

[54] **PROPORTIONAL BEVERAGE DISPENSING APPARATUS**

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[51] Int. Cl. B67d 5/30, B67d 5/56
[58] Field of Search 222/23, 30, 36, 70, 222/76, 129.1, 129.2, 129.3, 129.4, 394, 396, 399; 137/82, 212

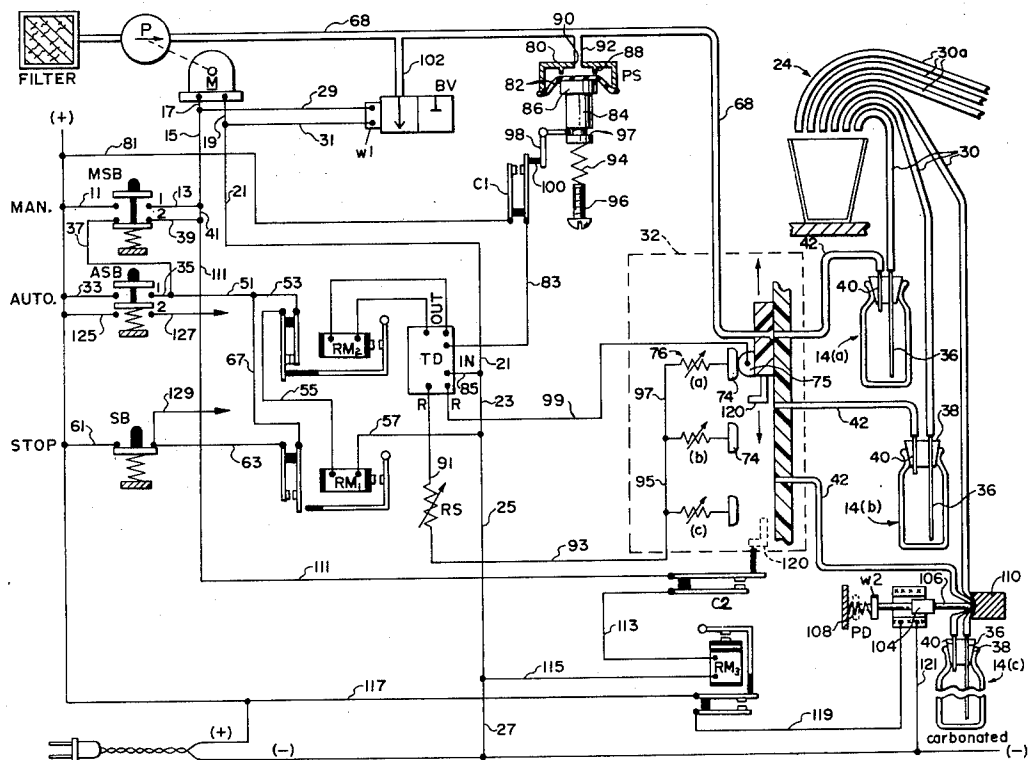
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[57] **ABSTRACT**

A fully automatic, push-button controlled, electrically powered beverage dispensing apparatus for selectively withdrawing predetermined quantities of alcoholic and non-alcoholic beverages from respective sealed containers and conducting them through riser tubes to an elevated dispensing spout for simultaneous discharge into a beverage glass or other receptacle.

12 Claims, 7 Drawing Figures



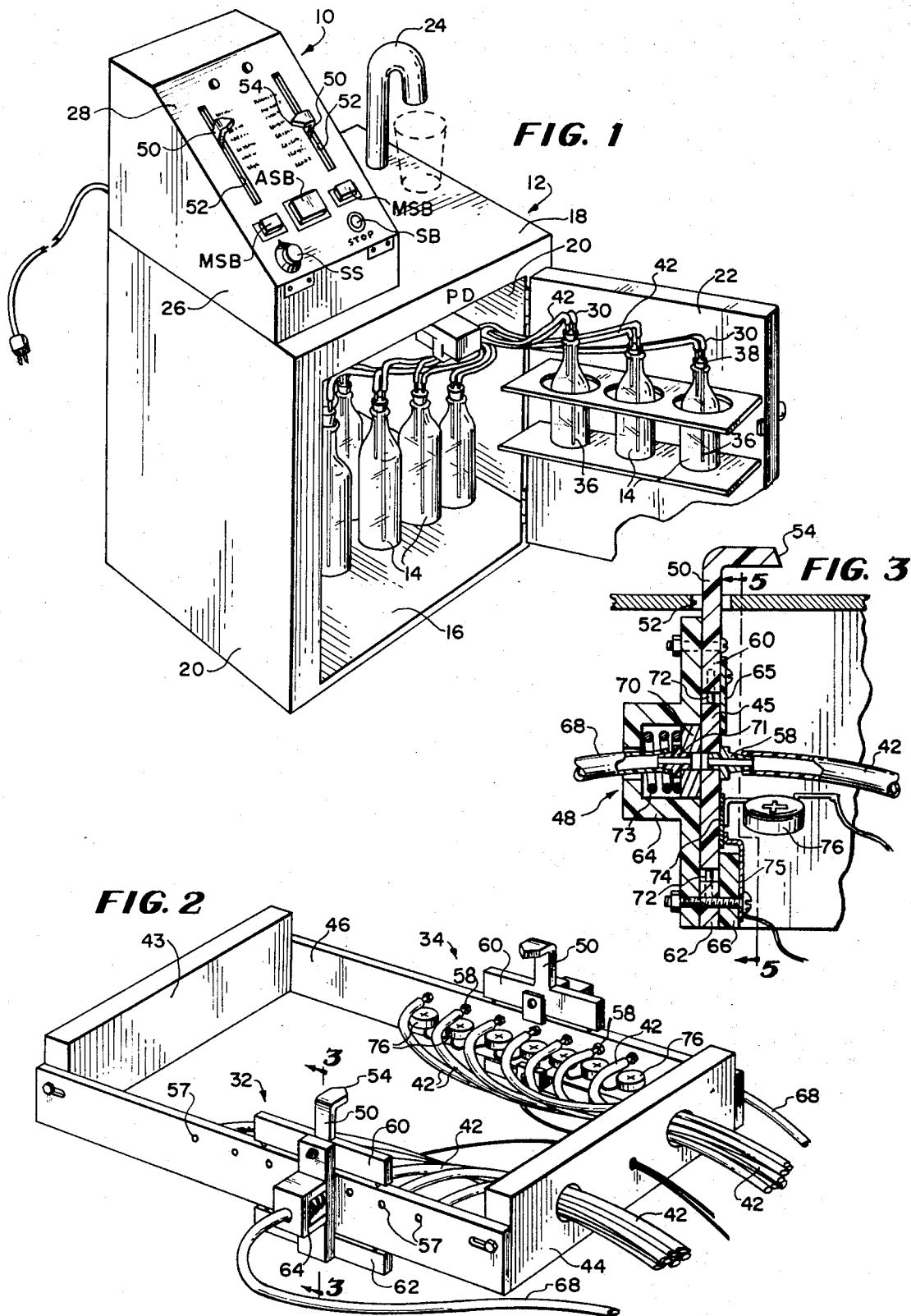


FIG. 4

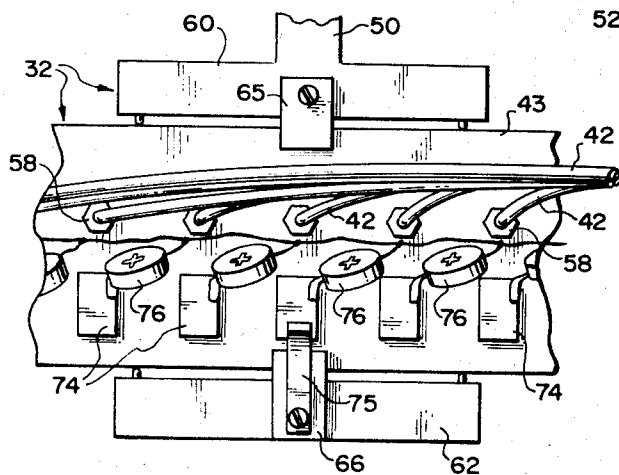
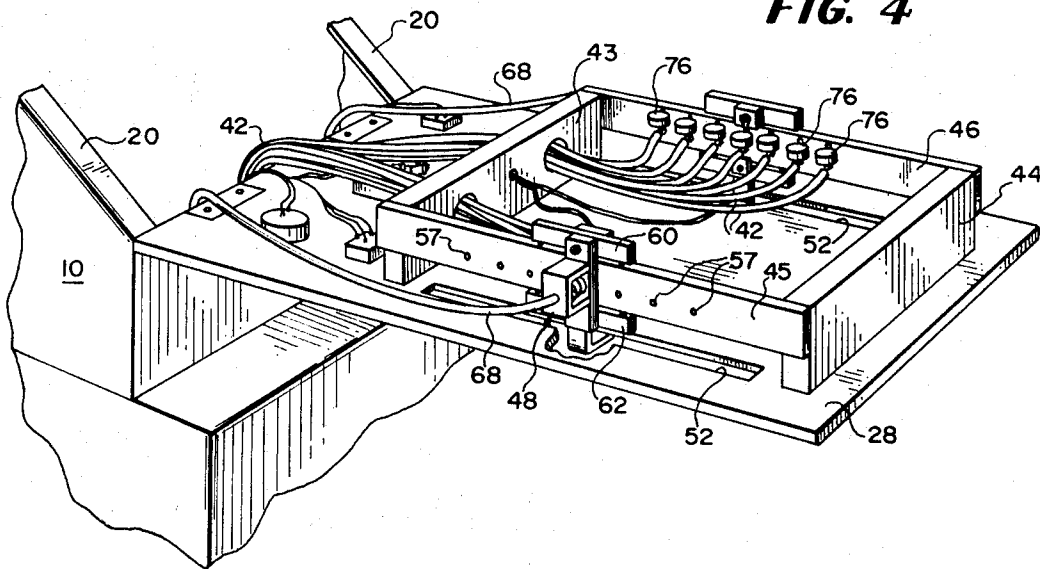


FIG. 5

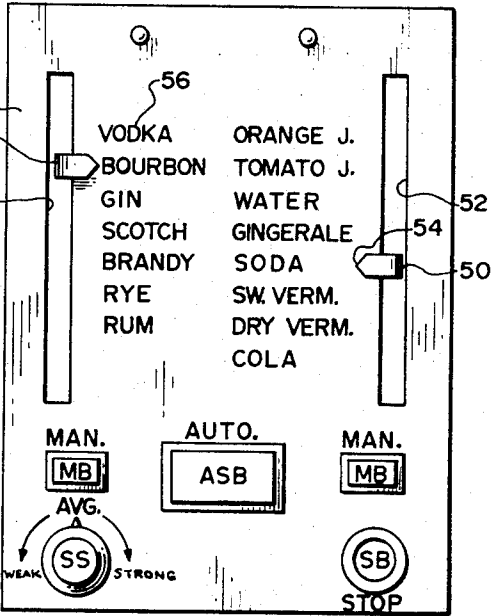
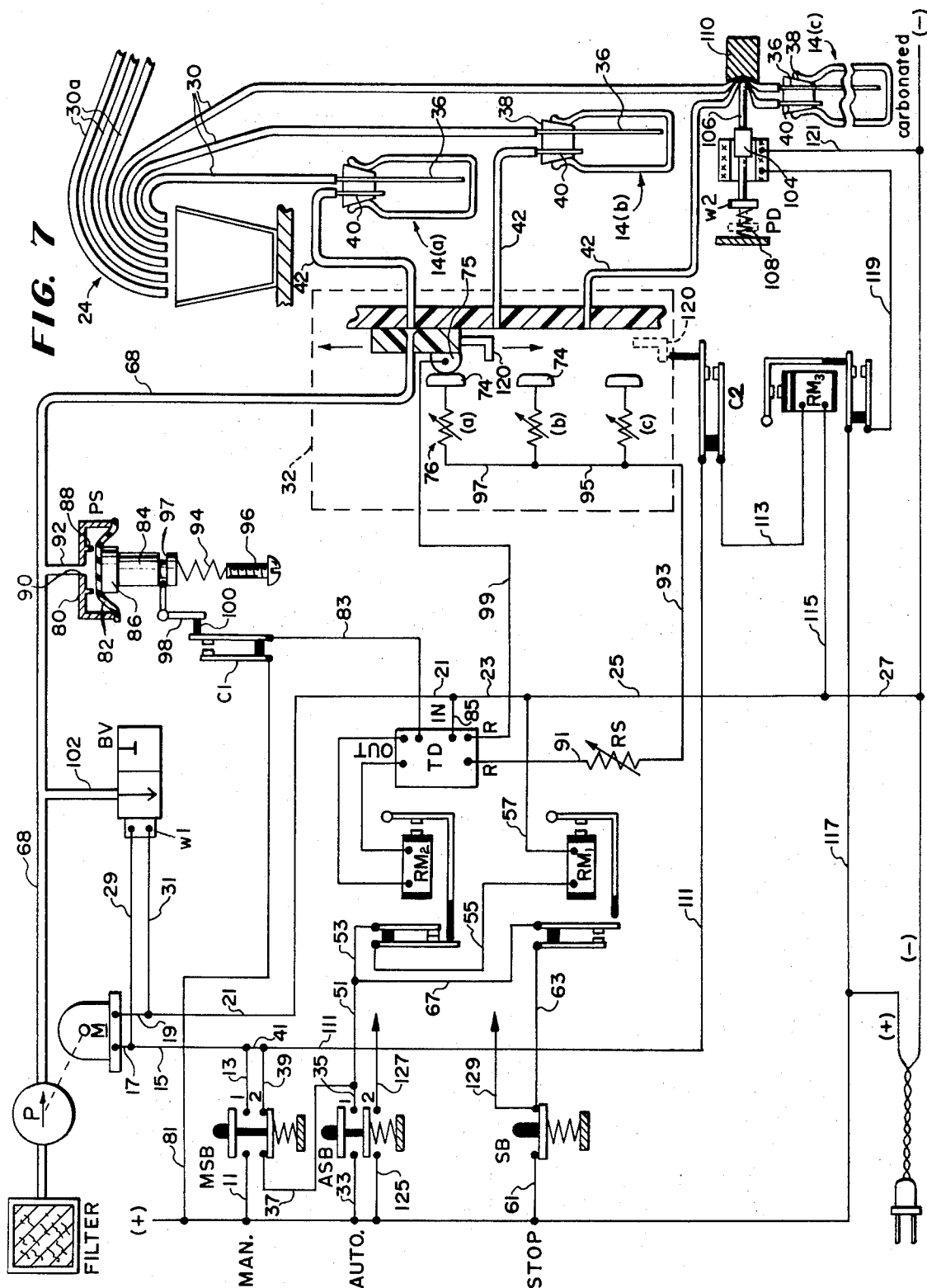


FIG. 6

FIG. 7



PROPORTIONAL BEVERAGE DISPENSING APPARATUS

The present invention relates to liquid dispensing apparatus and has particular reference to a fully automatic apparatus for selectively dispensing predetermined quantities of either alcoholic or non-alcoholic beverages, as well as effecting blends or mixtures of such beverages in predetermined ratios.

The improved dispensing apparatus comprising the present invention has been designed for use in the home for the dispensing and serving of mixed drinks. The invention is however capable of other uses and, if desired, the principles of the invention may be employed, with or without modification as required, for the retailing of individual drinks in a restaurant, bar, tavern or the like. Irrespective however of the particular use to which the invention may be put, the essential features thereof are at all times preserved.

Heretofore, the manual dispensing of mixed drinks, whether in the home or in a commercial establishment, is possessed of numerous limitations, principal among which is the inability of the host or bartender to measure and pour consistent amount of the selected beverage components into the serving glass. Among the variable factors which contribute toward such inconsistency are spillage, under-filling or over-filling the measuring container (i.e. above or below the measuring line), and amounts of alien residual beverage components which may remain in the measuring container from a preceding dispensing operation. Where the non-professional or home bartender is concerned, lack of familiarity with the correct beverage components for a given mixed drink, or the proportions thereof, not only necessitates a time-consuming investigation or inquiry before pouring operations are commenced, but it frequently leads to the serving of strange tasting drinks. In any event, the manual serving of drinks, whether mixed or otherwise, entails a degree of skill which is not often exhibited by the amateur bartender, to say nothing about the time that is wasted in unsealing and resealing the various bottles or other containers which are involved and restoring them to their proper places on the shelf after pouring operations have been completed.

The present invention is designed to overcome the above-noted limitations that are attendant upon the manual dispensing of drinks, particularly mixed drinks, and toward this end the invention contemplates the provision of a novel, fully automatic, electrically powered push-button controlled dispensing apparatus for selectively pressurizing and withdrawing predetermined or measured quantities of alcoholic and non-alcoholic beverages from respective sealed containers and conducting them through riser tubes to an elevated dispensing spout, from whence they are discharged simultaneously into a common drinking glass and thus mixed for immediate consumption thereof. Pressure-sensitive means are provided for sensing the hydrostatic head of liquid which accumulates in the riser tube in order to compensate for the inherent time delay which otherwise would take place due to the increasing amount of air which enters the bottle as the liquid therein becomes depleted. A rotary control knob is provided whereby the measured quantity of each selected alcoholic liquid component undergoing dispensing may be varied to increase or decrease the "strength" of the particular drink which is to be mixed. A single push button, when depressed, effects auto-

matic proportional dispensing operation, and a pair of selectively operable push-buttons overrides the automatic proportional drink dispensing operations and enables the alcoholic and non-alcoholic beverage components to be selectively dispensed individually. A pair of selector levers, which are associated with respective selector valves, directional switches and timing devices, function to establish communication between the selected beverage containers and the dispensing spout, and also to establish the proper normal strength ratio between the alcoholic and the non-alcoholic beverages undergoing dispensing. The various pushbuttons, selector valves, and the control knob are mounted on a control panel where they are conveniently accessible to the operator.

The provision of a drink dispensing apparatus such as has briefly been outlined above, and possessing the stated advantages, constitutes the principal object of the present invention.

A further and important feature of the invention resides in the provision of a novel selector switch assembly embodying a directional valve by means of which fluid communication is selectively established between the various pressurized beverage containers and the dispensing spout, while at the same time appropriate values of electrical resistance are selectively introduced into a timing circuit by means of which varying periods or durations of liquid flow through the aforementioned riser tubes may be attained for the purpose of attaining the proper measurement of beverages for effecting the selected mixture or blend of beverages.

A further ancillary feature of the invention resides in the provision of a novel solenoid-controlled shut-off or sealing valve mechanism by means of which such containers as are used for carbonated beverages may be sealed off from the atmosphere after a given quantity of such beverage has been dispensed so that the internal pressure which normally is inherent in such containers will not be allowed to dissipate itself during in-between dispensing operations during long periods of machine idleness. The provision of a drink mixing apparatus which is extremely simple in its construction and which, therefore, may be manufactured at a low cost; one which is comprised largely of commercially available components, thereby further contributing to economy of manufacture; one which is comprised of a minimum number of parts, particularly moving parts and which, therefore, is unlikely to get out of order; one which is rugged and durable and which therefore will withstand rough usage; one which is capable of ease of assembly and disassembly for purposes of inspection of parts, replacement or repair; one which may be constructed as original equipment or which is capable of being applied to existing drink serving installations; one which requires no particular degree of skill for its operation; one which is attractive in its appearance and pleasing in its design; and one which, otherwise, is well adapted to perform the services required of it, are further desirable features which have been borne in mind in the production and development of the present invention.

Numerous other objects and advantages of the invention, not at this time enumerated, will readily suggest themselves as the nature of the invention is better understood.

In the accompanying three sheets of drawings forming a part of this specification, one exemplary embodiment of the invention has been shown.

In these drawings:

FIG. 1 is a front perspective view of a drink mixing apparatus embodying the present invention and showing the same operatively installed in a beverage storing and serving cabinet;

FIG. 2 is an enlarged top perspective view of a pair of panel-mounted selector switch assemblies which are employed in connection with the invention;

FIG. 3 is an enlarged sectional view taken substantially on the vertical plane indicated by the line 3—3 of FIG. 2 and in the direction of the arrows;

FIG. 4 is a bottom perspective of the panel-mounted selector switch assemblies which are shown in FIG. 3;

FIG. 5 is a fragmentary sectional view taken substantially on the line 5—5 of FIG. 3;

FIG. 6 is a plan view of an exemplary control panel which may be employed in connection with the invention; and

FIG. 7 is a fragmentary combined electric, pneumatic and hydraulic circuit diagram, largely schematic in its representation, of the apparatus.

Referring now to the drawings in detail and in particular to FIG. 1, a drink-mixing apparatus constructed according to the present invention is designated in its entirety at 10 and it is illustrated as being operatively associated with a beverage-storing cabinet 12. The cabinet 12 may be either the stationary or portable roll-away type, or it may be supplanted by a conventional elongated drink-serving bar on which the apparatus 10 is adapted to be operatively supported or installed, the illustrated cabinet constituting merely an exemplary environment for the apparatus.

In general, the dispensing of mixed drinks is predicated upon the blending of an alcoholic beverage such as rye, scotch, gin and the like with a non-alcoholic beverage, either carbonated or non-carbonated, such as ginger ale, soda (carbonated water), orange or other fruit juice, or alternatively, with low alcoholic beverages such as sweet or dry vermouth. Accordingly, the cabinet 12 is designed for storage or enclosure of various containers 14 (herein disclosed in the form of bottles) which are maintained in an upright condition at appropriate places within the cabinet 12. The particular cabinet selected for illustration herein is of rectangular box-like configuration and is provided with a bottom wall 16, a top wall 18 which establishes a serving counter, side walls 20, and a hinged front door 22. The various walls and door establish an internal enclosure for the containers 14. The top wall 18 is provided with an upstanding pouring spout 24 for the discharge of beverages which are withdrawn from the various containers 14.

The drink mixing apparatus 10 likewise is of box-like configuration and it embodies a casing 26 having an inclined hinged control panel 28 which is capable of being swung forwardly and outwardly as shown in FIG. 4 to reveal the interior of the casing and also to provide access to certain selector switch mechanism the nature of which will be set forth presently.

Substantially all of the electric and pneumatic components of the beverage dispensing system are enclosed within the casing 26 while the hydraulic components are disposed exteriorly of such casing. These latter components consist substantially entirely of lengths of

flexible tubing which have been designated collectively in FIG. 1 by the reference numeral 30 and which extend from the various containers 14 to the dispensing spout 24.

As previously indicated, the present drink mixing apparatus is adapted for use in the blending of alcoholic beverages with non-alcoholic beverages in the production of so-called "mixed drinks." Accordingly, two substantially duplicate sets of electrical and pneumatic control devices are disposed within the casing 26, one such set effecting withdrawal of liquid from the containers 14 of alcoholic beverages, and the other set similarly effecting withdrawal of liquid from the containers of non-alcoholic beverages. The physical aspects of certain of the electrical and pneumatic components which are involved in the present invention and their specific placement within the casing 26 have not been disclosed herein since these components are commercially available items and any convenient arrangement thereof within the casing may be resorted to. A schematic representation of such components appears in FIG. 7 and this view will be relied upon largely to disclose the nature and function thereof. Furthermore, since duplicate sets of components are employed, only one such set is portrayed in FIG. 7, although its relationship to the other set will be described in detail. Among the illustrated components of FIG. 7 are a pulsating air pump P, an electric motor M which is operatively connected to the pump P in driving relationship, a pressure switch PS, a solenoid-actuated bleeder valve BV, a solenoid-actuated pinch off device PD, a plurality of relay magnets RM1, RM2, and a delayed action relay magnet RM3, together with their adjuncts. The illustrated set of components further includes a pair of substantially identical beverage selector switch assemblies 32 and 34, both of which appear in FIGS. 2 and 3. These selector switch assemblies constitute one of the principal features of the invention. In FIG. 7, one of these selector switch assemblies, namely the assembly 32, is defined by a dotted outline.

As shown in FIGS. 1 and 7, the aforementioned lengths 30 of flexible tubing (which hereinafter will be referred to simply as tubes) are connected to their respective bottles 14 by means of dip tubes 36, which project through bottle stoppers 38. Additional air inlet tubes 40 project through the stoppers and are connected variously to the selector switch assemblies by flexible air tubes 42 in a manner and for a purpose that will be made clear presently.

The function of the two selector switches 32 and 34 is to selectively connect the pump P to the various bottles 14 so as to pressurize the same and cause the beverages therein to rise through the dip tubes 36 and flow upwardly through the riser tubes 30 to the dispensing spout 24 for discharge of the selected beverage or beverages. The function of the pressure switch PS is to sense the hydrostatic head of liquid within the selected tubes 30 and, when a full hydrostatic head has been attained so that the selected liquids have filled the associated riser tubes 30, to effect commencement of a timing cycle under the control of the relay magnets RM1 and RM2 during which the liquids are actually dispensed, and at the termination of which pouring operations are completed. The function of the pinch-off device PD and delayed relay magnet RM3 is to collapse the riser tubes 30 which are associated with carbonated beverage containers 14 at the completion of any given

dispensing operation so that the inherent internal pressure within the carbonated beverage will be maintained during idle periods, thus preserving the carbonization thereof.

Considering now the nature of the two selector switch assemblies 32 and 34, a description of one of them will suffice for them both since they are substantially of identical construction. These assemblies are mounted on the back or inner side of the hinged control panel 28 and they are conveniently maintained in spaced apart relationship by means of a rectangular frame (FIGS. 2 and 4) having top and bottom frame members 43 and 44, and interconnecting side bars 45 and 46, the latter constituting functional elements of the switch assemblies.

The switch assembly 32 involves in its general organization the aforementioned and associated side bar 45 together with a sliding switch carriage 48 (see also FIG. 3) from which there projects upwardly and forwardly a selector lever 50 the upper end region of which projects through an elongated slot 52 (FIG. 1) which is provided in the control panel 28. A pointer 54 at the upper end of the lever 50 is designed for register with certain beverage indicia 56 which may be provided on the face of the panel. The switch assembly 32 functions both as a directional valve and as a circuit making and breaking device. Accordingly, a series of spaced air inlet openings or holes 57 extend through the side bar 44 and receive therein nipple fittings 58 (FIGS. 2 and 3) to which the terminal ends of associated tubes 42 are connected.

As best shown in FIGS. 2, 3 and 4, the carriage 32 is comprised of upper and lower spacer shoes 60 and 62 which overlie and underlie respectively the upper and lower edges of the side bar 45 and which are connected together by a channel member 64. The aforementioned selector lever 50 is integrally formed on the upper spacer shoe 60. A retaining plate 65 is secured to the shoe 60 and overhangs the upper edge of the side bar 45. Similarly, a retaining plate 66 is secured to the shoe 62 and overhangs the lower edge of the side bar. A flexible air line 68 (see also FIG. 7) has one end thereof projecting through the base of the channel member 64 and the other end of such air line is operatively connected to the discharge side of the pump P, as well as to the pressure switch PS and bleeder valve BV, in a manner and for a purpose that will be made clear presently. A sealing strip or washer 70 is disposed within the channel member and carries a nipple fitting 71 to which the adjacent end of the air line 68 is operatively connected. Wear plates 72 carried by the lower edge of the shoe 60 and the upper edge of the shoe 62 slidably engage the upper and lower edges of the side bar 45 and insure accurate alignment of the nipple fitting 71 with the various inlet openings or holes 56 as the carriage is moved along the side bar 45. A compression spring 73 bears at one end against the base of the channel member 64 and at its other end against the sealing strip or washer 70 and serves to yieldingly bias the latter against the outer side of the side bar 45.

From the above description it will be apparent that by shifting the switch carriage 48 longitudinally along the side bar 45, the flexible air line 68 may be brought selectively into register and fluid communication with the various air tubes 42 for bottle-pressurizing purpose.

Insofar as the electrical functions of the switch assembly 32 are concerned, a plurality of contact plates

74 (FIGS. 3 and 5) are mounted on the inside face of the side bar 45 in longitudinally spaced relationship and are designed to be successively traversed by a single contact strip 75 which is mounted on the lower retaining plate 66. Each contact plate 74 carries an electrical resistance element in the form of a potentiometer 76 which is electrically connected thereto. The various potentiometers 76 are also electrically connected to a time delay mechanism TD (FIG. 7) which is associated with the relay magnet RM2 and these potentiometers function during operation of the apparatus to introduce different values of resistance into the time delay mechanism TD and thus establish different durations of beverage pouring time for volumetric control of the quantities of the liquids which are dispensed all in a manner that will become clear when the operation of the apparatus is set forth.

The pressure switch PS is of the poppet valve type and includes a cup-shaped casing or head 80 across the rim of which there extends a diaphragm 82. An axially slidable poppet spool 84 is provided with an enlarged head 86 which is secured centrally to the diaphragm 82 and forces the central region of the latter against a sealing annulus 88 which surrounds an inlet port 90, this port being connected to the air line 68 by a branch air line 92. The poppet spool 84 is yieldingly pressed against the diaphragm 82 by means of a spring 94 while an adjustment screw 96 is provided for regulating the pressure exerted on the diaphragm by the spring 94. The poppet spool 84 is formed with an annular groove 97 therearound into which there projects one end of a bell crank lever 98, the other end of the lever being provided with an actuating finger 100 which cooperates with a pair of normally open contacts to close the same in a manner and for a purpose that will be described subsequently when the operation of the present beverage mechanism is set forth.

The pressure switch PS per se is not novel and no claim is made herein to any novelty associated with the same except insofar as the function which it performs in association with the dispensing apparatus is concerned. A valve of this type is shown and fully described in U.S. Pat. No. 3,506,041, dated Apr. 14, 1970 and entitled "Pneumatic Sealing Control System for Strapping Machines" and reference may be had to such patent for a full disclosure of the nature of such valve. For purposes of discussion herein it is deemed sufficient to state that the pressure switch affords a quick and sudden activation of the contact-actuating finger 100 at such time as the pressure within the air line 68 reaches a predetermined maximum. Prior to the attainment of such a predetermined pressure, the force of the spring 94 maintains the diaphragm 82 against the annulus 88 and overbalances the total air pressure acting on the circular area of the diaphragm and which is bounded by the annulus. The diaphragm therefore remains in sealing engagement with the annulus until such time as the predetermined pressure in the line 68 overbalances the pressure exerted by the spring 94. At this time, the diaphragm is forced away from the sealing annulus 88 or "cracks open," so to speak, whereupon the pressure of air at the inlet port 90 may then act upon substantially the entire area of the diaphragm, thereby rapidly forcing the poppet spool 84 axially so that the bell crank lever swings in a clockwise direction as viewed in FIG. 7, thereby closing the normally open contacts associated therewith.

Referring now to FIGS. 1 and 6, the control panel 28, in addition to being provided with the aforementioned lever-receiving slots 52, is formed with suitable openings therethrough for projection and exposure of a plurality of operating or start buttons including a pair of manual start buttons MB and a single automatic start button ASB. As will become apparent subsequently, depression of one of the buttons MSB will result in the dispensing of a selected alcoholic beverage, while depression of the other start button will similarly result in the dispensing of a selected non-alcoholic beverage. Depression of the button ASB will result in a cycle of operation by means of which selected alcoholic and non-alcoholic beverages will be dispensed simultaneously. A rotary control knob SS which is associated with the panel 28 is effective upon manipulation thereof to increase or decrease the quantity of alcoholic beverage undergoing dispensing and will therefore be referred to hereinafter as the "strength selector knob." A stop button SB projects through the panel 28 and, when depressed, terminates all machine functions regardless of the particular point in the machine cycle at which it is depressed.

The bleeder valve BV (FIG. 7) is in the form of a conventional solenoid-actuated shut-off valve having a solenoid winding w1 which, when deenergized, bleeds the air line 68 through a branch line 102 to the atmosphere.

The pinch-off device PD embodies a solenoid winding w2 and an associated armature 104, the latter being carried on an axially shiftable plunger 106, the forward end of which is designed for engagement with the flexible lines 30 and 42 leading from a container or bottle 14 which contains a carbonated beverage. A spring 108 normally urges the plunger 106 toward its effective position wherein the plunger engages the lines 30 and 42 and compresses the same against a reaction anvil 110, thus "pinching-off" the two tubes and sealing the container against loss of the inherent carbonation pressure.

Referring now to the schematic disclosure of FIG. 7, it is to be noted that this disclosure is a fragmentary one and only three of the seven beverage containers which are accommodated by the selector switch 32 appear in this view. It will be understood of course that a duplicate set of electrical and pneumatic instrumentalities are associated with the selector switch 34, these including a second motor M, pump P, bleeder valve BV, pressure switch PS, manual start button MSB and a second set of potentiometers 76, together with similar electrical and pneumatic circuitry therefor. However, the automatic start button ASB and the stop button SB are common to both sets of instrumentalities. To facilitate the description of the operation it will be assumed that the bottle 14 labeled "carbonated" contains a carbonated beverage while the other two illustrated bottles 14 are non-carbonated alcoholic beverages. To further facilitate description the three illustrated bottles 14 in FIG. 7 are labeled (a), (b) and (c).

Assuming that it is desired to dispense beverage from the bottle 14 labeled (a) for the serving of a "straight" drink as distinguished from a blend of beverages, it is merely necessary to set the selector lever 50 to the appropriate indicia 56 on the control panel 28, thus sliding the carriage 48 of the selector switch 32 to a position wherein the tube 68 registers with the tube 42 leading to the bottle, this being the position in which the carriage is shown in FIG. 7. Thereafter, the manual

start button MSB will be depressed, thus closing the No. 1 contacts thereof and establishing a circuit leading from the positive side of the line, through lead 11, No. 1 contacts of the start button MSB, leads 13, 15, 17, motor M, and leads 19, 21, 23, 25, 27 back to the negative side of the line. Energization of the motor M serves to drive the Pump P, whereupon pressurized air flows through the air line 68, tube 42 and tube 40 of the bottle 14, thus pressurizing the contents of the bottle and causing fluid to rise through the dip tube 36 and flow through the riser tube 30 for pouring from the spout 24.

The aforementioned solenoid actuated bleeder valve BV is of the normally open type so that when the winding w1 thereof is deenergized the air line 68 is connected to the atmosphere through the branch line 102. The winding w1 of the bleeder valve BV is connected in electrical parallel with the motor M through a local circuit 29, 31, so that each time the motor is energized the winding w1 also is energized, thus blocking off the branch line 102.

When the manual button MSB is thus used, pouring operations are observed and, when the desired amount of the beverage has been poured, release of the manual button will open the No. 1 contacts of such button and thus discontinue the previously described motor circuit, as well as the local circuit for the bleeder valve BV, so as to disable the pump P and terminate pouring operations. Opening of the bleeder valve BV depressurizes the line 68 and allows the liquid in the riser tube 30 to return to the bottle 14.

When it is desired to serve a mixed drink, i.e. a drink which is comprised of two different ingredients, both selector switches 32 and 34 will be set to the appropriate beverage as indicated on the panel 28, after which the automatic start button ASB will be depressed, thus establishing a circuit from the positive side of the line, through lead 33, No. 1 contacts of the button ASB, leads 35, 37, No. 2 contacts of the start button MSB, leads 39, 41, 15, 17, Motor M, leads 21, 23, 25, 27, back to the line. Again assuming that the bottle labeled (a) is one of the two bottles selected for the blended drink, energization of the motor M will effect rising of the liquid in the riser tube 30 as heretofore set forth in connection with the manual dispensing of liquid from such bottle. However, inasmuch as depression of the automatic start button ASB is only momentary, a holding circuit for the motor is provided. Accordingly, depression of the button ASB also establishes a circuit which extends from the power line through lead 33, button ASB, leads 35, 51, 53, normally closed contacts of the relay magnet RM2, lead 55, relay magnet RM1, and leads 57, 25, 27, back to the line. Energization of the magnet RM1 serves to close its normally open contacts, whereupon a holding circuit for the motor M will extend from the line through lead 61, stop button SB, lead 63, contacts of the magnet RM1, leads 67, 51, 37, No. 2 contacts of the manual start button MSB (now closed), leads 39, 41, 15, 17, motor M, and leads 19, 21, 23, 25, 27 back to the line.

With the motor M thus energized, air pressure is applied to the selected bottle 14 (a) and fluid is caused to rise in the riser tube 30 as previously set forth in connection with manual dispensing operations. However, since pouring operation do not come under the control of the operator during automatic operation of the apparatus, it is necessary to provide a predetermined pouring time interval for each of the ingredients undergoing

pouring. Furthermore, in order that the commencement of any given pouring cycle shall not take place until the riser tube 30 for the selected beverage has been filled with the beverage, the pressure switch PS is provided. This switch senses the back-up air pressure which exists within the line 68 incident to the hydrostatic head of liquid in the riser tube 30 and, at such time as such pressure attains, a predetermined maximum value which is calculated on the basis of a column of liquid within the riser tube and which has reached pouring spout level, the switch operates to initiate a timing period during which liquid pouring operations may continue. The timing period for any given beverage is a function of the ohmic value of its associated potentiometer 76 when coupled with the ohmic value of a variable resistor RS which is capable of being adjusted by the strength selector knob SS. The various potentiometers 76 and resistor RS are electrically connected to a time delay device TD which is associated with the relay magnet RM2 and which functions to energize the magnet for a period of time after pressure switch PS is actuated and maintains such magnet energized for a length of time which is determined by the aforementioned ohmic values of the potentiometers 76 and resistance RS.

Assuming now that the liquid in the riser tube 30 for the bottle 14 (a) has reached the common pouring level which is indicated by the dotted line 1-1 in FIG. 7, the back-up pressure in the air line 68 will be sufficient to actuate the pressure switch PS in the manner previously described. At this time the bell crank lever 98 will close a pair of normally open contacts C1, whereupon a circuit will be established from the line through lead 81, contacts C1, lead 83, time delay device TD, and leads 85, 23, 25, 27 back to the line.

Such energization of the time delay device sets an internal timing cycle into effect, the duration of such cycle being a function of the ohmic value of a local circuit which extends from the timing device through lead 91, resistor RS, leads 93, 95, 97, resistor 76 (a), fixed contact plate 74, slidable contact strip 75, and lead 99 back to the time delay device. The combined value of the resistances RS and 76 (a) being thus impressed upon the time delay device, a duration of beverage pouring time is initiated such pouring time being commensurate with the desired quantity of the beverage which is to be poured from the spout 24.

At the conclusion of the timing cycle, the time delay device TD functions to energize the magnet RM2, whereupon the contacts associated therewith become open, thereby deenergizing the circuit through the magnet RM1 and causing its contacts to become open. Opening of these latter contacts causes opening of the aforementioned holding circuit for the motor M and the bleeder valve BV, whereupon the motor becomes deenergized while the valve BV becomes open so as to bleed the line 68 to the atmosphere and allow the liquid in the riser tube 30 to siphon back into the bottle 14 (a). Various time delay devices are capable of being used in connection with the relay magnet RM2, one such device being manufactured and sold by Omnetics, Incorporated of Syracuse, New York under the trade name Solid State Time Delay Relay, Model No. MAR.

In order that the pressure of carbonation within such bottles 14 as contain a carbonated beverage shall not be dissipated during a period of machine idleness, each such bottle may have associated therewith one of the

aforementioned solenoid-actuated pinch-off devices PD. In the exemplary illustration of FIG. 7, the device is shown as being associated with the bottle 14 labeled (c). Normally, the plunger 106 of the device remains spring-pressed against the tubes which are associated with the bottle 14 (c) but, at such time as the selector switch 32 is set so as to bring the air line 68 into communication with the air tube 42 leading from the bottle 14 (c) preparatory to initiation of beverage dispensing operations, a finger 120 on the carriage 48 of the selector switch will effect closing of a pair of contacts C2, whereupon a circuit will be established from the line through lead 61, stop button SB, lead 63, contacts of the relay magnet RM2 (now closed), leads 67, 51, lead 37, No. 2 contacts of the button MSB, leads 39, 111, contact C2, lead 113, relay magnet RM3, and leads 115, 27 back to the line. Energization of the magnet RM3 will effect closing of its associated contacts, thus establishing a circuit which extends from the line, through lead 117, contacts of the magnet RM3 (now closed) lead 119, winding w2 of the device PD, and lead 121, back to the line. Energization of the winding w2 will cause retraction of the plunger 106, thus releasing the tubes 42 and 30 for beverage pouring operations. At the completion of beverage pouring operations, opening of the contacts of the relay magnet RM1 will deenergize the circuit through the winding w2 but, since the magnet RM3 is a delayed action magnet, its deenergization is delayed until such time as the liquid in the tube 30 has drained back into the bottle 14 (c).

If, during operation of the apparatus, it is desired at any time to stop the operation of the same, depression of the stop button SB will open the circuit which passes through the contacts of the relay magnet RM1, thus deenergizing the aforementioned holding circuit of the motor M and terminating the operation of the apparatus in the manner previously described. The stop button is thus available for use in the event of an emergency as, for example, failure to place a serving glass beneath the spout 24.

It will be understood, of course, that at the time the automatic start button ASB is depressed, the selector switch 34 which controls selection of the non-alcoholic or low alcohol content beverages will also have been set for the appropriate blend of beverages. Energizing current is supplied to the duplicate set of operating instrumentalities associated with the selector switch 34 from the positive side of the line, through a lead 125 which extends to the No. 2 contacts of the automatic start button ASB and from which contacts another lead 127 ties into such other set of instrumentalities in the same manner as the lead 35. Similarly, a lead 129 performs the same function in the duplicate system as does the lead 63.

It is to be understood that the invention is not to be limited to the exact arrangement of parts shown in the accompanying drawings or described in this specification, or to the precise electric and pneumatic circuitry which is disclosed herein as various changes in the detail of construction may be resorted to without departing from the spirit of the invention. Therefore, only insofar as the invention has particularly been pointed out in the accompanying claims is the same to be limited.

Having thus described my invention, what I claim and desire to secure by letters patent is:

1. In a dispensing apparatus for delivering a liquid beverage selected from a plurality of available liquids,

in combination, a container for each liquid and having a gas inlet and a liquid outlet, a liquid discharge spout above the level of said containers, a riser tube for each container separately and individually connecting the liquid outlet thereof to said spout, a selector valve means having a gas inlet and a plurality of gas outlets, a gas line for each container separately and individually connecting the gas inlet thereof to one of said gas outlets, electrically actuated means effective when energized to supply gas under pressure to the air inlet of said selector valve means for selective distribution to said containers, relay means for maintaining said gas supply means energized, time delay means effective when actuated to deenergize said gas supply means after a predetermined interval of time, and means responsive to the incidence of back-up pressure in said gas line and effective when such back-up pressure substantially equals the supported hydrostatic head of the liquid column in the riser tube of the selected container for actuating said time delay means.

2. In a dispensing apparatus, the combination set forth in claim 1, wherein said means for supplying gas under pressure to the selector valve comprises a pump having its discharge side connected to said gas line, and a normally deenergized electric motor operatively connected to the pump in driving relationship, said time delay means effective when actuated to energize said motor.

3. In a dispensing apparatus, the combination set forth in claim 2 including, additionally, a normally deenergized solenoid-actuated bleeder valve interposed in said gas line between the pump and selector valve, said time delay means being effective when actuated to energize the bleeder valve.

4. In a dispensing apparatus, the combination set forth in claim 3, wherein means are provided for regulating the interval of time during which said time delay means remains effective, said latter means being individual to each position of the selector valve.

5. In a dispensing apparatus, the combination set forth in claim 4, wherein additional and manually operable means, independent of said selector valve means, are provided for regulating the interval of time during which the time delay means remains effective.

6. In a dispensing apparatus, the combination set forth in claim 4, wherein shut-off valve means are provided for normally sealing the individual riser tube and the individual gas line which extends from at least one of said containers, and means are provided under the control of said selector valve means for rendering said shut-off valve means ineffective when the selector valve means is manipulated for distribution of gas to such container.

7. In a dispensing apparatus, the combination set forth in claim 4, wherein said riser tube and gas line are in the form of lengths of flexible tubing, and shut-off valve means are provided for formally sealing the indi-

vidual riser tube and gas line which extend from at least one of said containers, said shut-off means comprising a reaction anvil, a solenoid-actuated plunger movable between a projected position wherein it engages said lengths of tubing and forces the same against the anvil, and a retracted position wherein it releases said lengths of tubing, spring means yieldingly biasing said plunger to its projected position, and a normally deenergized solenoid effective upon energization to retract said plunger, said selector valve means being effective to cause energization of said solenoid.

8. In a dispensing apparatus, the combination set forth in claim 4 including, additionally, manually operable means for energizing said motor at will in overriding relationship with respect to said time delay means.

9. A beverage dispensing apparatus for selectively and simultaneously withdrawing liquid alcoholic beverages from a first group of containers, and non-alcoholic liquid beverages from a second group of containers and delivering them to a dispensing spout which is disposed above the level of the containers, each container having an air inlet and a liquid outlet, said apparatus comprising: a riser tube for each container separately and individually connecting the liquid outlet thereof to said spout, a manually operable beverage selector valve means for each group of containers and having an air inlet and a plurality of gas outlets, an air line for each container separately and individually connecting the gas inlet thereof to one of the gas outlets of its associated selector valve means, a pump for each group of containers and having its discharge side connected to one of said air lines, a normally deenergized electric motor for each pump, time delay means individual to each motor and effective when actuated to deenergize such motor after a predetermined interval of time, and means responsive to the incidence of back-up pressure in each of said gas lines and effective when such back-up pressure substantially equals the supported hydrostatic head of the liquid column in the riser tube of an associated and selected container for actuating the associated time delay means.

10. A beverage dispensing apparatus as set forth in claim 9, wherein means are provided for regulating the interval of time during which each time delay means remains effective, said latter means being individual to each position of its associated selector valve means.

11. A liquid dispensing apparatus as set forth in claim 10, wherein additional and manually operable means, independent of the selector valve means, are provided for regulating the interval of time during which the time delay means which is associated with the first group of containers remains effective.

12. A liquid dispensing apparatus as set forth in claim 11 including, additionally, manually operable means for energizing each of said motors at will in overriding relationship with respect to said time delay means.

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