Nov. 15, 1966 J. G. MORAN 3,285,467

RIP TAB OPENER FOR SEALED CONTAINERS

Filed May 14, 1964

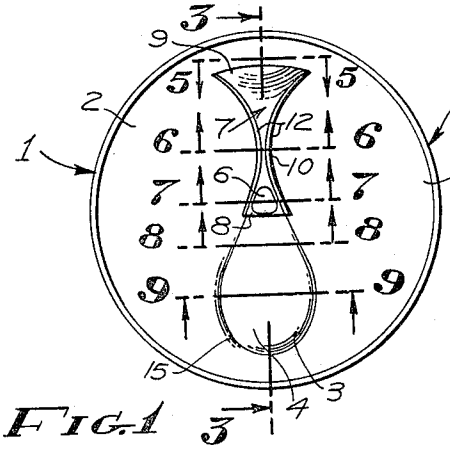


FIG. 1

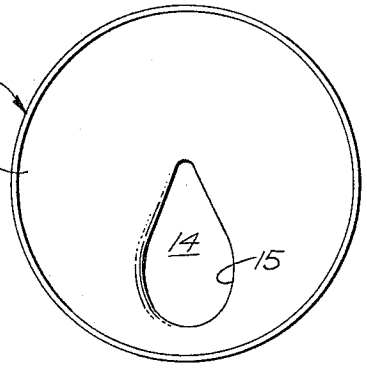


FIG. 2

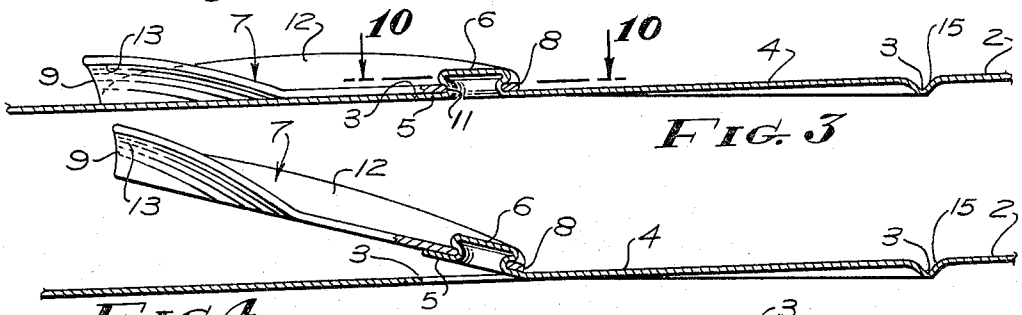


FIG. 3

FIG. 4

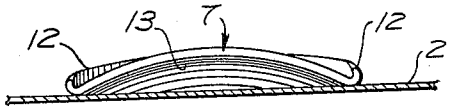


FIG. 5

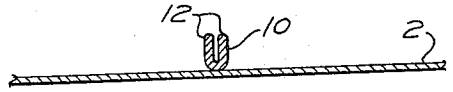


FIG. 6

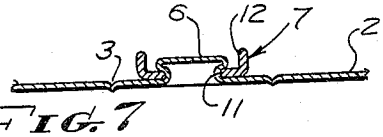


FIG. 7

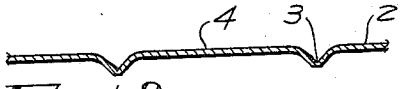


FIG. 8

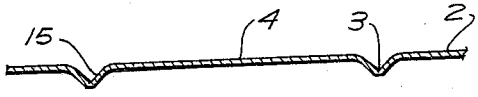


FIG. 9

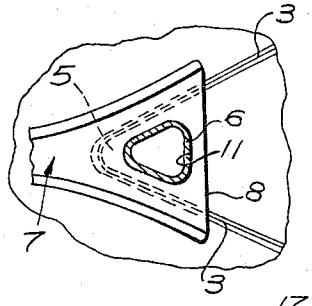


FIG. 10



FIG. 11

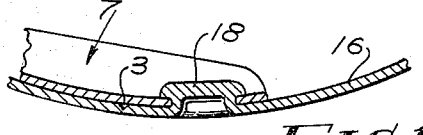


FIG. 12

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RIP TAB OPENER FOR SEALED CONTAINERS

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9 Claims. (Cl. 220—54)

This invention relates to rip tab openers for sealed containers and included in the objects of this invention are:

First, to provide a rip tab opener which, in its initial, sealed condition resists rupture due to internal pressure and although easily opened when desired, is so arranged as to minimize the possibility of being accidentally opened.

Second, to provide a rip tab opener wherein a wall of the container incorporates a closure element defining a novelly shaped area having weakened boundaries that includes an apex, and wherein a handle member is so attached to the closure element that the initial opening force required to initiate opening of the closure element.

Third, to provide a rip tab opener which incorporates a novelly arranged rip tab forming handle lever having a fulcrum close to the apex of the closure element, and a relatively long lever arm extending from the fulcrum so as to require an optimum force to effect initial operation of the closure element.

Fourth, to provide a rip tab opener wherein the handle lever rip tab is laterally enlarged at its extremity to form, in effect, a cross element adapted to fit comfortably between one's fingers so that a substantial force may be readily applied to rip the closure member free of the container.

Fifth, to provide a rip tab opener wherein the rip tab and closure member are so arranged as to be particularly safe to operate, minimizing the possibility that injury to the fingers may occur while opening the container.

Sixth, to provide a rip tab opener wherein the opening formed by the closure element is shaped to facilitate pouring or drinking from the container, and the margins of the opening are curved inwardly to avoid contact of one's lips with sharp edges when drinking from the container.

With the above and other objects in view as may appear hereinafter reference is directed to the accompanying drawings, in which:

FIGURE 1 is an end view of a sealed container such as a can showing the rip tab opener in its sealing or initial condition;

FIGURE 2 is an end view of the container after the rip tab has been removed to form an opening;

FIGURE 3 is a fragmentary enlarged longitudinal sectional view taken through 3—3 of FIGURE 1 showing the rip tab opener in its initial condition;

FIGURE 4 is a similar fragmentary longitudinal section view showing the initial opening movement of the rip tab;

FIGURE 5 is an enlarged fragmentary sectional view taken through 5—5 of FIGURE 1 showing the extremity of the handle portion of the rib tab in elevation;

FIGURES 6, 7, 8 and 9 are enlarged fragmentary sectional views taken through 6—6, 7—7, 8—8 and 9—9 respectively of FIGURE 1;

FIGURE 10 is a fragmentary partial plan partial sectional view taken through 10—10 of FIGURE 3 showing

particularly the interconnection between the container closure and the tip tab;

FIGURE 11 is an enlarged fragmentary sectional view of a modified type of container formed by impact extrusion.

FIGURE 12 is a similar fragmentary sectional view showing the connection of the rip tab opener therewith.

The rip tab opener is intended for use with a metal container such as a cylindrical container **1** having a circular cover **2**. Formed in the cover **2** is a score line **3** of teardrop configuration which forms the weakened periphery of a closure **4**. More specifically, the score line includes a semicircular portion adjacent the margin of the cover and converging portions terminating in an apex **5** extending diametrically from the rounded portion.

Adjacent the apex **5** the closure **4** is provided with an integral rivet boss **6**.

A rip tab handle lever **7** overlies the cover **2** and the apex end of the closure **4** and is disposed in alignment with the axis of the closure. The rip tab **7** is essentially hourglass in shape, that is, it comprises a flared fulcrum end **8** and a flared handle end **9** joined by a narrow neck portion **10**. The fulcrum end **8** forms with the apex **5** of the closure a small triangular portion and is provided with an aperture **11** which receives the rivet boss **6**. The rivet boss and aperture are preferably triangular in shape with rounded corners and the extended portion of the rivet boss forms a head firmly securing the rip tab **7** to the closure **4**.

The side edges of the rip tab are provided with upturned side flanges **12** which stiffen the rip tab longitudinally. At the flared handle end **9** of the rip tab the side flanges diverge from each other so that one may grasp the handle end between two fingers and pull longitudinally on the rip tab. At the handle extremity of the rip tab between the ends of the side flanges **12** the rip tab is arched as indicated by **13** to form a recess to receive the tip of one's finger.

Operation of the rip tab opener is as follows:

To initiate opening of the container and removal of the closure **4**, the rip tab **7** is pivoted from the position shown in FIGURE 3 toward the position shown in FIGURE 4 by upward pressure of the finger tip within the arch **13**. This initial movement places the greatest load at the apex **5** so that the sides of the closure rip open to a line defined by the fulcrum end of the rip tab. The rip tab is pivoted further in a clockwise direction as viewed in FIGURE 4 until one is able to insert a pair of fingers on opposite sides of the rip tab whereupon the rip tab is pulled axially and is further rotated to apply a continuing shearing stress along the score line **3** until the cover **4** is completely removed forming an opening **14** of teardrop configuration.

In order to minimize contact with the severed edge of the opening the margins of the opening designated **15**, especially in the region of the curved portion thereof, are turned downward or into the container.

The construction shown in FIGURES 1 through 10 is intended primarily for containers formed of tinned steel. The rip tab opener, however, may be adapted for use in connection with aluminum containers. Some types of aluminum containers are formed by a process known as impact extrusion. One type of such aluminum

container is provided with a concaved bottom **16** shown fragmentarily in FIGURES 11 and 12. As a part of the impact extrusion operation a rivet boss **17** may be formed as represented in FIGURE 11. A score line **3** with its apex **5** may be formed in the impact extrusion operation or may be pressed into the surface of the container after the forming operation. The rivet boss **17** is employed to attach a rip tab **7** identical to the first described rip tab except that it is of arcuate contour to conform to the concave contour of the container bottom. When a head **18** is formed by upsetting the rivet boss a strong and dependable connection is made with the rip tab.

While particular embodiments of this invention have been shown and described, it is not intended to limit the same to the exact details of the constructions set forth, and it embraces such changes, modifications, and equivalents of the parts and their formation and arrangement as come within the purview of the appended claims.

What is claimed is:

1. A rip tab opener for containers, comprising:
(a) a container wall having a score line forming a closed loop having an apex, the material of said wall within said loop forming a stripable closure;
(b) a rip tab overlying said container wall in contiguous relation therewith and having a flared fulcrum end, a flared handle end and a necked portion between said ends, said fulcrum end traversing said closure adjacent its apex and said handle end disposed beyond said apex;
(c) said rip tab including stiffener side flanges extending along its side edges between said ends;
(d) and means joining said closure and said rip tab between and contiguous to said apex and said fulcrum;
(e) the handle end of said rip tab being arcuately movable about said fulcrum to sever the apex end of said closure from said container wall;
(f) said flared handle end being manually gripable between fingers of the user to permit and outward pull on said closure for removal of said closure from the container wall.

2. A rip tab opener as set forth in claim **1**, wherein:
(a) the extremity of said handle end is arched between said flanges to form a finger top receiving recess to facilitate initial lifting of said rip tab from said container wall.

3. A rip tab opener for containers, comprising:
(a) a container wall having a semicircular score line, and converging score lines continuing from said semicircular score line and intersecting to form an apex, said score lines defining a closure of essentially teardrop shape forming a part of said container wall;
(b) said rip tab overlying said container wall in contiguous relation therewith and having a flared fulcrum end, a flared handle end and a neck portion between said ends, said fulcrum end traversing said closure adjacent its apex and said handle end disposed beyond said apex;
(c) said apex and said fulcrum defining a triangular area therebetween;
(d) and a triangular connecting means within said triangular area forming said closure and rip tab;
(e) and means joining said closure and said rip tab between and contiguous to said apex and said fulcrum;
(f) the handle end of said rip tab being arcuately movable about said fulcrum to sever the apex end of said closure from said container wall;
(g) said flared handle end being manually gripable between the fingers of the user to permit an outward pull on said closure for removal of said closure from the container wall.

4. A rip tab opener as set forth in claim **3**, wherein:
(a) the extremity of said handle end is arched between said flanges to form a finger tip securing recess to facilitate initial lifting of said rip tab from said container wall.

5. A rip-tab opener for containers, comprising:
(a) a container wall having a semicircular score line, and converging score lines continuing from said semicircular score line and intersecting to form an apex, said score lines defining a closure of essentially teardrop shape forming a part of said container wall;
(b) said container wall, at least in the region bordering said semicircular score line being turned downward to form a smooth margin of arcuate cross section;
(c) a longitudinally rigid rip tab having a fulcrum end and a handle end, said fulcrum end overlying said closure adjacent said apex and extending axially beyond said apex;
(d) and means joining said closure and said rip tab between and contiguous to said apex and said fulcrum;
(e) the handle end of said rip tab being arcuately movable about said fulcrum to sever the apex end of said closure from said container wall.

6. A rip tab opener for containers, comprising:
(a) a container wall having a score line defining a closure adapted to be severed from the container wall;
(b) and a rip tab having a lateraly flared handle bordered by flanges adapted to overly a pair of fingers of a user, a narrow, stiff stem dimensioned to fit between said fingers, and a fulcrum end joined to said closure adjacent a margin thereof;
(c) said rip tab initially positioned contiguous to said said container wall, and having an arched portion at the extremity of said handle engageable to raise said handle by rotation about said fulcrum for insertion of said fingers under said flanges, whereby on further rotation and pull on said rip tab, said closure is severed from said container.

7. A rip tab opener for containers, comprising:
(a) a container wall having a score line defining a closure adapted to be severed from the container wall;
(b) a rip tab having a laterally flared handle end and fulcrum end, said ends being joined by a narrow connecting stem, the lateral sides of said handle end and said stem being bordered by flanges to stiffen said stem and provide finger engaging surfaces;
(c) and means for attaching said rip tab adjacent said fulcrum end to said closure adjacent a margin thereof, whereby on rotation of said rip tab, and the application of tension thereto, said closure is forced free of said container.

8. A rip tab opener according to claim **7** wherein:
(a) said rip tab is initially positioned contiguous to the surface of said container wall, and said handle end is arched at its extremity between said flanges to facilitate initial pivotal movement, thereby to permit insertion of fingers astraddle said stem and under said handle end.

9. A rip tab opener for metal containers comprising:
(a) a container wall formed of sheet metal and having a score line defining a closure of essentially teardrop shape and forming an apex; the major portion of said score line being disposed substantially below the surface of the container wall and the margin of said container wall confronting said closure being curved to provide a smooth guard surface and minimize chance contact with the edge of the metal from which the container wall is formed;
(b) a rip tab having a laterally flared handle end and fulcrum end, said ends being joined by a narrow connecting stem, the lateral side of said handle end

and said stem being bordered by flanges to stiffen said stem and provide finger engaging surfaces;

(c) means for attaching said rip tab adjacent said fulcrum end to said closure at its apex end, with said rip tab being rotateable about said fulcrum to unseal the apex end of said closure, whereby said closure may be pulled from said container wall by outward pull on said rip tab;

(d) said rip tab having at the extremity of its handle end and arched portion extending between said side flanges to facilitate initial movement of said rip tab away from said container wall thereby to permit insertion of fingers astraddle said stem.

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