March 10, 1970 G. L. ADAMS 3,499,573

FLEXIBLE TAB FOR EASY OPENING CAN

Filed July 29, 1968 2 Sheets-Sheet 1

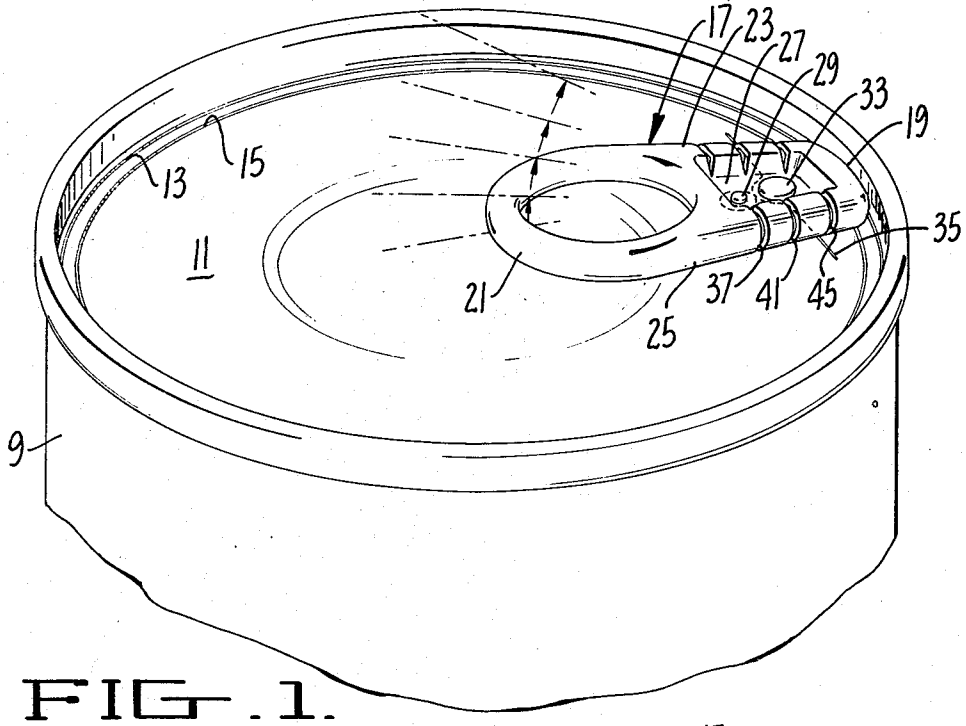


FIG. 1.

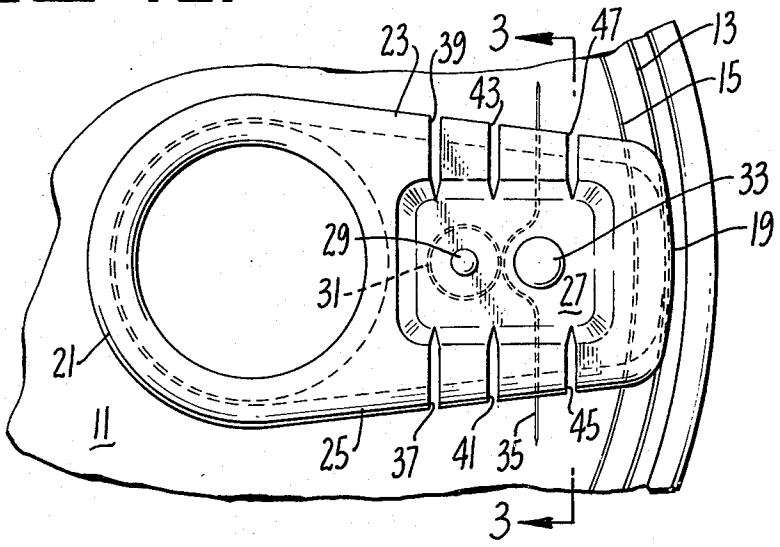


FIG. 2.

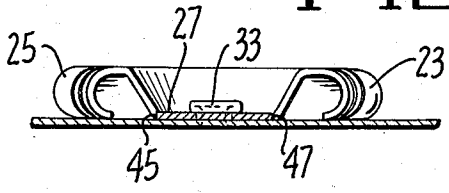


FIG. 3.

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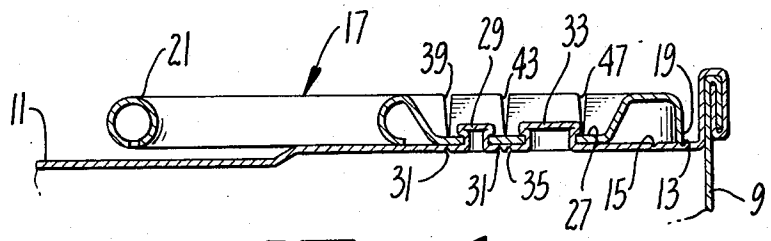


FIG. 4.

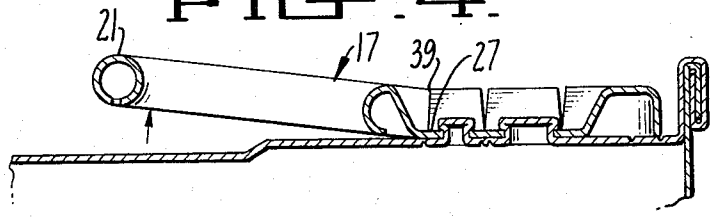


FIG. 5.

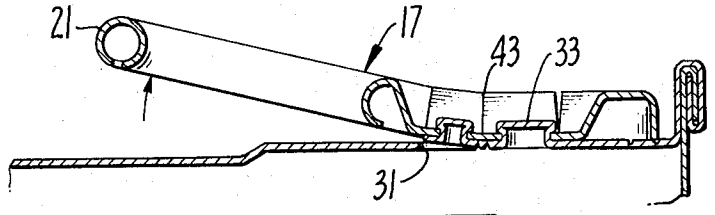


FIG. 6.

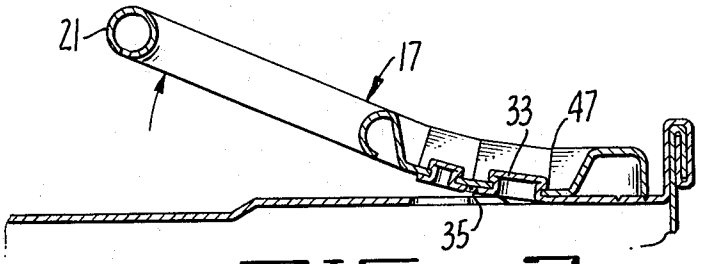


FIG. 7.

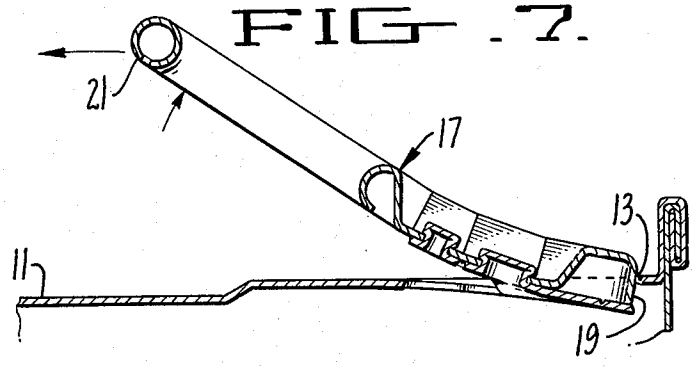


FIG. 8.

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United States Patent Office 3,499,573 Patented Mar. 10, 1970

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FLEXIBLE TAB FOR EASY OPENING CAN

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Filed July 29, 1968, Ser. No. 748,542
Int. Cl. B65d 17/24
U.S. Cl. 220—54 1 Claim

ABSTRACT OF THE DISCLOSURE

A tab for an easy opening can is provided wherein the tab has at least one pair of V shaped notches in its upper surface, allowing the tab to flex upwardly for a distance until the notches close, making the can easier to open.

SUMMARY OF THE INVENTION

The invention is primarily applicable to containers wherein the end of the container is removed as a single solid piece almost in its entirety without the formation of a spiral or other cut. However, the invention can be applied to cans wherein the end is withdrawn as a strip or where a relatively small opening is desired, as in a beverage container.

As is well known to those skilled in the art, such containers have an end of a soft metal such as aluminum with one or more scorelines therein with a tab which is lifted to initially puncture the end of the container and to eventually lift off the portion within the scoreline. In the past, such tabs have ordinarily been made as a fairly rigid structure. The most usual configuration for such tabs is to form a sheet of metal of a relatively thin gauge which in its flat form would not possess sufficient rigidity to perform the opening operation. The edges of the blank for the tab are then rolled to provide relatively strong marginal edges and to render the tab sufficiently rigid to perform the opening operation without substantial bending.

Many efforts have been made to provide a tab which would allow some motion between the tab and the container end before the rupturing operation takes place since it is much easier for the user if one can impart some motion to the tab before it is called upon to fracture the scoreline.

In accordance with the present invention, an easy opening tab is provided wherein at least one pair, and preferably several pairs, of V shaped notches are cut through the reinforcing roll at each side of the tab with the bottoms of the notches even with the flat center portion of the tab. This destroys the overall rigidity of the tab so that the finger end of the tab can be lifted freely, flexing only the relatively thin metal from which the tab is made until the walls of the V close upon each other, whereupon the top of the reinforcing rib is placed in compression and the bottom in tension rendering that portion of the tab rigid so as it is raised further, it can do some work on the can end such as fracturing a scoreline. If several such V shaped notches are employed there will be a regular sequence of alternating easy and work movements as the end of the tab is raised, so that the finger end of the tab will have moved to a considerable distance before the opposite end of the tab is called upon to fracture the main scoreline.

BRIEF DESCRIPTION OF THE DRAWING

FIGURE 1 is a persepective view of a can end showing a tab embodying the present invention.

FIGURE 2 is an enlarged plan view of the tab shown in FIGURE 1 and a portion of the can end.

FIGURE 3 is a section on the line 3—3 of FIGURE 2.

FIGURES 4 through 8 are section views through a can end and a tab embodying the present invention showing the progressive sequence of operations as the end is opened.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

There is shown a can **9** having an end generally designated **11**. The end **11** is made of a soft metal such as aluminum and has a main scoreline **13** and may have an anti-fracture scoreline **15**. Mounted on the end **11** is the tab generally designated **17** which has a nose end **19** which terminates just inside of scoreline **13** and a finger engaging end **21** which can conveniently be made in the form of a ring. The tab itself is formed of a relatively thin sheet of metal and in flat form the metal would not have sufficient rigidity to rupture the scoreline and provide a means for opening the can. To provide rigidity the metal is formed by rolling the edges as at **23** and **25** leaving a central flat portion **27**.

In the embodiment illustrated, the tab is fastened to the end at two points and two auxiliary scorelines are employed although it will be apparent that this is only one configuration which might be employed and that the principles of the invention could be carried out without this specific fastening means. The tab is fastened to the end **11** by a small self rivet **29** and a circular scoreline **31** surrounds the rivet. The tab is further fastened by means of a second self rivet **33** and a secondary scoreline **35** is placed between the two points of attachment as is shown.

In accordance with the present invention, the tab is provided with a series of at least two opposite V shaped notches with the wide ends of the V's at the top of the reinforcing portion of the tab, the bottoms of the V's terminating at the center flat portion of the tab. Thus, in the embodiment illustrated, there are three pairs of such V shaped notches namely, a first pair **37** and **39**, a second pair **41** and **43** and a third pair **45** and **47**.

The manner in which the device operates can be seen in FIGURES 4 through 8. In FIGURE 4, the can end is shown as it would normally be received by the consumer, i.e. none of the scorelines has been ruptured and the tab lies flush against the end of the container.

Now as the end **21** is lifted as is shown in FIGURE 5, substantially no strain will be put on rivet **29** at first since the center portion **27** will merely flex. However, as movement continues the walls of notch **39** (and naturally **37**) will come together as is shown in FIGURE 5 and at this point, the tab becomes rigid with respect to its first segment and as one continues lifting, scoreline **31** will be broken and at this point, the walls of slot **43** have come together as is shown in FIGURE 6. Now the second segment has become rigid and as one continues lifting, pressure will be exerted on rivet **33** raising the end and eventually the slots **47** will close, now rendering the entire tab rigid. As one continues the upward movement as is shown in FIGURE 8, nose **19** will fracture scoreline **13** and once scoreline **13** is fractured, continued movement on the tab will lift off the entire end. It will be readily apparent from a study of FIGURES 4 through 8 that a sequencing operation has been provided and that one progressively ruptures various of the scorelines as the tab is raised yet the balance of the tab remains flexible until the appropriate pair of V notches is closed, and also that the tab has moved through a considerable distance before it is called upon to do its main job, namely rupturing scoreline **13**. This provides a very smooth flowing, easy opening action.

Although a specific configuration has been shown with a double rivet construction and with three pairs of V notches, it should be understood that this is for purposes of illustration only. Thus, in some simple cans, only one pair of notches might be provided so that an initial rock-

ing action of the tab is provided until a single pair of V notches closes whereupon the nose of the tab would rupture a scoreline.

The flexibility of the tab can be altered within wide limits by changing the angles of the V's. All of the V's have been illustrated as having the same angle or width, but the various pairs might have different angles to control the sequencing in a desired manner.

What is claimed is:

1. A container adapted to be opened with the fingers comprising in combination:

(a) a container top with a scoreline therein,

(b) a pull tab attached to the container top having at one end a substantially rectangular nose portion adjacent said scoreline and a finger engaging opposite end,

(c) spaced rivets arranged along the longitudinal line of said tab in said nose portion, and securing said tab to said top, one of said rivets being encircled by a scoreline,

(d) said tabing having a reinforcing roll at each side thereof and a substantially flat intermediate portion,

(e) a plurality of pairs of V-shaped transversely aligned longitudinally spaced notches in said reinforcing roll on each side of said nose portion, the bottoms of the notches terminating at the flat intermediate portion, each pair of said aligned notches defining a bend line transversing the flat of said nose, and said bend lines traversing said nose on each side of said rivets,

(f) whereby said tab can be lifted and will bend on the flat portion until the walls of the V notches close, placing the uppermost portion in compression and the intermediate flat portion of the tab in tension.

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