

[54] CONTAINER CLOSURE

[76] Inventor: **Franklin Eugene Wharton**, 1308
Sartori Ave., Torrance, Calif. 90501

[22] Filed: **May 21, 1973**

[21] Appl. No.: 362,442

[52] U.S. Cl....220/287, 220/60 R, 220/200, 220/306

[51] Int. Cl..... B65d 45/00

[58] **Field of Search** 220/24 R, 42 B, 60

[56] **References Cited**

UNITED STATES PATENTS

2,246,533	6/1941	Peters	220/24 R
2,333,645	11/1943	Eckman	220/24 R
3,126,119	3/1964	Callegari	220/24 R
3,680,732	8/1972	Dickie	220/24 R X

Primary Examiner—William I. Price

Assistant Examiner—Steven M. Pollard

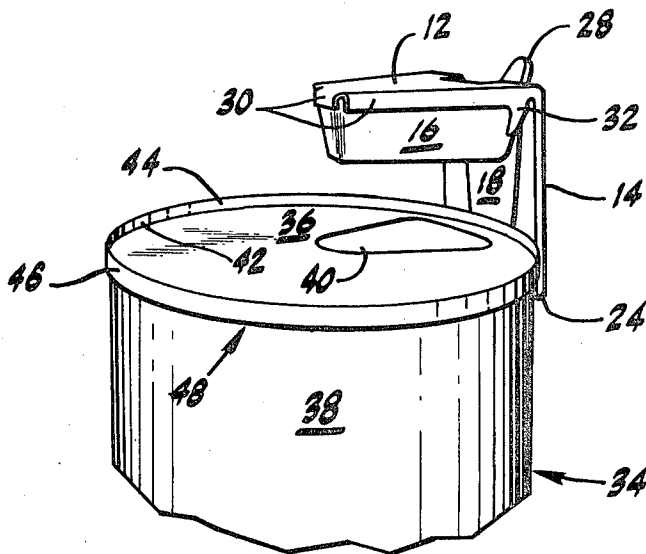
Attorney, Agent, or Firm—William F. McDonald

[57] **ABSTRACT**

A device for sealing an opening in the end wall of a container having at least one end wall and a side wall

wherein a first upwardly, from the end wall, and outwardly and downwardly extending rim is peripherally formed at the juncture of the end wall and side wall of the container. The device has a first plate having a pad of resilient material attached to one surface of the plate and adapted to sealingly cover the opening in the end wall of the container. A second plate is attached to the first plate so as to be at substantially right angles thereto in sealing position with the pad on the first plate being on the inside of the angle. The second plate is adapted to extend downwardly on the outside of the side wall of the container in close proximity thereto when the device is in sealing position. A tongue extends from adjacent the free end of the second plate toward the attachment of the plates to one another. The tip of the tongue is spaced from the attachment of the plates to one another sufficiently and biased so as to slide under and bear against the lower surface of the rim of the container when the device is in sealing position. In this manner the pad of resilient material is caused to sealingly close the opening in the end wall of the container. Means are provided for moving the tip of the tongue from beneath the rim of the container to release the device therefrom.

8 Claims, 12 Drawing Figures



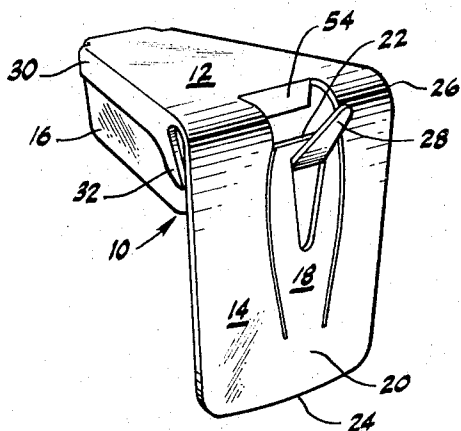


Fig. 1

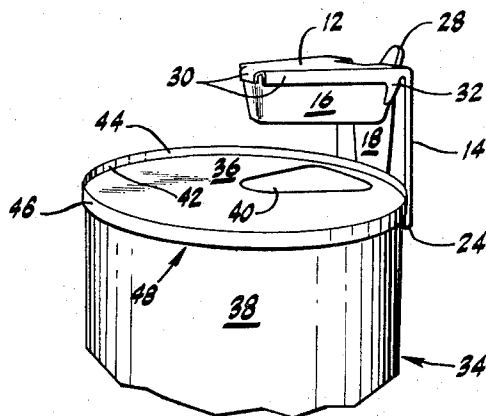


Fig. 2

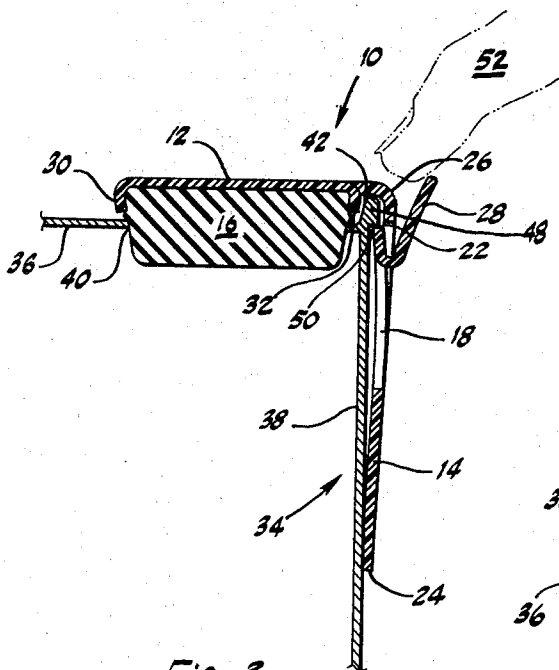


Fig. 3

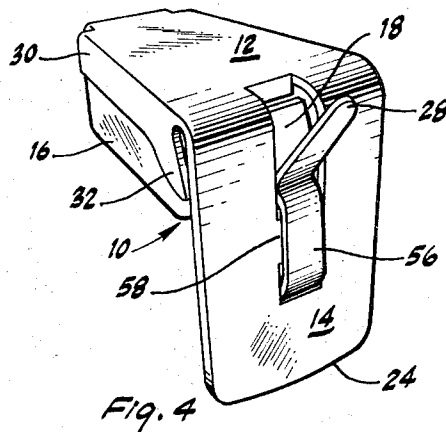


Fig. 4

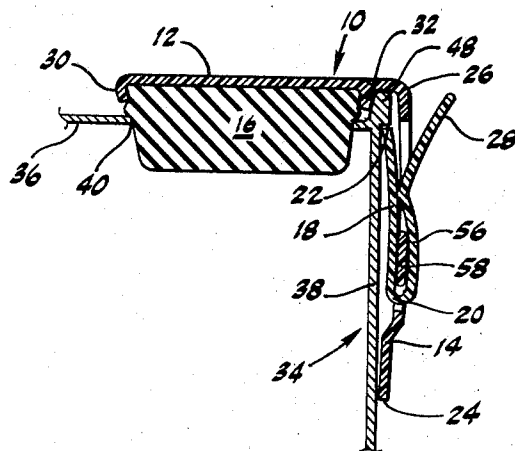


Fig. 5

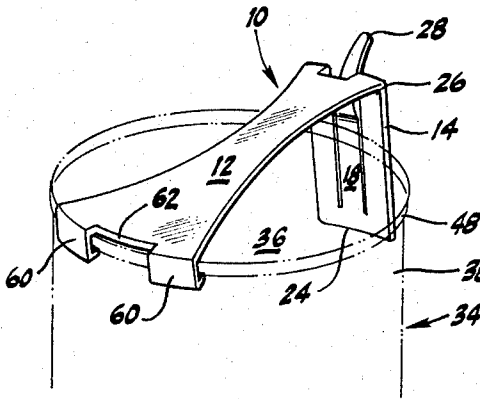


Fig. 6

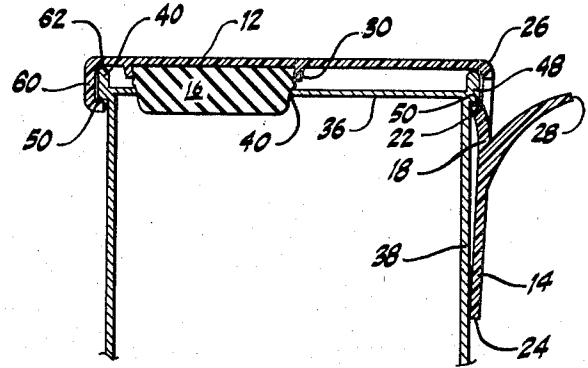


Fig. 7

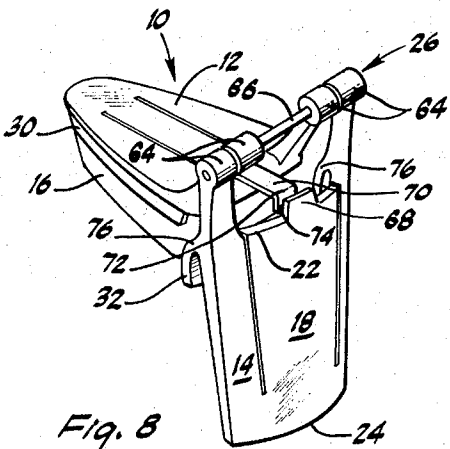


Fig. 8

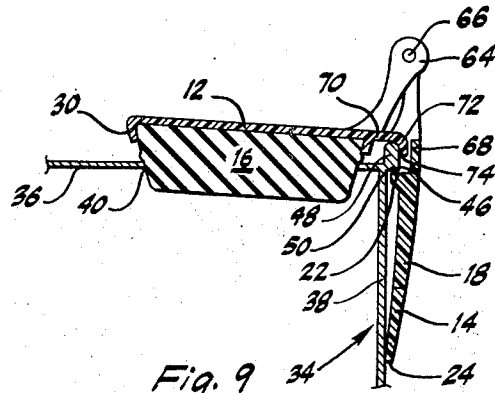


Fig. 9

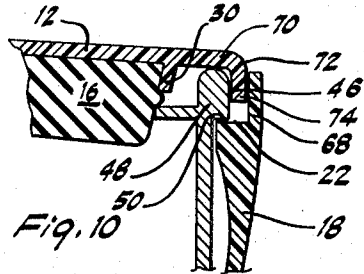


Fig. 10

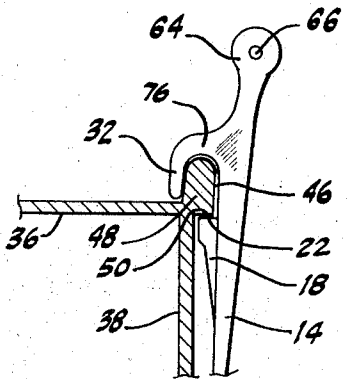


Fig. 12

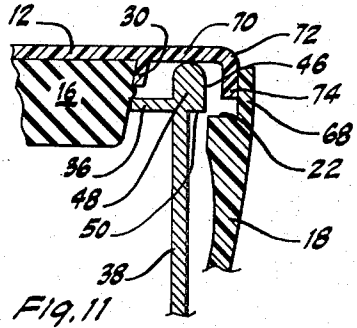


Fig. 11

CONTAINER CLOSURE

BACKGROUND OF THE INVENTION

The present invention relates to closures for containers. It is particularly applicable to sealing an opening in the end wall of a container having at least one end wall and a wide wall, wherein a first upwardly, from the end wall, and then outwardly and downwardly extending rim is peripherally formed at the juncture of the end wall and side wall of the container. An example of such a rim is a typical rolled rim on a metal can such as a tin can or an aluminum can.

Containers such as metal cans are widely used today for the containment of solids and liquids such as beverages. The containers are designed to protect their contents from contamination by the atmosphere. Further, with particular reference to liquids, the liquids are frequently carbonated or in some other manner contain gases under pressure. If the container is left open to the atmosphere for any length of time, the gases in the liquid will escape and the liquid will become what is known as "flat". All of these problems are well known. Accordingly, there have been many attempts to provide various devices for sealing the openings made in such containers. The degree of success of the closure has varied depending upon the type of closure and the type of opening which it is adapted to close.

In the nineteen thirties devices were developed for puncturing an opening of a roughly triangular shape in the end wall of a container. This was followed in the late nineteen fifties and early nineteen sixties by the development of the so-called tab top end wall of a can wherein a tab could be pulled to tear away part of the end wall making an opening. These openings vary in size and shape depending upon the type of puncturing device used and the type of tear tab that a particular can manufacturer uses. Thus, there has been the problem that a closure which would work well on one type of opening would not work well on a similar but not identical type of opening in a can of another manufacturer or by a different device, comparing the puncture type openings with the tear tab type openings. Accordingly, in recent years a real need has developed for a closure device which could seal the opening in the end wall of a container regardless of how the opening had been formed, e.g., by puncturing or through the medium of a tear tab and regardless of the particular shape or configuration of the opening.

SUMMARY OF THE INVENTION

It is an advantage of the instant invention that it provides a closure for sealing an opening in the end wall of a container which will effectively perform this function regardless of the manner in which the opening was formed. The only essential requirement would appear to be that the container have a rim peripherally formed at the juncture of the end wall and side wall. It is a further advantage of the present invention that the device, although very pressure tight, is easily applied to the container and easily removed therefrom.

The present invention provides a device or closure for sealing an opening in the end wall of a container having at least one end wall and a side wall. A first upwardly, from the end wall, and then outwardly and then downwardly extending rim is peripherally formed at the juncture of the end wall and side wall of the container. The device includes a first plate having a pad of resili-

ent material attached to one surface thereof. The pad of resilient material is adapted to sealingly cover the opening in the end wall of the container. A second plate is attached to the first plate so as to be at substantially right angles thereto in sealing position with the pad on the first plate being on the inside of the angle. The second plate is adapted to extend downwardly on the outside of the side wall of the container in close proximity thereto when the device is in sealing position. A tongue extends from adjacent the free end of the second plate toward the attachment of the plates to one another, the tip of the tongue being spaced therefrom sufficiently and biased so as to slide under and bear against the lower surface of the rim of the container in sealing position. In this manner the pad of resilient material is caused to sealingly close the opening in the end wall of the container. Means are provided for moving the tip of the tongue from beneath the rim of the container to release the device therefrom when it is desired to again open the container.

Others objects and advantages of the present invention will be apparent from the following detailed description in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Accompanying drawings are illustrative of advantageous embodiments of this invention.

In the drawings:

FIG. 1 is a perspective view of a closure according to the present invention;

FIG. 2 is a perspective view of the embodiment of FIG. 1 showing it in position to be applied to a container to seal an opening therein;

FIG. 3 is a side elevational view, partly in section, and with parts removed for purposes of clarity, showing the embodiment of FIG. 1 in sealing position on a container;

FIG. 4 is a perspective view of another embodiment of the present invention;

FIG. 5 is a side elevational view, partly in section, and with parts removed for purposes of clarity, showing the embodiment of FIG. 4 applied to a container;

FIG. 6 is a perspective view of another embodiment of the instant invention as it is about to be applied to a container;

FIG. 7 is a side elevational view, partly in section, and with parts removed for purposes of clarity, showing the embodiment of FIG. 6 applied to the container;

FIG. 8 is a perspective view of another embodiment of the invention;

FIG. 9 is a side elevational view, partly in section, and with parts removed for purposes of clarity, showing the embodiment of FIG. 8 in sealing position on a container;

FIG. 10 is a fragmentary side elevational view, partly in section, and with parts removed for purposes of clarity, of the embodiment of FIG. 8 in sealing position on a container;

FIG. 11 is a fragmentary side elevational view, partly in section, and with parts removed for purposes of clarity, showing the embodiment of FIG. 8 as it is released from sealing position on the container;

FIG. 12 is a fragmentary side elevational view, with parts removed for purposes of clarity, illustrating some of the construction features of the second plate of the embodiment shown in FIG. 8.

DETAILED DESCRIPTION

Throughout the drawings corresponding reference numerals have been used for corresponding parts.

Referring now particularly to FIG. 1, a closure device in accordance with the instant invention as indicated generally at 10. The device 10 includes a first plate 12 and a second plate 14. A pad 16 of resilient material such as rubber or a flexible plastic is attached by suitable means such as adhesive to one surface of the first plate 12. As will become more apparent hereinafter, pad 16 is adapted to sealingly close an opening in the end wall of a container. The second plate 14 is attached to first plate 12 so as to be at substantially right angles thereto in sealing position. As is apparent from the drawings, in this position pad 16 on first plate 12 will be on the inside of the angle. A tongue 18 having a base 20 and a tip 22 extends from adjacent free end 24 of second plate 14 toward the attachment 26 of the plates to one another. This attachment may be by any suitable means including, as shown here a simple shoulder when the plates are of one-piece construction. The tip 22 of tongue 18 is spaced from the point of attachment 26. Release means, such as handle 28 are attached to tongue 18.

Frame 30 is provided on first plate 12 to assist in holding pad 16 in proper position thereon. A ridge 32 is also attached to first plate 12 and extends downwardly therefrom.

Referring to FIG. 2 the closure 10 is seen as it is about to be applied to a container. In FIG. 2, we see a container indicated generally at 34 having an end wall 36 and a side wall 38. An opening 40 is formed in end wall 36. It will be appreciated that opening 40 may be of any shape and formed by any means such as a puncturing device or a tear tab provided on end wall 36. As can be seen in this figure, a first upwardly (upward section 42), from end wall 36, and then outwardly (outward section 44) and downwardly (downward section 46) extending rim 48 is peripherally formed at the juncture of end wall 36 and side wall 38 of container 34.

In FIG. 3 closure 10 has been pushed down into sealing position on container 34. It is immediately apparent that in this position pad 16 sealingly closes opening 40. Second plate 14 extends downwardly on the outside of side wall 38 of container 34 in close proximity thereto. Tongue 18 is spaced sufficiently from attachment 26 and is biased so as to slide under and bear against lower surface 50 of the rim 48 of container 34. This holds the pad 16 of resilient material in sealing position under slight compression. In this way the opening 40 is effectively closed and the contents thereof are sealed. The seal is sufficiently tight that it is difficult for any gas in the contents of container 34 to escape. However, when it is desired to remove closure 10 from container 34, this may be easily accomplished as by the finger 52 shown in phantom pushing down on handle 28 to move the tip 22 of tongue 18 from beneath rim 48 of container 34. When this is done, closure 10 can be simply lifted off container 34.

It is apparent in FIG. 3 that ridge 32 extends downwardly along the end wall side or upward section 42 of rim 48 in close proximity thereto and in proximity to tongue 18. Because of its position, ridge 32 will cooperate with tongue 18 in securely positioning and holding pad 16 in sealing position. In the embodiment shown, it will be appreciated that ridge 32 is in more than one

section, one on each side of the tongue. Some stabilization may also be provided by the portion of frame 30 above tongue 18 and designated 54 which could also be considered part of the ridge because of its position.

Another embodiment of the present invention is illustrated in FIGS. 4 and 5. In this embodiment a portion of second plate 14 is cut away and a slightly raised strut 58 is formed therein. Tongue 18 is not fixedly attached at its base 20 to second plate 14 but rather is pivotally connected to second plate 14 by means of yoke 56 which extends around strut 58. The relationship of the parts is such that tongue 18 extends for at least part of its length along the surface of plate 14 on the inside of the angle, specifically, the inside surface of strut 58, whereby the proximity of the second plate 14 to the side wall 38 of container 34 in sealing position (FIG. 5) biases tongue 18 into position beneath the rim 48 of container 34.

FIGS. 6 and 7 illustrates another embodiment of the present invention. In this embodiment first plate 12 is adapted to extend all the way across the end wall 36 of container 34. Hooks 60 are provided at the free end 62 of first plate 12 so as to hook under lower surface 50 of rim 48 on the outside thereof when closure 10 is in sealing position as illustrated in FIG. 7. This arrangement is an alternative way of holding and securely positioning pad 16 in sealing position. The device or closure 10 is releasable from container 34 in the same manner as in the other embodiments.

FIGS. 8 through 12 inclusive are illustrative of another embodiment of the present invention. In this embodiment, the attachment of the two plates together is a pivotal connection through a hinge assembly comprising sleeves 64 extending upwardly from both plates 12 and 14 and in axial alignment with one another. A pin 66 is passed through the open central portion of each sleeve to complete the hinge assembly. A tab 68 is provided on tongue 18 and extends upwardly from the outside surface thereof along the outside or downward section 46 of rim 50. The means for moving the free end and the tip 22 of tongue 18 comprise a beam 70 extending from first plate 12 toward the tab 68 and adapted to bear at its free end 72, for example by means of shoe 74, against tab 68.

The arrangement of the parts is such that when the closure 10 is pressed into sealing position, beam 70, through shoe 74, will press at its free end 72 against tab 68 so as to hold the first plate 12 immobile with pad 16 in sealing position (FIG. 10). When it is desired to remove closure 10 from container 34, one simply presses downwardly on plate 12 which will cause the free end 72 of beam 70 through shoe 74 to press further against tab 68 moving it, and with it tip 22 of tongue 18, outwardly from the side wall 38 of container 34 and from beneath lower surface 50 of rim 48 to release closure 10 (FIG. 11).

As shown in FIGS. 8 and 12, in this embodiment ridge 32 is in two parts, each attached by a shoulder 76 to second plate 14. However, it functions in the same manner as in the other embodiments.

The devices of the present invention have been tested and found to be very pressure tight on a variety of differently shaped openings and at the same time easy to apply and remove.

There have been shown and described herein above possible embodiments of this invention and it is to be understood that the invention is not limited thereto and

that various changes, alterations, and modifications can be made thereto without departing from the spirit and scope thereof as defined in the claims wherein what is claimed is:

1. A device for sealing an opening in the end wall of a container having at least one end wall and a sidewall wherein a first upwardly, from the end wall, and then outwardly and downwardly extending rim is peripherally formed at the juncture of the end wall and side wall of the container, which device comprises:
 - a. a first plate;
 - b. a pad of resilient material attached to one surface of the plate and adapted to sealingly close the opening in the end wall of container;
 - c. a second plate attached to the first plate so as to be at substantially right angles thereto in sealing position with the pad on the first plate being on the inside of the angle, the second plate being adapted to extend downwardly along the outside of the sidewall of the container in close proximity thereto when the device is in sealing position;
 - d. a tongue extending from adjacent the free end of the second plate toward the attachment of the plates to one another, the tip of the tongue being spaced therefrom sufficiently and biased so as to slide along an extension of a diameter of the container under and bear against the lower surface of the rim of the container in sealing position, whereby the pad of resilient material is caused to sealingly close the opening in the end wall of the container; and
 - e. means for moving the tip of the tongue from beneath the rim of the container to release the device therefrom; and
 - f. a ridge adapted to extend downwardly along the end wall side of the rim of the container in close proximity thereto so as to co-act with the tongue in securely positioning the pad in sealing position, the

ridge being in at least two sections, at least one on each side of the tongue.

2. The device of claim 1 wherein the ridge is attached to the first plate.

3. The device of claim 1 wherein the ridge is attached by a shoulder to the second plate.

4. The device of claim 1 wherein the two plates are pivotally connected together, and including a tab on the tongue which extends upwardly from the outside surface thereof along the outside of the rim and wherein the means for moving the tip of the tongue comprises a beam extending from the first plate toward the tab and adapted to bear at its free end against the tab so as to hold the first plate immobile when the device is in sealing position and adapted to push against the tab when the first plate is depressed from sealing position, whereby the free end of the tongue is moved from beneath the rim of the container to release the device therefrom.

5. The device of claim 1 wherein the first plate is adapted to extend all the way across the end wall of the container and includes a hook at the free end thereof so as to hook under the lower surface of the rim on the outside thereof when the device is in sealing position.

6. The device of claim 1 including a frame attached to the first plate to assist in holding the pad in proper position thereon.

7. The device of claim 1 wherein the means for moving the free end of the tongue comprises a handle on the tongue.

8. The device of claim 1 wherein the tongue is pivotally connected to the second plate and extends for at least part of its length along the surface of the plate on the inside of the angle whereby the proximity of the second plate to the sidewall of the container in sealing position will bias the tongue into position beneath the rim of the container.

* * * * *

40

45

50

55

60

65