

W. E. HEATH.
CLOSURE CAP AND THE LIKE.
APPLICATION FILED MAY 10, 1912.

1,170,152.

Patented Feb. 1, 1916.

Fig. 1.

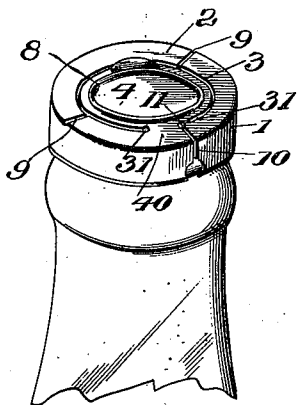


Fig. 2.

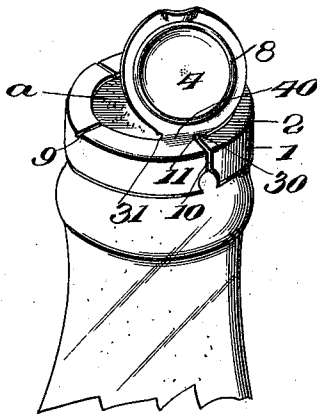


Fig. 3.

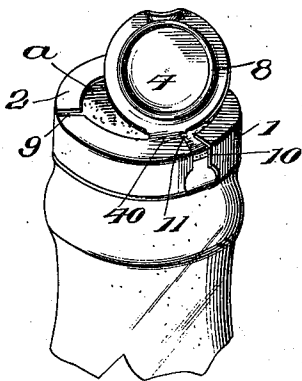


Fig. 4.

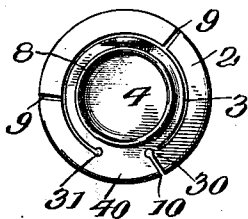


Fig. 5.

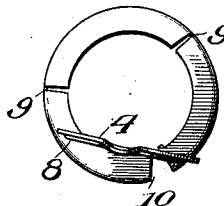
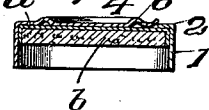


Fig. 6.



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CLOSURE-CAP AND THE LIKE.

1,170,152.

Specification of Letters Patent.

Patented Feb. 1, 1916.

Application filed May 10, 1912. Serial No. 696,511.

To all whom it may concern:

Be it known that I, WILLIAM ELISHA HEATH, a citizen of the United States, residing at Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Closure-Caps and the like; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in receptacle closures, and more particularly to closing caps of the type commonly known as bottle stoppers which embody means whereby the cap can be released and removed from the receptacle by the fingers without requiring the employment of an opener or other tool; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanation of the accompanying drawings illustrating what I now consider to be my preferred embodiment from among other formations and arrangements within the spirit and scope of my invention.

Heretofore bottle stoppers, or receptacle closing caps have been constructed with a depending flange adapted to be compressed or spun under the exterior shoulder of the bottle mouth to contract said flange or place the same under a tension in locking the cap to the bottle mouth, said flange being partially severed but held in contracted locked condition by the neck of a handle or finger piece cut from the cap top and normally arranged in the plane thereof, the arrangement being such that to release the cap it was necessary to bend the finger piece up and detach the same from the cap by severing or breaking said neck, thereby breaking the continuity of said flange and permitting the same to expand for removal from the bottle mouth. However, the handle or finger piece having been completely detached from the cap, it was often exceedingly awkward and difficult to remove the cap from the bottle mouth even after the same was thus broken and loosened by expansion.

It is an object of this invention to provide such caps with means and arrangements whereby the continuity of the flange or ring of the cap can be readily broken by the

handle or finger piece without detaching such handle from the cap whereby the handle forms an efficient medium by and through which the expanded or loosened cap can be readily and conveniently stripped from the bottle.

A further object of the invention is to provide a cap having a finger piece integral with its top, and with said top so formed that the connecting ligament holding the cap against spreading, is arranged directly in the line of the cut forming said finger piece, while the finger piece is otherwise secured and connected in the top, and serves as a lever for readily severing or breaking said ligament and without tearing or breaking the metal otherwise connecting the finger piece in the cap.

A further object of the invention is to produce a cap whose construction not only permits of its quick and rapid removal from the bottle mouth, but whose finger piece remaining integral with the top of the cap, serves both as a lever to break the connecting portion which holds the cap against spreading, as well as a handle, by which the cap may be lifted from the bottle after the connecting portion has been severed.

The invention consists in certain novel features in construction and in combinations and arrangements as more fully and particularly set forth hereinafter.

Referring to the accompanying drawings:—Figure 1, is a perspective view of the neck portion of a bottle closed by a cap embodying my present invention. Fig. 2, is a perspective view showing the finger piece swung up preparatory to twisting or exerting the lever action thereof to sever or break the cap connecting ligament. Fig. 3, is a perspective view showing said ligament broken and the cap expanded or loosened for removal. Fig. 4, is a top plan view of the cap as it appears in Fig. 1. Fig. 5, is a top plan of the cap as it appears in Fig. 3. Fig. 6, is a sectional view of the cap of Fig. 1.

In the example illustrated by the drawings, the cap of my invention is struck up, pressed, or otherwise formed, of suitable sheet metal with a depending annular flange 1, and a horizontal top flange 2, formed by the encircling cut 3, in the cap top that forms the handle or finger piece 4, the horizontal flange being divided by the

slots 9. This finger piece normally lies horizontally in the plane of the cap top occupying the central portion thereof. The cut 3, is not continuous or endless but its ends are spaced a distance apart so as to leave the neck or connecting portion 40, integral with the flange 2, and the finger piece 4, and arranged about radially of the cap top. This neck or connecting portion is of substantial width.

The depending flange of the cap is completely severed at one point by the cut 10, extending transversely thereacross and continued transversely of the cap top flange 2 in that portion thereof opposite the neck 40, so that the upper inner end of said cut 10, is located closely adjacent to one end of the cut 3, leaving the narrow ligament 30, between said upper end of the cut 10, and said adjacent end of cut 3. This narrow ligament forms the connection completing the circle or ring of the cap and holding the same and the flange 1, against expansion. The opposite end 31, of the cut 3, may be rounded and enlarged about as shown, and the upper inner end 11 of the cut 10, may also be enlarged and rounded about as shown. It will be observed that the cut 10, extends to a point immediately between the ends of the cut 3, and in the line or circle of said cut, so that the connecting ligament 30, is in the line of said cut 3, or in the line of a continuation of said cut; or in other words in the plane of said cut.

In practical use, the cap so far described, usually contains an inner imperforate sealing cap or disk *a*, containing or provided with a suitable sealing means as disk *b*, to compress on the bottle mouth as shown in Fig. 6. The cap of Fig. 1, is then usually applied to the bottle mouth under heavy pressure, or otherwise, and the lower edge of its flange 1, is then pressed, bent, or spun under the exterior shoulder of the bottle mouth to lock the cap in position and to contract or place the same under tension.

To release the cap, the finger piece, is bent up to about the position shown by Fig. 2, and is then slightly twisted or rocked to exert a lever action on the ligament 30, for breaking the same. The ligament is readily severed or broken by this twisting or lever movement of the finger piece, so that the parts will assume about the position shown by Fig. 3, with the finger piece remaining firmly attached to the cap through the medium of the connecting portion 40. As soon as the ligament 30, is broken or severed, the cap as a whole loosens or expands on the bottle mouth by reason of the slots 9, in the top horizontal flange 2, so that the same can be readily stripped or removed therefrom, through the medium of said finger piece. It will be noted that this finger piece remains positively attached to one end of the

broken or severed cap and that the cap can be thereby readily released from the bottle mouth by a stripping action beginning at said end to which the finger piece is attached.

The twist or movement of the finger piece necessary to break or sever the connecting ligament, is so slight that no substantial breaking or severing stress or strain is applied to the portion of the metal connecting the finger piece to the cap, and the avoidance of any tearing or severing strain on said portion 40, may be absolutely prevented by rounding or enlarging the ends 31 and 11, of the cuts 3 and 10, that form the boundaries of the connecting portion 40, although in commercial practice it may be found advantageous to eliminate these rounded portions to simplify the mechanical construction of the tools that produce the cap without sacrificing any of the advantages which the said rounded portions may possess; hence I do not care to limit myself to any particular mechanical construction of the cap in this particular.

In order to permit the finger piece 4, to move freely through the encircling cut 3, in the top horizontal flange, I preferably form said finger piece with a bead 8 located in close proximity to the edge of the finger piece, so that when the bead is stamped up into the finger piece it will draw the metal of the finger piece away from the edge of the cut 3, in the cap top, and thus allow the finger piece free movement through said cut; otherwise, the finger piece would bur and stick somewhat in its movement, and would not lie flush with the top of the horizontal flange, which would be objectionable when fastened on the bottle. Furthermore, by beading the top of the finger piece as outlined, the fingers are prevented from slipping in the act of manipulating the finger piece in the removal operation. Therefore, the beading of the finger piece performs a twofold result.

What I claim is;—

1. A stiff metal closure ring or cap composed of a vertical flange, a horizontal flange, and a finger piece partially severed from the horizontal flange by a circumferential cut, the horizontal flange having radial slits therein one of which is extended through the vertical flange, said last mentioned slit being separated from the circumferential cut forming the finger piece by a narrow strip of metal on one side and by a wide strip on the other side, whereby the twisting of the finger piece breaks the continuity of the horizontal flange and allows the cap to expand without separating the finger piece from the cap.

2. A stiff metal closure ring or cap composed of a finger piece partially severed therefrom, and integrally connected thereto

by a wide strip of metal on one side and by a narrow strip of metal on the other side, a vertical flange, and a horizontal flange, said horizontal flange having cuts therein to enable the cap to expand, said flanges having a cut extending completely therethrough except for said narrow strip of metal which maintains the continuity of the cap, whereby the bending of the finger piece severs said narrow strip of metal and breaks the continuity of the cap and allows the cap to expand without separating the finger piece from the cap.

3. A stiff metal closure ring or cap composed of a vertical flange, a horizontal flange, and a finger piece partially severed from the cap, said finger piece being integrally connected to the cap by a narrow strip of metal on one side of the finger piece and by a wide strip of metal on the other side, the horizontal flange having cuts therein one of which is extended through the vertical flange and is bridged by said narrow strip of metal to maintain the continuity of the cap, whereby the bending up and twisting of the finger piece severs said narrow strip and breaks the continuity of the cap and allows the cap to expand without separating the finger piece from the cap.

4. A stiff metal closure ring or cap composed of a vertical flange, a horizontal flange, and a finger piece partially severed from said cap and having a free end arranged in the horizontal plane of said horizontal flange, said finger piece being integrally connected to the cap by a narrow strip of metal on one side and a wide strip on the other side, the horizontal flange having cuts therein to render the same capable of expanding, one of said cuts extending through the vertical flange and being closed by said narrow strip of metal, whereby said narrow strip of metal is severed by bending up the

finger piece to break the continuity of the cap and allow the same to expand without separating the finger piece from the cap.

5. A stiff metal closure ring or cap composed of a vertical flange, a horizontal flange, and a finger piece partially severed from the cap and integrally connected to the horizontal flange by a narrow strip of metal on one side of said piece and by a wide strip on the other side, said horizontal flange having radial cuts therein one of which is extended through said vertical flange, said last mentioned cut being arranged between said strips, whereby the bending up of the finger piece breaks the continuity of the horizontal flange and allows the cap to expand without separating the finger piece from the cap.

6. A stiff metal closure ring or cap composed of a vertical flange, a horizontal flange, and a finger piece partially severed from the cap and having a free end arranged within the horizontal flange, said horizontal flange having cuts therein to enable the same to expand, said finger piece being integrally connected to said cap by a narrow strip of metal on one side and a wide strip on the other side of said piece, said cap at one side being cut completely through said flanges except for said narrow strip which maintains the continuity of the cap, whereby the bending up and twisting of the finger piece severs said narrow strip and breaks the continuity of the cap and allows the cap to expand without separating the finger piece from the cap.

In testimony whereof I affix my signature, in presence of two witnesses.

WILLIAM E. HEATH.

Witnesses:

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HENRY H. ANDREWS