

March 17, 1931.

J. E. SHARP ET AL

1,796,729

CLOSURE

Filed April 18, 1930

Fig. 1.

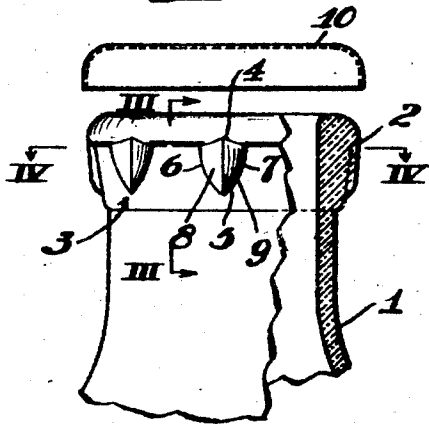


Fig. 2.

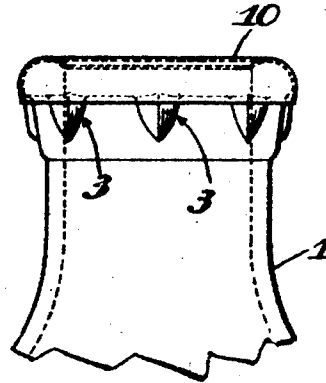


Fig. 3.

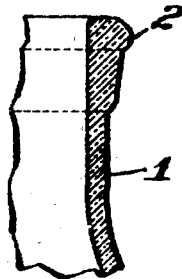


Fig. 5.

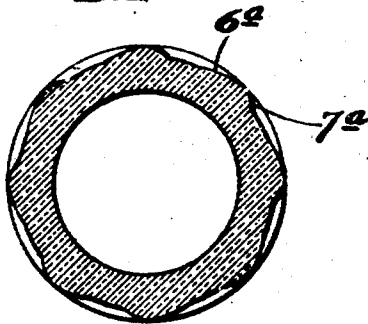
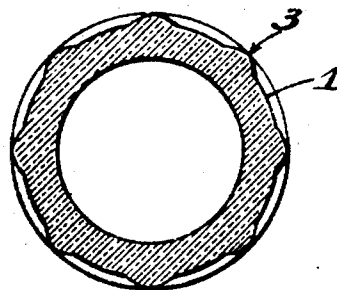


Fig. 4.



WITNESSES

W. Wallace.

INVENTOR

*John E. Sharp, and
Raymond W. Flinn
by Brown & Crutcher
his attorneys*

UNITED STATES PATENT OFFICE

JOHN E. SHARP, OF NEW KENSINGTON, PENNSYLVANIA, AND RAYMOND W. NIVER, OF ELMIRA, NEW YORK, ASSIGNORS TO ALUMINUM COMPANY OF AMERICA, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA

CLOSURE

Application filed April 18, 1930. Serial No. 445,340.

The invention relates to container closures, and while unlimited to containers for any particular purpose, it is especially applicable to milk bottles, and is accordingly so described herein.

The chief object is to provide a container closure, particularly for milk bottles, including a cap which can be easily applied and removed and which, when applied, protects the lip or mouth of the container against contamination.

Another object is to provide a closure of the type mentioned which, after removal, may be used as a replacement cover or cap for the container.

A further object is to provide a closure of the type which, in being removed, becomes so modified in appearance as to show that the container has been opened after the original sealing thereof.

The invention is illustrated in the accompanying drawings, of which Fig. 1 is a side view partially in section of the upper portion of a milk bottle, a cap being shown before it is in position to be applied to it; Fig. 2 a similar view of the bottle with the cap applied to it; Fig. 3 a sectional view taken on the line III—III, Fig. 1, with the cap removed; Fig. 4 a transverse sectional view taken on the line IV—IV, Fig. 1; and Fig. 5 a sectional view, similar to Fig. 4, showing a modification of construction.

In the practice of this invention in its preferred form, a bottle or like container is provided with a peripheral annular bead adjoining its mouth, and with a plurality of spaced projections immediately below the bead. Each of these projections merges at its top with the outer edge of the bead, and from thence it tapers laterally and downwardly to the surface of the container neck below the head. A closure cap formed of pliable material, preferably thin pliable metal, and having a continuous uninterrupted skirt, is molded in position on the

mouth of the container in such a way that the lower portion of the skirt is provided with detents which engage the lower portion of the bead and also the projections below it. By turning the cap angularly upon the container, the tapering sides of the projections gradually force outwardly the detents of the cap skirt until they lie in a cylindrical surface defined by the outer edge of the container bead, with the result that the cap may be easily removed. Thereafter the cap may be used as a reclosure.

In the illustrative embodiment of the invention, having reference first to Fig. 1, there is shown the upper portion of a milk bottle 1 provided with a peripheral annular bead 2 (Fig. 3) adjacent to its mouth. Below this bead the container is provided with a plurality of spaced projections 3, each of which merges at its top with the outer edge of the bead, as indicated at 4. Each of these projections also tapers downwardly and inwardly until it merges with the neck of the bottle as indicated at 5, and also tapers laterally and inwardly at each side until it similarly merges with the neck of the bottle as indicated at 6 and 7. Each projection is accordingly provided with two sloping faces 8 and 9.

Preferably the sides 8 and 9 of each projection 3 slope or taper inwardly equal amounts, so that each projection is symmetrical about a vertical central plane. However, if desired, each projection may be asymmetrical as indicated by the projections 3a in Fig. 5, one of its sides, 6a, merging more gradually into the neck of the bottle than its other side 7a.

Above the bottle there is shown a cap 10, preferably of thin pliable metal, such as aluminum, in position to be applied to the mouth of the bottle. If desired, the cap may be provided interiorly with a lining of waxed paper or a disc of suitable sealing material. When the cap is placed on the

container, lateral inward pressure is applied to its skirt by means of a pneumatic die or similar instrumentality to cause the skirt to conform to the bead 2 and engage its lower portion, and to also conform to the upper portions of projections 3. Thus the cap is provided with detents which engage the bead and projections which hold it in its applied position with sufficient firmness for its intended purpose, the cap then sealing the top of the container and protecting its mouth against contamination.

To remove the cap it is only necessary to rotate it on the bottle, the cap being formed of sufficiently pliable metal or other material to permit of such rotation without exerting undue effort. By such rotation of the cap, the sides of the projections 3 gradually remove the detents from the cap skirt, it usually being necessary to so rotate the cap only an angular amount equal to the spacing of the projections. The cap may then be used as a reclosure seal for the bottle to close its top, and further protect its mouth against contamination. Because the skirt is plain after it has been removed from the bottle, that fact shows that the bottle has been opened after being originally sealed.

As has been stated, cap 10 is preferably formed of thin pliable metal. The advantages of the invention may be fully attained by the use of metal of such thinness and pliability that it may be conformed readily to the projection on the container, and that, without the use of tools, the cap may be turned by hand on the container to obliterate the detents formed in it when applied to the container. By way of example, and not of limitation, it has been found that commercial sheet aluminum .0035 of an inch in thickness is suitable for forming the caps.

According to the provisions of the patent statutes, we have explained the principle and operation of our invention, and have illustrated and described what we consider to represent its best embodiment. However, we desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

We claim:

1. The combination with a bottle or like container provided with a peripheral annular bead adjoining its mouth, and with a plurality of spaced projections each merging at its top with the outer edge of said bead and from thence tapering laterally and downwardly to the surface of the container neck below said bead, of a closure cap formed of pliable material applied to the mouth of the container and having a skirt molded in position on the mouth of the container to engage said projections and the

lower portion of said bead by detents so formed in the skirt, whereby said cap may be loosened for removal and the detents of its skirt simultaneously obliterated by turning the cap angularly upon the container.

2. The combination with a bottle or like container provided with a peripheral annular bead adjoining its mouth, and with a plurality of spaced projections each merging at its top central portion with the outer edge of said bead and from thence tapering downwardly and laterally uniformly at each side to the surface of the container neck below said bead, of a closure cap formed of pliable material applied to the mouth of the container and having a skirt molded in position on the mouth of the container to engage said projections and the lower portion of said bead by detents so formed in the skirt, whereby said cap may be loosened for removal and the detents of its skirt simultaneously obliterated by turning the cap angularly upon the container.

3. The combination with a bottle or like container provided with a peripheral annular bead adjoining its mouth, and with a plurality of spaced projections each merging at its top central portion with the outer edge of said bead and from thence tapering downwardly and laterally uniformly at each side to the surface of the container neck below said bead, of a closure cap formed of thin pliable metal applied to the mouth of the container and having a continuous and uninterrupted skirt molded in position on the mouth of the container to engage said projections and the lower portion of said bead by detents so formed in the skirt, whereby said cap may be loosened for removal and the detents of its skirt simultaneously obliterated by turning the cap angularly upon the container.

4. In combination with a bottle neck having an annular bead and below the bead an annular series of bosses adjoining the bead, said series having substantially the same diameter as the bead, of a skirted cap of pliable metal placed on the bottle mouth and having its skirt pressed under the bead and shaped into conformity with the bosses to maintain the cap in sealing contact with said bead against accidental displacement but to permit the removal of the cap by manual rotation and consequent expansion of the depressed portions of the skirt to the diameter of the bead, whereby the cap can then be removed without collapsing or other substantial distortion thereof.

5. The combination with a bottle or like container provided with a peripheral annular bead adjoining its mouth, and with a projection merging at its top with the outer edge of said bead and from thence tapering laterally and downwardly to the surface of the container neck below said

bead, of a closure cap formed of pliable material applied to the mouth of the container and having a skirt molded in position on the mouth of the container to engage said
5 projection and the lower portion of said bead by detents so formed in the skirt, whereby said cap may be loosened for removal and the detents of its skirt simultaneously obliterated by turning the cap
10 angularly upon the container.

In testimony whereof, we sign our names.

JOHN E. SHARP.

RAYMOND W. NIVER.

15

20

25

30

35

40

45

50

55

60

65