May 27, 1969 C. N. HANNON 3,446,383

CONTAINER CLOSURE

Filed Sept. 29, 1966

FIG. 1

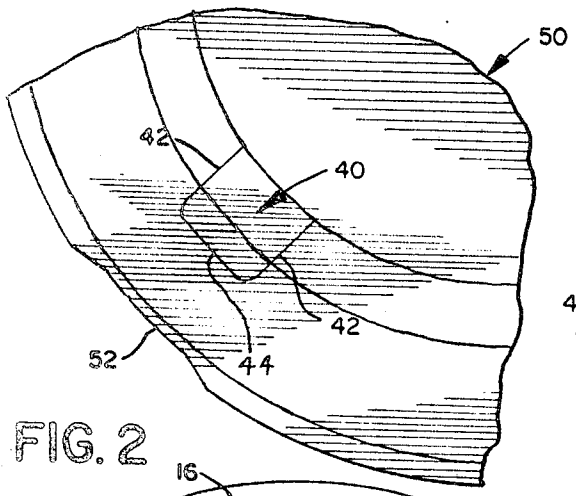
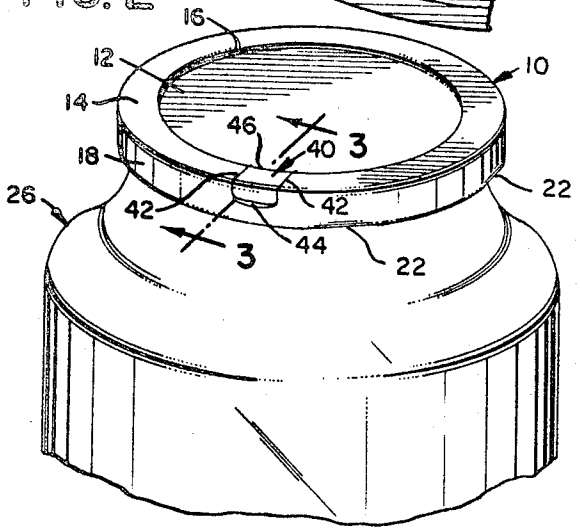


FIG. 2



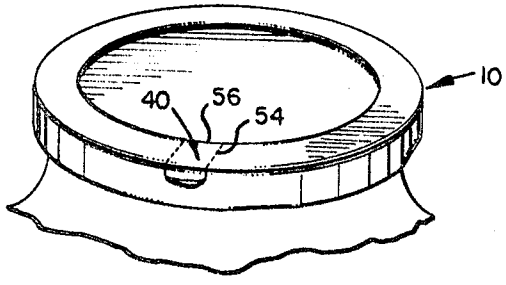


FIG. 3

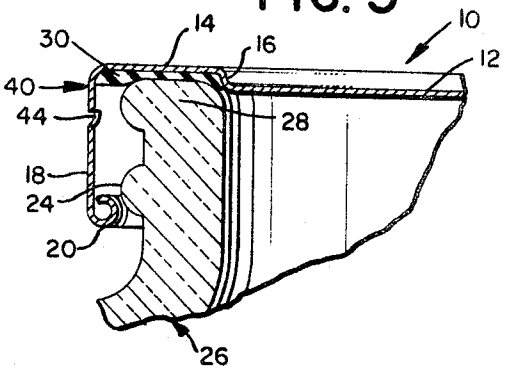


FIG. 4

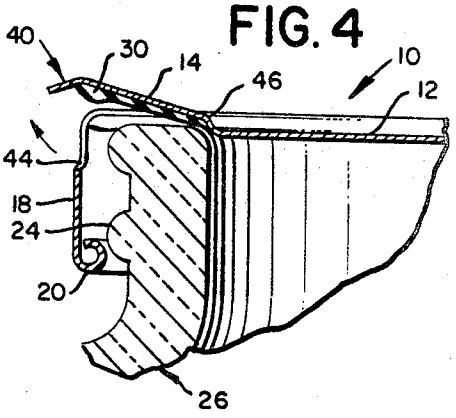


FIG. 5

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CONTAINER CLOSURE

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ABSTRACT OF THE DISCLOSURE

This invention relates to a container closure having a cap portion for covering the opening of a container and a skirt portion depending from the cap portion. A gasket is disposed on the underside of the cap portion and extends from adjacent the skirt portion toward the center of the cap portion for sealing the lip portion of a container. The gasket is made of relatively flexible material and is adhesively attached to the cap portion. A release flap portion extends from the skirt portion to the cap portion and a hinge for the flap is formed by a part of the cap portion. The skirt portion has a lifting aperture formed therein adjacent the flap portion for insertion of a tool to lift the flap portion about the hinge portion to form a passage between a container sealed by the container closure and the atmosphere.

The present invention relates to container closures and more particularly to a container closure having means for breaking the vacuum or releasing the pressure within a container before removing the closure.

It is a well-known fact that it is difficult for the average person particularly for the housewife to remove a conventional container closure from a vacuum or pressure type container because of the force on the cap created by the vacuum or pressure within the container. This is particularly true of twist-off type container closures engageable with the threaded portions of vacuum containers such as jars and bottles, because the vacuum in the container causes the pressure of the atmosphere to force the closure tightly against the container, thereby making it difficult to simply twist off the closure. The prior devices that have attempted to deal with this problem have either been cumbersome, difficult to open, or expensive to manufacture.

It is an object of this invention to provide a novel container closure adapted to readily release the vacuum or pressure within a container prior to removing the closure.

It is another object of this invention to provide such a container closure of the twist-off type for vacuum containers having a vacuum release portion on the closure that may be readily used to release the vacuum within the container so that the twist-off type closure may be easily removed from engagement with the container.

It is a further object of this invention to provide such a container closure that is simple for operation, relatively inexpensive to manufacture and may be reused to seal the container.

Other objects and advantages will be readily apparent from the following specification, claims and the drawings appended hereto wherein:

FIGURE 1 is a fragmentary top view of a blank for making the container closure of this invention.

FIGURE 2 is a fragmentary perspective view of a container sealed by the container closure of this invention.

FIGURE 3 is a fragmentary cross-sectional view of a portion of the container and closure.

FIGURE 4 is a view similar to FIGURE 3 with the tab illustrated in the open position.

FIGURE 5 is a perspective view of another embodiment of the container closure of this invention.

It has now been found that the foregoing and related objects can be readily attained in an integrally formed container closure having a cap portion for covering the opening of a container and a skirt portion depending from the cap portion having engaging means for securing the container closure in sealing engagement with the container. The container closure is of the type adapted to seal the lip portion of a bottle or jar in an air tight manner, particularly a container having a vacuum therein, however, the container closure is equally effective for use with containers under pressure gerater than atmospheric.

A release flap portion is provided on the container closure which extends from the skirt portion to the cap portion, and a hinge for the flap portion is provided by a part of the cap portion. The skirt portion has a lifting aperture formed therein adjacent the flap portion for insertion of a tool such as a kitchen knife or a finger nail for bending the flap portion about the hinge portion to form a passage between the container sealed by the closure and the atmosphere. This passage allows air to enter a container under a vacuum, or allows gas or air to escape from a container under pressure.

The container closure in the disclosed embodiment is of the twist-off type where it is desirable to release any pressure thereon so that the closure may be easily turned and removed from engagement with the container. The skirt portion of a twist-off type closure has portions adapted to extend inwardly to engage the threaded portion of a container. This invention may be utilized equally well on other types of suitable container closures in addition to the twist-off type.

The release flap may be formed on the container closure by slits made therein extending from the hinge on the cap portion to the lifting aperture on the skirt portion. Desirably, the container closure is cup shaped with a raised annular portion extending about the circumferential periphery of a disc shaped cap portion and is attached thereto by an annular wall extending generally upwardly between the cap portion and the annular ring. The annular ring portion forms an annular groove in cooperation with the skirt portion and the annular wall for sealing engagement with the lip portion of the container. In one embodiment the flap is formed by a pair of slits made in the closure which extend from the hinge disposed on the annular wall portion adjacent the cap portion to the lifting aperture on the skirt portion. However, the container closure may be made in any desirable configuration effective to seal a particular container.

In another embodiment the release flap portion may also be formed by indentations in the closure extending from the hinge on the cap portion to the lifting aperture in the skirt portion. These indentations form tear lines so that the flap may be lifted by a tool inserted in the aperture with a minimum of effort. In a container closure having an annular ring portion, the indentations may be formed in the same manner as the slits described above. The aperture in the skirt portion may be formed by indentations forming a "knock out" portion for the insertion of a tool to lift the flap.

The container closure may be made from blanks by conventional drawing processes having a concave portion cut from its peripheral edge adjacent the flap so that after the drawing process, the lifting aperture will have a desirable configuration. It has been found that if this concave portion is not removed from the blank, the lifting aperture will have an undesirable configuration when it is required to have this aperture placed near the lower edge of the skirt portion. When the aperture is placed ad-

jacent the upper edge of the skirt portion, the concave portion is unnecessary.

The container closure may be made of metal or other materials suitable to form an effective closure and which has sufficient resiliency to provide a hinge about which the flap may move.

Referring now to the drawings, an integrally formed container closure, generally designated by the numeral **10**, has a disc shaped cap **12** recessed below an outwardly extending flat annular ring **14** connected to the cap **12** by an inclined annular connecting wall **16** disposed about the circumferential periphery of the cap **12**. A cylindrically shaped skirt **18** depends normally from the peripheral edge of the annular ring **14** and has its free edge rolled over inwardly to form an annular bead **20**. Spaced at 90 degree intervals around skirt **20** are four inwardly extending shoulder portions **22** formed from the annular bead **20** for engagement with the threads **24** of a conventional vacuum type container **26**.

The vacuum container **26** has an annular lip portion **28** engaged with an annular channel formed by the ring **14** having the wall **16** and skirt **18** depending from opposite sides thereof. A conventional seal or gasket **30** is disposed between the annular ring **14** and the lip portion **28** in order to provide an air tight seal between the container closure **10** and the vacuum container **26**.

A vacuum release flap, generally designated by the numeral **40**, is formed in the skirt **18** and annular ring **14** of the container closure **10** by means of two generally parallel slits **42** which extend perpendicularly from opposite ends of a slot **44** formed in the skirt **18**. The slits **42** extend upwardly from the skirt **18** and terminate on the wall **16** adjacent the cap **12**. In an alternate embodiment (not shown) the slits **42** terminate on the annular ring **14** so that a portion of the annular ring **14** remains between the upper ends of the slits **14** and the inclined wall **16**. The portion of the wall **16** between the upper ends of the slits **42** form a hinge **46** about which the flap **40** may be bent or pivoted. The slot **44** is adapted, to be, of sufficient size to receive a utensil such as the end of a knife blade or a finger nail in order to bend the flap **40** about the hinge **46**.

In another embodiment of this invention for use where relatively stiff material is used for the container closure **10**, in order to make the flap **40** easily movable about the hinge **46**, a pair of hinge slits (not shown) may be provided which extend perpendicularly toward each other from the upper ends of the parallel slits **42** on the annular ring **14** and are terminated at predetermined points to provide the hinge portion thereof between.

As mentioned above, the parallel slits **42** and hinge slits **48** extend to the inner peripheral edge of the annular wall **16** adjacent the cap **12**. The container closure **10** is made of sufficiently stiff material so that when the flap **40** is in the closed position, illustrated in FIGURE 2, there is sufficient pressure on gasket **30** in the area of the flap **40** to maintain an air tight seal with the lip **28** of the container **26**.

In order to open the vacuum container **26** sealed by the closure **10**, a knife or similar utensil is inserted into the slot **44** and raised so that the flap **40** is moved upwardly about the hinge **46**. As this occurs, the gasket **30**, which is made of relatively flexible material and may be fastened to the annular ring **14** with an adhesive, is pulled away from the lip portion **28** by the movement of the flap **40**. Upward movement of the flap **40** and gasket **30** allows air to flow between the gasket **30** and the lip portion **28** adjacent the inclined wall **16** thereby destroying the vacuum in the container **26**. When the gasket is not fastened to the annular ring **14** the air may enter between the gasket and the wall **16**. The closure **10** may then be easily removed from the container **26** by rotation of the closure **10** in the usual manner without the resistance caused by a vacuum in the container **26**.

In order to insure that the slot **44** is of the desired size and shape when the container closure **10** is being formed, a blank, generally designated by the numeral **50**, is provided in the form illustrated in FIGURE 1, before being subjected to the drawing process. A concave section **52** is provided on the peripheral edge of the blank **50** adjacent the flap **40** formed thereon so that during the drawing process for forming the closure **10**, the slot **44** will be formed with the desired size and shape, as illustrated in FIGURE 2. It has been found that if the concave portion **52** is not provided in the blank **50**, the slot **44** will have an undesirable configuration after the drawing process. When the slot **44** is located near the upper edge of the skirt **18** the concave portion **52** is not provided in the blank **50** as it has been found unnecessary when such a construction is used. Instead of the concave section **52**, a convex portion (not shown) may be provided extending outwardly from the blanks **50** when it is desired to form the shoulder portions **22** in this area.

As illustrated in FIGURE 5 the flap **40** may also be formed by tear lines **54** formed by indentations in the closure **10**, instead of slits **42** so that the flap **40** may be moved about a hinge **56** by tearing the closure **10** along the tear lines. This construction functions in a manner similar to the one described above except that as the flap **40** is raised, it is necessary to exert extra force to tear the closure **10** along the tear lines **54**.

Accordingly, this invention provides a novel container closure adapted to readily release the vacuum or pressure within a container prior to removal of the closure. The container closure has a release flap which may be readily lifted to release the pressure or vacuum within a container, so that the container closure may be easily removed therefrom. Such a container closure is simple in operation, relatively inexpensive to manufacture and may be reused again to seal the container.

It will be understood that the foregoing description with the details of exemplary structure is not to be construed in any way to limit the invention, but that modifications may be made thereto without departing from the scope of the invention.

Having thus described the invention, I claim:

1. A container closure comprising: a cap portion for covering the opening of a container; a skirt portion depending from said cap portion; a gasket disposed on the underside of said cap portion and extending from adjacent said skirt portion toward the center of said cap portion for sealing the lip portion of a container, said gasket being of relatively flexible material and adhesively attached to said cap portion; engaging means on said skirt portion for securing said container closure to a container; a release flap portion extending from said skirt portion to said cap portion; a hinge for said flap formed by a part of said cap portion; and said skirt portion having a lifting aperture formed therein adjacent said flap portion for insertion of a tool to lift said flap portion and said gasket about said hinge portion to form a passage between a container sealed by said container closure and the atmosphere.

2. The container closure of claim **1** wherein said flap portion is formed by slits in said closure extending from said hinge on said cap portion to said lifting aperture on said skirt portion.

3. The container closure of claim **1** wherein said flap portion is formed by indentations in said closure extending from said hinge on said cap portion to said lifting aperture on said skirt portion, said indentations forming tear lines so that said flap may be lifted by a tool inserted in said aperture.

4. The container closure of claim **1** wherein said cap portion is generally disc shaped and has a raised annular ring portion extending about the circumferential periphery of said cap and is attached thereto by an annular wall extending generally upwardly from said cap portion to said annular ring portion, said annular ring por-

tion forming an annular groove in cooperation with said skirt portion and said annular wall receiving said gasket for sealing engagement with the lip portion of a container.

5. The container closure of claim 4 wherein said flap portion is formed by a pair of slits in said closure extending from said hinge disposed on said annular wall portion to said lifting aperture on said skirt portion.

6. The container closure of claim 4 wherein said flap portion is formed by a pair of indentations in said closure extending from said hinge disposed on said annular wall portion to said lifting aperture on said skirt portion, said indentations forming tear lines so that said flap may be lifted by a tool inserted in said aperture.

7. A container closure comprising: a cap portion for covering the opening of a container; a skirt portion depending from said cap portion; said cap portion being generally disc shaped and having a raised annular ring portion extending about the circumferential periphery thereof, said annular ring portion being attached to said cap portion by an annular wall extending generally upwardly from said cap portion to said annular ring portion, said annular ring portion forming an annular groove in cooperation with said skirt portion and said annular

wall; a gasket disposed in said annular groove for sealing the lip portion of the container; engaging means on said skirt portion for securing said container closure to a container; a release flap portion extending from said skirt portion to said annular ring portion; a hinge for said flap formed by a part of said annular ring portion; and said skirt portion having a lifting aperture formed therein adjacent said flap portion for insertion of a tool to bend said flap portion about said hinge portion to form a passage between a container sealed by said container closure and the atmosphere.

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JOSEPH R. LECLAIR, *Primary Examiner.*

U.S. Cl. X.R.

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