

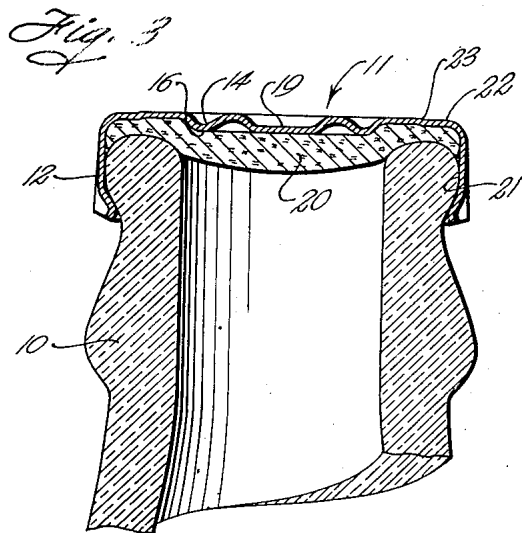
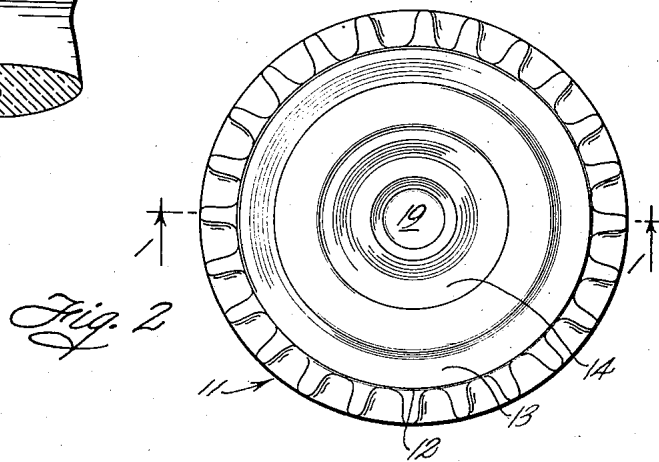
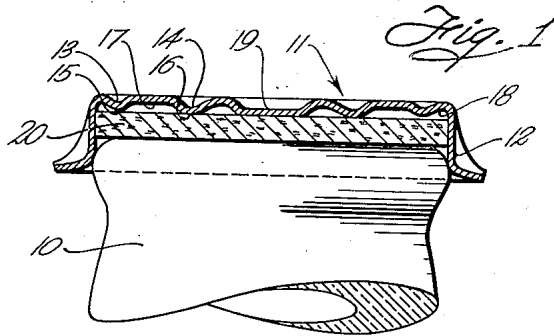
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BOTTLE CAP

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2,233,904

BOTTLE CAP

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3 Claims. (Cl. 215—39)

This invention relates to improvements in bottle caps.

5 An object of the invention is to provide an improved bottle cap for use on conventionally shaped or conventionally formed bottle mouths wherein the cap is of such design that it may be readily applied to the bottles by means of conventional bottle capping machines, the cap being advantageous in that it forms and maintains a superior
10 seal with the bottle mouth.

Bottles that are now generally used to market various liquid and semi-liquid substances, such as for example soda water, beer, wines, catsup, and the like, now have their mouths of a standardized shape and size. The cap that is generally used on such bottles usually has a crimped flange or side and a flat top. On the underside of the flat top there is a fabricated cork lining which is held firmly against the top of the bottle
15 when the crimped sides are drawn against the sides of the bottle mouth by means of the conventional bottle capping machine. Where the top of the cap is flat it transmits a distributed pressure to the lining so that the pressure with which the cork lining is forced against the bottle mouth is widely distributed. If the contents of the bottle is under pressure as in the case of soda water, beer, and the like, the distributed pressure applied to the lining of the cap is insufficient to maintain the requisite seal to prevent the escape of pressure within the bottle.
20 This results in a substantial percentage of bottles having their contents spoil or turn "flat."

An object of the present invention is to provide an improved bottle cap wherein the pressure applied to the lining by the cap is largely localized by means of two concentric beads formed by corrugations on the cap. In this way, the pressure transmitted through the lining instead
25 of being a widely distributed pressure, is largely localized on two concentric lines, the inner line forming a first or primary seal and the outer line providing a secondary seal. Consequently, with the cap of the present design danger of the contents of the bottle spilling or turning "flat" is greatly reduced.

Another object of the invention is to provide a cap which not only possesses superior sealing characteristics, but which is of such design that
30 it may be fed through the conventional bottle capping machine, and in addition, it may have applied thereto the printing or advertising matter that is now painted or lithographed on the conventional bottle cap.

35 With the foregoing and other objects in view,

which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawing for an illustrative embodiment of the invention, wherein:

Figure 1 is a view in side elevation of a bottle mouth on an enlarged scale illustrating the cap in vertical section in its initial condition wherein it is about to be applied to the bottle mouth;

Fig. 2 is a top plan view of the improved cap; and

Fig. 3 is a sectional view through a bottle mouth illustrating the improved cap in vertical section and in its final condition after having been applied to the bottle mouth.

Referring to the accompanying drawing wherein similar reference characters designate similar parts throughout, 10 indicates the mouth of a conventional soda water bottle or beer bottle. Inasmuch as the size and shape of the mouths
15 of these bottles has now been generally standardized, no detailed description of the bottle mouth need be made herein. It will be understood, however, that the improved cap has been designed to be applied to the conventional bottle mouth so that no special construction of bottle is required in order to secure the advantages of the present invention.

The cap is stamped out of sheet metal of approximately the conventional thickness and other characteristics and has a top generally designated at 11 and the conventional crimped sides or flange 12. The top of the cap, however, is not flat as is the case with a conventional cap, but instead has two continuous concentric corrugations 13 and 14 formed therein which form continuous concentric beads 15 and 16 on the underside of the cap. The outer bead 15 is spaced inwardly a short distance from the side or flange 12 so as to be arranged just outwardly of the center of the wall thickness of the bottle at the bottle mouth. The inner bead 16 is arranged somewhat inwardly of the inner corner of the bottle mouth. The metal between the two corrugations 13 and 14 is arranged in a plane somewhat above the bottom surface of the beads 15 and 16, this metal being indicated at 17. Likewise, in the cap as originally formed, the metal 18 which is outwardly of the outer bead is disposed above the bottom surface of bead 15. In the center of the cap there is a depressed portion indicated at 19, the bottom surface of which is approximately horizontally even with or flush with the bottom surface of the inner bead 16. The bottom surface of this depressed portion constitutes

an attaching surface for a fabricated cork lining 20. This cork lining is glued or cemented to the attaching surface formed by the depressed center portion 19 of the top of the cap. If desired, the lining may also be glued or attached to the bead 16 but attachment at this point is unnecessary. It is advantageous to cement the lining 20 to the attaching surface of the depressed portion 19 so as to hold the lining and cap together as they pass through the bottle capping machine prior to the cap being applied to the bottle.

When the cap is applied to the bottle mouth the conventional bottle capping machine draws the crimped sides 12 underneath the lip 21 and in so doing the metal at 18 is drawn downwardly or flattened as indicated at 22. Just prior to the drawing of the metal adjacent the edge of the cap the cork lining is positioned on the bottle mouth and the inner bead 16 tends to force it against the inner corner of the bottle mouth. As the cap is drawn tight inasmuch as the outer bead 15 is slightly above the inner bead 16 there is a slight delay in the outer bead engaging the cork lining affording the edge of the lining an opportunity to be drawn or squeezed outwardly over the edge of the bottle mouth. The outer bead 15 then engages the lining and the metal 18 is drawn downwardly or flattened. Some of the outer corrugation 13 is not entirely destroyed but still remains on the cap as indicated at 23. The pressure exerted on the lining by the flattening of the corrugation causes an outer line or circle of localized pressure to be continued to be exerted through the lining of the bottle mouth. The inner bead 16 is hardly deformed to any extent whatsoever during the application of the cap and is effective to transmit an inner localized line or circle of pressure through the lining to the inner corner of the bottle mouth forming a primary seal. Thus, with two concentric lines or circles of localized pressure double seals are formed and the danger of gas pressure escaping from the interior of the bottle is reduced to a minimum.

It is manifest that in order to gain the advantages of the double seals that the lining 20 cannot be too thick. If made quite thick the effect of the two beads 15 and 16 is somewhat loosened therein and becomes a distributed or dissipated pressure which approaches in its effect the distributed pressure exerted on the lining by the conventional flat-topped cap. The fabricated cork lining that I prefer to employ does not exceed one-tenth of an inch in thickness so that the pressures transmitted therethrough by the bead 16 and what is left of bead 15 following application will be in the nature of localized rings of pressure as distinguished from distributed areas of pressure.

From the above-described construction of bottle cap it will be appreciated that the design of

the cap is such that it can be fed through the conventional bottle capping machine and applied to the conventional bottle "ground." Furthermore, although there are corrugations or depressions formed on the top surface of the cap, these are not such as to interfere with the application of or the reading of any printing or advertising matter that it may be desired to apply to the top surface of the cap.

Various changes may be made in the details of construction without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. A bottle cap having a top and crimped sides, the top having two concentric corrugations formed thereon forming concentric beads on the underside of the cap which project downwardly below the metal of the cap therebetween, the inner bead being arranged to compress a lining tightly against the inner edge of a bottle mouth, and the outer bead being arranged to compress a lining tightly against the bottle mouth adjacent the outer edge thereof, the metal of the cap between the sides and the outer bead being initially above the bottom of the outer bead but being adapted to be flattened or forced downwardly from such elevated position on applying the cap to a bottle, the top of the cap having a depressed inner portion within the inner corrugation providing a gluing or cementing surface for attaching the lining thereto, said surface being approximately flush with the bottoms of the beads.

2. A bottle cap having a top and crimped sides, said top having a depressed inner portion adjacent the center thereof providing on its underside an attaching surface for attaching a lining thereto, there being two concentric corrugations formed in the cap about said depressed inner portion forming beads on the underside of the cap approximately even with the attaching surface, the metal of the cap between the beads and outwardly of the outer bead being initially disposed above the beads.

3. A bottle cap having a top and crimped sides, said top having a depressed inner portion adjacent the center thereof providing on its underside an attaching surface for attaching a lining thereto, there being two concentric corrugations formed in the cap about said depressed inner portion forming beads on the underside of the cap approximately even with the attaching surface, the metal of the cap between the beads and outwardly of the outer bead being initially disposed above the beads, but the metal outwardly of the outer bead being adapted to be forced downwardly or flattened on applying the cap to a bottle.

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