Sept. 9, 1969 R. S. KONEFAL 3,465,923

SEALING ASSEMBLIES FOR CONTAINERS

Filed Oct. 28, 1966

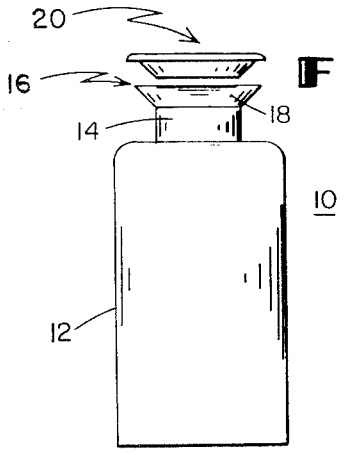


FIG 1

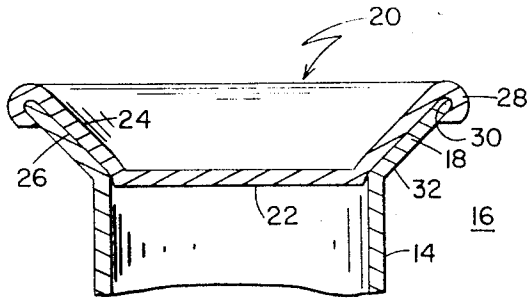


FIG. 2

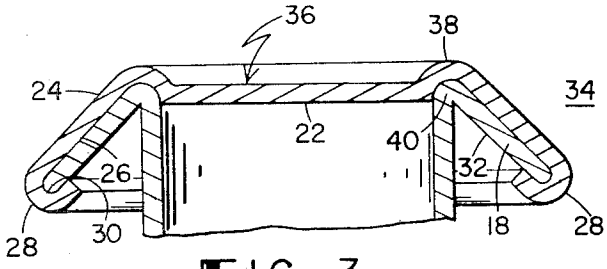


FIG. 3

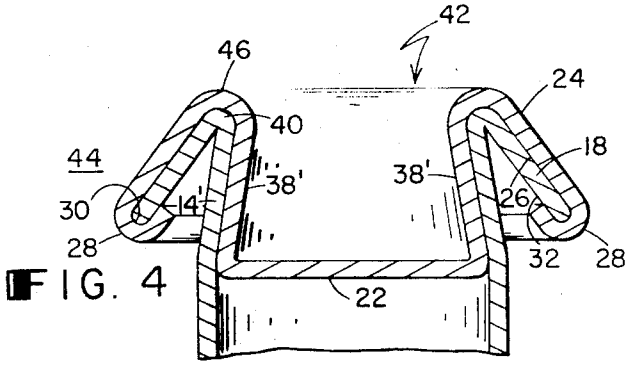


FIG. 4

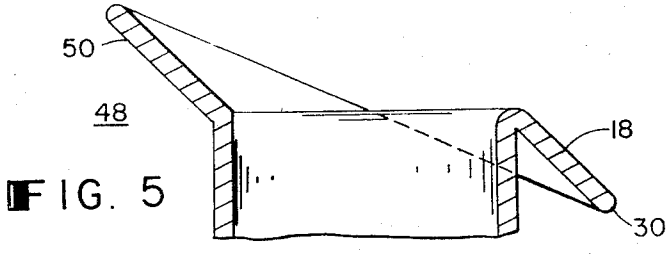


FIG. 5

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SEALING ASSEMBLIES FOR CONTAINERS

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U.S. Cl. 222—498 4 Claims

ABSTRACT OF THE DISCLOSURE

A throated container having an extending lip, and a cap for closing the throat having an extending wall, said wall and lip having stable over-center positions when extending diagonally of the throat axis, and flexible, in toggle-like action, between upward and downward diagonally-extending, stable, over-center positions.

This invention relates to improvements in sealing assemblies for containers.

It is a primary object of this invention, to provide a sealing assembly which may be quickly, easily, and positively secured, which may be repeatedly reused without deterioration of its sealing ability, and which will maintain its sealing ability through the internal pressure of the container is substantially above atmospheric.

It is a further object of the invention to achieve the above objects with a sealing assembly that is both simple and inexpensive.

The invention features a resilient sealing assembly for a container including a frusto-conical lip, connected to, and extending outwardly from the throat of the container. The assembly also includes a cap having a base for closing the throat of the container, and a frusto-conical wall extending from the base in juxtaposition with the lip, for providing a seal therebetween. An annular overhang extending from the wall engages the edge of the lip and a portion of the lip on the side opposite the wall, forming a second seal for the container.

In preferred embodiments the wall and lip extend downwardly and outwardly to form a toggle arrangement which urges the base against the throat to form a third seal for the container; the wall and lip have an over-center position in association with the toggle arrangement in which a section of the lip extends upwardly and outwardly to form a spout; and the base is connected to the walls by extension of the base that suspend the base in the throat, the throat being resilient; and the base extensions are of a smaller diameter at the top of the throat than at the base for constricting the throat about the base and base extension to form a fourth seal for the container.

Other objects, features, and advantages will appear from the following description of a preferred embodiment of the invention, taken together with the attached drawings thereof, in which:

FIG. 1 is a plan view of a container using the sealing assembly according to this invention;

FIG. 2 is an enlarged sectional view of the sealing assembly and part of the container shown in FIG. 1;

FIG. 3 is a view similar to FIG. 2 showing another embodiment of this invention using a toggle arrangement;

FIG. 4 is a view similar to FIG. 2 showing another embodiment of this invention using a toggle arrangement;

FIG. 5 is a view similar to FIG. 2 showing another embodiment of this invention using the toggle arrangement to provide a spout.

There is shown in FIG. 1 a container **10** having a receptacle portion **12**, throat **14**, and a resilient sealing assembly **16** mounted on the throat. Sealing assembly **16**

includes a frusto-conical lip **18** attached to, and extending upwardly and outwardly from, throat **14**, i.e., lip **18** extends diagonally relative the axis of throat **14**, and a cap **20**. Cap **20**, FIG. 2, includes a base **22** which closes throat **14**, and a frusto-conical wall **24** extending outwardly and upwardly i.e., diagonally relative the axis of throat **14**, in juxtaposition with internal face **26** of lip **18**. At its outer end wall **24** joins curved overhang **28** which engages the outer edge **30** and external face **32** of lip **18**.

Sealing assembly **16** is thus secured and sealed by the interaction of overhang **28** and edge **30** and is further sealed by the contact of wall **24** and face **26**, and by base **22** in throat **14**.

The toggle arrangement, FIG. 3, of sealing assembly **34** results when lip **18** and wall **24** are formed to extend outwardly and downwardly from throat **14**. The toggle arrangement results from wall **24** and lip **18** being in an over-center position, whereby diametrically opposed portions of cap **36** place base **22** in tension and urge it into sealing arrangement with throat **14**. In addition, base extension **38** is urged against rim **40** at the junction of lip **18** and throat **14** forming another seal for container **10**.

The toggle arrangement may be used to greater advantage with cap **42** formed by placing base **22** further into the throat using lengthened base extension **38'** in sealing assembly **44**, FIG. 4, and using a resilient throat **14'**. In this assembly the diameter of base extension **38'** is significantly smaller at its top **46** than at base **22**. This configuration causes throat **14'** to be constricted about base **22** and base extension **38**, providing another seal for container **10**.

A sealing assembly **48**, FIG. 5, shown without a cap, having a spout for pouring, may be realized by forming lip **18** with a portion extending downwardly and outwardly, and a portion extending upwardly and outwardly. The upwardly extending portion forms spout **50**.

In assembly **48**, as in all the disclosed assemblies, a section of overhang **28** may be left engaged with an arcuate portion of edge **30** of lip **18** to provide a hinge action for the cap so that it need not be completely removed when the cap is opened. Each of the disclosed assemblies is constructed of resilient materials, typically polyethylene plastic. The throat need not be resilient except as used in the sealing assembly of FIG. 4. The entire sealing assembly, throat and receptacle may be made of polyethylene plastic by injection molding processes.

What is claimed is:

1. A resilient sealing assembly for a throated container comprising:

a lip connected to, and extending outwardly from, the throat of the container,

a cap having a base for closing said throat, a wall extending from said base in juxtaposition with said lip, for providing a seal therebetween, and an annular overhang engaging the edge of said lip and a portion of said lip on the side opposite said wall for forming a second seal for said container,

said lip and wall each being stable in a plurality of overcenter positions, including a cap-engaging position and a cap-locking position, in which positions said lip and wall each extends diagonally relative the axis of said throat, and unstable when extending perpendicularly from said axis, said lip and wall each being responsive to external force applied thereto to flex in a toggle-like action between said cap-engaging and cap-locking positions therein assuming upward and downward diagonally-extending over-center attitudes.

2. The sealing assembly of claim **1** in which said throat is resilient, said base is connected to said wall by a base extension which suspends said base in said throat, and said

base extension is of a smaller diameter at the top of said throat than at said base for constricting said throat about said base and base extension and forming a fourth seal for said container.

3. The sealing assembly of claim **1**, in which said wall and lip, in extending downwardly and outwardly from said throat, urge said base against a rim formed by the junction of said throat and said lip to form a third seal for said container.

4. The sealing assembly of claim **1**, in which a first section of said lip is downwardly extending, and a second section of said lip is upwardly extending, said second section forming a spout for pouring fluid contents from said container.

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U.S. Cl. X.R.

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