Nov. 8, 1938. A. PODEL 2,135,731

CLOSURE CAP AND PACKAGE

Filed Feb. 7, 1936

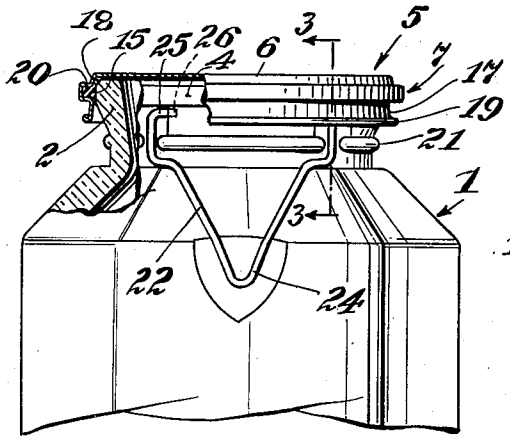


Fig. 1.

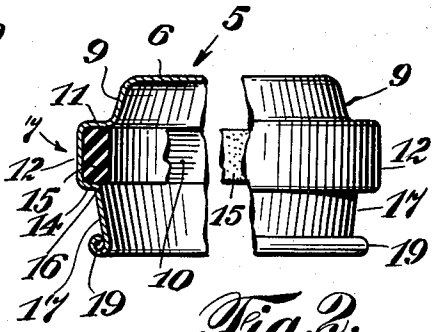


Fig. 2.

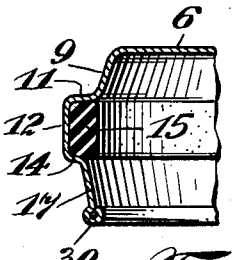


Fig. 4.

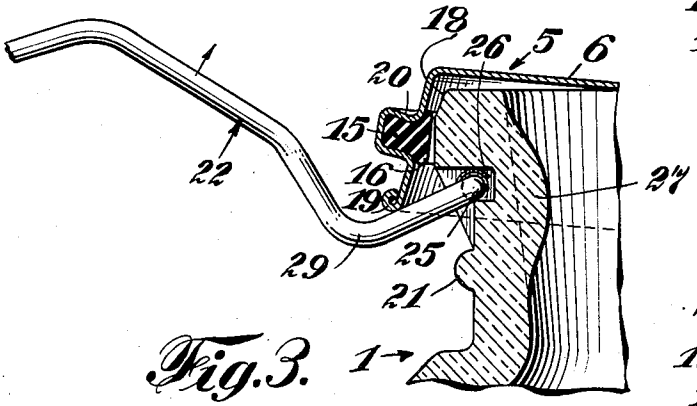


Fig. 3.

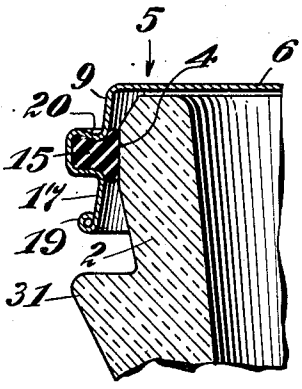


Fig. 5.

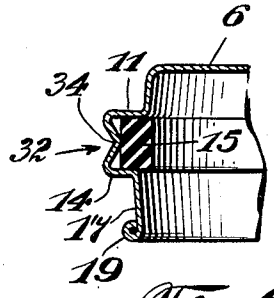


Fig. 6.

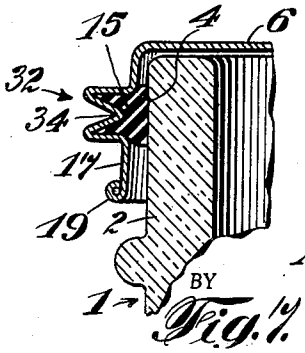


Fig. 7.

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Patented Nov. 8, 1938 2,135,731

UNITED STATES PATENT OFFICE

2,135,731

CLOSURE CAP AND PACKAGE

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Application February 7, 1936, Serial No. 62,771

5 Claims. (Cl. 215—46)

The present invention relates to the sealing art and more particularly to a closure cap and a sealed package.

A popular type of sealed package in commercial use at the present time comprises a container having a sealing zone on the side wall thereof and a closure cap provided with a bead containing a gasket. In sealing the cap, the bead usually is compressed to force the gasket against the sealing zone to form a seal. One of the difficulties with such a package is that the cap is not readily removable. Removing tools do not grip the cap securely and, if they do, they distort the cap to such an extent that it is not adapted to be used for resealing purposes. Since most packages of this type are used for preserves or other food products, they are sold almost exclusively to housewives, who must open them. It is, therefore, important that the packages can be easily opened without substantial effort on the part of the housewife and that the caps be adapted to be used for resealing the container during the consumption of the contents. While closures of the above class form very effective vacuum or hermetic seals, which preserve the contents for a long time, packers desire to provide their packages with caps which are more easily removable. In order to accomplish this, inferior caps have been used, but these have not been successful because they fail to properly seal and preserve the product.

The present invention aims to overcome the above objections by providing a closure cap adapted to form a secure hermetic or vacuum seal, which is readily removable without the use of special cap removing tools and which is adapted to reseal the container. The invention further aims to accomplish these objects without material increase in the cost of the cap and package and to improve the appearance of the sealed package.

An object of the present invention is to provide a closure cap which can be readily sealed to a container and can be readily removed therefrom.

Another object of the invention is to provide a closure cap forming a hermetic or vacuum seal adapted to be removed without distortion thereof to permit it to be used for reseal purposes.

Another object of the invention is to provide a closure cap forming a side seal having an improved skirt which facilitates removal of the cap without distortion thereof.

Another object of the invention is to provide a sealed package having a side seal cap thereon and means for removing the cap without the aid of special cap removing tools.

A further object of the invention is to provide a sealed package having a cap removing member associated therewith and a side seal closure cap extending over a part of the cap removing member.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawing, forming a part of the specification, wherein;

Fig. 1 is a side elevational view, partly in section, illustrating a preferred embodiment of the present invention;

Fig. 2 is an enlarged fragmentary side elevational view, partly in section, of the closure cap shown in Fig. 1 prior to being sealed to the container;

Fig. 3 is an enlarged fragmentary sectional view illustrating the cap being removed from the container;

Fig. 4 is an enlarged fragmentary sectional view illustrating a slightly different form of cap;

Fig. 5 is an enlarged fragmentary sectional view illustrating a cap sealed to a modified form of container;

Fig. 6 is an enlarged fragmentary sectional view of a still different form of closure cap prior to being sealed; and

Fig. 7 is an enlarged fragmentary sectional view illustrating the cap shown in Fig. 6 sealed upon a container.

Referring again to the drawing and more particularly to Figs. 1, 2 and 3 there is shown a glass container 1 having a neck portion 2 provided with a sealing zone 4 at the side wall thereof adapted to have a closure cap 5 sealed thereto. While the container shown is in the form of a wide mouth jar, it will be understood that the present invention is applicable to other types of containers such as tumblers, bottles and the like. It will also be understood that the invention may be applied to containers formed of other suitable materials, such as sheet metal or the like.

The closure cap 5 preferably comprises a cover portion 6 and a depending skirt 7 adapted to be telescoped over the upper end of the container. The skirt preferably has at its upper end an annular portion 9 depending from the cover part 6 adapted to extend downwardly substantially to the upper side of the sealing zone 4. Below the portion 9 and facing the sealing zone, a suitable gasket retaining groove or bead 10 is provided which may be formed by an upper shelf portion 11, a side wall 12 and a lower shelf portion 14. Preferably, the upper and lower shelf portions are substantially horizontal, while the side wall is

vertical and is disposed at substantially right angles to the shelf portions 11 and 14, to provide a substantially rectangular groove for retaining a gasket 15. The corners of the groove may be rounded to facilitate the manufacturing operations. If desired, the lower shelf may be sufficiently wide to support almost the entire lower side of the gasket to prevent accidental dislodgement of the gasket prior to sealing the cap. Preferably, the lower shelf 14 is slightly narrower than the lower side of the gasket, so that the lower inner corner 16 of the gasket may be impinged between the edge of the lower shelf and the sealing zone of the container to provide a more secure seal. Preferably, the lower part of the skirt beneath the gasket retaining groove is provided with a portion 17 extending downwardly from the lower shelf 14 a substantial distance and preferably having at its lower edge a rolled bead 19 or the like, adapted to stiffen the portion 17 and to facilitate removal of the cap by prying the wire edge 19 and the portion 17 upwardly. Prior to sealing the cap, the portion 17 preferably is flared downwardly and inwardly, but upon constricting the gasket bead 10 it becomes flared downwardly (Fig. 5) and outwardly and this facilitates prying the same, etc., outwardly and upwardly. It will be noted that the lower shelf 14 by being slightly narrower than the upper shelf 11, spaces the portion 17 a slight distance radially outwardly from the side wall of the container. This facilitates placing a cap removing tool under the skirt. Also, the portion 17 has a slightly larger diameter than the upper skirt portion 9, so that the cap may be tilted upwardly when removed, to permit the wire edge to clear the rim of the container. To further facilitate tilting the cap over the mouth of the container and to facilitate telescoping it thereon, the upper part of the neck above the sealing zone 4 is provided with a bevelled zone 18.

Preferably, the cap is sealed to the container by applying vertical pressure on the upper and lower shelf portions 11 and 14 to press them towards each other and compress the gasket, which in turn, is extruded from the bead or groove 10 and is forced against the sealing zone 4 of the container. The bead may be reformed by pressing an annular groove 20 into the upper shelf 11. If desired the lower shelf may also be reformed in any suitable manner to increase the compression of the gasket or the lower shelf alone may be reformed to form the seal. When the gasket is compressed vertical pressure on the shelves 11 and 14 of the bead 10 may be utilized to move the portion 17 from its inwardly flared position (Fig. 2) to its outwardly flared position (Fig. 1). In this manner, the bead may be substantially compressed and the tendency to pull the lower part of the skirt 17 outwardly is utilized to move the portion 17 into its desired position to facilitate removal.

A feature of the invention is that the above type of seal can be readily made with simple, inexpensive tools without interfering with the shoulder of the container or any other projection formed thereon, such as a bead 21, provided beneath the lower edge of the skirt of the cap. The reason for this is, that the gasket grove 10 spaces the gasket retaining bead a substantial distance from the ornamental bead 21 on the container and that the elongated portion 17 of the skirt spaces the gasket groove vertically from the bead 21. Another feature is that the outwardly flared portion 17 facilitates lifting the cap upwardly.

In order to open the package with minimum effort and maximum convenience, the container here shown may be provided with an opener or cap remover 22 attached to the neck thereof. A preferred form of cap remover, comprises a wire member having a substantially V-shaped portion 24 adapted to lie against the side wall of the container and having its free ends 25 pivotally mounted in recesses 26 formed in the side wall of the container slightly below the sealing zone. This type of opener is relatively inexpensive and can be attached to the jar prior to placing the cap thereon. In order to prevent breakage of the container, due to the strains caused by the cap remover, the container may be provided with reinforcing portions 27 (Fig. 3) of increased thickness at the inner wall of the container and substantially radially in back of the recesses 26 for mounting the cap remover.

The cap may be removed by engaging the handle end of the cap remover and raising it upwardly from the side wall of the container, as shown in Fig. 3. Upon upward movement, offset portions 28 of the opener engage the lower edge of the skirt and raise the skirt upwardly. The outwardly flared part 17 by being of substantial length, acts as a lever to fold the lower shelf 14 of the bead slightly downwardly and outwardly to release the pressure on the gasket at 16. In this manner, the gasket is loosened and if the package is vacuum sealed, the vacuum is released. Upon further upward movement, the cap is raised upwardly at one side and is tilted over the mouth of the container. During the removal of the cap, the wire edge 19 prevents buckling or tearing of the skirt and tends to maintain the cylindrical shape of the skirt so that the cap may be used to form a reseal.

In Fig. 4 a closure cap is shown having an inwardly rolled wire bead 30 at the lower edge of the skirt. By rolling the skirt inwardly, the raw edge of the metal is concealed and the outside appearance of the skirt is enhanced, while at the same time, the lower skirt portion 17 is reinforced.

In Fig. 5 a cap is shown applied to a slightly different form of container, having a pry-off ledge 31 below the sealing zone. An advantage of using the cap illustrated herein on such a container, is that the lower edge of the skirt may be positioned relatively close to the pry-off ledge to permit a coin or tool to be inserted. At the same time, the elongated lower skirt portion spaces the gasket bead from the ledge so that the ledge will not interefere with the sealing or compressing of the gasket retaining bead. A practical pry-off package may be provided by securing the gasket in the cap and pushing the cap downwardly on the container to form a seal without reforming the gasket retaining bead. Preferably, a cap removing member 22 may be mounted on the container, but packers, in order to economize and save the cost of the opener, may omit the opener and rely on the pry-off ledge for opening the package.

In Figs. 6 and 7 a slightly different form of closure is illustrated, which may be substituted for the cap in Fig. 3. The side wall 32 of the gasket retaining bead in this closure is substantially V-shaped, and the apex 34 of the V extends radially inwardly against the gasket. This construction is advantageous because the V-shaped wall can be readily collapsed or shortened by vertical pressure upon the top and bottom shelves 11 and 14 of the bead to compress the gasket 15. The apex of the side wall, upon collapsing of the

bead, is moved further radially inwardly to force the gasket against the container and to increase the sealing pressure of the gasket.

A preferred method of making the closure caps illustrated herein, comprises stamping flat sheets of material, such as tin-plated metal coated with lacquer, into hat-shaped blanks. Thereafter, the blanks are subjected to a rolling operation to form the gasket retaining groove or bead 10 and to flare the lower portion 17 slightly radially inwardly. Preferably, simultaneously with this operation, the lower edge of the skirt is rolled into the wire edge or bead 19. The gasket may thereafter be inserted either by hand or by automatic machinery to complete the cap.

It will be seen that the present invention provides a simple, inexpensive closure adapted to be sealed securely without any difficulty to form a vacuum or hermetic seal upon glass containers or the like. The sealed packages provided are attractive in appearance and can be easily opened by housewives without any special instructions or cap removing tools. A suitable removing member may be associated with the package adapted to break the seal and to remove the cap without mutilating the caps, whereby they can be used again to form a reseal while the contents of the package are being dispensed. The wire edge makes the closure desirable for use on pry-off finishes, while the skirt portion beneath the gasket retaining bead provides leverage for breaking the seal and facilitating removal of the closure. The caps are rugged in construction and can readily withstand any rough usage to which they may be subjected.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

1. A sealed package comprising, in combination, a container having a sealing zone and a closure cap having a gasket retaining bead substantially at the middle of the skirt thereof, a gasket in said bead, said bead having a collapsed V-shaped side wall, and upper shelf and a lower shelf exerting pressure on the gasket to compress the gasket against said sealing zone, and an elongated portion depending downwardly from the lower shelf of the bead adapted to act as a lever for releasing pressure on the gasket to break the seal and facilitate removing the cap from the container, and a cap removing member pivotally mounted on said container below said sealing zone and in position to engage said depending portion to remove the cap from the container.

2. A sealed package comprising, in combination, a container having a sealing zone at the side wall thereof, and a closure cap having a cover portion and a depending skirt, said skirt being provided with an outwardly extending gasket retaining groove spaced from the cover portion, a gasket in said groove, said groove having an upper and lower shelf compressing the gasket to force the gasket against the sealing zone and the inner edges of said shelves being out of contact with said sealing zone, said skirt having a downwardly depending portion adjacent and below the lower shelf of said groove adapted to be forced outwardly and upwardly to move said lower shelf downwardly and outwardly to relieve compression of said gasket and facilitate removing said closure cap from said container, and a cap removing member pivotally mounted on said container below the sealing zone and adjacent the lower edge of said depending portion and being adapted upon outward and upward movement to engage said depending portion to force it upwardly and slightly outwardly to effect easy removal of said cap.

3. A sealed package comprising, in combination, a container having a sealing zone at the side wall thereof, a closure cap having a cover portion and a depending skirt, said skirt being provided with an outwardly extending gasket retaining groove substantially at the middle thereof and a gasket in said groove, said groove having upper and lower shelves compressing the gasket against the sealing zone, said skirt having an elongated downwardly depending portion below said groove terminating in a rolled wire edge, and a cap removing member pivotally mounted on said container beneath said sealing surface having a portion for engaging the underside of the wire edge and bending said depending portion slightly outwardly to pry the cap from said container, said wire edge preventing tearing of said skirt when engaged by said cap removing member.

4. A sealed package comprising, in combination, a container having a sealing zone at the side wall thereof, a closure cap having a cover portion and a depending skirt, said skirt being provided with an outwardly flared portion at the upper end thereof for facilitating removal of said cap from the container, a gasket retaining groove below said outwardly flared portion, a gasket in said groove, said groove having upper and lower annular substantially horizontal shelves exerting vertical pressure on the gasket to force the gasket inwardly against the sealing zone, said skirt having an elongated downwardly depending lever portion below said groove adapted to be bent outwardly to relieve compression of the gasket, said elongated portion having a rolled wire edge at the bottom thereof to prevent tearing of said skirt when engaged by a cap removing tool, and a cap removing member pivotally mounted on said container below the sealing zone and extending under said elongated portion, said removing member being adapted to engage said wire edge to raise said cap.

5. A sealed package comprising, in combination, a container having a sealing zone and a closure cap having a cover part and a depending skirt provided with a gasket retaining bead substantially at the middle thereof and spaced from the cover part, a gasket in said bead, said bead having an upper shelf and a lower shelf compressing the gasket against the sealing zone, and an elongated portion depending downwardly from the lower shelf of the bead adapted to act as a lever to facilitate breaking the seal and removing the cap, and a wire member pivotally mounted on the container below the sealing zone and adapted to engage said elongated portion to force its upwardly and slightly outwardly to move said lower shelf downwardly and outwardly to relieve pressure on said gasket and facilitate removing the cap from the container, the upper shelf of said gasket bead having a groove in the upper surface thereof above said lower shelf to facilitate moving said lower shelf downwardly and outwardly to relieve compression of said gasket.

ABRAHAM PODEL.