Dec. 7, 1926. 1,609,470

C. HAMMER

FRICTION CLOSURE FOR CONTAINERS

Filed March 23, 1923

Fig. 1.

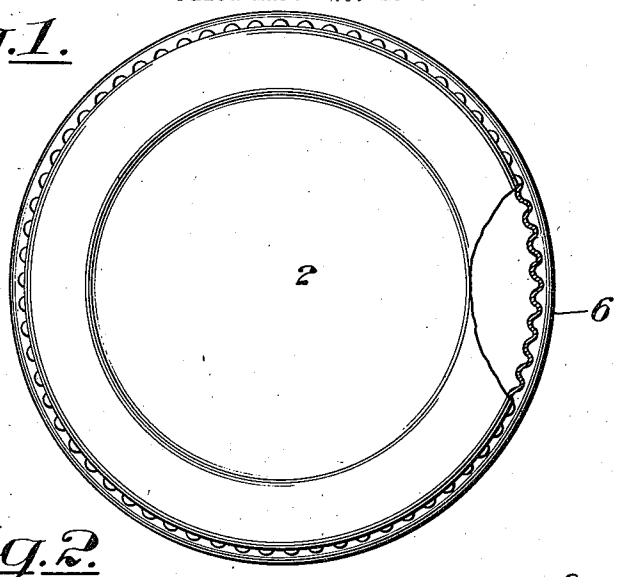


Fig. 2.

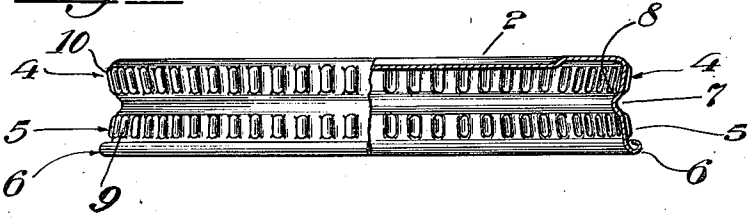


Fig. 3.

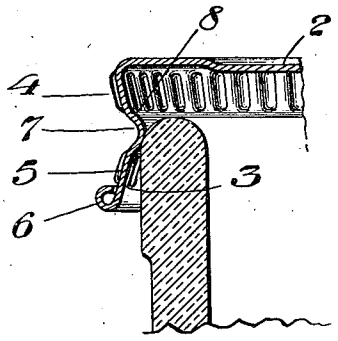
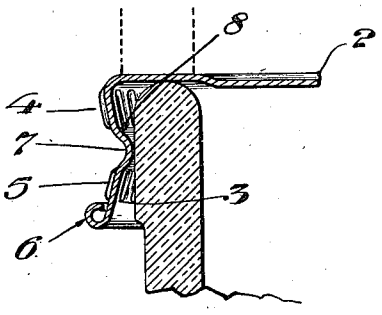


Fig. 4.



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UNITED STATES PATENT OFFICE.

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FRICTION CLOSURE FOR CONTAINERS.

Application filed March 23, 1923. Serial No. 627,000.

This invention relates to metal caps or closures, particularly to that class thereof known as friction caps adapted for use on containers such as glass jars usually having a straight or plain outer sealing wall and in which the cap is applied thereto by downward pressure on the top of the cap as for instance adjacent to the outer edges thereof the object of the invention being to provide an improved metal friction cap having a depending skirt provided with a friction seal so reinforced thereabove that the collapse of this friction seal is prevented on the application of the cap to the container, such reinforcement being shown in the present instance in the form of corrugations near the top of the cap and also to provide a cap of the class described having a friction seal provided at both sides thereof with strengthening corrugations.

Another object of this invention is to provide an improved friction cap, the flange of which is provided with a strengthened lower edge as by rolling or curling the same, and with a plurality of spaced series of reinforcements thereaboye, and with an uninterrupted sealing surface for engagement with the container, whereby the container may be effectively sealed at all points around the same.

Another object of this invention is the provision of an improved friction cap having a combined annular and curved friction surface or bead and reinforcing corrugations so located as to permit an uninterrupted seal entirely around the container.

A further object of the invention is the provision of a shallow flanged metal cap which may be made of relatively thin sheet metal comprising a top, a depending flange or skirt provided with a relatively small annular bead in position to engage the outer wall of the container, and two spaced sets of reinforcing corrugations located around the flange and spaced apart by the sealing bead, whereby the cap may be readily used either with or without a liner.

In the present improvement the corrugations which strengthen the flange of this slip-on or friction cap to prevent it from collapsing are so located that the cap may be readily used either with or without a liner and in the preferred form thereof the flange of the cap is provided with two sets or bands of corrugations having their opposed ends spaced apart and between which is located the annular friction surface or bead for frictionally engaging the outer side wall of the jar. Thus it will be observed that the corrugations do not interrupt the annular friction engaging surface of the cap so that a tight friction seal is obtained at every point around the jar, whereas if the corrugations met or extended entirely across the flange from top to bottom thereof, the result would be alternate spaces and friction engaging surfaces so that the spaces between such corrugations would admit air and moisture and consequently a tight seal could not be obtained without the use of a liner. In the present improvement however a tight seal is obtained whether a liner is used or not, and moreover a tighter engagement of the cap on the jar is ensured since there is a continuous annular friction engagement all around the jar. Moreover by having the corrugations located substantially in the manner shown a very effective gripping surface is provided throughout practically the entire height of the flange without however interfering with the sealing portion of the cap, and in addition to this increased gripping surface the flange is materially strengthened by the corrugations, the two sets of which materially increase this strengthening effect.

In the drawings accompanying and forming a part of this specification Fig. 1 is a top view of this improved cap with a portion thereof broken away; Fig. 2 is a part side and part sectional view of the cap; Fig. 3 is a sectional view illustrating the cap placed on top of a glass container; and Fig. 4 illustrates the same after it has been applied thereto by pressure.

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 detailed 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.

This improved metal cap which may be made of relatively thin sheet metal such as

tin comprises a top 2 having a depending flange or skirt 3, shown as of shallow form, and which flange in the present instance is conically formed as by being inclined downwardly and inwardly as at 4 to about the middle of the depth of the flange and then inclined downwardly and outwardly as at 5 terminating in a strengthened edge 6 which may be formed by curling or rolling the lower free or raw edge of the skirt or flange. The two inclined flange portions 4 and 5 are connected by an annular inwardly extending bead or curved portion 7 forming a shoulder 8 for the reception of a gasket if it is desired to use the same and this bead forms a friction engaging or sealing surface entirely around the cap. By reason of the outwardly inclined or flaring portion 5 the cap can be readily seated upon or slipped over the enlarged mouth of the container as shown in Fig. 3 with the convex face of the bead in position when pressure is applied to the cap to pass down and tightly engage the outer wall of the container and effectively seal and secure the cap on the container. Owing to the arch construction of this bead any undue bending of the closure, when pressure is applied to seal the jar, is prevented. In practice the normal internal diameter of the closure at the bead thereof is less than the outer diameter of the container where it is to fit so that the downward pressure of the cap on the jar, while it will enlarge the diameter of the cap sufficiently to permit the cap to pass on to the jar and tightly engage the jar, will not distort or buckle the flange of the cap owing to the arch construction of the bead and also to the strengthening corrugations. The bead thus forms a single point of contact between the skirt and the container while the outwardly flaring lower portion of the skirt provides a means for the insertion of a suitable instrument to release the cap. Furthermore by reason of the fact that the bead is of comparatively small size in cross section a much better sealing is obtained since the small bead will more readily allow for any irregularities in the jar wall and in the size of the jar than if the friction engaging surface was of large curvature. Formed in the cap flange around the same is a series of corrugations so disposed as not to interfere with the friction engaging surface of the cap, and in the present instance these corrugations are shown comprising two sets or bands, one set thereof as 9 located between the strengthened edge and the bead, and the other set as 10 located between the bead and the top of the cap so that while the cap is provided with strengthening corrugations and gripping surfaces throughout practically the entire height of the flange, these corrugations do not meet but are spaced apart by the annular friction engaging surface or bead 7 of the cap and therefore do not interfere with a cap engaging surface entirely around the glass jar so that the cap may be used whether with or without a liner as desired. It will be obvious as hereinbefore stated that if the corrugations extended from top to bottom of the cap that the corrugations would engage the jar wall while the spaces therebetween would be spaced from the jar preventing a tight seal of the jar at every point around the same and also sealing the jar with less effectiveness while facilitating the premature knocking of the cap off the jar, and also requiring the use of a liner to even seal the jar.

The present improvement thus provides a friction cap which may be used not only without a liner, but which is much stronger, and in which corrugations can be used without interfering with a continuous friction surface entirely around the jar, and which will have all of the good qualities of and certain advantages over the cap shown and described in my Reissue Patent No. 15,259 dated January 3, 1922, while being a materially stronger cap and one which can be handled to better advantage. It will also be observed that by means of the present improvement I am able to provide a cap having a single friction seal shown as formed by an annular bead and between which and the top of the cap is located a series of reinforcements shown in the form of corrugations whereby on the application of the cap to the container the collapse of the friction seal by reason of its contact with the upper edge of the container is prevented.

It is to be understood that by describing 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 said invention and described a way of constructing and using the same, although without attempting to set forth all the forms in which it may be made, or all the modes of its use, I claim:

1. A friction closure comprising a top having a depending skirt preformed by an inwardly inclined portion and an outwardly inclined portion connected at substantially the median line of the skirt by an inwardly extending bead forming a friction seal and so arranged that the skirt has contact only with the container at such bead, said skirt having corrugations therein below said friction seal and also above the same friction seal and strengthening the skirt to prevent the collapse thereof, said outwardly inclined portion provided with a strengthened lower edge.

2. A friction closure comprising a top having a depending skirt preformed by an

inwardly inclined portion and an outwardly inclined portion connected at substantially the median line of the skirt by an inwardly extending bead forming a friction seal, and so arranged that the skirt has a single point of contact with the container, said skirt having reinforcements therein below said friction seal and also above the same friction seal and strengthening the skirt to prevent the collapse thereof, said outwardly inclined portion provided with a strengthened lower edge.

3. A friction closure comprising a top having a depending skirt preformed entirely by an inwardly inclined portion and an outwardly inclined portion connected at substantially the median line of the skirt by an inwardly extending bead forming a friction seal and so arranged that the skirt has contact only with the container at the bead, said skirt having reinforcements in one of said inclined portions, and said outwardly inclined portion provided with a strengthened lower edge.

Signed at Brooklyn, N. Y., this 20th day of March, 1923.

CHARLES HAMMER.