Oct. 14, 1930. R. M. MEIKLEJOHN 1,778,532

CONTAINER FOR CORROSIVE MATERIALS

Filed Aug. 24, 1927

Fig. 1.

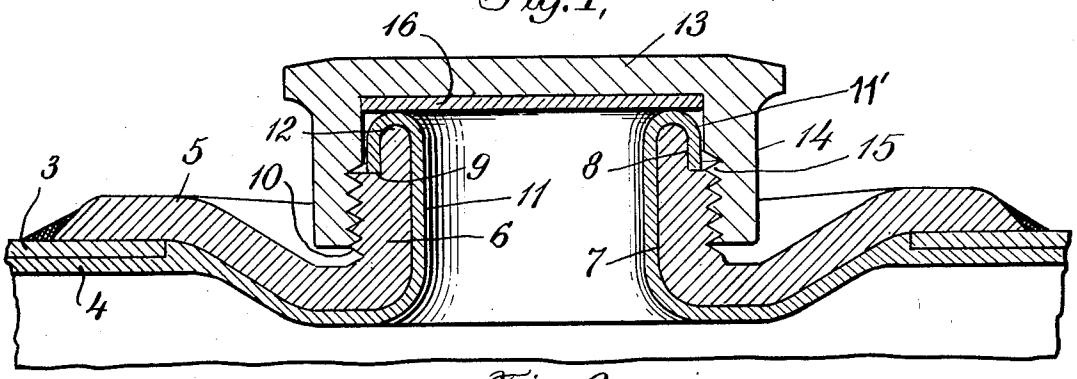
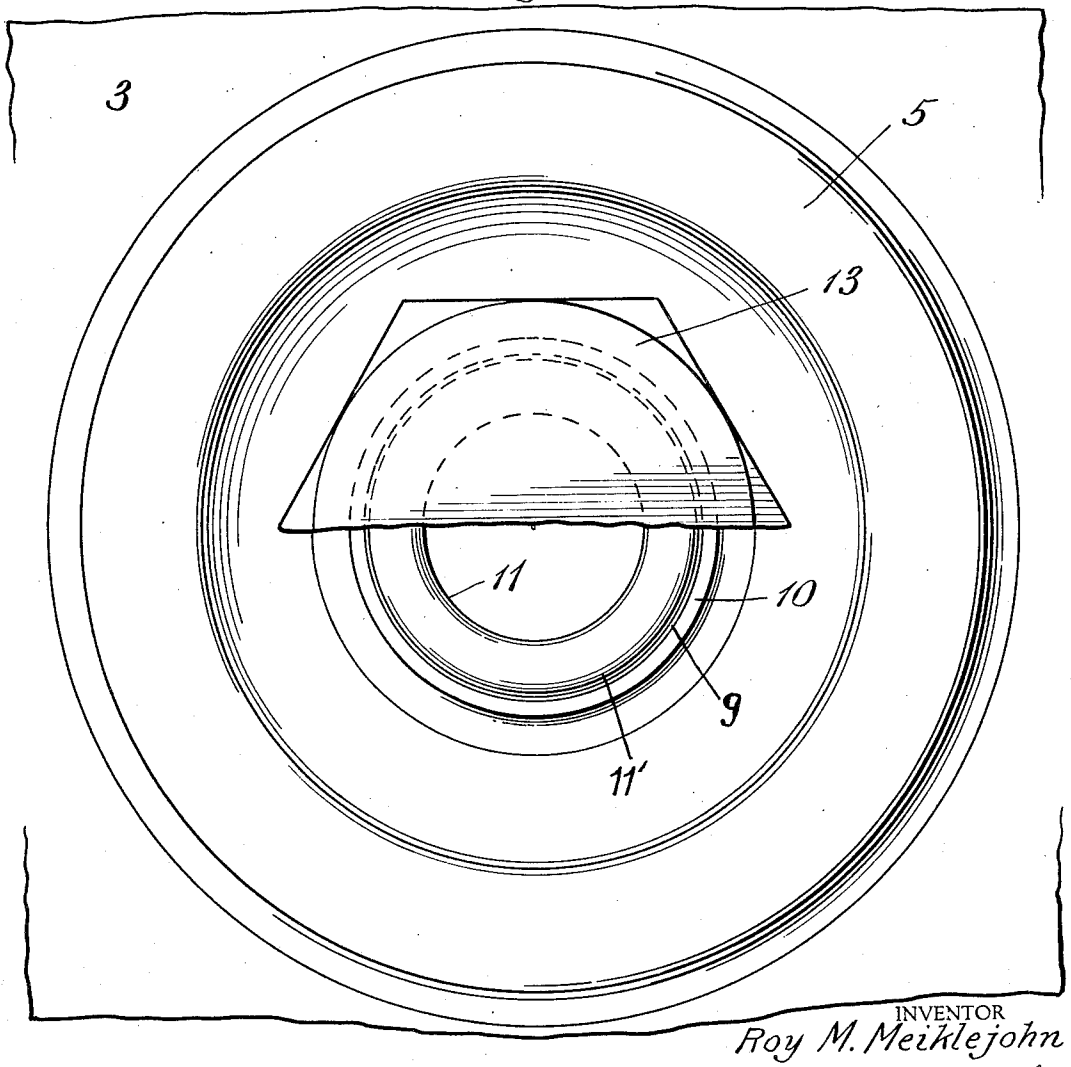


Fig. 2.



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CONTAINER FOR CORROSIVE MATERIALS

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My invention relates to improvements in containers for acids and similar corrosive materials wherein the containers are provided with non-corrodible linings, and relates more particularly to an arrangement of the closure of the container in relation to the container and its lining whereby the possibility of destruction of the closure and contamination of the contents of the container is reduced to a minimum.

Considerable difficulty has been experienced heretofore in the provision of efficient bungs or closures for lined tanks, drums, or other vessels containing corrosive materials. The linings for these vessels consist usually of some non-corrodible material such as lead, rubber, or the like, and while these linings are effective in so far as the main body of the container is concerned, the provision of a mouth in the same and the closure therefor presents a vulnerable point of attack for the corrosive material. These mouths are usually closed by plugs or similar means in threaded or frictional engagement with the inner side of the lining circumscribing the container mouth. This internal attachment is subject to considerable corrosive action, and promotes resistance to closure removal as well as contamination of the contents of the container upon such removal.

An object of my invention is to provide against destruction of the closure and to facilitate removal of the latter without contamination of the contents of the container.

A further object of my invention is to provide a closure means which presents no unprotected surface to the attack of the corrosive material.

With the above and other objects in view, the manner in which I accomplish the same will be set forth in the following specification taken in conjunction with the accompanying drawing, in which

Fig. I is a sectional elevation of a preferred embodiment of the closure of my invention, and

Fig. II is a plan view of the same with parts broken away.

Referring to the drawing, reference numeral 3 designates the outer wall or shell of a drum or other container made of steel or or other suitable material which shell is provided with a lining 4 of a suitable non-corrodible material such as lead, rubber, or the like constituting the interior surface of the main hollow body portion of the container. Overlapping the shell 3 and welded, riveted, or otherwise secured thereto is a ferrule 5 provided with a flange 6 whose inner and outer faces are designated 7 and 8 respectively. The outer face 8 of the ferrule flange 6 has projecting therefrom a shoulder 9 and is provided below the shoulder with threads 10.

The main container lining 4 has extending therefrom a continuous non-corrodible flange 11 which covers the inner face 7 of the ferrule flange 6 circumscribing a projecting mouth through which the acid or other material is introduced into and removed from the container. The flange 11 is provided with a hook-like extension 11′ which passes about the rim 12 of the flange 6 and then adjacent the outer face 8 thereof into abutting relationship with the shoulder 9. The ferrule flange 6 thus reinforces the lining flange 11, and, being positioned exteriorly of flange 11, is well adapted to carry threads 10 in an external position. The lining structure may be attached to the shell and to the ferrule 5 and its flange 6 in any suitable manner. By such a lining arrangement a continuous non-corrodible surface is presented by the container to the attack of the corrosive contents.

For closing the mouth of the container a cap 13 of steel or other suitable material is provided, which cap has a flange 14 internally screw threaded as at 15 for engagement with the external threads 10 on the ferrule flange 6 to retain the cap in place on the container. A lining piece 16 of rubber, lead, or similar non-corrodible material is fitted into the recess formed by the flange 14 and covers the face of the cap exposed to the container mouth. This lining piece may be secured to said face or not, as desired. If desired, an elastic gasket of a suitable non-corrodible material may be provided between the lining piece 16 and the rim 12 to further enhance the fluid-tight nature of the closure.

From the foregoing description it will be apparent that my invention presents a rugged and effective closure means presenting many advantageous features over the closures heretofore used for containers of the type described. When the cap is screwed in place on the ferrule flange a very satisfactory seal is obtained, and only corrosion resistant surfaces are exposed to the action of the contents of the container. By the provision of means for attaching the cooperating cap exteriorly of the lining circumscribing the opening, e. g., the externally screw-threaded ferrule flange, the attaching area is removed from the region most exposed to attack, enhancing the operative efficiency of the closure and prolonging its life. By virtue of the attachment externally of the opening the cap may be removed with considerable ease and without danger of any incrustation, such as appears on the usual internal plugs, dropping into the container. This applies also to the undesirable contamination which may result from surface abrasion between the cap and the container upon the application or removal of the cap.

The provision of a hooked extension of the lining flange which passes over the rim of the ferrule flange, partially encompassing the latter, assures protection, even under very adverse conditions, against displacement of the lining in the vulnerable region adjoining the opening. Such an arrangement, moreover, affords but slight opportunity for the corrosive materials to work in behind the lining and loosen it. When the cap is in place on the ferrule flange, the locking action of the same on the lining flange extension practically eliminates any possibility of the lining becoming displaced. It is evident that while this hooked extension of the lining flange preferably extends into abutting relationship with a shoulder on the ferrule flange, it need not extend so far but may terminate at any point beyond the sealing surface of the flange.

The attaching area may if desired be greased or similarly treated for protection against corrosion and for ease in operation, without involving contamination of the contents of the container by such foreign material.

While I have disclosed a preferred embodiment, it is to be understood that my invention also contemplates all equivalent combinations, structures, or arrangements of parts as may fall within the scope of the following claims.

I claim:

1. The combination in a container for corrosive materials having a mouth therein which comprises, a non-corrodible lining for said container, a non-corrodible flange extending from said lining circumscribing said mouth and having a hook-like extension, a member engaging the exterior of said flange and projecting into said hook-like extension, a cap covering said mouth in close contact with said flange to form a fluid-tight joint therewith and co-operating with said member to lock said extension between itself and said member, said cap being provided with a non-corrodible lining over the area of the same covering said mouth, and co-operating means on said cap and on said member detachably securing said cap to said member in a region separated from said mouth by said fluid-tight joint whereby the corrosive material in the container is prevented from coming in contact with said securing means.

2. The combination in a container for corrosive materials having a mouth therein which comprises, a non-corrodible lining for said container, a non-corrodible flange extending from said lining circumscribing said mouth and terminating in an outwardly projecting hook-like extension, a ferrule engaging the face of said flange exterior of said mouth and projecting into said hook-like extension, a flanged cap covering said mouth and extending about and engaging said ferrule, said cap being provided with a non-corrodible lining over the area of the same covering said mouth, and co-operating means on the outside of said ferrule and on the inside of said cap for detachably retaining said cap in close contact with said lining flange, thereby forming a fluid-tight joint which prevents the corrosive material in the container from coming in contact with said ferrule.

3. The combination in a container for corrosive materials having a mouth therein which comprises, a non-corrodible lining for said container, a non-corrodible flange extending from said lining circumscribing said mouth and having a hook-like extension, a member engaging the exterior of said flange and projecting into said hook-like extension, a cap covering said mouth in close contact with said flange to form a fluid-tight joint therewith and co-operating with said member to lock said extension between itself and said member, and co-operating means on said cap and on said member detachably securing said cap to said member in a region separated from said mouth by said fluid-tight joint whereby corrosive material in the container is prevented from coming in contact with said securing means.

4. The combination in a container for corrosive materials having a mouth therein which comprises, a non-corrodible lining for said container, a non-corrodible flange extending from said lining circumscribing said mouth and terminating in an outwardly projecting hook-like extension, a ferrule engaging the face of said flange exterior of said mouth and projecting into said hook-like extension, a flanged cap covering said mouth and extending about and engaging

said ferrule, and co-operating means on the outside of said ferrule and on the inside of said cap for detachably retaining said cap in close contact with said lining flange, thereby forming a fluid-tight joint which prevents corrosive material in the container from coming in contact with said ferrule.

In testimony whereof, I affix my signature.

ROY M. MEIKLEJOHN.