

G. KIRKEGAARD.  
BOTTLE STOPPER.  
APPLICATION FILED SEPT. 19, 1908.

922,779.

Patented May 25, 1909.

Fig. 1.

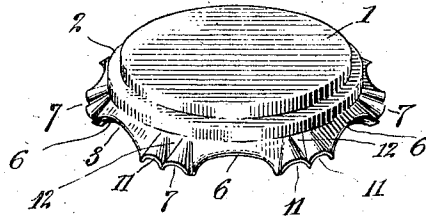


Fig. 2.

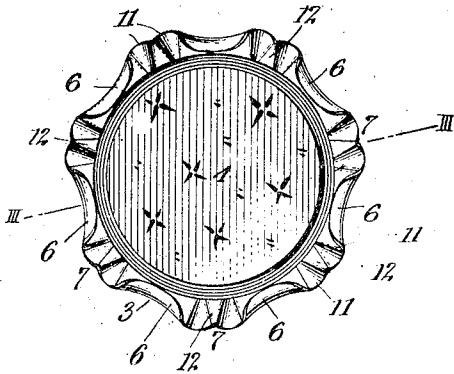


Fig. 3.

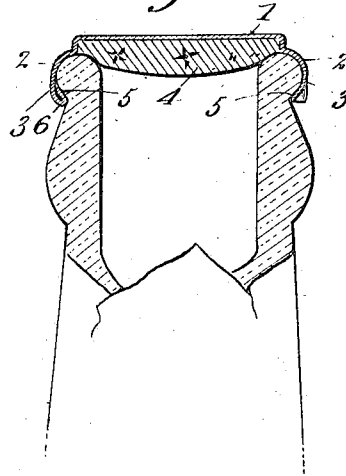
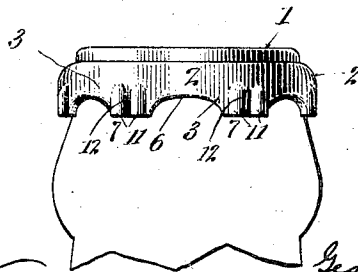


Fig. 4.



Witnesses:  
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Inventor  
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By his Attorneys  
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# UNITED STATES PATENT OFFICE.

GEORG KIRKEGAARD, OF NEW YORK, N. Y., ASSIGNOR TO IMPÉRIAL STOPPER COMPANY, A CORPORATION OF MAINE.

## BOTTLE-STOPPER.

No. 922,779.

Specification of Letters Patent.

Patented May 25, 1908.

Application filed September 19, 1908. Serial No. 453,779.

*To all whom it may concern:*

Be it known that I, GEORG KIRKEGAARD, a citizen of the United States, residing at the city of New York, in the borough of Brooklyn and State of New York, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a full, clear, and exact description.

This invention relates to stoppers for bottles, jars and similar receptacles, and is of that type which comprises a metallic cap with means for engaging an annular shoulder or bead on the exterior of the neck of the bottle to hold under compression a packing disk interposed between the mouth of the bottle and the cap.

The object of the invention is to provide means for holding the cap on the bottle against the internal pressure which for its sufficiency depends upon the shape or formation of the metallic portion of the cap rather than upon the stiffness or weight of the metal of which the cap is composed; thus a comparatively thin metal for the cap may be used, and a corresponding economy achieved in the manufacture thereof.

In some of its aspects the present invention is in the nature of an improvement on my prior patent, Number 889,137, dated May 26, 1908, and in other respects the present invention covers broadly new subject matter.

A particular feature of the present invention lies in the provision of vertical flutings of such a character that the cap will yield in being pried off a bottle neck instead of cracking off the usual glass bead; a result which might occur if the cap were formed into an absolutely unyielding flange beneath and around such bead. As will also later appear, these flutings provide an additional means of engagement between the cap and the bottle neck to hold the cap in place. The flutings also permit the cap to bend upon a transverse line across the top surface thereof when it is being removed from a bottle.

With these and various other objects in view my invention consists in the features of construction and combination as hereinafter set forth and claimed.

In the drawings: Figure 1 is a perspective view of a cap or stopper embodying the principles of my invention, before it is applied to a bottle. Fig. 2 is an underside view of the same. Fig. 3 is a vertical sectional view on the line III III of Fig. 2, showing the

cap applied to a bottle. Fig. 4 is a side view of the same.

The cap comprises essentially a disk 1, having integrally formed with it a depending wall 2, and flaring rim 3, depending from the vertical wall. The cap contains the usual disk of packing material 4, such as cork or paper, which is to be compressed against the mouth of the bottle to effect the seal.

The holding devices of the cap are formed upon the flaring rim 3. It is provided with a series of inwardly and upwardly bent lips 6, each being formed by bending a short length of the edge of the rim inward and upward on a curved line joining the edges of the rim at its ends, and leaving intermediate portions 7 of the rim which are adapted to be bent in a different manner. The lips 6 may be conveniently termed inturned reversely directed lips or inwardly directed reversely bent lips, in the sense that they are bent inward so as to lie closely parallel to the body of the flange 3, from which they are deflected. On account of the way in which the lips are bent on a curve rather than on a straight line or edge, they are virtually reinforced since they have a shape which combines the strength of an arch and a truss. In other words, the lips are crescent shaped, and merge into the edge of the flange 3 at their pointed extremities which are the logical point of anchorage of any truss or arch structure.

By the present invention I do not arrange the lips 6 closely adjacent to one another around the rim 3, but have them separated by an appreciable distance 7 in which the rim has vertical flutings or corrugations 11. In practice I have a pair of upwardly disposed flutings in the space between each pair of adjacent lips 6, there being also formed an inwardly directed protuberance 12 between the flutings 11.

When the cap is applied to the bottle, it is forced downward thereon until the cork is compressed so that the upper edge of the lips will fall within the zone of the bead or shoulder 5. Then by forcing the rim 3 inward as shown in Fig. 4, the upper jaws of the lips will be forced against the shoulder 5 and hold the cap on the bottle with the cork under compression. In this action the lips are very strong, mainly on account of the fact that each is a miniature truss or arch loaded at its middle and anchored at its ends,

as already referred to. Moreover the lips can only be made by drawing or compressing the metal somewhat, so that any reverse bending due to strains in use, must correspondingly produce a reverse drawing or compression of the metal itself, ordinarily requiring a great expenditure of force. The machine or tool for applying this cap to the bottle will be very simple since it will require only the plunger to press on the top of the cap and a simple ring pressed down on the outside of the vertical wall 2 and forced inward on the rim 3 to the position shown so as to form or bend the same into the relations shown in Figs. 3 and 4.

In the above action the flutings 11 with their intervening inwardly directing protuberances 12 take only a slight part, although the protuberances 12 engage the bead of the bottle neck and exert a holding connection in addition to that of the lips 6. The flutings 11 come into effect particularly, however, when the cap is removed, their form permitting the entire rim to expand slightly without actually stretching the metal, the expansion being accompanied by a slight straightening out of the bends of the corrugations. This prevents the bottle neck being cracked off below the usual bead when the cap is removed.

A feature of the present invention lies in the fact that an uneven number of the pairs of flutings or corrugations are provided around the rim of the cap. I have illustrated seven pairs of these flutings or corrugations although five would also be a

serviceable number. By having an odd number in this way it would be evident that there is always a line between the substantially opposite pairs of flutings which is slightly to one side of the directly diametral line, and on this line the cap bends upward slightly when it is engaged on one side by the usual cap removing tool. It is found in practice that the cap is removed more easily and expeditiously by having the material capable of bending in this way than if it is entirely rigid, or only capable of bending on a diametral line.

What I claim is:

1. A bottle-cap having a dependent circumferential rim with a plurality of intumed lips and intermediate fluted portions.

2. A bottle-cap having a dependent circumferential rim with intumed reversely directed lips bent on curved lines, and intermediate vertical flutings.

3. A bottle-cap having a dependent circumferential rim with inwardly directed reversely bent lips, said rim having a pair of vertical flutings between each pair of adjacent lips.

4. A bottle-cap having a dependent circumferential rim with an uneven number of inwardly directed reversely bent lips, said lips being separated by intervening flutings.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

GEORG KIRKEGAARD.

Witnesses:

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