ABSTRACT: In an easy-open can, a structure is provided which eliminates the conventional tab-holding rivet. The can end proper is provided with at least one pair of integral raised abutments having mutually opposed parallel vertical walls normally to the axis of the tab, and the tab is provided with at least one curled portion normal to its axis and of a diameter to enter between said parallel vertical walls, which walls are then crimped over said curled portion to hold the tab to the can end. A reinforcing wire may be inserted in said curled portion to give it additional strength. The curled portion when firmly crimped into said abutments serves as a fulcrum for the tab when the latter is raised to perforate the can end and to tear open a panel which is defined by a scoreline. The invention applied equally to can ends provided with beverage type openings whether the tab be captive or not, and to cans wherein substantially the entire end panel is removed, and can be applied to a previously fabricated can end.
MEANS FOR ATTACHING A PULL-TAB TO A CAN END

BRIEF SUMMARY OF THE INVENTION

In recent years, easy-open cans have come into wide use. For the most part, such cans have been beverage cans where the tab when pulled out provides a wedge-shaped pouring or drinking opening. The tab which breaks out the tear portion and by means of which the tear portion is torn out is usually secured to the can end within the scored outline by means of a rivet. This rivet has in some cases been a separate rivet and in other cases has been a rivet formed from the material of the can end.

When it is attempted to provide easy opening characteristics for a can end where it is necessary to remove a large panel constituting the major portion of the can end, tremendous loads are put on the rivet and various attempts have been made to alleviate the pressure on the rivet head so that the tab is not pulled off the rivet before the panel is removed from the can. The most common procedure has been to provide a scoreline immediately behind the rivet so that on initial lifting of the tab the scoreline behind the rivet fractures and permits the basic panel material to hinge and permits the tab to produce a fracture of the primary scoreline. Other expedients have involved lancing in such manner that the tab proper may hinge while the lace portion remains intact with the rivet head. Another expedient has been the placing of the rivet as close as possible to the scoreline so as to provide maximum mechanical advantage for rupture of the scoreline while minimizing stress on the rivet head.

According to the present invention, the conventional rivet is eliminated entirely and in its place the tab is provided with one or more cylindrical extensions which are crimped to abutments formed from the material of the can end, whereby the tab is held in place on the can end and which provides a fulcrum for the tab during the breaking out phase of the opening operation. The structure herein described may be applied to a can end which is completely fabricated except for tab attachment and scoring.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a plan view of an easy-open can end according to one embodiment of the invention.

FIG. 2 is a diametrical cross-sectional view taken through the axis of the tab.

FIG. 3 is an enlarged fragmentary cross-sectional view taken on the line 4—4 of FIG. 1 prior to crimping.

FIG. 4 is a view similar to FIG. 3 but showing the relationship of the parts after crimping.

FIG. 5 is a view similar to FIG. 2 showing a modification.

FIGS. 6 and 7 are views similar to FIGS. 3 and 4 but relate to the modification of FIG. 5.

FIG. 8 is a plan view of a modified can end and tab combination.

FIG. 9 is a diametrical cross-sectional view thereof taken through the axis of the tab.

FIGS. 10 and 11 are fragmentary cross-sectional views on the line 11—11 of FIG. 8 showing the abutments before and after crimping, respectively; and

FIG. 12 is a view similar to FIG. 9 showing a further modification.

DETAILED DESCRIPTION

Referring to the embodiment of FIGS. 1 to 4 inclusive, a can end is shown at 10. As is conventional, the can may have the rolled edge 11. The tab which is of the ring pull type is indicated generally at 12. The ring portion 13 thereof overlies a depression 14 in the can end to permit the fingers to get under the ring 13 to lift it up. The end of the tab which is adjacent the edge of the can end has the usual sharp chisel edge 15 which is directly over the score line 16 which extends all the way around the can end adjacent its periphery. If it is desired to provide a beverage type opening, the score line 16a will be provided instead of the scoreline 16, and if the tab is to be captive, a scoreline as shown at 16b will be provided.
3. The structure of claim 1, wherein there are two tubular portions coaxially disposed and extending from opposite sides of said tab, and wherein there are two pairs of said abutments in the can end to cooperate with said two tubular portions.

4. The structure of claim 3, wherein a reinforcing wire is disposed in each of said tubular portions substantially filling them.

5. The structure of claim 4, wherein a single continuous reinforcing wire is disposed in both said tubular portions, and extends across the tab between them.

6. The structure of claim 1, wherein there is a single tubular portion, centered axially of said tab, and wherein there is a single pair of said abutments in the can end to cooperate with said tubular portion.

7. The structure of claim 6, wherein a reinforcing wire is disposed in said tubular portion substantially filling the same.

8. The structure of claim 1, wherein said tubular portion is formed downwardly from the plane of said tab, and said pair of abutments are formed from a depressed portion of said can end.

9. The structure of claim 1, wherein said tubular portion is formed upwardly from the plane of said tab.

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