April 23, 1935. C. HAMMER 1,998,869

SEALED PACKAGE

Filed June 28, 1930

Fig. 1.

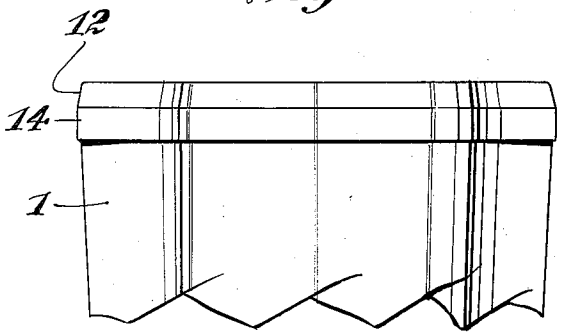


Fig. 2.

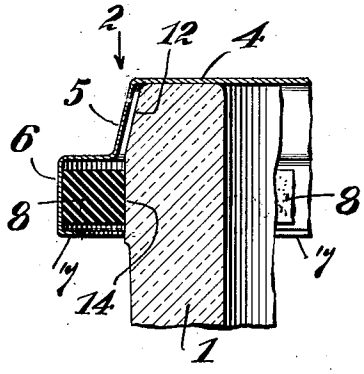


Fig. 3.

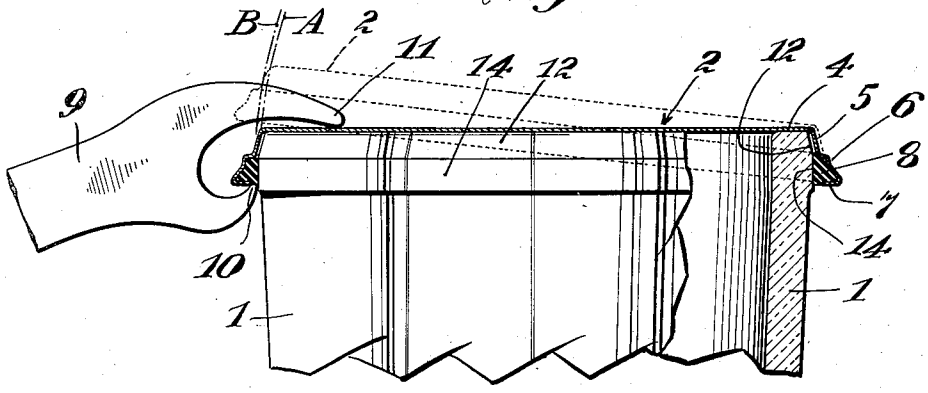
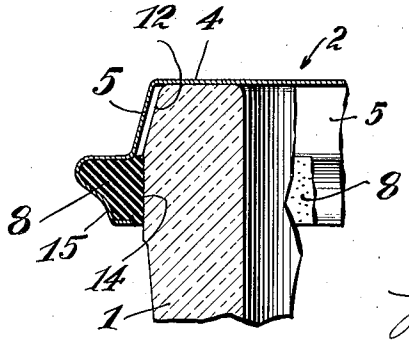


Fig. 4.



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UNITED STATES PATENT OFFICE

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Application June 28, 1930, Serial No. 464,436

6 Claims. (Cl. 215—40)

The present invention relates to the sealing art and more particularly to a sealed package provided with a closure cap which may be readily removed and may thereafter be used for reseal purposes.

The present invention is, more particularly, an improvement upon sealed packages having side seal closures thereon. An example of such a package may be found in the Edgar Scofield patent, No. 1,611,955, dated December 28, 1926. The hermetic seal of such a package is very secure; in fact, it has security to spare. In addition, by reforming the bead and the resilient gasket therein, the cap is adapted to take up a substantial range of variations in the size of the glass containers. It is well known that containers vary substantially from a predetermined standard and it is, therefore, necessary for closure caps to accommodate containers having such variations; otherwise the closure is not commercially feasible.

While the caps illustrated in the above patent are capable of accommodating substantial variations in container sizes and forming an effective seal thereon, difficulty has been encountered in the removal of the caps by the consumers, who are, for the most part, housewives. In addition, the housewife, in removing the caps, usually distorts them to such an extent that it is necessary to throw the closure away after removal. This is objectionable due to the fact that the consumer ordinarily desires a cap which, after removal, is adaptable as a cover at least and, preferably, as a reseal. This is one reason for the popularity of the so-called "screw cap". The latter, however, does not form an effective seal, which is most essential for the preservation of edible products.

The present invention is an improvement upon the packages having side seal closures thereon and is directed more particularly to facilitating the removal of the caps without distortion or destruction thereof, whereby they may be used thereafter for reseal purposes.

An object of the invention is to provide a secure hermetic seal which may be readily removed.

Another object of the invention is to provide a hermetically sealed package, the closure cap of which may be readily removed and reapplied for reseal purposes.

Another object of the invention is to provide an inexpensive hermetically sealed package provided with a side seal closure and to facilitate the removal of the closure without distortion thereof.

Another object of the invention is to provide an improved container particularly adapted for side seal closures, which will facilitate the removal and reuse of the closure.

Another object of the invention is to provide an improved method of sealing, whereby the sealed closure may be readily removed and used for reseal purposes.

Other and further objects of the invention will be ovbious 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.

Fig. 1 is a fragmentary, side elevational view of the container;

Fig. 2 is a fragmentary sectional view of the container and cap loosely mounted thereon before the sealing operation;

Fig. 3 is a fragmentary sectional view, with a portion of the container in elevation, illustrating the cap sealed upon the container and its path of movement during removal; and

Fig. 4 is a fragmentary sectional view showing a different type of seal.

In the manufacture of glass containers, defects are most likely to occur on the upper edge or rim thereof. This portion is frequently wavy and therefore, does not serve for sealing purposes as well as the outer side wall of the container. For this reason, side seals are very popular and desirable for products where a hermetic seal is required. In order to minimize leakage and defective seals, it is customary to form the seal a substantial distance below the rim of the container. This minimizes the chances of defects in the rim which would affect the seal. Such closure caps are removed from the containers by means of cap openers, or what is commonly known as a hooked bottle opener. The jaw of the opener engages below the lower side of the skirt of the cap and the fulcrum engages the cover part of the cap a substantial distance inward from the rim of the container. The side of the cap is then raised until the skirt of the cap clears the upper edge of the container. In many cases, the metal of the cap is bent inwardly at the fulcrum of the cap opener and the part of the cap engaged by the jaw of the opener is raised about this bent portion. In every case, the skirt of the cap has to be stretched substantially in order to clear the edge of the container. This ordinarily necessitates considerable effort and, frequently, the cap is demolished in the opening operation. This is particularly ob-

jectionable due to the fact that the consumer desires, in most instances, to use the cap as a cover at least, and, in some cases, for reseal purposes. The present invention is designed particularly to facilitate the removal of side seal closures without distorting the cap and to permit such closures to be used for reseal purposes.

Referring more particularly to the drawing, there is shown a container 1 having a closure cap 2 thereon. The closure cap may comprise the usual cover portion 4 and a depending skirt 5 having a bead 6 therein adjacent the lower edge thereof. The bottom of the skirt is turned inwardly, as shown at 7, to support a gasket 8 seated within the bead. Prior to being sealed, the cap and gasket fit loosely on the container and may be readily applied thereto by hand or by automatic cap feeding machinery. Thereafter, a suitable sealing machine reforms the bead 6 of the cap causing it to force the gasket against the side wall of the container to form a very tight hermetic seal therewith. Preferably, the upper part of the outer side of the cap is pressed inwardly more than the lower part thereof, so that the skirt of the sealed cap is flared, as shown more particularly in Fig. 3. This permits a substantial projection at the bottom of the cap and facilitates the engagement of the jaw of the cap opener therewith.

The cap is preferably removed by means of a suitable cap opener 9 having a jaw 10 adapted to engage the bottom of the skirt of the cap, and a fulcrum 11 adapted to engage the cover part of the cap. The removal of the cap is illustrated more particularly in Fig. 3, where the cap is shown in full lines in sealed position and in dotted lines in removed position.

In order to facilitate the removal of the cap, the container is provided with a bevelled surface 12 extending about the outer periphery of the container at the upper edge thereof. While the amount of the bevel may be varied within substantial limits, an angle of about fifteen degrees between the bevelled surface and the cylindrical sealing surface has been found to give excellent results. Preferably, the bevelled surface 12 merges into the sealing surface 14 at a point in line with the upper edge of the gasket 8. In this way, the entire seal is made upon a cylindrical surface which permits the cap to retain its effective seal and its effective hold upon the container.

It is well known that the greatest resistance to movement between a frictionally retained object is just prior to the commencement of relative movement therebetween. Therefore, the caps sealed as indicated in Fig. 3 have substantially the same holding power, in so far as accumulation of pressure within the container is concerned, due to heat or otherwise. On the other hand, when the cap opener 9 is applied to the cap for removal, the amount of stretching necessary is reduced to a minimum because the upper rim of the container has been reduced in size and the cap does not have to be stretched to clear the outer projecting edge. As shown more particularly in Fig. 3, the inner sides of the cap move along the dot and dash line A; whereas, with the usual tumbler, it would be necessary for the cap to be stretched so that it could move along the dot and dash line B. In other words, the skirt of the cap would have to be stretched substantially to clear the outer rim of the container.

In some cases, the fulcrum 11 bends the cover portion of the container inwardly and causes the skirt portion of the cap to be distorted substantially and to be pulled up about the point of the cover portion in contact with the fulcrum of the opener. In other words, the cap is not raised as an entirety, but only locally adjacent to the cap opener. This, of course, causes the skirt of the cap, while being raised, to be drawn further inwardly and necessitates a greater taper on the upper rim of the container than would normally be necessary if the cap were raised about its opposite side. For this reason, the taper 12, in order to take care of the worst operating conditions, is tapered substantially more than the theoretical amount required. It will be understood, of course, that the theoretical taper required would vary for each different size of container. The present invention, however, contemplates the use of the same amount of taper for convenience with containers covering a substantial range of sizes, preferably the entire range, but the amount of taper should not be greater than reasonably necessary.

In Fig. 4, a different form of seal is illustrated, wherein the lower side 15 of the bead of the cap is constricted inwardly to force the gasket firmly against the container. This type of seal is easily made but is more difficult to engage with the cap opener due to the reduced size of the lower edge of the skirt. The removal thereof and the application of the present invention to it is the same as that described with reference to Fig. 3.

In forming the seals described herein, a suitable cap is applied to the container so that it rests loosely thereon, as illustrated in Fig. 2, prior to the sealing operation. The bead of the cap is reformed and sealed against the container by means of the gasket 8, as illustrated more particularly in Fig. 3. Such a seal may be removed by the application of a cap opener, as illustrated in Fig. 3, at a series of points about the periphery of the cap, whereby the cap is gently raised at spaced points until it clears the cylindrical part of the sealing surface. Immediately after the gasket passes above the lower edge of the bevelled surface 12, resistance to removal thereof ceases. The purpose of engaging the cap at a plurality of points is to avoid serious distortion of the cap by reason of the fact that the cover portion bends inwardly under the pressure of the fulcrum of the opener and raises a part of the periphery of the cap about the fulcrum of the opener. This distorts the cap and prevents it from coming off in the proper manner. The application of the opener at a series of points stretches the cap slightly and permits it to be removed easily. After the cap has been removed, it may be used for reseal purposes because it has not been necessary to distort it substantially during removal. In addition, the bevelled surface 12 facilitates the application of the cap for reseal purposes since it forms a suitable resting shoulder and permits the cap to be wedged on by application of pressure. The cap, after being properly removed, may be hermetically resealed on the container to preserve the product. This seal, of course, will not be as secure as when the cap is originally applied.

It will be seen that the present invention provides a sealed package which is simple in construction and whereon the caps may be readily and effectively sealed. The removal of the caps may be easily effected by means of an ordinary bottle opener, without distortion thereof, thereby permitting the removed caps to be utilized for reseal purposes. The container may also be used as a drinking glass since the tapered portion 12, being reduced in amount to a reasonable mini-

mum, does not interfere with such use, nor does the limited amount of taper increase materially the amount of glass required. The caps permit easy removal and, at the same time, grip the containers securely and resist any pressure caused by the expansion of the air within the container due to relatively high external temperatures.

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, 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 a container having a sealing surface on the side wall thereof, a bevelled surface adjacent said sealing surface, and a closure cap having a bead in the skirt thereof, and a gasket in said bead, said skirt being reformed to extrude said gasket from the bead of the cap against said sealing surface immediately below said bevelled surface on the container.

2. A sealed package comprising a container having a bevelled surface on the external side wall thereof adjacent its upper end, a closure cap having a bead in the skirt thereof, a gasket in said bead, the upper side of said gasket being substantially in line with the lower edge of said bevelled surface, the upper part of said bead being constricted substantially more than the lower part to press the gasket against the side wall of the container to form a hermetic seal therebetween and to facilitate application of an opener for removal of the cap.

3. A sealed package comprising a container having a substantially cylindrical side wall sealing surface adjacent the upper end thereof, and having also a tapered part merging with said cylindrical part, said tapered part being at an angle of about fifteen degrees to the cylindrical part to minimize the increase in the thickness and weight of the container occasioned by the bevel, a closure cap having a skirt adapted to receive a gasket, a gasket in said skirt, said skirt being reduced in size after application to the container to press said gasket against the side wall sealing surface of the container, the upper part of said gasket being substantially adjacent the lower part of said bevelled part of the container.

4. A sealed package comprising a container having a cylindrical sealing portion, a closure cap having a bead in the skirt thereof, and a gasket in said bead, said bead being reformed to force the gasket against the side wall of the container and to form a side seal therewith, the upper part of said bead being constricted inwardly during the reforming operation, and the lower part being permitted to remain substantially in its original position to facilitate the engagement of an opener therewith, the outer periphery of said container being bevelled with the lower edge of the bevel terminating substantially at the upper edge of the gasket, whereby stretching of the cap will be minimized in raising one side about the other in removal, said bevelled portion of the container being about fifteen degrees to the cylindrical sealing portion to minimize the reduction in the thickness of the glass occasioned by the bevel.

5. A sealed package comprising a container having an annular bevelled surface adjacent its upper edge, the degree of the bevel being sufficient to permit the closure to clear the upper end of the container without substantial stretching and without impairment of the utility of the container by decreasing the thickness of the rim thereof, a closure cap having a bead in the skirt thereof and a gasket in said bead, the upper part of said bead being constricted substantially more than the lower part thereof to force the gasket against the container at a point immediately below the bevelled surface to facilitate removal thereof, whereby the lower part of the closure is a substantial distance from the container to facilitate application of a bottle opener whereby the cap may be removed without substantial stretching to clear the upper edge of the container.

6. A sealed package comprising a container having a sealing surface on the side wall thereof, a bevelled surface adjacent said sealing surface, and a closure cap having a bead in the skirt thereof, and a gasket in said bead, the lower part of said skirt being reformed and constricted inwardly toward the container to force said gasket supported in the bead of the cap against said sealing surface immediately below said bevelled surface on the container.

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