Feb. 25, 1964 F. H. CRUM 3,122,279

ELECTRIC LIQUID DISPENSER

Filed Oct. 5, 1959 2 Sheets-Sheet 1

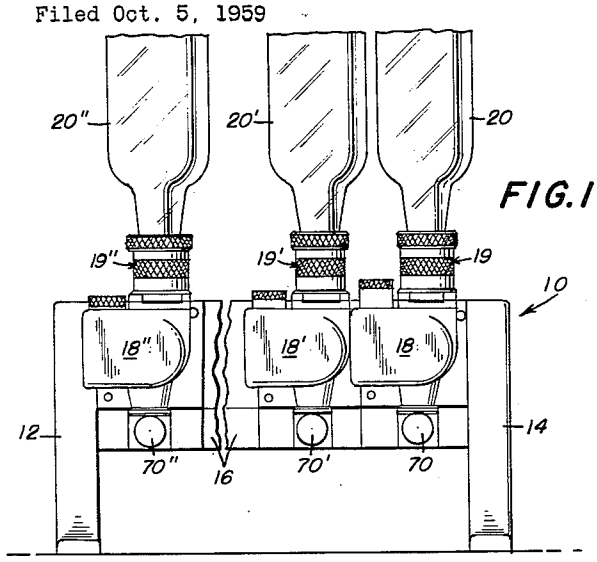


FIG. 1

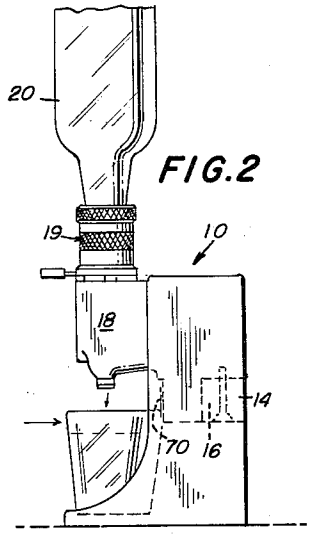


FIG. 2

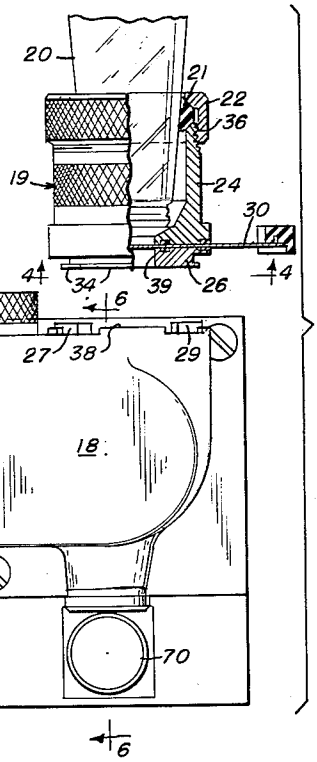


FIG. 3

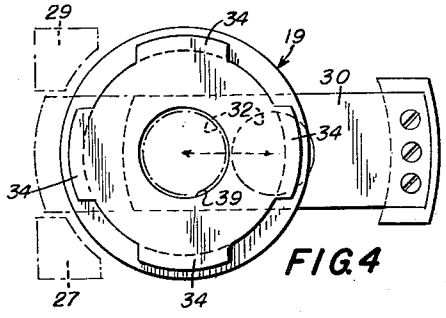


FIG. 4

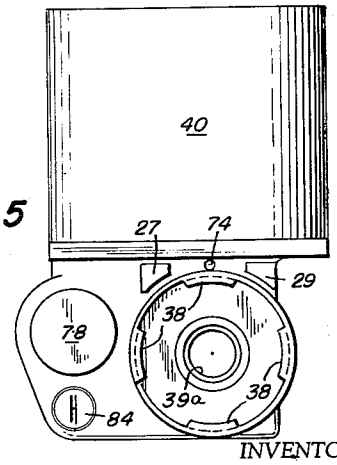


FIG. 5

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ELECTRIC LIQUID DISPENSER

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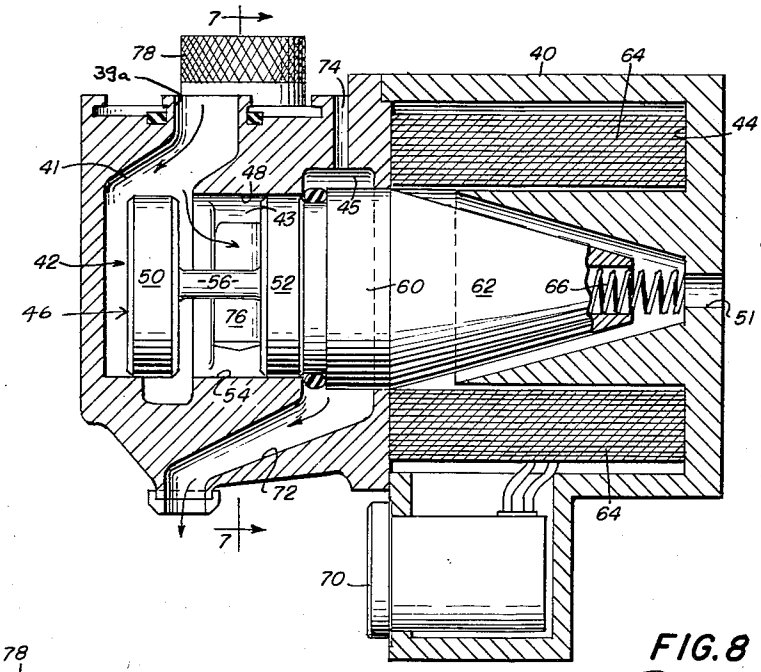


FIG.6

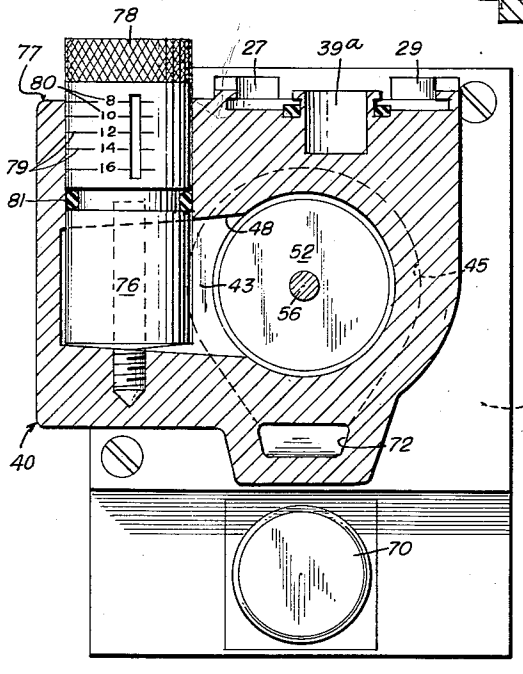


FIG.7

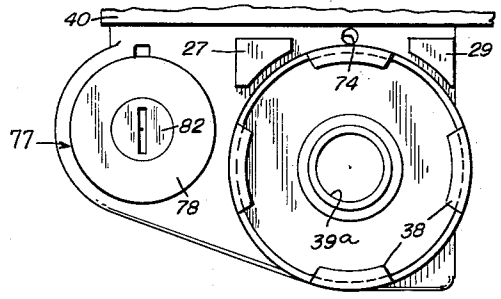


FIG.8

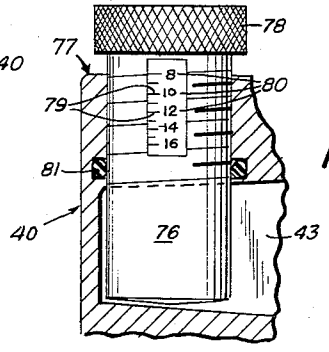


FIG.9

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3,122,279

ELECTRIC LIQUID DISPENSER

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Filed Oct. 5, 1959, Ser. No. 844,298
3 Claims. (Cl. 222—308)

This invention relates to a liquid dispenser and particularly to an electric dispenser in which a measured portion of liquid may be discharged at each activation of the mechanism.

One objective of this invention is to provide structure whereby a liquid container may be adapted so that it can be safely and quickly secured to a dispensing mechanism in an inverted position.

A further objective of this invention is to provide a closure device within the container adapting means which will allow the container to be removed from the dispensing mechanism, only when the closure device has sealed the container.

A still further objective of this invention is to provide a liquid dispensing machine in which the liquid will be dispensed in adjustable measured quantities from a bottle.

Another important objective of this invention is to provide means whereby the management of a liquid dispensing establishment may control the size of the drinks being served. This objective is accomplished by providing unique adjustable means within the dispensing mechanism which may be under the control of the management through such means as a key.

A still further objective of the invention is to provide a convenient means to prevent a vacuum lock from developing in the liquid container as the liquid is being dispensed.

This invention has its primary use at bars, taverns, restaurants and like establishments, where the management wishes to control the amount of liquor in the drinks beings served. The liquor container, in most instances, will be of the conventional quart or fifth type bottle having a throated section and a removable cap thereon. The invention provides means to safely secure this type bottle in an inverted position to a dispensing mechanism and further provides means whereby an adjustable charge of liquid is delivered upon each operation of a solenoid-activated piston. The charge of liquid dispensed through the action of the piston is adjustable and there are means provided whereby air at atmospheric pressure will be forced into the liquid container to displace the liquid being dispensed.

Another important objective of this invention is to provide a dispensing mechanism which may conveniently be arranged in a series upon a mounting bracket, such that the control and tabulation of the number of charges from each dispenser is conveniently under the control of the management.

Further objectives and advantages of this invention will be apparent from the following description and claims wherein the construction, arrangement and cooperation of the several parts of the electric liquid dispenser are set forth.

In the drawings:

FIG. 1 is a front elevation view of several of the dispensers of this invention arranged on a mounting bracket;

FIG. 2 is a side elevation view of FIG. 1;

FIG. 3 is an enlarged exploded view of one of the dispensing mechanisms shown in FIG. 1 with portions broken away;

FIG. 4 is a view along the line 4—4 of FIG. 3;

FIG. 5 is a plan view of the dispenser;

FIG. 6 is a sectional view along the line 6—6 of FIG. 3;

FIG. 7 is a sectional view along the line 7—7 of FIG. 6;

FIG. 8 is a top view of the receiving base prior to the insertion of a liquid container; and

FIG. 9 is an elevation view of the volume-adjusting spool.

Referring now to the drawings where like numerals indicate like parts, the numeral 10 indicates a supporting bracket which may be used with this invention. The supporting bracket consists of two side members 12 and 14 joined by the horizontal mounting bracket 16. Arranged along the horizontal bracket are a plurality of electric dispensing mechanisms 18, 18', 18'', etc. Secured to the top end of these dispensing mechanisms are a plurality of inverted liquid containers 20, 20', 20'', etc.

The invention provides means to adapt the liquid containers so that they may be inverted and secured to the dispensing mechanisms without any danger of spillage. Each adapter and its associated dispenser will be the same, and for that reason, only one will be described. Prior to securing the bottle 20 to the dispensing mechanism 18, the bottle must first have a bottle adapter 19 secured to the pouring end thereof. The bottle adapter is comprised of a clamp ring 22, an adapter body 24 and a gasket 21. The adapter body 24 has an integral adapter base which has a liquid discharge passage 39 therethrough. A slide valve 30 having an opening 32 therein is adapted to open and close the opening 39. Spaced about the end of adapter base 26 are a plurality of engaging lugs 24.

The adapter body 24 is secured to the bottle 20 by tightening the clamp ring to the adapter body 24 by screw threads 36. This in turn, will compress gasket 21, causing it to expand and grip the bottle 20. The adapter body 24 will then be firmly attached to the bottle 20 by a liquid-proof connection. The adapters are secured to the bottles while the bottles are in their upright position. The slide valve handle of the slide valve 30 is then pulled to its outward (closed) position to seal the outlet of the bottle. The bottle can then be inverted for attachment to the dispensing mechanism.

The dispensing mechanism 18 has at its upper end a plurality of adapter-receiving lugs 38 thereon. The lugs 38 surround a liquid-receiving opening 39*a*. The bottle 20 with the adapter 24 attached is lowered to the dispenser 18 such that lugs 34 will fall in the spaces between lugs 38. The lugs are so arranged that this position occurs when slide valve 30 is generally parallel to the bracket 16. The bottle and the adapter are then rotated ¼ turn so that lugs 34 and 38 will engage. This causes slide valve 30 to move perpendicular to bracket 16 such that it may be pushed inwardly to its open position, as best seen in FIG. 4, the end 31 of slide valve 30 in the inward position moves between the projecting lugs or ears 27 and 29. The lugs 27 and 29 prevent the slide valve 30, and consequently the bottle 20 and its adapter 24 from turning in either direction when in the open position. The slide valve must be pulled outwardly, or to its closed position, before the ears 27 and 29 will permit the adapter to rotate the quarter-turn necessary to permit lugs 34 and 38 to disengage. Of course, when the slide valve is pulled outwardly, bottle 20 is sealed, such that there will be no spillage when the bottle is removed.

The operation of the dispensing mechanism itself is best seen in FIG. 6. The mechanism consists primarily of a support housing 40 having a liquid chamber 42 at one end thereof and the solenoid housing chamber 44 at the other end thereof. The chamber 42 consists principally of three main sections, a reservoir 41, a cylindrical passageway 43, and a discharge section 45.

Reservoir 41 is in communication with the liquid-receiving opening 39*a* at all times. The passageway 43 is cylindrical in shape and receives a reciprocating piston 46. The piston 46 is circular in shape and closely engages the surface 48 of passageway 43. The piston head is com-

prised of two spaced spools 50 and 52 which define a space 54 therebetween. The spools are supported on either end of a shaft 56. Another shaft 60 connects the piston to a solenoid pole piece 62. The pole piece 62 is surrounded by a solenoid coil 64 in the normal fashion. The pole piece 62 and, in turn, the piston 46 are biased to a forward position (to the left as shown in FIG. 6) by the spring 66. The solenoid is conventional in design and is adapted to be activated by a switch 70 which is arranged generally below the dispenser 18. The electrical fields are so arranged that upon each activation of the switch 70, the piston 46 will move rearwardly i.e., to the right (FIG. 6). An air vent 51 is provided as a means to exhaust and admit air into chamber 44 as the pole piece reciprocates.

The position of the elements of the dispenser, while the dispenser is at rest is shown by the full lines of FIG. 6. In this position the piston compartment 54 is in communication with reservoir 41 and consequently contains a charge of liquid.

The discharge section 45 of chamber 42 has an air vent 74 at its upper end thereof and a dispensing outlet 72 at the lower end thereof.

An adjusting plug 76 within passageway 43 and between the space 54 defined by spools 50 and 52 is capable of adjusting the amount of liquid which falls within the space 54. This plug is conveniently controlled through the action of volume-adjusting knob 78 which is placed on the exterior of housing 40. The amount of liquid allowed to fill compartment 54 is determined by the amount of plug 76 which is allowed to lie within the compartment. Markings such as those shown by the numeral 80 may be placed along knob 78 to determine the size of the charges being dispensed. The adjustment is accomplished by merely rotating the knob 78 a sufficient amount such that the proper indicia on the scale 79 aligns with the upper surface 77 of the housing 40 which is adjacent to the indicia 79 of knob 78. An O-ring 81 is provided as a sealing means between the plug and the housing.

As shown in FIG. 8 a locking mechanism 82 may be associated with knob 78 whereby it will require a key or some other instrument to adjust knob 78. As shown in FIG. 5, the knob 78 has an associated locking mechanism 84 offset therefrom for the same purposes as the mechanism 82. The particular details of the locking mechanism are not within the scope of this invention. It will be apparent to those skilled in the art what locking mechanisms will be most suitable for use with the invention. However, the rotary adjustment motion is peculiarly adaptable for inexpensive lock type mechanisms.

The dispenser will operate upon a tripping of switch 70 by either a glass held under spout 72 or by the hand of the operator. The switch 70 will activate the solenoid 64 which will draw piston 46 to the rear of the housing 40. The compartment 54 together with the spools 50–52 will be drawn rearwardly through passageway 43 and carry a charge of liquid to discharge section 45. When the piston has reached its rearward position the space 54 will be in communication with the spout 72 and the air vent 74. The liquid which was in compartment 54 will then flow by gravity through the spout 72. Air flowing through vent 74 will fill the space 54. Upon release of pressure from switch 70, the spring 66 will return the piston to its forward position. The compartment 54 will carry air back to reservoir 41 where the air may displace the liquid extracted from container 20. This series of operations will take place upon each activation of switch 70.

In a general manner, while I have, in the above description, disclosed what I deem to be practical and efficient embodiment of my invention, it should be well understood that I do not wish to be limited thereto, as there might be changes made in the arrangement, disposition and form of the parts without departing from the principle of the present invention as comprehended within the scope of the accompanying claims.

I claim:

1. A liquid dispensing device comprising in combination a support housing having an interior chamber, said chamber having a reservoir section, a passageway, and a discharge section, a solenoid controlled piston slidable along said passageway, said piston having a head of two spaced apart spools which define a compartment with the interior sides of said passageway, said head being slidable into the reservoir to open said compartment into communication with the liquid of said reservoir at one end of the travel of said piston and slidable into communication with said discharge section at the other end of said travel to discharge the liquid, and a knob on the outside of said housing having a portion slidably extending into said compartment, whereby the compartment capacity may be varied by adjusting the size of said portion extending within said compartment.

2. The device defined in claim 1 wherein there is an air inlet aperture in communication with said discharge section whereby the fluid dispensed from said discharge section will be replaced by air, and said piston upon its return stroke, will deliver that air to said reservoir.

3. A liquid dispensing device comprising, a support housing having walls defining an interior chamber, said chamber having a reservoir section, a passageway, and a discharge section, a solenoid controlled piston slidable within said passageway, said piston having a head of two spaced apart spools which define a compartment with the interior sides of said passageway, said head being slidable into the reservoir to open said compartment into communication with the liquid of said reservoir at one end of the travel of said piston and slidable into communication with said discharge section at the other end of said travel, to discharge said liquid contained in the compartment, means for limiting the piston stroke to the recited extreme communication positions respectively, a knob on the outside of said housing having a portion extending through said walls and into said compartment, and said portion having a rotatable and slidable motion to vary the amount of said portion which falls within said compartment, whereby the compartment capacity may be varied.

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