(No Model.)

A. O'HARA.

METALLIC VESSEL.

No. 299,673. Patented June 3, 1884.

Fig. 1.

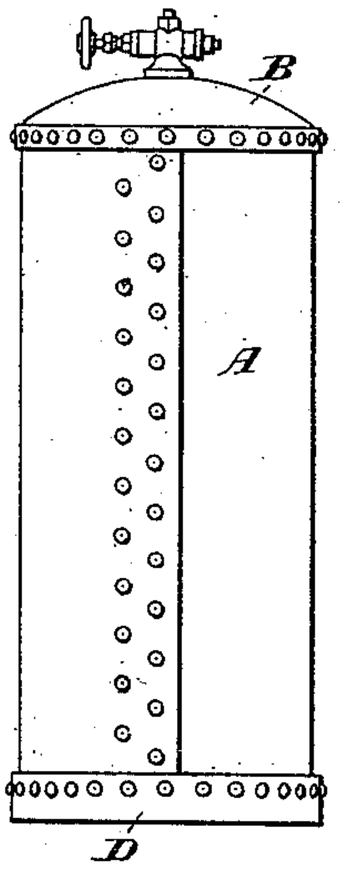


Fig. 2.

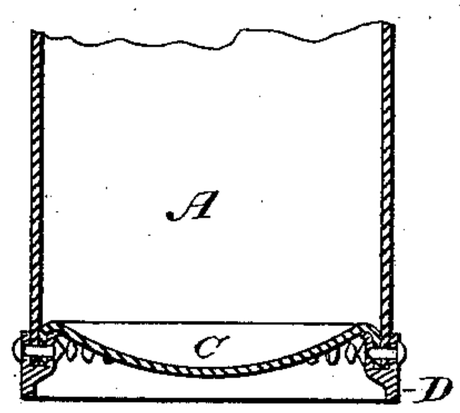


Fig. 3.

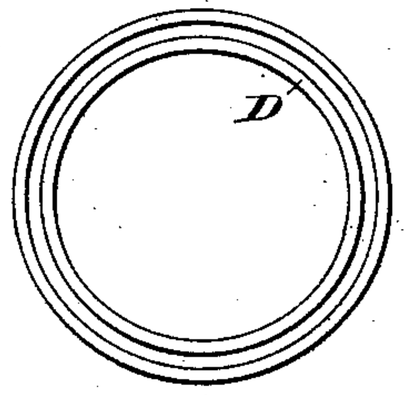
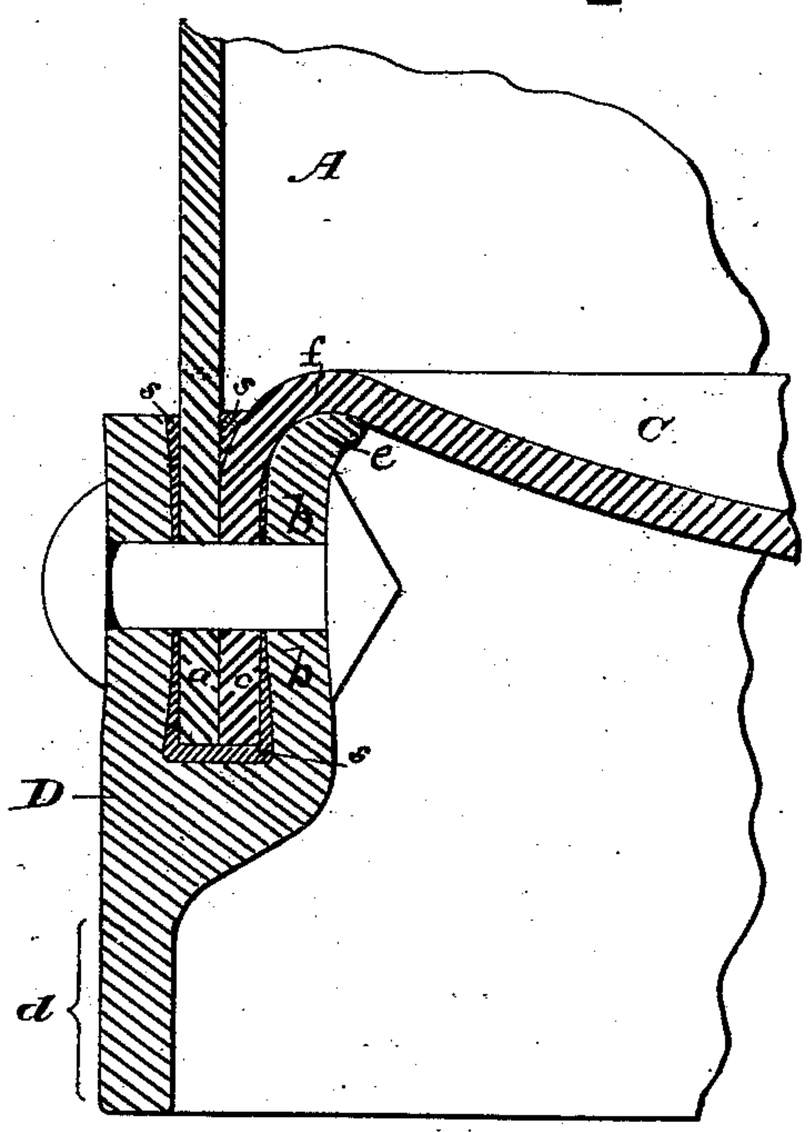


Fig. 4.



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UNITED STATES PATENT OFFICE.

ADAM O'HARA, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO HORATIO NELSON HOLT, OF SAME PLACE.

METALLIC VESSEL.

SPECIFICATION forming part of Letters Patent No. 299,673, dated June 3, 1884.

Application filed March 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, ADAM O'HARA, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Metallic Vessels and their Construction, of which the following is a specification.

My invention has reference most particularly to metallic vessels which are designed to be subjected to heavy internal pressure—such as soda-water fountains, boilers, and pressure-tanks—its object being to provide a strong, cheap, and sightly joint between the bottom and the sides.

Figure 1 of the accompanying drawings is an elevation of a soda-water fountain constructed according to my invention. Fig. 2 is a vertical section of the lower portion thereof. Fig. 3 is a plan of the ring for forming the bottom joint, and Fig. 4 is an enlarged transverse section of the joint.

Metallic vessels of this character are generally constructed with a cylindrical body or side wall, A, a convex top, B, flanged and riveted to the body, and a flanged bottom, C, placed within and riveted to the body A. For soda-water fountains which have to sustain a high pressure without heat, the joints are made tight by flowing in solder. I employ for the bottom joint a ring, D, having a deep groove or channel formed in its upper side. The lower portion or flange, *a*, on the body A and the downturned flange *c* on the bottom C are dropped into this channel, and the rivets are passed through the ring and flanges. The ring D, which is shown in plan in Fig. 3 and in cross-section in Fig. 4, is cast of some suitable malleable metal, such as brass or bronze, and the groove or channel is either cast in it or is cut out in a lathe after the ring is cast. A cast ring has the advantage over a wrought one that it can be made thicker, and consequently stiffer; that it can be readily given the most desirable proportions, and that it is much cheaper. As shown in Fig. 4, the inner flange, *b*, of the ring is formed with a curved lip, *e*. This is to receive and support the bend *f* of the bottom C where the flange *c* is bent down therefrom. The bend *f* rests upon the top of the flange *b* fitting this lip, and the lower edge of the flange *c* does not project deeply enough into the channel in the ring to rest upon the bottom thereof. Consequently the effect of pressure within the vessel is to force the bottom C down upon the lip *e*, which supports it, and aids the bottom in resisting the strain.

Heretofore in vessels of similar construction to this a hoop (answering to my ring D) has been bent beneath the edges of the side and bottom flanges, and carried up on the inner side thereof far enough to rivet through, but not far enough to afford any support for the bottom at *f*. Such vessels have not been designed to withstand a heavy internal pressure; but if they are subjected to such pressure the bottom would be forced downward and the upper portion of the flange *c* would be drawn inward and distorted, resulting unavoidably in the leakage of the vessel. My improved construction of ring avoids any such result, and imparts to the bottom all the requisite strength without the necessity of resorting to complicated and expensive bracketed trusses beneath the bottom. The ring D is also formed, as shown in Fig. 4, with a deep flange or foot, *d*, forming a downward continuation of the outer face of the ring, as shown. This foot serves as a standard for the vessel to rest upon, and lifts the vessel high enough to allow sufficient sag or bellying to the bottom C, as shown in Fig. 2, without the necessity of extending the flanges *a* and *c* downward. This foot *d* imparts a neat and workmanlike finish to the bottom portion of the vessel, as well inside as outside.

In putting together the parts to form the bottom joint of a vessel according to my invention, the ring D is placed right side up on a level surface. The bottom C is placed over it, its flange *c* dropping into the groove or channel, and its bend *f* resting on the top of the flange *b* of the ring. The body A is then placed over the bottom, and its lower edge or flange, *a*, is dropped into the groove or channel in the ring, some small pieces of metal, preferably solder, having been first placed in the bottom of the channel, to keep the edge *a* uplifted from the bottom. The rivet-holes are then punched or drilled through the ring D

and flanges *a* and *c*, and the rivets are put through and riveted down. In this way a very strong joint is made, but it is not necessarily tight. If the vessel is a soda-water fountain or other vessel designed to withstand a heavy internal pressure without much heat, the joint is made tight by flowing solder into the channel in the ring D, the temperature being maintained high enough to keep the solder liquid until it shall have flowed into and filled all the cracks and interstices. The joint thus completed is shown in section in Fig. 4, where *s s* represent the solder. By keeping the edges of the flanges *a* and *c* lifted above the bottom of the channel, the solder is permitted to flow beneath them without obstruction, and thus reaches all the interstices. Heretofore in making joints of this character where a channeled ring has been used, the side and bottom flanges have rested upon the bottom of the channel, thereby intercepting the solder and so retarding its flow as to render the joint imperfect and liable to leak if a considerable pressure were put upon it. My construction entirely avoids this difficulty. Other alloys than solder may be used, or it may be possible to flow in cement or gum instead of metal, which may answer for some purposes.

If the vessel is designed to withstand a degree of heat so high as to render it impracticable to flow into the joint a metal or alloy which will not be affected by such heat, the joint may be rendered tight by calking in the manner commonly employed in making steam-boilers.

I am aware that sheet-metal vessels not designed to resist pressure—such as milk-cans and metallic casks—have been made with a bottom hoop bent beneath the bottom edges of the metal and up on the inner side far enough to rivet through, and consequently bearing some resemblance to my channeled ring. My invention, however, has no reference to sheet-metal vessels, but pertains only to those vessels designed to withstand a heavy internal pressure. I am aware that vessels of the latter class have had their bottom joints constructed with two hoops embracing the flanges *a* and *c*, one hoop being outside and the other inside, and the rivets passing through all four thicknesses. It is this construction that my invention was primarily designed to improve. It is subject to the disadvantages that all four edges of the metal are exposed on the bottom of the vessel, and that it is difficult to flow in the solder without more or less of the latter running through into the interior of the vessel, since it is necessary to invert the vessel and pour the solder on the bottom of the joint.

My improved joint is stronger than those heretofore made, presents a more finished appearance, and is cheaper to construct, in addition to its greatly facilitating the flowing in of the solder. It may be applied to square or angular as well as to cylindrical vessels.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. The combination, in a metallic vessel for resisting heavy internal pressure, of the sides A, flanged bottom C, and channeled ring D, of rigid cast metal, embracing the flanges on the sides and bottom, and riveted through said flanges, whereby a strong bottom joint is formed, substantially as set forth.

2. The combination, in a metallic vessel for resisting heavy internal pressure, of the sides A, the bottom C, having a down-turned flange, *c*, fitting within the sides, and a channeled ring, D, the channel in which is deeper than the flange *c*, whereby the bottom C is supported by contact at the bend of its flange with the top of the inner flange of the ring, substantially as shown and described.

3. The combination, in a metallic vessel for resisting heavy internal pressure, of the sides A, the bottom C, having a turned-down flange, *c*, and a channeled ring, D, the inner flange, *b*, of which is formed with a rounded lip, *e*, and the channel in which is deeper than the flange *c*, the said channeled ring embracing the lower portion, *a*, of the sides A and the flange *c*, of the bottom C, and fastened thereto by rivets passing through it and them, substantially as set forth, whereby the bottom is supported by said lip *e* at the bend of its flange.

4. The combination, in a metallic vessel for resisting internal pressure, of a channeled ring, D, the sides A, arranged with their lower edges or flanges *a* in the channel of said ring, but raised above the bottom thereof, the bottom C, resting on the upper edge of said ring, and having a turned-down flange, *c*, fitting within the sides A, arranged within the channel of said ring and of less depth than said channel, consequently not extending to the bottom thereof, rivets passed through said ring, and the flanges *a* and *c*, and a filling of solder or its described equivalent in said channel, extending beneath the edges of *a* and *c* and occupying the interstices of the joint, substantially as and for the purposes set forth.

5. The combination, in a vessel for resisting heavy internal pressure, of the sides A, having flange *a*, the bottom C, having turned-down flange *c*, and a ring, D, having a channel which receives and embraces the flanges *a* and *c*, and with a downwardly-extending flange, *d*, beneath the bottom of said channel, forming a foot or base for the vessel, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ADAM O'HARA.

Witnesses:
ARTHUR C. FRASER,
GEO. H. FRASER.