April 28, 1931. T. E. MURRAY, JR 1,802,733

TANK

Filed Nov. 24, 1925

Fig. 1.

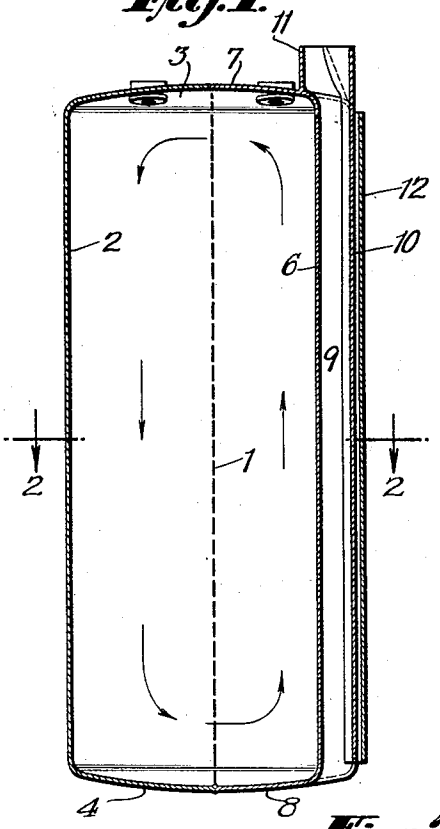


Fig. 2.

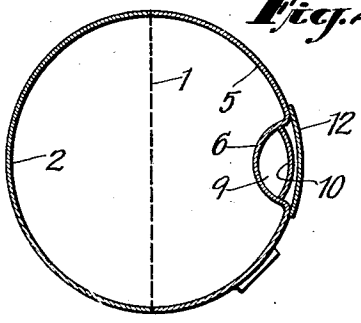
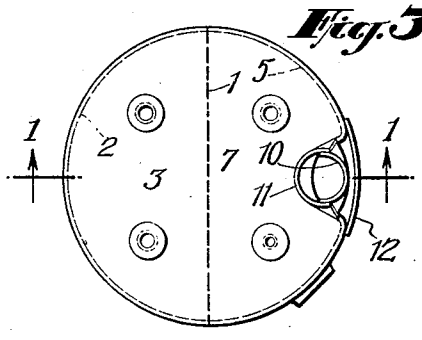


Fig. 3.



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UNITED STATES PATENT OFFICE

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TANK

Application filed November 24, 1925. Serial No. 71,059.

My invention provides certain improvements in hot water tanks and the like whereby they can be constructed cheaply and in a variety of forms or designs of superior efficiency. The accompanying drawings illustrate embodiments of the invention.

Fig. 1 is a vertical section of a tank taken on the line 1—1 of Fig. 3;

Fig. 2 is a horizontal section of the same on the line 2—2 of Fig. 1;

Fig. 3 is a plan of the same.

In Fig. 1 there is illustrated a tank in substantially drum form. It is made up of two segments joined together on the line 1. The segment at the left comprises a cylindrical portion 2 and portions 3 and 4 of the top and bottom heads. The segment at the right comprises a vertical portion 5 similar to the portion 2 but with a re-entrant or inwardly projecting portion 6 approximately semi-circular in cross-section; this segment having end portions 7 and 8. A flue 9 is formed between the integral portion 6 of the drum and an outside plate 10 which is spot welded or otherwise fastened in place. At its upper end the part 10 is bent around to meet the edges of a half-round piece 11 to provide a circular pipe for easy connection to a flue. Outside of the plate 10 is a protecting plate 12 welded to the circular portion 5 of the tank to cover the hot plate 10, preferably with an air space as shown in Fig. 2, so as to conserve heat while preventing contact with the hot plate 10. Any usual or suitable taps are provided for the connection of water pipes.

In the use of tanks of this sort a gas burner or other heater is arranged at the lower end of the flue 9. The arrangement of the flue at one side of the boiler has two considerable advantages. By heating the water eccentrically it causes a better circulation than in the old type of tanks with a central flue, the hotter water moving upward along the flue side and the cooler water moving downward freely along the opposite side. Such a circulation is easier than in the constricted annular space surrounding a central flue. Also the wall 6 of the flue which is in contact with the water is integral with the rest of the tank. There is not the chance of leakage which exists in the old style, with a separate pipe passing through the tank. In the latter case the joints where the pipe passes through the ends of the drum are subjected to considerable strain by heating and cooling and are apt to develop leaks in time.

The method of construction employed lends itself to the economical manufacture of this and other shapes. The two (or it may be more) segments are stamped out of sheet metal. For this purpose both the ends are made slightly convex. The segments are then butt welded along their edges, making a practically integral construction of the desired cross-section very economically.

These tanks are not used as boilers but generally to accumulate a quantity of hot water which is drawn off at irregular intervals and is maintained hot or reheated by a comparatively small flame not intended to generate any substantial quantity of steam. In such drums circulation of the water is important so that there will be accumulated a body of hot water substantially equal to the capacity of the tank instead of a body of water which is much hotter in the upper portion than in the lower portion.

In the present tank the wall is of cylindrical or outwardly bent shape throughout the major portion of its periphery and is bent inward only at one point (Fig. 1) or possibly at a greater number of points, but not so as to greatly restrict the cross-sectional area within the tank; so that the water is heated eccentrically and circulation is facilitated from one side of the drum to the other as well as from the top to the bottom.

In use the tank stands with its axis vertical so that the joint is exposed to the water within, particularly the joint across the lower head and throughout the major portions of the sides. It is important to prevent leakage, and this is accomplished by welding the segments together with a continuous weld; which not only prevents leakage when the tank is moved, but which is practically as strong as the metal of the sheets and not liable to open, as sometimes

happens with riveted and similar joints after a period of exposure to expansion and contraction in use.

Various other modifications may be made by those skilled in the art without departing from the invention as defined in the following claims.

What I claim is:

1. A hot water tank comprising a drum for water, the wall of the drum being bent outward throughout the major portion of its periphery and being bent inward for a smaller portion of its periphery and means co-operating with said inwardly bent portion to form a passage for the heating gases at the side of the drum, so as to heat the water eccentrically and cause a circulation from one side of the drum to another.

2. A hot water tank comprising a drum for water, the wall of the drum being bent outward throughout the major portion of its periphery and being bent inward to form a flue for the heating gases at the side of the drum so as to heat the water eccentrically and cause a circulation from one side of the drum to another, in combination with an outer member arranged to confine the heating gases and cause them to pass through said flue.

3. A hot water tank comprising a drum for water, the wall of the drum being bent outward throughout the major portion of its periphery and being bent inward to form a flue for the heating gases at the side of the drum so as to heat the water eccentrically and cause a circulation from one side of the drum to another, in combination with an outer member arranged to confine the heating gases and cause them to pass through said flue and a protecting plate outside of said member.

4. A hot water tank formed of segments stamped out of sheet metal and united along longitudinal edges forming a drum whose wall is bent outward throughout the major portion of its periphery and is bent inward for a smaller portion of its periphery and means co-operating with said inwardly bent portion to form a passage for heating gases at the side, so as to heat the water eccentrically and cause a circulation from one side of the drum to another.

In witness whereof, I have hereunto signed my name.

THOMAS E. MURRAY, JR.