Aug. 22, 1967 J. S. BOZEK 3,337,085

CONTAINER ASSEMBLY

Filed March 12, 1965

FIG. 1

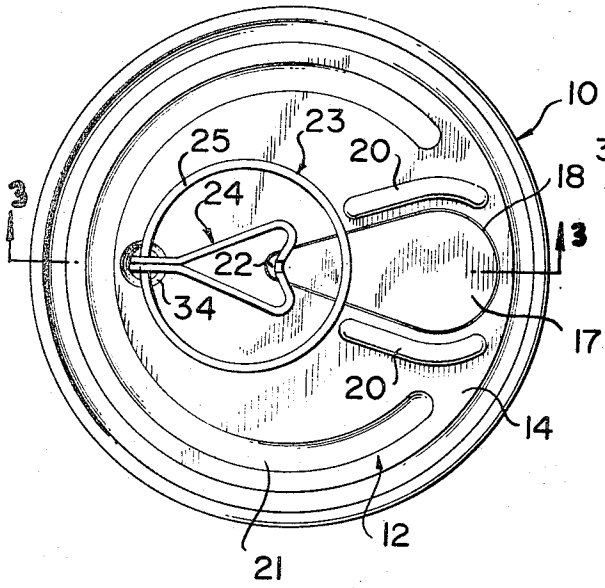


FIG. 2

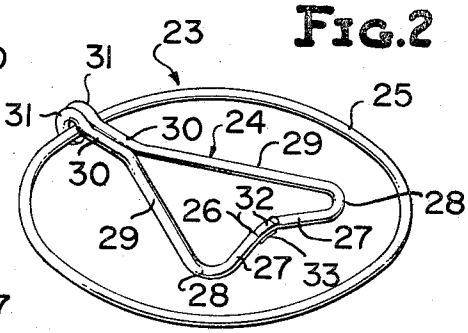


FIG. 3

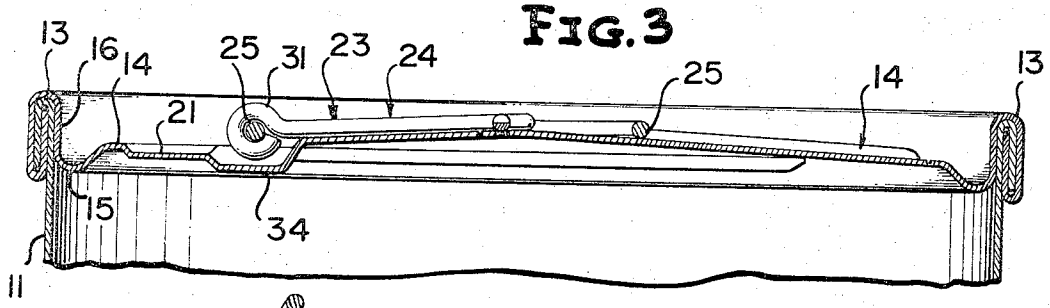
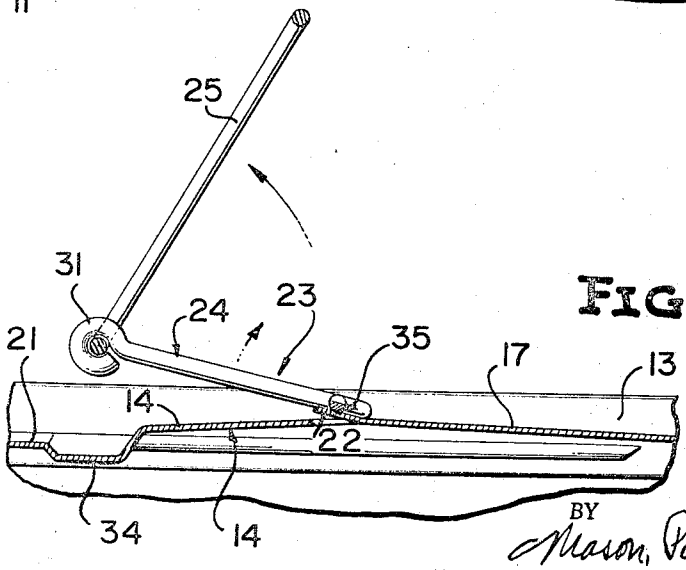


FIG. 4



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CONTAINER ASSEMBLY

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9 Claims. (Cl. 220—54)

This invention relates in general to new and useful improvements in the construction of containers, and more particularly to a novel container construction wherein the opening of the container may be accomplished without the use of any added implement.

The primary object of this invention has to do with novel means for facilitating the removal of a panel portion which is defined by weakening lines. Up to the present time, easy opening containers, particularly easy opening can ends, have been opened by means of a one-piece pull tab made from sheet metal, wire or plastic and attached to the removable panel portion by means of riveting, welding or gluing. While this type of pull tab has numerous advantages, it also has great disadvantages. To remove the removable panel portion from the remainder of the container, one has to have a strong grip on the pull tab. However, before this can be accomplished, it is necessary that the pull tab be lifted sufficiently away from the container so that a firm grip can be applied to it. Because the pull tab has been rigidly secured to the removable panel portion, the rupture of the container panel occurs during the lifting of the pull tab before a firm grip can be applied thereto. Accordingly, this initial lifting of the pull tab is done by the end of one's finger, principally the fingernail. Due to the pressure required to initially lift the pull tab, there is a constant danger of breaking one's fingernail. In accordance with this invention, it is proposed to make the pull tab of a two-piece construction, which pull tab includes a tab member which may be rigidly attached to the removable panel portion, and a lifting or pull ring which is pivotally attached to the tab member.

Another object of this invention is to provide a novel container assembly which includes a removable panel portion having rigidly secured to a starting portion thereof a tab member, and the tab member having pivotally attached thereto a lifting ring, the lifting ring normally being flush with the adjacent portion of the container and being readily pivotable to a position whereby it may be firmly gripped without requiring any significant force whatsoever, whereby the necessary lifting pressure may be applied to the tab member while one has a firm grip on the pull tab.

A second disadvantage of the present type of rigid pull tab construction is that found in containers wherein liquids are packaged under pressure, particularly soft drinks. Oftentimes, when the initial rupture of the container panel occurs, the pressure within the container applies a sufficient force to the removable panel portion to blow the same out. Inasmuch as one does not have a firm grip on the pull tab at this time, the removable panel portion and pull tab are blown from one's fingers and endanger either the person opening the container or people standing adjacent thereto. In view of this, it is a further object of this invention to provide a novel pull tab assembly for easy opening containers which includes a pull ring which may be firmly anchored on one's finger at the time the initial rupture of the associated container takes place so as to prevent the accidental blowing off of the removable panel portion and the removable panel portion flying away from one's hand.

A still further object of this invention is to provide an articulated two-piece pull tab assembly which may be

readily utilized in conjunction with easy opening can ends, the pull tab assembly being so constructed whereby the components thereof may lie flush with the end panel of the can end so as to require a minimum of clearance and therefore, a minimum of recessing of the end panel into the can body.

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 drawing:

In the drawing:

FIGURE 1 is a plan view of a can formed in accordance with this invention.

FIGURE 2 is an enlarged perspective view of the pull tab assembly.

FIGURE 3 is an enlarged fragmentary transverse vertical sectional view taken along the line 3—3 of FIGURE 1 and shows the specific details of the can end of the can and the relationship of the pull tab assembly thereto.

FIGURE 4 is an enlarged fragmentary vertical sectional view somewhat similar to FIGURE 3 and shows the pull tab assembly being utilized for the purpose of removing a panel portion of the can end.

Referring now to the drawings in detail, it will be seen that there is illustrated a conventional type of container which is generally referred to by the numeral **10**. Although the container **10** may be of any conventional container construction which is to be opened by removing a panel portion thereof, the illustrated container **10** is in the form of a can and will be so described hereinafter.

The can **10** includes a can body **11** which has the lower end thereof closed in any conventional manner. A can end, generally referred to by the numeral **12**, closes the upper end of the can body **11** and is secured thereto by means of a conventional double seam **13**.

The can end **12** includes a recessed end panel **14** which is surrounded by a shock absorbing bead **15** that is inwardly directed and which is disposed immediately adjacent the chuck wall **16** of the can end, the chuck wall **16** being a portion of the double seam **13**. The end panel **14** has a weakening line formed therein defining a removable panel portion **17**. The weakening line is in the form of a score line **18**. At this time it is pointed out that although the removable panel portion **17** is specifically illustrated in FIGURE 1, the outline thereof may vary and it is within the scope of this invention to so shape the score line **18** as to have the removable panel portion **17** constitute substantially all of the end panel **14**.

When the can end **12** is intended to be utilized as part of a beverage can, the end panel **14** may be provided with a pair of upstanding ribs **20** disposed on opposite sides of the removable panel portion **17** so as to define abutments for one's lips so that when the contents of the can **10** are directly drunk therefrom, one's lips will not contact the raw edge of the end panel **14** defining the dispensing opening which results from the removal of the panel portion **17**. Also, in order to stiffen the end panel **14** and reinforce the same against outward bulging under pressure, the end panel **14** is provided with a generally C-shaped inwardly directed rib **21**. It is to be noted that the opposite ends of the rib **21** terminate adjacent the ribs **20**.

In accordance with this invention, the panel portion **17** is removed by first rupturing the end panel **14** along a short portion of the score line **18**, and then tearing the panel portion **17** from the end panel **14** along the remainder of the score line **18**. In order to facilitate this, the panel portion **17** includes a starting end **22** which is defined by a small diameter portion of the score line **18**. It is to be understood that by making the starting end of

the removable panel relatively pointed, a minimum effort is required to rupture the end panel 14.

The removal of the panel portion 17 is facilitated by means of a pull tab assembly which is secured to the starting end 22, the pull tab assembly being generally referred to by the numeral 23. The pull tab assembly 23 is of an articulated construction, and includes a tab member, generally referred to by the numeral 24, and a pull ring 25 which is pivotally connected to the tab member 24. Both the tab member 24 and the pull ring 25 are preferably formed of single lengths of wire, although the invention is not intended to be so limited in that it is feasible to form the tab member 24 and the pull ring 25 of sheet metal or plastic material.

The tab member is broadly considered as including a forward end portion 26. The forward end portion 26 has connected thereto a pair of forwardly diverging legs 27 which, in turn, are connected to transversely spaced fulcrums 28. A pair of rearwardly converging legs 29 extend rearwardly from the fulcrums 28 and terminate in parallel rear portions 30 which are disposed in side-by-side relation. The rear portions 30 have the rear ends thereof reversely bent first upwardly and then downwardly to define a pair of side-by-side attaching loops 31. The pull ring 25 extends through the attaching loops 31 and is thusly connected to the tab member 24 for free pivotal movement relative thereto.

At this time it is pointed out that due to the offsetting of the attaching loops 31, the pull ring 25 lies in the same plane as a major portion of the tab member 24. This permits the tab assembly 23 to have a minimum vertical dimension which is highly desirable in that it reduces the amount the end panel 14 has to be recessed within the can body 11.

It is to be noted that the forward end portion 26 of the tab member 24 has certain of the metal thereof downwardly displaced so as to define an upper recess 32 and a lower projection 33. The projection 33 is important in that it facilitates the spot welding of the tab member 24 to the starting end of the removable panel portion 17, as is clearly shown in FIGURES 1 and 3. It is to be noted that the tab member 24 is secured to the panel portion 17 as a continuation thereof. It is also to be noted that the end panel 14 is provided with a suitable recess 34 for receiving the attaching loops 31. This is clearly shown in FIGURES 1 and 3.

It is also to be noted that when the pull tab assembly 23 is secured in place, the pull ring 25 substantially encircles the tab member 24. This permits the tab member 24 to be of a maximum length although it does extend as a continuation of the removable panel portion 17. At the same time, this construction permits the pull ring 25 to be of a sufficient size to receive one's finger.

Referring now to FIGURE 3 in particular, it will be seen that although the end panel 14 is outwardly bowed due to the pressure within the can 10, the tab member 24 lies flush against the outer surface thereof. At the same time, the pull ring 25 lies flush against the outer surface of the end panel 14 with the pull ring 25 lying substantially in the same plane as the tab member 24. Thus, the pull tab assembly 23 projects a minimum distance above the top of the end panel 14, thereby permitting a minimum of recessing of the end panel within the can body 11.

When it is desired to open the can 10 by removing the panel portion 17, the pull ring 25 is first swung to a generally upstanding position similar to that shown in FIGURE 4. Inasmuch as the pull ring 25 is freely pivotally connected to the tab member 24, it will be seen that practically no effort is required to swing the pull ring 25 to a position wherein it may be readily gripped. After the pull ring 25 has been swung to its elevated position, it is firmly gripped in a desired manner including by placing one's finger therethrough. The pull ring 25 is then moved away from the end panel 14 so as to lift the tab member 24. Inasmuch as the tab member 24 is rigidly secured to the starting end 22 of the removable panel portion 17 by the weld 35, it will be seen that there will be an upwardly directed force applied to the end panel 14 around the starting end 22 sufficiently to effect the initial rupture of the end panel 14 in the manner shown in FIGURE 4. A further upward and to the right pull, as viewed in FIGURE 4, on the pull ring 25, will result in the tearing of the panel portion 17 from the remainder of the end panel 14 along the score line 18.

At this time it is pointed out that when the product packaged within the can 10 is packaged under high gaseous pressure, there are conditions under which the pressure exerted against the panel portion 17 is sufficient to effect the blow out of the panel portion 17 after the initial rupture of the end panel 14. In the past, this pressure has been sufficient to effect the complete rupture of the end panel 14 around the panel portion 17 with the panel portion 17 being blown away from the can 10. However, since one may have a firm grip on the pull ring 25 due to the specific construction of the pull tab assembly 23, it will be seen that even when the panel portion 17 is blown out from the end panel 14, it will not be blown out of the hand of the person opening the can 10. Thus, injury to adjacent persons due to the flying panel portion 17 is eliminated.

Although only a preferred embodiment of the invention has been specifically illustrated and described here, it is to be understood that minor variations may be made in both the pull tab assembly and the container without departing from the spirit and scope of the invention, as defined by the appended claims.

I claim:

1. A pull tab assembly for an easy opening container, said pull tab assembly comprising a tab and a pull ring, said tab being formed of a bent single length of wire having a rearwardly facing central attaching portion, a forwardly facing and projecting fulcrum portion on each side of said attaching portion, a pair of rearwardly converging legs, and side-by-side attaching loops at the rear ends of said legs, and said pull ring passing through said attaching loops and being thus pivotally connected to said tab.

2. The pull tab assembly of claim 1 wherein the diameter of said pull ring is in excess of the length of said tab and said tab lies within said pull ring.

3. A pull tab assembly for an easy opening container, said pull tab assembly comprising a tab and a pull ring, said tab being formed of a bent single length of wire having a rearwardly facing central attaching portion, a forwardly facing and projecting fulcrum portion on each side of said attaching portion, a pair of rearwardly converging legs, and side-by-side attaching loops at the rear ends of said legs, and said pull ring passing through said attaching loops and being thus pivotally connected to said tab, said tab and said pull ring being coplanar with the exception of said attaching loops.

4. In an easy opening container, a panel, a weakening line in said panel defining a removable tear strip having a starting end portion, a tab having a first end portion secured to said starting end portion and extending from said tear strip as an extension thereof, and a second end portion, and a pull ring pivotally connected to said second end portion, said pull ring surrounding said pull tab, said tab and said pull ring lying substantially flush on said panel, said second end portion being in the form of an attaching loop, and said panel being recessed to provide clearance for said attaching loop.

5. In an easy opening container, a panel, a weakening line in said panel defining a removable tear strip having a starting end portion, a tab having a first end portion secured to said starting end portion and extending from said tear strip as an extension thereof, and a second end portion, and a pull ring pivotally connected to said second end portion, said pull ring surrounding said

pull tab, said tab and said pull ring each being formed of wire.

6. In an easy opening container, a panel, a weakening line in said panel defining a removable tear strip having a starting end portion, a tab having a first end portion secured to said starting end portion and extending from said tear strip as an extension thereof, said tab having fulcrum portions disposed on opposite sides of said tear strip, and a second end portion, and a pull ring pivotally connected to said second end portion, said pull ring surrounding said pull tab.

7. In an easy opening container, a panel, a weakening line in said panel defining a removable tear strip having a starting end portion, a pull tab assembly including a tab and a pull ring, said tab being formed of a bent single length of wire having a rearwardly facing central attaching portion, a forwardly facing and projecting fulcrum portion on each side of said attaching portion, a pair of rearwardly converging legs, and side-by-side attaching loops at the rear ends of said legs, and said pull ring passing through said attaching loops and being thus pivotally connected to said tab, said attaching portion being secured to said starting end portion with said tab forming an extension of said tear strip.

8. The container of claim 7 wherein the diameter of said pull ring is in excess of the length of said tab and said tab lies within said pull ring.

9. In an easy opening container, a panel, a weakening line in said panel defining a removable tear strip having a starting end portion, a pull tab assembly including a tab and a pull ring, said tab being formed of a bent single length of wire having a rearwardly facing central attaching portion, a forwardly facing and projecting fulcrum portion on each side of said attaching portion, a pair of rearwardly converging legs, and side-by-side attaching loops at the rear ends of said legs, and said pull ring passing through said attaching loops and being thus pivotally connected to said tab, said attaching portion being secured to said starting end portion with said tab forming an extension of said tear strip, said tab and said pull ring lying substantially flush on said panel.

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