Jan. 14, 1941. W. J. VOLKMANN 2,228,542

BOTTLE CAP SEAL

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Fig. 1.

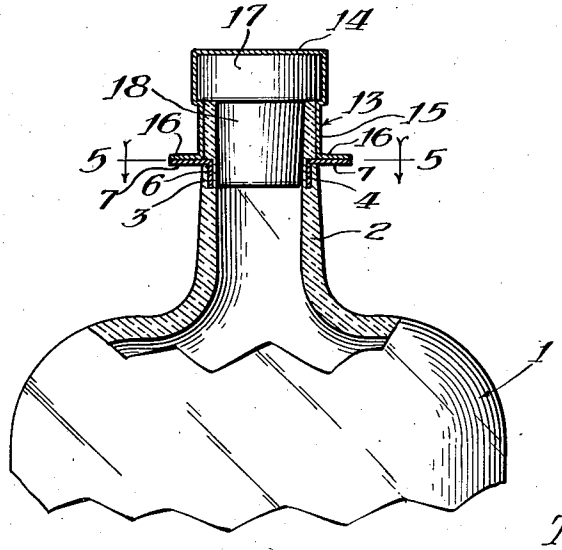


Fig. 4.

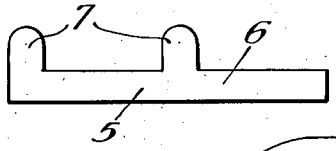


Fig. 2.

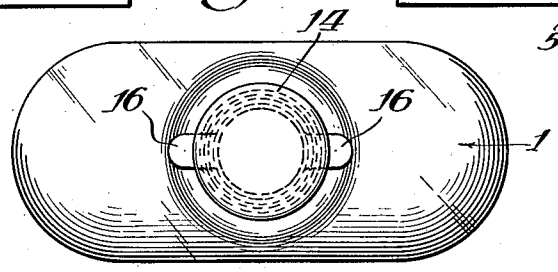


Fig. 7.

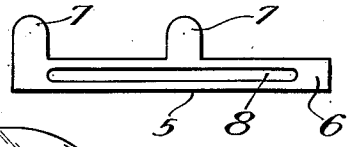


Fig. 5.

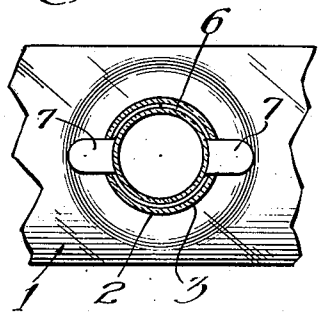


Fig. 3.

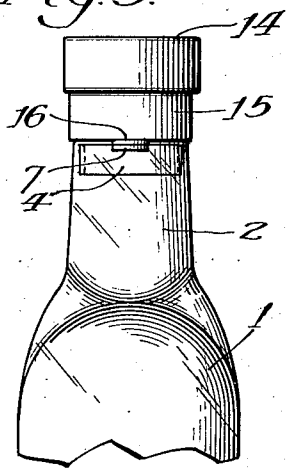
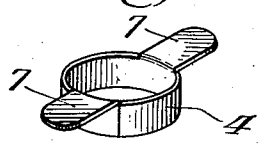


Fig. 6.



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Fig. 8.

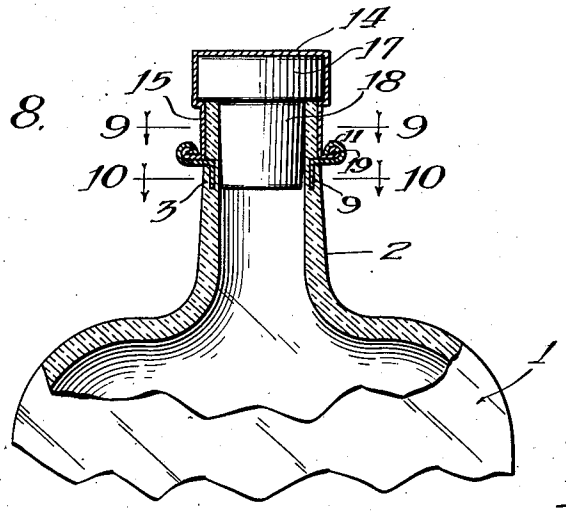


Fig. 14.

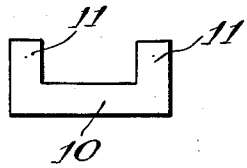


Fig. 12.

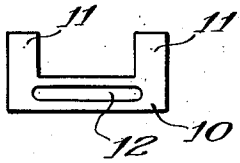


Fig. 9.

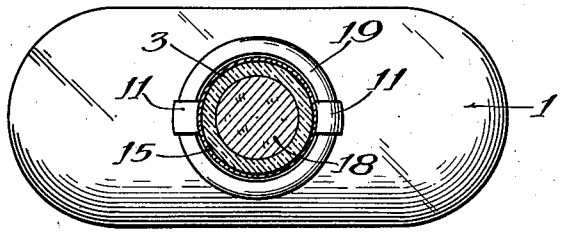


Fig. 13.

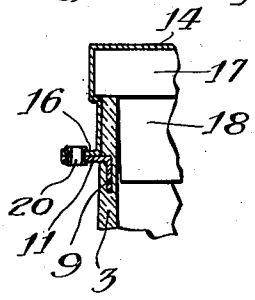


Fig. 10.

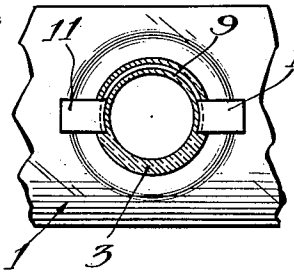
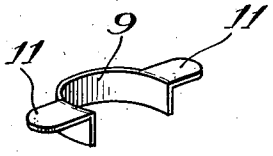


Fig. 11



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Fig. 15.

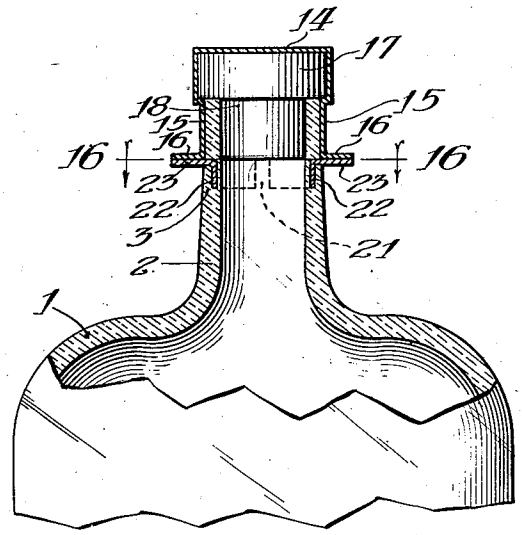


Fig. 17.

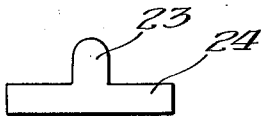


Fig. 19.

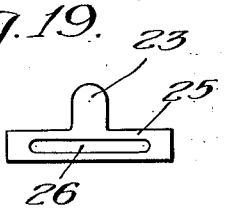


Fig. 16.

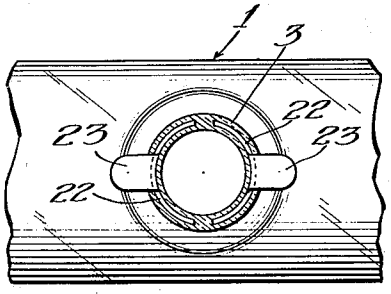
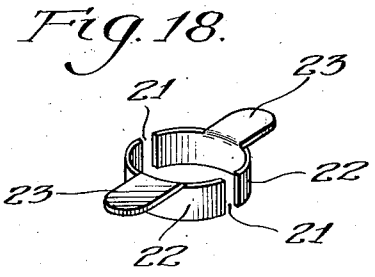


Fig. 18.



Inventor:
Walter J. Volkmann

Patented Jan. 14, 1941 2,228,542

UNITED STATES PATENT OFFICE

2,228,542

BOTTLE CAP SEAL

Walter J. Volkmann, Chicago, Ill.

Application May 26, 1937, Serial No. 144,887

7 Claims. (Cl. 215—83)

This invention relates to bottle cap seals and has for its object to provide a seal which cannot be broken or removed to permit emptying the contents of the bottle without leaving a part of the seal permanently embedded in the wall of the neck of the bottle and without possibility of resealing, thereby providing an inescapable telltale of opening the bottle and thus tending to prevent tampering with its contents or refilling of the bottle.

In the drawings:

Figure 1 is a vertical front sectional elevation of a bottle of a conventional liquor flask type, provided with a cap seal constructed in accordance with the invention.

Fig. 2 is a top plan view of the bottle shown in Fig. 1.

Fig. 3 is a side elevation of said bottle.

Fig. 4 is a view showing the sealing ring member, hereinafter more fully described, in plan.

Fig. 5 is a horizontal sectional plan view taken on the line 5—5 of Fig. 1.

Fig. 6 is a perspective view showing the sealing ring member ready for incorporation in the neck of a bottle.

Fig. 7 is a plan view of a modified form of sealing ring member.

Fig. 8 is a view similar to Fig. 1, but showing an alternative means for connecting any of the forms of the sealing ring member to the bottle cap.

Fig. 9 is a horizontal sectional plan view taken on the line 9—9 of Fig. 8.

Fig. 10 is a fragmentary horizontal sectional plan view taken on the line 10—10 of Fig. 8.

Fig. 11 is a perspective view of a modified form of sealing ring member.

Fig. 12 is a plan view showing a perforate sealing ring member of the type shown in Fig. 11.

Fig. 13 is a fragmentary vertical sectional view of the neck portion of a bottle showing a further alternative means for connecting the sealing ring member to the bottle cap.

Fig. 14 is a plan view showing an imperforate sealing ring member of the type shown in Fig. 11.

Fig. 15 is a view similar to Fig. 1, but showing a further modified form of the sealing ring member.

Fig. 16 is a fragmentary horizontal sectional plan view taken on the line 16—16 of Fig. 15.

Fig. 17 is a plan view of an imperforate ring member of the form shown in Fig. 15.

Fig. 18 is a perspective of the same.

Fig. 19 is a plan view of a perforate ring member of the form shown in Fig. 15.

The bottle shown in the drawings, as illustrative of one practical application of the invention, may be made of glass or other suitable material and is of the conventional flat liquor flask type comprising the main body 1 which tapers at its upper portion into the neck 2. As shown, the neck 2 of the bottle is preferably formed smooth and uninterrupted in contour, and substantially cylindrical in its upper portion where the seal is applied.

In accord with the invention, the neck wall 3 is provided with a sealing ring member at the time the bottle is molded. This sealing ring member is formed of metal, preferably of sheet metal having substantially the same coefficient of expansion as the glass of which the bottle is formed, and of proper composition to withstand the heat developed in the wall of the bottle during the molding operation. A sealing ring member constituted of a complete ring 4 is shown in Figures 1 to 7 inclusive, in which the ring may be formed from a flat sheet metal blank 5, shown in Figure 4, of the required gauge or thickness and punched or stamped out to provide the main body 6 of the ring and the transverse or laterally projecting portions 7. When the blank is curved into ring form, these projections are circumferentially-spaced preferably at diametrically opposite points on the ring and bent outwardly so as to project laterally from these points. At a proper stage in the manufacture of the bottle, for example during the formation of the neck, the sealing ring is pre-molded, that is to say, permanently embedded circumferentially within the glass wall of the neck with the integral circumferentially-spaced portions 7 protruding laterally, as shown in Figures 1, 2 and 3, through the outer surface of said wall. The embedding of the ring in the wall of the bottle neck may be accomplished by suspending the ring in that part of the mold in which the neck is formed and allowing the molten glass to flow on and cover both sides of the ring. If desired, the flow of the glass may be facilitated by stamping the ring with a longitudinal perforation or slot 8, as shown in Figure 7.

In Figures 10, 11, 12 and 14, inclusive, the sealing ring member which is embedded in the wall of the bottle is of half-ring form 9. Figure 14 shows an imperforate blank 10 from which the half ring may be curved with the lateral projections 11 spaced circumferentially similarly to the projections 7 of the full-ring form and projecting through the outer surface of the neck in the same manner, as shown in Figure 10. Figure 12 shows

an adaptation of the half-ring form to a perforate sealing member and for this purpose is stamped with the longitudinal slot 12.

The neck 2 of a bottle, provided with an embedded sealing ring member, as above described, with the lateral projections 7 or 11 is thus equipped for permanent, non-resealable connection to capping means separately applied to the bottle neck after the bottle is filled. For this purpose, I prefer to employ a combined metal cap and cork. The cap 13 shown in Figures 1 to 3, inclusive, comprises an upper cap portion or top 14 of circular form to fit over the bottle mouth and having an integral depending cylindrical skirt 15 which embraces the upper portion of the bottle neck. At its bottom edge, the skirt 15 is formed with integral circumferentially-spaced laterally-projecting tabs 16 which correspond to and overlie the projections 7 of the sealing ring member, when the cap is applied to the bottle. After capping the bottle, the permanent, non-resealable connection between the cap tabs 16 and the sealing ring projections 7 may be accomplished by any suitable method or means as by spot-welding the lapped parts. The cork comprises an upper portion 17 of relatively greater diameter to fit within and be held by the cap top 14, and a lower depending portion 18 of relatively reduced diameter to enter and stopper the bottle mouth. The stoppering portion of the cork is preferably tapered downwardly to permit easy turning of the cap and cork relatively to the bottle neck.

In Figures 8 and 9, the lower edge of the cap skirt 15 is provided with an encircling flange 19 and, when the cap is applied, the under-lying portions 11 of the ring member 9 may be rolled over the cap flange, to provide the permanent, non-resealable connection. Figure 13 shows a further alternative form of connection, in which the cap tabs 16, similar to those of Figures 1 to 3, inclusive, are connected to the underlying ring portions 11 by eyelet fastenings 20 of well-known design.

Whatever the form of the cap, the seal may be broken by twisting the cap and cork on the bottle neck. This operation results in tearing the projections 7 or 11 of the sealing ring member away from the bottle neck at the points where they protrude, while leaving the main body of the sealing ring permanently embedded in the bottle neck, thus providing a certain indication of opening the bottle and preventing counterfeit re-sealing. In order to insure the severing or breaking of the tabs or projections adjacent to the neck of the bottle, they may be scored or notched in any well-known manner at such points to weaken the same. The tearing operation may be facilitated by forming the cap tabs or flanges of metal of heavier gauge than the ring projections.

The form of the invention shown in Figures 15 to 19 inclusive is especially adapted for use in certain forms of bottle molds. In these figures, the sealing ring member is split transversely at 21 to provide companion ring sections 22 having the laterally-protruding portions 23. The sections are embedded in the wall of the bottle neck in the manner hereinbefore described. Figure 17 shows a split ring section blank 24 of imperforate form; and Figure 19 shows a blank 25 of perforate form having the slot 26.

The invention as hereinbefore described may be variously embodied within the scope of the claims hereinafter made.

I claim as my invention:

1. A glass bottle seal comprising, a sealing ring member formed of metal having substantially the same coefficient of expansion as the glass of which the bottle is formed and pre-molded within the glass wall of the bottle neck, said ring member being permanently embedded circumferentially within said neck wall and having integral portions which protrude laterally through the outer surface of said wall, a metallic cap fitted over the bottle neck, said cap having a skirt encircling said neck formed with integral laterally-projecting tabs which overlie the projecting portions of said ring member, and means for permanently uniting said cap tabs and ring member projecting portions to provide a sealed engagement of said cap to the glass wall of said bottle neck.

2. A glass bottle seal comprising, a sealing ring member formed of metal having substantially the same coefficient of expansion as the glass of which the bottle is formed and pre-molded within the glass wall of the bottle neck, said ring member being permanently embedded circumferentially within said neck wall and having integral portions which protrude laterally through the outer surface of said wall, a metallic cap fitted over the bottle neck, said cap having a skirt encircling said neck formed with integral flanging which overlies the projecting portions of said ring member, and means for permanently uniting said cap flanging and ring member projecting portions to provide a sealed engagement of said cap to the glass wall of said bottle neck.

3. A glass bottle seal comprising, a sealing ring member formed of metal having substantially the same coefficient of expansion as the glass of which the bottle is formed and pre-molded within the glass wall of the bottle neck, said ring member being permanently embedded circumferentially within said neck wall and having integral portions which protrude laterally through the outer surface of said wall, and a metallic cap fitted over the bottle neck and permanently united to said ring member projecting portions, said cap being formed of heavier guage metal than said projecting portions whereby a twisting movement of said cap effects a destructive removal of said projecting portions from the bottle neck.

4. A glass bottle seal comprising, a cap fitted over the bottle neck, said cap having a skirt encircling said neck and rolled flanging formed at the lower edge of said skirt, and a metallic sealing member having a portion, the circumferential dimension of which is not greater than one-half the circumference of the bottle neck, permanently embedded within the glass of said neck wall lengthwise of the longitudinal major section thereof and having an integral extension protruding through the outer surface of said wall to the exterior thereof, said extension being rolled in engagement with the flanging of said cap, to provide a sealed connection between said metallic sealing member and said cap.

5. A glass bottle seal comprising, a cap fitted over the bottle neck, said cap having a skirt encircling said neck and rolled flanging formed at the lower edge of said skirt, individual metallic sealing members pre-molded within the glass wall of the bottle neck, said sealing members being oppositely disposed circumferentially of said wall and having portions, of which the circumferential dimension of each is not greater than one-half the circumference of the bottle neck, each permanently embedded within said neck wall lengthwise of the longitudinal major section thereof and having an integral extension protruding through the outer surface of said wall to the exterior thereof, the

extensions of said sealing members being individually rolled into permanent connection with the flanging of said cap.

6. A glass bottle seal comprising, a metallic sealing member having a portion, the circumferential dimension of which is not greater than one-half the circumference of the bottle neck, permanently anchored to the glass wall of said neck lengthwise of the longitudinal major section thereof and having an integral extension protruding exteriorly of said wall, and a cap fitted over the bottle neck, said cap having a skirt encircling said neck and flanging at the lower edge of said skirt rolled into inter-connection with said integral extension to provide a permanent joint between said extension and said cap.

7. A bottle seal for a molded bottle, comprising a metallic sealing member premolded circumferentially within the neck wall and having integral portions which project laterally beyond the outer surface of the wall, a cap fitted over the bottle neck having a skirt with integral laterally projecting portions which overlie the said projecting portions of the sealing member, and means for permanently uniting the skirt and sealing member projecting portions to provide a sealed engagement of said cap to the wall of the bottle neck.

WALTER J. VOLKMANN.