Dec. 28, 1937. R. BERNHARDT 2,103,932

CONTAINER AND PUMP

Filed Sept. 12, 1933

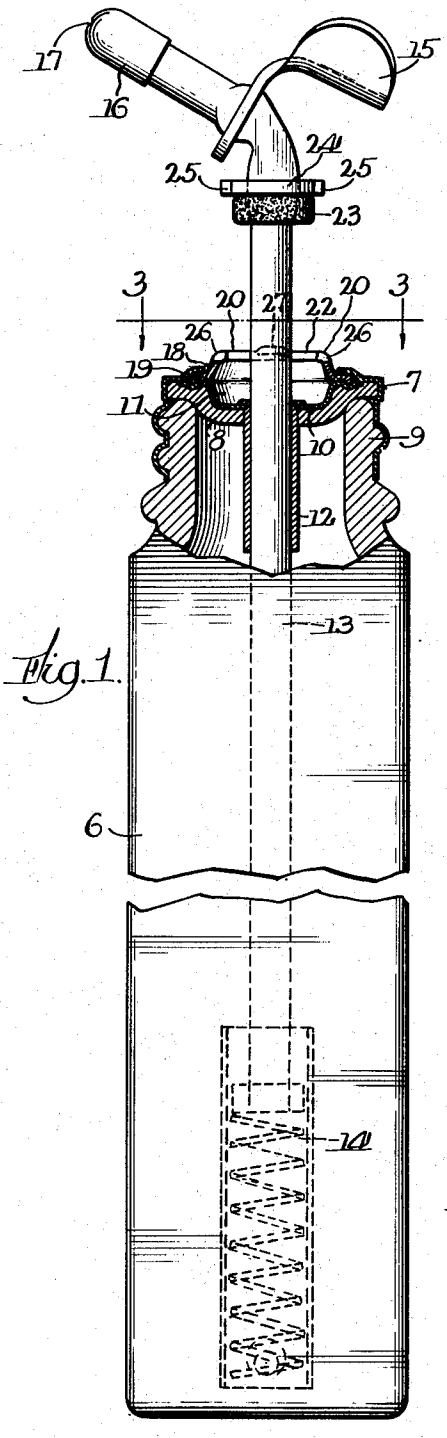


Fig. 1.

Fig. 2.

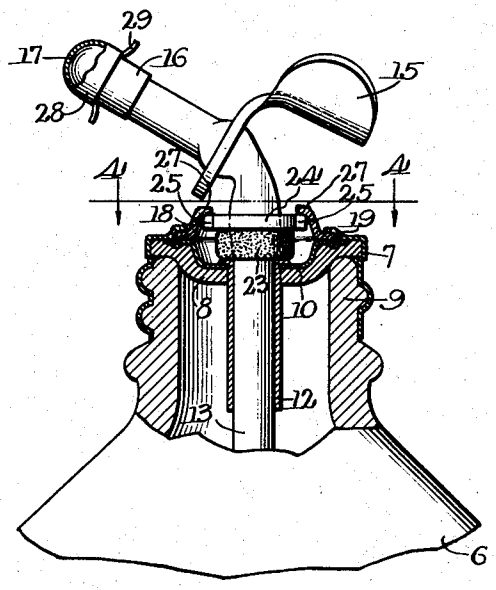


Fig. 3.

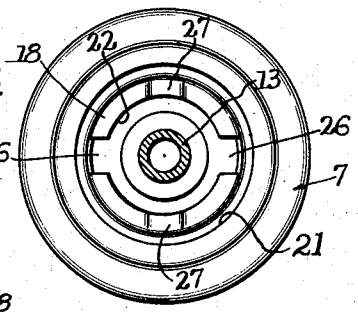


Fig. 5.

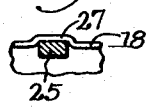
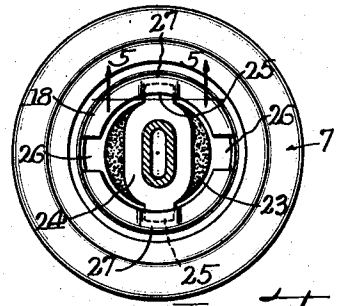


Fig. 4.



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2,103,932

CONTAINER AND PUMP

Rudolph Bernhardt, Chicago, Ill.

Application September 12, 1933, Serial No. 689,166

2 Claims. (Cl. 299—97)

This invention relates to pumps or spraying devices of the type adapted to be mounted in a bottle or container for pumping or spraying the contents therefrom and is particularly directed to devices of this kind shown and described in my application for Pumps, Serial No. 645,554, now matured into Patent No. 2,025,846, dated December 31, 1935, which are adapted to be supported and manipulated with one hand.

It is frequently desirable to mount such pumps or sprayers in the containers and ship the same filled with the spraying liquid and certain features of this invention are particularly directed to means for supporting the pump and holding the same in depressed position and securely sealed to prevent discharge or loss of the liquid.

The objects of this invention are in general to provide an improved container with a pump mounted therein; to provide a pump having a combined seal and support for a hollow pump rod or tube; to provide a bottle or the like with a cap of relatively thin or light material and having associated therewith means for guiding the pump rod and means for locking the pump with the rod in retracted and sealed position; and to provide such other advantages and novel features as will be described hereinafter and set forth in the claims.

In the accompanying drawing illustrating this invention,

Figure 1 is a side view of a bottle or container with parts broken away to illustrate the novel features of the invention;

Figure 2 is a detail view similar to Figure 1 but showing the pump rod in closed or shipping position and also showing a cap for the nozzle;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a sectional view taken on line 4—4 of Figure 2; and

Figure 5 is a sectional detail taken on the line 5—5 of Figure 4.

As shown in the drawing, the container is illustrated as a bottle 6 having a screw cap 7 of the type more or less commonly used for closing the same. A washer or gasket 8 is inserted between the cap and the threaded neck 9 of the container for making a tight joint between the neck and the cap. A metallic washer or disc 10 is interposed between the gasket 8 and the cap and has a central depressed portion 11 forming a portion of a chamber for receiving a packing ring. The disc 10 has a downwardly projecting cylinder or bearing 12 for the reciprocable hollow pump rod or discharge tube 13. This pump has a cylinder 14 which is adapted to rest on the bottom of the container and is of the type having a spring for raising the rod, the rod being depressed for the discharge movement by means of a finger piece 15. The pump is provided with a nozzle 16 having a discharge orifice 17 but as the pump is otherwise of well known construction further description is unnecessary. However, it will be noted that the spring tends to raise the rod and parts associated therewith up to the position shown in Figure 1. When the pump is to be operated the operator presses down on the thumb piece 15 and thereby pushes in or depresses the pump rod 13 against the tension of the spring in the cylinder 14 which presses against the piston and tends to normally hold the rod 13 in raised position, as described in my co-pending application. This provides the discharge stroke. As soon as the pressure on the thumb piece is released the spring again raises the piston and pump rod 13 to raised or projected position as shown in Fig. 1. This reciprocation of the pump rod and associated parts therefore accomplishes the pumping operation as will be readily understood by those familiar with the art.

The caps commonly used for such bottles are usually made of tin or other relatively light metal and in order to provide locking means for holding the rod 13 in depressed position against the tension of the spring and to securely pack the same, a plate or disc 18 is arranged with its outer edge 19 engaging with a peripheral recess in the horizontal portion of the disc 10. The central part 20 of the plate 18 is raised and extends out through a hole 21 in the cap 7, thus forming an inverted cup shaped member with its outer flange portion embraced by the adjacent overlying portion of the cap and the underlying flange of the disc 10. The raised central portion of the plate 18 has a hole 22 of sufficiently large diameter to permit the passage therethrough of a packing ring 23 and a substantially circular detent or disc 24 fixed on the rod 13. The detent 24 may be secured to the rod in any suitable manner, but in the arrangement shown it is applied thereto when circular in form and with a circular hole therethrough for receiving the rod. After this member is placed in position it is fixed to the rod by being flattened or compressed which at the same time causes the rod to be slightly flattened or compressed as shown particularly in Figure 4. This detent also has outwardly extending projections or lugs 25 which are adapted to pass down through slots or recesses 26 in the sides or inwardly projecting flange of the upwardly pro-

jecting portion of the plate 18. The plate 18 is also provided adjacent to the central opening with raised portions 27 preferably at right angles to the recesses 26, such raised portion providing pockets or depressions for receiving the lugs 25 after the lugs have passed through the slots 26 and been turned under the edge of the plate to locking position. By means of this arrangement it will be seen that I provide a fastening in the nature of a bayonet joint for holding the parts in depressed position as shown in Figure 2. When in this position the packing ring 23 is pressed tightly against the bottom of the disc 10 or the upper end of the tube 12 which is fitted therein, thereby making a tight joint between the pump rod 13 and the other closure members. When in this position the package or container is adapted to be shipped without having the contents leaking out and it will also require less room for packing on account of the retracted position of the pump rod and connected parts. In order to further prevent any leakage I provide a cap or thimble 28 which is preferably made of light sheet metal or other suitable material and which fits closely over the nozzle 16. This cap is preferably provided with thumb pieces 29 for convenience in applying and removing the same.

While my improved device may be made in any desired sizes, the illustrations are made from commercial forms which are relatively small and adapted to be used with one hand. The cup shaped plate 18 is preferably made of heavier material than the cap and thereby furnishes a substantial and lasting locking member for cooperation with the detent and packing ring.

While I have shown a preferred form of my invention it will be noted that changes may be made in order to adapt it for different uses and it is to be understood that the invention is not limited to the specific structure other than as set forth in the following claims, in which I claim:

1. The combination with a bottle, of a screw cap, a packing member arranged between the cap and the end of the bottle, a disc positioned between the cap and the packing member and having a depressed central portion with a bearing therein, a reciprocating pump mounted in the bottle having a hollow pump rod projecting outwardly through the bearing and having resilient means tending to hold the rod in outwardly projected position, an inverted cup-shaped member projecting upwardly through an opening in the cap and having a flange secured between the cap and the disc, said member having a central opening therethrough with notches in the edges, said disc and said cup shaped member forming a chamber, a washer engaging with the pump rod at a distance above the top of the bottle when the rod is in raised position and secured thereto by being deformed together with a portion of the rod, and having lugs thereon, and a packing ring around the rod below the washer, the arrangement being such that the washer and ring may be pressed downwardly into the chamber between the disc and the cup-shaped member with the lugs passing through said notches and the washer turned to bring the lugs into fastening position to hold the rod in closing position.

2. The combination with a bottle, of a closure, said bottle having a neck and having a reciprocating pump mounted therein with its piston rod freely movable through the closure, said closure comprising a cap formed of thin metal mounted on the bottle and having a central opening therethrough, a disc positioned between the top of the bottle and the cap, a bearing mounted in the disc and engaging with the rod, an annular plate formed of heavier material than the cap which is positioned between the disc and the cap and having a raised portion extending outwardly through said central opening in the cap said disc and plate being marginally secured to the bottle neck by the cap, means associated with the rod adapted to detachably engage with the plate and hold the rod in retracted position, and means for making a tight packing between the rod and the bearing.

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