Sept. 12, 1939. W. P. WHITE 2,172,825

CLOSURE CAP AND PACKAGE

Filed April 26, 1937

Fig. 1.

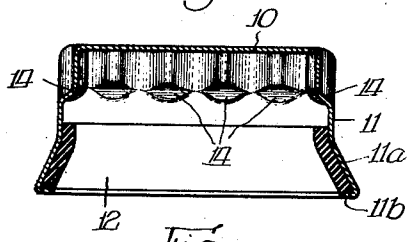


Fig. 2.

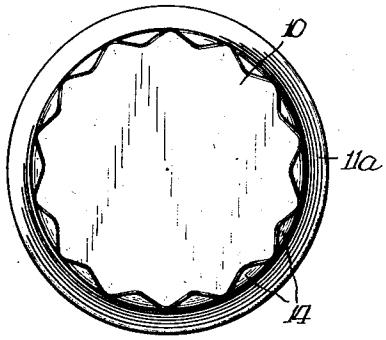


Fig. 3.

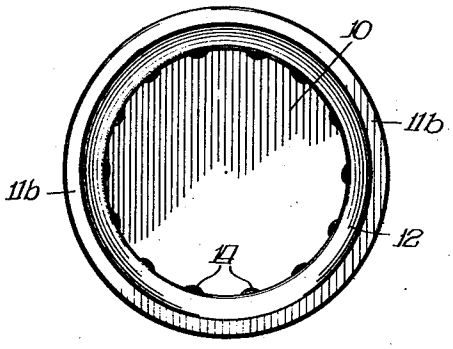


Fig. 4.

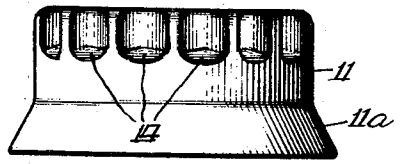
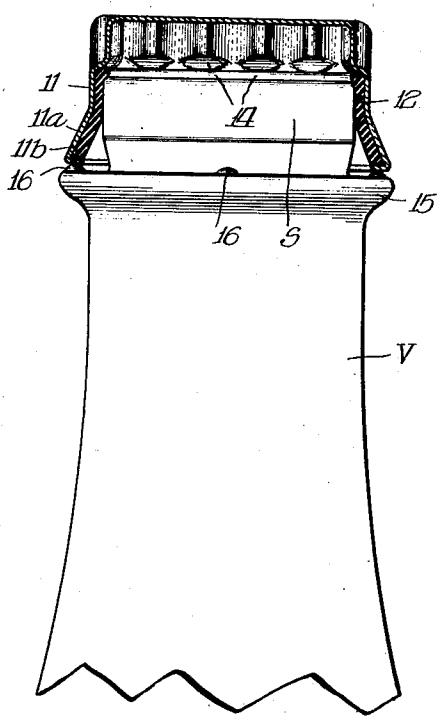


Fig. 5.



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CLOSURE CAP AND PACKAGE

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Application April 26, 1937, Serial No. 138,957

4 Claims. (Cl. 215—38)

This invention relates to packages and to closure caps for the stoppering and sealing of bottles and the like, such as bottles for catsup, sauces, lotions and other commodities which are dispensed from the bottle in small quantities from time to time.

A general object of the invention is the provision of such a closure which may be manufactured at low cost, which can be applied to the receptacle with facility and will hold its place securely thereon and seal the receptacle hermetically, and which can be repeatedly removed and re-applied conveniently by hand.

Other and further objects of the invention will be pointed out or indicated hereinafter, or will be apparent upon an understanding of the invention or its employment in use.

For the purpose of aiding in an explanation of the invention I show in the accompanying drawing forming a part of this specification, and hereinafter describe, one embodiment of it. It is to be understood, however, that the specific example here shown and described is presented for the purpose of illustration only and is not to be construed in any fashion calculated to limit the appended claims short of the true and most comprehensive scope of the invention in the art.

In said drawing

Fig. 1 is a sectional elevation of a closure constituting subject matter of the invention, the section being taken on a diameter thereof;

Fig. 2 is a top view of such closure cap;

Fig. 3 is a bottom view of same;

Fig. 4 is an elevational view of same; and

Fig. 5 is a sectional elevational view of a package constituting subject matter of the invention, showing the closure in sealing position on the receptacle.

There are numerous commodities which are dispensed or consumed a little at a time, but which it is important to package tightly in order to prevent spoilage or evaporation. Hence, it is desirable that the closure for the packaging receptacle be of a character such as to seal the receptacle hermetically, but at the same time be easily and conveniently manipulable by hand for opening and closing the package incident to dispensing of portions of its contents from time to time. The present invention provides a package and closure cap which fulfill these requirements, and which possess various other advantages as to cost, convenience in sealing by automatic capping machinery, good appearance and simplicity.

The nature of the invention will be most readily ascertained from the illustrative embodiment shown in the drawing, which will now be described.

The closure cap here illustrated is adapted particularly for the sealing of bottles of catsup, sauces or the like, as well as other commodities, such as lotions, toilet water, liquors and the like, which are of volatile character. Commodities such as catsup and sauces are customarily sealed while hot, and in some instances it is desirable to remove or exhaust the air from the head space in the bottle preliminary to the initial sealing. The closure comprises a shell, of metal or other suitable material, formed of a top portion 10 and a depending annular skirt portion 11. In order to render the closure easily handled and manipulated in the operations of removing it from the bottle and re-applying it, the skirt portion 11 is made of considerable depth. The lower portion 11*a* of the skirt is of flaring form, and terminates at a narrow inturned flange 11*b*.

The sealing element is an elastic compressible gasket 12, of rubber or the like. This gasket, which is of the sleeve type, is originally of cylindrical form and of an external diameter somewhat greater than the maximum internal diameter of the skirt portion 11*a*. For insertion into the shell, the gasket is contracted or constricted circumferentially, so that it is elastically compressed to a size permitting its introduction within the skirt, where it is held in a compressed condition by the encompassing portions of the skirt against which its periphery rests. Thus, the lower portion of the gasket is given a conic or flaring form, while its upper portion extends slightly above the flaring portion 11*a* of the skirt and its lower margin rests against the flange 11*b*. The gasket is quite materially shorter or shallower than the shell skirt, so that its upper margin is spaced a considerable distance below the top portion 10 of the shell and is free or unconfined against upward movement or elongation along the skirt.

This closure cap is designed for cooperation with a suitable receptacle, such as a bottle, V, which has at its mouth a peripheral sealing surface, S, of approximately cylindrical form. The diameter of the shell skirt and the thickness of the gasket are such that the rim of the vessel may be received within the flaring lower portion of the gasket, but that the upper portion of the gasket will have an internal diameter substantially smaller than the external diameter of the sealing surface S. The closure is sealed on the vessel by pressing it downwardly thereon, thus forcing the sealing surface of the vessel

into the constricted portion of the gasket. Incident to this operation, the upper portion of the gasket is compressed between the sealing surface S and the shell skirt 11, and the gasket is stretched upwardly. Since the gasket is strongly elastic, this compression of it causes it to exert a strong binding or gripping pressure on the sealing surface, forming an hermetic seal thereon and retaining the closure securely in place.

The intrusion of the bottle mouth into the constricted portion of the gasket produces a very pronounced drag on the latter, tending to move the gasket bodily upward in the shell. In order to prevent excessive local elongation or displacement of the gasket bodily upward, such as might occur at one side of the receptacle mouth while the opposite side of the gasket remains in place, I provide the upper portion of the skirt with inwardly jutting portions 14. These may be formed by fluting the upper portion of the skirt in the manner illustrated in the drawing. These inwardly jutting portions are spaced an appreciable distance above the initial level of the upper margin of the gasket, so as to allow for the necessary amount of upward stretching of the gasket as above described, and these inwardly jutting portions form an abutment extending circumferentially of the skirt, for the purpose of definitely limiting the extent to which the gasket may be displaced or elongated upwardly in the shell. It is to be understood that this abutment for limiting upward movement of the gasket may be formed in other fashions, such as by a continuous inwardly jutting bead or shoulder on the skirt at a distance above the gasket and below the shell top, without departing from the spirit of the invention. When formed in the manner described, the fluted external form of the skirt facilities the secure gripping of the closure by the hand in the operations of removing and re-applying it to the receptacle. The provision of an abutment in which there are spaces, such as the spaces between the inwardly jutting portions 14, affords a safeguard against pinching of the gasket material against the top rim of the receptacle, as the elastic material is thereby afforded room to move laterally from between the receptacle rim and the overlying lower ends of the inwardly projecting portions. The abutment formed by the inwardly jutting portions may be relied upon also to limit the extent to which the mouth of the receptacle may be inserted into the shell.

However, to prevent distortion of the inwardly jutting portions, which might occur if the closure were forced down on the receptacle to such extent that they were jammed against its mouth portion, I prefer to provide the receptacle with a stop for cooperation with the lower margin of the shell. This is accomplished by forming the receptacle with a peripheral outstanding ledge 15, of a diameter approximately the same as that of the lower margin of the shell, and providing on this ledge a plurality of upwardly projecting lugs or protuberances 16, which are of small size and are spaced from one another circumferentially of the ledge 15. Preferably, there should be three of these stop lugs, spaced at equidistant intervals. They are located in position to contact the flange 11*b* of the shell when the closure is pressed down to proper sealing position on the receptacle. Thus they prevent the jamming of the inwardly jutting portions 14 against the rim of the receptacle, and they also space the intervening portions of the flange 11*b* from the ledge 15, so as to permit the insertion of a suitable prying implement therebetween for the purpose of exerting upward prying pressure on the closure. The use of such an implement in such a fashion may be necessary in the initial opening of a package, particularly if the air were displaced from within it preliminary to the sealing.

From the foregoing it will be appreciated that the closure constituting the subject matter of the present invention is adapted to be applied with facility and to form a very secure hermetic seal on the container. It is also to be observed that it may be manufactured at low cost and with economy of materials, as the shell may be formed by simple pressing operations and the gasket may be of quite limited height in comparison to the depth of the shell. It is to be observed furthermore that the closure, due to the liberal depth of the shell, is well adapted to convenient manipulation in removal and re-application of the closure incident to dispensing of portions of the contents of the receptacle from time to time.

What I claim is:

1. A closure cap for sealing packing receptacles, comprising a shell having a top and depending annular skirt which is of a height such as to permit its being readily grasped by the hand, a short sleeve gasket of elastic sealing material retained in the lower portion of the shell and at a distance from the top with its periphery lying against the skirt, said gasket being free of the shell so that it may be elongated upwardly therein, the skirt being formed with a plurality of inwardly pressed flutings which extend from the top downwardly to a point spaced somewhat above the upper margin of the gasket, the lower ends of said flutings forming an abutment for limiting upward displacement of the gasket along the skirt.

2. A closure cap as specified in claim 1 and wherein the lower portion of the shell skirt is of downwardly flaring form and the lower ends of the flutings are spaced a substantial distance above said flaring portion, the lower part of the gasket resting against said flaring portion of the skirt and conforming to the shape thereof.

3. A packaging container comprising a receptacle having a sealing surface about its mouth portion and an outwardly projecting ledge below said sealing surface, and a closure comprising a shell adapted to receive the mouth portion of the receptacle and carrying a sealing gasket in position to be compressed upon the sealing surface when the closure is forced downwardly on the receptacle, said ledge being provided with upwardly extending narrow projections which are spaced apart from one another circumferentially of the receptacle in positions to contact the lower margin of the shell and prevent its contacting the ledge when the closure is forced to sealing position.

4. A packaging container comprising the combination with a closure cap as specified in claim 1, of a receptacle having a mouth portion adapted to be intruded within the sleeve gasket to compress it against the skirt, said receptacle having an outwardly projecting ledge spaced below its mouth rim by a distance greater than that between the lower ends of said flutings and the lower rim of the skirt, said ledge carrying narrow upwardly projecting elements which are spaced apart from one another circumferentially of the receptacle and are disposed in positions to contact the lower margin of the skirt when the closure cap is forced to sealing position.

WILLIAM P. WHITE.