

June 19, 1934.

LE ROY CHILSON

1,963,886

DROPPER

Filed April 4, 1931

Fig. 1

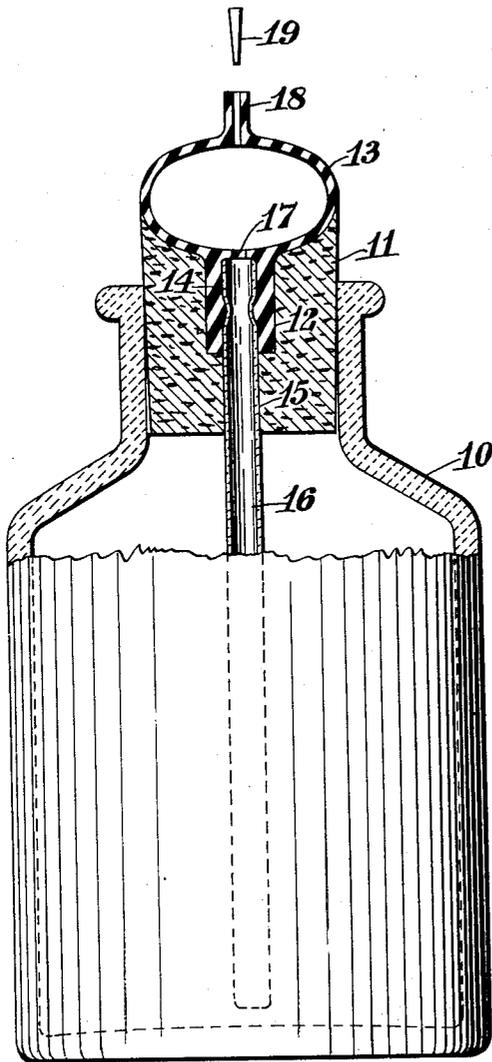


Fig. 2

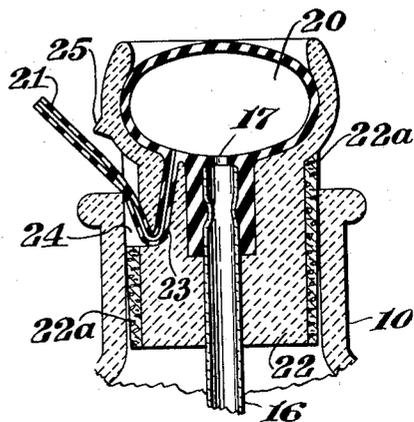


Fig. 3

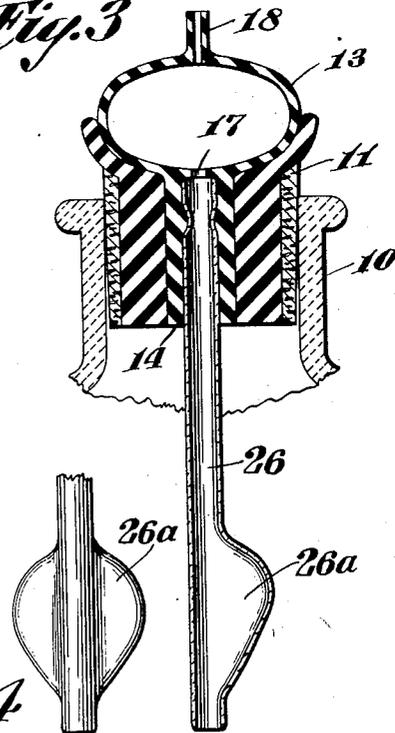


Fig. 4

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UNITED STATES PATENT OFFICE

1,963,886

DROPPER

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Application April 4, 1931, Serial No. 527,728

3 Claims. (Cl. 215—58)

This invention relates to the form of device for dispensing liquids, generally referred to as droppers.

The general object of the invention is a dropper which can be easily manipulated and controlled in the discharge of a desired quantity of liquid from a container.

The invention may be readily understood from the accompanying drawing forming a part of the specification.

Fig. 1 of the drawing is a partly sectional view of a device embodying the invention;

Fig. 2 is a fragmentary sectional view showing a modified form of the invention;

Fig. 3 is a fragmentary sectional view showing another embodiment of the invention; and

Fig. 4 is a fragmentary view in elevation of a part shown in Fig. 3.

Having reference to Fig. 1, 10 represents a bottle and 11 a stopper therefor. The stopper 11, which may be of glass, cork or any other material suitable for that purpose, is preferably hollowed out at the top and provided with a central depression 12 for the reception of a rubber bulb 13 and nipple 14, respectively. The stopper 11 is also provided with a central bore 15 to receive the upper end of a dropper tube 16, the latter being frictionally or otherwise held in the nipple 14 and being in fluid connection with the bulb 13 through a perforation 17. The bulb has a vent, preferably at its upper surface, in the form of a perforated nipple 18, which vent may be closed by a preferably tapered plug 19.

When the stopper is in position, as shown, and the plug 19 is in closing position in the vent nipple 18, the liquid in the bottle cannot escape nor evaporate.

The bulb 13 is preferably somewhat flattened so as to be more readily compressed, like a cap-sular diaphragm.

In contradistinction to the ordinary bulb dropper, wherein the liquid drawn into the dropper tube must be squeezed out by compressing the bulb, the liquid in my arrangement is released by controlling the vent opening. The vent can be so controlled either by means of the plug 19 or by use of a finger as to allow air to flow into the bulb at any desired rate to displace a certain amount of liquid. Just as soon as the vent is closed tight, the flow of liquid out of the dropper tube is stopped. Whether the liquid be discharged in the form of drops or in quantities measured by graduations on the tube, the rate of discharge can be accurately observed and controlled, whereas in droppers of the usual form

of control of the discharge depends upon the sensitiveness of the touch, dexterity with the fingers and upon experience.

The arrangement shown in Fig. 2 differs from that shown in Fig. 1, largely by the use of a thin and relatively long flexible tube 21 extending from the bulb 20. The stopper 22 may be of glass or other material, but is preferably provided with a cork lining 22a. The tube 21 extends from the bottom surface through a channel 23 in the stopper. The channel 23 preferably extends in downward direction and then turning upwardly it opens into a groove 24 cut through the upper portion of the cork lining 22a. The tube 21 is sufficiently long to permit convenient control by means of the fingers. While there is a great deal of latitude in this respect, I preferably provide on the stopper a projecting shoulder 25 defining a relatively sharp edge close to and in vertical alignment with the projecting end of the tube 21.

Normally the stopper is pressed down until the edge at the upper end of groove 24 is firmly seated against the protruding part of the tube 21 and thereby pinches the latter to cut off communication through the tube between the interior of the bottle and the outside atmosphere. To use the dropper, the stopper is withdrawn and the dropper filled. The stopper is preferably so grasped that either the thumb or one finger holds the tube 21 against the projection 25 so as to control the air flow to the bulb 20. Only a little pressure is required, in holding the tube 21 against the sharp edge of the projection 25, to completely shut off the air and a release of this pressure allows air to freely flow into the bulb and allow the liquid to flow out of the dropper by gravity.

The volume of the bulb is preferably about 10% smaller than the volume of the dropper tube so that the liquid drawn into the latter cannot possibly flood the bulb.

The upper part of the stopper is preferably so shaped as to rise above the upper surface of the bulb, whereby the latter is completely protected.

The form shown in Figs. 3 and 4 does not materially differ from the forms shown in Figs. 1 and 2. The lower portion of the dropper tube 26 has an enlarged portion 26a resembling the hollow of a teaspoon. The volume of this portion 26a may be equivalent to that of the usual teaspoon dosage. The desired amount may be accurately and quickly determined and then discharged.

In the foregoing I have described several em-

bodiments of the invention, but it is obvious that the invention is susceptible of execution in different ways.

I claim:

5 1. The combination of a tubular member, a resilient suction bulb therefor, a cylindrical stopper having its upper surface shaped to receive the bulb and having a bore to accommodate the tubular member, and a vent tube extending from
10 the bulb out of the cylindrical stopper surface.

2. The combination of a tubular member, a suction bulb therefor, a stopper having its upper surface shaped to receive the bulb and having a bore to accommodate the tubular member
15 and a vent tube extending from the bulb out of

the cylindrical stopper surface, the latter having a groove extending upwardly from the point at which the vent tube issues from the stopper surface.

3. The combination of a tubular member, a suction bulb therefor, a stopper having its upper surface shaped to receive the bulb and having a bore to accommodate the tubular member, a vent tube extending from the bulb out of the cylindrical stopper surface and a projection on
80 the stopper above the point at which the vent tube issues from the stopper surface, said projection defining a peripheral edge.
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