

J. NEVELSON.
CLOSURE FOR CONTAINING VESSELS.
APPLICATION FILED NOV. 27, 1914.

1,189,860.

Patented July 4, 1916.

FIG. 1.

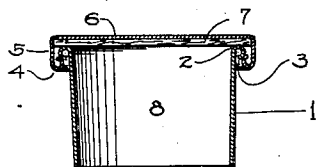


FIG. 2.

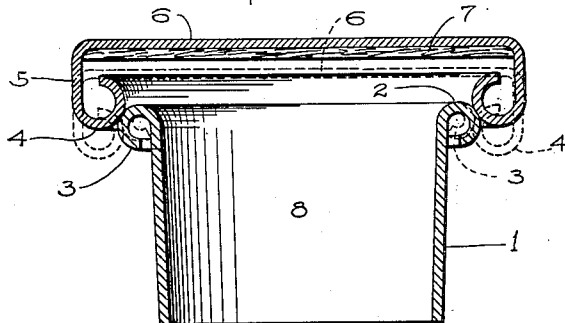
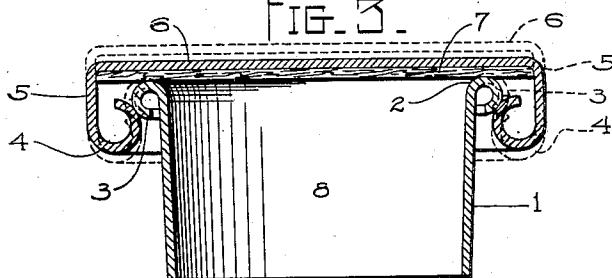


FIG. 3.



WITNESSES:

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JULIUS NEVELSON, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO NATIONAL CAN COMPANY, A COPARTNERSHIP COMPRISING HYMAN STERN AND DAVID STERN, OF BOSTON, MASSACHUSETTS.

CLOSURE FOR CONTAINING VESSELS.

1,189,860.

Specification of Letters Patent.

Patented July 4, 1916.

Application filed November 27, 1914. Serial No. 874,144.

To all whom it may concern:

Be it known that I, JULIUS NEVELSON, a citizen of the United States, residing at Somerville, county of Middlesex, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Closures for Containing Vessels, of which the following is a specification.

This invention relates to closures for containing vessels and particularly to a seal for the delivery opening of a can nozzle.

My seal is especially designed for use upon receptacles containing highly volatile liquids which are often times subject to rough handling in shipping. The sealing of any aerated or highly volatile liquid is particularly difficult owing to the constant tendency of the liquid content to force the closure off the container by reason of internal pressure. Where the container was of metal it has been proposed to employ a closure in the form of a cap having a plurality of clenching fingers which were crimped under a shoulder formed about the mouth of the container. This seal while generally satisfactory required a special cap construction and special crimping dies for clenching the fingers under the container rim. Where the container was of glass, an integral bead or lip flange was formed about its mouth and a metal cap having a downwardly trending beaded edge was forced over the container flange. In a seal of this type it was found necessary to make radial cut outs in the beaded edge of the cap in order to give to the bead a degree of resiliency sufficient to permit it to pass over the hard unyielding bead of the glass container. This impaired the effectiveness of the closure both as to its sealing qualities and its permanency.

I have discovered that by forming the container with a downwardly and inwardly trending rim, bead or "wire" about its mouth and the metallic cap with an upwardly and outwardly trending continuous rim, the container may not only be positively sealed in a hermetic manner due to the uninterrupted continuity of the cap rim, but there is in fact an interlocking engagement

between the two oppositely rolled rims upon any tendency of the cap to be displaced from its seat either by reason of the internal pressure of the liquid content or by rough handling in transit. More than this, it is a feature of my invention that in seating the cap the mutual pressure of the cap and container rims as they move by each other in continuous rolling contact produces a tendency on the part of the cap rim to roll outwardly toward its flange or skirt and the container rim to roll inwardly toward the nozzle so that the cap may be easily seated without involving a distortion of its rim beyond the limit of its elasticity.

In my closure, any upward unseating tendency of the cap is opposed by the engagement of the cap and container rims, so that the mutual contact of the two rims as they tend to move upwardly by each other produces an unrolling action opposite in its directive tendency to the action had in seating the cap. This actually tends to roll the container rim outwardly and upwardly and to roll the cap rim inwardly and downwardly whereby to produce an interlocking engagement which can only be overcome by a positive opening pressure exerted upon the cap rim with a suitable opening tool.

The construction and manner of applying my closure will be more fully disclosed in the specification which follows. In the drawings forming a part of that specification I have shown a closure which not only clearly illustrates the principles involved but is in itself a form proven satisfactory in use and well adapted to the requirements of manufacture.

Throughout specification and drawings like reference numerals are correspondingly applied, and in these drawings: Figure 1 is a central longitudinal section of a can nozzle to which my closure has been applied. Fig. 2 is a similar enlarged view illustrating in full and dotted lines the opposite rolling tendencies of the cap and container rims as they are forced by each other in seating a cap. Fig. 3 is a view similar to Fig. 2 illustrating the opposite rolling tendencies of the two rims toward an interlock-

ing engagement with each other where the pressure in the container is tending to unseat the cap.

My present invention involves the seating of a metal cap over the shoulder of a metallic can nozzle by pressure applied directly to the cap.

I have indicated at 1 a metallic can nozzle having an outwardly flared rim 2 which is rolled over and bent downwardly and inwardly upon itself to form an annular slightly yieldable bead or shoulder 3. The outer face of this bead is rounded as shown to permit the upwardly and outwardly trending rounded rim or bead 4 of a pendent circumferential skirt or flange 5 on a metallic cap 6 to move therepast with a rolling contact. The rim 4 is developed as a continuous unslotted but slightly yieldable bead about the lower edge of the flange 5. The inside diameter of the cap within the bead 4 is slightly less than the maximum external diameter of the bead 3. The cap 6 seats a pack 7 on the rim 2 in sealing relation to the delivery opening 8 of the nozzle.

In assembling the seal, the downward inwardly trending rim of the nozzle and the upward outwardly trending rim of the cap are separately formed. The cap is applied to the nozzle and seated by pressure applied directly to the cap or possibly to the container, in any suitable manner. The effect of this pressure is as follows: In the initial movement of the cap over the mouth of the nozzle the rounded face of the rim 4 engages the oppositely rounded face of the rim 3 and the tendency of the pressure is to roll the rim 4 upwardly and outwardly toward the flange 5 and to roll the rim 3 in an opposite direction downwardly and inwardly toward the wall of the nozzle. This action is illustrated by the dotted line showing in Fig. 2. This rolling action is of course very slight but its effect is appreciable in that it permits the cap rim to more readily pass the container rim without danger of permanently distorting the cap. After such passage the resiliency of the flange 5 draws the cap rim back in under the container rim, thus tightly seating the pack 7 against its seat on the rim 2 and effectually sealing the container. With the cap thus seated the container is permanently sealed and can only be opened by applying the usual cap removing tool to one edge of the cap rim and prying the cap off. Any tendency of the cap to unseat because of the pressure from within the container or by reason of rough handling in shipping is opposed by the rims 3 and 4 which bind against each other and tend to interlock upon any upward movement of the cap. This is illustrated in Fig. 3 wherein the mutual contact of the rims in the upward unseating tendency of the cap is shown as tending to unroll the cap rim downwardly

and inwardly and to unroll the container rim upwardly and outwardly so that the two rims practically interlock.

The closure of the present invention is believed to possess merit over those closures wherein the pendent flange of the cap is crimped under an upset rim on the container in that no crimping dies are required to seat the present closure while the seal is substantially as tight and as permanent as where the cap is crimped on. The closure of the present invention is also believed to possess merit over those closures wherein a cap having an annular resilient slotted bead is forced over an unyielding flange on the container in that the present closure provides a more perfectly hermetic seal and is better adapted to resist an unseating tendency by reason of its interlocking feature.

Various modifications in the form and construction of my invention may obviously be resorted to within the limits of the appended claims.

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

1. In combination, a containing vessel having a downwardly and inwardly turned resilient bead, extending adjacent to but not contacting with the exterior vessel wall and a cap having a flange terminating in an upwardly and outwardly turned resilient bead extending adjacent to but not contacting with the inner face of the cap wall, said cap rim being of greater maximum internal diameter than the maximum external diameter of the vessel rim to leave a free space between the cap and the vessel body, and said space permitting rolling tendency of said beads in opposite directions and away from their plane of mutual contact in the seating movement of the cap and permitting rolling tendency of said beads toward each other and into their plane of mutual contact to interlock upon any tendency of the cap to move away from its seat.

2. In combination, a containing vessel having an outwardly sloped and downwardly rolled rim extending adjacent to but not contacting with the exterior face of the vessel wall, and a cap having an inwardly and upwardly rolled rim extending adjacent to but not contacting with the inner face of the wall cap, said cap rim being of greater maximum internal diameter than the maximum external diameter of the vessel rim, and of greater internal diameter than the external diameter of the opposite wall of the vessel to leave a free space below said vessel rim and exposing said rim for direct underneath support in seating the cap.

3. In combination, a containing vessel having an outwardly directed rim extending adjacent to but not contacting with the exterior face of the vessel wall, and a cap having an inwardly directed rim extending ad-

5 jacent to but not contacting with the inner face of the cap wall, said cap rim being of greater maximum internal diameter than the maximum external diameter of the vessel rim, and of greater internal diameter than the external diameter of the opposite wall of the vessel to leave a continuous free space below said vessel rim and exposing said

rim for direct underneath support in seating the cap.

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

JULIUS NEVELSON.

Witnesses:

VICTORIA LOWDEN,
AGNES V. O'CONNELL.