Jan. 2, 1923. 1,440,988

C. HAMMER.
CLOSURE FOR CONTAINERS.
ORIGINAL FILED MAY 29, 1920.

Fig. 1.

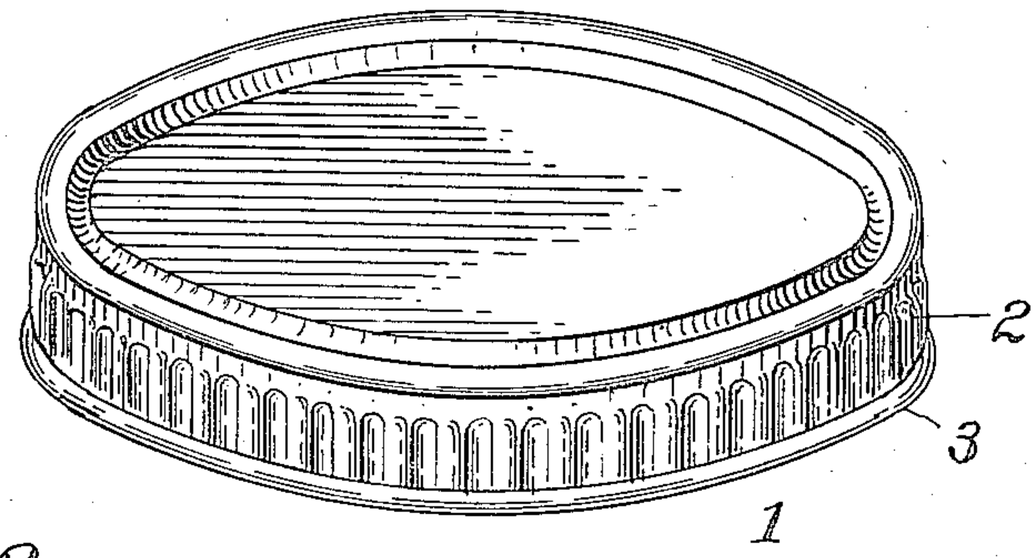


Fig. 2.

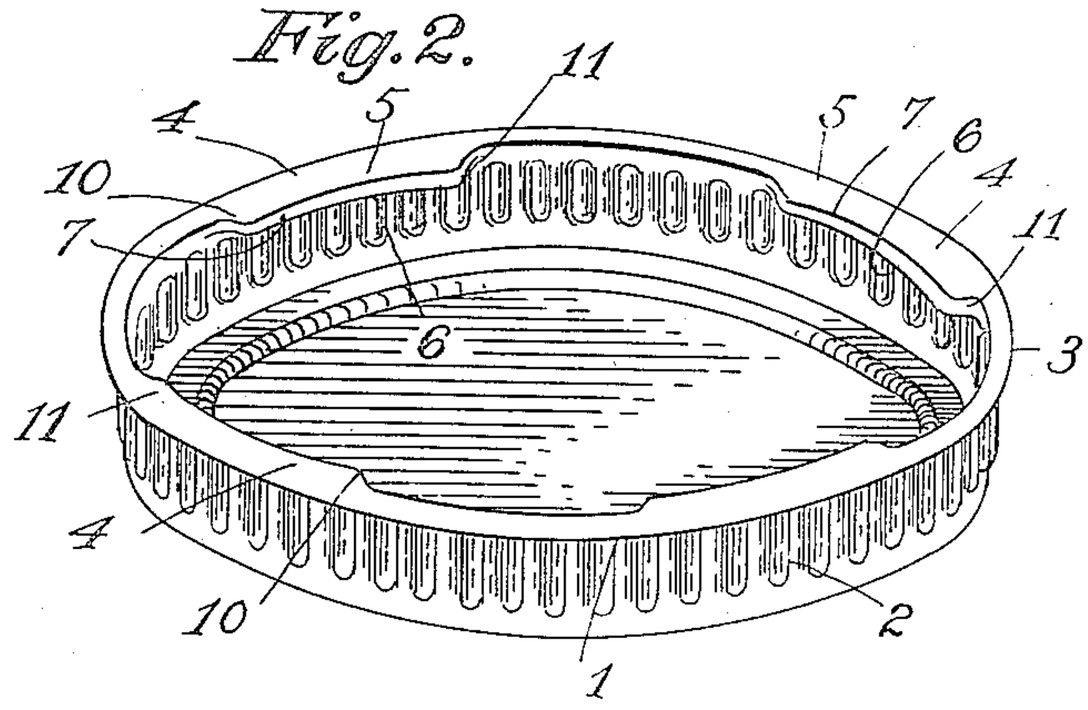


Fig. 8. Fig. 9. Fig. 10.

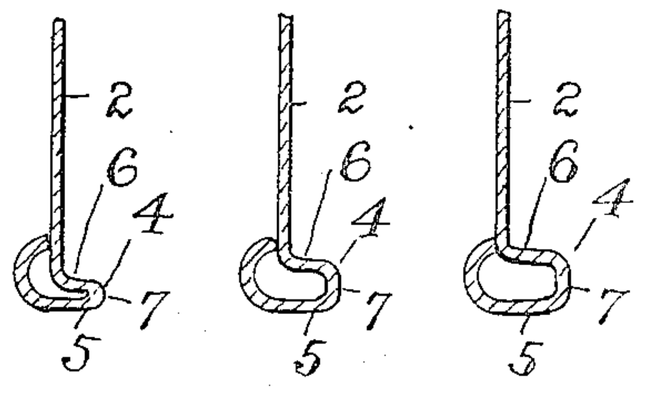


Fig. 3.

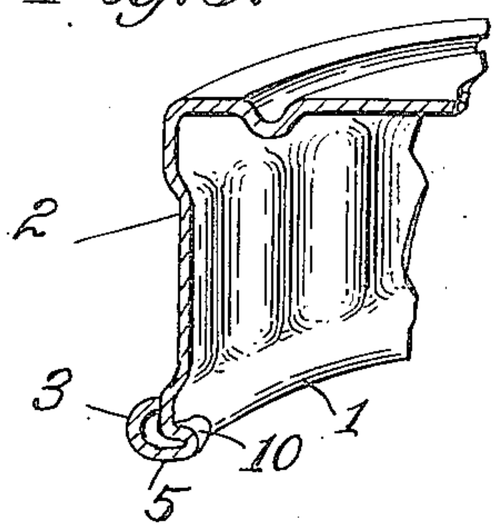


Fig. 4.

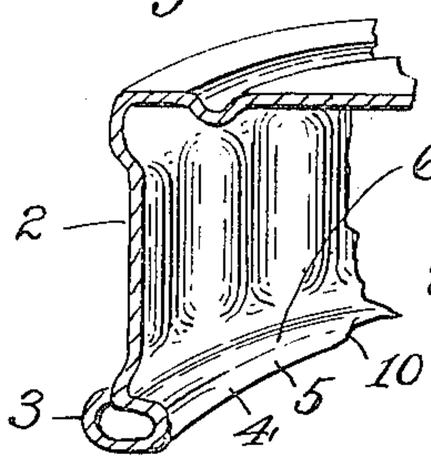


Fig. 5.

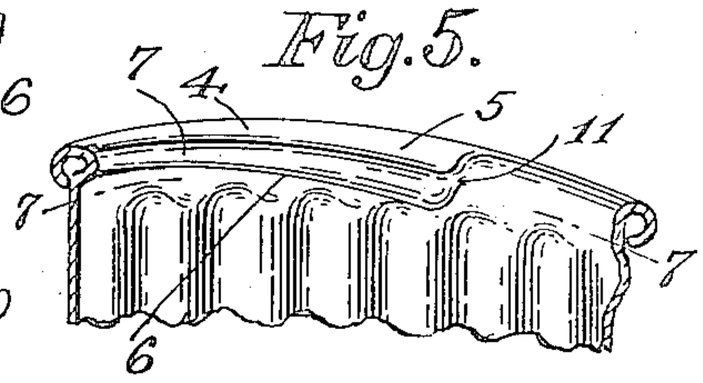


Fig. 7.

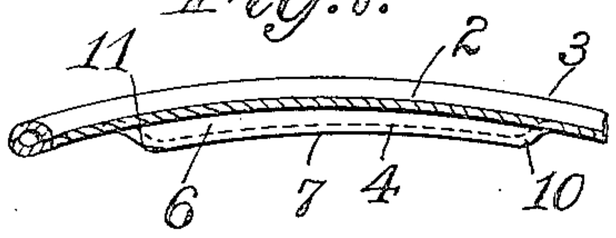
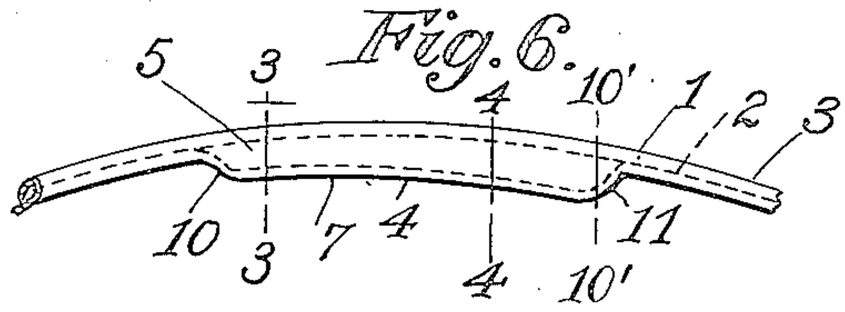


Fig. 6.



Inventor
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By his Attorney
Wm. H. Reid.

Patented Jan. 2, 1923. 1,440,988

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.

CLOSURE FOR CONTAINERS.

Application filed May 29, 1920, Serial No. 385,134. Renewed May 20, 1922. Serial No. 562,529.

To all whom it may concern:

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

This invention relates to metal caps or closures for glass containers or receptacles and to that form commonly designated in the trade as "screw caps" and more particularly to that variety commonly known as "divided thread caps," particularly adapted for use on glass jars and bottles having divided threads or multiple projections, whereby on the turning of the cap it will be securely locked on the container, the object of the invention being to provide an improved cap or closure of this class, and a cap in which a strong and rigid projection is provided at intervals at the lower edge of the cap, each having inclined upper faces in the nature of screw threads.

A further object of the invention is the provision of such a cap in which the projections will be reinforced by an outwardly extending bead or curled edge, which among other advantages, serves to practically conceal such projections.

A further object of the invention is the provision of a metal cap or closure having at its lower edge a combined bead or curled edge and a thread-like projection.

One of the objects of the invention is the provision of an improved cap or closure of the divided or multiple thread variety having a roughened or reinforcing corrugated flange provided with a curled or beaded edge, which is utilized at intervals to form projections of thread-like form, and each of which is shown as having its upper edge or face inclined upwardly, and in the preferred form thereof has its lower edge or face located in the bottom plane of the closure.

A further object of the invention is the provision of an improved cap or closure of the class described, which may be readily constructed of thin sheet metal and in which the reinforcing corrugations of the skirt, the curled edge of the skirt, and the projections formed from a part of such curled edge are all so co-related that among the advantages, very strong and rigid projections are not only obtained, but projections are provided which will take up the necessary variations in the glass jar or container, and in which the curled edge, the projections and the corrugations all cooperate to stiffen the cap and to insure sufficient rigidity to the projections.

In the accompanying drawing showing one embodiment of my invention, Fig. 1 is a perspective view of the closure.

Fig. 2 is a view of the closure inverted, showing the interior.

Fig. 3 is a vertical section enlarged on the line 3—3 of Fig. 6.

Fig. 4 is a similar view on the line 4—4 of Fig. 6.

Fig. 5 is an interior fragmentary view showing one of the projections.

Fig. 6 is a bottom plan view of one projection.

Fig. 7 is a vertical section looking upward on the line 7—7 of Fig. 5.

Fig. 8 is a sectional view enlarged corresponding to Fig. 3.

Fig. 9 is an enlarged section corresponding to Fig. 4.

Fig. 10 is an enlarged section on the line 10—10 of Fig. 6.

In my prior Patent No. 1,160,596 dated November 16, 1915, a closure is provided in which the projections are located wholly above and between the curl or bead of the flange and the corrugations, whereas in the present improvement the projections are located along or at the curled edge of the cap instead of above it and are formed partly from the curled or beaded edge itself, whereby the inclined or helical working faces of the projections may, in some forms of caps, be located a relatively greater distance from the top of the cap without materially increasing the depth of the skirt or flange, and in the present instance the projections are moreover, more nearly tubular instead of practically semi-circular or arch-shaped as in said patent.

In my prior Patent No. 1,079,238 dated November 18, 1913, the bead was compressed or flattened at intervals to provide locking projections, which however, were not only relatively small but were not of thread-like form in that they did not have inclined or helical working faces in the direction of their length and therefore they did not have either the same construction or length or the same tubular form as in the present improvement, and therefore I believe that I am the first to provide a cap having a com-

bined curled or beaded edge and thread formed or thread like projections, and therefore the first to provide a plurality of thread-like projections formed or partly formed from the curled or beaded edge of the cap, and the first to utilize the beaded or curled edge of a cap to form a series of relatively long projections preferably having their lower edges flush with or in the same plane as the bottom plane of the closure and their upper edges inclined from one end toward the other, and therefore I believe that I am the first to provide a cap having a curled and corrugated skirt provided with thread-like projections partly formed from such curl and therefore located to project inwardly at the curled edge of the skirt.

Referring to the drawings, it will be seen I provide a closure formed of a top, and a skirt portion 2 substantially cylindrical. The lower edge of the skirt portion is bent or rolled preferably outwardly to form a bead or curled edge 3 that is preferably rolled until the raw edge or margin is practically concealed.

At several places in the skirt, I cause the metal to be bent inwardly to form projections or ribs denoted generally by 4, and I show four of these projections. This projection is shown as having its lower face 5 substantially flush with the bottom plane of the closure, or of the bead 3. The projection is substantially wedge-shaped, the upper wall 6 of the projection increasing its distance from the lower wall from one end of the projection toward the other, as clearly set forth in Figs. 8, 9 and 10. The projection also has an inner wall 7, whose distance removed from the cylindrical contour of the skirt is preferably slightly greater at the thicker end of the projection. It will be noticed that each projection has abrupt end portions 10 and 11, forming shoulders. The bead 3 at its outer wall or portion serves to surround and conceal the projection, which is an advantage not only in appearance, but the practical use of the device, as this will prevent the entrance of material into the cavity or inner portion of the projection.

It will thus be seen that I have provided a closure with projections in the nature of screw threads, that can cooperate with threads or projections on the neck of the bottle or jar that is either inclined, or which has an engaging face parallel with the top of the bottle, and also with jars or bottles having short lugs provided thereon. This improved form of cap projection or rib does not possess any raw edge whatever and therefore no pockets are provided to hold material that would be a disadvantage. The material from which the projections are formed is in part taken from the skirt or side wall adjacent to the portion that would form the bead, that is the material is drawn downwardly. By this means the portion of the bead opposite the projection forms a continuation of the other portions of the bead between the projections. Furthermore, a projection of this character possesses very considerable strength and rigidity to withstand the strain when the closure is screwed on the jar.

From the foregoing it will be observed that in forming the projections, which may be considered as of substantially tubular form, or having a cornute formation, a portion of the bead or curl of the cap together with that of the skirt immediately adjacent thereto is utilized to provide relatively long ribs or projections having inclined or helically formed upper or working faces, so that such projections taper in the direction of their length and are therefore of wedge-shaped or thread-like form and are located in such manner that the lower face of each projection, when the cap is normally applied to a glass container, is, as it were, a continuation of the beaded, curled or strengthened edge of the cap, so that it may properly be said that as the thread-like projections are located at or along the curled edge of the skirt instead of wholly above it, the instruck tapered or thread-like projections extend from and are formed from the bead, or that the bead at the point where the projections are located, being a continuation of the projections, is formed from the metal thereof, that is to say, in the present improvement the bead and the projection merge into each other, as it were, at the bottom edge of the cap, so that looking at the side of the cap from the exterior thereof, the bead, to a very considerable extent, conceals all appearance of projections. This construction thus provides a threaded form of projection instead of a lug, thus giving a longer bearing surface on the jar projection, also a stronger and more rigid projection, and one which will be of sufficient area to take up the usual variations in a glass jar and which, in cooperation with the curled edge and corrugated flange or skirt of the cap, provides a superior form of cap, in which to those skilled in the art the advantages are many.

What I claim is:

1. A closure cap for containers having a skirt rolled outwardly at the lower edge to form a bead, the bead portion of the skirt having a plurality of in-pressed projections of cornute form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement with a container lug.

2. A closure cap for containers having a skirt rolled outwardly at the lower edge to form a bead, the bead portion of the skirt

having a plurality of in-pressed projections of cornute form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement with a container lug, one end of each projection being offset from the adjacent portion of the skirt and forming a shoulder therewith.

3. A closure cap for containers having a skirt rolled outwardly at the lower edge to form a bead, the bead portion of the skirt having a plurality of in-pressed projections of cornute form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement with a container lug, both ends of each projection being offset from the adjacent portion of the skirt forming a shoulder therewith.

4. A closure cap for containers having a skirt rolled outwardly at the lower edge to form a bead, the bead portion of the skirt having a plurality of in-pressed projections of cornute form, each projection having the lower edge or surface located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement with a container lug, the larger end of each projection being offset from the adjacent portion of the skirt and forming a shoulder therewith.

5. A closure cap for containers having the skirt rolled outwardly at the lower edge to form a bead, the skirt having a plurality of in-pressed projections of substantially tapered form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement with container lug, the inner face of each projection increasing its distance from the skirt from one end to the other.

6. A closure cap for containers having the skirt rolled outwardly at the lower edge to form a bead, the skirt having a plurality of in-pressed projections of substantially tapered form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement with container lug, both ends of each projection being offset from the adjacent portion of the skirt and forming a shoulder therewith, the inner face of each projection increasing its distance from the skirt from one end to the other.

7. A closure cap for containers having the skirt rolled outwardly at the lower edge to form a bead, the skirt having a plurality of in-pressed projections of substantially tapered form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement with a container lug, the inner face of each projection being curved eccentric to the skirt.

8. A closure cap for containers having the skirt rolled outwardly at the lower edge to form a bead, the skirt having a plurality of in-pressed projections of substantially tapered form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement with a container lug, one end of each projection being offset from the adjacent portion of the skirt and forming a shoulder therewith, the inner face of each projection being curved eccentric to the skirt.

9. A closure cap for containers having a skirt provided with a plurality of in-pressed projections of cornute form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement with a container lug.

10. A closure cap for containers having a skirt provided with a plurality of in-pressed projections of cornute form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection inclined upwardly in the same circular direction, to constitute a screw thread for engagement with a container lug, the larger end of each projection being offset from the adjacent portion and forming a shoulder therewith.

11. A closure cap for containers having a skirt provided with a plurality of in-pressed projections of cornute form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement with a container lug, the inner face of each projection increasing its distance from the skirt from one end to the other.

12. A closure cap for containers having a skirt provided with a plurality of in-pressed projections of cornute form, each projection having the lower edge or face located in the bottom plane of the closure, and the upper edge or face of the projection each inclined upwardly in the same circular direction, to constitute a screw thread for engagement

with a container lug, the inner face of each projection being curved eccentric to the skirt.

13. A closure for containers having a depending skirt provided with a combined external curled edge, and an internal thread-like inclined projection adapted to engage the threads or projections of a glass container.

14. A closure for containers having a skirt provided with a combined bead or curled edge and a plurality of spaced inwardly extending projections, each having an inclined or helical working surface in the direction of its length, adapted to engage the threads or projections of a glass container.

15. A closure for containers having a skirt provided with a beaded or curled lower edge, and a plurality of inwardly extending thread-like inclined projections located along the curled edge of the skirt and forming part of such curled edge.

16. A closure for containers having a skirt provided with a beaded or curled lower edge, and a plurality of inwardly extending thread-like inclined projections, the bead and the projections being formed partly one from the other.

17. A closure for containers having a skirt provided with a beaded or curled lower edge, and a lengthwise tapered projection extending inwardly of the skirt at such curled edge, the metal of the projection and of the curled edge merging one into the other.

18. A closure for containers having a skirt provided with a curled or beaded lower edge, and an inwardly extending projection wedge-formed in the direction of its length and located with a part thereof in the plane of the curled edge of the cap.

19. A closure for containers having a relatively shallow skirt provided with reinforcing corrugations, a reinforcing curled or beaded lower edge, and a plurality of inwardly extending projections wedge-formed in the direction of their length and located along the curled edge of the cap, each of said projections having a substantially tubular form.

20. A closure for containers having a relatively shallow skirt provided with corrugations, a curled or beaded lower edge, and a plurality of inwardly extending projections wedge-formed in the direction of their length located along the curled edge of the cap, each having its lower face in substantially the same plane as the bottom edge of the cap and its upper face inclined from one end toward the other.

21. A closure for containers having a skirt provided with reinforcing corrugations and provided with a curled or beaded lower edge, and an inwardly extending projection wedge-formed in the direction of its length and located with a part thereof in the plane of the curled edge of the cap.

22. A closure for containers having a depending skirt provided with a threadlike projection inwardly pressed from the skirt and closed at the outer side of the skirt.

23. A closure for containers having a depending skirt having at intervals along the margin thereof threadlike projections extending inwardly from the skirt and a part extending upwardly to close the depression in each of said projections.

24. A closure for containers having a depending skirt provided with a plurality of spaced closed projections pressed inwardly from the skirt above the margin thereof, each having an inclined or helical working surface in the direction of its length adapted to engage the threads or projections of a glass container.

25. A closure for containers having a depending skirt provided with a plurality of spaced tubular projections pressed inwardly from the skirt above the margin thereof, each having an inclined or helical working surface in the direction of its length adapted to engage the threads or projections of a glass container.

26. A closure for containers having a depending skirt provided with reinforcing corrugations and a plurality of spaced closed projections pressed inwardly from the skirt above the margin thereof, each having an inclined or helical working surface in the direction of its length adapted to engage the threads or projections of a glass container.

Signed at New York city, N. Y., on May 12th, 1920.

CHARLES HAMMER.