R. A. RUSSELL.

RECEPTACLE CLOSURE.

APPLICATION FILED FEB. 2, 1917.

1,311,419. Patented July 29, 1919.

Fig. 1.

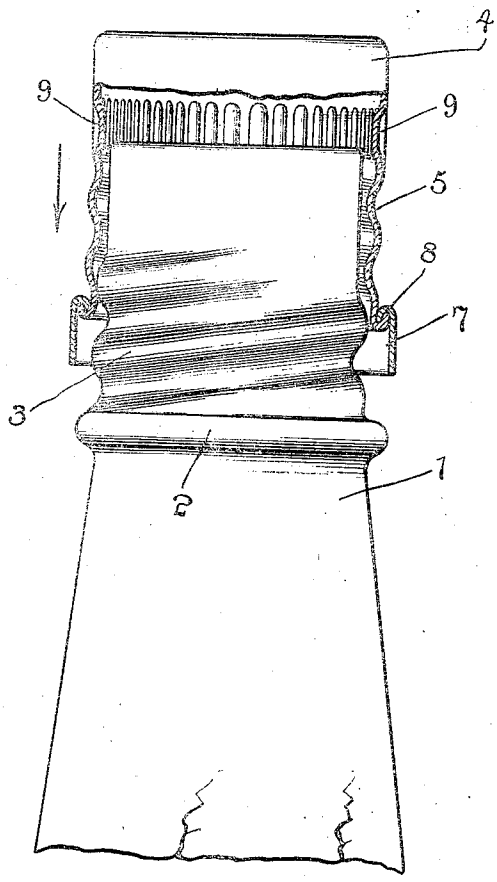


Fig. 2.

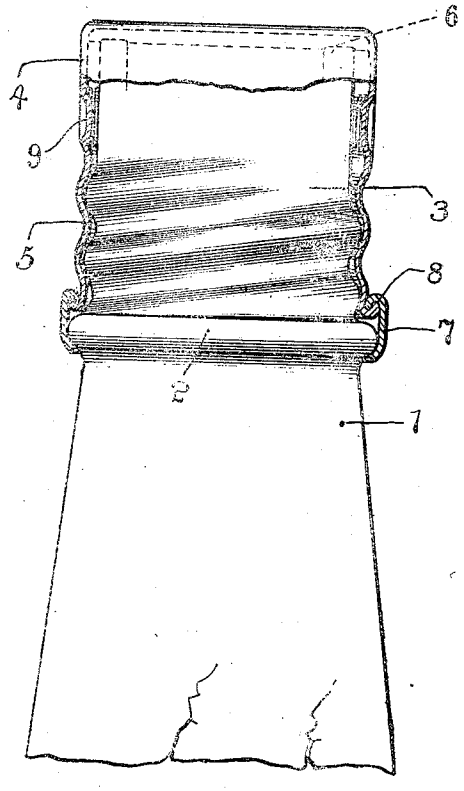
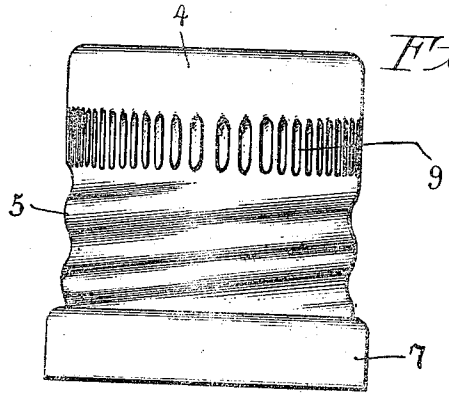


Fig. 3.



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RECEPTACLE-CLOSURE.

1,311,419. Specification of Letters Patent. Patented July 29, 1919.

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To all whom it may concern:

Be it known that I, ROBERT A. RUSSELL, a citizen of the United States, and resident of the borough of Manhattan, in the city and State of New York, have invented a new and useful Improvement in Receptacle-Closures, of which the following is a specification.

This invention relates to improvements in receptacle closures, with the object in view of providing an arrangement of this nature in which the cap or closure may be applied to the receptacle with great rapidity and held in sealing position thereon against accidental displacement.

Another object consists in providing such an arrangement in which the closure or cap may be applied to the receptacle, so as to enter into sealing contact therewith, by a simple axial movement, while the disassociation of the closure and receptacle may be effected manually, by a relative rotary movement of the two.

A further object consists in providing such an arrangement in which auxiliary interlocking means is fitted to insure the positive retention of the closure in sealing engagement with the receptacle.

A still further object consists in providing certain improvements in the form, construction and arrangement of the parts whereby the above mentioned and other objects may be effectively attained.

A practical embodiment of my invention is represented in the accompanying drawings in which:

Figure 1 represents a side view, partly in section, showing the closure in disengaged association with the receptacle.

Fig. 2 represents a similar view with the closure and receptacle in interlocked and sealing engagement, and

Fig. 3 represents a side view of the cap.

The receptacle, only the upper portion of which is shown, is denoted by 1, and represents, by way of example, an ordinary catsup bottle. It is provided with an annular, protruding beading 2, located a short distance from the mouth of the receptacle, and with screw-threads 3 intermediate the beading and the mouth. The beading 2 and threads 3 may be of the ordinary size and shape, such as are commonly fashioned upon the necks of catsup bottles.

The closure or cap is represented by 4, and is shown as substantially cylindrical in form, with a flat top, and of such a size as to conveniently coöperate with the receptacle 1. This cap 4 may be of integral construction, such as results from the well known spinning operation, or it may be formed of a plurality of separate elements, such as a cylindrical body portion and a flat top interlocked with each other, or of any other suitable or approved construction. In the present instance, I have illustrated it as unitary.

This closure 4 has a screw-thread 5 fashioned in the side walls of its body portion for coöperative engagement with the threads 3 upon the receptacle 1; but it should be noted that, while the pitch of the threads 3 and 5 is substantially the same, the depth of the thread 5 is considerably less than that of the thread 3, as is clearly shown in section, Fig. 2.

Additionally, the closure 4 may be composed of some relatively elastic or springy material, such, for instance, as sheet iron, while the receptacle 1 will generally and naturally be composed of some unyielding, vitreous material, such as glass.

By reason of the points just mentioned, viz: the difference in the threads 3 and 5, and the springy nature of the closure, it is perfectly feasible to force the latter into sealing engagement with respect to the receptacle 1, by a simple axial movement, as is indicated by the arrow in Fig. 1. Of course, this axial movement needs only to be a relative one; that is, the closure 4 may be forced on to the receptacle 1 while the latter remains stationary; or the receptacle 1 may be forced into the closure 4, while the latter remains stationary, or both the closure 4 and the receptacle 1 may be simultaneously moved axially with respect to each other and in opposite directions. During this movement, however, it may be engendered, the threads 5 spring over the threads 3, so that the closure 4 may be firmly seated upon the receptacle 1. The fact that such an operation is much more expeditious than the normay operation of screwing the closure on the receptacle, cannot be gainsaid.

As an additional sealing means, a disk 6 may be interposed between the top of the closure 4 and the mouth of the receptacle 1, as indicated in dotted lines, Fig. 2; and this disk may conveniently be composed of

some material such as rubber composition, cork, etc.

While the construction is such as to permit the threads 5 to jump over the threads 3 during relative axial movement of the closure 4 and receptacle 1, nevertheless, there is a sufficient normal inter-engagement between the threads 3 and 5, so that relative rotary movement between the closure 4 and receptacle 1 will generate relative axial movement therebetween, in the usual manner; or, in a more simple phrase, so that the closure 4 may be screwed on or off the receptacle 1.

As an additional and auxiliary means of interlocking the closure and receptacle, when in sealing engagement, I provide a band 7, which may conveniently be composed of some relatively ductile sheet metal, which band has its upper end turned downwardly and inwardly for engagement with the upwardly and outwardly turned rim of the closure 4, as clearly shown at 8. After the closure and receptacle have been forced into sealing engagement, the lower edge of the band 7 may be crimped under the beading 2 on the receptacle, as clearly shown in Fig. 2. When the receptacle is received by the consumer, it is simply necessary to seize the closure in the ordinary manner and unscrew the same. During this manual operation, the inter-engagement of the threads 3 and 5 will be sufficient to move the closure 4 axially away from the receptacle 1, even against the restraining influence of the band 7, the lower portion of which will be distorted from its crimped condition, shown in Fig. 2, to substantially the form shown in Fig. 1. This band may then be removed from the closure 4 and discarded. Of course, if desired, the band 7 may be ripped off from the closure and receptacle, before unscrewing the former, by the use of any ordinary and suitable implement; but I intend that it shall be normally disengaged from the beading 2 by the unscrewing of the closure 4, as described.

As a means for assisting the manual gripping of the closure 4, it may be provided, on its outer surface, with a milled effect, consisting of an annular band of vertical corrugations or excrescences, as shown at 9 in Fig. 3.

The element of time saved during the sealing of the receptacle, by means of the simple axial movement as distinguished from rotary movement, becomes of magnified importance, when viewed in connection with the performance of a sealing operation upon hundreds of thousands or millions of receptacles; and yet I have succeeded in providing an arrangement which effects such saving, without decreasing the perfect sealing engagement between the closure and receptacle, and without depriving the housewife or other consumer of the convenience of a screw cap, or producing an arrangement which it is difficult to unseal when received.

It will be understood that various changes may be resorted to in the form, construction, composition and arrangement of the several parts without departing from the spirit and scope of my invention, and hence I do not intend to be limited to the details herein shown and described except as they may be specifically included in the claims.

What I claim is:

1. In combination, a receptacle and a closure therefor, the two having coöperative threads adapted, when mutually engaged, to enable the closure to be rotated into and out of sealing engagement with the receptacle, the thread on one of the two being temporarily distortable so that direct relative axial movement may be enforced without rupture or injury.

2. In combination, a receptacle and a closure therefor, the two having coöperative threads adapted, when mutually engaged, to enable the closure to be rotated into and out of sealing engagement with the receptacle, the thread on the closure being temporarily distortable so that direct relative axial movement may be enforced without rupture or injury.

3. In combination, a receptacle and a closure therefor, the two having coöperative threads adapted, when mutually engaged, to enable the closure to be rotated into and out of sealing engagement with the receptacle, the thread on the closure being shallower than the thread on the receptacle, so that direct relative axial movement may be enforced without rupture or injury.

4. In combination, a receptacle and a closure therefor, the two having coöperative threads adapted, when mutually engaged, to enable the closure to be rotated into and out of sealing engagement with the receptacle, the thread on the closure being shallower than the thread on the receptacle and the closure being composed of springy material, so that direct relative axial movement may be enforced without rupture or injury.

5. In combination, a receptacle and a closure therefor, the two having coöperative threads adapted, when mutually engaged, to enable the closure to be rotated into and out of sealing engagement with the receptacle, the thread on the closure being shallower than the thread on the receptacle, so that direct relative axial movement may be enforced without rupture or injury, and auxiliary means for locking the closure in sealing engagement with the receptacle, said auxiliary means being arranged to be disengaged from the receptacle by rotating the closure out of engagement therewith.

6. In combination, a receptacle and a closure therefor, the two having coöperative

threads adapted, when mutually engaged, to permit the closure to be screwed into and out of sealing engagement with the receptacle, the thread on the closure being shallower than the thread on the receptacle and the closure being composed of springy material, so that the relative axial movement may be enforced without rupture or injury, and auxiliary means for locking the closure in sealing engagement with the receptacle, said auxiliary means being arranged to be disengaged from the receptacle by unscrewing the closure.

In testimony that I claim the foregoing as my invention I have signed my name this 1st day of February, 1917.

ROBERT A. RUSSELL.