March 14, 1939. R. BERNHARDT 2,150,485

DISPENSER

Filed May 27, 1937

Fig. 1.

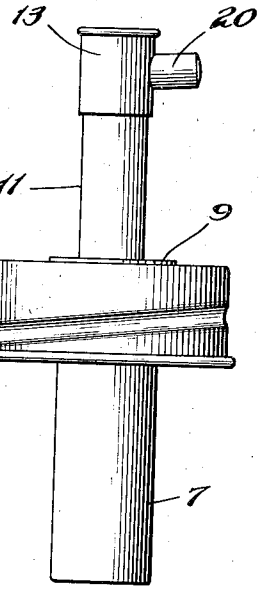


Fig. 2.

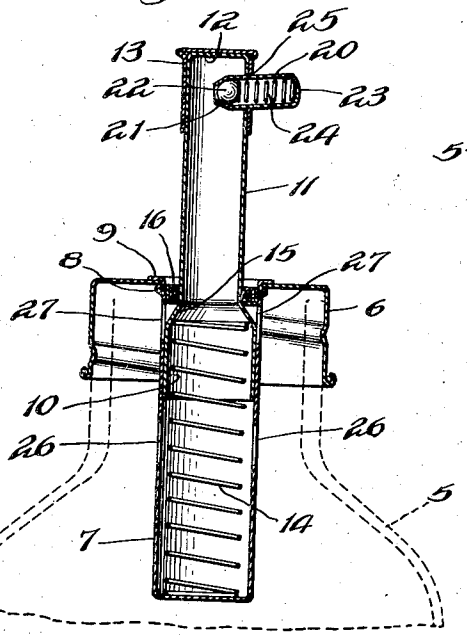


Fig. 3.

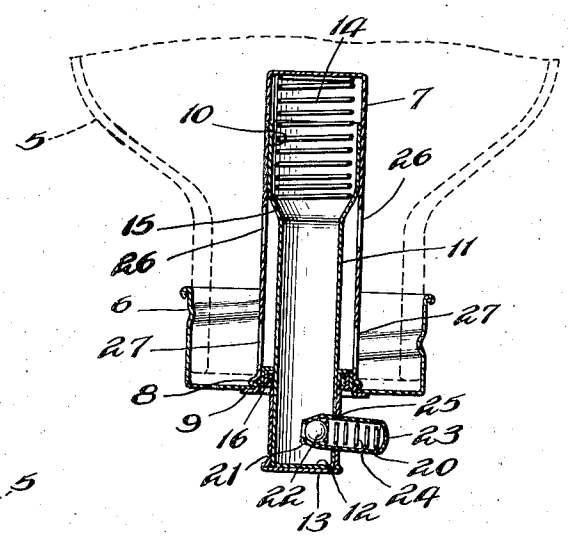
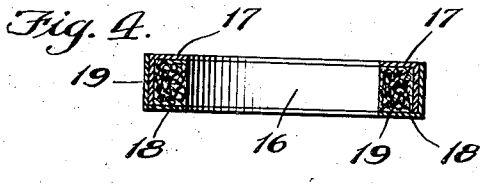


Fig. 4.



Inventor.
Rudolph Bernhardt
By Glenn S. Noble
Atty.

Patented Mar. 14, 1939 2,150,485

UNITED STATES PATENT OFFICE

2,150,485

DISPENSER

Rudolph Bernhardt, Chicago, Ill.

Application May 27, 1937, Serial No. 145,026

3 Claims. (Cl. 221—50)

This invention relates to means for dispensing or pumping out limited amounts of liquid from a bottle or other container and is particularly intended for use with various emolients or lotions which are often of a somewhat viscous nature. It has been found desirable to provide such dispensers at a low cost so that they may be furnished generally with the bottles of lotion and if desired may be discarded without any considerable loss.

The principal objects of this invention are to provide a dispenser which may thus be made at a low cost but which will be efficient and satisfactory in use.

Other objects will appear more fully from the following description when taken in connection with the accompanying drawing in which

Figure 1 is a side view of the dispenser shown on an enlarged scale;

Figure 2 is a longitudinal sectional view showing the piston in extended view;

Figure 3 is a similar view showing the bottle inverted and with the piston in discharging position; and

Figure 4 is an enlarged sectional detail of the piston retaining and packing ring.

The bottle or container 5 as indicated in dotted lines, has a cap or closure 6. A cylinder 7 extends through a hole in the cap, this cylinder being preferably made of drawn metal and is closed at the bottom. The upper open end of the cylinder is held in engagement with the cap by means of an inner projection 8 and a coacting flange 9 as shown in Figure 2. A hollow piston or plunger 10 fits in the cylinder 7. This piston is also preferably made of drawn metal and has a reduced portion 11 which extends outwardly through the cap and serves as a hollow piston rod or discharge pipe. The upper end of the discharge pipe 11 is also preferably closed as shown at 12 and has a cap 13 which fits thereover with a pressed fit and serves as a hand piece for pressing the piston inwardly.

A spring 14 is interposed between the shoulder 15 formed at the upper end of the piston and the bottom of the cylinder and tends to urge the piston outwardly or to extended position. The piston is held in the cylinder by a retaining ring 16 as shown in Figure 4. This ring is formed of two flanged rings 17 and 18 which are pressed together and which hold a packing washer 19 that makes a close contact or fit with the discharge pipe 11. The ring 16 is held in the end of the cylinder by a pressed fit, or in any other suitable manner.

The discharge nozzle 20 has a conical or tapered inner end 21 with an opening therethrough, this also serving as a valve seat for a ball valve 22. The opposite end of the nozzle has a discharge opening 23 and a spring 24 is arranged in the nozzle to hold the valve 22 in closed position. The discharge nozzle 20 has a pressed fit in a hole 25 extending through the walls of the discharge pipe 11 and cap 13, this double thickness insuring a suitable support for the nozzle and the tapered end serves to guide the nozzle into the hole during the pressing operation. It will be understood that the metal in the various parts is relatively thin in the commercial forms so that this additional strengthening is desirable for supporting the nozzle. The device is shown in the drawing on a greatly enlarged scale over the ordinary commercial forms for lotion bottles.

When the dispenser is to be used the bottle or container is inverted and liquid flows into the cylinder 7 through holes 26 which are positioned near the lower end of the piston when the piston is in normal or projected position. Relative movement between the piston and the cylinder is provided by holding the hand under the cap 13 when in inverted position and pressing up on the cap or down on the bottle. This causes the piston to move inwardly to the position shown in Figure 3 and to force more or less of the contents of the cylinder out through the discharge nozzle 20. Holes 27 are provided in the sides of the cylinder adjacent to the retaining ring 16 to permit the free passage of liquid during the operation of the piston and prevent any retarding of the same. After the piston has been moved inwardly for the discharge operation it is again returned to normal position by the spring 14 ready for the next movement.

What I claim is:

1. A dispenser for a bottle or the like, comprising a cylinder closed at one end and open at the other end, said cylinder being formed of drawn metal and of uniform internal diameter, means for attaching the open end to a closure cap or the like with the cylinder projecting into the container, a piston in said cylinder, a spring coacting with the piston and cylinder tending to hold the piston in projected position, said piston being formed of drawn metal and having an integrally formed discharge tube extending outwardly therefrom which is of substantially less diameter than the piston with a tapered shoulder between the piston and the tube, a retaining ring secured in the end of the cylinder by a pressed fit and coacting with the discharge tube and serving as

a stop for the piston, said cylinder having an inlet opening in the side spaced at a distance from the closed end and serving to permit fluid to pass into the cylinder below the piston and having an opening in the side thereof above the piston to prevent trapping of fluid between the piston and the retaining ring, a hand piece on the outer end of the discharge tube, a discharge nozzle extending laterally from the outer end of the discharge tube, and a check valve in said nozzle.

2. In a liquid dispenser, a closure cap, a cylinder formed of drawn metal adapted to extend inwardly from said cap and having a closed inner end and having lateral openings spaced at a distance from the closed end to permit liquid to enter the same, a hollow piston formed of drawn metal fitting in said cylinder, a spring interposed between the piston and the bottom of the cylinder, said cylinder having an integrally formed discharge pipe extending outwardly therefrom and closed at its outer end, a cap secured to said closed end by a pressed fit and serving as a hand piece, a retaining ring fitting in the end of the cylinder and coacting with the pipe and piston for holding the parts together, a discharge nozzle projecting through holes in the side of the pipe and the cap and having a pressed fit therein, the side of said pipe, and a check valve for said nozzle.

3. In combination, a container having a metal closure cap, a cylinder projecting into the cap and having a closed inner end and secured to the cap at its outer end, a hollow piston fitting in the cylinder and having a reduced tubular portion extending outwardly to provide a discharge pipe with a shoulder at the point of extension, said tubular portion being closed at its outer end, a retaining ring in the open end of the cylinder coacting with the piston and the discharge pipe to hold the parts in operative position, a spring in the cylinder tending to hold the piston in projected position, said cylinder having holes in the side thereof above and below the piston when in normal position, the holes below the piston providing inlet openings to permit liquid to flow into the cylinder and the holes above the piston preventing liquid from being trapped between the piston and the retaining ring, a lateral discharge nozzle adjacent to the outer end of the discharge pipe, and a spring-pressed check valve in said nozzle.

RUDOLPH BERNHARDT.