W. E. ROSS.

WATER HEATER.

APPLICATION FILED APR. 16, 1917.

1,270,552. Patented June 25, 1918.

Fig. 1.

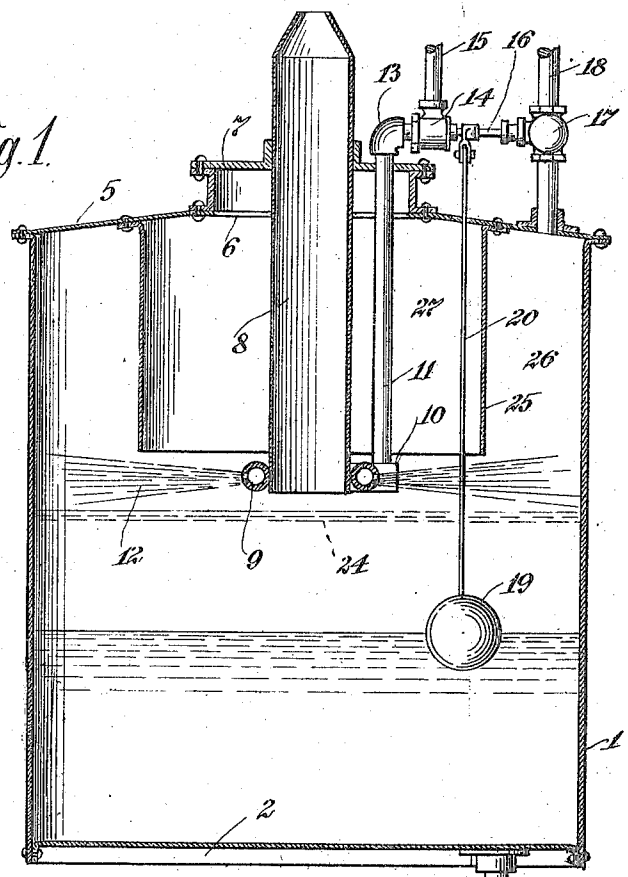
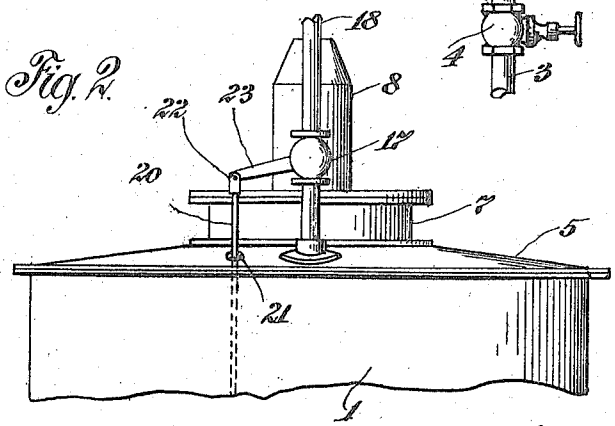


Fig. 2.



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WATER-HEATER.

1,270,552. Specification of Letters Patent. Patented June 25, 1918.

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To all whom it may concern:

Be it known that I, WALLACE E. ROSS, a citizen of the United States of America, residing at Northville, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Water-Heaters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a water heater, and has special reference to that class of heaters utilizing steam as a heating agent for water.

The object of my invention is to provide a compact water heating apparatus wherein the water is sprayed or projected as a film or jet so that it will be subjected to the heating action of steam admitted to the apparatus and trapped more or less by the water so that a low pressure of the steam may be used and water quickly and economically heated. The admission of water and steam to the apparatus is automatically controlled and provision is made for the escape of steam when there is an excessive pressure, thus making the apparatus perfectly safe for household or commercial purposes. A further object of my invention is to provide a heating apparatus wherein the parts are constructed with a view of reducing the cost of manufacture and at the same time retain those features by which durability and ease of assembling are secured. With such ends in view my invention resides in the novel construction, combination and arrangement of parts hereinafter specifically described and then claimed.

Reference will now be had to the drawings, wherein—

Figure 1 is a vertical sectional view of a water heating apparatus, and

Fig. 2 is a side elevation of a portion of the same.

In the drawing, 1 denotes a cylinder or receptacle having a set in bottom plate 2 provided with water outlet connection 3 and this connection has a suitable valve 4. The upper end of the cylinder or receptacle 1 has a permanent cover 5 provided with a central opening 6, and mounted over this opening is a dome 7 supporting a central exhaust pipe 8 which extends downwardly to a point approximately central of the cylinder or receptacle 1. The lower end of the exhaust pipe 8 is open and on the outer side walls of said pipe, at the open end thereof, is an annular nozzle or perforated tube 9 having a connection 10 with a depending water inlet pipe 11. The nozzle 9 is adapted to spray or project water in a radial direction toward the inner walls of the cylinder or receptacle 1, the water being projected in the form of a film or jet, as indicated at 12, so as to form an aqueous partition horizontally of the cylinder or receptacle 1.

The water inlet pipe 11 is disposed in parallelism with the exhaust pipe 8 and extends out of the top of the dome 7. The pipe is connected by an elbow 13 to a valve 14 in communication with a water supply pipe 15. The valve 14 has the operating stem 16 thereof as part of a valve 17 controlling the supply of steam to the cylinder or receptacle 1 through the medium of a pipe 18. The steam supply pipe is connected to the cover 5 of the cylinder or receptacle 1, adjacent to a side wall of said cylinder or receptacle, and automatically controlling the admission of steam and water to the cylinder or receptacle is a float member 19. The float member 19 is on a rigid rod 20 extending through an opening 21 provided therefor in the permanent cover 5 and the upper end of said rod is pivotally connected, as at 22, to a crank 23 fixed on the stem 16 of the valves 14 and 17. With the valves 14 and 17 open, water is admitted to the cylinder or receptacle 1 until the level of water therein reaches the height indicated at 24, at which time the valves 14 and 17 are closed, as the water which has accumulated within the receptacle has been thoroughly heated by the steam admitted thereto.

The permanent cover 5 of the cylinder or receptacle has a concentric depending apron 25 providing an outer annular compartment 26 and a trap 27 around the exhaust pipe 8. The lower end of the apron 25 is in proximity to the aqueous partition formed by the admission of water to the cylinder or receptacle 1, and as steam is admitted to the annular compartment 26, the steam must impinge against the aqueous partition before it can escape into the trap 27. Even after accumulating within the trap 27, the steam must pass through the aqueous curtain to reach the lower end of the exhaust pipe 8, and it has been found that since the water is projected as a film or jet, that the steam, even at a low pressure, is sufficient to heat the water within the cylinder or receptacle 1.

One embodiment of my invention has been illustrated and it is to be understood that the structural elements are susceptible to such variations and modifications as fall within the scope of the appended claims.

What I claim is:—

1. A water heating apparatus comprising a receptacle having the bottom thereof provided with a hot water outlet connection, a permanent cover on said receptacle, a steam exhaust pipe centrally thereof, and extending into said receptacle, an annular nozzle at the lower end of said steam exhaust pipe, a water supply pipe extending through the cover of said receptacle and connected to said nozzle, a steam supply pipe connected to the cover of said receptacle, valves carried by said water and steam supply pipes outside of said receptacle, and having a common stem, a crank on the stem of said valves, a float within said receptacle having a rod connected to said crank, and adapted to control the admission of water to said receptacle, and a depending apron carried by said cover providing an annular steam compartment and a steam trap.

2. A water heating apparatus comprising a receptacle provided with hot water outlet connections, a cover on said receptacle, a steam exhaust pipe centrally thereof, an annular nozzle at the inner end of said steam exhaust pipe and adapted to produce an aqueous horizontal partition in said receptacle, the water supply pipe extending through said cover and connected to said nozzle, a steam supply pipe connected to said cover, valves carried by said water and steam supply pipes, a float mechanism in said receptacle controlling said valves and the admission of steam and water to said receptacle, and a depending apron carried by said cover and having the lower edge thereof in a plane in proximity to the lower end of said steam exhaust pipe.

3. A water heating apparatus comprising a receptacle having a hot water outlet connection, a cover on said receptacle, a depending apron carried by said cover and providing an annular steam compartment and a steam trap, a water supply pipe extending through said cover, an annular nozzle at the lower end of said water supply pipe and below the lower end of said apron and adapted to produce an aqueous horizontal partition in said receptacle, a steam supply pipe connected to said receptacle, valves carried by said water and steam supply pipes and having a common stem, float actuated means for opening and closing said valves, and means centrally of said receptacle adapted for relieving excessive steam pressure in said receptacle.

In testimony whereof I affix my signature in the presence of two witnesses.

WALLACE E. ROSS.

Witnesses:

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ARTHUR F. DRAER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."