

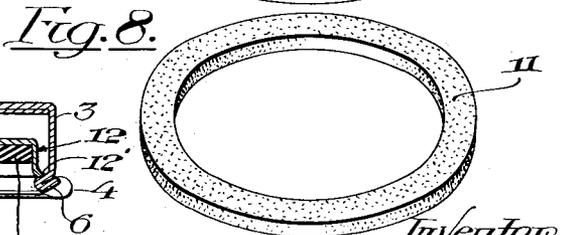
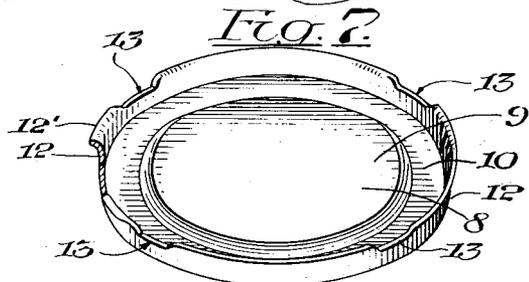
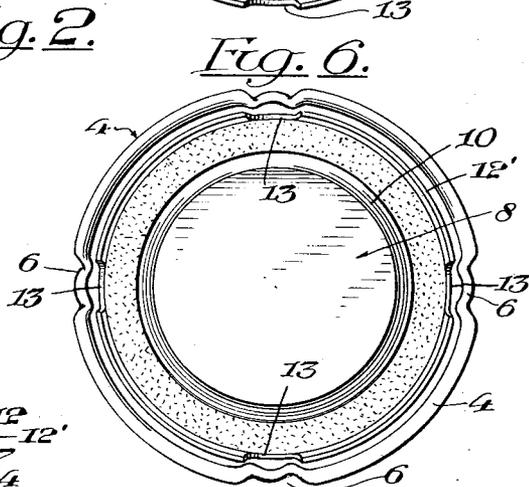
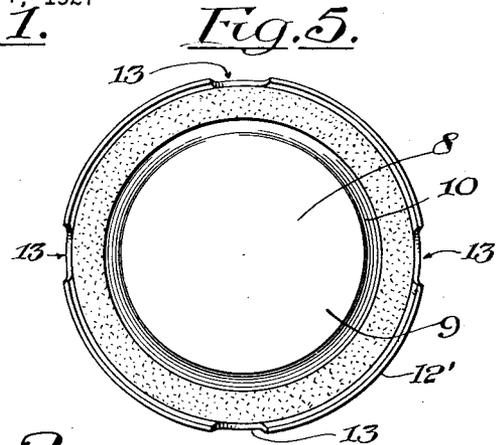
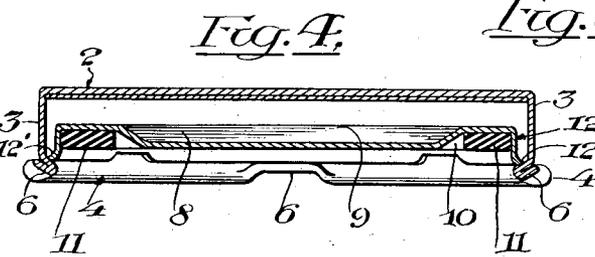
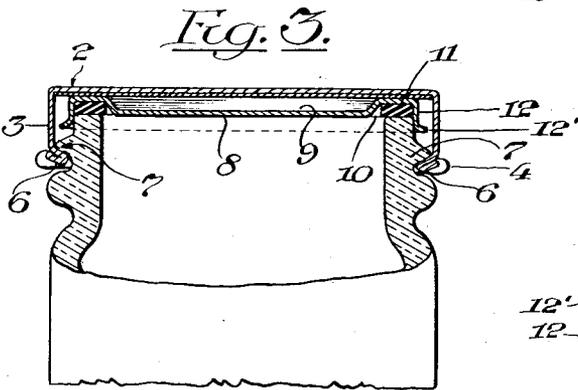
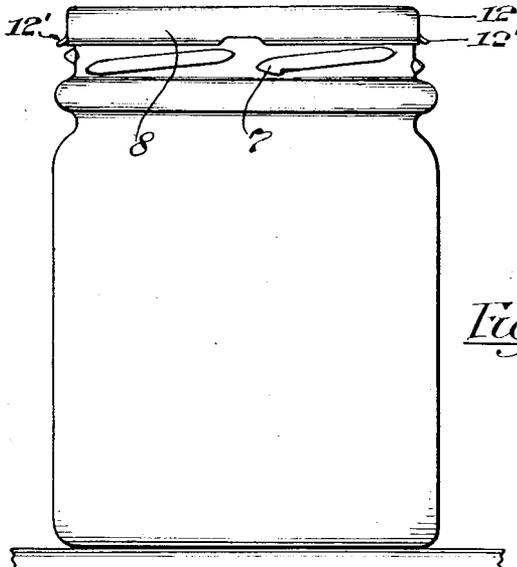
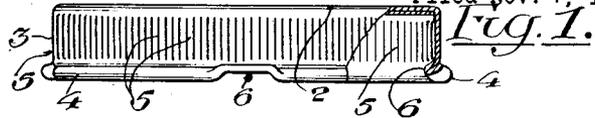
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C. HAMMER

COMBINED LUG CAP AND LINER PLATE

Filed Nov. 7, 1927



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UNITED STATES PATENT OFFICE.

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COMBINED LUG CAP AND LINER PLATE.

Application filed November 7, 1927. Serial No. 231,511.

This invention relates to a combined cap or closure and sealing member or liner plate for containers, such as glass containers, the primary object of the invention being to provide
 5 a combined lug-formed cap and liner plate so constructed that the cap with the liner plate previously assembled therewith may be readily and quickly applied to the container without liability of the liner plate dropping from
 10 the cap, whereby the liner plate will assist in centering the cap, but which liner plate is so constructed that the cap may also be readily removed without the necessity of first releasing the liner plate from the container and
 15 may also be used for resealing the container after the liner plate is removed.

A further object of the invention is the provision of an improved metal sealing member or liner plate for use with rotary metal
 20 caps having inwardly extending lugs or projections which will permit the removal of the cap without the necessity of first releasing the liner plate from the container and which liner plate can be subsequently released from the
 25 container without injury or destruction of the gasket carried thereby.

In order to have a tight sealing fit of the liner plate onto the container, and to center the cap during its application, thereby facilitating the quick and easy attachment of the
 30 cap to the container, and for the purpose of saving as much metal as possible, it is essential that the liner plate have a comparatively snug fit with the mouth or top of the container; whereas, as the cap must overlap the projecting threads of the container in order to be applied, it is essential that the diameter of the cap be considerably greater than that of the liner plate and, consequently, when the
 40 liner plate is made with a straight depending flange, it is practically impossible to prevent the liner plate from dropping out of the cap during the application of the cap onto the container and, therefore, it is desirable that
 45 the liner plate have a flaring lower edge whereby the diameter at the bottom of the liner plate will be slightly greater than the interior diameter of the lugs, so that the plate will rest upon the lugs and be prevented from
 50 falling out during the application of the assembled cap and liner plate to the container. This construction, however, while

facilitating the application of the plate and cap to the container, materially interferes with the removal of the cap, for the reason
 55 that on the backward rotation of the cap to remove it from the container, the lugs engage the flaring lower edge of the liner plate and either release the liner plate from the container—which is at times undesirable—or else
 60 prevent the removal of the cap until the liner plate is first released, and as the lower edge of the cap encloses the liner plate, especially when the cap has a beaded edge, there is considerable difficulty in releasing the liner plate,
 65 especially where the container has been vacuumized,—that is, sealed by vacuum.

It is, therefore, the object of the present invention, not only to provide a combined lug-formed rotary cap and liner plate which may
 70 be applied as a unit to the container without liability of the liner plate dropping out of the cap, but which will permit the cap to be readily removed without the necessity of first breaking the sealing action of the liner plate.
 75

Among the numerous advantages of the present improvement is that the liner plate may have a snug fit on the container, thereby requiring less metal to make it than would be the case if it had a diameter corresponding
 80 substantially to the interior diameter of the cap, which must be sufficiently large to overlap the projecting threads of the container, and which snug fit also facilitates the centering of the cap on the container during the application of the cap, and which liner plate
 85 will be maintained in assembled position with the cap during the application of the cap and prevented from dropping out during such application, but which is so constructed that
 90 the cap may be readily removed without interference from the liner plate, thereby permitting the subsequent release of the liner plate without likelihood of injuring the gasket.
 95

In the drawings accompanying and forming part of this specification—

Figure 1 illustrates a form of lug cap with which this liner plate is particularly adapted for use;
 100

Fig. 2 illustrates a glass container with the liner plate in position after the removal of the cap shown in Fig. 1;

Fig. 3 is a sectional view of the cap, the

liner plate and the upper part of a container assembled;

Fig. 4 is a sectional view of the cap and its liner plate assembled in readiness to be applied to the container;

Fig. 5 is an interior view of the liner plate;

Fig. 6 is an interior view of the liner plate and its cap assembled, with the cap lugs in register with the recesses of the liner;

Fig. 7 is a perspective sectional view of the liner plate with the gasket removed, and

Fig. 8 is a detail view of the gasket, much enlarged.

Similar characters of reference indicate corresponding parts in the several views.

Before explaining in detail the present improvement and mode of operation thereof, I desire to have it understood that the invention is not limited to the details of construction and arrangement of parts which are illustrated in the accompanying drawings, since the invention is capable of other embodiments, and that the phraseology which I employ is for the purpose of description and not of limitation.

The cap or closure, usually of metal, in the form shown comprise a top 2 having a depending skirt or flange 3 provided with a curled or strengthened or beaded lower edge 4, the skirt having suitable knurls or corrugations 5 which have the several advantages of providing a grip for applying and releasing the cap, strengthening and reinforcing the skirt of the cap, and also the lugs of the cap. The curled edge of the cap is provided with a plurality of locking lugs or projections 6, which in the present instance are of arc-shaped form which thereby prevent scratching or injury to the glass threads of the container. These lugs or projections are in position to engage suitable projections or threads 7 of a glass container when the cap is rotated thereon. The improved liner plate may be used, however, with a ring-formed cap, in which case the liner plate itself would form the top of the cap. Located within this rotary cap is this improved sealing member or liner plate 8, preferably of metal, comprising in the form shown a disk or plate 9 wholly enclosed by the cap when the form of cap shown is used. This plate is provided with an annular recess 10, of relatively shallow formation, for the reception of a flat ring gasket 11, which gasket is comparatively thin. The liner plate is provided with a depending flange 12 of shallow formation, it being but little deeper than the thickness of the gasket—which, as stated, is comparatively thin—the diameter of this flange being just sufficient to snugly fit the top of the container. The flange, however, flares outwardly at its lower edge 12' so as to have a diameter somewhat greater than the diameter between the lugs of the cap, whereby when the cap is in posi-

tion to be applied to a container, this outwardly flaring edge 12' of the flange 12 will rest upon the lugs of the cap (see Fig. 4) and thus be prevented from falling out of the cap during the application thereof to the container.

By having the diameter of the liner plate top no greater than is absolutely necessary to properly and snugly fit the mouth of the container and flaring the flange thereof, it follows that a considerable quantity of metal is saved in the manufacture of these liner plates, since the top of the liner plates may be made of much less metal than is necessary to form the cap—since this has to have a diameter sufficiently great to overlap the threads of the container. Furthermore, this permits the liner plate snugly to fit the top of the container, so that during the application of the cap this fit of the container by the liner plate facilitates the centering both of the liner plate and the cap onto the container and, consequently, the ready and easy application thereof to the container.

However, one of the disadvantages of having the liner plate of this construction is that the removal of the cap from the container is materially interfered with, for since the construction of the liner plate prevents it from dropping out of the cap during the application of the cap to the container, it follows that the opening of the container by the removal of the cap is likewise prevented, since the lugs on the turning backward of the cap will engage the lower outwardly flaring edge of the liner plate and thus be prevented from being turned off—especially when the container has been vacuum-sealed, so that it is practically impossible to remove the cap until the vacuum has been released, and as the cap completely encloses the liner plate it is difficult so as to release the vacuum because of the interference of the cap, especially when the cap has a beaded or curled protecting edge. Furthermore, it is desirable at times to remove the cap and leave the container sealed by the liner plate. To permit the removal of the cap, the flaring flange of the liner is provided with a plurality of recesses 13 corresponding in number with the number of lugs on the cap and having a size sufficiently large to permit the cap lugs to pass there-through, so that on the backward rotation of the cap to a position where the lugs of the cap will register with the recesses in the flange of the liner plate, the cap can be then readily removed from the container, after which the liner plate can be released by the insertion of an instrument under the flaring edge 12', which facilitates this operation, or at one of the recesses, which further facilitates this operation,—whereby air can be let into the container, thus releasing the gasket therefrom.

Thus this improved liner plate has several important advantages: It facilitates the insertion of a knife-blade, either between the flaring flange and the container or through
 5 one of the recesses thereof, to release the vacuum and permit its ready removal; it facilitates the centering of the liner plate and also the cap during the application thereof to the container, since the flaring flange extends slightly below the gasket—especially
 10 where these containers are not true to form, since the flaring edge will readily pass over the mouth of the container,—thus centering the liner plate on the container and thereby
 15 the cap; it conserves the amount of metal required in the formation thereof and in the amount of the gasket material; it prevents the premature separation of the liner plate from the cap during the application thereof
 20 to the container and very much facilitates the quick and ready removal of the cap, thereby permitting access to the liner plate and its ready removal without injury thereto.

From the foregoing it will thus be observed
 25 that I have provided an improved combined lug-formed rotary cap and liner plate, in which the plate is so constructed that the plate and cap may not only be assembled as a unit without liability of the plate dropping
 30 out of the cap, but which will permit the quick and ready removal of the cap from the container without the necessity of first releasing the liner plate.

In practice it is usual to supply the cap
 35 with the metal liner, thereby having a metal to metal fit between the liner and the top of the cap, but in some instances it is desirable to thoroughly reseal the container after the removal of the liner plate and in such instances the cap is furnished with a liner
 40 of some suitable material, usually comprising a disk of suitable board either provided with a coating of oiled or paraffined material or with a separate disk of similar material,
 45 whereby after the liner plate has been removed, the rotation of the cap onto the container will very effectively reseal it.

It is to be understood that by describing
 50 in detail herein any particular form, structure or arrangement, it is not intended to limit the invention beyond the terms of the several claims or the requirements of the prior art.

Having thus explained the nature of my
 55 said invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I claim:

60 1. A combined cap and liner plate having a gasket, said cap and plate each having a depending flange, the flange of the cap having inwardly extending locking lugs and the flange of the plate having recesses in number
 65 and size to permit the cap lugs to register

and pass therethrough on the backward rotation of the cap, thereby to permit the cap to be readily removed without first releasing the liner plate.

2. A combined cap and liner plate each
 70 having a depending flange, the flange of the cap having inwardly extending lugs or projections for securing it onto a container and the flange of the liner plate flaring outwardly with its diameter at its lower edge greater
 75 than that between the lugs of the cap, whereby the liner plate and cap can be applied in assembled condition to the container, said liner flange having recesses corresponding with the number of the cap lugs and adapted
 80 to register therewith on the backward rotation of the cap, thereby to permit the cap to be readily removed without interference from the liner plate and without first releasing the liner plate. 85

3. A combined cap and liner plate each having a depending flange, the flange of the cap having inwardly extending lugs or projections for securing it onto a container and the flange of the liner plate comprising an
 90 annular portion adapted to snugly fit the container mouth and terminating in an outwardly flaring portion with its diameter at its lower edge greater than that between the lugs of the cap, whereby the liner plate
 95 and cap can be applied in assembled condition to the container, the flaring portion of the said liner flange having recesses corresponding with the number of the cap lugs and adapted to register therewith on the backward
 100 rotation of the cap, thereby to permit the cap to be readily removed without interference from the liner plate and without first releasing the liner plate.

4. A combined cap and liner plate each
 105 having a depending flange, the flange of the cap having inwardly extending lugs for securing it onto a container, a gasket carried by said liner plate, the flange of the liner plate having a depth in excess of the thickness of
 110 the gasket and flaring outwardly with a diameter at its lower edge greater than that between the lugs of the cap, whereby the liner and the cap can be applied in assembled condition to the container, said liner flange having
 115 a plurality of recesses corresponding with the number of the cap lugs and adapted to register therewith on the backward rotation of the cap, thereby to permit the cap to be readily removed without interference from
 120 the liner plate and without first releasing the liner plate and whereby the subsequent release of the liner plate is facilitated.

5. A combined cap and liner plate having
 125 a depending flange, the flange of the cap having four inwardly extending lugs or projections for securing it onto a container and the flange of the liner plate flaring outwardly with its diameter at its lower edge greater than that between the lugs of the cap, where- 130

by the liner plate and cap can be applied in assembled condition to the container, said flaring flange also having four recesses corresponding to the number of cap lugs and adapted to register therewith on the backward rotation of the cap, thereby to permit the cap to be removed without interference from the liner plate and without first releasing the liner plate.

6. A combined cap and liner plate each having a depending flange, the flange of the cap having a rolled or beaded edge provided with inwardly extending lugs or projections for securing it onto a container, said liner plate having an annular recess in its top for the reception of a ring gasket and the flange of the liner plate having a shallow formation and flaring outwardly with its diameter at its lower edge greater than that between the lugs of the cap, whereby the liner plate and cap can be applied in assembled condition to the container, the flaring portion of the flange having recesses corresponding in number with the lugs of the cap and having a length sufficient to permit the passage of the lugs of the cap therethrough on the backward rotation of the cap, thereby to permit the cap to be removed and facilitate the release of the liner plate from the container.

7. A combined cap and liner plate each having a depending flange, the cap flange having a curled or beaded edge of greater diameter than the over-all diameter of the threads or projections of the container and provided with inwardly extending locking lugs, the flange of the plate having a diameter at its top less than the over-all diameter of the container threads and flaring outwardly

therefrom with its diameter at its lower edge greater than that between the lugs of the cap, whereby the liner plate and cap can be applied as a unit to the container, said flaring portion having recesses corresponding to the number of cap lugs and adapted to register therewith, thereby to permit the cap to be removed without interference from the liner plate and without first releasing the liner plate.

8. A liner plate for a lug-formed cap comprising a top and a depending flange flared outwardly at its lower portion to have a diameter greater than that between the lugs of the cap, whereby the cap and liner plate may be assembled as a unit, and provided with recesses corresponding to the number of the cap lugs for registration therewith to permit the removal of the cap without interference by the liner plate.

9. A liner plate for a lug-formed cap comprising a top having an annular recess for the reception of a gasket and a shallow flange flared outwardly at its lower portion to have a diameter greater than that between the lugs of the cap, whereby the cap and liner plate may be assembled as a unit, said flaring portion provided with recesses corresponding in number with the number of lugs on the cap and having a length sufficient to permit the passage of the lugs of the cap therethrough, whereby on the registration of the cap lugs with the liner recesses the cap may be removed without interference by the liner plate.

Signed at Brooklyn, New York, this 31st day of October, 1927.

CHARLES HAMMER.