United States Patent

Lelyk et al.

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[54] **CONTAINER CLOSURE**

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[52] **U.S. Cl.** .....**220/55 AN**, 215/96

[51] **Int. Cl.** **B65d 45/32**

[58] **Field of Search**.....220/55 AN; 215/95, 96

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[57] **ABSTRACT**

A closure for a container such as beverage cans and the like which may be applied and removed by hand as many times as desired has a sealing gasket and body member slidably nested in an outer retaining ring, which ring has means to cooperate with the body member and the sealing gasket to effect an hermetic seal and to prevent the closure from being blown from the container by gaseous pressure exerted by its contents.

9 Claims, 5 Drawing Figures

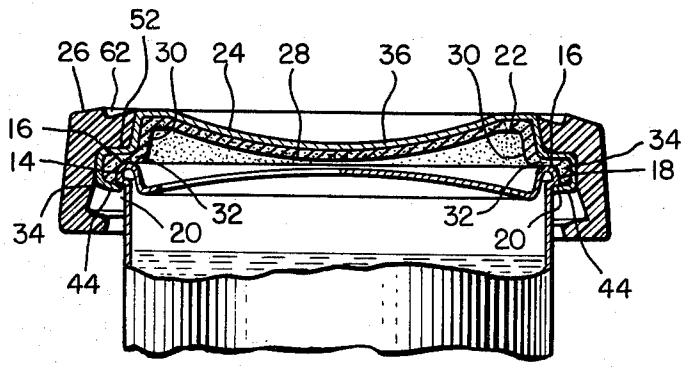


FIG. 1

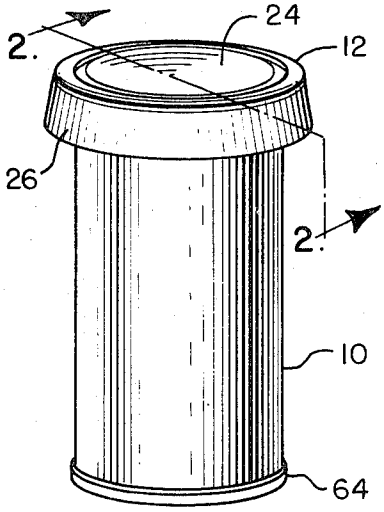


FIG. 2

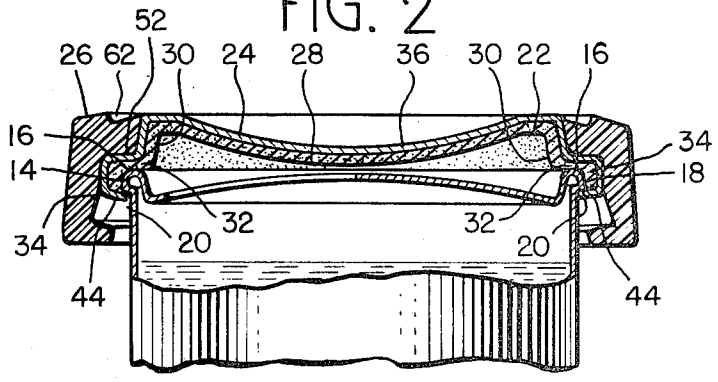


FIG. 2a

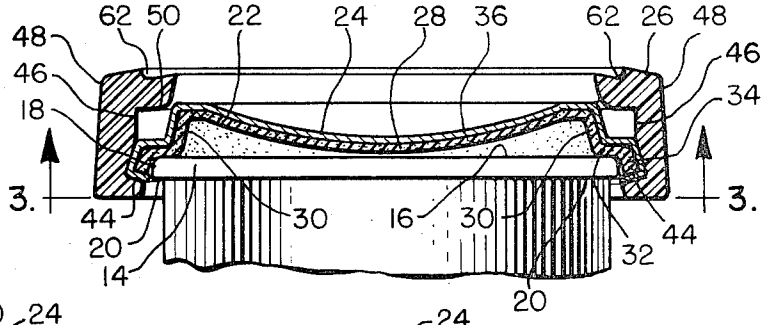


FIG 4

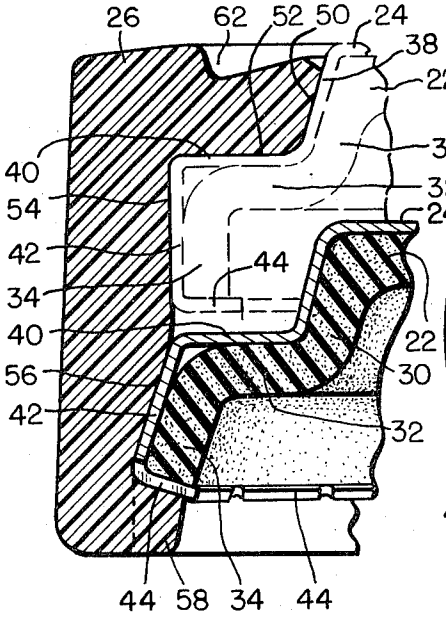
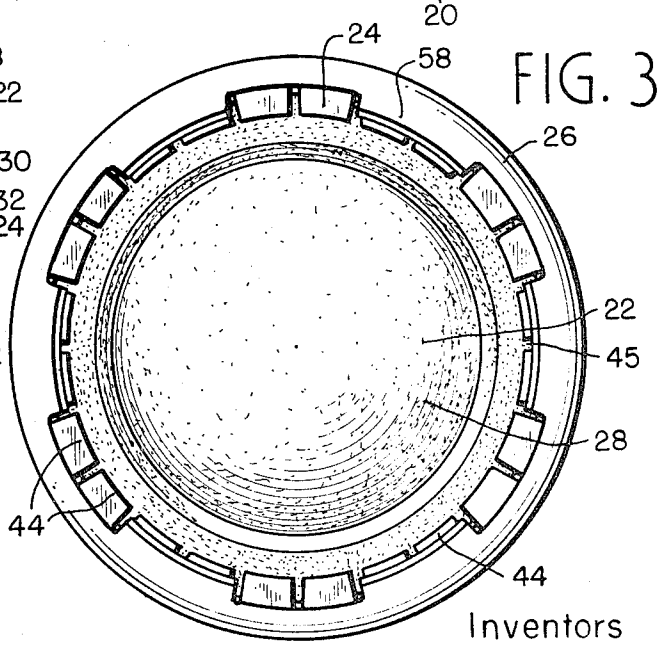


FIG. 3



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CONTAINER CLOSURE

BACKGROUND OF THE INVENTION

This invention relates generally to a closure adapted to close and seal the opening of containers for beverages, foods and the like, and particularly to a closure of the character adapted for use to effectively reclose such containers after they have been opened by means of a can opener or a device of the "easy-open" variety. This invention is especially effective for closing cans safely and effectively where there would normally be a danger of "blow-off" from gases emanated by carbonated beverages and the like.

While reclosure devices have been marketed for bottles for years, heretofore no effective device has been available for reclosing carbonated beverage cans. The most apparent reasons are that a bottle, having a relatively narrow and deep mouth, needs a closure having a relatively small surface area for restraining gases, and that, because it has a relatively large and protruding rim bead, provides an excellent gripping member for any closure. Thus, various types of plugs could be used to fill the mouths and relatively heavy rubberlike overcaps could be employed to grip around the large bead — some with the assistance of an outer sleeve of a more rigid material.

Cans, on the other hand, have a relatively small rim bead and consequently provide very little gripping area for a closure. At the same time, the end area of a can is quite large and a closure would tend to easily deform by bulging outwardly from the pressures inside the can resulting in leakage in the sealing areas, and possibly blow-off of the closure.

It is therefore an object of the invention to provide a closure for cans that can overcome the above disadvantages and one which is relatively simple to manufacture and assemble, may be applied and removed easily with simple hand motions without bending, distorting or losing its effectiveness, and which will preserve the carbonation, effervescence and other desired properties of its contents for a long period of time.

SUMMARY OF THE INVENTION

To overcome the above disadvantages and to meet the above objectives there is provided a closure comprising three basic parts: a sealing gasket of resilient material to provide the hermetic seal with the beaded rim of the can; a concave relatively rigid body member into which the gasket snugly fits, and which provides the strength to prevent bulging of the closure and consequent leakage, as well as, by lateral pressure on the sealing gasket, and by means of fingers adapted to engage the bottom shoulder of the beaded rim, promoting an effective seal and grip between the closure and the can; and an outer retaining ring which is slidably disposed over the body member, and which provides the means for compressing and holding the body member and gasket in sealing relationship with the can.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the closure of our invention shown in use on a beverage can.

FIG. 2 is a sectional view of the closure and a can showing the closure in its sealing position on the can, taken along line 2—2 of FIG. 1.

FIG. 2*a* is a sectional view of the closure in its open position on the can.

FIG. 3 is a plan view taken along line 3—3 of FIG. 2*a* showing the underside of a closure.

FIG. 4 is an enlarged, fragmentary sectional view, showing the relationship of various parts of the closure in both its sealing (dotted lines) and open (solid lines) positions, taken along line 4—4 of FIG. 3.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The drawing shows a can **10** of the type usually used for carbonated drinks. The closure is generally designated by the reference numeral **12**.

The can **10** has a beaded rim **14** which, in turn, has a top **16**, an outer periphery **18** and a bottom shoulder **20**.

The preferred embodiment of the closure **12** comprises a sealing gasket **22** of resilient rubber-like material, a rigid body member **24** and an outer retaining ring **26**.

The sealing gasket **22** has a top wall **28**, an upper side wall **30** extending generally downwardly from the top wall **28**, a ledge **32** extending outwardly from the upper side wall **30** and a lower side wall **34** extending downwardly form ledge **32**. Ledge **32** is dimensioned to seat removably across the top **16** of the rim **14** of the can **10**. Lower side wall **34** is dimensioned to seat removably along the outer periphery **18** of rim **14**.

The body member **24** comprises a top wall **36**, an upper side wall **38** extending downwardly from top wall **36**, a ledge **40** extending outwardly from upper side wall **38**, and a lower side wall **42** extending downwardly from ledge **40**. These parts are most clearly shown in FIG. 4 of drawing. Preferably the configuration of the top wall **36**, upper side wall **38**, ledge **40** and lower side wall **42** of sealing gasket **22** correspond substantially to the top wall **28**, upper side wall **30**, ledge **32** and lower side wall **34** of the body member **24** so that the sealing gasket **22** fits snugly within the body member **24**. Extending from the bottom of the lower side wall **42** of body member **24** are inwardly flared fingers **44** which are separated by spaces **45** and which serve several purposes which will hereinafter be described.

The outer retaining ring **26** comprises an inner side wall **46** and an outer side wall **48**. The inner side wall **46** has an upper portion **50**, a roof **52** extending outwardly from upper portion **50**, a substantially vertical intermediate portion **54** extending downwardly from roof **52** and a lower flared portion **56** extending downwardly and outwardly from intermediate portion **54**. The functions of these parts of the retaining ring **26** will be described below. The retaining ring **26** also preferably includes means projecting inwardly from the bottom of the ring **26** to restrain the body member **24** and the sealing gasket **22** within ring **26**. In the drawings such means are shown to be in the form of a plurality of tabs **58**. However, it is readily apparent that a continuous tab or shoulder would also be suitable.

With the above basic description of parts in mind, their functions and purposes can best be understood by a detailed description of the assembly and operation of the closure. As already stated, the sealing gasket **22** is dimensioned to fit snugly within the body member **24**. These two parts are then forced past the tabs **58** and

are thus trapped within the ring **26** as shown in FIG. **2a** by tabs **58**. The body member **24** is slidable within the ring **26**. FIG. **2a** shows the restraining ring **26** in an upper unrestrained position relative to body member **24**, and FIG. **2** shows the ring **26** in a lower sealing position relative thereto. The upper unrestrained position is also shown by the solid lines, and the lower sealing position by the dotted lines in FIG. **4**.

To effect the sealing of the can the closure is first manually placed on the can with the ring **26** in its upper unrestrained position. Downward hand pressure then forces ring **26** into its lower sealing position as shown in FIG. **2** and as indicated by the dotted lines in FIG. **4**. To remove the closure the ring is simply raised to its original unrestrained position and lifted from the can.

It can be seen in the drawings that for the closure **12** to be placed on the can in its unrestrained position, the fingers **44** of the body member must be able to clear the can rim so that ledge **32** of sealing gasket **22** rests on the top of beaded rim **14**. In this position the lower side wall **42** of body member **24** is unrestrained by the inner side wall **46** of retaining ring **26**. When the retaining ring is forced downwardly into its lower sealing position, the lower side wall **42** of body member **24** is forced inwardly by the intermediate portion **54** of inner side wall **46** and lower side wall **34** of sealing gasket **22** is thereby compressed radially into sealing relationship with the outer periphery **18** of rim **14**. At the same time the fingers **44** are moved into gripping position beneath the bottom shoulder **20** of rim **14**. When the ring **26** is initially brought into the lower sealing position the lateral compressive force on gasket **22** is sufficient to hold the closure in sealing relationship on the can. However, gaseous pressure emanating from the contents of the can over a period of time exert upward force on the closure which tends to lift the closure from the can. Fingers **44** of body member **24**, however, become positively engaged with the bottom shoulder **20** of rim **14** and prevent upward movement of the closure. The result is that the hermetic seal along the outer periphery is maintained and "blow-off" of the closure is prevented.

Another important feature of the invention is the fact that the top wall **36** of body member **24** is concave. This greatly strengthens the top wall and prevents any outward bulging thereof which would cause the retaining ring **26** to slide upwardly toward its upper unrestrained position relative to body member **24** and a resultant release of the seal.

While it has been stated that the body member is made of a rigid material, the lower side wall **42** and fingers **44** obviously must be made flexible enough to bend inwardly when the intermediate portion **54** of side wall **46** forces them inwardly. To provide this flexibility the spaces **45** between fingers **44** may be extended upwardly into the lower side wall **42** of the body member **24**, and preferably along the entire height of lower side wall **42**.

To enable the invention to serve the dual functions of closure and coaster, a recess **62** corresponding in size and shape to the outer plan dimension of the bottom of can **10** may be provided on the top of the ring **26**. Thus, the user may retrieve a can of beverage that has been preserved by means of the seal effected by the closure, remove the closure and set the can in the recess **62** on top of the closure while he is between sips of the beverage.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

What is claimed is:

1. A closure for a container having a beaded rim, said closure comprising: A sealing gasket of resilient material having a top wall and a side wall extending downwardly from said top wall, said side wall and said top wall being adapted to form a seal with said beaded rim; a body member having a top wall, a side wall extending downwardly from said top wall, the general outline of said top wall of said side wall of said body member conforming substantially to that of said sealing gasket so that said sealing gasket fits snugly within said body member said body member including inwardly flared fingers extending from the bottom of said side wall of said body member and an outer retaining ring slidably disposed over said body member and having means to decrease the outer dimension of said side walls of said body member to thereby force said sealing gasket into sealing engagement with said beaded rim said fingers being adapted to engage said rim of said container when said sealing gasket is forced into sealing engagement with said rim.

2. A closure according to claim **1** wherein said top wall of said gasket and said top wall of said body member are concave.

3. A closure for a container having a beaded rim comprised of a top, an outer periphery and a bottom shoulder, said closure comprising: a sealing gasket of resilient material having a top wall, an upper side wall extending downwardly from the outer edge of said top wall, a ledge extending outwardly from said upper side wall, said ledge being dimensioned to seat removably across the top of said rim of said container, and a lower side wall extending downwardly from said ledge, said lower side wall being dimensioned to seat removably along the outer periphery of said rim; a body member having a top wall, an upper side wall extending downwardly from the outer edge of said top wall, a ledge extending outwardly from said upper side wall, a lower side wall extending downwardly from said ledge, the configuration of said top wall, said upper side wall, said ledge and said lower side wall of said sealing gasket corresponding to those of said body member so that said sealing gasket fits snugly within said body member, and inwardly flared fingers extending from the bottom of said side wall of said body member, said fingers retaining said sealing gasket in said body member and said fingers being dimensioned to engage said bottom shoulder of said beaded rim; and an outer retaining ring having an inner side wall and an outer side wall, said inner side wall being slidably disposed over said body member between an upper position and a lower position relative to said body member, said inner side wall having an upper portion slidably engaging with said upper side wall of said body member, a roof extending outwardly from said upper portion of said inner side

wall, a substantially vertical intermediate portion extending downwardly from said roof and a lower flared portion extending downwardly and outwardly from said intermediate portion, said intermediate portion of said side wall and said lower flared portion of said side wall slidably engaging said lower side wall of said body member so that, when said outer retaining ring is in said upper position relative to said body member, said lower side wall of said body member will be substantially unrestrained to allow for application and removal of said closure over said rim of said container, and when said outer retaining ring is in said lower position relative to said body member said lower side wall of said body member will be restrained by said intermediate portion of said inner side wall of said outer retaining ring to effect a seal between said lower side wall of said gasket and said outer periphery of said rim and to engage said fingers of said body member to prevent any upward force beneath said closure from removing said closure from said container.

4. The closure according to claim 3 wherein said outer retaining ring includes means projecting inwardly from the bottom of said ring to restrain said body member and said sealing gasket within said ring.

5. The closure according to claim 3 wherein the top surface of said outer retaining ring includes a recess, the outer portion of said recess corresponding in size and shape to the outer plan dimension of said container so that said closure serves as a coaster for said container while the contents of the container are being consumed.

6. The closure according to claim 3 wherein said top wall of said body member is concave.

7. A closure for a container having a beaded rim comprised of a top, an outer periphery and a bottom shoulder, said closure comprising: a sealing gasket of resilient material having a top wall, an upper side wall extending downwardly from the outer edge of said top wall, a ledge extending outwardly from said upper side wall, said ledge being dimensioned to seat removably across the top of said rim of said container, and a lower side wall extending downwardly from said ledge, said lower side wall being dimensioned to seat removably along the outer periphery of said rim; a body member having a top wall, an upper side wall extending downwardly from the outer edge of said top wall, a ledge extending outwardly from said upper side wall, a lower side wall extending downwardly from said ledge, the configuration of said top wall, said upper side wall, said ledge and said lower side wall of said sealing gasket corresponding to those of said body member so that said sealing gasket fits snugly within said body member, inwardly flared fingers extending from the bottom of said side wall of said body member, said fingers retaining said sealing gasket in said body member and said fingers being dimensioned to engage said bottom shoulder of said beaded rim; and an outer retaining ring having an inner side wall and an outer side wall, said inner side wall being slidably disposed over said body member between an upper position and a lower position relative to said body member so that, when said outer retaining ring is in said upper position relative to said body member, said lower side wall of said body member will be substantially unrestrained to allow for application and removal of said closure over said rim of said container, and when said outer retaining ring is in said lower position relative to said body member said lower side wall of said body member will be restrained by said inner side wall of said outer retaining ring to effect a seal between said lower side wall of said gasket and said outer periphery of said rim and to engage said fingers of said body member to prevent any upward force beneath said closure from removing said closure from said container.

8. The closure according to claim 7 wherein said top wall of said body member is concave.

9. The closure according to claim 7 wherein said outer retaining ring includes means projecting inwardly from the bottom of said rim to restrain said body member and said sealing gasket within said ring.

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