

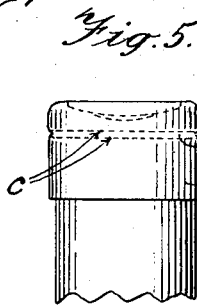
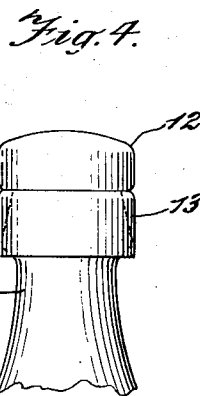
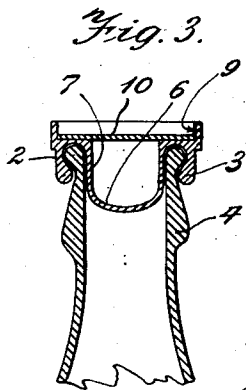
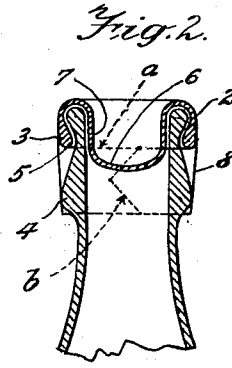
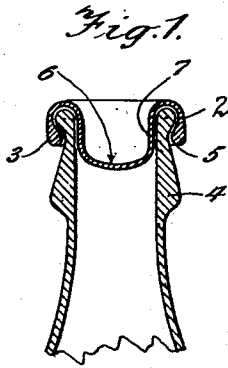
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CONTAINER SEALING MEANS

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CONTAINER SEALING MEANS

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6 Claims. (Cl. 215-41)

This invention relates to container sealing means or cap-seals applicable to bottles, jars and other containers, particularly those having an aperture defined by an annular wall.

Objects of the invention include the provision of a sealing means or cap which is easy and cheap to manufacture from various flexible sheet materials including plastics which are neutral, odorless and tasteless, may be readily and quickly applied to and removed from the container by manual or mechanical means, and provides an efficient liquid- and vapor-tight seal without requiring the exertion of considerable stress. Another object is to provide such a cap with a tamper-proof means.

A more specific object lies in the provision of such a cap-seal which is so conformed that, upon its application to a container, the increased pressure prevailing in the container as a result of the application of the seal, will be effective to force the seal into tight engagement with the container.

Essentially, the cap-seal may comprise a coaxial pair of spaced, inner and outer, annular skirt portions interconnected at one end by a transversely extending annular portion and so conformed, proportioned and spaced that the seal may be snugly yet freely fitted over the neck or the like of the container with said transverse annular portion applied against the outer end surface of said neck and with said neck enclosed between said spaced skirts, and that the increased pressure which prevails within the container as a result of this application of the seal thereto will act to spread out and apply said inner skirt against the inner wall of the neck, and at the same time apply said outer skirt into tight engagement with the outer surface of the neck.

In a preferred embodiment the seal may be formed from an integral blank which is centrally dished to provide an inwardly projecting cuplike part the vertical side walls of which will provide the above-mentioned inner skirt adapted to be applied against the inner periphery of the neck, while a peripheral part of the blank is formed with a flange extending in parallel spaced relation with said vertical wall of the central dished part so as to provide the outer skirt adapted to be applied against the outer neck periphery, said central cuplike part being provided with certain characteristics as to shape and thickness, to be defined later, such that the previously-mentioned pressure increase in the container resulting from the application of the seal will cause the container neck to be tightly clamped between the inner and outer skirts of the seal, the former being spread out and the latter closed in against said neck.

The above and further objects, features and advantages of the invention will appear from the ensuing disclosure, relating to some specific embodiments thereof given by way of indication and not of limitation with reference to the accompanying drawings, wherein:

Fig. 1 is an axial cross-section of the neck of a bottle having my improved sealing means applied thereto;

Fig. 2 is a corresponding view of a similar sealing means further provided with a tamper-proof appendage;

Fig. 3 is a corresponding view of a slightly modified embodiment provided with a different form of tamper-proof means;

Fig. 4 is a view in elevation of a seal according to the invention including an outer cover;

Fig. 5 is a view in elevation of another embodiment of a seal with a tamper-proof appendage.

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As shown in the drawings, a sealing means according to the invention essentially comprises an outer skirt 2 provided at the bottom or free end with an inwardly projecting bead 3, the neck 4 of the bottle to be sealed being assumed to be formed with a complementary annular groove 5. The central part of the seal is dished to form a cuplike part 6 having a diameter such that the bottle-neck 4 can be inserted in an easy sliding fit between the outer skirt 2 and the inner skirt or vertical wall 7 of the cuplike part. The bottom of the cuplike part 6 is convex as shown and it preferably gradually decreases in thickness from its periphery to its centre.

It will be understood that, as the seal is applied to the bottle, the pressure of air or gas entrapped and compressed between the bottom of the part 6 and the liquid level in the container neck 4 will cause a distortion of said part 6, its bottom being flattened out sometimes to the point of becoming concave, whereby its side wall 7 forming the inner skirt of the seal is forced out and applied against the inner wall of the neck in tight sealing relationship therewith. Simultaneously this distortion causes the outer flange or skirt 2 to close in and its bead 3 is applied into and against the annular groove 5 in the outer wall of the neck 4 forming another tight seal at this point. The neck is thus tightly clamped between the two skirts 2 and 7 of the seal. The effect would be similar if the outer surface of the bottleneck were smooth rather than being formed with the groove 5, the bead 3 of the flange 2 then being omitted.

To prevent the possibility of the seal being removed by an unauthorized person without being destroyed and thus to avert the possibility of the contents of the container being tampered with, my invention provides for various arrangements now to be described.

Thus, as shown in Fig. 2, the outer skirt 2 may be extended downwardly by an integral band or extension 8 which may be made of a similar material as the seal itself but much thinner gauge, and in which weakened lines are provided as indicated for instance by the stippled lines *a* and *b*. Thus removal of the seal from the bottleneck 4 will necessarily require and/or cause the band 8 to be torn.

Alternatively as shown in Fig. 3, a circumferential chamfer 9 may be machined in the top transverse annular portion which interconnects the inner and outer skirts, this portion being in this case provided considerably heavier, as shown. Crimped in this chamfer 9 after the seal has been finally affixed to the container is a very thin circular diaphragm 10 which will be necessarily broken upon removal of the seal from the bottleneck. Rather than being crimped in a circumferential chamfer as shown, the guarantee diaphragm 10 may of course be directly spun in the cuplike part 6 of the seal.

To improve the seal's outer appearance, it may as shown in Fig. 4 have placed over it an outer cover or cap 12 adapted at the same time to fit over the top of the neck 4 of the bottle. The cover 12 may be provided with a tamperproof extension or band 13 similar to the extension 8 shown in Fig. 2, molded integrally with or secured to the cover 12.

Fig. 5 shows a cap-seal according to any of the foregoing embodiments provided with a tamperproof band 15 somewhat similar to the band 8 of Fig. 2, but which comprises only a small removable annular area 16 defined by the circumferential lines *c* which may constitute stippled or chequered areas or the like. Thus, after the seal has been removed, the major part of the tamperproof band or cover may be retained, thus improving the appearance of the bottle-sealing means.

It will be understood that various modifications and departures may be made in and from the details illustrated and described without exceeding the scope of the invention as defined in the appended claims. The shape and depth of the cuplike part 6 may be greatly varied. So may the materials used in manufacturing the seal.

What I claim is:

1. A permanently resilient and flexible capseal for a container having an opening defined by an annular

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wall, said capseal being formed from an integral blank and exhibiting its said resilient and flexible character at room temperature, said capseal comprising a coaxial pair of spaced inner and outer annular skirt portions adapted to enclose said annular wall therebetween, said outer skirt portion being shorter in length than the inner skirt portion and having an inwardly projecting thickened beaded portion at its free edge, a transversely curved end portion interconnecting said skirt portions at the upper ends thereof and forming an annular channel U-shaped in cross-section, which is adapted to seat on the top of said annular container wall, a downwardly convex cuplike sealing portion extending from the lower part of the inner skirt portion, said downwardly convex cuplike portion tapering in thickness from its periphery to its center and being adapted as a result of upward pressure from within the container to flatten and thereby move a portion of the inner skirt outwardly to form a tighter seal against the container wall.

2. A capseal according to claim 1 which includes a tamper-proof element integral with said capseal.

3. A capseal according to claim 2 wherein said tamper-proof element is a band integral with the outer skirt portion and extends downwardly therefrom, said band being divided from the outer skirt portion by a weakened line along which the band is separable from said outer skirt portion, and said capseal, after removal of said band, being reusable as a capseal in the manner recited above.

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4. A capseal according to claim 2 wherein said tamper-proof element comprises a thin diaphragm extending across the upper end of the capseal.

5. A capseal according to claim 1 which includes a cover for said capseal and a tamper-proof separable band integrally secured to said cover and extending downwardly therefrom.

6. A capseal according to claim 5 wherein said tamper-proof band engages the outer side of the container wall and is attached to the cover through a circular strip, said strip being removable to permit removal of the cover while permitting the band to remain on said container wall.

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