Oct. 1, 1968 W. J. WEBER 3,403,812

CONTAINER CLOSURE

Filed Jan. 30, 1967 2 Sheets-Sheet 1

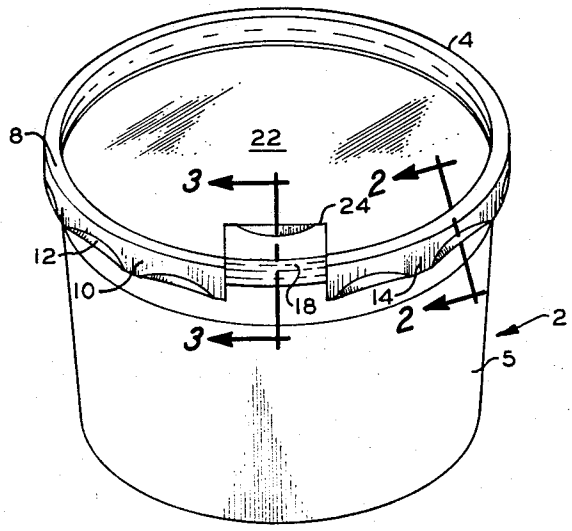


FIG. 1

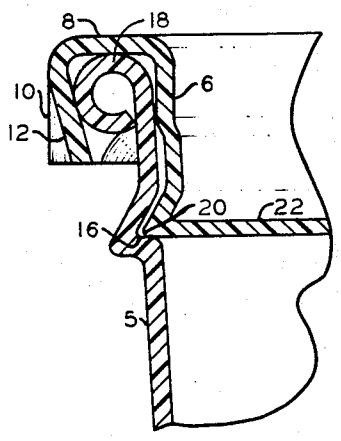


FIG. 2

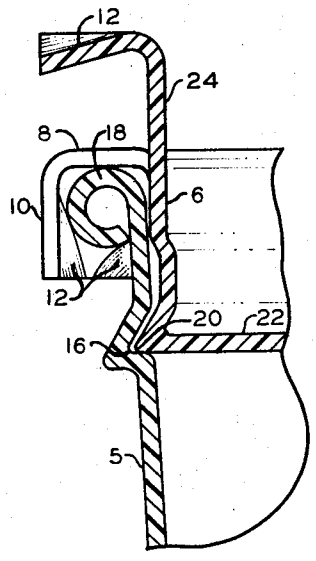


FIG. 3

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CONTAINER CLOSURE

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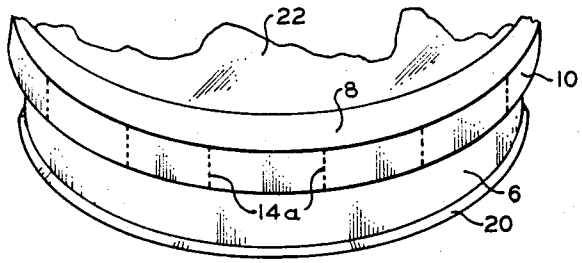


FIG. 4

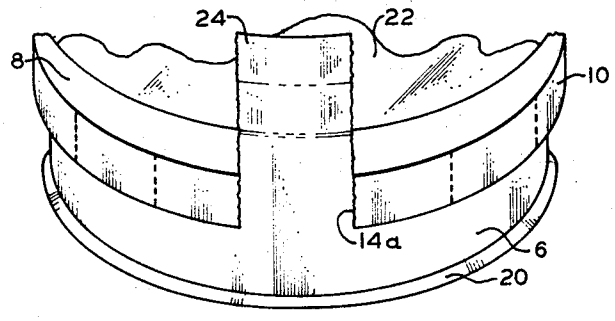


FIG. 5

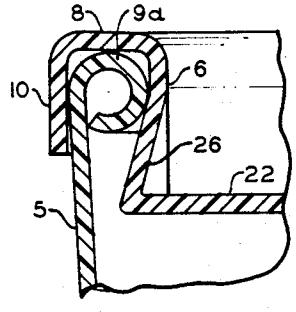


FIG. 6

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3,403,812

CONTAINER CLOSURE

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Filed Jan. 30, 1967, Ser. No. 612,578
10 Claims. (Cl. 220—60)

ABSTRACT OF THE DISCLOSURE

A container closure having an inverted U-shaped portion which fits over the rim bead and a plurality of weakened portions at which the closure will tear when it is removed from the container.

This invention relates to a tamper-proof container closure with a pull tab. In one of its aspects, it relates to a closure for a container with a rim bead at the upper portion thereof, the closure having an inverted U-shaped portion which fits over the rim bead and a plurality of weakened portions at which the closure will tear when it is removed from the container to thereby form a pull tab for removing the closure.

Many snap fit lids for containers have been devised. Many are made out of rigid polystyrene. While the covers fit tightly, it is also difficult to remove them from the containers when desirable.

A problem with packaging foods for consumers in normal containers is that sometimes the contents are exposed to the atmosphere after they have been packaged. It is desirable to have a package that gives a visual indication when the contents have been opened to the atmosphere. Such a container is called a "tamper-proof" package since the container gives a visual indication when the package has been tampered with. This visual indication puts the consumer on notice that he should be aware that the contents may be contaminated.

I have discovered a closure which is tamper-proof after having it placed upon the container and which is easily removed when desirable by a pull tab resulting from the tearing of a portion of the closure.

By various aspects of this invention, one or more of the following or other objects can be obtained.

It is an object of this invention to provide a tamper-proof package for consumable items.

It is a further object of this invention to provide an improved snap-fit closure for a container in which removal of the closure from the container is facilitated by the formation of a lift tab for removal of the closure.

It is a still further object of this invention to provide a method of applying a tamper-proof closure to a container.

Other aspects, objects, and the several advantages of this invention are apparent to one skilled in the art from a study of this disclosure, the drawings, and the appended claims.

According to the invention, there is provided a closure for a container having an upstanding side wall with a rim bead at the top portion thereof, the cover having a diaphragm portion covering the opening of the top portion of the container, an upwardly exending wall portion attached to said diaphragm portion and adjacent to the top portion of said container, an outwardly extending annular wall portion atached to the upwardly extending wall portion and extending outwardly of the rim bead, a downwardly extending flange attached to the outwardly extending annular wall portion and a plurality of weakened portions on the downwardly extending flange such that when upward pressure is applied to the cover on the downwardly extending flange, the flange will rupture to thereby facilitate the removal of the closure from the container.

In one embodiment, the cover is preferably made of a

frangible material, most preferably polystyrene. The weakened portions of the downwardly extending flange can be made by forming a small notch or slit at the bottom portion of the downwardly extending flange. In another embodiment, the weakened portion can be made by perforating the downwardly extending flange.

In still another embodiment of the invention, the covers are applied to the containers in a novel way. The closures are placed on the container so that the outwardly extending wall portion abuts against the rim bead of the container. A heated forming means is then placed against the portion of the closure which is adjacent to and beneath the rim bead to thereby secure the closure to the container.

The invention will now be described with reference to the accompanying drawings in which FIGURE 1 shows a preferred embodiment of the closure of the invention as applied to a standard container; FIGURE 2 is a sectional view through longitude 2 of FIGURE 1; FIGURE 3 is a sectional view through line 3—3 of FIGURE 1; FIGURE 4 is a partial view of a closure showing another embodiment of the invention; FIGURE 5 is a view of the closure shown in FIGURE 4 indicating the formation of the pull tab; and FIGURE 6 is a sectional view through a container and closure in which a closure of the invention has been applied to a different container than that shown in FIGURE 1.

Referring now to the drawings and, in particular, to FIGURES 1, 2 and 3, a closure **4** is provided for a container **2**. The container **2** has an upstanding side wall **5** with an outwardly extending groove **16** at the upper portion thereof and an outwardly exending rim bead **18** at the top of the side wall. The closure has a diaphragm portion **22**, an outwardly extending groove **20** adapted to seat in groove **16** of the container side wall, an upwardly extending wall portion **6**, an outwardly extending wall portion **8** and a downwardly extending flange **10**. The flange **10** has a plurality of notches or small slits **14** at the bottom portion thereof. As can be seen from the drawings, the upwardly extending wall portion, outwardly extending wall portion and downwardly extending flange form an inverted U-shape which is attached to the diaphragm **22**.

When upward pressure is applied to the bottom portion of flange **10**, the closure being made of a frangible material, the flange **10** will tear along notches or slits **14** and form a pull tab **24**. The pull tab **24** can then be used to pull the closure from the container and thereby facilitate access to the contents of the container. Additionally, the rupture of the closure to form pull tab **24** will be a visual indication that the container has been opened. In other words, if, after having been opened by pulling tab **24**, the closure is placed back on the container, it will become evident to anyone from a cursory inspection that the cover has been removed.

The closure is made with a relatively straight, downwardly extending flange **10**. After the closure has been placed onto the container, a hot forming tool is placed against the bottom portion of flange **10** and forms a plurality of indentations **12** which clamp the closure onto the container. After the indentations **12** have been formed, it will be impossible to remove the closure **4** from container **2** without forming a pull tab **24**.

Referring now to FIGURES 4 and 5, there is shown another embodiment of the invention in which like numbers have been used to designate like parts. In this embodiment, instead of having a plurality of notches or slits **14**, a plurality of perforations **14A** have been provided in downwardly extending flange **10**. The perforations **14A** are so constructed as to initiate propagation of a tear when upward pressure is applied to the bottom portion of flange **10**. In this manner, a pull tab **24** will be formed.

In FIGURE 6, there is shown a different arrangement wherein the closure of the invention has been attached to a different container. The container has a side wall **5** with an inwardly extending rim bead **9A**. In this instance, the indentations **26** are made in the upwardly extending wall portions **6** to clamp under bead **9A**. In this embodiment, the indentations **26** are made by pressing a hot forming tool against the lower portion of upwardly extending wall **6** until sufficient deformation has been provided to clamp the closure onto the container.

The containers on which the covers are placed can be made of any suitable material hereinbefore used for the formation of the containers. For example, paper board, coated paper, polyethylene, polypropylene, and copolymers thereof, polystyrene, polyvinylchloride, and the like. The closure **4** is prefarably made of a relatively frangible material. The preferred cover material is polystyrene.

Reasonable variation and modification are possible within the scope of the foregoing disclosure, the drawings, and the appended claims to the invention without departing from the spirit thereof.

I claim:

1. A tamper-proof thermoplastic closure for a container having an upstanding side wall with a rim bead at the top portion of said side wall, said cover having:

a diaphragm portion covering the opening at the top portion of said container,

an upwardly extending wall portion attached to said diaphragm portion adjacent the top portion of said container,

an outwardly extending wall portion attached to said upwardly extending wall portion and extending outwardly of said rim bead,

a downwardly extending flange attached to said outwardly extending wall portion, and

a plurality of weakened portions on said downwardly extending flange at horizontally spaced positions such that when upward pressure is applied to the lower portion of said flange said downwardly extending flange and said outwardly extending wall portion will rupture along vertical lines through at least two of the horizontally spaced weakened positions to form a pull tab, thereby facilitating removal of said closure from said container.

2. A closure according to claim **1** wherein there is provided a means for clamping said closure over said rim bead.

3. A closure according to claim wherein said closure is made of a frangible material.

4. A closure according to claim **3** wherein said frangible material is polystyrene.

5. A closure according to claim **1** wherein each of said weakened portions comprises a slit in the lower portion of said downwardly extending flange.

6. A closure according to claim **1** wherein each of said weakened portions comprises a perforated substantially vertical line in said downwardly extending flange.

7. A closure according to claim **1** wherein said container has an outwardly extending groove in said side wall and said closure has an outwardly extending bead at the bottom portion of said upwardly extending wall portion to seat in said container side wall outwardly extending groove.

8. A method for applying the cover of claim **1** to a container having an outwardly extending rim bead comprising placing said cover onto said container, contacting a bottom portion of said downwardly extending flange with a heated surface and applying sufficient pressure to said heated surface to cause deformation of said portion of said flange under said rim bead.

9. A method for applying a cover of claim **1** to a container having an inwardly extending upper rim bead, comprising placing said cover on said container, contacting said upwardly extending wall portion beneath said bead with a heated surface and pressing said heated surface outwardly to cause said wall portion to be formed beneath said bead.

10. A closure according to claim **1** wherein each of said weakened portions comprises a notch in the lower portion of said downwardly extending flange.

References Cited

UNITED STATES PATENTS

2,698,108	12/1954	Schwartz	215—42
2,942,747	6/1960	Towns	215—42
2,985,354	5/1961	Aldington	220—60

JAMES B. MARBERT, *Primary Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,403,812 October 1, 1968

William J. Weber

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

Column 4, line 4, after "claim" insert the reference numeral -- 1 --.

Signed and sealed this 31st day of March 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents