

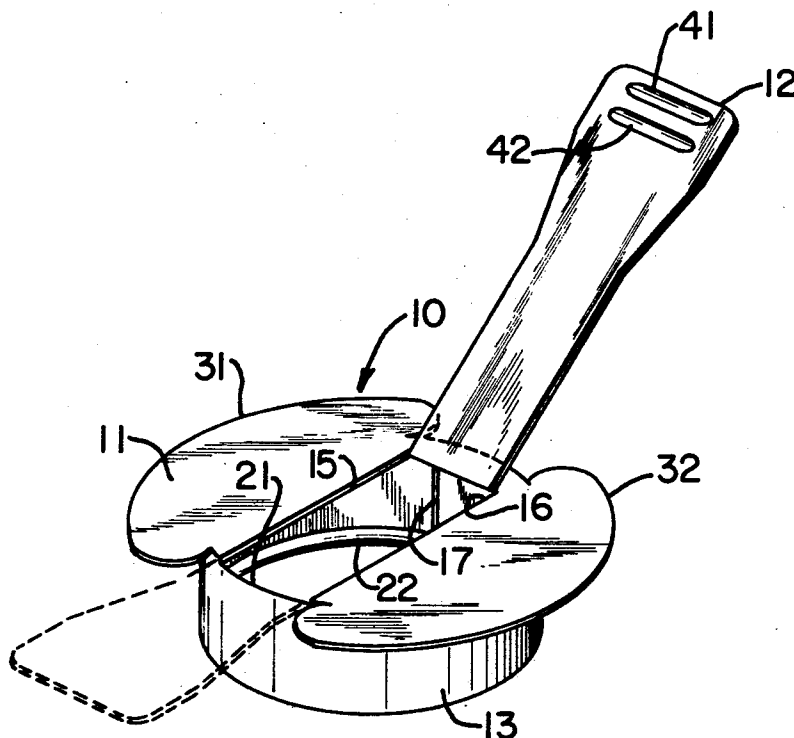
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 [21] Appl. No. **829,165**
 [22] Filed **May 5, 1969**
 [45] Patented **Aug. 3, 1971**
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[56] **References Cited**
UNITED STATES PATENTS
 3,357,592 12/1967 Kusserow 220/27
 3,362,563 1/1968 Koll 220/27
Primary Examiner—George T. Hall
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[54] **TEARAWAY CLOSURE FOR BEVERAGE CONTAINERS AND THE LIKE**
6 Claims, 8 Drawing Figs.

[52] U.S. Cl. 220/27,
 215/7, 215/46 A
 [51] Int. Cl. B65d 17/00,
 B65d 45/00
 [50] Field of Search 220/27, 54,
 48, 53; 215/46.5, 42, 7; 229/51 TS

ABSTRACT: A tearaway flexible closure for openings in beverage containers such as beer kegs includes a top portion, pull tab projecting from the top portion and a flange portion depending from the top portion. The flange portion is closed throughout its circumferential extent and snugly embraces surfaces of the container associated with the opening and has a weakened section at the juncture of the tab and top portions and a pair of intermediate inwardly extending projections on each side of the weakened section to facilitate a tearaway action along shear lines across the top portion and one side of the flange portion. Depending ribs on the top portion extensions engage an outer surface surrounding the opening in a contamination-preventing sealing engagement therewith.



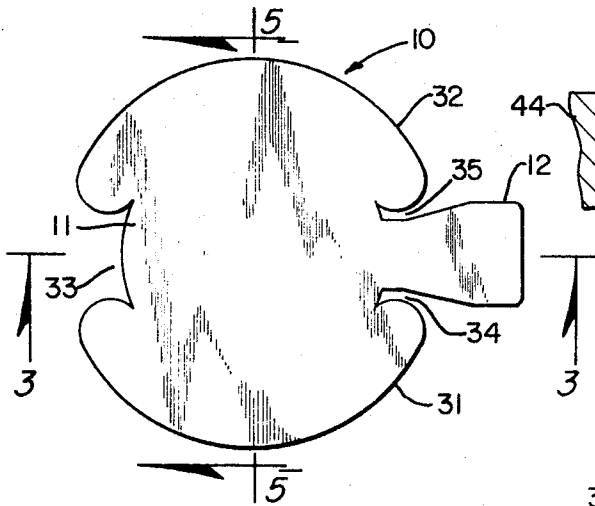


FIG. 1

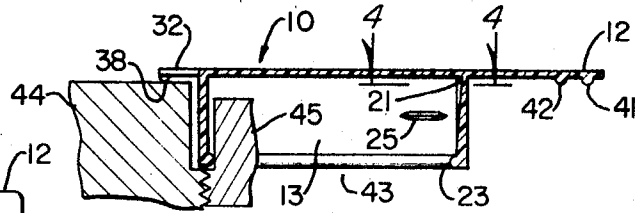


FIG. 3

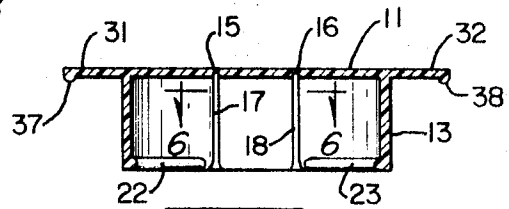


FIG. 5

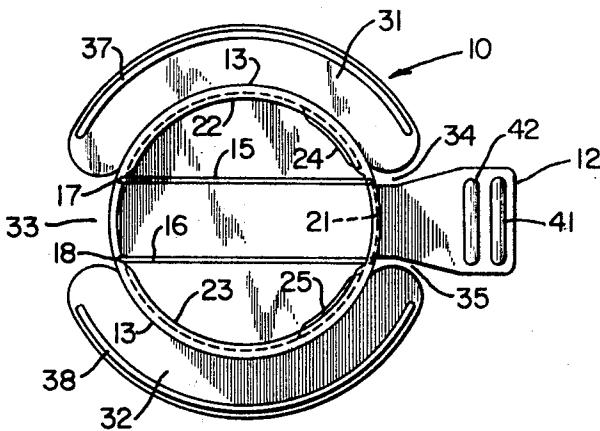


FIG. 2

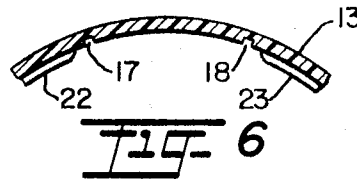


FIG. 6

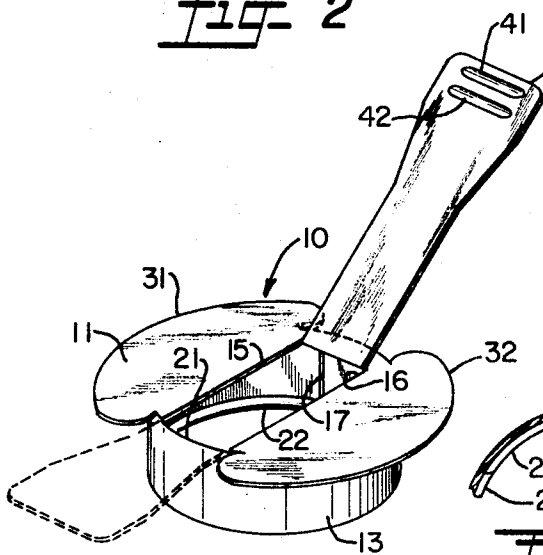


FIG. 7

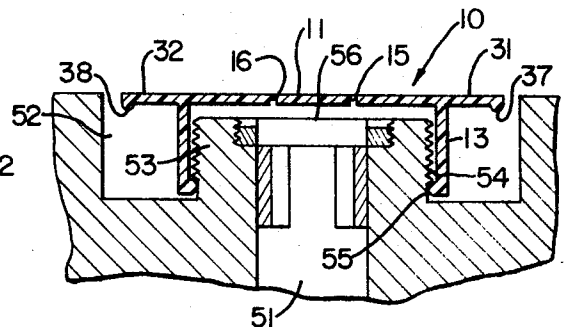


FIG. 8

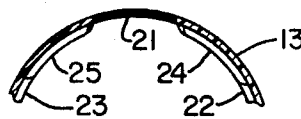


FIG. 4

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TEARAWAY CLOSURE FOR BEVERAGE CONTAINERS AND THE LIKE

This invention relates to closures for containers and more particularly to improved tearaway closures for beverage containers and the like of the general type disclosed in U.S. Pat. No. 3,357,592, assigned to the assignee of the present invention.

As noted in the above-referred to patent, containers for beer and other beverages frequently utilize an easily removable cap or closure to cover the openings in the containers which are commonly referred to as tap holes and valve openings and maintain sanitary conditions during transport and prior to actual removal of their contents and serve as a label to identify the container and its contents. Such closures have heretofore taken a variety of forms and in some instances have been formed of a molded plastic material which provides desirable flexibility and reduces the cost of manufacture. The closure in the above-referred to patent may be generally characterized as being of the tearaway or frangible type in that it is constructed so that a section tears or breaks away during its removal from the container opening and is thereby incapable of being reused. Closures for such containers of necessity must grip the container to a substantial degree to avoid accidental displacement and insure that the closure does not come off without the destroying action taking place while at the same time the gripping action must not be so strong as to preclude an expeditious removal of the closure when it is desired to tap the contents of the container.

Accordingly, it is an object of this invention to provide a simple, durable and easy-to-use tearaway closure for beverage containers such as beer and the like which is effective for contamination prevention and as a label for identifying the container and contents to which it is attached.

Another object of this invention is to provide an improved tearaway closure which will firmly grip the container to prevent accidental displacement while at the same time has sufficiently weakened portions to permit it to readily break away when removal forces are applied to the tab.

Yet a further object of this invention is to provide a tearaway closure having an annular depending flange which is closed throughout its circumferential extent with a weakened section and shear lines suitably formed therein to facilitate removal thereof.

Still a further object of this invention is to provide a tearaway closure having a depending flange with a pair of opposed intermediate projections of a limited extent which increase its gripping action when the removal forces are first applied to tearaway the closure.

In accordance with the present invention there is provided a flexible closure having a depending, torsionally flexible, annular flange portion which is closed throughout its circumferential extent to firmly grip external surfaces of the container; the flange portion having a weakened section at the juncture of the top portion and pull tab portion together with a pair of opposed intermediate projections on the flange in proximity to the weakened section which will provide an additional gripping action to insure that the closure breaks away when the removal forces are applied. Depending ribs on the top portion engage an outer surface surrounding the opening for further contamination prevention.

Other objects, advantages and capabilities of the present invention will be more apparent as the description proceeds taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a top plan view of an enclosure for container openings embodying features of the present invention.

FIG. 2 is a bottom plan view of the closure shown in FIG. 1.

FIG. 3 is a sectional view taken along lines 3-3 of FIG. 1 with a fragment of a typical container being shown in a functional relation thereto.

FIG. 4 is a sectional view taken along lines 4-4 of FIG. 3.

FIG. 5 is a sectional view taken along lines 5-5 of FIG. 1.

FIG. 6 is a sectional view taken along lines 6-6 of FIG. 5.

FIG. 7 is perspective view of the closure after the initial removal force has been applied to the tab to sever the top portion of the closure along the shear lines; and

FIG. 8 is a vertical sectional view through the closure showing its relationship to a typical container opening.

Referring now to the drawings there is shown a closure 10 which in general comprises a disclike, circular top portion 11 having a pull tab portion 12 formed integral with the top portion and extending radially outwardly therefrom together with an annular flange portion 13 which projects downwardly from the underside of the top portion and is formed integrally therewith. A pair of parallel indentations or shear lines 15 and 16 are formed in the underside of the top portion 11; the shear lines being arranged so that they are extensions or continuations of the sides of the tab 12 to establish a tearaway section across a central area of the top portion and in addition there is provided parallel indentations or shear lines 17 and 18 formed in the inner side of the flange portion oppositely from the tab 12 which are continuations of lines 15 and 16, respectively, to establish a tearaway section across one side of the flange.

The flange portion 13 may be generally characterized as being closed throughout its circumferential extent, comparatively thin in cross section, torsionally flexible and generally cylindrical in shape with a smooth continuous outer surface. A weakened section 21 is formed in the flange portion which begins between the shear lines at the juncture of the tab 12 with the top portion 11 to insure an easier breakaway action therebetween when the removal forces are first applied to the tab. This weakened section is thinnest in cross section at this juncture and is tapered so that it gradually increases in thickness towards the opposite end of the flange as best seen in FIG. 3. Flange portion 13 has a pair of opposed terminal bulges or thickened sections 22 and 23 along the outer or bottom end portion which are separated by the shear lines; these bulges extend radially inwardly to insure a snug fit when fitted over container structures having openings as described fully hereinafter.

In addition to the bulges 22 and 23, a pair of intermediate projections or lugs 24 and 25 are formed on the inside of the flange which are also located on each side of the shear lines and are in proximity to the weakened wall section 21 and the juncture of the tab and top portion as best shown in FIG. 4. These projections 24 and 25 extend radially inwardly and are generally parallel with associated bulges 22 and 23 respectively and are only of a limited length. Projections 24 and 25 are formed with knifelike edges which distinguish them from the rounded shape of the bulges 22 and 23. These projections are so arranged on the flange portion 13 to provide a gripping action below and in close proximity to the weakened section to assure that the closure holds to the container when the removal forces are first applied to the tab and help to insure that the closure will break away at the weakened section and not become separated from the container without first tearing along the shear lines.

The top circular portion 11 is formed with extensions 31 and 32 on each side of the shear lines which extend a substantial distance beyond a flange portion 13; the extensions having rounded ends terminating outwardly of the flange shear lines 17 and 18 to form a gap 33, and outwardly of the sides of the tab 12 to form gaps 34 and 35 therebetween so that the top portion and tab does not interfere with the tearing action which results from pulling the tab 12. Depending ribs 37 and 38 are formed along the bottom peripheral surfaces of extensions 31 and 32 respectively to engage a surface of the container surrounding the opening as an added feature to inhibit contamination and prevent the collection of matter in the recessed area around the container opening. The tab 12 has two parallel transverse bars 41 and 42 disposed near the outer end thereof to permit the better grasp of the tab when removal of the closure from the container is required.

A portion of one container as it is associated with the closure is shown in FIG. 3 and is generally similar to that of the above-referred to patent and this container includes an opening 43 in the container body 44; the inner peripheral section of

the opening being threaded to receive a plug or bung 45. The closure 10 is placed around the plug and its top extensions overlay the outer surface of the container and are held down generally by the gripping action of the flange portions so that the ribs in a contamination-preventing sealing engagement with the surface of the container surrounding the opening.

Another form of container structure is shown in more detail in FIG. 8 to include an opening 51 into the container which is surrounded by a larger annular recess 52 into which the closure will fit. The opening 51 is surrounded by an upstanding flanged neck member 53 within the recess 52. The flanged neck 53 typically has external threads 54 and a bottom undercut portion 55 below the threads and a plug 56 is mounted within the upper portion of the opening. In its assembly onto the container the closure 10 is press fitted over the threads in a torsional flexural action and the bulges 22 and 23 will fit into the undercut portion 55 and the projections 24 and 25 directly engage the threads 54 to snugly embrace the container flange. In the removal operation the tab 12 is grasped by the user and pulled so as to break away first along the juncture between the tap and top portions and then across the shear lines of the top portion and finally along the shear lines of the flange so as to eventually break the closure into three pieces so that it will clearly not be suitable for reuse.

The above-described closure is preferably composed entirely of a plastic material such as polyethylene and manufactured using knockout devices or tension knockout bars to form the shear lines. The flange portion is cylindrical or of annular construction which is continuous throughout its circumferential extent to provide increased strength for embracing the flange of the container and the weakened section an projections on each side of the weakened sections serve to facilitate the breaking away or tearing so that it cannot be reused.

Although the present invention has been described with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that changes in details of structure and system components may be made without departing from the spirit thereof.

What I claim is:

1. A flexible closure for an opening in a container comprising a top portion, a pull tab formed integral with said top portion, and a depending annular flange portion with a container-engaging surface closed throughout its circumferential extent and formed integral with one side of said top portion and adapted for torsional flexure with respect thereto, said top portion and flange portion having a pair of indented shear

lines forming a continuation of the tab sides, said shear lines being adapted to be easily torn upon application of a pulling force to the tab to break along the shear lines thereby resulting in removal of the closure from the opening, said flange portion having a weakened section in the upper portion of the flange at the juncture between the tab and said upper portion, said weakened section being defined by a reduced thickness in the flange portion to facilitate severance of the pull tab from the flange portion and a oppositely of the top portion to snugly embrace a portion of a peripheral surface disposed within the opening of a container.

2. A flexible closure as defined in claim 1 wherein said flange portion has a pair of intermediate projections disposed between the top portion and the terminal bulge on each side of the weakened section in proximity to said juncture to further embrace and grip the peripheral surface of the container within the opening.

3. A flexible closure as defined in claim 2 wherein said intermediate projections extend inwardly from the flange beyond the terminal bulge and have generally knifelike edges.

4. A flexible closure as defined in claim 1 wherein said weakened section at the juncture between the top portion and tab is reduced in thickness to approximately one-third of that of the adjacent flange wall.

5. A flexible closure as defined in claim 4 wherein said weakened section is tapered and characterized by being thinnest at said juncture and progressively increasing in thickness from the juncture at the tab toward the opposite lower end of the flange.

6. A flexible closure for an opening in a container comprising a top portion, a pull tab formed integral with and projecting outwardly from said top portion, and a depending annular flange portion formed integral with one side of said top portion, said flange portion providing a circumferentially continuous container-engaging surface coextensive with the container opening, said top portion having a pair of indented shear lines forming a continuation of the pull tab sides, said shear lines being adapted to be easily torn upon application of a tearing force to the pull tab to break along the shear lines, said flange portion having a weakened area in the upper portion of the flange at the juncture between the tab and said upper portion, said weakened area being defined by a reduced thickness in the flange portion to facilitate severance of the pull tab from the flange portion and the tearing of the top portion between said shear lines.

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