Nov. 22, 1966 J. S. BOZEK 3,286,874

EASY OPENING CAN

Filed Feb. 12, 1965

FIG. 1

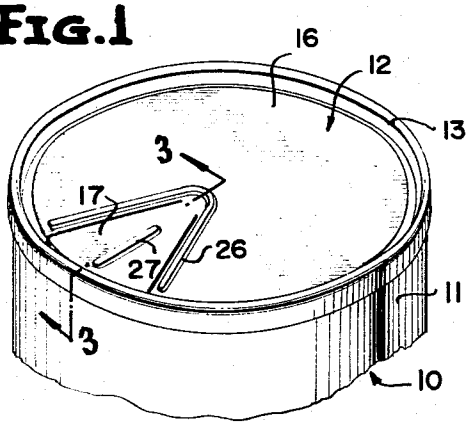


FIG. 2

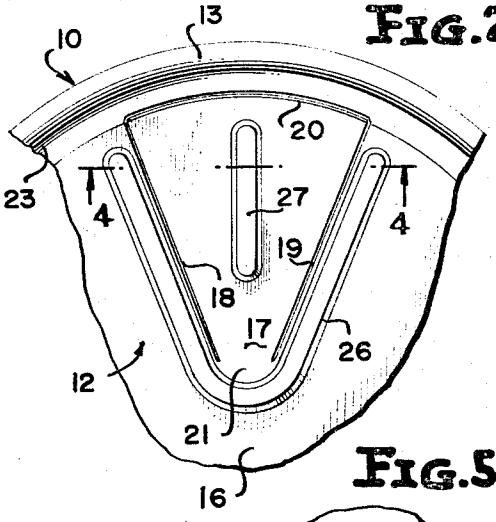


FIG. 5

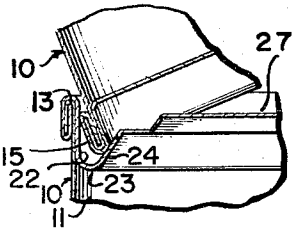


FIG. 3

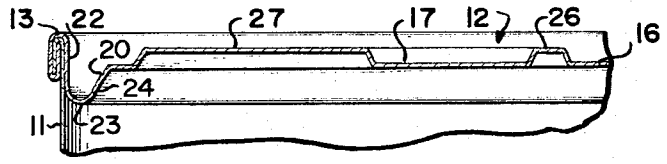
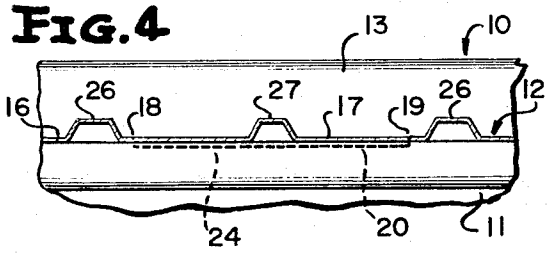


FIG. 4



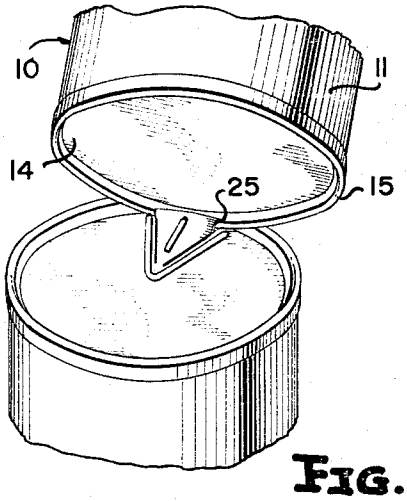


FIG. 6

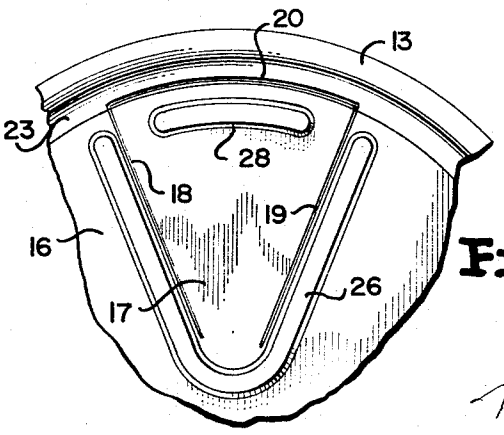


FIG. 7

INVENTOR

JOHN S. BOZEK

BY Mann, Porter, Miller & Stewart

ATTORNEYS

United States Patent Office 3,286,874 Patented Nov. 22, 1966

3,286,874

EASY OPENING CAN

John S. Bozek, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y., a corporation of New York

Filed Feb. 12, 1965, Ser. No. 432,370
17 Claims. (Cl. 220—48)

This invention relates in general to new and useful improvements in can structures, and more particularly to cans having easy opening can ends.

Recently there have been numerous developments in cans of the easy opening type which do not require a tool to open them. This is particularly true of beverage cans. The developments have been primarily directed to cans wherein the ends thereof have tear out portions defined by score lines and the tear out portions have pull tabs attached thereto to facilitate separating the tear out portions from the can end panels along the score lines.

A primary object of this invention is to provide an easy opening can end which, when applied to a can, may be readily opened and at the same time does not require the use of a pull tab.

Another object of this invention is to provide a novel can end wherein the tear strip portion thereof has one end thereof hingedly connected to the remainder of the can end so that in opening the can, the tear strip portion is merely folded back upon an adjacent portion of the can end and is not detached from the can and separately discarded.

Another object of this invention is to provide a novel can end of the easy opening type having formations adjacent the edges of the opening formed therein to protect the lips or adjacent mouth areas of a person drinking therefrom.

A further object of this invention is to provide a novel easy opening can end which is so constructed that when applied to a can, it may be easily opened by utilizing either another can or any conventional blunt leverage type tool that may be available, such as a spoon, knife, etc.

A still further object of this invention is to provide a novel easy opening can end which is so reinforced by suitable ribbing that the metal flow resulting from scoring the can end to define the opening panel is gathered in the reinforcing ribs or beading of the can end.

A still further object of this invention is to provide a novel can which includes a can body having a can end of the easy opening type secured thereto by means of a conventional double seam, and the can being openable by inserting the double seam of a similar can between the double seam of the can and a portion of the can end and utilizing the similar can as a prying tool to pry out a removable portion of the can 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 fragmentary top perspective view of a can incorporating the spirit of this invention.

FIGURE 2 is an enlarged fragmentary plan view of the can of FIGURE 1 and shows specifically the easy opening details of the can end thereof.

FIGURE 3 is an enlarged fragmentary vertical sectional view taken along the line 3—3 of FIGURE 1 and shows the cross section of the can end through the removable portion thereof.

FIGURE 4 is an enlarged fragmentary vertical sectional view taken along the line 4—4 of FIGURE 2 and shows the specific transverse cross section of the removable

portion of the can end and adjacent portions of the can end.

FIGURE 5 is a fragmentary vertical sectional view showing the manner in which the can of FIGURE 1 may be opened utilizing a similar can as an opening tool.

FIGURE 6 is a fragmentary perspective view showing the can of FIGURE 1 being opened using the bottom of a similar can.

FIGURE 7 is an enlarged fragmentary plan view similar to FIGURE 2 and shows a modified can end construction.

In accordance with this invention, a can end is formed so that it may be readily opened by utilizing a suitable pry tool including a similar can. The can end is provided with a tear strip portion that has a starting part against which a lever type tool may be applied with the tool fulcruming about the double seam joining the can end to an associated can body.

Referring now to the drawings in detail, it will be seen that there is illustrated a can incorporating the spirit of this invention, the can being generally referred to by the numeral **10**. The can **10** includes a can body **11** which is closed at its upper end by means of a can end of the easy opening type, the can end being generally referred to by the numeral **12** and being secured to the can body **11** by means of a conventional double seam **13**. As is best shown in FIGURE 6, the lower end of the can body **11** is closed by means of a can end **14** of the conventional type and which is secured to the can body **11** by means of a conventional double seam **15**.

The opening of the can **10** is facilitated by providing an end panel **16** of the can end **12** with a tear strip portion **17**. The tear strip portion **17**, as is best shown in FIGURE 2, is defined by three weakening or score lines **18**, **19** and **20** which are arranged in a generally triangular pattern. The score lines **18** and **19** are disposed in outwardly diverging relation and intersect the ends of the score line **20**. However, the inner ends of the score lines **18** and **19** terminate short of intersection with one another and the material of the end panel **16** between the inner ends of the score lines **18** and **19** generally define a hinge area at **21**.

The end panel **16** is connected to a chuck wall **22** of the can end **12** by means of a generally trough shaped recess **23** which extends entirely around the end panel **16**. As is clearly shown in FIGURE 3, the recess **23** presents an upstanding wall **24**. The upstanding wall **24** is connected directly to the end panel **16** and it will be apparent from FIGURE 3 that the score line **20** is formed in the upstanding wall **24** immediately adjacent its connection with the end panel **16**.

Referring now to FIGURES 5 and 6 in particular, it will be seen that the can **10** may be readily opened by utilizing a similarly formed can **10** or another conventional can. When it is desired to open the can **10** for the dispensing of the beverage or other product disposed therein, the end of another can **10** may be positioned in generally overlapping relation to the can **10** to be opened with the double seam **15** thereof being disposed generally within the recess **23** of the can to be opened, as is clearly shown in FIGURE 5. It will be seen that the relationship of the two cans is such that the double seam **15** engages the upstanding wall **24** at the score line **20**. When a counterclockwise twisting force is applied to the uppermost can **10**, it will pivot generally about the chuck wall **22** and the double seam **13** to effect an upwardly directed prying force on the tear strip portion **17** at the score line **20**. As a result, the can end **12** will be initially ruptured along the score line **20**, followed by a complete tearing of the can end **12** along the score line **20** and then along the score lines **18** and **19** as the uppermost can **10** is further pivoted or twisted. The can **10** which

is being utilized for opening the other can may be then utilized as a pull type implement to pull the tear strip portion **17** out of the plane of the end panel **16** and generally into flattened overlying relation with respect thereto. It is to be noted that since the score line **20** is disposed in a recessed position with respect to the end panel **16**, when the tear strip portion **17** is torn from the end panel **16**, there exists a small lip **25**, which is best shown in FIGURE 5, with which the opened can may be engaged to effect the final tearing of the tear strip portion and the folding thereof.

It is to be noted that the score line **20** is generally horizontally facing with the result that it defines a generally horizontal shoulder beneath which a prying tool, including a can, may be engaged. Thus, when the can **10** is being opened, there is a locking engagement between the prying tool and the tear strip portion along the score line **20**.

Although the can **10** is particularly designed for opening by means of a like can or other conventional types of cans, it is to be noted that the tear strip portion **17** may be torn from the can **10** by means of other conventional implements, such as spoons, knives, forks, etc. Also, it is to be understood that while the tear strip portion **17** illustrated in the drawings is particularly designed for the dispensing of liquids, the design of the tear strip portion **17** may be varied so that fine solid contents may be dispensed from the can **10**.

It is to be noted that the end panel **16** is reinforced by means of a generally V-shaped bead **26** which projects upwardly from the surface of the end panel adjacent the score lines **18** and **19** and around the apex of the tear strip portion **17**. The bead **26** is of a two-fold purpose. First, it serves to gather the excess metal resulting from the forming of the score lines **18** and **19**. Secondly, it serves as a protective buffer preventing one's mouth from engaging the end panel **16** directly along the score lines **18** and **19** after the can **10** has been opened. It is to be noted that the bead **26** cooperates with the upstanding chuck wall **22** and the associated double seam **13** to substantially completely surround the tear strip portion **17** and protect the same from accidental engagement.

In the embodiment of the invention illustrated in FIGURES 1 through 4, the tear strip portion **17** is further provided with a longitudinally extending upstanding rib **27** generally along the center line thereof. This rib serves to reinforce the tear strip portion **17** at the time it is being torn from the end panel **16**. Also, it reinforces the tear strip portion **17** against flexing in the normal handling of the can **10** and so prevents the accidental rupture of the can end **12** along one of the score lines **18**, **19** and **20**. Further, the rib **27** serves to gather excess metal resulting from the forming of the score lines.

In FIGURE 7 a modified form of the tear strip portion **17** is illustrated. In lieu of being provided with a longitudinally extending rib, the tear strip portion **17** of FIGURE 7 is provided with an arcuate rib **28** which extends generally concentric to the seam **13** and generally between the two ends of the V-shaped bead **26**. The arcuate rib **28** serves the same functions as is set forth with respect to the rib **27**, but more ably functions to gather the metal from the forming of the score line **20**. Further, it more ably resists transverse flexing of the tear strip portion **17** and thus prevents accidental rupture of the can end **12** at the intersections of the score line **20** with the score lines **18** and **19**.

Although only two preferred embodiments of the invention have been specifically illustrated and described herein, it is to be understood that other minor variations may be made in the disclosed easy opening can construction within the spirit and scope of this invention, as defined in the appened claims.

I claim:

1. An easy opening can end comprising an upstanding chuck wall and an end panel, a pair of inwardly converging weakening lines formed in said end panel and in part defining a triangular tear strip, said can end being recessed between said chuck wall and said end panel in alignment with said tear strip to define an upstanding wall around said end panel and in opposed spaced relation to said chuck wall, and a generally circumferentially extending third weakening line in said upstanding wall and extending between the widely spaced ends of said pair of weakening lines whereby said can end may be ruptured along said third weakening line and said tear strip pried out of the plane of said end panel.

2. The can end of claim **1** wherein said third weakening line is in the form of an external score line forming a shoulder beneath which a pry tool may be engaged.

3. The can end of claim **1** wherein the spacing between said chuck wall and said upstanding wall is sufficient for the reception of a double seam between a can body and a like can end whereby one can may be utilized for prying open an end of a like can.

4. The can end of claim **1** wherein the spacing between said chuck wall and said upstanding wall is sufficient for the reception of a double seam between a can body and a like can end whereby one can may be utilized for prying open an end of a like can, and said third weakening line is in the form of an external score line forming a shoulder beneath which a can double seam may be engaged.

5. The can end of claim **1** wherein said end panel has a generally V-shaped upstanding rib outlining and being disposed closely adjacent said pair of weakening lines for protecting the mouth of a person drinking from the can end.

6. The can end of claim **1** wherein said pair of weakening lines have spaced apart converging ends with the material of said end panel between said spaced line ends defining a hinge for said tear strip to eliminate detachment of said tear strip from said end panel.

7. The can end of claim **1** wherein said tear strip is reinforced by a rib formed therein.

8. The can end of claim **1** wherein said tear strip is reinforced by a rib formed therein, said rib being disposed centrally of said tear strip and extending longitudinally thereof.

9. The can end of claim **1** wherein said tear strip is reinforced by a rib formed therein, said rib being disposed adjacent said upstanding wall and generally concentric therewith.

10. The can end of claim **1** wherein said end panel has a generally V-shaped upstanding rib outlining and being disposed closely adjacent said pair of weakening lines for protecting the mouth of a person drinking from the can end, and said pair of weakening lines have spaced apart converging ends with the material of said end panel between said spaced line ends defining a hinge for said tear strip to eliminate detachment of said tear strip from said end panel.

11. The can end of claim **1** wherein said end panel has a generally V-shaped upstanding rib outlining and being disposed closely adjacent said pair of weakening lines for protecting the mouth of a person drinking from the can end, and said tear strip is reinforced by a rib formed therein.

12. An easy opening can end comprising an upstanding chuck wall and an end panel, a pair of inwardly converging weakening lines formed in said end panel and in part defining a triangular tear strip, said can end having an upstanding wall extending generally between remote ends of said weakening lines and generally opposing said chuck wall and a generally circumferentially extending third weakening line in said upstanding wall and extending between the widely spaced ends of said pair of weakening lines whereby said can end may be ruptured along said third weakening line and said tear strip pried out of the plane of said end panel.

13. The can end of claim **12** wherein said third weak-

ening line is in the form of an external score line forming a shoulder beneath which a pry tool may be engaged.

14. The can end of claim **12** wherein the spacing between said chuck wall and said upstanding wall is sufficient for the reception of a double seam between a can body and a like can end whereby one can may be utilized for prying open an end of a like can.

15. An easy opening can including a can end having a tear strip portion defined therein by weakening lines, and upstanding projections extending around substantially all of said tear strip portion and functioning as a guard.

16. The can of claim **15** wherein said upstanding projections include an upstanding seam between said can end and a body of the can.

17. The can end of claim **12** wherein said upstanding wall extends downwardly from an adjacent portion of said tear strip and said third weakening line is spaced downwardly from the upper boundary of said upstanding wall whereby a tool engageable lip is left on said tear strip as it is being torn from said end panel.

References Cited by the Examiner

UNITED STATES PATENTS

2,210,225	8/1940	Walensky	220—48
2,547,059	4/1951	Taylor et al.	81—3.1

THERON E. CONDON, *Primary Examiner.*

G. T. HALL, *Assistant Examiner.*