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INTERIORLY ENAMELED BOILER

Original Filed July 30, 1927

Fig. 1.

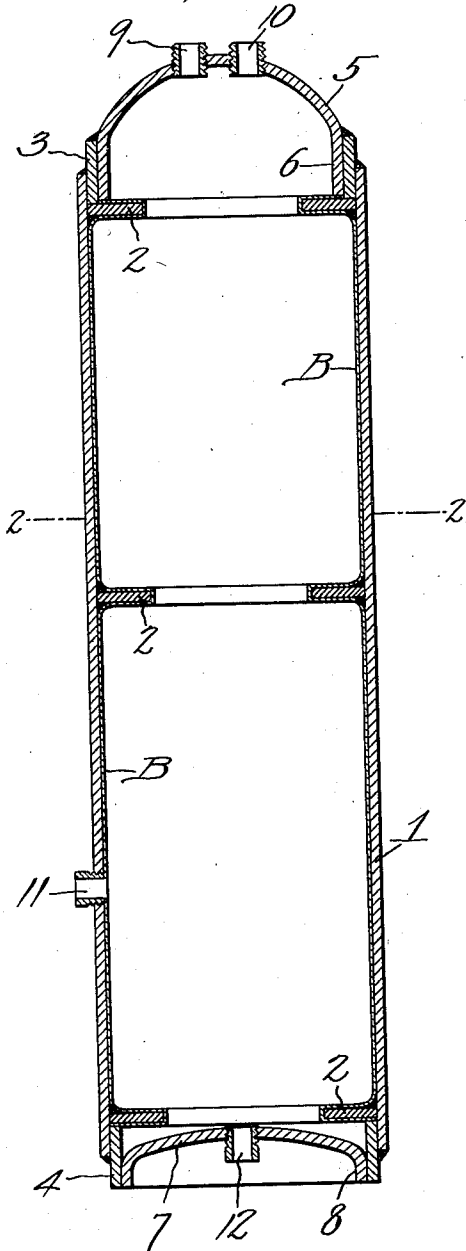


Fig. 2.

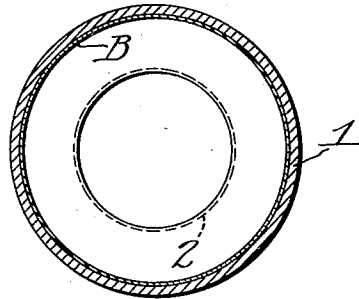
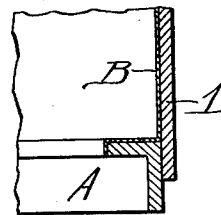


Fig. 3.



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INTERIORLY ENAMELED BOILER

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This invention relates to heated water containers such for example as range boilers composed of readily corrodible metal and its object is to provide a surface coating therefor of such nature as to prevent corrosion and thereby prolong the life of these devices.

Usually boilers of the character indicated are cylindrical in form and composed of sheet iron with end caps, and while attempts have been made to protect their interior surfaces by the use of enamel no considerable success has attended such efforts, for these reasons:

It is necessary that the enamel be applied to the inner surface of the cylinder before the end caps are secured thereto so that the coating may be inspected and found to cover the metal, for if any portion thereof is left exposed to the action of water corrosion will occur at that point and nullify the entire purpose of the enameling. Heretofore, with the end caps in place and either riveted or welded to the cylinder the enamel has been introduced by injecting it through one of the water apertures and employing either a centrifugal or shaking motion to spread the enamel on the surface. This method is more or less haphazard and affords no opportunity for inspection or proof that the surfacing is properly and thoroughly performed. Also where the end caps have been bolted to the cylinder after the latter has been interiorly enameled it is obvious that unenameled points may remain where corrosion can occur.

Still further, the subjection of a cylinder that has been coated with enamel to heat for the baking process has the tendency to distort the shape of the cylinder.

Therefore my invention has for its object the performance of the process of applying enamel to the cylinder interior surface before the end caps have been secured thereto so that the enameling may be thoroughly applied and fired and the character of the work inspected before closing the cylinder ends. Also, before the cylinder interior is enameled I secure internal bracing thereto for the purpose of preventing such distortion as might otherwise occur when subjected to the heat

necessary in baking the enamel, and finally I place and secure the closure members or caps on the cylinder ends, which caps are preferably composed of a metallic material that is of relatively non-corrodible character.

Other features and advantages of my invention will hereinafter appear.

In the drawings:

Figure 1 is a vertical sectional view of a boiler that has been interiorly enameled according to my new method.

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1, and

Fig. 3 is a partial detail showing a modified form of stiffening ring.

In said views let 1 indicate a cylinder which may be of iron or other readily corrodible material that is to be enameled interiorly for its protection. Before applying the enamel and while one or both ends are uncovered I place a number of braces therein, these braces in the example of the drawings having the form of metallic rings 2, disposed transversely within the cylinder, one ring being fitted near each end thereof and a third at an intermediate point. These rings 2, whose number and particular locations are subject to variation, are welded or otherwise securely attached to the interior surface of the cylinder and serve as stiffening means for said cylinder. Also in Fig. 1 I have shown a circular band 3 fitted within the upper end of cylinder 1, to which it is welded, thereby forming a vertical flange extending from the upper ring 2, and I have shown a similar band 4 fitted within the lower end of cylinder 1, to which it is welded, this band forming a depending annular flange for the lower ring 2.

In the modification of Fig. 3 I have shown at A an end ring and band as having integral L-shape form in cross-section. With the stiffening rings secured in place enamel is then applied to the cylinder interior surface, either by spraying or in any other well known manner, the enamel being introduced through either or both of the cylinder open ends. After inspection and ascertaining that the enamel indicated at B, has thoroughly coated the interior surface of the cylinder,

the latter is then subjected to the necessary heat for baking the enamel, in which heat process the stiffening rings prevent distortion of the cylinder.

5 End caps can then be fitted and secured in place, and may be of a relatively non-corrodible material adapted to withstand corrosion without a protective lining of enamel.

Thus, the top cap 5, having cylindrical
10 wall 6 may be fitted thereby within band 3 and welded or otherwise secured thereto, and similarly the bottom cap 7, having wall 8 may be fitted and secured thereby within band 4.

15 Cap 5 is shown as provided with the usual inflow and outlet connections 9 and 10, while the cylinder has connection 11 and cap 7 connection 12 for circulation through the water back of a range, not shown.

20 Variations within the spirit and scope of my invention are equally comprehended in the foregoing disclosure.

I claim:

A boiler comprising an open-ended cylinder formed from a single piece of corrodible
25 material, a plurality of spaced stiffening rings, attached and extending from the interior surface of said cylinder, the end rings being spaced from the extremities of said
30 cylinder, a coating of enamel applied to the interior of said cylinder and directly covering the exposed portions of said rings and closure means of non-corrodible material for
35 sealing the ends of said cylinder, and adapted to be attached thereto after the application of the enamel, each of said closure means being partially overlapped by the ends of the cylinder.

New York, July 28th, 1927.

40 ARTHUR L. DUNHAM.

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