

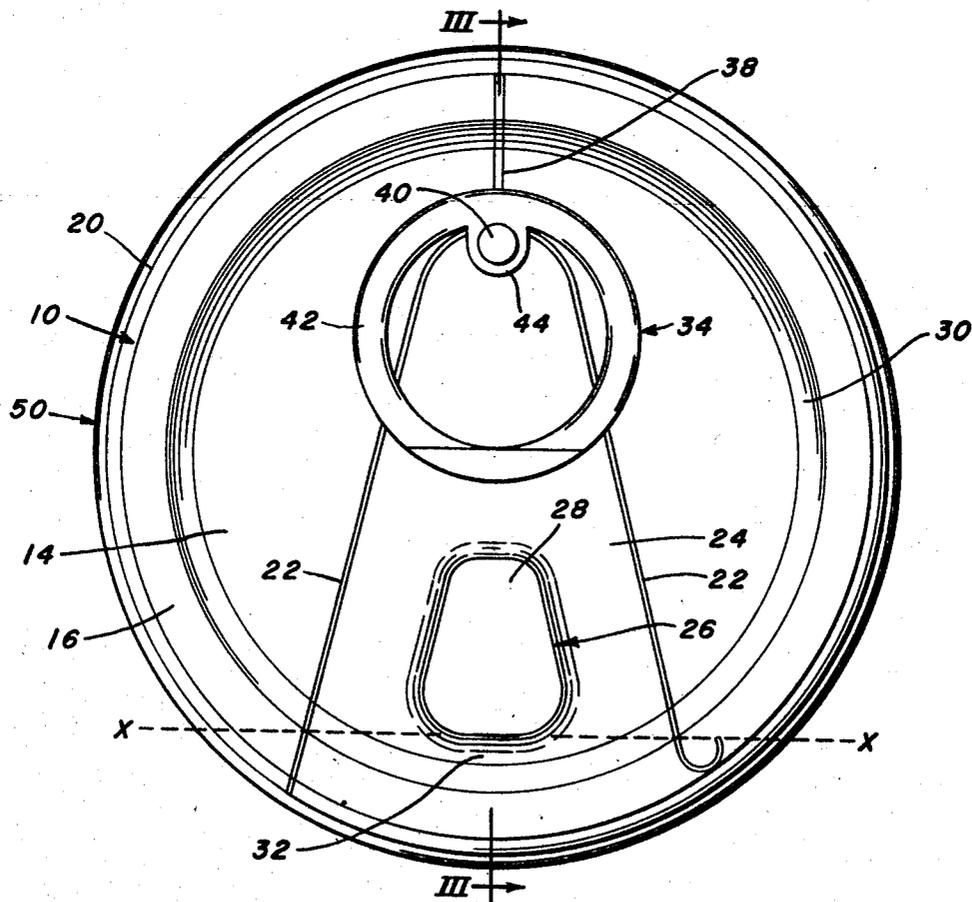
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[54] **TEAR-OFF CONTAINER CLOSURE**
 2 Claims, 4 Drawing Figs.
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 B65d 17/24
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 48; 215/46.5

ABSTRACT: A closure having a top portion with a recessed central panel and a peripheral rim, and a skirt depending from the rim, and having a tear strip defined by scoring divisive of the top portion and extending into the closure skirt, the tear strip having an embossed island in the recessed central panel portion thereof adjacent the rim to aid in severing the tear strip from the top portion and splitting said skirt for removal of the closure from a container.



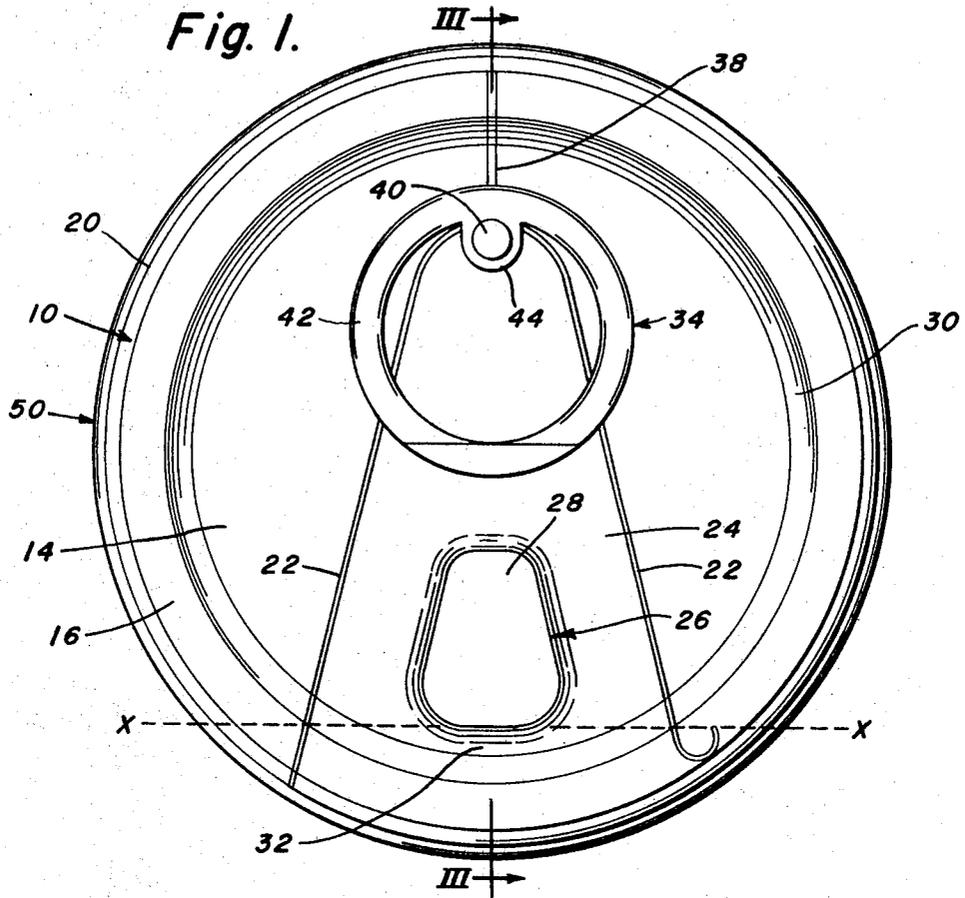


Fig. 2.

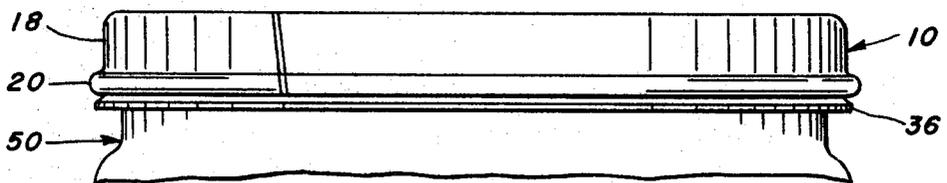
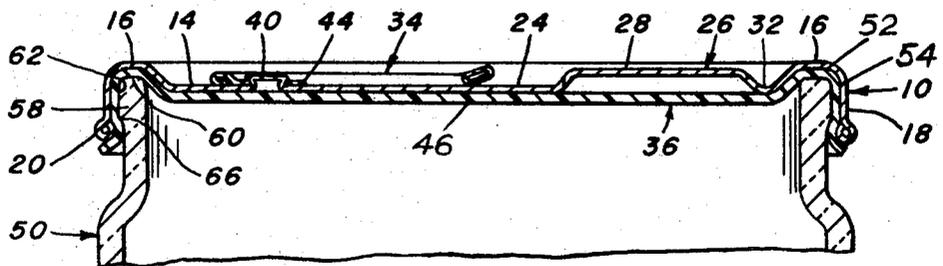


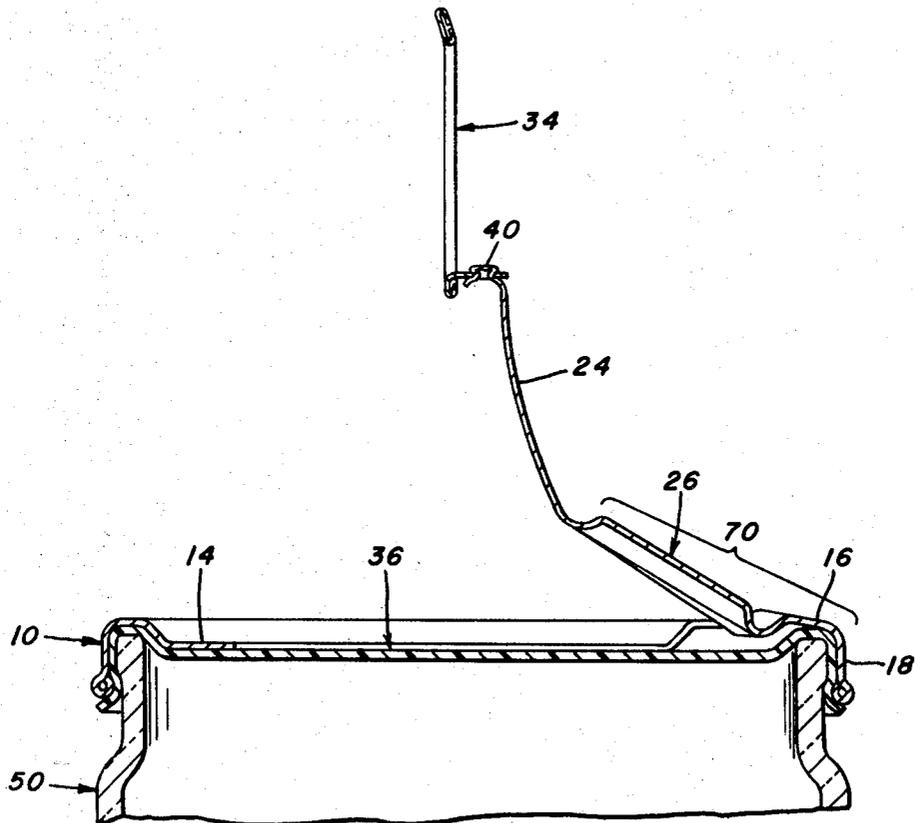
Fig. 3.



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Fig. 4.



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TEAR-OFF CONTAINER CLOSURE

BACKGROUND OF THE INVENTION

It is known to provide a frangible metal closure or closure fitment with an inner gasket for affixation to a container, the fitment being removable from the container by severance of a tear strip across its end wall to form a partially split member with the tear strip remaining attached to the fitment skirt. It is also known to provide a recess in the closure end wall for disposition of a pull tab affixed to the tear strip and for protecting the device from accidental opening. With such closures, the tear strip sometimes becomes completely separated from the closure during opening when the tab is pulled horizontally across the closure rather than being pulled upwardly. When the tear strip is completely severed from the partially split member, the remainder of the closure or fitment must be separately removed from the container entrance mouth.

SUMMARY OF THE INVENTION

This invention provides an embossed portion or island in a tear strip within the recessed central panel of a closure end wall adjacent the rim of the closure to aid in severing the tear strip from the closure, and to prevent complete separation of the tear strip from the closure.

Brief Description of the Drawings

FIG. 1 is a plan view of a closure on a container;

FIG. 2 is a fragmentary elevation of the closure and container of FIG. 1;

FIG. 3 is a fragmentary vertical cross-sectional view of the closure and container taken along lines III-III of FIG. 1; and

FIG. 4 is a fragmentary vertical cross-sectional view similar to FIG. 3 with the tear strip partially severed from the closure.

Description of a Preferred Embodiment

In the several illustrations appended hereto, a metal closure or closure fitment is shown in the form of a permanently deformable drawn metallic shell having a top portion and a depending skirt terminating in a circumferential bead, and having a tear strip with a lever type pull tab affixed thereto divisive of the closure fitment to facilitate removal of the fitment. A cup-shaped liner of resilient plastic material is provided within the fitment to form a closure assembly. The container with entrance mouth thereto is illustrated as a conventional open top jar, bottle, or the like, made of glass, plastic or like material, and suitable to have the closure assembly sealingly affixed thereto.

Referring to the illustrations, FIGS. 1 and 2 show a closure fitment 10 formed from sheet metal or other permanently deformable material, and preferably from a thin sheet of aluminum or aluminum alloy, which is adapted to be secured over the entrance mouth of a container 50. Closure fitment 10 is comprised of a spanning top portion having a recessed central panel 14, a raised rim 16 therearound, and a depending skirt 18 terminating in a circumferential bead 20. Central panel 14 includes an incline 30 at its periphery which connects the central panel 14 and the rim 16. The closure fitment 10 is weakened or scored along line 22 to form or define a tear strip 24 divisive of the closure top from a starting location adjacent or towards the periphery of the top relative to its center to a generally opposite location, and from there divisive of the closure fitment along one side of the tear strip 24 all the way to the edge of the sheet material of the fitment, and along the other side of the tear strip 24 to a location short of the edge of the sheet material leaving a bridge or ligament of unscored metal between its end and the bottom of the skirt 18.

The tear strip 24 has an upwardly embossed island 26 therein in the recessed end panel 14 of the fitment adjacent the rim 16. The island 26 is generally illustrated as being trapezoidal in shape with rounded corners, and has an upper surface 28 disposed in or below the upper surface of the rim

16 (FIG. 3). Island 26 traverses a chordal line X-X through the intersections of the score line 22 with the top of the incline 30 at periphery of the recessed central panel 14, and preferably extends from a relatively wide sector of the tear strip located in the recessed central panel outwardly of chordal line X-X, inwardly for a substantial distance towards a relatively narrow sector of the strip near the center of the central panel without interfering with seating of pull tab 34. In the embodiment selected for illustration, island 26 terminates short of the rim 16 to leave a channel 32 therebetween, but the island 26 may also merge with the rim 16. Island 26 forms a substantially rigid section in the portion of the recessed end panel 14 which lies in the tear strip and functions as a lever to aid in severing the tear strip 24 over incline 30 and rim 16. The trapezoidal shape of embossed island 26 while preferable, is not essential, as the island may be given a variety of configuration. A plurality of ribs may also be substituted for island 26 to form a rigid section in the tear strip along a portion of its length adjacent the rim 16.

Closure fitment 10 is weakened or scored outwardly of and adjacent to the starting end of the tear strip 24 by means of score line 38. Score line 38 is preferably located approximately opposite the skirt portion of the tear strip 24, and extends from adjacent the point of attachment of the tab 34 to the tear strip 24 outwardly and into the closure skirt 18 but ends short of the bottom edge of the skirt 18 to leave a bridge or ligament of unscored metal to serve as a hinge for spreading the closure into sectors for removal of the closure from a container.

Pull tab 34, illustrative of the type of tab that may be employed, is attached to the tear strip 24 in its starting end by an integral hollow rivet 40. Pull tab 34 is a reverse acting, double lever type having a centrally open ring body 42 with a tongue 44 for affixation of the rivet 40. The tongue 44 is bendable at its junction with the tab body 42 so that the tab 34 can be easily initially lifted from the surface of the fitment top for severance of the tear strip 24. As affixed to the tear strip 24, the tab 34 lies substantially flush with the surface of the recessed central panel 14, and rim 16 protects the opening structure from accidental opening or fracture of the score lines.

Liner 36 is provided within the fitment 10 for effecting a seal when the assembly is affixed to a container 50, and may also serve as a reclosure for the container 50 after opening. Liner 36 may be formed from any of a variety of materials such as rubber, paper, cardboard, and the synthetic plastic such as polyethylene, polypropylene and polyvinyl chloride. The liner 36 has a complete spanning top portion including a recessed central panel 46 and a raised rim 52 with a skirt 54 depending therefrom, and is dimensioned to fit or nest in closure fitment 10.

The container mouth entrance illustrated in FIGS. 3 and 4 is representative of a structure suitable for affixation of the closure fitment 10 and liner 36. It will be observed that the container 50 provides an entrance mouth defined by an outwardly projecting closure securing bead 58 having an upwardly facing sealing surface 60, a laterally facing side sealing surface 62, and a shoulder having an undersurface 66 blending into the container wall therebelow. The closure assembly is sealingly secured to the container entrance mouth with the metal fitment 10 covering the liner 36 over the open top of the container 50.

In a container sealed with a closure fitment and liner as shown in FIG. 3, opening is effected by grasping the tab 34 and lifting it to fracture the scoring around the starting end of the tear strip 24. After the initial rupture of this scoring, continued pulling of the tab 34 ruptures or tears the score line along both sides of the tear strip 24 across the closure top as shown in FIG. 4. As the tearing progresses across the recessed end panel 14, the freed portion of the tear strip 24 bows or bends slightly as a result of the pulling force applied thereto until the tearing reaches the section of the tear strip having embossed island 26 therein. At this point the reinforcing island 26 resists further bending of the tear strip 24. Con-

sequently, continued pulling of the tab 34 severs the portion of the tear strip 24 containing island 26 in the form of a substantially straight section 70 as defined by the bracket in FIG. 4, which includes therewith an arc of rim 16 within the tear strip 24. Since island 26 traverses chordal line X-X (FIG. 1), the entire length of section 70 is reinforced either by island 26 or by the arc of the rim 16 as is clearly shown in FIG. 4. It is noted that slightly more force may be required to initiate the severance of section 70 because of its rigidity and its resistance to bending. The resistance to bending of section 70 means that the section is not progressively severed, but is severed substantially coincidentally along its entire length.

The rigidity of section 70 produces the desired upward tearing action on the score line over the incline 30 between the recessed central portion 14 and the rim 16 even when the tab 34 is pulled horizontally across the fitment 10. In the absence of island 26 and resulting section 70, tear strip 24 tends to bow or bend as it does over the remainder of its length. When such bending occurs at incline 30, the resistance to tearing produced by the incline and rim turns the tearing inwardly along the incline rather than over it as in the present invention. Consequently, in the absence of island 26, tear strip 24 may be completely severed from the closure rather than remaining attached thereto.

Upon fracture of the score line over incline 30 and rim 16, continued pulling of tab 34 ruptures the long leg of scoring to the bottom of the fitment skirt 18 without tearing the bridge of metal between the end of the short leg of scoring and the bottom of the skirt. The fitment 10 is thereby converted into a partially split member with the tear strip 24 attached thereto by said bridge of metal. Further pulling of the tab 34 ruptures score line 38 adjacent the starting end of the tear strip 24 and causes hingelike opening of the fitment into sectors to permit

lifting of the fitment 10 from the container 50 leaving the liner 36 over the container entrance mouth. The liner 36 may then be removed by simply lifting the edge thereof, and can subsequently be snapped back over the entrance mouth to act as a reseal.

It will be apparent to those versed in the art to which the invention is addressed that the particular embodiment has been selected for purposes of specific illustration and description; and that numerous variations of the structure details may be made within the intended scope of the invention without departing from the appended claims. Exemplary of such variations would be to provide a ring gasket in lieu of the cuplike liner, various tab shapes, and various score line configurations.

I claim:

1. A sheet metal closure comprising a top portion with a recessed central panel and a rim around the panel, and a skirt depending from said rim, the closure further having a tear strip defined by scoring divisive of said top portion and extending into the closure skirt, said tear strip having an upwardly embossed island in the recessed panel portion thereof adjacent said rim and traversing a chordal line through the intersections of the sides of said tear strip with the periphery of said recessed central panel to aid in severing said tear strip from said top portion for removal of the closure from a container.

2. A closure as set forth in claim 1 in which said embossed island extends from a relatively wide sector of said tear strip located in said recessed central panel outwardly of said chordal line inwardly towards a relatively narrow sector of said tear strip near the center of said recessed central panel.

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