

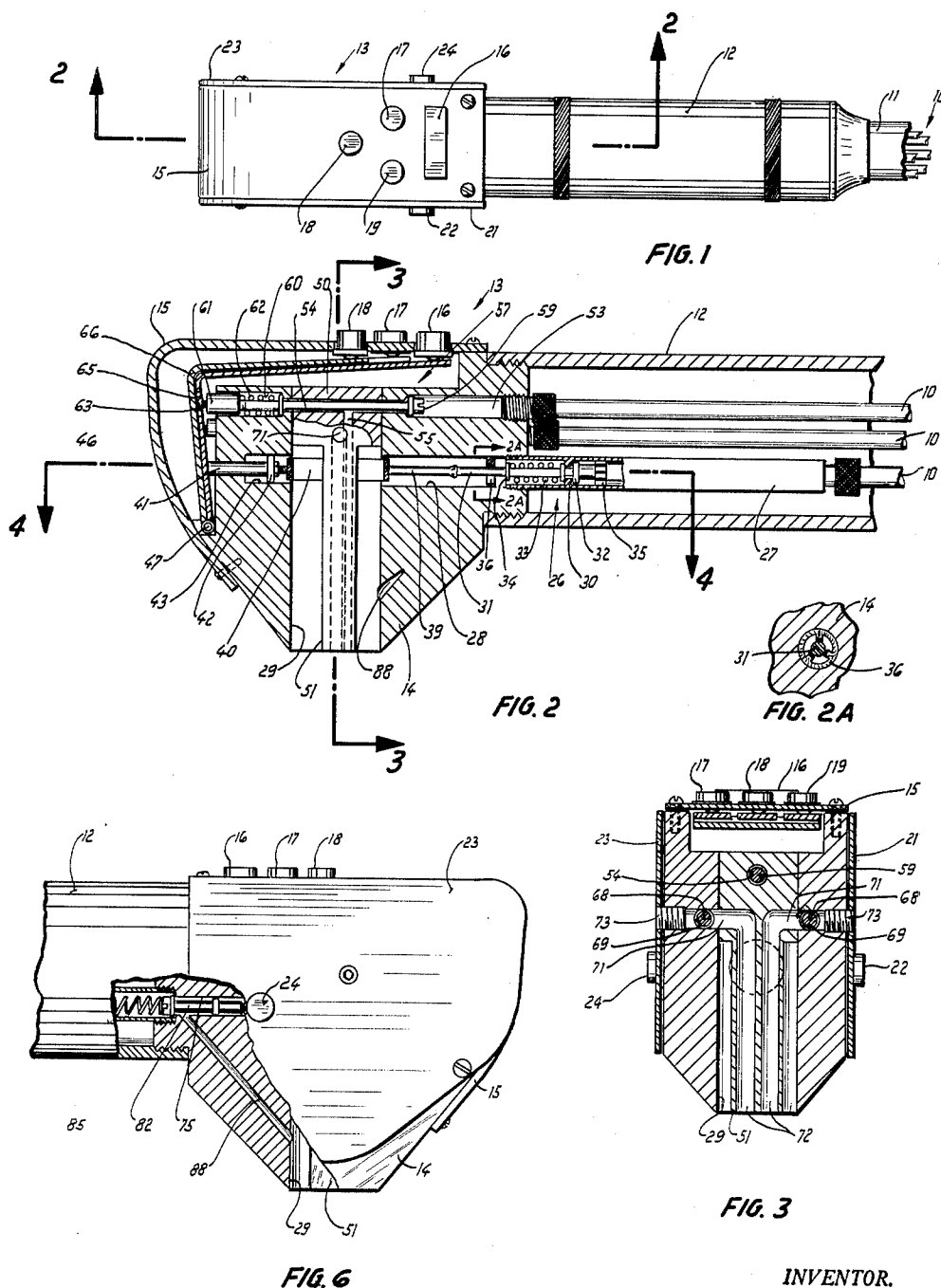
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M. A. McCLAIN
DISPENSING DEVICE

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2 Sheets-Sheet 1



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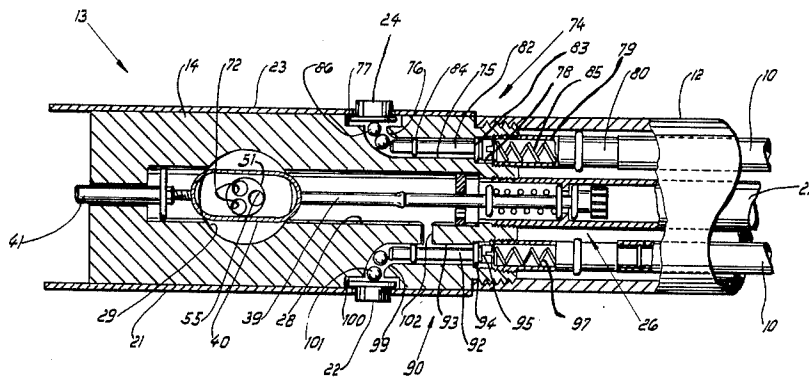


FIG. 4

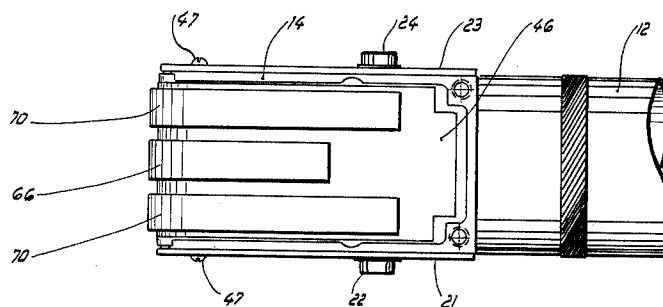


FIG. 5

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This invention relates to devices for selectively dispensing any one of several liquids or combinations thereof, and more particularly to hand held dispensers which are used at bars for such purpose.

An object of this invention is to provide an improved dispenser for liquids.

Another object of this invention is to provide a semi-portable hand carried dispenser for selectively supplying mix or liquids for drinking purposes.

A still further object of this invention is to provide a liquid dispenser capable of selectively dispensing any one of three liquids alone or any one of three other liquids in combination with one of the first mentioned liquids.

Still another object of this invention is to provide a unique, compact, mechanical operated hand dispenser which can accommodate and selectively dispense more different fluids than prior hand dispensers.

A still further object of this invention is to provide an inexpensive, compact hand dispenser for fluids.

Other and further objects of this invention will become apparent in the detailed description below in conjunction with the attached drawings wherein:

FIGURE 1 is a plan view of a preferred embodiment of the invention;

FIGURE 2 is a cross section of the dispenser shown in FIGURE 1 taken along line 2-2 in FIGURE 1;

FIGURE 2A is a fragmentary view taken along line 2A-2A in FIGURE 2;

FIGURE 3 is a cross sectional view taken along line 3-3 in FIGURE 2;

FIGURE 4 is a cross sectional view taken along line 4-4 in FIGURE 2;

FIGURE 5 is an enlarged plan view of the head of the dispenser with the cover removed, and;

FIGURE 6 is a partially broken away view of the right side of the dispenser shown in FIGURES 1 through 5.

Embodiments of the present invention are most widely used at commercial bars to enable the bar tender to mix and otherwise dispense more rapidly drinks to the customers. Therefore, the present invention shall be described in that environment. In addition the particular embodiment of the invention shown is presently being sold to a great extent to dispense soda water, Coca-Cola, 7-Up, Ginger Ale, plain water, and quinine water. Therefore, in the detailed description below, I will refer to the different portions of the dispenser with reference to such fluids in order to facilitate understanding the invention. Naturally the invention is not limited to the use of such fluids only.

Six flexible liquid conducting tubes 10, enclosed in a sheath 11, extend from the rear of handle 12 of the dispenser to a remote point (normally below or adjacent the bar) at which is located the supply of syrups, soda water, quinine water, and plain water. These liquids are supplied under pressure by conventional means which do not comprise part of the invention and therefore are not disclosed or described. In addition, as will become apparent in the description below the valves in the dispenser head are essentially two position, that is on-off valves. Therefore there is usually provided for each tube 10 a metering valve which controls the flow of liquid when the associated valve in the dispenser is open. However such metering valves are located at the "supply end" of the tubes 10 and are also conventional, and therefore are not shown.

Before describing in detail the mechanism by which the disclosed embodiment of the invention accomplishes the purpose of the invention, I will describe the function of the dispenser illustrated from a broad aspect. At the forward end of the handle 12 is located a head generally indicated by the arrow 13. This head comprises a body or housing 14 carrying the various components of the device, which body is partially enclosed by a cover 15. Extending through the top of the cover 15 is a generally rectangular soda button 16 which when depressed allows the soda water to be dispensed through the subject device.

Located in front of the soda button 16 are three syrup buttons 17, 18, and 19 which, when depressed cause to be dispensed Coca-Cola, Ginger Ale, and 7-Up respectively. As will become apparent in the description below, each of these buttons 17 to 19 is operatively associated with mechanism so that as the particular button is depressed, not only is a valve controlling the flow of syrup opened, but the valve controlling the flow of soda water is also opened. By this arrangement the particular syrup is mixed with the soda water as the two liquids are discharged from the dispenser.

Located on the left side of the head 15 and extending through a suitable hole in left side plate 21 is a left side button 22. In the embodiment disclosed the button 22 preferably controls the bow and discharge of ordinary water from the dispensing device while button 24 located on the right side of the head is used for controlling the flow and discharge of a liquid such as quinine water.

It can be seen how easily the subject dispensing device can be operated because of the compact physical size of the dispenser and the location of the various control buttons, which compactness and button location arise from and are made possible by, among other things, the unique construction of the invention illustrated herein.

Referring now to FIGURES 2 to 5 the particular construction and mode of operation will be described. Since the soda water is discharged either by itself or with any of the three syrups control apparatus for this liquid will be described first.

Located within the dispenser is a soda valve indicated generally by arrow 26. (See FIGURES 2 and 4 in particular.) This soda valve includes, affixed to the rear side of the body 14, a rigid tube 27 to which is attached the particular flexible tube 10 which is connected to the supply of soda water. From the tube 27 the soda water flows around the valve 26, through a longitudinal passage 28 in the body 14 and thence through a vertical outlet passage 29.

Formed within the tube 27 is an annular seat 30 through which extends an actuator rod 31 carrying an O-ring gasket 32 which selectively seals against the seat 30. As can be seen the pressure of the soda water urges the valve 26 closed. However, it has been found desirable to provide a light spring which functions to keep the valve 26 closed when there is no pressure on the upstream side of the valve. To this end there is provided a light spring 33 located around the rod 31 and acting against the seat 30 and a snap ring 34 located in a suitable recess in the rod 31.

An enlarged serrated guide 35 on the rear end of the rod 31 stabilizes the rod at that end while a spider 36, press fitted into the passage 28 guides the rod 31 at the rod's forward end. In FIGURE 2A further details of the configuration of the spider 36 may be seen. To facilitate the manufacture of the subject dispenser, the rod 31 terminates a short distance within the passage 28 where it abuts the concave rear end of a rod 39.

The rod 39 is connected to the rear edge of an oval ring 40, which has a stub shaft attached to its forward side on which an actuator shaft 41 is threaded. At the rear

end of the shaft 41 is an O-ring which seals against the wall of bore 42 and also tends to support the combination of the ring 40, rod 39 and shaft 41 in the forward and rearward movement of the combination.

In order to move the shaft 41 rearwardly and thus open the soda valve 26, a soda actuator lever 46 is pivoted at 47 and normally abuts the forward end of the shaft 41. As seen from the side, i.e. the aspect of FIGURE 2, the lever 46 is bent rather similarly to a L and extends upwardly in front of body 14 and then rearwardly over the top of the body 14 to a position below the soda button 16. Accordingly by depressing the button 16 the lever 46 is rotated clockwise (as seen in FIGURE 2) moving the shaft 41, ring 40, and rods 39 and 31 to the right opening the soda valve 26.

Turning my attention now to the syrup valves, located within the bore forming the passage 29 is a member having a plug 50 at its upper end filling the bore, with a reduced portion 51 depending concentric to the vertical outlet passage 29 to a point which is flush with the bottom of the body 14. As will be described in more detail below, the reduced portion 51 has three passages within it through which is discharged any one of three syrups according to the desire of the operator.

The three syrup valves are substantially identical in construction and mode of operation. Therefore only the center valve actuated by the button 18 is shown completely and will be described in detail. The other syrup valves will be described with reference to the center syrup valve.

Referring again to FIGURE 2 in particular, one of the syrup conducting tubes 10 is connected to a passage 53 which opens at its forward end to a reduced passage 54 having a vertical outlet passage 55 extending therefrom down through the above mentioned reduced portion 51. Therefore the syrup may flow from tube 10 through passage 53 around a syrup valve indicated generally by the arrow 57 and through passages 54 and 55.

Forming part of syrup valve 57 is a specially shaped bolt 59 carrying an O-ring gasket 58 which seals against the seat formed at the junction of passage 53 and 54 when the bolt is moved forward. The shank of the bolt 59 extends through the reduced passage 54 and is of smaller diameter than the last mentioned passage in order that syrup passing by the valve 57 can flow through to the outlet passage 55.

The shank of the bolt 59 extends forwardly into an enlarged bore 60 in which is disposed a coupling 61 threaded on the forward end of the bolt. Also located in the bore 60 is a spring 62 which performs the dual function of biasing the bolt 59 forward to normally close the valve 57, and holding against the rear end of the bore 60 and O-ring seal 64. At the front end of the coupling 61 is an adjustment screw 63 which extends through the properly oriented hole 65 in the soda valve actuator lever 46.

In order to move the bolt 59 rearwardly and thus open the syrup valve 57, a syrup actuator lever 66 is also pivoted at 47 and extends generally contiguously with the soda actuator lever 46 to a point immediately below the center button 18. (See also FIGURE 5.) With such arrangement, as the operator pushes downwardly on the button 18 the syrup actuator lever 66 pushes on the adjustment screw 60 thus opening the syrup valve 67, and at the same time the actuator lever rotates clockwise (as seen in FIGURE 2) the soda valve actuator lever 46 thus opening the soda valve 26 as described previously. At this time syrup would be discharged from the outlet passage 55 while soda water would discharge through outlet passage 29.

It should be noted that by adjusting the screw 63 it is possible to commence the flow of soda water just before commencing the flow of syrup or just after commencing the flow of syrup, or at the same time as the flow of syrup is commenced. Similarly this same adjustment would cause the soda valve 26 to close just before, or

at the same time as, or just after the syrup valve 57 is closed. It is preferred that the soda valve 26 opened just before and closed just after the particular syrup valve is opened or closed. Thereby the soda tends to flush off the end of the portion 51 through which the syrup outlet passages open.

Turning now to the description of the other two syrup valves, as mentioned above they are substantially identical in structure and operation as the center syrup valve 57 just described. Each of those valves comprises a bolt 68, the shank of which can be seen in FIGURE 3 extending through a reduced bore 69 with sufficient clearance to allow syrup supplied from an associated tube 10 to pass as in the case of the center reduced bore 54. Each of these bolts 68 also has the adjustment feature and spring biasing feature of the center syrup valve.

In order to actuate the left and right syrup valve, each such valve is provided with an actuator lever 70, which is substantially the same shape as and works in substantially the same manner as the actuator lever 66. The actuator levers 70 are also pivoted at 47. The actuator levers 70 do differ from the lever 66 in that they extend further back across the upper portion of the soda lever 46 than does the lever 66 (see FIGURE 5); however this is only so that they extend to a position directly below the buttons 17 and 19 respectively. By that arrangement, either of the syrup valves may be opened by depressing the associated button 17 or 19.

Since the bores 69 are spaced laterally from the center of the outlet passage 29 transverse bores 71 are provided to allow the syrup to flow to, and thence through, outlet passages 72 in the reduced portion 51. Plugs 73 close the passages 71.

The portion of the illustrated device so far is very similar both in function and in structure to my earlier dispenser which handled only three syrups and soda water. I found that it is very beneficial that the dispensing device also handle ordinary water and a liquid such as quinine water or a flavored liquid such as orange juice therefore by a unique design, I have been able to increase the capacity of my dispenser to six liquids without increasing the size of the dispenser and without prohibitive costs.

Referring now to FIGURES 4 and 6, right side valve indicated generally by the arrow 74 will be described in detail. Immediately inward of the right side button 24 is located a longitudinal bore 75 which is curved at its forward end 76 and opens to a cavity 77 in which the button 24 is located. Adjacent the rear end of the body 14, the bore 75 is counter-bored at 78 to form a seat at the junction of the bore and counter-bore. The counter-bore 73 is threaded and receives a collar 79 to which is attached a nipple 80 which in turn has secured thereto the proper one of the flexible tubes 10.

Forming an important portion of the valve 74 is a mushroom shaped member 82 which is very similar to a bolt having no threads on its shank, or stem, which extends through the bore 75. This shank is smaller than the bore 75 in order to allow the flow of quinine water or flavored drink through the bore when the valve is open. Therefore, in addition to an O-ring gasket 84 carried by the member 82 abutting the head thereof for sealing at the above mentioned seat, there is provided an O-ring 84 encircling the member near the front end thereof for sealing and guiding purposes. Upon inspection of FIGURE 4, it can be seen that the pressure of the liquid on the upstream side of the valve 74 urges the valve closed. However, as in the case of the previously described valves, a light spring 85 is used to bias close the valve 74 when there isn't any such upstream pressure.

Located within the curved section 76 of the passage 75 are a plurality steel balls 86 which are instrumental in opening the valve 74. These balls 86 are only slightly smaller than the diameter of the section 76. In addition, the curved section 76, the member 82, the cavity 77, and the button 24 are sized and related so that when the mem-

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ber 82 is in its forward position (and the valve 74 is therefore closed) the button is at its outer position with the unnumbered annular flange thereon engaging, or immediately adjacent, the side plate 23.

Therefore, with the above arrangement, when the operator presses the button 24, the balls 86, cooperating with the curved section 76 convert this lateral motion into longitudinal motion, moving the member 82 rearwardly opening the valve 74 against the biasing force of the spring 85 and the pressure of liquid upstream of the valve 74. At this point the pressure on the upstream liquid forces the liquid through the nipple and collar 80 and 79 respectively, to the passage 75 and thence through a diagonal passage 88 which opens to the outlet passage 29 near the lower end thereof. (See FIGURE 6 in particular.)

The associated passages down stream of the left side valve indicated generally by the arrow 90 are slightly different than the right side valve 74 just described. However, the remainder of the left side valve is substantially the same. More particularly it has provided a longitudinal bore or passage 93, which receives a mushroom shaped member 92 therein carrying an O-ring gasket 94 abutting its head, which O-ring seals at the seat formed between the passage 93 and a counter-bore 95 at the rear end of the passage 93. In the same manner, as the right side valve 74, the left side valve 90 is normally biased closed by a light spring 97 acting against the head of the member 92.

Also, as in the case of the right side valve 74, the passage 93 is curved outwardly at its forward end 99 and opens to cavity 100 in which the left side button 22 is located. Therefore, by means of balls 101, disposed in the curved section 99, lateral motion of the button 22 by the operators thumb can move longitudinally the member 92 against the spring 97 and the pressure of the water thus opening the valve 90.

With the valve 90 open the water flows past the O-ring gasket 94 into the passage 93 and turns a right angle to flow through a transverse passage 102 into the previously described soda dispensing passages 28 and 29.

The water is directed into the soda passages 28 and 29 because the pressure is much higher than the pressure to which are subjected the quinine water and/or the various syrups. (The latter liquids are supplied at, for example, 20 p.s.i.) And it has been found that by directing the water as described, it may be discharged at a very high rate without excess splashing.

It can be seen from the above description that the present device overcomes the disadvantages of a dispenser which can only accommodate three flavoring syrups and soda water. If the dispensing device cannot accommodate water in addition and also quinine water or another flavored liquid, a second and/or a third dispensing nozzle must be provided for that purpose, thus complicating and making more time consuming the task of the bar tender. It can also be seen that because of the unique construction of the device, the left and right side valve control buttons 22 and 24, as well as, the syrup and soda valve control buttons can be quickly and easily used by the operator.

Although only one embodiment of the invention is shown and described in detail, it will be apparent to those skilled in the art that such is by way of illustration only and that numerous changes and modifications may be made thereto without departing from the spirit of the present invention. Therefore, it is my intention that this invention be limited solely by the scope of the appended claims.

I claim:

1. A hand graspable liquid dispensing device:

a head having a plurality of passages formed therein each of which is adapted to receive the end of a separate liquid conducting tube;

a separate valve located in each of said passages;

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a first actuator means operatively associated with one of said valves, said first actuator means including a lever being pivoted to said head for limited movement between a first position where the associated valve is closed and a second position where the associated valve is open;

a second actuator means operatively associated with a second of said valves, said second actuator means including a lever pivoted for limited movement between a first position where the associated valve is closed and a second position where the associated valve is open and the lever of the first actuator means to its said second position;

a third actuator means operatively associated with a third one of said valves, said third valve including a valve member disposed in its passage for movement between a closed position and an open position, said third actuator means including an actuator passage formed in said head leading from one end of said member to a side of said head, and a plurality of balls located in said actuator passage and substantially filling said passage, whereby motion of said balls relative to said head is transmitted to said third valve member, said passage and balls being disposed so that said movement opens said third valve.

2. A hand graspable liquid dispensing device comprising:

a head having a plurality of passages formed therein, each of which is adapted to receive the end of a separate liquid conducting tube;

an annular valve seat in a first one of said passages facing upstream with respect to the normal flow of liquid through said passage;

a mushroom shaped valve member having its stem extending through said annular valve seat and its head on the upstream side of said valve seat;

means resiliently urging said valve member head against said valve seat closing said valve;

and means for moving said valve member away from said seat to open said valve, said means including:

an actuation passage formed in said head extending from the stem end of said valve member parallel to the axis of motion of said member and then to a position opening through the side of said head;

a plurality of balls substantially filling said actuation passage;

and an actuator accessible from said side of the dispenser operatively, abutting said balls, said actuator being disposed in said head for movement between a first position and a second position, which movement is transmitted via said balls to said valve member to open said valve.

3. A dispensing device comprising:

a plurality of generally coextensive flexible liquid conducting tubes each adapted to be connected at one end to a separate supply source;

a hand graspable dispensing head connected to the other ends of said tubes, said head having a passage formed therein in communication with each tube, each of said passages leading to an outlet;

a first valve located in said head in one of said passages;

a second valve located in said head in a second one of said passages;

a separate actuator operatively associated with each of said valves;

means interengaging said actuators whereby actuation of the actuator for said second valve actuates the actuator for said first valve;

a third valve having a movable member located in said head in a third one of said passages;

and actuation means operably connected with said third valve for opening said third valve independent of

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said first and second valves, said actuation means including:

- an actuation passage leading from the passage in which said third valve is located to a point at which it opens to a shallow cavity in the side of said head;
 - a plurality of balls in said actuation passage substantially filling the passage between said cavity and the moveable member of said third valve;
 - and a button disposed in said cavity for limited movement, whereby when the button is moved the balls transmit that movement to the moveable member of said third valve to open said valve.
4. The dispensing device set forth in claim 3 wherein a fourth valve is located within said head within a fourth one of said passages, said fourth valve having a moveable member disposed in said passage for limited movement between a closed position and an open position;
- and a second actuation means is provided in operative relation with said fourth valve member for moving said last mentioned member to said open position, said last mentioned actuation means including:
- an actuation passage extending from the end of said last mentioned member opposite said open position to a button disposed in said head for limited movement and being accessible from the exterior of said head;
 - and a plurality of balls substantially filling said passage, whereby movement of said button against said balls moves the balls and thereby moves the fourth valve member to said open position.
5. The dispensing device set forth in claim 4 wherein said first and second actuators each include a button disposed in said head for limited movement, each of said buttons being exposed to and projecting slightly above the top of said head, said button operatively associated with said third valve projects slightly outward of the left side of said head, and said button operatively associated with said fourth valve projects slightly outward of the right side of said head.
6. A dispensing device comprising:
- a hand graspable head;
 - a first liquid conducting passage formed therein with a horizontal section extending from the rear of said head forward, said passage having a vertical section from the forward end of said horizontal section downward to an opening in the bottom side of said head;
- first valve means in said first passage at the rear of said horizontal section;
- means for actuating said first valve means to selectively open said valve means to allow flow therethrough;
- means forming a second liquid conducting passage in said head, said second passage extending down through said vertical section of said first passage to said opening, said second passage forming means being of smaller diameter than said first passage in said vertical section;

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- second valve means in said second passage;
- actuation means in said second passage for selectively opening said second valve means to allow flow therethrough;
- means cooperating with said first and second valve actuation means whereby actuation of said second valve means actuates said first valve means;
- a third passage formed in said head, said third passage extending from the rear of said head and communicating with said first passage in said horizontal section;
- and flow control means in said third passage for selectively controlling flow through said third passage, said last mentioned means being operable independent of the actuation of said first and second valve means, said flow control means including:
- a third valve having a movable member located in said head in said third passage;
 - an actuation means operably associated with said third valve for moving said valve member, said actuation means comprising:
 - an actuation passage formed in said head leading from said movable member to a point at which said actuation passage opens to a shallow cavity in the side of said head;
 - a plurality of balls in said actuation passage substantially filling the passage between said cavity and the moveable member of said third valve;
 - and a button disposed in said cavity for limited movement, whereby as said button is moved the balls transmit that movement to the movable member of said third valve to open said valve.
7. A liquid dispensing device comprising:
- a body having an inlet port and an outlet port therein;
 - a passage formed in said body communicating said inlet and outlet ports;
 - valve means in said body for variably restricting flow through said passage;
 - control means for actuating said valve means, said control means comprising:
 - an actuation passage formed in said body extending from said valve means to a point spaced from said valve means;
 - a plurality of balls substantially filling said actuation passage;
 - and means located at said point and engaging at least one of said balls, said last mentioned means being mounted for movement, said last mentioned means being adapted to be moved by an external force, which movement is communicated through said balls to said valve means.

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