June 1, 1965 W. H. McKNIGHT 3,186,572

CONTAINER CLOSURE

Filed Oct. 7, 1963

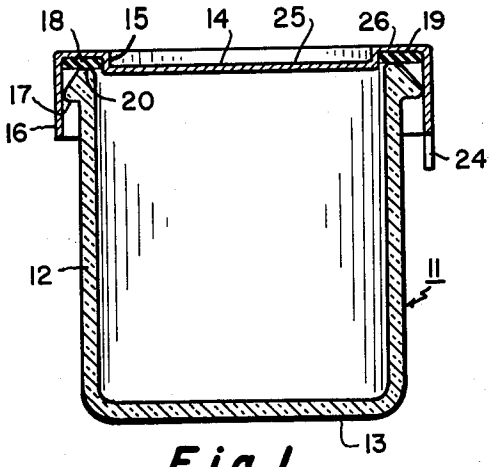


Fig. 1

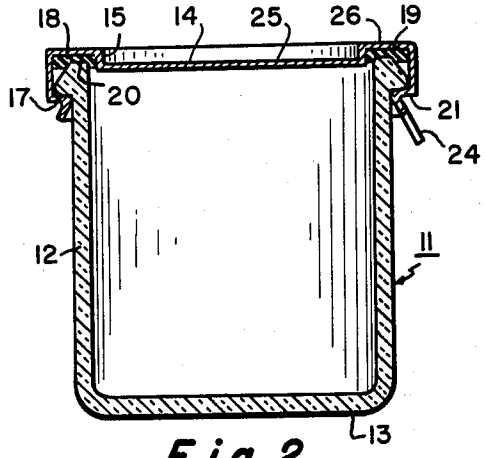


Fig. 2

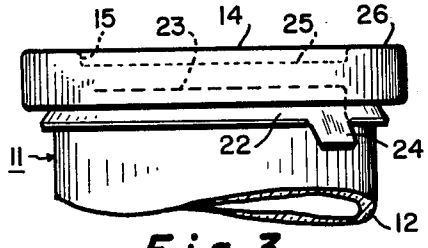


Fig. 3

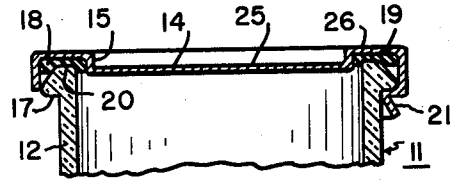


Fig. 4

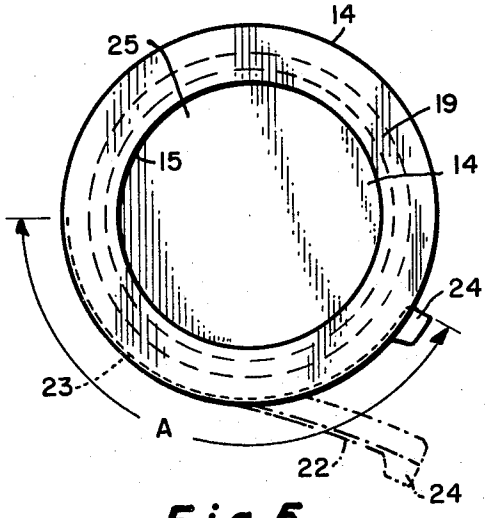


Fig. 5

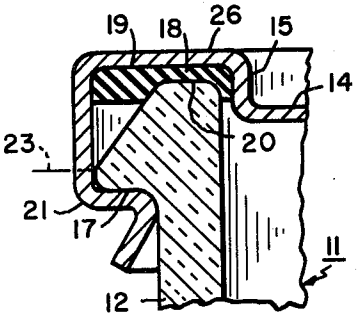


Fig. 6

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United States Patent Office 3,186,572 Patented June 1, 1965

3,186,572

CONTAINER CLOSURE

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Filed Oct. 7, 1963, Ser. No. 314,423
3 Claims. (Cl. 215—46)

This invention relates to container closures, and more particularly to easily removable closures for hermetically sealing open-mouth containers which may be repeatedly snapped on and off such containers to reclose and reopen them after the hermetic seal is once broken.

Numerous occasions arise in the utilization of open-mouth containers where it is desirable to have a reclosable snap-on closure which may not only be easily removable and replaceable with one hand, but yet maintain a seal which preserves the quality of the unused portion of the packaged contents. A typical example of such a container having these requirements is a baby food container, wherein portions of the contents are normally removed in spaced intervals, and reopening must often be accomplished with one hand.

Presently available container closures consist of a metal cap which is pressed on to the open-mouthed vessel to effect a hermetic seal, and which requires a special deforming tool to accomplish the difficult initial removal thereof from the container. Since the closure is inherently deformed upon removal, it is impossible to adequately reclose the container. A further known type of container closure is screwed onto a receptacle and has a threaded neck coupled with an inner sealing disk. This type of closure is not only expensive, but also its operation is time-consuming and requires two hands for manipulation. Both of these known types of closures require a large bead on the finish of the open-mouthed glass container, and neither provides a readibly reclosable and easily reopenable snap-on, snap-off action for closing-off the container once the hermetic seal is broken.

My invention not only alleviates the problem of reclosability heretofore encountered with known types of closures, but also provides for a convenient easily-operable initial opening of the closure. Basically my invention relates to a hermetically-sealable closure, having a tear strip formed integrally therewith, for facilitating the initial removal of such closure while permitting the closure to be snugly reapplied and easily removed from the container with a snap action.

It thus has been an object of my invention to provide an improved, easily operable, reclosable closure for wide mouth containers.

A further object of the invention is to provide a low cost container closure structure which is adapted to mass production techniques.

Other objects and advantages of the invention will be shown in the following detailed description of a preferred embodiment thereof as illustrated in the accompanying drawing in which:

FIG. 1 is an elevational view in section illustrating the initial positionment of a closure embodying my invention upon a container, prior to the formation of such closure.

FIG. 2 is a vertical section illustrating the positionment of the closure shown in FIG. 1 after it is formed to fit the container.

FIG. 3 is a fragmentary side elevational view illustrating one form of the container closure of the present invention, hermetically sealed upon a container.

FIG. 4 is a fragmentary vertical section illustrating the positionment of the closure upon a container after a portion of the beam section of such closure has been removed along a predetermined score line or other suitable line of weakness.

FIG. 5 is a top plan view of the container closure with a partial removal of a tear strip indicated in phantom lines for the sake of clarity.

FIG. 6 is a fragmentary elevational view in section, greatly enlarged, illustrating a container closure hermetically sealed upon a container with a score line at a major diameter of a closure.

Referring now to the drawings, a cylindrical container 11 of glass, plastic, or any other suitable material, is shown having side walls 12 terminating at their upper end in a top edge portion 20 provided with an outer reentrant circumferential finish 17, and at their lower end in a bottom portion 13. A closure 14 such as a lid or cap of any suitable plastic or sheet metal is formed with a recessed central plate or disk portion 25 which projects within the open upper end of the container 11.

The disk portion 25 is bounded by a raised annular rim 26 which forms a downwardly open trough or channel 19 for receiving the upper edge 20 of side walls 12. A depending wall 15 connects the rim 26 with the disk portion 25 and an extended vertical banding flange 16 projects downwardly from rim 26 about the outwardly facing circumferential finish 17 of the container 11. In order to hermetically seal the closure 14 to the container 11, when the container 11 is first filled, a suitable gasket or packing 18, of resilient or rubber-like consistency, is applied to the inner surface of the upwardly extending annular trough 19.

After the container has been filled, the closure 14 is assembled to the container 11 by inserting the top edge 20 of the container between the depending vertical wall 15 and the vertical flange 16 of the closure 14 and into channel 19 so as to engage gasket 18. The vertical flange 16 is then rolled around the outwardly-facing circumferential finish 17 to hermetically seal the container 11. In addition, the lower portion of extended flange 16 is formed into a reentrant strengthening curvilinear beam section 21, which as shown in FIGS. 2 and 6, has a radially-inwardly extending horizontal portion cooperably engageable with the finish 17 and a downwardly-outwardly projecting skirt portion joined by a curvilinear compression-locking knee portion, which beam section 21 functions to lock the cap or lid 14 in position.

A tear strip 22 is formed on the closure 14 between a peripheral edge of the closure and a predetermined line of weakness such as a score line 23. When the container is to be opened, the tear strip 22 is torn from the closure by hand, without necessitating the use of a special tool and without deforming the remaining portion of the closure. A projecting tab 24 is provided to facilitate the tearing or removal of the tear strip 22 from the closure 14. The tear strip 22 removes the beam section 21 from the closure 14 through an arc A of approximately 90° to 270°, depending upon the length of the predetermined score line 23. The amount of the beam section 21 removed is controlled by such line of weakness or score line 23 which is formed in the closure 14 prior to its application on the container. The closure is scored to coincide with the largest horizontal diameter of the outwardly facing circumferential surface finish 17, so that the strengthening curvilinear beam section is removed by such tear strip so as to facilitate the removal of the closure. When the tear strip 22 has been removed, the pressure or vacuum of the container 11 is released, and the closure may be removed from the container 11 by a slight push on that portion of the closure 14 where the tear strip has been removed.

The unremoved portion of the beam section 21, remaining after the removal of the tear strip 22, cooper-

ates with the top edge 20 and reentrant portion 17 of the container 11 to provide a snap-on fit so that the closure may be reapplied to tightly close the container. In addition, the cover or lid 14 may be again readily removed with one hand by merely snapping the closure off of the container by slight pressure on the edge of that part of the closure where the tear strip has been removed. Thus, I have been able to provide an improved easily openable closure, which not only hermetically seals a container, but which is also easily and repeatedly reclosable.

Although I have described my invention with respect to certain specific embodiments thereof, I do not wish to be thereby limited, as various modifications of my invention are intended to be encompassed within its true spirit and scope as indicated by the following claims.

I claim:

1. An improved easily removable hermetically-sealable closure for open mouth containers which may be readily reapplied and removed to reclose and reopen such containers when the hermetic seal is broken which comprises, a central disk portion projectable within an upper opening of a container, an annular rim portion bounding said central disk portion and forming a downwardly open channel for receiving upper edge portions of the side walls of such container, an extended vertical flange depending from said annular rim portion overlying outer edge portions of the side walls adjacent the upper edge thereof, said vertical flange having a lower end portion forming a strengthening curvilinear beam section cooperably engaging a reentrant circumferential outwardly-facing finish on the container for locking said closure thereon, said curvilinear beam section having a radially-inwardly extending horizontal portion cooperably engageable with the finish and a downwardly-outwardly projecting skirt portion joined by a curvilinear compression-locking knee portion, and a predetermined weakness line formed along a desired length of said vertically-extending flange providing a tear strip for facilitating the easy removal of said closure from the container.

2. An improved easily removable closure as defined in claim 1 wherein, a single continuous arcuate circumferential portion of said strengthening curvilinear beam section extending between approximately 90° and 270° remains upon said closure after the removal of said tear strip to cooperably engage with the reentrant circumferential finish of the container and facilitate the reclosability of such closure by providing a snap-on engagement therewith.

3. A closure adapted to close a container of the type having sidewalls terminating at its upper end in an annularly outwardly extending bead portion whereby the bead portion of the wall, which defines the opening in such container, is thicker in cross section than that portion of the wall therebelow and the outer lower edge of the bead forms a reentrant circumferential surface, said closure comprising a central disk portion projecting within the opening of such container, an annular rim portion surrounding said central disk portion and forming a downwardly open channel cooperably receiving the beaded upper edge portions of the sidewalls of such container, an extended vertical flange depending from said annular rim portion overlying outer edge portions of the sidewalls adjacent the upper beaded edge thereof, said vertical flange having a lower end portion forming a reentrant strengthening curvilinear beam section cooperably engaging the reentrant circumferential surface on the container for locking said closure thereon, said strengthening curvilinear beam section having a downwardly-outwardly projecting skirt portion joined to a curvilinear compression-locking knee portion joined to a radially-inwardly extending horizontal portion cooperably engageable with the re-entrant circumferential surface; and a predetermined weakness line formed about the circumference of said vertically-extending flange and extending between 90° and 270°, providing a tear strip for facilitating the easy removal of said closure from the container.

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