Aug. 12, 1930. C. R. HILTY 1,772,545

LIQUID BEVERAGE DISPENSING APPARATUS

Filed March 6, 1929

Fig. 1

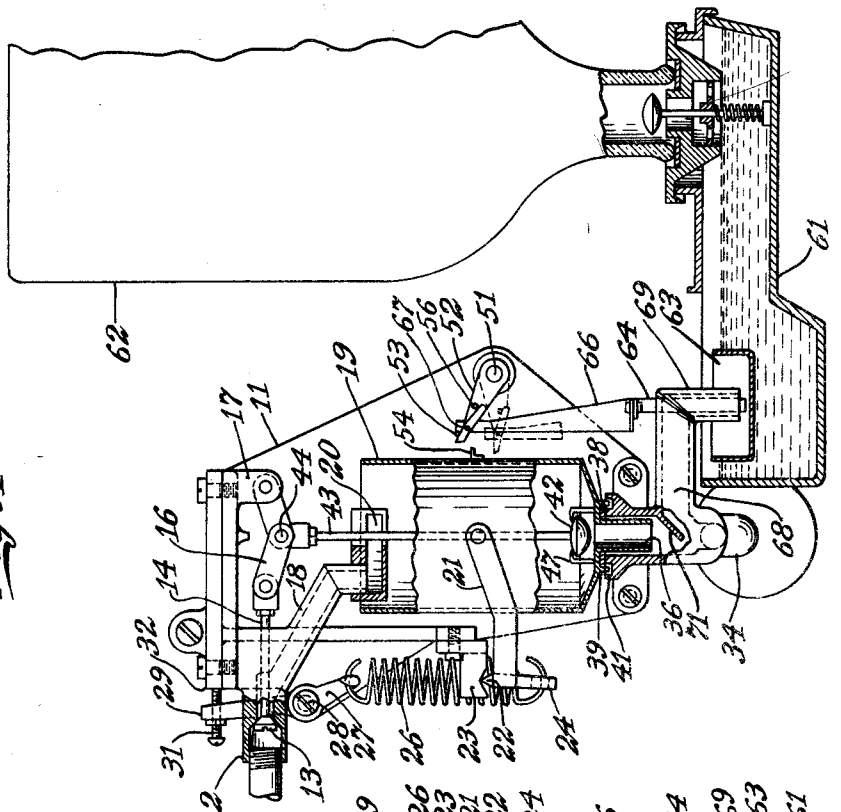
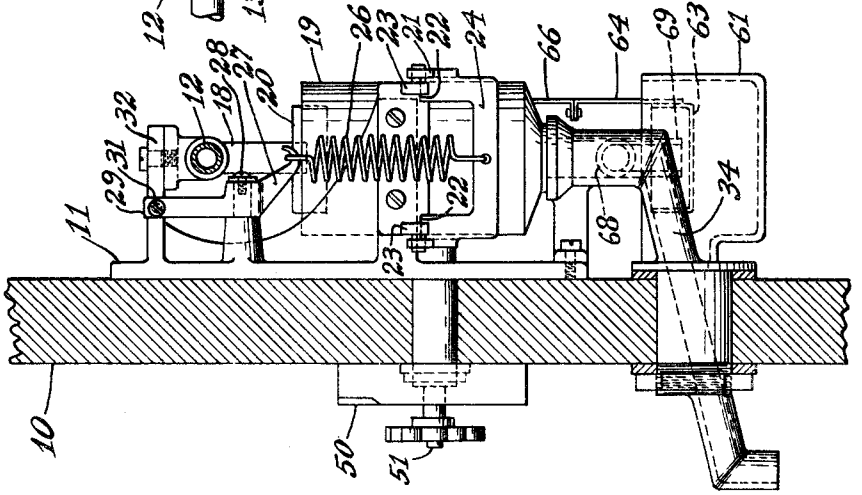


Fig. 2



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Patented Aug. 12, 1930 1,772,545

UNITED STATES PATENT OFFICE

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LIQUID-BEVERAGE-DISPENSING APPARATUS

Application filed March 6, 1929. Serial No. 344,801.

My invention relates to automatic beverage dispensing apparatus, more particularly to apparatus for mixing and dispensing beverages embodying more than one liquid ingredient and has for its object the provision of apparatus of the character designated which shall be simple and sturdy of construction and reliable in operation.

A further object of my invention is to provide an automatic beverage mixing and dispensing apparatus adapted to be actuated from coin controlled mechanism and which shall be capable of operating for long periods of time without getting out of order.

A still further object of my invention is to provide automatic beverage mixing and dispensing apparatus wherein an accurately measured and invariable proportion of liquid ingredients is afforded at every operation of the apparatus.

In automatic beverage and dispensing apparatus, as heretofore known to me, serious difficulties have been encountered in providing a design wherein the ingredients to be mixed are accurately measured before mixing and delivering. This is especially true in the case of syrups having widely varying viscosities at varying temperatures. With a viscous syrup, it is difficult to provide automatic valve control operative to provide accurately measured quantities so as to provide a beverage having a uniform composition and flavor at all times. Another difficulty of design has been that of providing a thorough mixing of water and syrup as the beverage is being dispensed, which thorough mixing is so desirable in beverages of this character.

These and other difficulties are overcome by apparatus made in accordance with my invention. In my improved apparatus I provide a cup or receptacle for carbonated water or similar liquid which is herein designated as a water cup, and provide means whereby at each operation of the apparatus an accurately weighed quantity of the water is admitted to and discharged from the cup. I also provide a syrup cup and a source of syrup supply in which the syrup is adapted to dip and be filled at each operation of the apparatus, thereby avoiding any valves for handling this viscous substance and providing an accurately measured quantity of the syrup at each operation. When the apparatus is being operated and the water cup is filled and discharged, the discharging contents from the water cup siphon and the syrup out of the syrup cup and are thoroughly commingled with each other as they are discharged from the apparatus.

Apparatus embodying features of my invention is illustrated in the accompanying drawings, forming a part of this application, in which

Fig. 1 is a longitudinal, sectional view of the apparatus, and

Fig. 2 is a side elevation of the same.

Referring to the drawings for a better understanding of my invention, I show a wall 10 of any suitable cabinet for enclosing the apparatus, many of such cabinets being already known in the art. Mounted on the wall 10, within the cabinet, is a frame 11 upon which the working parts of my improved apparatus are mounted. At 12 is shown an inlet for carbonated water which may be connected in any manner known to the art to a supply of the same under pressure and which is controlled by an inlet valve 13 having a stem 14 connected to a toggle joint 16, the other end of which is connected to a stationary member 17, carried by the frame.

A spout 18 leads from the source of water supply 12 to discharge into a water cup 19. To prevent the force of the water under pressure from interfering with the proper operation of the apparatus, to be described later, I provide a baffle member 20 on the end of the spout 18. The water cup 19 is carried by a yoke 21 whereby it may be raised and lowered a limited amount. The yoke 21 is pivotally mounted as by means of knife edge supports 22 bearing against notched lugs 23 supported from the frame 11. At 24 is shown a depending arm from the yoke 21 and I connect to this depending arm a relatively heavy spring 26 having its upper end connected to an anchor 27. The anchor 27 is pivotally mounted to the frame 11 at 28 and has an upper arm 29 through which a set

screw 31 extends to bear against an arm 32 extending inwardly from the frame 11. The purpose of the set screw is to vary the direction line of force of the spring 26 and consequently the effective force of the spring as will hereinafter appear.

The cup 19 is adapted to discharge its contents through the bottom thereof into a discharge spout 34 which extends outwardly through the front of the cabinet. The discharge spout 34 is fixedly connected to the cabinet 10 and the cup 19 is provided with a nozzle 36 extending downwardly into the upper end of the discharge spout. When the cup is in its lower position, as shown in the drawings, its lower side bears against a soft rubber gasket 38 to prevent air from passing into the discharging contents of the water. The lower side of the cup 19 is also provided with an annular flange 39 which, when the cup is in its lower position, fits into a corresponding groove 41 on the upper end of the spout 34. This groove 41 becomes filled with water, in the operation of the apparatus, and the flange 39 entering the water in the groove further aids in maintaining a seal against air leakage into the discharge spout.

The discharge of the contents of the cup 19 through the nozzle 36 is controlled by a valve 42 adapted to close the bottom outlet of the cup when the cup is in its upper or raised position. The valve 42 is provided with a stem 43 which is connected at 44 to the middle joint of the toggle 16. In the bottom of the cup 42 are provided a suitable number of fingers 47 which extend upwardly and over the valve 42 so that when the cup moves downwardly, the fingers 47 engage the valve 42, pulling the stem 43 downwardly and the valve 13 to its seat to close off the water supply. At the same time, the valve 42 opens to permit the discharge of the contents of the water cup into the spout 34.

When the cup 19 is raised or lowered, the arm 24 of the yoke 21 swings through a short arc so that the knife edge supports 22, in either the raised or lowered position, are outside the direction of the line of force of the spring 26. Consequently it may be seen that the cup will remain in either its raised or lowered position until the force exerted by the spring 26 is overcome. When the cup 19 moves to its upper position, the valve 42 is closed and the stem 43, acting through the toggle 16, opens the water inlet valve 13. The strength of the spring 26 is such that, when the cup 19 fills with water, it overcomes the strength of the spring and the water cup moves to its downward position, as shown in Fig. 1 of the drawing, whereupon the valve 42 is opened and the stem 43 is jerked downward by the fingers 47 in the bottom of the cup and the water supply valve 13 is closed. By means of the set screw 31, the angle of the spring 26 with respect to the arm 24 of the yoke may be varied, thereby varying the quantity of water necessary to overcome the force of the spring.

The cup 19 is raised to its upper position by manually operable means which will now be described. Extending through the front of the cabinet 10 is a shaft 51 which is adapted to be controlled by any suitable coin controlled mechanism, indicated conventionally by the numeral 50. The shaft 51 on its inner end carries a crank arm 52. Pivotally mounted on the end of the crank arm is a finger 53 which is adapted to coact with a clip 54 secured to the adjacent side of the cup 19. A stop pin 56, carried by the arm 52, prevents the finger 53 from swinging downward from the position shown, but permits it to swing freely upward. It will accordingly be seen that if the shaft 51 be first turned so as to swing the crank 52 counterclockwise as seen in Fig. 1, the finger 53 swings past the clip 54. When the shaft 51 is turned clockwise the finger 53 engages the clip 54 and raises it to its upper position and passes outside the range of clip 54, whereby when the cup is filled with water it may readily move downwards due to its own weight.

At 61 is shown a receptacle for syrup in which the syrup is maintained at a constant level as from a bottle 62 in a well known manner. At 63 is shown a syrup cup having a bail 64 connected to a link 66 which latter is pivotally connected to the crank arm 52 at 67. The cup 63 is so positioned that when the crank arm 52 is swung in a counterclockwise direction it dips the cup into the syrup and when swung in a clockwise direction to raise the water cup 19, it raises the filled syrup cup 63 out of the syrup.

Connected to the discharge spout 34 is a conduit 68 terminating in an elbow 69 which extends downwardly to a point near the bottom of the cup 63 when the cup is in its raised position. It will be apparent that when the contents of the cup 19 are being discharged, a siphoning action is set up which withdraws the contents of the syrup cup 63 and commingles the contents of the two cups in the discharge spout 34. To create a condition of turbulence at the point where the two liquids are being commingled, I provide a baffle 71 against which the discharging contents of the cup 19 strike to be diverted toward one side of the discharge spout 34 thereby causing the discharging water to swirl and thoroughly mix with the syrup.

From the foregoing description, the operation of my improved apparatus will be readily understood. With the parts in the position shown in Fig. 1 of the drawings, when the shaft 51 is turned in a counter-clockwise direction, the arm 52 swings downwards to lower the syrup cup 63 and fill it. The shaft 51 is then turned clockwise to raise the filled

cup 63 and raise the water cup 19 by the finger 53 striking the clip 54. As the water cup 19 is raised, the valve 42 is closed and acting through the toggle 16, the inlet valve 13 from the water supply is opened. As soon as the cup 19 is filled, the weight of the water in the cup overcomes the force of the spring 26 and the cup moves downward, closing the valve 13 and opening the discharge valve 42. The discharging contents from the water cup siphon out the contents of the syrup cup 63, in a manner already described, and commingle therewith to be discharged through the spout 34 to the customer. During this action, the spring 26 holds the cup 19 down to tightly engage the gasket 38 which together with the flange 39 in the water filled groove 41 effectively seals the discharge spout against air leakage and insures a prompt and thorough siphon action.

From the foregoing, it will be apparent that I have devised an improved liquid beverage mixing and dispensing apparatus which is simple and sturdy of design, reliable in operation, and one wherein definitely measured quantities of liquids are mixed and dispensed.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon, as are imposed by the prior art, or as are specifically set forth in the appended claims.

What I claim is:

1. In a liquid dispensing apparatus, the combination of a pair of measuring cups for liquids to be mixed and dispensed, manually operable means effective to fill the two cups, means responsive to weight of liquid in one of the cups to discharge the contents thereof, and siphon means connecting the two cups whereby the discharging contents from one cup entrain and mix with the contents of the other cup.

2. In a liquid mixing and dispensing apparatus, the combination of a pair of movably mounted cups for the liquids to be mixed, interconnected manually operable means for filling the two cups, means responsive to the weight of liquid in one of the cups for discharging the contents thereof, and a siphon connection between the discharge from said cup and the other cup and operable to entrain the contents of said other cup and mix and discharge the contents of the two cups.

3. In a liquid mixing and dispensing apparatus, the combination of a pair of movably mounted cups for the liquids to be mixed, interconnected manually operable means for filling the two cups, means responsive to the weight of liquid in one of the cups for discharging the contents thereof, a siphon connection between the discharge from said cup and the other cup and operable to entrain the contents of said other cup and mix and discharge the contents of the two cups, and means included in the siphon connection to create a condition of turbulence in the discharging liquids to insure thorough mixing.

4. In a liquid beverage dispensing apparatus, a water cup, a syrup cup, a discharge conduit leading from the water cup, a siphon connection between the discharge conduit and the syrup cup, interconnected manually operable means for filling both of said cups, means responsive to the weight of liquid in the water cup to discharge the contents thereof into the discharge conduit, and means to entrain the contents of the syrup cup with the discharging contents of the water cup.

5. In a liquid beverage dispensing apparatus, a water cup, a syrup cup, a discharge conduit leading from the water cup, a siphon connection between the discharge conduit and the syrup cup, interconnected manually operable means for filling both of said cups, means responsive to the weight of liquid in the water cup to discharge the contents thereof into the discharge conduit, means to entrain the contents of the syrup cup with the discharging contents of the water cup, means forming an air seal between the water cup and the discharge conduit, and a baffle member in the siphon connection for creating a condition of turbulence in mixing the contents of the water cup and the syrup cup.

6. In apparatus for mixing and dispensing beverages, a water cup, a syrup cup, a source of syrup supply, a source of water supply, means for dipping the syrup cup into the syrup supply to fill it and raise it out of the syrup supply when filled, water supply and discharge valves for the water cup, means actuated from the syrup cup filling means for opening the water supply valve and closing the water discharge valve, means responsive to weight of water in the cup for closing the water supply valve and opening the water discharge valve, and a siphon means operative upon discharge of water from the water cup to entrain the syrup and discharge it mixed with the water.

7. In a liquid mixing and dispensing apparatus, a movably mounted water cup, a movably mounted syrup cup, means responsive to actuation of said cups to fill them with measured quantities of liquids, and means operable upon filling the water cup for simultaneously discharging and for mixing the contents of the two cups.

8. In a beverage mixing and dispensing apparatus, a supply of water under pressure, a water cup, a yoke supporting the water cup and disposed to permit the cup to be raised and lowered, a pivotal support for the yoke, an arm on the pivotal support, a spring connected to the arm and biasing the yoke to-

ward its support, the arm being disposed to swing the spring so that the pivot is outside the direction line of force of the spring when the cup is in its raised and in its lowered positions, and valves operated by movement of the cup to fill it when in raised position and empty it when in lowered position, the weight of water in the cup when filled being sufficient to overcome the force of the spring and lower the cup.

9. In a beverage mixing and dispensing apparatus, a supply of water under pressure, a water cup, a yoke supporting the water cup and disposed to permit the cup to be raised and lowered, a pivotal support for the yoke, an arm on the pivotal support, a spring connected to the arm and biasing the yoke toward its support, the arm being disposed to swing the spring so that the pivot is outside the direction line of force of the spring when the cup is in its raised and in its lowered positions, valves operated by movement of the cup to fill it when in raised position and empty it when in lowered position, the weight of water in the cup when filled being sufficient to overcome the force of the spring and lower the cup, and manually operable means for raising the water cup.

10. In a beverage mixing and dispensing apparatus, a supply of water under pressure, a water cup, a yoke supporting the water cup and disposed to permit the cup to be raised and lowered, a pivotal support for the yoke, an arm on the pivotal support, a spring connected to the arm and biasing the yoke toward its support, the arm being disposed to swing the spring so that the pivot is outside the direction line of force of the spring when the cup is in its raised and in its lowered positions, valves operated by movement of the cup to fill it when in raised position and empty it when in lowered position, the weight of water in the cup when filled being sufficient to overcome the force of the spring and lower the cup, manually operable means for raising the water cup, a source of syrup supply, a syrup cup operatively connected to the manually operable means whereby it is dipped into the source of syrup supply and filled and raised full out of the syrup supply when the water cup is raised, and means for commingling and discharging the contents of the two cups together.

In testimony whereof I affix my signature.

CHARLES R. HILTY.