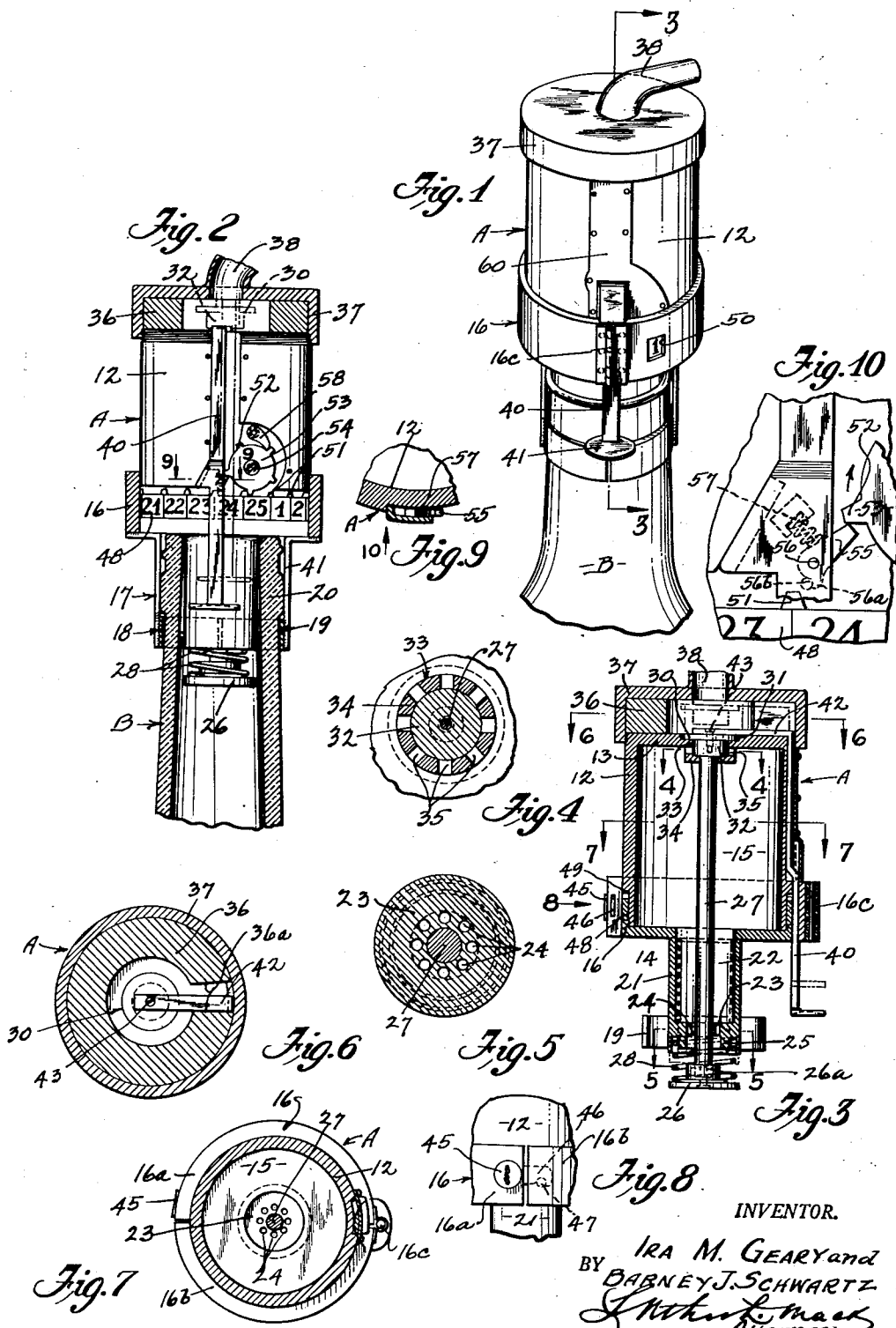


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METERED BOTTLE CLOSURE

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METERED BOTTLE CLOSURE

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1 Claim. (Cl. 222—38)

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This invention relates to and has for a primary object the provision of a metered closure and pouring spout for bottles and the like whereby measured quantities of a liquid may be dispensed at each pouring operation.

In the consideration of this invention it will be understood that conventional spouts will dispense liquid from a bottle in variable quantities by merely tipping the container, and thus more or less than a predetermined quantity may be dispensed on different occasions, thereby resulting in a loss to the purveyors or customers at times.

It is, therefore, an object to provide a liquid dispenser which embodies a self-contained meter and is arranged to limit the quantity of liquid dispensed at each operation to a predetermined quantity and register each operation on the meter. Thus, if an ounce of liquid is to be dispensed at each operation and the container holds one quart (32 ounces) only 32 servings can be made from such container, and discrepancies can be readily checked.

Other and more detailed objects will appear in the description of our invention, reference being had to the accompanying drawings in which one form of our dispenser is illustrated.

In said drawings:

Fig. 1 is a perspective view of a dispenser embodying our improvements and applied to a bottle;

Fig. 2 is a side view of the dispenser applied to a bottle, the mouth of the bottle, the outlet of the dispenser and the member enclosing the lower part of the dispenser being shown in longitudinal section;

Fig. 3 is a longitudinal section of the dispensing device;

Figs. 4, 5, 6 and 7 are sectional plans on lines 4—4, 5—5, 6—6 and 7—7 of Fig. 3, respectively;

Fig. 8 is a fragmentary view as seen in the direction of arrow 8 in Fig. 3;

Fig. 9 is a fragmentary section on line 9—9 of Fig. 2; and

Fig. 10 is a fragmentary external view as seen in the direction of arrow 10 in Fig. 9.

The device is generally indicated at A and is adapted for application to a bottle B in such a manner that it can not be removed without detection, so that the contents of the bottle may not be unauthorizably removed.

Dispenser A includes a cylinder 12 formed with a top wall 13 and a reduced skirt portion 14 and an enclosed chamber 15 adapted to hold one full predetermined measure of liquid derived

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from bottle B. Cylinder 12 is adapted to seat in and be locked to an annular cup-like portion 16 of an adaptor 17 by means of which the dispenser is irremovable from the neck of bottle B, except by force and consequent detection. Member 16 may have an expansible skirt 18 formed with an internal flange or ring 19 adapted to underlie a bead or thread 20 on the neck of bottle B (Fig. 2). Member 16 also has a depending portion 21 formed with a filling chamber 22 closed by a bottom wall 23, which is perforated at 24 for affording communication, at times, between bottle B and chambers 15 and 22. Wall 23 has a valve seat 25 adapted to be closed by a valve 26, said valve having a stem 27, which is slidable in a central bore in wall 23 and which carries a coiled spring 28 adapted to compress between said valve and wall 23 for normally urging valve 26 to open position, so as to admit liquid from the bottle to chamber 15 of the dispenser.

The upper end of stem 27 carries a disc valve 30 adapted to seat at 31 on the upper side of wall 13 of cylinder 12. Valve 30 has a hub 32 slidable in a bore 33 of wall 13. Fixed to the lower part of wall 13 is an outlet member 34, which has peripheral perforations 35 for, at times, affording an outlet from chamber 15 for the liquid contents of chamber 15, as when valve 32 is open, as shown in broken lines in Fig. 3.

Cylinder 12 is overlaid with a disc 36, which is held in position as by means of a cap 37 affixed to the cylinder by suitable means. Cap 37 has an outlet 38 to which a pouring spout 39 may be connected for dispensing the liquid contents of the cylinder.

It is apparent that spring 28 normally holds valve 26 open and valve 30 closed so that no liquid can be transferred from bottle B to chamber 15, nor discharged from chamber 15. However, we provide a valve actuator 40, which is vertically slidable on cylinder 12 (Fig. 3) and has a finger piece 41 on its lower end and an arm 42 on its upper end, said arm being attached to valve 30 as by means of a screw 43. Thus, when pressure is applied to the finger piece 41, as in a dispensing operation, stem 27 together with valves 26 and 30 will be lifted to an extent necessary to close valve 26 and open valve 30, thereby preventing a flow of liquid from bottle B while permitting the evacuation of the measured contents of chamber 15 of cylinder 12.

It is obvious, therefore, that in order to dispense a liquid the valve 26 must be open, as shown in Fig. 3, so as to occasion a filling of

chamber 15 while valve 30 is closed, by merely tilting the bottle. The design of valve 30 and outlet member, as well as valve 26 and its seat, are such that no liquid can be dispensed while valve 26 is open. The operation of member 40 during the filling of chamber 15 can not open valve 30 until valve 26 is closed, hence, there can be no possibility of dispensing liquid which is unmetred.

Member 16 is formed of a pair of arcuate portions 16a and 16b hinged together at 16c and adapted to be locked in operative position on cylinder 12 by a key operated lock 45 and a latch bar 46 which engages a pin 47 for the purpose of supporting an annular dial 48 in a recess 49 (Fig. 3) which is adapted to rotate about the vertical axis of cylinder 12 in a step-by-step manner in response to the movement of actuator 40. As shown in Fig. 1, an aperture 50 is formed in member 16 through which numerals on dial 48 may be observed by an operator or others. Of course, the numerals on the dial are in sequence and are of such a number as to correspond to the number of units capable of being dispensed from bottle B. For example, a quart bottle will hold thirty-two ounces of liquid, and if one ounce is to be dispensed at each operation the numerals on the dial will read from "1" to "32" in sequence. Chamber 15 in such case would hold exactly one ounce of liquid, and would be completely exhausted at each pouring operation.

Dial 48 is arranged to be advanced one step at each operation of actuator 40. To such end the dial is formed with teeth 51, which are engageable with teeth 52 of a rotatable gear or sprocket 53 which is pivotally mounted at 54 on cylinder 12 (Figs. 2 and 10). Actuator 40 carries a pawl 55 which is pivoted thereon at 56 and is urged into operative engagement with teeth 52 of gear 53 by a spring 57, so as to advance gear 53 in a clockwise direction, as illustrated in Fig. 10, each time the actuator is operated. Gear 53 is prevented from moving backwardly by a detent pawl 58, such as is shown in Fig. 2, or otherwise. Gear 53 and pawls 55 and 58 may be mounted in a casing 60 applied to the cylinder 12, as in Fig. 1, or mounted in the wall of cylinder 12 or member 16, if desired.

Each upward stroke of actuator 40 moves dial 48 one point in a given direction and at the same time opens valve 30 and closes valve 26. When chamber 15 is empty it can be readily refilled by tilting bottle B while valve 30 is closed. As shown in Fig. 6, arm 42 of the actuator 40 is slightly movable in a slot 36a in order that the actuator may accommodate itself to the curvature of gear 53 during its upward stroke. Also pawl 55 is limited in its pivotal movement on axis 56 by means of a heel extension 56a, which is engageable with a stop 56b fixed in position on cylinder 12.

Assuming that bottle B is full of liquid and the element A is attached thereto, it is necessary to tilt the bottle for as long a time as is required to fill chamber 15 with a full charge of liquid. Thereafter, when the bottle is again tilted and actuator 40 is operated, all of the contents of chamber 15 may be evacuated without possibility of liquid from the bottle entering chamber 15, because valve 26 will be closed until actuator 40

is restored to normally inoperative position, as in Fig. 1 and valve 30 is closed while valve 26 is open, thus requiring another tilting of the bottle to refill chamber 15.

A portion 26a of valve 26 seats in the bore or seat 25 before the portion 32 of valve 30 is opened sufficiently to discharge the contents of chamber 15. Hence, in operation, each time the actuator is thrust upwardly all of the measured contents of chamber 15 may be discharged through pouring spout 38 while valve 26 remains closed, and thereafter chamber 15 may be refilled by a subsequent tilting of the bottle preparatory to a succeeding dispensing operation. The metering dispenser A is readily attached to and detached from the bottle B by locking and unlocking the hinged clamp 16.

We claim:

A liquid dispensing closure for containers comprising: a body attachable to a container against unauthorized removal and formed with a dispensing chamber, a mounting having an annular band around the bottom of the body and arms depending therefrom and hooked under an annular shoulder on the neck of a container affixed to the bottom of said body and formed with a filling chamber depending into the container and in constant communication with said dispensing chamber, said body having an outlet at the top of the dispensing chamber and said filling chamber having an inlet at its bottom, coaxial valves operatively connected for maintaining said inlet normally open to permit free flow of liquid from the container through said inlet and filling chamber to said dispensing chamber and when the valves are actuated for closing the inlet and opening the outlet so as to dispense a complete charge of liquid from the dispensing chamber, a stem connecting said valves, a spring borne by said stem and compressed between the end wall of the filling chamber and a portion of said stem, and an actuator slidable on the mounting in a plane paralleling the common axis of and operatively connected with said valve stem for opening the outlet and closing the inlet in a dispensing operation, an annular indicator surrounding said body and formed with a scale of numerals for indicating successive dispensing operations, said mounting having an aperture through which said numerals are visible, and means connecting said actuator with and for rotating said indicator one step in each dispensing operation.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
218,292	Lynn	Aug. 5, 1879
793,154	Phillips	June 27, 1905
1,256,298	Cremona	Feb. 12, 1918

FOREIGN PATENTS

Number	Country	Date
27,403	Denmark	Apr. 4, 1921
461,147	Great Britain	Feb. 11, 1937