No. 862,482. PATENTED AUG. 6, 1907.

J. V. HULL.

CLOSURE FOR BOTTLES, JARS, AND OTHER RECEPTACLES.

APPLICATION FILED DEC. 20, 1906.

Fig. 1.

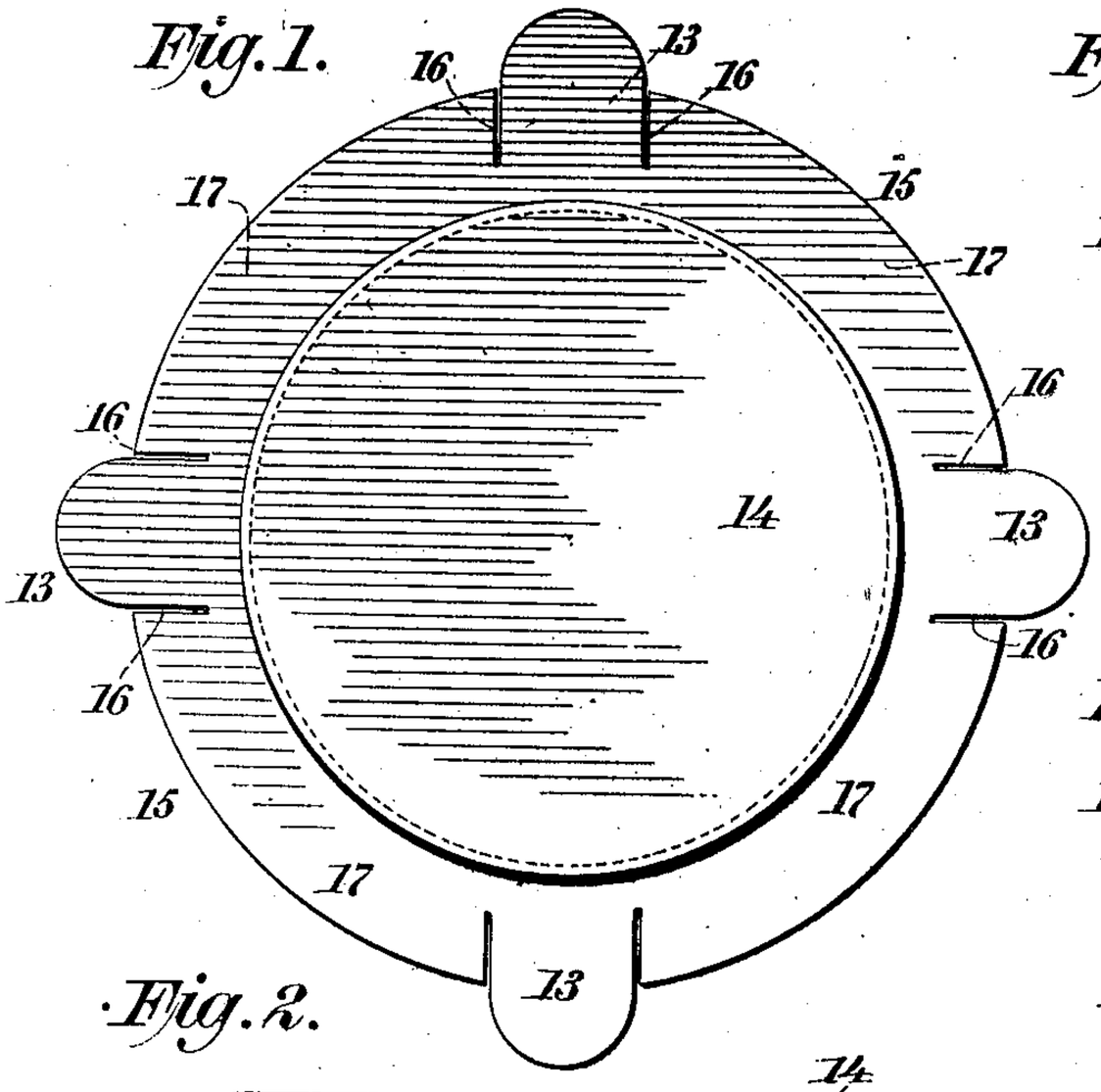


Fig. 2.

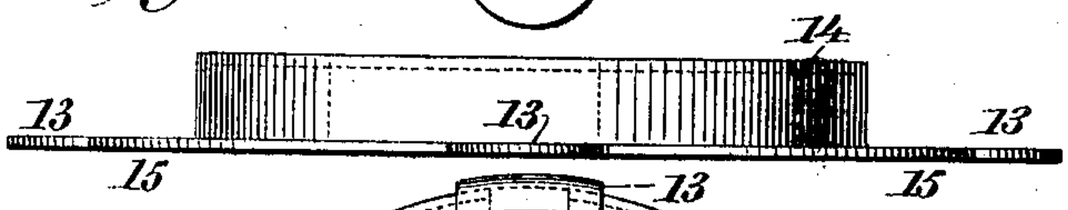


Fig. 3.

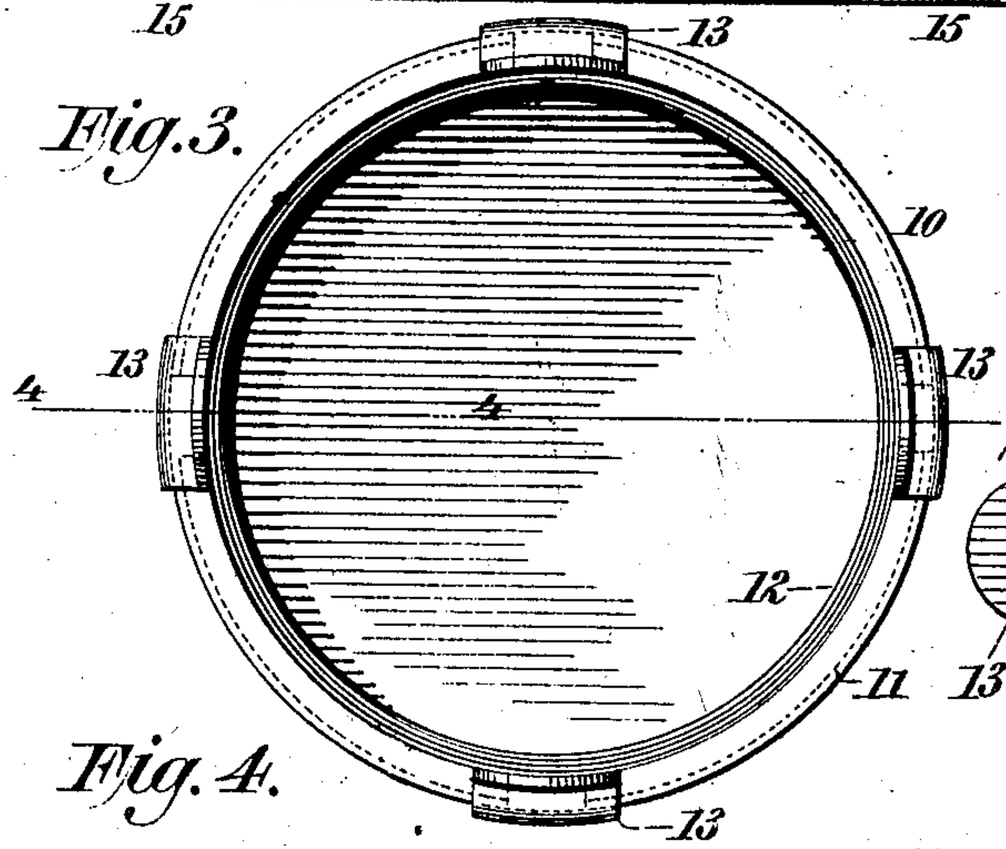


Fig. 4.

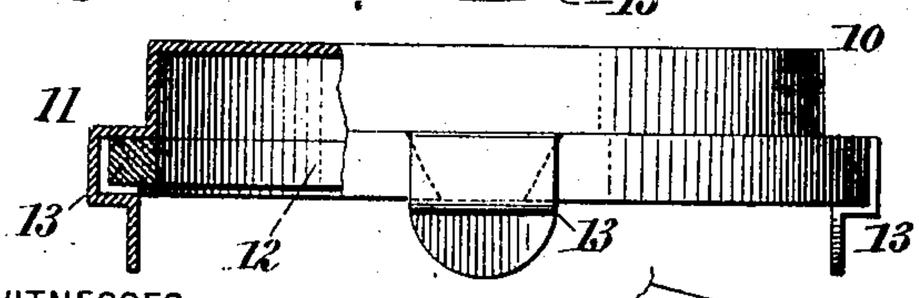


Fig. 5.

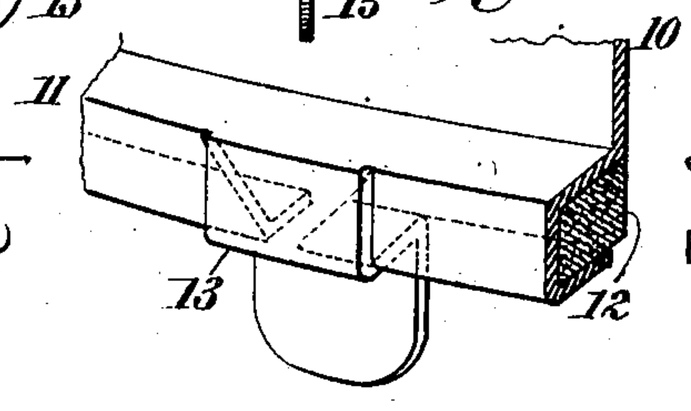


Fig. 6.

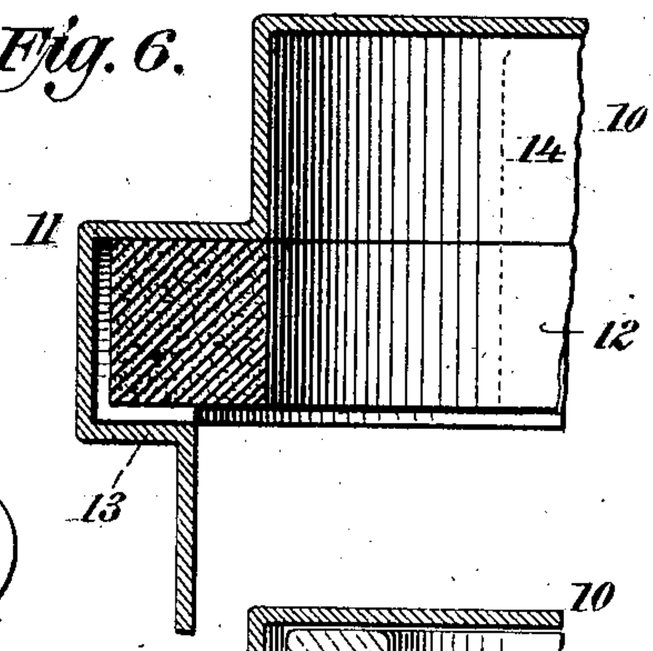


Fig. 7.

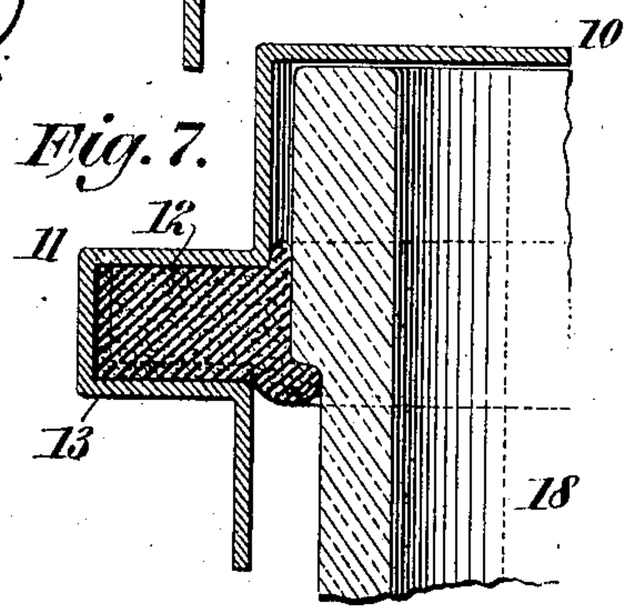
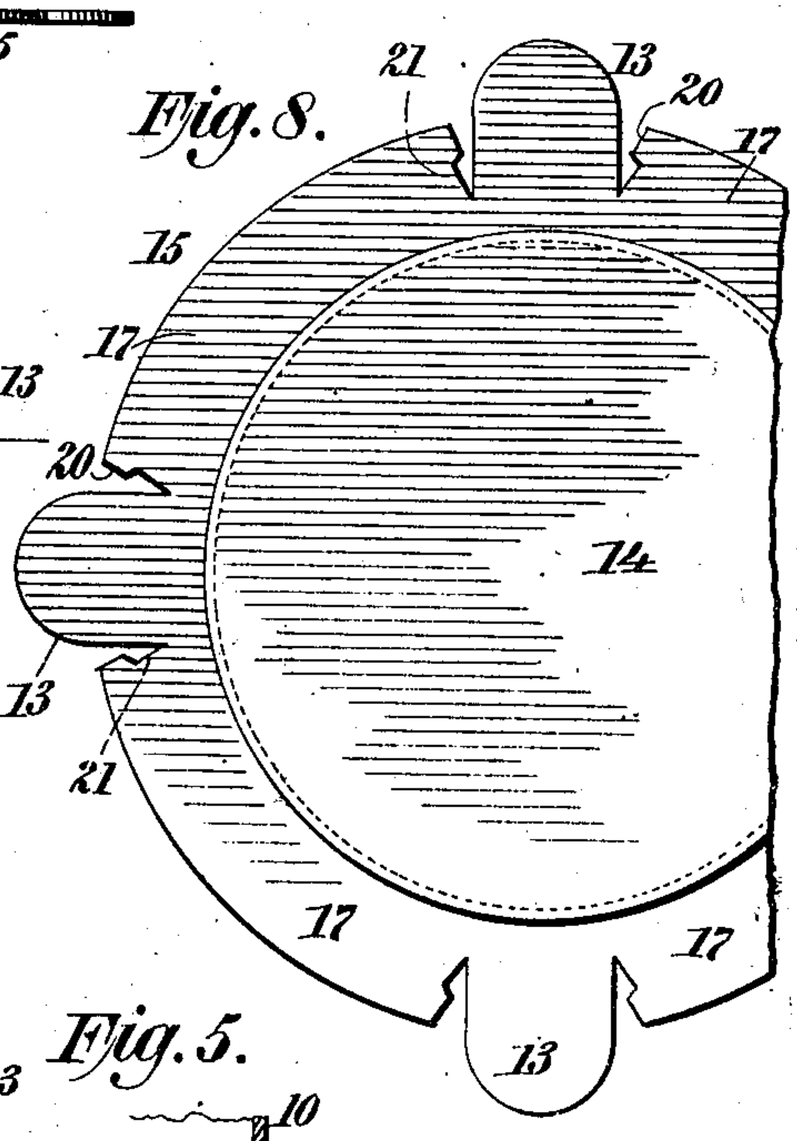


Fig. 8.



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CLOSURE FOR BOTTLES, JARS, AND OTHER RECEPTACLES.

No. 862,482. Specification of Letters Patent. Patented Aug. 6, 1907.

Application filed December 20, 1906. Serial No. 348,764

To all whom it may concern:

Be it known that I, JOSEPH V. HULL, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Closures for Bottles, Jars, and other Receptacles, of which the following is a specification.

The invention relates to improvements in closures for bottles, jars and other receptacles; and it consists in the novel features hereinafter described, and particularly pointed out in the claims.

The invention comprises an integral cap to be applied over the mouth of a bottle or the like and having at the lower edges of its sides an outwardly extending annular beading composed of segments to receive a ring of packing and which beading when reduced by vertical pressure to its final form, after the cap has been applied to the bottle, holds said packing-ring with the inner periphery thereof squeezed against the sides of the bottle-neck, whereby the sealing is effected. The blank from which the cap is formed is slitted to create tongues at several points in the beading, these tongues extending, in the finished cap, below the packing-ring and vertically along the sides of the beading to the top of said ring, and said tongues being of sufficient extent to permit projecting portions thereof to extend downwardly below the packing ring and beading and constitute finger pieces for facilitating the unsealing or loosening of the packing ring from its firm contact with the bottle-neck. When it is desired to unseal the bottle and remove the cap the tongues will be pulled outwardly in a direction from the bottle-neck and packing and thereby create spaces at the outer side of the beading on the cap into which the elastic packing may expand and thus release a part of its pressure from the bottle-neck, the cap in this way being sufficiently loosened to permit of its convenient removal.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which:

Figure 1 is a top view of the cap prior to the formation thereon of the beading which holds the packing; Fig. 2 is an edge view of same; Fig. 3 is a bottom view of same after the projecting flange surrounding the dome of the cap has been fashioned into the beading to receive the packing ring, the latter being also shown in position; Fig. 4 is an edge view of same, partly in section on the dotted line 4—4 of Fig. 3; Fig. 5 is a detached perspective view of a portion of the cap showing the relation of the tongue to the other portions of the beading after the cap is ready to be applied upon a bottle-neck; Fig. 6 is an enlarged vertical transverse section through a portion of the cap with the parts shown in their initial condition preparatory to being placed upon the neck of a bottle, the beading on the cap being shown as merely holding the backing-ring and as not having been reduced, by vertical pressure, to its final form for effecting, through the packing, the sealing of the bottle; Fig. 7 is a like view of same showing the relation of the parts after the cap has been applied upon a bottle-neck and the beading has been reduced by vertical pressure to its final form and the packing compressed and at its inner peripheral portions squeezed laterally against the bottle neck, a portion of the squeezed-out part of the packing being partly below and partly above a shoulder formed on said neck, and Fig. 8 is a top view of a modified form of cap, the difference between the construction shown in Fig. 1 and that illustrated in Fig. 8 referring merely to the formation of the slits creating the tongues.

In the drawings, 10 designates the cap, 11 the annular beading formed thereon, 12 the packing-ring held within said beading, and 13 the releasing-tongues. The initial condition and relation of the parts of the cap as the latter is prepared ready to be applied over the mouth of a bottle or the like is shown in Fig. 6, while Fig. 7 illustrates the cap in its final condition sealing the bottle.

The cap is formed from an integral blank of sheet metal which at first is pressed into the shape shown in Figs. 1 and 2, the dome 14 being thereby formed and provided at its lower edges with the horizontal encompassing flange 15, which is slit, as at 16, to divide the said flange into segments 17 and intermediate releasing-tongues 13. The outer ends of the tongues 13 extend outwardly beyond the outer edges of the segments 17 to finally form finger-pieces, and the slits 16 extend inwardly about two-thirds of the width of said segments, the purpose being that when the flange 15 is finally formed into the finished beading shown in Fig. 7, the said slits shall extend along the bottom and vertical sides of said beading and preferably not across the top of same.

After the formation shown in Fig. 1 has been prepared the outer portions of the segments 17 along a circular line about two-thirds inwardly from the outer edge of the flange 15 are bent downwardly, and the remaining portions of the segments are left horizonta to constitute the top of the beading 11. The tongues 13 are then bent downwardly, and thereupon the packing ring 12 is introduced to position within the walls formed by the horizontal top and vertical side portions of the segments 17, after which the lower edges of said segments and portions of said tongues are bent inwardly below the packing-ring to the position shown in Fig. 6, whereby the initial condition of the beading 11 is formed and the packing-ring becomes held in place. The packing is not however at this time compressed and its inner vertical edges are in line with the inner vertical walls of the dome of the

cap. In the initial condition of the beading 11, shown in Fig. 6, the lower inner edges of the then bent segments 17 do not extend inwardly to the inner vertical edges of the packing 12 but lie outwardly beyond the same and beyond the vertical plane of the sides of the dome 14. The segments 17 are first bent below the packing 12 and then the tongues 13 are folded inwardly, the folded portions of said tongues not contacting with the packing but with the lower surface of the flanges formed by bending the segments against the lower surface of the packing. The folding below the packing of the outer portions of the segments 17 results in the adjacent ends of said segments approaching each other, as shown in Fig. 5, this being due to the movement of the outer edges of the segments to define a smaller circle than their outline when they were in their flat shape shown in Fig. 1, and therefore when the outer portions of the segments 17 are folded below the packing 12 before the tongues 13 are thus folded, said tongues will lap upon the outer side of the adjoining ends of said segments both along the bottom and vertical sides of the beading 11.

The parts having been shaped and assembled, as shown in Fig. 6, the closure is ready to be applied to a bottle or the like, numbered 18, and receive further treatment for effecting the sealing.

After the closure has been placed upon the bottle the sealing will be effected by pressure applied vertically against the lower horizontal surfaces of the beading 11 and tongues 13, to compress the packing 12, while at the same time the top and sides of the dome 14 and the top and outer sides of the beading 11 are held within a closely fitting socket in the capping machine and prevented from expanding or becoming distorted outwardly, the effect of the vertical pressure against the lower horizontal surfaces of the beading and tongues being that the metal will be pressed upwardly and the packing compressed and said metal caused to move inwardly during the shortening in the height of the beading until it assumes the position shown in Fig. 7, in which it may be seen that the inner vertical edges of the bottom of the beading and the tongues 13 have been forced inwardly until they are about in line with the vertical plane of the sides of the dome 14 and that the beading has been given a lower surface or bottom about equal in extent to its top. The vertical pressure applied for sealing the cap upon the bottle thus reduces the vertical height of the beading 11 and completes the formation of the beading by causing the metal which is provided to form the bottom thereof to move inwardly below the packing. The dome of the cap and the top and vertical sides of the beading being held within a closely fitting socket during the compression of the packing, the metal at the lower portion of the beading cannot move outwardly and is consequently compelled to move inwardly to complete the formation of the beading 11. The vertical reduction in the size of the beading 11 results in the packing 12 being compressed and having its inner peripheral portion squeezed outwardly against the neck of the bottle 18 and passing partly above and partly below the shoulder 19 on the bottle neck. After the sealing of the bottle has taken place a portion of the tongues 13 are left projecting downwardly, as shown in Fig. 7, to constitute finger pieces for use in unsealing the bottle.

When it is desired to remove the cap from the bottle the tongues 13 may be grasped at their lower projecting ends and pulled outwardly to bend the tongues from below the beading 11 and away from the vertical sides thereof, this having the effect of enabling the elastic packing to expand outwardly through the spaces previously covered by the tongues, whereby said packing is caused to release its firm sealing contact with the bottle neck and permit of the removal of the cap without undue exertion or the use of special tools.

In Fig. 8 I illustrate a modification of the formation shown in Fig. 1 in that in cutting the slits 16 I remove a portion of the end edges of the segments 17 so as to leave angular spaces at each side of each tongue 13 and form projecting lips 20 which in the formation of the segments 17 into the beading 11 pass below the packing and are engaged by the folded-under portion of the tongues, while along the vertical sides of the beading 11 the creation of the double thickness of metal indicated in Figs. 4, 5 and 6 is avoided, since due to the cutting away of the end edges of the segments, the parts 21 thereof will, along the vertical sides of the beading, match the side edges of the tongues 13 and thus leave the beading with a uniform outer vertical surface but slit from its lower to its upper edge. The tongues shown in Fig. 8 are the same construction, purpose and operation as those shown in Figs. 1, 6 and 7. The slits 16 may be variously formed and I present Fig. 8 to indicate that said slits may be so shaped as to enable the tongues to lie in between the adjacent end edges of the segments 17 in the completed beading 11.

What I claim as my invention and desire to secure by Letters-Patent, is:—

1. A closure comprising a cap having at its lower edges an integral outwardly-projecting annular beading composed of segments and intermediate tongues, and a packing-ring within the recess formed by said beading, said tongues being free to be pulled outwardly from the beading when it is desired to remove the closure; substantially as set forth.

2. A closure comprising a cap having at its lower edges an integral outwardly-projecting annular beading composed of segments and intermediate tongues, and a packing-ring within the recess formed by said beading, said tongues lapping upon the adjacent end edges of said segments along the bottom and extending upwardly along the sides of the beading and being free to be pulled outwardly therefrom when it is desired to remove the closure; substantially as set forth.

Signed at New York city, in the county of New York, and State of New York, this 18th day of December, A. D. 1906.

JOSEPH V. HULL.

Witnesses:
ARTHUR MARION,
CHAS. C. GILL.