Dec. 11, 1956 A. M. TOFT 2,773,620

CONTAINER AND CLOSURE THEREFOR

Filed Oct. 30, 1952

Fig. 1

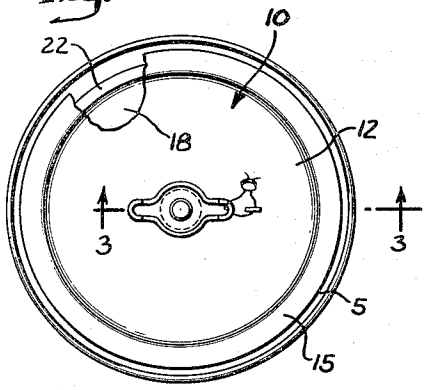


Fig. 2

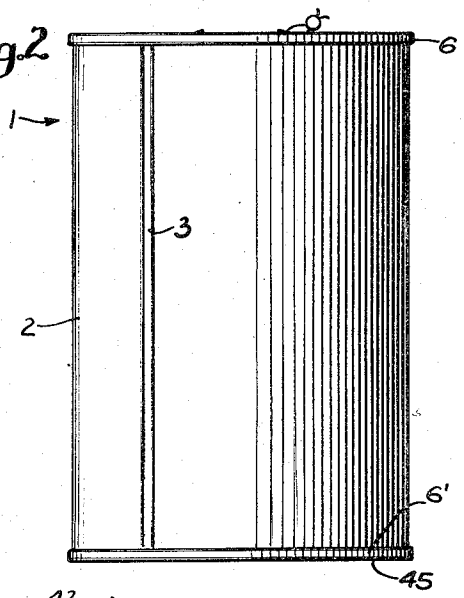


Fig. 3

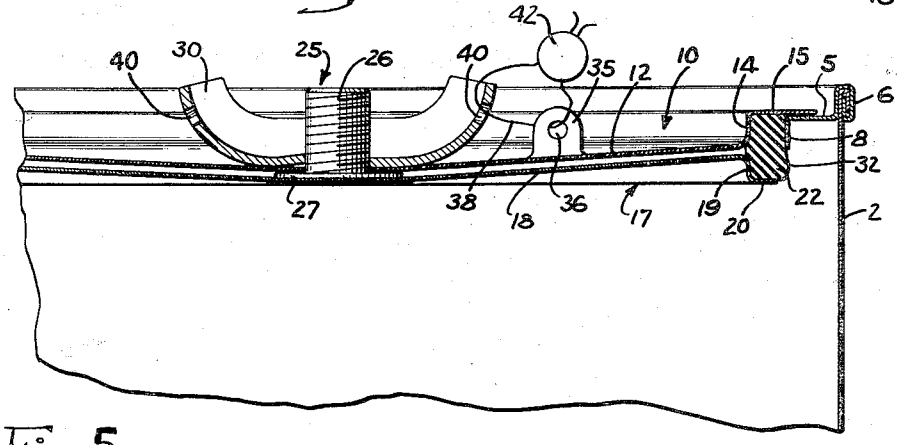


Fig. 5

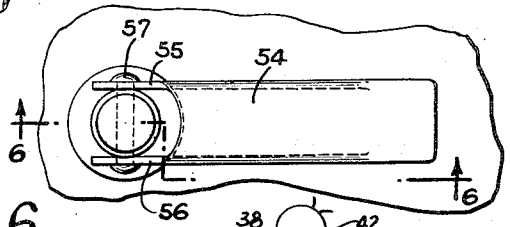


Fig. 4

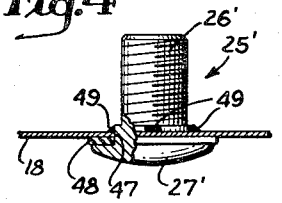
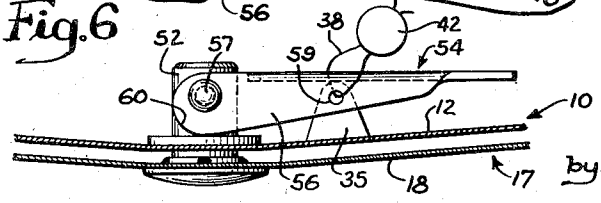


Fig. 6



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CONTAINER AND CLOSURE THEREFOR

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1 Claim. (Cl. 220—24.5)

This invention relates to cans, particularly metal cans.

It is one of the objects of the present invention to provide a releasable and reclosable cover for a can, which cover may be manipulated to form a liquid-tight, air-tight seal, and then may be made tamper-proof. It is a further object of the present invention to provide a releasable closure for a can wherein a sealing gasket ring is subjected to axial pressure to expand it radially into sealing engagement with the wall surrounding the can opening and which at the same time is further expanded to latch it in place under the end of the neck. It is a still further object of the present invention to provide a releasable and reclosable closure for cans, which closure has means for manipulating it in such a manner that even a slight closing action will secure the cover in place against accidental displacement, and a more vigorous closing will produce a firm liquid-tight, air-tight seal.

The attainment of the above and further objects of the present invention will be apparent from the following specification taken in conjunction with the accompanying drawing forming a part thereof.

In the drawing:

Figure 1 is a plan view of a can embodying the present invention, parts being broken away to illustrate the interior construction;

Figure 2 is a side view thereof;

Figure 3 is an enlarged fragmentary sectional view taken along the line 3—3 of Figure 1;

Figure 4 is a fragmentary enlarged side elevational view of an alternate stud attachment in partial section;

Figure 5 is a plan view of an alternate clamping arrangement; and

Figure 6 is a sectional view taken along the line 6—6 of Figure 5.

Reference may now be had more particularly to the drawing wherein like reference numerals designate like parts throughout.

The can 1 of Figures 1 and 2 comprises a cylindrical body 2, fo the usual construction, which may comprise a rectangular sheet of metal formed into a cylinder with the longitudinal edges 3 sealed together in a conventional manner as, for instance, by a solder seal with or without a bead. The top end of the can includes an end or cover plate 5 of an annular shape, which is sealed to the top of the can body 2 as by a conventional beaded seal 6. The annular plate 5 extends inwardly of the can body a short distance and then terminates in a downwardly extending seamless neck 8 which defines a circular opening in the annular cover plate 5. The opening is adapted to be closed by a clamp plate 10 that comprises a dished circular plate 12 having a peripheral rim 14 substantially coaxial with the can body 2, and an upper flange 15 that overlies the annular cover plate 5. The closure 10 also includes a lower seal plate 17 that includes a dished circular plate member 18 and a downwardly extending peripheral rim 19 in line with the rim 14, and a transversely extending annular flange 20 parallel to the flange 15. The outer diameter of the flange 20 is slightly

less than the inner diameter of the neck 8. The peripheral rim 14 and 19 and the flanges 15 and 20 are seamless and they reenforce the dished plates 12 and 18, respectively. A sealing gasket comprising a soft rubber sealing ring 22 is interposed between the seal plate and the clamp plate and is confined axially by the flanges 15 and 20 and is confined against flow radially inwardly by the peripheral rims 14 and 19. This ring normally maintains the seal plate and clamp plate spaced apart an amount slightly in excess of that illustrated in Figure 3, but permits drawing of the plates together to compress the ring 22 axially, thus producing a radial pressure thereon, as will be more fully set forth.

A stud 25 having a threaded shank 26 and a head 27 is welded to the upper side of the plate 18 at the center thereof, with the shank extending through a central hole in the plate 12. A wing nut 30 is threaded on the shank 26 and, upon tightening of the nut on the shank the nut draws the clamp plate and seal plate towards one another, thus compressing the soft rubber sealing ring 22 axially. This compression tends to produce a radial expansion of the sealing ring. The radial expansion of the sealing ring brings it into firm sealing pressure engagement with the inside surface of the neck 8 on the entire inner surface of the neck, thereby producing a liquid-tight, air-tight seal. At the same time, the ring 22 is caused to bulge outward radially, as indicated at 32, which bulge underlies the bottom of the neck 8 and serves as a lock to prevent manual retraction of the cover 10 from the neck 8.

A locking lug 35 is welded to the top of the plate 12 said lug having an eye 36 therethrough. A wire 38 may be passed through the eye 36 and through either one of two eyes 40—40 in the wing nut 30, and the two ends of the wire may be secured together by a soft metal slug 42, as of lead or the like, to prevent turning of the wing nut so that any tampering with the can cover will be evidenced by the breaking of the wire seal.

The bottom of the can body 2 is closed by an imperforate circular bottom plate 45 that may be beaded thereto by a bead 6' like the bead 6, as is conventional in the can making art.

In Figure 4 there is shown an alternate stud attachment wherein a stud 25' that corresponds to the stud 25 of Figure 3 has a threaded shank 26' and a head 27'. This stud also has a circular shoulder 47 of a diameter slightly greater than that of the shank 26'. In this instance a circular rubber gasket 48 is placed between the head 27' and the plate 18, and the stud is passed through a hole in the plate 18. The head 27' is then forced toward the plate 18 to compress the rubber gasket 48, and while it is thus held in compression the shoulder 47 is spot welded, by spot welds 49, to the upper side of the plate 18. This provides a liquid-tight seal around the hole in the plate 18 through which the shoulder 47 passes. The stud of Figure 4 may be substituted for the stud of Figure 3 in the can of Figure 1.

Figures 5 and 6 show an alternate arrangement for drawing the clamp plate 12 and the seal plate 17 together. In this instance there is shown a stud 52 mounted on the plate 18 in the same manner as illustrated in Figure 4 (although it may be mounted in the same manner as is illustrated in Figure 3), which stud includes a shank 52 similar to the shank 26 but not threaded. A stamped metal cam lever 54 includes a pair of arms 55—56 that embrace the stud 52 and are pivoted thereto as by a rivet 57. The arms 55 and 56 have a cam portion 60 which may be a circular arc eccentric with respect to the center of the rivet 57. When the clamp 54 is in the position illustrated in Figure 6 it has drawn the clamp plate and seal plate together. At this time the arms 55—56 embrace the stud 35 so that the sealing wire 38 may be passed through holes 59 in the arms 55 and

56, which holes are in alignment with the hole **36** in the stud 35, thus rendering this can tamper-proof.

The can above described is made of sheet metal. This includes the can body **2**, the bottom **45**, the top plate 5, the clamp plate **10** and the seal plate **12**. The metal may be the usual can making metal which is generally iron that has been plated with tin and is known as tinplate.

In compliance with the requirements of the patent statutes I have here shown and described a few preferred embodiments of my invention. It is, however, to be understood that the invention is not limited to the precise constructions here shown, he same being merely illustrative of the principles of the invention. What I consider new and desire to secure by Letters Patent is:

A container comprising a body wall, an end secured to the body and comprising an annular member sealed at the periphery to the body and having an inwardly extending annular ring terminating in a seamless open neck extending inwardly of the body, a sealing closure for the neck comprising a first plate covering the neck opening and resting on the annular ring, a second plate, a gasket ring of compressible material between said plates and bearing against the inside of the neck and having a portion underlapping the same, said first and second plates having peripheral rims, said rims respectively extending upwardly from the top plate and downwardly from the bottom plate, the rim that projects from the top plate projecting an amount approximately the depth of the neck of said end and being opposite said neck and together with the neck forming a channel for receiving

the gasket ring and confining the gasket ring against expansion radially, a portion of said first plate extending from the top of the peripheral rim thereof up to the neck where the neck merges with the rest of said end and constituting a closure for said channel and confining the gasket against axial movement, means on the outside of the plates for drawing the plates toward one another to compress the gasket means axially thereby forcing the portion of the gasket that is confined in the channel to expand radially in its confining channel into pressure engagement with the neck and with the depending rim of the first plate, said gasket extending below the neck whereby upon axial compression it expands also radially outwardly into sealing overlap at the bottom of the neck, said last means comprising a stud secured to the second plate at the center thereof and extending toward and through the first plate and a rotatable member operable on the stud to draw it axially to force the plates toward one another, and means for locking the rotatable member to prevent release of the sealing means.

References Cited in the file of this patent

UNITED STATES PATENTS

287,189	Stone	Oct. 23, 1883
1,260,299	Banes	Mar. 26, 1918
1,297,113	Domenico	Mar. 11, 1919
1,673,240	Grosser	June 12, 1928
2,199,964	Rook	May 7, 1940
2,604,225	Armstrong	July 22, 1952
2,634,881	Grenfell	Apr. 14, 1953