May 29, 1928. 1,671,735

H. E. McCRERY

SHIPPING DRUM

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Fig. 1.

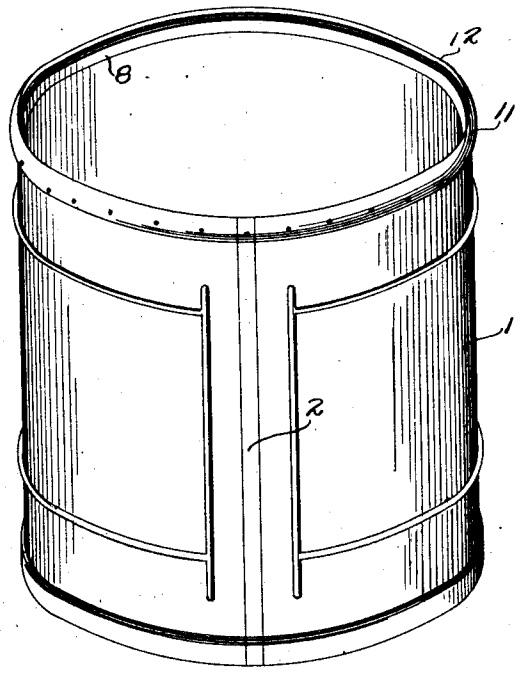


Fig. 2.

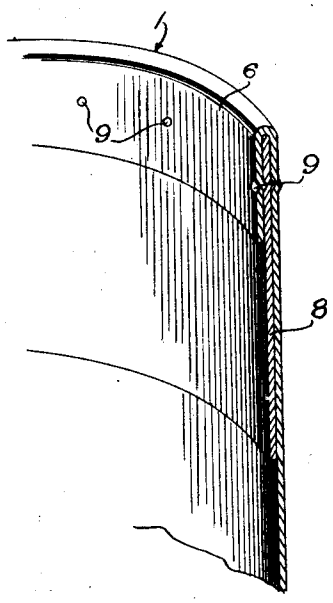
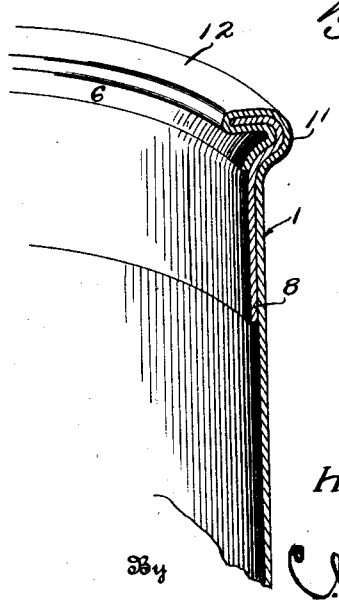


Fig. 3.



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SHIPPING DRUM

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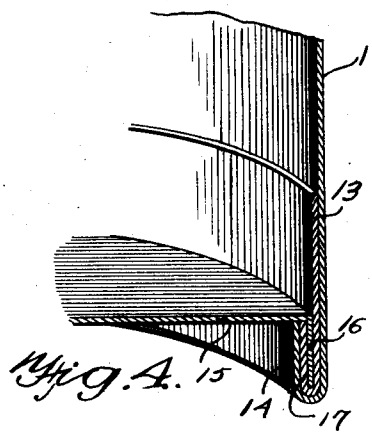
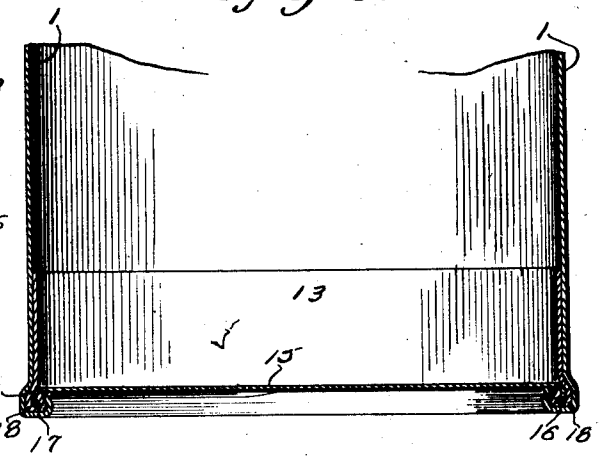


Fig. 4.

Fig. 5.



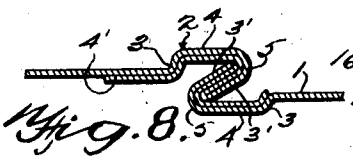
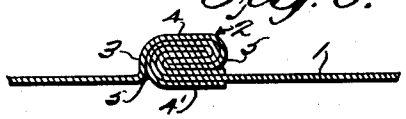


Fig. 8.

Fig. 9.



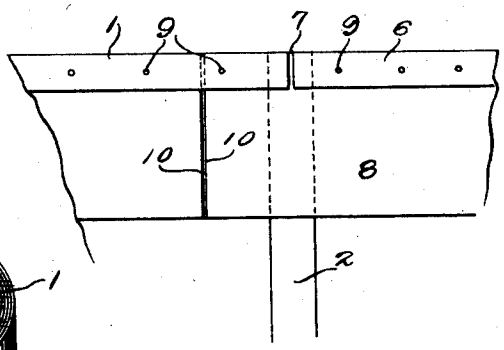


Fig. 6.

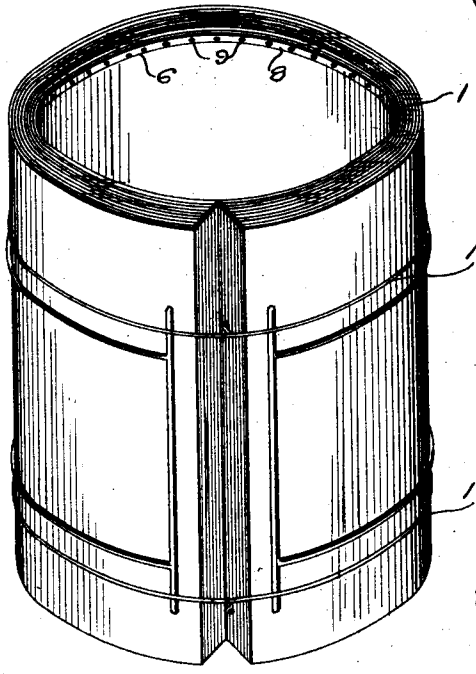


Fig. 7.

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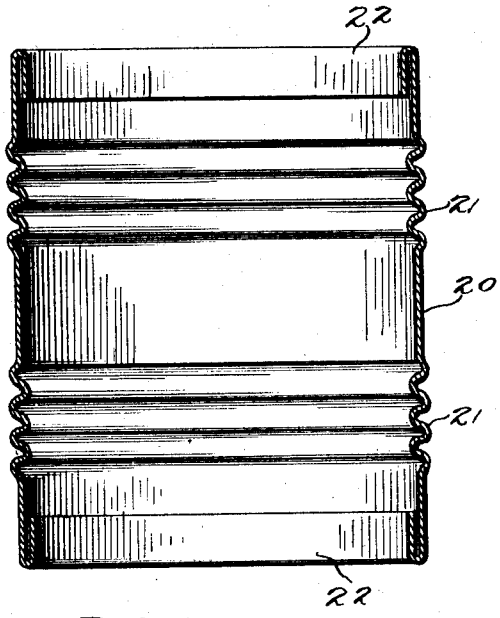
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H. E. McCRERY

SHIPPING DRUM

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Fig. 10.



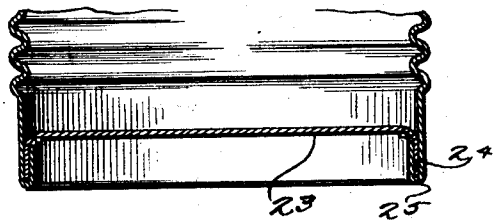
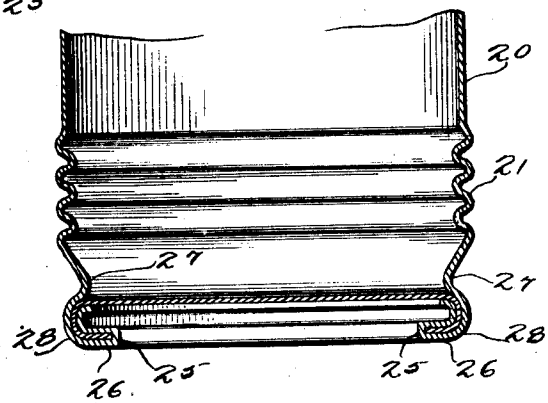


Fig. 11.

Fig. 12.



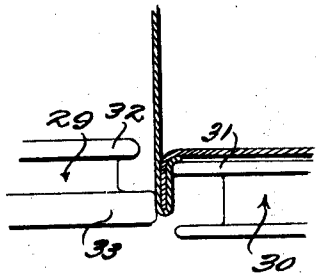


Fig. 13.

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Patented May 29, 1928. 1,671,735

UNITED STATES PATENT OFFICE.

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SHIPPING DRUM.

Application filed September 23, 1925. Serial No. 58,189.

This invention relates to shipping drums, and is a continuation in part of my pending application Serial No. 699,520, filed March 15th, 1924.

An object of the invention is the provision of reenforcing means for the top and bottom of a metallic shipping drum. In the present invention, I provide a drum having a rolled top and bottom and a folded locking seam at the meeting edges of the body. I place strips of heavy gage metal in the rolled edges for reenforcing the same. In the ordinary shipping drum, the top and bottom edges are submitted to the greatest wear and the life of the drum may be materially increased by providing suitable reenforcing means at these points.

A further object of the invention is to provide a novel form of head construction adapted to form a drum which is water tight and hence practicable for use as a shipping container for liquids.

A still further object is to provide a novel head construction for a drum adapted to contain liquids, the connection between the heads and side walls of the drum being such that when the drum contains a liquid and is standing on end, the weight of the liquid within the drum tends to more tightly seal the head and body connection to insure a leak-proof joint.

In the accompanying drawings, I have shown several embodiments of the invention. In this showing:

Figure 1 is a perspective view of the drum,

Figure 2 is a vertical sectional view of the upper edge of the drum showing the heavy gage bracing strip in position and machine punched at the factory to retain it in position,

Figure 3 is a similar view showing the drum after being rolled,

Figure 4 is a vertical sectional view of the bottom of the drum showing the bracing strip in position ready for rolling.

Figure 5 is a similar view of the bottom of the drum after rolling,

Figure 6 is a side elevation of a portion of the top of the drum looking from the inside showing the arrangement of the bracing strip at the seam,

Figure 7 is a perspective view of a number of the drums nested for shipment,

Figure 8 is a horizontal sectional view through the side seam, in partly closed position,

Figure 9 is a similar view of the seam in closed position,

Figure 10 is a sectional view of a somewhat modified form of drum body,

Figure 11 is a fragmentary sectional view of one end of the drum body shown in Figure 10 with the head arranged in position,

Figure 12 is a similar view showing the body of the drum and flange of the head rolled to retain the head in position, and,

Figure 13 is a detail view showing the manner of rolling the head and drum body.

Referring to the drawings, the reference numeral 1 designates the body portion of the drum which is formed of a sheet metal shaped to provide a cylindrical body. The meeting edges are connected to each other by a locking seam 2. The detail construction of the locking seam is shown in Figures 8 and 9 of the drawings. As shown, each edge of the sheet of metal forming the body is first offset, as at 3, and then extended parallel to the body portion, as at 4. Each edge is then folded on itself as at 5, and then extended at an angle, as at 3'. The material beyond the offset 3 is arranged of double thickness and one edge is provided with an extension 4' arranged beside the adjacent body portion.

The top of the drum is bent inwardly and then downwardly, forming a strip 6, shown in Figures 2 and 6 of the drawings, and this strip is provided with slots 7 at suitable intervals to facilitate the proper arrangement of the strip. A bracing strip 8 of heavy gage metal is arranged at the top of the drum between the body portion and the strip 6. This bracing strip is retained in position by punching the top of the drum at suitable intervals, as indicated at 9. In Figure 6 of the drawings, I have shown the arrangement of the bracing strip with respect to the seam 2. As shown, the edges 10 of the bracing strip are out of alinement with the seam whereby the weakest portion of the bracing strip is arranged out of alinement with the weakest portion of the body of the drum. The drums are adapted to be shipped with the top arranged as shown in Figure 2 of the drawings, and after arrival at their destination, the top of the

drum is rolled, as indicated at 11 in Figure 3 of the drawings, forming a turn-over portion 12, and an offset edge to hold the bracing strip in place and strengthen the top of the drum.

The bottom of the drum is similarly provided with a bracing strip 13. As shown, the lower edge of the body portion is turned upwardly, as at 14, and a head 15 is adapted to be arranged between this turned-up portion and the side wall of the body. The head is provided with a peripheral flange 16, extending between the two thicknesses of metal and the bracing strip is adapted to extend downwardly on one side of the flange and is provided with a curved portion 17 extending upwardly on the opposite side of the flange. The bottom of the drum is likewise adapted to be rolled, as indicated at 18 in Figure 5 of the drawings.

When a number of drums are to be bundled for shipment, the body portions are arranged nested, as shown in Figure 7 of the drawings and tied together in any suitable manner, as by wires 19. The bottom of the inner drum is placed in position before bundling and the bottoms of the remaining drums arranged inside the inner drum. The drums are shipped unrolled and the tops and bottoms are rolled after they reach their destination.

In assembling a drum, the side seams are first arranged as shown in Figure 8 of the drawings, and then hammered to provide a tight seam. The extension 4′ is arranged over the seam, as shown.

In Figures 10 to 13 of the drawings, I have shown a somewhat modified construction. In this form of the invention I employ a cylindrical drum body 20 having relatively heavy annular rings 21 rolled therein to support the drum against inward bending or distortion and serve as hoops upon which the drum may be rolled. The drum is provided at opposite ends with inturned annular flanges 22 which are formed parallel to the sides of the drum and spaced therefrom, as shown. Each end of the drum may be closed by a head 23 provided with an annular flange 24 at its edge which is adapted to be received in the space between the flange 22 and the body of the drum. The end of the flange 24, the outer extremity of each flange 22 and the adjacent end of the drum are adapted to form in effect a drum end 25, as shown in Figure 11. After the head has been placed in position the drum is adapted to be rolled as shown in Figure 11 to turn the drum end 25 inwardly, the adjacent outer face of the body of the drum then being arranged flat and substantially at right angles to the walls of the drum as indicated at 26 in Figure 12. In the rolling action referred to, a shoulder 27 is formed inwardly of the head 23 to secure it against inward movement, and the flanges 22 and 24, and the adjacent portion of the drum are curved as at 28 outwardly of the flat portion 26.

In Figure 13 of the drawings, I have indicated one practical method of forming the closure for the drum wherein I employ rolls 29 and 30. The roll 30 is provided at one edge with an annular rib 31 adapted to be arranged adjacent the head in contact with the flange 22, while the roll 29 is provided with annular flanges 32 and 33, the latter contacting with the drum adjacent its lower end during the initial rolling operation. As shown in Figure 13, the rib 32 is materially smaller in diameter than the rib 33 for a purpose to be described.

The method of assembling the heads of the drum, as illustrated in Figures 4 and 5, is as follows: The head 15 is placed in position as shown in Figure 4, with the flange 16 thereof arranged between the adjacent portions of the reinforcing strip 13 whereupon the entire structure beyond the head 15 may be rolled or stretched outwardly and the extremity of the drum turned inwardly as indicated at Figure 5. It will be apparent that a portion of the extremity of the completed drum extends inwardly toward the center thereof a greater distance than the curve formed in the flange 16 of the head, and it has been found that the resulting joint is entirely watertight. When the drum contains a liquid and is standing on end, the weight of the liquid within the drum tends to bend the extremity of the drum inwardly, thus causing an additional bend in the flange 16 and the adjacent portions of the drum body and reinforcing strip which tends to more tightly clamp these elements against each other to prevent leakage of liquid.

While the form of the drum as described has been found thoroughly satisfactory for use in shipping liquids, it is preferable to employ the form of the device shown in Figures 10 to 13 inclusive. In the latter form, the provision of the plurality of deep rolled rings 21 materially strengthens the drum, and the elimination of the reinforcing strips provides a structure which is cheaper to manufacture. In the modified form of the invention, the edges of the metal forming the body portion may be assembled in the same manner as that described in the other form of the invention. When placing the heads in position, the latter are inserted into the drum edgewise, the drum being sprung sufficiently to permit the entrance thereof, and the flange 24 is inserted in position as shown in Figure 11. The rolls 29 and 30 are then brought into operation, the initial step of the rolling operation being illustrated in Figure 13. The ribs 31 and 33

contact with the flange 22 and the body of the drum respectively and the rolls are then moved toward each other. The initial movement of the rolls toward each other turns the drum end 25 inwardly transverse to the axis of the drum, and continued movement of the roll brings the rib 32 into contact with the outer surface of the drum inwardly of the head 23 whereby the shoulder 27 will be formed. The arrangement of the drum end 25 and the flat portion 26 is such that the weight of liquid within the drum tends to bend the flat portion 26 inwardly, thus clamping the curved portions 28 of the flanges 22 and 24 and the adjacent portions of the body of the drum tightly against each other, thus assuring the prevention of leakage.

It is to be understood that the forms of my invention herewith shown and described are to be taken as preferred examples of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A metallic shipping drum comprising a cylindrical body having one end turned inwardly to form a continuous flange spaced from the adjacent portion of the body, a head in said body provided with an annular flange arranged in the space between said first named flange and the adjacent portion of the body, said flanges and the adjacent portion of the body forming a drum end, said drum end being rolled to provide an inwardly extending annular rib arranged substantially at right angles to the axis of said body to provide a supporting surface of substantial area.

2. A metallic shipping drum comprising a cylindrical body having the metal at one end thereof turned inwardly to form a continuous flange spaced from the adjacent portion of the body, a head in said body provided with an annular flange arranged in the space between said first named flange and the adjacent portion of the body, said flanges and the adjacent portion of the body being rolled inwardly substantially at right angles to the axis of the body, to provide a supporting surface of substantial area having an annular portion arranged wholly inwardly of the curve in the flange of said head formed by the rolling thereof inwardly.

3. A metallic shipping drum comprising a cylindrical body having one end turned inwardly to form a continuous flange spaced from the adjacent portion of the body, a head in said body provided with an annular flange arranged in the space between said first named flange and the adjacent portion of the body, said flanges and the adjacent portion of the body forming a drum end, said drum end being rolled to form an inwardly extending annular rib arranged substantially at right angles to the axis of the body and forming a supporting surface of substantial area, said body being provided with an annular shoulder rolled inwardly therefrom and contacting with the inner face of said head.

4. A metallic shipping drum comprising a cylindrical body having one end turned inwardly to form a flange substantially parallel to and spaced from the adjacent portion of the body, a head arranged in said body and provided with an annular flange, the space between said first named flange and the adjacent portion of the body corresponding in width to the thickness of and adapted to receive the flange of said head, said flanges and the adjacent portion of the body forming a drum end, said drum end being rolled inwardly substantially at right angles to the axis of said body to provide a supporting surface of substantial area having an annular portion arranged wholly inwardly of the outer extremity of said head, and an annular shoulder formed on said body and contacting with the inner face of said head.

5. A metallic shipping drum comprising a sheet of metal shaped to form a cylinder and having its edge portions bent backwardly upon themselves to form flaps, one of said flaps being arranged against the inner face of the drum, the other of said flaps being arranged against the outer face of the drum, said flaps and the adjacent portions of the sheet being bent to form an interlocking joint, said flaps extending material distances on opposite sides of said joint, the extremity of said flap arranged against the outer face of said drum being bent backwardly against said joint after the latter is assembled.

6. A metallic shipping drum comprising a cylindrical body having the metal at one end thereof turned inwardly to form a continuous flange spaced from the adjacent portion of the body, a head in said body including a central disk portion and an annular flange arranged in the space between said first named flange and the adjacent portion of the body, said flanges and the adjacent portion of the body being rolled inwardly substantially at right angles to the axis of the body to provide a supporting surface of substantial area having an annular portion arranged wholly inwardly of the curve in the flange of said head formed by the rolling thereof inwardly, said flanges being spaced a substantial distance below the disk portion of said head.

In testimony whereof I affix my signature.

HAROLD E. McCRERY.