

Aug. 7, 1934.

W. E. COAKLEY

1,969,120

LINED BARREL CONSTRUCTION

Filed May 29, 1930

2 Sheets-Sheet 1

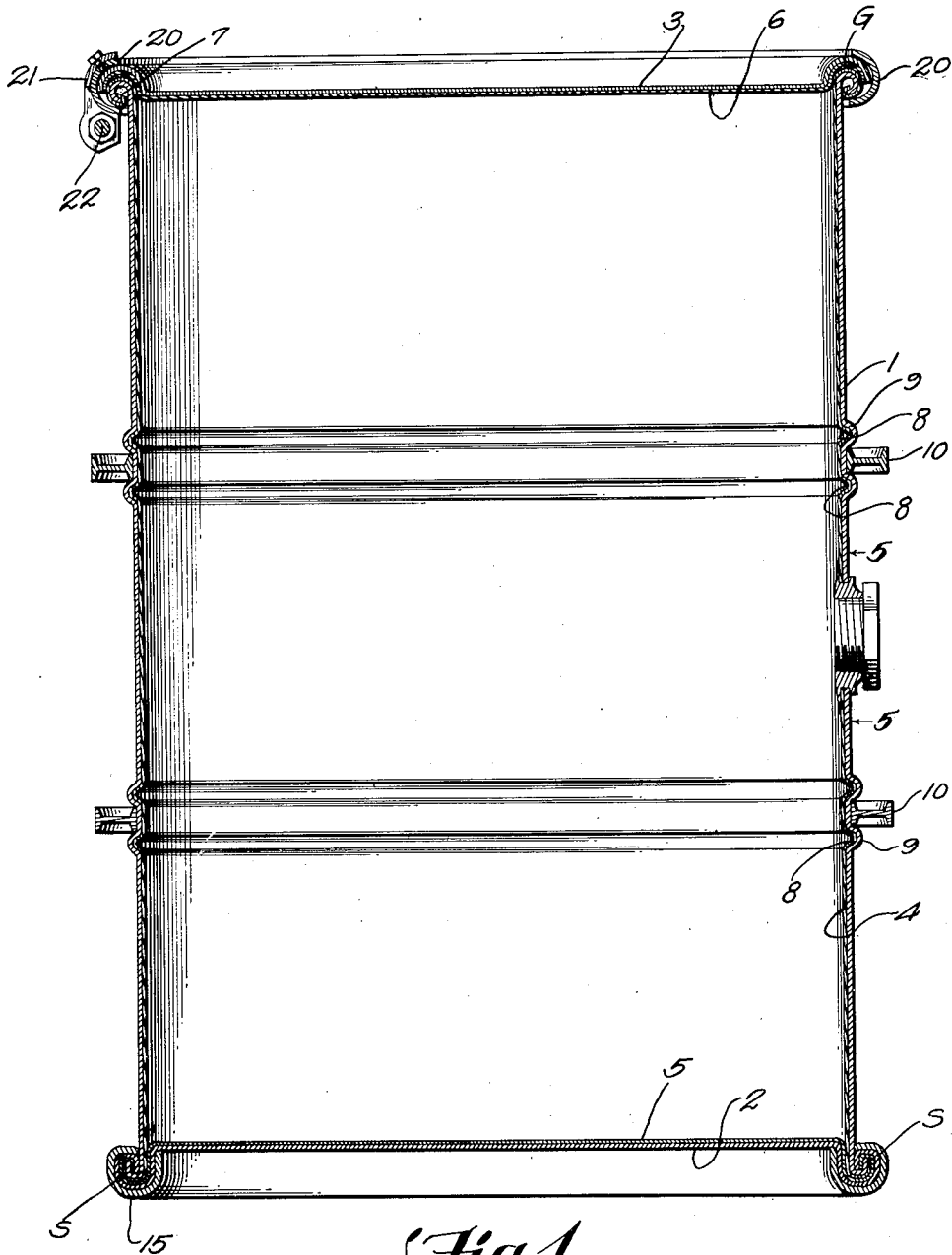


Fig. 1.

Inventor
William E. Coakley

By
Bohannan, Henderson, Leckie, MacKinnon and Mitchell
Attorneys

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2 Sheets—Sheet 2

Fig. 2.

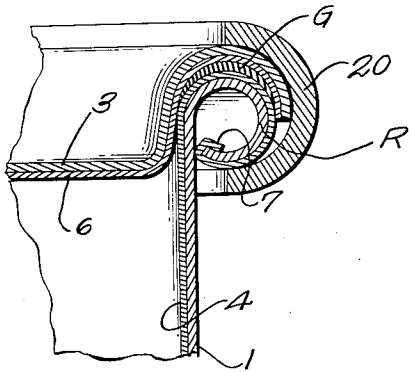


Fig. 3.

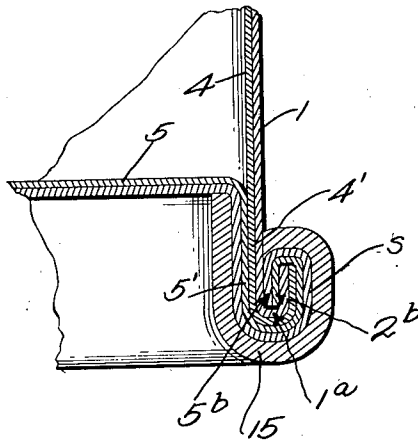


Fig. 4.

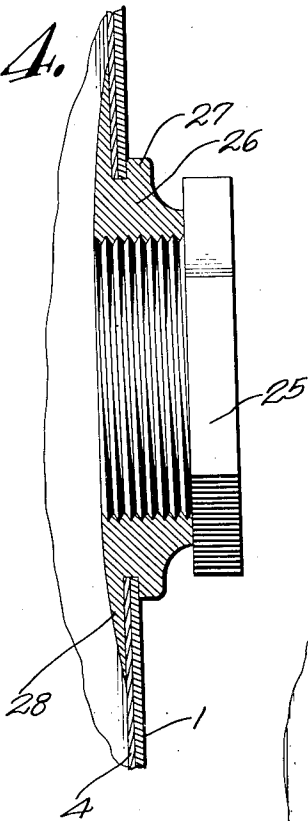


Fig. 6.

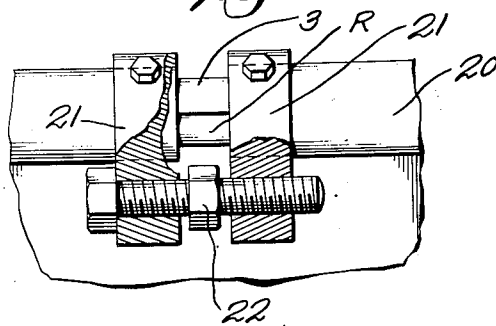
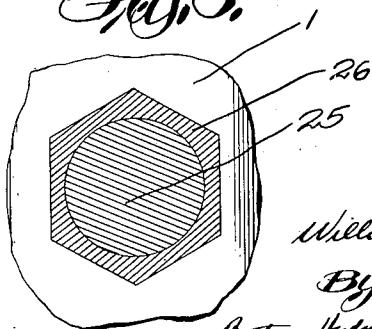


Fig. 5.



Inventor
William E. Coakley
By
Bothman, Hedden, Spalding, McNamee and Mitchell
Attorneys

UNITED STATES PATENT OFFICE

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LINED BARREL CONSTRUCTION

William E. Coakley, Milwaukee, Wis., assignor to
Pressed Steel Tank Company, Milwaukee, Wis.,
a corporation of Wisconsin

Application May 29, 1930, Serial No. 456,965

5 Claims. (Cl. 220-63)

This invention relates to a container of the metal barrel or metal drum type and is especially designed and adapted for use with lacquer or other similar substance liable to be discolored or have its properties impaired when stored or shipped in the ordinary types of metal containers.

In its broader aspects the present invention proposes a drum or barrel type of container having its body portion, its bottom and its top constituted of sheet steel or similar metal and completely lined with aluminum or other metal which is inert or chemically inactive with lacquer and suitable for permanent structural organization with the outer container structure. More specifically, the present invention proposes a novel organization of the sheet-like aluminum lining with the outer steel structure of the container whereby the lining is permanently interconnected and positively secured to and supported on the outer steel structure without employing impractical and elaborate fastening devices and without resorting to expensive manufacturing methods.

Along with these advantages the container embodying the present invention is simple and durable in construction, reliable and effective in use and adapted to be manufactured with economy from materials and by means of facilities ordinarily available.

Other objects and advantages reside in certain novel features of the construction, arrangement and combination of parts which will be hereinafter more fully described and particularly pointed out in the appended claims, reference being had to the accompanying drawings, forming a part of this specification, and in which:

Figure 1 is a view in diametrical vertical section showing a metal drum or barrel embodying the present invention, parts being shown in elevation for the sake of simplicity in illustration;

Figure 2 is a fragmentary sectional view on an enlarged scale illustrating the construction at the top of the drum;

Figure 3 is a similar view illustrating the construction at the bottom of the drum;

Figure 4 is a similar view showing the construction at the bung;

Figure 5 is a sectional view taken on line 5-5 of Figure 1; and

Figure 6 is a fragmentary view partly in section and partly in elevation showing the fastening means for the clamping ring employed for releasably securing the top or head to the drum.

Referring to the drawings, it will be seen that

the metal container embodying the present invention comprises an outer shell or body portion 1 which may be of sheet steel or similar metal, a bottom 2 and a removable top or head 3, the bottom 2 and removable head 3 also being constituted of sheet steel or the like. The inner surfaces of the outer shell 1, bottom 2 and top 3 are completely covered by a lining of sheet aluminum, which lining comprises, as shown in Figure 1, a substantially cylindrical aluminum shell 4 organized with the outer shell 1, an aluminum sheet 5 organized with the bottom 2 and an aluminum sheet 6 organized with the removable top 3.

The lining shell 4 is firmly and securely interconnected with the outer steel shell 1 at its ends and at spaced intermediate points, this securing being effected at the top by forming an angular extension 7 over the upper end of the shell 4 and disposing this extension 7 so that it embraces the upper end of the outer shell 1. In the final form of the drum or barrel the upper end of the shell 1 and the associated portion of the lining shell 4 are rolled as indicated at R, and this engages the angular extension with the cylindrical portion of the shell and disposes it within the roll, as clearly shown in Figure 2. Intermediate the top and bottom of the drum the lining shell 7 is effectively interconnected therewith by forming corrugations 8 in the lining shell 4 and nesting or snugly interfitting these corrugations 8 in similar corrugations 9 provided in the outer steel shell 1. These corrugations 8 and 9 may be formed and interengaged in a single rolling operation and obviously prevent any tendency of the inner shell 4 to shift axially of the outer steel shell 1. As illustrated, the corrugations 8 and 9 are arranged in pairs and the members of each pair of corrugations are snugly engaged with an external reinforcing ring or hoop 10 of channel form in cross section whereby the corrugations serve the additional function of holding the reinforcing rings or hoops 10 in place.

At the bottom of the drum, the bottom plate 2, its lining sheet 5, the lower end of body portion 1 and its lining shell 4 are interfolded or provided with a rolled seam and a protecting and retaining ring structure for the purpose of effectively uniting the bottom structure to the body structure and of securing the lining shell 4 and lining sheet 5 in position. The rolled seam formation employed between the bottom and the body portion is shown to advantage in Figure 3 and, as illustrated, is so constituted that extension portions 4' and 5' of the lining shell 4 and lining sheet 5 are engaged throughout their en-

tire extent in the seam structure which is designated generally at S. These engaged portions of the aluminum lining elements are interposed between the shell 1 and the extension of the bottom plate 5 that is worked into the seam and during the rolling operation the compression and working to which the aluminum portions 4' and 5' are subjected effectively unites these portions to provide a fluid tight seal therebetween. As shown in the drawings, the outer shell 1 has its lower end 1^a of U-shaped form when the seam S is completed. The lining elements 4 and 5 and the bottom plate 2 are similarly formed in the seam structure although the bottom plate 2 and the lining element 5 have the outer leg of their U-shaped formation provided with depending extensions designated at 2^b and 5^b respectively, these extensions being firmly clamped together and being located in between and clamped by the U-shaped formation at the lower end of the steel shell 1. A reinforcing ring-like structure 15 is rolled about the seam structure S to protect and reinforce the same.

The lining sheet 6 for the top plate 3 completely covers the undersurface of the main portion of this top plate or removable head and also covers the undersurface of an inverted trough-like formation provided around the periphery of the removable head and designed to engage and compress a suitable gasket G (see Figure 2) seated on the rolled rim R. For securing the lining sheet 6 to the head 3 an adhesive is employed between the contiguous faces of the head 3 and its lining sheet 6. The cover or head 3 is held in place by a split clamping ring 20 which is curved or shaped in cross section to embrace the trough-like rim and the bead or roll R. The adjacent ends of the split clamping ring 20 are provided with lugs 21 having threaded openings coacting with a clamping screw 22 (see Figure 6).

The barrel or drum may be provided with an aluminum bung 25 threaded into an aluminum bushing 26 having a shoulder 27 engaging the margin of the opening in the outer shell provided for the bushing. The inner end of the bushing is spun over the lining shell 4 or welded thereto as indicated at 28. With a metal barrel or drum constructed in this manner, the lacquer or other contents thereof is effectively protected against discoloration or impairment in any way. Due to the novel manner in which the lining elements are organized with the outer steel structure of the container, the parts are permanently and effectively united to provide a secure and durable structure. This is especially true of the body portion and bottom of the container and this is especially desirable as these parts are subjected to the forces which tend to impair the organization of the outer steel structure and the lining structure. Moreover, these advantages are had without utilizing auxiliary fastening devices or modifying the general structure of the drum or barrel inasmuch as the securing of the lining shell of the body and the lining sheet of the bottom is brought about by incorporating these lining elements in the seam at the bottom, in the bead or roll at the top and in the corrugations which secure the hoops or reinforcing rings in place.

The rolled seam structures at the opposite ends of the drum extend laterally outward from the drum over the ends of the same as defined by the inner and outer shells. This extends the seam structures beyond the body of the drum as defined by the inner and outer shells, and to protect such

seam structures from contact with exterior objects and more particularly when the drum is supported by the rolling hoops 10, the latter, as shown in Figure 1, project laterally outward from the body of the drum a distance greater than the seam structures. The upper seam structure in extending laterally outward from the drum and over the upper edge of the same as defined by the inner and outer shells causes the outer side of the bead as provided by this seam structure to be faced by the adjacent upper end portion of the inner shell. Thus the inner lining sheet of the removable head or cover 3 of the drum may be pressed into fluid tight contact with the inner lining of the drum at this bead on the application of the closure to the drum.

The invention claimed is:

1. A metal drum of the character described comprising an outer steel shell, an outer steel bottom plate, an inner shell of aluminum snugly fitting in the outer steel shell, an inner lining aluminum sheet fitted flush against the bottom plate, the lower ends of the outer and inner shells and the peripheral portion of the bottom plate and its lining sheet being interfolded into a seam structure around the circumference of the bottom of the drum with the aluminum bottom sheet and aluminum inner shell engaged and compressed into fluid tight contact, the upper end of the inner shell being provided with an angular extension embracing the upper end of the outer steel shell and rolled therewith to form an outwardly extending bead having its outer surface covered by the adjacent upper end portion of the inner shell and providing a seat for a removable head for the upper end of the drum, a removable head providing a detachable closure for the upper end of the drum, said head being formed to have a pressed fit in the drum at the bead and having its marginal portion engaging the bead whereby the head may be removed from and applied to the drum in opening and closing the same, and a sheet of aluminum carried by and completely covering the under surface of the head for contact with the portion of the inner shell covering the outer surface of the head to provide a fluid tight joint at the upper end of the drum when the head is pressed in closed relation against the bead.

2. A drum of the character described, comprising an outer steel shell, an outer steel bottom plate, an inner shell of aluminum snugly fitted in and lining the outer shell from end to end, an inner sheet of aluminum fitting flush against the bottom plate and lining the same, said shells being interconnected at the opposite ends of the drum by rolled seam structures at the two ends of the drum, the bottom plate and its lining sheet having their marginal portions interconnected in the lower seam structure for securing the bottom plate and lining sheet to the lower end of the drum, interfitting corrugations formed in the shells intermediate the ends thereof to prevent axial shifting of the shells, and rolling hoops encircling the drum at the corrugations and fitting against the outer shell between the corrugations, said hoops and said seam structures extending laterally outward from the drum, the hoops extending farther than the seam structures to protect the same from contact with the support on which the hoops rest when supporting the drum.

3. A drum of the character described, comprising an outer metal shell, an outer metal bottom plate, an inner shell of aluminum snugly fitted in and lining the outer shell from end to end, and

an inner sheet of aluminum fitting flush against the bottom plate and lining the same, said shells being interconnected at the opposite ends of the drum by rolled seam structures at the two ends of the drum, the bottom plate and its lining sheet having their marginal portions included in the lower seam structure for securing the bottom plate and lining sheet to the lower end of the drum, said upper seam structure extending laterally outwardly from the drum over the upper edge of the same as defined by said shells to form a closure receiving bead integral and directly connected with the shells and faced on its outer side by the adjacent upper end portion of the inner shell.

4. A drum of the character described, comprising an outer metal shell, an outer metal bottom plate, an inner shell of aluminum snugly fitted in and lining the outer shell from end to end, and an inner sheet of aluminum fitting flush against the bottom plate and lining the same, said shells being interconnected at the opposite ends of the drum by rolled structures at the two ends of the drum, the bottom plate and its lining sheet having their marginal portions included in the lower seam structure for securing the bottom plate and lining sheet to the lower end of the drum, said upper seam structure extending laterally outward from the drum over the upper edge thereof as defined by said shells to form a closure receiving bead integral and directly connected with the shells and faced on its outer side by the adjacent upper

end portion of the inner shell, and interfitted corrugations formed in the shells intermediate the seam structures to prevent axial shifting of the shells.

5. A drum of the character described, comprising an outer steel shell, an outer steel bottom plate, an inner shell of aluminum snugly fitted in and lining the outer shell from end to end, and an inner sheet of aluminum fitting flush against the bottom plate and lining the same, said shells being interconnected at the opposite ends of the drum by rolled structures at the two ends of the drum, the bottom plate and its lining sheet having their marginal portions included in the lower seam structure for securing the bottom plate and lining sheet to the lower end of the drum, said upper seam structure extending laterally outward from the drum over the upper edge thereof as defined by said shells to form a closure receiving bead integral and directly connected with said shells and faced on its outer side by the adjacent upper end portion of the inner shell, the latter being longer than the outer shell and having its upper end bent over the upper end of the outer shell to interlock the inner and the outer shells together at the outer edge of the bead, and a removable closure for the upper end of the drum, said closure having its underside completely covered by a sheet of aluminum and pressable against the facing of the bead on the application of the closure to the drum.

WILLIAM E. COAKLEY.

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