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L. A. PAUL

2,105,370

DISPENSER

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Fig. 1.

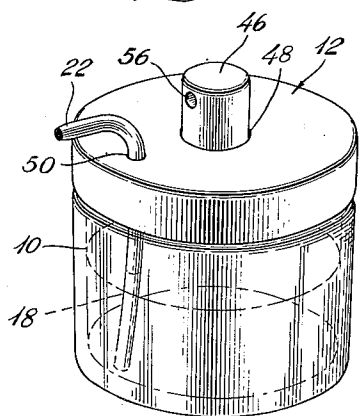


Fig. 3.

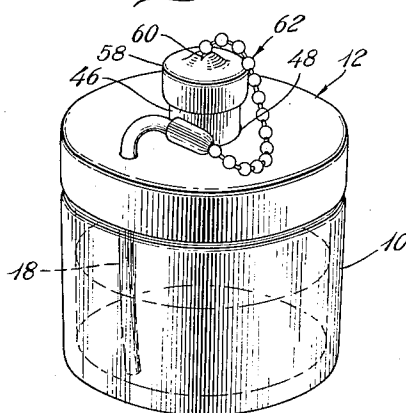


Fig. 2.

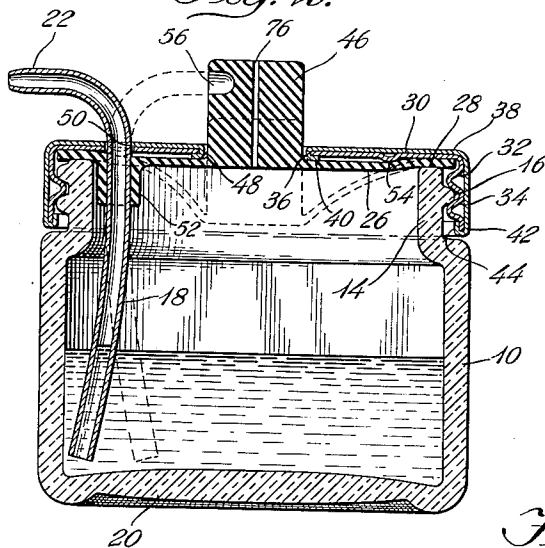


Fig. 4.

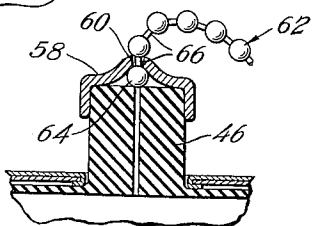
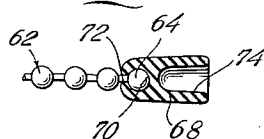


Fig. 5.



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UNITED STATES PATENT OFFICE

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DISPENSER

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Application July 21, 1937, Serial No. 154,895

11 Claims. (Cl. 221-76)

My invention relates to the art of dispensing fluids, and semi-fluids, and includes among its objects and advantages the provision of an improved dispenser so designed as to facilitate the transfer of material from one container to another.

In the accompanying drawing:

Fig. 1 is a perspective view of my invention;

Fig. 2 is a sectional view;

Fig. 3 is a perspective view of a different form;

Fig. 4 is a sectional view of a portion of the structure illustrated in Fig. 3; and

Fig. 5 is a sectional view of the closure cap of Fig. 3.

In the embodiment selected to illustrate my invention, I make use of a container 10 which is illustrated in the form of a glass jar provided with a cover 12. The jar includes a threaded neck 14 having threaded connection with the cover 12, as indicated at 16. Cover 12 carries a dispensing tube 18 having its lower end positioned in close relation with the bottom 20 of the jar and its other end extending through the cover and bent to provide a substantially right angular reach 22.

Within the cover 12 I mount a rubber or flexible diaphragm 26 which is pinched between the cover and the neck 14, as at 28, when the cover is screwed down. Specifically, the cover 12 comprises an inner unit 30 flanged at 32 with the flange provided with threads 34 for connection with the threaded neck 14. Unit 30 is provided with a relatively large central opening 36, and the outer unit 38 is provided with a smaller opening and the material surrounding the opening bent through the opening 36 and bent back, as at 40. The outer flange 42 of the unit 38 is bent back upon the flange 32 as at 44 for connecting the two as a unit.

Diaphragm 26 may comprise rubber and carries a pressure element 46 which may comprise rubber molded with the diaphragm. Pressure element 46 moves freely within the opening 48. Units 30 and 38 are provided with aligned openings as indicated at 50 for the reception of the tube 18 while the diaphragm is provided with a tubular extension 52 which embraces the tube 18. Tubular extension 52 is under tension so as to provide an effective seal about the tube 18 in addition to lending support thereto. Because of the frictional relation between the extension and the tube, the latter may be adjusted vertically to position its lower end in proper relation with the bottom 20. Unit 38 is provided with a depressed portion 54 which co-operates with the flange 40

for holding the diaphragm in slightly spaced relation with the unit 30.

From the foregoing description of the various parts of the device, the operation thereof will be readily understood. While the invention is primarily designed for dispensing material such as is used in cigar lighters and the like, the device may be used for dispensing other materials of a fluid or semi-fluid nature.

With the container 10 supplied with material to be dispensed, the cover 12 is screwed down, after which the device is ready for use. In turning down the cap, the diaphragm 26 will be tightly pinched between the neck 14 and the cover so as to establish an effective air seal. Extension 52 also establishes an air seal with respect to the tube 18. By applying pressure on the element 46, the diaphragm may be shifted in the direction of the dotted line illustration of Fig. 2, which applies pressure to the liquid in the container and forces some of the material through the tube 18.

Extension 52 is positioned in close relation with the neck 14 so as to move slightly, if at all, when the diaphragm 26 is depressed for dispensing purposes. Tube 18 slides freely within the opening 50 in the event that extension 52 should move slightly when the diaphragm is stretched. Because of the extension 52, the tube 18 may be accurately adjusted to the bottom 20 and the adjusting feature permits the cover to be associated with containers of different depths.

Conventional jars and bottles may be employed, while the cover 12 and the diaphragm are so designed as to be easily assembled and connected with the container. The extension 52 is so closely positioned to the neck 14 as to have pressure relation therewith in the event that the extension is moved downwardly with the diaphragm. Slight shifting of the extension 52 brings it into pressure relation with the neck so as to resist further shifting, whereby the lower end of the tube will vary little, if any, with respect to the bottom 20.

By bending material of the unit 38 through the opening 36, I provide a gentle curvature and surface which permits the element 46 to slide freely therein. At the same time, the element 46 fits with sufficient looseness within the opening 48 to constitute an air bleed for the space between the diaphragm and the cover 12. In using the invention for dispensing cigar lighter fluids, the diaphragm 26 should be made of a rubber treated to resist the disintegrating action of the material. Because of the shiftable mounting for the dispensing tube 18, the tube may be

adjusted to different positions to perform a skimming action. The air in the container is effectively trapped therein so as not to escape when pressure is applied to the diaphragm.

5 I provide the element 46 with a bore 56 arranged to receive the open end of the right angular reach 22 by rotating the tube 18 180°. Element 46 because of being carried by the flexible diaphragm 26 may be tilted slightly to one side
10 to facilitate insertion of the open end of the reach 22. With the open end pressed into the bore 46, an effective closure is provided. The diaphragm 26, element 46 and the tubular extension 52 comprise an integral unit while the element
15 46 performs a two-fold function, namely, an actuating element for the diaphragm and a closure for the tube 18.

In Figs. 3, 4 and 5, I illustrate a different form of closure for the dispensing tube 18. Upon the
20 element 46 I mount a rigid cap 58 which has frictional relation with the element 46 for connection purposes. Cap 58 is provided with an opening 60 for connection with a chain 62 made up of balls 64 interconnected by links 66. One of the balls
25 is housed within the cap, and the opening 60 is smaller than this ball. The balls 64 underneath the cap and the balls 64 lying against its outer face are connected with their connecting links 66 after assembly with the cap. To the opposite
30 end of the chain 62 I connect a soft rubber cap 68 having a cavity 70 for the reception of the ball 64 at that end of the chain. The cap is provided with a small opening 72 which may be stretched to permit the ball 64 to be pressed into the cavity
35 70. Cap 68 is provided with a bore 74 for the reception of the end 22 of the dispensing tube 18.

In Fig. 2, I illustrate the pressure element 46 as being provided with a small air bleed 76. This bleed is covered by the finger when pressure is
40 applied to the diaphragm so as to prevent the escape of air. The bleed provides leakage for air when the cover 12 is screwed down so as to prevent excessive pressure on the liquid, which might force some of it through the dispensing
45 tube. At the same time, the air vent prevents excessive pressure on the material due to expansion thereof incident to a rising temperature.

Without further elaboration, the foregoing will so fully explain my invention that others may,
50 by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. A dispenser comprising a container having
55 an opening, a closure detachably connected with the container for closing the opening, a diaphragm pinched between the closure and the container, a dispensing tube extending through the diaphragm in sealed relation therewith and
60 through the closure, and an actuating element associated with the diaphragm and extending through an opening in the closure.

2. A dispenser comprising a container having
65 an opening, a closure detachably connected with the container for closing the opening, a diaphragm pinched between the closure and the container, a dispensing tube extending through the diaphragm in sealed relation therewith and
70 through the closure, and an actuating element associated with the diaphragm and extending through an opening in the closure, said dispensing tube being slidable through a second opening in the closure.

3. A device of the type described, comprising a
75 container having an opening, a cap for closing

said opening and having a threaded connection with the container, a pressure diaphragm pinched between the cap and the container, a pressure element connected with the diaphragm and extending through said opening, said diaphragm
5 having a tubular extension, said cap being provided with a second opening aligned with said tubular extension, and a dispensing tube extending through said second opening and the tubular extension, one end of said tube being located in
10 close relation with the bottom of the container and its opposite end being located exteriorly thereof.

4. A device of the type described, comprising a container having an opening, a cap for closing
15 said opening and having a threaded connection with the container, a pressure diaphragm pinched between the cap and the container, said cap having an opening, a pressure element connected with the diaphragm and extending through said
20 opening, said diaphragm having a tubular extension, said cap being provided with a second opening aligned with said tubular extension, and a dispensing tube extending through said second opening and the tubular extension, one end of said
25 tube being located in close relation with the bottom of the container and its opposite end being located exteriorly thereof, said tubular extension having sealing relation with the dispensing tube.

5. A device of the type described, comprising
30 a container having an opening, a cap for closing said opening and having a threaded connection with the container, a pressure diaphragm pinched between the cap and the container, a pressure element connected with the diaphragm and extending through said
35 opening, said diaphragm having a tubular extension, said cap being provided with a second opening aligned with said tubular extension, and a dispensing tube extending through said second opening and the tubular
40 extension, one end of said tube being located in close relation with the bottom of the container and its opposite end being located exteriorly thereof, said tubular extension having sealing relation with the dispensing tube, said tubular
45 extension being located near the outer margin of the diaphragm and said dispensing tube being shiftable within the extension.

6. A dispensing device of the type described, comprising a container, a movable dispensing
50 tube located inside the container and having an end positioned exteriorly thereof, means inside the container for applying pressure to the contents for forcing the same through said dispensing tube, and actuating means associated with
55 said first named means and extending to the exterior of the container, said dispensing tube having its end outside the container so shaped as to have closing relation with said actuating means when moved into the path of the same.
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7. A dispensing device comprising a container having an opening, a cap connected with the container for closing said opening, a diaphragm located on the inner side of the cap, a dispensing tube extending through the cap and the diaphragm with its lower end terminating in close
65 relation with the bottom of the container, and diaphragm actuating means extending through said cap, said dispensing tube being rotatably mounted, the outer end of said tube being so
70 arranged as to have closing relation with said diaphragm actuating means when rotated into the path of the same.

8. A dispenser comprising a container, a pressure diaphragm associated with the container,
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a dispensing tube extending through the diaphragm and having one end located inside the container and its opposite end positioned exteriorly thereof, means formed integrally with the diaphragm for supporting the dispensing tube, and means formed integrally with the diaphragm and extending to the exterior of the container, said dispensing tube being rotatable and having its outer end shaped to be moved into the path of the said last named means, said last named means having an opening for the reception of the end of the dispensing tube, to close the same.

9. A dispenser comprising a container, a pressure diaphragm associated with the container, a dispensing tube extending through the diaphragm and having one end located inside the container and its opposite end positioned exteriorly thereof, means for actuating the pressure diaphragm, and means cooperable on the outer end of the

dispensing tube and said means for closing the dispensing tube.

10. A dispenser comprising a container, a pressure diaphragm associated with the container, a dispensing tube extending through the diaphragm and having one end located inside the container and its opposite end positioned exteriorly thereof, means for actuating the pressure diaphragm, a cap for closing the outer end of the dispensing tube, and means for connecting the cap with said first named means.

11. A dispenser comprising a container having an opening, a perforated closure for said opening, a pressure diaphragm mounted underneath said closure, a dispensing conduit extending through the pressure diaphragm in sealed relation therewith and through the perforated closure, and diaphragm actuating means.

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