March 3, 1964 L. R. SCHILTZ 3,123,258

DISPENSING CONTAINER

Filed Nov. 28, 1960

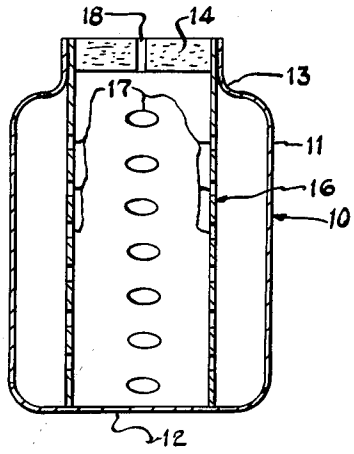


FIG. 1

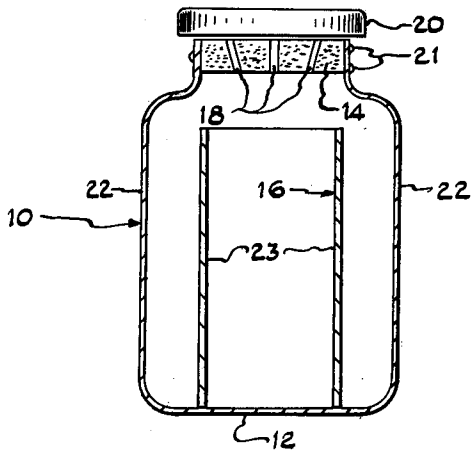


FIG. 2

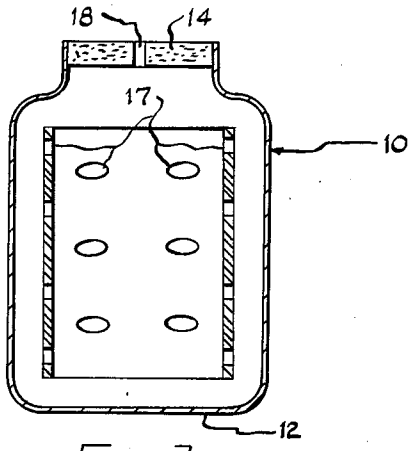


FIG. 3

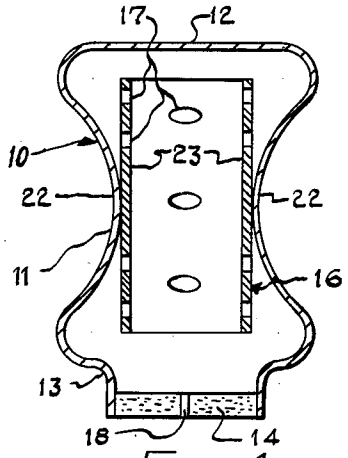


FIG. 4

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United States Patent Office 3,123,258 Patented Mar. 3, 1964

3,123,258

DISPENSING CONTAINER

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Filed Nov. 28, 1960, Ser. No. 71,971
1 Claim. (Cl. 222—215)

This invention relates in general to a dispensing container. More particularly, my invention is directed to a novel partially flexible dispenser which will dispense a predetermined amount of the contents of the dispenser whenever the flexible portion thereof is subjected to a particular inwardly exerted pressure.

Conventionally known bottle-type dispensers generally have at least two shortcomings. They are not capable of dispensing a uniform predetermined amount of the contents of the bottle at each application and when used, a portion of the contents of the container tends to accumulate at the outlet orifice and to spill down around the sides of the orifice, making a very unattractive appearance, as well as causing a loss of the contents and perhaps clogging of the outlet port. It is an object of my invention to provide a dispenser which will overcome these shortcomings.

An additional object is to provide a dispenser which is eminently suited to easily dispense measured amounts of fluid substances.

Further objects and advantages of my invention will become obvious to those skilled in the art from the following description of the invention taken in conjunction with the drawings in which:

FIGURE 1 is a sectional elevation showing one embodiment of the invention;

FIGURE 2 is a sectional view illustrating a further embodiment of the invention and showing an optional closure cap;

FIGURE 3 is a sectional elevation showing yet another embodiment of the invention;

And FIGURE 4 is a sectional view of the embodiment of FIGURE 3 showing the dispenser in its "in use" position.

Referring to the drawings, the dispensing container generally **10** includes a substantially flexible outer side wall portion **11** preferably of a generally bottle-like configuration, a bottom portion **12**, a neck portion **13** into which a stopper or plug **14** is fitted, and a substantially inflexible inner wall portion generally **16** spaced from the outer side wall portion **11**. Plug **14** could, of course, be formed integrally with the outer dimension of container **10**. However, to facilitate refilling container **10** with contents to be dispensed, I prefer that the plug be removably fitted into neck portion **13**. Rigid inner wall portion **16** may be of a generally tubular configuration and will in most embodiments have a plurality of orifices **17**. However, wall portion **16** can be imperforate (see FIGURE 2) provided wall portion **16** does not block free entry of the contents of the container to all portions thereof when the dispenser is in use. Plug **14** has an outlet port **18**. In certain instances, outlet port **18** may contain a plurality of orifices. Outlet port **18** is of a size insufficient to allow free flow of the container contents therefrom. A closure cap **20** may be used to cover outlet orifice **18** when not in use. The closure cap may be conveniently placed on container **10** as, for example, by clamping down over a portion of neck **13** or by intermeshing with a threaded portion **21** of neck **13** (see FIGURE 2), etc.

The operating position of the dispenser is illustrated in FIGURE 4. Bottle **10** containing the substance to be dispensed is inverted and squeezed as, for example, by applying pressure at an area to generally opposed faces

22 of flexible side wall **11** sufficient to inwardly distort side wall **11** at said area until at least the most inwardly distorted portion of the opposed faces contacts, or abuts, generally opposed faces **23** of inner rigid wall portion **16**. A quantity of the substance to be dispensed will flow through outlet orifice **18**. When the squeeze pressure is released, air rushes into the container through port **18** and, due to the construction of inner rigid tube **16** which allows the contents of the container to freely enter therein and remain at substantially the same level throughout the inner dimension of container **10**, the air carries with it any of the substance remaining on the discharge port thus giving my dispenser a "no drip" feature. Substantially the same quantity of substance will be dispensed through orifice **18** with every squeeze operation. The quantity dispensed is predetermined by the perimetrical size of inner rigid portion **16** relative to the perimetrical size of the outer side wall **11** and the size of outlet port **18**.

My novel dispensing container can be readily fabricated. A soft pliable plastic is eminently suitable for the outer dimension while a rigid noncompressible plastic tube is useful for portion **16**. While I prefer to manufacture the dispenser of plastic, it is feasible to make inner rigid tube **16** of glass, metal or substantially any rigid material, and the outer wall could be made of any flexible or readily compressible material such as, for example, rubber, flexible synthetic rubbers, etc. Plug **14** is also preferably of plastic but can also be made of rubber, cork, etc. As is illustrated in the drawings, the rigid tube may be connected at the top and bottom of the bottle, only at the top, only at the bottom or may float freely within the outer dimension, i.e., be spaced from the top and bottom as well as from the outer side walls. If when in operation the inner rigid tube would cover the neck portion of the bottle or when a floating inner rigid tube is used (for example, a floating tube might fall down by the force of gravity into the neck portion) it is necessary that the inner tube be perforate in order for the dispenser to function properly. The size and number of perforations should allow the bottle contents to freely enter the tube. Therefore, the viscosity of the contents will, to some extent, determine the size and number of the orifices. As mentioned previously, the relative size of the inner and outer wall portions will determine the amount of contents dispensed. For example, a generally cylindrical bottle having an outside diameter of about 1⅝ inches and an inner rigid tube diameter of about ½ inch will dispense approximately 35 cc. of contents from the bottle. It is to be understood that the inner and outer walls can have square, rectangular, elliptical, etc., cross sections as well as the preferred generally circular configuration illustrated. It is also feasible for the inner and outer wall cross sections to differ from one another.

From the above it will be clear that by varying the size of the inner rigid tube of the dispenser relative to the size of the outer wall dimensions of the dispenser, substantially any desired amount of contents can be dispensed. This allows my novel dispenser to be useful not only for manual operations such as in the dispensing of lotions, shampoos, liquid dish washing compounds, condiments and the like, but to be adaptable to substantially automatic dispensing operations. For example, the dispensing container could be positioned between jaws oriented in a dish washing or clothes washing machine with the jaws operable (e.g. mechanically or electrically) to apply the squeeze pressure to the bottle to dispense only the predetermined desired amount of soap or detergent. The "no drip" feature would allow the bottle to be fastened in the inverted position without the danger of leakage.

The dispenser for bleaches, water softeners and the like could also be so adapted.

Obviously many modifications and variations of the invention as hereinbefore set forth may be made without departing from the spirit and scope thereof and therefore only such limitations should be imposed as are indicated in the appended claim.

I claim:

An improved dispenser comprising: a flexible-walled, cylindrical storage bottle having an open neck and a given cross section for containing a charge of fluid material; a closure plug fitted within the neck of said bottle, said plug having a discharge orifice of a dimension that will permit the discharge of said material only when under pressure; and a rigid perforate-wall inner tube fully enclosed within said bottle and plug, said rigid tube being disposed longitudinally of said bottle and completely unconnected to said bottle and plug, said rigid tube further being of substantial cross-sectional dimension relative to said bottle, the dimension of the tube limiting the inward deflection of the bottle walls to substantially less than full collapse whereby uniform and known quantities of fluid will be dispensed when said bottle is inverted and the flexible outer wall is pressed inwardly into contact with said inner rigid tube.

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