

E. P. WETMORE.
SEALING CAP FOR BOTTLES.
APPLICATION FILED NOV. 5, 1908.

954,405.

Patented Apr. 5, 1910.

Fig. 1.

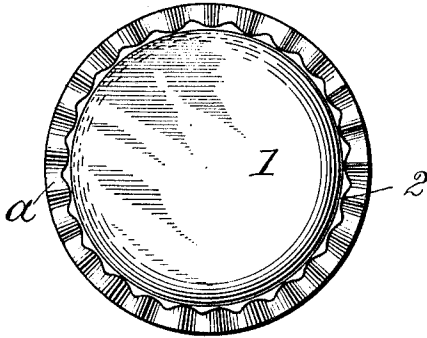


Fig. 3.

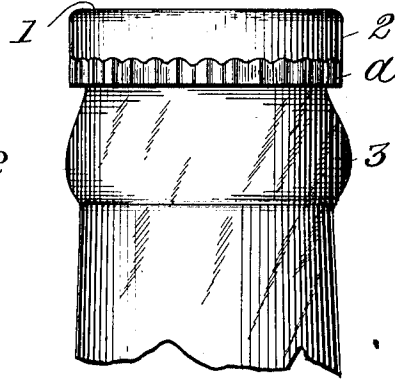


Fig. 2.



Fig. 5.

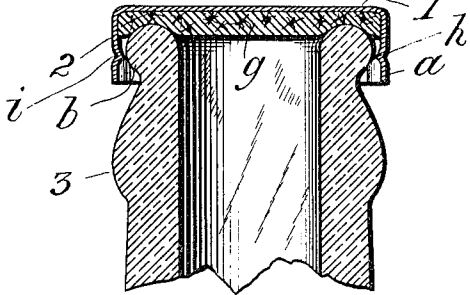


Fig. 4.

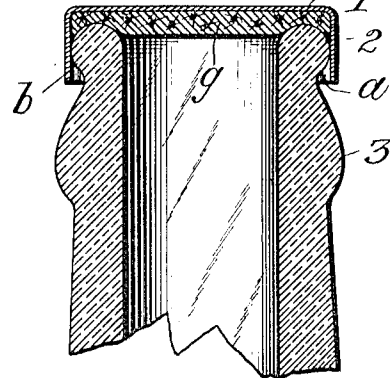


Fig. 6.

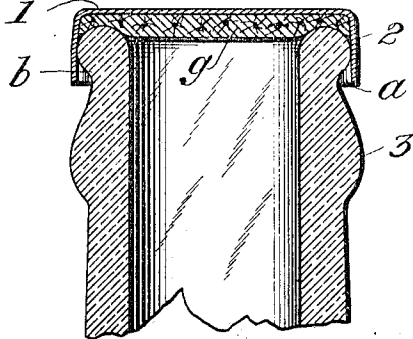
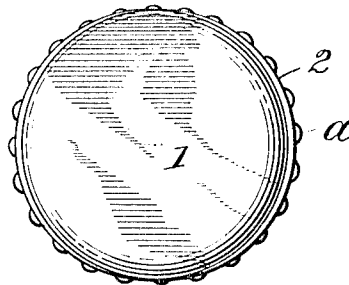


Fig. 7.



WITNESSES

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UNITED STATES PATENT OFFICE.

EARL PORTER WETMORE, OF NEW YORK, N. Y., ASSIGNOR TO STERLING CORK AND SEAL COMPANY, A CORPORATION OF DELAWARE.

SEALING-CAP FOR BOTTLES.

954,405.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed November 5, 1908. Serial No. 461,144.

To all whom it may concern:

Be it known that I, EARL PORTER WETMORE, of the city, county, and State of New York, have invented certain Improvements in Sealing-Caps for Bottles, of which the following is a specification.

This invention relates to an improvement in sealing caps having substantially the construction shown and described in Letters Patent No. 888,995 granted on the twenty sixth day of May, 1908, to Emory J. Godman, to which reference should be made. The sealing cap described in the said patent consists of a crown having a smooth cylindrical skirt which is provided at its edge with a horizontally extending corrugated flange; and the operation of affixing the cap to a bottle consists in indenting the skirt on a circular line which is above the corrugated flange and slightly below or partially underneath the locking shoulder of the bottle head. By an examination of the said sealing cap it will be seen that the skirt above the corrugated flange is flexible, while the flange due to the corrugations, is rigid, and it has been found that in any effort to turn down the horizontally extending flange, the skirt will bend at the junction of the flange with the smooth cylindrical portion of the cap above it, and the sharp annular corner formed at that point will be thrown inward and the skirt of the cap at that place reduced in diameter to a greater extent than the portion of the skirt immediately above it. This peculiarity discovered in experimentally turning down the corrugated flange, is availed of in the present invention to produce a more satisfactory closure of bottles without respect to variations in shape of their heads, or differences in diameter within a reasonable limit, as will hereinafter fully appear.

In the further description of the said invention which follows, reference is made to the accompanying drawings, forming a part hereof, and in which,—

Figure 1 is a top view of the sealing cap described in Patent No. 888,995, and Fig. 2 an exterior edge view of the same. Fig. 3 is an exterior side view of the sealing cap affixed to a bottle head of standard size, and Fig. 4 is a vertical central section of the same. Fig. 5 is a view similar to Fig. 4 except that the sealing cap is shown as affixed to a bottle head which is less in diameter than the

standard bottle. Fig. 6 is a view similar to Fig. 4 except that the bottle head to which the sealing cap is affixed, is larger in diameter than the standard bottle. Fig. 7 illustrates the top view of a sealing cap when secured to a bottle the head of which is not circular, but slightly elliptical in shape.

Referring now to Figs. 1 and 2 which illustrate the sealing cap described in Patent No. 888,995, 1 is the crown, 2 the skirt, and *a* the horizontally-extending corrugated flange at the edge of the skirt.

Referring now to Figs. 3 and 4 of the drawings the sealing cap is shown as affixed to a bottle head of standard size, and it will be seen that the horizontally extending flange *a* of the sealing cap has been drawn, bent or turned down, and the skirt and corrugated flange has become a cylindrical body with the underside of the corrugations of the flange situated under the shoulder *b* of the bottle head 3. This changed condition of the sealing cap is produced by the passage over it of the suitable capping tool.

In the bottle-sealing operation, a suitable sealing head is forced over the loosely capped bottle (or the bottle and cap are forced upwardly into the sealing head) thereby bending the corrugated flange *a* downwardly until its outer surface is substantially in the cylindrical plane of the skirt 2. The flange *a* is thus forced into a circle of less than its original diameter, and as the sealing head confines the cap therein, the surplus metal produced by this contraction of the flange is forced to flow inwardly, and the crests of the corrugation are thereby forced under and into locking engagement with the shoulder of the bottle. Owing to the corrugations on the flange, this flange is considerably stiffer than the metal in the skirt 2. The line *i* where the flange *a* joins this skirt forms, therefore the natural bending point, and in the capping operation, the bend will occur with substantial uniformity along this line. This forms the inwardly projecting ridge or edge *h* of Fig. 5. With bottles having heads of standard size, this edge largely disappears as the sealing cap compresses the outer crests of the corrugations inwardly. With bottles having heads slightly smaller than the standard, as shown in Fig. 5, this edge *h* contacts with the locking shoulder on the bottle, and affords a bearing or fulcrum

for the head to act upon in effecting the lock. Fig. 6 shows the locking flange expanded over a head of larger diameter than the standard. Fig. 7 illustrates the sealing cap on a bottle having a somewhat elliptical head. In such cases, the corrugations adjacent to the larger diameter of the head and cap project outwardly to a somewhat greater extent than those adjacent to the shorter diameter.

The provision of an initial bending line at the junction of portions of the cap which are of different degrees of stiffness, and then bending the locking flange on this line throughout the entire circumference of the cap, constitutes the important feature of my invention. In this manner, the bend, instead of being across the corrugations, and along a line of unequal resistance, occurs at the inner end of the corrugations and along a line of substantially uniform resistance. There is therefore no distortion of the locking flange due to an attempt to bend across the corrugations; but the distortion is wholly that which is due to the crowding of the metal of the flange into a smaller diameter, and which is utilized to force the corrugations inwardly into locking engagement with the shoulder of the bottle. This results in such a close fitting of the cap to the bottle head at all points as to prevent leakage. The bearing edge *h* also forms such close contact with the bottle as to effectually exclude small insects from crawling up through the corrugations and attacking the cork gasket *g*, a difficulty which has proven a serious one in southern countries with other forms of caps. The bending line of substantially uniform resistance also enables the flange *a* to stretch to adapt itself to irregular bottle heads (as shown in Fig. 7,

for instance) in a manner which is not possible with a bend made across the corrugations. By this method of bending, comparatively little inward radial pressure is required. This obviates to a very large degree the breakage of the bottles, which has occurred with the methods heretofore employed. It also permits of the application of the invention to other vessels besides bottles; that is to say, vessels such as fruit jars, jelly glasses, and like vessels having mouths of relatively large diameters.

I claim as my invention,—

1. A bottle or other vessel having a head provided with a locking shoulder, and a sealing cap, said cap comprising a crown, a skirt, and a continuously corrugated locking flange forming an extension of the skirt, said flange being bent downwardly on a line forming the junction between the skirt and flange, with the corrugations of the flange forced inwardly underneath said shoulder; substantially as described.

2. A bottle or other vessel having a head provided with a locking shoulder, and a sealing cap, said cap comprising a crown, a skirt, and a continuously corrugated locking flange, the flange, in its locking position, forming a substantially vertical extension of the skirt, said flange being circumferentially compressed into a diameter less than its original diameter by bending downwardly on a line at the inner ends of the corrugations, whereby the latter are contracted and forced into locking engagement with said shoulder; substantially as described.

EARL PORTER WETMORE.

Witnesses:

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