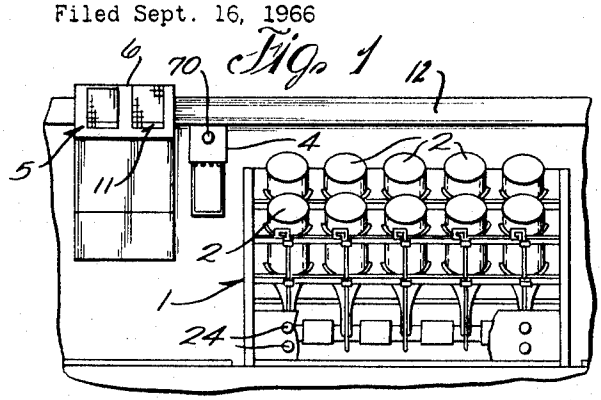
June 4, 1968 M. J. ARPS ET AL 3,386,621

DISPENSING AND RECORDING APPARATUS

Filed Sept. 16, 1966 2 Sheets-Sheet 1

Fig. 1



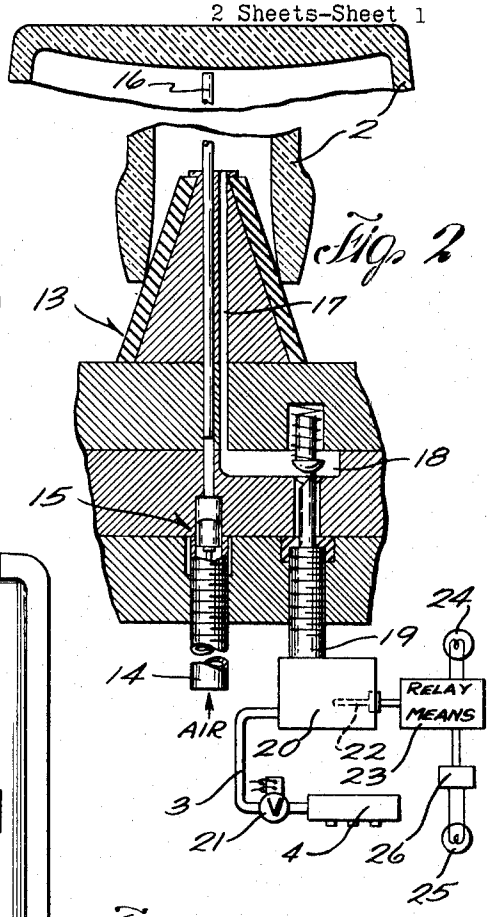


Fig. 2

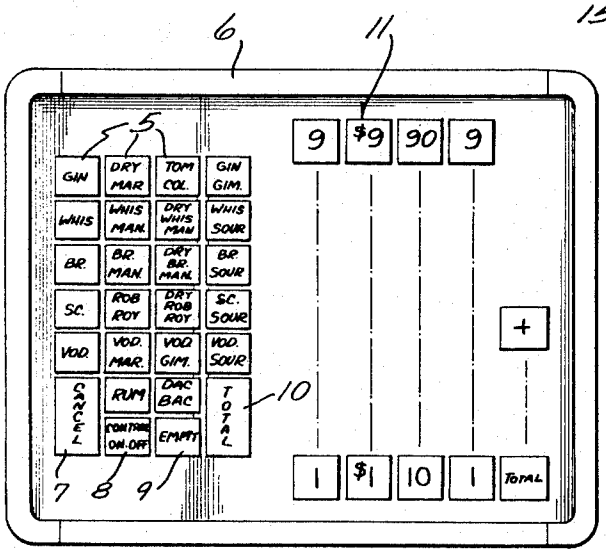


Fig. 3

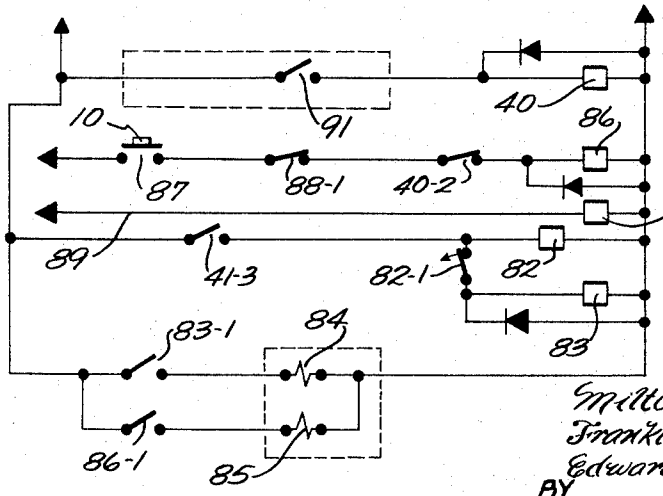


Fig. 5

Inventors
Milton J. Arps
Franklin James Grist
Edward J. Rippl
BY Andrus & Starke
Attorneys.

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DISPENSING AND RECORDING APPARATUS

Filed Sept. 16, 1966 2 Sheets-Sheet 2

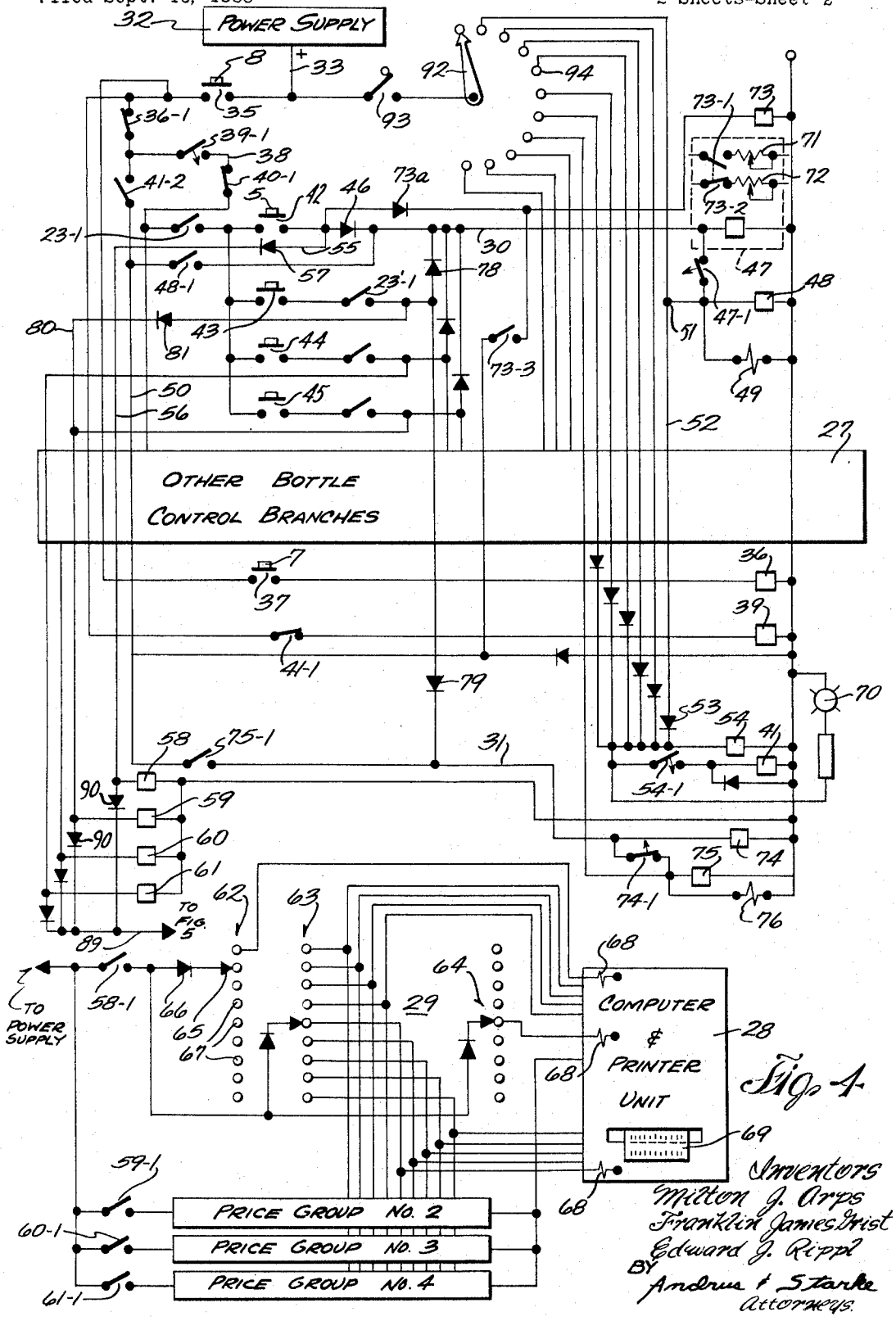


Fig. 1

Inventors
Milton J. Arps
Franklin James Hirst
Edward J. Rippl
BY Andrus & Starke
Attorneys

United States Patent Office

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DISPENSING AND RECORDING APPARATUS

Milton J. Arps, P.O. Box 76, and Franklin James Grist, 24 Winona Court, both of Appleton, Wis. 54911, and Edward J. Rippl, 215 Broad St., Menasha, Wis. 54952

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18 Claims. (Cl. 222—30)

ABSTRACT OF THE DISCLOSURE

Pressurized liquids are directly dispensed from the individual bottles each of which is closed by a connector including a liquid outlet and a suitable pressure inlet. Individual solenoid valves are provided in the several liquor lines to control the dispensing of the liquor and the solenoid valves are individually energized through suitable devices by actuation of a series of push button switches. Certain push buttons control dispensing of the basic liquid and others simultaneously control a plurality of liquids to provide a desired mixed drink.

A computer and printing unit is interconnected to the discharge control circuit for the several solenoid valves or the like. Depressing of the push button for any given drink either straight or a blend transfers a related signal to a price selection device wherein the several drinks are grouped into different price groupings. The price selection device transfers a related charge signal to an adding and printing machine which prints the related charge on a receipt. The printer retains the last recorded drink and permits addition of the next and all subsequent drinks from the automatic dispenser. Additionally, a manual input is provided for recording other items sold. A totalizing unit totalizes the cost of the individual items and provides a totalized receipt.

An interlocking timing relay prevents operation of the totalizing system while the printing machine is recording a drink then being dispensed. The drink selection button controls a relay which requires the button be depressed for a preselected time to lock in the discharging cycle and thereby insure that the computer and printer has been actuated to record the transaction.

This invention relates to ad ispensing apparatus and more particularly to a dispensing apparatus for selectively dispensing selected amounts of liquid components individually and as blends or mixtures of the individual components in combination with means to provide an automatic charge print-out.

Retailing of liquor by the drink in a restaurant or bar normally has been done through manual dispensing of the liquor by a bartender. As more fully disclosed in the copending application of Milton J. Arps et al. filed on Apr. 14, 1965 with Ser. No. 447,998 and entitled Metering and Dispensing Apparatus, automatic dispensing of the individual liquors to provide individual drinks and blends or mixed drinks has many advantages from the standpoint of uniformity and quality control as well as monetary and inventory control.

The above identified application discloses a highly satisfactory pressurized means for dispensing of the liquids directly from the individual bottles under a electronic control means. The several liquor bottles are mounted in a suitable storage means and interconnected to a dispensing head through transfer lines. Each of the bottles is closed by a special connector including a liquid outlet and a suitable pressure inlet. In operation, the pressure establishes a discharge pressure on the upper surface of the liquid in each bottle and forces the liquid outwardly through the outlet line in the lower end of the bottle. Individual solenoid valves are provided in the several liquor lines to control the dispensing of the liquor. The solenoid valves are individually energized through suitable timed means responsive to a series of push button controls for dispensing of the several liquids. The push button controls include means for dispensing of the basic liquid as well as individual push buttons for establishing simultaneous control of a plurality of liquids to provide a desired mixed drink.

The present invention is particularly directed to a dispensing apparatus such as disclosed in the above identified application and in particular to a means for providing an overriding interlocking control in the system to insure proper operation of the system and means for automatically and directly providing recording not only of the number of drinks dispensed but providing of a printed receipt for each individual or plurality of totalized transactions.

Generally in accordance with the present invention, a computer and printing unit is interconnected to the discharge control circuit for the several solenoid valves or the like. Depressing of the push button for any given drink either straight or a blend transfers a signal to a price selection device such that the several drinks can be grouped into different price groupings. The price selection device is actuated to transfer a related signal to an adding and printing machine or cash register which will record the related price on a receipt. The printer retains the last recorded drink and permits addition of the next and all subsequent drinks from the automatic dispenser. Additionally, a manual input is provided for recording other items sold, such as cigars and the like. Thereafter, a totalizing control is actuated to totalize the cost of the individual items and provide a totalized receipt.

Interlocking means are preferably provided to prevent operation of the totalizing system while the printing machine is within a recording cycle; that is, recording a drink then being dispensed. Further, the system is constructed in accordance with still another aspect of the invention such that the drink selection button must be depressed for a preselected time to lock in the discharging cycle and thereby insure that the computer and printer has been actuated to record the transaction.

After a drink has been initiated, if it has been in error, a cancellation control is provided. However, the system is set up such that although the discharge of the drink can be terminated the charge on the printer will not be. Consequently, special notation must be made of this fact to maintain control over the operation of the system.

The system of the invention is also preferably provided with a novel manual control system for individual purging of the several systems from the individual bottles. This is highly desirable to permit individual cleansing of any particular line by filling a bottle with a suitable cleansing material, mounting it in a rack in the normal manner and then actuating the manual purge override control to permit dispensing or discharge of the cleaning fluid through the related system.

The present invention thus provides an improved dispensing device having means to improve the overall operation and control of the dispenser while providing interlocking recording in accordance with price or the like. The circuitry employs a relay-diode type logic control substantially employing solid state components permitting long, reliable operation.

The drawings furnished herewith illustrate a preferred construction of the present invention in which the above objects and advantages will appear as well as others which will be clear from the following description of the drawings.

In the drawings:

FIG. 1 is an elevational view showing a liquor dispensing apparatus of the present invention;

FIG. 2 is an enlarged plan view showing the drink selection panel from which the particular drink is selected;

FIG. 3 is a diagrammatic view of the discharge system for one of the bottles shown in FIG. 1;

FIG. 4 is a schematic wiring diagram of an operating control circuit for the dispenser and computer; and

FIG. 5 is a schematic diagram of the means for operating a printer.

Referring to the drawings and particularly to FIG. 1, an apparatus for dispensing of alcoholic liquors or the like is shown generally similar to that shown in the previously referred to application. The apparatus includes a supporting rack 1 within which a series of bottles 2 is mounted in an inverted position. The several bottles 2 contain separate liquids to be dispensed individually or as blends. Thus, each of the bottles 2 will contain one of the basic components such as whiskey, gin, Scotch, vermouth, vodka, lemon, lime and like. The several bottles 2 are connected through individual transfer lines 3, as shown in FIG. 2, to a dispensing unit or head 4 from which they are individually dispensed. The particular liquid or liquors to be dispensed at any given time are controlled through selective operation of a plurality of push buttons 5 provided on a control panel 6 at a convenient location for the bartender.

In accordance with the illustrated embodiment of the present invention, the control panel 6 is provided with two sections, one consisting of the plurality of push buttons arranged in a matrix of horizontal rows and vertical columns. Certain of the push buttons 5 are related to the particular drink to be dispensed and others are related to certain control functions. Further, some of the push buttons control discharge of straight liquor; for example, whiskey, gin or the like while others discharge mixed drinks. For purposes of convenience, the drink push buttons may be color coded or the like with the straight liquor control buttons in the first column; for example, the left column, and the related mixed drink push buttons made with such liquor in the corresponding row. Further, in the illustrated embodiment of the invention, the push button control panel includes a large cancel push button 7 which will immediately stop the discharge after initiation of the drink in case of an error. A main on-off push button 8 is provided as well as an empty indicating lamp means 9. A totalizing push button 10 is also provided for actuating a printer or cash register to produce a receipt for all drinks entered as a part of one transaction.

Immediately adjacent to the array of control push buttons 5, a cash register input key system 11 is provided. This is interlocked through a computer and printer mechanism as hereinafter described. The bartender can operate the device to automatically dispense and record one or more drinks in the mechanism and can separately record any other sales and thereafter receive a totalized receipt. Thus, the bartender may deliver a specialty drink not included in the automatic control system as well as beer, cigars, and other products which require separate recording.

In the illustrated embodiment of the invention, the rack 1 and panel 6 are shown supported immediately adjacent the main bar 12.

Rack 1 may of course be located in any remote location, if desired.

The particular means for mounting of the bottles 2 and the related components of rack 1 are not separately shown in this application and for further details of such construction, reference may be made to the previously identified application. Further, the method and connections for discharging of the liquids are described in detail in the above application. The dispensing control for a single bottle 2 is diagrammatically shown in FIG. 3 and only briefly described to clearly show the operation of the system.

Referring particularly to FIG. 3, the gin bottle 2 is inverted with the neck portion telescoped onto a coupling unit 13 plugged into rack 1. An air inlet line 14 is connected through a suitable valve 15 to an air discharge tube 16 which projects upwardly and terminates within the upper end of the bottle 2. A lower discharge passageway or line 17 is interconnected through a valve 18 to a discharge line 19 which is connected to a suitable sensing reservoir 20. The dispensing or transfer line 3 connects the reservoir 20 to the dispensing head 4. A solenoid valve 21 is connected in the line 3 to provide controlled discharge through the particular system.

All of the other bottles are similarly connected to individual transfer lines 3 terminating in discharge ends at the dispensing head 4.

The illustrated coupling means is similar to that shown in the previously described application and reference thereto is made for a more detailed description of the several illustrated components, if desired. A suitable sensing probe 22 is provided in the reservoir to sense when the related bottle 2 is empty and provide a control signal to the operator.

As in the previous application, the probe 22 provides a complete circuit path in the presence of liquid and an open path when the liquid drops below the probe level.

The probe 22 is connected in circuit with a suitable relay means 23 having contacts controlling a lamp 24 mounted on the rack 1 adjacent the corresponding bottle 2 and controlling a common indicating lamp 25 mounted below the "empty" button 9 at panel 6. The probe 22 and relay means 23 in such that in the presence of a liquid, lamps 24 and 25 are off. The common lamp 25 is connected in circuit through a suitable flasher 26 such that if the liquid drops below the level of the probe 22, the common lamp 25 is flashed and the individual lamp 24 burns continuously.

As in the previous application, the relay means 23 further controls interlock contacts in the main discharge control circuit to be presently described.

Referring particularly to FIG. 4, the operating and control circuitry is schematically shown including a discharge control circuit section 27, a printer operating circuit section 28 and a transfer circuit section 29. A portion of the discharge control circuit is shown in detail for claerly illustrating and explaining the operation of the present invention. The control circuit branch 30 is shown for the control of one basic liquor; for example, gin, either as a straight drink or combined with other liquor for making a cocktail. Each of the other basic liquors; for example, whiskey, brandy, Scotch and vodka, would include a similar branch circuit.

Additionally, a control branch 31 for dry vermouth which is related to the formation of a dry martini is shown in detail. Similar branches are provided for sweet vermouth, lemon and lime because of their wide variety of use in connection with mixed drinks. For example, in connection with the gin channel, a lemon control branch, used for making a Tom Collins, would be interconnected in the circuit in the same manner as the vermouth branch and similarly a lime control branch similar to that of the dry vermouth branch would be interconnected into the circuit to form a gin gimlet.

In addition, the price transfer and selection circuit section 29 is interconnected to the several branch circuits 30 and 31 and to section 28 of a computer and printer to record and print out the price of each drink dispensed.

More particularly, the discharge control circuitry shown in FIG. 4 is adapted to be operated as a low voltage direct current (D.C.) circuit conventionally employed in logic controls. A suitable D.C. converter and regulator 32 or the like provides a power supply connected to an input power system such as the conventional 110 volt A.C. system and provides a suitable low voltage D.C. at the lines 33 and 34 for operating of the various components in the control circuitry and the printing unit, which is also schematically shown to the extent necessary to clearly understand the present invention.

Although in a commercial construction, the several different main sections may employ different operative voltages, the circuits are shown in FIG. 4 connected to a single set of lines for simplicity of explanation.

In the illustrated embodiment of the invention, a main on-off control switch 35, actuated by push button 8 of panel 6, is connected between the positive D.C. line and the discharge control section to provide an overriding control at the push button station in case of an emergency. The level sensing circuit and other operating sections are separately connected to the power lines.

A set of normally closed contacts 36–1 of a stop or cancel relay are connected between the control section 27 and switch 35 to permit cancelling of a pour during a discharge cycle for any particular drink. The cancel relay 36 is connected in series with a cancel switch 37 coupled to the push button 7 at the panel. If the operator actuates a drink push button 5 to obtain a drink and for any reason changes his mind, he merely actuates the cancel push button 7 to energize the relay 36 which opens contacts 36–1. This removes power from section 27 and particularly the solenoid valve 21 to terminate the discharge cycle, as more fully described hereinafter.

A trigger power line 38 connects the branches 30 and 31 of control section 27 to the contacts 36–1 in series with the push button switch 35 and includes a set of normally open contacts 39–1 of a delay-between-drinks timing relay 39 and a set of normally closed printer interlock contacts 40–1 actuated by a mechanical linkage in the printer, as shown in FIG. 5.

The delay-between-drinks relay 39 is connected in series with a set of normally closed contacts 41–1 of a pour-interlock relay 41 and the main on-off push button switch 35 to the power lines 33 and 34. In the initial standby position, switch 35 is closed and the timing relay 39 will be energized through the normally closed contact 41–1. After a predetermined time period, it will hold the contacts 39–1 closed to permit operation of the liquor discharge control circuit.

As hereinafter described, the relay 41 is energized to open its contacts during a pour or discharge cycle and thereby de-energizes the timing relay 39 until the termination of a delivery of a drink. After the relay 39 is again energized, it times out to hold the relay contacts 39–1 open and prevent discharge of another drink for the preselected time period; after which the contacts 39–1 again close to condition the circuit for a subsequent drink.

The control branch 30 for the gin bottle 2 includes a set of relay sensing contacts 23–1 of relay means 23. Generally, the contacts 23–1 are held closed as long as gin sufficient to provide a complete drink is retained in the reservoir 20. As soon as the level drops below such level, the contacts 23–1 open and prevent formation of any drink requiring gin.

The reservoir control is previously noted simultaneously provides an overriding flashing indicator by flashing of lamp 25 as the empty button 9 to indicate the necessity of replacing a bottle and by control of a lamp 24 at the rack 1 to provide a direct indication of which bottle must be replaced.

Assuming that the gin bottle 2 and reservoir 20 has sufficient liquid therein to permit dispensing of at least one drink, the contacts 23–1 are closed and provide power to a bank of push button switches including a straight gin push button switch 42 in parallel circuit with the similar switches 43, 44 and 45 associated with mixed drinks employing gin, which for description are referred to as a dry martini, Tom Collins and gin gimlet.

The straight gin push button switch 42 is connected in series with a diode 46 and a gin discharge timing relay 47 to the negative or common line 34 of the D.C. power supply. Thus, when the push button is closed, timing relay 47 is energized.

The timing relay 47 controls a set of normally closed contacts 47–1 connected in series with a latch relay 48 across the timing relay 47. The gin bottle solenoid 49 of solenoid valve 21 is connected in parallel with relay 48. The relay 48 controls a set of normally open contacts 48–1 connected in latch circuit between a latch power line 50 and the timing relay 47 to bypass the switch 42. Line 50 is connected in parallel with line 38 and includes a set of pour interlock contacts 41–2 of relay 41.

The relay 41 is a common interlock relay connected in circuit through the several branch circuits 30 and 31, as follows. The junction 51 of the timing relay contacts 47–1 and the paralleled relay 48 and solenoid 49 are connected by a line 52 including a diode 53 to the circuit of the relay 41 which further includes a timing relay 54. The relay 54 is connected directly between the related diode and the negative power line 34 and is thus energized immediately upon application of power to the gin control circuit. The relay 54 includes contact 54–1 connected in series with the control relay 41 between diode 53 and the negative line 34 such that the relay 41 is energized a short time after the initial depression of push button switch 42 and the application of power to the timing relay 47 and the latch relay 48.

As a result, the bartender must depress the push button for a finite length of time; for example, 60 milliseconds, before the discharging circuit for a drink locks in. As more fully developed hereinafter this is desirable to insure that the proper price has been entered into the automatic computer and printer unit via section 29. If the push button is depressed for a very short time in order to avoid ringing up of the price, the common liquor control relay 41 will not lock in to hold the latch power line 50 in a complete circuit and consequently only a very small quantity of gin will be discharged.

The printer operating section 28 is connected into the control circuit 27 by the transfer section 29, as follows. A line 55 is connected to the junction of the push button switch 42 and the diode 46 and to a related price line 56. A diode 57 is connected in line 55. A price relay 58 is connected between the line 56 and to the common or negative power line 34. Thus, whenever the push button switch 42 is actuated, power is applied to the relay 58 and closes a set of contacts 58–1 in the computer and printer operating section 28.

The relay 58 is one of four price group relays to permit four different price groupings. The plurality of different drinks which can be automatically discharged will therefore be assigned to one of the four groupings. For example, straight gin would be classified as one price group, a dry martini would be a second, Tom Collins a third and Scotch may be a fourth classification.

Each of the relays 58, 59, 60 and 61 is a power relay which remains closed only for the 60 milliseconds before contacts 39–1 open. The diode 46 prevents a continuous energization via the latching contacts 48–1. Diode 46 further isolates the straight gin circuitry of push button switch 42 from the mixed drink channels involving gin as presently described.

The price transfer relay contacts 58–1 are normally open and are connected in series to the power line 33 with a decade counter having three manually settable input sections 62, 63 and 64 for interconnecting of power to related solenoids of the computer and printer or cash register unit. The sections 62–64 respectively define the dollar position, dome position and penny position in the pricing system. Each section is provided with a movable contact 65 similarly interconnected to the one side of the price group relay contacts 58–1 in series with a separate steering diode 66. Movable contact 65 is selectively positioned in connection with any one of nine fixed contacts 67, related to the usual decimal digits 1 through 9 and connected to the one side of a corresponding solenoid 68. If no input is made a zero is printed. In the illustrated embodiment of the invention, the dollar section 62 employs only the first or one dollar fixed contact. As a straight gin drink would be less than one

dollar the movable contact 65 is spaced therefrom. The dime section 63 has each of the fixed contacts 67 connected separately to the printer unit to provide for corresponding energization of the related digit solenoids 68 of the printer unit whenever power is applied to a contact 67. The penny section is shown having only the fixed 5 cent contact connected to the corresponding solenoid 68 of the unit. The tens position has the movable contact 65 connected to the number 5 contact and the penny position also has the movable contact connected to the number 5 contact. The first price group therefore is established for 55 cents. Therefore, whenever power is applied to relay 53, the closing of contacts 53–1 applies power to the movable contacts 65 of sections 62, 63 and 64 and thereby applies power to the solenoids 68 of the printer unit to print out 55¢.

The computer and printer unit or cash register may be any suitable computing device having operating solenoids 68 or the like connected to appropriate digit printout devices, not shown, for imprinting the corresponding digits onto a movable tape 69 which is automatically positioned after each operation. As such units are known, no further description thereof is given other than the circuit for controlling the adding and totalizing control. An actual printer employed in a device was manufactured and commercially available from Monroe International Division of Litton Ind.

The other price group relays 59, 60 and 61 are similarly connected through corresponding price setting sections and are adjusted to actuate the desired solenoids to provide a different price grouping, as desired in accordance with the particular charge for other drinks.

Returning to the discharge control section 27 and particularly gin branch 30, the time relay 47 times out and the contacts 47–1 open, breaking the latch circuit of the relay 48 and the solenoid 49. This closes the gin valve 21 and resets the circuit.

The removal of power from the relay 48 and the solenoid 49 simultaneously removes power from the line 52 to de-energize the timing relay 54 and the interlock relay 41 both of which reset. The de-energization of the relay 41 results in the closing of the contacts 41–1 in the circuit delay-between-drinks relay 39. As a result, the relay 39 is again energized and after a predetermined time closes its contacts 39–1 in trigger power line 38 to permit operation for a subsequent drink after such time delay.

A common drink pour light 70 mounted on head 4 and connected in parallel with the timing relay 54 is thus illuminated any time a drink is being poured.

In the dispensing of drinks, the mixed drinks normally require a different quantity of the basic liquor than that provided in a straight drink. The timing relay 47 is therefore provided with a dual timing control system. For example, relay 47 may be commercially available reed relays sold by General Electric Co. and identified as CR120 Type G reed switch relays having means for connection of an external potentiometer to vary the time delay in the operation thereof.

In the illustrated embodiment of the invention, the relay 47 is shown in block diagram with a first control potentiometer 71 and a second potentiometer 72 selectively connected in circuit by contacts 73–1 and 73–2 of a straight drink relay 73. The potentiometers 71 and 72 are connected in parallel with each other and in series respectively with normally open contacts 73–1 and normally closed contacts 73–2 of the relay 73. The potentiometer 71 controls the operation of the timing relay 47 during a normally straight gin discharge and the potentiometer 72 controls the operation of timing relay 47 during the discharge for a mixed drink, as follows. The relay 73 is connected in series with a diode 73*a* in parallel with diode 46 and gin timing relay 47. It is therefore energized whenever switch 42 is closed. In addition to contacts 73–1 and 73–2, the relay includes latch contacts 73–3 connected between the relay 73 and the latch power line 50. The relay 73, once energized, is therefore held in until the relay 41 is de-energized at the end of the discharge cycle.

The circuit for the timing relay 47 is shown diagrammatically as including single potentiometers 71 and 72. In fact, the device will normally be provided with a coarse and fine adjustment to permit more accurate adjustment of the amount of gin provided in each drink.

A cocktail is similarly formed by simultaneously actuating the gin channel or branch 30 and the dry vermouth channel or branch 31.

The illustrated dry vermouth channel 31 includes a timing relay 74, a control relay 75 and a solenoid 76 interconnected to the power lines 33 and 34 generally in the same manner as the corresponding elements for the gin channel 30. The vermouth channel 31 is connected into the circuit through the second push button switch 43 which as previously described is related to a dry martini.

The dry vermouth will also be employed through similar switching circuits of other channels adapted to provide a drink calling for dry vermouth; for example, a dry brandy manhattan.

The push button switch 43 has its one side connected to the gin bottle reservoir relay contacts 23–1 and the opposite side connected in series with a set of reservoir contacts 23'–1 of the reservoir associated with the vermouth bottle to form a dry martini selection branch. The branch is connected in series with a first diode 78 to the gin bottle relay circuitry including timing relay 47, relay 48 and solenoid 49 to bypass the diode 46 and the circuit of relay 73. The diode 46 isolates the circuit of relay 73 to prevent energization therewith during a mixed drink cycle and thereby maintaining the mixed drink potentiometer 72 in the circuit of the gin discharge timing relay 47.

The martini selection branch of switch 43 is also connected via a diode 79 to the dry vermouth branch 31 and particularly the paralleled relays 74 and 75 and solenoid 76. The diode 79 which interconnects the dry martini branch of switch 43 to the dry vermouth branch 31 provides a blocking action to prevent operation of the gin branch 30 when still other drink branches employing the dry vermouth branch 31 are interconnected into the circuit. They similarly include diodes to prevent operation when the above dry martini branch is energized.

When the push button 43 is depressed and assuming the gin and vermouth bottles have provided sufficient liquor for the mixing of at least one martini, power is applied via the switch 43 to the two branch circuits 30 and 31 to simultaneously energize the timing relays 47 and 74. The associated latch relays 48 and 75 are simultaneously energized through the timing contacts to establish latching circuits bypassing the switch 43 and the related gin solenoid 49 and the dry vermouth solenoid 76 are energized to simultaneously discharge gin and vermouth in accordance with the setting of the timing relay circuit.

Further, the application of power to the gin branch 30 also supplies power through the timing contacts 47–1 and diode 53 to the circuit of the time delay relay 54 and the interlock relay 41 and the pour lamp 70 in the same manner as previously described.

As a result, the timing relays 47 and 74 time out the proper amount of gin and dry vermouth and at the completion of the timing cycle open their respective contacts to de-energize the gin solenoid 49 and the vermouth solenoid 76. This also removes power from the latch relays 48 and 75 to open contacts 48–1 and 75–1 and thereby break the latch circuits previously described.

When the push button switch 43 is closed, it also supplies power to a price group relay 59 through a line 80 and diode 81. The other side of the relay is connected directly to the negative line 34 of the power supply. Thus, the relay 59 is energized whenever the dry martini push button switch is actuated, closes the associated contacts 59–1 to actuate the appropriate solenoids of the printer unit to record the related price on the tape 69 and to add

the price within the unit to any previously recorded drinks forming a part of a single transaction, as follows.

The operating circuit for the adding and totalizing of the printer unit is shown in FIG. 5 which includes a set of contacts 41–3 of the relay 41.

Whenever a drink push button is depressed there is a short time delay provided by the timing relay 54 before energization of the relay 41 is established. The relay 41 includes the normally open contacts 41–3 particularly connected in series with a timing relay 82. The relay 82 actuates a set of normally closed contacts 82–1 connected in series with a control relay 83 across the timing relay. Relay 83 actuates a set of normally open contacts 83–1 connected in series with an "add" function solenoid 84 of the printer unit. The "add" function solenoid 84 is therefore energized for a selected period, determined by timing relay 82, after the time period established by timing relay 54 which controls energization of relay 41. This insures that the price entry for the current drink has been inserted in the printer unit. Drink charges are thus inserted into the device, recorded on tape 69 and automatically added in the printer mechanism.

The printer unit further includes a totalizing solenoid 85 adapted to print out the total figure. The solenoid 85 is connected to power in series with normally open contacts 86–1 of a totalizing control relay 86, shown in FIG. 5. The relay 86 is connected to the power lines in series with a manually operated total switch 87 as well as a set of normally closed contacts 88–1 of a total hold-off relay 88 and a set of interlock contacts 40–2 of printer interlock relay 40 which is energized whenever the printer is in a recording or adding operation which also has contacts 40–1 in the trigger line 38 of the discharge control section 27 of FIG. 4. Switch 87 is controlled by the "total" button 10 at panel 6.

The total hold-off relay 88 is connected to the several price selection lines 56 via a line 89 interconnected to the push button switch circuits of FIG. 4. Diodes 90 are interconnected between the line 89 to relay 88 and the several lines 56 to isolate the several lines 56.

The relay 40 of FIG. 5 is operated by a switch 91 forming a part of the printer and closed whenever it is in a recording or adding operation.

During the period that the push button switch 42 or 43 is actuated, power is supplied to the appropriate price selection relays 58 or 59 and simultaneously to the total hold-off relay 88. Consequently, the totalizing switch 87 cannot actuate the relay 86 while any one of the drink selection push buttons is depressed. The totalizing circuit can only be actuated after the price has been inserted in the printer unit and added to any previous charges of a single transaction.

Thereafter actuation of the totalizing button actuates or closes contacts 86–1 to actuate the totalizing solenoid and provide a print-out total of all of the previously entered drinks as previously described.

The relay 40 includes the set of normally closed contacts 40–1 in the trigger line 38. Therefore, whenever the printer unit is in an adding cycle, the device cannot be actuated to enter a second drink. This is desirable to insure proper operation of the circuit and complete recording of all drinks dispensed.

In the illustrated embodiment of the invention, the control circuitry is also provided with an overriding manual control for energizing the discharge solenoids 49 and 76, as shown in FIG. 4.

The manual selector system includes a multiple position switch having a movable contact 92 connected in series with an automatic-manual power switch 93 to one side of the power supply. Individual fixed contacts 94 are connected directly one each to the paralleled circuit including the operating solenoids 49 and 76 of the various branches for the different bottles 2. Direct energization of the solenoids is thereby permitted. This may be desirable for example when it is desired to clean or purge the flow system shown in FIG. 2. An appropriate bottle may be filled with a suitable liquid, the switch 88 set to the discharge position for that particular system and the bottle completely emptied through the system. This provides a reliable and quick means for cleaning.

In summary, the present invention thus provides a means for providing selected discharge of straight or mixed drinks while at the same time providing command of a print-out mechanism to print the proper price on a customer receipt or the like.

Cash registers are also available in which solenoid-operated preset keys are provided to establish print-out of a multiple digit price. With such a register, the illustrated switching means could be eliminated and the output of relay 58 connected directly to the register to actuate the appropriate preset key device.

The present invention provides a rapid and accurate computer control system which can be readily employed in a commercial establishment to improve the quality and uniformity of the drinks dispensed while maintaining accurate inventory and cash control.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

We claim:

1. In an apparatus for metering and dispensing a plurality of liquids,
container means for said liquids,
a remote dispensing system connected to the container means and having individual valve means to control the discharge of preset amounts of the several liquids from the container means,
a plurality of input control means connected to control said valve means of the dispensing system to selectively dispense said liquids singly and in given combinations,
a charge computer, and
computer input signal means connected to said plurality of means and to said computer and constructed to provide different input signals each being related to a preselected charge for the single liquids and the combinations, said signal means being connected to said computer to record which of said plurality of means has been actuated and establish a corresponding total charge in said computer dependent upon which of said means has been actuated and in accordance with the discharge of a single liquid or a combination of liquids.

2. The apparatus of claim 1, including means responsive to actuation of said control means to actuate said computer to sequentially add the several charges inserted in the computer.

3. The apparatus of claim 2, wherein said computer includes a printer having means to print said individual charges and the sum thereof on a dispensable record means.

4. The apparatus of claim 2, wherein said printer includes an "add" function means and a "total" function means,
a timing circuit connected to actuate the "add" function means, said timing circuit being actuated by any of said input control means,
switch means connected to actuate the "total" function means,
means actuated by the input control means to prevent operation of said "total" function means, and
means actuated by said printer to prevent operation of said "total" function means if the printer is in operation.

5. The apparatus of claim 1, having a manual input register connected to said computer to permit manual insertion of charges into said computer, whereby a single computer can be employed.

6. In the apparatus of claim 1, wherein said container

means includes a plurality of containers, each containing a different liquid and said input means includes individual means connected to selectively dispense individual liquids and combinations of said liquids,

said individual and combinations being divided into selected price groups, and

said input signal means including a plurality of similar switching circuits one for each price group, each switching circuit having an input element connected to be actuated by a related individual means.

7. In the apparatus of claim 1, wherein said container means includes a plurality of containers, each containing a different liquid and said input means are connected to selectively dispense individual liquids and combinations of said liquids,

said individual and combinations being divided into selected price groups, and

said input signal means including a plurality of similar switching circuits one for each price group, each switching circuit having an input element connected to be actuated by a related input control means and a series of output elements related to the significant positions in the decimal numbering system, said output elements being presettable to selected digits whereby each switching circuit establishes a selected numerical output to the computer.

8. The apparatus of claim 1, wherein said input control means includes,

separate timing circuits for each of said valve means and a plurality of switch means to actuate said timing circuits singly and in combination to selectively dispense said liquid, each of said timing circuits including time delay means operable to latch said timing circuits to a power means a predetermined delay time after actuation of a switch means, and

said charge computer being operable within said delay time and said input signal means being connected to said switches whereby each discharge cycle is recorded.

9. The apparatus of claim 1, wherein said container means includes a plurality of containers each containing a different liquid and having a separate dispensing line for each container, each of said lines having a separate electrically actuated valve means,

a separate timing circuit for each of said valve means,

said input control means including a plurality of switches connected in a discharge circuit to energize said timing circuits, certain of said switches being connected to actuate a plurality of said timing means,

said discharge circuit including latch means to bypass the connected switch and a timed interlock means connected to prevent setting of the latch means for a selected period less than the discharge time whereby said switch must be actuated for a minimum period, and

said computer input signal means includes electrically actuated means connected in power circuits with said switches.

10. The apparatus of claim 9, including separate means to terminate a discharge cycle without interruption of the computer operation.

11. The apparatus of claim 9, including diode means isloating the several interconnected switches and said interlock means includes an electrically operated timed

switch means connected to be energized simultaneously with the latch means and including contacts connected in said latch circuit.

12. The apparatus of claim 9, having override control means to permit energization of the electrically actuated valve means independently of said timing circuits.

13. The apparatus of claim 1, wherein said container means includes a plurality of containers each containing a different liquid and having a separate dispensing line for each container, each of said lines having a separate electrically actuated valve means,

a separate timing circuit for each of said valve means including a control latch relay and a timing relay means connected to provide timed energization of the valve means and the latch relay,

said input control means including a plurality of switches connected in discharge circuits to energize said timing circuits individually and in combinations, said latch relays being operable to establish a latch circuit about the corresponding switch,

a timed interlock relay means connected in circuit with the timing relay means of said timing circuits and including means in said latch circuit to prevent setting of the latch means for a selected period less than discharge time whereby said switch must be actuated for a minimum period, and

said computer input signal means including electrically actuated means connected in a power circuit with said switches.

14. The apparatus of claim 13, wherein said computer input signal means includes a plurality of relay means, each being connected in an operating circuit with one or more of the switches to be energized only when said particular switches are closed, said relay means having contacts connected to actuate the computer to record a charge assigned to the corresponding relay means.

15. The apparatus of claim 1, wherein said charge computer includes a print-out means including means to print the proper charge of each discharge on a tape, summate all charges placed in the computer since a totalizing function and to print the total on said tape.

16. The apparatus of claim 15, wherein said functions are controlled by the actuation of said input control means.

17. The apparatus of claim 1, having delay-between-discharge means responsive to actuation of one input control means to prevent a subsequent discharge of liquid for a predetermined time after the termination of the discharge of the liquid.

18. The apparatus of claim 17, wherein said delay-between-discharge means is a timing relay means having contacts connected in series with all of the input control means, said timing relay means being actuated in response to actuation of the input control means and held energized for the discharge period.

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STANLEY H. TOLLBERG, *Primary Examiner.*