B. W. RIVERS.

CLOSURE FOR CONTAINING VESSELS.

APPLICATION FILED MAR. 27, 1919. RENEWED JULY 14, 1920.

1,365,274. Patented Jan. 11, 1921.

Fig. 1.

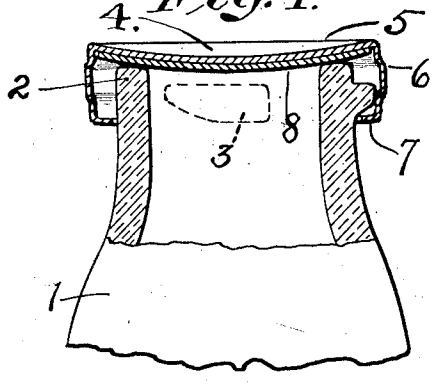


Fig. 2.

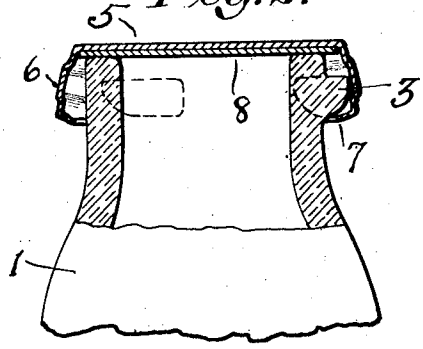


Fig. 3.

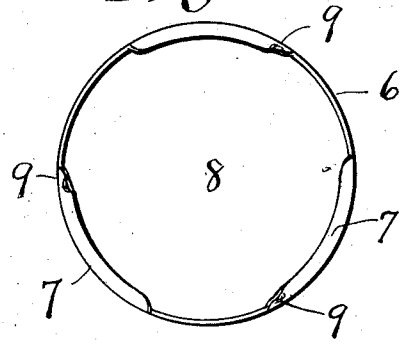


Fig. 4.

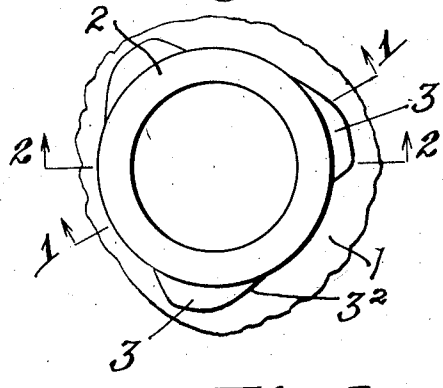


Fig. 5.

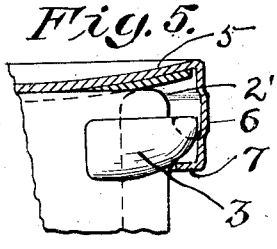


Fig. 6.

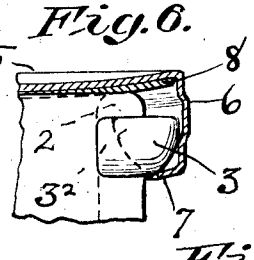


Fig. 7.

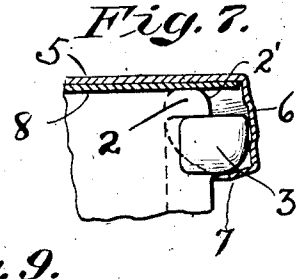


Fig. 8.

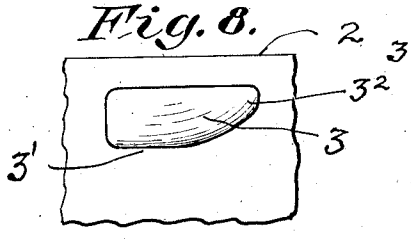
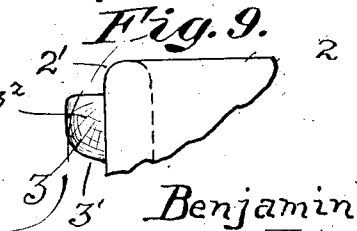


Fig. 9.



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Inventor
by Thos Spear
attorney

UNITED STATES PATENT OFFICE.

BENJAMIN W. RIVERS, OF PORTLAND, MAINE, ASSIGNOR, BY MESNE ASSIGNMENTS, TO NATIONAL SEAL COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

CLOSURE FOR CONTAINING VESSELS.

1,365,274. Specification of Letters Patent. **Patented Jan. 11, 1921.**

Original application filed December 18, 1917, Serial No. 207,785. Divided and this application filed March 27, 1919, Serial No. 285,413. Renewed July 14, 1920. Serial No. 396,333.

To all whom it may concern:

Be it known that I, BENJAMIN W. RIVERS, a citizen of the United States, residing at Portland, county of Cumberland, State of Maine, have invented certain new and useful Improvements in Closures for Containing Vessels, of which the following is a specification.

The invention involved in this case relates to certain improvements in closures for containing vessels, the same being divisional matter of my previous application, Serial No. 207,785, filed Dec. 18, 1917.

The object of the present improvements is to increase the sealing contact and to produce a more perfect seal under varying conditions incident to the use of such articles.

In any closure which is to be used on containers for volatile or liquid content, great difficulty has been experienced both in securing perfection of seal at the time of original sealing and in permanency of that perfection under subsequent shrinkage of the compressible pack of the cap or results of opening and closing during the display of the goods as is frequently a necessity or an incident to their sale.

As illustrative of my invention, I have shown in the accompanying drawings embodiments found practical in manufacture and use and which I will more fully describe and discuss in the specification which follows.

In the drawings and specification like reference numerals are employed to indicate corresponding parts, and in the drawings:

Figure 1 is a view of a closure on the mouth of a container before tightening.

Fig. 2 is a similar view tightened.

Fig. 3 is a lower face view of the closure.

Fig. 4 a plan view of the container mouth.

Figs. 5, 6 and 7 details showing successive stages of engagement illustrating characteristic adjustment.

Figs. 8 and 9 side and end views of the closure lug.

In the practice of my invention, a container 1 of any shape or material is provided below its mouth 2 with a suitable number of lugs 3 according to the size of the container mouth to afford suitable bearing for the cap.

The closure 4 comprises a top disk 5 which is normally slightly dished or concaved as appears in Fig. 6 and 7. Depending from the top 5 is an annular skirt 6 which is preferably knurled. This skirt 6 terminates in segmental inturned lips 7. These lips 7 are of greater length than the lugs 3 and in effect subtend an inclosing arc of the adjacent skirt 6 in somewhat of a truss arrangement. They thus have when drawn under the lugs 3 a strong drawing down action on margins of the top 5 included by or adjacent to the arcs subtended by the lips 7.

This action is an important one as tightness and uniformity of seal is important and even indispensable in preserving the usual container contents.

It will be noted in Fig. 1 that the bearing of the top 5 and that of its underlying pack 8 is on the mouth 2 somewhat within the skirt 6. In order to make the bearing of these parts as direct and complete as possible under the marginal strain of the lug engagement of the lips 7 so that under the sealing strain it may yieldingly seat on the mouth 2 with completeness of contact.

In drawing down such a cap or closure, the mouth of the vessel, which is preferably rounded on its outer edge, as indicated at 2^1 constitutes a sort of annular fulcrum over which the top of the closure may be drawn or buckled. The concavity in the top 5 provides expressly for this buckling and permits a slight take up in case of shrinkage of the pack 8. In practice, the amount of take up at this point is not great, although it is material and important for practical results. Inasmuch as there is not only variation in the thickness of the pack but also some slight variation in the mouth and the

lugs of the closure, and some slight variations even in the seals themselves, it is important to have these factors of adjustment.

In my closure and container therefor, I provide for further potential adjustment. While the skirt 6 in one sense is a rigid wall, yet in another sense, it does have a slight potential expansiveness.

Both of these tendencies tend to supplement the resilience of the lip 7 in drawing under the lugs 3. The take up in the slightly dished top has already been explained. The lateral expansion and adjustment of the skirt 6 permits the inturned lips 7 to stand both at a slight angle to the horizontal and also to engage a higher level on the lug 3 in case the pack is thicker than normal. These adjustments, either single or combined, constitute that factor which is necessary in commercial production to assure tightness of seal.

The lugs 3 have preferably a somewhat extended under bearing surface 3^1 although being preferably comparatively shorter than the lips 7. The desired construction being of a length of lug which will give a slightly extended bearing on its surface 3^1 to the engaged area of the lip 7 so that while giving full adjusting movement it will not tend to buckle the lip locally.

The end of the lug 3 is provided with a lead 3^2 with which the advancing end of the lip 7 may progressively engage as it is guided under stress to the bearing face 3^1. Each lip 7 is furthermore provided with a stop 9 formed by an indentation in the following end of the lip 7.

The lug 3 has been referred to as having a substantially flat lower bearing surface as appears in the enlarged views in Fig. 8. This surface is preferably not a truly horizontal surface but is very slightly pitched downward giving a slightly increased tension to the inner edge of the lip 7 and at the same time affording a convenient draft for the removal of the mold members. This is indicated in Figs. 8 and 9 at 3^1. The lug 3 is further provided at its forward end with a rounded lead 3^2 which affords a progressive engagement with the lip 7 and a non-chipping contact with the stop 9.

It will be noted that the dished construction is indicated in somewhat exaggerated form but it may be variously modified both in degree and form.

Various other modifications may be made in the structure of the cap and in the container mouth, all without departing from the spirit of my invention if within the limits of the appended claims.

What I therefore claim and desire to secure by Letters Patent is:

1. In combination with a container having an annular mouth and external engageable members on said container below said mouth, a closure comprising a resilient cap disk of greater diameter than said mouth, and adapted to project radially across the mouth in substantially radial symmetry from its center, container engaging members on said projecting edges of said cap disk adapted upon engagement with said engageable members on the container to exert a drawing down effect on the overhanging cap margin to fulcrum it on radial lines across said vessel mouth.

2. A closure for a container having an annular mouth and external engageable members on said container below said mouth and lying radially beyond the mouth, comprising a resilient cap disk of greater diameter than said mouth, and adapted to project radially across the mouth in substantially radial symmetry from its center, container engaging members on said projecting edges of said cap disk adapted upon engagement with said engageable members on the container to exert a drawing down effect on the overhanging cap margin to fulcrum it on radial lines across said vessel mouth.

3. A closure for a container having an annular mouth and external engageable members on said container below said mouth and lying radially beyond the mouth, comprising a resilient cap disk of greater diameter than said mouth, and adapted to project radially across the mouth in substantially radial symmetry from its center, adapted upon engagement with said engageable members on the container to exert a drawing down effect on the overhanging cap margin to fulcrum it on radial lines across said vessel mouth.

4. A closure for a container having an annular mouth comprising a resilient disk adapted to overlie said mouth and including an annular marginal portion disposed so as to overlie said mouth and project beyond to form an overhanging margin of leverage radially across the container mouth, and interengaging members on the cap margin and container for drawing down said cap under stress on lines of radial leverage of said cap radially across said cap on said mouth as a fulcrum.

5. A closure for a container having an annular mouth comprising a resilient disk adapted to overlie said mouth and including an annular marginal portion of upward flare and disposed so as to overlie said mouth and project beyond to form an overhanging margin of leverage radially across the container mouth and interengaging members on the cap margin and container for drawing down said cap under stress on lines of radial leverage of said cap radially across said cap on said mouth as a fulcrum.

6. A closure for a container, comprising a yieldable cap adapted to fulcrum on the container mouth, the top surface of the cap within said fulcrum concaved to permit the cap to be stressed, and beyond said fulcrum extending as a radial area of leverage, and container engaging devices on the cap for applying downwardly directed force to said area of leverage to stress said concaved surface into sealing contact with the vessel mouth.

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

BENJAMIN W. RIVERS.

Witnesses:
ELIZA BARNARD,
EDWARD C. REYNOLDS.