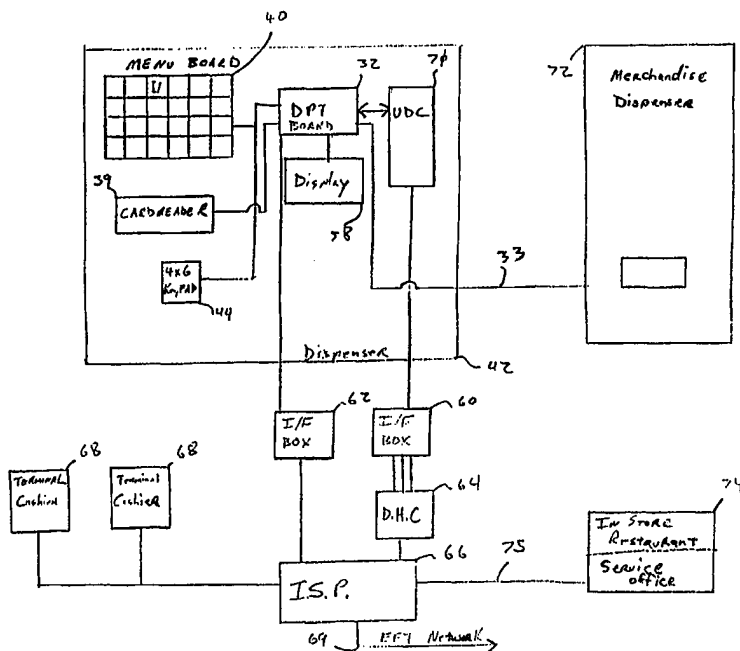




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : G06F 17/60</p>	<p>A1</p>	<p>(11) International Publication Number: WO 98/16892 (43) International Publication Date: 23 April 1998 (23.04.98)</p>
<p>(21) International Application Number: PCT/US97/18463 (22) International Filing Date: 14 October 1997 (14.10.97) (30) Priority Data: 60/028,134 15 October 1996 (15.10.96) US (71) Applicant: TOKHEIM CORPORATION [US/US]; 10501 Corporate Drive, Fort Wayne, IN 46845 (US). (72) Inventors: PREWITT, Art; 1903 S. Hadley Road, Fort Wayne, IN 46804 (US). LAD, Dinesh; 5510 Albany Court, Fort Wayne, IN 46835 (US). (74) Agent: KNUTH, Randall, J.; Randall J. Knuth, P.C., 3510-A Stellhorn Road, Fort Wayne, IN 46815-4631 (US).</p>		<p>(81) Designated States: AU, CA, CN, DE, JP, MX, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>

(54) Title: TOUCH MENU PANEL SALES TERMINAL



(57) Abstract

A fuel dispenser system (12, 14, 24, 42, 66, 74) including a fuel dispenser (42) for dispensing fuel; a plurality of switches (40) connected to the fuel dispenser (42), the switches (40) utilized by customers for determining merchandise selected for sale; a plurality of graphic icons, each icon connected respectively to a switch (40); and a point of sale system (12, 66) connected to the fuel dispenser (42) to total the sale of both fuel and customer selected merchandise.

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TOUCH MENU PANEL SALES TERMINALBACKGROUND OF THE INVENTION

1. Field of the invention.

The present invention relates to a point of purchase system that provides the user a touch menu panel with graphic interface for customer selection of retail food, or other items.

5 2. Description of the related art.

Most modern gasoline stations and convenience stores provide customer-operated (self-serve) fuel dispensers which typically are controlled and monitored from within the store by a cashier using a fuel delivery control device. Conventional fuel delivery
10 controllers consist of a counter-top base unit with an alphanumeric display panel and a keyboard containing various function keys. When a customer is ready to pump fuel, the customer provides an indication to the controller by, for example, pushing a button on the dispenser or raising a lever
15 after removing the fuel delivery nozzle. The controller sends a message on the display prompting the cashier to authorize fuel delivery. The cashier approves delivery and enables the dispenser by pressing the appropriate key on the controller keyboard. After delivery, the customer tells the cashier which
20 dispenser was used to deliver fuel. The cashier then determines the amount due for the fuel purchase by pressing a controller key corresponding to that dispenser. The controller displays the fuel sale amount the cashier adds to the customer's additional purchases, if any, using a standard cash register.

Conventional fuel delivery controllers have several drawbacks when used in conjunction with standard cash registers to facilitate fuel and other sales in such point of sale environments. A fundamental problem is simply the burden imposed upon the cashier of simultaneously operating two separate pieces of equipment. The cashier must repeatedly shift focus from one piece of equipment to the other during the course of the day. As a result, the cashier's ability to service customers is impaired and the retail checkout procedure is prolonged. Additionally, greater time and resources must be devoted to cashier training since the operation of two devices must be mastered.

Finally, conventional point of sale systems provide limited assistance to store personnel in evaluating the store's sales performance because access to daily sales and inventory data using such systems is a cumbersome, time consuming process. Generally, a cashier must manually transfer data from the fuel delivery controller and cash register to a written form to consolidate funds, sales and inventory information.

SUMMARY OF THE INVENTION

The present invention provides a touch menu panel sales terminal connected to a point of sale system which allows the customer to control fuel delivery and conduct customer sales transactions. The interface includes a touch panel which displays groups of graphic icons or pictures containing images which represent particular retail items. The customer simply touches an icon corresponding to a desired item, such as a sandwich, and the system responds by adding its cost of the sandwich to the dispenser total. A signal is sent from the

system to the location where, in this case, a sandwich is produced or provided.

5 Unlike conventional point of sale systems, the system of the present invention provides signals into a remote order taking station. It additionally decreases the waiting time of the customer for other non-fuel goods.

10 The touch sensitive panel of the present invention has a robust interface device, well adapted to the service station environment. Unlike conventional keyboard interfaces, the display switches can easily be actuated. Additionally, the dirt and grease found in some gasoline station environments will not affect the operation of the interface because the touch panel's rugged outer surface renders it virtually impervious to contamination-induced failure. In operation, the touch panel provides a single point of eye focus. Unlike a keyboard used with a display, for example, where the user must look at the keyboard to touch keys, then look at the display to view the consequence of touching the keys, the touch sensitive panel provides a "see and touch" interface.

20 Unlike conventional keyboard-controlled systems, the point of sale system of the present invention is highly intuitive to operate. The icon or photo images representing retail of item for purchase inherently meaningful and logically arranged on the screen in groups based on related-item types, i.e., sandwiches, snacks, or drinks. The intuitively identifiable icons arranged in this user-friendly structure greatly simplify the process of ordering items while dispensing fuel. Accordingly, customer

25

checkout time is reduced. Moreover, since the interface is visually oriented, almost no training in its use is required.

Accordingly, an object of the present invention is to provide a touch panel sales terminal with a point of sale system for a fuel dispensing system that enables the user to control fuel dispensing and ordering of retail sale items at the point of fuel dispensing.

Another object is to provide touch panel sales terminal with a point of sale system for a fuel dispensing system with an interface which is simple to operate and performs reliably in a service station environment.

Another object of the present invention is to provide a touch panel sales terminal point of sale system that utilizes a computer operating system that can support other commonly available application programs and enable data interchange between the system and such other programs.

Another object of the present invention is to provide a touch panel sales terminal point of sale system with a highly intuitive operator interface.

Yet another object is to provide a point of sale system for a fuel dispensing system that requires a minimal amount of training to operate.

Other objects of this invention will become apparent upon a reading of the following description.

BRIEF DESCRIPTION OF THE DRAWINGS

The above-mentioned and other features and advantages of this invention, and the manner of attaining them, will become more apparent and the invention will be better understood by

reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a block diagram of one embodiment of the present invention;

Figure 2 is a view of an illustrative touch panel of the present invention; and

Figure 3 is a block diagram of another embodiment of the present invention.

Corresponding reference characters indicate corresponding parts throughout the several views. The exemplification set out herein illustrates one preferred embodiment of the invention, in one form, and such exemplification is not to be construed as limiting the scope of the invention in any manner.

DETAILED DESCRIPTION OF THE INVENTION

Fig. 1 shows, in a block diagrammatic view, one form of the present invention of point of sale terminal system 10 including a primary terminal 12 and at least one secondary terminal 14. A plurality of secondary terminals may similarly be connected.

Primary terminal 12 communicates with secondary remote terminal(s) 14 by a local area network (LAN) 24. Lan 24 may be implemented using any commonly known interface network for computer-to-computer communication. At the secondary remote terminal 14 may be an order taker to process the customer's selections and expedite such order obtained at primary terminal 12.

Primary terminal 12 includes a computer 26, which in the embodiment is an IBM-compatible personal computer, connected to a

touch panel 40 and central processor 28 that communicates over system bus 30 with a one or more of a fuel dispenser controller card 32, memory 34, input/output controller 38 and display 58.

5 In embodiments of the invention associated with a fuel dispenser 42, controller 32 is connected to such fuel dispenser with bi-directional communication. The input/output controller 38 is connected to a magnetic strip reader 39 and possibly other I/O devices 44.

10 The present invention involves a touch panel 40 utilizing a micro touch system or membrane keyswitches with an overlay of items being advertized and promoted at the point of sale by a gas station operator. Touch panel 40 can be either integral with the gasoline dispenser as shown in Fig. 1 or a separate stand-alone unit. Such overlay of items may be photographs, drawings, or
15 icons of various merchandise or services available for purchase.

Touch panel 40 allows consumers to select in-store retail and food items (such as shown in Fig. 2), view advertised promotions, and could be interfaced with a credit card reader system to allow the consumer to complete the transaction of fuel
20 or other products at touch panel primary terminal 12.

Touch panel 40 in another embodiment may contain backlights that either light up the entire menu before a customer makes a selection and turn off each item selected or backlight items only after their selection. A sound card interface (not shown) may
25 also be incorporated to provide voice feedback confirmation of selections made or actions performed on the touch panel.

An alternative embodiment, as shown in Fig. 3, discloses the present invention disposed within the actual dispenser 42 located

on a service station island. Touch menu panel 40, constructed, for instance, as a four by six keypad of switches, or alternatively a touch sensitive screen, is connected along with the standard four by six keypad panel 44 to a typical dispenser payment terminal (DPT) board 32. This DPT board, as known in the art, handles payment commands and controls particular card readers, such as a card reader 39, along with other means of payment, such as cash acceptors, or the like. DPT board 32 is connected to display 58 for reading out particular data regarding both operation of fuel dispensing function of dispenser 42, along with the menu selections or particular items selected from menu board 40. An adjacent merchandise dispenser 72, such as a beverage dispenser or snack dispenser may be connected by control line 33 to DPT board 32. Such control line 32 allows enablement of dispersement and selection of merchandise within the dispenser 72 via commands from DPT board 32, normally selected via one of the switches or locations on menu board keypad 40.

In the particular embodiment shown in Fig. 3, a universal dispenser control (UDC) system, which handles all fuel dispenser operations, such as controlling of pump valves and any vacuum vapor removal system, is shown as UDC 70. Such UDC unit is connected via a RS485 connection to DPT board 32. The equipment, disposed within fuel dispenser 42, may be connected to an in-store processor (ISP) 66, such as one of many commercially available point of sale (POS) systems.

To operate effectively in a typical service station, the DPT boards 32 of a plurality of different dispenser stations 42, environment may all be connect to an interface box 62. Such

interface box 62 would collect the DPT boards 32 output, and pass such signals and information to the ISP 66 via a multi-drop communication line. A plurality of universal dispenser controllers 70, may be connected via an interface box 60 such that all the universal dispenser controllers may be connected to a dispenser hose controller (DHC) 64, which permits the service station to control one or more hoses at one time, permitting authorization and de-authorization of particular hoses and/or dispensers 42. The output of the DHC system 64 is connected to ISP 66. In-store processor 66, such as a standard POS system may include a number of terminals 68, for inputting purchases made within the store or kiosk. Additionally, an in-store restaurant 74, may be connected via communication line 75 to ISP 66, such that the menu board's selections made, for example a hotdog or sandwich, made via the menu board 44 outside the store at the dispenser 42, may be communicated to personnel within in-store restaurant 74. This function permits personnel to begin work on completing the food or merchandise order, while the fuel dispenser operation is still taking place, and the customer is outside. After the normal fuel dispensing operation is completed 42, the customer may drive or walk to the in-store restaurant 74 to pick up their merchandise order, in this case a hotdog or sandwich. Such remote ordering at the dispenser station, reduces customer time at the service station complex. As shown in Fig. 3, in-store processor 66 may be communicated via a communication line 69 to a electronic funds transfer network.

In operation of menu board touch panel 40, the customer may dispense fuel normally from fuel dispenser 42 and while waiting,

select different keys or buttons (Fig.2) to select various items for purchase. Using keys (switches) indicated, the user may re-start their selection, clear an item from their selection, review a multi-item order, and transmit (selection complete) such
5 desired order.

Primary terminal 12 sends the order obtained from the customer to a secondary remote terminal 14 for order fulfillment, display or other action by the store attendant or order taking machinery. The terminal 12 adds the cost of such ordered items to
10 a total that may include a fuel sale.

The present invention permits a simple and inexpensive order taking terminal able to increase impulse buying sales by automating the order taking system while eliminating a human order taker or sales assistant.

15 The present touch panel sales terminal 12 may additionally be connected to other point of sales systems through the use of LAN 24.

In operation of the embodiment shown in Fig. 3, a customer would have many choices in particular products of services at
20 dispenser 42. Typically, a customer would selected an item, such as a beverage or sandwich via menu board 40, and such selection would be either lit up or unlit to allow the customer to view their selection. Such selection would be communicated to the DPT board 32.

25 If merchandise selected was available at an outside merchandise dispenser 72, the DPT board would operate in two functions. One, the cost of such selection would be sent through interface box 62 to in-store processor or POS 66 for registration

in the total sales price. Then upon authorization of ISP 66, DPT board 32 would cause a control signal to pass through communication line 33 to merchandise dispenser 72 for dispersement of the selected merchandise, such as a beverage, for instance, from an outside refrigerated beverage machine.

Secondly, if the merchandise or service selected via menu board 40 was something only available in-store, DPT board 32 would transfer such selection through interface box 62 to the in-store processor or POS 66, and such POS would then send an order signal via control line 75 to the in-store restaurant 74 or possibly the service office of the service station, to prepare such previously selected merchandise, such as a hotdog or sandwich. Alternatively, personnel may begin pulling the requested merchandise for expediting the customers time at the gasoline station or convenience store.

In such cases, it may be possible for the customer then to simply drive to the in-store restaurant, such as a drive thru or pick up window to obtain such previously ordered merchandise selected at menu board 40. Therefore, the customer would be able to expedite their order by remotely ordering their menu selections at the dispenser 42 while fueling.

While this invention has been described as having a preferred design, the present invention can be further modified within the spirit and scope of this disclosure. This application is therefore intended to cover any variations, uses, or adaptations of the invention using its general principles. Further, this application is intended to cover such departures from the present disclosure as come within known or customary

practice in the art to which this invention pertains and which fall within the limits of the appended claims.

WHAT IS CLAIMED IS:

1. A fuel dispenser system comprising:
 - a fuel dispenser for dispensing fuel;
 - a plurality of switches connected to said fuel dispenser, said switches utilized by customers for determining merchandise selected for sale;
 - 5 a plurality of graphic icons each said icon connected respectively to a said switch; and
 - a point of sale system connected to said fuel dispenser to total the sale of both fuel and customer selected merchandise.
2. The fuel dispenser system of Claim 1 in which said plurality of switches is a four by six membrane keyswitch pad.
3. The fuel dispenser system of Claim 1 in which said plurality of switches is a touch sensitive video screen.
4. The fuel dispenser system of Claim 1 further comprising an in-store restaurant in communication with said point of sale systems, at least one switch of said plurality of switches sending a signal to said restaurant via said point of sale system to indicate a merchandise order from said fuel dispenser location.
- 5
5. The fuel dispenser system of Claim 4 in which said merchandise order comprises a food order.
6. The fuel dispenser system of Claim 1 further comprising a merchandise dispenser operatively connected to said fuel dispenser, said merchandise dispenser dispensing merchandise after a predetermined said switch is utilized by a customer.
7. The fuel dispenser system of Claim 6 in which said merchandise dispenser dispenses beverages.

8. The fuel dispenser system of Claim 1 in which said graphic icons are backlit whereby as a said respective switch is activated said respective icon is darkened.

9. The fuel dispenser system of Claim 1 in which said graphic icons are darkened and as a said respective switch is activated said respective icon is backlight.

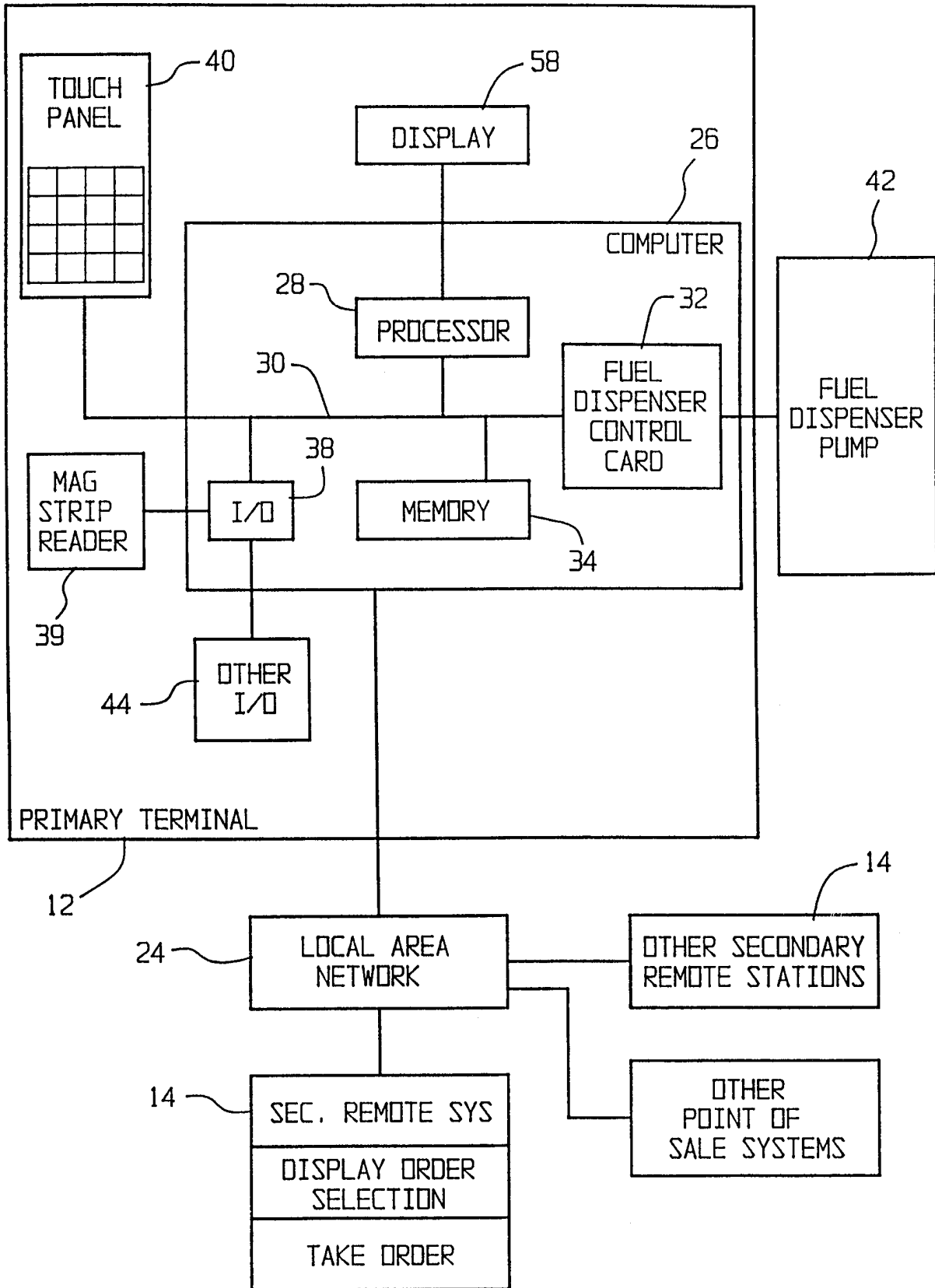


Fig. 1

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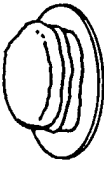
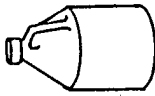


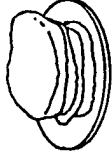
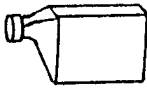

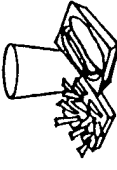
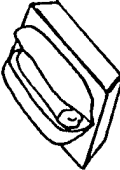
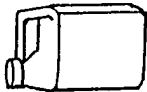



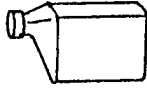


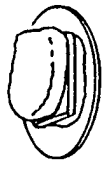
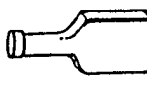

	1 SINGLE BURGER FRIES DRINK \$1.99		SINGLE BURGER 89¢		WASHER FLUID (1 GAL.) 99¢		CAR WASH \$2.00	REGULAR WASH
	2 DOUBLE BURGER FRIES DRINK \$2.99		DOUBLE BURGER \$1.19		MOTOR OIL (1 QT.) \$1.29		CAR WASH \$3.00	REGULAR WASHERY
	3 HOT DOG FRIES DRINK \$1.99		HOT DOG 89¢		ANTI-FREEZE (1 GAL.) \$3.99		CAR WASH \$4.00	REGULAR WASH/ WASHERY
	4 CHICKEN SANDWICH FRIES DRINK \$3.29		CHICKEN SANDWICH \$2.09		TRANS FLUID (1 QT.) \$1.49		CAR WASH \$5.00	REGULAR WASH/ WHITE WAX/ WASHERY
	5 FISH SANDWICH FRIES DRINK \$2.99		FISH SANDWICH \$1.99		GAS ADDITIVE (1 PT.) \$1.19		CAR WASH \$6.00	DELUXE WASH
CLEAR ITEM		REVIEW SELECTION						

FIG. 2

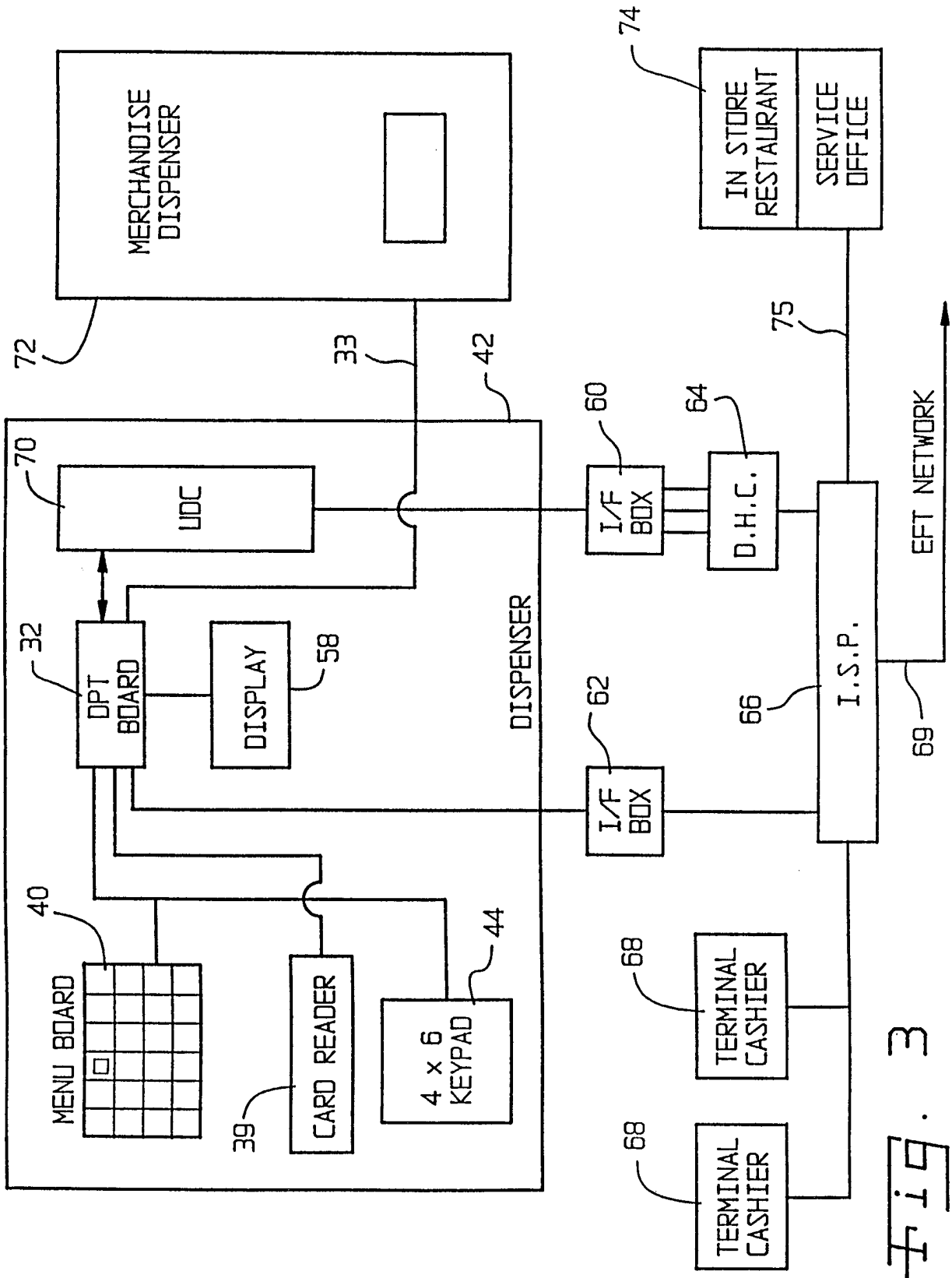


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US97/18463

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :G06F 17/60
US CL :705/16; 345/173, 352; 364/479.01; 705/413

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 235/375, 380, 381, 383; 340/825.34; 345/173, 343, 352; 364/400, 479.01, 479.1, 479.11; 705/1, 15, 16, 21, 25, 26, 27, 413

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
NONE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,235,509 A (MUELLER ET AL) 10 August 1993, see abstract and figs. 6-9	1-9
Y	US 5,353,219 A (MUELLER ET AL) 04 October 1994, see abstract and figs. 6-9.	1-9
Y	US 5,510,979 A (MODERI ET AL) 23 April 1996, see abstract and figs. 7-10.	1-9
Y	US 5,546,523 A (GATTO) 13 August 1996, see abstract and figs. 1 & 2.	1-9
A, P	US 5,602,730 A (COLEMAN ET AL) 11 February 1997, see abstract and figs. 14 & 15.	1-9

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*&* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 24 JANUARY 1998	Date of mailing of the international search report 25 FEB 1998
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