Sept. 15, 1925. 1,553,805

A. E. ECKERT

LIQUID DISPENSING DEVICE

Filed Aug. 16, 1923

Fig. 1

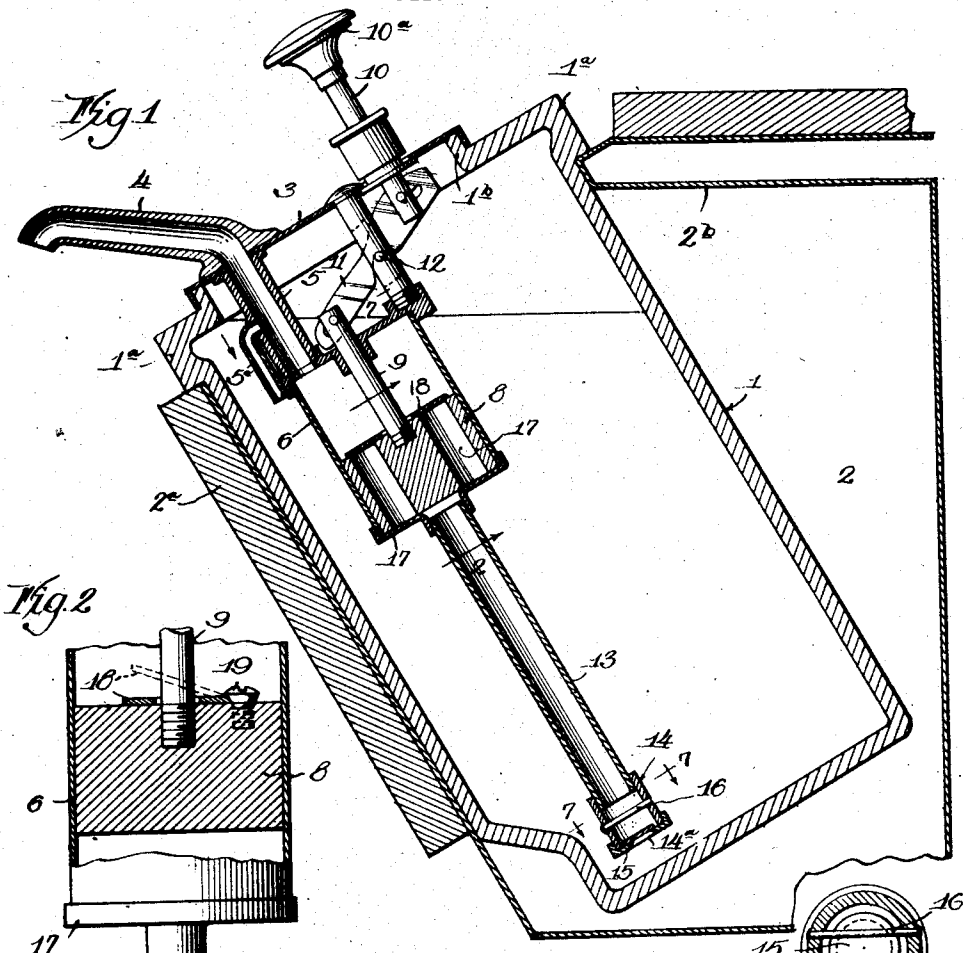


Fig. 2

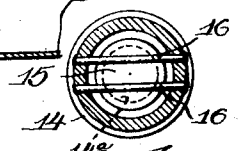


Fig. 7

Fig. 4

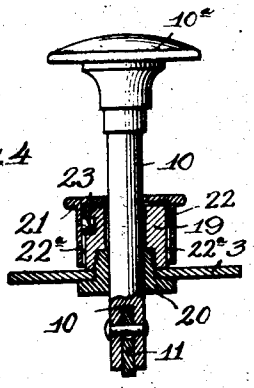
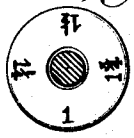


Fig. 5



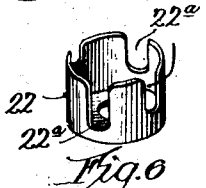
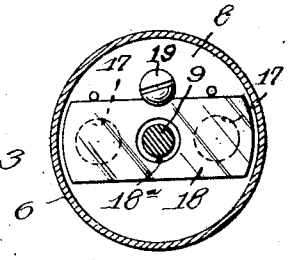


Fig. 6

Fig. 3



Witness:
Chas. K. Kursh.

Inventor,
Adolph E. Eckert,
By Offield, Bubbley, Porter & Scott. Attys

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UNITED STATES PATENT OFFICE.

ADOLPH E. ECKERT, OF OAK PARK, ILLINOIS.

LIQUID-DISPENSING DEVICE.

Application filed August 16, 1923. Serial No. 657,663.

To all whom it may concern:

Be it known that I, ADOLPH E. ECKERT, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Liquid-Dispensing Devices, of which the following is a specification.

This invention relates to improvements in liquid dispensing devices, and particularly to those devices used for dispensing syrups in connection with fountain equipment for serving soda water, ice cream and various mixed beverages.

The object of the invention is to provide an improved construction for a dispensing device, characterized especially by the simplicity of mechanical detail, uniformity and regulation of the volume of liquid dispensed, ease of operation and other features tending to promote greater economy and better service.

A preferred embodiment of the invention is illustrated in the accompanying drawings wherein—

Figure 1 is a view in vertical section of the dispensing device.

Figure 2 is an enlarged view of the pump cylinder, with the piston shown in section as taken on line 2—2 of Figure 1.

Figure 3 is a top plan view of the piston.

Figure 4 is a detail view of the plunger, showing the parts of the regulating device in section.

Figure 5 is a top plan view of the regulating member.

Figure 6 is a perspective view of the slotted bushing forming a part of the regulating member, and

Figure 7 is an enlarged detail view of the check valve at the lower end of the suction pipe, taken on line 7—7 of Figure 1.

The dispensing device is housed with and forms a part of a jar or container 1 from which the liquid is dispensed. The jar 1, is removably mounted within an ice compartment 2, and having oblique front wall 2^a and an oblique portion in its top wall having an opening in which the jar is inserted, the latter assuming an inclined position of say 30^a to the vertical, and facing rearwardly from the service counter. The jar 1 is provided with a shoulder 1^a at its upper end which engages around the opening in the compartment 2.

The jar has a relatively large opening in its top wall, preferably of an oval shape and surrounded by a flange or lip 1^b. A flanged plate 3, fits over the opening, and not only forms a closure for the jar, but serves as a supporting plate for the dispensing mechanism, so that all parts can be removed as a unit, in the refilling or cleaning of the jar.

Near the lower edge of the plate 3, is a fixed spout, 4, extending rearwardly in horizontal position, and having a down turned end. The spout is provided with an extension, below the plate 3, having the form of a pipe 5, extending parallel to the axis of the jar and connected with a cylinder 6, mounted a short distance below the plate 3, and located generally in the upper portion of the jar. The cylinder is further connected with the plate 3, by means of a slotted stud or post 7, said post and pipe 5 acting to support the cylinder at diametrically opposed points, to the plate 3 above.

Within the cylinder is a piston 8, secured to a piston rod 9, extending through the upper end or head of the cylinder. The piston rod is connected to a plunger rod 10, supported on the cover plate 3, through the medium of a lever 11 passing through a slot formed in the post 7, and fulcrumed intermediate its ends on a pin 12. The ends of the lever 11 are connected to the adjacent ends of the piston and plunger rods by pin and slot connections of the usual form. The plunger carries a head 10^a, which is pressed by hand to operate the pump as will hereinafter be more clearly described.

Extending from the lower end of the cylinder is a pipe 13, terminating near the bottom of the jar 1, and carrying at its end, a check valve 14, consisting of a cylindric casing, having an opening 14^a in its bottom. A valve disc 15 is loosely mounted in the casing and normally covers the opening, its axial movement being limited by two bars 16, 16, extending transversely of the casing just above the disc. (Figure 7).

Referring to the piston 8, the same has an axial dimension equal to substantially one-half the length of the cylinder 6. Extending longitudinally through the cylinder and offset from its axis are two passages 17, 17. Mounted on the top face of the piston is a flap or check valve 18, consisting of a flat plate, having an aperture 18^a at its center through which the piston rod 9 extends. The plate is somewhat wider than the diameter of the passages 17, 17 and when rest-

ing flatwise upon the piston, closes the upper ends of said passages. A screw 19, is tapped into the piston at one edge of the valve plate and serves to fulcrum the plate along said edge. Pins 20 inserted along the same edge and on either side of the screw, prevent the plate from rotating about the piston rod 9. Thus the movement of the plate is confined to a limited swinging movement about one edge, into and out of passage closing positions.

It is manifest that during the upward stroke of the piston, the flap valve 18 remains closed and the liquid above the piston is forced out of the cylinder and through the spout 4. A portion of the liquid remains in the spout and pipe 5, which either drains back into the cylinder or is returned to the jar through drain pipe 5[a] connected with the pipe 5 above the cylinder. Likewise, during the upstroke, the piston draws a quantity of liquid by suction into the cylinder, which is trapped therein, as well as in the pipe 13, by the closing of the check valve 14, at the instant the suction is relieved and a pressure is exerted by the movement of the piston on its down stroke. The piston is heavy enough to be moved downwardly by gravity, as soon as the pressure is removed from the plunger 10, and thus returns to the lower end of the cylinder after each discharge stroke. During the downward stroke the flap valve opens against the liquid pressure from below, thus allowing the upper part of the cylinder to become filled, by the free passage of the liquid through the passages 17, 17. On the next upstroke the contents of the cylinder are discharged and a new charge drawn into the cylinder below the piston, as before described.

Referring now to the means for regulating the amount of liquid discharged: Surrounding the plunger rod and mounted on the cover plate is a cylindric block 19 (Figure 4) secured in place by a bushing 20, inserted from the underside of the plate 3, and screwed into the base of the block 19. Loosely mounted on the block is a cap 21, having a metal liner or inner cap 22, fixed in place. This inner cap is provided with a series of slots 22[a], arranged circumferentially about the same at 90° intervals (Figure 6). The slots vary in length, corresponding to certain indicia marked on the top wall of the cap 21 (Figure 5). These indicia, to wit, 1, 1¼, 1½, 1¾, indicate volumes of liquid in fluid ounces, the smallest quantity corresponding to the slot 22[a] of shortest length and so on. Projecting from some point in the cylinder surface of the block 19 is a projection 23, of a size to fit the several slots 22[a]. By lifting the cap 21, out of engagement with one of the slots and turning it around to another slot, the distance or vertical position of the cap, above the block is varied, the total range of adjustment being, say, one half of an inch. Thus, when the longest slot is engaging the projection 23, the maximum stroke of the plunger is obtaned and the maximum quantity of liquid is discharged from the pump, namely 1¾ ounces. And similarly, as the cap is raised above the block, the stroke is shortened and lesser amounts are discharged during each stroke, at that particular setting.

Manifestly, the parts are dimensioned so that a definite proportion is established between the stroke of the plunger rod, and the volume that is discharged from the cylinder. Thus, the operator knows the exact amount that is discharged each time the plunger is pressed, and can thus be sure of dispensing a uniform amount into each beverage that is prepared. Furthermore, it is possible to vary the amount discharged, depending on the particular kind of syrup being dispensed, or the amount specified for any particular beverage. Such an arrangement is particularly advantageous to the owner, or employer, since it eliminates guesswork and waste on the part of the employé and affords an accurate check on the syrup consumption.

Besides the advantages of the graduated regulations there are other features that are perhaps not so readily apparent, without some knowledge of the present state of the art. The prevailing type of dispenser consists of a plunger-operated force pump located at the bottom of the jar, the cylinder thereof being open at its top, so that a quantity of liquid flows into the cylinder after each downward stroke. The piston at the end of the plunger is spring operated in one direction, and is pressed down by hand to force the contents upwardly through a stem connected with the delivery spout.

In the present form of dispenser, the piston is not exposed to the body of the liquid, and therefore, does not keep it in continual state of agitation that in some forms of syrup is detrimental to its quality. In the improved form there are no springs, the pump is positive in action and delivers the full capacity at a single stroke, thus making it unnecessary to press more than once on the plunger to obtain the required amount for a single mixture, and finally it is noiseless, and instantly responsive in action.

Having set forth the features of the device embodying the invention and the advantages thereof, I claim:

1. In a liquid dispensing device, the combination with a plunger rod of means for regulating the stroke thereof, comprising a fixed member through which said rod extends, a sleeve surrounding said rod and adapted for having engagement with said fixed member, said sleeve and fixed member having coacting stop members whereby the

sleeve may be adjusted longitudinally of said rod to limit its movement in one direction.

2. In a liquid dispensing device, the combination with a plunger rod of means for regulating its stroke in one direction comprising a relatively fixed block through which said rod extends, a sleeve loosely mounted on said block, said sleeve and block being provided with coacting slots and a projection, said slots extending axially of said rod and of different lengths, whereby the sleeve may be set in different positions of longitudinal adjustment.

3. In a liquid dispensing device, the combination with a plunger rod of means for regulating its stroke in one direction comprising a relatively fixed block through which said rod extends, a cap loosely fitting over said block and provided with a plurality of circumferentially spaced slots extending longitudinally thereof, said block having a projecting lug adapted to engage said slots for holding said cap in several positions of longitudinal adjustment.

In witness whereof, I hereunto subscribe my name this 25th day of July, A. D., 1923.

ADOLPH E. ECKERT.