Aug. 14, 1923. 1,465.079

C. HAMMER

LINER PLATE LUG CLOSURE

Filed Jan. 18, 1922

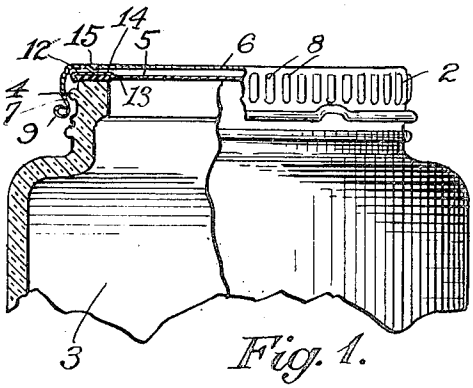


Fig. 1.

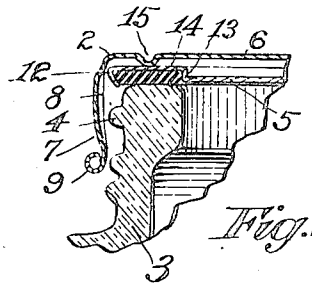


Fig. 2.

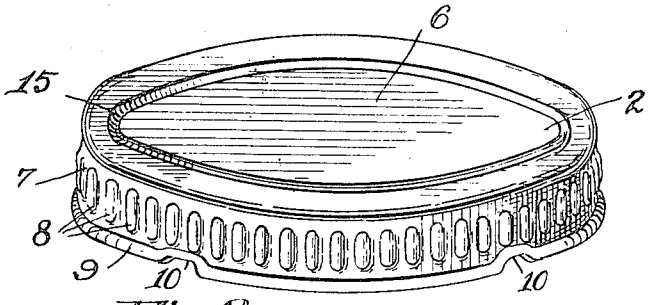


Fig. 3.

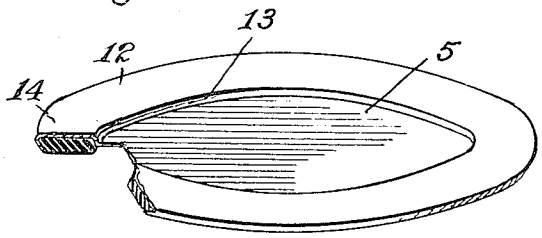


Fig. 4.

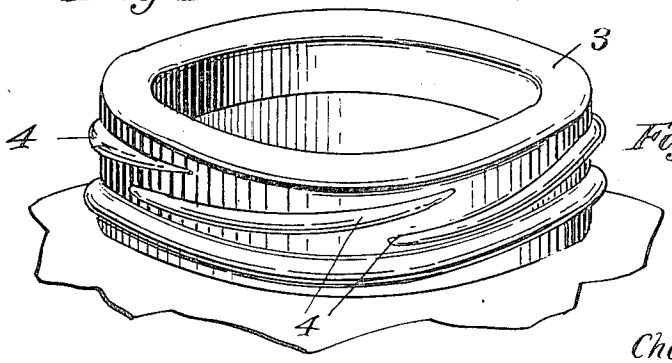


Fig. 5.

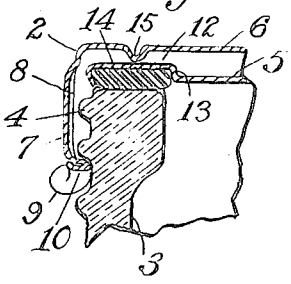


Fig. 6.

Inventor
Charles Hammer

By his Attorney
Wm. H. Reid.

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UNITED STATES PATENT OFFICE.

CHARLES HAMMER, OF QUEENS, NEW YORK, ASSIGNOR TO AMERICAN METAL CAP COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

LINER-PLATE LUG CLOSURE.

Application filed January 18, 1922. Serial No. 530,083.

To all whom it may concern:

Be it known that I, CHARLES HAMMER, a citizen of the United States, and a resident of Queens, in the county of Queens and State of New York, have invented certain new and useful Improvements in Liner-Plate Lug Closures, of which the following is a specification.

This invention relates to rotatable caps or closures for containers, such as glass containers, the object of the invention being to provide an improved combined cap and liner plate therefor, which will facilitate the turning of the cap off the container, yet by means of which a hermetic seal of the container may be obtained when the contents thereof is in a heated condition or by the operation known as "processing."

A further object of the invention is the provision of an improved liner applicable for use with various forms of caps, and particularly for rotatable caps comprising a metal holding member and a yieldable or flexible sealing member interlocked with the metal holding member, whereby the yielding member will contact with the edge of the container mouth while the metal holding member will contact with the cap or closure.

Heretofore it has been the practice, where it was desired to effect a hermetic sealing of the container, to have a liner or gasket of special composition, and since the gasket was of a yielding nature, it followed that the edge of the container would be pressed into the composition at the underside while the cap would likewise be somewhat pressed into the composition at the upper side, or would stick thereto and consequently it was very difficult to unscrew the closure. In other words, as the liner was of the same composition throughout, it would stick to both the container edge and to the inner wall of the cap, rendering it difficult for the user to unscrew the cap.

By reason of the present improvement however, the same effecting sealing is obtained as heretofore, but the unscrewing of the cap is very much facilitated. Moreover, by means of the present improvement, the liner can be reused by the user, since it is not liable to breakage or mutilation as heretofore on the unscrewing of the cap, especially when this liner has been made of certain materials.

In the accompanying drawing showing embodiments of my invention, Figure 1 shows the complete closure in position on a jar.

Fig. 2 is an enlarged partial section.

Fig. 3 represents the cap member.

Fig. 4 represents the liner plate.

Fig. 5 shows the container.

Fig. 6 is an enlarged partial section of the cap and its liner through a lug of the cap.

In the preferred form shown, the invention comprises a cap member denoted generally by 2, of the lug type adapted to screw down on a container 3 in the form of a glass jar having screw threads 4 on the outer wall of its neck. The closure also includes a liner plate denoted generally by 5, in the form of a flat disk having a ring gasket attached to its lower face.

The cap 2 comprises a flat top 6 having a depending shallow skirt or flange 7, that may have vertical corrugations 8 to strengthen and reinforce the same. The lower edge of the skirt is bent or curled outwardly and upwardly to form a rolled edge or bead 9 substantially round in section and it will be observed that the corrugations or knurls 8 extend from the upper part of the skirt practically down to the bead. This bead or rolled edge not only reinforces the flange of the cap, but provides a more sanitary cap and one which avoids liability of cutting the hands of the user. This bead 9 is provided at intervals with inwardly extending lugs 10, of which four are shown to cooperate with four threaded portions on the neck of the jar that is usually of the character known as multiple threads, instead of a continuous thread, to provide a quick seal of the closure on the jar.

The liner member of the closure comprises a disc having a depressed disc-shaped portion 5 and a raised relatively flat ring-shaped portion 12, the disc and ring being integrally connected by a shoulder 13. Within the ring-shaped portion 12 of the liner is located a relatively flat ring gasket 14 engaging the relatively flat under wall of the ring portion 12 of the liner with its inner edge adjacent to the shoulder 13. The outer edge of the ring member is bent downwardly and inwardly to engage and securely hold the gasket 14 in place, and in contact with the shoulder 13, thus inter-

locking the gasket between the walls of the liner member.

The cap 2 is preferably provided with a depression or groove forming a downwardly extending annular projection 15 that will engage the top of the ring portion 12 of the liner plate.

From this it will be seen that the contact between the metal plate and the metal liner is a single point contact only around the cap and the plate. In other words the apex of the depending projection only engages the liner plate, thus reducing frictional resistance between the plate and the cap, while this projection is effective to increase the sealing contact between the gasket and the upper edge of the container by forcing it more firmly on to the container. This liner plate is of a size to be placed inside of the cap member 2, and will be engaged by the top thereof, as by the projection 15.

It will be seen that when this closure is placed on the jar and screwed down, the liner plate will have its gasket engage the top edge of the jar neck, and as the cap member is screwed down the liner and gasket will be forced into very intimate engagement with the jar edge, and the flexible or yielding nature of the gasket will permit it to take into slight irregularities in the top edge of the jar and form a very tight seal, and this without any portion of the cap penetrating or projecting into the gasket itself. As there is a metal to metal contact between the cap and the top side of the gasket holder or liner plate, it follows that such deforming of the gasket to conform to the edge of the container and seal the same is practically all at the underside of the gasket where the soft or yielding face thereof is in contact with the container edge, so that there is no penetration or such frictional engagement of the upper side of the gasket and the cap as will prevent the thorough and effective screwing down of the cap or interfere with the turning off of the cap to unseal the container. Thus, by the present improvement, a very secure sealing of the jar contents is obtained, and yet the cap can be readily removed when desired, and is adapted for future use, either with or without the liner plate, until the contents of the jar have been used.

Heretofore, in closures where it is desired to have a hermetic seal using the vacuum process or having the contents boiling hot, the single closure shown in Fig. 3 has been employed using a liner or gasket of special composition. While this would hold tightly, it was very difficult to unscrew such a closure because the gasket locks between the lower faces of the cap on the top edge of the jar and seals the two members, tending to prevent the turning of the cap. With the present closure, the gasket is carried by a separate and independent liner plate the metal surface of which contacts with the metal cap so that one can readily slide on the other to permit the unscrewing of the cap and thus the cap will not stick as it does when the gasket engages both the cap and the jar.

The use of this improved liner materially helps to insure an hermetic sealing of the contents of the container by reason of the fact that the bending of the edge of the liner over the gasket compresses it, and therefore not only interlocks the gasket and holds it in place but forms practically an air tight joint all around the gasket as no mere cementing of the gasket could do.

What I claim is:—

1. A combined cap and sealing member comprising a rotary metal cap and a metal sealing member fitting and wholly enclosed by said cap, and a yielding gasket secured to the under side of the sealing member by inturning a part of said sealing member over the sealing face portion of the gasket, the gasket being in position to engage the top edge of the container with the metal of the sealing member in contact with the metal of the cap around and adjacent to the outer edge of the sealing member, whereby the cap may be rotated relatively to the sealing member without sticking thereto.

2. A combined cap and sealing member comprising a rotary metal cap having in the top thereof a depending annular projection and a metal sealing member fitting and wholly enclosed by said cap, and a yielding gasket secured to the under side of the sealing member by inturning a part of said sealing member over the sealing face portion of the gasket, the gasket being in position to engage the top edge of the container with the metal of the sealing member in contact with the annular projection of the cap around and adjacent to the outer edge of the sealing member, whereby the cap may be rotated relatively to the sealing member without sticking thereto.

3. A combined cap and sealing member comprising a rotary metal cap and a metal sealing member fitting and wholly enclosed by said cap, and a yielding gasket secured to the under side of the sealing member by inturning the outer edge of said sealing member over the sealing face portion of the gasket, the gasket being in position to engage the top edge of the container with the metal of the sealing member in contact with the metal of the cap around and adjacent to the outer edge of the sealing member, whereby the cap may be rotated relatively to the sealing member without sticking thereto.

4. A combined cap and sealing member comprising a rotary metal cap having a top and a shallow flange provided with a

rolled edge and locking lugs formed at such edge, said top having an annular depending projection and a metal sealing member fitting and wholly enclosed by said cap, and having a channel-shaped annular portion at its under side, and a yielding gasket secured to the under side of the sealing member by inturning one side of said channel-shaped portion over the sealing face portion of the gasket, the gasket being in position to engage the top edge of the container with the metal of the sealing member in contact with the annular projection of the top of the cap around and adjacent to the outer edge of the sealing member, whereby the cap may be rotated relatively to the sealing member without sticking thereto.

5. A sealed package comprising a container, a flanged metal cap adapted to be secured thereon and having an annular projection in the top of said cap, a relatively thin metal liner plate wholly enclosed and concealed by said cap and engaged by the annular projection of the cap top around and adjacent to the outer edge of the liner plate, a gasket interlocked in the under side of said liner plate and in position to engage the upper edge of the container immediately under the projection of the top whereby the container will be effectively sealed around the upper edge thereof, and whereby the cap will have engagement with the metal of the liner plate at a single point of contact around the cap and the plate.

6. A combined metal cap and metal liner comprising a shallow flanged metal cap and a relatively thin metal liner disc insertible into and wholly enclosed and adapted to be concealed by said cap, and having metal to metal contact with the cap at a single point around and adjacent to the outer edge of the liner disc, a gasket interlocked on the under side of said liner disc and in position to engage the upper edge of the container immediately under the metal to metal contact of the cap with the liner disc, whereby the container will be effectively sealed around the upper edge thereof.

7. A combined metal cap, and metal sealing liner wholly enclosed by and having a metal to metal contact with the cap, and a gasket carried by the metal liner and interlocked therewith by bending the outer edge of the liner over a portion of the sealing face of the gasket.

8. A metal lining plate comprising a disc and a gasket interlocked therewith by bending a portion of the plate over a portion of the sealing face of the gasket.

9. An insertible sealing liner for a cap comprising a metal plate having a channel-shaped annular portion around its outer edge, and a gasket located in said channel and locked therein by bending one of the side walls of said channel over a portion of the sealing face of said gasket.

10. An insertible sealing liner for a cap comprising a metal plate having a channel-shaped annular portion around its outer edge, and a gasket located in said channel and locked therein by bending the outer side wall of said channel over a portion of the sealing face of said gasket.

Signed at New York city, N. Y.

CHARLES HAMMER.