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C. HAMMER.  
FLANGED SCREW CLOSURE AND METHOD OF MAKING THE SAME.  
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Fig. 1.

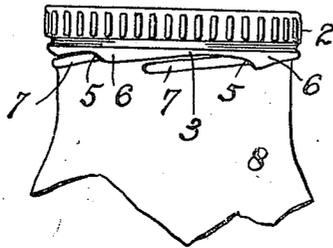


Fig. 2.

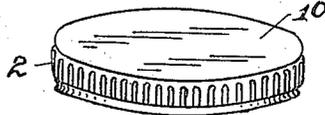


Fig. 3.

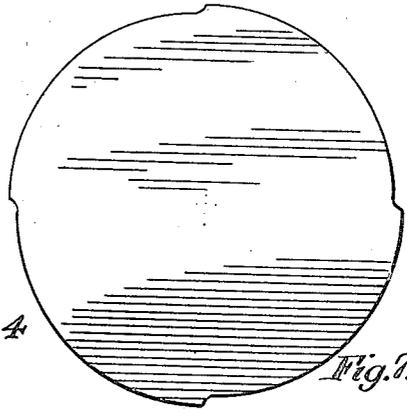
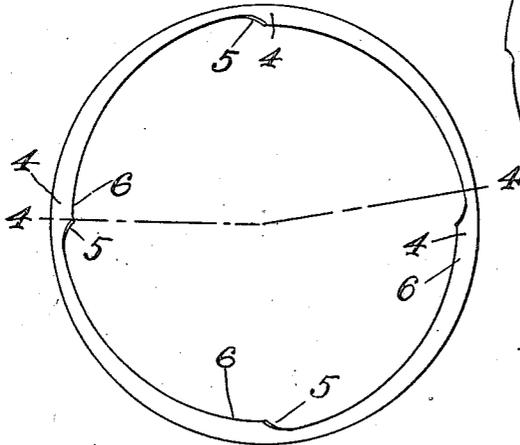


Fig. 6.



Fig. 4.

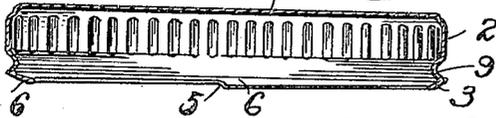


Fig. 5.

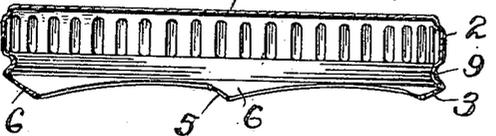


Fig. 8.



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## UNITED STATES PATENT OFFICE.

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## FLANGED SCREW CLOSURE AND METHOD OF MAKING THE SAME.

Application filed June 13, 1921. Serial No. 477,124.

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 Flanged Screw Closures and Methods of Making the Same, of which the following is a specification.

This invention has reference to closures for containers, such as bottles and jars, especially those made of glass metal or other material having threads or inclined lugs at the outer side of the neck or top, and the closure is provided with projecting portions that will pass under such lugs when the closure is turned on the bottle, whereby it is securely locked by a screwing action.

The object of the present invention is to provide a closure of this character that can be very simply and economically constructed, by simply cutting a blank in the form of a disk, then by suitable means as dies forming therefrom a cup-shaped blank; a cup shape, with the margin of the skirt or flange formed at intervals with projections, and which projections may be formed in the disk before the cupping operation; and then deflecting the flange with its projections inwardly throughout its perimeter to extend toward the axis of the cylindrical skirt, and which preferably extends at an angle both to the axis and to the plane of the top wall of the closure.

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

Fig. 2 shows the closure in perspective.

Fig. 3 is a bottom plan view enlarged.

Fig. 4 is a section on the line 4-4 of Fig. 3 and illustrating the closure before its application to a container;

Fig. 5 is a similar view after the closure has been applied and removed.

Fig. 6 is a view similar to Fig. 4 of a modified construction.

Fig. 7 indicates the flat disc-shaped blank, and

Fig. 8 shows the cup shaped blank.

Heretofore, in this art, closures have been formed by providing projections or scallops on the margin of the skirt which projections are bent over in various forms to engage lugs or threads on the jar, but between these projections the skirt extends as a cylinder

with a free raw edge. In other constructions the margin between the projections is sometimes formed into a bead or doubled over against the cylindrical wall.

With the present invention the cylindrical skirt itself has its lower marginal portion inclined inwardly throughout the entire perimeter of the skirt to form an inturned rim or flange; and the margin of this inwardly extending flange is provided at intervals with projections that will extend toward the axis of the closure.

In the arrangement set forth in Figs. 1-5, I provide a closure comprising a flat top and having a skirt 2 substantially cylindrical. The marginal portion of the skirt is bent inwardly at 3 to form a kind of rim or flange that is annular and continuous. This flange is shown as inclined downward toward the axis of the closure and which angle is uniform throughout the rim in the cap as constructed.

This rim 3 is shown as provided with projecting portions 4 of which four are arranged at intervals. As shown these projections are substantially angular and have one side 5 of the angle comparatively short and abrupt, while the other side 6 is tapered, and is curved, but eccentric to the skirt curvature, as clearly shown in Fig. 3. This will permit the upper end of each lug or projection 7 on the jar 8 to enter near the projection 4 at the abrupt end portion 5, and upon turning the closure on the jar it will pass under the container projection and serve to draw the closure down on the jar. This operation is assisted by the construction of the projections that will yield because the cap is made of comparatively thin sheet metal and each projection will bend downwardly a comparatively short distance, as indicated in Figs. 1 and 5. But the adjacent portions of the rim serve to strengthen the projecting portions and the closure is rigidly secured on the jar.

By turning the lower edge of the skirt inwardly to form an annular flange having the projections on its inner margin, the raw edge of such flange extends inwardly at a considerable angle so that the outer lower edge of the skirt is thus rounded and smooth, and consequently the hands of the user in applying or removing the closure or grasping the container by the top, do not come in contact with such raw edge and thus are protected.

Moreover the raw edge is to a certain extent protected from moisture so that rusting thereof is prevented.

The great advantage of a closure of this character is facility of construction. The flat disk is simply brought into cup shape by a suitable die operation, and then by placing this member on a simple roll or disk, and causing engagement by another roll which are both rotated at high speed, the margin of the skirt will be turned inwardly at the proper angle. The configuration of the disk when blanked out, may have the projections already formed, that are retained in the cupping operation. And the said rolling or spinning portion will simply turn inward the marginal portion containing these projections that will be brought to the proper shape by simply spinning or rolling operation.

If desired, the skirt may be pressed inwardly at the lower portion adjacent the inclined rim 3, to form a bead 9, as shown in Figs. 4 and 5. Between this bead and the top wall, the skirt may be given corrugations 10 to reinforce and strengthen the closure and its skirt.

In Fig. 6 a similar arrangement is shown, with the corrugations 12, extending the full height of the skirt, the bead 9 being in this form omitted. With the use of the bead 9 as shown in Fig. 4, that is extended inwardly, the portion of the bead adjoining the inwardly extending rim 3 forms an outwardly extending bead that will greatly strengthen the cap at this portion.

As stated when the cap is applied to a jar, the projecting portions will be slightly bent downwardly, but a very strong engagement on the jar is obtained. This closure can be removed and replaced if desired, as the projections will still engage the lugs on the jar.

What I claim is:

1. A sheet metal screw closure for containers comprising a top and a skirt, said skirt having the lower margin thereof bent inwardly throughout its perimeter to form an inwardly extending flange, said flange having projections at intervals adapted to engage lugs or threads on the container.

2. A sheet metal screw closure for containers comprising a top and a skirt, said skirt having the lower margin thereof bent inwardly throughout its perimeter to form an inwardly extending flange, said flange having angularly formed projections at intervals adapted to engage lugs or threads on the container.

3. A sheet metal screw closure for containers comprising a top and a skirt, said skirt having the lower margin thereof bent inwardly throughout its perimeter to form an inwardly extending flange, said flange having angularly formed projections at intervals with one side of the angle of greater

length than the other side and adapted to engage lugs or threads on the container.

4. A sheet metal screw closure for containers comprising a top and a skirt, said skirt having the lower margin thereof bent inwardly throughout its perimeter to form an inwardly extending flange, said flange having angularly formed projections at intervals, one side thereof being comparatively abrupt and the other side tapered and curved eccentric to the skirt curvature and adapted to engage lugs or threads on the container.

5. A sheet metal screw closure for containers comprising a top and a skirt, said skirt having the lower margin thereof bent inwardly throughout its perimeter to form an inwardly extending flange, said flange having projections at intervals adapted to engage projections on the container, said closure being formed of yieldable thin metal whereby the projections can yield to conform to the inclines of the projections of the container.

6. A sheet metal screw closure for containers comprising a top and a skirt, said skirt having the lower margin thereof bent inwardly throughout its perimeter to form an inwardly and downwardly extending flange, said flange having projections at intervals adapted to engage lugs or threads on the container.

7. A sheet metal screw closure for containers, comprising a top and a skirt, said skirt having the lower margin thereof bent inwardly throughout its perimeter to form an inwardly and downwardly extending flange, said flange having angular projections at intervals adapted to engage projections on the container, said closure projections having one side of the angle of greater length than the other side, and said closure being formed of yieldable thin metal whereby the projections can yield to conform to the inclines of the projections of the container.

8. A sheet metal screw closure for containers, comprising a top and a skirt, said skirt having the lower margin thereof substantially uniformly bent throughout its perimeter to form an inwardly and downwardly extending flange, said flange having projections at intervals adapted to engage lugs or threads on the container.

9. A sheet metal screw closure for containers comprising a top and a skirt, said skirt having the lower margin thereof bent inwardly throughout its perimeter to form an inwardly extending flange, said flange having projections at intervals adapted to engage lugs or threads on the container, and said skirt having a reinforcing bead above said flange.

10. A sheet metal screw closure for containers comprising a top and a skirt, said skirt having the lower margin thereof bent

inwardly throughout its perimeter to form an inwardly extending flange, said flange having projections at intervals adapted to engage lugs or threads on the container, and said skirt having reinforcing corrugations and an inwardly extending bead between said corrugations and the flange.

11. A sheet metal screw closure for containers comprising a top and a skirt, said skirt having the lower margin thereof bent inwardly throughout its perimeter to form an inwardly and downwardly extending flange, said flange having angular projections at intervals, one side thereof being comparatively abrupt and the other side tapered and curved eccentric to the skirt curvature and adapted to engage projections on the container, said closure being formed of yieldable thin metal whereby the projections can yield to conform to the inclines of the projections of the container, and said skirt having a series of reinforcing corrugations and a reinforcing bead between said corrugations and the flange.

12. The method of making a sheet metal screw closure for containers which consists in forming from a disc of metal a cup shaped blank comprising a top and a skirt, then bending the lower portion of the skirt inwardly to form an inwardly extending con-

tinuous flange, and providing, during the formation of the closure, the inner margin of said inwardly extending flange at intervals with locking projections.

13. The method of making a sheet metal screw closure for containers which consists in forming from a disc of metal a cup shaped blank comprising a top and a skirt, then bending the lower portion of the skirt inwardly to form an inwardly extending continuous flange, and providing, during the formation of the closure the inner margin of said inwardly extending flange at intervals, with locking projections, and also providing said skirt with reinforcing corrugations and a reinforcing bead between the corrugations and said flange.

14. The method of making a sheet metal closure for containers which consists in providing a disc of metal with a series of projections along its margin, then forming said metal disc into a cup-shaped blank having a top and a skirt, then bending the lower portion of the skirt inwardly throughout its perimeter to form an inclined flange with said projections along the margin thereof.

Signed at New York city, N. Y., on June 10, 1921.

CHARLES HAMMER.