

No. 795,283.

PATENTED JULY 25, 1905.

J. V. HULL.

CLOSURE FOR BOTTLES, JARS, OR OTHER RECEPTACLES.

APPLICATION FILED OCT. 28, 1904.

Fig. 1.

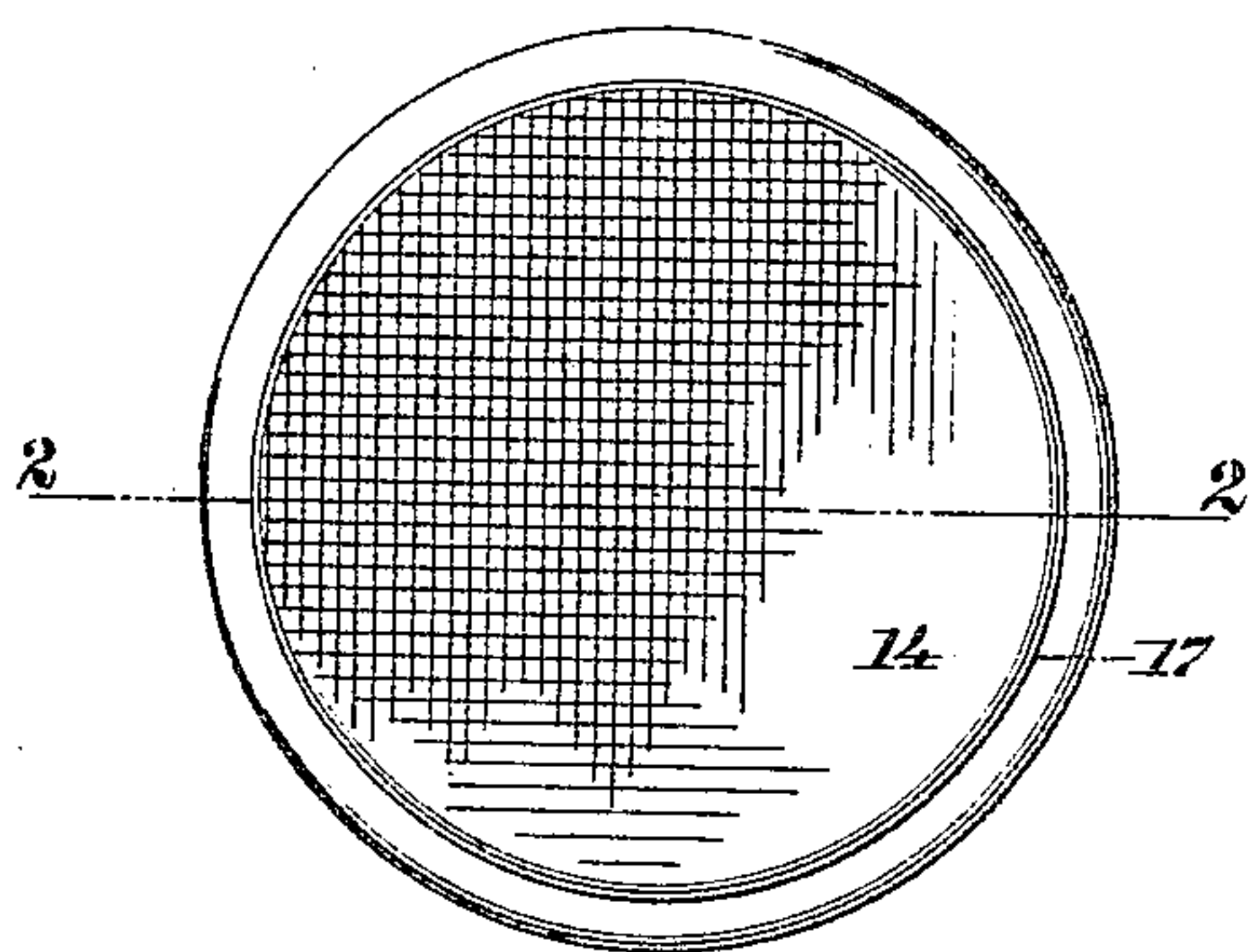


Fig. 5.

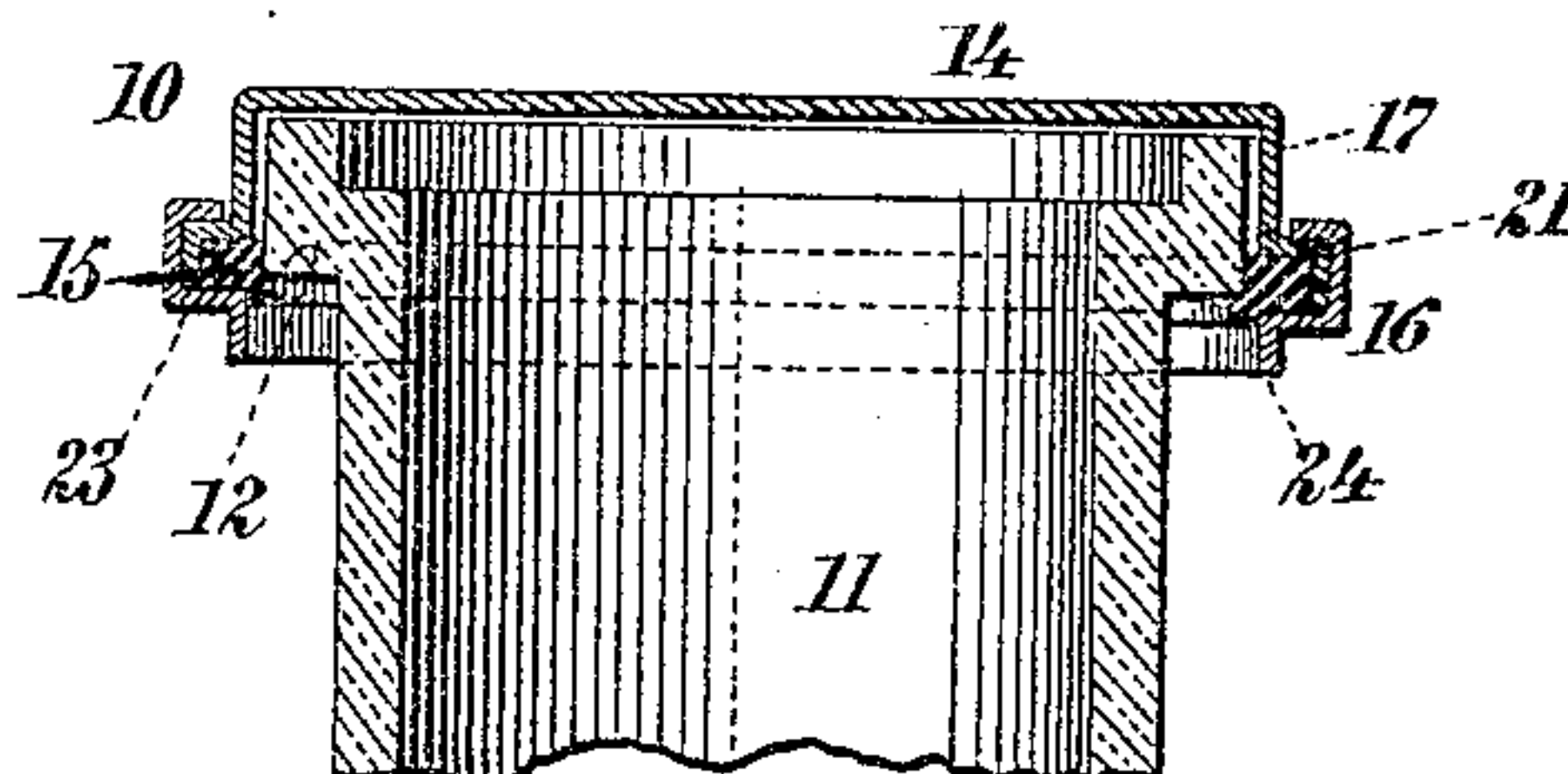


Fig. 2.

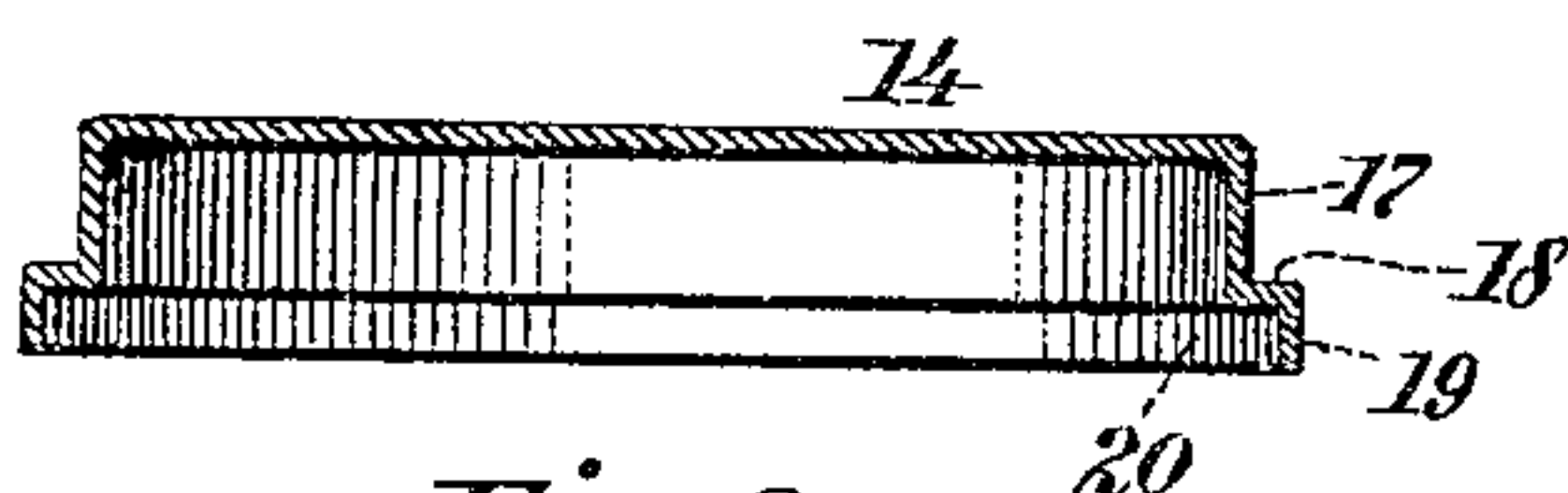


Fig. 6.

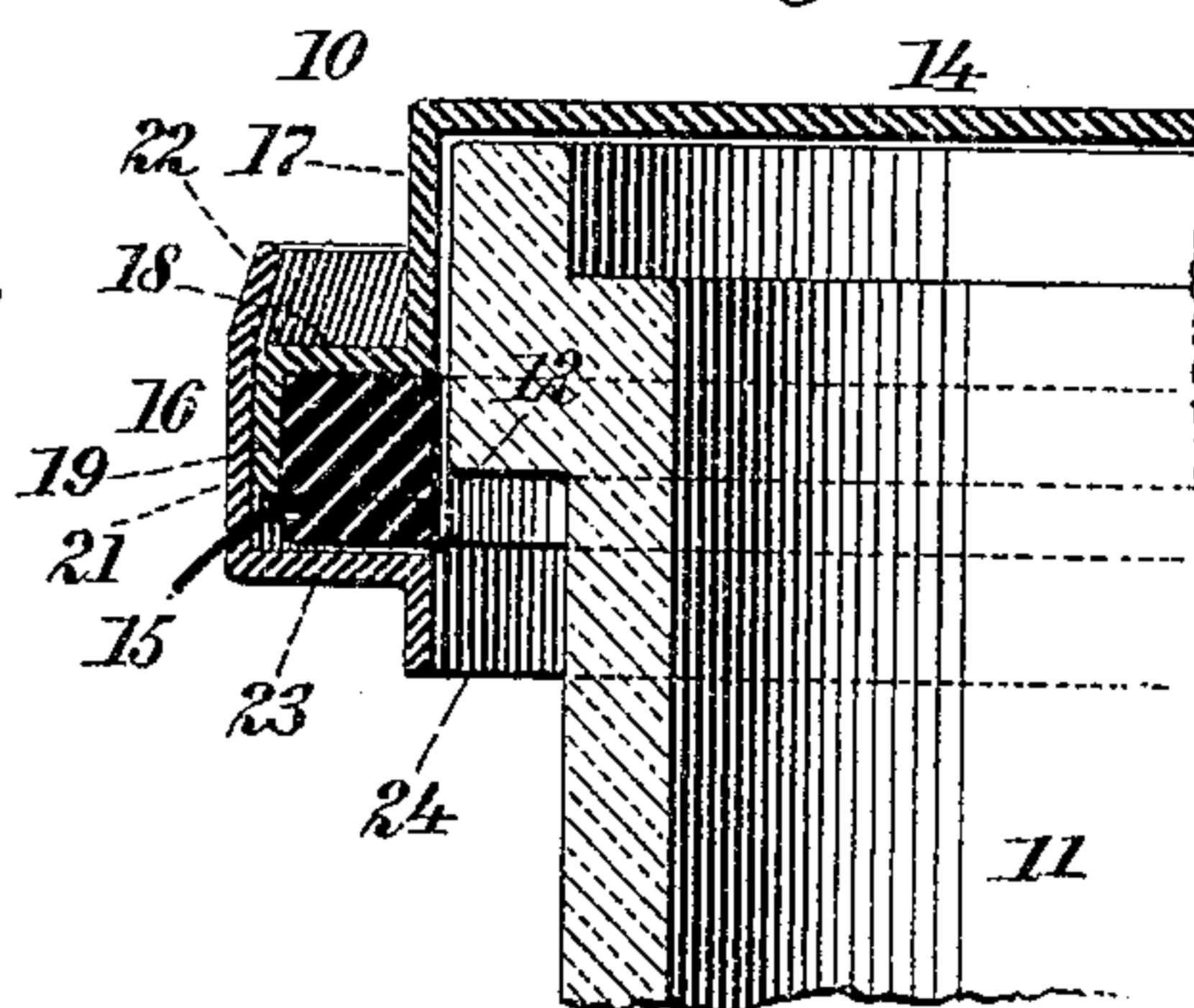


Fig. 3.

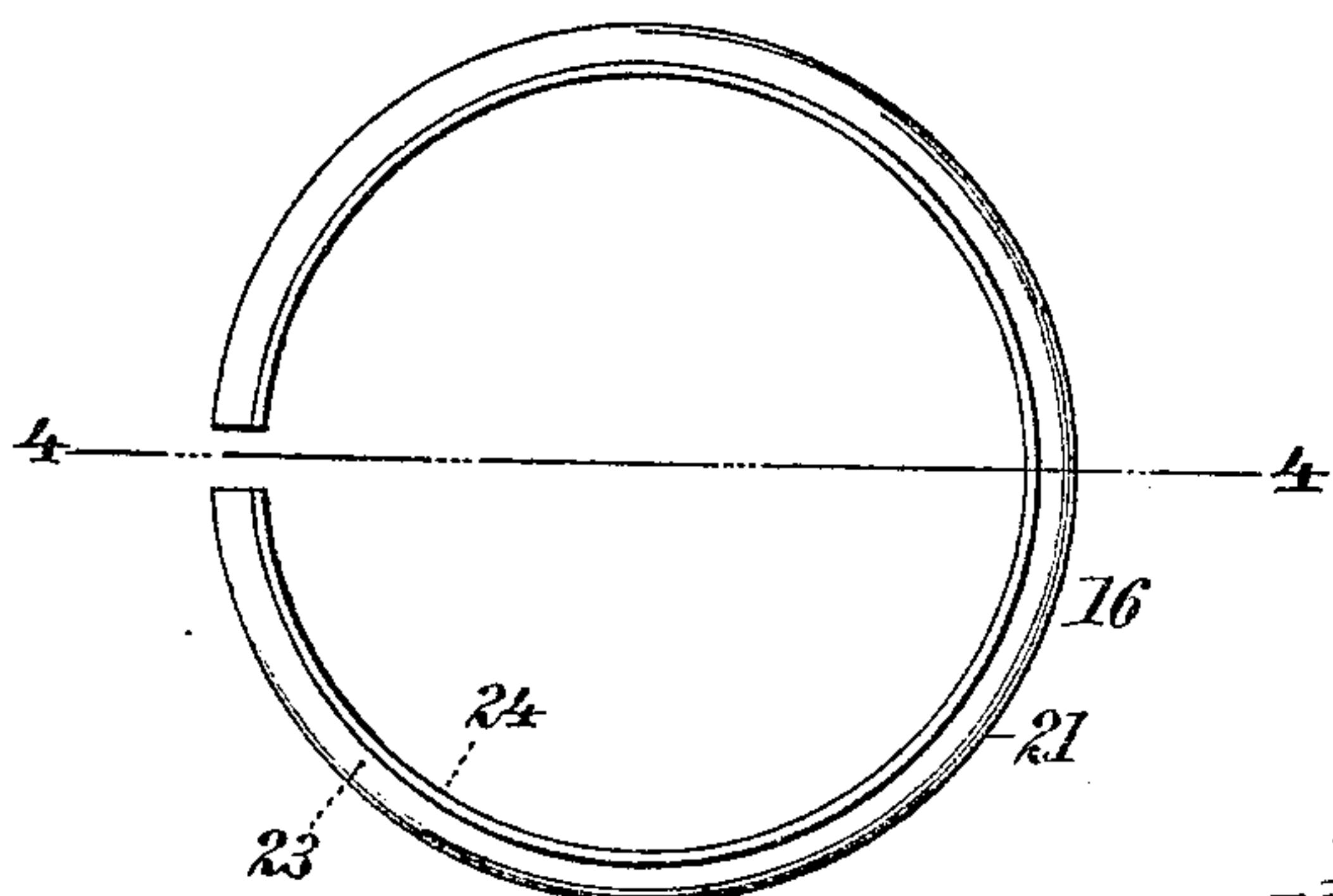


Fig. 7.

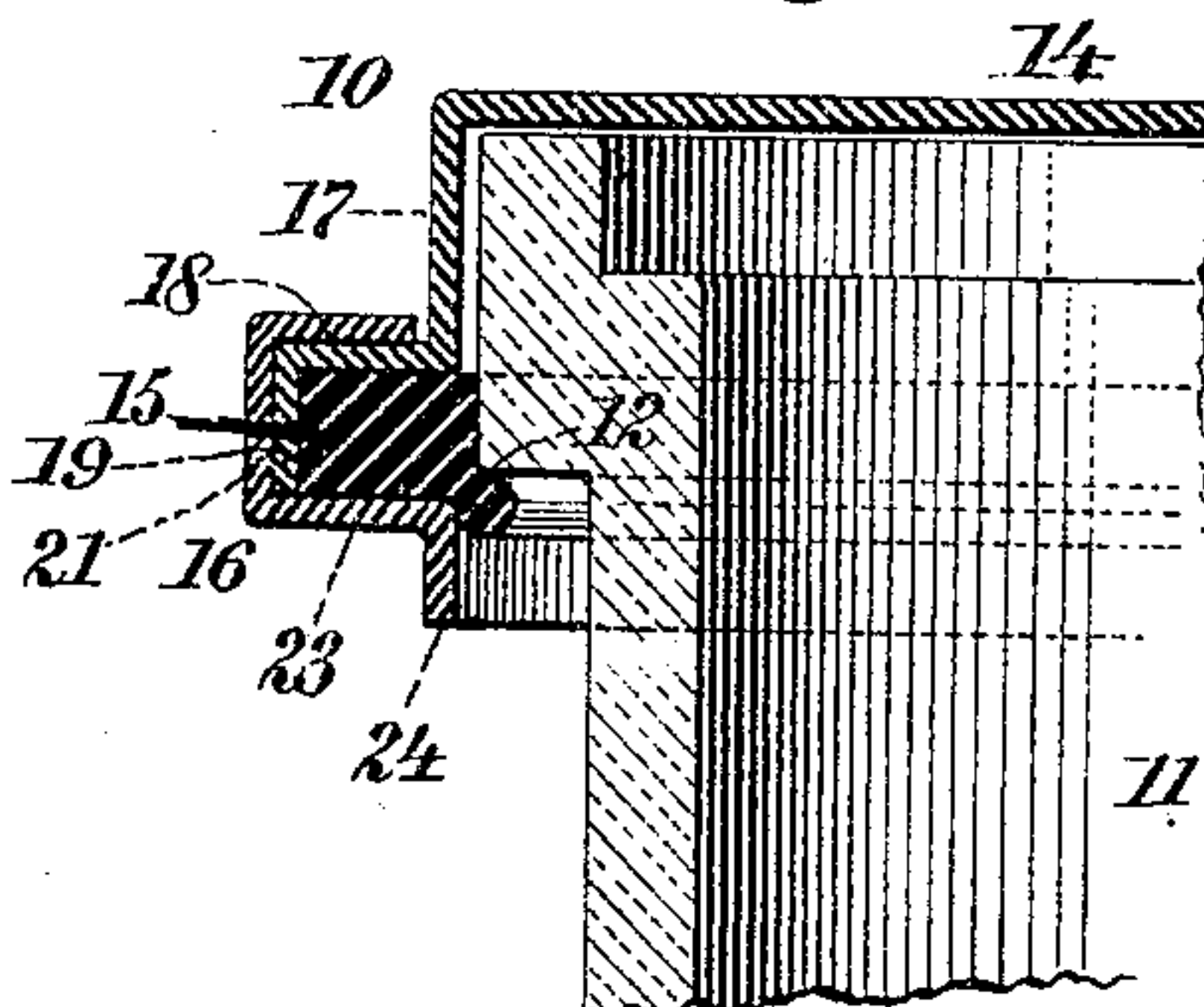
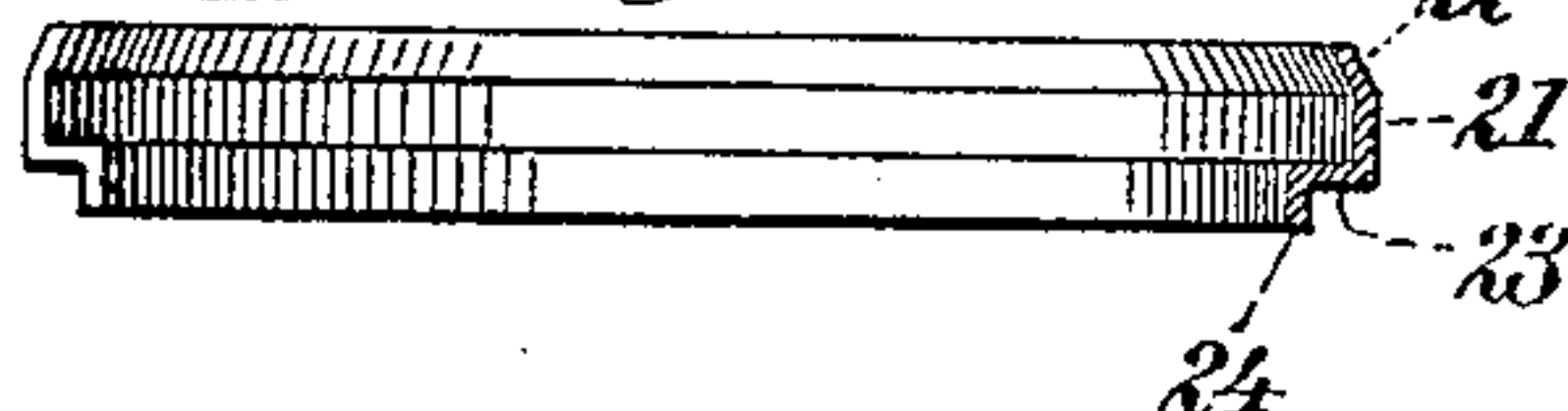


Fig. 4.



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CLOSURE FOR BOTTLES, JARS, OR OTHER RECEPTACLES.

No. 795,283

Specification of Letters Patent.

Patented July 25, 1905.

Application filed October 28, 1904. Serial No. 230,297.

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, or 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 in its preferred form a cap to be applied over the mouth of a bottle and having in its lower edges an annular outwardly-projecting recess holding a packing-ring 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 and the upper surface of the annularly-projecting recessed portion of the cap and compressed vertically, whereby it is securely though detachably locked in position around the lower edges of said cap, and a portion of said packing-ring is squeezed laterally below the annular shoulder on the bottle-neck, the cap being thus securely locked upon the bottle-neck and the latter sealed thereby. When it is desired to remove the cap from the bottle-neck, the locking-ring is released by pulling it from one of its ends from the cap, thereby leaving the latter and the packing-ring in condition and position to be moved upwardly from the bottle-neck.

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 with the locking-ring omitted therefrom. Fig. 2 is a vertical section of the cap on the dotted line 2 2 of Fig. 1. Fig. 3 is a detached bottom view of the split locking-ring. Fig. 4 is a vertical section of same on the dotted line 4 4 of Fig. 3. Fig. 5 is a central vertical section through the upper portion of the neck of a bottle or jar having applied thereon the closure of my invention. Fig. 6 is an enlarged view showing in central vertical section a part of a bottle-neck with the closure of my invention applied thereon, but not

secured, the locking-ring and packing being shown in their initial position prior to the compression in a vertical direction of said locking-ring and packing; and Fig. 7 is a like view of same, showing the cap, locking-ring, and packing in their final condition sealing the bottle or jar, the locking-ring and packing-ring being shown as having been compressed in a vertical direction and a portion of said packing-ring as having been squeezed below the shoulder on the bottle-neck.

In the drawings, 10 designates the closure as a whole, and 11 the neck of a bottle or jar having the exterior annular shoulder 12 at a suitable distance below its upper edge.

The closure 10 comprises the cap 14, packing-ring 15, and split locking-ring 16, the packing 15 being of rubber or other suitable yielding material and the cap 14 and split ring 16 being of tin, aluminium, or other suitable material. The cap 14 has side walls 17 adapted to pass freely downwardly upon the exterior side surface of the bottle-neck, and at the lower edges of said sides 17 the metal of the cap is flanged outwardly, as at 18, and then downwardly, as at 19, whereby an annular outwardly-projecting triangular section is produced, within which is formed a recess 20, adapted to receive the packing-ring 15, the latter, as shown in Fig. 6, being greater in vertical depth than the depth of the 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. 6, in which it will be observed that the horizontal center of the packing-ring is about in line with the shoulder 12 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 outwardly below the lower edge of the recess 20 is to afford adequate opportunity for at the proper time the compression in a vertical direction of said ring.

The split locking-ring 16 is formed from a strip of sheet metal and comprises side walls 21, whose upper edges are deflected inwardly, as at 22, a flange 23, extending inwardly from the lower edges of said side walls 21, and a flange 24, extending downwardly from the inner edges of said flange 23, and the said

locking-ring is so proportioned to the cap 14 that when in position thereon the flange 24 of the ring will be about in line with the side walls 17, and the inner edges of the packing-ring 15 when the latter is in its initial condition, the flange 23 will engage the lower surface of said packing-ring, and the side walls 21 will encompass the outer surfaces of the flange 19 of the cap, while the upper deflected portion 22 of the locking-ring converges inwardly over the flange 18 of said cap. The locking-ring 16 being a split ring may be applied laterally over the flanges 18 and 19 of the cap or upwardly upon the lower end of the cap.

In applying the closure to the bottle-neck the cap 14 and packing-ring 15 may be first passed downwardly upon the bottle-neck and the locking-ring 16 then positioned, or the cap, packing-ring, and locking-ring may be assembled and passed downwardly upon the bottle-neck to the position shown in Fig. 6, and thereupon the upwardly-projecting portions 22 of the locking-ring and the flange 23 thereof will be subjected to pressure in a vertical direction, tending to force said portions 22 23 toward each other, this pressure having the effect of forcing the said portion 22 into firm contact with the flange 18 of the cap 14 and the flange 23 against the lower surface of the packing-ring 15, the latter being thereby compressed, as shown in Fig. 7, against the walls of the recess formed by the flanges 18, 19, and 23 and against the exterior side of the bottle-neck, and a portion of said packing-ring being squeezed laterally from without said recess and below the shoulder 12 on the bottle-neck, whereby said packing-ring is caused to securely seal the bottle and said closure to become effectually locked in position upon the bottle-neck. It will be observed on reference to Fig. 7 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 12 and slightly downwardly over the upper edge of the flange 24 of the locking-ring 16, and while the compression of the packing-ring against the side of the bottle-neck and against the walls of the recess formed by the flanges 18, 19, and 23 is important it is also of importance that a portion of said ring be squeezed inwardly below the said shoulder 12, the combined result being that the bottle becomes not only sealed, but the closure becomes so efficiently locked upon the bottle-neck that it will remain thereon and resist internal pressure acting against the top of the cap 14. While I do not in every instance limit my invention to the employment of the flange 24 on the locking-ring, I regard said flange as of considerable importance in that by reason thereof the laterally-squeezed inner portion of the

packing-ring may find a bearing against the same, and the inner edge of the flange 23 is not liable to sever such portion of the ring as it might do if the said flange were left with a raw edge.

When it is desired to remove the closure from the bottle-neck, a sharp instrument may be inserted beneath one end of the split ring 16 and said end pressed outwardly from the cap 14, and the said end of the ring having been thus started outwardly it may be taken hold of and the ring readily stripped from the flanges 18 19 of said cap, the latter being thus left free to be lifted from the bottle-neck.

When the closure is upon the bottle-neck, sealing the mouth thereof, it comprises side walls having a laterally-projecting annular portion forming a recess at the lower inner edge of which is the downwardly-extending flange 24, and a packing-ring compressed within said recess by the vertical reduction of the latter against said ring, the latter being thus pressed with sealing effect against the bottle-neck, and the walls of the recess and a portion of said ring being held squeezed laterally from the recess below and, by preference, also above a shoulder formed on the bottle-neck, and I desire to claim this structure whether the recess in the lower edges of the closure is formed in part by the walls of a detachable ring 16 or by like walls which may not be detachable, as would be the case if the ring 16 were permanently secured. I prefer, however, to complete the recess at the lower edge of the bottle-cap by means of a detachable ring 16. Another feature of the invention relates to the fact that the annular recess at the lower edge of the cap is so disposed with respect to the shoulder 12 on the bottle-neck that when said recess is compressed in a vertical direction a part of the packing-ring will be squeezed laterally against the bottle-neck above said shoulder and another part thereof will be forced below said shoulder, this construction and arrangement adding greatly to the efficiency of the closure.

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

1. In combination with a bottle or other receptacle, a closure of the character hereinbefore described therefor, said closure comprising side walls having a laterally-projecting portion forming an annular recess, an annular flange extending downwardly along the lower edge of the open side of said recess, and a packing-ring initially adapted to said recess, said recessed portion of the closure being reduced in vertical diameter against said ring so that its upper and lower inner walls firmly bind against the upper and lower surfaces of a peripheral portion of said ring and hold squeezed from said recess the other peripheral portion of said ring in firm contact with

a portion of said bottle or other receptacle, for sealing the same and locking the closure in position; substantially as set forth.

2. In combination with a bottle or other receptacle having an annular shoulder about its mouth, a closure of the character hereinbefore described therefor, said closure comprising side walls having a laterally-projecting portion forming an annular recess, an annular flange extending downwardly along the lower edge of the open side of said recess, and a packing-ring initially adapted to said recess, said recessed portion of the closure being reduced in vertical diameter against said ring so that its upper and lower inner walls firmly bind against the upper and lower surfaces of a peripheral portion of said ring and hold squeezed from said recess the other peripheral portion of said ring below and in firm contact with said shoulder, for sealing the same and locking the closure in position; substantially as set forth.

3. In combination with a bottle or other receptacle having an annular shoulder about its mouth, a closure of the character hereinbefore described therefor, said closure comprising side walls having a laterally-projecting portion forming an annular recess, an annular flange extending downwardly along the lower edge of the open side of said recess, and a packing-ring initially adapted to said recess, said recessed portion of the closure being reduced in vertical diameter against said ring so that its upper and lower inner walls firmly bind against the upper and lower surfaces of a peripheral portion of said ring and hold squeezed from said recess the other peripheral portion of said ring, a part of said squeezed-out portion of said ring firmly engaging the neck of the receptacle above said shoulder thereon and the other part thereof being below and firmly engaging said shoulder, for sealing the receptacle and locking the closure in position; substantially as set forth.

4. In combination with a bottle or other receptacle having an annular shoulder about its mouth, a closure of the character hereinbefore described, said closure comprising side walls having a laterally-projecting portion forming an annular recess disposed partly above and partly below said shoulder, and a packing-ring initially adapted to said recess and held by it partly above and partly below said shoulder, said recessed portion of the closure being reduced against said ring and holding the latter firmly pressed against the neck of said receptacle above and below said shoulder, for sealing the same and locking the closure in position; substantially as set forth.

5. In combination with a bottle or other receptacle, a closure of the character hereinbefore described therefor, said closure comprising 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 closure 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 closure and said packing-ring and with said flanged portion holding a peripheral portion of said packing-ringsqueezed from said recess and in firm contact with a part of said receptacle, for sealing the same and locking the closure in position; substantially as set forth.

6. In combination with a bottle or other receptacle having an annular shoulder about its mouth, a closure of the character hereinbefore described therefor, said closure comprising 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 closure 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 closure and said packing-ring and with said flanged portion holding a peripheral portion of said packing-ringsqueezed from said recess and in firm contact with said shoulder, for sealing the receptacle and locking the closure in position; substantially as set forth.

7. In combination with a bottle or other receptacle having an annular shoulder about its mouth, a closure of the character hereinbefore described therefor, said closure comprising 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 closure 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 closure and said packing-ring and with said flanged portion holding a peripheral portion of said packing-ring squeezed from said recess and in firm contact with the neck of said receptacle both above and below said shoulder thereon, for sealing the receptacle and locking the closure in position; substantially as set forth.

8. In combination with a bottle or other receptacle having an annular shoulder about its mouth, a closure of the character hereinbefore described therefor, said closure comprising side walls whose lower edges are flanged outwardly and downwardly forming a recess, a packing-ring in said recess and initially ex-

tending downwardly below the same, and a split locking-ring applied upon the flanged portion of said closure and engaging the upper surface thereof and the lower surface of said packing-ring, said locking-ring having a downwardly-extending flange along its lower inner edge and being reduced in vertical diameter against the flanged portion of the closure and said packing-ring and with said flanged portion holding a peripheral portion of said packing-ring below and in firm con-

tact with said shoulder, for sealing the receptacle and locking the closure in position; substantially as set forth.

Signed at New York city, in the county of New York and State of New York, this 26th day of October, A. D. 1904.

JOSEPH V. HULL.

Witnesses:

ARTHUR MARION,
CHAS. C. GILL.