

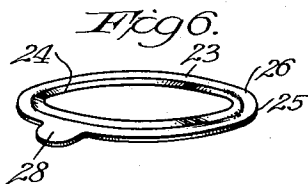
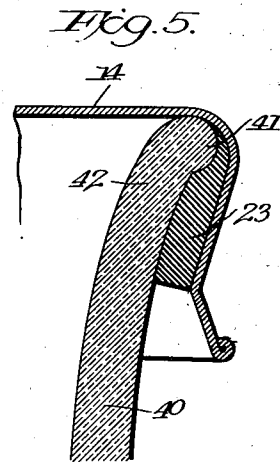
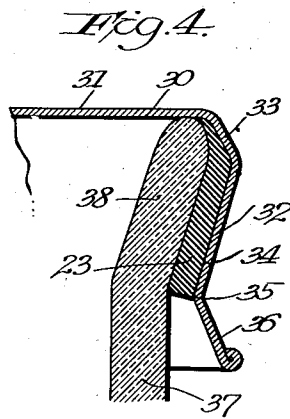
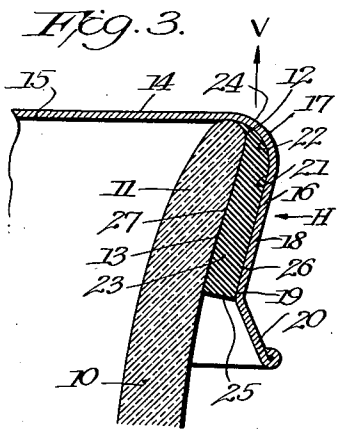
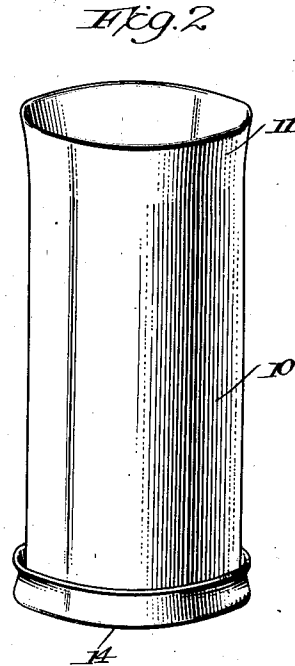
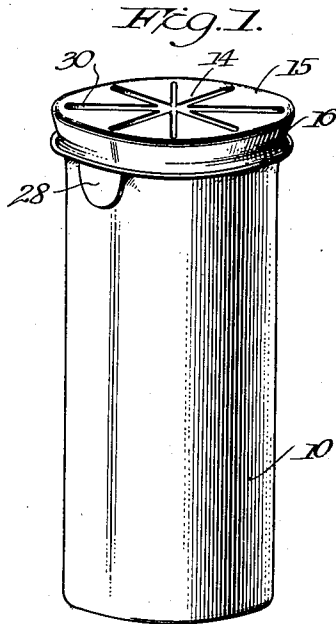
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CONTAINER AND CLOSURE MEANS THEREFOR

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UNITED STATES PATENT OFFICE

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CONTAINER AND CLOSURE MEANS THERE-
FOR

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7 Claims. (Cl. 215-40)

The present invention relates to a container and a closure means therefor and a method of sealing the same.

The principal object of the invention is to provide a container and a closure means and a method of sealing the same whereby the closure means may be readily placed in sealing position upon the container and will be securely retained in such position until it is manually removed.

Another important object of the invention is to provide a container and a closure means and a method of sealing the same whereby the closure means will be locked in sealing position without the necessity of a locking ring or any means of a similar nature, the container and closure means being also so arranged that the closure means will not be distorted upon its removal from the container, thereby enabling the closure means to be repeatedly applied and sealed upon the container.

The manner of sealing containers which is now ordinarily followed, particularly with wide mouthed containers, is to seal the closure to the container by means of a compressible or resilient packing ring, which packing ring is locked or retained in sealing position by means of a locking ring. In order to securely hold the locking ring in locked position, pressure is applied to the closure to crimp it or bend it into engagement with the locking ring. By another method quite generally followed, no locking ring is used and the closure is crimped or bent into locking engagement with the sealing ring.

Either of the arrangements described above makes it necessary to bend or deform the closure in order to permit its removal from the container. Because of this, the closure cannot again be sealed upon the container and, in many instances, after it is once removed, it will have such a poor seating upon the container mouth that it will not form a satisfactory non-sealed closure.

Another object of the invention is to provide a container and a closure means and a method of sealing the same whereby the closure means will remain firmly seated upon the container regardless of the pressure exerted thereon by the contents of the container.

The invention preferably comprises a container, closure and a sealing means or ring, the container having at least its mouth portion outwardly flared, and the closure having a depending flange or skirt with an inwardly and downwardly inclined surface arranged opposite the outwardly flared mouth of the container. The sealing means, preferably in the form of a ring, is positioned

between the outer surface of the container mouth and the inner surface of the closure skirt. The sealing ring is of such a shape, in cross section, and is so positioned with respect to the container and closure, that pressure within the container will result in an increased sealing action. The relationship and positioning of the various elements is also such that the pressure within the container cannot force the sealing ring out of proper position, thereby eliminating the necessity of deforming the closure to hold the sealing ring in proper position.

Another object of the invention is to provide a container and a closure therefor which are so arranged that the closure, when removed, may serve as a coaster for the container. This result is obtained by reason of the fact that the closure will not be distorted during removal from the container.

Other objects and advantages of the invention will be apparent from the following specification, wherein:

Figure 1 is an elevation of the container with the closure applied thereto;

Figure 2 is an elevation of the container with the closure removed and in use as a coaster for the container;

Figure 3 is a vertical sectional view showing the closure means applied to the container;

Figure 4 is a vertical sectional view showing a modified form of container and closure means therefor;

Figure 5 is a vertical sectional view showing another modification of the container and closure means; and

Figure 6 is a view showing the sealing means or ring adapted to be used in the invention.

The numeral 10 designates the container used in my invention, the container being preferably of glass, although it may be formed of any other suitable material. The container is preferably provided with an outwardly flaring mouth 11 including a lip 12 and an outer surface 13. It will be understood that the entire length of the container wall, or at least a portion greater than the mouth thereof, may be flared or upwardly and outwardly tapered. A closure 14 is provided for the container, the closure preferably being formed of metal and comprising a flat body portion 15 and a depending skirt or flange generally indicated by the numeral 16. The body portion and skirt are joined by a curved or arcuate portion 17 and the skirt 16 is inclined inwardly and downwardly as indicated at 18 to a point 19. From the point 19 downwardly, the skirt may be

outwardly flared as indicated at 20. It will be understood that the outer surfaces of the closure 14 need not follow the conformation of the inner surfaces thereof, but, in any event, the inner surface 21 of the closure between its body portion 15 and the point 19 should be inwardly and downwardly inclined and joined to the outer edge of the body portion by an inclined or curved surface 22. The lip 12 of the mouth 11 of the container is of a very slightly larger diameter than the inner diameter of the closure at the point 19. By this arrangement, the closure may be snapped over the mouth of the container. If desired, the diameter of the lip 12 may be slightly reduced so that the closure can be fitted over the lip without a snapping action.

A resilient sealing ring or washer 23 is provided between the inner surface 21 of the inwardly and downwardly inclined portion 13 of the skirt of the closure and the outer surface 13 of the mouth of the container. The surfaces 13 and 21 are substantially parallel throughout the greater portions of their lengths forming a substantially rectangular space between the surfaces, although, as is shown in Figure 3, the curved surface 22 of the closure which is opposite the lip 12 of the container when the closure is positioned upon the container, provides a reduced area at this point.

The washer or sealing ring 23 is shown in perspective in Figure 6 and, in its normal shape and condition, is preferably in the form of a flat ring having a tapered inner edge 24, an outer edge 25, upper and lower surfaces 26 and 27, respectively, and a radially extending tab 28.

In order to position the closure means upon the container, the sealing ring or washer 23 is bodily twisted or turned so that the normally horizontally extending upper and lower walls 26 and 27 thereof will extend longitudinally of the container. With the closure 14 positioned over the mouth 11 of the container, the sealing ring is moved upwardly upon the container and between the inwardly inclined surface 21 of the closure and the outer flared surface 13 of the mouth of the container. Suitable pressure may be applied to the lower edge 25 of the sealing ring to force the sealing ring into close engagement between the container and the closure and so that the tapered edge 24 of the sealing ring will be positioned as far upwardly as possible in the restricted area between the lip 12 and the curved surface 22 of the closure.

It will be observed that the use of a normally flat ring, twisted in the manner described above, provides a sealing ring having its edge 24 under greatly increased tension. Because of this tension, exerted upon the flared mouth of the container, and the compression of the sealing ring between the container and closure means, it will be impossible for the sealing ring and closure to be both moved upwardly from the container mouth.

With the closure 14 sealed to the container in this manner, any pressure within the container will act upwardly upon the body portion 15 of the closure, tending to move the closure upwardly on the line indicated by the arrow V. However, any such tendency toward upward movement of the closure will merely increase the inward and substantially horizontal pressure along the line indicated by the arrow H, by reason of the fact that upward movement of the inwardly inclined surface 21 of the closure with respect to the flared surface 13 of the container will result in a further compression of the sealing ring 23. By this

action, the seal between the container and the closure will become even more secure. The wide area of the body portion 15 of the closure which is exposed to the pressure within the container, as opposed to the relatively smaller area of the reduced edge 24 of the sealing ring about the lip 12 which may be exposed to the pressure within the container prevents the sealing ring from being moved downwardly upon the container. That is, any tendency of the pressure within the container to move the sealing ring 23 downwardly will be more than offset by the tendency of the pressure acting upon the body portion 15 of the closure to move the closure upwardly, thus causing the sealing ring to be more firmly gripped between the container and the closure.

In order to remove the closure from the container, it is only necessary to exert a downward pull upon the tab 28 provided upon the edge 25 of the sealing ring. A moderate pull upon this tab will cause the sealing ring to be entirely removed from between the closure and container and without in any way distorting or marring the container closure. Since the base of the container is of less diameter than the smallest inner diameter of the closure, the closure may be used as a coaster for the container, as shown in Figure 2. In order to render the closure more attractive in appearance and to make it suitable for use as a coaster, its body portion 15 may be provided with radially extending ribs or corrugations 30 as indicated in Figure 1.

It will be appreciated that the container and closure means provided by my invention are particularly valuable for use with any substance which may exert pressure upon the closure, for example, carbonated beverages, beer, or any effervescent substance. The invention is also applicable for use for substances packed in a vacuum since any tendency toward drawing the body portion 15 inwardly will likewise increase the pressure exerted by the skirt 16 in the direction indicated by the arrow H, thereby maintaining the seal entirely efficient.

Figure 4 shows a slightly modified form of the invention, the cap 30 illustrated in this figure being provided with a body portion 31 and a depending flange or skirt 32. The body portion 31 and the skirt 32 are joined by a flat inwardly and upwardly inclined portion 33 the portion of the skirt beneath the portion 33 being inwardly and downwardly inclined as indicated at 34, to the point 35. From the point 35 downwardly, the skirt may be flared as shown at 36.

Figure 4 also shows the mode of application of my closure means to a container 37 having a flared mouth 38 which is angled with respect to the body of the container instead of being in curved relation thereto. A sealing ring 23 of the type used in the Figure 3 device is used with the Figure 4 form of container and closure, and co-operates with the container and closure in the manner which has heretofore been described in connection with the Figure 3 form of the invention.

The form of the invention shown in Figure 2 is substantially similar to that shown in Figure 3 with the exception that the container 40 illustrated in Figure 5 is provided with a bead 41 on the upper and outer periphery of its mouth 42 which further reduces the area of the upper portion of the space between the wall of the container mouth and the inner surface of the closure skirt. A closure 14 and a sealing ring 23 of the type used in the Figure 3 form of the invention

cooperate with the container 40 in exactly the same manner as has heretofore been described. The arrangement of Figure 5 provides a still more firmly locked seal for the container.

5 It will be understood that the various forms of closures and containers illustrated in the several figures are entirely interchangeable.

As will be observed from the preceding specification, the use of the containers and closure means and the method of my invention eliminate the necessity of any extra holding means for the sealing ring or closure. Furthermore, the device of my invention permits the closure means to be reapplied to the container after it has once
10 been opened, it then being only necessary to reinsert the sealing ring between the container and the closure. This is obviously a marked improvement upon the structures ordinarily used and in which the closure is distorted and marred upon
15 initial removal to such an extent that it cannot again be efficiently sealed or held upon the container.

It will be understood that the invention is not limited to the details of the construction shown
20 in the drawing and that the examples of the use of the device and method which have been given do not include all of the uses of which the device is capable or by which the method may be followed; also, that the phraseology employed in
25 the specification is for the purpose of description and not of limitation.

I claim:—

1. In combination, a container having an upwardly and outwardly inclined outer surface about its mouth, a preformed closure including a rigid skirt, the skirt having an inwardly and downwardly inclined inner surface, said surfaces being in opposed relation and substantially parallel throughout the greater portion of their
35 lengths, and a sealing member having a reduced edge interposed between said surfaces with the reduced edge thereof positioned substantially opposite the upper edge of the mouth of the container.

2. In combination, a container having an upwardly and outwardly inclined outer surface about its mouth, a preformed closure including a substantially flat body portion and a rigid skirt having an inwardly and downwardly inclined inner surface joined to said body portion by a flared portion, said surfaces being in opposed relation and substantially parallel, said flared portion of the closure providing a reduced area between the container and closure, and a
45 sealing member having a reduced edge positioned between said surfaces with the reduced edge thereof positioned in the reduced area between the container and closure.

3. In combination, a container having an upwardly and outwardly inclined outer surface about its mouth, a closure including a skirt, the skirt having an inwardly and downwardly inclined inner surface, said surfaces being in opposed relation and substantially parallel throughout the greater portion of their lengths, and a normally flat annular sealing member having a reduced inner edge, said sealing member being positioned about the mouth of said container and between said surfaces, being bodily twisted
50 through an arc of substantially 90° from its normal form to cause its reduced edge to exert an increased pressure about the mouth of the container, the reduced edge of said sealing member being positioned substantially opposite the upper
55 edge of the mouth of the container.

4. In combination, a container having an upwardly and outwardly inclined outer surface about its mouth, a preformed closure including a rigid skirt, the skirt having an inwardly and downwardly inclined inner surface, said surfaces being opposed and substantially parallel to form a substantially rectangular space between them, the outermost and uppermost portion of the inclined surface of the container mouth and the innermost and lowermost portion of the inclined surface of the closure skirt being on a line substantially coinciding with the line of movement of the closure from the container, and a sealing member positioned in said space and between said points on the mouth and closure skirt.

5. In combination, a container having an upwardly and outwardly inclined outer surface about its mouth, a preformed closure including a rigid skirt, the skirt having an inwardly and downwardly inclined inner surface, said surfaces being opposed and substantially parallel to form a substantially rectangular space between them, the outermost and uppermost portion of the inclined surface of the container mouth and the innermost and lowermost portion of the inclined surface of the closure skirt being on a line substantially coinciding with the line of movement of the closure from the container, and a sealing member positioned in said space and between said points on the mouth and closure skirt, said sealing member being in the form of a normally flat ring having a reduced inner edge, and being bodily twisted through an arc of substantially 90° from its normal form to cause its reduced edge to exert an increased pressure about the mouth
35 of the container.

6. In combination, a container having an upwardly and outwardly inclined outer surface about its mouth, a closure including a rigid and preformed skirt, the skirt having an inwardly and downwardly inclined inner surface, said surfaces being opposed and substantially parallel to form a substantially rectangular space between them, a sealing member positioned in said space, the outermost and uppermost edge of the inclined surface of the container mouth and the innermost and lowermost edge of the inclined surface of the closure skirt being on a line substantially coinciding with the line of movement from the container, and a sealing member in said space with its major dimension positioned between said edges of the container mouth and closure skirt so that upward movement of said edge of the closure skirt will cause the sealing member to be expanded laterally.

7. In combination, a container having an upwardly and outwardly inclined outer surface about its mouth, a closure including a skirt, the skirt having an inwardly and downwardly inclined inner surface, said surfaces being in opposed relation and substantially parallel throughout the greater portion of their lengths, and a normally flat annular sealing member having a reduced inner edge, said sealing member being positioned about the mouth of said container and between said surfaces and being bodily twisted through an arc of substantially 90° from its normal form to cause its reduced edge to exert an increased pressure about the mouth of the container, the reduced edge of said sealing member being positioned substantially opposite the upper edge of the mouth of the container to provide a decreased pressure-subject surface.