

Nov. 25, 1969

N. S. KHOURY

3,480,175

SINGLE FULL RING TAB

Filed March 17, 1967

FIG. 1

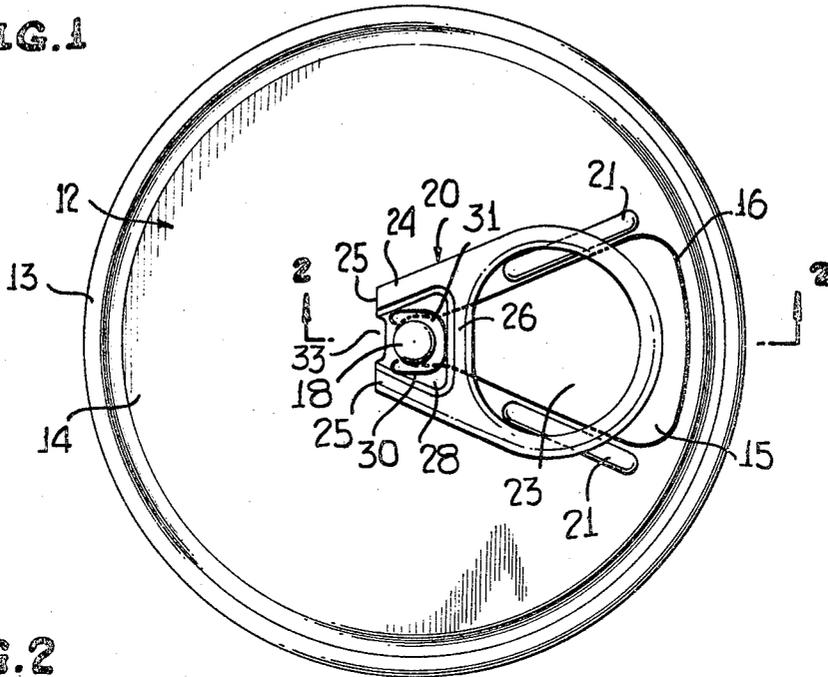


FIG. 2

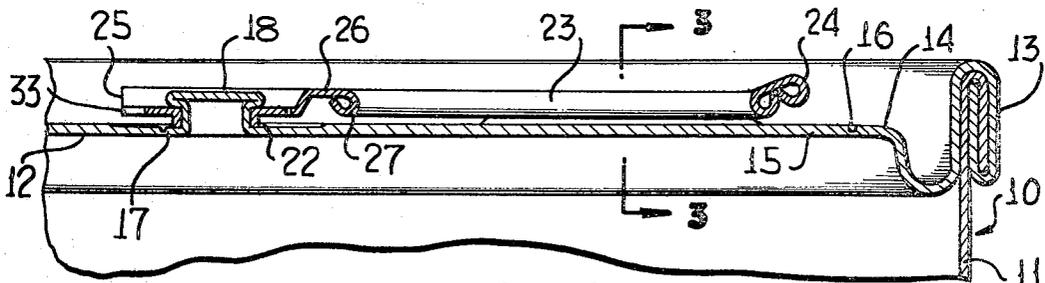


FIG. 4

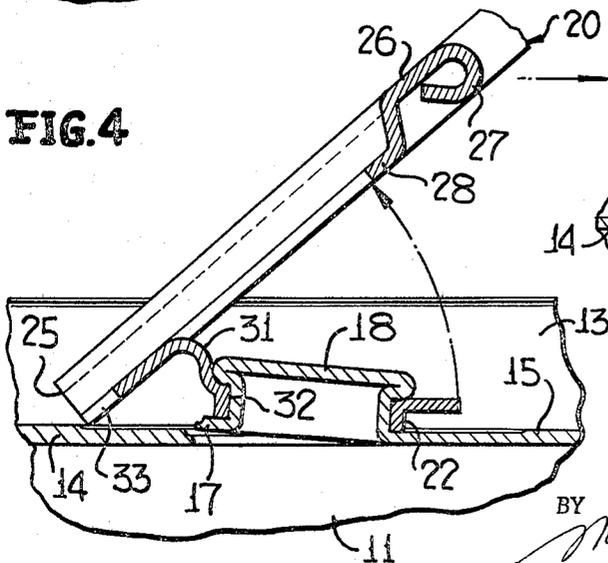
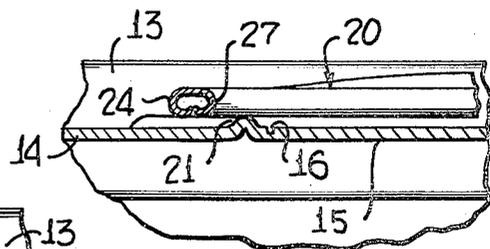


FIG. 3



INVENTOR
NICK S. KHOURY

BY *Maxon, Porter, Miller & Brown*
ATTORNEYS

1

2

3,480,175

SINGLE PULL RING TAB

Nick S. Khoury, Worth, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York

Filed Mar. 17, 1967, Ser. No. 624,029

Int. Cl. B65d 17/24

U.S. Cl. 220—54

7 Claims

ABSTRACT OF THE DISCLOSURE

This subject has to do with easy opening can ends having a tear portion defined by a weakening line and wherein a pull tab is attached to the tear portion to effect the removal thereof. The pull tab overlies the tear portion so as to protect the tear portion against accidental removal. By having the pull tab coextensive with the tear portion, more space is made available for a larger tear portion.

This invention relates in general to new and useful improvements in easy opening containers, and more particularly to a novel easy opening panel construction of the type having a tear portion defined by a peripheral weakening line and a pull tab secured to the tear portion and adjacent a starting end thereof to facilitate both the initial rupture of the container panel and the tearing out of the tear portion.

When a tear portion of an easy opening container is placed in the end panel of a container end, in the past the extent of the tear portion has been restricted by the size of the end panel. This has been because the pull tab has normally provided an extension of the tear strip. In accordance with this invention, it is proposed to have the pull tab disposed coextensive with the tear strip whereby the starting end of the tear strip is not restricted to a position immediately adjacent the center of the end panel as has been customary.

Another feature of this invention is to position the pull tab in overlying relation to the tear portion whereby the pull tab protects the tear portion and prevents accidental rupture of the container panel along the weakening line defining the tear portion.

Still another feature of this invention is to provide adjacent the tear portion upstanding ribs which support the pull tab in an elevated position above the tear portion to further prevent the accidental rupture of the container panel along the weakening line defining the tear portion.

In accordance with the foregoing object, the upstanding ribs may be positioned immediately adjacent the tear portion along opposite sides thereof and serve as protective beads whereby when one drinks directly from the container through the opening defined by the removal of the tear portion, one's mouth would not accidentally engage the resultant raw edge.

Another feature of this invention is to position a pull tab with respect to a tear portion in a manner wherein the pull tab has a fulcrum end disposed beyond the starting end of the tear portion whereby full bearing engagement of the fulcrum end of the pull tab with the container panel is facilitated.

In accordance with the foregoing object, it is also proposed to recess the fulcrum end of the pull tab so as to define two spaced apart fulcrums, and to define in the pull tab a connecting ear which is hingedly connected to the remainder of the pull tab and is connected directly to a container tear portion, the connecting ear being aligned with the recessed portion of the fulcrum end.

A still further object of this invention is to provide a novel one-piece pull tab which is formed of sheet metal and which has a generally triangular or horse-

shoe outline, the pull tab being provided at one end with a fulcrum and at the opposite end being in the form of a ring, the pull tab having a peripheral reinforcement and a cross bar reinforcement which combines to define the ring and with the peripheral reinforcement terminating at the fulcrum end into spaced apart fulcrums, and the tab having struck therefrom a connecting ear disposed between the fulcrum end and the cross bar with the connecting ear being hingedly connected to the remainder of the tab adjacent the fulcrum end.

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 an end of a container formed in accordance with this invention.

FIGURE 2 is an enlarged fragmentary vertical sectional view taken along the line 2—2 of FIGURE 1 and shows further the details of construction of the can end.

FIGURE 3 is an enlarged fragmentary transverse vertical sectional view taken along the line 3—3 of FIGURE 2 and shows the manner in which the pull tab is supported in an elevated position above the tear portion.

FIGURE 4 is an enlarged fragmentary sectional view similar to FIGURE 2 but on a larger scale and shows the pull tab in an elevated position immediately after the initial rupture of the end panel at the starting end of the tear portion.

Referring now to the drawings in detail, it will be seen that there is illustrated a can, which is generally referred to by the numeral 10. The can 10 includes a body 11 having one end (not shown) closed in a conventional manner and the opposite end thereof closed by means of an easy opening end, which is the subject of this invention, the end being generally referred to by the numeral 12. The end is secured to the can body 11 by means of a conventional seam 13. The end 12 includes an end panel 14 which is recessed within the can body 11, as is best shown in FIGURE 2.

The end panel 14 has defined therein a removable tear portion 15. The tear portion 15 is defined by a weakening line 16 which is preferably in the form of a score. It is to be noted that the tear portion 15 is of a configuration to facilitate the dispensing of a liquid and is of a generally triangular outline terminating at its inner end in a starting end 17.

The tear portion 15 is provided immediately adjacent the starting end 17 with an integral rivet 18 which is utilized to secure a pull tab, which is generally referred to by the numeral 20, to the tear portion 15. The pull tab 20, like the tear portion 15, is also of a generally triangular outline and is disposed coextensive with the tear portion 15 in overlying relation thereto, as is clearly shown in FIGURE 1. It is to be noted that the pull tab 20 is wider than the tear portion 15 with the result that a major portion of the tear periphery of the pull tab 20 is disposed outwardly of the tear portion 15 so as to provide adequate protection for the tear panel 15 and the weakening line 16 defining the same. However, when the tear portion 15 extends closely adjacent to the double seam 13 it is necessary to terminate the adjacent end of the pull tab 20 short of the end of the tear portion 15 to provide sufficient room for the engagement of that end of the pull tab to facilitate the elevation thereof in a manner to be described hereinafter.

At this time it is pointed out that inasmuch as the pull tab 20 is coextensive with the tear portion 15, not only does it serve to protect the end panel 14 against accidental rupture along the weakening line 16, but also provides more space for the tear portion 15. Heretobefore, when

the pull tab 20 extended from the tear portion, the extent of the tear portion was substantially restricted to a point adjacent the center of the end panel with the rivet being disposed concentric with the center of the end panel, as is shown in FIGURE 1. However, with the pull tab 20 being coextensive with the tear portion 15, it will be readily apparent that the tear portion 15, particularly in smaller diameter cans, may extend well beyond the center of the end panel and thus provide a much larger dispensing opening. This has been desired for some time in relatively small cans, such as beer cans.

It is to be noted that the end panel 14 has been provided with a pair of beads 21 disposed on opposite sides of the tear portion 15 and closely adjacent thereto. The beads 21 serve three primary purposes. First, they support the pull tab 20 in an elevated position with respect to the tear portion 15 whereby when a force is accidentally directed against the pull tab 20 directing the same towards the tear portion 15, it is prevented from engaging the tear portion 15, and thereby accidental rupture of the end panel 14 along the weakening line 16 is prevented. Secondly, because the pull tab 20 is held in an elevated position with respect to the end panel 14, it may be more readily engaged and lifted. A third advantage of the ribs 21 is that the ribs in of themselves function as guards against the accidental engagement of one's mouth with the raw edge which results when the tear portion 15 is removed and one drinks directly from the can.

Referring now to FIGURE 2 in particular, it is to be noted that the pull tab 20 has a peripheral flange 22 extending around the base of the rivet 18. This flange 22 cooperates with the ribs 21 in retaining the pull tab 20 in an elevated position with respect to the tear portion 15. The peripheral flange 22 also serves to reinforce that portion of the pull tab of which it is a part. It further reinforces the connection between the pull tab and the rivet.

Reference is now made to the construction of the pull tab 20. It is to be noted that it is of a one-piece sheet metal construction. As described above, the pull tab 20 is of a generally triangular outline or it may be described as being of a generally horeshoe configuration. One end thereof, the end disposed adjacent the starting end 17 of the tear portion 15, is considered to be a fulcrum end. The opposite end of the pull tab is in the form of a ring 23 of a size to receive one's finger. The pull tab 20 has a peripheral reinforcement 24 which terminates at the fulcrum end of the pull tab in two spaced apart fulcrums 25. The peripheral reinforcement 24 also partially defines the ring 23. The pull tab 20 also has a cross bar reinforcement 26 which extends transversely of the pull tab and is joined to the peripheral reinforcement 24. It is to be noted that the peripheral reinforcement 24 is in the form of a reversely turned hem, as is best shown in FIGURES 2 and 4. It is also to be noted that the surface of the pull ring 23 is defined by an inner hem 27 which in part forms a portion of the cross bar reinforcement 26 and in part forms a portion of the peripheral reinforcement 24. The hem 27 assures the elimination of any exposed raw edge around the ring portion 23.

It is to be noted that the pull tab 20 is provided with a recessed panel 28 between the fulcrum end and the cross bar 26. The recessed panel 28 has cut therefrom by means of a generally C-shaped cut line 30 a connecting ear 31. The connecting ear 31 has an opening 32 therein defined by the aforementioned annular flange 22 through which the rivet 18 passes. It is to be noted that the connecting ear 31 is hingedly connected to the remainder of the pull tab 20 along a transversely extending hinge line which extends between the free ends of the C-shaped cut 30, the hinge line being disposed adjacent the fulcrum end of the pull tab 20 and generally aligned with the starting end 17 of the tear portion 15.

It is also to be noted that the fulcrum end of the pull tab 20 is recessed, as at 33, in alignment with the connecting ear 31. This provides for the spaced apart ful-

crums 25 to function as individual fulcrums and therefore, facilitates the lifting of the rivet 18 and the associated starting end 17 of the tear portion 15 by means of the connecting ear 31 when the pull tab 20 is pivoted upwardly.

Referring now to FIGURE 4 in particular, it will be seen that when the pull tab 20 is initially lifted, the connecting ear 31 will remain substantially stationary and bend along its general hinge line of connection with the remainder of the pull tab 20. This permits the pull tab 20 to be elevated a considerable distance above the end panel 14. Thereafter, the fulcrums 25 engage the end panel 14 beyond the starting end of the tear portion 15 with sufficient force so as to direct an upward force on the rivet 18 through the connecting ear 31. As a result, the primary pressure is applied through the rivet 18 to the tear portion 15 at the starting end 17 thereof, along which rupture first occurs. After the rupture illustrated in FIGURE 4 occurs, the pull tab 20 is pulled to the right in the direction of the arrow to tear out the tear portion 15.

It will be readily apparent from the foregoing that the specific pull tab tear portion arrangement is such that in smaller cans a larger dispensing opening than heretofore possible is provided. Also, the pull tab protects the tear portion against accidental removal. Further, because of this protection afforded by the pull tab, the weakening line 16 may be made deeper, thereby reducing the effort required to provide the initial rupture. In addition, the particular pull tab arrangement is such that a higher lifting force may be applied to the rivet 18 therethrough.

Although a preferred embodiment of the invention has been specifically illustrated and described herein, it is to be understood that minor variations may be made in the pull tab and easy opening panel construction without departing from the spirit and scope of the invention, as defined by the appended claims.

I claim:

1. An easy opening container panel, a weakening line defining a tear portion having a starting end, a pull tab, means attaching said pull tab to said tear portion starting end for facilitating the removal thereof, said pull tab extending in the same general direction from said starting end as said tear portion in overlying relation to said tear portion and having a major portion of the periphery thereof disposed outwardly of said tear portion whereby said pull tab protects said panel against accidental rupture along said weakening line, said pull tab having a fulcrum end of a greater width than said starting end disposed longitudinally beyond said tear portion at said starting end, said fulcrum end being centrally recessed and having two spaced apart fulcrums, and an integral connecting ear projecting away from said fulcrum end and having a hinge connection with the remainder of said pull tab generally aligned with said starting end whereby said pull tab may be initially freely lifted and thereafter a direct lifting force may be applied to said tear portion at said starting end through said connecting ear, said connecting ear being aligned with said recess in said fulcrum end, and a transversely extending cross bar disposed adjacent said connecting ear on the side thereof remote from said fulcrum end, said cross bar extending transversely across said tear strip and supporting an intermediate portion of said pull tab against downward deflection towards said tear strip.

2. The container panel of claim 1 wherein said pull tab overlies a major portion of said tear panel.

3. The container panel of claim 1 wherein said panel has means disposed adjacent said tear portion on opposite sides thereof and outwardly thereof supporting said pull tab in spaced relation to said tear panel.

4. The container panel of claim 3 wherein pull tab supporting means are in the form of protective beads.

5. A one-piece sheet metal pull tab having one end thereof in the form of a fulcrum end and the other end thereof in the form of a ring, said pull tab having a peripheral reinforcement defining a major portion of said

5

ring and terminating at said fulcrum end in spaced apart fulcrums, said fulcrum end being recessed between said spaced apart fulcrums, a cross bar reinforcement extending between said peripheral reinforcement and defining the remainder of said ring, and a connecting ear intermediate said fulcrum end and said cross bar in alignment with said recess and hingedly connected to the remainder of said pull tab adjacent said fulcrum end.

6. The container panel of claim 1 wherein said container panel is an end panel of an end unit for a can, and said end unit is secured to a can body and forms a rigid part thereof.

7. The pull tab of claim 5 wherein there is an integral web connecting together said peripheral reinforcement be-

6

tween said cross bar and said fulcrum end, and said connecting ear being formed from a portion of said web.

References Cited

UNITED STATES PATENTS

3,403,811	10/1968	Moller et al.	220—54
3,366,270	1/1968	Khoury	220—54
2,112,231	3/1938	Speidel	220—54
3,225,957	12/1965	Huth	220—54
3,322,296	5/1967	Khoury	220—48
3,327,891	6/1967	Smyth	220—54

GEORGE T. HALL, Primary Examiner