

[54] EASY OPENING CONTAINER WALL

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[52] U.S. Cl. 220/54

[51] Int. Cl. B65d 17/20

[58] Field of Search 220/54, 27, 48, 53

[56] References Cited

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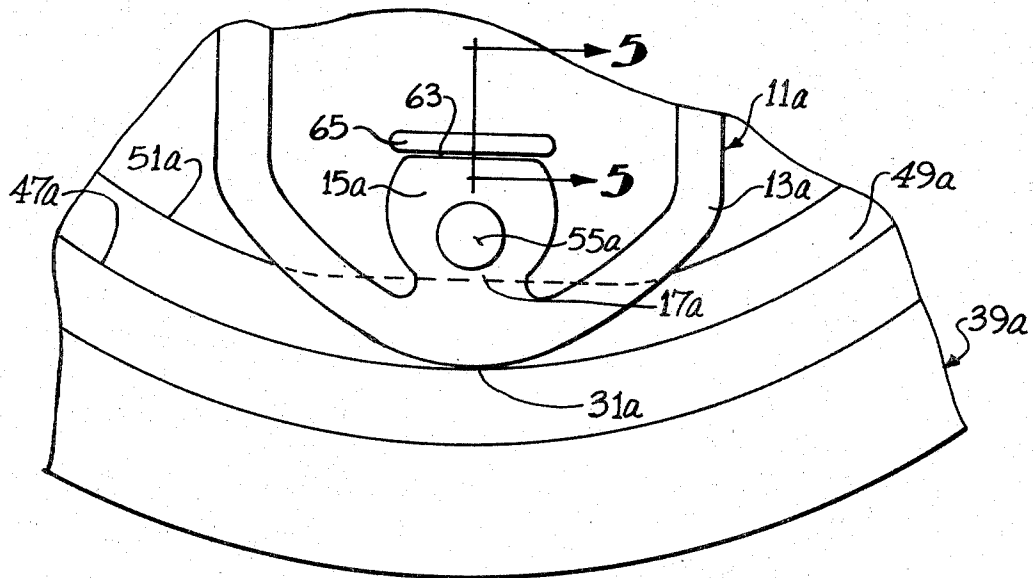
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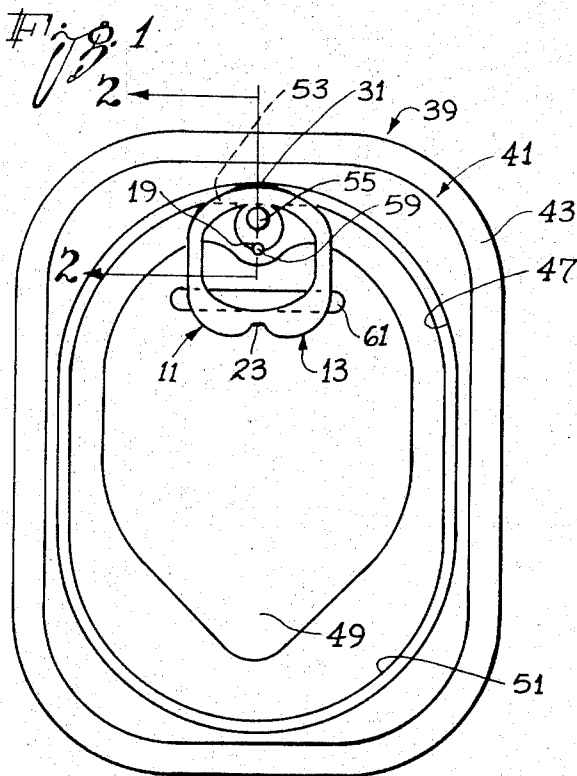
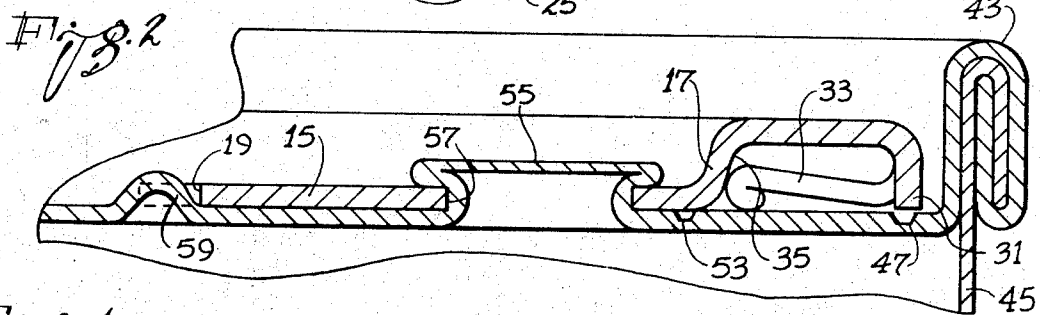
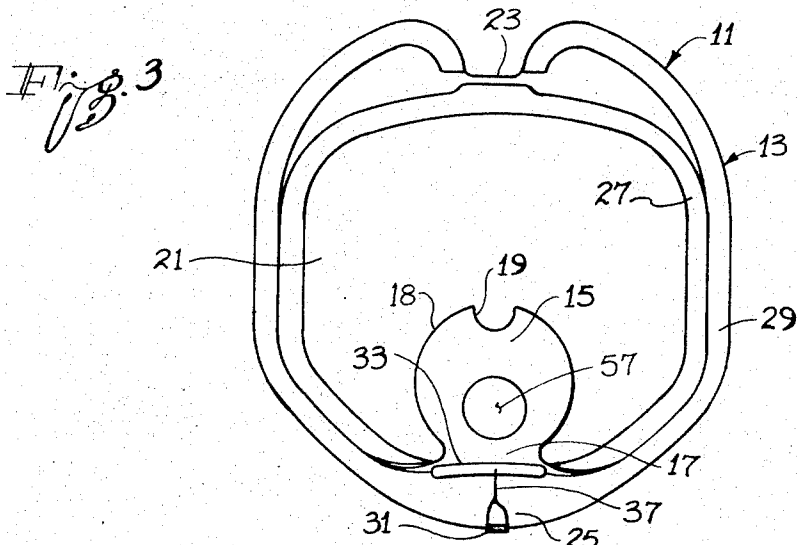
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[57] ABSTRACT

An easy opening container wall comprising a container wall of sheet material, a line of weakness in the container wall defining a tear portion, and a tab including an attachment portion and a tab body joined to the attachment portion. The attachment portion is attached to the tear portion so that the tab can be manipulated to initiate rupture of the sheet material along the line of weakness. A zone of the container is formed in close proximity to a segment of the peripheral edge of the attachment portion and cooperates therewith to retain the tab against pivotal movement about its point of attachment to the tear portion.

2 Claims, 5 Drawing Figures





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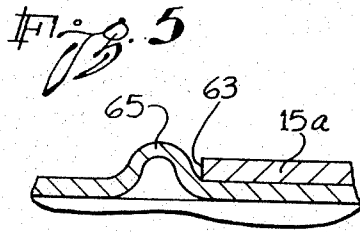
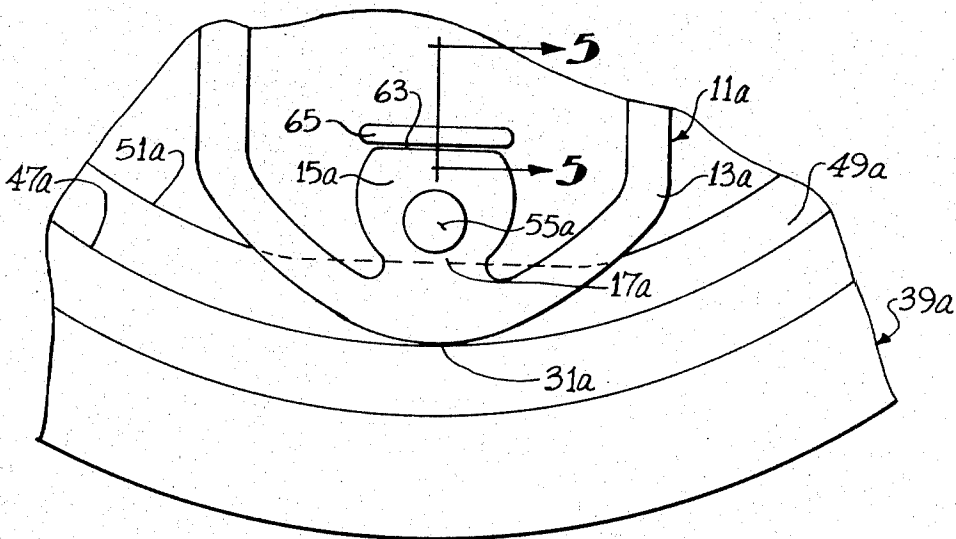


Fig. 4



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EASY OPENING CONTAINER WALL

REFERENCE TO COPENDING APPLICATION

This is a continuation-in-part of application Ser. No. 64,291, filed on Aug. 17, 1970, entitled Easy Opening Container Wall.

BACKGROUND OF THE INVENTION

An easy opening container wall typically includes a container wall of sheet material, a line of weakness in the container wall defining a tear portion at least partially removable from the container wall and a tab for initiating severance of the sheet material along the line of weakness. In many easy opening container wall constructions it is important that the tab, when manipulated, bear against a selected location to assure that the sheet material along the line of weakness will be ruptured easily. For example, in "front opening" container walls, the tab is operative to bear against a region of the container wall closely adjacent the line of weakness to depress a region of the tear portion into the container. To facilitate rupture of the sheet material, it is important that the rupturing end of the tab bear against a preselected location on the container wall such as on the line of weakness.

One problem is that the tab can pivot generally in the plane of the tab to move the rupturing end away from the preselected location. Typically, the tab is attached to the tear portion by a rivet which clamps the tab against the container wall. Although the rivet ordinarily restrains the tab against pivotal movement, it does not positively lock the tab against pivotal movement. Accordingly, the tab may, inadvertently or otherwise, be pivoted about the rivet. When this occurs manipulation of the tab may break the tab before rupture of the sheet metal occurs, or at the very best, the initiation of the severance of the sheet material along the line of weakness is made much more difficult.

The present invention provides a simple and inexpensive way in which to lock the tab against rotation about the rivet in the plane of the tab. This is accomplished by deforming a zone of the container wall into engagement with a segment of the tab. The deformed zone and the tab segment cooperate to prevent pivotal movement of the tab about the rivet in the plane of the container wall.

A tab of the type which is usable with the present invention may include an attachment portion which is riveted to the tear portion and a tab body which is attached to the attachment portion by a pliable connecting portion.

The zone of the container wall can advantageously be in the form of a projection. The engagement between the projection and the tab does not interfere with manipulation of the tab to initiate or continue severance of the sheet material along the line of weakness. The projection is engageable with a peripheral edge of the attachment portion.

With the present invention, it is not necessary that the projection be deformed into clamping engagement with the tab. Rather, the projection and the peripheral edge of the attachment portion serve only as an anti-rotation device.

In order that the zone of the container wall and the peripheral edge can serve as an antirotation lock, it is necessary that the peripheral edge be of a configuration which is engageable with the zone to prevent tab rota-

tion. According to one practice of the present invention, the peripheral edge of the attachment portion has a peripheral cutout section into which the projection of the container wall is received. According to a second practice of the present invention, the peripheral edge of the attachment portion has a flat segment and the projection is in close proximity to the flat segment to prevent tab rotation. With either practice of the present invention, it is only necessary to provide a small projection in the container wall.

The invention can best be understood by reference to the following description taken in connection with the accompanying illustrative drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a top plan view of an easy opening container constructed in accordance with the teachings of this invention.

FIG. 2 is an enlarged, fragmentary, sectional view taken generally along line 2—2 of FIG. 1.

FIG. 3 is a bottom plan view of a tab constructed in accordance with the teachings of this invention.

FIG. 4 is an enlarged, fragmentary plan view of another form of easy opening container constructed in accordance with the teachings of this invention.

FIG. 5 is an enlarged, fragmentary, sectional view taken generally along line 5—5 of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 3 shows a tab 11 which includes a tab body 13 and an attachment portion 15 integrally joined to the tab body by a connecting wall 17. The attachment portion 15 has a peripheral edge 18 and an arcuate cutout or notch 19 formed in the peripheral edge. The tab 11 is preferably integrally formed of sheet material such as aluminum and the tab body 13 surrounds the attachment portion 15. The tab body 13 defines an opening 21 sized to accommodate the finger of a user. The tab body 13 is relatively longitudinally rigid and includes a lifting end 23 and a rupturing or nose end 25.

The tab body 13 has an inner reinforcing bead or curl 27 and an outer reinforcing bead or curl 29 which is interrupted at the lifting end 23 and at the nose end 25 by a rupturing flange 31. The outer bead 29 is severed along two lines to thereby free the sides of the flange 31 so that it is connected to the remainder of the tab 11 only along the upper end thereof. The outer bead 29 also includes a double layer portion 33 which supports the outer surface 35 of the connecting wall 17. The outer bead 29 is cut along a radial line 37 at the nose end 25 as shown in FIG. 3.

FIGS. 1 and 2 show an easy opening container wall 39 utilizing the tab 11, it being understood that the tab 11 may be used with easy opening container walls of different construction than that illustrated in FIGS. 1 and 2. The easy opening container wall 39 includes a can end 41 having a peripheral attaching flange 43 for attaching the can end to a container body 45 (FIG. 2). The can end 41 is constructed of sheet material such as aluminum and has a primary score line 47 therein defining a panel 49 which is removable from the can end 41 upon complete severance of the primary score line.

The panel 49 covers a major portion of the area in plan of the can end 41 and has a secondary score line 51 therein closely adjacent and spaced radially inwardly from the primary score line 47. The secondary

score line 51 constitutes an anti-fracture score which permits the segment of the panel 49 circumscribed thereby to flex if the container is dropped to thereby prevent such impact from rupturing the primary score 47. Except for a section 53 of the score line 51, the score line 51 is spaced a constant radial distance from the primary score line 47. Thus, except for the section 53, the secondary score line 51 is geometrically similar to the score line 47.

The tab 13 is attached to the panel 49 by a rivet 55 formed integrally with the panel with the rivet 55 projecting through an aperture 57 of the attachment portion 15. The tab 11 is oriented radially of the panel 49 with the lifting end 23 being at an inward position and with the rupturing flange 31 overlying a location on the primary score line 47. Such orientation is maintained by a dimple or projection 59 integral with the panel 49 which projects into the arcuate cutout 19 of the tab 11. The panel 49 has an upstanding integral rib 61 to space the lifting end 23 above the panel.

With the construction shown in FIGS. 1-3, it is apparent that the tab 11 cannot pivot about the rivet 55 in the plane of the tab. This is because the tab 11 is held not only by the rivet 21 but also by virtue of the cooperation between the notch 19 and the projection 59. In the embodiment illustrated, the notch 19 is in the form of an arcuate cut out and the projection 59 is correspondingly shaped. Of course, the notch 19 and the projection 59 may be of any configuration which would constitute an anti-rotation lock.

The tab 11 can be operated in a conventional fashion to remove the panel 49. Specifically, the user moves the lifting end 23 of the tab 11 away from the panel 49. Because the tab body 13 is longitudinally rigid, it constitutes a lever which pivots generally about the connecting portion 17 relative to the attachment portion 15 in response to elevation of the lifting end 23. It is apparent that the projection 59 and the notch 19 in no way hinder or impede such pivotal movement of the tab body 13.

Such pivotal movement of the tab body 13 causes the rupturing flange 31 to bear against the sheet material along the primary score line 47. The force exerted by the rupturing flange 31 eventually becomes sufficient to rupture the sheet material along the score line whereupon the user can completely remove the panel 49 by exerting an outward pulling force on the tab 11. The notch 19 and the projection 59 cooperate during tab manipulation to cause the rupturing flange 31 to bear against a preselected location, i.e., the sheet material at or closely adjacent the primary score line 47, but do not interfere in any way with tab manipulation.

FIGS. 4 and 5 illustrate an alternate embodiment of the invention wherein corresponding parts are designated by corresponding reference characters followed by the letter *a*. The embodiment of FIG. 5 is identical

to the embodiment of FIGS. 1-3 in all respects not specifically shown or described herein.

The tab 11 is identical to the tab 11*a* except that the latter has no notch 19 but rather has a flat peripheral edge portion 63 on the attachment portion 15*a*. The easy opening container wall 39 is identical to the easy opening container wall 39*a* except that the latter has an elongated, straight dimple or bead or projection 65 in lieu of the circular projection 59. The peripheral edge portion 63 and the projection 65 cooperate with the rivet 55*a* to prevent pivotal movement of the tab 11*a* in the plane of the tab. In the embodiment illustrated in FIGS. 4 and 5, the edge portion 63 and the longitudinal axis of the projection 65 are perpendicular to the axis of the tab; however, the edge portion 63 and dimple 65 could be located in any position where they would cooperate with the rivet 55*a* to prevent rotation of the tab 11*a* in the plane of the tab. Similarly, the configuration of the edge portion 63 and of the projection 65 could be varied without effecting the antirotation function performed thereby.

The tab 11*a* operates in the same manner as the tab 11. The peripheral edge 63 and the projection 65 do not interfere with tab operation.

Although exemplary embodiments of the invention have been shown and described, many changes, modifications and substitutions may be made by those having ordinary skill in the art without necessarily departing from the spirit and scope of this invention.

I claim:

1. An easy opening container wall comprising:

a container wall of sheet material;

a line of weakness in said container wall defining a tear portion at least partially removable from the container wall;

a tab including an attachment portion and a tab body joined to the attachment portion for pivotal movement relative thereto;

means for attaching said tab at said attachment portion to the tear portion so that the tab can be manipulated to initiate rupture of the line of weakness;

said attachment portion being constructed of sheet material and having a peripheral edge including an elongated substantially straight segment; and

said container wall having at least one elongated substantially straight bead in close proximity to the straight segment of said edge and cooperating therewith to retain said tab against pivotal movement about said means for attaching in the plane of the tab.

2. An easy opening container wall as defined in claim 1 wherein said straight region and the direction of elongation of the bead extend transverse to the longitudinal axis of the tab.

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