

Brown

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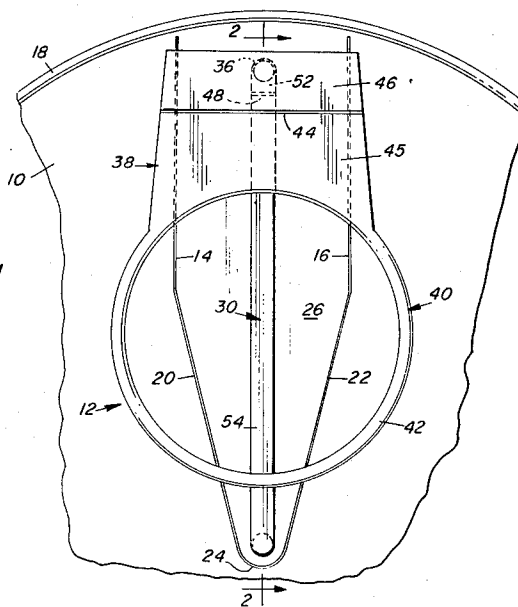


FIG. 1

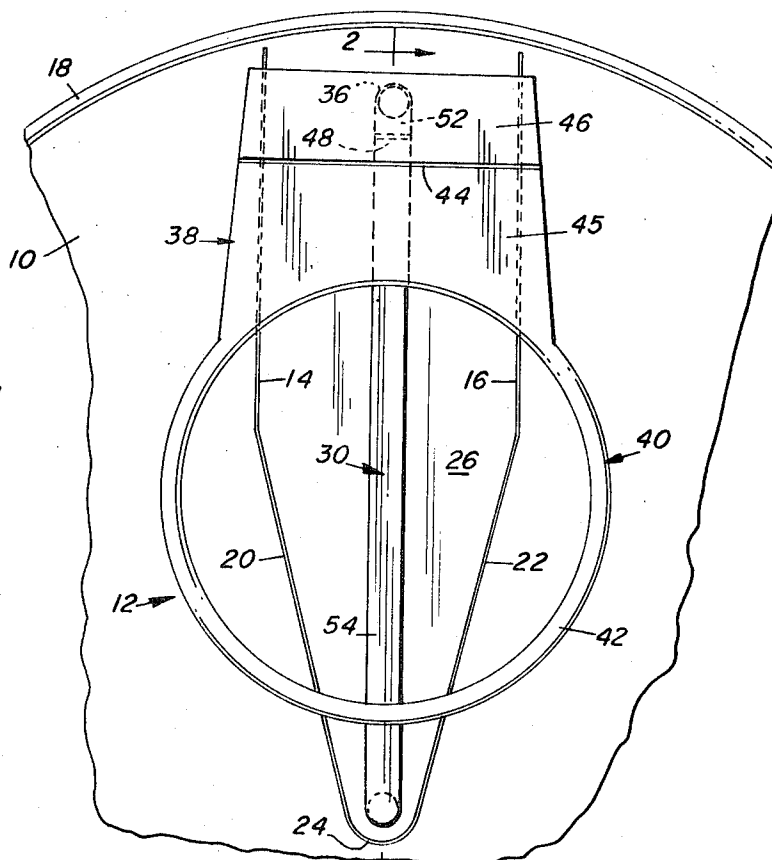
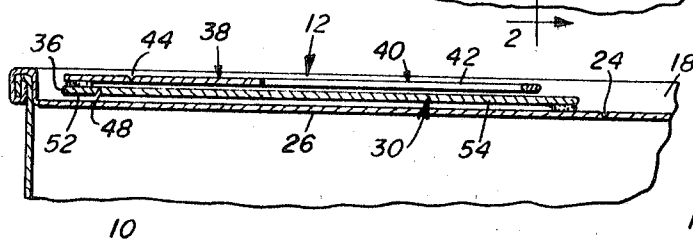


FIG. 2

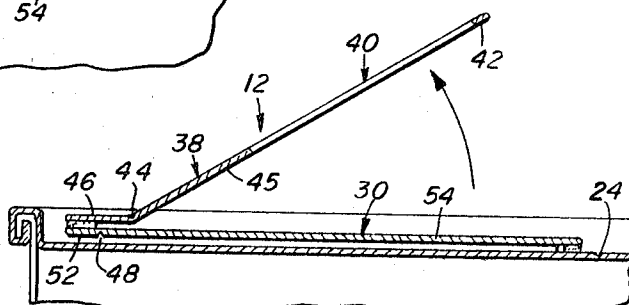


FIG. 3

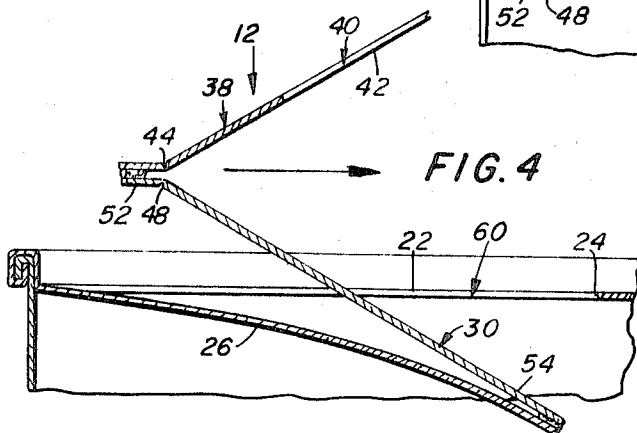


FIG. 4

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FIG. 5

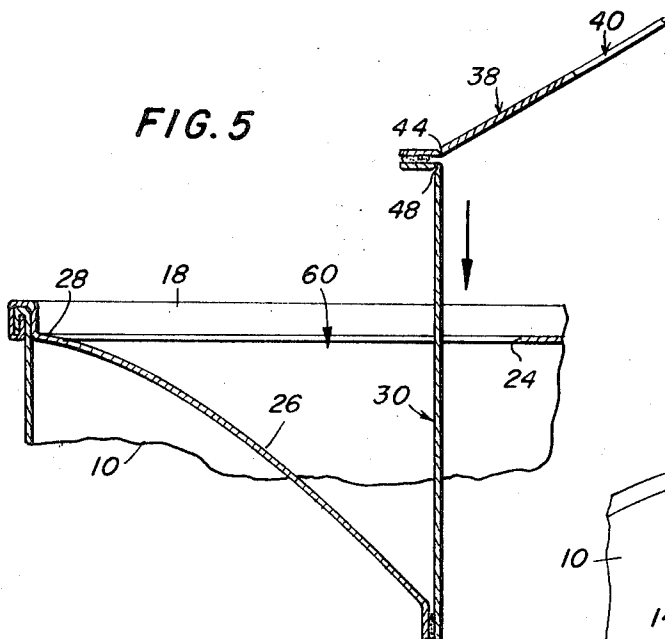


FIG. 6

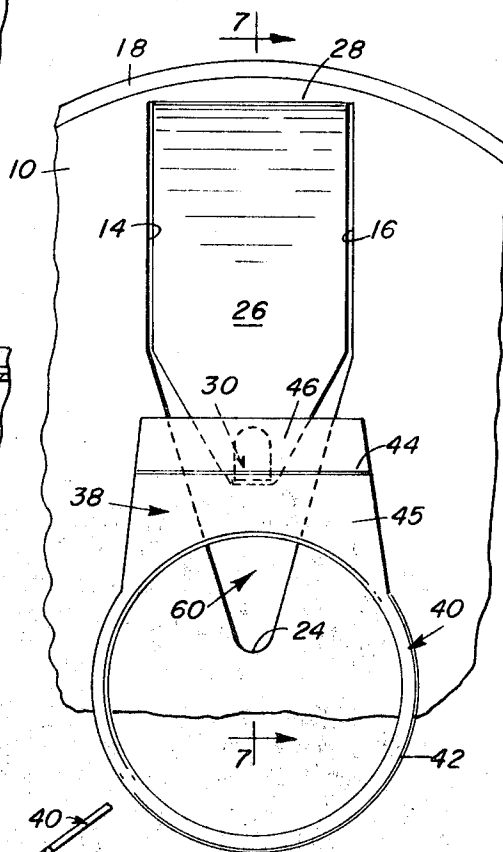


FIG. 7

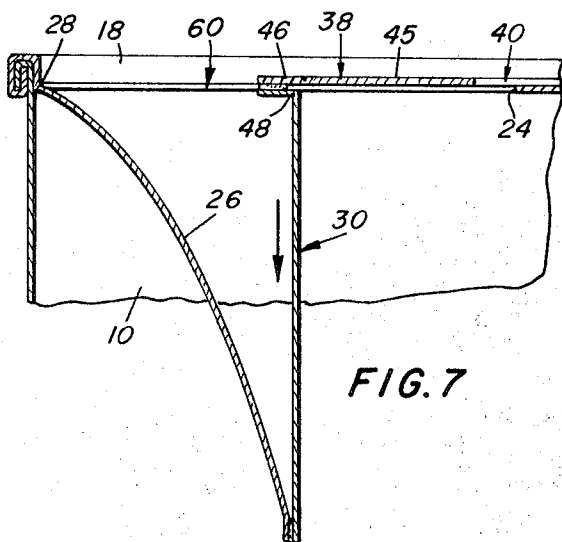
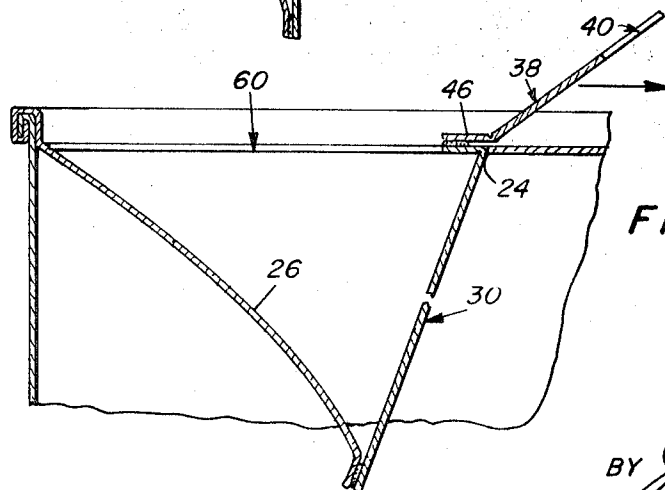


FIG. 8



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RETAINABLE TEAR-AWAY TAB FOR CONTAINER

BACKGROUND OF THE INVENTION

This invention relates to a pull tear-away tab or closure for a can, and more particularly to a tear-away tab which will remain attached to the can top after the can is opened.

Presently, many different types of beverages such as beer, carbonated soft drinks, etc., are being sold in cans having tab openers or more commonly called "pop top" cans. Although these cans are extremely convenient for outdoor activities such as picnics and the like, they are a source of growing concern to the ecologist. Most of the concern, however, has been directed to the disposable can itself, but little attention has been focused on the other pollution problems which the discarded tear-away tab causes. Even if the user has the foresight to dispose of the can in a trash receptacle, very few will take the time to find a receptacle in which to discard a small tear-away tab. These tabs can be found littering most of the outdoor recreational areas, and they are just as much an "eye sore" as the disposable can. The ever increasing use of aluminum in the making of disposable cans by the beverage industry has pyramided this problem since aluminum will not oxidize or decompose easily.

Besides littering the picnic grounds, other environmental problems are caused by the discarded tear-away tabs. For example, many tabs are discarded in lakes, rivers, etc., by people using the recreational water facilities for boating and fishing, or other water sports, and it has been found that many times fish will strike at a tab as it settles to the bottom of the body of water. If the fish swallows the tab, serious internal injury usually results, and the fish dies. The discarded tabs also produce a safety hazard, in that, severe lacerations may be inflicted when a person without shoes steps on one of the tabs.

Several attempts have been made to alleviate the problem mentioned above by making pop top cans with tabs which cannot be detached from the can top, examples being found in U.S. Pat. No. 2,326,406 to Brown and U.S. Pat. No. 3,462,042 to Stolle. Both of these patents eliminate the problem of the discarded tabs, but they produce other problems such as exposing the user to the sharp edges of the tab since the tabs are generally torn outwardly and retained on the can top, tooling and manufacturing difficulties, and the like.

SUMMARY OF THE INVENTION

It is, therefore, an object of this invention to provide a means for retaining a tear-away tab on a can top which will prevent the tab from being discarded and thereby reduce environmental pollution.

Another object of this invention is to provide a retaining means which will position the tab in a location which is away from the can top in order to eliminate all of the sharp edges which might cause injuries to the user.

Still another object of this invention is to provide a pull tab which can be retained on the can top that is easy and economical to manufacture.

These and other objects are accomplished by the present invention through the use of a pull tab opener for the top of a can which is defined by a scored segment that is adapted to be pressed downwardly into the can to form a desired opening. The scored segment, or tab, remains attached to the can adjacent to the rim thereof so that it cannot be removed or discarded. A pull ring is attached to the tab by means of a stem, the stem being connected near the inner edge of the tab. The stem overlies the tab with its free end extending toward the can rim where it is attached to the pull ring which, in turn, overlies the stem and the tab. To open the can, the ring is lifted upwardly, pulling the stem into a generally vertical position over the inner end of the tab. The stem and ring are then pressed downwardly causing the tab to tear away from the can top along the scored lines from the center towards the rim of the can and be forced down into the can. The ring is forced downwardly to a position flush with the surface of the can top, and although the ring, stem and tab remain attached to the

can, they are conveniently positioned so as not to interfere with the normal use of the can.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a portion of a plan view of a can showing a portion of a can top having a pull top opener according to the present invention;

FIG. 2 is a cross section view as taken on line 2—2 of FIG. 1;

FIG. 3 is a cross section view of a portion of the can shown in FIG. 1, illustrating the initial stage in the sequence for severing the tab from the can top according to the present invention;

FIG. 4 is a cross section view of the portion of the can top shown in FIG. 1 illustrating the second step in the sequence for severing the pull tab from the can top;

FIG. 5 is a cross section view of the portion of the can top shown in FIG. 1, illustrating the third step in the sequence for severing the pull tab from the can top;

FIG. 6 is a plan view of the portion of a can top having a pull tab opener of the present invention wherein the tab has been severed from the can top and illustrates the final step in the sequence for opening the can;

FIG. 7 is a cross section view taken on line 7—7 of FIG. 6; and

FIG. 8 is a section view of the portion of the can top illustrating the final position of the tab opener in an alternative location.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring more particularly to the drawings, in FIGS. 1 and 2, the numeral 10 indicates a partial section of a beverage can top having a pull tab opener 12 device formed therein. The pull tab opener has parallel scored lines or grooves 14 and 16 extending from the rim 18 of the can. The parallel scored lines 14 and 16 continue as converging scored lines 20 and 22 towards the center of the can top. Prior to the geometrical intersection of the converging lines 20 and 22, a rounded scored segment 24 joins the converging scored lines 20 and 22. The parallel scored lines 14 and 16, converging scored lines 20 and 22 and rounded scored segment 24 define a scored segment, tab, or partially enclosed closure strip 26 which also defines the outline of the opening which will be formed in the can top when the tab 26 is severed from the can top 10. The outer end 28 of the tab 26 near rim 18 is not scored and defines a bend line, thus this end portion of the closure strip 26 remains attached to the can top 10 when the remaining portion of the tab 26 is disconnected or severed from the can top 10 along scored lines 14, 16, 20, 22 and 24.

A stem 30 overlies the tab 26 (see FIG. 2) and is secured by spot welding or other suitable means to the tab 26 near the inner end of the tab contiguous to the scored round segment 24, as can be seen in FIG. 1. The stem 30 extends outwardly towards the rim 18 and is parallel and centered between the scored lines 14 and 16 of tab 26. The outer end 36 of stem 30 is spot welded to the underside of a generally trapezoidal member or base portion 38 of a pull ring or handle 40. The pull ring 40 extends from the rim of the can towards the center portion of the can top and overlies the stem. The inner end of the pull ring 40 is a finger ring 42 which is formed integrally with the trapezoidal member 38. The ring tab 40 has a crease line 44 across the trapezoidal member 38 which permits the finger ring 42 and inner section 45 of the trapezoidal member 38 to be bent or pivoted upwardly with respect to the outer section 46 of the trapezoidal member 38 when the pull ring 40 is lifted.

At the outer end 36 of stem or elongated rod 30, there is another crease line 48 (see FIGS. 1 and 2) adjacent to the connection joint between the stem 30 and pull ring 40. The crease line 48 permits the outer portion 52 of stem 30 to remain horizontal and parallel with respect to the outer section 46 of the pull ring 40 while the inner portion 54 (see FIG.

4) of stem 30 is bent or pivoted to a vertical position when the pull ring 40 is lifted and pulled towards the inner end of the tab 26.

Turning now to the procedure for opening the pull tab opener device, FIG. 2 illustrates the initial position of the tab opener device prior to lifting of the pull ring 40. In FIG. 3, the pull ring is lifted upwardly, thereby permitting the pull ring 40 to be pivoted upwardly along crease line 44 so that the ring portion 42 is disposed at an angle with respect to the plane of the outer portion 46 of the trapezoidal member 38.

Continuing with the opening operation in FIG. 4, pull ring 40 is moved initially upwardly and inwardly with respect to the center of can top 10 so that the inner portion 54 of stem 30 will be forced downwardly and thus the stem will be creased along line 48. The downward pressure applied to the inner end of tab 26 by the downward movement of the inner end 54 of stem 30 causes the tab 26 to be severed or torn away from top 10 along scored lines beginning with the rounded scored segment 24.

As the inner end 54 of the stem is pivoted to a vertical position as shown in FIG. 5, the tab 26 is severed progressively along converging scored lines 20 and 22. When the inner portion 54 of stem 30 is in the vertical position, a subsequent downward force on the pull ring 40 applies pressure through stem 30 to tab 26 so that it is progressively severed from the can top along parallel scored lines 14 and 16. After the stem is forced downwardly into the can, the trapezoidal member 38 of pull ring 40 is in contact with the can top 10 on each side of a tab opening 60 as seen in FIG. 6. The inner section 45 of the trapezoidal member 38 and the finger ring 42 are pushed downwardly into contact with the upper surface of can top 10 as seen in FIG. 7 so that they are conveniently positioned and do not interfere with the normal use of the can. The tab segment 26 remains connected to the can top 10 along outer edge 28, therefore the pull tab opener cannot be removed or discarded.

FIG. 8 illustrates a second method of positioning the pull ring upon opening the can. After the stem is forced downwardly into the can so that the outer portion 46 of the trapezoidal member 38 on pull ring 40 engages the can top 10, the pull ring 40 is pulled inwardly so that stem 30 will contact the edge of opening 60 defined by the rounded portion 24 of the scored segment. The stem 30 is pivoted away from the vertical position and the opening 60 is increased in size.

It should be understood that the drawings only illustrate the principle of operation and the major components used to accomplish the invention and the particular shape and size of the tab segment, the pull ring is not significant and may be varied in any desired manner.

It can be seen from the above description and drawings that this invention provides a device in which the pull tab opener would be retained on the can and the sharp edges of the tab will be positioned remotely to the outside surface of the can so that they will not injure the user. The device also permits for easy tooling and manufacturing and will be very economical.

The above embodiment can be modified in numerous ways as will be apparent from the foregoing. For example, the configuration of the tab and the ring puller can be varied while any appropriate means may be used to secure the stem to the tab and the pull ring. However, these and other variations and changes can be made in the invention as above described and illustrated without departing from the true spirit and scope thereof as defined in the following claims.

What is claimed is:

1. A tear-away tab device within a container wall for providing an opening in said container wall comprising:

- a. tab means in said container wall adapted to be partially severed from said container wall, thereby forming said opening in said container wall;
- b. stem means secured to said tab means and adapted to apply pressure to said tab means to sever said tab means from said container wall and force said tab means into the container; and

c. handle means secured to said stem means for manipulating said stem means to apply pressure on said tab means.

2. The tear-away tab device of claim 1, wherein said tab means is a closure strip defined by a scored line which partially encloses said closure strip and a bend line between the ends of said scored line, said closure strip can be severed from said container wall along said scored line while remaining attached to said container wall along said bend line.

3. The tear-away tab device of claim 1, wherein said stem means is an elongated member which overlies said tab means and which can be manipulated by an initial upward and subsequent downward force applied to said handle means so that said tab means is severed from said container wall and forced into said container.

4. The tear-away tab device of claim 1, wherein said handle means is a pull ring which overlies both said tab and stem means, said pull ring being adapted to manipulate said stem in order to force said tab means into said container upon an initial upward and subsequent downward force being applied to said pull ring.

5. The tear-away tab device of claim 2, wherein said stem means is an elongated member which overlies said closure strip and which can be manipulated by an initial upward and subsequent downward force applied to said handle means so that said closure strip is severed from said container wall and forced into said container.

6. The tear-away strip of claim 5, wherein said handle means is a pull ring which overlies both said closure strip and said elongated member, said pull ring being adapted to manipulate said stem in order to force said closure strip into said container upon an initial upward and subsequent downward force being applied to said pull ring.

7. The tear-away strip of claim 1, wherein said stem means is an elongated member overlying said tab means, said elongated member having a first crease line dividing said member into a first and second portion, said first portion being secured to said handle means, said second portion being secured to said tab means so that said elongated member applies pressure to said tab means and severs the tab means from said container wall and forces said tab inwardly when said elongated member is bent along said first crease line so that said second portion of said elongated member is rotated to a vertical position by applying an initial upward force and subsequent downward force to said handle means.

8. The tear away tab device of claim 7, wherein said handle means is a pull ring overlying both said tab means and said elongated member, said pulling ring having a base portion divided into a first and second section by a second crease line, said first section being secured to said elongated member and said second section being integrally formed with a finger ring, said second section and said finger ring being adapted to pivot upwardly with respect to said first section about said second crease line when said upward force is applied to said pull ring.

9. The tear-away tab device of claim 2, wherein said stem means is an elongated member overlying said closure strip, said elongated member having a first crease line dividing said member into a first and second portion, said first portion, said first portion being secured to said handle means, said second portion being secured to said closure strip so that said elongated member applies pressure to said closure strip and severs said closure strip from said container wall and forces said closure strip inwardly when said elongated member is bent along said first crease line so that said second portion of said elongated member is rotated to a vertical position by applying an initial upward force and subsequent downward force to said handle means.

10. The tear-away tab device of claim, 9 wherein said handle means is a pull ring overlying both said closure strip and said elongated member, said pulling ring having a base portion divided into a first and second section by a second crease line, said first section being secured to said elongated member and said second section being integrally formed with a finger ring, said second section and said finger ring being adapted to pivot

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upwardly with respect to said first section about said second
crease line when said upward force is applied to said pull ring.

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