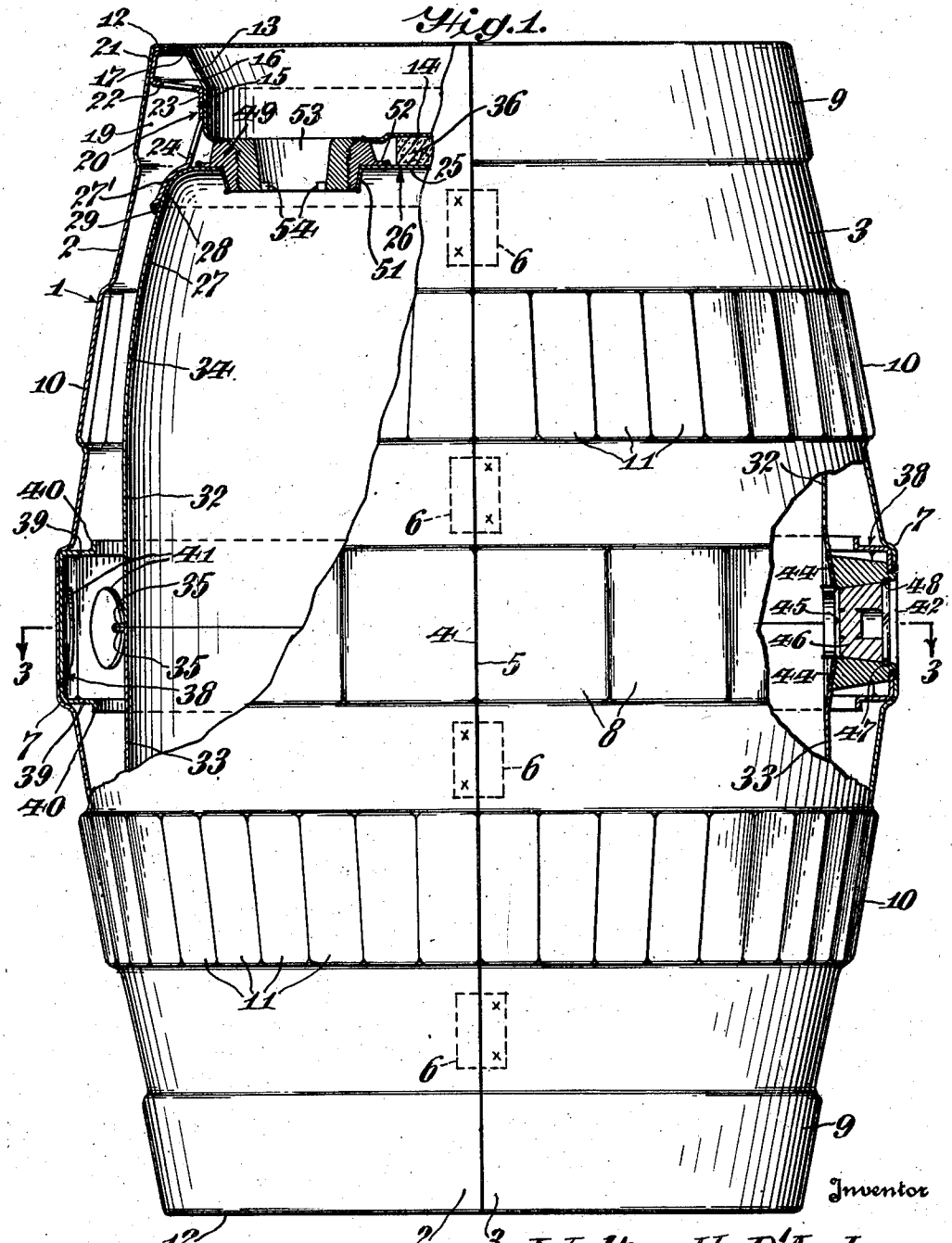
March 1, 1938. W. H. D'ARDENNE 2,109,836

METAL BARREL

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Fig. 1.




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Fig. 2.

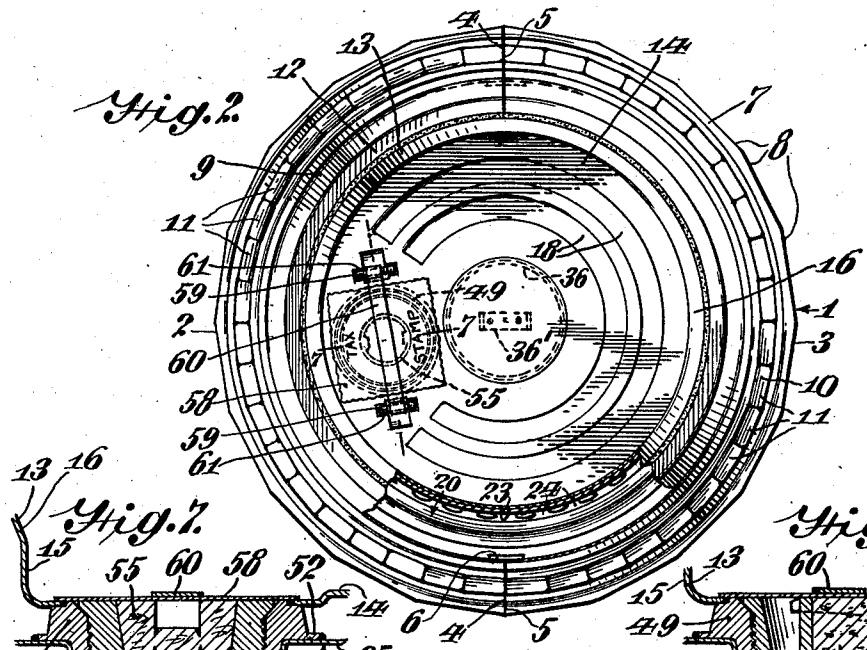



Fig. 7.




Fig. 8.

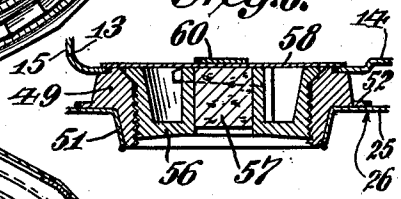



Fig. 3.

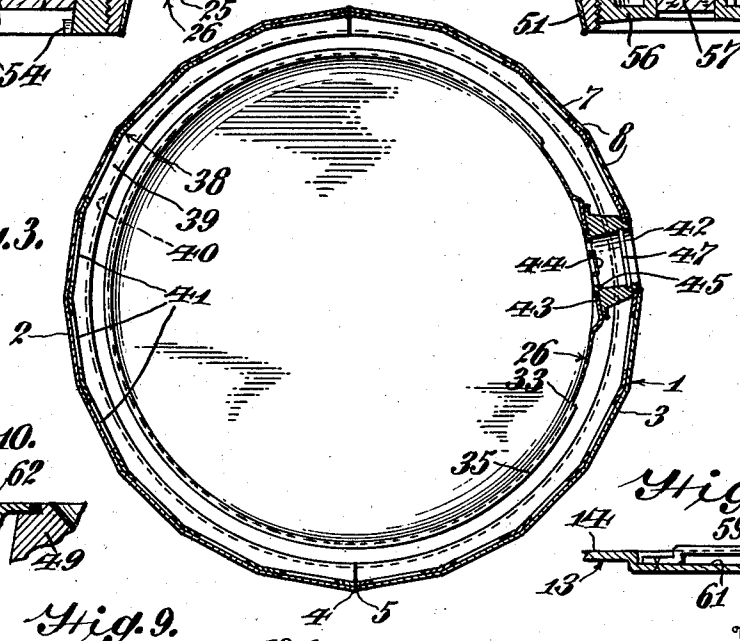



Fig. 10.

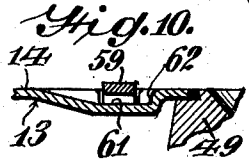
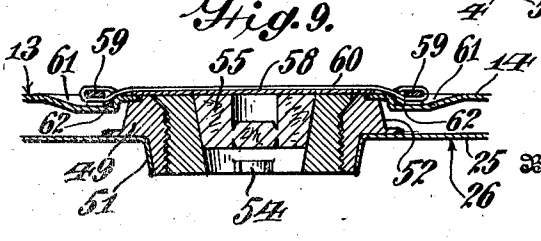



Fig. 11.




Fig. 9.




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METAL BARREL

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Fig. 4.

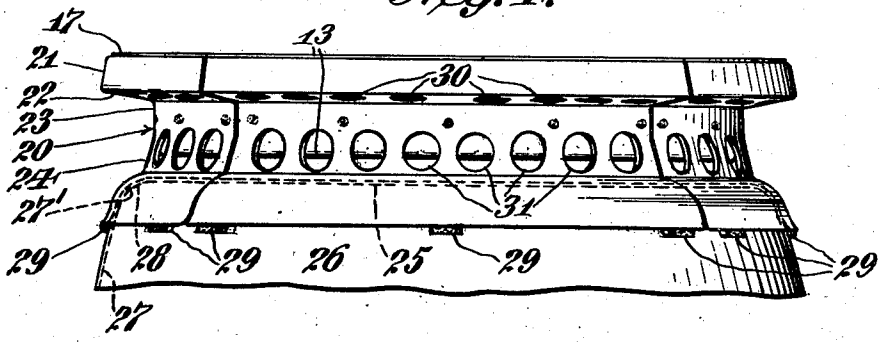



Fig. 5.

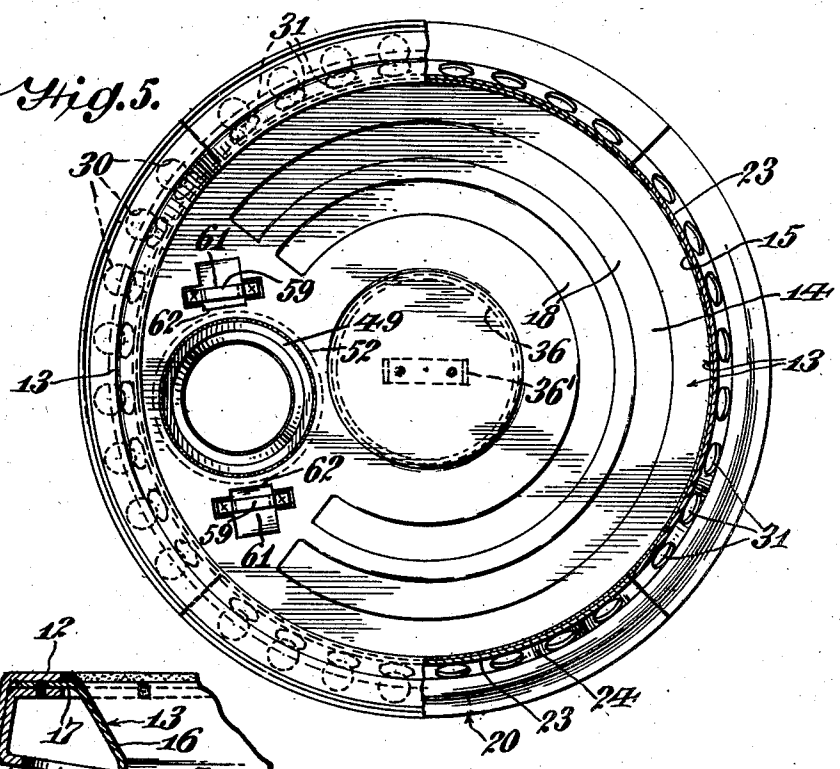
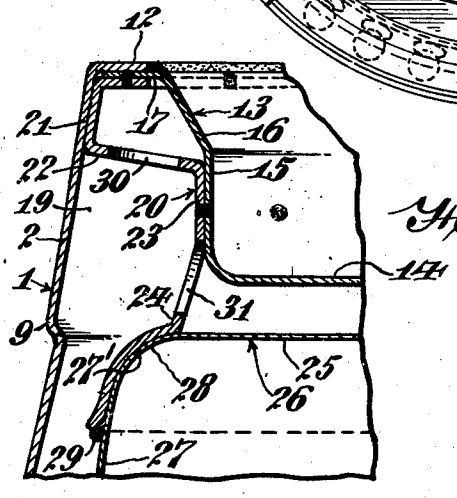



Fig. 6.




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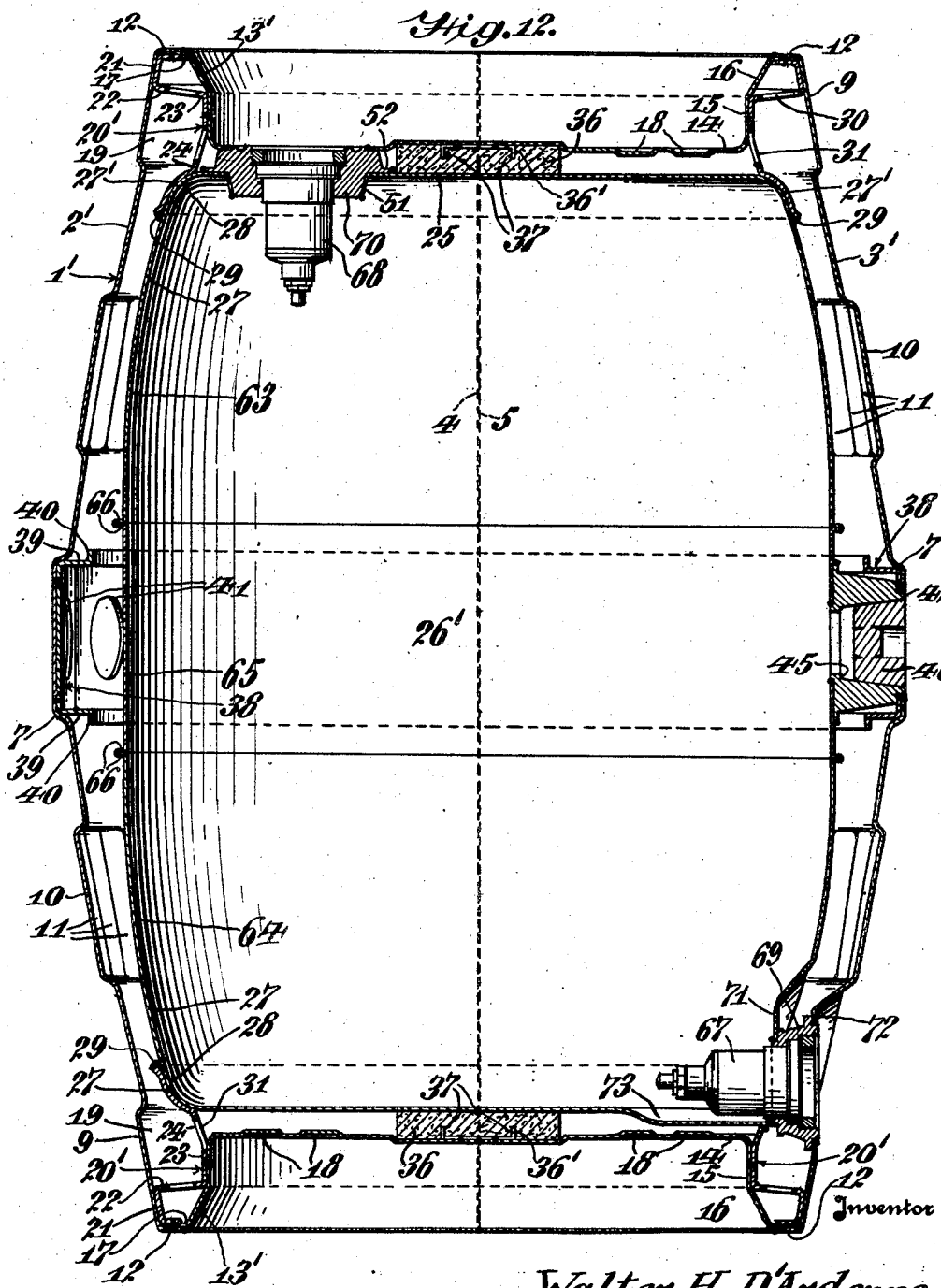
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Fig. 12.



Patented Mar. 1, 1938 2,109,836

# UNITED STATES PATENT OFFICE

2,109,836

## METAL BARREL

Walter H. D'Ardenne, Jenkintown Manor, Pa., assignor, by mesne assignments, to Heintz Manufacturing Company, a corporation of Pennsylvania

Application August 19, 1933, Serial No. 685,927

5 Claims. (Cl. 220—15)

The invention relates to a metal barrel, and involves an improvement in double walled barrels or other similar containers wherein an inner sheet metal casing is spaced from an outer sheet metal casing and supported therefrom in such a manner as to afford the maximum degree of protection to the inner casing from impacts upon the outer shell when the barrel is in use, and in such a manner as to afford a high degree of thermal insulation for the contents of the barrel by means of the structure and arrangement of the parts thereof.

One of the primary objects of the invention, therefore, is the provision in a sheet metal barrel of a double walled structure wherein an inner casing is spaced from an outer casing by a minimum of supporting means in order to minimize the damage to the inner shell by impacts upon the outer shell when the barrel is in use. It is also an object of the invention to provide a double walled sheet metal barrel which is so constructed that blows received upon the outer casing are not transmitted to the inner casing in such a manner as to indent or deform the inner casing to such an extent as to affect the volume thereof or otherwise damage the inner casing. A further object of the invention is the provision of improved means for supporting the inner casing from the outer casing of a double walled sheet metal barrel. A still further object of the invention is the provision of improved means for reinforcing the chime portion of the barrel. A still further object of the invention is the provision of improved means for reinforcing the bilge of the outer casing. It is also an object of the invention to provide means upon the exterior of the outer casing to facilitate the passage of the barrel through a mechanical washing machine. Still another object of the invention is the provision of improved means for securing a stamp or other form of seal to the barrel over the tap opening.

Other objects and advantages of the improvement will be apparent from the following description, taken with the accompanying drawings, wherein:

Fig. 1 is an elevational view, partly in section, showing one form of a barrel with my improvements embodied therein;

Fig. 2 is a plan view, partly in section, of the barrel shown in Fig. 1 and showing the improved seal attaching means in position thereon;

Fig. 3 is a transverse sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is an elevational view of the chime ring assembled on the outer head and the inner casing;

Fig. 5 is a plan view, partly in section, of the head for the outer casing with the chime ring assembled thereon;

Fig. 6 is an enlarged detailed view showing the relative arrangement of the side wall and head of the outer casing, the inner casing, and the chime ring;

Fig. 7 is a transverse sectional view through the tap opening taken on the line 7—7 of Fig. 2 and showing one form of tap bushing therein;

Fig. 8 is a transverse sectional view similar to Fig. 7 but showing a modified form of tap bushing;

Fig. 9 is a transverse sectional view through the tap opening shown in Fig. 2, taken at right angles to Fig. 7;

Figs. 10 and 11 are detailed views showing the means by which the seal is secured in position over the tap opening; and

Fig. 12 is a vertical sectional view showing the utilization of separate tap and vent openings, and a slightly modified form of inner casing.

As disclosed herein my improved barrel comprises an outer sheet metal casing 1 which is preferably formed from two substantially semi-cylindrical sections 2 and 3 pressed from rectangular sheets and provided with a circumferential bilge. In assembling the barrel the longitudinal edges 4 and 5 of the sections 2 and 3 are welded together, preferably by a butt welding operation, and these edges have locating plates 6 welded to the inner face thereof, alternating plates being secured to one section only in order that the edges of the sections may be properly alined in the assembly thereof.

Each of the semi-cylindrical sections 2 and 3 is pressed outwardly to provide a circumferential bilge reinforcing rib 7, and this rib is preferably provided with a continuous series of flattened portions 8 in order to retain the barrel in a position of rest when supported upon the bilge. The opposite ends of the semi-cylindrical sections 2 and 3 are provided with outwardly pressed reinforcing head ribs 9, and outwardly pressed intermediate ribs 10 are provided between each of the head ribs 9 and the bilge rib 7. The intermediate ribs 10 are likewise provided with a continuous series of flattened portions 11 for engagement with the operating rolls of a washing machine so that rotation of the barrel may be insured as it is moved through the machine. The free edges of the head ribs 9 are turned inwardly to provide annular flanges 12 to which the margins of the outer heads 13 are secured.

The two outer heads 13 are similar in construc-

tion and are preferably pressed from a circular sheet of metal so as to form a dished structure with a substantially flat bottom 14 having an upright rim 15 flaring outwardly at 16 and provided with a marginal portion 17 which is welded to the inner face of the annular flange 12 on the free edge of the curved wall of the outer casing 1. As shown in Fig. 2, one of the outer heads 13, or both if desired, may be provided with arcuate depressions 18 in which the name of the owner may be embossed, and which also serve as strengthening means for the outer heads.

The rim 15 of the dished outer head therefore provides a chime flange which is substantially spaced from the curved side wall of the outer casing so as to form an annular channel 19 as clearly shown in Figs. 1, 6 and 12. The chime thus provided is reinforced by means of a chime ring 20 which serves the purpose of a combined chime reinforcing member and inner casing support. For convenience in manufacture, the chime ring 20 shown herein is formed from four similar arcuate members with the meeting ends thereof welded together to form an integral, rigid structure. It will be understood, however, that this ring may be pressed from a single blank if desired, or it may be formed from any desired number of separate parts, and it will also be understood that it is not essential, where the ring is made up of separate sections, that the ends of the sections be welded or otherwise secured together.

As I have disclosed the same herein, the chime ring 20 is substantially S-shaped in cross section. The end of the outer loop is welded to the marginal portion 17 of the outer head 13, and this loop extends inwardly for some distance in contact with the inner surface of the head rib, as shown at 21, thence extends transversely across the annular channel at 22 and inwardly at 23 in engagement with the chime flange to which the lower loop is welded. The lower loop is then inclined outwardly as at 24 across the space between the outer head 13 and the end wall 25 of the inner casing 26 and is then curved to form a seat 27' for the rounded edge 28 of the end wall 25 and the side wall 27 of the inner casing 26, being brazed or tacked to the side wall 27 of the inner casing at intervals as indicated at 29.

The portion 22 of the chime ring which extends transversely across the annular channel 19 between the chime flange and the head rib is provided with a circumferential series of perforations 30 in order to reduce the weight thereof and to provide communication between the inner and outer portions of the annular channel 19. Likewise the portion 24 of the inner loop between the outer head 13 and the end wall 25 of the inner casing 26 is provided with a circumferential series of perforations 31 in order to decrease the weight and reduce the thermal conductivity thereof, and in order that the space between the side walls of the casings 1 and 26 may be in communication with the space between the adjacent end walls 13 and 25 of the casings.

The inner casing 26 is preferably formed from two substantially similar tub-shaped sections 32 and 33 pressed from sheet metal so as to provide an outer circumferentially curved wall 34 which is preferably slightly curved in a longitudinal direction and meets the end wall 25 along the rounded edge 28 heretofore referred to, as shown in Figs. 1, 6 and 12. The free edges of the inner casing sections are turned outwardly to provide annular flanges 35 which are welded together in the assembly of the barrel. As hereinbefore indicated, the rounded edges 28 between the side wall 34 and each of the end walls 25 of the inner casing are supported within the seat 27' formed by the curved inner edge of the chime ring 20.

With the construction above described, it will be noted that the inner casing 26 is spaced throughout its extent from the outer casing 1, and is supported from the outer casing solely by the engagement of the chime ring 20 about the edges thereof. Inasmuch as the space between the casings contains only air, impacts or blows received by the outer casing are not transmitted to the inner casing and therefore do not deform the inner casing, and, as will be apparent from the drawings, either the side or end walls of the outer casing may be indented to a considerable extent without any deformation or other injury to the inner casing. In case of a severe blow upon the chime of the barrel, the structure which I have provided is such that the chime as well as the chime ring 20 will collapse without deforming the inner casing in any manner.

As an added protection for the end walls 25 of the inner casing, a pad or cushion 36 of asbestos or other insulating material is secured centrally between each inner head 25 and the adjacent outer head 13. This pad may be held in place by a metal clip 36' welded to the outer head 13 and having its opposite ends bent transversely so as to embed themselves within the pad as shown at 37 in Fig. 12.

In order to protect the barrel against damage from the severe blows which are ordinarily received upon the bilge portion, I prefer to reinforce this portion by means of a bilge reinforcing ring 38 extending circumferentially within the bilge rib 7 and welded therein. The reinforcing ring 38 is preferably made to conform to the flattened portions 8 of the bilge rib, and is of such a width as to extend transversely across the rib, the edges thereof being turned inwardly as shown at 39 and thence outwardly as at 40 in order to provide additional strength. The reinforcing ring 38 may also be provided with a circumferential series of relatively large perforations 41 in order to reduce its weight. As shown herein, the ring 38 is formed from two semi-circular sections with the meeting ends thereof welded together and is so positioned that the joints therein coincide with the longitudinal meeting edges 4 and 5 of the outer casing sections. It will be understood, however, that the ring 38 may be integral or it may be formed from more than two sections if desired.

In the form of my invention disclosed in Fig. 1, I provide a bung opening comprising a bung bushing 42 secured in alined openings in the inner casing, the bilge rib and the bilge reinforcing ring, the openings in the bilge rib and the bilge reinforcing ring preferably being located centrally of one of the flattened portions 8. The inner and outer faces of the bushing 42 are preferably flat and the area immediately surrounding the opening in the inner casing is preferably flattened as shown at 43 to conform thereto, and the inner and outer faces of the bushing are suitably welded to the inner casing, the bilge reinforcing ring and the outer casing. In order that proper drainage of the barrel may be effected during the washing operation, I prefer to provide the inner face of the bushing 42 with oppositely arranged slots 44 inclined inwardly, with the wall of the inner casing pressed outwardly into the slots and conforming thereto, as shown in Fig. 1.

The inner end of the opening through the bushing 42 is provided with a circumferential flange 45 to serve as a stop for the bung 46 and to prevent the same from being forced into the interior of the barrel. In order to provide against the accidental removal of the bung 46, I preferably provide the outer end of the opening through the bushing 42 with a circumferential groove 47 for receiving a split ring 48 or other form of retaining means, such as a dished plate, when the bung is in position.

A tap opening is provided in the upper head of the barrel in the form of a tap retainer 49 secured between the outer and inner heads in alined openings therein. Preferably the opening in the inner head 25 is provided with an inturned flange 51 the free edge of which is welded to the retainer 49 as shown. The retainer 49 is also provided with an outwardly projecting flange 52 resting upon the outer face of the inner head 25 and welded thereto. It will also be understood that the outer end of the retainer 49 is suitably welded to the outer head 13. The opening through the retainer 49 is preferably threaded to receive a threaded tap bushing 53 such as shown in Fig. 7 or in Fig. 8. In the form shown in Fig. 7 the tapered opening in the bushing 53 is provided with inwardly projecting lugs 54 for engagement with a tap connection, and these lugs may also serve as stop means for a wooden plug 55 of well-known construction. In the form shown in Fig. 8 the tap retainer 49 is similar to that shown in Fig. 7, but the bushing 56 is provided with a straight opening closed by means of a plug 57 which may be driven therethrough when the tap connection to the barrel is made.

For the purpose of securely affixing a stamp 58 or other seal to the barrel I have devised improved means wherein a pair of ears 59 is provided on opposite sides of the tap opening, and a strip of metal 60 is extended across the tap over the stamp 58 and has its ends secured to the ears. Preferably, the ears 59 are welded or otherwise secured within recesses 61 formed in the outer head on opposite sides of the tap opening, and they are of such a height with respect to the recesses 61 that the lower faces of the ears are slightly below the outer surfce of the head, as shown in Figs. 9, 10 and 11. The inner edges of the ears are positioned near the abrupt inner walls 62 of the recesses so that the sealing strip 60 binds upon the upper edges of the walls 62 and is held in place thereby. Such a structure is effective in preventing the accidental removal of the seal and may also be utilized for preventing the accidental removal of the plugs 55 and 57.

In the modification of my invention shown in Fig. 12 the inner casing 26' is formed from two similar end sections 63 and 64 and an intermediate circumferential section 65, the meeting edges of each of the end sections and the intermediate section being provided with outwardly turned flanges 66 which are welded together when the sections are assembled. The end sections 63 and 64 are formed in a manner similar to the two sections 32 and 33 of the inner casing 26 heretofore described. The outer casing 1', comprising the longitudinal sections 2' and 3' and the heads 13', is similar in construction to the outer casing 1. The construction of the chime ring 20' and its arrangement with respect to the other elements do not differ from the construction and arrangement of the chime ring 20. Further description of these features is therefore omitted.

In this modified form of my invention however, I have disclosed the manner in which a barrel with my improvements embodied therein may be constructed to use a standard form of tap and vent 67 and 68 respectively. The tap 67 and vent 68 are attached to the barrel by means of retainers 69 and 70 secured in position in a manner similar to the retainer 49 heretofore described. It is preferred, however, to recess both the inner and outer casings as shown at 71 and 72 in order to provide suitable flat surfaces for engagement with the opposite faces of the retainer 67, and the bottom wall of the inner casing may be depressed as shown at 73 in order to insure proper drainage of the contents from the tap opening.

It will be understood that the barrel, constructed as above described, may have its outer surface finished or coated in such manner as may be desired, and that the interior of the inner casing may be coated to accord with the liquid contained therein. Irrespective of the character of the inner coating, my improvement provides a structure in which there is little likelihood of this coating being damaged by reason of blows received by the outer casing. The manner in which the inner casing is spaced from the outer one and supported therefrom provides efficient and economical thermal insulation for the contents of the barrel, and I regard this as one of the important features of my improvement.

Although I have shown and described certain forms which my invention may take, it will be understood that various other changes may be made therein, without departing from the invention, so long as such changes come within the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a sheet metal barrel, an outer casing comprising a curved side wall and circular heads secured thereto, each of said heads being inwardly dished to provide a chime flange spaced from said side wall to form an annular channel, an inner casing spaced from said outer casing and comprising a curved side wall and substantially flat end walls, and means for supporting each end of the inner casing comprising an annular member having a perforated chime reinforcing portion secured to the head of the outer casing and extending transversely across said annular channel between the side wall of the outer casing and said chime flange and a seat portion projecting therefrom into engagement with the edge of the inner casing and having openings therethrough communicating with the space between said side walls and the space between said head and the adjacent end wall of the inner casing.

2. In a sheet metal barrel, an outer casing having a curved side wall and circular heads secured thereto, each of said heads being inwardly dished to provide a chime flange spaced from said curved side wall to form an annular channel, an inner casing spaced from said outer casing and having a substantially cylindrical side wall and circular end walls connected thereto by rounded edges, and means for supporting each end of said inner casing from said outer casing comprising an annular member having one edge thereof secured to said chime flange and the opposite edge curved about the rounded edge of said inner casing and secured to said inner casing, the intermediate portion of said annular member enclosing the space between the circular head and the adjacent circular end wall and having a plurality of openings therethrough.

3. In a sheet metal barrel, an outer casing having a side wall formed from two similar longitudinal sections welded together along their abutting edges and having the opposite ends thereof turned inwardly to provide head engaging flanges, and end walls each of which is inwardly dished to provide a chime flange spaced from said side wall to form an annular channel and a marginal portion secured to said head engaging flange, an inner casing formed from two similar transverse sections welded together along a circumferential line, and means in each end of said outer casing for supporting said inner casing spaced from said outer casing comprising an annular member substantially S-shaped in cross section having one loop secured to said marginal portion and engaging with said side wall and the other loop secured to said chime flange and engaging about the meeting edge of the side and end walls of the inner casing.

4. In a sheet metal barrel, an outer casing comprising a side wall having the edges thereof turned inwardly to provide head engaging flanges, an outwardly pressed circumferential rib at the bilge portion, and an outwardly pressed circumferential rib intermediate the bilge and each of said edges, said ribs having the outer faces thereof provided with a continuous series of circumferentially connected flattened portions, and a head for each end of the casing having the central portion inwardly dished to provide a chime flange and a marginal portion secured to said head engaging flange.

5. In a sheet metal barrel, an outer casing comprising a side wall and heads secured to the edges thereof, the side wall having an outwardly pressed circumferential bilge rib provided with a continuous series of connected flattened portions on the outer face thereof, and a reinforcing ring secured within and conforming to said rib and having inwardly turned flanges on the opposite edges thereof.

WALTER H. D'ARDENNE.