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3,186,606

PUNCH-OUT POURING SPOUT CLOSURE

Filed Jan. 21, 1963

FIG. 1.

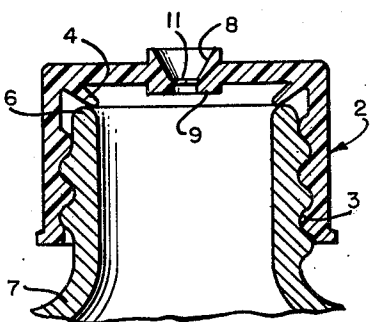


FIG. 2.

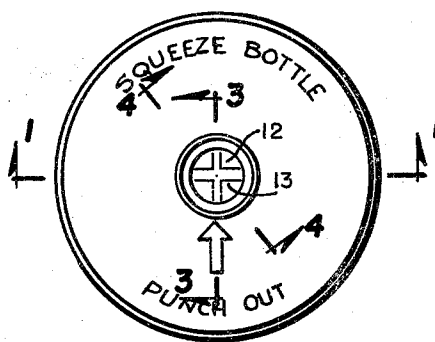


FIG. 3.

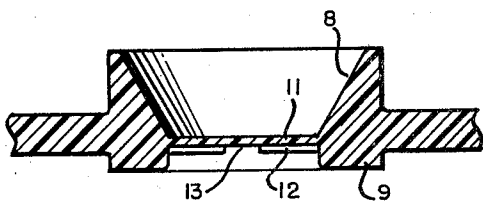


FIG. 4.

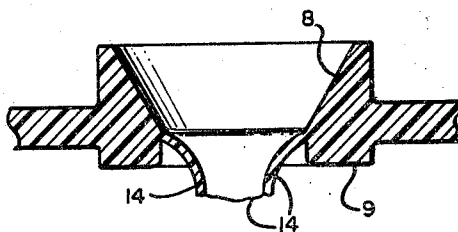
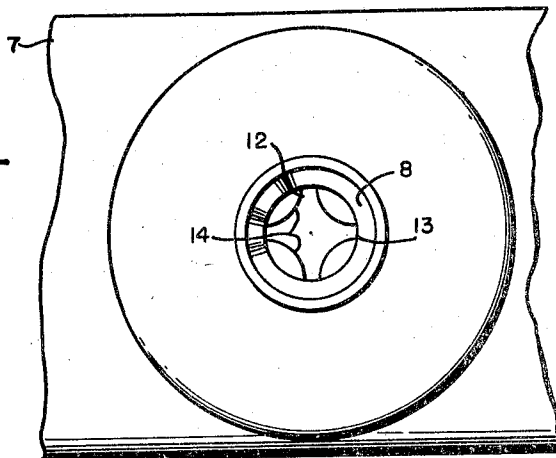


FIG. 5.



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PUNCH-OUT POURING SPOUT CLOSURE

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2 Claims. (Cl. 222-541)

This invention relates to closures for bottles, jars, and other receptacles, and has for its primary object the provision of a unitary, one-piece closure for both sealing the receptacle and providing a dispensing spout when suitably punctured.

It is a major object of the invention to provide a very inexpensive one-piece molded closure which can be used as a pouring or dispensing spout by simply puncturing a suitable pre-formed portion of the unit.

An important object of the invention is to provide a puncturable pouring spout which can be opened without the use of special tools, e.g., by a fork, scissors, or knife such as are always available in a kitchen or bathroom where the contents are normally used.

Another object is to provide such a spout which will always pour freely and smoothly in normal use despite the necessarily uneven edges left by the puncturing operation.

According to the invention, the closure, which is preferably molded of a single piece of plastic material provided with a suitable sealing flange, is provided with a shallow, outwardly flaring spout portion, at the bottom of which is a thin puncturable diaphragm having still thinner weakened lines preferably in the form of a cross to facilitate the puncturing operation, and a rearwardly formed circular ring protruding from the under side of the closure directly opposite the shallow spout portion.

The specific nature of the invention, as well as other objects and advantages thereof, will clearly appear from a description of a preferred embodiment as shown in the accompanying drawing, in which:

FIG. 1 is a sectional view taken on line 1-1 of FIG. 2;

FIG. 2 is a top plan view of the closure prior to puncturing;

FIG. 3 is an enlarged sectional view of the center portion of the top taken on line 3-3 of FIG. 2, in the unpunctured condition;

FIG. 4 is a view similar to FIG. 3 showing the punctured condition; and

FIG. 5 is an enlarged top plan view showing the pouring spout in the punctured condition.

As best shown in FIG. 1, the closure is preferably in the form of a screw-type plastic cap such as are commonly used for bottles, although it will be understood that the cap may be adapted to any type of enclosure ordinarily employed. The cap 2 is shown as provided with screw threads 3, although the invention may obviously also be employed with a snap-on type of cap of any conventional design. A sealing flange 4 is provided for cooperating with the lip 6 of a container 7 with which the cap is adapted to be used, thus obviating the need for any separate liner. In the center of the top of the cap is a flared annular pouring spout 8, preferably very shallow, and flaring outwardly by at least 30° from the axial line of the cap so that it merely protrudes slightly beyond the top surface of the cap 2. On the under side of the cap an annular ring 9 protrudes below the bottom surface of the top of the cap. A thin diaphragm 11 is provided

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across the bottom of the flaring spout portion 8 to initially provide a closure whereby the cap is effective to seal the contents of the container 7.

As best seen in FIGS. 2 and 3, the thin diaphragm 11 is provided with two still thinner lines 12 and 13 to provide lines of breakage when the diaphragm is ruptured. This is ordinarily done with any approximately pointed implement as the tine of a fork, a knife, or a pair of scissors, etc. When this is done, the diaphragm ordinarily ruptures into four downwardly extending tabs 14, as best shown in FIGS. 4 and 5, sufficiently stressing the material so that these tabs remain thereafter in approximately the position shown in FIGS. 4 and 5. As can be seen in FIG. 4, there is sufficient clearance behind the diaphragm 11 so that the ruptured portions can be stressed beyond their elastic limit, whereby they remain bent to provide a passage for liquid flow. In this way an aperture is formed whereby a small amount of the contents of the bottle may be squirted out for use.

In a preferred embodiment of the invention, it is used with a well-known type of plastic squeeze bottle, it being desired that when the bottle is inverted and squeezed, a smooth, controlled stream of fluid can be directed to a fairly well-defined location. It has been found that without the construction shown, and particularly the outwardly flared shape of the pouring spout 8, it is impossible to obtain a smooth, controllable stream which can be accurately directed to a desired location. With the construction shown and desired, in spite of the ragged edges left by the torn portions of the tabs 14, a smooth, controllable stream of fluid is always obtained. With the sides 8 of the aperture made perpendicular to the top of the cap, instead of flared as shown, it was also found that a satisfactory stream was not obtained. Even though the flaring portion is so shallow that it would not appear to be very important whether the sides were flared or not, actually this has been found to produce a very significant improvement in the controllability and direct ability of the stream of fluid through the perforated aperture.

It will be apparent that the embodiments shown are only exemplary and that various modifications can be made in construction and arrangement within the scope of my invention as defined in the appended claims.

I claim:

1. A combination closure cap and liquid dispenser for use with a squeeze bottle comprising a unitary molded cap having a cylindrical side wall portion and a circular disc-like top portion at one end of said cylindrical portion; receptacle-engaging means on the interior surface of said cylindrical portion, and receptacle-sealing means adjacent the top portion; a shallow pouring spout extending slightly beyond the exterior surface of said top portion, and providing a short dispensing passage the inner wall of which flares outwardly by at least thirty degrees from the axial line of the cap; a thin rupturable diaphragm closing the smaller end of said outwardly flaring passage, said diaphragm having at least two intercepting weakened linear portions to facilitate rupturing of the diaphragm, whereby fluid is dispensed in a coherent stream from the dispensing passage, there being sufficient clearance behind the diaphragm so that ruptured portions thereof can be stressed beyond their elastic limit, whereby such portions are bent inwardly and remain bent to provide a passage for liquid flow.

2. The invention according to claim 1, and an annular

rim portion protruding from the inner side of said top disc in alignment with said pouring spout portion, said rim being spaced from the inner surface of any receptacle with which the cap is used.

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