Oct. 11, 1927. 1,645,022

A. PODEL

CAP AND PACKAGE

Filed March 23, 1925

Fig. 1.

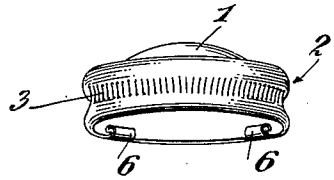


Fig. 2.

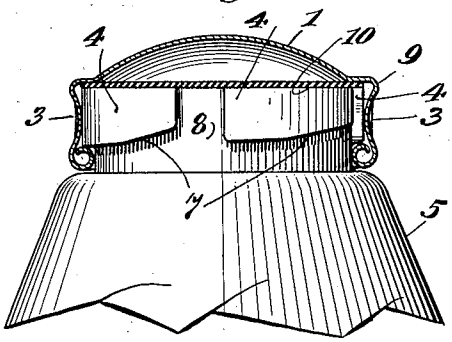


Fig. 4.

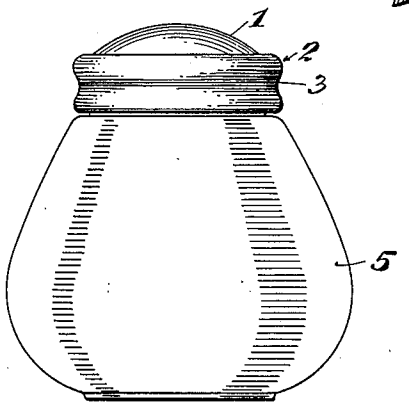


Fig. 3.

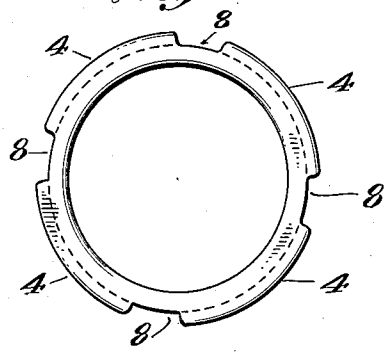


Fig. 5.

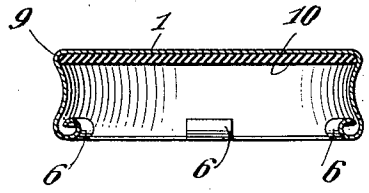
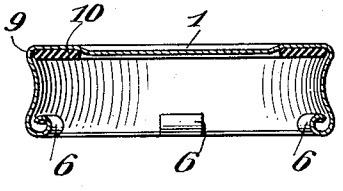


Fig. 6.



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UNITED STATES PATENT OFFICE.

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CAP AND PACKAGE.

Application filed March 23, 1925. Serial No. 17,477.

This invention relates to the art of packaging and particularly to a closure cap and to a closed package.

The general object of the invention is to provide a form of closure and container which will effectively cooperate to form a closed package even with very wide variations in the size and proportion of the container.

Another object of the invention is to provide a quick action closure of increased reliability and effectiveness.

A further object of the invention is to provide a closure which possesses the advantages of both friction closures and screw closures.

A still further object of the invention is to provide a sealed package which can be readily and quickly opened, but which is positively safeguarded against accidental opening.

Other objects of the invention will be apparent from the following description.

In accordance with the present invention there is provided a closure cap, preferably made of sheet metal or the like, which embodies a cover portion and a skirt portion. The skirt portion of the cap is provided with an impressed groove extending circumferentially of the skirt and adapted to grasp the sidewall of a suitable container. This circumferentially extending groove may be smooth or it may be provided with suitable corrugations or the like which increase its ability to expand in a circumferential direction and thereby size the groove to the particular container to which the closure may be applied. At the base of the skirt there are provided locking lugs preferably in the form of open coils rolled up within the skirt from portions of metal integral therewith.

The closure is adapted to be applied to a container which has a substantially cylindrical but discontinuous surface adjacent the mouth thereof. This discontinuous cylindrical surface terminates in a series of downwardly inclined shoulders or cams each of which is adapted to cooperate with a locking lug on the closure. The closure is applied to the container by passing the locking lugs downwardly along the discontinuities in the cylindrical surface and then rotating the closure so that the lugs cooperate with the cam surface of the container to exert an endwise clamping force upon the closure as the closure is applied. The circumferential groove in the closure skirt grasps the cylindrical surface and functions to hold the closure frictionally upon the container.

Fig. 1 of the drawings is a perspective view showing a closure cap embodying the present invention.

Fig. 2 is an elevational view partially in section showing a closed package embodying the cap of Fig. 1.

Fig. 3, is a plan view showing the mouth of the container shown in Fig. 2.

Fig. 4, is an elevational view of a package embodying the present invention.

Fig. 5 is a sectional view of a modified form of closure embodying the present invention.

Fig. 6, is a sectional view showing another modified form of closure embodying the present invention.

As shown more especially in Figs. 1 and 2 there is provided a closure cap of sheet metal or the like having a cover portion 1, and a skirt 2 provided with an inspun annular groove 3 which is adapted to grasp a cylindrical surface 4 of a suitable container 5. By reason of the fact that the portion 3 is inspun, it forms a resilient groove which is adapted to be displaced outwardly when the closure is applied, to size the groove to the particular container. This groove may be plain as shown in Fig. 4, but is preferably provided with a series of indentations or corrugations, as shown in Fig. 1, which adapt it for very large circumferential expansion and thereby enable the closure to take care of wide variations in the size of the container finish.

At the base of the skirt 2, there are provided a series of locking lugs or projections 6, preferably in the form of large resilient coils, which may be rolled up within the skirt from strips of metal integral therewith.

As shown particularly in Figs. 2 and 3, the container 5 is provided adjacent its mouth with a substantially cylindrical surface 4 interrupted by discontinuities at 8. Each section of cylindrical surface 4 terminates in a locking shoulder 7 which is circumferentially inclined downwardly to form a cam surface.

The closure is applied to the container by passing the locking lugs 6 downwardly along the discontinuities 8 and then rotating the cup to cause the lugs 6 to cooperate

with the cam surfaces 7, and thereby exert an endwise clamping force upon the closure. When the closure is applied the annular groove 3 grasps the cylindrical surface 4 in the manner of a friction retained closure. After the package has been sealed the grip of groove 3 prevents movement of the cap not only vertically but circumferentially, and thereby precludes the cap from being accidentally unscrewed due to the camming action between the cam surfaces 7 and locking lugs 6. If groove 3 is corrugated as shown in Fig. 1 the corrugations engage the corners of the surface 4 at the discontinuities 8, thus securely holding the cap against rotation. This enables the cam surfaces 7 to be made very steep without any danger of the cap becoming unscrewed due to camming action.

The cap may be formed with a dome like cover portion as shown in Fig. 1, or it may be formed with a flat cover portion as shown in Fig. 5, or with a depressed cover portion as shown in Fig. 6.

As shown in Figs. 2, 5, and 6, there is an annular recess 9 adjacent the cover portion which serves as a means for retaining a suitable gasket 10 in the closure and thus enabling the cap and gasket to be applied to the container in a single operation. The gasket 10 may be in the form of a complete disc as shown in Fig. 5, or in the form of a ring as shown in Fig. 6. The ring form of gasket is particularly suited to the form of closure shown in Fig. 6, since it seats in the annular recess between the skirt and the depressed portion of the cover.

It is seen that the present invention provides a quick acting closure which is very reliable and effective on account of the fact that it incorporates the holding powers of both a friction retained closure and a screw closure. It is also apparent that the present closure may be applied and removed by rotation through a comparatively small angle; and that after application the closure is positively safeguarded against accidental unscrewing.

It is realized that the present invention may be embodied in forms other than those particularly disclosed and hence it is desired that the disclosure be considered as illustrative and not as limiting.

Having thus described my invention, what I claim is:—

1. A package comprising a container having an interrupted substantially cylindrical surface adjacent the mouth thereof and locking shoulders beneath the cylindrical surface; in combination with a closure having a skirt provided with a circumferential groove grasping said interrupted cylindrical surface and locking projections cooperating with said locking shoulders.

2. A package comprising a container having an interrupted substantially cylindrical surface adjacent the mouth thereof and cam surfaces beneath the cylindrical surface; in combination with a closure having a skirt provided with a circumferential groove grasping said interrupted cylindrical surface and locking projections cooperating with said cam surfaces to exert an endwise locking force on said closure.

3. A package comprising a container having an interrupted substantially cylindrical surface adjacent the mouth thereof and cam surfaces beneath the cylindrical surface; in combination with a closure comprising a skirt provided with a corrugated groove grasping said interrupted cylindrical surface, to resist movement of the cap axially and circumferentially of the container, and locking projections cooperating with said cam surfaces to exert an endwise clamping force on said closure.

4. A package comprising a container having an interrupted substantially cylindrical surface adjacent the mouth thereof and inclined locking shoulders beneath the cylindrical surface; in combination with a closure comprising a skirt provided with a resilient circumferential groove grasping said interrupted cylindrical surface, and resilient open rolled locking projections cooperating with the inclined locking shoulders to exert a yielding endwise clamping force on said closure.

5. A package comprising a container having an interrupted substantially cylindrical surface adjacent the mouth thereof and locking shoulders beneath the cylindrical surface; in combination with a closure comprising a skirt provided with a circumferential groove grasping said interrupted cylindrical surface, and locking projections cooperating with said locking shoulders, said closure being adapted to be removed by rotation of the closure locking projections into alignment with the discontinuities in the cylindrical surface and then withdrawing the locking projections along the discontinuities.

6. A package comprising a container having an interrupted substantially cylindrical surface adjacent the mouth thereof and locking shoulders beneath said surface; a gasket in contact with the mouth of said container; and a closure cooperating with said gasket, said closure having a skirt provided with a circumferential groove grasping said interrupted cylindrical surface and locking projections cooperating with said locking shoulders.

7. A closure cap comprising a skirt of substantially uniform length throughout having a circumferentially extending resilient groove adapted to grasp the side wall of a container, and screw lugs concealed within said skirt.

8. A closure cap comprising a skirt hav-

ing a circumferentially extending resilient groove adapted to grasp the side wall of a container; and screw lugs at the bottom of said skirt, said lugs being formed from strips of metal rolled up into open coils having operative surfaces on the exterior of the coils at their tops and adapted to engage the under surface of container locking shoulders, said coils being adapted to undergo a relatively large resilient distortion in a vertical direction as the cap is screwed on a suitable container.

9. A closure cap for a container having an interrupted substantially cylindrical surface adjacent the mouth thereof and locking shoulders beneath the cylindrical surface, said cap comprising a skirt having a circumferentially extending resilient groove adapted to grasp the interrupted cylindrical surface, and locking projections adapted to cooperate with the container shoulders to exert an endwise clamping force.

10. A closure cap for a container having an interrupted substantially cylindrical surface adjacent the mouth thereof and locking shoulders beneath the cylindrical surface, said cap comprising a skirt having a circumferentially extending resilient groove adapted to grasp the interrupted cylindrical surface, said groove being formed with alternate indentations and prominences, and locking projections adapted to cooperate with the container shoulders to exert an endwise clamping force.

11. A closure cap comprising a skirt of substantially uniform length having a circumferentially extending groove adapted to grasp the side of a container, and resilient rolled lugs concealed within said skirt and adapted to engage co-operating lugs or threads on a container.

12. A closure cap comprising a skirt having a circumferentially extending groove adapted to frictionally engage the side of a container, resilient rolled lugs within said skirt adapted to engage lugs or threads on a container, said lugs on the skirt being open rolled to permit the free ends thereof to move toward the skirt upon upward pressure on the lugs, thereby allowing said lugs to slip over the lugs or threads on the container when the cap is pressed thereon.

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