Aug. 5, 1947. F. W. OPITZ 2,425,161

LIQUID DISPENSING VALVE

Filed June 14, 1945

Fig. 1.

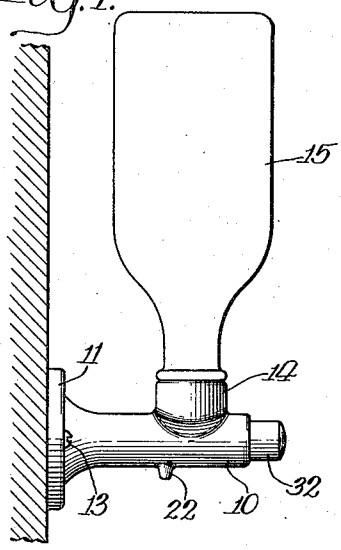


Fig. 2.

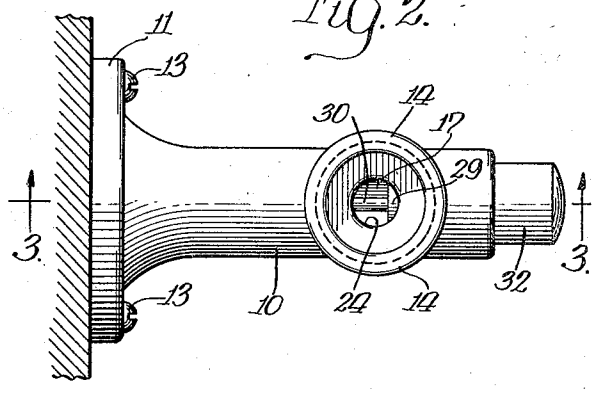


Fig. 3.

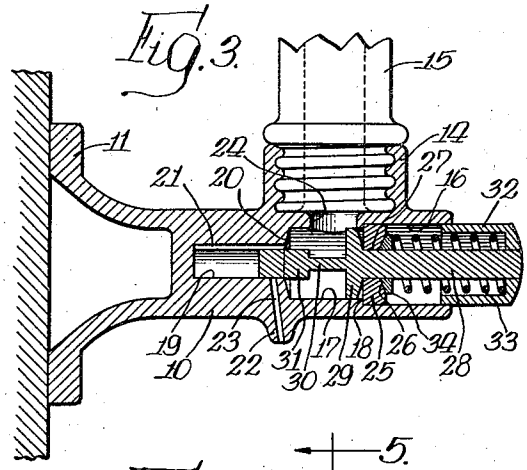


Fig. 5.

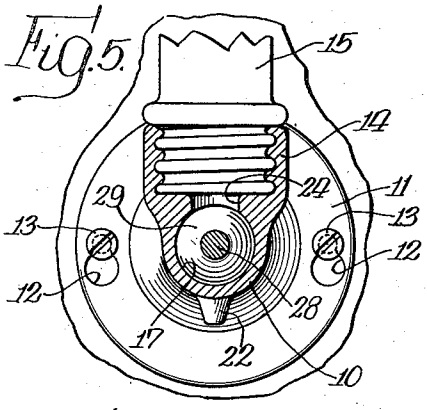


Fig. 4.

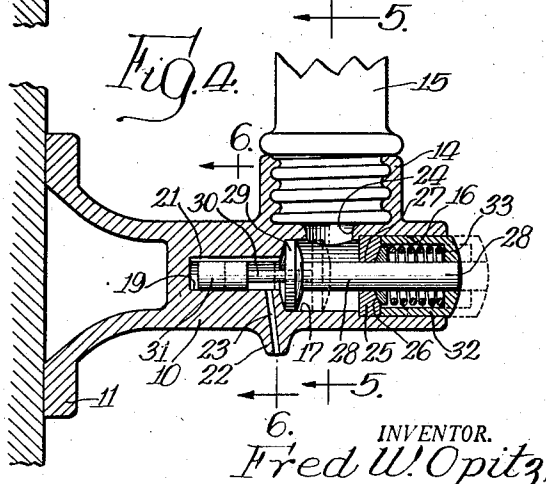
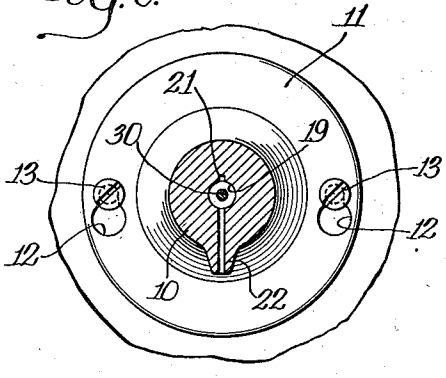


Fig. 6.



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LIQUID DISPENSING VALVE

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6 Claims. (Cl. 222—340)

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The present invention relates generally to liquid dispensing valves, but more particularly to a new, useful and simplified construction of a compact, detachable, wall-type dispensing valve.

One of the objects of the present invention is to provide a novel and simplified construction of liquid dispensing valve for discharging a "charge" of liquid such as hand lotion or the like, and at the same time prevent dripping from the discharge spout when not in use.

A further object of the invention is to provide a novel and improved dispensing valve adapted to be removably mounted on a wall for supporting an inverted bottle of liquid thereon so that the same may be conveniently located for use.

These and other objects are accomplished by providing a construction and an arrangement of the various parts in the manner hereinafter described and particularly pointed out in the appended claims.

Referring to the drawings:

Fig. 1 is a side elevational view of my improved dispensing valve showing the manner in which the inverted bottle is supported thereon;

Fig. 2 is an enlarged top plan view of the same;

Fig. 3 is a cross sectional view taken on the line 3—3 in Fig. 2 of the drawings;

Fig. 4 is a similar view showing the plunger depressed;

Fig. 5 is a cross sectional view taken on the line 5—5 in Fig. 4 of the drawings; and

Fig. 6 is a cross sectional view taken on the line 6—6 in Fig. 4 of the drawings.

In illustrating one form of my invention I have shown the same as comprising a main cylindrical member or casing 10 which has a right angular flange or base portion as shown at 11 for removably attaching the dispensing valve on a wall in the position shown in Fig. 1 of the drawings. The base portion 11 has oppositely positioned key-hole-like slots 12 which are adapted to slide over the heads of screws 13 for supporting the valve on the wall. Formed integrally with the casing member 10 and extending vertically upwardly therefrom is an internally threaded collar 14 for receiving in engagement therewith and supporting thereon a threaded neck of an inverted bottle 15. The casing 10 has a longitudinally extending bore 16 adjacent its outer end which forms the spring chamber. Extending in axial alignment with the bore 16 is a relatively smaller bore or liquid chamber 17. Formed between these bores 16 and 17 is an annular shoulder 18. The inner end of the bore or

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liquid chamber 17 communicates with an aligned and relatively smaller longitudinal bore or valve chamber 19. A tapered shoulder 20 is formed between these bores. Extending longitudinally of the casing 10 and in the periphery of the bore 19 is a relatively small groove or passageway 21 which constantly communicates the bore or valve chamber 19 with the bore or liquid chamber 17. This groove serves to permit any accumulation of liquid in the valve chamber to be returned to the liquid chamber 17. Formed integrally with the casing 10 on the lower side thereof is a discharge nipple 22. Extending downwardly and angularly through the nipple 22 and communicating with the valve chamber 19 is a discharge port or opening 23. Formed in communication with the liquid chamber or bore 17 and the annular member 14 is an inlet port or opening 24 through which the liquid flows from the neck of the inverted bottle 15 into the dispensive valve. Snugly fitting the bore 16 against the shoulder 18 is a washer 25 which has a central opening 27. The washer 25 has a bevelled seat 26 on one side thereof surrounding the central opening 27. Reciprocally mounted in the opening 27 of the washer 25 is a plunger, generally indicated by the reference character 28. Formed integrally with the plunger or rod 28 is a disc-like plunger head 29 which is adapted to be reciprocably moved within the bore or liquid chamber 17. Formed integrally with the plunger or rod 28 and head 29 is a reduced extension 30. Formed integrally with the extension 30 and of a relatively larger diameter than the extension is a cylindrical head or valve member 31 which slidably fits in and is adapted to be reciprocated in the bore or valve chamber 19 of the casing 10. Secured in any well known manner to the outer end of the plunger or rod 28 is a thimble-like member or cap 32. Extending into the cap 32 and surrounding the plunger or rod 28 is one end of a compression spring 33. The other or inner end of the spring 33 seats on a packing washer 34 which in turn is seated in the beveled recess 26 of the washer 25 to seal the spring chamber 16 from the liquid chamber 17.

Summarizing the advantages and function of operation of my improved liquid dispensing valve, it will be understood that when the valve casing is attached to the wall and supports thereon an inverted bottle containing hand lotion or the like in the manner shown in Fig. 1 of the drawings, the spring 33 will normally actuate the plunger 28 to its outermost position or the position shown in Fig. 3 of the drawings. In this position the liquid in the bottle will flow by

gravity through the inlet port 24 to the liquid chamber 17. At the same time, the valve head 31 covers the outlet port 23. When the plunger 28 is moved inwardly by depressing the cap 32 to the position shown in broken lines in Fig. 4 of the drawings, the disc-like valve member 29 covers the inlet port 24, and valve head 31 uncovers the outlet port 23 to permit the "trapped" liquid in the liquid chamber 17 to be discharged from the nipple 22. When the pressure is released from the cap 32, the spring 33 will return the plunger and valve members from the full line position shown in Fig. 4 of the drawings to the position shown in Fig. 1 of the drawings. In this connection it will be noted that during a portion of the return movement of the valve member 29, there will be created a partial vacuum in the liquid chamber 17, which will siphon the liquid from the outlet port 23 to thereby prevent dripping or leakage therefrom. At the same time, a certain amount of air will be drawn into the inlet port which will eventually pass from the liquid chamber to the top of the inverted bottle and thus permit the free flow of the liquid from the bottle to the dispensing valve.

It will also be obvious that in the event liquid accumulates in the valve chamber 19 ahead of the valve member 31, the same will be discharged through the groove 21 on the inward stroke of the plunger.

From the above description it will be seen that I have not only provided a simple and compact liquid dispensing valve, but also one which will effectively and efficiently dispense liquid therefrom without dripping or leakage from the outlet port when the plunger is returned to its normal position.

While in the above specification I have described one embodiment which my invention may assume in practice, it will, of course, be understood that the same is capable of modification and that such modification may be made without departing from the spirit and scope of the invention as expressed in the following claims.

What I claim as my invention and desire to secure by Letters Patent is:

1. A liquid dispensing valve comprising a casing, an internally threaded collar formed integrally therewith for supporting an inverted bottle thereon, there being a longitudinal bore in said casing forming a liquid chamber and a valve chamber, an inlet port communicating said collar with said liquid chamber, a nipple formed integrally with said casing having an outlet port communicating with the valve chamber, there being a passageway in said casing forming a constant communication between said chambers, and a plunger mounted in said bore for controlling said inlet port and said outlet port.

2. A liquid dispensing valve comprising a casing, an internally threaded collar fromed integrally therewith for supporting an inverted bottle thereon, there being a longitudinal bore in said casing, there being a passageway longitudinally of said bore for permitting communication of one end of said bore with the intermediate portion of said bore, an inlet port communicating said collar with said bore, a nipple formed integrally with said casing having an outlet port communicating with said bore, a plunger mounted in said bore for controlling said inlet port and said outlet port, and a spring mounted on said plunger for actuating said plunger in one direction.

3. A liquid dispensing valve comprising a casing, said casing having a longitudinally extending bore divided into a spring chamber, a liquid chamber, and a valve chamber, a by-pass between said liquid chamber and said valve chamber, said casing having an inlet port communicating with said liquid chamber, and an outlet port communicating with said valve chamber, a reciprocating plunger mounted in said bore, a disc-like valve member carried by said plunger and adapted to control said inlet port, a second valve member carried by said plunger and adapted to control said outlet port, and a spring mounted in said spring chamber for normally actuating said plunger.

4. A liquid dispensing valve comprising a casing, said casing having a longitudinally extending bore divided into a spring chamber, a liquid chamber and a valve chamber, a separate communication between said liquid chamber and said valve chamber, said casing having an inlet port communicating with said liquid chamber, and an outlet port communicating with said valve chamber, a reciprocating plunger mounted in said bore, a disc-like valve member carried by said plunger and adapted to control said inlet port, a second valve member carried by said plunger and adapted to control said outlet port, a spring mounted in said spring chamber for normally actuating said plunger, and a cap embracing one end of said spring and telescopically mounted in said spring chamber.

5. A liquid dispensing valve comprising a casing, said casing having a longitudinally extending bore divided into a spring chamber, a liquid chamber and a valve chamber, said casing having an inlet port communicating with said liquid chamber and an outlet port communicating with said valve chamber, a reciprocating plunger mounted in said bore, a disc-like valve member carried by said plunger and adapted to control said inlet port, a second valve member carried by said plunger and adapted to control said outlet port, there being a longitudinally extending groove in said second named valve member forming communication between said liquid chamber and said valve chamber, and a compression spring embracing said plunger and located in said spring chamber for normally returning said plunger.

6. A liquid dispensing valve comprising a casing, said casing having a longitudinally extending bore divided into a spring chamber, a liquid chamber and a valve chamber, said casing having an inlet port communicating with said liquid chamber and an outlet port communicating with said valve chamber, a reciprocating plunger mounted in said bore, a disc-like valve member mounted intermediate the ends of said plunger and located in said liquid chamber for controlling said inlet port, a second valve member carried at the inner end of said plunger for controlling said outlet port, there being a longitudinal groove in said casing adjacent said second named valve member forming the communication between said liquid chamber and said valve chamber, and a spring mounted in said spring chamber for normally returning said plunger.

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