CONTAINER OPENING MEANS

Assignee: National Can Corporation, Chicago, Ill.

Filed: Jan. 26, 1973
Appl. No.: 326,970

U.S. Cl. .................................................. 220/47
Int. Cl. ................................................. B65d 39/00
Field of Search ..................................... 220/47, 48, 54, 27

References Cited
UNITED STATES PATENTS
2,092,671 9/1937 Hildebrandt .......................... 220/48

Primary Examiner—George T. Hall

ABSTRACT

A container end panel is formed with a lever member having a first end, a second end and an offset portion which serves to expose a dispensing opening in the panel when the lever is rotated. The panel is provided with first and second weakened lines which respectively enable the dispensing opening to be formed and the lever to rotate. The front end of the lever is in turn connected to a hinge formed in the end panel by means of the second weakened line.

8 Claims, 6 Drawing Figures
CONTAINER OPENING MEANS

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 an extension proximate said first end and offset laterally therefrom. The first end of the lever member is in turn attached to the end panel within a portion thereof defined by a generally U-shaped weakened line the end of which terminates so as to form a hinge member which may be displaced downwardly of the main portion of the end panel. The forward or first end of the lever is in turn permanently attached to such hinge towards the front of the U-shaped portion thereof thus enabling the forward end of the lever to be downwardly displaced along with the forward portion of the hinge to a position underlying the main end panel portion. The container end panel is further provided with an incipient opening defined by a weakened line portion over which the terminus of said lever member extension is initially positioned.

The lever member in its simplest embodiment may be a longitudinal plate, the second end thereof forming a grasping portion which serves to enable the user of the container to grasp the lever member and the extension thereof of a general L-shaped configuration. In this way then the first end of the lever member is brought to bear against that portion of the end panel defined by the first weakened line and form an opening there through either by entirely or partially displacing said portion from the remaining end wall portions.

The connecting means affixing the forward portion of the lever member is additionally capable of permitting rotation of the lever member from an initial position entirely overlaying the end panel to a secondary and opened position whereby a portion thereof underlies a portion of the end panel. In such secondary position the lever extension entirely underlies the end panel and in those cases wherein the first weakened line forms a non-detachable displaceable portion, the extension forces such displaceable portion upwardly towards under portions of the end panel.

The means by which the forward end of the lever member is connected to the end panel may comprise a rivet construction wherein a portion of the end panel is formed into an upstanding cylindrical member for receipt by an opening in the lever forward end and upper portions of the rivet thereafter flattened so as to securely axially clinch the thus connected portions together.

BRIEF DESCRIPTION OF SEVERAL VIEWS OF DRAWINGS

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

FIG. 2 is a top plan view of the end panel depicted in FIG. 1 of the drawings and in an unopened configuration;

FIG. 3 is a partial sectional view of the container end panel taken along the line 3—3 of FIG. 2 and shows in particular the container in a partially opened condition;

FIG. 4 is a bottom plan view of the end panel taken along line 4—4 of FIG. 2 of the drawings wherein a preferred form of weakened line configuration is provided for the formation of the dispensing opening;

FIG. 5 is a plan view of the end panel similar to FIG. 2 of the drawing but shows the lever member in a fully opened position after having been rotated 180° from its initial unopened position shown in FIG. 2 of the drawing;

FIG. 6 is a partial sectional view taken along the lines 6—6 of FIG. 5 and shows the preferred embodiment opening configuration depicted in FIG. 4 of the drawing.

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 (one shown) connected to the body portion by a conventional double seam construction. 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 first weakened score line 18 as best shown by FIG. 4 of the drawings the extent of which defines a flap 20 which when displaced forms an opening 22 through the end panel 14. This weakened line 18 may be alternatively cut entirely through the end panel thickness and held in place by adhesive means such as a thin plastic area coating (not shown) or may take the form of a line scored partially through the thickness of the panel or otherwise weakened line. Also the first weakened line may define the entire periphery of the incipient opening 22 or may stop short thereof and permit a portion of the end panel to remain connected with the displaceable portion 20 and in such a manner form a hinged connection therewith in the manner of the key-hole construction depicted in the drawing. The term weakened line is used throughout to identify the several forms indicated above.

The underside peripheral of the displaceable portion 20 especially when entirely severed from its remaining end panel portions is provided with a coating or protective material (not shown) 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 displacable portion 20 within the
opening 22 and may further provide the means by
which an entirely severed displacable portion 20 may
be hingedly connected to the end panel as by their par-
tial removal therefrom.

A lever member 30 forms the means by which the
displacable portion 20 is removed from the remaining
dermal panel portions to define the dispensing opening 22.
This lever 30 has a first end 32, a second end 34 and
an extension 36 thereof laterally offset therefrom and
proximate the first end 32 thereof. The lever may be
formed as depicted in the drawings of a relatively stiff
metal plate material or may be formed of thinner stock
and bent into the desired shape shown. Alternatively
the lever may be formed from other materials and by
other procedures such as injection molded synthetic
polymers.

The extension 36 may be of generally L-shaped con-
figuration to present a connecting portion 38 and a ter-
minus or finger 40 adapted to overly the displacable
portion 20 defined by the first weakened line 18. Also
the terminus 40 is preferably adapted to initially bear
against the displacable portion 20 of the end panel
forward of a line about which the lever 30 is adapted
to hinge or pivot downwardly through the main plane
of the end panel 14 as will hereinafter be more clearly
brought out.

A second weakened line 42 of generally U-shaped
configuration is formed in the end panel 14 generally
centrally thereof to define a hinge member 44 pivot-
able about a bend line 46 connecting the sides of the
second weakened line 42 and created either by a second-
ary second weakened line or by the bend forces cre-
ated in the hinge member 44 through the interaction of
the lever 30. The forward end of the lever 30 is in turn
attached to the hinge 44 forward of such bend line 46
by means of a connector means 48.

The particular manner in which the lever member 30
is attached to the end panel 14 so that such will not be
displaced after having served to open the container and
the contents thereof is by such connector means 48
formed by a rivet or upstanding boss construction
wherein a hollow boss is formed in the end panel. An
opening in the forward end of the lever accepts such
boss and those portions of the boss projecting beyond
the lever are flattened thereagainst to clinch the two
members together so as to form a permanent connec-
tion therewith.

Operation of the device of the present invention is as
follows: the lever extension 36 is positioned over the
displacable portion 20 defined by the first weakened
line 18. Thereafter the second or handle end 34 of the
lever 30 is rotated upwardly about the bend line 46 so
as to force the forward end thereof downwardly
through the major plane of the end panel to a position
therebeneath. Concomitantly finger 40 of extension 36
moves downwardly against the displacable portion 20
to force such downwardly as by bending a portion
thereof or entirely removes the same from the end
panel. It should be noted also that the central place-
mation of the first end 32 of the lever 30 and its connec-
tion with the hinged member 44 enables pressure to be
initially released in those cases where the product con-
tained in pressurized, e.g., carbonated beverages in the
central portion of the end panel, thus preventing an un-
desirable possible squinting of liquid contents. Such ac-
tion is shown in FIGS. 3 and 6 of the drawings wherein
the handle portion of the lever is depicted as having
been rotated in an arc of approximately 90° from its in-
tial position shown in FIG. 2, in FIG. 3 and approxi-
mately 180° in FIG. 6. The lever is preferably rotated
a total of 180° wherein the handle 34 may assume a po-
sition flat against the end panel but on the opposite side
of the bend line 46. In such movement the first end of
the lever would additionally assume a position under
the surface of the end panel and oppose its original position
as shown in FIG. 2 as by additionally forcing
the hinge 44 against lower surfaces of the end panel.
Also separate means for maintaining the fully opened
position of the container shown in FIG. 6 of the draw-
ing may be utilized, e.g., the upstanding chuck wall of
the double seam construction may be provided with an
extension or undercut portion for receipt of the termi-
nus of the handle 34 of the lever member 30 which may
in turn be provided with an extension for such purpose.

The embodiment shown in FIG. 3 depicts a displac-
able portion 20 which is entirely severable from the end
panel 14 in which case the weakened line 18 is cut es-
tentially entirely through the end panel 14 and is
formed to entirely close upon itself. 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 com-
prising,
an end panel,
a dispensing opening through said panel, said open-
ing being defined by a displacable portion of said panel,
a hinge formed in said end panel, said hinge being
defined by a weakened line in said panel,
a lever member having first and second end portions
and an extension thereof proximate said first end
and laterally offset therefrom,
said extension overlying said displacable panel
portion,
said first end of said lever members connected to
said hinge whereby arcuate movement of said
lever urges said extension thereof into engage-
ment with said displacable portion thereby ex-
posing said dispensing opening.
2. The easy open end of claim 1 wherein said displ-
icable end panel portion is defined by a first weak-
ened line formed in said end panel and wherein said
hinge is defined by a second weakened line formed in
said end panel.
3. The easy open end of claim 2 wherein said hinge
is defined by a generally U-shaped weakened line that
terminates at spaced locations on said end panel to de-
cine a permanent connection between the hinge and
said end panel.
4. The easy open end of claim 2 wherein said first and
second weakened lines are of general U-shaped con-
figuration.
5. The easy open end of claim 2 wherein said end
panel is centrally upwardly domed and said first end
of said lever member is positionally centrally of said end
3,826,401

5 panel and said lever extension is positioned radially outwardly thereof.

6. The easy open end of claim 5 wherein said second end of said lever forms a grasping portion thereof and wherein said second lever end and said lever extension are each rotatable 180° in different but complementary arcs.

7. The easy open end of claim 6 wherein said lever extension is of L-shaped configuration and extends forward of the terminus of said lever first end.

8. The easy open end of claim 6 wherein said lever extension initially forces said displaceable portion downwardly and finally forces said displaceable portion upwardly towards under portions of said end panel.

* * * * *