

Nov. 29, 1938.

H. T. GRISWOLD

2,138,376

CLOSURE

Filed Sept. 2, 1937

Fig. 1.

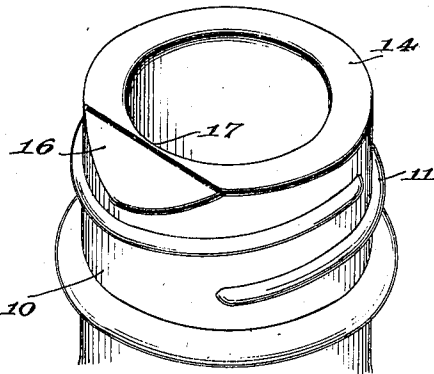


Fig. 2.

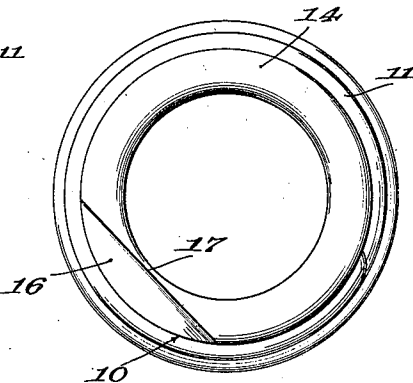


Fig. 3.

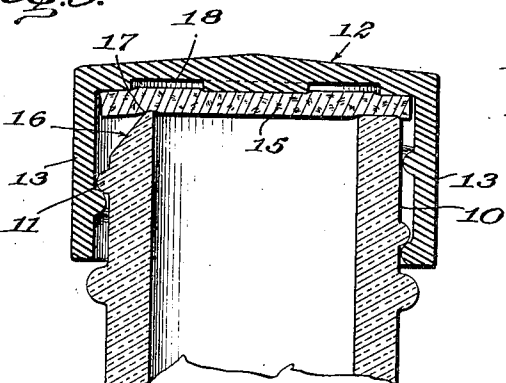
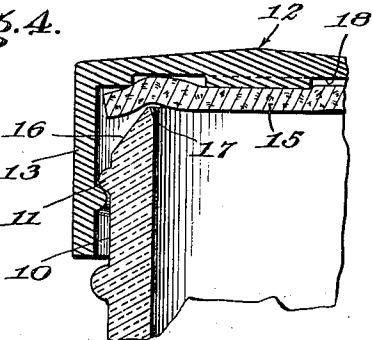


Fig. 4.



Hugh T. Griswold

INVENTOR

BY

Paul & Hoge

ATTORNEYS

UNITED STATES PATENT OFFICE

2,138,376

CLOSURE

Hugh T. Griswold, San Francisco, Calif., assignor
to Owens-Illinois Pacific Coast Company, a
corporation of Delaware

Application September 2, 1937, Serial No. 162,179

5 Claims. (Cl. 215-56)

The self-venting seal comprising the present invention is primarily adapted for use in connection with bottles or jugs having reduced threaded neck portions providing relatively narrow mouth openings, although the principles of the invention are applicable for use in connection with jars or other receptacles having wider mouth openings.

The principal object of the invention is to provide such a bottle seal which automatically operates to relieve excessive pressures developed or generated within the bottle; one which is inherent in the threaded finish of the bottle and in the usual threaded closure therefor; yet one which does not require such modification of either the bottle finish or of the closure as to preclude or increase the cost of their formation in the usual respective manners of molding these articles.

Other objects will become apparent as the following description ensues.

In the accompanying drawing:

Fig. 1 is a perspective view of the threaded neck portion of a bottle manufactured in accordance with the principles of the present invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is a sectional view taken vertically through the neck portion of the bottle showing a threaded closure manufactured in accordance with the principles of the present invention applied thereto under normal conditions of pressure within the bottle; and

Fig. 4 is a fragmentary sectional view taken through the bottle neck and closure under conditions of excessive pressure within the bottle.

The reduced neck portion of a bottle is designated at 10 and is provided with inner and outer surfaces that are substantially cylindrical. The usual threads 11 are formed on the neck to accommodate a threaded closure 12 having a depending skirt portion 13. The upper rim 14 of the bottle neck surrounding the bottle opening provides a flat sealing surface designed for coextensive sealing engagement with a resilient liner 15 mounted within the closure 12.

A portion of the glass existing in the vicinity of the rim 14 above the threads 11 is cut away to provide an inclined plane surface 16 which leaves a relatively narrow restricted venting edge or lip 17 at the rim 14 at one side thereof. Excess pressures generated or developed within the bottle are adapted to be relieved between the lip 17 and the liner 15 to the atmosphere by following the tortuous path provided by the threads 11

between the outer surface of the bottle neck 10 and the inner surface of the skirt 13.

In order to facilitate such venting of the bottle, a relatively wide annular groove 18 is formed in the inner surface of the closure 12 and overlies the venting lip 17.

Under normal conditions of pressure within the bottle, the resilient liner 15 is compressed between the rim 14 and that portion of the closure immediately surrounding the groove 18 while the portion of the liner overlying the venting lip 17 remains in sealing contact therewith by virtue of the inherent resiliency and stiffness of the liner. Under conditions of excessive pressure within the bottle, the liner becomes flexed in the vicinity of the venting lip as shown in Fig. 4, thus following the line of least resistance over the edge and through the tortuous path provided by the threads 11 to the atmosphere.

It is obvious that by varying the resiliency (and consequently the stiffness) of the liner 15, or the width of the venting lip 17, the bottle may automatically be caused to become vented to the atmosphere within reasonably definite ranges of internal pressure, assuming, of course, that in applying the closure to the bottle the torque employed is neither excessive nor insufficient to create an effective seal.

Modifications may be resorted to within the spirit of the appended claims.

I claim:

1. In combination, a container including a circular wall defining a filling opening, the latter being formed with a continuous sealing surface at its outer end, said surface being reduced in width in a restricted zone to provide a venting lip, a closure, means for securing the closure in position to seal the opening, and a resilient liner in the closure in sealing contact with said surface and venting lip, said closure having a recess in its inner side directly over the venting lip.

2. In combination, a container having a neck formed with a continuous annular sealing surface at its outer end, a restricted portion of said sealing surface being of less width than the remainder thereof to provide a venting lip, a closure, means for attaching the closure to the neck, and a resilient liner in the closure in sealing engagement with said sealing surface, said closure having a recess in its inner surface directly over the venting lip.

3. In combination, a container having a neck formed with a continuous annular sealing surface at its outer end, a restricted portion of

said sealing surface being of less width than the remainder thereof to provide a venting lip, a threaded closure for said neck having a cap portion and a skirt portion, and a resilient liner
5 in said closure in sealing engagement with said sealing surface, there being an annular groove in the cap portion of said closure overlying said venting lip.

4. In combination, a container having a neck
10 formed with a continuous annular sealing surface at its upper end, a restricted portion of said sealing surface being of less width than the remainder thereof to provide a venting lip, a threaded closure on said neck having a cap portion and a skirt portion, and a resilient liner
15 in said closure in sealing engagement with said sealing surface, there being a recess in the cap

portion of said closure overlying said venting lip, said recess only partially overlying the remainder of said sealing surface.

5. In combination, a container having a neck provided with a continuous annular sealing surface at its upper end, the outer surface of said bottle neck above the threads thereof being provided with a cutaway portion having a plane upwardly and inwardly inclined surface intersecting said sealing surface to provide a venting lip
10 of less width than the remainder of said sealing surface, a threaded closure on said neck, and a resilient liner in said closure in sealing engagement with said sealing surface, there being a void in the material of which said closure is
15 formed overlying said venting lip.

HUGH T. GRISWOLD.