Aug. 8, 1944. G. WHITE 2,355,492

BOTTLE STOPPER

Filed July 5, 1941

Fig. 1

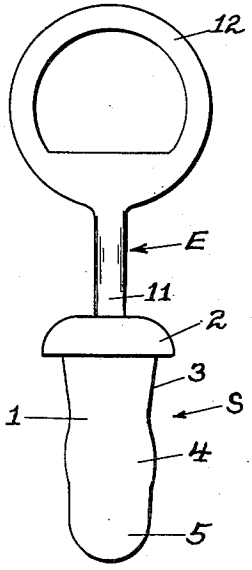


Fig. 2

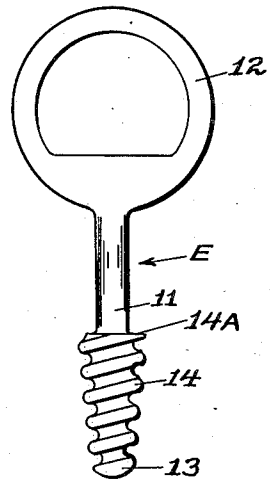


Fig. 3

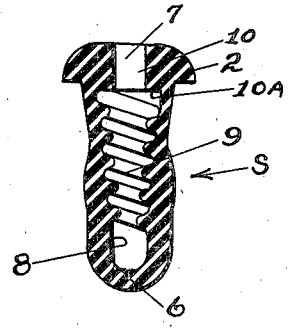


Fig. 4

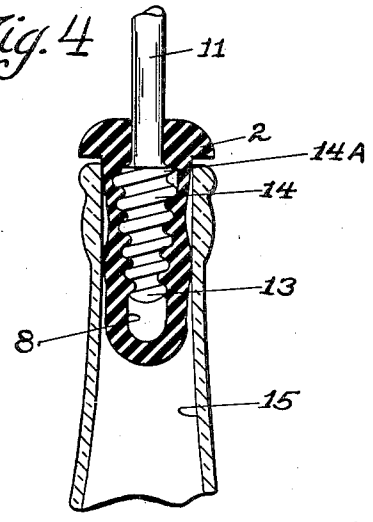
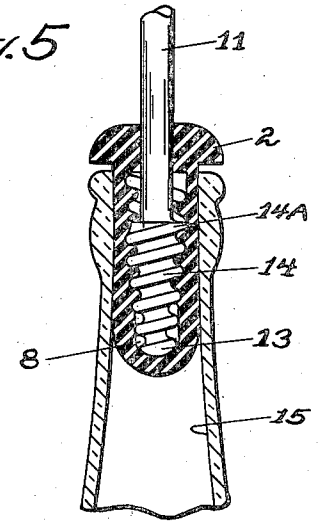


Fig. 5



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BOTTLE STOPPER

Gilbert White, Milwaukee, Wis.

Application July 5, 1941, Serial No. 401,122

1 Claim. (Cl. 215—54)

This invention relates to improvements in bottle stoppers.

It is an object of this invention to provide an expansible resilient stopper having a manually operable stopper expanding means for expanding the stopper into sealing relation to the neck of a bottle; an expansible resilient bottle stopper enclosing the stopper expanding means and preventing the contents of a bottle in which the stopper is positioned from contacting the expanding means; a manually expansible stopper adapted to fit bottle openings of various sizes; and a manually expansible stopper comprising a minimum number of parts which may be cheaply manufactured and assembled and easily manipulated.

In the drawing:

Fig. 1 is a view in side elevation of a bottle stopper and expander embodying my invention.

Fig. 2 is a view in side elevation of the stopper expander.

Fig. 3 is a vertical section view of the stopper shown in Fig. 1.

Fig. 4 is a fragmentary sectional view of a bottle with the stopper assembly inserted therein, the stopper being shown in vertical section.

Fig. 5 is a view similar to Fig. 4, showing the stopper expanded.

Throughout the several views, like parts are identified by the same reference characters.

The stopper S comprises a body 1 having a flange 2, a tapered portion 3, a portion 4 which is slightly bulged annularly, and a rounded end portion 5. As indicated in Fig. 3, the stopper is provided with an elongated recess which is closed at the inner end 6 and open at 7. The lower portion 8 of the hollow is cylindrical, the intermediate portion 9 is provided with a cork-screw like thread having a taper of approximately 6 degrees inwardly of the hollow, and the upper portion 10 is cylindrical and threadless and provides a shoulder 10A at the upper end of the thread.

The upper end of the thread is preferably of an outside diameter greater than the diameter of the opening 7 and the lower end of the thread is preferably of an outside diameter approximating the diameter of the hollow portion 8, but less than the outside diameter of the upper end of the thread.

Preferably, the stopper is made of resilient rubber, but may be made of any suitable resilient material adaptable for use in the presence of liquids and which will successively assume the shapes shown in Figs. 4 and 5.

The stopper expander E comprises a shank portion 11 having at one end an eye 12, a flanged spheroidal end 13, and a threaded portion 14 extending from the end 13 and terminating in an annular shoulder 14A. The threaded portion 14, as indicated in Figs. 2, 4, and 5, tapers toward the end 13 and is complementary to the portion 9 of the stopper S when positioned therein as shown in Fig. 4. In this position the stopper is unexpanded.

Since the threaded portion 9 of the stopper and the threaded portion 14 on the expander E are tapered, it will be seen that upon rotation of the expander E to cause it to travel inwardly of the stopper to the position shown in Fig. 5 the larger end of the threaded portion 14 will force smaller parts of the threaded portion 9 on the stopper to expand.

Preferably the threaded portion 9 in the stopper S is substantially the same length as the threaded portion 14 on the expander E. Thus when the expander is positioned in the stopper, as shown in Fig. 4, the threaded portion 14 will be positioned adjacent the opening 7 in the stopper and the end 13 will be positioned adjacent the upper end of the unthreaded portion 8 of the stopper. The shoulder 10A on the stopper co-acting with the shoulder 14A on the expander determines the extent of movement toward the upper end of the stopper and prevents separation of the parts.

Preferably the outer periphery of the body portion 1 of the stopper is tapered as shown at 3 to adapt the stopper for use with bottle openings of various dimensions within limits determined by the stopper. When the expander is rotated to cause it to travel in the stopper to the position shown in Fig. 5, the wall of the stopper will be forced radially outward by the threaded portion 14 into contact with the inner periphery of the bottle mouth 15. The expander may move inwardly of the stopper until the end 13 contacts the end 6 of the stopper.

It is preferable although not a necessary feature that the inside diameter of the major part of the threaded portion 9 be less than the diameter of the shank 11 on the expander which fills the opening 7 so that the expanded wall of the stopper immediately above the threaded portion 14 on the expander will be held in expanded condition by means of the shank, thereby maintaining the stopper in sealing relationship to the bottle mouth. This feature is not clearly obvious from the drawing, but will be apparent from the foregoing description.

The stopper is released by rotating the expander to cause the threaded portion 14 to travel upwardly toward the opening 7 to the position

shown in Fig. 4. When the expander is in this position, the stopper assumes its normal shape and the expander then serves as a means for removing the stopper from the bottle.

From the foregoing it will be apparent that a simple, easily manipulated, expansible resilient stopper is provided which may be cheaply manufactured and assembled, which comprises a minimum number of parts, and which shields the manipulating parts from the contents of a bottle to which the stopper is applied.

I claim:

An expansible stopper for bottle necks, said stopper comprising a hollow resilient member closed at its bottle stopping end and having a constricted opening at its opposite end, said end with the constricted opening having an annular flange engageable with the end of a bottle neck, the interior wall of the hollow in said member being defined by a tapered thread converging toward said closed end and the exterior wall of the hollow having an annular bulge located in a plane disposed intermediate the ends of said tapered thread, and an expander having a shank projecting into and fitting said constricted opening and a tapered threaded portion in said hollow complementary to the tapered thread therein, said hollow being appreciably longer than the threaded portion on said expander, whereby when said stopper is placed in the neck of a bottle and the expander appropriately rotated said annular bulge and adjacent annular portions of said stopper will be expanded into sealing contact with the inner wall of the bottle neck.

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