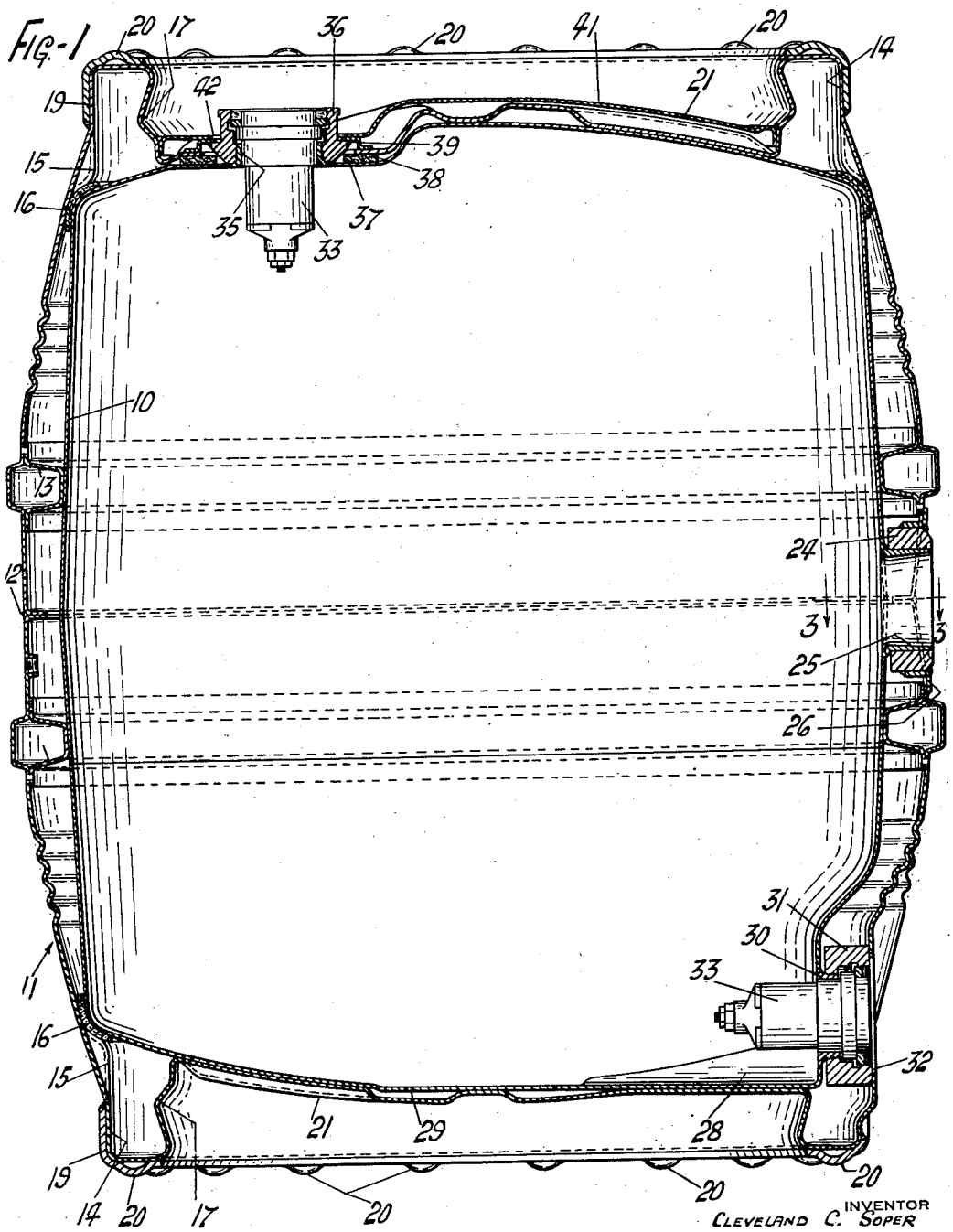
Dec. 24, 1940. C. C. SOPER 2,226,109

METAL CONTAINER

Filed Dec. 14, 1936 3 Sheets-Sheet 1

FIG. 1



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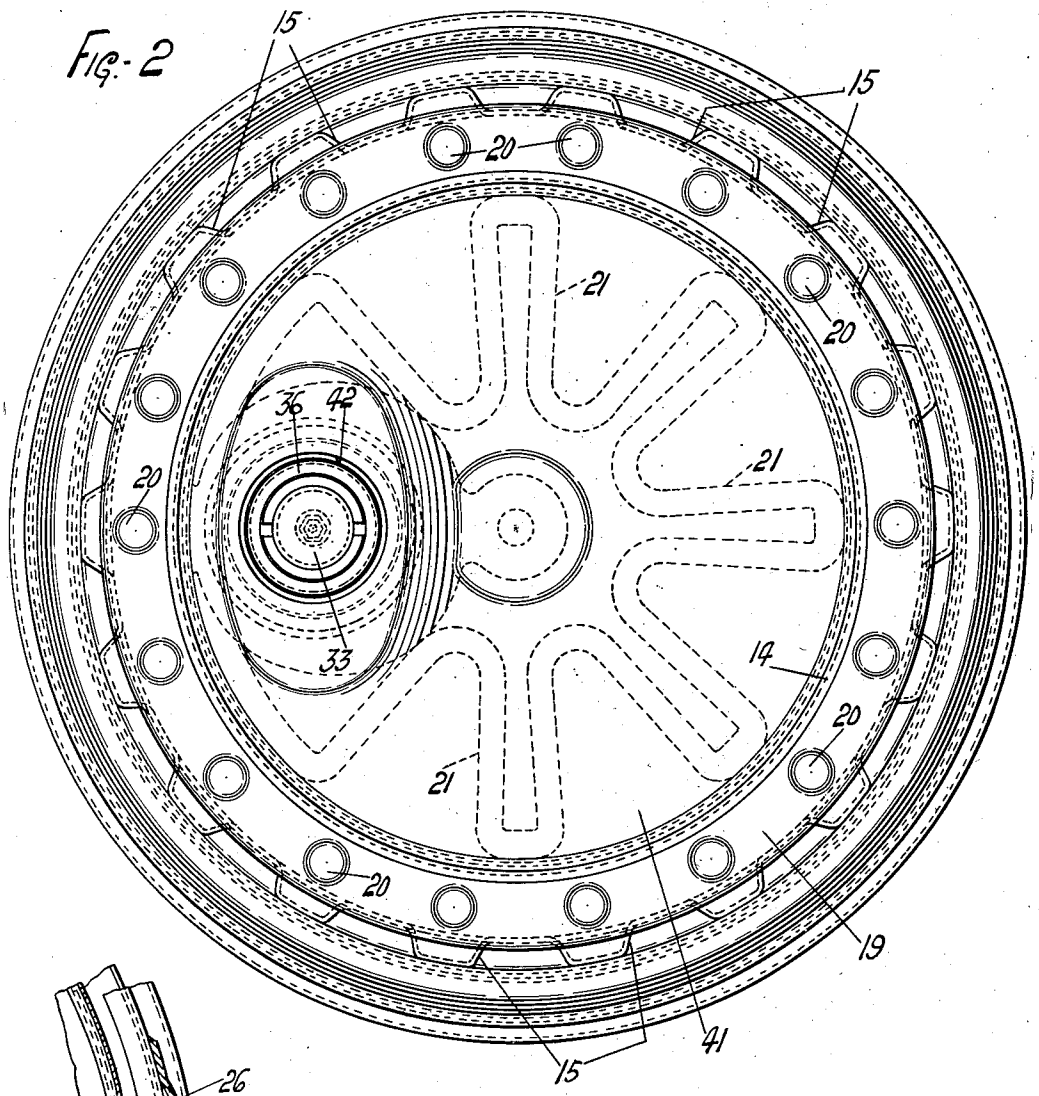
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METAL CONTAINER

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FIG. 2



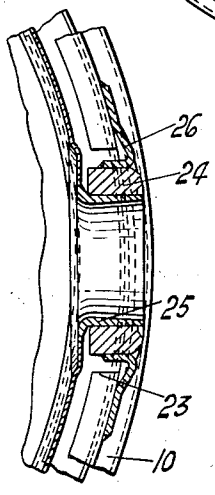


FIG. 3

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Fig.-4

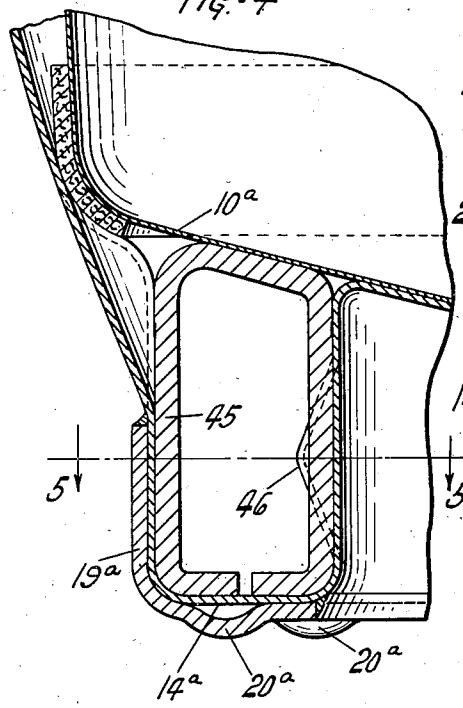
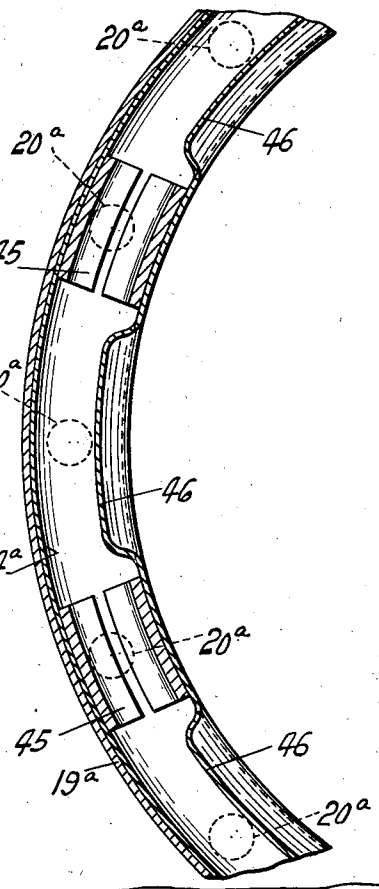


Fig.-5



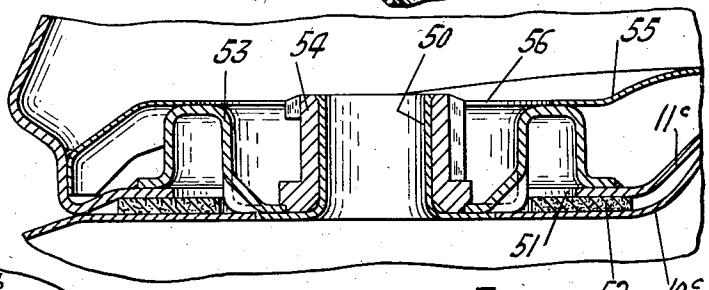


Fig.-7

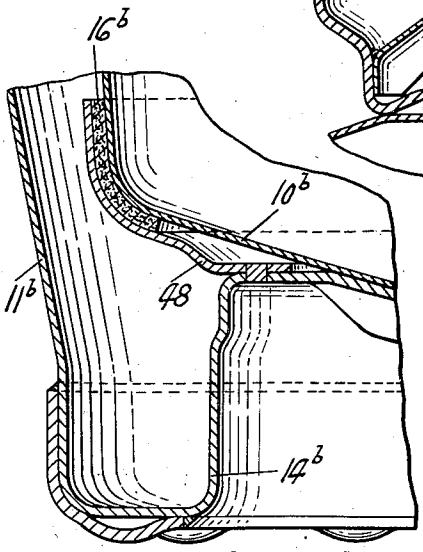


Fig.-6

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Patented Dec. 24, 1940 2,226,109

UNITED STATES PATENT OFFICE

2,226,109

METAL CONTAINER

Cleveland C. Soper, Kent, Ohio, assignor, by mesne assignments, to The Firestone Tire & Rubber Company, Akron, Ohio, a corporation of Ohio

Application December 14, 1936, Serial No. 115,769

2 Claims. (Cl. 220—15)

This invention relates to metal containers, and more especially it relates to metal containers such as barrels or kegs that are used for the transportation of beverages such as beer and the like.

Barrels of the character mentioned are made with a lining or inner shell of stainless steel so as not to be corroded by the contents of the barrel and so as not to contaminate or affect the flavor of the beverage. In the inner shell, the necks of the tap and bung openings are a unitary structure without laps or other projections or unevenness so that the container is easily cleaned and there are no recesses or other places where sediment might lodge. The barrel generally and the method of making the same constitute the subject matter of my co-pending application for Letters Patent, Serial No. 115,770, filed December 14, 1936. The present invention is directed to novel details of construction which combine to provide a superior barrel.

The chief objects of the invention are to provide a superior arrangement of supporting the lining of the barrel within the outer shell or casing; to provide a construction whereby wear on the barrels is localized so as to avoid extensive rusting of the casing when the galvanizing is worn off; to provide a barrel construction capable of withstanding heavy impact without damage to the casing or inner shell; to provide a barrel of such contour as to have suitable portions that may be gripped when the barrels are manually handled; to provide a construction that permits substantially the entire contents of the barrel to be removed through a tap in the side thereof; to provide a tap and bung construction whereby the lining assembly does not require to be accurately registered with the casing structure during assembly; and to provide metal barrels of approximately the same external size as wooden barrels of the same capacity so that the same cleaning and filling apparatus may be used for both. Other objects will be manifest.

Of the accompanying drawings:

Figure 1 is a vertical diametric section through a barrel embodying the invention, showing a construction especially adapted for half-barrel sizes;

Figure 2 is a plan view of the barrel shown in Figure 1;

Figure 3 is a section, on a larger scale, on the line 3—3 of Figure 1;

Figure 4 is a sectional detail, on a larger scale, showing a reinforced barrel-end construction especially adapted for full-barrel sizes;

Figure 5 is a section, on a smaller scale, on the line 5—5 of Figure 4;

Figure 6 is a sectional detail of a barrel-end construction especially adapted for smaller barrel sizes; and

Figure 7 is a sectional detail of the construction about the tap hole in an end of the barrel.

Referring to Figures 1 to 3 of the drawings, there is shown an assembled barrel comprising an inner shell or liner 10 of stainless steel, and an outer shell or casing generally designated 11 composed of sheet iron that is galvanized on both sides. The lining 10 is composed of stainless steel, and the various elements thereof are united by atomic welding so that it consists of a unitary structure wherein the contents of the barrel come into contact with nothing but stainless steel. The casing 11 is composed of two major sections that are united at the central transverse plane of the barrel by a seam 12 composed of special bronze alloy that is arc-welded to the adjacent margins of the casing sections.

The lining unit 10 has a force fit within the outer shell or casing 11 so that the latter assists the lining in withstanding internal pressure, and also supports the lining against all other strains arising from use and abuse. It is desirable, however, that there be a dead air space between the lining and casing to retard heat transfer therebetween, and to this end the casing is constructed so that it engages the lining only at local regions, which regions are so situated and of such shape as to furnish adequate support to the lining. Thus the medial region of the lining 10 is supported by a pair of circumferential ribs or channels 13, 13 that are riveted or otherwise secured to the inner periphery of the respective half-sections of the casing 11, adjacent the seam 12 of said casing.

The bulbous medial region of the casing 11 is extended at each end thereof to provide respective cylindrical chimes 14, 14, and at the juncture of the chimes and side wall of the casing said sidewall is formed with a circumferential series of spaced apart indentations or corrugations 15, 15, each of the latter having a wall that is parallel to the axis of the barrel and is in effect a continuation of the chime-wall. The indentations 15 are disposed adjacent the rounded juncture of the sidewall and respective ends or heads of the lining 10, and support the latter at these regions, there being respective strips of insulating material 16, such as asbestos fibre,

positioned between the indentations 15 and the corners of the lining 10. The insulating strips 16 partly absorb shocks and jolts to which the lining is subjected. They also retard heat transfer between the lining and the indentations 15, and the feature of having the latter spaced apart further retards heat transfer. The indentations 15 also enable the chimes of the barrel to resist impact applied parallel to the axis of the barrel, the undeformed metal between the indentations providing a buttress effect to strengthen the chimes against lateral impact. The inner periphery of each chime 14 is formed with a circumferential re-entrant and overhang to provide a hand-grip region 17 by means of which the barrel more readily may be manipulated.

The chimes 14 are further strengthened by angular, circumferential reinforcing members 19, 19 mounted upon the outer corners thereof so as to extend onto the outer peripheral face of the chimes and the end faces thereof. That portion of each member 19 that is on the end face of a chime is formed with a circumferential series of spaced apart, bulbous knobs or projections 20, 20. The knobs 20 provide supports for the barrel when the latter is resting on end, with the result that end-wear is localized on the knobs, the galvanizing is not worn off the major area of the chime-ends, and less rusting thereof occurs. The knobs 20 also facilitate the stacking of barrels one upon another since the knobs are sufficiently spaced apart that the knobs on one barrel may fit between the knobs of the superposed barrel, whereby relative lateral movement of the barrels is impeded by interengagement of their knobs. Preferably the reinforcing members 19 are welded to the chimes.

The respective ends or heads of the casing 11 are suitably ribbed or corrugated so as to be better able to withstand the pressure of the contents of the barrel exerted thereon through the ends of the lining 10, in order to keep the volumetric capacity of the barrel within specified legal limits, and to reduce the area of contact between lining and casing so that heat transfer is reduced. Said ribs or corrugations, designated 21, may be arranged in concentric, or in star-shaped figures as is most clearly shown in Figure 2.

The tap apertures in the side and end of the lining 10 and the bung aperture in the medial transverse plane thereof are provided with the usual liners or necks, as explained in my aforesaid prior application, and each of said necks subsequently is provided with a sput or reinforcing ring. The details of the bung assembly are best shown in Figure 3 wherein it will be seen that the half-section of the casing 11 is recessed at 23, on its margin, to receive a carbon steel sput 24. Previously said sput is mounted in the middle of a rectangular, apertured plate or bung support 26, and is welded thereto with bronze that is fused by means of a carbon arc. After the lining 10 and casing 11 are assembled and the half-sections of the latter welded together, the bung support 26 with sput 24 is mounted as a unit upon the bung lining 25, the sput then being arc welded to the latter with stainless steel. Thereafter the margins of the plate 26 are arc welded to the casing structure with bronze alloy. The bronze welding of the plate 26 to the casing is sufficiently remote from the stainless steel bung liner 25 so as not to affect the characteristics of the stainless steel. Thereafter the outer end of sput 24 and lining 25 is faced off, and further bronze welding applied thereto to conceal any exposure of the carbon steel of sput 24, to the end that the casing is rendered rust proof in this area.

The details of the side tap of the barrel are shown in Figure 1 wherein it will be seen that the tap is located at the outer end of a radial groove or recess 28 in the bottom head of the lining 10, said recess terminating at its inner end in a shallow axial sump 29 in said lining-head, the arrangement permitting maximum withdrawal of the contents of the barrel without tilting of the latter. The tap assembly comprises a tap liner or neck 30 of stainless steel that is exteriorly threaded to receive a collar or sput 31. In the assembled barrel the sput 31 is disposed between the liner 10 and casing 11, its outer face abutting the inner face of the casing and being substantially aligned with an aperture 32 in the latter. Because of the radial width of the sput, exact axial alignment of the sput and the aperture 32 is not necessary. The galvanized casing is bronze welded to the sput about the margin of the aperture 32. A tap 33 of known construction is mounted in the sput 31, the outer end of the tap being flush with the outer end of the sput. As is clearly shown in the drawings, both lining 10 and casing 11 are indented or embossed in the region of the side tap so that the latter is located inwardly of the rolling surface of the barrel, with the result that the possibility of damage to the tap assembly is reduced.

The tap assembly in the top head of the barrel is located in an embossed depression in the liner 10 and casing 11, at one side of the center thereof. The assembly comprises a tap liner 35 of stainless steel that is exteriorly threaded to receive a sput 36. The top head of the casing 11 is formed with an aperture 37 through which the sput 36 extends, and there is an insulating collar 38 of asbestos or like material positioned between the lining and casing and circumscribing the sput 36. An apertured collar 39 of Z-shaped section circumscribes the sput, resting upon a flange near the lower end thereof and being welded to said flange and to the casing 11. The collar 39 is sufficiently larger than the body of the sput to permit slight mis-alignment of the latter and the aperture 37.

In order to comply with the law relating to branding of barrels, yet avoiding making such branding a permanent part thereof, the barrel is provided with a false head 41 that may be embossed with the required indicia. The false head 41 is mounted on the barrel over the upper head of the casing 11, and secured thereto by being soldered about its periphery. The false head is formed with an aperture 42 through which the sput 36 extends, and the false head is soldered to the collar 39 around said aperture 42. A tap, such as the tap 33, may be mounted in the sput 36.

The barrel is capable of withstanding the rigorous service conditions to which it is subjected, and it achieves the other objects set out in the foregoing statement of objects.

The construction shown in Figures 4 and 5, which is especially applicable to containers of full-barrel capacity, is substantially the same as that shown in Figures 1 to 3 with the exception of the chimes, the latter being reinforced so as better to withstand the impacts incidental to service. As shown, the chimes 14*a* are reinforced by a circumferential series of individual reinforcing member 45, 45, the latter being relatively widely spaced apart, and preferably coin-

cident with alternate protuberances 20*a* formed on the annular external reinforcing member 19*a*. Each reinforcing member 45 consists of a strip of heavy metal bent substantially into rectangular shape and fitted into the chimes so as to contact the inner and outer peripheral walls thereof and the respective end walls. The heads or end walls of the lining 10*a* may abut the inner ends of said members 45. If desired, the reinforcing members 45 may be spot welded to the inner and outer peripheral walls of the chimes so as to retain the members fixedly in position. The inner peripheral wall of each chime 14*a* is locally recessed or indented between adjacent reinforcing members 45 to provide hand-grip regions 46, 46. The construction gives greater strength to those portions of the barrel that are subject to greatest strains.

In the construction shown in Figure 6, which is especially applicable to quarter-barrel construction, the casing 11*b* is considerably larger than the lining 10*b*. In order properly to support the latter within the casing, each end of the barrel is provided with an annular supporting structure 48 of dished shape that is secured inside the casing by being riveted or welded thereto in that region of the casing head that is disposed adjacent the chime 14*b*. The rounded corner at the juncture of the side wall and head of the lining 10*b* seats within the concave surface of the dished structure 48, there being an insulating strip 16*b* of asbestos composition disposed therebetween. By the construction described it is possible to make the exterior of the barrel conform to the size of wooden barrels of the same capacity.

In Figure 7 is shown an alternative type of top tap assembly. As is shown, the barrel liner 10*c* is formed with an integral tap liner 50. The casing 11*c* is formed with a relatively large aperture 51, and a gasket 52 of asbestos composition is positioned about the tap liner 50, between the lining and casing. An annular spacer member 53 that is of inverted U-shape in transverse section with one leg of the U shorter than the other is assembled with a sput 54 by having its long leg welded or copper brazed to the sput as shown. The assembly is then mounted upon the barrel by telescoping the sput upon the tap liner 50 and silver soldering thereto. The short leg of the spacer member 53, which rests upon the casing 11*c*, about the aperture 51 therein, is welded at its margin to said casing. A false head 55 that is mounted upon the upper head of the barrel is formed with an aperture 56 that is concentric with the tap liner 50, said false head resting upon the spacer member 53 and being soldered thereto circumferentially of the aperture 56. The foregoing construction, as well as the construction of the tap and bung structures previously described, provides a sealed engagement of the liner and casing so that there is a dead air space between the same, whereby heat transfer between the interior and exterior of the barrel is retarded.

The invention provides for the manufacture of metal barrels of various capacities, with the barrels having the same external size as wooden barrels of the same capacities. The barrels are fully capable of withstanding the usual rough handling accorded barrels of the character described, they keep their contents in perfect condition, and achieve the other advantage set out in the foregoing state of objects.

Other modification may be resorted to without departing from the invention or the scope of the appended claims.

What is claimed is:

1. In a metal barrel, the combination of an inner shell or liner, an outer shell or casing enclosing the inner shell and being extended at opposite ends of the barrel to provide double-wall chimes, the wall of the casing being formed with a series of circumferentially spaced vertically directed indentations adjacent the base of each chime, the indentations becoming deeper as they extend inwardly from the outer end of the chime and terminating in shoulders which engage with and support the heads of the inner shell at the edges thereof.

2. In a metal barrel, the combination of an inner shell or liner, an outer shell or casing enclosing the inner shell and extended at both ends of the barrel to provide chimes that have spaced-apart inner and outer peripheral walls, the inner periphery of each chime having spaced indentations formed therein to provide overhanging hand grip portions therein, and a plurality of substantially rectangular reenforcing members received in said chimes in the space between the indentations, said members abutting and being confined between the head of the inner shell and the walls and ends of the chimes to reenforce the chimes primarily against axial forces on the container.

CLEVELAND C. SOPER.