United States Patent [19]

Zundel

[11] **3,853,242**

[45] **Dec. 10, 1974**

[54] **EASY OPEN END**

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[73] Assignee: **National Can Corporation,** Chicago, Ill.

[22] Filed: **Jan. 24, 1973**

[21] Appl. No.: **326,238**

[52] **U.S. Cl.** **220/267,** 220/277

[51] **Int. Cl.** **B65d 17/20**

[58] **Field of Search** 220/48, 47, 54, 27

[56] **References Cited**

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Primary Examiner—George T. Hall

[57] **ABSTRACT**

A container end panel is formed with a lever member having a first panel piercing portion and a second finger grasping portion and a central portion by which the member is connected to the end. The member is further rotatable in a plane normal to the panel about its connection means with the end panel from a first position whereby one end of the member overlies a weakened line opening to a second position wherein said one member end is forced through the panel to expose the opening formed by the weakened line The member is also rotatable about its ocnnection means with the end panel in a plane parallel to said panel.

12 Claims, 10 Drawing Figures

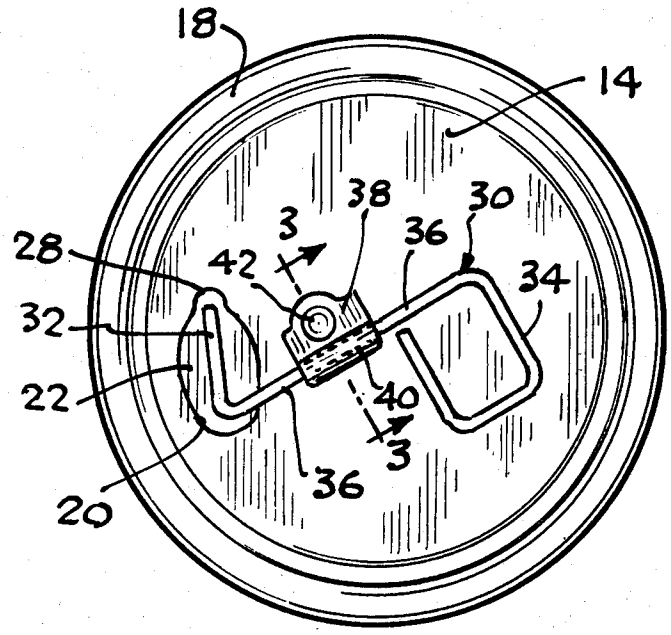


FIG. 1

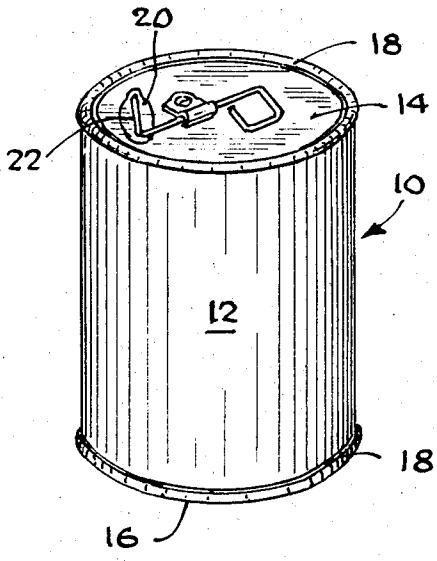


FIG. 2

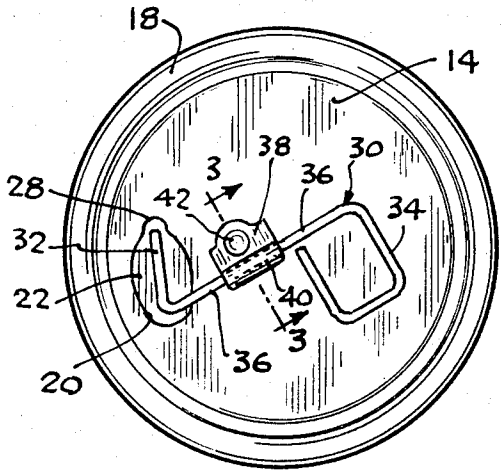


FIG. 3

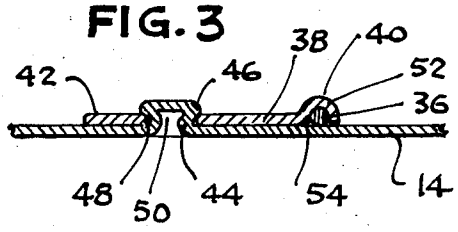


FIG. 4

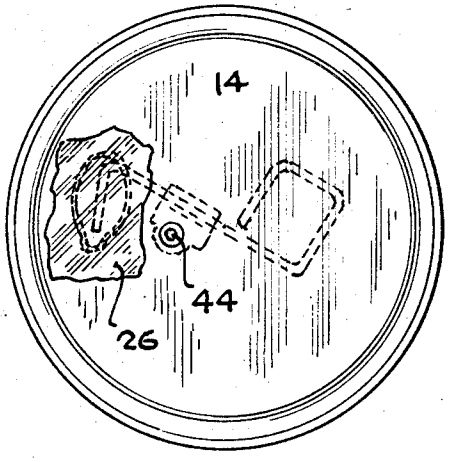


FIG. 5

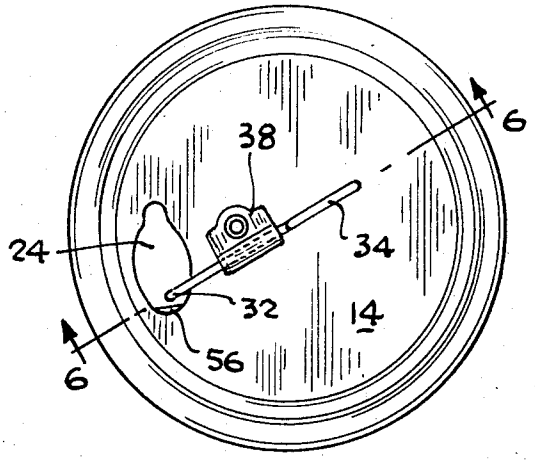


FIG. 6

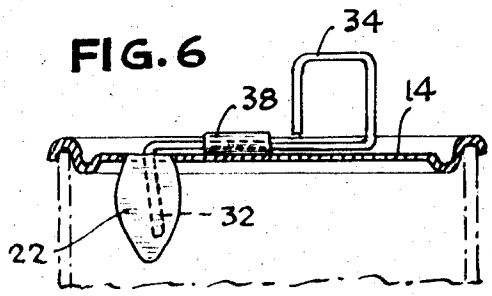
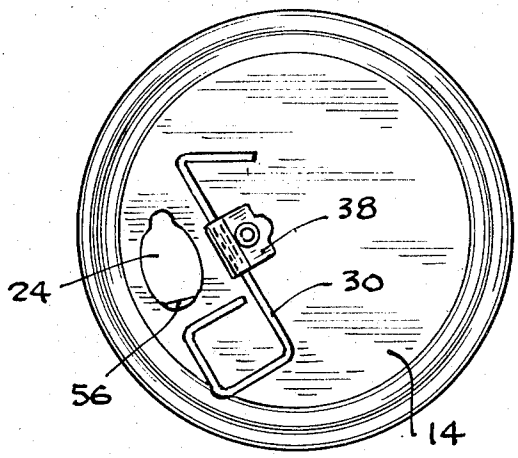


FIG.7



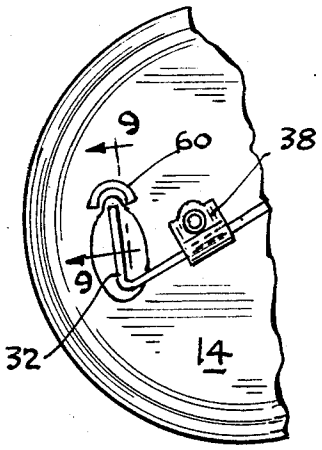


FIG.8

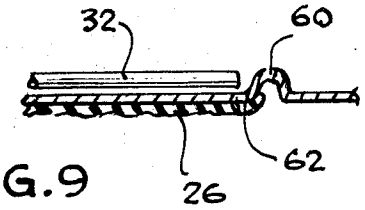


FIG.9

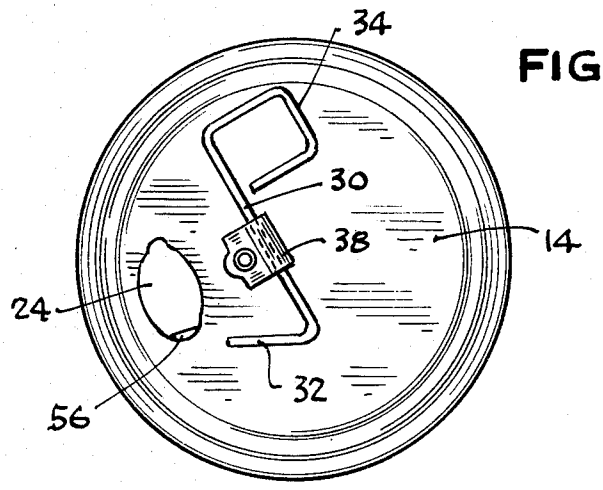


FIG.10

EASY OPEN END

BACKGROUND OF THE INVENTION

This invention relates to a container having a portion of its end wall or panel weakened to serve as an opening for access to the contents of the container.

Containers having easy open ends have gained widespread acceptance in recent years. Such containers for the packaging of beer and carbonated beverages, provide ends having a weakened score line that defines an opening to which an opening mechanism, e.g., a tab is connected thereto. Such tabs with or without their associated tear strips are often discarded at random and are not as readily gathered up as the containers themselves. As a consequence, the discarded members may accumulate in areas such as highways, beaches and picnic areas and accordingly present an unsightly condition. Obviously a ready solution to this problem is for the users of such containers to refrain from randomly discarding such opening devices or tabs so that any litter caused thereby is prevented, however, prevention programs have met with only limited success.

SUMMARY OF THE INVENTION

The present invention utilizes an opening device in the form of a lever member which is permanently attached to the container end panel and positionable where both ease in forming an opening in a container and unobstructed pouring or removal of the contents from the container can be accomplished.

More specifically, the present invention contemplates an elongated lever member having first and second end portions, and a central connecting portion which in turn is attached to the end panel. The container end panel is further provided with an incipient opening defined by a weakened line portion over which said first end portion of the lever member is initially positioned. The lever member in its simplest embodiment may be of bent wire form, the second end thereof forming a grasping portion which serves to enable the user of the container to move the lever member in an arcuate path upwardly about an axis formed by its central connecting portion. In this way then the first end of the member is brought to bear against that portion of the end panel defined by the weakened line and form an opening therethrough either by entirely or partially displacing said portion from the remaining end wall portions.

The connecting means affixing the central portion of the lever member is additionally capable of permitting rotation of the lever member therearound so that the first end of such member may be shifted relative to the opening which is forced through the container end panel to a position removed from the dispensing opening formed thereby. Such rotational movement further shifts the second end of the member to a secondary position relative to the end panel.

According to a specific aspect of the invention the means for connecting the lever member to the end panel comprises a separate platelike member having a forward end of significant extent in receiving contact with the central portion of said lever member and a rearward end rotatably fixed to the end panel. Such affixation is by means of the conventional rivet construction wherein a portion of the end panel is formed into an upstanding cylindrical member for receipt by an opening in the separate platelike member and upper portions thereof thereafter flattened so as to securely axially clinch the thus connected portions together while permitting relative rotation therebetween.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF DRAWINGS

FIG. **1** shows a perspective view of a container having an easy open end panel constructed in accordance with the present invention;

FIG. **2** is an enlarged plan view of an end panel of the container;

FIG. **3** is a still further enlarged sectional view of the container taken along the line **3—3** of FIG. **2** end panel and lever member thereof showing in particular the preferred manner of connection therebetween;

FIG. **4** is an enlarged bottom plan view of the end panel shown in FIG. **2** of the drawings;

FIG. **5** is a plan view of the end panel similar to FIG. **2** of the drawings but shows the lever member in an upright disposition and the opening already formed in the end panel;

FIG. **6** is a sectional view taken along the line **6—6** of FIG. **5** of the drawings;

FIG. **7** is a top plan view of the container end and opening member wherein the lever member has been displaced relative the already formed dispensing opening;

FIG. **8** is a partial plan view of a modification of the present invention wherein an upstanding ridge has been formed at one terminal portion of the weakened line opening;

FIG. **9** is a sectional view on an enlarged scale along line **9—9** of FIG. **8** wherein the first end of the lever member is shown in abutting relation to the upstanding ridge; and

FIG. **10** is a plan view of the container end similar to FIG. **7** but showing a modification thereof.

DETAILED DESCRIPTION OF THE DRAWINGS

Turning now to the drawings and particularly FIG. **1** thereof, there is shown a container generally indicated by the reference numeral **10** consisting of a cylindrical body portion **12** having upper and lower walls or end panels **14** and **16** respectively connected to the body portion by a conventional double seam construction **18.** The container or at least the upper end panel thereof is preferably made of metal, such as aluminum or steel.

The upper end panel **14** is further provided with a weakened score line **20** as best shown iby FIG. **2** of the drawings the extent of which defines a flap **22** which when displaced forms an opening **24** through the end panel **14.** This weakened line **20** may be alternatively cut entirely through the end panel thickness and held in place by adhesive means such as the thin plastisol area coating **26** shown in FIG. **4** of the drawings or may take the form of a partially scored or otherwise weakened line. Also the weakened line may define the entire periphery of the incipient opening **24** or may stop short thereof and permit a portion of the end panel to remain connected with flap **22** and in such a manner form a hinged connection therewith. The term weakened line is used throughout to identify the several forms indicated above.

The opening **24** formed by the weakend line is generally of elongated form and is provided in one embodi-

ment of the invention with an extension or projection 28 for a purpose which will hereinafter be more clearly brought out. The underside peripheral extent of the flap 22 especially when entirely severed from its remaining end panel portions is provided with a coating or protective material such as polyvinyl chloride plastisol composition which serves to prevent the thus cut metal peripheral surfaces from coming into contact with the materials such as beer and beverages contained therein. Such coating or other material such as self supporting plastic, metallic, or metallized plastic strips provided with adhesive surfaces additionally serve to position the flap 22 within the opening 24 and may further provide the means by which an entirely severed flap 22 may be hingedly connected to the end panel as by their partial removal therefrom.

A lever member 30 forms the means by which the flap 22 is displaced or removed from the remaining end panel portions to define the dispensing opening 24. This lever 30 has a first end 32, a second end 34 and an elongated central portion 36 which serves to connect said first and second ends. The lever may be formed as depicted in the drawings of a relatively stiff wire material in which case it is preferable to bend wire stock into the desired shape shown or alternatively the lever may be formed from other materials and by other procedures such as injection molded synthetic polymers.

The manner in which the lever member 30 is attached to the end panel 14 so that such will not be discarded after having served to open the container and the contents thereof dispensed is best shown in FIGS. 2–4 of the drawings. A plate-like member 38 having a forward end 40 and a rearward end 42 is permanently connected to the end panel 14 by means of an upstanding end panel boss 44 flattened or peened at 46 over peripheral edges 48 of an opening 50 formed in the rearward portion of the plate 38. The forward end of the plate is formed with an opening for receipt of an extent of the central portion 36 of the lever member 30 preferably in the form of an inverted U or L-shaped terminus 52. Such terminus serves to envelop or trap the lever in position against the end panel 14.

The rivet connection between the end panel and the rearward portion 42 of the plate 38 is constructed so as to permit rotation of the plate 38 about the upstanding circular boss 44 as by not forcing the flattened edges 46 of the boss too tightly against the upper peripheral portions of the rearward portion 42 which define the opening 50 and thus permit the peripheral edges 48 thereof to slidably engages the sides of the boss 44 in a manner permitting such rotational movement of the plate 38 about the above described rivet connection. In addition the inner side of the lever member central portion 36 which underlies the plate terminus 52 and bears against a cooperating extent 54 of the forward portion 40 of the plate so that rotational movement of the handle 34 of the lever accomplishes rotational displacement of the lever 30 in relation to the end panel 14 and the opening 24 formed therein for a purpose that will be more clearly brought out hereinafter.

Operation of the device of the present invention is as follows: the first end 32 of the lever is positioned over the flap 22 defined by the weakened line 20. Thereafter the second or handle end 34 of the lever 30 is rotated upwardly about the major axis of the central portion 36 of the lever so as to concomitantly force the first end downwardly through the major plane of the end panel to a position therebeneath. Such action forces the flap downwardly about its hinge 56 or entirely removes the same from the end panel. Such action is shown in FIGS. 5 and 6 of the drawings wherein the handle portion of the lever is depicted as having been rotated in an arc of 90° from its initial position shown in FIG. 2. If desired the lever may be farther rotated a total of 180° wherein the handle 34 assumes a position flat against the end panel but on the opposite side of a plane along the major axis of the lever central portion 36 and normal to the end panel 14. In such movement the first end of the lever would additionally assume a position under the surface of the end panel and opposite its original position as shown in FIG. 2 as by additionally forcing the flap 22 against lower surfaces of the end panel.

Also the lever may be returned to its original position as shown in FIG. 2 after having served to open the container in the manner above described and then rotated about the rivet either clockwise to the storage position shown in FIG. 7 or alternatively counter-clockwise to the storage position shown in FIG. 10 of the drawings. In either case the first or forward end of the member is removed as a possible obstruction to the dispensing of the contents of the container 10 by means of the opening 24 therethrough.

Turning now to FIGS. 8 and 9 of the drawings, a particular specific embodiment is shown. Therein an upstanding ridge 60 generally U-shaped to match the projection 28 is formed in the end panel 14 at one end of the flap 22. This ridge assures the correct alignment of the first lever end 32 in relation to the incipient opening to be formed by the downward displacement of the flap. Additionally in those cases where the weakened line comprises a scored line that portion of the weakened line 20 may be completely severed as at 62 to assist in intrating tearing of the flap 22 from its surrounding end panel portions. In such cases as with those wherein the flap 22 is entirely severed initially a plastisol or other coating material may serve to repair the integrity of the container in such areas.

I claim:

1. An easy open end for containers and the like comprising, an end panel having a substantially planar top surface, an opening through said planar surface, said opening defined by a weakened line portion in said end panel, a lever member having first and second end portions and an elongated central portion connecting said ends, said first end overlying said weakened line portion, said second end distal therefrom, said lever member rotatable about the axis of its central connecting portion from an initial first end position overlying said weakened line portion to a second position through said opening and beneath said end panel planar top surface, and permanent connecting means for positioning said lever member in relation to said end panel, said connecting means holding said lever member elongated central portion in fixed relation to said end panel, said connecting means being positioned to have said first and second end portions extend generally parallel to said planar surface in a stored position after said weakened line has been severed.

2. The easy open end defined in claim 1 wherein said lever member central portion is held in contact with said end panel in said first, second and stored positions of said lever member.

3. The easy open end defined in claim 1 wherein said first and second ends of said lever member extend outwardly and to opposite sides of a plane passing through the major extent of said lever member central connecting portion and disposed generally normal to said planar end panel surface.

4. The easy open end defined in claim 3 wherein said lever member is rotatable around said connecting means in the plane parallel to that of said end panel planar surface.

5. The easy open end defined in claim 3 wherein said first end is disposed outwardly from the center of said end panel proximate peripheral portions thereof and said second end is disposed distal therefrom.

6. The easy open end defined in claim 5 wherein said lever member is formed of bent wire.

7. The easy open end defined in claim 6 wherein said connecting means comprises a plate member having a forward opening for receipt of said central connecting portion and a rearward opening, portions of said end panel disposed through and overlying said rearward opening.

8. The easy open end defined in claim 6 wherein said member first end is an L-shaped extension of said wire and said member second end comprises a finger gripping portion.

9. The easy open end construction defined in claim 8 wherein said wire is rotatable about said connecting means from an initial said position wherein said first end overlies said opening to a second position wherein both said first and second ends are removed therefrom.

10. The easy open end construction defined in claim 1 wherein said weakened line is discontinuous whereby the end panel portion downwardly deflected to define a dispensing opening therethrough remains hingedly connected thereto.

11. The easy open end construction defined in claim 10 wherein an upstanding end panel ridge is formed at one end of said opening at the terminal portion thereof and wherein such ridge positions said first end of said lever over the weakened line portion proximate said one end.

12. The easy open end defined in claim 1, in which said permanent connecting means includes means accommodating rotational displacement of said lever member along said planar top surface from said first position to said stored position.

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