June 30, 1964 H. R. HUTCHINSON 3,139,131

CONTAINER SEAL STRUCTURE

Filed June 4, 1962

FIG. 2.

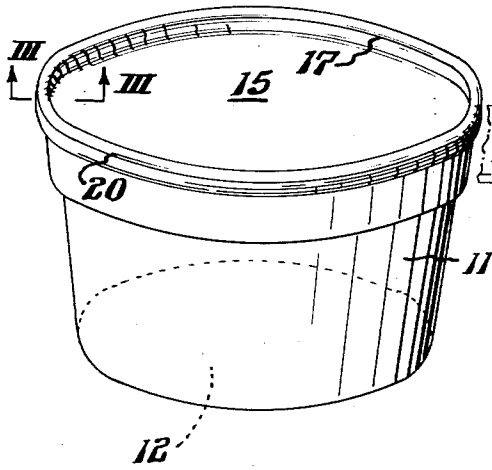


FIG. 4.

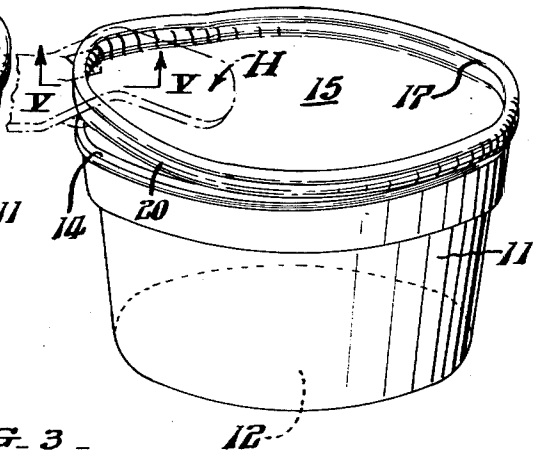


FIG. 3.

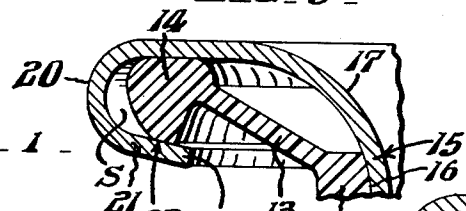


FIG. 1.

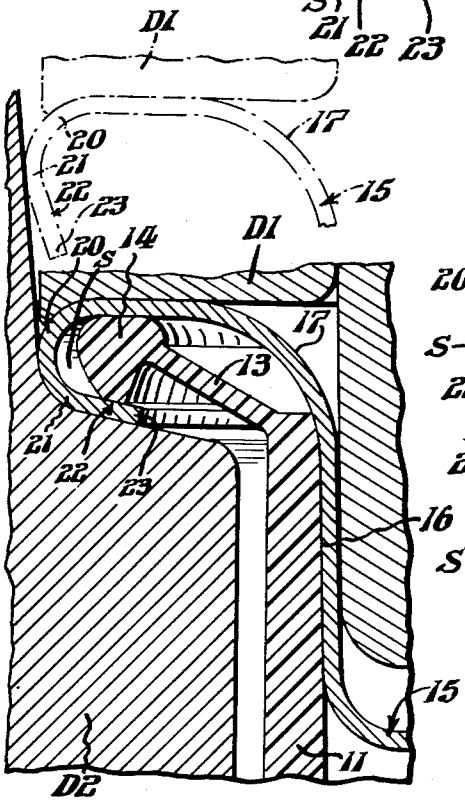


FIG. 5.

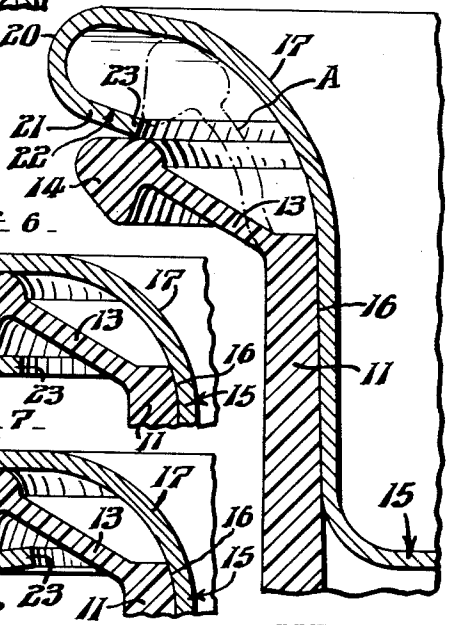


FIG. 6.

FIG. 7.

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CONTAINER SEAL STRUCTURE

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5 Claims. (Cl. 150—.5)

This invention relates to a container seal structure and more particularly concerns a sealing structure for a pliable plastic container having a metallic cover.

An object of this invention is to provide a superior sealing structure for a pliable or plastic container for solids or liquids such as food or the like, which effectively seals the contents from the surrounding atmosphere but yet is simple to open with a conventional hook opener. Sealed containers in accordance with this invention can be opened readily by hand, once the opening process has been started with the assistance of a hook opener. Moreover, such containers are readily adaptable to wide varieties of contents and can be modified readily to provide different degrees of ease of opening.

Other objects and advantages of this invention including the simplicity and economy of the same will further become apparent hereinafter and in the drawings whereof:

FIG. 1 is an enlarged sectional view showing one form of the invention, together with fragmentary representations of dies which may be utilized to form the closure.

FIG. 2 represents a view in perspective showing the complete container in accordance with this invention.

FIG. 3 represents a sectional view taken as indicated by the lines and arrows III—III which appear in FIG. 2.

FIG. 4 represents a view similar to FIG. 2, showing the container partially open, using a hook opener.

FIG. 5 represents a sectional view taken as indicated by the lines and arrows V—V which appear in FIG. 4, and

FIGS. 6 and 7 represent sectional views similar to FIG. 5 showing modified forms of the container seal.

Turning now to the specific form of the invention illustrated in the drawings, the number **11** designates the wall of the container which has a conventional bottom **12** (FIG. 1). Extending upwardly and angularly outwardly from the top of the wall **11** is a web **13**, preferably considerably thinner than the wall **11**. At the outer periphery of the web **13** is an enlarged bead **14** which is curved and which preferably has a thickness of at least twice the thickness of the web **13**. The web **13** and bead **14** extend entirely around the upper periphery of the container. The number **15** designates the cover, preferably of steel or aluminum. Cover **15** contacts the inner surface of wall **11** as indicated at **16**, and then curves upwardly and outwardly at the portion **17**, bridging over web **13** and contacting the top of bead **14**. The cover **15** then has a downwardly curved portion **20** which is spaced outwardly away from the outer periphery of bead **14**, forming intervening free space S therebetween, and then curves downwardly and inwardly at the portion **21**, being compressed against the bottom of bead **14** at the location **22**. The lid has a locking lip extension **23** which extends beyond the point of compression against the bead **14**, and extends freely in a substantially flat condition inwardly toward the wall **11**.

As will be seen from FIG. 1 the dies D1 and D2 are moved toward one another to compress the upper portion of the cover and the lower portion **22** against the bead **14**.

FIG. 4 shows the effect of placing a hook opener under the lip **23** of FIG. 3, deforming the metal cover and permitting the opening of the container. In view of the thinness and plasticity of the web **13**, hand pressure suffices to separate the cover from the container, after it has been deformed by the hook opener H.

FIG. 5 shows, in dot-dash lines, the deformation of

the web **13** pursuant to the operation of the hook opener H. As the hook opener H is lifted, locking lip **23** is raised, causing a curling inwardly and upwardly of the web **13** as indicated by the dot-dash lines A appearing in FIG. 5, at which point the bead **14** is no longer between the upper portion of the cover and the lower portion **22**.

As shown in FIGS. 1–5 inclusive, the web **13** is inclined upwardly and outwardly. It is important to observe that it may be horizontal in some cases but must be at least at an angle of 30° away from the vertical. The enlarged bead at the periphery of the web is of compressible material such of polyethylene plastic or the like and must be at least twice as thick as the web. Preferably, the entire container is plastic, notably polyethylene.

The length of the locking lip controls the difficulty of opening the container; the longer the lip the more difficult to open. The thickness of web **13** varies in accordance with its length and is preferably about ¼ to ⅛ of its length as measured from wall to bead. The thicker the web in relation to its length (the stiffer the web) the more difficult it is to open the container. The space S makes it possible to vary the length of the locking lip.

The cover is preferably metal, either tin plate steel or aluminum. It is deformable and preferably springy for purposes of reclosure. In any event it is important to observe that compression exists when the container is sealed, compressing bead **14**.

FIGS. 6 and 7 show modified forms of the invention, wherein the locking lip **23** is either horizontal (FIG. 6) or angled upwardly and inwardly (FIG. 7). Such constructions render it more difficult to open the container, which is a desirable feature in some cases.

While this invention has been described with reference to specific embodiments thereof, it will be apparent to those skilled in the art that various changes other than those referred to above may be made in the form of the device, that equivalent elements may be substituted for those illustrated in the drawings, that parts may be reversed, and that certain features of the invention may be used to advantage independently of the use of other features, all within the spirit and scope of the invention as defined in the appended claims.

Having thus described my invention, I claim:

1. In a container having a bottom and a pliable enclosing wall extending upwardly from said bottom forming an opening, a sealing structure comprising means forming a pliable web extending outwardly of said wall and extending around said opening, means forming an enlarged pliable compressible bead of plastic material extending around the outer edge of said web, said bead being thicker than said web, the entire bead being spaced outwardly of said container wall and means forming a deformable metal cover contacting said bead, said cover having a curved portion extending down around and under said bead and sealingly compressed against said bead, said curved portion having a lip which extends freely beyond said bead and extends substantially continuously around said container.

2. In a container having a bottom and a generally cylindrical plastic enclosing wall extending substantially vertically from said bottom forming a generally circular opening, a sealing structure comprising means forming a pliable web extending angularly upwardly and outwardly of said wall at an angle of at least about 30° to the vertical and disposed entirely around said opening, means forming an enlarged rounded compressible plastic bead extending around the outer edge of said web and spaced outwardly of said enclosing wall, said bead being at least twice as thick as said web, and means forming a deformable metal cover contacting the top of said bead, said cover extending outwardly down around and inwardly under said bead and sealingly compressed against said

bead and having a substantially flat locking lip which extends freely beyond said bead and extends substantially continuously around said container.

3. In a container having a bottom and a pliable enclosing wall extending upwardly from said bottom forming an opening, a sealing structure comprising means forming a pliable web extending outwardly of said wall and extending around said opening, means forming an enlarged pliable compressible bead of plastic material extending around the outer edge of said web and spaced outwardly of said enclosing wall, said bead being at least twice as thick as said web, and means forming a deformable metal cover contacting said bead, said cover having a curved portion extending down around said bead and spaced outwardly of the outer periphery of said bead providing intervening free space, said curved portion then extending downwardly inwardly contacting and sealingly compressed against and extending continuously around the periphery of said bead to form a seal which is spaced away from the top of said wall.

4. In a container having a bottom and a pliable enclosing wall extending upwardly from said bottom forming an opening, a sealing structure comprising means forming a pliable web extending outwardly of said wall and extending continuously around said opening, means forming an enlarged pliable compressible bead of plastic material extending continuously around the outer edge of said web and spaced outwardly of said enclosing wall, said bead being at least twice as thick as said web, and means forming a deformable metal cover contacting the inside surface of said wall, bridging over said web and contacting the top of said bead continuously around its periphery,

said cover extending down around and under said bead and sealingly compressed against said bead along a line extending continuously around its periphery and spaced away from the top of said wall, and said cover terminating in a lip portion which extends freely beyond said bead and continuously around said container.

5. In a container having a bottom and a pliable enclosing wall extending upwardly from said bottom forming an opening, a sealing structure comprising means forming a pliable web which is thinner than said wall extending upwardly angularly outwardly of said wall and extending continuously around said opening, the thickness of said web being from about ¼ to ⅛ of its length, means forming an enlarged pliable compressible bead of plastic material extending continuously around the outer edge of said web and spaced outwardly of said enclosing wall, said bead being at least twice as thick as said web, and means forming a deformable metal cover contacting said bead continuously, said cover extending down around and under said bead and sealingly compressed against said bead continuously around its entire periphery to form a seal which is spaced outwardly of the top of said wall, and said cover having a lip portion which extends angularly downwardly beyond said bead and continuously around said container.

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