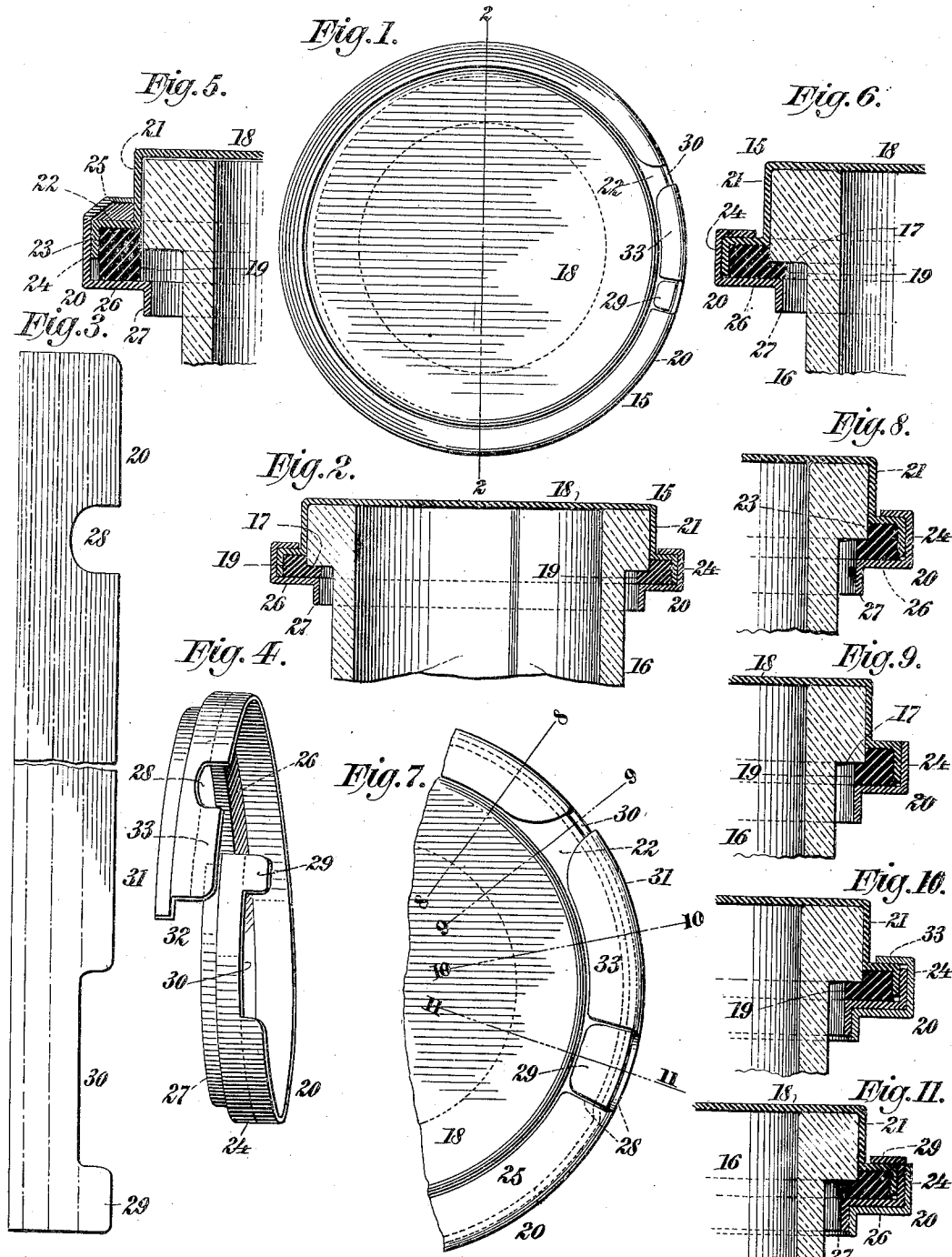


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 CLOSURE FOR BOTTLES, JARS, AND OTHER RECEPTACLES.
 APPLICATION FILED APR. 10, 1908. RENEWED JUNE 3, 1911.

1,013,392.

Patented Jan. 2, 1912.



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CLOSURE FOR BOTTLES, JARS, AND OTHER RECEPTACLES.

1,013,392.

Specification of Letters Patent.

Patented Jan. 2, 1912.

Application filed April 10, 1908, Serial No. 426,331. Renewed June 3, 1911. Serial No. 631,088

To all whom it may concern:

Be it known that I, JOSEPH VARLEY 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, structure and combinations of parts hereinafter described, and particularly pointed out in the claim.

The invention comprises a cap to be applied over the mouth of a bottle, jar or other receptacle and having in its lower edges an annular outwardly projecting recess to receive a packing-ring preferably in line with an annular shoulder formed on the bottle neck, and a split removable locking ring adapted to be brought into engagement with the lower surface of said packing-ring and the upper surface of the annularly projecting recessed portion of the cap and compressed vertically, whereby it is securely though detachably held around the lower edges of said cap, and a portion of said packing ring is squeezed laterally against the bottle neck, the cap being thus securely locked upon the bottle neck and the latter sealed thereby. The locking ring is of special construction in that its ends overlap each other and the upper portion of one end is formed with a tongue and the upper portion of the other end with a recess, whereby when the ends of the locking ring are in position about the lower edges of the cap and the upper circumferential portions of said ring are compressed downwardly upon the upper surface of the recessed portion of the cap, the tongue on one end of the ring will lie within the recess formed in the other end thereof and serve as means to prevent the ring from expanding and losing its position with the cap. The cap proper is not of novel structure but is shown in Letters Patent No. 795,283 granted to me on July 25, 1905, which patent also shows the locking ring of this application less the novel features thereof made the subject of the present claim, these features relating to the overlapping end portions of the locking ring and the interlocking tongue and recess formations thereof.

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 upper portion of a jar equipped with and sealed by a closure constructed in accordance with and embodying my invention; Fig. 2 is a central vertical section of the same on the dotted line 2—2 of Fig. 1; Fig. 3 is a detached elevation, partly broken away, of a blank from which the locking ring of the closure may be formed; Fig. 4 is a detached perspective view showing the locking ring prior to the final bending inwardly of its upper circumferential portion; Fig. 5 is an enlarged vertical transverse section through a portion of one edge of the jar having the closure applied thereon, the parts of the closure being shown in their initial condition and relation to each other prior to the application of vertical pressure by which the two members of the closure become firmly bound together; Fig. 6 is a like view of the same and shows the condition and relation of the parts of the closure to each other and to the jar after the vertical compression of the gasket and locking-ring has taken place; Fig. 7 is an enlarged top view, partly broken away, of the closure shown in its sealing position and condition; Fig. 8 is a vertical section of the same on the dotted line 8—8 of Fig. 7; Fig. 9 is a vertical section of the same on the dotted line 9—9 of Fig. 7; Fig. 10 is a vertical section of the same on the dotted line 10—10 of Fig. 7; and Fig. 11 is a vertical section of the same on the dotted line 11—11 of Fig. 7.

In the drawings, 15 designates the closure as a whole, and 16 the neck of a bottle, jar, or other receptacle, having an exterior annular shoulder 17 at a suitable distance below its upper edge.

The closure 15 comprises the cap 18, packing ring 19, and split locking ring 20, the packing 19 being of rubber or other suitable yielding material and the cap 18 and split ring 20 being of tin, aluminum, or other suitable material. The cap 18 has side walls 21 adapted to pass freely downward upon the exterior surfaces of the bottle neck, and at the lower edges of said sides 21 the metal of the cap is flanged outwardly, as at 22, and downwardly as at 23,

whereby an annular outwardly projecting triangular section is produced, within which is formed a recess adapted to receive the packing ring 19, the latter, as shown in Fig. 5, being initially greater in vertical depth than the depth of said recess and in horizontal thickness being about equal to the width, laterally considered, of said recess, whereby the inner walls of the packing ring are adapted to pass downwardly over the bottle neck to about the position shown in Fig. 5, in which it will be observed that the horizontal center of the packing ring is about in line with the shoulder 17 on the bottle neck, a part of said packing ring being disposed above said shoulder and a portion thereof below said shoulder. The object in having the packing ring 15 extend downwardly below the lower edge of its recess is to afford adequate opportunity for, at the proper time, the compression in a vertical direction of said ring.

The split locking ring 20 is formed from a strip of sheet metal and comprises side walls 24, whose upper edges are deflected inwardly, as at 25, a flange 26 extending inwardly from the lower edges of said side walls 24, and a flange 27 extending downwardly from the inner edges of said flange 26, and the said locking ring is so proportioned to the cap 18 that when in position thereon the flange 26 will engage the lower surface of the packing ring 19 and the side walls 24 will encompass the outer surfaces of the flange 23 of the cap, while the upper deflected portion 25 of the locking ring converges inwardly over the flange 22 of said cap. The locking ring 16 being a split ring may be applied laterally over the flanges 22, 23 of the cap or upwardly over the lower end of the cap.

The locking ring 20 is of special construction in that it is of sufficient length to overlap at its ends when it is in final position on the cap 18, and one of said ends, in the deflected flange portion 25 thereof, is provided with a recess 28 set inwardly a suitable distance from the extreme end edge of the ring, while the other end of said split ring is at its extreme end portion formed in the deflected flange portion 25 with a tongue 29 adapted to the size of the said recess 28. Inwardly from the tongue 29 the locking ring 20 has an elongated recess 30 formed by removing a limited section of the flange portion 25 of the ring, and said recess 30 being about equal in length to the distance the recess 28 is set inwardly from its end of said ring, the purpose being in the final application of the locking ring that the end 31 of the ring shall overlap the end 32 thereof, that the tongue 29 shall be pressed downwardly upon the flange 22 of the cap, as shown in Figs. 7 and 11, that that portion of the ring numbered 33 and extending

from the recess 28 outwardly shall be pressed downwardly through the recess 30 of the other end of the ring and engage the upper surface of the flange 22 of the cap, as shown in Figs. 7 and 10, and that during the flattening of the flange portion 25 of the ring the recess 28 thereof shall close down along the opposite edges of the tongue 29, as shown in Figs. 1 and 7.

The recess 28 extends outwardly slightly beyond the line on which the upper flange 25 is bent inwardly so that said recess may close downwardly along the opposite edges of the tongue 29, and the edges of said recess, throughout their entire length, is brought into line with the entire length of the edges of said tongue, whereby a very strong interlocking engagement of the ends of the ring is secured. The recess 30 extends outwardly to the line on which the upper flange 25 is bent inwardly so that said recess may receive the full width of that portion numbered 33 of said flange, as shown. When the ring is in its final position there is an interlocking engagement of its end portions throughout the entire width of the upper flanged portion 25 thereof, and this is important because thereby such engagement is effective to resist excessive internal pressure within the receptacle and the expansive force of the compressed packing 19 and the upper flanged portion 25 of the ring is left flat.

In applying the closure to the bottle-neck, the cap 18 and packing-ring 19 may be first passed downwardly upon the bottle-neck and the locking-ring 20 then positioned, or the cap, packing-ring and locking-ring may be assembled and applied to said neck. When the parts of the closure are in position on the bottle-neck, care will be taken to see that the ends of the locking-ring 20 overlap each other and that the tongue 29 and recess 30 of the inner end are respectively in alignment with the recess 28 and portion 33 of the outer end of said ring. After the closure has been applied to the bottle-neck, the upwardly and inwardly deflected portion 25 (including the tongue 29 and portion 33) and the flange 26 of the locking-ring will be subjected to pressure in a vertical direction, tending to force said members 25, 26 toward each other, this pressure having the effect of forcing the flange 25 into firm contact with the flange 22 of the cap and the flange 26 against the lower surface of the packing-ring 19, the latter being thereby compressed as shown in Fig. 6 against the walls of the recess formed by the flanges 26, 23, 22 and against the exterior side of the bottle-neck, a portion of said packing-ring being squeezed laterally from without said recess and below the shoulder on said neck, whereby said packing-ring is caused to securely seal the bottle and said closure to become effectually locked

in position. It will be observed on reference to Fig. 6 that the packing-ring due to the vertical compression has been reduced in vertical diameter and that a portion of said ring has been squeezed inwardly below the shoulder 17.

During the vertical compression of the upper and lower opposite portions of the locking ring against the annularly projecting portion of the cap and the packing-ring, the portion 33 at one end of the locking-ring becomes laid within the recess 30 in the opposite end portion thereof and the recess 28 becomes horizontal and incloses at its opposite edges the then horizontal or flattened tongue 29, the whole being left in the condition shown in Figs. 1 and 7. The locking-ring 20 without the recess 28, tongue 29, recess 30, and portion 33, is shown in my aforesaid Letters Patent No. 795,283 granted July 25, 1905, and the present invention is designed as an improvement upon the construction shown in my said patent: The structure shown in my aforesaid Letters Patent is entirely efficient for all usual conditions, but I have found that there are occasions in which highly excessive internal pressure seems to be generated within a sealed receptacle and that this pressure exerts a force tending to expand the locking-ring, and my present invention is to provide means for overcoming this result. I therefore make the locking-ring sufficiently long to overlap at its ends and provide one end of said ring with the recess 30 set inwardly from its end of the ring and the other end of the ring with the inwardly set recess 28, so that after the final application of the closure to the bottle or receptacle any internal pressure tending to expand the ring will be resisted by the engagement of the edge of the recess 28 against the edge of the tongue 29, said tongue 29 at one end of the ring and the portion 33 at the other end thereof being flat and on the same horizontal plane when the parts are in final position.

When it is desired to remove the closure from the bottle-neck a sharp instrument may be inserted beneath the outer end of the split ring and said end pressed outwardly from

that part of the other end of the ring which it overlaps, this resulting in the portion 33 of the outer end of the ring being forced outwardly from the tongue 29, and the said outer end of the ring having thus been started outwardly it may be taken hold of and the ring stripped from the flanges 22, 23 of the cap, the latter being thus left free to be lifted from the bottle-neck.

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

In combination with a bottle or other receptacle, a closure therefor comprising a cap having side walls whose lower edges are flanged outwardly and downwardly forming a recess, a packing-ring in said recess and initially extending downwardly below the same, and a split locking-ring applied upon the flanged portion of said cap and engaging the upper surface thereof and the lower surface of said packing-ring, said locking-ring being reduced in vertical diameter against the flanged portion of said cap and said packing-ring and with said flanged portion holding a peripheral portion of said packing-ring squeezed from said recess against said receptacle, said locking-ring having overlapping end portions, one of which in its upper edge is formed inwardly from its end with a recess (28), and the other of which is formed in its upper edge with a tongue (29) adapted to said recess and a recess (30) adapted to receive that portion of the upper edge of the ring between said recess 28 and the adjacent end of the ring, and said tongue and said recesses being of substantial length, with the recess 28 extending outwardly slightly beyond the line on which the upper flange (25) of said ring is bent inwardly and downwardly and the recess 30 extended outwardly to said bending line; substantially as set forth.

Signed at New York city, in the county of New York and State of New York, this 9th day of April A. D. 1908.

JOSEPH VARLEY HULL.

Witnesses:

ARTHUR MARION,
CHAS. C. GILL.