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REMOVABLE CLOSURE FOR METALLIC CONTAINERS

Filed Oct. 28, 1930

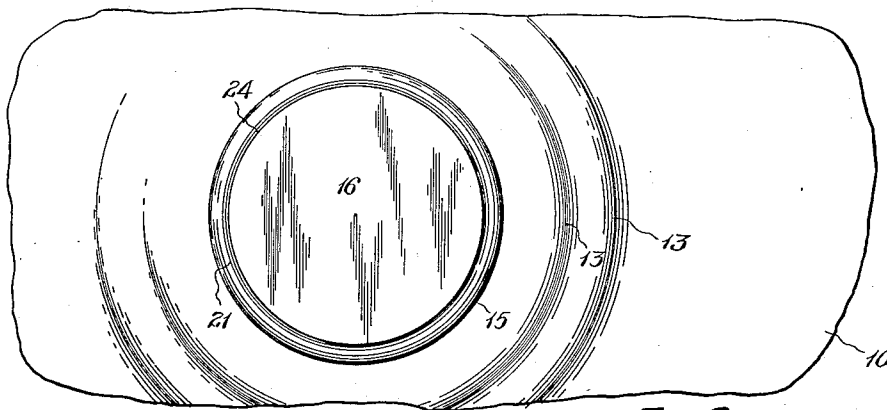


FIG. 2

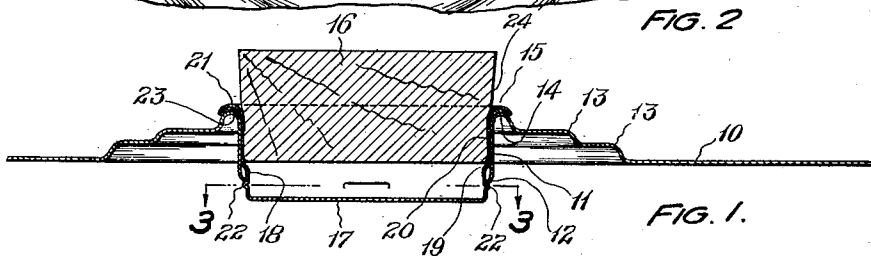


FIG. 1.

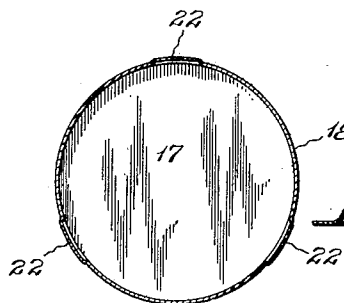


FIG. 3

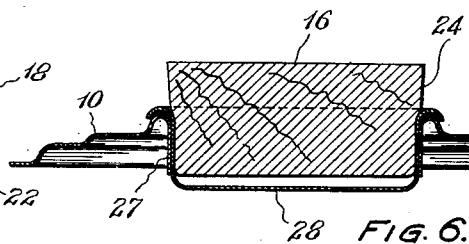


FIG. 6.

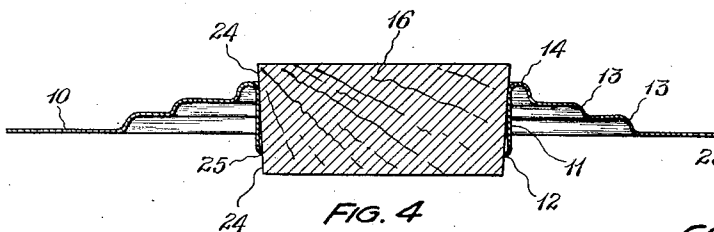


FIG. 4

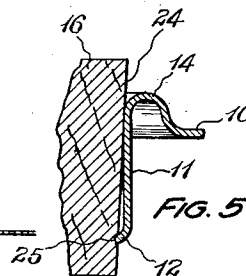


FIG. 5

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REMOVABLE CLOSURE FOR METALLIC CONTAINERS

Application filed October 28, 1930. Serial No. 491,687.

The invention relates to closures for metallic barrels, drums, vessels, packages or containers utilized for shipping or storing liquid or semi-solid substances.

5 The C. T. Draper Patent No. 1,381,704 shows a removable closure for metallic containers which may be readily and quickly inserted in its container receiving opening and locked in a tightly sealed relation therewith. 10 However, the closure member shown in this patent must be distorted in order to be removed from its container, which may require the closure member to be made of thinner metal than the metal forming the container 15 walls. The utilization of thin metal closure members which are unprotected, subject the same to damage as by being punctured, during transportation and storage, by accidental contact with sharp objects which would not 20 puncture the container wall.

Moreover, the construction shown in this prior patent is subject to being distorted by falling during shipping or storage. The resulting distortion will not cause the liquid 25 seal between the closure and container to be broken, but will prevent the insertion of a new closure member in the distorted container opening, after the original closure has been removed to gain access to the contents of 30 the container. Under these circumstances the container does not have any salvage value.

The C. T. Draper Patent No. 1,651,342 discloses a closure construction, including a plurality of cooperating closure members, in 35 which the container wall is moderately reinforced by one of the closure members; and which permits an unfilled container to be shipped to a customer without having the closure in locked position, so as to prevent 40 entrance of dirt and foreign matter into the interior of the container.

However, the closure construction last referred to may be accidentally punctured during shipping and storage; and a distortion 45 of the container wall opening may prevent the container from having a salvage value, because a new closure member cannot be inserted in liquid sealing relation in a distorted opening.

50 The C. T. Draper Patent No. 1,667,697 dis-

closes a construction in which the container opening is reinforced against distortion in normal use, but the closure member is subject to being punctured as aforesaid, and the container wall and reinforcing means have frequently been distorted so as to prevent a subsequent use of a new closure member in liquid tight sealing relation, when the container is accidentally dropped and badly knocked out of shape as a result of impact with a hard 60 surface. Moreover, it is relatively expensive to provide a container with this last mentioned type of reinforcing means.

For these reasons, the closure means disclosed in my prior patents are not economically adapted for use with extremely large 65 containers particularly when it is desired to have a high salvage value for a container which has already been used one or more times.

It is therefore an object of the present invention to provide a removable closure construction for metallic containers which permits the use of a relatively thin closure member, and in which the thin metal of the closure 70 member is protected against being punctured by accidentally being subjected to a blow from a sharp object.

A further object of the present invention is to provide a construction in which the container wall is strengthened and reinforced 75 by the closure means.

A further object of the present invention is to provide closure means for a metallic container which prevents any substantial distortion of the closure opening regardless of how 80 badly the container may be distorted.

Moreover, it is an object of the present invention to provide container closure means including a solid or substantially rigid plug 85 member combined with a thin metal cup-shaped member with side walls having a substantial expansibility in which the plug member seats and maintains the cup-shaped member in substantially perfect sealing relation 90 within its container opening.

Furthermore, it is an object of the present invention to provide a removable closure construction in which new thin metal cup-shaped 95 members may be used time after time for 100

closing the container opening, thus giving the container a high salvage value.

Likewise, it is an object of the present invention to provide a closure construction in which the solid plug member may in itself be utilized for temporarily closing the container opening, or for closing the container opening in liquid tight sealing relation when the container wall has been so distorted that a thin metal cup-shaped closure member cannot be utilized for that purpose.

And finally, it is an object of the present invention to provide a simplified closure construction, having a very cheap cost of manufacture, for attaining all of the aforesaid advantageous results.

These and other objects may be obtained by providing a removable closure construction, preferred embodiments of which are shown in the accompanying drawings, which may be stated in general terms as including in combination with a container having an opening provided with an annular rim, a cup-shaped closure member inserted in said opening, provided with a peripheral surface for frictionally engaging said rim, and a solid plug member driven into the cup-shaped member for maintaining the rim against distortion, for seating and maintaining the peripheral surface of the cup-shaped member in sealing relation with the rim, and for protecting the cup-shaped member against being punctured.

In the accompanying drawings, which show the present improvements:

Figure 1 is a vertical section through a container wall provided with one form of improved closure construction;

Fig. 2 is a plan view of the improved closure construction shown in Fig. 1;

Fig. 3 is a plan section taken on the line 3—3, Fig. 1;

Fig. 4 is a vertical section through a container wall similar to Fig. 1, showing the manner in which the solid plug member may be utilized as a closure for an opening in the wall of a metallic container;

Fig. 5 is an enlarged view of certain of the parts shown in Fig. 4; and

Fig. 6 is a vertical section similar to Fig. 1, showing a container wall provided with a modified form of improved closure construction.

Similar numerals of reference indicate corresponding parts throughout the various figures of the drawings.

In the embodiment of the invention shown in Figs. 1 to 5, inclusive, the wall 10 of the container may be provided with a preferably integral annular rim flange 11 directed toward the interior of the container and terminating in an inturned locking lip 12, to form an opening in the container wall; and the container wall may be reinforced against distortion at and adjacent the opening by pro-

viding the raised annular shoulders 13 and stiffening bead 14 at and adjacent the opening.

The opening is provided with closure means which includes a cup-shaped member generally indicated at 15, and a preferably solid or substantially rigid plug member 16 formed preferably of wood, hard rubber, or other distortion resisting but unbreakable material; referred to hereinafter as a rigid plug.

The cup-shaped member 15 includes a bottom wall 17, a peripheral side wall 18 extending upwardly and terminating in an outwardly flared peripheral shoulder 19, which shoulder has a peripheral or annular wall 20 extending upwardly therefrom terminating in an outwardly curled rim 21.

The cup-shaped member 15 is inserted in the container opening so that the outer surface of the peripheral wall 20 preferably frictionally engages the inner surface of the rim 11, and so that the spaced circumferential projections 22, extending outwardly from the peripheral portion 18, engage the inturned lip 12 to lock the cup-shaped closure member 15 in the opening. A liquid sealing gasket 23 is preferably interposed between the bead 14 and curled rim 21.

The projections 22 do not extend radially outwardly of the cup-shaped member 15 as far as the outer peripheral frictional engaging surface 20 thereof, so that the projections 22 will not scratch or otherwise mar or distort the inner surface of the rim 11 when the cup-shaped closure member 15 is inserted in the container opening.

The rigid plug member 16, which is preferably provided with a slightly tapered peripheral surface 24, is then driven into the cup-shaped member 15 to the position shown in Fig. 1, whereby the wedging pressure of the plug 16 upon being driven into the cup-shaped member 15 engages and pressure seats the cup-shaped member in the container wall opening, by expanding the wall of the cup against the surrounding rim flange, thereby insuring that the peripheral portion 20 of the member 15 is in liquid tight sealing contact around its entire periphery with the rim 11.

Moreover, the rigid plug 16 prevents any distortion of the annular rim 11 even though the container may be dropped on a hard surface so as to badly distort its wall 10; and the plug member 16 prevents the thin wall 17 of the cup-shaped member 15 from being punctured by accidental contact with a sharp instrument.

When it is desired to gain access to the contents of the container, the plug member 16 is removed by tapping or prying the same out of the cup-shaped member 15, whereupon the cup-shaped member 15 which is made of thinner material than the container wall 10

may be distorted and removed from the opening.

However, the rim 11 having been maintained in circular form during shipment due to the presence of the plug 16 and having maintained its original shape during the removal of the relatively thin closure member 15, permits the container to be subsequently filled and sealed from time to time by inserting new cup-shaped closure members 15 and driving the plug member 16 therein.

The container with its closure means 15—16 removed may be accidentally subjected to a blow which will distort its rim 11 so that a new cup-shaped closure member 15 cannot be used for closing the opening. In such event, the plug 16 may be driven into the opening to close the same as shown in Fig. 4, and the plug, being formed of wood, hard rubber, or other similar material will accommodate itself to the distorted opening and will be maintained in liquid tight sealing relation therein, because the inturned lip 12 will dig into the peripheral surface 24 of the plug as well shown at 25, in Fig. 5.

The opening formed by the annular rim 11 in the wall 10 of the container is preferably formed of such sizes that standard sizes of wooden barrel bung hole plugs may be used in the present construction.

It has been found by numerous tests performed upon containers equipped with the present closure construction that the same is absolutely leakproof even after the wall 10 has been seriously distorted; and that the closure construction may be utilized in connection with very large fifty-five gallon containers which have usually previously required more expensively constructed threaded openings and screw plugs.

In the embodiment of the invention shown in Fig. 6, the wall 10 of the container is provided with an annular rim 27 directed toward the interior of the container, to form an opening in the container wall, the cup-shaped closure member 28 is inserted in the opening, and the rigid plug member 16 is driven into the cup-shaped member 28 to maintain the rim 27 against distortion, to seat and maintain the peripheral surface of the cup-shaped member 28 in sealing relation with the rim 27, and to protect the cup-shaped member 28 against being punctured.

I claim:

1. A metallic container having an opening provided with an annular rim flange, a metallic closure cup having a thin bottom and a thin wall within and surrounded by the rim flange, the said wall having a substantial expansibility to secure an increased liquid tight sealing contact between the wall and the flange, and a tapered rigid plug driven into the cup to expand and seat its wall against the surrounding rim flange.

2. A metallic container having an opening provided with an annular rim flange, a metallic closure cup having a thin bottom and a thin wall frictionally engaging within and surrounded by the rim flange, the said wall having a substantial expansibility to secure an increased liquid tight sealing contact between the wall and the flange, and a tapered rigid plug driven into the cup to expand and seat its wall against the surrounding rim flange.

3. A metallic container having an opening provided with an annular rim flange integral with a wall of the container, a metallic closure cup having a thin bottom and a thin wall within and surrounded by the rim flange, the said wall having a substantial expansibility to secure an increased liquid tight sealing contact between the wall and the flange, and a tapered rigid plug driven into the cup to expand and seat its wall against the surrounding rim flange.

In testimony that I claim the above, I have hereunto subscribed my name.

CHARLES T. DRAPER.