

April 24, 1928.

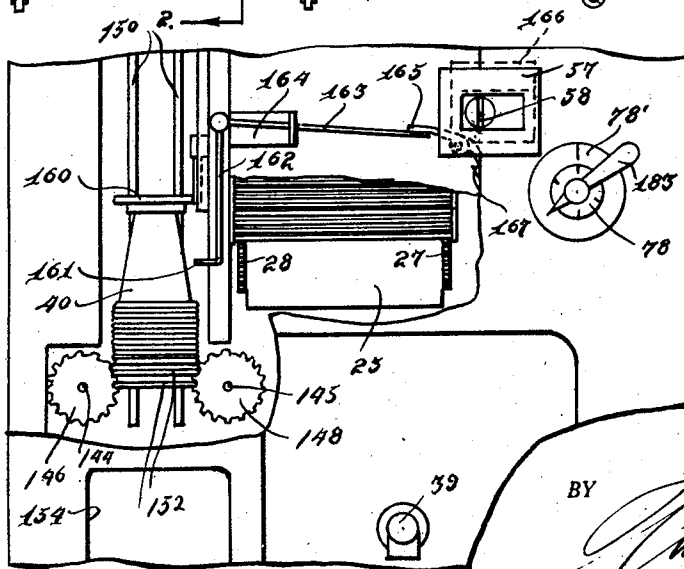
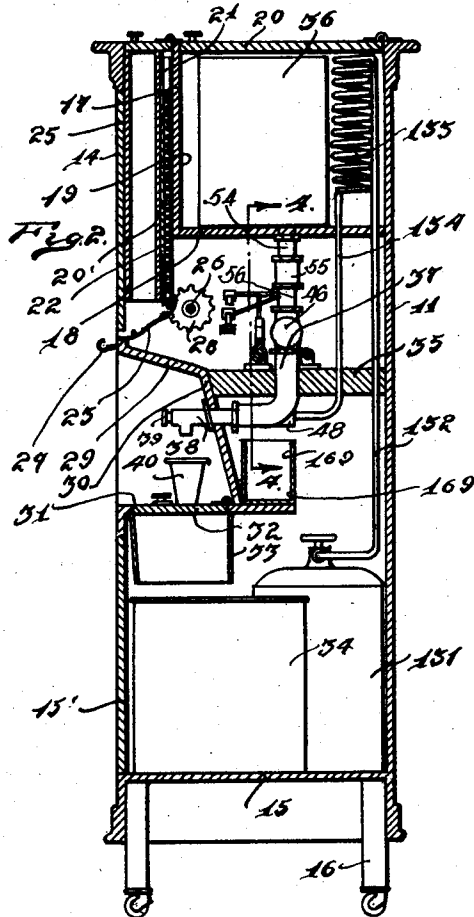
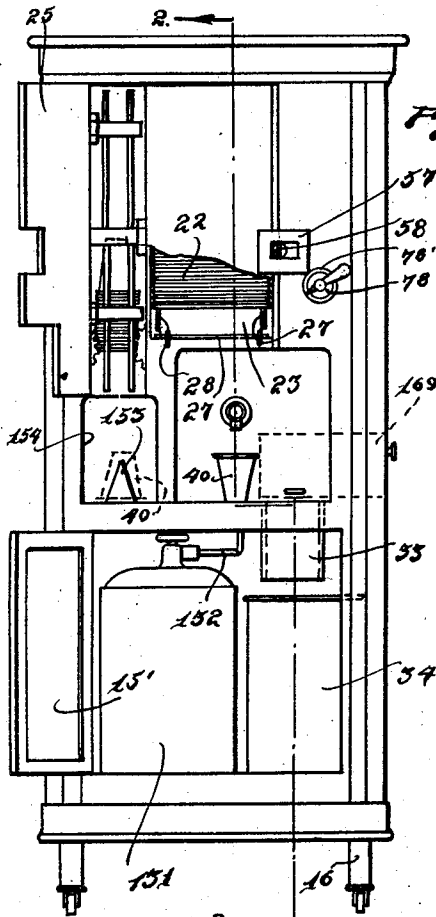
1,667,483

C. LEOF

LIQUID DISPENSER

Filed Jan. 24, 1927

2 Sheets-Sheet 1



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April 24, 1928.

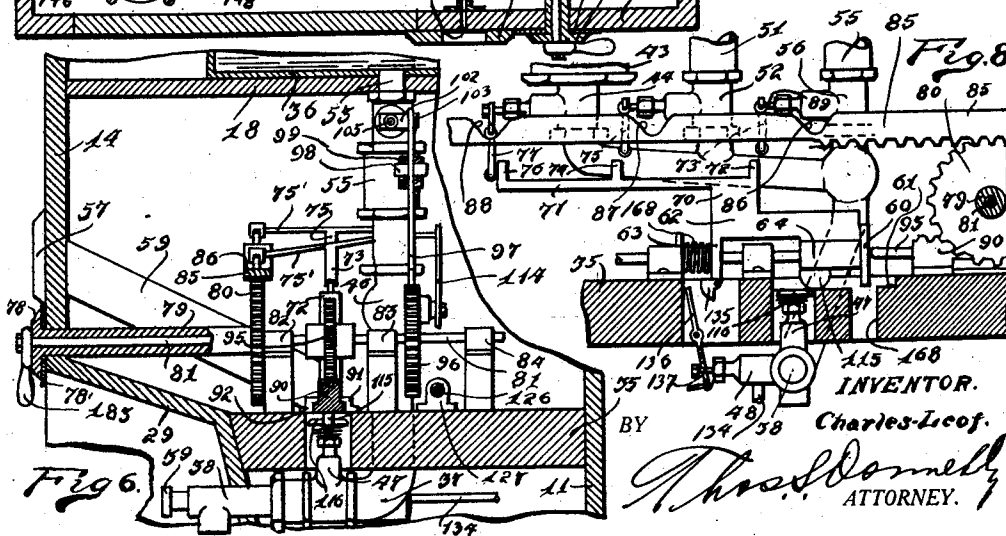
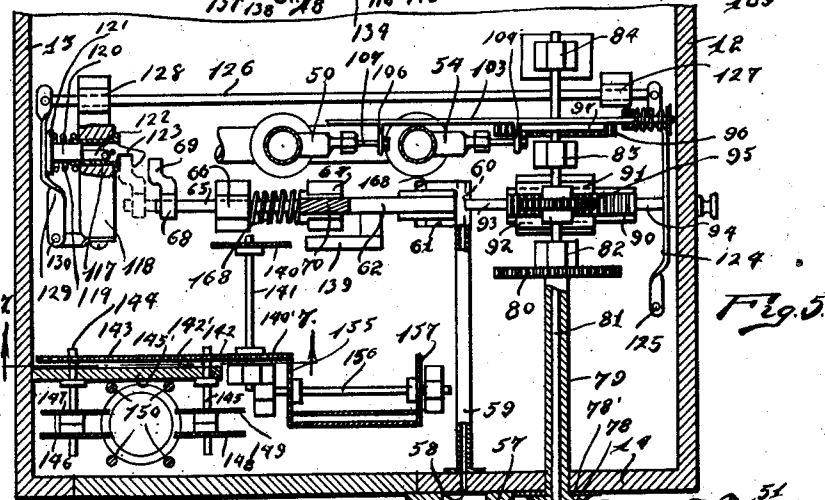
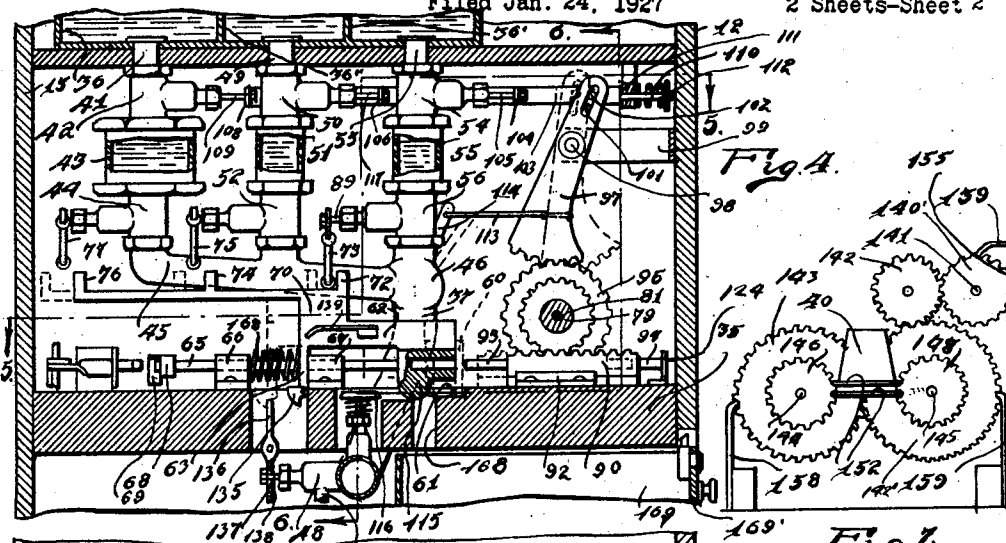
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C. LEOF

LIQUID DISPENSER

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2 Sheets-Sheet 2



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CHARLES LEOF, OF DETROIT, MICHIGAN.

LIQUID DISPENSER.

Application filed January 24, 1927. Serial No. 163,157.

My invention relates to a new and useful improvement in a liquid dispenser adapted for use in automatically dispensing liquids in predetermined amounts, and has for its object the provision in a liquid dispenser of this class of a plurality of containers containing different liquids, and a selective control system whereby the operator may select the particular kind of liquid desired before operating the mechanism.

Another object of the invention is the provision in a device of this class of a mechanism whereby, upon the operation of the mechanism, a predetermined amount of liquid may be delivered to a container simultaneously with the delivery of a cup, so that the operator, after operating the mechanism, may deposit the predetermined amount of liquid delivered into the cup, the predetermined amount, after being delivered, being freely accessible to the operator.

Another object of the invention is the provision in a liquid dispenser of this class of a mechanism whereby a predetermined amount of syrup or other liquid may be delivered together with a predetermined amount of carbonated and gasified water, so that a freshly mixed carbonated drink in a predetermined amount is obtainable upon the operation of the mechanism.

Another object of the invention is the provision of a mechanism whereby upon the contents of the dispenser becoming exhausted, the device will be closed against operation.

Other objects will appear hereinafter.

The invention consists in the combination and arrangement of parts hereinafter described and claimed.

The invention will be best understood by a reference to the accompanying drawings which form a part of this specification and in which,

Fig. 1 is a front elevational view of the invention with parts broken away.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary front elevational view with parts broken away.

Fig. 4 is a fragmentary sectional view taken on line 4—4 of Fig. 2.

Fig. 5 is a fragmentary sectional view taken on line 5—5 of Fig. 4.

Fig. 6 is a fragmentary sectional view taken on line 6—6 of Fig. 4.

Fig. 7 is an enlarged side elevational view of the cup feeding mechanism.

Fig. 8 is a fragmentary enlarged view of a portion of Fig. 4, showing a different position of operation than is shown in Fig. 4.

In the device I provide a cabinet having a rear wall 11, side walls 12 and 13, a front wall 14 and a bottom 15, upon which is mounted the supporting legs 16. A vertically extending partition 17 forms with the horizontally extending partition 18 a compartment 19 which is provided at its upper end with the swingably mounted cover 20. A magazine 21 is adapted for mounting in the space between the partition 17 and the partition 20', this magazine containing straws 22 which, upon travel from the magazine 21, are deposited on the incline 23 so as to roll into the trough 24 which is positioned exterior of the cabinet and slightly below the swingable door 25, these straws 22 being fed out individually on to the incline 23 by means of the gears 27 and 28 which are fixedly mounted upon the shaft 26, this shaft being journaled in suitable bearings mounted in the cabinet. The forward wall below the door 25 is provided with the inclined portion 29 and the inclined portion 30 to provide in the cabinet a recess 31, the base thereof being a swingable door 32, communicating with a chute 33 positioned above a refuse container 34 which is positioned on the bottom 15, the lower portion of the cabinet being provided with a swingable door 15'.

Mounted in the cabinet above the door 32 is the horizontally disposed partition 35. Positioned on the partition 18 is a container 36 having partitions 36' and 36'' formed therein to divide this compartment into a number of non-communicating compartments. A pipe 37 is provided having the angularly turned portion 38 which extends through the inclined front wall portion 30 and is provided with a plunger 39 whereby a valve in the pipe 38 may be opened, this valve being normally springheld in closed position, and

of a well known type of structure. The cup 40 may be positioned on the door 32 below the pipe 38 so that upon a pressing inwardly of the plunger 39 the contents may be deposited in the cup 40. Communicating with one of the compartments is a pipe 41, flow of liquid from which is controlled by the valve 42, this valve controlling the flow of the liquid into the enlarged receptacle or container 43, from which the liquid may flow through the valve 44, and into the pipe 45, passing through the valve 46 into the pipe 37, a valve 48 being mounted in the pipe 37. A pipe 49 communicates with one of the compartments leading to a valve 50 which controls the flow of the fluid to the small receptacle or container 51 from which the liquid would pass through the valve 52 into the pipe 45. A pipe 53 leads from the other receptacle or compartment in the container 36, this liquid passing through the valve 54 into the small container 55, and through the valves 56 and 46 into the pipe 37.

Mounted on the front wall 14 is a frame 57 framing a recess 58 which communicates with a tube 59, leading inwardly and downwardly of the receptacle and terminating slightly at one side of an opening 168 formed in the partition 35, this opening being positioned above a cash receptacle 169, access to which may be had through the door 169', as shown in Fig. 4. The slot 58 is of such size that a coin may be inserted into the tube 59, this coin 60 after leaving the tube 59 engaging on the partition 35 in the recess 61.

A bracket 62 is provided having depending lugs 63 and 64, through which is extended the rod 65 projecting through the bearings 66 and 67. Carried on the free end of the rod 65 is a head 68 having the bracket arm 69 projecting outwardly therefrom, as shown in Fig. 4 and Fig. 5. An upwardly projecting portion 70 on the bracket 62 is provided with the laterally extended arm 71, projecting upwardly from which are bosses 72, 74 and 76, the boss 72 serving to engage the arm 73 which is connected to an arm 73' which is attached to the valve stem 89 of the valve 56. The boss 74 is adapted in certain positions for engaging the depending arm 75 which is connected to a laterally extending arm 75' which connects to the valve stem of the valve 52. A similar depending arm 77 connected to the valve stem of the valve 44 is adapted for engagement with the boss 76 in certain positions of its movement.

Engaging the front wall 14 of the cabinet is a disc 78 which rides on a dial 78', this disc 78 being formed integral with the tube 79 which projects inwardly of the cabinet and upon which is fixedly mounted a gear 80, a shaft 81 being projected through the tube 79 and journaled in suitable bearings 82, 83 and 84 mounted on the partition 35. The gear 80 meshes with the teeth on the rack bar

85 which is slidably mounted and in the upper edge of which are formed notches 86, 87 and 88, these notches being adapted for accommodating rollers on the end of the arms 75', 73', etc., these arms being tiltable for this purpose. When the end of the arm 73' engages in the notch, as shown in Fig. 8, the depending arms 73, 75 or 77 determined by which is in registration with its notch, is in position for engagement with the bosses 72, 74 or 76, and as shown in Fig. 8, no two of these arms can register with a notch at the same time. This is a part of the mechanism whereby the user or operator of the machine may determine or select what kind of liquid he desires to be delivered from the machine.

Mounted on the member 35 between the guides 91 and 92 is a slidable rack bar 90 meshing with the teeth of a pinion 95 which is fixedly mounted on the rod 81. This rack bar 90 carries at opposite ends a reduced pin forming portion 93 and 94, the pin forming portion 93 being engageable in a socket formed in a head carried by the bracket 62. Fixedly mounted upon the shaft 81 is a pinion 96 engaging the teeth of the segment 97 which is pivotally mounted at 98 on a bracket or supporting arm 99, the opposite end of this segment arm 97 being provided with an elongated slot 101 in which engages a pin 102 projecting outwardly from a bar 103, this bar carrying an outwardly projecting portion 104 which is attached to the stem 105 of the valve 54 and with an outwardly projecting portion 106 which is attached to the valve stem 107 of the valve 50, and at its end with an outwardly projecting portion 108 attached to the stem 109 of the valve 41. Projecting from one end of the bar 103 is a rod 110 passing through a bearing 111 supported by the partition 18, a spring 112 being positioned in embracing relation on this rod 110, so as to normally retain the bar 103 moved into the position shown in full lines in Fig. 4. The segment arm 97 is pivotally connected by means of the rod 113 to an arm 114 which is fixedly mounted on the valve stem of the valve 46. Mounted in the cabinet is a suitable support 118 in which is positioned a bushing or sleeve 117, projecting inwardly of which is a plunger 120 having a reduced portion 122, which is pivotally attached to a dog 123, this stud 120 being provided with a head 121 against which engages one end of a coil spring 119 which is positioned about the stud 120 in embracing relation.

Pivotally mounted at 125 on the member 35 is an arm 124, the opposite end of which is pivotally mounted to the rod 126 which is slidably positioned in bearings 127 and 128, the opposite end of the rod 126 being pivotally connected to the rod 129, which is offset, intermediate its ends

and pivotally connected at its opposite end at 130 to an arm projecting outwardly from the support 118, so that in the offset portion of the arm 129, the head 121 may be engaged, thus causing the entry of the plunger 120 inwardly of the sleeve 117 at certain positions of movement of the arm 124.

Positioned on the bottom 15 is a tank 131 which is adapted for containing carbonated water, and which is connected by the piping 132 to the coil 133, this coil being connected by the pipe 134, as shown in Fig. 2, and Fig 4, through the valve 48 to the pipe 37.

Pivotally mounted on the depending arm 63 of the bracket 62 is a dog or latch member 135 which, upon movement of the latch member into the position shown in dotted lines in Fig. 4, is adapted to engage the end of the pivotally mounted arm 136, which is attached at its free end to the valve stem 137, this valve stem projecting through a slot 138 formed in the arm 136.

Projecting outwardly from the bracket 62 and carried thereby is a parallel extending gear operating arm 139 which is, as shown in Fig. 7, and in Fig. 5, adapted to engage the teeth of the gear 140, which is mounted on the shaft 141, a similar gear 140' being also mounted on the shaft 141, this shaft being journaled in suitable bearings. The gear 140' meshes with the gear 142 which also meshes with the idler gear 142', this gear meshing with the gear 143. The gear 143 is fixedly mounted on the shaft 144, and upon the shaft 144 are fixedly mounted the gears 146 and 147, these gears being termed the cup feeding gears. The gear 142' is fixedly mounted upon the shaft 145, upon which are fixedly mounted another set of cup feeding gears 148 and 149, these shafts 145 and 144 being projected through the partition 145'. Extending vertically in parallel relation to each other are guide rods 150, the stack of cups 40 being mounted between these guide rods, as shown clearly in Fig. 5, Fig. 1 and Fig. 3. Each of these cups is provided with a bead 152, as shown in Fig. 7, so that as the feed wheels are rotated, the cups will be individually fed downwardly from the stack and permitted to drop into the compartment 154 upon the cone shaped guide 153 (see Fig. 1). The gear 140' meshes with the gear 155 which is fixedly mounted upon the shaft 156 and upon which shaft there is fixedly mounted a gear 157, these gears 155 and 157 being straw feeding gears and being positioned so that the straws, when passing downwardly from the magazine 21, will engage the teeth of the gears and be fed outwardly. A spring arm 158 is adapted to engage the gear 143 and prevent its reverse rotation, and a smaller spring arm 159 is adapted to engage the gear 142' and prevent its reverse rotation, these spring arms 158 and 159 serving as

a locking means against reverse operation of the mechanism.

The rods 150 project through a weight 160 which is slidably mounted thereon, this weight serving as a follower to press the stack of cups 40 downwardly, as shown in Fig. 3. A pivotally mounted, downwardly projected arm 162 is provided with an angularly turned end 161 which is adapted to engage the weight 160 when the stack of cups is reduced to a predetermined distance in height. When the weight 160 engages the angularly turned end 161 it will cause a rocking of the arm 163, which is pivotally mounted on the bracket 164, thus causing a rocking on its pivot of the dog 165, this dog engaging teeth 167 on a guard plate 166 which is slidably mounted rearwardly of the frame 57, so as to close the slot 58 and prevent the entry of a coin therein.

A coil spring 168 is positioned about the rod 65 so as to normally retain the bracket 62 moved into the position shown in full lines in Fig. 4. The bracket 62 is provided with a cam head 115 which upon movement of this head into engagement with the head 116 of the valve stem leading to the valve 47 will cause an inward pressure of the valve stem, thus serving to close this valve, this valve being normally springheld in open position.

In operation the various compartments of the container 36 may be filled with a suitable liquid and in the drawings I have illustrated two of the containers filled with a syrup so that the syrup from these containers or compartments will be delivered to the receptacles 51 and 55. The other receptacle is filled with a ready prepared drink, such as lemonade, or the like, which may be deposited in the receptacle 43. The deposit of a coin in the tube 59 will move into the position shown in Fig. 5, the coin 60 engaging between the end of the bracket 62 and the pin 93, so that when the shaft 81 is rotated, the pin 93 cannot enter the socket in the head but will engage the coin 60 and force the bracket into the position shown in dotted lines in Fig. 4. Prior to this operation, the operator would move the disc 78 so as to rotate the sleeve 79 into the position indicated on the dial plate 78' as the desired selection to be made. The rotation of the sleeve 79 will effect a rotation of the gear 80, thus moving the rack bar 85 to the left until the desired position is reached, at which time the proper roller will engage in either the notch 86, 87 or 88, thus bringing either the arm 73, 75 or 77 into position for engagement with its respective bosses 72, 74 or 76. The operator will then rotate, through the handle 183, the shaft 81, thus effecting a rotation of the gear 95, and a rotation of the gear 96. As the gear 95 is rotated it moves the rack bar 90 slidably so as to force the bracket 62 into position shown

in dotted lines. At the same time the segment arm 97 is rocked on its pivot so as to move the arm 103 to close the valves 54, 50 and 42. At the same time, the proper valve which engages the boss will be opened through engagement of the boss with the arm 73, 75 and 77, thus permitting the liquid in the receptacles 55, 51 or 43 to flow downwardly through the pipe 55, and at the same time, opening the valve 46 to permit the flow of the liquid into the pipe 37, which is of a predetermined capacity. As the movement continues, the cam head 115 will engage the valve stem head 116, thus closing the valve and preventing withdrawal of the liquid from the pipe 37. When the device is used with carbonated water, and as the movement is about completed, the dog 135 will ride over the end of the arm 136. At the same time, the dog 123 will ride over the end of the bracket arm 69, thus locking the mechanism in this position. This movement will cause a compression of the springs 168 and 110. This brings the coin 60 which is clamped between the end of the bracket 62 and the pin 93 into registration with the slot 168, as clearly seen in Fig. 8. A reverse rotation of the shaft 81 will permit the coin to drop through the slot 168 into the cash box 169. This reverse rotation is effected through the compression of the spring 110. This movement will move the pin 94 into engagement with the arm 124, causing it to rock on its pivot and thrust the plunger 120 inwardly so as to release the dog 123 from the bracket arm 69. When it is released, the spring 168 will force the bracket 62 into its normal position, thus causing the valve 52 or 44 or 56 which may have been open to close, these valves being normally spring closed valves, and at the same time, the valves 54 or 42, are opened, permitting the receptacles 55, 51 or 43 to be again replenished. At the same time, the valve 46 is closed by the rocking of the arm 114. The disengagement of the cam 115 from the head 116 will open this valve and render the liquid accessible to the user. As the latch 135 snaps backwardly with the bracket 62, the lever 136 will be rocked on its pivot to open the valve 48, and permit a certain amount of carbonated water to flow into the mixture. If carbonated water is not to be used, the latching mechanism involving the dog 135 and the arm 136 may be dispensed with or relatively misplaced, as desired.

As this operation is being effected the cup feeding wheels are rotated to feed a single cup outwardly into the receptacle 154 and the straw feeding wheels are also rotated to deposit a single straw in the straw trough 24. The liquid may then be withdrawn by an inward pressing on the plunger 39.

In this manner I have provided a dispenser of this class which is so constructed

and arranged as to provide for the various requirements to which such a dispenser may be subjected, and one which is easily operated and quickly understood by the inexperienced, so that a maximum amount of service may be rendered the user.

While I have illustrated and described the preferred form of my invention, I do not wish to limit myself to the precise details of structure shown, but desire to avail myself of such variations and modifications as may come within the scope of the appended claims.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A liquid dispenser of the class described, comprising: a plurality of containers; means for conducting liquid from each of said containers; control means for controlling the flow of liquid from each of said containers separately; mechanism for selecting the control means to be operated; and automatically operated means for returning said selective means to normal position after operation.

2. In a liquid dispenser of the class described, a plurality of liquid containers; a separate conduit communicating with each of said containers for conducting liquid therefrom; a receptacle in communication with each of said conduits, said receptacle being of a predetermined size; a delivery pipe communicating with said receptacle; control means for controlling the flow of liquid from said containers to said receptacles; control means for controlling the delivery of liquid from said receptacles; means for individually operating said control means which control the flow of liquid from said receptacles; and selective means for selecting the control means to be operated; and means for closing the control means positioned between said containers and said receptacles, upon the opening of one of said control means controlling the flow of liquid from one of said receptacles.

3. A liquid dispenser of the class described comprising: a plurality of containers; a plurality of receptacles, each in communication with one of said containers; control means for opening and closing said communication; a conduit; means communicating each of said receptacles with said conduit; control means mounted in said communicating means for opening and closing communication of said receptacles with said conduit; a delivery pipe communicating with said conduit; a valve for controlling the flow of liquid to said delivery pipe; a valve in said delivery pipe for controlling flow of liquid therefrom; means for opening said control means controlling the flow of liquid from said receptacles to said conduit; means for selecting the control means to be opened;

means for closing communication between said receptacles and said containers upon the opening of said control means; and means simultaneously operable with the closing of said control means for opening the control means controlling communication of said delivery pipe with said conduit; and separate means for, simultaneously with said action, closing the control means controlling the flow of liquid from said delivery pipe.

4. A liquid dispenser of the class described comprising: a plurality of containers; a plurality of receptacles, each in communication with one of said containers; control means for opening and closing said communication; a conduit; means communicating each of said receptacles with said conduit; control means mounted in said communicating means for opening and closing communication of said receptacles with said conduit; a delivery pipe communicating with said conduit; a valve for controlling the flow of liquid to said delivery pipe; a valve in said delivery pipe for controlling flow of liquid therefrom; means for opening said control means controlling the flow of liquid from said receptacles to said conduit; means for selecting the control means to be opened; means for closing communication between said receptacles and said containers upon the opening of said control means; and means simultaneously operable with the closing of said control means for opening the control means controlling communication of said delivery pipe with said conduit; and separate means for, simultaneously with said action, closing the control means controlling the flow of liquid from said delivery pipe; a cup receptacle; and means for feeding said cups therefrom individually upon the opening of said control means.

5. A liquid dispenser of the class described comprising: a plurality of containers; a plurality of receptacles, each in communication with one of said containers; control means for opening and closing said communication; a conduit; means communicating each of said receptacles with said conduit; control means mounted in said communicating means for opening and closing communication of said receptacles with said conduit; a delivery pipe communicating with said conduit; a valve for controlling the flow of liquid to said delivery pipe; a valve in said delivery pipe for controlling flow of liquid therefrom; means for opening said control means controlling the flow of liquid from said receptacles to said conduit; means for selecting the control means to be opened; means for closing communication between said receptacles and said containers upon the opening of said control means; and means simultaneously operable with the closing of said control means for opening the control means controlling communication of said de-

livery pipe with said conduit; and separate means for, simultaneously with said action, closing the control means controlling the flow of liquid from said delivery pipe; a cup receptacle; and means for feeding said cups therefrom individually upon the opening of said control means; a straw magazine; and means for feeding straws therefrom individually upon the opening of said control means.

6. A liquid dispenser of the class described comprising: a plurality of containers; a plurality of receptacles, each in communication with one of said containers; control means for opening and closing said communication; a conduit; means communicating each of said receptacles with said conduit; control means mounted in said communicating means for opening and closing communication of said receptacles with said conduit; a delivery pipe communicating with said conduit; a valve for controlling the flow of liquid to said delivery pipe; a valve in said delivery pipe for controlling flow of liquid therefrom; means for opening said control means controlling the flow of fluid from said receptacles to said conduit; means for selecting the control means to be opened; means for closing communication between said receptacles and said containers upon the opening of said control means; means simultaneously operable with the closing of said control means for opening the control means controlling communication of said delivery pipe with said conduit; separate means for, simultaneously with said action, closing the control means controlling the flow of liquid from said delivery pipe; latching means for latching said mechanism in position to retain said control means open; automatic means for releasing said latching means; and resilient means for restoring said mechanism to normal position.

7. A liquid dispenser of the class described comprising: a plurality of containers; a plurality of receptacles, each in communication with one of said containers; control means for opening and closing said communication; a conduit; means communicating each of said receptacles with said conduit; control means mounted in said communicating means for opening and closing communication of said receptacles with said conduit; a delivery pipe communicating with said conduit; a valve for controlling the flow of liquid to said delivery pipe; a valve in said delivery pipe for controlling flow of liquid therefrom; means for opening said control means controlling the flow of liquid from said receptacles to said conduit; means for selecting the control means to be opened; means for closing communication between said receptacles and said containers upon the opening of said control means; means simultaneously operable with the closing of

said control means for opening the control means controlling communication of said delivery pipe with said conduit; separate means for, simultaneously with said action, closing the control means controlling the flow of liquid from said delivery pipe; a container for carbonated gas; a delivery means for conducting said carbonated gas into said delivery pipe; means for controlling delivery of said carbonated gas into said delivery pipe; and means for opening said control means last mentioned upon movement of said mechanism from operated to normal position.

In testimony whereof I have signed the foregoing.

CHARLES LEOF.