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J. M. YOUNG

2,072,149

CONTAINER

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Fig. 1

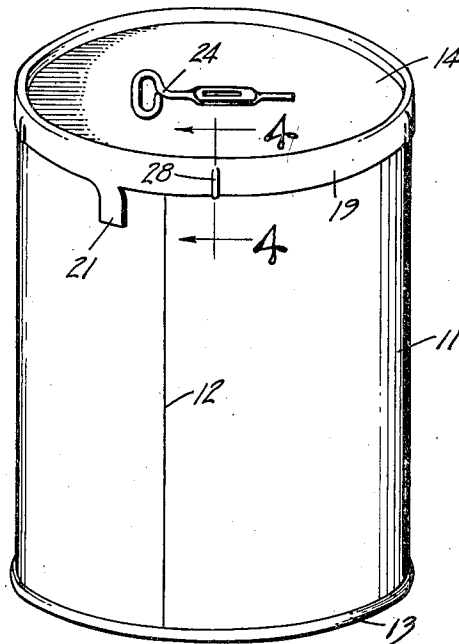


Fig. 2

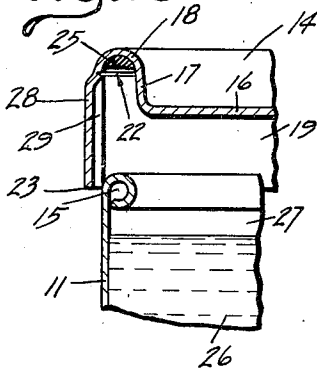


Fig. 3

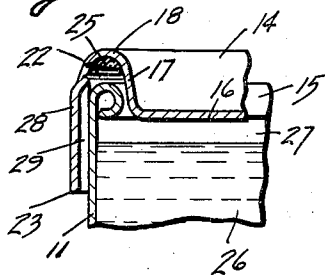


Fig. 4

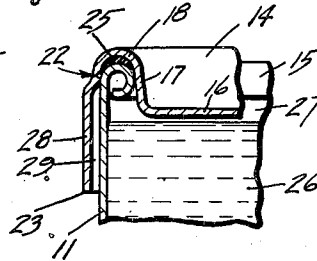
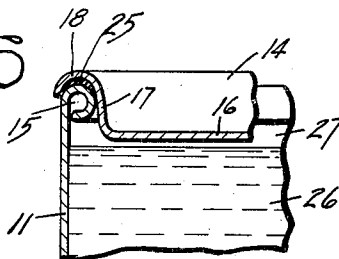


Fig. 5



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2,072,149

CONTAINER

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8 Claims. (Cl. 220—53)

This invention relates in general to sheet metal containers, and more particularly to an improved end closure for a sheet metal container.

A principal object of the invention is the provision of an end closure adapted to hermetically seal a container, adapted to be readily applied to a container by a tight fitting drive fit and adapted to permit the escape of air from the interior of the container when the air is displaced by the closure during its rapid application to the container.

Another important object of the invention is the provision of an end closure having a depending container engaging drive fit flange, generally like structure shown and described in my co-pending application, Serial No. 377,145, filed July 10, 1929, (since issued into Patent No. 1,920,288), and provided with vertically arranged, spaced and channeled ridges, constituting air vents, to permit the escape of displaced air within the container and also provided with a weakening or score line to permit removal of the flange by tearing, thereby releasing the tight fitting drive fit closure to open the container and to also provide a reclosure.

Still another object of the invention is the provision of an improved end closure which has a scored depending flange and which utilizes the inherent elasticity of the metal of the flange to produce a very tight drive fit (superior to a mere friction fit) connection between it and a portion of a container body which has a predetermined size, and which connection would permanently resist disengagement except by severance of the flange along a score line by means of a suitable key.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawing, discloses a preferred embodiment thereof.

Referring to the drawing:

Figure 1 is a perspective view of one kind of container to which the present invention is applicable;

Fig. 2 is a cross sectional view showing in fragmentary fashion the can body and closure at the beginning of the assembly operation;

Fig. 3 is a similar view showing a later stage of the assembly;

Fig. 4 is a similar view showing the completion of the assembly; and

Fig. 5 is a fragmentary cross sectional view

showing the container and closure after removal of the scored flange.

Certain products, which it is desired to pack in these drive fit containers, require that as much air as possible be excluded from the container without going to the trouble and expense of positive vacuumization. It has been found that in applying the drive fit closure more or less rapidly by means of automatic pressure mechanism, air which fills the head space commonly left in the container above the product and air carried down by the cup shaped end closure is trapped and compressed within the container, with the result that oxidation within the sealed container is considerably aided. It was to substantially prevent this pressure and oxidation by providing means for the escape of substantially all the air that the construction illustrated herein was conceived and devised.

To illustrate a preferred embodiment of the invention there is shown in the drawing a sheet metal container comprising a cylindrical body 11, having a side seam 12, a bottom closure joined to the body in a double seam 13, and a top closure 14. The upper extremity of the body 11 is bent inwardly, downwardly and outwardly to provide a rounded, annular top edge or curl 15.

The top closure 14 comprises a sunken panel 16, a vertical wall 17, a rounded shoulder or recess 18 which merges into a depending imperforate flange or skirt 19, having an integral tongue extension 21.

At the outer base of the shoulder or recess 18 the skirt or depending flange 19 is scored interiorly and annularly to provide a line of severance 22 producing a tearing strip defined by the score line 22 and the bottom edge 23 of the annular skirt 19. This strip is adapted to be torn away from the remainder of the cover or closure by means of a slotted key 24 removably secured to the panel 16 in any suitable manner, as by spot welding. The usual slot of the key is adapted to engage the tongue 21, and the key constitutes means for removal of the tearing strip and release of the cover by the well known rolling of the strip upon the key.

To obtain the best sealing results from the improved closure it is desirable to have the annular sealing area of the body 11, adjacent its top, of substantially accurate predetermined diameter. This is accomplished by a die sizing of the container and accurately dimensioning the cover flange 19, as fully and clearly described and illustrated in the co-pending application above referred to.

The forcing or driving home of the cover over the body to produce a permanent metal to metal seal between body and cover is also fully explained in the co-pending application referred to, the principle being that the inner diameter of the imperforate depending flange 19 is smaller than the outer diameter of the sealing area of the body 11, so that the metal of the flange 19 is stretched within its elastic limits over the body sealing area.

This seal is more than and is superior to a mere rubbing or frictional engagement between the ordinary slip or friction cover and a container body. This is evidenced by the fact that after the cover 14 is thus driven home over the body 11, the two cannot be separated except by fracturing or tearing the expanded cover flange 19. This is preferably done by rolling up the tearing strip, defined by the score line 22 and the flange edge 23, upon the key 24 in the usual and well known manner.

The closure 14 may be made hermetic by placing a gasket or lining compound 25 in the closure recess 18, as clearly illustrated in Figs. 2-5. When the closure 14 is forced into sealing engagement with the can body, this lining compound or gasket 25 is compressed between the top surface of the curl 15 of the body and the inner surface of the closure recess or channel 18, and the closure is thus made both liquid and air tight.

After the container body 11 has been filled with a product 26 to a level extending to within a short distance below the curl 15, so as to leave the usual head space 27, the closure 14 is brought in alignment with and is applied to the container body, as described (see Figs. 2-4). This cover applying operation is accomplished by pressing the cover down over the open end of the can body in a metal to metal drive fit which is permanent until the tearing strip is removed to release it, as shown in Fig. 5.

As the cover 14 telescopes with the top of the container, the head space initially provided is reduced until the cover is fully seated. In order that the air above the contained product may not be placed under compression as the cover is driven home, means are provided for venting this space until or substantially until the end of the telescoping movement. These means comprise one or more hollow ridges or ribs 28 vertically arranged in spaced relationship about the periphery of the flange 19.

Each hollow ridge or rib extends perpendicularly from just beneath the score line 22 to the edge 23 of the flange 19, is pressed out from the metal of the flange preferably by the same die which produces the cover, and forms an air vent or air escape channel 29 permitting air to escape from the time the cover is initially engaging the top of the body 11, as shown in Fig. 2, through the partially applied stage as shown in Fig. 3, until just before the cover is fully driven home into hermetic sealing engagement with the container body as shown in Fig. 4.

When the metal to metal drive fit seal between the stretched cover flange and the container body is released by winding the tearing strip upon the key 24, there is left, as shown in Fig. 5, a short flanged reclosure which serves the purpose of a cover until the container has been emptied of its entire contents.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form,

construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. The combination in a container, a container body having a sealing area of predetermined diameter, a cover for said container having a depending flange of predetermined smaller diameter than said sealing area, and having a portion providing a tearing strip, said flange being adapted to be tensioned within the limits of its elasticity about said sealing area to form a permanent seal with the container, said flange also being bent to form passages for the escape of air during its application to the container.

2. The combination in a container, of a container body having a sealing area of predetermined diameter and a cover having a drive fit flange of smaller diameter than said sealing area and adapted to be stretched within its elastic limits over said container sealing area when applied to said container, said flange having means extending along the vertical dimension of the drive fit to permit escape of air during the application of said cover.

3. The combination in a container, of a container body having a sealing area of predetermined diameter and a cover having a drive fit flange of smaller diameter than said sealing area and adapted to be stretched within its elastic limits over said container sealing area when applied to said container, said flange having upwardly and downwardly extending air passages arranged about its periphery to permit escape of air during the application of said cover.

4. The combination in a container, of a container body having a sealing area of predetermined diameter and a cover having a depending wall of smaller diameter than said sealing area and adapted to be hermetically sealed with an end of said container when applied to the latter, and an outwardly extruded air passage constituting an integral part of said wall to permit escape of air during the forming of the drive fit and until sealing of the cover to the container.

5. The combination in a container, of a container body having a sealing area of predetermined diameter and a cover having a depending flange of smaller diameter than said sealing area and adapted to be hermetically sealed to an end of said container, when applied to the latter, a score line in said flange defining a tearing strip adapted to be removed to open the container, and an air passage in said cover extending to the bottom of said flange to permit escape of air during the sealing of the cover to the container.

6. The combination in a container, of a body member having a sealing area of predetermined diameter and a cover member having a depending wall of smaller diameter than said sealing area and adapted to be brought into sealing engagement with said body member, one of said members being formed with an elongated air passage of an extent substantially equal to the vertical dimension of the area of said body member which is engaged by said cover wall, whereby to permit escape of air from the container until the sealing operation between the cover and body member is completed.

7. The combination in a container, of a container body having a sealing area of predetermined diameter and a cover having a drive fit wall of smaller diameter than said sealing area and

adapted to be brought into sealing engagement with the container wall when applied thereto, and an air passage between said walls to permit escape of air during the sealing of the cover to the container.

5 8. The combination in a container, of a container body having a sealing area of predetermined diameter and a cover having a depending flange of smaller diameter than said sealing area

and adapted to be hermetically sealed with an end of said container in a drive fit, a sealing gasket within said cover and an outwardly extruded air passage constituting an integral part of said flange and disposed beneath said gasket 5 to permit escape of air until said gasket comes into hermetic sealing engagement with said container.

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