

March 30, 1937.

H. G. VAUGHN

2,075,381

CONTAINER

Filed April 20, 1935

4 Sheets-Sheet 1

FIG. 1.

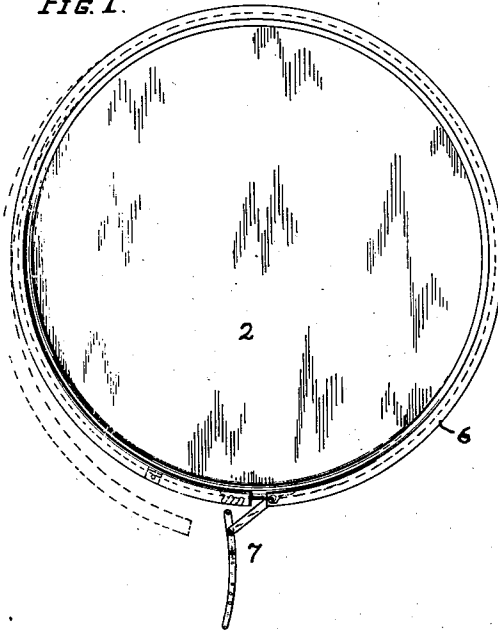


FIG. 3.

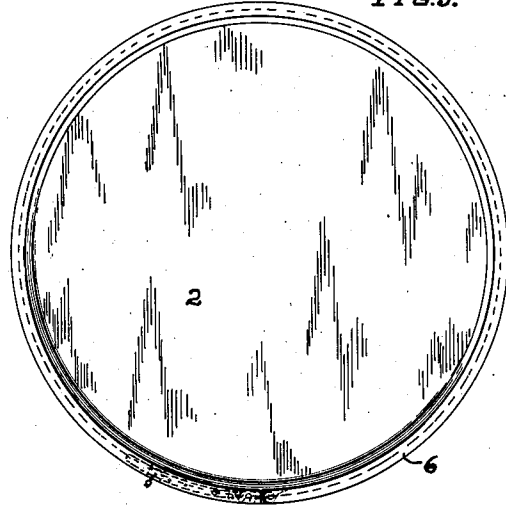


FIG. 4.

FIG. 2.

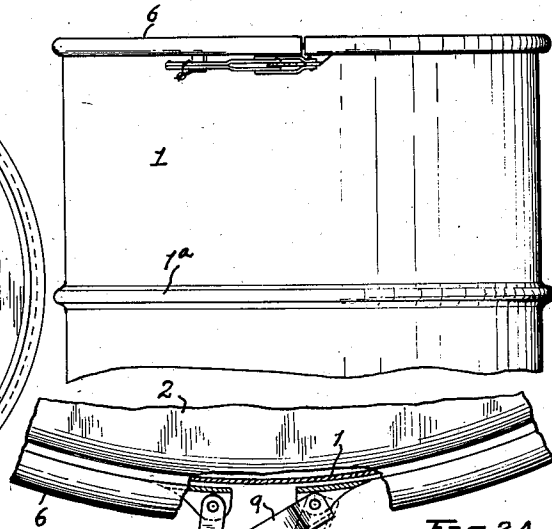
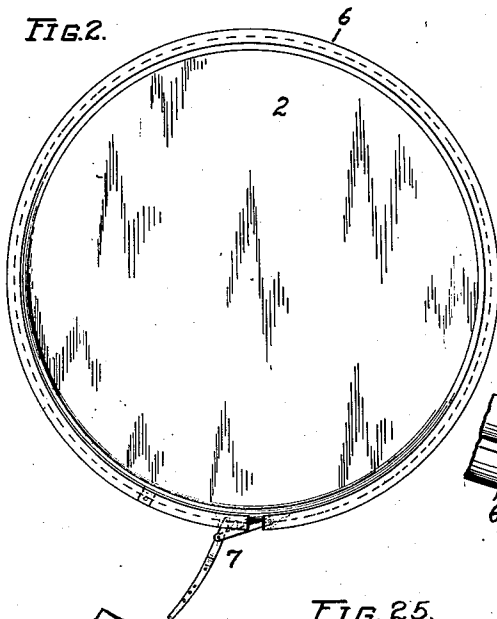
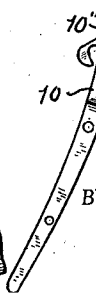
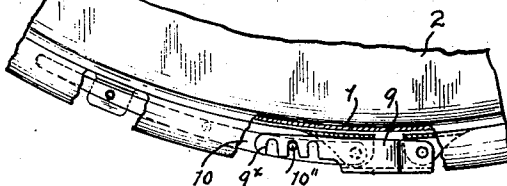


FIG. 24.

FIG. 25.



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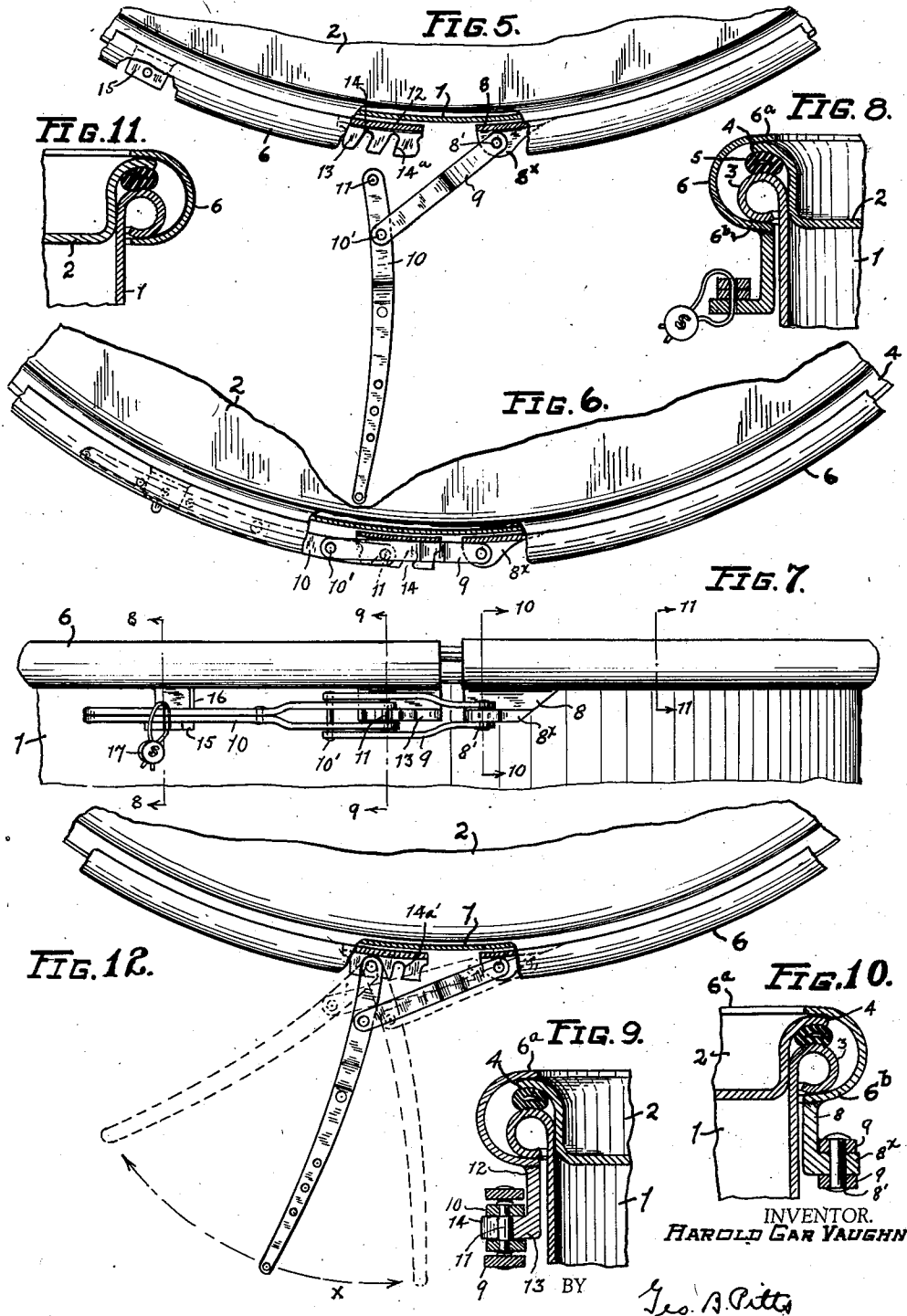
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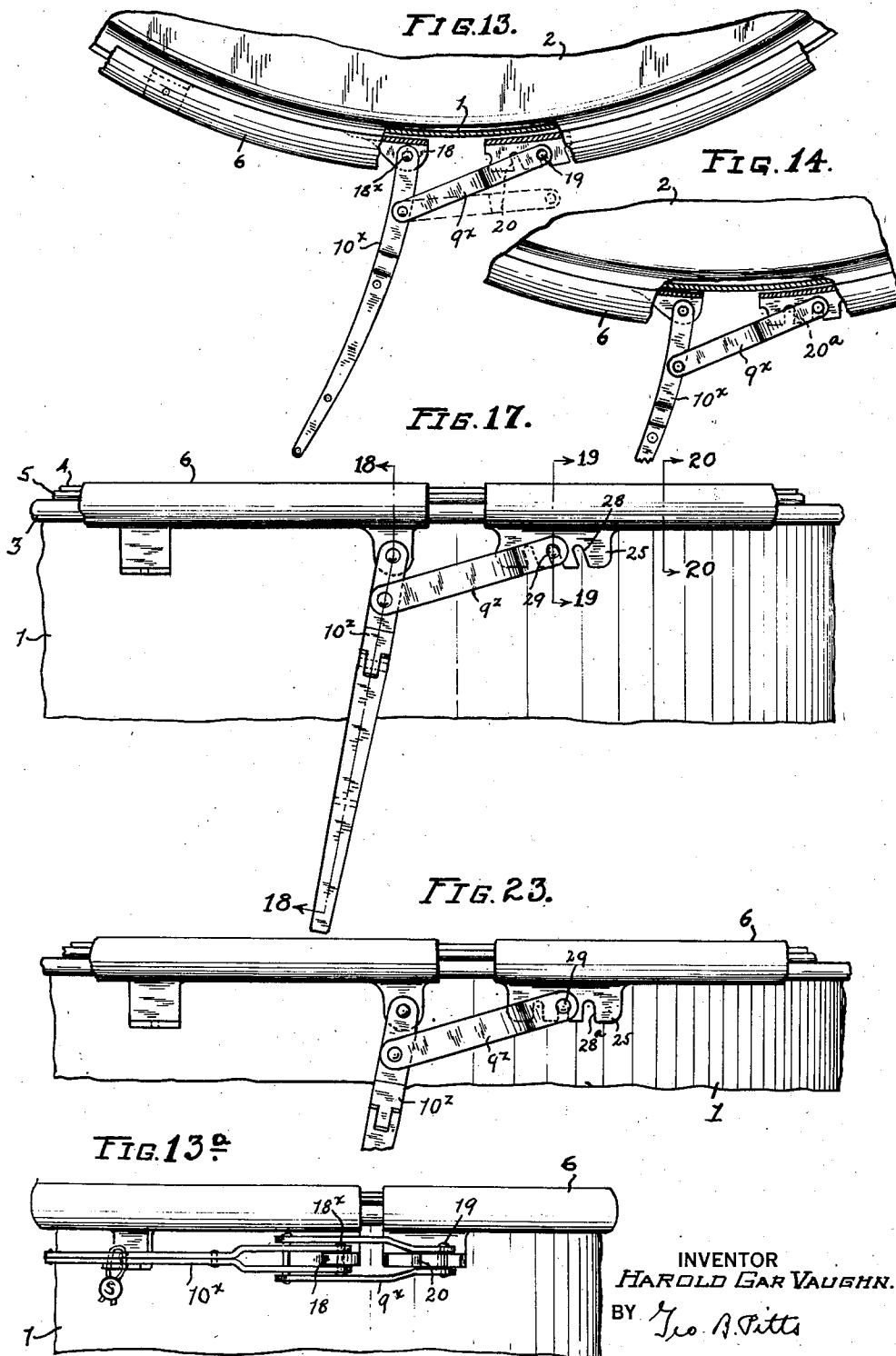
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FIG. 21.

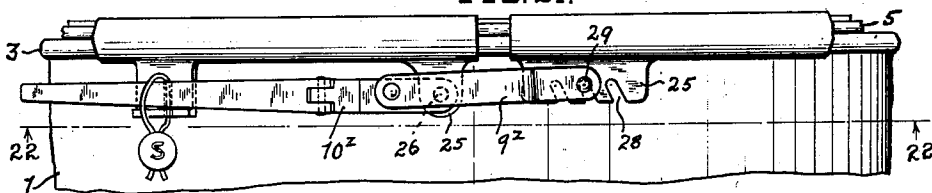


FIG. 22.

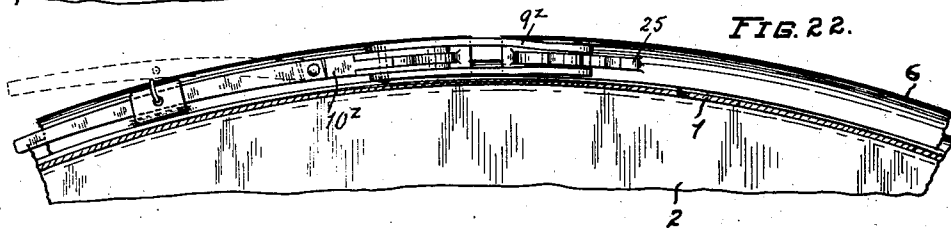
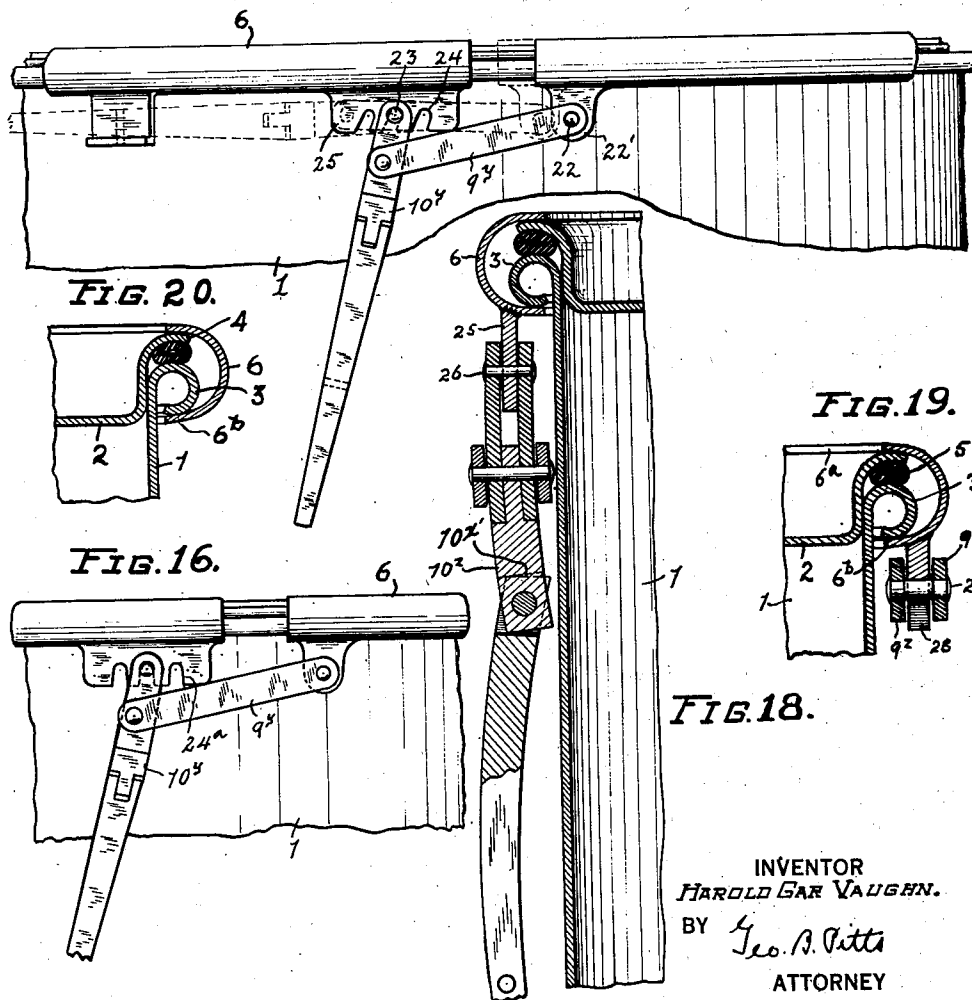


FIG. 15.



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CONTAINER

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a corporation of Ohio

Application April 20, 1935, Serial No. 17,495

7 Claims. (Cl. 220—61)

This invention relates to a container of the type in which one end is open and the head for such end constitutes a removable cover adapted to be sealed to form a liquid tight container for foods, fluids, semi-fluids, greases and other materials. By preference all portions of the container are formed of sheet steel.

One object of the invention is to provide for a container of this type an improved closing, sealing and locking means comprising a resilient split ring and a locking means for the ring the construction of which is simplified to facilitate the positioning of the ring and locking its ends together and to reduce the cost of manufacture of the ring and locking means.

Another object of the invention is to provide for a container of this type an improved split ring carrying on one end thereof a locking means, the ring being constructed and arranged to be positioned and removed independently of the locking means and the latter being arranged to engage the other ring end and lock the ring ends together, whereby the locking means may be made of small elements of simplified construction, readily connected and disconnected to the other ring end and requires but little effort to operate.

A further object of the invention is to provide for a container of this type an improved cover closing, sealing and locking means which does not interfere with the handling, stacking, storing and rolling of the containers.

A still further object of the invention is to provide an improved ring construction having a locking means so related to the ring and outer walls of the container that the positioning and removal of the ring may be easily effected.

Other objects of the invention will be apparent to those skilled in the art to which my invention relates from the following description taken in connection with the accompanying drawings:

Fig. 1 is a plan view of a container showing a cover or top thereon and a ring construction embodying my invention, the ring being in position to close and seal the cover; a portion of the ring being shown in dotted lines moved outwardly to illustrate the operation of applying the ring or removing it.

Fig. 2 is a view similar to Fig. 1, but showing the attachment of the locking means to the free ring end to position the locking means ready for operation.

Fig. 3 is a view similar to Figs. 1 and 2, but showing the locking means in operated position.

Fig. 4 is a side elevation of parts shown in Fig. 3.

Fig. 5 is a fragmentary view of the parts in the position shown in Fig. 1, enlarged and with portions broken away.

Fig. 6 is a fragmentary view of the parts in the position shown in Figs. 3 and 4, enlarged and with portions broken away.

Fig. 7 is a side view of the parts shown in Fig. 6.

Figs. 8, 9, 10 and 11 are sections on the lines 8—8, 9—9, 10—10 and 11—11, respectively, of Fig. 7.

Fig. 12 is a view similar to Fig. 2, enlarged but showing a modified form of construction.

Fig. 13 is a view similar to Fig. 5, but showing a different embodiment of the invention.

Fig. 13a is a side elevation of the parts shown in Fig. 13, with the locking means in operated position.

Fig. 14 is a fragmentary view of the embodiment shown in Fig. 13, but illustrating a modified form.

Fig. 15 is a fragmentary side elevation showing another embodiment of my invention.

Fig. 16 is a view of the parts shown in Fig. 15, but showing a modified form of construction.

Fig. 17 is a view similar to Fig. 15 but showing another embodiment of the invention.

Figs. 18, 19 and 20 are sections on the lines 18—18, 19—19 and 20—20, respectively, of Fig. 17.

Fig. 21 is a view of the parts shown in Fig. 17, but illustrating the locking means in operated position.

Fig. 22 is a section on the line 22—22, of Fig. 21.

Fig. 23 is a view similar to Fig. 17, but showing a modified form.

Fig. 24 is a fragmentary view (parts being broken away) showing a different embodiment of the invention.

Fig. 25 is a view substantially similar to Fig. 24, but showing the locking means in operated position.

The container illustrated is of the steel drum or barrel type, having a side wall 1, a cover 2 and a bottom wall or head (not shown). The side wall 1 is provided with the usual rolling hoops 1a (only one being shown). The upper end of the side wall is rolled over outwardly to form a continuous circumferential bead 3 and the cover 2 has a circumferential wall or flange 4 arranged to engage a packing or gasket 5 seated on the bead 3 and effect a closing and sealing of the container. The cover is preferably cup-

shaped so as to fit or telescope within the open end of the side wall 1, the flange 4 projecting outwardly to lie over the packing 5.

6 indicates a split ring substantially U-shape in cross section and when positioned, the ring surrounds the bead 3 and its upper and lower circumferential terminating walls 6a, 6b, engage the flange 4 and lower side of the bead 3 to effect sealing of the cover in position. The ring 6 is preferably formed of resilient metal and as its ends are unattached, it may be readily expanded circumferentially and its ends separated laterally sufficiently to be positioned around the bead and flange and then contracted circumferentially into engagement therewith, as shown in Figs. 1, 2 and 5, in which position the cover flange 4 is secured to the bead 3. The operation of contracting the ring is preferably accomplished by imparting thereto several taps or blows at varying points around its circumference. Such contraction serves to force the flange 4 throughout its circumference toward the bead 3 substantially axially of the container, thereby uniformly compressing the packing 5 and effecting a liquid tight seal for the container.

7 indicates as an entirety a locking means carried entirely on and below the lower wall 6b of the ring adjacent one end thereof so as to permit the free expansion and contraction of the ring when being positioned, as well as its free expansion when being removed. The locking means are adapted to be detachably connected to the other end of the ring (see Fig. 2) to lock them together, after the ring is positioned, as above set forth. When the locking means are operated into their locked position, the compressibility of the packing 5 allows the ring to contract slightly circumferentially, as shown in Figs. 3, 4, 6 and 7; as a result of this contraction the upper and lower walls 6a, 6b, serve to tightly seal the cover in position, in which position the cover is held by the locking means.

Referring to Figs. 1 to 11, inclusive, I provide on one ring end a depending wall 8 having at its lower end an outwardly extending lug 8x to which is pivoted on a vertical axis 8' the inner end of a link 9, preferably two links disposed on opposite sides of the lug. The outer ends of the links 9 are pivotally connected at 10' to a lever 10 between its ends, the pivot 10' being arranged near the inner end of the lever to provide outwardly of the pivot a relatively long portion which serves as an operating handle. The inner end of the lever 10 is provided with a vertically disposed pin 11, adapted to detachably engage the other ring end. The other ring end is provided with a depending wall 12 having an outwardly extending lug 13 in which is formed a series of notches 14, into any one of which the pin 11 may be inserted (see Fig. 2), following which the lever 10 may be operated from the Fig. 2 position inwardly, horizontally toward the side wall 1 to the position shown in Figs. 3, 4, 6 and 7. As shown, I provide a series of notches 65 which permit the pin 11 to have an adjustable, detachable connection with the other ring end to effect the desired tightness or to compensate for different thicknesses in the packing or variations in the size of the bead. Also, by providing 70 a series of notches, the ring may be tightened or contracted from time to time to compensate for wear or setting of the gasket to maintain and insure an absolute seal. When the lever 10 is operated to the position shown in Figs. 3, 4, 6 75 and 7, an imaginary line extending through the

axes of the pivot 8' and fulcrum 10' lies inwardly of the axis of the pin 11; accordingly, the lever is locked in its operated position. The lever 10 is preferably made of two correspondingly shaped parts the inner portions of which are spaced to support both ends of the pin 11; the outer portions being preferably spot welded together. In this arrangement the spaced portions straddle the lug 13 and the pin 11 engages the walls of one notch between them, whereas the outer end portions of the links 9 are bent laterally so as to lie on the outer sides of the lever parts and engage the opposite ends of the fulcrum 10'. In this arrangement, the locking action is transmitted in the plane of the lugs 8x and 13 and substantially in a direction parallel to the plane of the ring, so that in the contracting operation of the latter, due to operation of the lever 10, no twisting forces are imparted to the ring ends and the upper and lower walls of the ring move substantially at right angles to the axis of the container.

In the illustrations above referred to the notches 14 have side walls 14a inclined away from the adjacent ring end; accordingly, when the lever is swung outwardly away from the side wall 1, the pin 11 automatically disengages the adjacent notch 14 (see Figs. 1 and 5), following which one ring end may be initially sprung outwardly (see dotted lines in Fig. 1) and progressively disengaged from bead 2 and flange 4. By providing notches having side walls 14a' which extend substantially radially of the ring axis, as shown in Fig. 12, the notch serves to retain the pin 11 therein when the lever 10 is moved in either direction, so that in the opening movement of the lever, indicated by the arrow x (Fig. 12), the lever acts to initially spread or expand the ring whereby its removal is facilitated. When the lever 10 is moved to its operated position, its outer end portion is related to a lug 15 provided on a wall 16 also depending from the lower wall 6b of the ring, so that by means of a wire threaded through suitable openings formed in the lug and lever and a lead slug 17, the lever is sealed against unauthorized operation. The walls 8 and 12 are preferably disposed in line with the terminating edge of the wall 6b, being welded to the latter and the lugs 8x and 13 and the locking elements are of a size and shape to lie entirely within an imaginary circle equal in diameter to that of the side wall of the ring, as shown in Figs. 3 and 6.

Figs. 13 and 13a show a construction in which the elements of the locking means are similar in construction to like elements already described, but the mounting of such means on one ring end and their attachment and detachment with the other ring end are reversed, as compared to the arrangement shown in Figs. 1 to 11; that is, the lever 10x is pivotally mounted on one ring end and the outer end of the links 9x is unattached to the other ring end when the ring is being positioned, but is adapted to be adjustably and detachably connected thereto after the ring is positioned (see Fig. 13). In these views the inner end of the lever is pivotally mounted on a lug 18 to swing about a vertically disposed pivot 18x and the outer free end of the links 9x are provided with a vertically disposed pin 19 adapted to engage the walls of any one of the notches 20 formed in the horizontal lug 21. The lug 21 is supported and constructed similar to the lug 13; and when the pin 19 is so engaged and the lever 10x is moved in-

wardly about its pivot 18x to the position shown in Fig. 13a, the ring is locked in cover sealing position. As shown in Figs 13 and 13a, the side walls of the notches 20 are inclined away from the adjacent ring end, so that when the lever 10x is moved outwardly or to its unlocked position, the pin 19 automatically disengages the adjacent notch. By making the side walls of the notches substantially radial to the ring axis, as shown at 20a in Fig. 14, these side walls serve to retain the pivot or pin 19 in the adjacent notch when the handle 10x is moved in either direction, so that outward movement of the handle or lever effects an initial expanding movement to the ring. The lever and links are slightly curved to conform to the shape of the wall 1.

Fig. 15 shows a different embodiment of the invention in which the locking elements are similar to like elements shown in Figs. 1 to 11, inclusive, but are mounted on one ring end and detachably and adjustably connected to the other ring end to operate on horizontal axes. In this arrangement, the outer ends of the links 9y are pivoted by means of a horizontally disposed pin or pivot 22 to the opposite sides of a vertical wall 22' depending from the ring wall 6b adjacent one end of the ring and the pivot pin 23 on the inner end of the lever 10y detachably engages the wall of one of the notches 24 formed in the lower free edge of a vertical wall 25 depending from the wall 6b adjacent the other end of the ring. The operation of applying the ring and thereafter operating the locking elements to the position shown in dotted lines in Fig. 15 are similar to like operations described in connection with the embodiment shown in Figs. 1 to 11, inclusive. The lever 10y is formed of hinged sections preferably having abutting walls (see walls 10x' in Fig. 18) to limit the articulating movement of the sections, such hinging permitting the outer end of the lever to swing free of the container wall 1 when being operated. The side walls of the notches 24 may be inclined away from the adjacent end of the ring as shown in Fig. 15 or disposed vertically as shown at 24a in Fig. 16, whereby opening movement of the lever 10y will impart an initial expansion to the ring 6.

Figs. 17 to 22, inclusive, show a construction similar to that shown in Fig. 15 and wherein the elements of the locking means are similar in construction to like parts already described and operate about horizontal axes, except that the inner end of the lever is pivotally mounted on the lower wall 6b adjacent one ring end and the outer or free ends of the links 9z are adapted, after the ring is positioned, to be detachably and adjustably connected to the other ring end. In these views, 25 indicates a vertical wall depending from the ring wall 6b adjacent the opposite end of the ring, the lower edge of this vertical wall being formed with notches 28 into any one of which the horizontally disposed pin 29 carried by the free ends of the links 9z may be inserted (see Fig. 17) when the locking means are to be operated to their closed or locked position, as shown in Figs. 21 and 22.

The lever 10z is preferably of sectional construction so that its outer portion may clear the wall 1, the pivotal connection between the lever sections being arranged to limit their articulation as shown at 10z' in Fig. 18. As shown in Figs. 17 and 21, the side walls of the notches 28 are inclined away from the adjacent ring end to permit the ready and automatic disconnection

of the links from the adjacent notch when the lever is moved to its open position, but by extending these side walls vertically as shown at 28a in Fig. 23, such movement of the lever will impart an initial expansion to the ring.

Figs. 24 and 25 illustrate a different embodiment in which the lever 10 is permanently pivoted to the wall 13 and the outer ends of the links 9 are permanently pivoted to the wall 8x and the inner ends of the links are adapted to be detachably connected to the lever 10 intermediate its ends. To provide for the attachment and detachment of the lever and links, the lever 10 is provided with a pin 10'' the ends of which extend laterally from its opposite sides and the links, which straddle the lever, are formed with a series of aligned notches 9'' into which the pin may be inserted (Fig. 24) when these locking elements are to be operated to the locking position, as shown in Fig. 25. The links are preferably connected together by a plate 9'. By swinging the lever and links to an abnormal position, they may be readily detached to permit free manipulation of the ring.

In the forms of construction shown in Figs. 15 to 25, inclusive, the elements of the locking means are slightly curved laterally to conform to the shape of the container wall 1 and when in operated position, a line extending between the pivots for the inner end of the lever and outer ends of the links lies inwardly of the pivotal connection between the links and lever, so that the latter is locked in its operated position.

It will be noted that in the several forms of construction shown in Figs. 12 to 25, inclusive, as set forth in the first disclosed embodiment, the elements of the locking means, when in locked position, lie below the ring 6 and entirely within an imaginary circle equal in diameter to the side wall of the ring, so that handling, storing, stacking and rolling of the containers are not impaired. It will also be noted that as the locking means are (a) carried by one ring end and are detachable from the other ring end or (b) the elements of the locking means are detachable and the ring is applied independently of the locking means, the latter may be formed of small parts or elements, which tend to facilitate and economize in the manufacture thereof. Furthermore, since the ring ends are unattached and the ring is free to be expanded, it may be slid down the wall 1 and allowed to rest on the hoop 1a so as to remain associated with the container. This arrangement prevents the ring from becoming misplaced or lost.

No claim is made herein to the subjects-matter that are common to this application and my co-pending application, Serial No. 49,901, filed November 15, 1935, all such subjects-matter being claimed in the latter application.

To those skilled in the art to which my invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope thereof. My disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

What I claim is:

1. The combination with a container the side wall of which is provided at its upper end with a circumferential bead and a cover having a circumferential marginal edge arranged to engage said bead, of a resilient split ring substantially U-shape in cross section to provide upper

and lower terminating walls arranged to be expanded over said bead and edge and contracted to effect engagement of said terminating walls therewith, whereby said cover is sealed against said bead, pivotally connected locking elements mounted on and below said lower wall adjacent one end of said ring to swing about a horizontal axis for contracting said ring, and a wall depending from the lower wall of said ring adjacent the other end thereof, and formed with a notch to provide a pivotal, detachable connection by one of said locking elements with said last mentioned wall.

2. The combination with a container the side wall of which is provided at its upper end with a circumferential bead and a cover having a circumferential marginal edge arranged to engage said bead, of a resilient split ring substantially U-shape in cross section to provide upper and lower terminating walls arranged to be expanded over said bead and edge and contracted to effect engagement of said terminating walls therewith, whereby said cover is sealed against said bead, pivotally connected locking elements mounted on and below said lower wall adjacent one end of said ring to swing about a horizontal axis for contracting said ring, and a wall depending from the lower wall of said ring adjacent the other end thereof and formed with a plurality of notches to provide a pivotal, detachable connection by one of said locking elements with said last mentioned wall.

3. The combination with a container the side wall of which is provided at its upper end with a circumferential bead and a cover having a circumferential marginal edge which is arranged to engage said bead, of a resilient split ring substantially U-shape in cross section to provide upper and lower terminating walls arranged to be expanded over said bead and edge and contracted to effect engagement of said terminating walls therewith, whereby said cover is sealed against said bead, and pivotally connected locking elements for contracting said ring comprising a lever mounted on and below said lower wall adjacent one end of said ring to swing about a horizontal axis and a link pivotally connected at its inner end to said lever, the outer end of said link being adapted to pivotally and detachably engage an element fixed to and arranged below said lower wall adjacent the other end of said ring.

4. In a container construction, the combination with a container having a circumferential bead surrounding its open end, a compressible gasket arranged to engage said bead, and a cover having a circumferential marginal edge arranged to engage said gasket, of a resilient split ring of

substantially U-shape in cross section arranged to be contracted circumferentially whereby its upper and lower terminating walls engage said bead and marginal edge of the cover to compress said gasket therebetween, supporting elements secured to and arranged below the lower terminating wall adjacent the opposite ends of said ring, one of said elements being formed along its edge with a plurality of notches, a lever pivoted at its inner end to the other element to swing about a horizontal axis, a link pivoted on a horizontal axis at its inner end to said lever intermediate its ends, the outer end of said link being provided with a pin adapted to detachably and pivotally engage the walls of one of said notches, whereby said lever when operated operates through said link to contract said ring.

5. In a container construction, the combination of a container having a circumferential bead surrounding its open end, a gasket arranged to engage said bead and a cover having a peripheral edge arranged to engage said gasket, of a split ring of substantially U-shape in cross section arranged to be contracted circumferentially, whereby its upper and lower terminating walls engage said bead and edge to press them together with the gasket therebetween, pivotal locking elements for contracting said ring supported on and below the lower wall of said ring and swingable on horizontal axes, said elements being pivoted to each other and to said lower ring wall adjacent the ends thereof, one of said pivotal connections being detachable.

6. A container construction as claimed in claim 5 in which the detachable connection is between one of said elements and the adjacent lower ring wall.

7. In a container construction, the combination of a container having a circumferential bead surrounding its open end, a gasket arranged to engage said bead and a cover having a peripheral edge arranged to engage said gasket, of a split ring of substantially U-shape in cross section arranged to be contracted circumferentially, whereby its upper and lower terminating walls engage said bead and edge to press them together with the gasket therebetween, a plurality of elements pivotally connected together on horizontal axes for contracting said ring and comprising lugs fixed to the lower wall of said ring adjacent the ends thereof and linkage between said lugs, the pivotal connection between two of said elements being detachable and one of said detachable elements being formed with a plurality of notches and the other detachable element being provided with a pin for engagement with any one of said notches.

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