June 21, 1955 E. H. BENSON 2,711,264

METAL DRUM

Filed Sept. 8, 1950

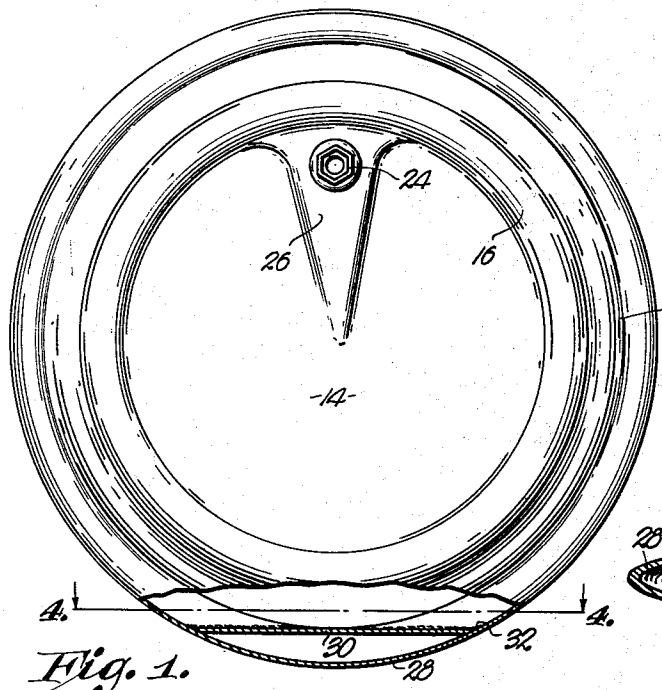


Fig. 1.

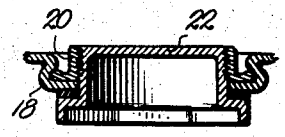


Fig. 3.

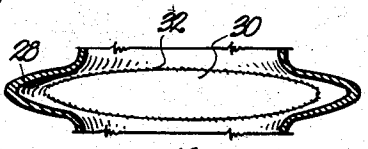


Fig. 4.

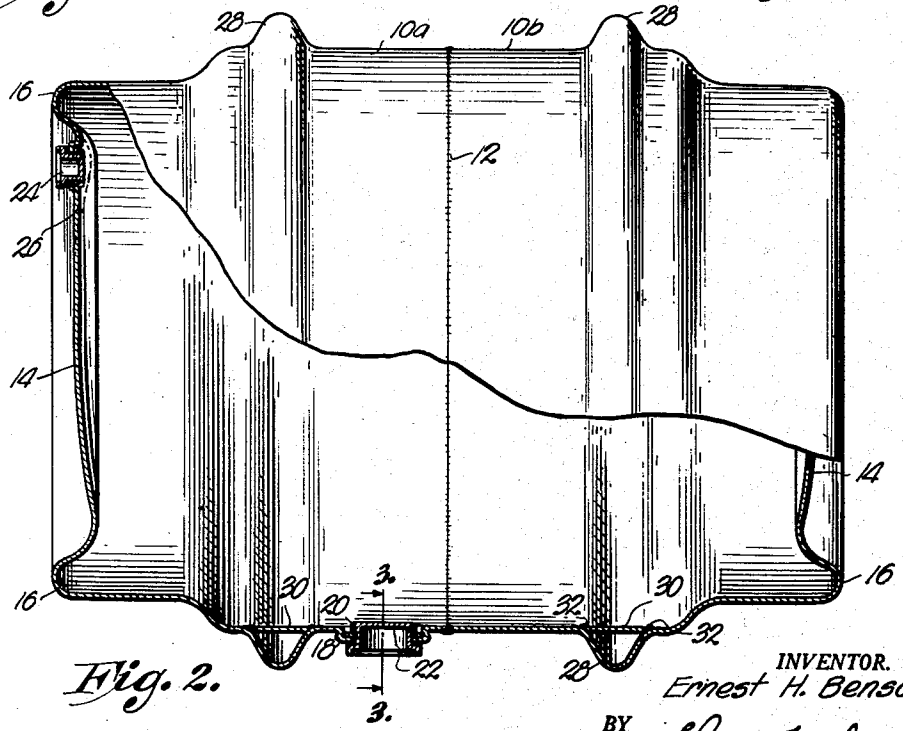


Fig. 2.

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METAL DRUM

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1 Claim. (Cl. 220—5)

This invention relates in general to the shipment and storage of liquids, particularly chemical and petroleum products, and it deals more specifically with an improved drum, barrel, or like vessel designed for this purpose.

It is an object of the invention to provide a storage or shipping vessel of light compact structure to facilitate handling, yet sufficiently strong to withstand normal shock and wear without rupture or deformation.

In this connection an important feature of the invention resides in the provision of a vessel of this type fabricated of welded cup-shaped half sections of aluminum or other light metal wherein the rolling rings as well as the chimes of the vessel are expanded and drawn from the material of its side walls.

Another object is to provide a vessel of particular construction designed to prevent contamination of its contents either as a result of chemical reaction of the contained liquids or gases with the inner surfaces thereof, or as the result of the retention therein of any of the contents of a previous use of the vessel.

Accordingly, another important feature of the invention resides in the provision of a vessel having substantially smooth side walls and inner surfaces free of sharp corners which might entrap fluids or sediment, and wherein positive free draining surfaces are provided in that portion of the side wall lying on each side of a filler or drain opening.

A further object is to provide a drum, barrel or like container of this character which is simple in design and therefore economical to manufacture by mass production methods.

Other and further objects of my invention together with the features of novelty will appear in the course of the following description.

In the accompanying drawings which form a part of the specification and are to be read in conjunction therewith, and in which like reference numerals are used to indicate like parts in the various views:

Fig. 1 is an end elevational view of the drum or barrel, part of the head being cut away to show the structure of the drainage inserts located in the side of the vessel,

Fig. 2 is a side elevational view of the drum or barrel, part of the wall being broken away to show the structure of the side and end walls of the vessel and the position of the drainage inserts adjacent the filler opening,

Fig. 3 is a sectional view of the filler opening and plug taken along the line 3—3 of Fig. 2, in the direction of the arrows, and

Fig. 4 is a fragmentary sectional view taken along the line 4—4 of Fig. 1 in the direction of the arrows, showing the configuration of the drainage inserts and the manner in which they are welded to the side walls of the vessel.

Referring more particularly to the drawings, shown therein is a drum or barrel of aluminum or similar light metal fabricated of two substantially identical cup-shaped halves 10*a* and 10*b* welded together along the annular seam 12 to provide a vessel symmetrical about a medial

plane transverse to its longitudinal axis. As can best be appreciated from Fig. 2 the vessel has a relatively large, cylindrical central wall section merging with cylindrical end sections of smaller diameter. The ends of the container are provided with dome-shaped heads 14. Each head is circumscribed by a raised annular rim drawn or expanded from the end surface of the vessel to project beyond the head and form a hollow chime 16 blending into the outer barrel surface and into the head in reverse curve indentations as shown. The offsets between the wall sections of the vessel as well as the arcuate surfaces of the chimes are formed with substantial radii of curvature so that the vessel is provided with smoothly contoured surfaces substantially free of angles or sharp corners which might entrap sediment, foreign matter or solids carried by the contained liquids. This type of structure facilitates drainage and cleaning of the vessel and also provides it with increased inherent strength against deformation such as might occur from rough handling incident to normal use.

Located in the side wall of the vessel, near the center thereof but laterally spaced from the welded seam 12, is a filler opening. This opening is conveniently formed in one of the half sections of the container before they are joined and, as indicated in Fig. 3, comprises essentially an outturned flange or spout 18 reversely bent to define an aperture adapted by means of an internally disposed, threaded collar 20 to receive a screw-in type plug 22.

A vent opening 24, smaller in size but similar in structure to the filler opening, is provided in one of the vessel heads. This latter opening is located off the center of the head on an outwardly pressed rib 26 which blends into the center portion of the head, the outer edge of the opening being positioned below the projecting surface of the chime so that it is protected thereby from damage when the vessel is upended for storage. The rib 26 forms a well in the inner surface of the head which will cause fluid to drain toward the opening should it be desired to use the same for a pouring spout or for draining the vessel.

Encircling the vessel on each side of the filler opening and laterally spaced from the medial section of the container are a pair of annular rolling rings 28. These rings are also expanded from the side walls of the half sections and extend away from the outer wall surfaces thereof slightly farther than does the plugged filler opening. Therefore, the rings not only serve to strengthen the body structure of the container against deformation but they also permit rolling of the barrel without damage to the structure of the filler opening.

It is obvious that in a drum or barrel of this type the expansion of the rolling rings 28 from the material of the side walls will form corresponding annular wells in the inner surfaces of the vessel. These wells would ordinarily tend to retain a small quantity of the vessel's contents when it is drained with the filler opening held in the downward position indicated in Fig. 2 of the drawings. However, a salient feature of novelty in my invention resides in the provision of special drain surfaces in the wells thereby to cause the entire contents of the vessel to drain freely through the opening. As can best be appreciated from Fig. 4, these surfaces are formed by a pair of relatively thin plates 30 having their marginal edges contoured to fit the annular surfaces of the wells. The plates are inserted in the respective wells so that they lie on each side of a longitudinal line passing through the axis of the filler opening, each plate being dimensioned so that when it is secured in place by means of the welded seam 32 its upper surface will lie in a plane normal to the axis of the opening and tangent to the arcuate surface of the vessel wall at a

point lying on the longitudinal line through the axis. With the inserted plates thus positioned, it can readily be seen that when the vessel is held in the position indicated in the drawings, with the filler opening turned downward for draining, any liquid which might otherwise be retained in the wells will be caused to drain freely therefrom and pass through the opening.

It will be seen that a drum or barrel of this construction embodies several important advantages. First, the vessel is light in weight and therefore more economical to ship as well as more easily handled for both transportation and storage. Since the container is provided with rolling rings and chimes drawn or expanded from the material of its sidewalls, it is a structure of greater inherent strength capable of withstanding the wear and shock incident to normal use. Not only is the vessel constructed of material normally resistant to chemical reaction, thereby to prevent contamination of its contents, but in addition it is provided with smoothly contoured inner surfaces as well as special drain inserts to permit free drainage of its contents and prevent the retention of any portion thereof from one use to another. Finally, the basic structure of the vessel is sufficiently simple in design to allow it to be economically manufactured by mass production methods.

From the foregoing it will be seen that this invention is one well adapted to attain all of the ends and objects hereinbefore set forth together with other advantages which are obvious and which are inherent to the apparatus.

It will be understood that certain features and subcombinations are of utility and may be employed without

reference to other features and subcombinations. This is contemplated by and is within the scope of the claim.

Inasmuch as various modifications of the invention may be made without departing from the scope thereof, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:

A single-walled metal barrel comprising two continuous unitary halves welded along a circumferential median line to form a unitary structure, a chime and rolling ring formed in each half, a bung in one of the halves between the rolling ring and the circumferential weld, said bung protruding above the surface of said barrel to a lesser height than said rolling rings, and metallic inserts covering that portion of the grooves formed within the barrel by the rolling rings which lies below the bung when the bung is downwardly positioned, each metallic insert having an elongated oval shape and lying in the plane of a chord of one of the circular rolling rings.

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