Sept. 9, 1952 G. SZEKELY 2,609,972

DEVICE FOR DROPWISE DISPENSING OF LIQUIDS

Filed Oct. 21, 1947

Fig. 1

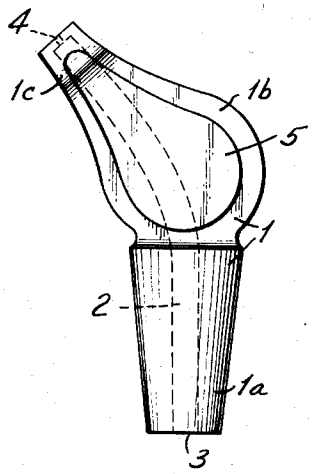


Fig. 2

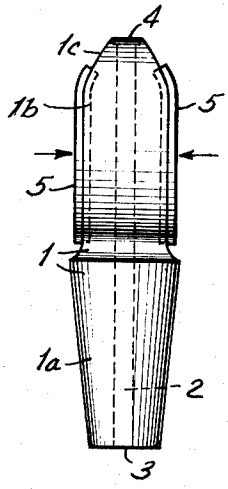


Fig. 1a

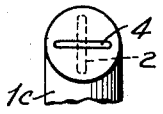


Fig. 6



Fig. 3

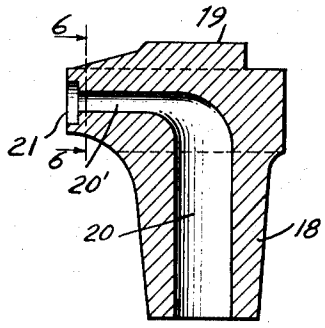
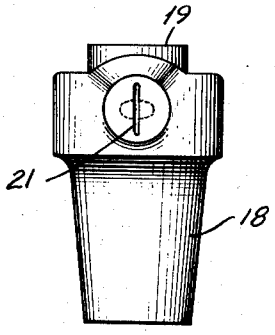


Fig. 4



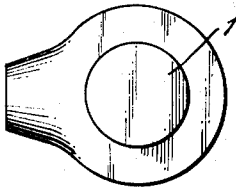


Fig. 5

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DEVICE FOR DROPWISE DISPENSING OF LIQUIDS

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In Palestine November 15, 1946

1 Claim. (Cl. 222—207)

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The invention relates to a device for dropwise dispensing of liquids, especially of liquid medicines, from bottles or the like receptacles. With devices of this kind it is important that they should be easily manipulated, give drops of a uniform size and allow an entrance of air into the receptacle to replace the dispensed drops. It is the aim of the present invention to comply in high measure with these requirements.

The new device is made of a resilient material, such as rubber or pliable plastic, and possesses an internal channel at the free end of which there is arranged a normally closed valve. Through compression of the device at a point situated between the ends of the channel the valve is opened and a drop of the liquid is discharged.

The valve is advantageously formed by a slit in the wall of the device. The channel has preferably an elongated cross section, the longer axis of which crosses the direction of the slit. It is advisable to mark on the device the point on which the compression is most suitably exerted. Two such points situated on the device diametrically to the plane of symmetry of the channel may be provided so that the compression can comfortably be effected by means of the thumb and forefinger. The marking may be formed by reinforcing plates the dimensions of which also define the stretch along which the channel is compressed.

The invention is illustrated in the annexed drawing in several constructional examples.

Figs. 1 and 2 show the new device according to the invention in two different views in the shape of a stopper.

Fig. 1*a* is a front view of the mouth piece of the device on a larger scale.

Fig. 3 is a longitudinal sectional view of another embodiment of my invention;

Figure 4 is a front elevation thereof;

Figure 5 is a plan view thereof;

Figure 6 is a section taken on the line 6—6 of Figure 3.

Referring to Figs. 1, 1*a* and 2, the body 1 of the nipple is preferably made of rubber. Part 1*a* has the shape of a stopper and part 1*b* is shaped similar to a bird's head with beak 1*c*. Part 1*a* is of circular and part 1*b* of a substantially quadrangular section. Through both parts extends a narrow channel 2 from the open end or intake 3 of the stopper to the end of the beak 1*c*. In head 1*b* the height of the channel 2 is enlarged. Beak 1*c* is normally closed but is

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provided with a slit 4 which can be opened whenever it is desired to dispense a drop by pressing on the lateral walls of head 1*b* of the nipple, as indicated by arrows in Fig. 2. In order to exert always the pressure on an equal area of the nipple there are attached to or incorporated into the lateral walls of the nipple rigid plates 5 which can be conveniently grasped between the thumb and forefinger. The narrow channel 2 crosses with its upward extension the slit 4 (see Fig. 1*a*), and the slit opens, when the nipple is compressed.

The device is operated as follows:

The device with the bottle to which it is attached are held approximately horizontally or a little inclined with the beak directed downwardly, so that the hollow space of the nipple becomes filled with liquid from the bottle, and air from that space can wander into the bottle. Then a short compression is exerted with the fingers on the plates 5, whereby a part of the liquid contained in the hollow space is separated from the bulk of the liquid and a drop is urged out through the slit 4 which is simultaneously opened by the compression of the plates 5. When releasing the plates some air is sucked in through the slit 4 and air bubbles become visible ascending in the bottle. To release a further drop, the operation has to be repeated.

The slits 4 and 21 are valves well suited for the purposes envisaged, since they are a simple means for keeping the bottles or the like containers of medicines airtight.

According to Figs. 3–6, in the closure 18, a thickening 19 from the same material as the closure itself is extended above and along the horizontal part 20' of channel 20. The pressure is exerted on thickening 19, whereby the slit 21 in the beak opens and permits a drop to escape. When pressure is exerted onto the thickening 19, the channel is divided into two parts at the point where its portion of elongated cross section merges into the vertical portion having circular cross section and together with the extrusion of the drop the air in the channel is driven back into the container.

Channel 20 extends in a continuous line, so that there is no dead space or air traps.

What I claim is:

A dispenser for liquid serving as a stopper for the neck of a receptacle having a stopper portion and a beak portion comprising the outlet branch connected to each other, said beak portion being formed of resilient material and extending substantially laterally from said stopper portion to

thereby form an elbow therewith, an internal passage of elongated cross section leading through said stopper portion and beak portion, said passage being substantially medially of the stopper portion and extending longitudinally in an axial direction, the passage in the beak portion being directed substantially transversely to the passage in the stopper portion, a reinforcement situated on and extending above the elbow of the branches toward said beak portion and substantially in parallelism to the longitudinal axis of the passage, an outlet slit in the beak portion at the end thereof positioned transversely of the longer cross sectional axis of said passage and normally closed by the resiliency of the material, the reinforcement being integrated to the beak portion to prevent extension thereof, the device having the beak end to one side of the elbow extending clear of the stopper portion and responding to pressure adjacent the elbow on the reinforcement to interrupt the passage and serving to urge the stopper into the receptacle and under the said pressure the liquid in front of the bend is moved into the outlet branch, wherefrom it falls as a drop with accuracy of placement.

GEORGE SZEKELY.

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