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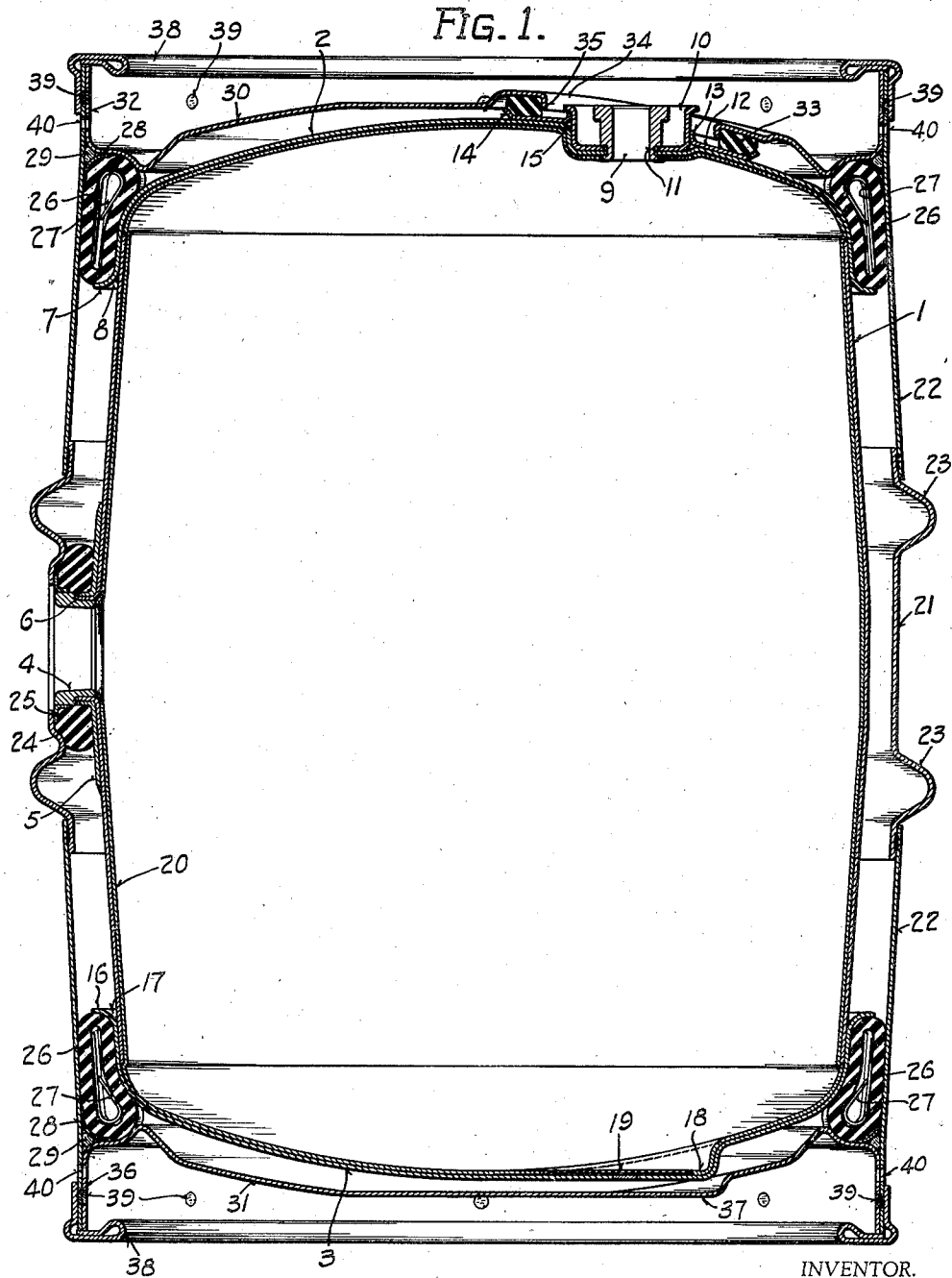
D. J. REED

2,057,346

METAL BARREL WITH FLOATING INNER CONTAINER

Filed Dec. 26, 1933

2 Sheets-Sheet 1



INVENTOR.

Daniel J. Reed

BY *Clavin L. Andrews*

ATTORNEY.

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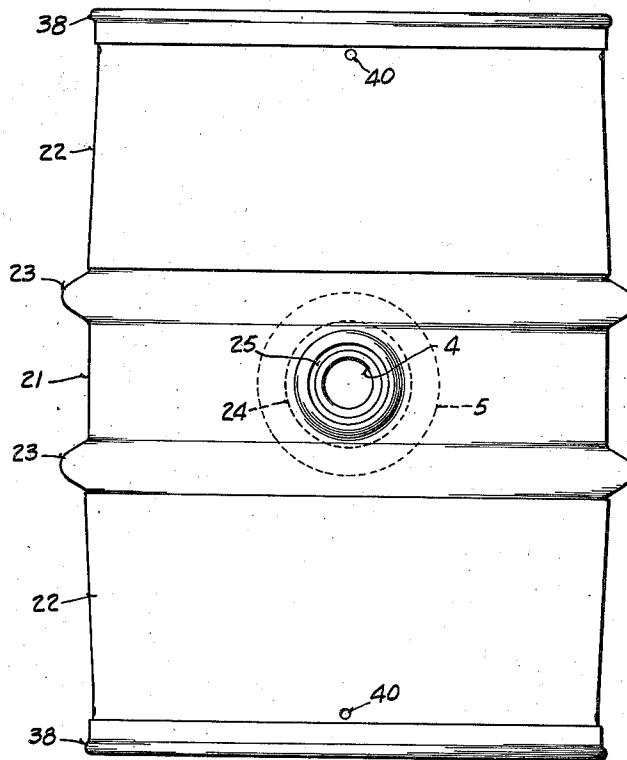


FIG. 2.

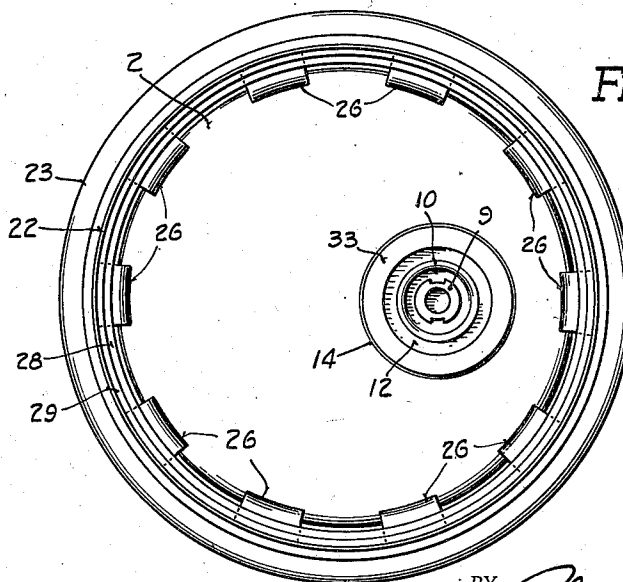


FIG. 3.

INVENTOR.
Daniel J. Reed

BY

Wm. C. Andrews

ATTORNEY.

UNITED STATES PATENT OFFICE

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METAL BARREL WITH FLOATING INNER CONTAINER

Daniel J. Reed, Milwaukee, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis., a corporation of New York

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4 Claims. (Cl. 220—15)

This invention relates to a metal barrel with floating inner container, and has been particularly applied in the construction of beer barrels.

The principal object of the invention is to provide a double-walled metal barrel in which the inner container is lined with vitreous enamel or similar material, and in which the inner container is supported in a floating manner with respect to the outer wall to protect the container from shock and deformation.

Another object is to provide a light-weight, highly heat-insulated barrel suitable for transporting beer or the like.

Other objects will appear hereinafter.

The accompanying drawings illustrate a preferred embodiment of the invention.

Figure 1 is a central longitudinal section of the barrel;

Fig. 2 is a side elevation of the barrel showing the bung opening;

Fig. 3 is a top plan view of the barrel during assembly, and before the end head is positioned thereon.

The barrel comprises, in general, an inner container, an outer cylindrical wall, two outer end heads, suitable means for supporting the inner container for limited relative movement, and suitable fittings.

The inner container has a slightly bilged substantially cylindrical body 1 of thin wall, and two end heads 2 and 3, respectively, preferably of heavier wall thickness. The parts are preferably formed of fairly high carbon steel, i. e., from .30 to .45 per cent carbon, in order to provide the required strength with lightness of weight. However, it will be understood that various compositions or alloys may be employed for the purpose.

In making the container body 1, a flat sheet of metal is first rolled into a cylinder with the end edges of the sheet meeting on a longitudinal line. Then the edges are butt welded together, as by electric flash welding, after which the flash is trimmed from the seam. The cylinder is then placed on an expanding mandrel and bilged.

The bung opening in the side of the body 1 is provided with a tubular bung fitting 4 and a reinforcing plate 5. As illustrated in the drawings, the body 1 and reinforcing plate 5 are curved outwardly and fit into a machined recess in the fitting 4, the flange of the plate 5 extending farther out than that of the body 1 so as to leave an annular space 6 around the bung for receiving a wire of brazing metal, such as copper

or brass. The surfaces of the several parts are made to fit snugly to facilitate brazing of the parts together.

The top end head 2 of the container is formed of a single sheet of metal and curved on lines best suited for withstanding the stresses caused by internal fluid pressure, or the rough handling of the barrel in use. The outer rim 7 of the head is curved outwardly like a flange, and a portion of the head adjacent the rim is of a shape and size to fit snugly over the upper end of the body 1, as shown in the drawings. The recess 8, between the rim 7 and body 1, serves for receiving a wire or strip of brazing metal for brazing the parts together.

The head 2 has a tap fitting 9 therein as is customarily provided for beer barrels. The top fitting 9 may be located as desired, the one illustrated being located to one side of the center. For this purpose, the head 2 is provided with an opening for receiving the tap fitting 9 and formed with a recess around the opening for receiving the tap cup 10, the head being shaped to fit snugly against the surface of the cup and to provide a level support for the cup and tap.

An annular space 11 is provided for receiving a wire of brazing metal at the inner edge of the cup 10 for brazing the tap 9, cup 10, and end head 2 together, and the inner end of the tap 9 is pressed outwardly against the head 2 to press the parts together.

A reinforcing tap plate 12 encircles the tap cup 10 for reinforcing the end head adjacent the cup. The plate 12 has an upstanding flange 13 fitting against the cup 10 and an outer upwardly slanting rim 14, as will be explained more fully hereinafter. The annular space 15 between the plate 12, cup 10, and head 2 is adapted to receive brazing metal for brazing the parts together.

The bottom head 3 is shaped generally similar to the head 2, having an outer rim 16 similar to the rim 7 of head 2. A recess 17 between the rim 16 and body 1 is provided for receiving suitable brazing metal, and the head fits snugly upon the end of the body 1 to facilitate the brazing operation.

The head 3 has a flat bottom portion 18 directly beneath the tap 9 in the upper head to provide for drainage of the barrel by a tap member inserted through the tap opening. A flat stainless steel clad plate 19 is provided in the recessed portion 18 to withstand the blows of the tap connection. The plate 19 is first secured in place at the center by a light tack weld made

through a hole in the head 3 provided for that purpose. A thin strip of brazing metal is placed beneath the plate 19 prior to the tack welding operation for the purpose of brazing the plate 5 to the head throughout the juxtaposed surfaces of the same.

In manufacturing the inner container, the several parts are first assembled, as described above, with the brazing metal in place, and the container is then heated in a brazing furnace in a reducing atmosphere to a temperature sufficient to melt the brazing metal employed and to cause it to penetrate the several joints and to unite the parts into a unitary whole. The temperature 15 to which the container should be heated is chiefly dependent upon the kind of brazing metal employed. Where brass is employed for brazing, the temperature should be about 1750° F., and where copper is used, a higher temperature should 20 be employed.

After the container is cooled from the brazing operation, it is coated on the inside with vitreous enameling material in any suitable manner, and the coating dried. Then the enameling material 25 is wiped off from the top stainless steel surface of the plate 19. The container is then heated in a furnace to a temperature which will effect a fusing or burning down of the enamel to provide the glass lining 20 for the container. The 30 temperature employed for this purpose will depend upon the composition of the enameling material used, a temperature of from 1500° to 1750° F. usually being sufficient.

The outer cylindrical wall of the container is 35 preferably made of three parts, one heavy central bilge 21 and two thin-walled shells 22, one at either end of the bilge. The shells 22 overlap the ends of the bilge 21 and are preferably electrically resistance welded thereto. All three parts 40 are formed from flat sheets having their longitudinal meeting edges electrically flash welded. They are of fairly high carbon steel and may be treated for the purpose of increasing their stiffness.

The central bilge 21 is formed with two circumferential corrugations or rolling rings 23, one on either side of the bung fitting 4.

In assembling the inner container in the outer wall, a soft rubber sealing ring 24 is placed around 50 the bung fitting 4 and the container then inserted through one end of the outer wall until the bung fitting 4 registers with the bung opening in the outer wall. The rubber ring 24 is adapted to press tightly against the outer wall, the bung fitting 4, and the reinforcing plate 5 55 to form a tight seal between the parts. An aluminum corner guard 25 is preferably provided to protect the exposed corner of the rubber ring 24 from injury.

Rubber cushion blocks 26 are then inserted in 60 the space between the end heads 2 and 3 and the outer wall shells 22. These blocks 26 may be solid and of any suitable shape. Applicant has found it preferable to employ sections of rubber hose of suitable diameter and cut in lengths of 65 about two or three inches. A thin curved sheet metal or wire insert 27 is provided for each section of hose to give it greater rigidity to more nearly approximate the characteristics of a solid 70 soft rubber block. Eight or ten hose sections 26 are equally spaced about the circumference of the barrel at each end and are inserted to a point where they engage the rims 7 and 16, respectively, of the heads 2 and 3 of the container.

75 After the cushion blocks 26 are in place, a thin

sheet metal ring 28 is positioned at the outer ends of the blocks at the corner adjacent the outer shells 22 to hold the blocks from deformation and also to provide a support for a rubber sealing ring 29. The sealing rings 29 extend circumferentially of the barrel between the metal rings 28, the outer shells 22, and the outer end heads 30 and 31, as hereinafter explained. 5

The outer end head 30 is formed of a single sheet of metal and is dished in its central portion 10 to provide a suitable space between it and the container head 2. The head 30 has an outwardly extending flange or skirt 32 adapted to fit snugly in the end of the shell 22, and the portion of the head between the dished central portion and the 15 skirt 32 is shaped to confine the end of the blocks 26, the inner corner of the head engaging the sealing ring 29.

A rubber sealing ring 33 is provided in the reinforcing tap plate 12, the ring being of such 20 thickness that it is tightly confined in place between the plate 12, rim 14, and the outer head 30. The head 30 has an opening 34 adapted to accommodate the tap fitting 9 and tap cup 10, the edge of the head at the opening being turned 25 downwardly to provide a flange 35 for confining the inner surface of the sealing ring 33.

The outer end head 31, which is adapted to fit in the bottom end of the barrel, is generally similar in construction to the head 30, having a downwardly extending skirt 36 and a dished center, the portion of the head between the two being adapted to confine the lower ends of the blocks 26. Instead of having an opening for receiving a tap fitting, the head 31 has a flattened portion 35 37 to accommodate the flat portion 18 of the head 3.

After the end heads 30 and 31 have been pressed tightly in place, chimes 38 are secured to the adjacent outer ends of the shells 22, and 40 the respective skirts or flanges 32 and 36. Where the chimes are formed, as illustrated in the drawings, it has been found preferable to key weld the several parts together as through aligned openings in the shells, skirts, and chimes provided for that purpose. As illustrated, about 45 eight key welds 39 are made at each end of the barrel to secure the end heads and chimes in place. Suitable drainage holes 40 may be provided through the shells 22 and skirts 32 and 36 50 to prevent collection of water at the upper end of the barrel in case of rain, or from other cause.

A barrel constructed as described above has many advantages. It avoids the difficulties heretofore encountered in satisfactorily pitching the 55 inside of metal barrels to protect the beer from contamination. It provides a glass or enamel lining which is readily cleaned and sterilized. It protects the glass-lined inner container from shock and deformation which might tend to 60 crack and disrupt the lining, by providing a completely resilient or floating mounting for the container. It provides complete heat insulation between the inner container and outer wall, there being no metal to metal contact, and the insulating quality of the barrel being greater than 65 that of wooden barrels. Practically all of the main parts of the barrel can be readily replaced without difficulty, it being possible to drill out the key welds 39, thereby permitting dissembling 70 of the various parts.

The invention may have various embodiments within the scope of the accompanying claims.

The invention is claimed as follows:

1. In a double wall sheet metal barrel, a tap fitting brazed to the inner wall, the outer wall having an opening to accommodate said tap fitting, a reenforcing plate for the inner wall surrounding said tap fitting, and a rubber sealing ring disposed in said reenforcing plate and pressed tightly between the same and the outer wall, the outer periphery of said ring being confined by a rim on said reenforcing plate and the inner surface of the ring being confined by an intumed flange at the edge of the opening in the outer wall.

2. In a double wall sheet metal barrel; radially extending flange-like members disposed at the outer corners of the inner container; annular rubber cushion blocks having internal supporting metallic forms; and head members provided with annular deformations adapted to confine the rubber cushion blocks, which blocks, upon assembly of the barrel, are seated against said flange-like members and are pressed between said members, the spaced outer and inner walls of the barrel and the outer heads with their confining deformations, to resiliently support the inner container within the barrel against shock.

3. In a double wall sheet metal barrel, radially

extending flange-like members disposed at the outer corners of the inner container, rubber cushion blocks seated against said members and pressed between said members and the spaced outer and inner walls of the barrel, annular retaining rings placed externally to said cushion blocks, separate outer head members adapted to be inserted in the outer walls and pressed against said blocks and said retaining rings, and annular sealing rings adapted to fit over said retaining rings and seal the line between said heads and the outer wall of said double-walled barrel.

4. In a double-walled barrel, an outer cylindrical shell, outer heads adapted to be inserted in said shell, an inner substantially cylindrical enclosure, cushion blocks adapted to be pressed between said enclosure and said shell and heads at the outer corners of said enclosure to resiliently support said enclosure against shock, sealing rings for sealing the junction between said cylinder and said heads, and a metallic retaining ring adapted to rest against said blocks and press said rings into the corners between said heads and said cylinders.

DANIEL J. REED.