Jan. 7, 1947. F. LOBL 2,413,721

CONTAINER

Filed March 17, 1945

Fig. 1.

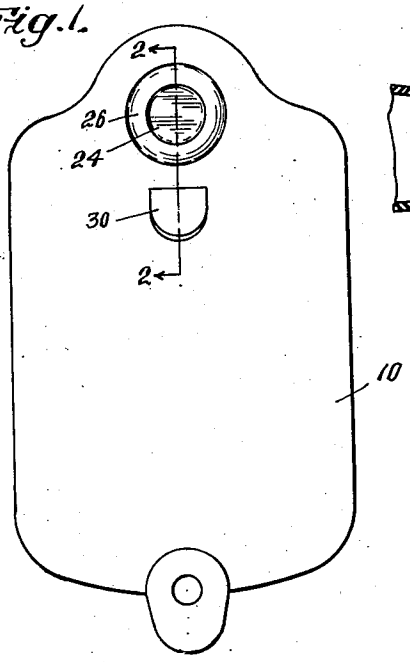
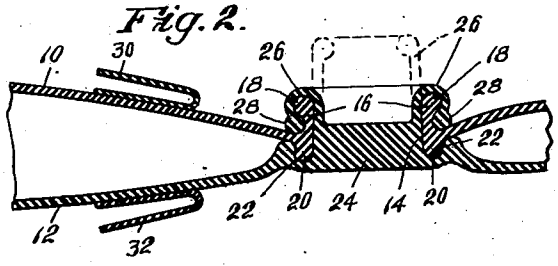


Fig. 2.



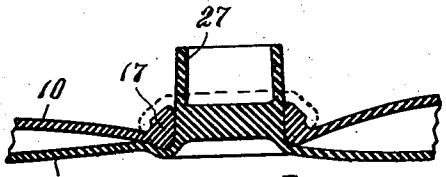


Fig. 3.

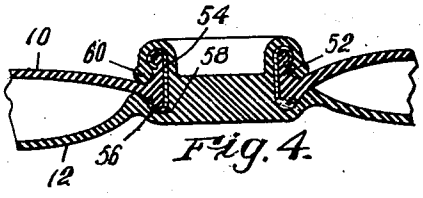


Fig. 4.

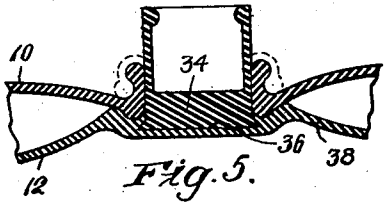


Fig. 5.

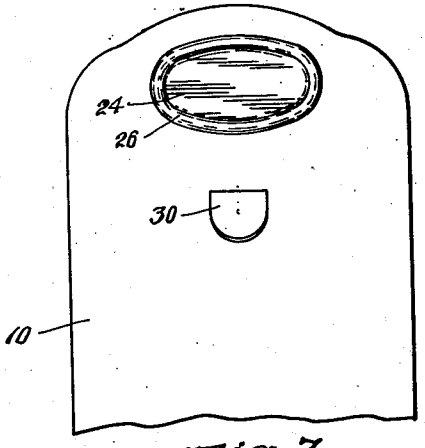


Fig. 7.

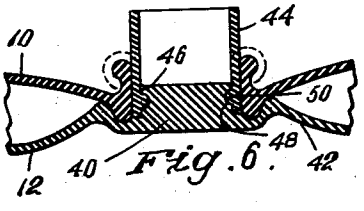


Fig. 6.

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Patented Jan. 7, 1947

2,413,721

UNITED STATES PATENT OFFICE

2,413,721

CONTAINER

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Application March 17, 1945, Serial No. 583,299

10 Claims. (Cl. 150—8)

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This invention relates to improvements in containers of the general type having oppositely disposed wall portions which are yieldable toward and from each other and more especially to improved closure means for sealing a mouth opening in a said wall portion of such a container, which may be, for example, a hot water bottle or an ice bag.

The invention will be described herein as applied to a hot water bottle but it should be understood that the structural features of novelty have a board field of utility for effectively closing a container against escape of fluid by coaction of elements on superimposed relatively yieldable wall portions of the container.

In my United States Leters Patent No. 2,171,730, granted to me September 5, 1939, there is disclosed a container and closure therefor of the general type to which my present invention relates. The said patented construction, shown embodied in a hot water bag, has oppositely disposed relatively yieldable wall portions of which one has a mouth opening therein and the other has a plug element adapted to be thrust into said mouth opening. The mouth has an outstanding flange thereon, and the plug element has an enlargement at its leading end constituting a head larger than the mouth opening so that it can be forced through the mouth only by stretching the flange around the mouth. After the head of the plug element has been forced through the mouth to beyond the flange, the flange resiliently contracts and closes around the plug element, back of its head, whereby the plug element is securely but removably held in said mouth.

Although my said patented construction effectively closes the container against escape of water or other fluid for ordinary purposes, the closure portion of the container sometimes becomes subjected to stresses in use which cause stretching or pulling away of the mouth flange from its sealing engagement around the plug element, under which circumstances contents of the container may escape.

It is among the objects of my present invention to provide a container of the mentioned general type having a closure and sealing means which can resist effectively and successfully all stresses and strains to which the container and its closure reasonably may be subjected in use. I employ the feature of my patented construction of projecting a plug element on one wall portion into a flanged mouth opening in an oppositely disposed wall portion but, according to my present invention, the plug element enters the mouth without

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any appreciable stretching or enlarging of the mouth. Rather, the walls of the mouth opening preferably are tapered, and the plug element has a complemental taper for seating in the mouth. Also, the plug element has a continuous flange of resilient flexible material projecting beyond the leading end of the plug and adapted to be rolled back over and into gripping sealing engagement with the mouth flange.

Another object is to provide a container closure of the mentioned general description having a flanged mouth opening in one wall portion of the container and a plug on an oppositely disposed wall portion, with co-acting means on said flanged mouth and said plug for effecting an inner seal and an outer seal around the mouth opening. I provide a continuous rib around the mouth interiorly of the wall portion having the mouth, and a complementary groove around the base of the plug on the other wall portion, said rib seating in said groove when the plug is thrust into said mouth. Also a continuous resilient projection on the plug is adapted to be rolled over into resilient gripping engagement with the mouth flange exteriorly of the container to effect an exterior seal around the mouth opening and to maintain interior sealing inter-engagement of said interior rib in said groove around the base of the plug.

Yet another object is to provide a double sealed container closure of the mentioned general description having an exterior seal which effectively can resist stresses imposed thereon by flexings and distortions of the container in use but which easily and quickly may be released manually to open the container mouth.

It is, moreover, my purpose and object generally to improve the structure and effectiveness of containers and more particularly the openable closures thereof.

In the accompanying drawing:

Figure 1 is a face view of a hot water bottle embodying features of my present invention;

Figure 2 is a cross-sectional view on line 2—2 of Figure 1, on a larger scale;

Figure 3 is a cross-sectional view similar to Figure 2 but showing a modified form of bottle mouth and closure;

Figure 4 is a detail cross-sectional view similar to Figure 2 but showing the mouth of the bottle equipped with a metallic ring;

Figure 5 is a detail cross-sectional view showing a modified form in which the closure plug is a separate piece cemented to the wall opposite the mouth wall;

Figure 6 is a detail cross-sectional view of another modification in which the plug flange is a separate piece cemented to the plug body; and

Figure 7 is a face view of a hot water bottle having an oval-shaped mouth and closure.

Referring to the drawing, the hot water bottle as represented may have its walls 10, 12 made of rubber as is usual but the mouth 14 of the bottle opens laterally through the side wall 10 near one end of the bottle.

According to the invention, the mouth is surrounded by an exteriorly projecting flange 16 having its interior surfaces tapering as illustrated in Figs. 2 and 3, and having a lip beaded exteriorly as at 18. Interiorly, the wall 10 has a rib 20 extending around the mouth and projecting generally toward the wall 12 for seating in the interior groove 22 extending around the base of the plug 24 on wall 12. Preferably the rib 20 will be somewhat larger than groove 22 so that the rib will enter the groove with force fit. Plug 24 has size and complementary taper for fitting snugly in the mouth 14, and its solid extent is made as short as is feasible so that the plug and its flange will not interfere with filling of the bottle.

It is a feature of my improved construction that the closure effectively seals the mouth both interiorly where the rib 20 seats in groove 22 and exteriorly around the lip 18 of the mouth flange 16. Also the plug is drawn tight and maintained tight in mouth 14, and the said interior seal is maintained effective, by the exterior seal which comprises a resiliently flexible projection 26 on plug 24 which engages over the bead 18. Projection 26 has tubular extent beyond the end of plug 24, being projected beyond bead 18 on the mouth flange when plug 24 is seated in mouth 14. The outer end of tube 26 may be beaded interiorly as at 28, or may be beaded exteriorly, or not at all. The tubular walls are resiliently stretchable so that they may be rolled back over the lip bead 18 from their dotted positions in Fig. 2 to their full line positions in Fig. 2. This roll-back of the tube over bead 18 involves considerable stretching of the stock of the tube, and draws the plug strongly into mouth 14 while simultaneously forcing the interior mouth rib 20 tightly into groove 22, thereby effecting a seal interiorly and a general sealing tightness of the plug all along the mouth flange. With a construction as shown in Fig. 2, for example, as the tube bead 28 is forced over the lip bead 18 it contracts to strongly engage back of bead 18, accomplishing at this exterior location a seal which manually may be broken easily and quickly but which is secure and strong against stresses and strains incident to use of the bag.

The mouth 14 and the plug 24 with their respective accessories may be generally circular in cross-section as indicated in Fig. 1, or they may be oval in cross-section as suggested in Fig. 7. In either case the sealing action will be the same and the cross-section showings of Figs. 2–6 are representative of either shape.

In filling the bag, the mouth wall 10 may be spread away from wall 12 so that the plug 24 and its projecting tube 26 are clear of the mouth, and the mouth preferably will be tilted slightly, so that water may pass through the mouth and past the plug and its tube. When the bag is supplied with a desired quantity of water, the plug may be thrust into mouth 14 and the latter securely sealed as previously described.

Preferably each wall 10, 12 will have one or more flaps 30, 32 thereon to facilitate opening of the bottle, the flap 30 on wall 10 serving also as a convenient means for carrying the bottle and for holding it while it is being filled.

It will be obvious from the foregoing description that my improved bag has its closure fixed on a wall interiorly of the bag where it always is available in proper relation to the bottle mouth for effectively closing and sealing the mouth. The closure cannot be mislaid or lost as frequently happens with separable closure elements.

In Fig. 3 the lip around the mouth in wall 10 is merely an enlargement 17 providing both interior and exterior beads, and the closure flange 27 requires no beaded end but rolls into sealing relation to the mouth as shown.

However, it may be desirable in some cases to form the closure element, with its projecting flange, as a separate element and to cement it in place interiorly of a wall of a bag. Such a construction is illustrated in Fig. 5 wherein the closure plug 34 is a separate element cemented in a slightly depressed locating seat 36 in the bag wall 38. This construction simplifies the operation of molding the bag walls, and the plug and its flange may be made of livelier rubber than the bag walls.

If desired, and as shown in Fig. 6, the plug body 40 may be molded as an integral part of the bag wall 42 and only the projecting flange 44 in this case is made separate, it being cemented at 46 to the plug body. A groove 48 may be provided in the plug for seating a rib 50 formed interiorly of the flange. In this case, the flange conveniently may be of livelier rubber than the main bag and closure plug.

Fig. 4 shows still another modification in which the mouth flange 52 is reinforced by a metallic ring 54. The metal lines the interior wall of the mouth, being turned outward to provide an interior annular rib or bead 56 for seating in groove 58 around the base of the closure plug, and turned outward over the lip of the mouth flange and crimped into clamping relation to the flange as at 60. The metal makes the mouth flange more rigid and preserves the rubber mouth flange against cracking or other deterioration. Also the crimping of the metal at 60 forms the metal at the lip into a bead behind which the turned over flange of the closure plug can engage.

In every case, however, the closure plug seats from within the bag to close the mouth, and effective inner and outer seals are effected when the plug flange is rolled over the mouth flange.

While I have shown and described specific structural shapes and designs of parts, it will be obvious that various changes in the shapes and designs of parts may be made without departing from the spirit and scope of my invention as defined in the claims.

I claim as my invention:

1. A container having two wall portions movable relatively toward and from each other, one of said wall portions having a mouth opening therein and the other having a projecting plug thereon for seating in said mouth opening, mechanical sealing means around said mouth and plug interiorly of the container, a lip extending around said mouth opening exteriorly of the container, and resilient tubular means on said plug inserted through said mouth opening, resiliently engaged in sealing relation over said lip and biasing said interior sealing means into co-acting sealing relation.

2. A container having two wall portions mov-

able relatively toward and from each other, one of said wall portions having a mouth opening therein and the other having a projecting plug thereon for seating in said mouth opening, a lip extending around said mouth opening exteriorly of the container, and an elastic tubular projection on said plug inserted through said mouth opening and rolled into sealing relation to said lip, said elastic tubular projection also biasing said plug to its seat in said mouth opening.

3. A container having two wall portions movable relatively toward and from each other, one of said wall portions having a mouth opening therein and the other having a projecting plug thereon for seating in said mouth opening, an exteriorly projecting beaded flange on the wall portion having said mouth opening and extending around said opening, an elastic tube projecting axially at the end of said plug and having a bead of its elastic stock at its outer end, said tube being inserted through said mouth opening and rolled over the bead of said flange with its elastic bead strongly and resiliently gripping the flange back of the flange bead.

4. A container having two wall portions movable relatively toward and from each other, one of said wall portions having a tapered mouth opening therein and the other having a plug thereon projecting with complementary taper and adapted to seat in said mouth opening, a rib around the mouth opening at the interior end of its tapered walls, a socket around the base of said plug interiorly of the container for seating said rib, and elastic means on the end of said plug projected through the mouth opening and engaged elastically at the exterior side of the wall portion having the mouth opening and biasing said interior rib and socket into co-acting sealing relation around said mouth opening.

5. A container having oppositely disposed flexible walls of which one wall has a mouth opening extending therethrough in general direction toward the other wall, and said other wall having a stopper thereon projecting generally in direction toward the wall with the mouth opening and adapted to seat in said opening, an elastic tube projecting from the end of the said stopper and adapted to be projected through said mouth opening when said stopper is seated, a lip projecting exteriorly around the mouth opening, and mechanical sealing means interiorly of the mouth opening, said elastic tube being rollable backward over said exterior lip to provide an exterior seal around the mouth opening and simultaneously biasing said interior sealing means into sealing relation around the mouth opening.

6. In a rubber-walled container having a mouth opening in one wall thereof, a closure for said opening comprising a stopper projecting interiorly from an opposite wall and seatable in said mouth opening, a beaded exterior projection around the mouth opening in said one wall, and an elastic tubular projection at the outer end of said stopper insertible through said mouth opening and rollable backward over said beaded exterior projection around the mouth opening for strongly seating said stopper in said mouth opening and for sealing said opening exteriorly of the container.

7. A container comprising a wall portion having a mouth opening therein, a second wall portion movable toward and from said first wall portion and having a plug-projection thereon adapted to be thrust into said mouth opening of the first mentioned wall portion, said first wall portion having an exterior projecting lip extending around said opening, and said plug-projection having a resiliently flexible continuous flange projecting therefrom and adapted to be projected to the exterior side of said first mentioned wall portion when said plug-projection is thrust into said mouth opening, and to be rolled back over and into gripping engagement with said lip.

8. In a container for holding fluids, a pair of superimposed wall portions yieldable toward and from each other, one said wall portion having a mouth opening therethrough bounded by an exteriorly outstanding lip, a plug carried on the other wall portion, insertible in said mouth opening and having a resiliently flexible flange projecting beyond the end of the plug with continuity of extent around and spaced from the axis of the plug, said flange being adapted to project through and beyond said mouth when said plug is inserted in the mouth and to be rolled back over and into gripping relation with said lip.

9. A container having superimposed wall portions movable toward and from each other, one of said wall portions having a mouth opening therein, a closure plug on the interior of the other wall portion and projecting generally toward said mouth opening, an annular elastic flange projecting from the end of the closure plug, said plug being seatable from within the container to close said mouth opening with said elastic flange projected through and beyond the mouth, and said elastic flange being rollable backward into sealing engagement with the container walls around said mouth.

10. A container having superimposed wall portions made of flexible material and movable toward and from each other, an exteriorly projecting neck on one of said wall portions defining a mouth opening therethrough, rigid means clamped on said neck and reinforcing the walls thereof, a closure plug on the interior of the other wall portion and projecting generally toward said mouth opening, an annular elastic flange projecting from the end of the closure plug, said plug being seatable from within the container to close said mouth opening with said elastic flange projected through the mouth opening and beyond said neck, and said elastic flange being rollable backward over said neck for annularly sealing the mouth opening.

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