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L. R. N. CARVALHO

JAR CLOSURE

Filed March 5, 1927

Fig. 1-

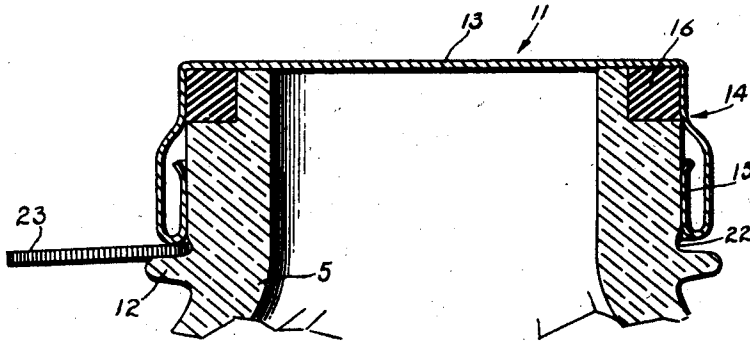


Fig. 2-

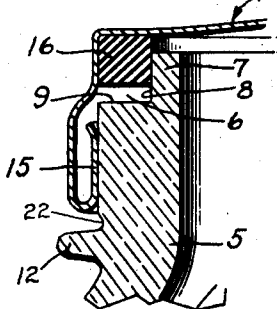


Fig. 3-

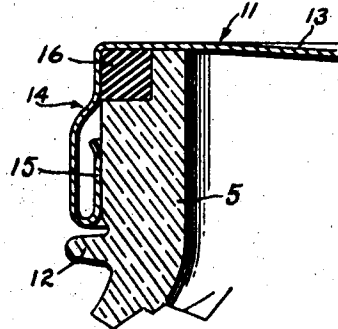
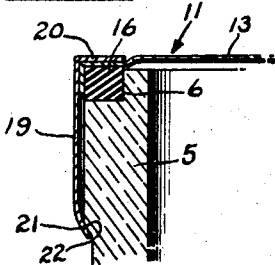


Fig. 4-



Inventor

L. R. N. Carvalho

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J. F. Rule,

Attorney

UNITED STATES PATENT OFFICE.

LESLIE R. N. CARVALHO, OF TOLEDO, OHIO, ASSIGNOR TO THE CLOSURE SERVICE COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

JAR CLOSURE.

Application filed March 5, 1927. Serial No. 173,039.

The present invention relates to improvements in closures for jars and the like receptacles.

An object of the invention is to provide means for positively sealing receptacles wherein a high vacuum is used in combination with a process of sterilization of products at high temperatures. To this end, the receptacle is formed with an annular recess in its top surface or finish to receive a sealing ring which is carried by a closure, the sealing surfaces of the recess and the sealing ring being of such form and so related to each other that excessive internal pressure within the receptacle, while causing slight outward movement of the closure, will not break the seal but will merely cause a slight relative sliding movement between the side sealing surfaces of the receptacle and gasket. Also, I provide a retaining flange yieldably frictionally engaging the outer surface of the receptacle, further minimizing the relative movement between the closure and receptacle and serving to hold the closure in sealing position if the vacuum is dissipated.

Other objects will be apparent hereinafter.

In the accompanying drawings:

Fig. 1 is a sectional view showing the closure applied to a receptacle.

Fig. 2 is a sectional view illustrating the manner in which positive sealing of the receptacle is maintained even during the presence of excessive internal pressure.

Fig. 3 is a view similar to Fig. 2, showing the top and side seal obtained by vacuumizing the receptacle.

Fig. 4 illustrates a slightly modified form of closure retaining means.

Referring to the drawings, and particularly to Figs. 1 to 3, inclusive, the receptacle 5 has the outer corner of its finish or upper end cut away to provide an annular channel 6. By cutting away the corner as shown, there is provided an upstanding annular rib 7 whose outer face 8 is arranged at right angles to the bottom 9 of the annular channel. This arrangement provides meeting sealing surfaces 7 and 9 which contact with similarly related faces of a sealing ring or gasket 16 permanently affixed to a closure 11. At a point spaced below the annular channel 6, the jar is formed with an annular groove 22 in proximity to and above a

radial rib 12 which provides a continuous ledge upon which a portion of a coin 23 or some suitable implement may be placed (Fig. 1) when removal of the closure is desired.

The closure 11 is formed of a suitable gauge of sheet metal or the like material and includes a top or button 13 formed with a depending annular flange 14 arranged at right angles to the top portion. The flange 14 has its lower edge portion 15 turned upwardly beneath and in spaced relation to the main body of the flange to yieldably and frictionally contact with the outer face of the neck of the receptacle 5. This flange serves to maintain the closure in sealing position if the vacuum is dissipated. The lower rolled edge of the flange, when the closure is in its final sealing position, is spaced slightly from the annular rib 12 so that a coin or some suitable implement may be inserted between said flange and the rib to facilitate removal of the closure. The sealing ring 16 of rubber, composition or other comparatively inexpensive material, is permanently affixed to the closure at the corner formed at the juncture of the button 13 and flange 14. This sealing ring is preferably of a cross sectional contour corresponding to that of the annular channel 6 formed at the finish end of the receptacle 5 so that absolutely uniform effective sealing engagement between the ring 16 and the sealing surfaces of the channel and closure may be readily obtained.

In applying the closure to a receptacle in which hot goods are packed, said closure is applied substantially as shown in Fig. 1 so that both top and side seals are obtained. In the event excessive internal pressure, due to sterilization of products in the receptacle at high temperature, tends to displace the closure 11, there will be an upward bulging of the button 13 and possibly a certain degree of separation of the sealing ring from the bottom sealing surface of the annular channel 6. Such separation is minimized by frictional engagement between the yieldable flange portion 15 with the receptacle 5 and by the slidable sealing engagement between the inner face of the sealing ring 16 and the outer wall or sealing surface 8 of the annular rib 7 formed on the receptacle. Thus, displacement of the closure is minimized and sufficient side sealing engagement between

the sealing ring 16 and the receptacle is maintained to prevent entry of outside air into the receptacle. After the goods in the receptacle have cooled sufficiently, the closure will automatically assume its original position, bringing the sealing ring 16 into snug engagement with both sealing surfaces of the annular channel, thus forming effective top and side seals. Creation of a vacuum or partial vacuum within the receptacle 5 will tend to pull the button 13 slightly into the mouth of the receptacle (Fig. 2), thereby exerting additional pressure upon the sealing ring and effecting exceptionally reliable closing of the receptacle. Due to the location of the annular rib 7, the vacuum will not displace the sealing ring 16 by pulling it inwardly into the receptacle.

It is seen that after the closure has been removed as by use of a coin or some other implement, said closure may be repeatedly used as a temporary cover, though obviously a vacuum will not thereafter be created in the receptacle. Due to the frictional engagement between the flange portion 15 and the receptacle, the closure will be reliably retained in receptacle closing position without the presence of a vacuum to create an inward pull on the button 13 of the closure.

In the form shown in Fig. 4, which is also illustrated but not claimed in my co-pending application, Serial Number 140,027, filed October 7, 1926, the receptacle 5 is provided with an annular channel 6 as heretofore brought out, and the sealing ring 16 is permanently affixed to the button 13 of the closure 11. Instead of forming an integral depending flange on the button, a separate band 19 is employed. This band has its upper edge portion bent at right angles to its body forming a flange 20 which takes over a marginal portion of the button 13 immediately above the sealing ring 16. The lower edge of the retaining band 19 is spun over an annular shoulder 22 formed on the receptacle 5. The construction shown in Fig. 4 permits the user to remove and entirely dispense with the retaining band 19 and employ the remaining portion of the closure as a temporary cover for the receptacle.

Manifestly, certain minor changes may be resorted to within the spirit and scope of the appended claims.

What I claim is:

1. The combination of a receptacle having the outer corner of its upper end cut away to form a channel, a closure, a sealing gasket fixed to the under side of the closure and adapted to seat in the channel, and a circular retaining flange for the closure ex-

tending below said channel and gasket, said flange having its lower portion folded inwardly and upwardly in spaced relation to the main portion of the flange for yieldable frictional engagement with the exterior surface of the receptacle, said upwardly folded portion terminating below the gasket.

2. The combination of a receptacle having the outer corner of its upper end cut away to form an annular channel, a closure cap comprising a top cover portion and a depending flange portion, and an annular sealing gasket fixed to the interior surface of the cap, said gasket being seated in the corner formed between the top and flange portions of the cap, said gasket being adapted to seat in said channel and of a size to fill the channel, said flange portion of the cap being extended downward a substantial distance below the said channel and providing a cylindrical gripping surface arranged to grip the exterior surface of the receptacle below said channel and gasket, said flange portion being offset below said gasket, the lower portion of the flange being folded inwardly and upwardly, the upwardly turned portion terminating below the gasket and providing said cylindrical gripping surface, the latter being held in frictional contact with the exterior surface of the receptacle.

3. The combination of a receptacle having the outer corner of its upper end cut away to form an annular channel, a closure cap comprising a top cover portion and a depending flange portion, and an annular sealing gasket fixed to the interior surface of the cap, said gasket being seated in the corner formed between the top and flange portions of the cap, said gasket being adapted to seat in said channel and of a size to fill the channel, said flange portion of the cap being extended downward a substantial distance below the said channel and providing a cylindrical gripping surface arranged to grip the exterior surface of the receptacle below said channel and gasket, said flange portion being offset below said gasket, the lower portion of the flange being folded inwardly and upwardly, the upwardly turned portion terminating below the gasket and providing said cylindrical gripping surface, the latter being held in frictional contact with the exterior surface of the receptacle, said receptacle formed with an annular exterior rib spaced below the said flange portion of the cap to form therewith an annular groove to receive a pry-off implement.

Signed at Toledo, in the county of Lucas and State of Ohio, this 28 day of February, 1927.

LESLIE R. N. CARVALHO.