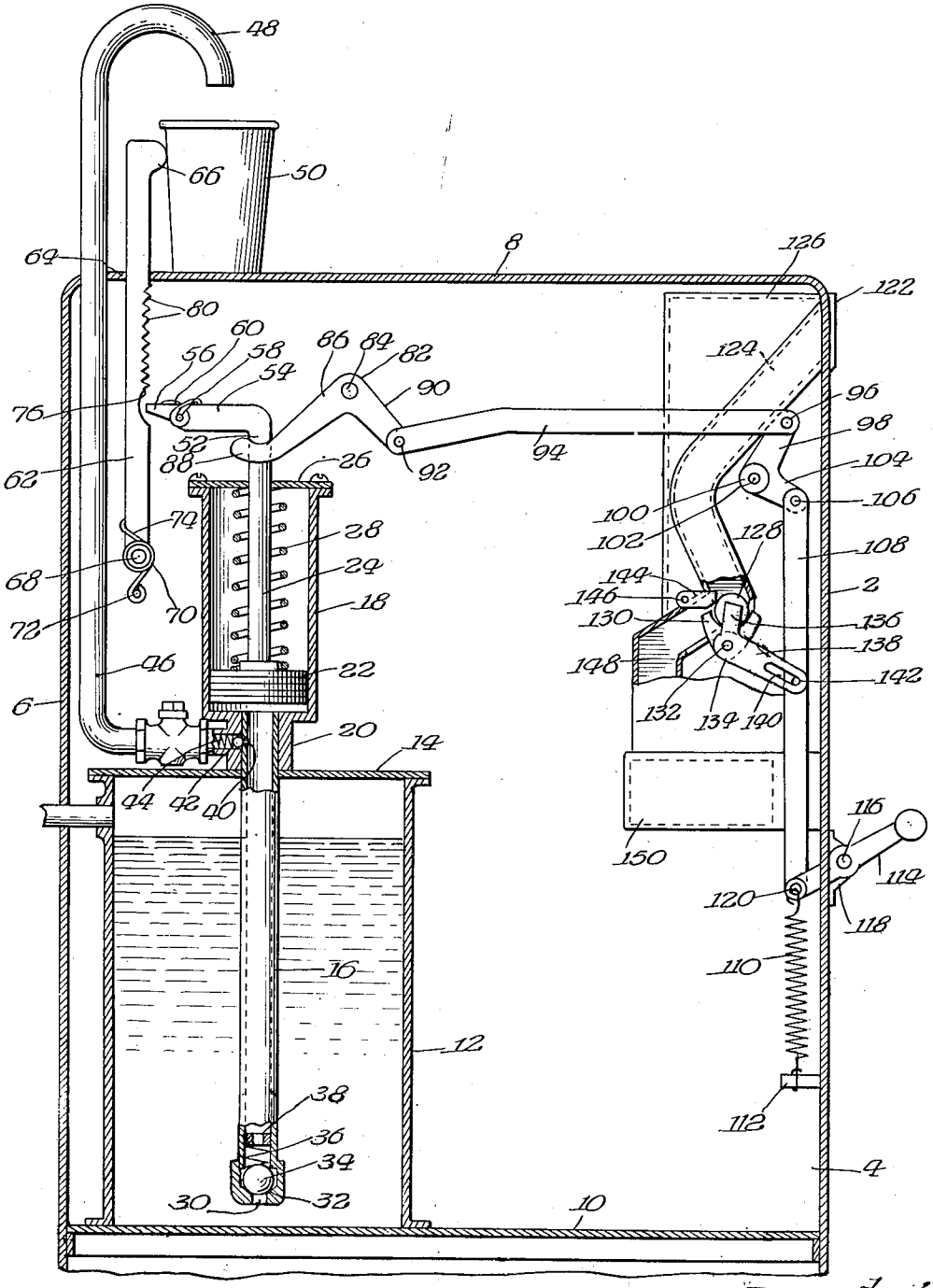
Oct. 23, 1951 E. H. THOMPSON 2,572,540

LIQUID DISPENSER WITH MEANS NORMALLY LOCKING SAID DISPENSER AND COIN-ACTUATED MEANS PREVENTING OPERATION OF SAID LOCKING MEANS

Filed July 5, 1946




Inventor
Ernest H. Thompson

By: Spencer, Marzall, Johnston and Cook attys.

Patented Oct. 23, 1951 2,572,540

# UNITED STATES PATENT OFFICE

2,572,540

## LIQUID DISPENSER WITH MEANS NORMALLY LOCKING SAID DISPENSER AND COIN-ACTUATED MEANS PREVENTING OPERATION OF SAID LOCKING MEANS

Ernest H. Thompson, Winnetka, Ill., assignor to Automatic Canteen Company of America, Chicago, Ill., a corporation of Delaware

Application July 5, 1946, Serial No. 681,569

7 Claims. (Cl. 222—2)

1

This invention relates in general to a liquid dispensing apparatus and particularly to one which is used in conjunction with a coin-controlled mechanism.

While it has been customary in the past to provide liquid dispensing machines with a device which will also provide cups into which the liquid may be delivered, it is contemplated that my invention may be utilized either with or without such a cup dispensing apparatus. While the invention has been shown in such form that it may be desirable to furnish receptacles or cups entirely independent from the machine itself, one form of cup dispenser which may be used with this apparatus is illustrated in my co-pending application bearing Ser. No. 681,570 filed July 5, 1946, now abandoned.

One of the objects of the present invention is to provide a novel liquid dispensing apparatus operable in conjunction with a coin mechanism.

Another object of the invention is to provide a liquid dispensing apparatus wherein a liquid reservoir is provided with means to deliver a predetermined or measured quantity of liquid into a receptacle, and coin-controlled means which will permit such delivery upon depositing an acceptable coin therein.

A further object of the invention is to provide a liquid dispensing apparatus wherein a pump is actuated by a coin-controlled lever arm to withdraw a predetermined quantity of liquid from a reservoir and deliver it to a receptacle.

Still another and more specific object of the invention is to provide a liquid dispensing apparatus wherein manually operable means are provided to deliver liquid from a reservoir to a receptacle, but where the manually operable means can not be actuated until an acceptable coin has been deposited.

A still further object of the invention is to provide a liquid reservoir from which liquid is transferred to a container and held therein upon initial operation of the machine, and then is delivered to a receptacle from the container upon further operation of the machine; the liquid delivery operation taking place by a manually controlled arrangement.

Other objects and advantages of the invention will be apparent by reference to the following description in conjunction with the accompanying drawing wherein the single figure is a vertical section through the apparatus embodying my invention from front to rear thereof.

It is contemplated that the liquid adapted to be dispensed may be either carbonated or non-carbonated. Also, the machine may be operated either mechanically or electrically, the mechanical apparatus shown herein being merely for purposes of illustration.

2

In the practical embodiment of the invention, I provide a cabinet which may consist of a front 2, sides 4, a back 6, a top 8 and a bottom 10. A source of liquid supply such as the reservoir 12 may be located in the cabinet and contain a quantity of the liquid to be dispensed. It may be desirable in some instances to connect the apparatus directly to an outside source of liquid supply, for example a city water line, the reservoir shown herein being merely for purposes of illustration. The upper end of the reservoir is provided with a cover plate 14 having a central opening therein adapted to receive a conduit 16, which extends downwardly to a point adjacent the bottom of the reservoir 12.

A cylinder 18 is located above the reservoir and is provided with a cylindrical boss 20 on the bottom thereof through which the upper end of the conduit 16 passes and connects the cylinder with the reservoir.

A piston 22 is located within the cylinder 18 and is provided with a piston rod 24 for moving the piston within the cylinder. A coiled compression spring 28 surrounds the piston rod 24 and bears at its upper end against the top 26 and at its lower end against the piston 22 to thereby maintain the piston normally in its lower position.

The lower end of the conduit 16 is provided with an opening 30, which connects with a ball check valve chamber having the annular tapered lower end 32 upon which the ball 34 is adapted to seat. A spring 36 bears at one end against the ball 34 and at its other end against a ring 38 whereby the ball, which forms the check valve, is maintained normally against the seat 32 to prevent liquid from passing upwardly into the conduit 16. It will be clear that when the piston 22 moves upwardly in the cylinder 18, the ball 34 will be unseated and the suction created within the cylinder and its connecting conduit will draw a quantity of the liquid within the reservoir upwardly into the cylinder 18.

A passageway 40 extending laterally through the conduit 16 and through one side of the boss 20 has a check valve therein similar to the one just described and consisting of the ball 42 and spring 44, the spring normally maintaining the ball in a position to close the passageway 40 and prevent liquid from passing therethrough. After the piston 22 has been elevated and has drawn a predetermined quantity of liquid into the cylinder it will then move downwardly, at which time it will close the ball check valve 34 and open the ball check valve 42, whereupon the liquid from

the cylinder will be forced into the conduit 46. This latter conduit connects with the passageway 40 and extends upwardly through the top 8 of the cabinet and is curved as at 48 to provide a spout so that liquid passing therethrough may be delivered into a receptacle 50.

I have so designed the apparatus that upon initial operation thereof the piston will be elevated to draw in a predetermined quantity of liquid. The piston will remain in its upper position until the second operation takes place which permits the spring 28 to force the piston downwardly and deliver the liquid to the receptacle. The particular manner which I have chosen to effect this result contemplates the upper end of the piston rod 24 being offset as at 52 for a purpose which will be presently described. This offset portion then continues toward the rear of the cabinet as at 54 and is provided at its outer end with a finger 56 pivoted at 58 to the outer end of the portion 54, and is maintained in the position shown by means of a spring 60, coiled around the pivot 58 and which has its ends bearing one against the finger 56 and the other against the portion 54. The finger 56 may be moved downwardly but will immediately return to its normal position upon the release of any pressure thereagainst by reason of the action of the spring 60.

A vertically disposed rachet arm 62 extends upwardly through an opening 64 in the top 8 of the cabinet and terminates at its upper end in an enlarged portion 66. The opening 64 through which the rachet arm passes is sufficiently wide to permit a forward and rearward movement thereof. The lower end of the rachet arm 62 is pivoted at 68 to one of the sides of the cabinet and a coiled spring 70 which passes around the pivot 68, has one end thereof encircling a pin 72 and the other end 74 thereof bearing against the rear side of the rachet arm 62. The spring 70 thus normally maintains the rachet arm in its forward position as shown in the drawing.

At one point along the length of the rachet arm it is provided with a rearwardly extending recess 76 within which the forward end of the finger 56 normally extends. A plurality of teeth 80 are located above the recess 76 on the rachet arm. When the piston rod 24 moves upwardly and carries the piston 22 therewith, the finger 56 will also move upwardly against the teeth 80, which action is permitted because of the pivotal action of the finger and the tension of the spring 60 thereagainst. The full stroke of the piston is reached when the finger has reached the uppermost tooth 80. Since the pivotal movement of the finger 56 can take place only in a counterclockwise direction, when it reaches the top tooth the piston will be held in such elevated position until the rachet arm 62 is moved rearwardly to release the finger 56 and permit the piston to be forced downwardly by the spring 28. It is obvious that such movement of the rachet arm 62 can be caused manually, but it is contemplated that a patron operating the machine will have obtained a receptacle 50 either from the machine or from some outside source whereupon such receptacle can be placed beneath the spout 48 and pressure exerted rearwardly on the upper end of the rachet arm 62, whereupon the rachet arm will move rearwardly a sufficient distance to permit the piston to be lowered and force a quantity of liquid through the conduit 46 and into the receptacle 50.

Any suitable mechanism can be utilized for



elevating the piston and effecting delivery of the liquid, but for purposes of illustration I have disclosed herein a preferred mechanical form wherein a bell crank lever 82 is pivoted at 84 and which has one arm 86 thereof curved at its outer end as at 88 and lies immediately below the offset portion 52 of the piston rod 24. The other arm 90 of the bell crank lever is pivoted at 92 to an elongated arm 94, which extends forwardly in the cabinet, and at its forward end is pivoted at 96 to one arm 98 of a bell crank lever 100. This bell crank lever is pivoted to a suitably located pin 102 and the other arm 104 thereof is pivotally connected at 106 to the upper end of an elongated vertically positioned lever 108. One end of a coiled tension spring 110 is connected to the lower end of the lever 108 and its other end is secured to a bracket 112 to aid in maintaining the lever arm 108 in its lower position. It will be clear that any upward movement of the arm 108 will cause a counter-clockwise rotation of the bell crank lever 100 which, in turn, will move the arm 94 toward the left. This movement will then cause a clockwise rotation of the bell crank lever 82 and will elevate the piston 22 by reason of the fact that the lower curved end 88 of the arm 86 will move upwardly against the offset portion 52 of the piston rod 24.

Any suitable manually operable means can be provided to actuate the mechanism just described, but for purposes of illustration I have shown a lever 114 which is pivoted at 116 to a bracket 118 and which extends through the front 2 of the cabinet and is connected at its inner end to the lower end of the arm 108 at 120. A downward manual pressure of the lever 114 will obviously elevate the arm 108 to cause elevation of the piston 22 as previously described. The piston will then remain in its upper position and the liquid will be held in the cylinder until a receptacle has been placed against the upper end of the rachet arm 62 to move it rearwardly, whereupon the mechanism which holds the piston in its upper position will be released and permit the spring 28 to move it downwardly and deliver a quantity of liquid to the receptacle.

I have provided a novel coin-controlled mechanism whereby the lever 114 will be locked against movement to actuate the delivery means until an acceptable coin has been deposited therein. At the front of the cabinet I provide the usual coin slot 122 which leads to a coin chute 124. The upper part of the coin chute passes through the coin mechanism 126 which is conventional and is provided with the usual scavenging means for detecting and rejecting spurious coins. This part of the coin mechanism may be purchased on the open market and need not be described in detail since it forms no part of the present invention.

The coin chute 124 carries the coin 128 downwardly and deposits it into a curved recess in the upper edge of a plate 130, which plate is rotatably mounted on a pin 132. A bell crank lever 134 is also pivotally mounted on the pin 132 and has an upwardly extending arm 136 and a downwardly and forwardly extending arm 138. The lower end of the arm 138 is slotted as at 140 and receives a pin 142 connected to the arm 108, whereby upward movement of the arm 108 will cause a counter-clockwise rotation of the lever 134. When this movement occurs, the plate 130 will also be caused to rotate in the same direction. A locking lever 144 is pivotally mounted at 146 adjacent the plate 130 and the arm 136, and is normally in the path of movement of said

arm. Thus, when no coin is present, and an attempt is made to actuate the lever 114, the arm 136 will be moved a short distance until it comes against the end of the locking lever 144, whereupon further movement of the lever 114 is impossible. The distance which these parts are permitted to move when no coin is present is very slight, and is not sufficient to cause the delivery of any liquid.

After an acceptable coin has been deposited, however, it will be received and will rest in the recess of the plate 130 as shown at 128. At this time, when pressure is exerted against the lever 114 and the plate 130 rotates in a counter-clockwise direction, the plate will carry with it the coin 128 whereupon the curved edge thereof will come against the forward end of the locking lever 144 and cam it out of the path of movement thereof to thus permit a full stroke of the lever 114 and operation of the liquid delivery mechanism. When the lever has reached its full stroke, the coin 128 will be deposited into the coin chute 148 and will be delivered to the coin box 150.

From the foregoing description it will be evident that I have provided a novel liquid dispensing apparatus which may be operated in conjunction with a coin-controlled mechanism. It will be evident that certain changes can be made in the apparatus thus disclosed, either in the form, construction or arrangement of parts thereof without in any way departing from the spirit of the invention or sacrificing any of the attendant advantages thereof.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. A coin-controlled liquid dispensing apparatus, comprising a source of liquid supply, reciprocable delivery means operable to positively deliver a predetermined quantity of liquid from said source directly into a receptacle, manually operable means operable to actuate said reciprocable delivery means, means to normally lock said manually operable means against movement, and coin-controlled means to prevent the locking of said manually operable means thereby to permit delivery of said liquid.

2. A coin-controlled liquid dispensing apparatus, comprising a source of liquid supply, a pump connected to said source adapted to withdraw a predetermined quantity of liquid therefrom and deliver said liquid to a receptacle, manually operable means to actuate said pump, a coin mechanism normally locking said actuating means against movement, and means in said mechanism adapted upon the deposit of an acceptable coin therein to prevent said actuating means from being locked.

3. A coin-controlled liquid dispensing apparatus, comprising a source of liquid supply, a container, reciprocable means to transfer a quantity of liquid from said source to said container when moved in one direction, manually operable means to actuate said transfer means, a coin mechanism normally locking said manually operable means against movement, means in said coin mechanism adapted to prevent said manually operable means from being locked upon depositing an acceptable coin therein, and means to retain said reciprocable means in its liquid transferring position, said means to retain said reciprocable means being so constructed and arranged as to release said reciprocable means when contacted by a receptacle being moved thereagainst to deliver the liquid from said container to a receptacle therefor.



4. A liquid dispensing apparatus, comprising a source of liquid supply, a cylinder adjacent said source, a piston slidable in said cylinder to withdraw a predetermined quantity of liquid from said reservoir into said cylinder, means to move said piston to liquid withdrawing position, releasable locking means to retain said piston in liquid withdrawing position, said means to retain said piston being so constructed and arranged as to release said piston when contacted by a receptacle being moved thereagainst, whereby said piston is freed to move in the opposite direction and deliver the liquid from said cylinder to a receptacle therefor.

5. A coin-controlled liquid dispensing apparatus, comprising a source of liquid supply, a container adjacent said source, coin-controlled means to transfer a predetermined quantity of liquid from said source to said container upon depositing an acceptable coin, means to retain said liquid in said container, said means to retain said liquid being so constructed and arranged as to release said piston when contacted by a receptacle being moved thereagainst and deliver said liquid from said container to a receptacle therefor.

6. In a liquid dispensing apparatus the combination of a source of liquid supply, a cylinder connected to said source, a spring opposed piston adapted to reciprocate in said cylinder and to draw a predetermined quantity of liquid into said cylinder in response to the movement of manually operable actuating means, a valve and dispenser arrangement for directing the flow of a predetermined quantity of liquid from said piston in response to the force of said spring, a coin mechanism normally locking said actuating means against movement, and means in said mechanism adapted to prevent said actuating means from being locked upon the deposit of an acceptable coin therein.

7. In a liquid dispensing apparatus the combination of a source of liquid supply, a cylinder connected to said source, a spring opposed piston adapted to reciprocate in said cylinder and to draw a predetermined quantity of liquid into said cylinder in response to the movement of manually operable actuating means, ratchet and pawl locking means to retain said piston in extended position within said cylinder, means to disengage said ratchet and pawl means and allow said piston to be advanced by said spring thereby to deliver said liquid from said container to a receptacle therefor, a coin mechanism normally locking said actuating means against movement, and means in said mechanism adapted to prevent said actuating means from being locked upon the deposit of an acceptable coin therein.

ERNEST H. THOMPSON.

## REFERENCES CITED

The following references are of record in the file of this patent:

### UNITED STATES PATENTS


| Number | Name | Date |
|---|---|---|
| 358,162 | Miller et al. | Feb. 22, 1887 |
| 872,314 | Wilson | Nov. 26, 1907 |
| 921,594 | Crane | May 11, 1909 |
| 941,760 | Cordley | Nov. 30, 1909 |
| 943,649 | Buck | Dec. 21, 1909 |
| 963,342 | Warters | July 5, 1910 |
| 1,117,729 | Ward | Nov. 17, 1914 |
| 1,260,335 | Cordley | Mar. 26, 1918 |
| 1,633,287 | Reuther | June 21, 1927 |
| 1,638,189 | Dupont | Aug. 9, 1927 |