July 20, 1965 J. HENCHERT 3,195,765

TEAR STRIP CONNECTED TO PULL TAB BY MEANS OF AN INTEGRAL RIVET

Original Filed Feb. 10, 1961

FIG. 1

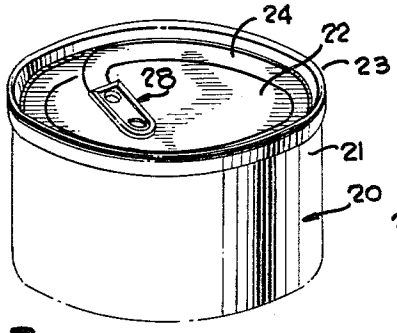


FIG. 2

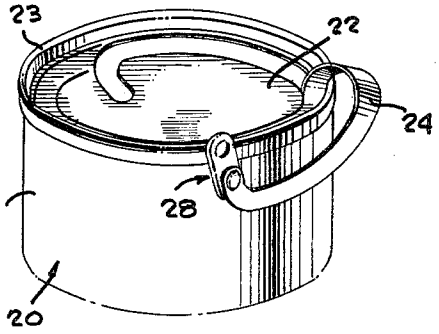


FIG. 3

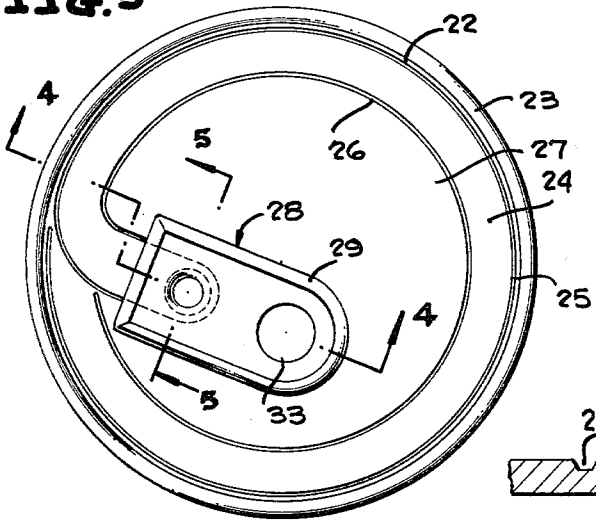


FIG. 6

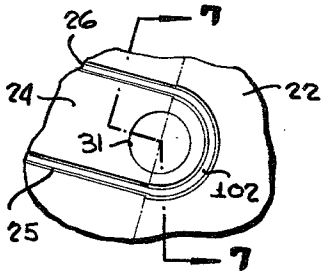


FIG. 7

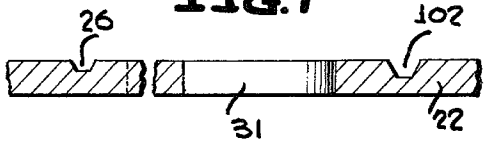


FIG. 4

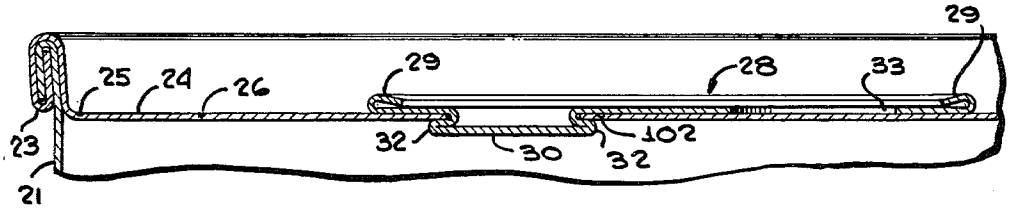
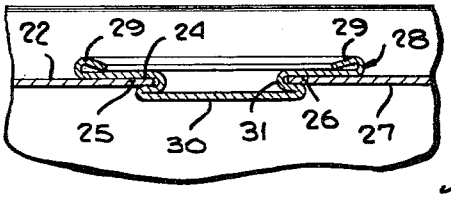


FIG. 5



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TEAR STRIP CONNECTED TO PULL TAB BY MEANS OF AN INTEGRAL RIVET

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Original application Feb. 10, 1961, Ser. No. 88,473, now Patent No. 3,151,766, dated Oct. 6, 1964. Divided and this application June 19, 1963, Ser. No. 289,013

3 Claims. (Cl. 220—54)

This application is a division of my co-pending application Serial No. 88,473, filed February 10, 1961, now Patent No. 3,151,766.

This invention relates in general to new and useful improvements in means for opening containers, such as cans, and more particularly is directed to a novel tear strip arrangement for containers including metal can ends wherein a container may be opened by merely grasping a pull tab attached to a tear strip and removing the tear strip to thereby remove a panel of the container.

One of the primary objects of this invention is to provide a novel tear strip and pull tab combination wherein the pull tab is firmly anchored to one end of the tear strip and is of a greater width than the tear strip whereby the pull tab rests upon the associated container member on opposite sides of the tear strip to reinforce the tear strip at its starting end to eliminate the accidental rupture of the container member at the starting end of the tear strip.

Another object of this invention is to provide a novel tear strip and pull tab arrangement wherein the pull tab is provided with an end which is merely passed through an opening in the starting end of the tear strip and is thus interlocking with the tear strip, with the mechanical connection between the tear strip and the pull tab being sufficiently great to prevent the accidental removal of the pull tab from the tear strip during a tear strip removal operation.

A further object of this invention is to provide a pull tab and tear strip connection wherein the pull tab is provided with a simple boss, which is passed through an opening in a tear strip and the boss upset to both form an interlock between the tear strip and the pull tab and to seal the opening in the tear strip.

This invention also proposes to provide means to facilitate the starting of the tearing of a tear strip from the adjacent metal whereby the tear strip is provided with a generally semi-circular end portion which is scored more deeply than side edge portions of the tear strip, whereby a lesser starting force is required to rupture the tear strip along the score lines.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims and the several views illustrated in the accompanying drawings:

In the drawings:

FIGURE 1 is a perspective view of an upper portion of a can having a metal can end which is provided with a tear strip and pull tab in accordance with this invention.

FIGURE 2 is a perspective view similar to FIGURE 1 and shows the tear strip partially removed.

FIGURE 3 is an enlarged plan view of the upper end of the can of FIGURE 1 and shows further the details of the tear strip and pull tab.

FIGURE 4 is an enlarged fragmentary vertical sectional view taken through the line 4—4 of FIGURE 3, and shows the specific details of the connection between the pull tab and the tear strip.

FIGURE 5 is an enlarged fragmentary transverse vertical sectional view taken along the line 5—5 of FIGURE 3 and shows further the details of the connection between the pull tab and tear strip, including the fact that the pull tab overlies the metal can end on opposite sides of the tear strip to prevent the accidental rupturing of the can end along the outline of the tear strip by a downward pressure.

FIGURE 6 is a fragmentary plan view showing the general outline of the tear strip at the starting end thereof and the formation of the score lines defining the same.

FIGURE 7 is an enlarged fragmentary vertical sectional view taken along the line 7—7 of FIGURE 6, and shows the specific arrangement of the scores in the various portions of the metal can end along the outline of the tear strip.

Reference is first made to FIGURES 1, 2 and 3 wherein there is illustrated a conventional type of can which is generally referred to by the numeral 20, and which includes a can body 21 and a can end 22. The can end 22 is preferably formed of a light gauge metal, and it is desirable that the metal be easily rupturable. As a result, normally the can end 22 will be formed of aluminum, although the usual metals employed in the making of the can ends may be utilized. The can end 22 is secured to the can body 21 by a conventional seam 23. The can 20 is illustrated and described only to set forth one environment of the invention. The present invention is not restricted to cans, but may be used in all types of containers, etc., where it is desired to remove a portion thereof without utilizing any opening equipment, such as a can opener in the case of a can.

Reference is now made to FIGURE 3 in particular, wherein the can end 22 is illustrated as having a circumferential tear strip 24 which is defined by a pair of score lines 25, 26 with the score line 25 being disposed outermost and being disposed adjacent the seam 23 so that when the tear strip 24 is removed, substantially the entire can end 22 within the seam 23 will be removed. The score lines 25, 26 are disposed generally in concentric relation for the most part of their lengths and the score line 26 generally defines an inner panel 27.

In order to facilitate the tearing and removal of the tear strip 24 from the can end 22, there is provided a pull tab, generally referred to by the numeral 28. The pull tab 28 is relatively elongated and is of a greater width than the tear strip 24. The peripheral edges of the pull tab 28 are reinforced by a narrow peripheral flange 29 which is bent over the upper surface of the pull tab 28, as is best shown in FIGURES 3, 4 and 5.

The pull tab 28 is provided adjacent one end thereof with a boss 30 which projects downwardly through an opening 31 formed in the starting end of the tear strip 24 and crimped therebeneath, as at 32. Thus, a highly desirable mechanical connection is provided between the pull tab 28 and the tear strip 24. Although the opening 31 is formed in the tear strip 24, the can 20 remains sealed due to the effectiveness of the connection between the pull tab 28 and the tear strip 24, as is clearly shown in FIGURES 4 and 5. It is to be noted from FIGURE 5 in particular that the pull tab 28 is of a greater width than the tear strip 24 so that an accidental downward pressure on the pull tab 28 will not result in the rupturing of the can end 22 at the starting end of the tear strip 24.

The end of the pull tab 28 remote from the tear strip 24 is provided with an opening 33 therethrough. The opening 33 is for the purpose of facilitating the gripping of the pull tab and may be replaced by other suitable grip facilitating means.

Reference is now made to FIGURES 6 and 7, wherein the details of the score lines defining the various tear strips at the starting end of each tear strip, are shown.

For identification purposes only, the partial can end illustrated in FIGURE 6 will be considered to be the can end **22**, and the tear strip, the tear strip **24**. As was previously described, the tear strip **24** is defined by a pair of score lines **25**, **26**. As is best illustrated in FIGURE 7, these score lines **25**, **26** are relatively shallow. The score lines **25** and **26** will preferably be of a depth so that the remaining metal to be torn in the removal of the tear strip **24** will have a thickness of 0.003 inch. The ends of the score lines **25**, **26** are connected together by a generally semi-circular score line **102** which has a greater base width and is of a greater depth, as is best illustrated in FIGURES 6 and 7. The depth of the score line **102** will be such that in most instances, the remaining thickness of metal to be torn will range between 0.001 inch and 0.0015 inch. By making the score line **102** much deeper than the score lines **25**, **26**, it will be readily apparent that a sharp upward pull on the starting end of the tear strip **24** by means of the pull tab **28** will result in the rupturing of the metal of the can end **22** along the score line **102**. Once the initial rupturing has been accomplished, the tear strip **24** may be removed by continuously exerting an upward pull thereon with the tear strip **24** being torn from the can end **22** along the tear lines **25**, **26**.

The advantage of the relatively deep score line **102** coupled with the supporting feature of the individual pull tab is obvious. Applicant has made the initially torn portion of the can end of sufficient weakness to facilitate the ease of tearing the starting end of the tear strip therefrom. On the other hand, by making each pull tab of a sufficient width to engage the can end outwardly of the tear strip, the tear strip is prevented from deflecting inwardly due to any accidental force exerted thereon, whereby the can **20** would be opened prematurely.

From the foregoing, it will be seen that novel and advantageous provision has been made for carrying out the desired end. However, attention is again directed to the fact that variations may be made in the examples of the invention disclosed herein without departing from the spirit and scope of the invention, as defined in the appended claims.

I claim:

1. In a container, a tear strip assembly for facilitating the opening of said container without the use of any additional device, said tear strip assembly being formed in a panel of said container and comprising a tear strip forming an integral part of said container panel, said tear strip being primarily defined by two spaced score lines in said panel and including a starting end, a pull member overlying said tear strip starting end for facilitating the manual tearing of said tear strip from said container panel to effect the opening of said container, a permanent connection joining the tear strip starting end to the pull member, said two score lines being joined by a starting score line portion at least partially defining said tear strip starting end, said starting score line portion being of a greater depth than said two score lines and presenting a line of least resistance to rupture to facilitate the starting of the tearing of said tear strip from said container panel, and said pull member protectively overlying said starting end portion and being adapted to rest on said container panel outwardly of said tear strip to resist accidental rupture of said container panel along said starting score line portion by an accidental inward displacement of said tear strip starting end, said permanent connection including an opening through said tear strip starting end and an integral tubular boss depending from said pull member, said boss extending through said tear strip opening and being upset behind said tear strip and sealing said tear strip opening.

2. In a container, a tear strip assembly for facilitating the opening of said container without the use of any additional device, said tear strip assembly being formed in a panel of said container and comprising a tear strip forming an integral part of said container panel, said tear strip being primarily defined by two spaced score lines in said panel and including a starting end, a pull member overlying said tear strip starting end for facilitating the manual tearing of said tear strip from said container panel to effect the opening of said container, a permanent connection joining the tear strip starting end to the pull member, said two score lines being joined by a starting score line portion at least partially defining said tear strip starting end, said starting score line portion being of a greater depth than said two score lines and presenting a line of least resistance to rupture to facilitate the starting of the tearing of said tear strip from said container panel, and said pull member protectively overlying said starting end portion and being adapted to rest on said container panel outwardly of said tear strip to resist accidental rupture of said container panel along said starting score line portion by an accidental inward displacement of said tear strip starting end, said pull member being formed of sheet metal and having front and rear ends joined by spaced sides with the edge portions of said pull member being reversely turned along substantially all of said sides and said rear end to both define reinforced edges resisting deformation of said pull member and to eliminate exposed raw edges, said reversely turned edge portions of said sides extending at least to the center of said connection.

3. A tear strip assembly comprising a panel, a tear strip defined in said panel by spaced weakening lines in said panel, said tear strip having a starting end, and a pull tab overlying and connected to said tear strip starting end for facilitating the removal of said tear strip, said pull tab being of a greater width than the underlying portion of said tear strip and being seatable on said panel outwardly of said tear strip to resist accidental rupturing of said panel by inward displacement of said tear strip starting end, said pull tab being formed of sheet metal and having front and rear ends joined by spaced sides with the edge portions of said pull tab along substantially all of said sides and said rear end and outwardly of said tear strip being reversely turned to both define reinforced edges resisting deformation of said pull tab and to eliminate exposed raw edges of said sheet metal, said reversely turned edge portions extending along said pull tab sides at least to the center of the connection between said pull tab and said tear strip whereby transverse folding of said pull tab intermediate said connection and said pull tab rear end during the use of said pull tab is prevented.

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