Aug. 29, 1944. R. H. WHITMYER 2,357,246

CONTAINER

Filed Sept. 15, 1941 2 Sheets-Sheet 1

Fig. 1.

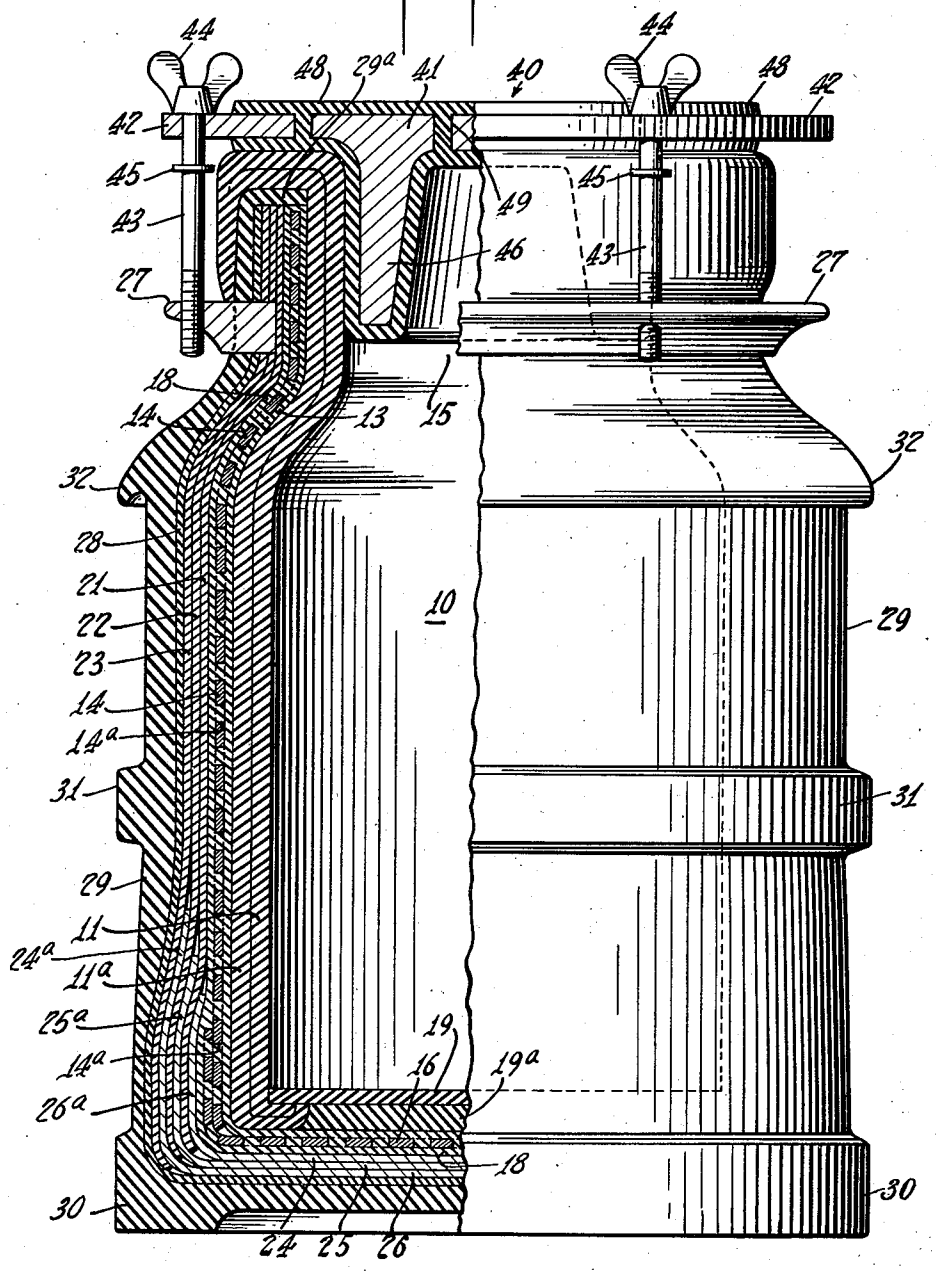

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Fig. 2.

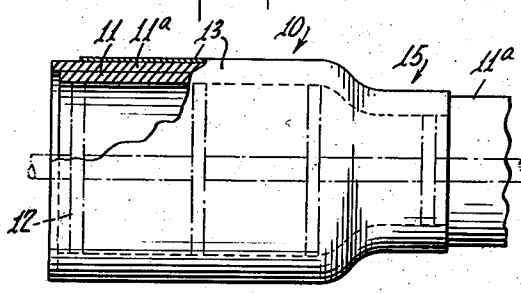


Fig. 5.

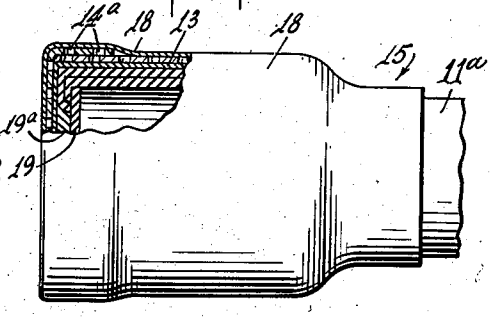


Fig. 3.

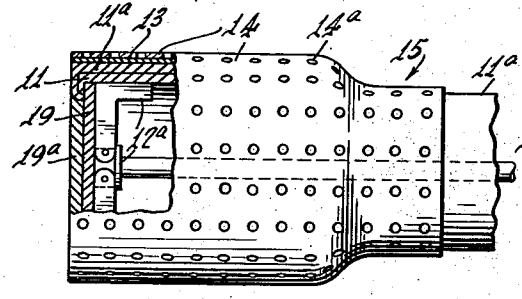


Fig. 6.

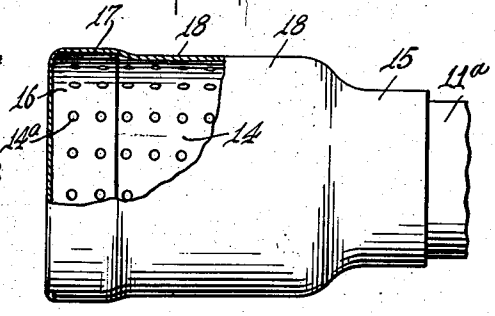


Fig. 4.

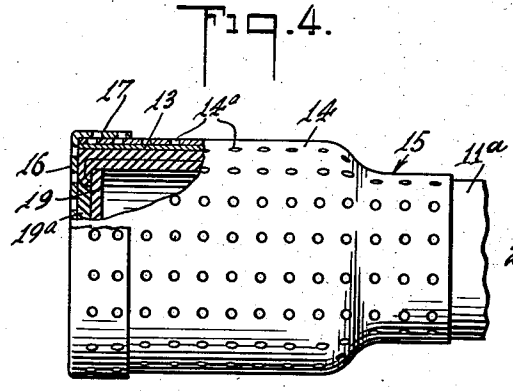
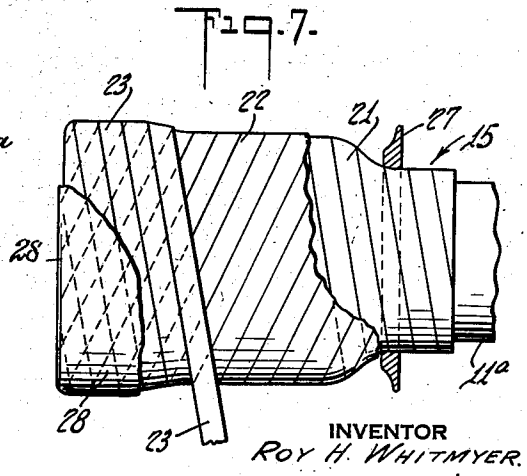


Fig. 7.



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UNITED STATES PATENT OFFICE

2,357,246

CONTAINER

Roy H. Whitmyer, Patchogue, N. Y.

Application September 15, 1941, Serial No. 410,885

9 Claims. (Cl. 206—2)

My invention relates to improvements in containers or receptacles for storing or shipping fluids and similar substances, and the same has for its object to provide a container for receiving and shipping chemicals, which is comparatively simple in construction, durable in use, and easy to manufacture.

Further, said invention has for its object to provide a container of the character specified which is not subject to the action of the fluid or other matter disposed within said receptacle.

Further, said invention has for its object to provide a container for storing and shipping of acids, alkalis, and other chemicals or combinations thereof, and which will be capable of resisting the action of said fluids or substances packed or stored therein.

Further, said invention has for its object to provide a container of laminated form having an inner wall or lining formed of material which is not subject to harmful action of, or affected by acids, alkalis or other liquids disposed in the container.

Further, said invention has for its object to provide a container in which a metal form or body is provided upon its outer surfaces with successive layers of rubber-impregnated fabric between the lower ends of which are disposed the separated, upturned edges of the bottom layers, all of which are bonded together by heat to form a homogeneous unitary structure, and in which the successive united layers serve to strengthen or reinforce the metal form or armature.

Further, said invention has for its object to provide a container in which the several linings or coatings are so constructed and arranged that the same will not split from the metal form or armature as a result of rough handling or extended use.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects and ends my invention consists in the novel features of construction, and in the combination, connection and arrangements of parts hereinafter more fully described and then pointed out in the claims.

Figure 1 is a side elevation, half in section, showing one form of container constructed according to, and embodying my said invention, and

Figs. 2, 3, 4, 5, 6, and 7 are diagrammatic side elevations, partly broken out and in section illustrating the successive steps or operations performed in producing the container.

In constructing the container or receptacle 10 I first form the inner lining consisting of two heavy layers 11, 11ª of gum rubber upon a suitable folding or collapsible frame 12, and then cover the outer surface of said layers 11, 11ª with a thin layer 13 of gum rubber, as shown at Fig. 2. Hereupon the container, as thus far assembled, is removed endwise from the frame 12, and a sheet metal shell or body portion 14, which is open at its bottom, is slipped over the parts 11, 11ª, 13, from the reduced upper end or neck portion 15 thereof, as shown at Fig. 3.

Next a bottom frame 12ª is inserted into the assembly, and the bottom lining 19 of acid-proof rubber disposed against the ends of the frame 12ª. The edges of the inner lining 11 are then turned inwardly over the bottom lining member 19, and the edges of the lining member 11ª then turned inwardly over the in-turned edges of the lining member 11. The circular space between the in-turned edges of the lining member 11ª is thereupon filled with a rubber disk 19ª.

Next, a sheet metal bottom member 16 having a flange or wall portion 17 extending upwardly and slightly inclined outwardly to correspond to the contour of the open end of the body portion or shell is secured by welding, riveting, or other convenient means to the body portion or shell 14, as shown at Fig. 4.

The body portion or shell 14 and the bottom member 16 are provided with perforations 14ª which extend over the entire surface of said body portion and said bottom member. The body portion 14 and bottom member 16 are then provided upon their outer surfaces with a relatively thin layer of gum rubber 18, corresponding to the layer 13 upon the inner sides of said body portion and bottom member, as shown at Figs. 5 and 6. The bottom member 16 is also provided upon its inner side with two heavy layers of gum rubber 19, 19ª corresponding to and merging with the layers 11, 11ª of the body portion 11. When the parts are subjected to pressure and heat the inner and outer layers 13, 18 will be forced through the apertures 14ª of said body portion 14 and bottom member 16 and cause the layers 11, 11ª, 13, and the perforated parts 14, 16, to become bonded into a homogeneous mass. The upper ends of the said layers 11, 11ª are brought upwardly out of the container and carried over the top edge of the perforated shell or body portion 14, as hereinafter described.

Upon the outer side of the gum rubber layer 18 are wound three successive layers of three-ply cord fabric rubber 21, 22, 23 which are ap-

plied in the form of relatively narrow strips and spirally wound thereon. The angle of the spiral winding being reversed with each successive layer as shown at Fig. 7.

The bottom member 16 is provided upon the under or outer side thereof with three layers of cord fabric rubber 24, 25, 26 which have their edges 24a, 25a, 26a brought upwards and disposed intermediate the lower separated edges of the spirally-wound fabric body layers 21, 22, 23 and the layer 18. The upper portions 24a, 25a, 26a of said bottom layers 24, 25, 26 become progressively broader or deeper as the same approach the outer surface of the container, as shown at Fig. 1.

Before the outer layers 22, 23 are applied a ring 27 of metal or other suitable material is fitted about the neck portion 15 of the container, and retained in position by the succeeding layers 22, 23. The body layers 21, 22, 23 and the bottom layers 24, 25, 26 are then enclosed with a thin covering of gum rubber 28, and the whole finally enclosed with a heavy protective coating of rubber 29 having a rim 30 at its base, an intermediate protective band 31, and an upper, annular projection 32 having a recessed lower edge extending around the same and serving as a handle portion for the container.

The upper end 29a of the coating 29 is carried laterally inwardly over the upper ends of the thin rubber layer 13, perforated member 14, layer 18, spiral windings 21, 22 and 23 and the outer thin rubber layer 28, and the upper ends of the inner heavy layers of rubber 11, 11a are then carried outwardly over the upper end of the outer coating 29a, and thence downwardly over the upper end of the outer coating or layer 29 to the ring 27.

When the several parts have been duly assembled as above described, the structure is then subjected to the action of pressure and heat to insure the vulcanization of the whole into a unitary structure possessing the required degree of hardness.

The cover or closure 40 is formed of metal or other suitable material and comprises a top portion 41 provided with projecting ears or lugs 42 in which work bolts 43 having their upper ends provided with wing portions 44. The bolts 43 engage at their lower threaded ends with threaded apertures in the ring 27, and are provided below said ears or lugs 42 with washers 45 to limit the upward movement of said bolts.

The closure or cover 40 has a depending annular, tapering portion 46 which is provided with a coating of rubber 47 or other material not subject to the deleterious action of the contents of the container. The outer or top surface of the closure 40 is similarly provided with a coating of rubber 48. The closure is thereupon subjected to heat and pressure to obtain the desired degree of vulcanization.

To insure the due bonding or uniting of the metal and rubber parts, the top of the closure 40 is provided with apertures 49 through which the rubber parts may extend to unite the two parts.

It will, of course, be understood that the inner linings or coatings of the container may be formed of different compositions of rubber, or of other substances depending upon the nature of the fluids to be disposed therein for packing or transportation.

Having thus described my said invention what I claim and desire to secure by Letters Patent is:

1. A container of the character described comprising a plurality of relatively thin gum rubber lining members, a metal shell including perforated side and bottom walls interposed between said lining members, and bonded together therewith through the perforations, a plurality of heavier rubber lining members covering the inner side of said lined shell, a plurality of layers of rubber-impregnated fabric each formed of a relatively narrow band disposed spirally upon said covered shell, and an outer, heavy covering member of rubber enclosing said shell and lining members, all of said rubber portions being coalescently bonded together to form an integral unitary structure.

2. A container of the character described comprising a plurality of relatively thin gum rubber lining members, a metal shell including perforated side and bottom walls interposed between said lining members and bonded together therewith through the perforations, a plurality of heavier rubber lining members covering the inner side of said lined shell, a plurality of layers of rubber-impregnated fabric each formed of a relatively narrow band disposed spirally upon said covered shell, and each successive layer being disposed at an angle to that of the preceding layer, and an outer heavy covering member of rubber enclosing said shell and lining members; said inner and outer members having the upper portions thereof disposed in overlapping relation enclosing the intermediate parts, all of the rubber portions of said several parts being coalescently bonded together into a unitary structure.

3. A container of the character described comprising a plurality of relatively thin gum rubber lining members, a metal shell including perforated side and bottom walls interposed between said lining members, a plurality of heavier rubber lining members covering the inner side of said lined shell, a series of layers of rubber-impregnated fabric each formed of a relatively narrow band disposed spirally upon said covered shell and each successive layer being disposed at an angle to that of the preceding layer, the upper portion of said fabric being separated from the lower portion thereof to form an annular recess therebetween, an outer heavy coating of rubber enclosing said shell and lining members, the rubber containing portions of said several parts being coalescently bonded together to form an integral structure, an annular member embedded in the container and extended inwardly beyond the outer heavy rubber coating into said annular recess having threaded openings therein, and a closure for said container, bolts carried by said closure and engageable with the threaded openings in said annular member for securing said closure to said container.

4. A container of the character described comprising a plurality of thin gum rubber lining members, a metal shell including a neck portion, and perforated side and bottom walls interposed between said lining members and bonded together therewith, a heavy rubber lining covering the inner side of said lined shell, a plurality of rubber-impregnated fabric bands disposed spirally upon said covered shell, a thin layer of gum rubber enclosing said impregnated fabric bands, a heavy protective coating of rubber closely enveloping said shell and lining members, the rubber portions of said several parts being coalescently bonded together to form an integral structure, a closure for said container having a protective coating, and securing means in part em-

bedded in said container, and in part arranged on said closure for securing said closure to said container.

5. A container of the character described comprising a plurality of thin rubber lining members, a metal shell including a neck portion, and perforated side and bottom walls interposed between said lining members and bonded together therewith, a heavy rubber lining covering the inner sides of said lined shell, a plurality of rubber-impregnated fabric bands disposed upon said covered shell, a thin layer of rubber enclosing said impregnated fabric bands, a heavy protective coating of rubber closely enveloping said shell and lining members, the rubber portions of said several parts being coalescently bonded together to form an integral structure, and the outer of said parts having separated portions providing an annular recess therebetween, a closure for said container having a protective coating, and securing means in part embedded in said container and received within said recess, and means on said closure engaging with said last-named means for securing said closure to said container.

6. A container of the character described including a body portion and an open ended neck portion, said container comprising a plurality of relatively thin rubber lining members, a metal shell including perforated side and bottom walls interposed between said lining members and bonded together therewith, a heavier rubber lining member covering the inner side of said lined shell, a plurality of layers of rubber-impregnated fabric each formed of a relatively narrow band disposed spirally upon said covered shell and each successive layer being disposed at an angle to that of the preceding layer, and an outer heavy coating of rubber enclosing said shell and lining members and having its upper edge turned inwardly, said heavier inner rubber lining being carried outward and downward over the upper inturned-edge of said heavy outer rubber coating, all of said rubber containing parts being coalescently bonded together.

7. A container of the character described comprising a plurality of gum rubber lining members, a rigid shell having perforated wall portions interposed between said lining members and bonded together therewith, a relatively-hard lining member of rubber composition resistant to the action of chemicals and to wear covering the inner side of said lined shell, a plurality of rubber impregnated fabric layers disposed upon the outer side of said lined shell, and an outer, relatively-hard protective covering of rubber composition resistant to wear disposed about said fabric layers, the rubber portions of said several parts being coalescently bonded together to form a substantially integral structure.

8. A container of the character described comprising a plurality of soft gum rubber lining members, a perforated rigid shell interposed between said lining members and bonded together therewith, a relatively heavier rubber-containing lining member covering the inner side of said lined shell, a covering of rubber-impregnated fabric disposed upon the outer side of said lined shell, and an outer relatively-heavier rubber containing covering member disposed about said fabric, said inner and outer members being disposed in overlapping relation enclosing the upper edges of the intermediate parts, and the rubber portions of said several parts being coalescently bonded together throughout to form a substantially integral structure.

9. A container of the character described including a body portion and an open-ended neck portion, said container comprising a plurality of rubber lining members, a metal shell having perforated wall portions interposed between said rubber lining members and bonded together therewith, a heavier lining member of rubber composition covering the inner side of said lined shell, a covering composed of rubber impregnated fabric disposed about the outer side of said lined shell, and an outermost heavier shell of rubber composition enclosing said lined shell and having the upper portion thereof directed inwardly over said lined shell, said heavier inner lining member having a portion directed outwardly and downwardly over the upper portion of said outermost heavier shell, and the rubber portions of said several parts being coalescently bonded together to form a substantially integral structure.

ROY H. WHITMYER.