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G. C. WILSON

2,312,513

SLIP CAP FOR BOTTLES.

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Fig. 1.

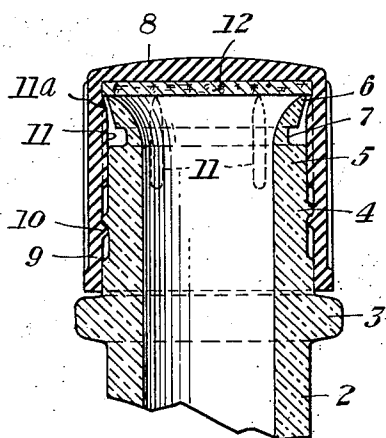


Fig. 2.

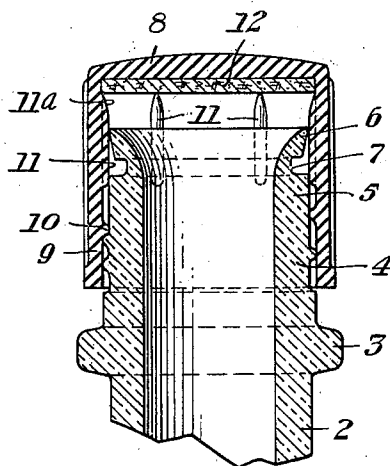


Fig. 3.

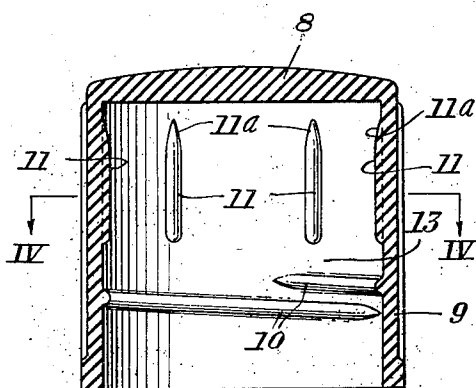
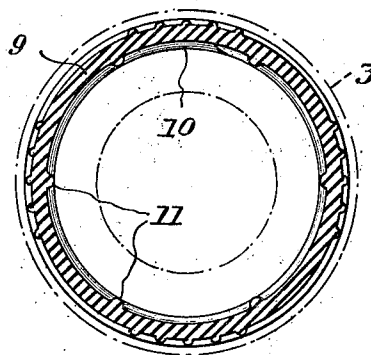


Fig. 4.



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SLIP CAP FOR BOTTLES

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Application July 19, 1939, Serial No. 285,389

1-Claim. (Cl. 215-43)

This invention is for a bottle closure and relates to bottle closures of the type that may be slipped onto the neck of a bottle and subsequently turned to screw the cap tightly onto the bottle where a tight seal is to be effected.

Combination slip and screw caps of the type to which the present invention pertains are provided for use on bar bottles and bottles for chemicals or pharmaceutical preparations. Where bottles are provided with an ordinary screw cap and are used either as bar bottles or as bottles for the mixing or compounding of chemicals or prescriptions, the user may not find it convenient to immediately replace the cap and screw it on with the result that the bottle is left open for the free evaporation of its contents or for the contamination of its contents by foreign substances or insects. In order to avoid this, caps have heretofore been constructed for use with especially designed bottles which may be retained on the bottle by merely slipping them endwise onto the bottle. When slipped on in this manner, they prevent the free evaporation of the contents of the bottle and the contamination of the contents. To tightly seal the bottle, they may be turned to screw the cap tightly down into sealing relation with the lip of the bottle.

In the copending application of Grant A. Dibert, Serial No. 261,488, filed March 13, 1939, there is disclosed a bottle and slip cap, and the present invention constitutes an improvement on the cap therein disclosed.

According to the present invention there is provided a combination slip and screw cap which requires less plastic material in its manufacture than caps heretofore constructed for the same purpose and which are of a nature such that they can be stripped from the forming mandrel or punch by a straight stripping operation without requiring that they be rotated to unscrew them from the plunger or punch and which may be easily applied to the bottle as a slip cap and centered thereon. By reason of the thinner walls in the skirt of the cap, less material is required for the manufacture of the caps and less time is required for curing them in the molding press. Because of the fact that the caps may be stripped from the forming mandrel without an unscrewing operation, the removal of the caps from the forming plunger or molds may be more quickly accomplished. These advantages result in a cap which may be more cheaply manufactured than caps heretofore intended for the purpose and which is otherwise as convenient to use. In the

drawings which illustrate one preferred embodiment of my invention:

Figure 1 is a vertical transverse section through a bottle and cap assembly showing the cap screwed down into sealing position on the neck of the bottle;

Figure 2 is a view similar to Figure 1 in which the bottle is rotated 60° from the position shown in Figure 1 and showing the cap resting on the threads of the neck of the bottle in the position which it assumes when it is merely slipped onto the bottle;

Figure 3 is a transverse section through the cap shown in Figure 1 on a slightly larger scale and showing the cap clear of the bottle; and

Figure 4 is a transverse horizontal section in the plane of line IV-IV of Figure 3, the contour of the neck of the bottle being indicated in chain lines.

In the drawing, 2 designates the upper portion of a bottle having a flange 3 thereon and above the flange 3 is a portion having cap-retaining means thereon, such as the thread 4, the thread preferably being a thread of only approximately one turn. Above the threaded portion is an extension 5. This extension is illustrated as terminating in a pouring lip, the pouring lip comprising a part 6, the interior of which flares outwardly while the exterior thereof is tapered inwardly, there being an annular recess 7 intermediate this lip and the main body of the neck. The bottle illustrated is the same as that disclosed in the aforesaid application of Grant A. Dibert and forms no part of the present invention per se.

The cap, which is preferably formed of Bakelite or other molded plastic material, comprises an integral cap-shaped body having a top 8 and a deep skirt 9. Projecting from the inner face of the skirt 9 is a means for engaging the thread on the neck of the bottle, this means in the particular form illustrated comprising a thread 10, the thread also preferably extending only slightly more than a single turn around the interior of the skirt.

Located on the interior wall of the skirt between the thread 10 and the top 8 of the cap are neck-engaging ribs 11. There are a plurality of these ribs around the interior of the skirt. The ribs extend axially of the cap and the upper end portions 11a thereof taper off in both width and thickness. The ribs 11 project from the surface of the interior wall of the skirt in a radial direction sufficient for these ribs to slidably engage or barely clear the outer portion of the lip

6 and the upper part of the neck 5 of the bottle. By reason of this arrangement, when the cap is merely slipped onto the neck of the bottle, as shown in Figure 2 so that the thread-engaging means 10 rests on the thread 4, the ribs 11 will 5 form guiding surfaces to hold the cap centered on the end of the neck of the bottle and restrain it from lateral or radial movement. They may even project far enough to have a slight frictional contact with the upper part of the neck of the bottle so as to hold the cap in place should the bottle be knocked over, although normally the dimensions of the part are such that the cap may be freely slipped on and off with ease.

Seated against the top of the cap is a sealing 15 or liner disk 12 of a compressible material. When the cap is screwed down tightly on the neck of the bottle as shown in Figure 1, the disk 21 makes contact with the top edge of the neck 6 serving to form a fluid-tight seal. When this disk is inserted into the cap, it is forced past the ribs 11 and the inner ends of these ribs preferably terminate in spaced relation to the top of the cap so that the sealing disk is confined between the top of the cap and the tip portions 11a of the ribs 11. The ribs thus serve to hold the sealing disk in position, and it is unnecessary to form any undercut or recess in the skirt of the cap adjacent the top for retaining the sealing disk. 20

By reference to the drawings and particularly Figure 3 thereof, it will be noted that the outermost or lowermost ends of the ribs 11 terminate in spaced relation to the thread 10 providing in effect a zone 13 between the protuberances in the thread. This zone provides the clearance which is necessary to allow the cap to be screwed completely down on the neck of the bottle to the position shown in Figure 1 without the ribs 11 engaging the thread 4 on the neck of the bottle. 25

The bottle cap can be molded in the usual manner and it can be force-stripped from the forming mandrel or punch. The tapered shape of the upper end portions 11a of the ribs 11 facilitates this stripping and renders the ribs less likely to be broken off in the stripping operation. In the drawing the cap is illustrated as having molded ornamentation on the exterior thereof, but this is purely arbitrary. Also, while the cap is especially designed for use with a bottle having an extension with a pouring lip thereon, the cap may be used on any suitable bottle having an extension for cooperation with a slip cap. 30

While the ribs for centering the cap on the

neck need not necessarily be in the form illustrated, axially extending ribs are preferable not only because they can be stripped from the plunger more readily than other shapes, but because they will slide smoothly over the pouring lip and not present any obstruction which will catch under the pouring lip and interfere with the cap being lifted off the bottle. The longitudinal ribs or centering projections not only serve to hold the cap against lateral or radial movement when the cap is used merely as a slip cap; i. e., in a non-sealing position, but when the cap is screwed down tightly into a sealing position, these ribs will prevent the cap from being flexed and broken as it might be if there were an annular space between the skirt and the neck of the bottle from the thread to the interior of the top of the cap. This is of particular importance where the cap is used as an original seal where it might be broken in transit or in handling if it could be so flexed. 35

While I have shown and described one particular embodiment of my invention, it will be understood that various changes and modifications may be made in both the cap and the bottle within the contemplation of my invention and within the scope of the following claim.

I claim:

A combination slip and screw cap for bottles which have a threaded neck and an elongated extension above the threads on the neck comprising a cap-shaped body having a top and a deep skirt, the skirt having means on the interior thereof extending beyond the surface of the interior wall of the skirt and adapted to engage the threads on the neck of the bottle, axially extending ribs on the interior of the skirt spaced circumferentially thereabout between the said thread engaging means and the cap top and projecting from the interior wall of the skirt a height in a direction radially of the cap sufficient to slidably engage the said elongated extension of the neck of the bottle for which the cap is designed to be used at opposite sides of the neck to center the cap thereon when the cap is in either a slipped-on or screwed-on position on the bottle, the ribs being spaced from the thread engaging means in a direction axially of the cap so as to provide a continuously smooth zone on the interior of the cap skirt between the thread engaging means and the ribs. 40 45 50

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