application module for executing the interpreted function assigned to the pushbutton at the interpreted level.

6. The terminal as set forth in claim 5 wherein the execution by the application module of at least some of the functions causes the input/output module to switch levels.

7. The terminal as set forth in claim 5 further including means in the input/output module for paging from level to level and coordinating the display of pushbutton functions and interpretation of keystrokes in accordance with the current level.

8. The terminal as set forth in claim 7 wherein the means for paging includes:

- one of the pushbuttons; and
- the input/output modules assigns a page up/page down function to said one of the pushbuttons.

9. The terminal as set forth in claim 5 in which the user input module includes an inverted "L" shaped array of pushbuttons arranged in lines along the top and one side of the display, the display module displaying the on-screen representation in locations along the top and one side of the screen positionally corresponding to the positions of the pushbuttons, so that the center of the screen is free for display of application information.

10. The terminal as set forth in claim 5 wherein the multiple levels of the input/output module include a first said level assigning a first portion of an alphanumeric character set to the pushbuttons, second and third said levels assigning second and third portions of the alphanumeric character set to the pushbutton so that the plurality of levels make up a complete alphanumeric character set, and means are provided for paging between the levels to allow formation and entry of free form alphanumeric commands.

11. The terminal as set forth in claim 5 wherein at least one of the pushbuttons has a permanent function which is not altered by the input/output module.

12. The terminal as set forth in claim 11 wherein the plurality of electrical pushbuttons include an enter pushbutton and an escape pushbutton having permanent functions assigned thereto and which are not altered by the input/output module, so as to provide the ability to enter data or escape an application at any time during operation of the terminal.

13. The terminal as set forth in claim 5 in which the special purpose terminal is a waiter's terminal for a restaurant and in which:

- the multiple levels of the input/output module include a stored series of nested menus including root level menus branching to elemental level menus, a root level menu being adapted to assign the courses of a meal to the function keys, a mid-level menu being adapted to assign selections to the courses specified in the root level menu, and sub-level menus being adapted to refine the selections in the mid-level menus;
- the application module being adapted to guide the user through the menus in completing a selection of a meal, and to produce, at a printout station, an itemized check.

14

14. The terminal as set forth in claim 13, including a second menu tree of options containing a plurality of levels together making up an alphanumeric character set, the multiple levels presenting sub-sets of the alphanumeric character set, and page means for changing from level to level and sub-set to sub-set.

15. A method of simplifying the input/output operation in a special purpose terminal, the method comprising the steps of:

providing a general purpose microcomputer having a display connected to the display port and having a keyboard port of the type responsive to interpret keystroke signals in a standard format when transmitted from a standard alphanumeric keyboard;

providing an array of input pushbuttons, comprising the only input means for the terminal, and connecting said input pushbuttons through a keyboard encoder to the keyboard port, the number of pushbuttons being substantially less than the number of characters in a standard alphanumeric character set;

operating the terminal at a plurality of program levels each assigning different functions to at least some of the pushbuttons;

operating the keyboard encoder to assign particular keystroke signals to each pushbutton irrespective of the program level at which the terminal is operating;

assigning variable functions to the pushbuttons dependent on the program level at which the terminal is operating, as part of the assigning step displaying on the display a set of indicators for the functions assigned to the pushbuttons in positional relationship with the physical locations of the pushbuttons; and

interpreting a keystroke signal received from an actuated pushbutton in accordance with the program level then in effect to cause the function displayed for the pushbutton to be performed upon actuation thereof.

16. The method as set forth in claim 15 including the further step of switching program levels to assign different functions to the pushbuttons, and interpreting the pushbutton actuations according to the different levels.

17. The method as set forth in claim 16 wherein the special purpose terminal is a waiter's terminal for a restaurant, and in which the step of assigning variable functions to the pushbuttons dependent on the program level includes sequentially displaying a stored series of nested menus including root level menus branching to elemental level menus, a root level menu assigning the courses of a meal to the function keys, a mid-level menu assigning selections to the courses specified in the root level menu, and sub-level menus refining the selections in the mid-level menus;

and the step of switching levels is nested to guide the user through the menus in completing a selection of a meal.

18. The method as set forth in claim 17 in which the step of assigning variable functions includes assigning a second set of functions to the pushbuttons comprising characters of an alphanumeric character set, segregating the characters of the alphanumeric character set into at least three groups, and the step of interpreting a keystroke signal includes identifying the pushbutton and the level to enter an alphanumeric character on the display corresponding to the function of the pushbutton at the current level.

* * * * *



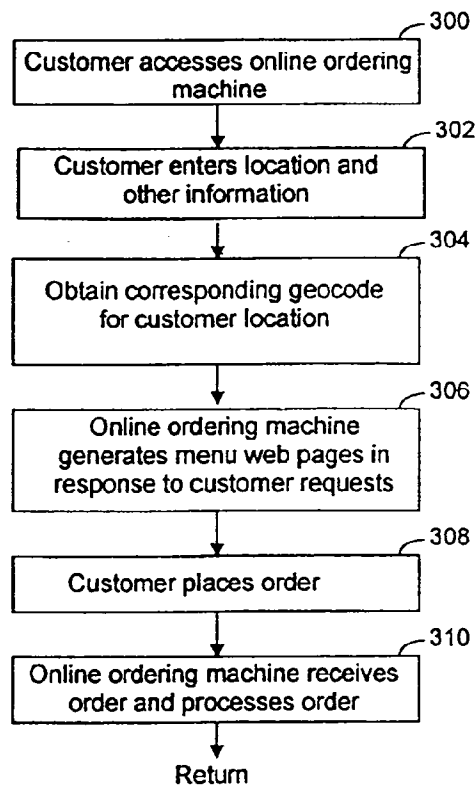
US005991739A

United States Patent [19][11] **Patent Number:** **5,991,739****Cupps et al.**[45] **Date of Patent:** **Nov. 23, 1999**[54] **INTERNET ONLINE ORDER METHOD AND APPARATUS**[75] Inventors: **Bryan Cupps**, Bothell, Wash.; **Tim Glass**, Aptos, Calif.[73] Assignee: **FOOD.COM**, San Francisco, Calif.[21] Appl. No.: **08/976,793**[22] Filed: **Nov. 24, 1997**[51] Int. Cl.⁶ **G06F 17/60**[52] U.S. Cl. **705/26; 705/26; 705/37; 705/27**[58] Field of Search **705/26; 340/994; 379/201**[56] **References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Kevin J. Teska*Assistant Examiner*—Mark J. Fink*Attorney, Agent, or Firm*—Flehr Hohbach Test Albritton & Herbert; Steven F. Caserza[57] **ABSTRACT**

A system and method for providing an online -ordering machine that manages the distribution of home delivered products over a distributed computer system is herein disclosed. The distributed computer system includes a group of customers connected to client computers and at least one server computer system that executes the online ordering machine. The online ordering machine provides the customers with product information from various vendors whose delivery range is within the customer's location or with product information from vendors having take out service within a specified range from the customer's location. The vendor's and customer's location is associated with a geocode representing the latitude and longitude coordinates of the location. The search for the vendors servicing the customer's location is done using the geocodes. The online ordering machine accepts orders from the customer for a particular product from a selected vendor. The order is converted into voice instructions which are transmitted to the vendor through a telephone call. The vendor receives the telephonic order and responds to voice-prompted instructions used to confirm the order.

40 Claims, 20 Drawing Sheets

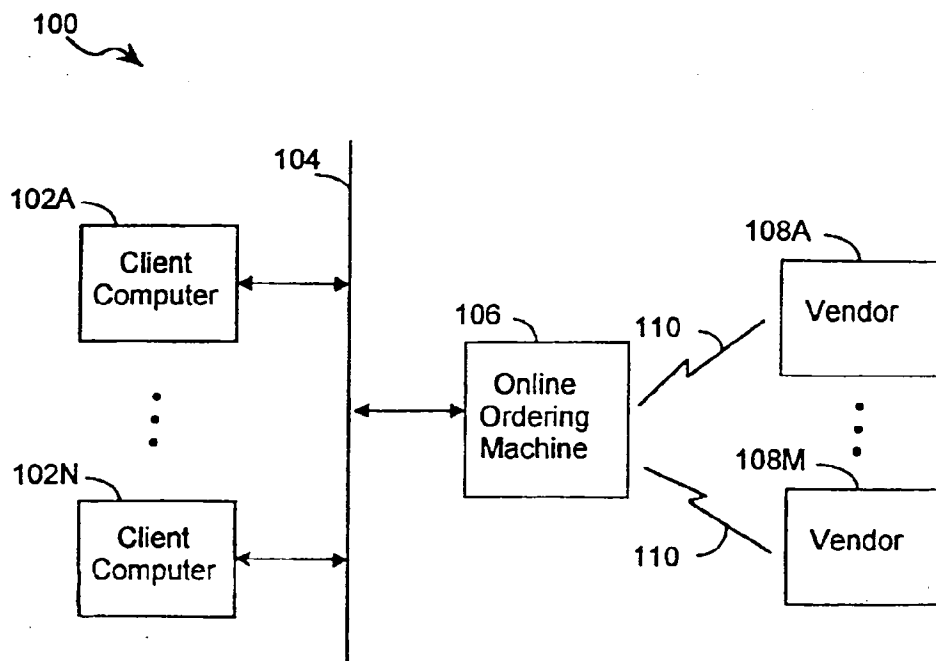


FIG. 1

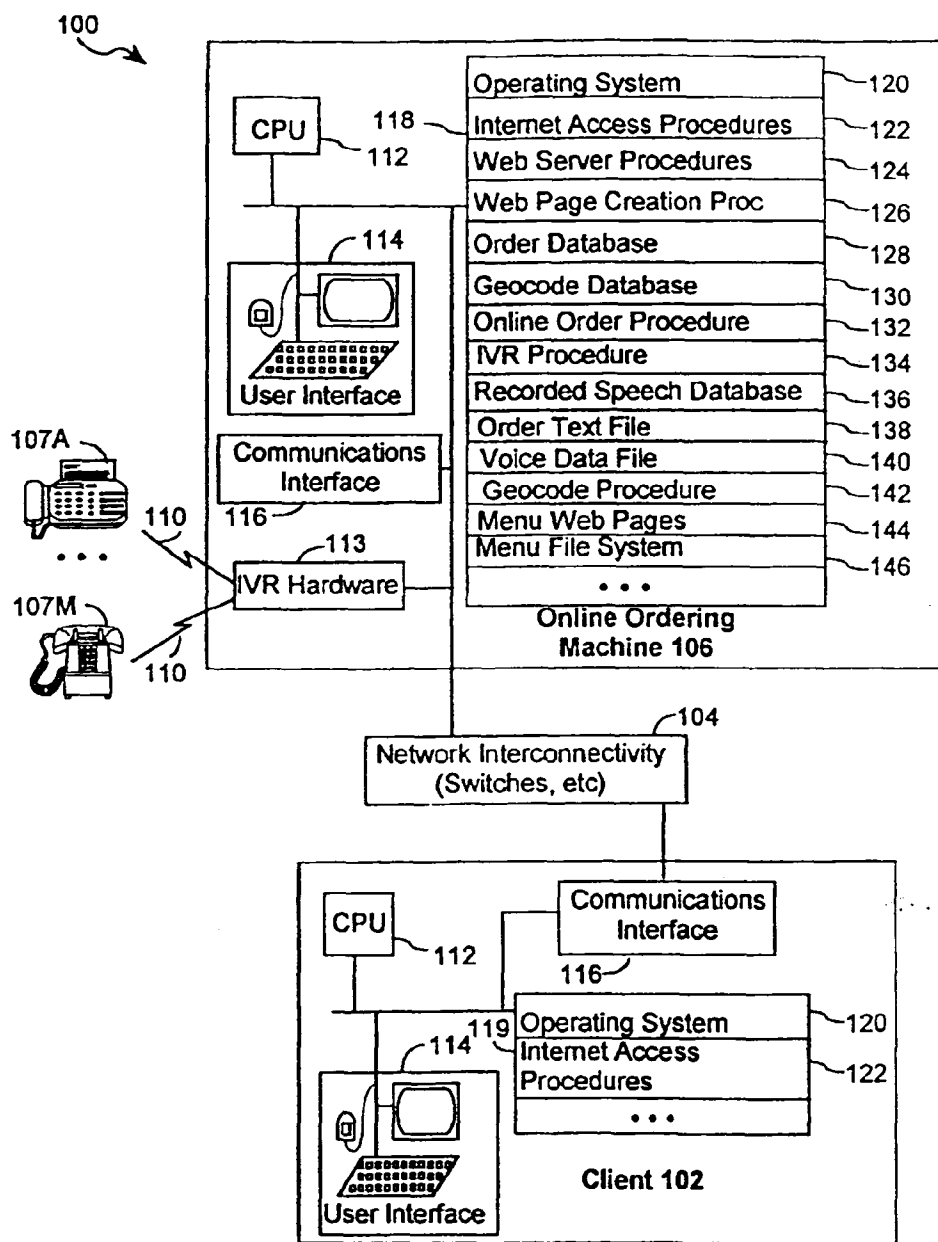


FIG. 2

FIG. 3A	FIG. 3B
FIG. 3C	FIG. 3D
FIG. 3E	FIG. 3F

KEY TO FIG. 3

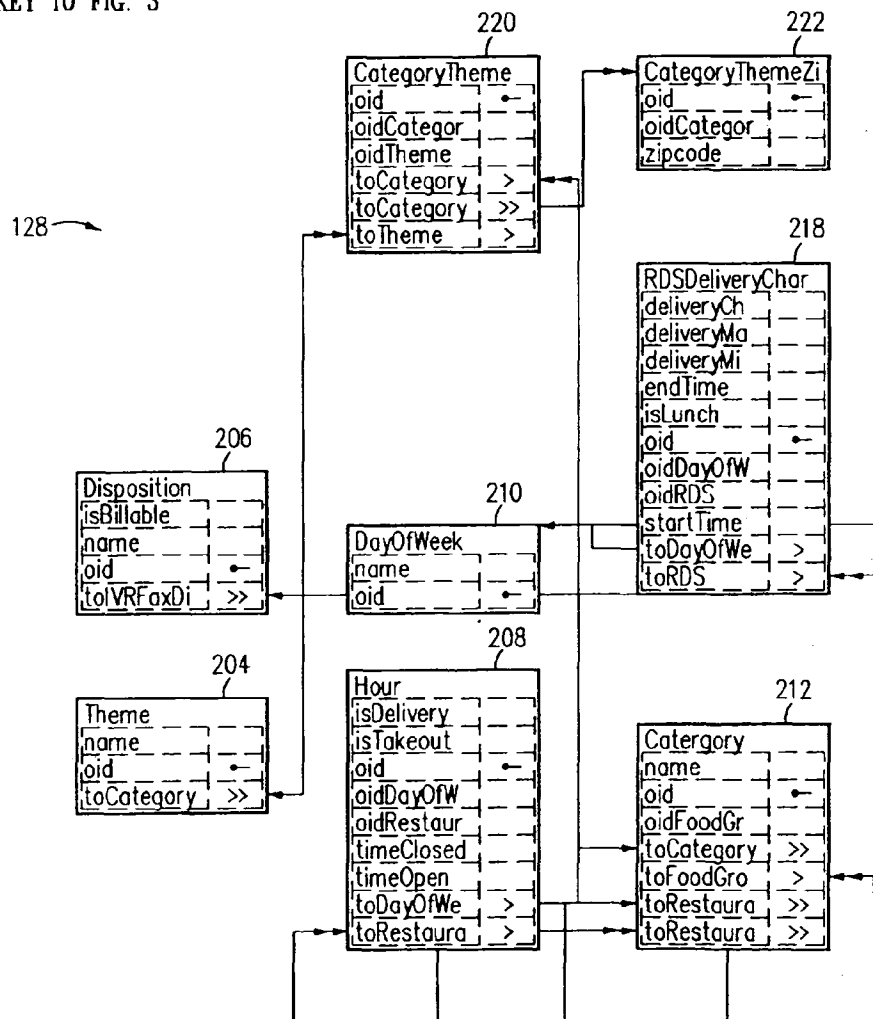


FIG. 3A

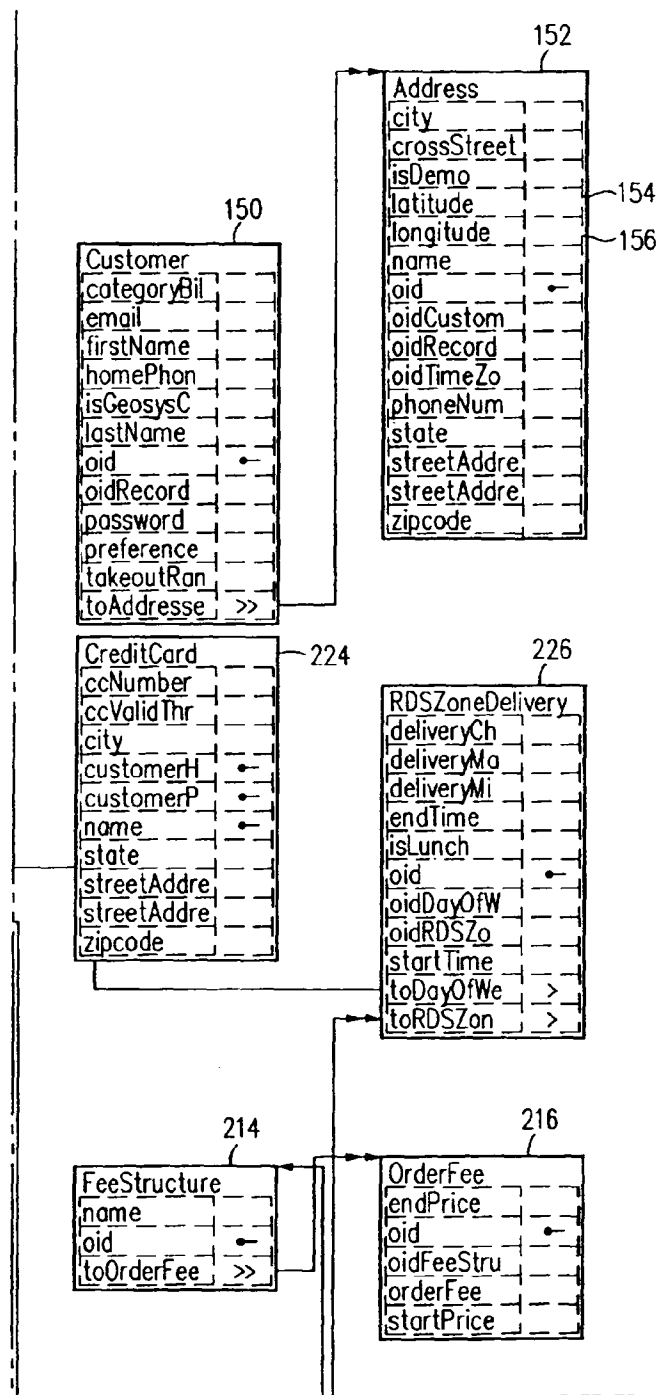


FIG. 3B

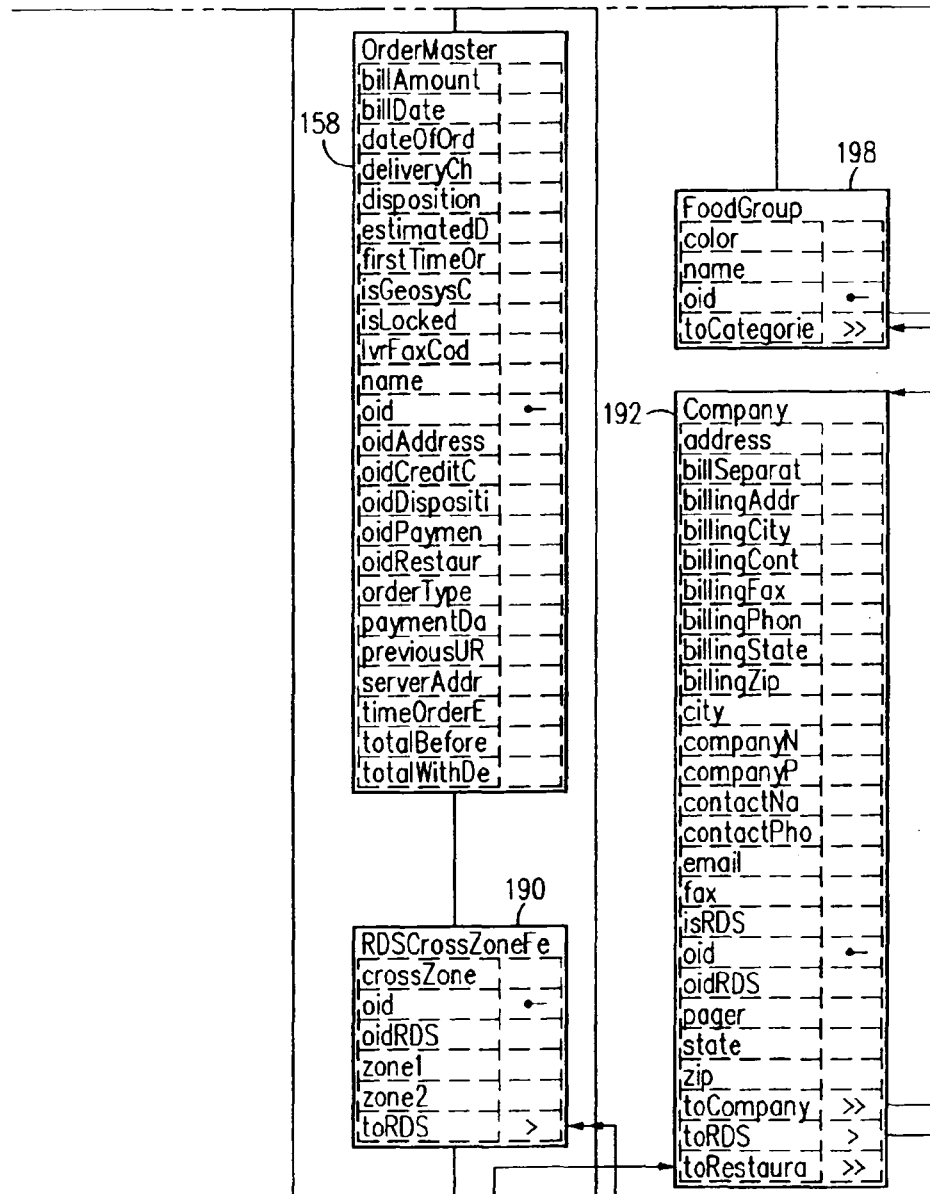


FIG. 3C

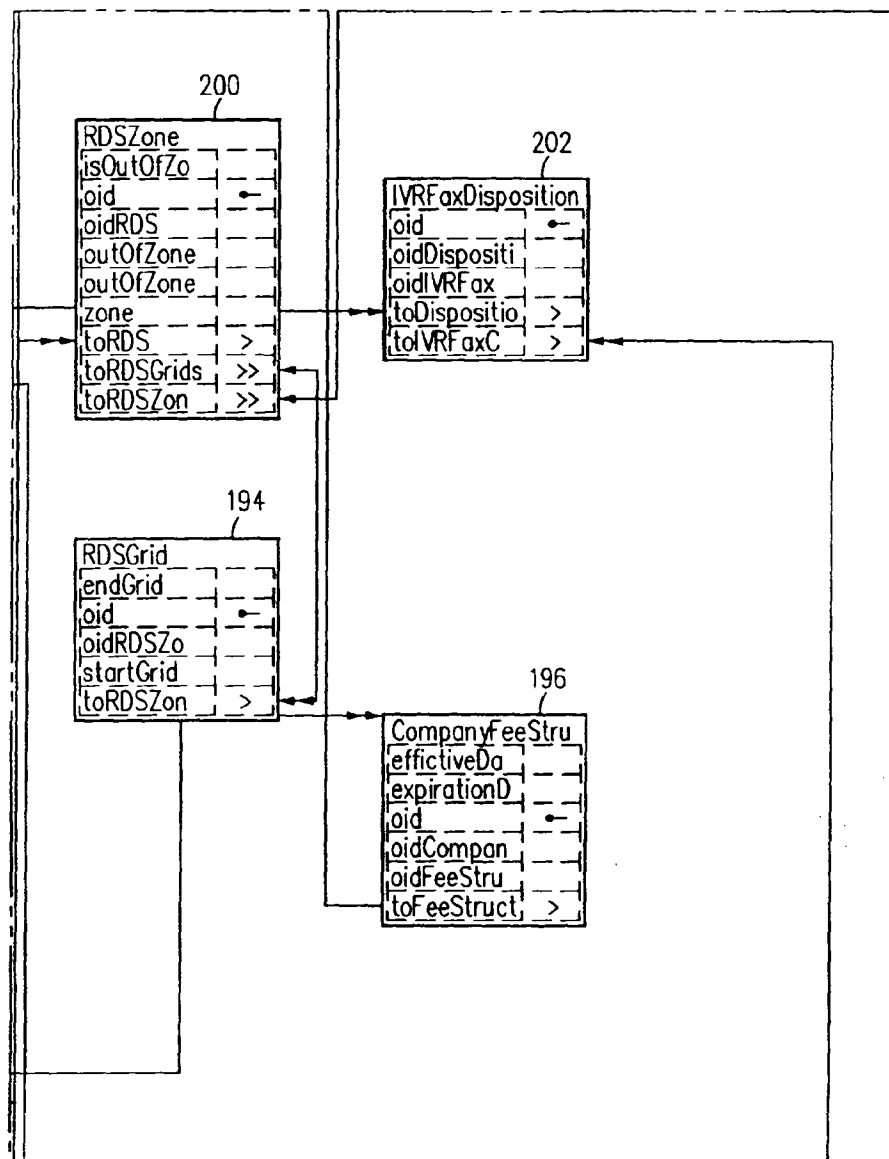


FIG. 3D

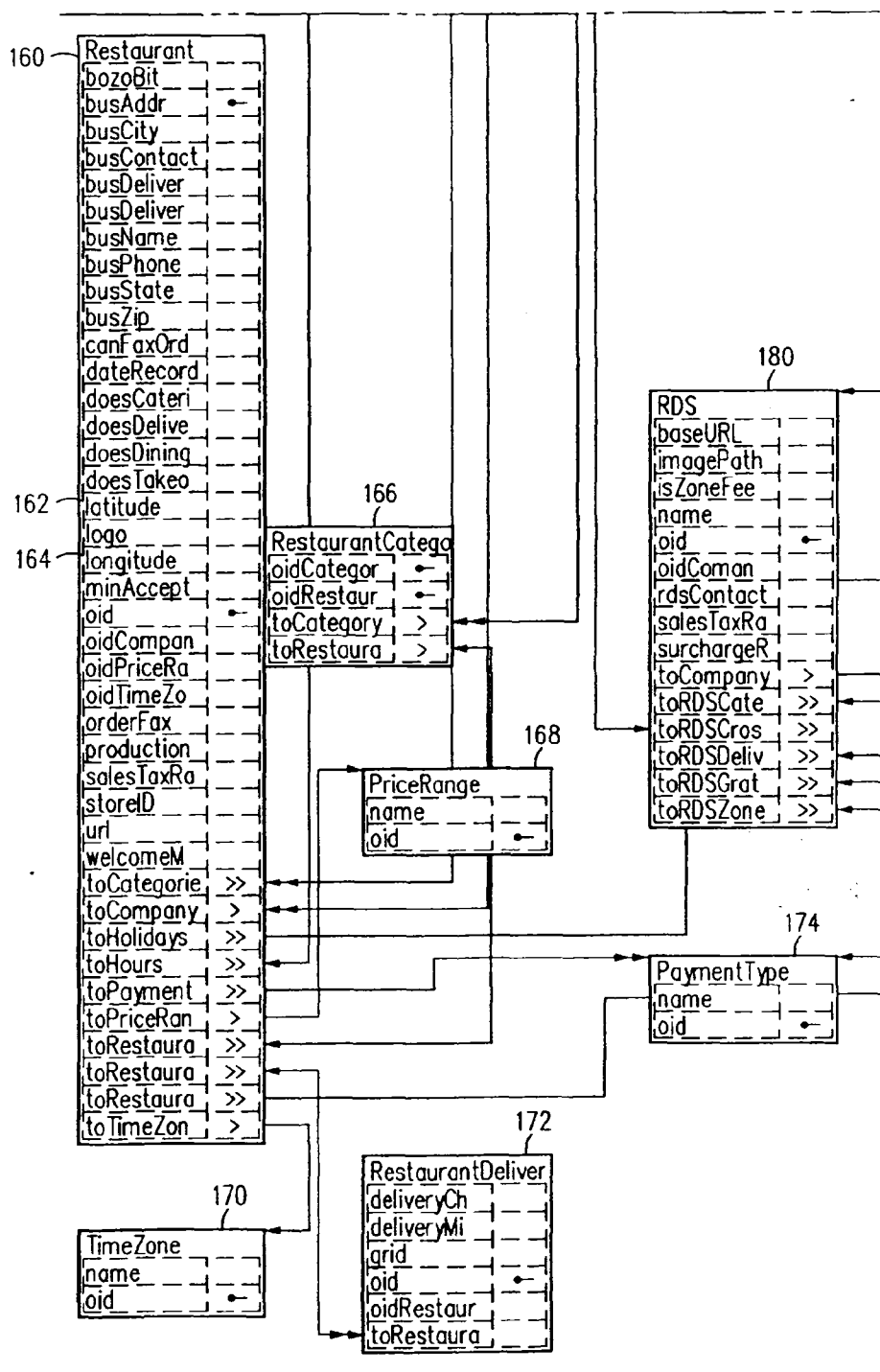


FIG. 3E

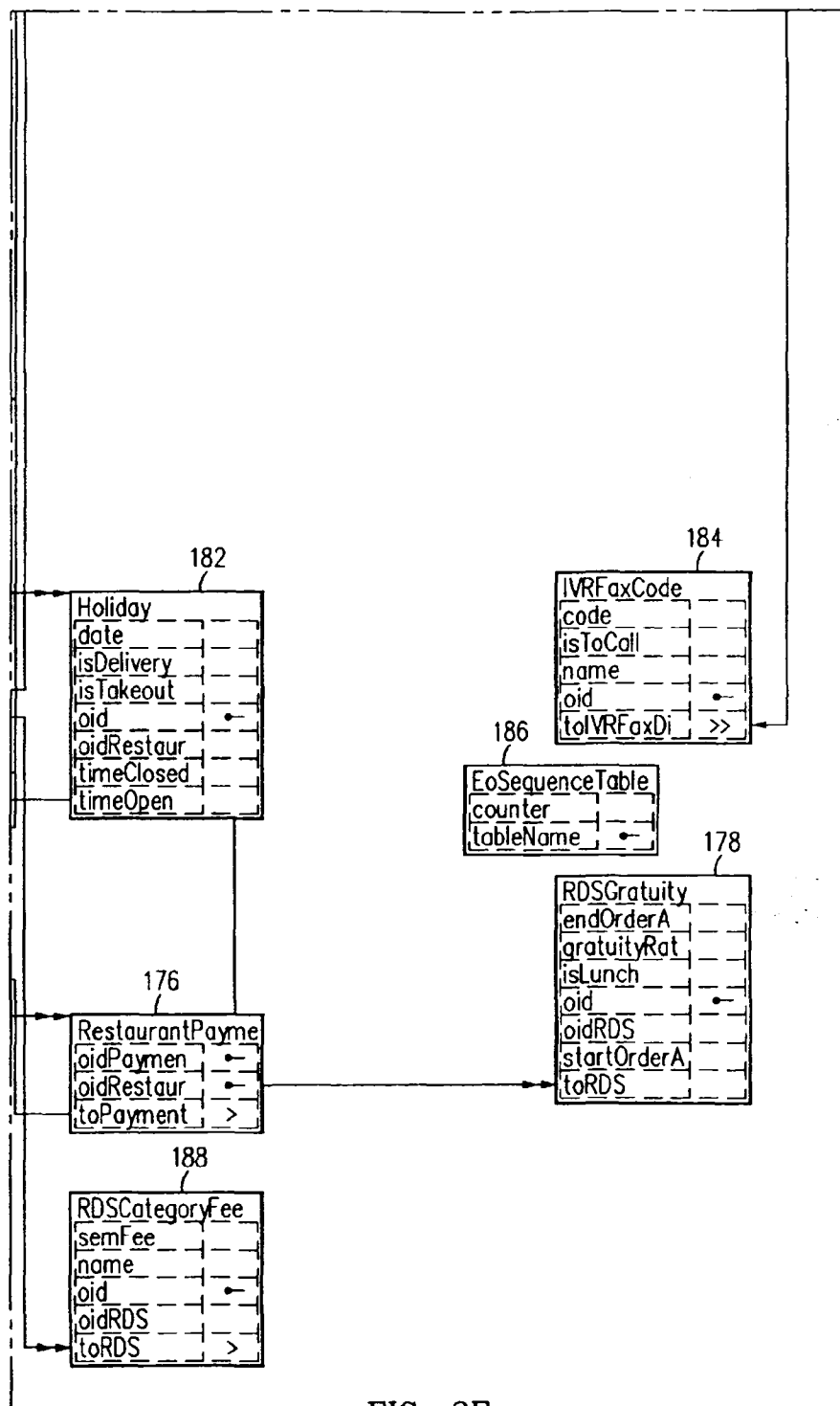
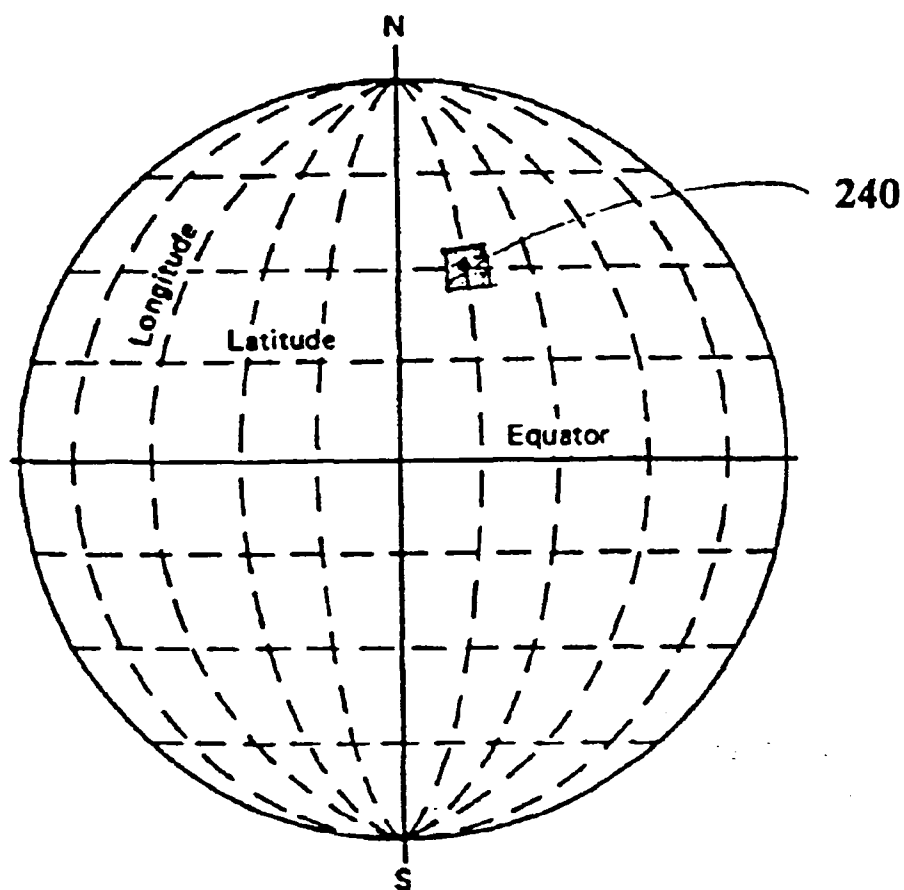


FIG. 3F

**FIG. 4**

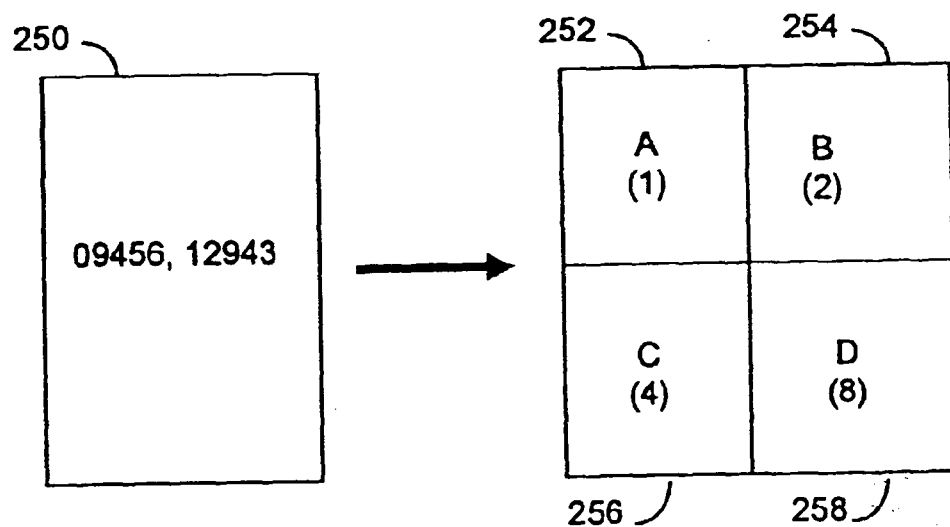


FIG. 5

Header:

Order Number
Order Type
First Time Customer
Delivery
Special Instructions
RDS Number
Restaurant Name
Restaurant Phone
Restaurant Fax
Customer Name
Customer Email
Customer Address1
Customer Address2
Customer Cross St.
Customer City
Customer Phone
Total
Payment Type
Special Count
Item Count

Special:

ID
Description of Item
Price
Item Count

Special Item:

ID
Description of Item
Price
Item Count

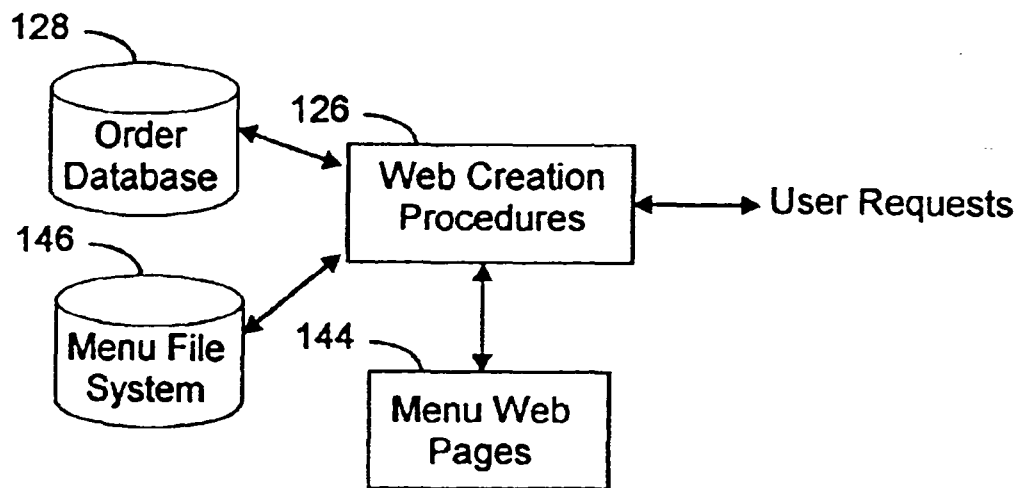
Item:

ID
Description of Item
Quantity
Price

Return Information:

Return Code
Delivery Time

FIG. 6

**FIG. 7**



Pizza


Delivery Restaurants


The following restaurants were found in your area. To see a restaurant's menu, click the Logo, Restaurant Name, or Menu Button.

Home
Repeat Customer
Cuisines
● Restaurants


1-5	6-10	11-11
Ba-Ga	Go-Pi	Ro-Ro

User Profile
Opportunities
Help
About Us
Nominate Restaurants

Click here to see  Special Savings




Ballard Firehouse
 5429 Russell Ave NW Seattle, WA
 Relax we'll bring it to you







Cucina! Cucina!
 901 Fairview N Seattle, WA
 Where you will receive the finest food in town. Additional 3% charge on Visa, Master Card and American Express.






Elliott Bay Pizza Company
 2115 Queen Anne Ave. N. Seattle, WA
 Queen Anne's newest pizzeria owned and operated by Wayne & Kelly Glass. The Gourmet Pizza is known for its distinctive marinara sauce.





Enzo's
 605 Queen Anne Ave N Seattle, WA
 Relax we'll bring it to you



[Menu & Ordering](#)



Gardelli's Pizza & Pasta
 2422 1st Ave. Seattle, WA
 Taste the difference! Everything is home-made: Dough, pizza sauce, Italian sausage, dressings and clam sauce. We use low-fat cheese and no oil in any of our sauces.



1-5	6-10	11-11
Ba-Ga	Go-Pi	Ro-Ro

FIG. 8



[Home](#)
[Repeat Customer](#)
[Cuisines](#)
[Restaurants](#)
 • [Menu](#)

[User Profile](#)
[Opportunities](#)
[Help](#)
[About Us](#)
[Nominate Restaurants](#)



Enzo's Delivery - Menu

605 Queen Anne Ave N Seattle, WA

Categories

[Pizza](#)
[Specialty Pizza](#)
[Antipasti](#)
[Salad](#)
[Pesce Fresco](#)
[For The Love Of Pasta](#)
[Enzos Favorite Pastas](#)
[Carne E Pollo](#)
[Enzos Classic Pastas](#)
[Enzos Classic Pasta Side](#)
[Orders](#)
[Desserts](#)
[Beverages](#)

Order Summary

Nothing Yet

[Click Here!](#)

To Proceed

Pizza Every Enzos Pizza Begins With Fresh, Hand Tossed Dough, Then Covered Generously With Our Rich Pizza Sauce And Real Mozzarella

Cheese Pizza	Small 10" - 7.35, Medium 12" - 8.35, Large 14" - 9.35, Extra Large 16" - 10.35
One Item Pizza	Small 10" - 8.85, Medium 12" - 9.85, Large 14" - 11.10, Extra Large 16" - 12.10
Two Item Pizza	Small 10" - 10.35, Medium 12" - 11.35, Large 14" - 12.85, Extra Large 16" - 13.85
Three Item Pizza	Small 10" - 11.85, Medium 12" - 12.85, Large 14" - 14.60, Extra Large 16" - 15.60
Four Item Pizza	Small 10" - 13.35, Medium 12" - 14.35, Large 14" - 16.35, Extra Large 16" - 17.35
Five Item Pizza	Small 10" - 14.85, Medium 12" - 15.85, Large 14" - 18.10, Extra Large 16" - 19.10

FIG. 9



[Home](#)
[Repeat Customer](#)
[Cuisines](#)
[Restaurants](#)
 • [Menu](#)

[User Profile](#)
[Opportunities](#)
[Help](#)
[About Us](#)
[Nominate Restaurants](#)



Enzo's Delivery - Menu

605 Queen Anne Ave N Seattle, WA

Categories

[Pizza](#)
[Specialty Pizza](#)
[Antipasti](#)
[Salad](#)
[Pesce Fresco](#)
[For The Love Of Pasta](#)
[Enzos Favorite Pastas](#)
[Carne E Pollo](#)
[Enzos Classic Pastas](#)
[Enzos Classic Pasta Side](#)
[Orders](#)
[Desserts](#)
[Beverages](#)

Order Summary

Nothing Yet

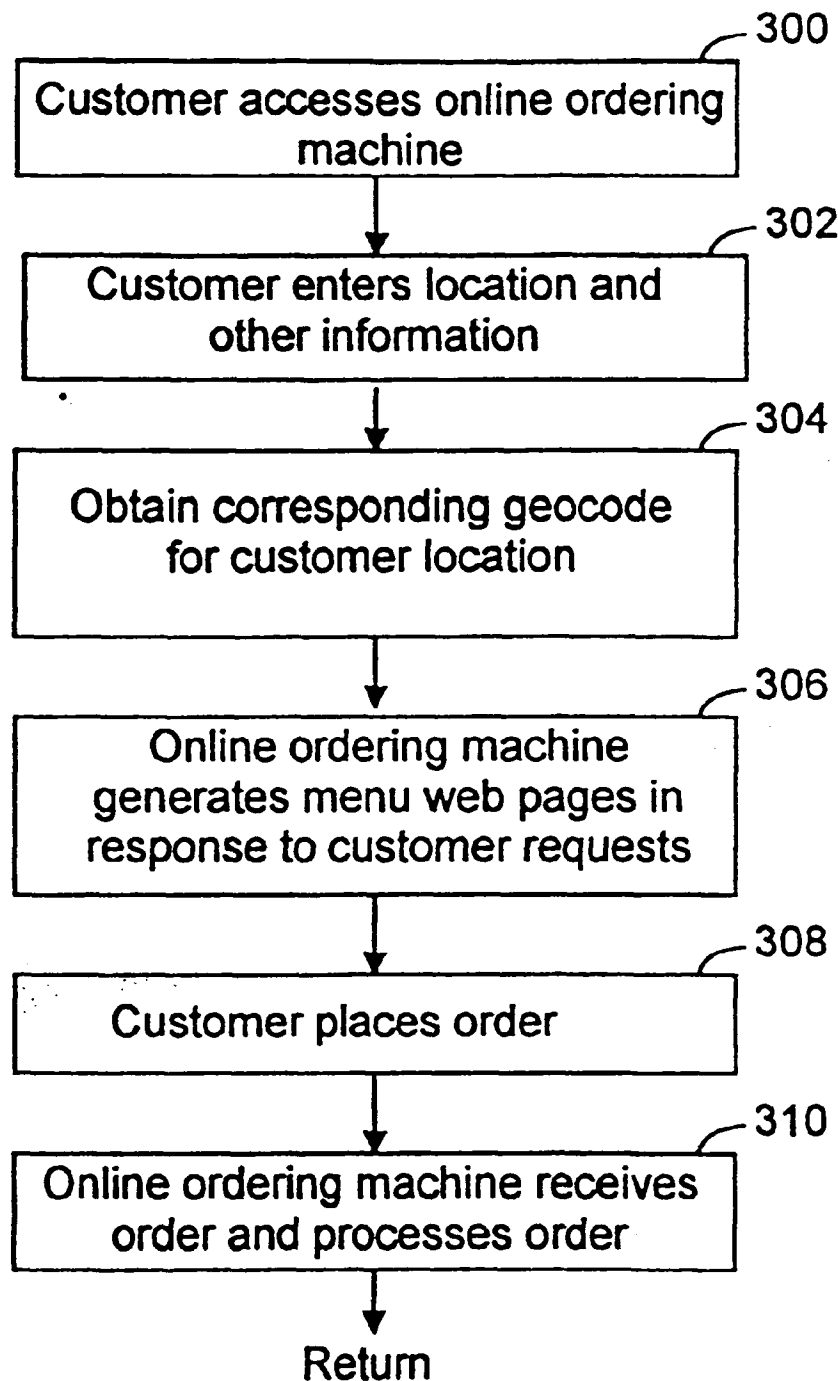
[Click Here!](#)

To Proceed



Pesce Fresco All dinners served with tossed salad and bread.

#21 Bistecca Di	Tender moist halibut steak smothered in lemon butter sauce with mushrooms or our homemade pesto sauce and pasta side.	Serving - 14.85
Halibut Alla Griglia		
#22 Gamberoni Bianchi	Prawns sauteed in garlic and lemon with mushrooms and broccoli. Includes a side of pasta.	Serving - 14.85
#23 Gamberoni Rossi	Prawns in spicy tomato basil sauce with mushrooms. Includes a side of pasta.	Serving - 14.85
#24 Gamberoni Con Spinaci	Prawns sauteed in lemon butter sauce and tossed with fresh spinach and tomatoes. Served over a hot bed of linguine.	Serving - 14.85
#25 Pesce Del Pescatore	Halibut, prawns and fresh clams delicately simmered in a spicy red sauce and served over a bed of linguine.	Serving - 14.85

FIG. 10

**FIG. 11**

cybermeals™
The World's Largest Take-Out and Delivery Service!
Order from your local restaurants.

 Demo cybermeals Visit cybermeals Click Here!	 Repeat Customer Enter login name and password below. LOGIN NAME <input type="text"/> PASSWORD <input type="text"/> Click Here!	 New Customer Register now to begin ordering. Click Here!
--	---	--

[HOME](#) [ABOUT CYBERMEALS](#) [SUPPORT/FAQS](#) [WORK/DATE YOUR FAVORITE RESTAURANT](#)

[Switch to Text Version](#)
© 1997 cybermeals

FIG. 12A

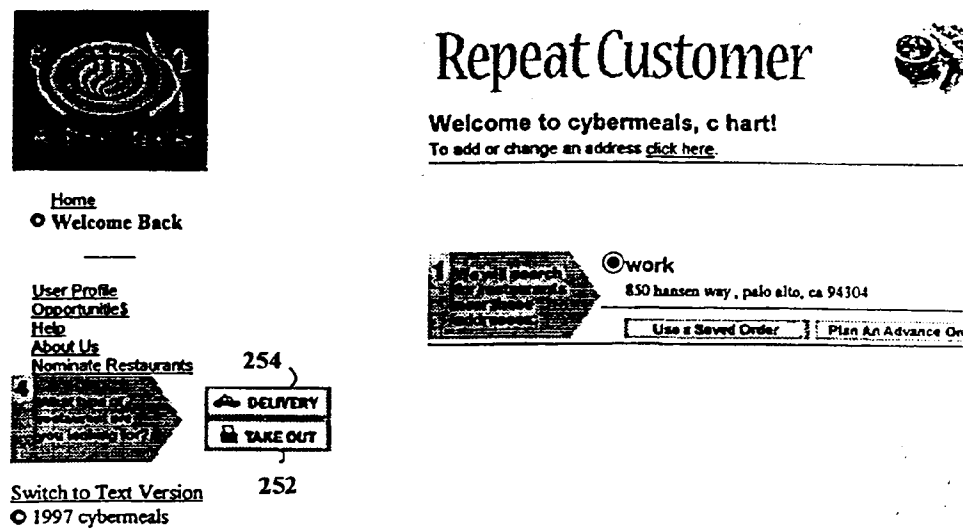


FIG. 12B



Cuisines

[Home](#)
[Demo](#)
 • [Cuisines](#)

[Opportunities](#)
[Help](#)
[About Us](#)
[Nominate Restaurants](#)

Thank you for visiting cybermeals! As if you were at:
 The Seattle Space Needle - 219 Fourth Avenue North, Seattle, WA
 98109

This is a DEMO - [Register Now!](#)

[Click Here](#) to see All 56 Restaurants. A restaurant may be listed in more than one cuisine.



Cravings (31)

[P-Pizza \(11\)](#)
[Deli \(3\)](#)
[Sandwiches \(18\)](#)
[Coffee Shop \(3\)](#)
[Hamburgers \(9\)](#)
[Salads \(19\)](#)
[Breakfast \(5\)](#)
[Seafood \(10\)](#)
[Wraps](#)
[Chicken \(8\)](#)



Asian (17)

[Chinese \(8\)](#)
[Thai \(3\)](#)
[Japanese \(4\)](#)
[Indian \(2\)](#)
[Korean \(2\)](#)



European (13)

[Italian \(11\)](#)
[French](#)
[Mediterranean](#)
[Greek](#)
[Bistro \(2\)](#)
[German](#)
[English](#)



American (16)

[Mexican \(4\)](#)
[Fast Food \(1\)](#)
[Health](#)
[American \(7\)](#)
[Bar-B-Que \(4\)](#)
[Soul Food \(2\)](#)
[Southwestern](#)
[Tex-Mex \(1\)](#)



Exotic (1)

[Caribbean](#)
[South American](#)
[Persian](#)
[North African](#)
[Lebanese \(1\)](#)

FIG. 12C

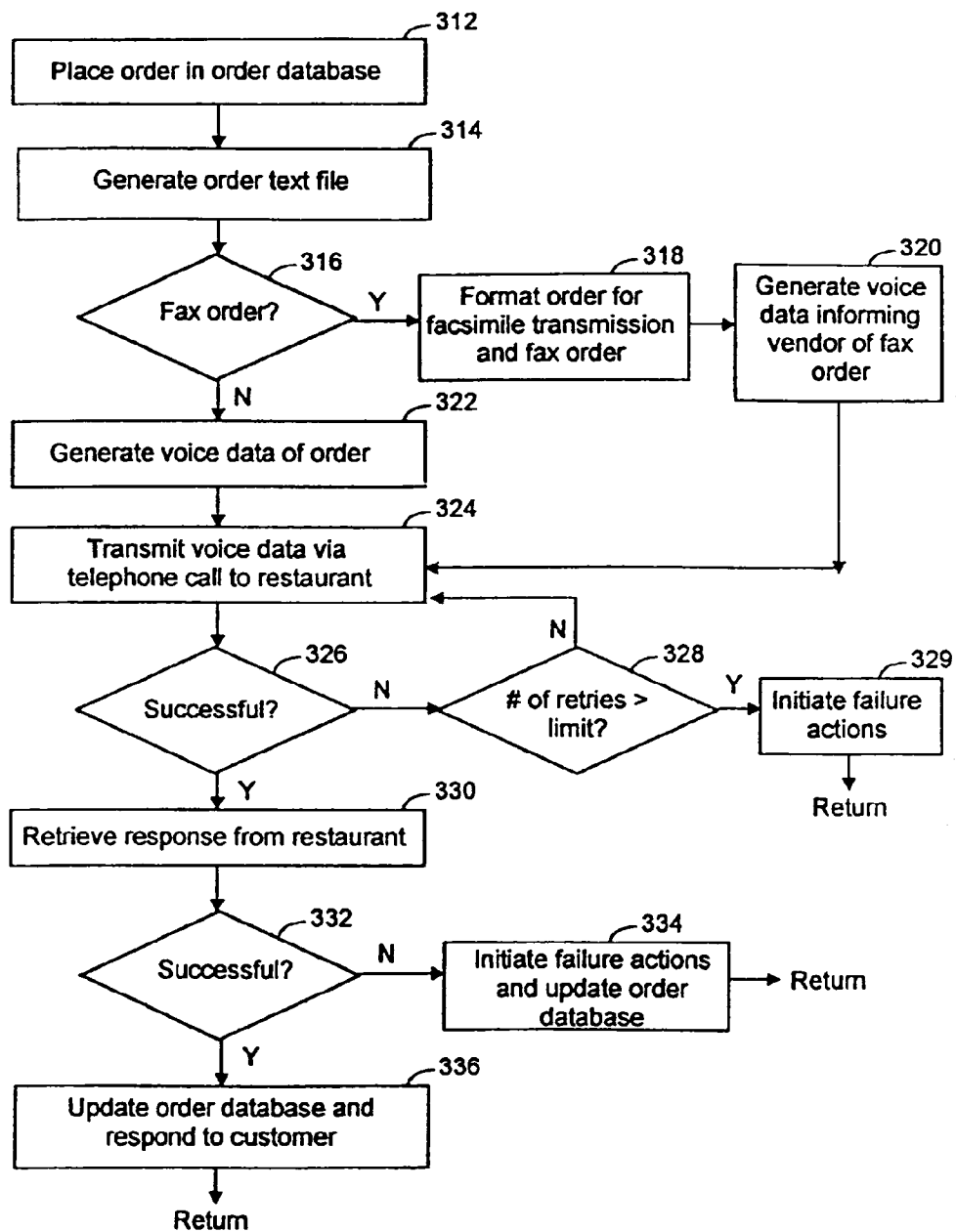


FIG. 13

INTERNET ONLINE ORDER METHOD AND APPARATUS

The present invention relates to systems and methods for electronic commerce and particularly to an Internet self-ordering mechanism.

BACKGROUND OF THE INVENTION

The Internet has provided consumers with a new medium for electronic commerce. Currently, there exist several Internet services that provide consumers with access to menus for food products that can be ordered online.

World Wide Waiters is one such service in which each consumer and participating restaurants are linked via the Internet to the World Wide Waiter server. The World Wide Waiter server provides a web site that includes web pages having menus of several participating restaurants with home delivery and/or take-out service. The consumer can search for a menu either using a restaurant's name or a city.

The consumer can then place an order from the menu of a selected restaurant which is transferred to the World Wide Waiter server. The World Wide Waiter server then emails the order over the Internet to the restaurant. The restaurant confirms the order to the World Wide Waiter server. Upon receiving the restaurant's confirmation, the World Wide Waiter server transmits to the consumer a confirming email that the restaurant has received the order and will deliver the order.

In addition, World Wide Waiters allows a customer to fax the order directly to the World Wide Waiters office. Personnel at the World Wide Waiters office contacts the restaurant in order to process the order.

There are several shortcomings to this system. First, each participating restaurant needs to have Internet access to the World Wide Waiter server. This additional expense can deter restaurant proprietors from utilizing this type of home delivery service.

Second, the World Wide Waiter server downloads to the customer statically created HTML pages representing the menus of each participating restaurant. These menu web pages are preconfigured and stored in the server. The use of these statically configured menu web pages becomes a burden since it hampers the maintainability and scalability of the server to take on additional restaurants.

Waiters on Wheels is another Internet online ordering service that provides Internet consumers with a web site to advertise menus of participating restaurants and that accepts consumer orders. It faxes an order to a participating restaurant. It provides its own waiters which pick up the take-out order from a participating restaurant and deliver it to the consumer's location.

The menus are stored by the geographic location of a Waiters on Wheels office. A consumer searches those menus associated with the Waiters on Wheels office within their delivery location. A consumer can order online from the menu. The Waiters on Wheels server confirms receipt of the consumer's order by telephone. If the restaurant cannot deliver the order to the Internet consumer, the restaurant telephones the Waiters on Wheels office. The office in turn calls the consumer to inform them of the problem.

PizzaNet is another prior art online ordering system that provides Internet consumers with a web site including menus of participating pizza restaurants. To place an order, consumers enter their zip code, telephone area code, and the first three digits of their phone number. A list of participating

pizza restaurants within the consumer's location is provided along with their menus. The consumer can then select the restaurant of his or her choice and order from its menu. PizzaNet receives the order from the Internet and faxes to the restaurant a copy of the order. In some instances, PizzaNet verifies the order by a return phone call and in other cases the pizza restaurant verifies the order by return phone call.

A shortcoming of the Waiter on Wheels and PizzaNet systems is in its method of communicating with the restaurant through a facsimile machine. The additional expense incurred in installing a facsimile machine can deter prospective restaurants from participating in this system. Further, once an order is received, all subsequent communications between the customer and the delivery system are performed via telephone calls which requires manual intervention.

SUMMARY OF THE INVENTION

The present invention pertains to an online ordering machine that manages the distribution of home delivered products over a distributed computer system. The distributed computer system includes a group of customers connected to client computers and at least one server computer system that executes the online ordering machine. The online ordering machine provides the customers with product information from various vendors whose delivery range is within the customer's location or with product information from vendors having take out service within a specified range from the customer's location. The online ordering machine accepts orders from the customer for a particular product from a selected vendor. The order is converted into voice instructions which are transmitted to the vendor through a telephone call. Alternatively, the order can be transmitted via facsimile transmission with follow up voice instructions transmitted via a telephone call seeking a response. The vendor responds to the voice-prompted instructions which are then used to confirm the order.

In an embodiment of the present invention, the online ordering machine enables Internet customers to order food products from various participating restaurants. The online ordering machine is a Web server including a web creation procedure that dynamically generates menu web pages in response to a customer's request. The menu web pages list the various products for delivery or takeout service. An Internet customer is provided with a menu web page listing those vendors or restaurants that service the customer's location. In addition, the online ordering machine indicates which restaurants are open at the time the customer makes the request.

The online ordering machine categorizes the location of each participating restaurant by a set of longitude and latitude coordinates. Each customer's delivery location is also categorized by a set of longitude and latitude coordinates. The online ordering machine searches for those restaurants whose delivery area lies within the customer's location based on the restaurant's and customer's longitude and latitude coordinates. Likewise, the online ordering machine searches for those restaurants having takeout service within the customer's location based on the restaurant's and customer's longitude and latitude coordinates.

Once an Internet customer places an order, the order is converted into voice data. An interactive voice recognition (IVR) procedure receives the order as an order text file and converts the order into a voice file of recorded speech segments. The IVR procedure automatically places a call to the restaurant and transmits the voice file which is played

3

when the call is received. In addition, the IVR procedure can transmit the order as a facsimile transmission and follow up with an automated telephone call. In either case, voice prompts are used to obtain a response from the restaurant in the form of one or more DTMF tones. The online ordering machine then relays a status response to the customer.

BRIEF DESCRIPTION OF THE DRAWINGS

Additional objects and features of the invention will be more readily apparent from the following detailed description and appended claims when taken in conjunction with the drawings, in which:

FIG. 1 is a block diagram of an embodiment of a distributed computer system incorporating the present invention.

FIG. 2 is a block diagram of the client computer and online ordering machine as shown in FIG. 1.

FIG. 3 illustrates the order database schema in a preferred embodiment of the present invention.

FIG. 4 illustrates the geocodes in a preferred embodiment of the present invention.

FIG. 5 is a block diagram illustrating the partitioning of a grid area into smaller areas in a preferred embodiment of the present invention.

FIG. 6 is an exemplary format of the order text file in a preferred embodiment of the present invention.

FIG. 7 is a block diagram illustrating the menu web page creation in a preferred embodiment of the present invention.

FIGS. 8-10 are schematic representations of exemplary menu web pages that are dynamically created in response to a customer's response.

FIG. 11 is a flow chart illustrating the steps used to process an order in a preferred embodiment of the present invention.

FIGS. 12A-12C are schematic representations of exemplary menu web pages used to receive an order in a preferred embodiment of the present invention.

FIG. 13 is a flow chart illustrating the steps used to process an order in a preferred embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Computer Architecture

FIG. 1 illustrates a system 100 representing an embodiment of the present invention including a number of client computers 102A-102N and one or more online ordering machines 106 in communication via a communications link 104. In a preferred embodiment, an online ordering machine 106 is a server computer. An online ordering machine 106 is in communication with one or more vendors 108A-108M through one or more telephone links 110.

The communication link 104 generically refers to any type of wire or wireless link between computers, such as but not limited to a local area network, a wide area network, or a combination of networks. In a preferred embodiment of the present invention, the communications link 104 can be a network such as the Internet.

A client computer 102 can be any type of computing device, such as but not limited to, desktop computers, workstations, laptops, and/or mainframe computers. One or more users (not shown) can be associated with each client computer 102.

4

FIG. 2 illustrates the client computer 102 which includes a CPU 112, a user interface 114, a memory 119, and a communication interface 116. The communications interface 116 is used to communicate with the server computer 106 as well as other system resources not shown. The memory 119 of the client computer 102 may be implemented as RAM (random access memory) or a combination of RAM and non-volatile memory such as magnetic disk storage. The memory 119 can contain the following:

- an operating system 120;
- Internet access procedures 122;
- as well as other procedures and files.

FIG. 2 also illustrates the online ordering machine 106 which includes a central processing unit (CPU) 112, Interactive Voice Recognition (IVR) hardware 113, a user interface 114, a memory 118, a communications interface 116. The online ordering machine 106 can be any type of computing device, such as but not limited to, desktop computers, workstations, laptops, and/or mainframe computers. The communications interface 116 is used to communicate with the client computers 102 as well as other system resources not shown.

The IVR hardware 113 connects the online ordering machine 106 to a telephonic link 110 coupled to one or more telephonic devices, such as but not limited to a facsimile machine 107A and/or a telephone 107M. Each telephonic device 107 can be associated with a particular vendor 108. The IVR hardware 113 provides interactive voice recognition capabilities including voice processing, speech recognition, and text-to-speech processing.

In a preferred embodiment of the present invention, the IVR hardware 113 consists of three types of devices: (1) one or more Dialogic™ CP/12SC™ facsimile boards that provide the online ordering machine 106 with 60 or more facsimile channels, the facsimile board enables communication between the online ordering machine 106 and a facsimile machine 107 associated with a vendor 108; (2) one or more Dialogic™ D/240SC-T1™ boards that provide 24 digital signal processor (DSP)-based ports to an on-board T-1 telephone interface; and (3) one or more Dialogic™ D/41 ESC™ boards that provide four DSP-based voice ports to an on-board analog telephone interface. The facsimile board enables communication between the online ordering machine 106 and a facsimile machine 107A associated with a vendor 108. The D/240SC-T1™ board enables interactive voice recognition capabilities between the online ordering machine 106 and a vendor 108 having an analog telephonic interface, and the D/41 ESC™ board enables interactive speech recognition capabilities between the online ordering machine 106 and a vendor 108 or customer having an analog telephone interface. A more detailed description of these devices can be found in the product literature for each of these products located at <http://www.dialogic.com> which is hereby incorporated by reference as background information.

It should be noted that the present invention is not constrained to the preferred IVR hardware and that other such hardware devices can be used that provide a similar capability.

The memory 118 of the online ordering machine 106 may be implemented as RAM (random access memory) or a combination of RAM and non-volatile memory such as magnetic disk storage. The memory 118 can contain the following:

- an operating system 120;
- Internet access procedures 122;
- web server procedures 124;

web page creation procedures 126 that dynamically generate menu web pages in response to a customer's request;
 an order database 128 that includes information on each of the customers, vendors, and received orders;
 a geocode database 130 that is used to convert a geographic location such as a street address into longitude and latitude coordinates;
 an online ordering procedure 132;
 an interactive voice recognition (IVR) procedure 134 that is used to deliver a voice message and obtain a response to the voice message;
 a recorded speech database 136 including one or more recorded speech segments;
 an order text file 138 that is an ASCII representation of the order in a preferred format;
 a voice data file 140;
 a geocode procedure 142 that is used to convert a geographic location into its corresponding longitude and latitude coordinates;
 one or more menu web pages 144 that are dynamically created by the web creation procedure 126;
 a menu file system 146 including one or more menu files representing menu data associated with a particular vendor, preferably, the menu files are binary files stored in a NS encoded format; and
 other procedures and data structures.

FIG. 3 illustrates the schema of the order database 128. The order database 128 can include the following tables:
 a customer table 150 having an entry for each customer that tenders an order to the online ordering machine 106, the customer entry including information that characterizes a particular customer;
 an address table 152 having an entry for each customer and including the latitude 154 and longitude 156 coordinates associated with a customer's address;
 an order master table 158 having an entry for each order;
 a restaurant table 160 having an entry for each restaurant containing information that describes the restaurant, its services and products, each entry including the latitude 162 and longitude 164 coordinates associated with a restaurant;
 a restaurant category table 162 associated with the restaurant table 160 that is used to identify a category associated with a restaurant;
 a price range table 168 associated with the restaurant table 160 identifying the price ranges for products offered by a restaurant;
 a time zone table 170 associated with the restaurant table 160 indicating the time zone corresponding to a restaurant;
 a restaurant delivery table 172;
 a payment type table 174;
 a restaurant payment table 176;
 a restaurant delivery service (RDS) gratuity table 178;
 a RDS table 180;
 a holiday table 182 associated with the restaurant table and indicating the restaurant's holidays;
 an IVR fax code table 184;
 an EoSequence table 186;
 a RDS Category Fee table 188;
 a RDS Cross Zone Fee table 190;
 a company table 192;
 a RDS grid table 194;
 a company fee structure table 196;
 a food group table 198;
 a RDS zone table 200;
 an IVR fax disposition table 202;

a theme table 204;
 a disposition table 206;
 an hour table 208;
 a day of week table 210;
 a category table 212;
 a fee structure table 214;
 an order fee table 216;
 a RDS delivery table 218;
 a first category theme table 220 and a second category theme table 222;
 a credit card table 224; and
 a RDS zone delivery table 226.

It should be noted that the present invention is not limited to the database schema shown in FIG. 3. Other schemas can be utilized and other types of databases, other than the relational database shown in FIG. 3 can be utilized as well.

Geocodes

The present invention uses geocodes to determine whether a customer is within a specified geographic area of a restaurant's delivery area or whether a restaurant is within a specified geographic area of the customer's takeout range. The use of geocodes has the advantage of producing more accurate search results. The prior art use of zip codes, cities, or telephone prefixes generally produces unsatisfactory results listing restaurants that do not deliver to the customer's location. In addition, the geocodes can be used to specify a geographic location anywhere within the globe, thereby enabling the online ordering machine to accommodate international locations as well as the United States.

A geocode represents a particular geographic area or grid defined by longitude and latitude coordinates. Longitude and latitude coordinates are used to define a geographic location relative to the surface of the earth. The earth's reference system is composed of surface divisions denoted by geographic lines of latitude and longitude. A specific geographic location can be defined in this system by its respective longitude and latitude coordinates.

FIG. 4 illustrates the earth with latitude and longitude lines. The area 240 is represented by a geocode associated with a latitude and a longitude coordinate. Typically, a latitude coordinate is specified in latitude degrees and a longitude coordinate is specified in longitude degrees.

The technology of the present invention uses the geocodes to identify each customer and vendor in order to determine whether a customer is within a specified geographic area or grid of a restaurant's delivery area or whether a restaurant is within a specified geographic area or grid of the customer's takeout range. A geocode procedure 142 is used that converts the address of each customer and vendor into its respective latitude and longitude coordinates. The latitude and longitude coordinates then become the geocode which represents a particular grid. Next, the online order procedure 132 uses the geocode to search the order database 142 to make the appropriate selections.

In a preferred embodiment, the grid size for the United States was selected between 0.25 and 0.3 miles. For example, a 0.3 mile grid equates to 0.0054 longitude degrees and 0.0043 latitude degrees. Thus, in order to convert the latitude and longitude coordinates of a customer or restaurant location into a geocode, the following mathematical equations can be used:

$$\begin{aligned}\text{Latitude Id} &= \text{trunc}[(\text{latitude in degrees} \times 10^6) / 4300] + 1, \\ \text{Longitude Id} &= \text{abs}(\text{trunc}[-(\text{longitude in degrees} \times 10^6) / 5400] + 1), \\ \text{Geocode} &= \text{Latitude Id, Longitude Id}\end{aligned}$$

The geocodes can then be used to determine whether a customer is within a specified geographic area of a restaurant's delivery area or whether a restaurant is within a specified geographic area of the customer's take-out range. To determine whether a customer is within a specified geographic area of a restaurant's delivery area, the customer's geocode is used to search the order database 128 for those restaurants having the same geocode.

The following mathematical relation is used to select restaurants that are within a customer's takeout range:

```

IF the Latitude Id of the restaurant > Latitude Id customer's location
- Takeout Range and
the Latitude Id of the restaurant < Latitude Id of the customer's location
+ Takeout Range and
Longitude Id of the restaurant > Longitude Id of the customer's location
- Takeout Range and
Longitude Id of the restaurant < Longitude Id of the customer's location
+ Takeout Range.
THEN
  Restaurant is within the Takeout Range.
  
```

In certain geographic areas, a grid size between 0.25 and 0.3 miles may be too large for a delivery or takeout range. In such cases, the grid can be partitioned into smaller grid sizes. The larger grid is referred to as the parent grid and the smaller grids are referred to as the child grids.

FIG. 5 illustrates one such example of this partitioning. A parent grid 250 having a grid size between 0.25–0.3 miles is associated with a geocode 09456, 12943. The parent grid 250 is partitioned into four child grids 252–258 having a grid size between 0.06–0.075 miles. Each child grid 252 is associated with a subgrid identifier such as A, B, C, or D that represents an associated geographic region.

A vendor can service one or more of the child grids. For example, vendor X can service child grid A, vendor Y can service child grids A and B, and vendor Z can service child grids A and D. As such, a coding scheme was developed to identify all the possible combinations that can occur. A numeric value is associated with each child grid. For example, child grid A is associated with the value 1, child grid B with the value 2, child grid C with the value 4, and child grid D with the value 8. The sum of these values represent a particular combination of delivery areas. For example, the combination of child grid A and B is identified by a value of 3. Table 1 below shows the encoding scheme for all possible combinations in the child grid scheme shown in FIG. 5.

TABLE 1

VALUE	COMBINATION
1	A
2	B
3	A,B
4	C
5	A,C
6	B,C
7	A,B,C
8	D
9	A,D
10	B,D
11	A,B,D
12	C,D
13	A,C,D
14	B,C,D
15	A,B,C,D

When searching for a matching vendor, the geocode procedure 142 determines the appropriate subgrid identifier

associated with the customer's location. For example, customer X can be associated with the geocode 09456, 2943A. The online order procedure 132 then searches for those vendors servicing child grid A associated with parent grid 09456, 12943. In the above example, that would encompass searching for all the odd values: 1, 3, 5, 7, 9, 11, 13, and 15.

It should be noted that the technology of the present invention can be practiced with other partitioning or encoding schemes. One skilled in the art can easily modify the present invention to accommodate other subgrid sizes and to even partition the subgrids further. Other encoding schemes can be used to identify the various possible delivery combinations associated with a particular parent grid. In addition, one can combine one or more adjacent grids to formulate a larger delivery or takeout range for a particular geographic area.

Interactive Voice Recognition (IVR) System

The Interactive Voice Recognition (IVR) procedure 134 is used to convert a customer's text order into voice data that is transmitted to the vendor 108. Alternatively, the IVR procedure 134 can convert a customer's order into a format suitable for facsimile transmission.

When a customer's order is received by the online order machine 106, it is converted into an order text file 138 having a prescribed format as shown in FIG. 6. The order text file 138 is then transmitted to the IVR procedure 134. If the order is to be transmitted to the vendor by facsimile transmission, then the IVR procedure 134 formats the order text file 138 into a format that is suitable for facsimile transmission (e.g., postscript format) and transmits the order to the IVR hardware 113. The IVR hardware 113 is used to transmit the order to the vendor 108.

When the order is to be transmitted to the vendor 108 by telephone transmission, the IVR procedure 134 then translates the order text file 138 into a voice data file 140 using the recorded speech database 136. The voice data file 140 is then transmitted to the IVR hardware 113 which transmits the voice data to the vendor 108.

Dynamically Created Menu Web Pages

The online ordering machine 106 generates menu web pages 144 that are specific to a particular customer's request. The creation of the menu web pages 144 is done dynamically at runtime in order to provide data that accommodates a customer's request. The creation of the menu web pages 144 in this manner differs from the prior art online order systems. In the prior art online order systems, the menu web pages are preconfigured and displayed upon request. This becomes a burden to maintain and limits scalability. In the present technology, each menu web page 144 is configured at runtime and customized for a particular customer's request. Thus, each menu web page 144 differs since each customer's request is different as is the customer's location.

FIG. 7 illustrates the components used to dynamically generate a menu web page 144. A web page creation procedure 126 is provided that receives as input one or more customer requests and is linked to the order database 128 and the menu file system 146. The web page creation procedure 126 generates a menu web page 144 based on the input received from the user. The data included in the menu web page 144 is retrieved from the order database 128 and the menu file system 146. The order database 128 contains information such as the operational time of a vendor, the restaurant's logo, the categories of the food products served, and the like. The menu file system 146 includes menu data

associated with each vendor. The menu file system 146 includes a number of menu files stored in an encoded binary format for faster retrieval purposes. The web page creation procedure 126 uses the data in the order database 128 and the menu file system 146 to dynamically generate one or more menu web pages 144 that are customized to a customer's request.

In a preferred embodiment, the web page creation procedure 126 utilizes the WebObjects technology provided by Apple Software. WebObjects is a server technology that links the order database 128 directly to the web server procedures 124 and generates HTML web menu pages 144 based on a customer's request. More detailed information on WebObjects can be found at <http://software.apple.com/webobjects> which is hereby incorporated by reference as background information.

FIGS. 8-10 are exemplary menu web pages 144. FIG. 8 is a menu web page 144 showing the first five pizza restaurants that deliver within a particular customer's location. The restaurants shown are selected based on the customer's location and the restaurant's delivery area. As such, this menu web page 144 is dynamically created for this particular customer.

Likewise, FIG. 9 is a menu web page 144 showing the various types of food items that a particular restaurant offers for delivery service within a particular customer's location. This menu web page 144 was created in response to the customer's request for pizza selections. FIG. 10 is a menu web page 144 showing the various types of "pesce fresco" items that a particular restaurant offers for delivery service within a particular customer's location. This menu web page 144 was created in response to the customer's request for "pesce fresco" selections.

Ordering Process

FIG. 11 illustrates the steps used by the online ordering machine 106 to process an online order. A customer accesses the online ordering machine 106 through a client computer 102 that is connected to the Internet 104. The customer enters the appropriate web address or universal resource locator (URL) for the online ordering machine 106 (step 300). The online order procedure 132 interacts with the client computer 102 by providing access to a series of web pages that can be downloaded to the client computer 102 for the customer's use (step 300). Initially, a home web page is provided to the client computer 102 which is shown in FIG. 12A.

The customer can register with the online ordering machine 106 which is accomplished by filling out information requested through one or more web pages. The customer is then provided with a web page that prompts the customer for his location as shown in the exemplary web page illustrated in FIG. 12B (step 302). This web page can also obtain the current time at the customer's location which is returned to the online order procedure 132 (step 302). The current time is used to determine which restaurants meeting the customer's criteria are currently open. In addition, the web page obtains the type of service that the customer seeks, such as but not limited to take-out service 252 or delivery service 254. If takeout service is requested, the web page requests the range of miles that the customer is willing to drive. If none is indicated, a default value is provided.

Once the customer's location is provided, the online order procedure 132 converts the customer's location into the appropriate geocode as described above (step 304).

The online order procedure 132 then searches the order database 128 for those restaurants that deliver to the cus-

tomers location or are within the customer's desired takeout range (step 306). This search is performed as described above with respect to the geocode procedure 142. A menu web page 144 including a list of these restaurants is dynamically created by the web creation procedure 126 and provided to the customer as shown in FIG. 12C.

The customer can then select a particular vendor or restaurant and one or more menu web pages 144 including the selected information that is dynamically created by the web creation procedure 126 and provided to the customer's client computer 102. The customer can then browse through the menu web pages 144 and select items of interest. The user's selection or requests are used by the web creation procedure 126 to generate one or more menu web pages 144 that are displayed to the customer (step 306). FIGS. 8-10 illustrate such exemplary menu web pages 144.

The customer places an order by selecting the appropriate items from the menu web pages 144 (step 308) which are then transmitted to the online ordering machine 106 (step 310). The online ordering machine 106 receives the order and processes it as shown in FIG. 13 (step 310).

Referring to FIG. 13, an entry is generated for the order in the order database 128 (step 312). An order text file 138 is generated representing the order in accordance with a prescribed format as shown in FIG. 6 (step 314).

In the case where the order is transmitted by facsimile transmission to the vendor (step 316-Y), the order text file 138 is then formatted for facsimile transmission and transmitted to the vendor as described above (step 318). A voice data file 140 is then generated that informs the vendor 108 of the transmitted fax order (step 320).

In the case where the order is transmitted by a telephone call, the IVR procedure 134 is used to convert the order text file 138 into voice data (step 322). The IVR procedure 134 performs the conversion by finding prerecorded speech segments stored in the recorded speech database 136 that match the words contained in the order text file 138. The speech segments are then concatenated into a voice data file 140 that is then transmitted to the IVR hardware 113 (step 324). The IVR hardware 113 then establishes telephonic communication with the vendor 108 and transmits the voice data to the vendor 108 (step 324).

In some instances, one or more calls may be made to the vendor 108 before communication is established (step 326-N). After a predetermined number of unsuccessful attempts have been made that have failed to establish communication to the vendor 108 (step 328-Y), the online ordering procedure 132 may initiate failure actions. These failure actions can include calling the vendor directly to place the order or to determine the nature of the problem (step 329). Based on the nature of the problem, in some cases, the customer can be notified of the failed communication and asked to select another vendor 108 (step 329). In addition, the online order procedure 132 updates the order database 128 to reflect the status of the order (step 329).

In the case where the online ordering procedure 132 is successful in communicating with the vendor 108 (step 326-Y), the vendor 108 hears a recorded message including voice prompts for responses from the vendor 108. An exemplary transcript of such a recorded message can be as follows:

This is cybermeals with (an/a repeat) order for (delivery/ carry out). Press 1 when you are ready to take this order.

When the employee presses 1, the voice continues with the following: The customer's phone number is . The

11

customer's name is. The address is (only if the order is for delivery). The order is. Total prices excluding tax and coupons is.

The employee is then given the option of pressing further keys: 5 to accept the order, 6 to decline the order, 2 to pause the order, 3 to repeat the order, 4 to hear only the address repeated, 7 to repeat the food items, total price, and payment method, 8 to repeat the phone number, and * to just repeat the last segment you were listening to.

Finally, the voice requests that the vendor press keys to indicate how long the order will take to deliver.

If the IVR procedure 134 encounters any failures in retrieving the vendor's response (step 332-N), the online order procedure 132 initiates one or more failure recovery actions to rectify the failure. For example, if the vendor 108 does not respond to a telephonic order, a manual telephone call can be made to the vendor 108 in order to ascertain the nature of the problem or to obtain the response.

If the IVR procedure 134 receives a response from the vendor 108 (step 332-Y), the online order procedure 132 transmits a notification to the customer indicating the status of an order and updates the order database 128 with the status thereby completing the order (step 336). Notification to the customer can be by an email message, or other communication medium, and can include an expected delivery time.

In addition to the aforementioned steps, the online order procedure 132 can also transmit to the vendor 108 directions to the customer's location either as a facsimile transmission, as a telephone call, email message, and the like. Likewise, the online order procedure 132 can transmit through any medium directions to a vendor's location to a customer requesting takeout service.

Alternate Embodiments

The foregoing description, for purposes of explanation, used specific nomenclature to provide a thorough understanding of the invention. However, it will be apparent to one skilled in the art that the specific details are not required in order to practice the invention. In other instances, well known circuits and devices are shown in block diagram form in order to avoid unnecessary distraction from the underlying invention. Thus, the foregoing descriptions of specific embodiments of the present invention are presented for purposes of illustration and description. They are not intended to be exhaustive or to limit the invention to the precise forms disclosed, obviously many modifications and variations are possible in view of the above teachings. The embodiments were chosen and described in order to best explain the principles of the invention and its practical applications, to thereby enable others skilled in the art to best utilize the invention and various embodiments with various modifications as are suited to the particular use contemplated. It is intended that the scope of the invention be defined by the following claims and their equivalents.

Further, the method and system described hereinabove is amenable for execution on various types of executable mediums other than a memory device such as a random access memory. Other types of executable mediums can be used, such as but not limited to, a computer readable storage medium which can be any memory device, compact disc, or floppy disk.

Although the present invention has been described with reference to ordering food products from restaurants, it is not limited to this particular product or vendor. The present

12

invention can be used for other electronic commerce purposes, other commodities, other types of vendors, and other types of services other than delivery or takeout.

In addition, the present invention is not constrained to transmitting a customer's order to the vendor through the interactive voice recognition system as described above. A modem connection can be established which will enable communication between the online ordering machine and the vendor through the Internet thereby allowing email communication, web communication, and the like.

What is claimed is:

1. A method for exchanging data in a distributed computer system comprising a plurality of client computers and at least one server computer connected by a communications link to the client computers, the server computer capable of connecting by one or more communications links to a plurality of vendors, said method comprising the steps of:

storing vendor data associated with the vendors;

associating with each vendor at least one geocode representing a geographic location associated with a particular vendor;

receiving a request for vendor data from one of the client computers, the request including a geographic location associated with the requesting client computer;

converting the requesting client computer's associated geographic location into a corresponding geocode;

selecting vendor data that is associated with zero or more vendors having a geocode that is compatible with the requesting client computer's geocode; and

providing the selected vendor data to the requesting client computer.

2. The method of claim 1,

wherein said providing step further comprises the step of: dynamically creating one or more menu web pages including the selected vendor data in response to the request; and

transmitting the menu web pages to the requesting client computer.

3. The method of claim 1,

wherein each geocode includes a latitude coordinate and a longitude coordinate.

4. The method of claim 1,

wherein the vendor geocode represents a delivery range;

said selecting step further comprises the step of:

finding one or more vendors whose geocode matches the requesting client computer's geocode.

5. The method of claim 4,

said selecting step further comprises the steps of:

associating an operational time with each vendor;

obtaining a current time from the requesting client computer; and

indicating which of the found vendors are operational when the request is made.

6. The method of claim 1,

said selecting step further comprises the steps of:

obtaining a takeout range from the requesting client computer; and

selecting those vendors whose geocode is within the takeout range of the requesting client computer's geocode.

7. The method of claim 1 further comprising the steps of:

obtaining an order from the requesting client computer for a vendor product from a select vendor;

representing the order as voice data; and

13

transmitting the voice data to the select vendor through a telephonic link.

8. The method of claim 7, further comprising the steps of: receiving a reply from the select vendor; and

transmitting a response to the requesting client computer.
9. The method of claim 1 further comprising the steps of: obtaining an order from the requesting client computer for a vendor product from a select vendor; and transmitting the order to the select vendor as a facsimile transmission.

10. The method of claim 9 further comprising the steps of: transmitting to the select vendor a telephonic communication indicating the facsimile transmission;

obtaining a reply from the vendor; and forwarding a response to the requesting client computer indicating the reply.

11. An order entry apparatus for managing the procurement of orders for vendor products on a computer network, said computer network comprising a plurality of client computers in communication with the order entry apparatus by a first communication link, the order entry apparatus capable of being connected by one or more communications links to a plurality of vendors, said apparatus comprising:

a plurality of vendors, each vendor associated with a vendor geocode representing a location associated with the vendor;

a plurality of users, each user associated with a particular client computer, each user associated with a user geocode representing a geographic location associated with the user;

a plurality of vendor data; and

an online ordering procedure having a capability to receive a request for vendor data from a requesting user and to select vendor data associated with vendors having a geocode compatible with the geocode of the requesting user.

12. The apparatus of claim 11, wherein each geocode includes a latitude and a longitude coordinate.

13. The apparatus of claim 11, comprising:

a web page creation procedure having a capability to dynamically generate one or more menu web pages including the select vendor data in response to the request received from the requesting user.

14. The apparatus of claim 11, wherein the online order procedure further includes the capability to select vendor data associated with one or more vendors having a vendor geocode that matches the requesting user geocode.

15. The apparatus of claim 11, wherein the online order procedure further includes the capability to select vendor data within a takeout range of the requesting user geocode.

16. The apparatus of claim 11, comprising:

a geocode procedure having the capability to map a geographic location into a geocode.

17. The apparatus of claim 11, wherein the online order procedure includes the capability to receive an order for one or more vendor products; and

further comprising an interactive voice recognition (IVR) procedure having the capability to convert the order into voice data and to transmit the voice data through a communication link to a particular vendor.

14

18. The apparatus of claim 17:

wherein the IVR procedure includes the capability to receive a reply from the vendor through a communication link; and

wherein the online order procedure includes the capability to transmit a response to the requesting user indicating the reply.

19. The apparatus of claim 17:

wherein the IVR procedure includes the capability to transmit the order through a communication link to a particular vendor.

20. The apparatus of claim 19:

wherein the IVR procedure includes the capability to receive a reply from the vendor through a communication link; and

wherein the online order procedure includes the capability to transmit a response to the requesting user indicating the reply.

21. A computer readable storage medium that directs a computer to function in a specified manner, comprising:

a plurality of vendors, each vendor associated with a vendor geocode representing a location associated with the vendor;

a plurality of users, each user associated with a particular client computer, each user associated with a user geocode representing a geographic location associated with the user;

a plurality of vendor data; and

an online ordering procedure having a capability to receive a request for vendor data from a requesting user and to select vendor data associated with vendors having a geocode compatible with the geocode of the requesting user.

22. The apparatus of claim 21, wherein each geocode includes a latitude and a longitude coordinate.

23. The apparatus of claim 21, comprising:

a web page creation procedure having a capability to dynamically generate one or more menu web pages including the select vendor data in response to the request received from the requesting user.

24. The apparatus of claim 21,

wherein the online order procedure further includes the capability to select vendor data associated with one or more vendors having a vendor geocode that matches the requesting user geocode.

25. The apparatus of claim 21,

wherein the online order procedure further includes the capability to select vendor data within a takeout range of the requesting user geocode.

26. The apparatus of claim 21, comprising:

a geocode procedure having the capability to map a geographic location into a geocode.

27. The apparatus of claim 21:

wherein the online order procedure includes the capability to receive an order for one or more vendor products; and

further comprising an interactive voice recognition (IVR) procedure having the capability to convert the order into voice data and to transmit the voice data through a communication link to a particular vendor.

28. The apparatus of claim 27:

wherein the IVR procedure includes the capability to receive a reply from the vendor through a communication link; and

15

wherein the online order procedure includes the capability to transmit a response to the response to the requesting user indicating the reply.

29. The apparatus of claim 27:

wherein the IVR procedure includes the capability to transmit the order through a communication link to a particular vendor.

30. The apparatus of claim 29:

wherein the IVR procedure includes the capability to receive a reply from the vendor through a communication link; and

wherein the online order procedure includes the capability to transmit a response to the requesting user indicating the reply.

31. The method of claim 1,

wherein one or more of said communications links to said vendors comprise a computer network link.

32. The method of claim 1,

wherein one or more of said communications links to said vendors comprise the internet.

33. The method of claim 11,

wherein one or more of said communications links to said vendors comprise a computer network link.

34. The method of claim 11,

wherein one or more of said communications links to said vendors comprise the internet.

16

35. The apparatus of claim 21:

wherein the online order procedure includes the capability to receive an order for one or more vendor products; and

further comprising a procedure to transmit the order information through a communication link to a particular vendor.

36. The apparatus of claim 35:

wherein the procedure includes the capability to receive a reply from the vendor through a communication link; and

wherein the online order procedure includes the capability to transmit a response to the response to the requesting user indicating the reply.

37. The method of claim 35,

wherein said communication link to a particular vendor comprises a computer network link.

38. The method of claim 35,

wherein said communication link to a particular vendor comprises the internet.

39. The method of claim 36,

wherein said communication link to a particular vendor comprises a computer network link.

40. The method of claim 36,

wherein said communication link to a particular vendor comprises the internet.

* * * * *



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United States Patent [19]
Kinebuchi et al.

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 [45] **Date of Patent:** **Jun. 15, 1999**

[54] **TERMINAL DEVICE**

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[21] **Appl. No.:** **08/664,463**

[22] **Filed:** **Jun. 14, 1996**

[30] **Foreign Application Priority Data**

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 Jul. 27, 1995 [JP] Japan 7-192289
 Sep. 22, 1995 [JP] Japan 7-269354

[51] **Int. Cl.⁶** **H04N 1/32**

[52] **U.S. Cl.** **358/442; 358/468; 345/348;**
434/428

[58] **Field of Search** **358/400, 434,**
358/442, 468; 395/114-116, 967; 345/173,
145, 146, 400, 441, 348, 349, 434/428,
429; H04N 1/32

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Primary Examiner—Kim Yen Vu

Attorney, Agent, or Firm—Mark P. Watson

[57] **ABSTRACT**

An order-taking terminal device enables a customer to order food, but can respond rapidly to changes and additions to the menu. When this terminal device starts up, it receives an operating program and image data from main management equipment. The order-taking terminal device stores the thus received operating program and image data and displays a menu screen on a display screen on the basis of the thus stored operating program and image data.

32 Claims, 26 Drawing Sheets

FIG. 1

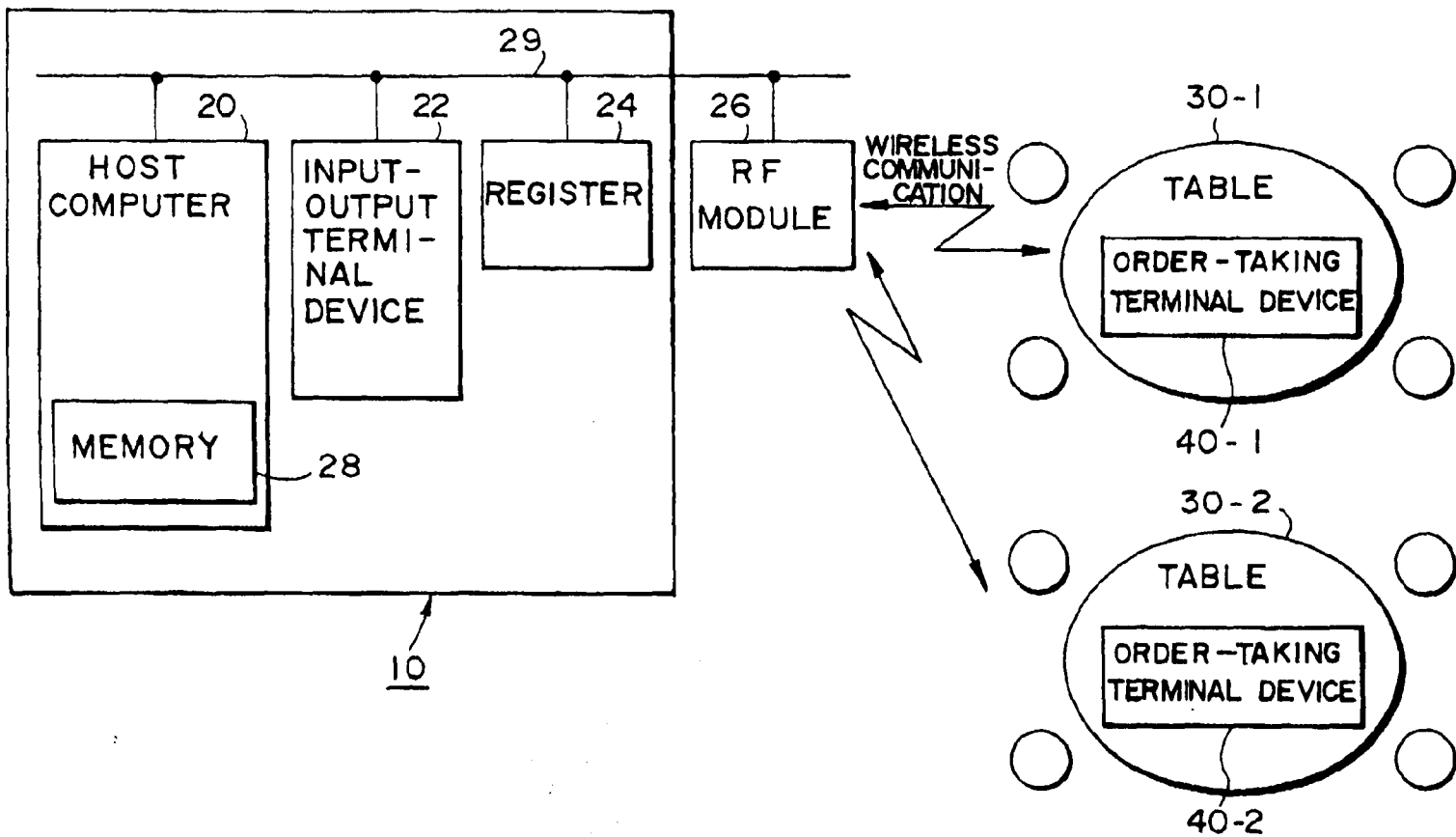


FIG. 2

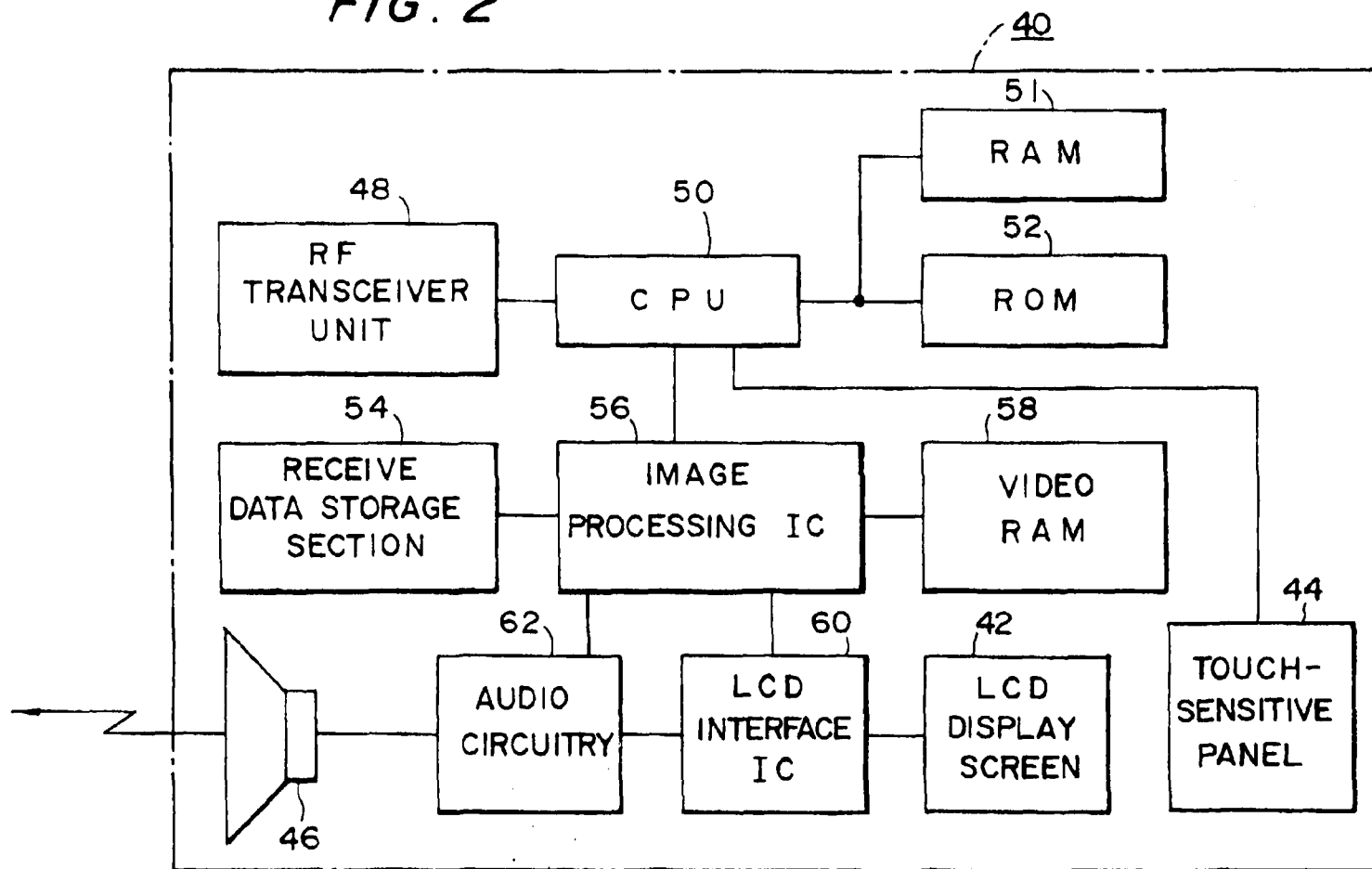


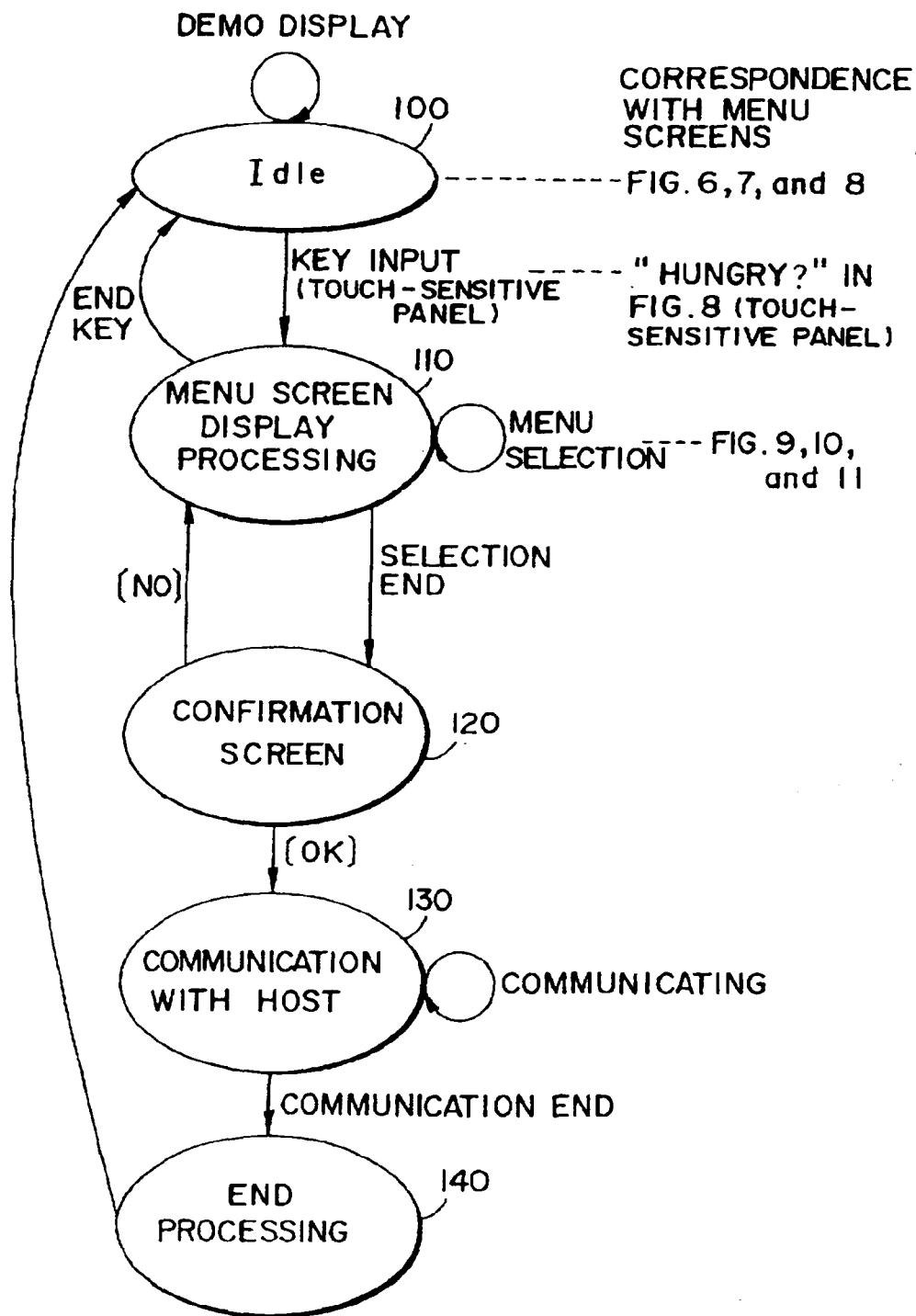
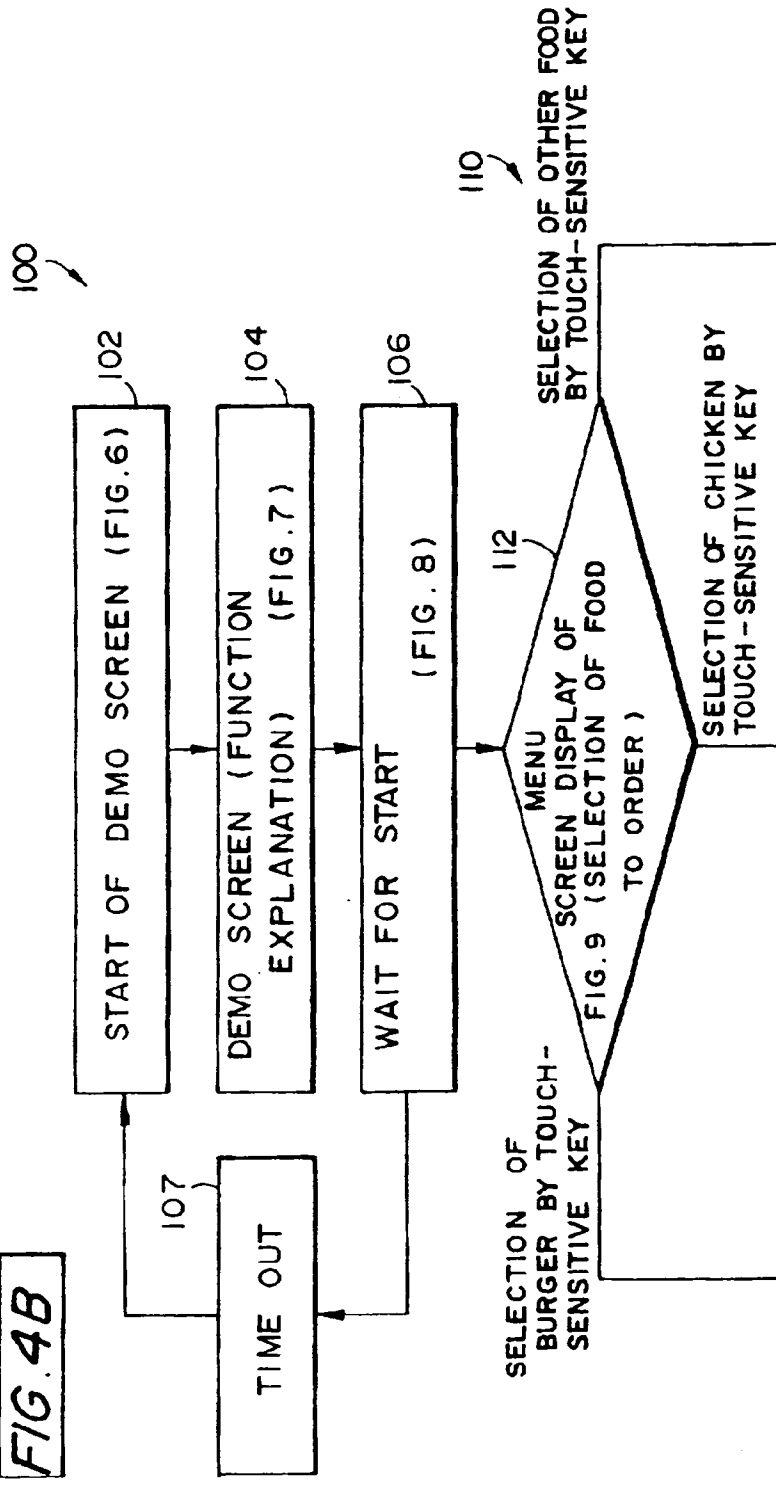
FIG. 3

FIG. 4A

FIG. 4A
FIG. 4B



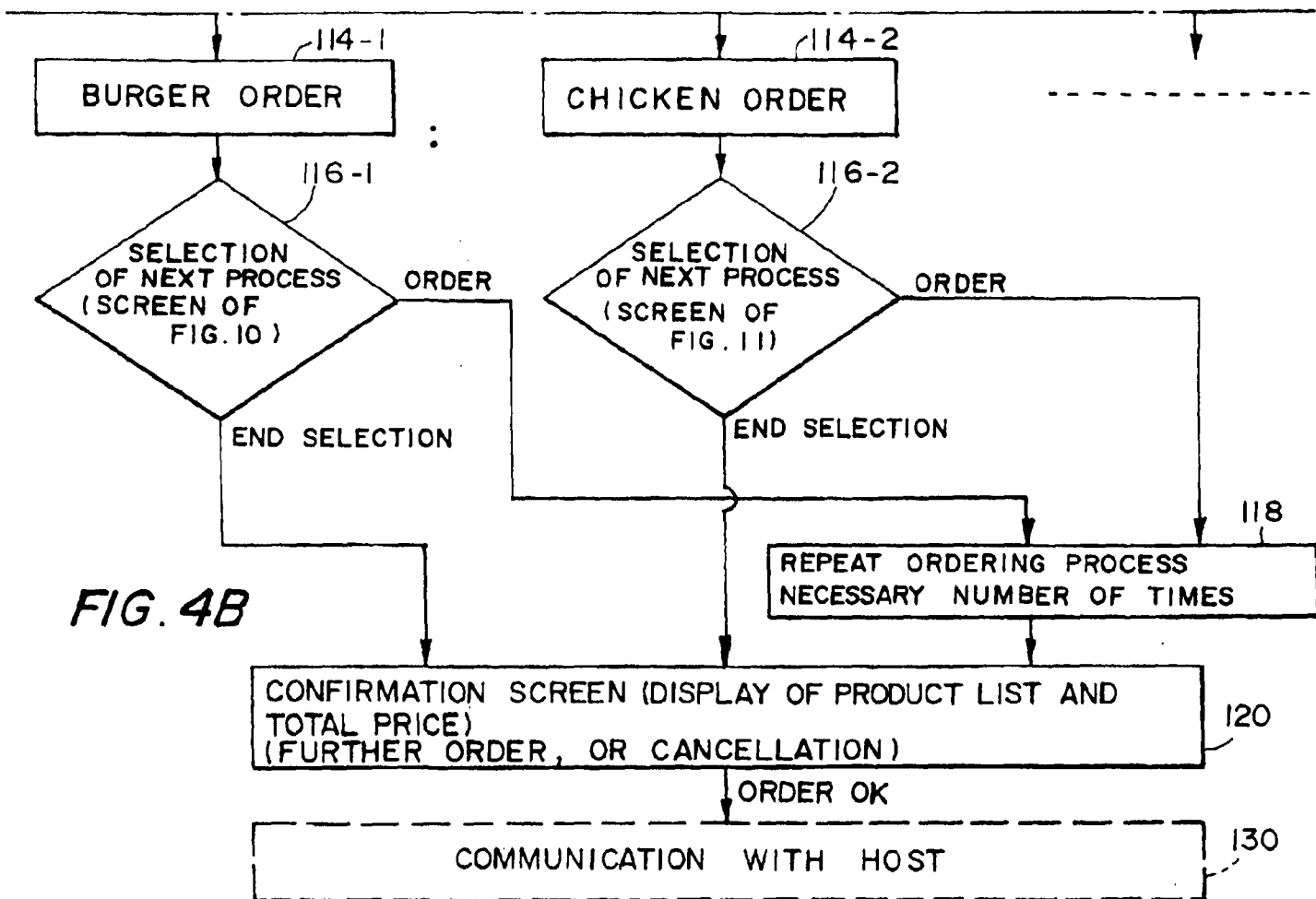


FIG. 5

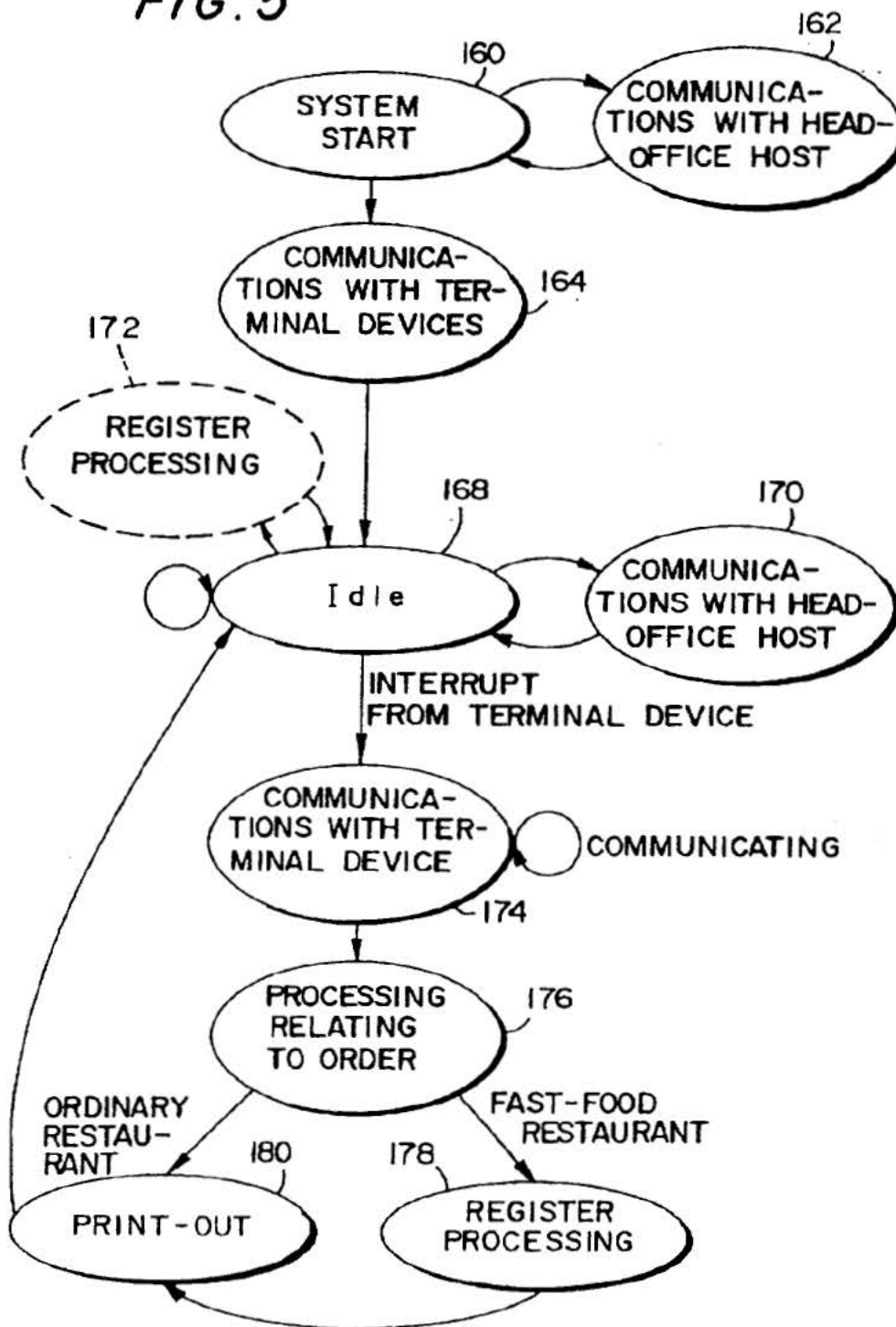


FIG. 6

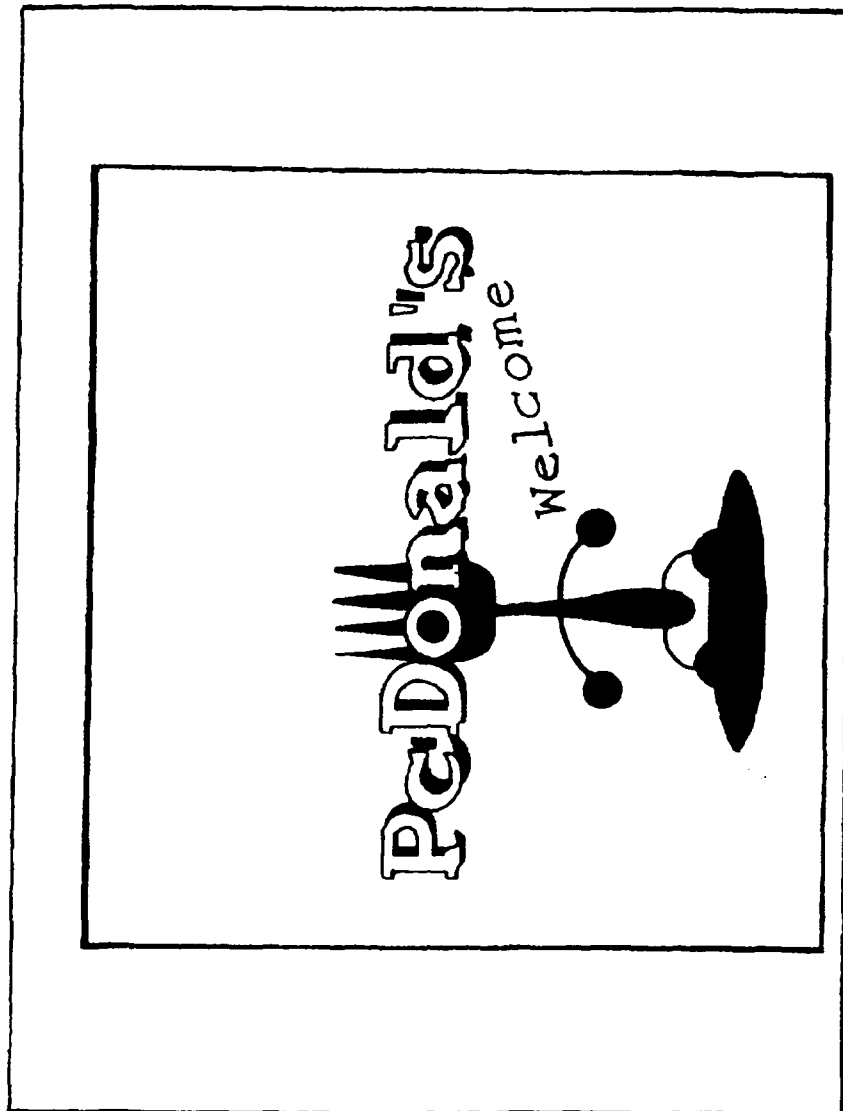


FIG. 7

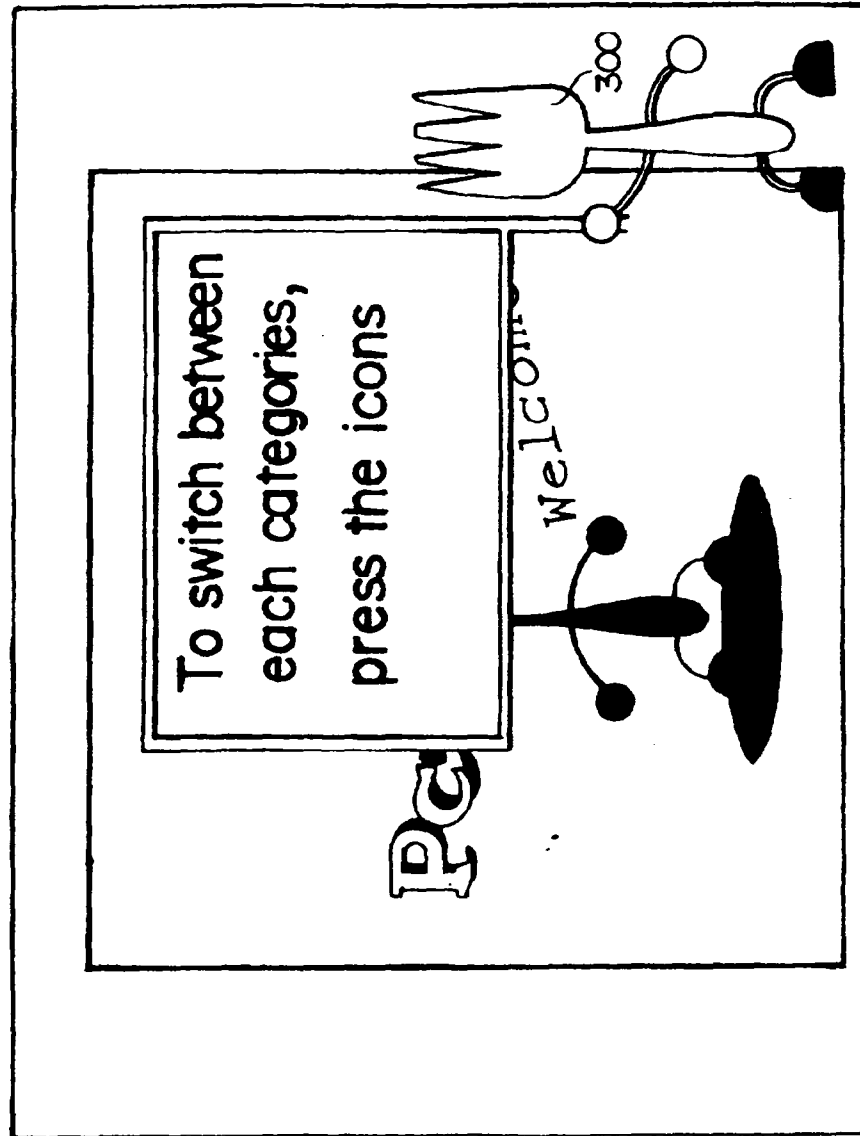


FIG. 8

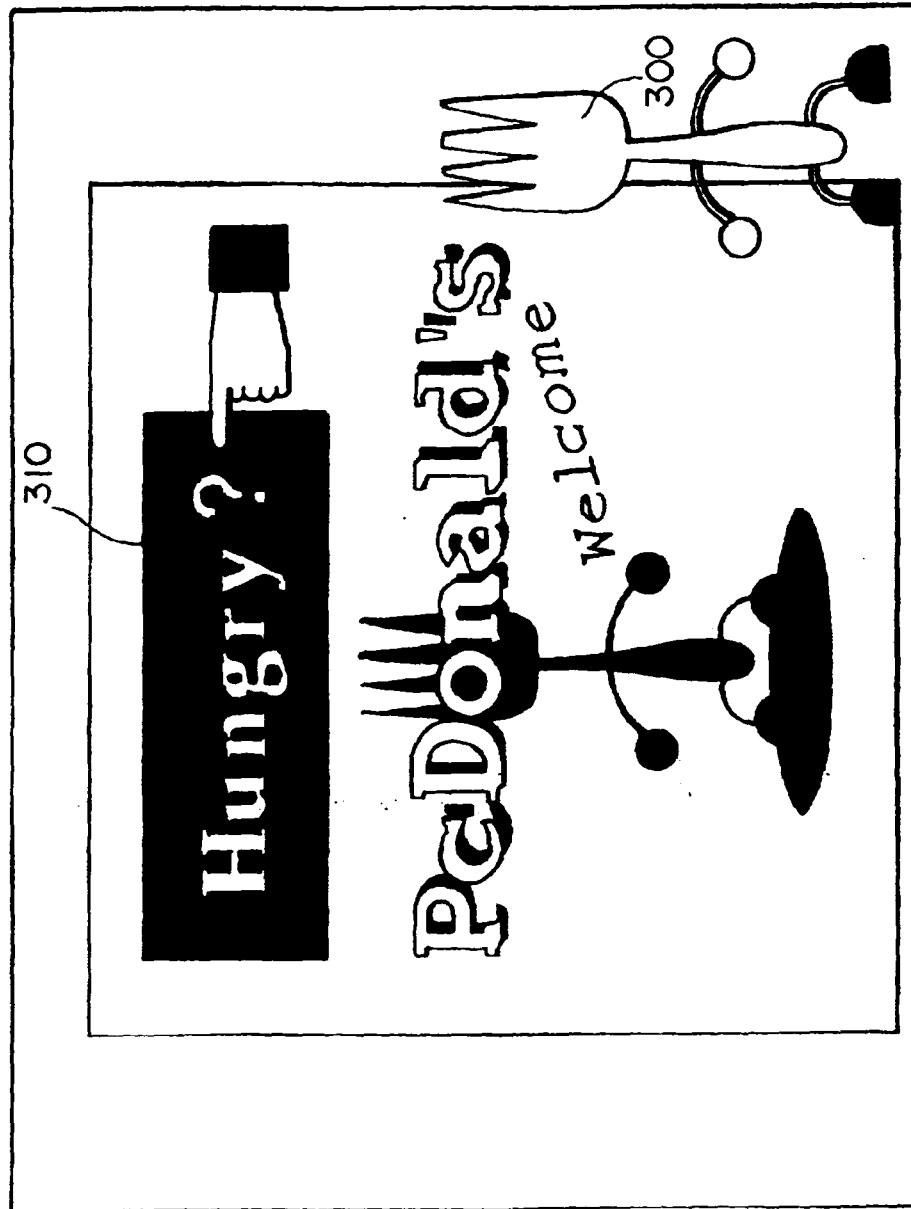


FIG. 9

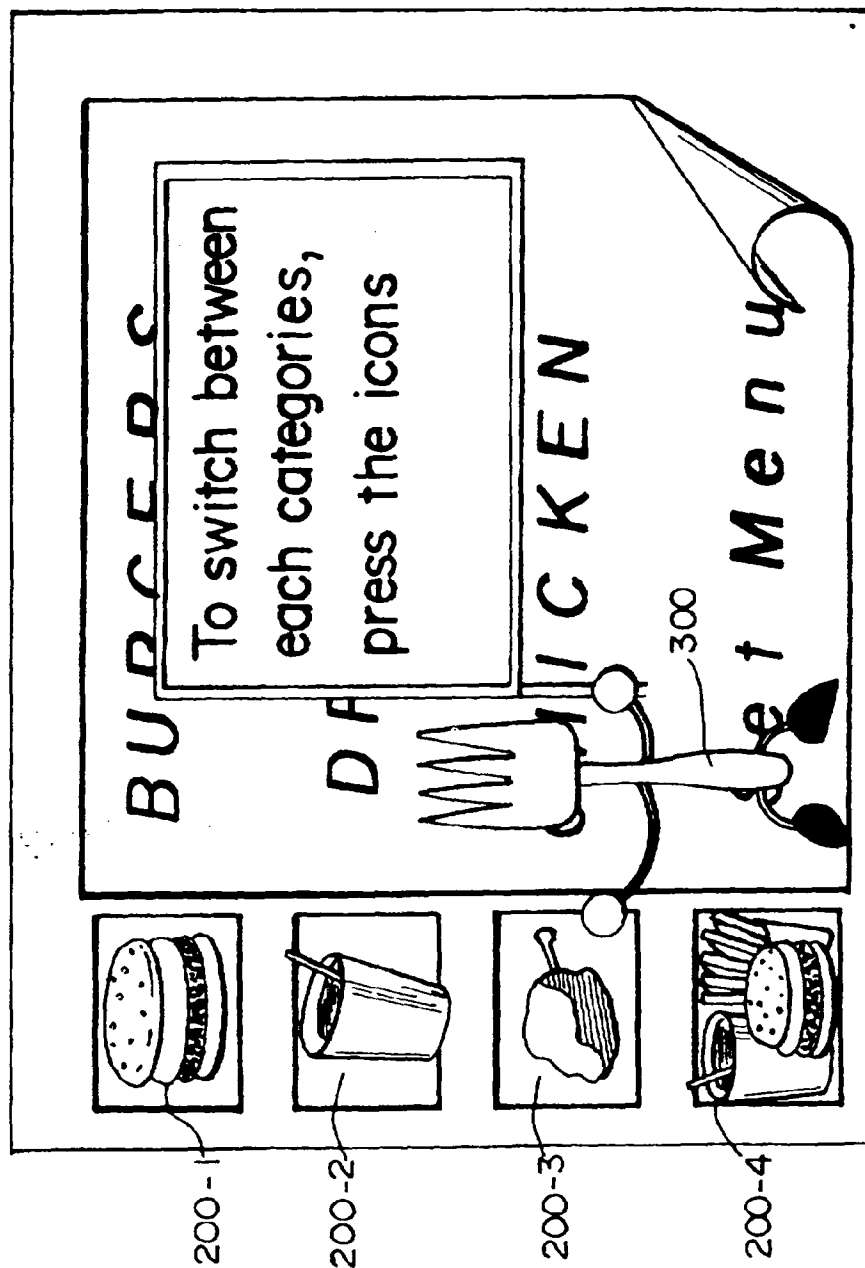


FIG. 10

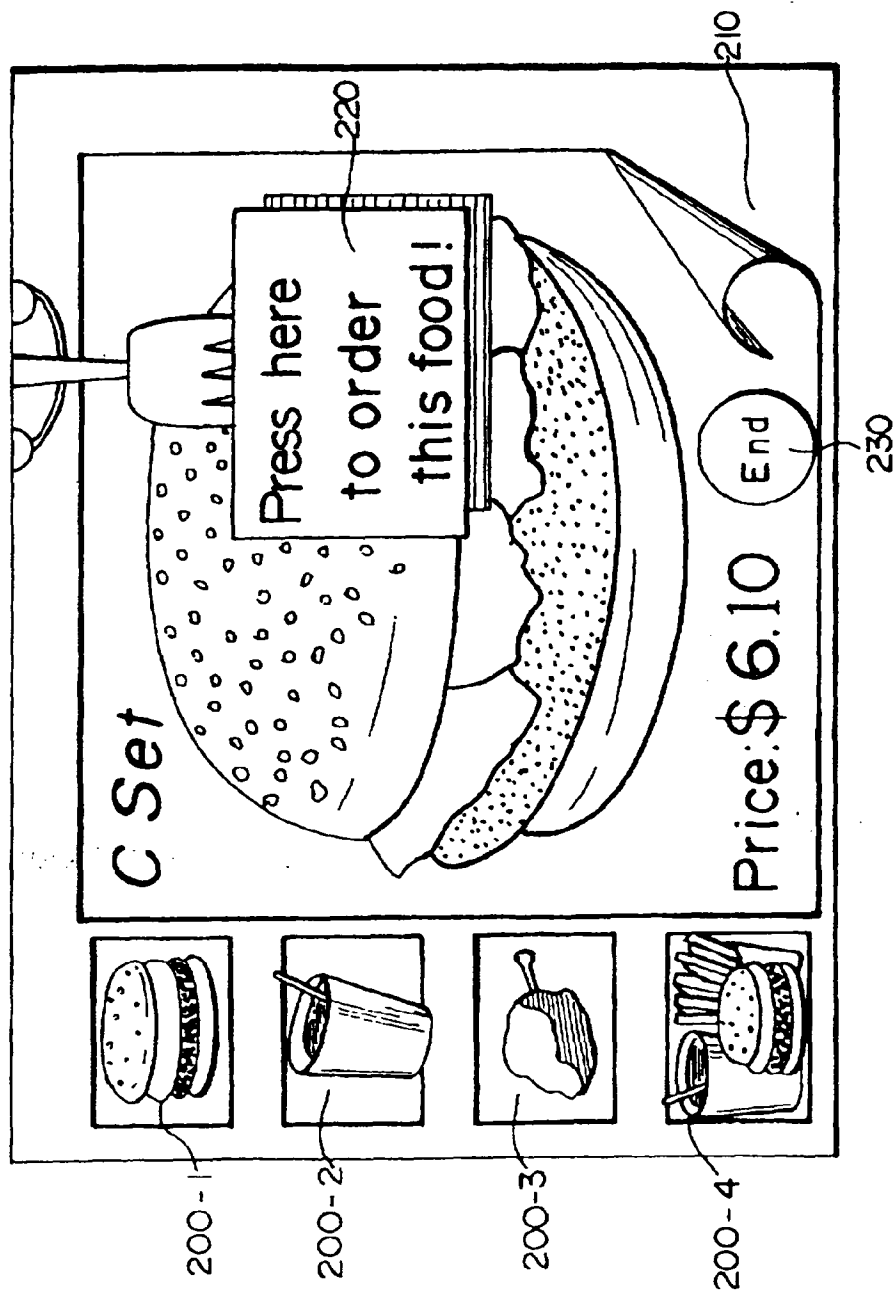


FIG. 11

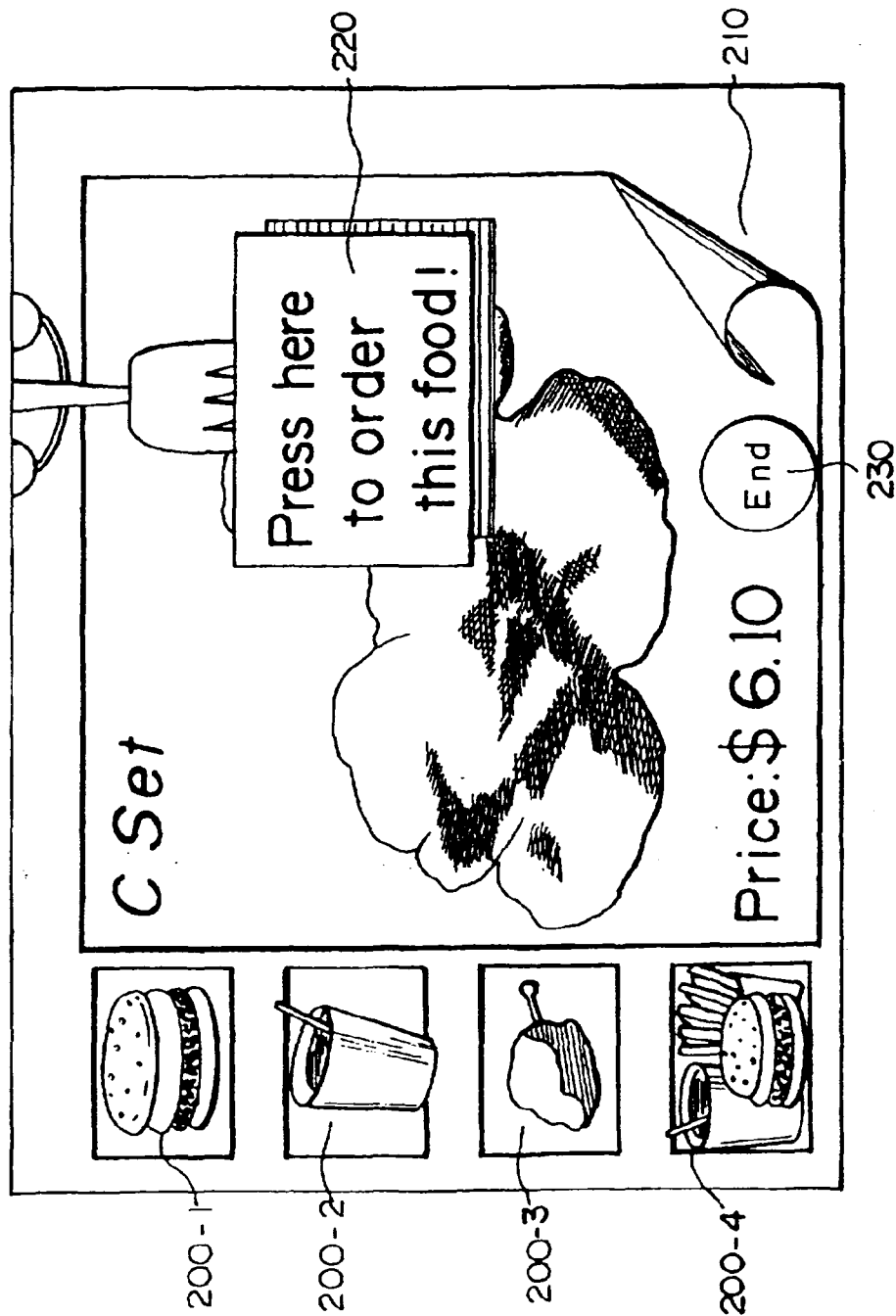


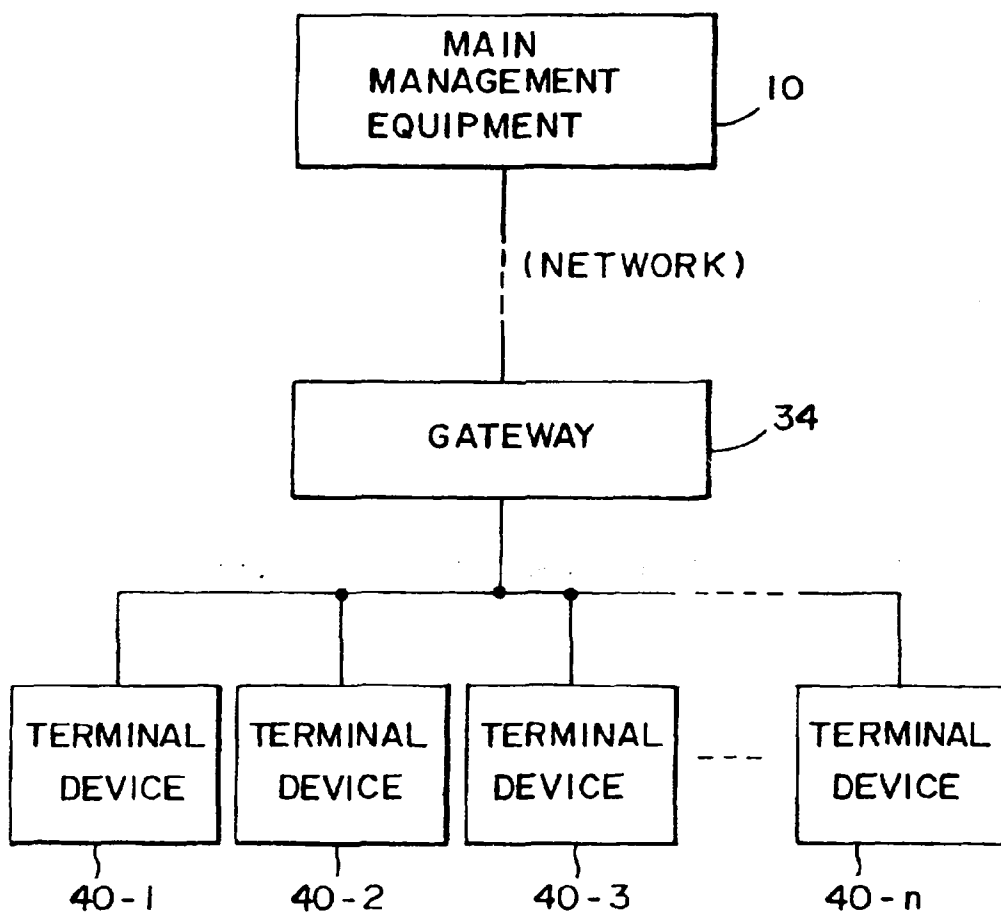
FIG. 12

FIG. 13

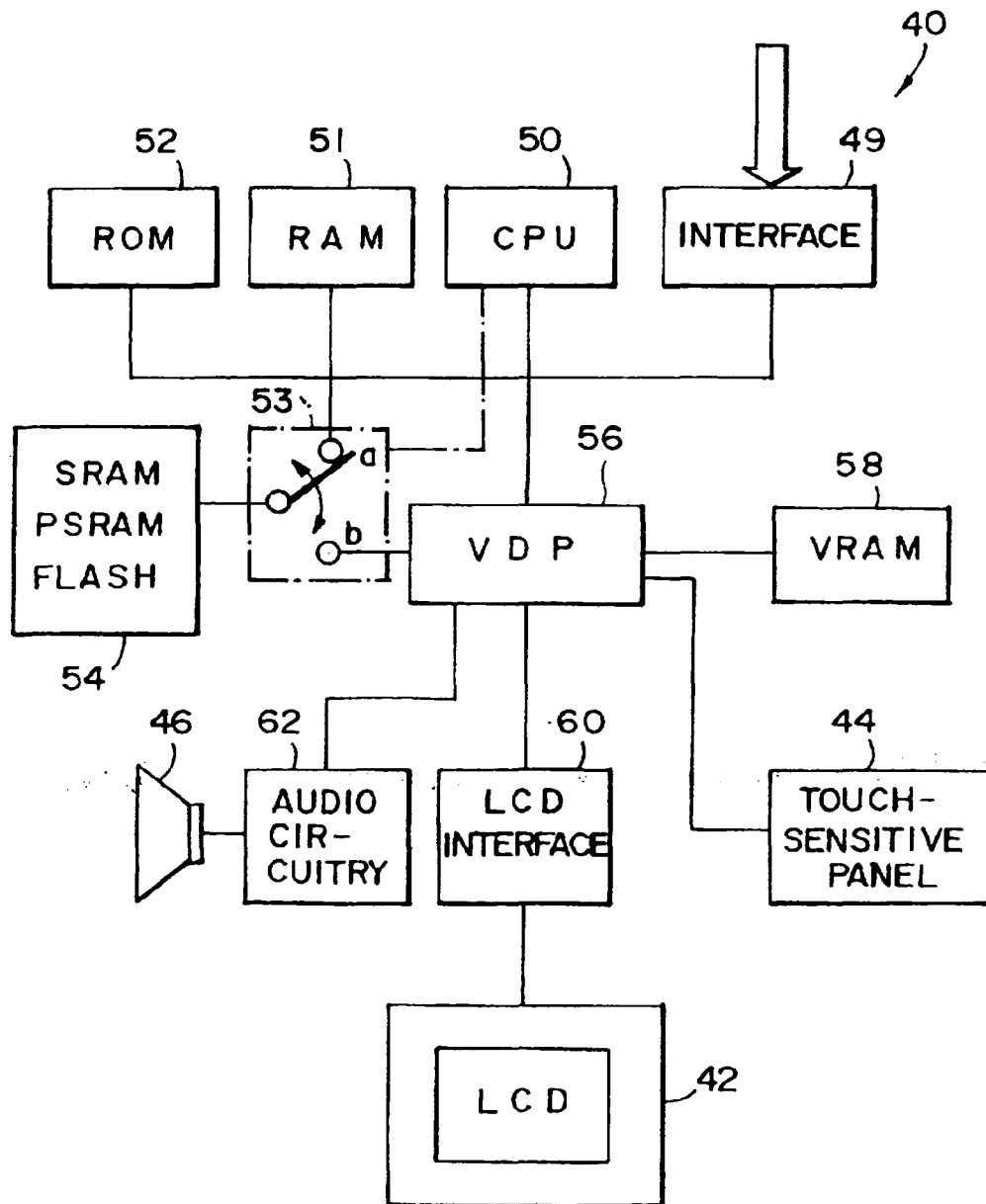


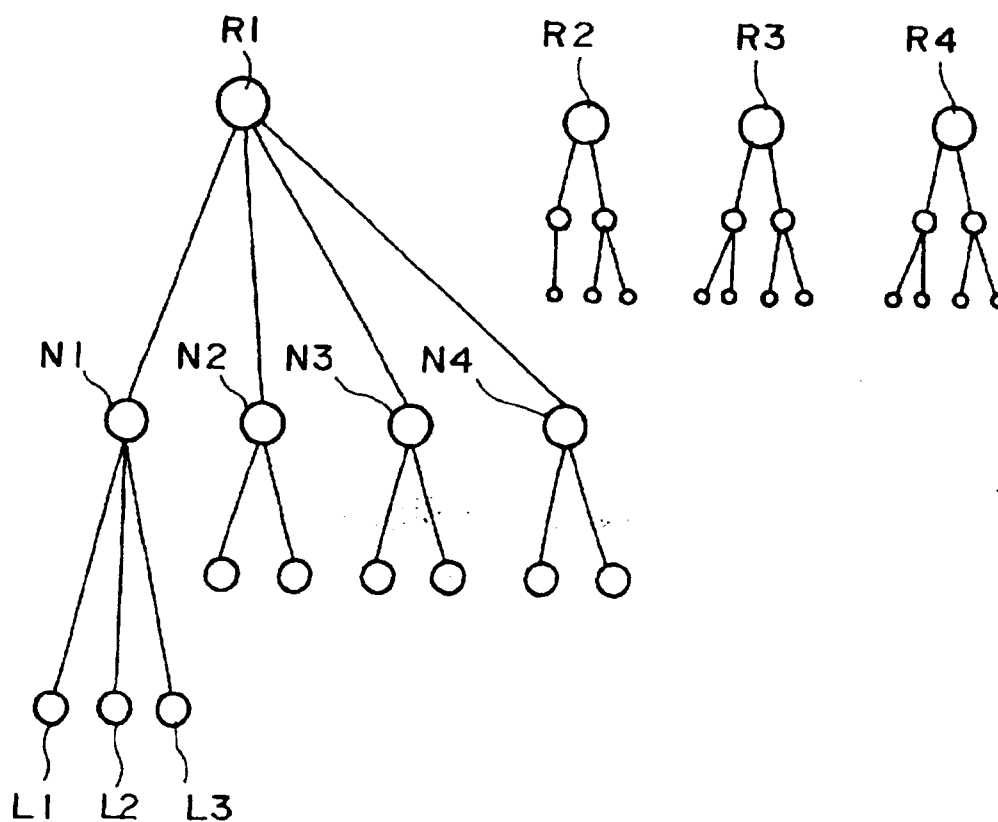
FIG. 14

FIG. 15

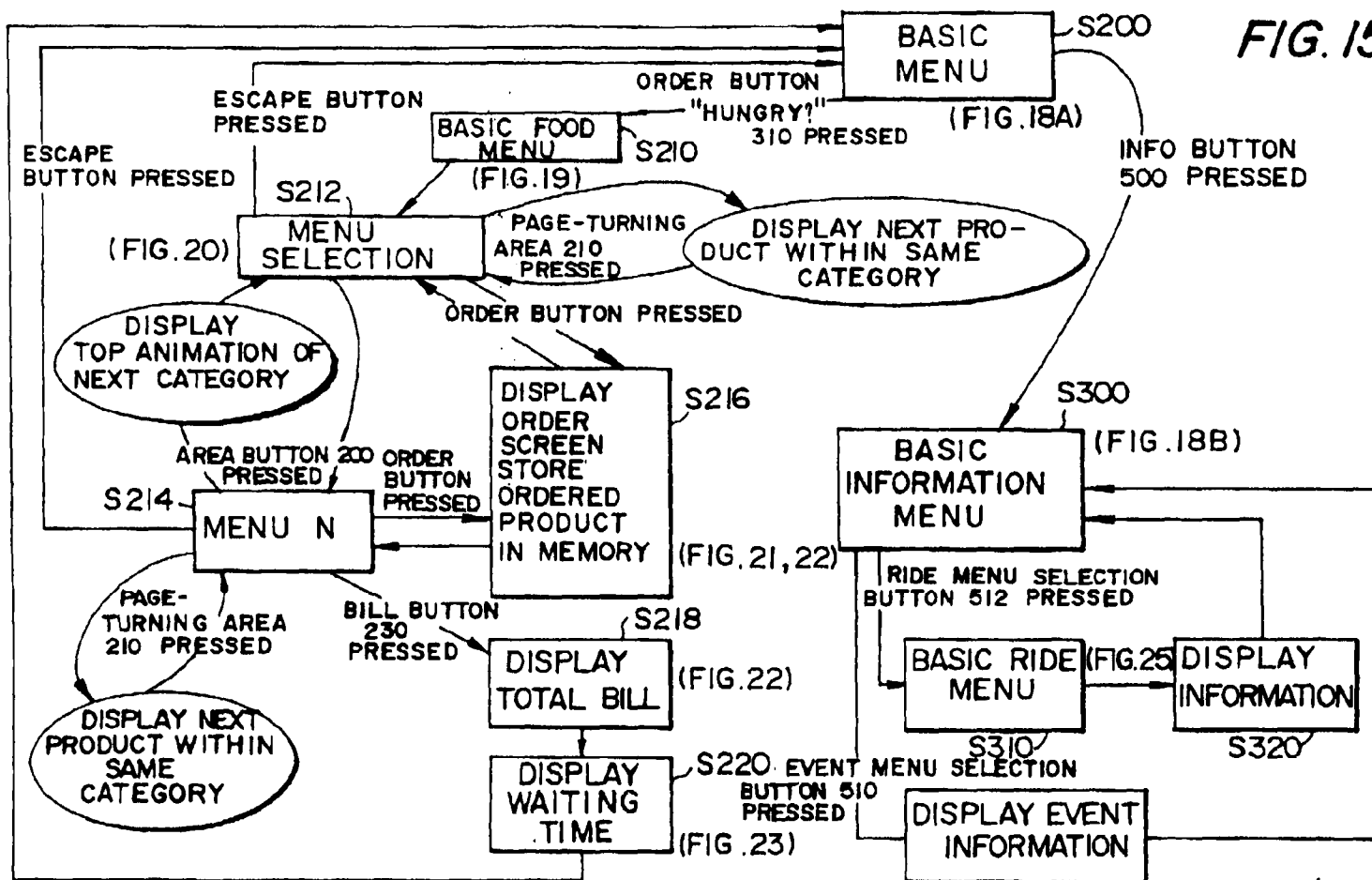


FIG. 16

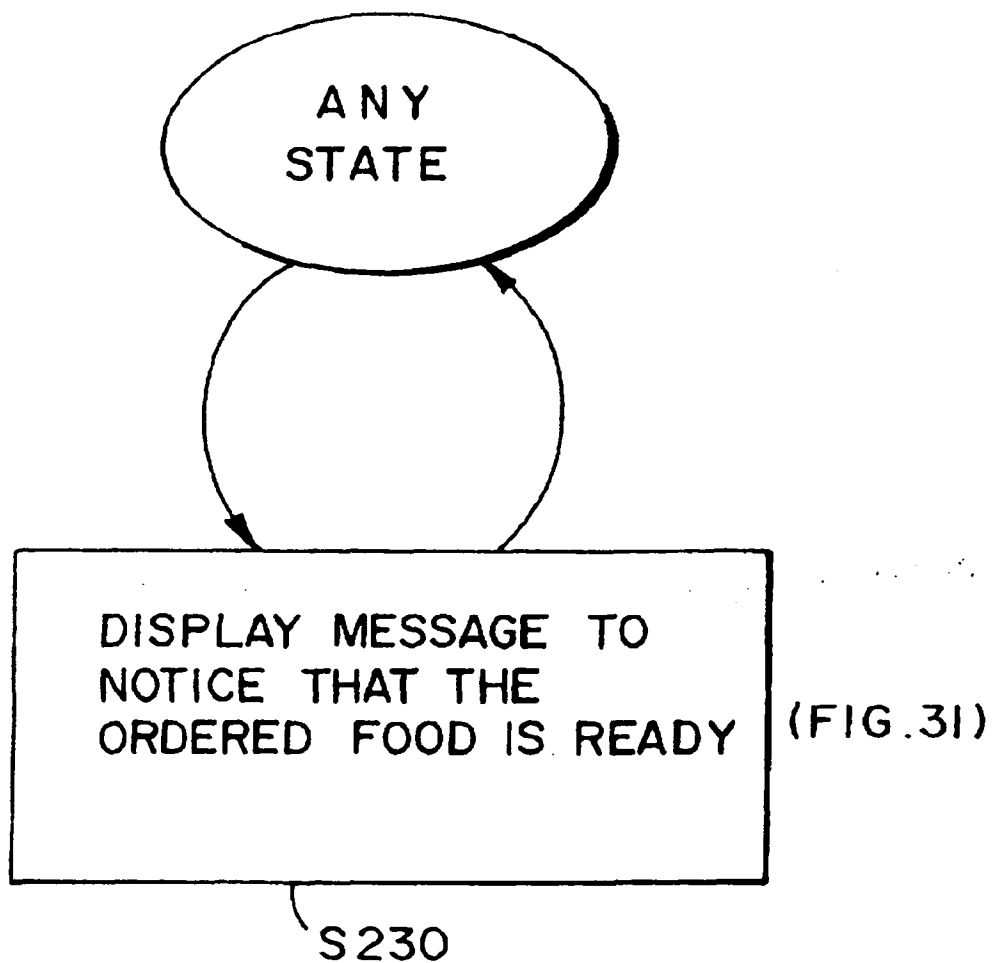


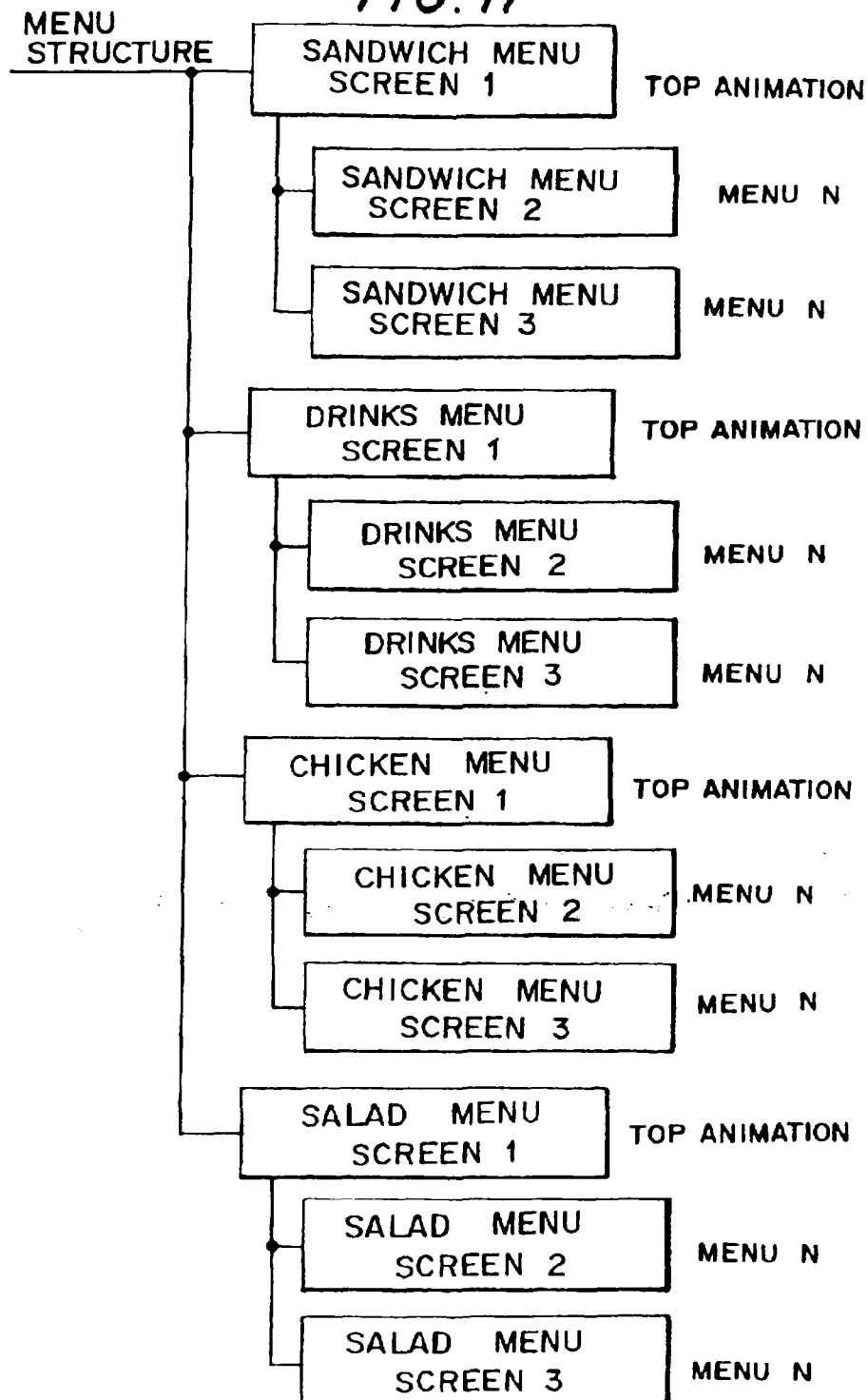
FIG. 17

FIG. 18A

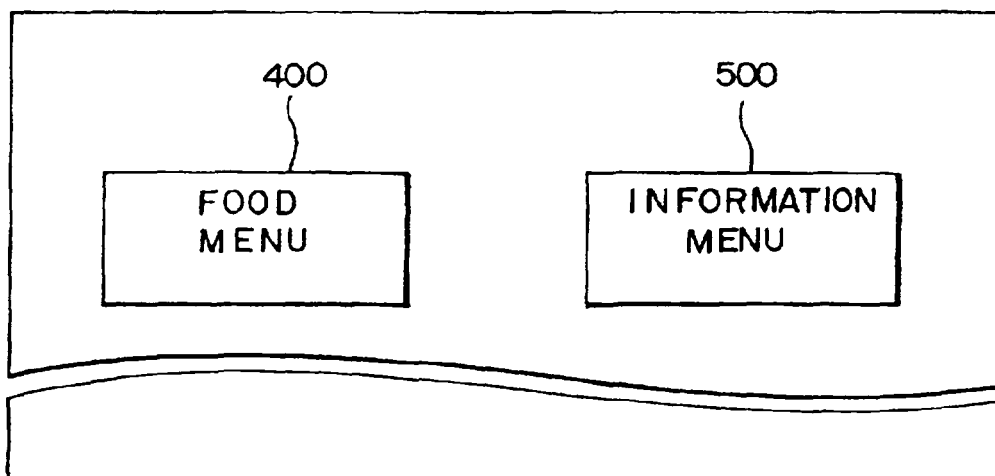


FIG. 18B

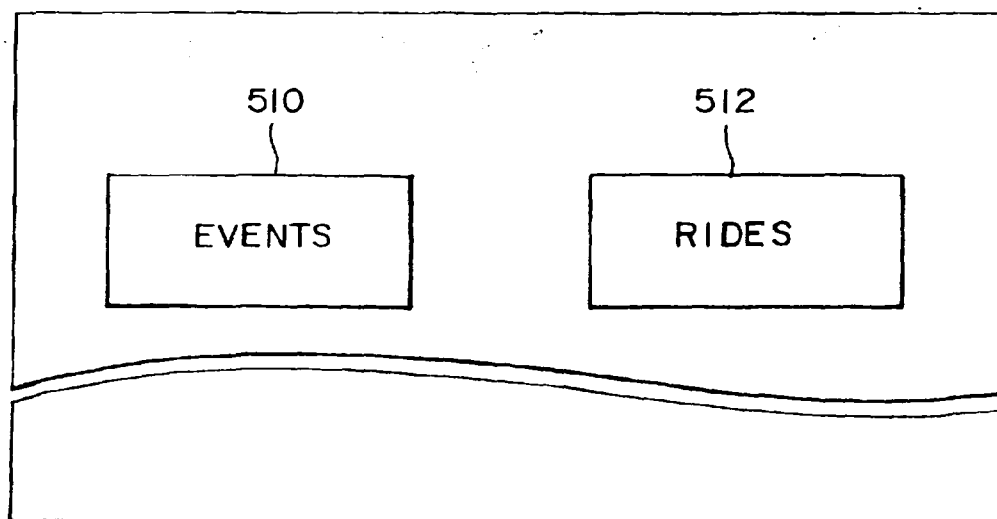


FIG. 19

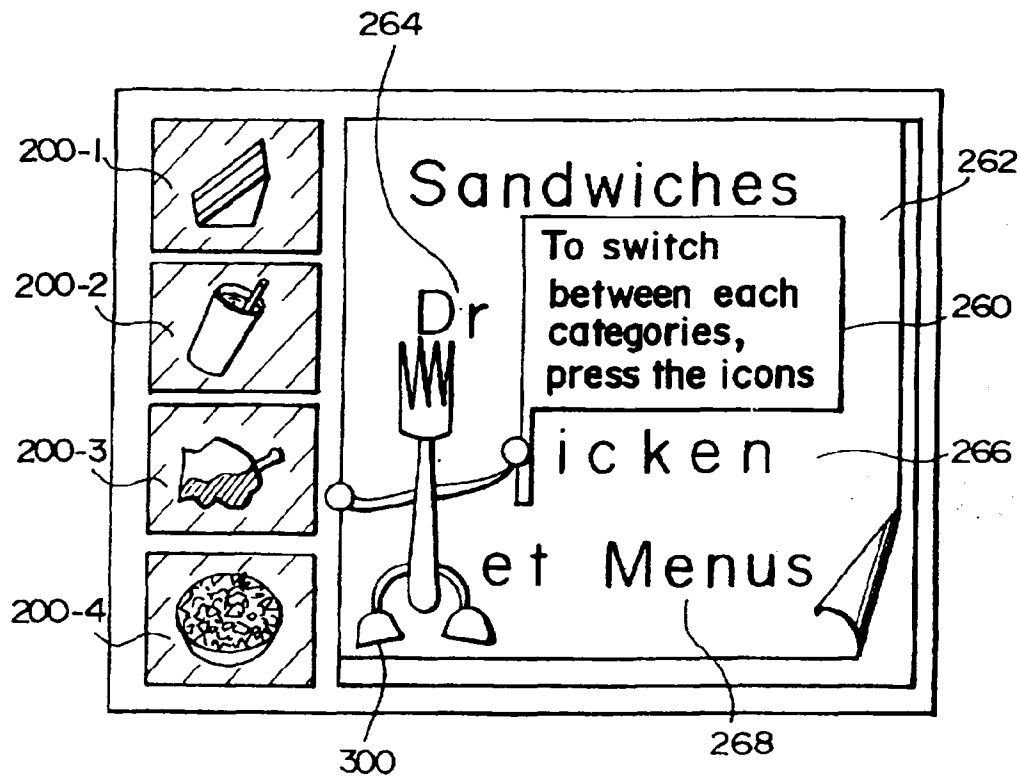


FIG. 20

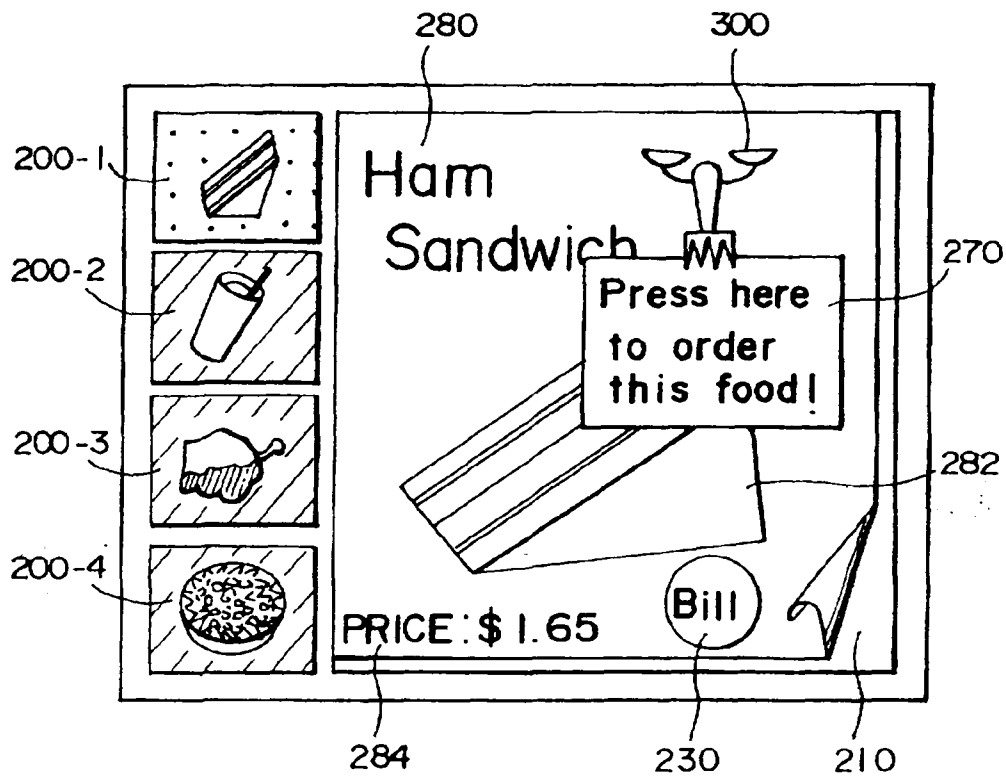


FIG. 21

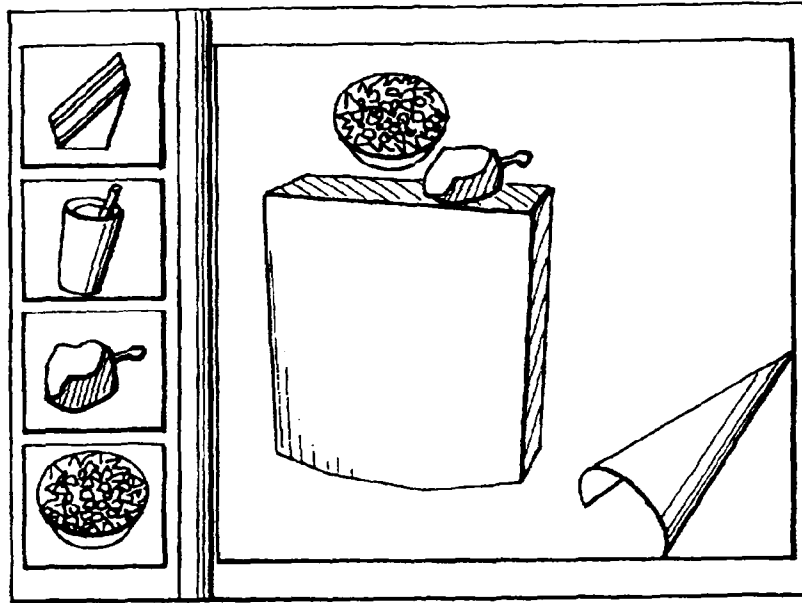


FIG. 22

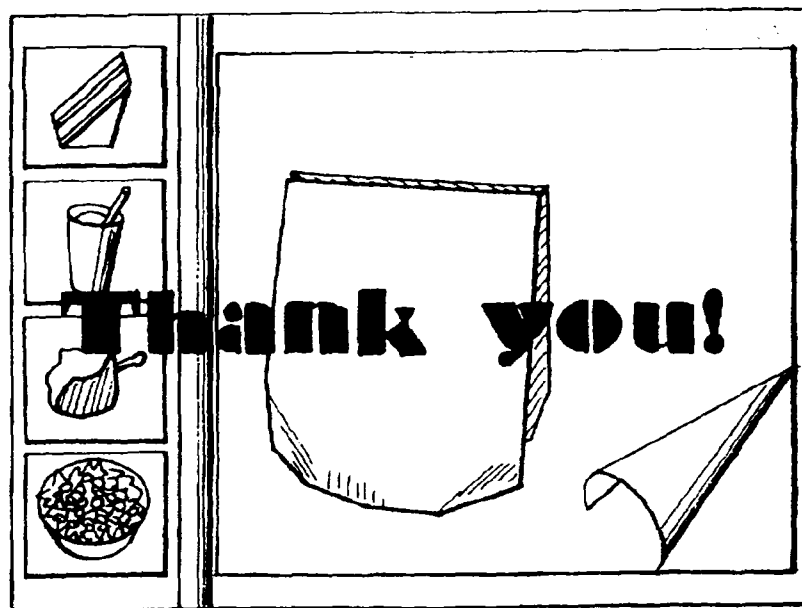


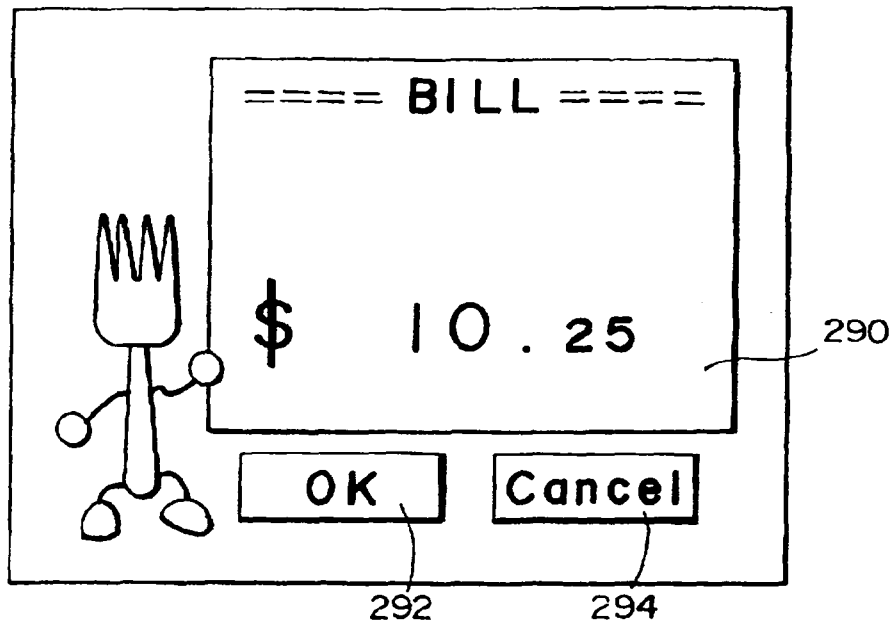
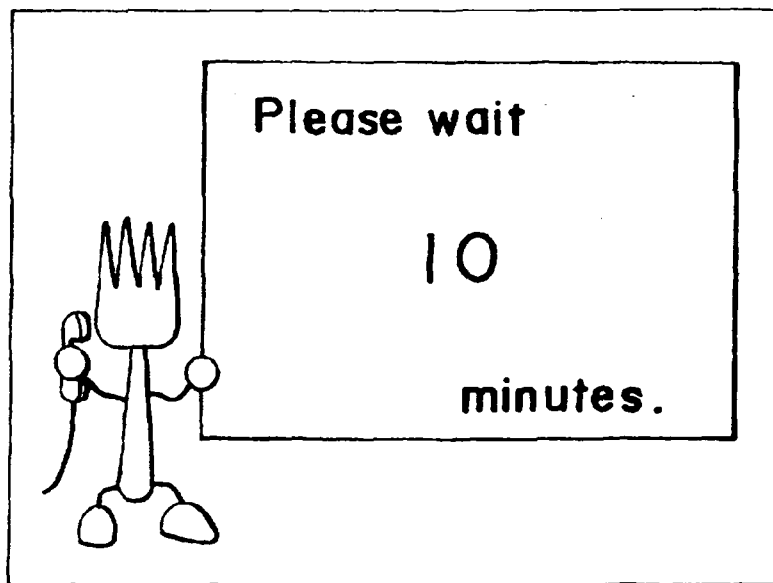
FIG. 23A*FIG. 23B*

FIG. 24

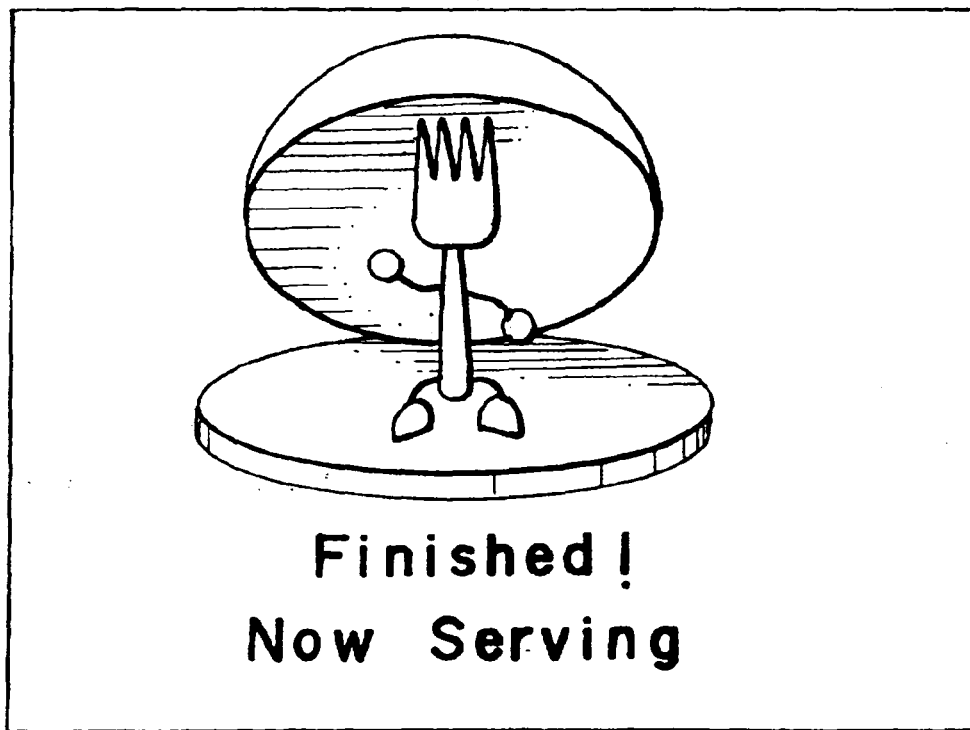


FIG. 25

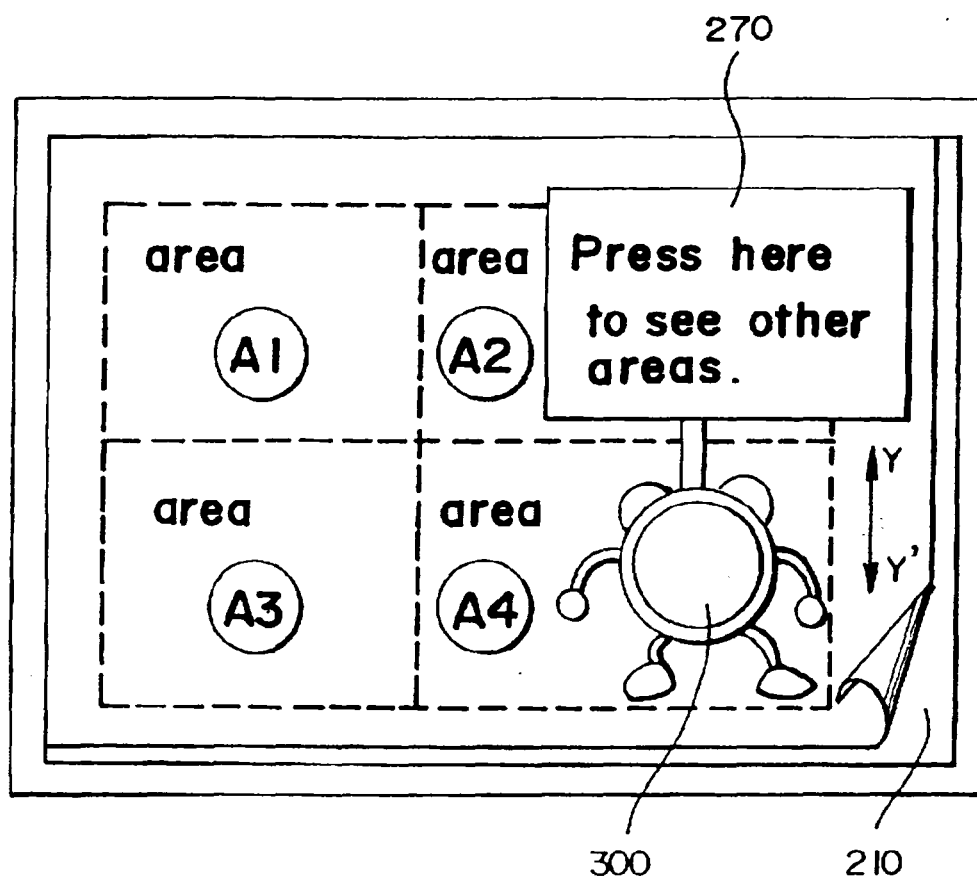
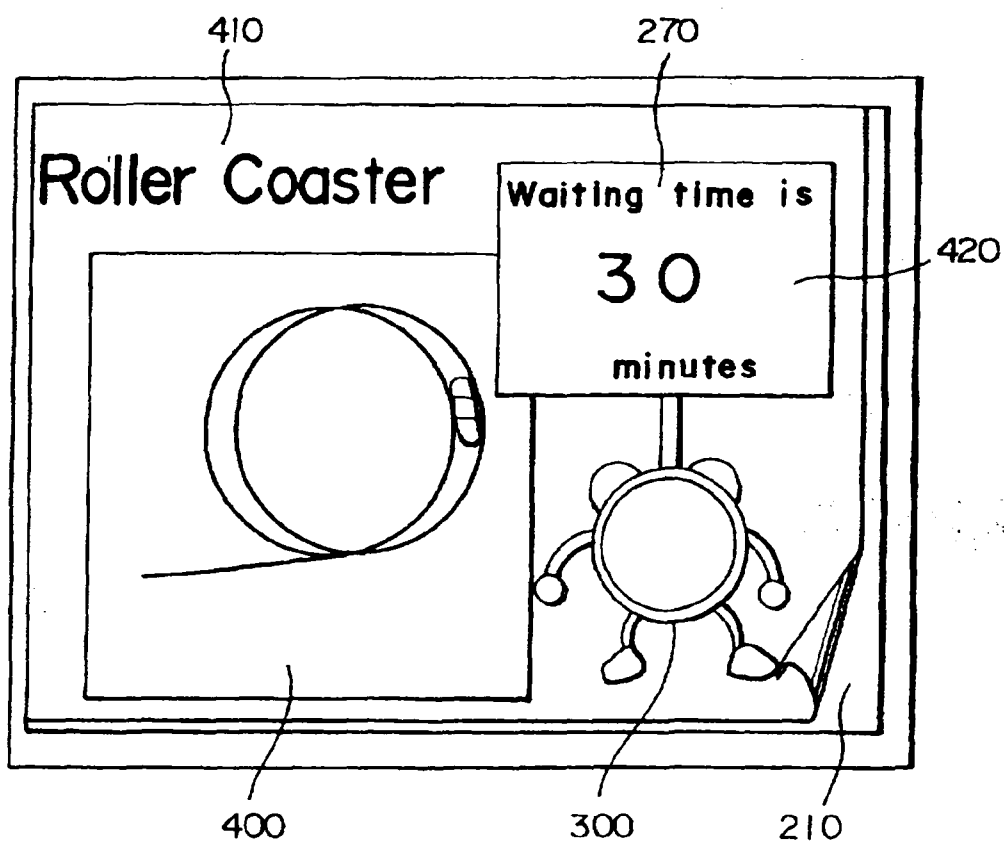


FIG. 26



TERMINAL DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to a terminal device, in particular, to a terminal device by which a user can transmit data while viewing a screen on the terminal device.

DESCRIPTION OF THE PRIOR ART

The system generally used for administering orders in a restaurant or the like is such that a waiter or waitress takes each customer's order and conveys it to the kitchen. However, an order management system of this type has a problem in that the expenses involved in employing waiting staff increases the unit price of the food.

In establishments such as fast-food restaurants that have recently become common, a system is used in which the customer has to approach a counter to order and again to pick up the ordered food.

However, an order management system of that type has a problem in that it places a large burden on customers because they have to return to the counter every time they order, and they have to wait in line at the counter if the restaurant is busy.

In order to solve these problems, the use of an order management system has been considered in which a main piece of management equipment for order management (a host computer) is combined with a plurality of terminal devices for ordering that are provided at the customers' tables. Since this order management system makes it possible for a customer to make an order while viewing image data for ordering that is displayed on a terminal device, and the resultant order can be processed by the main management equipment, it can solve both of the previously mentioned problems concerning staff expenses and the load on the customers.

Unfortunately, it is not possible for a customer to obtain a good visualization of the dishes available for order, simply from an order list displayed on a terminal device. In such a case, a problem occurs in that customers become reluctant to use this system to order food.

SUMMARY OF THE INVENTION

In the light of the above described problems, a first objective of the present invention is to provide a terminal device which can manage with only a small quantity of data to transfer, and which enables a user to input data to be transferred in an easy-to-understand fashion.

Another objective of the present invention is to provide a terminal device which is capable of transferring interactive data to and from another device, wherein this data is easy for a user to understand and is also small in quantity.

A further objective of the present invention is to provide a terminal device which is capable of responding flexibly to changes in the image data used for data transfer management.

In order to achieve the above objectives, a first aspect of the present invention relates to a terminal device for transmitting data to another device, comprising:

input means;

display means;

storage means for storing image data for a data transmission management screen wherein at least part of the image data is presented as a dynamic image, and an operating program for reproducing the image data in

accordance with predetermined rules and managing data transmission; and

computation control means for managing data transmission;

wherein the computation control means, comprises:

image displaying means for reading the image data and displaying a data transmission management screen on the display means based on the operating program; and

control means for generating transfer data based on the operating program and input from the input means in response to the data transmission management screen, and managing the transmission of data to the other device.

In accordance with the terminal device of the present invention, a data transmission management screen is displayed on the display means to enable a user to visually verify the details of data to be transmitted to another device and the procedure required for transmitting this data.

In particular, since part of the data for these management screens is presented as a dynamic image, this aspect of the invention makes it possible to use dynamic animations and cartoon characters to express the data transmission procedure and details of this data in a visual form that is easy for a user to understand.

The user can easily input data from the input means in response to this data transmission management screen, while receiving visual confirmation of this data to be transmitted. The thus-input data is sent as transmit data to the other device.

From the above description, it is clear that the terminal device in accordance with this aspect of the invention displays the relationship between the displayed screens and the data to be transmitted, so that the user can check the details of the data to be sent and the operating sequence for sending this data in a visual, easy-to-understand manner, and thus the terminal device is extremely convenient to use.

Moreover, since the basic concept of this terminal device is such that the image data itself is not transmitted during data transfer, only data relating to that image data is transmitted, the quantity of data transferred is small and thus the data can be transmitted rapidly.

A second aspect of the present invention relates to a terminal device for transferring interactive data to and from another device, comprising:

input means;

display means;

storage means for storing image data for a data transmission management screen wherein at least part of the image data is presented as a dynamic image, and an operating program for reproducing the image data in accordance with predetermined rules and managing data transmission; and

computation control means for managing data transmission;

wherein the computation control means, comprises:

image displaying means for reading the image data and displaying a data transmission management screen on the display means based on the operating program; and

control means for generating first order data based on the operating program and an input from the input means in response to the data transmission management screen, transmitting the first data to the other device, and managing to display a screen with details corresponding to interactive second data on the

3

image displaying means based on the second data received from the other device.

The terminal device of this aspect of the invention enables the interactive transfer of data to and from another device, in a manner that is easy for the user to understand and requires little data.

This terminal device is particularly characterized in that at least part of a data transfer management screen is presented as a dynamic image such as an animation. This makes it possible to manage the transfer of data that is visually easy for the user to understand, and thus enable the implementation of a terminal device that is extremely easy for the user to understand and use.

In a third aspect of the present invention:

the image data is image data for an order management screen;

the operating program reproduces image data for order management in accordance with predetermined rules and manages data transmission for order management; the image displaying means reads out the image data based on the operating program and displays the order management screen on the display means; and

the control means generates order management data based on the operating program and an order input from the input means in response to the order management screen, and controls the transmission of the order to the other device.

In a fourth aspect of the present invention:

the image data is image data for an order management screen;

the operating program reproduces image data for order management in accordance with predetermined rules and manages data transmission for order management; the image displaying means reads out the image data based on the operating program and displays the order management screen on the display means; and

the control means generates first order management data based on the operating program and an order input from the input means in response to the order management screen, transmits the first order management data to the other device, and manages to display an order management screen with details corresponding to interactive second data on the image displaying means based on the second data received from the other device.

In accordance with this aspect of the invention, since the user can input an order while viewing an order management screen wherein at least part is presented as a dynamic image, an order-taking terminal device can be implemented that is extremely easy to understand and convenient to use.

In particular, this aspect of the invention makes it possible to transfer data for order management in an interactive form to and from another device. Thus, when food has been ordered, for example, data communications can be used to inform the user that the ordered food is ready. In addition, if the user orders the fetching of predetermined data, the thus ordered data can be received from the other end of the system.

In a fifth aspect of the present invention:

the input means is a touch-sensitive panel disposed on the display means in a predetermined mutual relationship with the management screen.

Disposing a touch-sensitive panel on the display means in a predetermined mutual relationship with the management screen in this manner enables the user to input order data easily, merely by touching a predetermined position on the displayed order management screen. This makes it possible to implement a terminal device that is convenient for a user to use.

4

In a sixth aspect of the present invention:

the image data displays a menu screen representing a plurality of management categories as the management screen.

Displaying the management screen as a menu screen in this manner makes it possible to implement a terminal device that is even more convenient to use.

In this regard, it is preferable that managerial details, such as details of the data to be sent, are displayed on the menu screen by using readily understandable animations or photographs.

In a seventh aspect of the present invention:

the storage means stores image data for an order menu screen representing a plurality of ordering categories as the management screen; and

the control means converts an ordering category selected by the input means into code data and transmits the code data as the first data, and displays an order management screen with details which are code data received as the second data from the other device on the image displaying means.

The terminal device of this aspect of the present invention enables the input of data to be transmitted by simply selecting a desired ordering category, thus making it possible to implement a terminal device that is extremely convenient to use.

In particular, since the transmitted data is transferred to and from the other device in a converted form as code data, the terminal device of this aspect of the invention has the advantage of managing with an extremely small quantity of data to be transferred.

In an eighth aspect of the present invention:

the storage means stores a plurality of sets of the image data and operating programs; and

the control means manages data transmission based on remaining sets of image data and operating program during a waiting time during which data transmission is being managed based on a predetermined set of image data and operating program.

In accordance with this aspect of the terminal device of the present invention, another data transfer management operation can be performed during the waiting time of a predetermined data transfer management operation, so that the user can make use of the waiting time to transfer other data effectively.

In a ninth aspect of the present invention:

the storage means stores a plurality of sets of the image data and associated display operating programs for product ordering and information ordering; and

the control means performs ordering control based on image data for information ordering and an associated display operating program from a time at which the first code data is transmitted until when the second code data is received, during ordering control based on image data for product ordering and an associated operating program.

It often happens that the time required to transfer an order for information through a circuit and receive that information is shorter than the time taken between placing the order for a dish until the food is ready. This aspect of the invention makes use of the waiting time that occurs when a product such as a food dish is being ordered, between the ordering of the dish and the time that the food is ready, to provide ordering control for information. This ensures that the user does not waste this waiting time, and can use it efficiently to obtain other information.

In a tenth aspect of the present invention:

the control means comprises means for writing into the storage means the image data and an associated display operating program which are received from the other device.

The terminal device in accordance with this aspect of the present invention receives image data and an associated operating program for a screen to be displayed from an external apparatus, and controls the writing of this data into the storage means. In other words, the image data and operating program that arrive from the external apparatus are in a over-writable form.

Since the present invention makes it possible to respond rapidly to changes in the images to be displayed, it enables the implementation of a terminal device that is extremely applicable to a wide range of applications and is convenient to use.

It is preferable that this transfer and writing of the image data and operating program is performed during a time band in which the terminal device is not usually in use.

In a eleventh aspect of the present invention:

the image data displays hierarchical menu screens representing a plurality of management items as the management screen.

The use of hierarchical menus in this manner makes it possible to utilize a limited display space efficiently and display screens that are easy for the user to understand.

In a twelfth aspect of the present invention:

the image data includes transmission items divided into a number of major categories according to type, items belonging to each of the major categories further divided into a tree structure within that major category, so as to display order management menu screens are displayed in a hierarchy; and

the operating program displays a menu screen representing items in a level next to a hierarchical level corresponding to one of root and node portions of the displayed tree structure, the next level belonging to a category selected by a user from categories of the hierarchical level, and the operating program switches menu screens representing each of items belonging to a same leaf portion of the tree structure to display a menu screen based on screen changing order from the second control means.

In a thirteenth aspect of the present invention:

display contents of each item belonging to a hierarchical level corresponding to the one of root and node portions is an image acting as an index representing the contents of the item, at least parts of the index data function as icons; and

the image displaying means displays a menu containing the item corresponding thereto when one of the icons is selected by means of the input means.

Displaying parts of the menu screen as icons in this manner makes it possible to provide an input operation that is even more convenient for the user to use.

In a fourteenth aspect of the present invention:

the image displaying means identifies and displays a selected icon and a non-selected icon.

Displaying highly recognizable icons in this manner makes it possible to provide the user with an accurate input operation.

In a fifteenth aspect of the present invention:

the image displaying means displays a display change area on a screen and switches the image which is displayed when the display change area is selected by

the input means so as to display plurality of items corresponding to a leaf portion of the tree structure.

This makes it possible to switch smoothly between hierarchical menu screens.

In a sixteenth aspect of the present invention:

the image displaying means displays explanatory information for explaining details of information displayed on a display screen so as to overlay the display information with the explanatory information, and causes the explanatory information to move so that the contents of the display information in the overlaid area are recognizable.

In other words, at least part of a data transmission management screen in the terminal device of the present invention is presented as a dynamic image. When explanatory information for explaining details of information displayed on the display screen is presented as a dynamic image that overlays the information on the display screen in this manner, it is preferable that the explanatory information is made to move to ensure that the display information in the overlaid area can be seen. This makes it possible to provide an image display that is even easier for the user to understand.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an explanatory view of the order management system of a preferred first embodiment of the present invention;

FIG. 2 is a functional block diagram showing the specific configuration of the order-taking terminal device in the system of FIG. 1;

FIG. 3 is a flowchart of the operation of the order-taking terminal device;

FIG. 4 is a detailed flowchart of the operation of the order-taking terminal device FIG. 4 consist of FIGS. 4A and 4B;

FIG. 5 is a flowchart of the operation of the on-site POS system;

FIG. 6 is an explanatory view of the display screen of the order-taking terminal device;

FIG. 7 is another explanatory view of the display screen of the order-taking terminal device;

FIG. 8 is yet another explanatory view of the display screen of the order-taking terminal device;

FIG. 9 is an explanatory view of the order screen of the order-taking terminal device;

FIG. 10 is another explanatory view of the order screen of the order-taking terminal device;

FIG. 11 is yet another explanatory view of the order screen of the order-taking terminal device;

FIG. 12 is an explanatory view of the order management system of another embodiment of the present invention;

FIG. 13 is a functional block diagram of the terminal device used in the order management system of FIG. 12;

FIG. 14 is an explanatory view of the operation of the tree structure of hierarchical menu screens used in the system;

FIG. 15 is a flowchart of the operation of the order management system of the second embodiment of the present invention;

FIG. 16 is another flowchart of the operation of the second embodiment;

FIG. 17 is an explanatory view of the menu structure of the second embodiment;

FIGS. 18A and 18B are explanatory views of a basic menu screen and a basic information menu screen of the second embodiment respectively;

FIG. 19 is an explanatory view of a basic food menu screen;

FIG. 20 is an explanatory view of a menu selection screen;

FIG. 21 is an explanatory view of an order screen;

FIG. 22 is another explanatory view of an order screen;

FIGS. 23A and 23B are explanatory views of a total charge screen and waiting time display screen respectively;

FIG. 24 is an explanatory view of an order-ready message screen;

FIG. 25 is an explanatory view of a basic ride menu screen; and

FIG. 26 is an explanatory view of a display screen for ride information.

DESCRIPTION OF PREFERRED EMBODIMENTS

Preferred embodiments of the present invention will now be described with reference to the accompanying drawings.

First Embodiment

A first preferred embodiment of the present invention is shown in FIG. 1. This order management system controls orders at a restaurant located at a site such as an amusement park. Specifically, it is configured to comprise an on-site (i.e., installed at the restaurant) point-of-sales (POS) system 10 that functions as a main piece of management equipment for order management and a plurality of order-taking terminal devices 40-1, 40-2 . . . located on each of the tables 30-1, 30-2 . . . of the restaurant.

This on-site POS system 10 is connected by a line 29 to a host computer (not shown in the figure) at the head office of the restaurant chain that handles all of the restaurants. A network is configured of the head-office host computer and a host computer 20 at each restaurant.

The POS system 10 is configured to comprise the host computer 20, an input-output terminal device 22 that functions as an input-output means, and a register 24 that keeps track of all money transactions. This POS system 10 uses an RF module 26 as a relay terminal to keep in contact with the order-taking terminal devices 40-1, 40-2 . . . on the tables 30 within the restaurant.

The host computer 20 is configured to comprise a memory 28. Programs that enable the on-site host computer 20 to function as a main piece of management equipment for order management are stored in this memory 28.

In addition, an operating program and image data for order screens are stored in the memory 28 for the order-taking terminal devices 40. That is to say, this memory 28 also functions as storage means for data to be transferred to the terminal devices 40.

In this case, the operating program and image data are generated to enable order management of the food served at this restaurant.

The operating program and image data for order screens that are stored in the memory 28 for the terminal devices are read out when the system starts up, then are transferred to each of the order-taking terminal devices 40-1, 40-2 . . . via the RF module 26.

When an order is placed from one of the order-taking terminal devices 40, the on-site POS system 10 temporarily stores details of that order in the memory 28 and also outputs a printout of the order from the input-output terminal device 22. If this restaurant is a fast-food restaurant, when an order

is received, details of that order are processed at the register 24 to compute the bill, then those details are output as a printout from the input-output terminal device 22.

When the ordered food has been prepared, the restaurant staff inputs notice data that the ordered food is ready to the on-site POS system 10 by means of the input-output terminal device 22. When this input is performed, the host computer 20 sends an order-ready message to the order-taking terminal device 40 on the corresponding table 30, as second data.

When an order for information is input from one of the order-taking terminal device 40, as will be described later with reference to a second embodiment of the present invention, the on-site POS system 10 temporarily stores the contents of that order in the memory 28. If the thus-ordered information is already in the memory 28, that information is transferred as second data to the appropriate order-taking terminal device 40. If the thus-ordered information is not already in the memory 28, the POS system 10 asks the head-office host computer (not shown in the figure) for the required information, and that information is transferred as second data to the appropriate order-taking terminal device 40.

The configuration of the order-taking terminal device 40 that is placed on each table is shown in FIG. 2. This order-taking terminal device 40 comprises a liquid crystal display screen 42 and a transparent touch-sensitive panel 44 placed on this display screen 42, and is configured in such a manner that a customer can operate the touch-sensitive panel 44 while viewing order screens displayed on the display screen 42. This order-taking terminal device 40 is also provided with a speaker 46 configured in such a manner that messages such as those relating to the operating sequence and order confirmation messages can be output audibly therefrom.

The configuration is such that the inputting of an order is facilitated by the touch-sensitive panel 44, whereby touch sensors are arranged in a predetermined mutual relationship with the products that can be ordered on the order menu screen that is displayed on the screen 42.

This order-taking terminal device 40 is configured to comprise an RF transceiver unit 48, a CPU 50, RAM 51, ROM 52, a receive data storage section 54, an image processing IC 56, and video RAM 58. The image processing IC 56 is configured to display an order screen on the display screen 42 via the LCD interface IC 60 and also to output audio signals from the speaker 46 via audio circuitry 62.

This order-taking terminal device 40 is also configured to transmit and receive data through a wireless communications circuit formed between the RF transceiver unit 48 and the RF module 26 of FIG. 1.

A basic operating program is stored as firmware in the ROM 52 to provide basic control over the entire apparatus.

This basic operating program is configured to control the entire apparatus on the basis of data such as inputs from the touch-sensitive panel 44, and also control functions such as the transfer of data to and from the POS system 10. This basic operating program also comprises a program for writing the image data and operating program received from the host computer 20 into the receive data storage section 54.

When the order-taking terminal device 40 receives the operating program and image data for order screens from the on-site POS system 10 at start-up, the CPU 50 writes the thus received operating program and image data into the receive data storage section 54 on the basis of this basic operating program. In other words, the CPU 50 functions as a data write means.

In this case, the receive data storage section 54 could be configured by using various different types of writable memory. For example, it could be configured by using graphics memory, SRAM, PSRAM, flash memory, or a hard disk, as required.

The operating program stored in the receive data storage section 54 is basically configured as programs that display this image data in accordance with predetermined rules and also send and receive data for order management.

The image data of this embodiment is configured of data for a plurality of menu screens in a hierarchical structure, with data for each of these menu screens being stored beforehand at predetermined addresses. In order to display the contents of the menus in an easy-to-understand form on the menu screens, the configuration is such that a cartoon character (a certain "Mr. Fork" 300, as will be described later) appears as a dynamic image on each screen. Data for this cartoon character information is also stored at predetermined addresses. Note that the receive data storage section 54 is used actively as a character generator. In order to enable several cartoon characters to move freely on the screen, data for a plurality of cartoon characters could be pre-stored in the storage section 54 as part of the image data.

It should also be noted that each of these menu screens and the cartoon character data comprises both written captions and audio data.

The image processing IC 56 reads out image data from the receive data storage section 54 in accordance with control commands from the CPU 50 and the operating program stored in the receive data storage section 54. It then puts together screen data for the menu screen and writes it to the video RAM 58, and also displays the screen data stored in the video RAM 58 on the screen 42, via the interface IC 60.

In other words, in the terminal device of this embodiment, the CPU 50 performs predetermined computations for control on the basis of the basic operating program and the operating program stored in the receive data storage section 54, then outputs the thus computed control codes to the image processing IC 56.

If, for example, a user doesn't input anything through the touch-sensitive panel 44, a control code representing that fact is input to the image processing IC 56. This causes the image processing IC 56 to put together a first-level menu screen from amongst the plurality of menu screens in the hierarchy and display it on the screen 42.

If the user does input something through the touch-sensitive panel 44, the CPU 50 outputs the corresponding instruction as a control configuration to the image processing IC 56. This causes the image processing IC 56 to put together image data that is stored in the receive data storage section 54 in accordance with the operating program and display it on the screen 42.

That is to say, when a user selects certain information from the touch-sensitive panel 44, the CPU 50 outputs a control signal to the image processing IC 56 on the basis of the resultant signal from the touch-sensitive panel 44. The image processing IC 56 reads out information from in the receive data storage section 54 on the control signal, and displays the thus read-out contents on the screen 42. If there is audio data available, it also outputs this audio data from the speaker 46 via the audio circuitry 62. Thus a display and audio output is performed to correspond to the order selected by the user through the touch-sensitive panel 44.

The distinctive characteristic of this embodiment lies in the manner in which an operating program and image data that is stored in the receive data storage section 54 of the

order-taking terminal device 40 is sent from the on-site POS system 10 when the order management system starts up. This ensures that the order management system can respond rapidly to variations such as changes and additions to the menu.

Note that, although the on-site POS system 10 that configures the main management equipment and the order-taking terminal devices 40-1, 40-2 . . . in the system shown in FIGS. 1 and 2 were described by way of example as being connected by wireless communications circuitry, other configurations could be considered such as one in which the on-site POS system 10 and the order-taking terminal devices 40-1, 40-2 . . . are connected via a gateway 34 provided on a network, as shown in FIG. 12. In such a case, this gateway 34 acts as an interface between the terminal devices 40, the network, and the main management equipment (host computer) 10.

An example of a terminal device 40 used in this case is shown in FIG. 13. Note that components corresponding to those in the terminal device of FIG. 2 are given the same reference numbers and further description thereof is omitted.

As will be described later, the CPU 50 functions as a data write means. When image data and operating program that is sent from the on-site POS system 10 is received through an interface 49, a switching means 53 is controlled to a side a for a write mode and the thus received data is written to the receive data storage section 54 for storage therein.

The configuration is such that, when this write ends, the switching means 53 is controlled to switch to a side b for a read mode, and a sequence of order management actions occurs on the basis of the thus written image data and operating program.

Flowcharts of the detailed operation of the order-taking terminal device 40 are shown in FIGS. 3 and 4. FIG. 4 consists of FIGS. 4A and 4B.

The order-taking terminal device 40 is always set to an idle state when the system starts up, as shown in FIG. 3 (step 100). During this idle state (step 100), the operation cycles through steps 102, 104, 106, and 107 shown in FIG. 4 at fixed intervals.

In step 102, a demo screen such as that of the restaurant's logo is shown on the display screen 42 for a fixed time, as shown in FIG. 6.

In step 104, a demo screen used for explaining the functions of the system is displayed as shown in FIG. 7. At this point, a cartoon character called Mr. Fork 300 appears. This Mr. Fork 300 moves around the screen and describes the operation of the various screens both in writing and audibly.

Next, in step 106, an order-taking demo screen appears as shown in FIG. 8. Mr. Fork describes the customer to press the "Hungry?" display area (or rather, a touch sensor provided over the "Hungry?" display area) 310. If the "Hungry?" display area 310 is not pressed within a fixed time, a time-out occurs (step 107) and the sequence of steps 102 to 106 is repeated.

If the customer did touch the "Hungry?" display area 310 during step 106, the flow proceeds from the idle state of step 100 to a menu screen display processing state of a step 110. This step 110 comprises steps 112, 114, 116, and 118 of FIG. 4.

First of all, in step 112, the menu screen shown in FIG. 9 appears on the display screen 42. In this menu screen, Mr. Fork 300 describes lists 200-1, 200-2, 200-3, and 200-4 of four types of food that can be ordered. If the customer

presses one of the display areas of these lists 200-1 to 200-4, a selection signal for that type of food is input from a touch sensor provided over that portion (step 112).

Assume that the display area over the burger food list 200-1 has been touched. In that case, a menu screen for ordering burgers appears on the display screen 42, as shown in FIG. 10. Of the frames around the food display areas 200-1 to 200-4 down the left side of this screen, only the area 200-1 changes color to identify it, to indicate that the burger menu screen is currently displayed (step 114-1).

If a number of types of burger are available for ordering, a page-turning area 210 is also displayed at the bottom right corner of the screen to enable the customer to see the next burger menu screen by touching this area 210.

In each of these menu screens, a price is displayed along the bottom of the screen. When a burger appears that the customer would like to order, he or she can touch an order area 220 on the screen. This ensures that a burger selection signal corresponding to a touch sensor provided at a position over this area 220 is input to the CPU 50 (step 116-1).

If the customer orders chicken in step 112, the menu shown in FIG. 11 appears on the display screen 42 (step 114-2) so that the customer can select a desired chicken dish from a number of chicken menu screens in a similar manner to that described above.

In this manner, a food such as a burger or chicken is selected and ordered. To make a further order at the same time, such as that of a beverage such as coffee or another item, the customer can touch another order area 200 on the menu screen shown in FIG. 10 or 11 to select it. This enables the customer to combine a number of orders (step 118).

Once a sequence of orders has been completed in this manner, the customer touches a computation button display area 230 that is displayed on each menu screen as shown in FIGS. 10 and 11.

This changes the flow in FIG. 3 from the menu screen display processing step 110 to a confirmation screen display step 120, and a list of the products ordered and the total bill appears on the screen together with selection buttons for additional orders, cancellation, and order-confirmation.

Once the customer has checked that this order is correct, by looking at this confirmation screen, he or she touches the order-confirmation (OK) button.

This causes the order data to be sent from this order-taking terminal device 40 via the RF transceiver unit 48 to the on-site POS system 10, where it is written to the memory 28 in the host computer 20 (step 130).

When this data transfer has ended (step 140), the order-taking terminal device 40 returns to the idle state (step 100) of FIG. 3 and starts the previously described process of inducing orders.

A flowchart of the operations of the on-site POS system 10 is shown in FIG. 5.

When the order management system starts up (step 160), it communicates with the head-office host computer (step 162) to receive various items of data relating to the day's menu, and it also receives an operating program and image data for order screens for use by the order-taking terminal devices 40 and writes them to the memory 28 in the on-site POS system.

Subsequently, the on-site POS system 10 sets and stores the new operating program and image data in the order-taking terminal devices 40-1, 40-2 . . . on the tables 30-1, 30-2 . . . within the restaurant, by sending the operating program and image data for order screens that are stored in the memory 28 to the terminal devices 40-1, 40-2 . . . (step 164).

This enables the order management system of the present invention to respond flexibly to additions and modifications to the menu, since the operating program and image data are distributed to the order-taking terminal devices 40 as appropriate when the system starts up.

Subsequently, the on-site POS system 10 is controlled in the idle state (step 168), it can communicate with the head-office host if necessary (step 170), and it can also perform register processing such as sales management with the register 24 (step 172).

While the system is in this idle state (step 168), if order data is received from any order-taking terminal device 40 (step 174) in the manner described above, the flow proceeds to the step of processing that order (step 176). If this is a fast-food restaurant, register processing (step 178) is performed immediately after the processing of step 176, then a list of the products ordered together with the total price is printed out (step 180). If this is an ordinary restaurant, this printout is processed (step 180) after the order has been processed (step 176).

In this manner, the on-site POS system 10 is designed to accept orders from the order-taking terminal devices 40 within the restaurant and also perform the appropriate register processing.

When the products that have been ordered have been prepared, the restaurant staff use the input-output terminal device 22 to input an order-ready message, whereupon that message is sent by wireless means from the on-site POS system 10 to the appropriate order-taking terminal device 40, causing an indication to appear on the screen of that order-taking terminal device 40. This enables the customer to determine immediately that the ordered food is ready and can be picked up. Therefore, an order management system can be implemented in such a manner that both customers and staff find it extremely convenient to use, since customers can relax in their own seats during the time between the placing of each order and when the food is ready, and thus do not have to wait in line to order and pick up their food.

A particularly preferable configuration of the system of this embodiment is such that data transferred interactively between the order-taking terminal devices 40 and the on-site POS system 10 (such as ordering data sent from a terminal device 40 to the POS system 10 and message-display data sent from the POS system 10 to each of the terminal devices 40) is transferred as coded data. This makes it possible to reduce the amount of interactive data that is transferred and thus enable efficient data transfer.

The system of this embodiment also causes a cartoon character such as Mr. Fork 300 to appear within each menu screen so that information necessary to the user can be conveyed in an easy-to-understand form. In other words, the provision of this animated cartoon character makes it possible to convey to the user details such as the contents of each item in the menu screens and how to operate these menu screens, in a visually comprehensible form.

Second Embodiment

A second embodiment of the present invention will now be described in detail.

The first embodiment of the present invention was described by way of example as being applied only to the order management of a food menu in a restaurant. This second embodiment, however, is characterized in that it is configured to provide order management of information, not just of the food menu in the restaurant.

In other words, the system of this embodiment is characterized in that image data and an associated operating

system for the order management of a food menu are stored in the memory 28 of the on-site POS system 10 of FIG. 1 together with image data and an associated operating system for the order management of information. When this system starts up, a plurality of sets of image data and operating programs are sent from the on-site POS system 10 to the terminal devices 40-1, 40-2 . . . , and the thus-transferred data is written into and stored in the receive data storage section 54 of each of the order-taking terminal devices 40.

An outline of the operation of each terminal device 40 is shown in the flowchart of FIG. 15.

First of all, when the system has started up and the transfer and writing of the image data and operating programs from the POS system 10 to the order-taking terminal devices 40-1, 40-2 . . . has ended, a basic menu screen such as that shown in FIG. 18A appears on the display screen 42 of each of the order-taking terminal devices 40 (step S200).

A food menu selection button 400 and an information menu selection button 500 are displayed on this basic menu screen, with a transparent touch-sensitive panel 44 positioned over each display area.

If a customer sitting at one of the seats in the restaurant views the display screen of the terminal device 40 provided at that table and touches the food menu selection button 400 with a finger, a corresponding input signal is input to the CPU 50 from the touch-sensitive panel 44. This causes a predetermined instruction to be sent from the CPU 50 to the image processing IC 56, the image processing IC 56 calls up image data from the receive data storage section 54 on the basis of this instruction, and the basic menu screen for food is displayed as shown in FIG. 19 (step S210).

A row of major list categories 200-1 to 200-4 of products that can be ordered from the food menu is displayed on the left side of this basic menu screen. Icons are displayed as animated or photographic images in the display areas for these categories 200-1 to 200-4, to act as an instantly recognizable index to the contents of these categories (such as sandwiches, beverages, chicken dishes, and salads).

Written captions 262, 264, 266, and 268 of each of the categories are displayed beside each category in main part of the screen to the right of these categories 200-1 to 200-4. These written captions 262 to 268 are arranged in such a manner that "Sandwiches" is displayed for category 200-1, "Drinks" for category 200-2, "Chicken" for category 200-3, and "Salads" for category 200-4.

A dynamic cartoon character 300 is also displayed in such a manner as to partially overlay the written captions 262 to 268, and a sign 260 held by this cartoon character 300 bears the written notice: "To switch between each category, press the icons."

To request menus that are not currently displayed, the customer can touch the area of the sign 260 to display the next page of the menu which is a screen of the same configuration as that of FIG. 19.

It should be noted that parts of the written captions 262 to 268 that are overlaid by the cartoon character 300 and the sign 260 ("Drinks" and "Chicken" in this figure) will be obscured if the character stays in a fixed position without moving. Therefore, the cartoon character 300 and the sign 260 are made to move in a circuit up and down the screen, to make hidden captions visible. This enables efficient use of a limited display area.

From consideration of the size of the display screen and size of area that a user can be expected to touch easily, it is preferable to display about four items per screen as the major

categories 200-1 to 200-4 of the food menu. Each of these categories 200-1 to 200-4 also functions as an icon, and information relating to a category is displayed on the screen when the user touches the associated icon.

For example, if the user touches the sandwich category 200-1, a menu screen similar to that of FIG. 20 is displayed.

Note that the category 200-1 that is currently selected is displayed with a different background color within its frame, to distinguish it from the other categories 200-2 to 200-4.

More specifically, all of the categories 200-1 to 200-4 have the same background color (represented by hatching in this figure) before any selection is made (the state shown in FIG. 19). However, if category 200-1 is touched, the color of that category 200-1 changes (represented by a dotted pattern in FIG. 20) while the color of the other categories 200-2 to 200-4 remain the same. This process of having a different color within the frame of a specified category can equally well be reversed so that the selected category 200-1 remains the same color, but the color of the other categories 200-2 to 200-4 is changed.

Note that FIG. 20 shows the display that appears when the sandwich category 200-1 is specified, in which case an animated image 282 of a ham sandwich that is representative of the selected category 200-1 is displayed in the area to the right of the figure. At the same time, a written caption 280 giving the product name "Ham Sandwich" and another written caption 284 giving the price are also displayed in addition to the animated image 282 of the ham sandwich. The cartoon character 300 is also displayed on this screen, together with a sign 270 on which is written "Press here to order this food." A computation button 230 on which is written "Bill" is also displayed on the screen, to prompt computation of the bill. If the user wishes to order, he or she touches the area of the sign 270 and then touches the computation button 230.

The menu structure of these categories 200-1 to 200-4 is shown in FIG. 17. Taking the sandwich menu as an example, the configuration is such that there are three menu screens, one for each of three different types of sandwich. The first menu screen could display a salad sandwich; the second menu screen, a ham sandwich; and the third menu screen, an egg sandwich, for example. Similarly, a number of menu screens are configured to display details of each of a number of different choices in the other categories, such as drinks, chicken dishes, and salads.

If the sandwich category 200-1 has been selected and the user then touches the sign 270 shown in FIG. 20, a display screen for selecting a number of orders (not shown in these figures) appears so that the user can input a number of orders while viewing this screen. More specifically, if the user presses the specified portion 270 in accordance with the instruction "Press here to order this food," the written caption "Press here to order this food" within the sign 270 could change to show numeric keys 0 to 9 that the customer could use to input a number of orders.

If the customer uses this function to order a predetermined number of ham sandwiches, for example, a series of animations could appear to show the products that have been ordered in a package to go, as shown in FIGS. 21 and 22 (step S216). This enables the user to verify the details of the order visually.

At the point at which the products that have been ordered are shown accommodated within a package, as shown in FIG. 22, a "Thank you" message appears on the screen, then the display returns to the menu selection screen of FIG. 20 (steps S212 and 214).

15

A user that does not want a ham sandwich could press the page-turning area 210 provided at the bottom right corner of the display screen, whereupon an animated image of a salad sandwich, for example, is displayed instead of the currently displayed ham sandwich. If the page-turning area 210 is pressed again while the salad sandwich is being displayed, another type of sandwich is displayed in sequence, such as an egg sandwich.

In a similar manner, if the category 200-2 was selected, an animated image of a beverage such as orange juice appears first, together with an appropriate written caption, (step S214). If the user doesn't want orange juice and presses the page-turning area 210 provided at the bottom right of the display screen, an animated image of a different type of juice is displayed as second information. Pressing the page-turning area 210 again when this image is displayed causes the next beverage to be displayed, and thus a number of beverages can be displayed one-by-one in sequence.

In this way, the user orders the desired items of food (steps S212, S214, and S216). Once this sequence of orders is completed, the user touches the computation button 230 that is displayed in a manner such as that shown in FIG. 20. This causes a total charge screen such as that shown in FIG. 23A to appear on the display screen 42 (step S218). A written caption 290 indicating the total bill for the products that the user has ordered, an OK button 292, and a cancel button 294 are displayed on this final-total screen. The user then touches the OK button 292 to agree to the bill for this order, or the cancel button 294 to correct the order.

If the OK button 292 is touched, the ordering sequence ends and details of the order (information such as the food name, number of items, total bill, and table number) are sent as code data from the terminal device 40 to the host computer 20 of the POS system 10. The waiting time required until the ordered products will be ready is sent back to that terminal device 40 from the host computer 20 as code data. The time until the ordered food is ready is displayed on the display screen 42 of the terminal device 40 as shown in FIG. 23B (step S220).

When this sequence of processing ends, the flow returns to step S200 and the basic menu screen reappears on the display.

When the food that the user has ordered is ready, an interrupt is sent from the on-site POS system 10 to the user's order-taking terminal device 40, as shown in FIG. 16, and a message saying that the ordered food is ready is sent as code data. When it receives this code data, the terminal device 40 displays a food-ready message such as that of FIG. 24 on the display screen 42 (step S230). This sends an interrupt to the display screen 42 to display a food-ready message, making it possible for the user to be informed accurately that the ordered food is ready, even if the user has selected another screen and the associated operations are being performed, as will be described later.

Note that if the cancel button 294 is touched in step S218, the menu selection screen of FIG. 19 returns to the screen, enabling the user to start the ordering process from the beginning.

Note also that the system of this embodiment is configured in such a manner that, once the ordering from the food menu has ended, the waiting time required until the food is ready can be used to present various items of information about the amusement park, from the basic menu screen displayed on the display screen 42 (step S200). To see this information in such a case, the user touches an information menu selection button 500 from the basic menu screen shown in FIG. 18A.

16

This causes a basic information menu screen to appear on the display screen 42, as shown in FIG. 18B, and also causes aural instructions for operating this basic menu screen to be output from the speaker 46 (step S300).

An event menu selection button 510 and a ride menu selection button 512 are displayed on this basic menu screen.

If the user touches the ride menu selection button 512, a basic ride menu screen appears on the display screen 42, as shown in FIG. 25 (step S310).

This basic ride menu screen displays four areas, a first area A1 to a fourth area A4, to represent areas A1 to A4 within the amusement park. In this case, each of the areas displays a simple animated image of a typical ride within that part of the amusement park, such as a roller coaster in area A1 and a Ferris wheel in area A2 (however, these animated images are omitted from the figure). In addition, a cartoon character 300 appears in such a manner as to overlay this area information. A sign 270 held by this cartoon character 300 has a written caption saying "Press here to see other areas," in a similar manner to that of the food menu. To see an area that is not displayed on this screen, the user touches the sign 270 and the next page of information (on four areas from A5 onward) is displayed with the same screen structure. Note that parts of the displayed information that is overlaid by the cartoon character 300 and the sign 270 will be obscured if the character stays in a fixed position without moving, so the cartoon character 300 and the sign 270 are made to move in a circuit along the path Y-Y', to make hidden captions visible. This enables efficient use of a limited display area.

In the same manner as with the food menu, the amount of area information displayed at a time is preferably enough for four areas within one display screen, as shown in FIG. 25, from consideration of the size of the display screen and size of area that a user can be expected to touch easily. Since each of these areas A1 to A4 also functions as an icon, details associated with an area are displayed on the screen if the region of that area is touched. For example, if the region of area A1 is touched, the display shown in FIG. 26 could appear (step S320). Note that the color of the background portion within the frame of the specified item (area A1, in this case) could be made to be different from the color of other items, in the same manner as with the food menu.

Note that FIG. 26 shows the display that appears when area A1 is specified, in which case an animated image that expresses the concept of a roller coaster is shown on the screen in an easy-to-understand form. In addition to an animated image 400 of a roller coaster, the screen also shows a written caption 410 saying "Roller coaster" and another written caption 420 expressing the waiting time as "Waiting time is 30 minutes," together with the cartoon character 300. If the user presses the page-turning area 210 provided at the bottom right of the display screen, an animated image of another ride within the same area A1 is displayed instead of the currently displayed roller coaster. Every time the user presses the page-turning area 210 of the animated image representing a newly displayed ride, animated images of other rides within the same area are displayed one at a time in sequence.

The above description concerned a case in which information relating to the food menu and attractions at an amusement park are displayed, but the present invention can equally well be applied to a case in which a similar method is used to display "Event information" and "Other information" (not shown in the figure). If a user touches a major category such as "Event information" or "Other informa-

tion" in such a configuration, animated images relating to about four items are first displayed to act as an index of the information belonging to that major category. If any one of those four categories is pressed, a first animated image belonging thereto is displayed. If there is another item available within this category, pressing the page-turning area 210 causes a similar second animated image to be displayed, pressing the page-turning area 210 again causes a similar third animated image to be displayed, and so on until all the images have been displayed in sequence by screen switching. Note that the display method in this case is substantially the same as that of the display of the food menu or attractions, so further description thereof is omitted.

In this manner, this embodiment of the invention makes it possible for an order entry system at a restaurant or similar site to display large quantities of multimedia information efficiently within a limited display space, and also display that information in a form that is easy for a user to understand. It also enables the user to perform the input operation easily, based on displayed information.

An example of the structure of hierarchical menu screens that are displayed in this manner is shown in FIG. 14.

In this structure, a plurality of items of multimedia information to be displayed is divided into a number of major categories, one for each type of information, and information within each of these categories is arranged in a tree structure belonging to that category. If one item of information in a hierarchical level corresponding to a root or node of this tree structure is selected, information in the next level belonging to the thus selected information is displayed. If there is a plurality of items of information to be displayed, the selection of one item of this information ensures that the display of information in the next level belonging to the selected information is processed in sequence. At the leaf level of the tree structure, a plurality of items of information corresponding to the selected leaf are switched to display one at a time.

If, for example, roots R1, R2, R3, and R4 in the tree structure of FIG. 14 are made to correspond to the above described second embodiment, root R1 would correspond to "Food menu selection", root R2 to "Event information", root R3 to "Attraction information", and root R4 to "Other information." Note that, in order to simplify the description below, only "Food menu selection" is discussed. Nodes N1, N2, N3, and N4 belonging to root R1 "Food menu selection" correspond to major categories 200-1 to 200-4 of the food menu in this case, as shown in FIG. 19. Similarly, leaves L1, L2, . . . belonging to node N1 of category 200-1, for example, correspond to different types of sandwich in this case, such as ham sandwich and salad sandwich.

The use of a display method of this type makes it possible to display a large quantity of varied information in an easily recognizable form, even if the screen can only display a small amount of space at a time. Since the image information that is displayed is animation information (mainly dynamic images, but a static image could also be used), information that the management particularly wants to attract the user's attention could be made more noticeable by making only the attention-attracting portion a dynamic image, or it could be made even more recognizable by various other contrivances. From the recognizability point of view, it is also preferable that the entire screen is used to display each type one-by-one, to make the images seem bigger. Note that a plurality of images could equally well be displayed simultaneously, within a range in which recognizability is not affected.

With this embodiment, the configuration is such that various types of animation information (image data) to be displayed are stored in the receive data storage section 54 provided in the terminal device 40, the user requests information from the touch-sensitive panel 44, and animation information is read out from an address corresponding to the input from the touch-sensitive panel 44. However, the configuration could be such that information other than this preset animation information is sent from the host computer 20 to each terminal device 40 at fixed intervals. This information could relate to the waiting times for rides or the starting times of events, or it could be information that changes with time such as news about lost property or straying children. The CPU 50 could accumulate the information sent from a central location as latest information in the memory 54 and display it as required.

In this manner, the system of this embodiment is configured in such a manner that animation image data that involves a large quantity of data that would require a long wait to transfer is held within the terminal device, and only information such as that which requires a short wait to transfer or numeric information is transferred to and from the host computer. Moreover, accumulating data from the host computer in the memory of the terminal device ensures that there is normally no need to receive data from the host computer. Thus the system of this embodiment is characterized in that it can be implemented even with an inexpensive network that can transfer only a small quantity of data.

It should be obvious to those skilled in the art that the above described embodiments are merely examples of the application of the present invention, and should not be taken as being limiting. For example, the major categories of this embodiment were specified as being "Food menu selection," "Event information," "Ride information," and "Other information." However, software such as various games could also be incorporated into the system. If the user touches a category of "Games," major categories of a number of games appear and the user can then select a preferred game from amongst these options.

In addition, although the above embodiments concerned examples in which the present invention was applied to order management in a restaurant, it should be obvious that the present invention is not limited thereto and various other embodiments can equally well be applied to other environments.

For example, the order-taking terminal devices 40 shown in FIG. 1 could be disposed at customers' seats at a sports ground such as a baseball stadium or soccer stadium, with the POS system 10 being located at a central product distribution center. The configuration could be such that, when an order is received from one of the order-taking terminal devices 40, the operator of the POS system 10 instructs the nearest vendor to that customer's seat to deliver the ordered products.

The order management system of the present invention is not necessarily applicable to a baseball stadium as described above; it can equally well be applied to another place of entertainment such as a theater. In such a case, the ordering of products from customers' seats in the theater can be facilitated by the provision of an order-taking terminal device at each of the customer's seats.

The order management system of the present invention is not limited to food and beverages in a restaurant as was described above, it can equally well be applied to the ordering of data relating to a popular player or actor in an entertainment site such as a sports ground, baseball stadium, or theater.

In such a case, the ordered data is preferably transmitted by radio from the POS system 10 to the corresponding terminal device 40, and it displayed on the display screen 42 of the terminal device 40.

In addition, if the present invention is applied to an entertainment site such as a baseball stadium or theater, it is not essential to display a menu screen when the system starts up. Advertising images could be displayed on each of the order-taking terminal devices by configuring the system in such a manner that data such as image data for predetermined advertisements is transmitted from the main management equipment to the order-taking terminal devices. This enables the system to respond rapidly to changes and additions to advertisements from sponsors, as well as to changes in the ordering menu.

The above embodiments were also described by way of example as relating to a system in which the on-site pos system and the order-taking terminal devices were connected by wireless circuitry, but they could equally well be connected by cables if necessary.

What is claimed is:

1. A terminal device for transferring interactive data to and from another device, comprising:

input means;

display means;

storage means for storing image data for a data transmission management screen wherein at least part of said image data is presented as a dynamic image, and an operating program for reproducing said image data in accordance with predetermined rules and managing data transmission; and

computation control means for managing data transmission; wherein said computation control means, comprises:

image displaying means for reading said image data and displaying a data transmission management screen on said display means based on said operating program; and

control means for generating first order data based on said operating program and an input from said input means in response to said data transmission management screen, transmitting said first order data to said other device, and managing display of a screen with details corresponding to interactive second data on said image displaying means based on said second data received from said other device; and

wherein said image data is image data for an order management screen;

said operating program reproduces image data for order management in accordance with predetermined rules and manages data transmission for order management;

said image displaying means reads out said image data based on said operating program and displays said order management screen on said display means; and said control means generates first order management data based on said operating program and an order input from said input means in response to said order management screen, transmits said first order management data to said other device, and manages display of an order management screen with details corresponding to interactive second data on said image displaying means based on said second data received from said other device.

2. The terminal device as defined in claim 1, wherein said input means is a touch-sensitive panel disposed on said

display means in a predetermined mutual relationship with said management screen.

3. The terminal device as defined in claim 1, wherein said image data displays a menu screen representing a plurality of management categories as said management screen.

4. The terminal device as defined in claim 1, wherein said storage means stores image data for an order menu screen representing a plurality of ordering categories as said management screen; and

said control means converts an ordering category selected by said input means into code data and transmits said code data as said first order data, and displays an order management screen with details which are code data received as said second data from said other device on said image displaying means.

5. The terminal device as defined in claim 1, wherein said storage means stores a plurality of sets of said image data and operating programs; and

said control means manages data transmission based on remaining sets of image data and operating program during a waiting time during which data transmission is being managed based on a predetermined set of image data and operating program.

6. The terminal device as defined in claim 5, wherein said storage means stores a plurality of sets of said image data and associated display operating programs for product ordering and information ordering; and

said control means performs ordering control based on image data for information ordering and an associated display operating program from a time at which said first order data is transmitted until when said second data is received, during ordering control based on image data for produce ordering and an associated operating program.

7. The terminal device as defined in claim 6, wherein said control means comprises means for writing into said storage means said image data and an associated display operating program which are received from said other device.

8. The terminal device as defined in claim 1, wherein said control means comprises means for writing into said storage means said image data and an associated display operating program which are received from said other device.

9. The terminal device as defined in claim 1, wherein said image data displays hierarchical menu screens representing a plurality of management items as said management screen.

10. The terminal device as defined in claim 9, wherein said image data includes transmission items divided into a number of major categories according to type, items belonging to each of said major categories further divided into a tree structure within that major category, so as to display order management menu screens in a hierarchy; and

said operating program displays a menu screen representing items in a level next to a hierarchical level corresponding to one of root and node portions of the displayed tree structure, said next level belonging to a category selected by a user from categories of the hierarchical level, and said operating program switches menu screens representing each of items belonging to a same leaf portion of said tree structure to display a menu screen based on screen changing order from said control means.

11. The terminal device as defined in claim 10, wherein display contents of each item belonging to a hierarchical level corresponding to said one of root and node portions is an image acting as an index representing the contents of said item, at least parts of said image function as icons; and

said image displaying means displays a menu containing the item corresponding thereto when one of said icons is selected by said input means.

21

12. The terminal device as defined in claim 11, wherein said image displaying means identifies and displays a selected icon and a non-selected icon.

13. The terminal device as defined in claim 12, wherein said image displaying means displays a display change area on a screen and switches the image which is displayed when said display change area is selected by said input means so as to display plurality of items corresponding to a leaf portion of said tree structure.

14. The terminal device as defined in claim 13, wherein said image displaying means displays explanatory information for explaining details of information displayed on a display screen so as to overlay said display information with said explanatory information, and causes said explanatory information to move so that the contents of said display information in the overlaid area are recognizable.

15. A terminal device for transmitting data to another device, comprising:

input means;

display means;

storage means for storing image data for a data transmission management screen wherein at least part of said image data is presented as a dynamic image, and an operating program for reproducing said image data in accordance with predetermined rules and managing data transmission; and

computation control means for managing data transmission;

wherein said computation control means, comprises:

image displaying means for reading said image data and displaying a data transmission management screen on said display means based on said operating program; and

control means for generating transfer data based on said operating program and input from said input means in response to said data transmission management screen, and managing the transmission of data to said other device; and

wherein said image data is image data for an order management screen;

said operating program reproduces image data for order management in accordance with predetermined rules and manages data transmission for order management;

said image displaying means reads out said image data based on said operating program and displays said order management screen on said display means; and

said control means generates order management data based on said operating program and an order input from said input means in response to said order management screen, and controls the transmission of said order to said other device.

16. The terminal device as defined in claim 15, wherein said input means is a touch-sensitive panel disposed on said display means in a predetermined mutual relationship with said management screen.

17. The terminal device as defined in claim 15, wherein said image data displays a menu screen representing a plurality of management categories as said management screen.

18. The terminal device as defined in claim 15, wherein said image data displays hierarchical menu screens representing a plurality of management items as said management screen.

19. The terminal device as defined in claim 18, wherein said image data includes transmission items divided into a

22

number of major categories according to type, items belonging to each of said major categories further divided into a tree structure within that major category, so as to display order management menu screens in a hierarchy; and

said operating program displays a menu screen representing items in a level next to a hierarchical level corresponding to one of root and node portions of the displayed tree structure, said next level belonging to a category selected by a user from categories of the hierarchical level, and said operating program switches menu screens representing each of items belonging to a same leaf portion of said tree structure to display a menu screen based on screen changing order from said second control means.

20. The terminal device as defined in claim 19, wherein display contents of each item belonging to a hierarchical level corresponding to said one of root and node portions is an image acting as an index representing the contents of said item, at least parts of said index data function as icons; and

said image displaying means displays a menu containing the item corresponding thereto when one of said icons is selected by means of said input means.

21. The terminal device as defined in claim 20, wherein said image displaying means identifies and displays a selected icon and a non-selected icon.

22. The terminal device as defined in claim 21, wherein said image displaying means displays a display change area on a screen and switches the image which is displayed when said display change area is selected by said input means so as to display plurality of items corresponding to a leaf portion of said tree structure.

23. The terminal device as defined in claim 22, wherein said image displaying means displays explanatory information for explaining details of information displayed on a display screen so as to overlay said display information with said explanatory information, and causes said explanatory information to move so that the contents of said display information in the overlaid area are recognizable.

24. A terminal device for transmitting data to another device, comprising:

input means;

display means;

storage means for storing image data for a data transmission management screen wherein at least part of said image data is presented as a dynamic image, and an operating program for reproducing said image data in accordance with predetermined rules and managing data transmission; and

computation control means for managing data transmission; wherein said computation control means comprises:

image displaying means for reading said image data and displaying a data transmission management screen on said display means based on said operating program;

control means for generating transfer data based on said operating program and input from said input means in response to said data transmission management screen, and managing the transmission of data to said other device;

wherein said other device comprises a host computer for down-loading said image data and associated display operating program to said terminal upon start-up;

wherein said image data is image data for an order management screen;

23

said operating program reproduces image data for order management in accordance with predetermined rules and manages data transmission for order management;

said image displaying means reads out said image data based on said operating program and displays said order management screen on said display means; and said control means generates first order management data based on said operating program and an order input from said input means in response to said order management screen, transmits said first order management data to said other device, and manages display of an order management screen with details corresponding to interactive second data on said image displaying screen means based on said second data received from said other device.

25. A terminal device for transmitting data to another device, comprising:

- input means;
- display means;
- storage means for storing image data for a data transmission management screen wherein at least part of said image data is presented as a dynamic image, and an operating program for reproducing said image data in accordance with predetermined rules and managing data transmission; and
- computation control means for managing data transmission; wherein said computation control means comprises:
 - image displaying means for reading said image data and displaying a data transmission management screen on said display means based on said operating program;
 - control means for generating transfer data based on said operating program and input from said input means in response to said data transmission management screen, and managing the transmission of data to said other device;

wherein said other device comprises a host computer for down-loading said image data and associated display operating program to said terminal upon start-up;

wherein said image data displays hierarchical menu screens representing a plurality of management items as said management screen;

wherein said image data includes transmission items divided into a number of major categories according to type, items belonging to each of said major categories further divided into a tree structure within that major category, so as to display order management menu screens in a hierarchy; and

said operating program displays a menu screen representing items in a level next to a hierarchical level corresponding to one of root and node portions of the displayed tree structure, said next level belonging to a category selected by a user from categories of the hierarchical level, and said operating program switches menu screens representing each of items belonging to a same leaf portion of said tree structure to display a menu screen based on screen changing order from said control means.

26. A terminal device for transferring interactive data to and from another device, comprising:

- input means;
- display means;
- storage means for storing image data for a data transmission management screen wherein at least part of said

24

image data is presented as a dynamic image, and an operating program for reproducing said image data in accordance with predetermined rules and managing data transmission; and

computation control means for managing data transmission; wherein said computation control means, comprises:

- image displaying means for reading said image data and displaying a data transmission management screen on said display means based on said operating program; and
- control means for generating first order data based on said operating program and an input from said input means in response to said data transmission management screen transmitting said first order data to said other device, and managing display of a screen with details corresponding to interactive second data on said image displaying means based on said second data received from said other device; and

 wherein said other device comprises a host computer for down-loading said image data and associated display operating program to said terminal upon start-up.

27. The terminal device as defined in claim 26, wherein said image data is image data for an order management screen;

said operating program reproduces image data for order management in accordance with predetermined rules and manages data transmission for order management;

said image displaying means reads out said image data based on said operating program and displays said order management screen on said display means; and said control means generates first order management data based on said operating program and an order input from said input means in response to said order management screen, transmits said first order management data to said other device, and manages display of an order management screen with details corresponding to interactive second data on said image displaying means based on said second data received from said other device.

28. The terminal device as defined in claim 26, wherein said image data displays hierarchical menu screens representing a plurality of management items as said management screen.

29. The terminal device as defined in claim 28, wherein said image data includes transmission items divided into a number of major categories according to type, items belonging to each of said major categories further divided into a tree structure within that major category, so as to display order management menu screens in a hierarchy; and

said operating program displays a menu screen representing items in a level next to a hierarchical level corresponding to one of root and node portions of the displayed tree structure, said next level belonging to a category selected by a user from categories of the hierarchical level, and said operating program switches menu screens representing each of items belonging to a same leaf portion of said tree structure to display a menu screen based on screen changing order from said control means.

30. A method of operating a terminal device for transmitting data to another device, comprising:

- storing image data for a data transmission management screen wherein at least part of said image data is presented as a dynamic image, and storing an operating

25

program for reproducing said image data in accordance with predetermined rules and managing data transmission; and

managing data transmission;

wherein said managing data transmission step comprises:

reading said image data and displaying a data transmission management screen on a display based on said operating program; and

generating transfer data based on said operating program and input from an input means in response to said data transmission management screen, and managing the transmission of data to said other device; and

wherein said image data is image data for an order management screen; and further comprising:

reading out said image data based on said operating program and displaying said order management screen on said display; and

generating order management data based on said operating program and an order input from said input means in response to said order management screen, and controlling the transmission of said order to said other device.

31. A method of operating a terminal device for transferring interactive data to and from another device, comprising:

storing image data for a data transmission management screen wherein at least part of said image data is presented as a dynamic image, and storing an operating program for reproducing said image data in accordance with predetermined rules and managing data transmission; and

managing data transmission; wherein said managing data transmission step comprises:

reading said image data and displaying a data transmission management screen on a display based on said operating program; and

generating first order data based on said operating program and an input from an input means in response to said data transmission management screen, transmitting said first order data to said other device, and managing display of a screen with details corresponding to interactive second data on said display based on said second data received from said other device; and

26

wherein said image data is image data for an order management screen; and further comprising:

reproducing image data for order management in accordance with predetermined rules and managing data transmission for order management;

reading out said image data based on said operating program and displaying said order management screen on said display; and

generating first order management data based on said operating program and an order input from said input means in response to said order management screen, transmitting said first order management data to said other device, and managing display of an order management screen with details corresponding to interactive second data on said display based on said second data received from said other device.

32. A method of operating a terminal device for transferring interactive data to and from another device, comprising:

storing image data for a data transmission management screen wherein at least part of said image data is presented as a dynamic image, and storing an operating program for reproducing said image data in accordance with predetermined rules and managing data transmission; and

managing data transmission; wherein said managing data transmission step comprises:

reading said image data and displaying a data transmission management screen on a display based on said operating program; and

generating first order data based on said operating program and an input from an input means in response to said data transmission management screen, transmitting said first order data to said other device, and managing display of a screen with details corresponding to interactive second data on said display based on said second data received from said other device; and

wherein said other device comprises a host computer and further comprising down-loading said image data and associated display operating program from said host computer to said terminal upon start-up.

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