March 30, 1937. G. H. EVANS 2,075,708

WATER HEATING APPARATUS

Filed Aug. 30, 1935

Fig. 1.

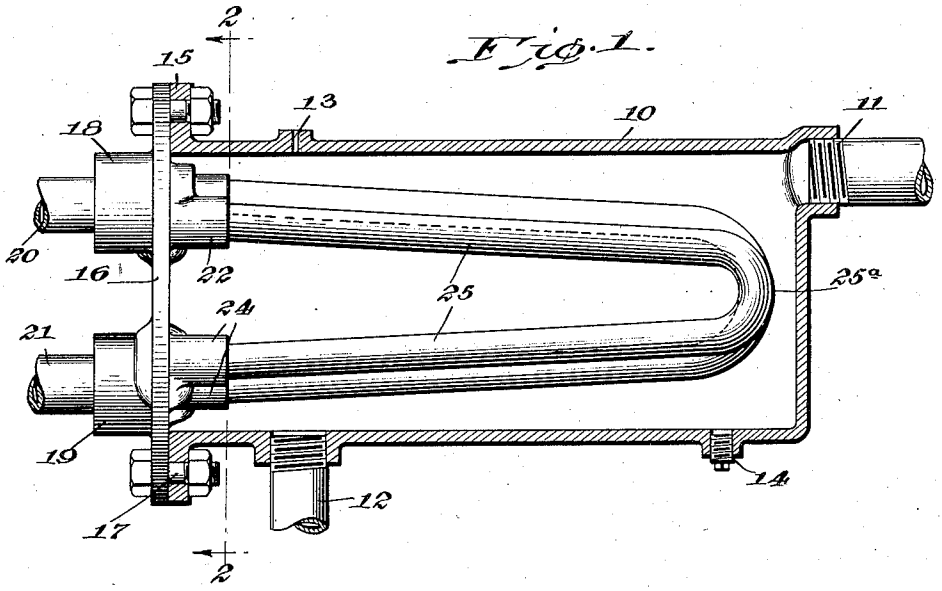


Fig. 2.

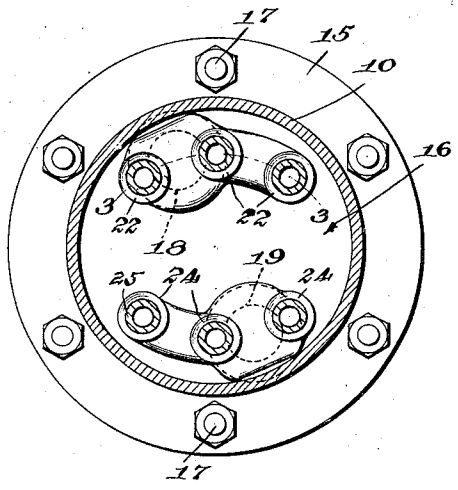
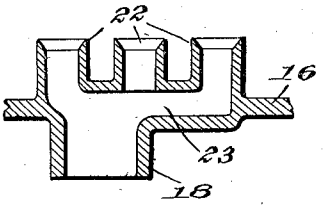


Fig. 3.



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WATER HEATING APPARATUS

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3 Claims. (Cl. 257—239)

This invention relates to apparatus for heating water for domestic or other uses, and more particularly to a heat transfer device whereby a supply of water may be heated and kept hot indirectly from a burner equipped boiler. While the device of my invention may be applied directly to the hot water storage tank, it is herein illustratively shown as applied to a relatively small tank member that is in water circulating connection with the main storage tank and is equipped with inlet and return piping for circulating the hot water from the boiler in heat transferring relation to the water circulation from the storage tank. A principal object of the invention is to provide a tank device of this kind with a unitary or one-piece header constituting a closure for one end of the tank and constituted as a one-piece manifold. To this end such header member is formed in one-piece with connections at one side thereof tc receive the inlet and return pipe connections to the boiler, and formed on its other side with manifold connections to receive and have fixed thereto a multiple arrangement of heat transfer pipes extending within and through such tank member.

The foregoing and other object and advantages of the invention will be better understood from the following detailed description taken in connection with the accompanying drawing, and the distinctive features of novelty will be thereafter pointed out in the appended claims.

Referring to the drawing:

Figure 1 is a view partly in elevation and partly in longitudinal vertical section showing an apparatus embodying my invention.

Figure 2 is a transverse section on line 2—2 of Figure 1; and

Figure 3 is a fragmentary section of the manifolding arrangement on lines 3—3 of Figure 2.

10 indicates a horizontally extending tank member of relatively small size and shown as circular in cross section. This is equipped with an outlet connection 11 at its top for the off-take of hot water to the storage tank and with a return connection 12 at its bottom to complete the circulating system from the main storage tank to the tank member 10. This tank member 10 may be equipped with a suitable vent 13 with a valve closure (not shown), and with a drain plug 14 tapped in the bottom thereof. The tank 10 may have its body formed in one-piece with an open end equipped with a radial, peripheral flange 15. To this flange is secured a header 16 by means of bolts 17, this header being formed as a one-piece manifold with a sleeve 18 to constitute an inlet connection near its top and another sleeve 19 to constitute a return connection near its bottom, the circulating pipes 20, 21 from the boiler being sweated or otherwise suitably secured in these sleeves. The header 16 is formed at its inner side with a plurality shown as three in number, of sleeves 22 near its top and in communication through an interior cavity 23 with the passage of the sleeve 18. A second series of sleeves 24 corresponding in number to the sleeves 22, is formed near the bottom of header 16, in communication with the passage through the sleeve 19 by a manifolding cavity corresponding to the cavity 23. A series of U shaped heat transfer pipes 25 extending into and through the tank 10 have their upper and lower ends sweated or otherwise secured in the sleeves 22, 24 respectively, there being illustratively shown three of these U pipes 25 each of which has its upper end fitted in one of the sleeves 22 and its lower end fitted in one of the sleeves 24. It will be noted that these pipes 25 are thus securely held so that there is a continual slope from their entrance ends in the sleeves 22 through the bends 25a at the inner portions thereof and through the return portions which are secured in the sleeves 24, thus avoiding any possibility of air binding by trapped air. The one-piece manifold header 16 thus serves both as a closure for the end of the tank 10 and as a connecting means complete in itself between the circulating pipes 20, 21 from the boiler and the series of heat transfer pipes 25 in the tank 10.

I am aware that my invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

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

1. A hot water heating apparatus comprising a tank, a one-piece cast manifold header constituting a closure for one end of the tank, said header having integral outer sleeves adjacent its top and bottom respectively, to constitute a connection for circulating water from a boiler, and a plurality of integral sleeves extending inward therefrom adjacent its top and also adjacent its bottom, the header having manifold cavities establishing communication between the outer top sleeve and the series of inner top sleeves and

also establishing communication between the lower outer sleeve and the series of inner lower sleeves, and piping extending from the upper inner sleeves through the tank and returning to connections with the lower inner sleeves.

2. A hot water heating apparatus comprising a horizontally extending tank open at one end and with a peripheral flange at such open end, a one-piece manifold header secured to said flange to constitute a tank closure, said header having external sleeves integral therewith constituting connections to a boiler circulating system, with a plurality of internal sleeves integral therewith having manifold connection with each of said external sleeves, and piping extending through the tank and connecting said upper internal sleeves with said lower internal sleeves.

3. A one-piece manifold header for hot water tanks having spaced apart upper and lower sleeves integral therewith extending outwardly therefrom and a series of internally extending sleeves integral therewith in manifold communication with each of said outwardly extending sleeves.

GILBERT H. EVANS.