July 26, 1927. 1,636,907

A. L. HALL

WATER HEATER

Filed July 15, 1924

Fig. 1.

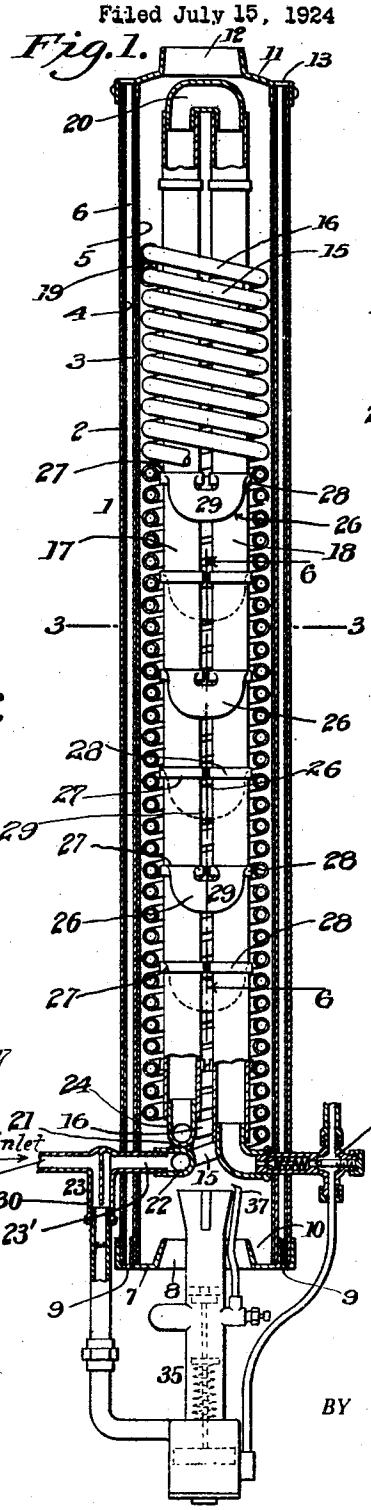


Fig. 5.

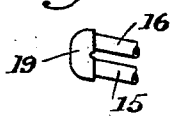
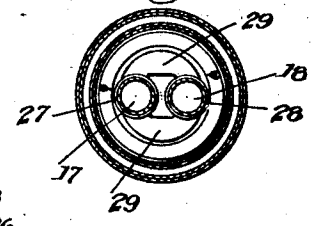


Fig. 3.



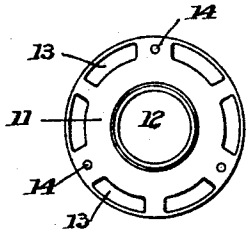


Fig. 2.

Fig. 4.

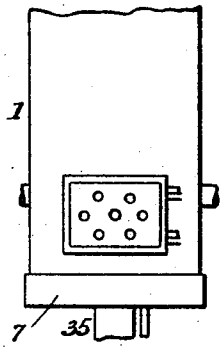
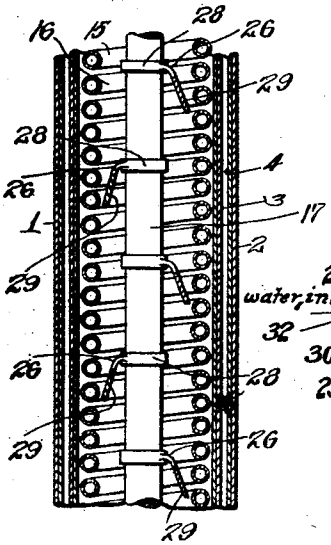


Fig. 6.



INVENTOR:
Albert L. Hall

BY
Robt. G. Pearson
ATTORNEY.

Patented July 26, 1927. 1,636,907

UNITED STATES PATENT OFFICE.

ALBERT L. HALL, OF LOS ANGELES, CALIFORNIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO AUGUST J. HARTFIELD, OF HUNTINGTON PARK, CALIFORNIA.

WATER HEATER.

Application filed July 15, 1924. Serial No. 726,184.

My invention relates to water heaters particularly useful in dwellings.

The general object of my invention is to provide a water heater which will rapidly and efficiently heat flowing water circulated therethrough.

A more particular object is to provide a water heater constructed with a maximum length of heating coil and tubing and so arranged that a maximum amount of water circulated therethrough will be heated by the burner of the heater in a minimum length of time.

A further object is to provide a water heater of the character stated which will occupy only a small space.

Other objects and advantages will be made manifest in the following specification for an embodiment of the invention illustrated in the accompanying drawing.

Referring to the drawing:

Figure 1 is a vertical longitudinal section of my water heater.

Figure 2 is a plan view of my water heater.

Figure 3 is a horizontal section of my water heater taken on line 3—3 of Figure 1.

Figure 4 is a fragmentary front elevation of the lower portion of my water heater.

Fig. 5 is a view of the upper end of the coils, showing their connection.

Fig. 6 is a vertical longitudinal section taken on line 6—6 of Fig. 1.

In the drawing 1 indicates a long vertical cylindrical casing of small diameter, comprising an outer shell 2 and an inner shell 3, there being an asbestos lining 4 in the outer shell 2 and an asbestos lining 5 within the inner shell 3, and an air space 6 between the lining 4 and inner shell 3. A head 7 is fitted on the lower end of the casing 1, said head being provided with a central upwardly converging opening 8, and with openings 9, and formed with an annular water receiving receptacle 10 between said opening and the inner shell 3, the openings 9 communicating with the casing space 6 for admitting air into the lower end of said space. A head 11 is fitted on the upper end of the casing 1, said head being provided with a central outlet 12 for the escape of the products of combustion from the casing, and with openings 13 in communication with the upper end of the space 6 through which latter openings air escapes from the upper end of said space, thus providing for the circulation of air upwardly through said space, which air forms a heat insulation to prevent the heat from radiating out of the casing. Vertical rods 14 extend through the casing and connect to the heads 7 and 11 to hold said heads on the lower and upper ends of the casing respectively.

In the casing 1 are two vertical coils of pipe 15 and 16 and two vertical heating tubes 17 and 18 extending through said coils. The upper ends of the pipes 15 and 16 are intercoiled between each other and are connected at their upper ends by a fitting 19. The upper ends of the tubes 17 and 18 are connected by a fitting 20. A fitting 21 is formed with a connecting member 22 which connects one arm 23′ of the elbow 23 and the lower end of the coil 15 and said fitting is formed with a connecting member 24 which connects the lower end of the coil 16 and the lower end of the tube 17. The lower end of the tube 18 is connected to an outlet valve 25.

The tubes 17 and 18 are spaced a short distance apart. Baffle plates 26 are secured at suitable intervals along the tubes 17 and 18 each of which plates being formed with two collars 27 and 28 which fit tightly on said tubes respectively, and with a plate member 29 which extends downwardly and outwardly from said collars and transversely of the tubes and the space therebetween. The baffle plates 26 are secured on the tubes 17 and 18, with the plate members 29 of alternate plates extending one across the front of said tubes, the next across the rear of the tubes, the next across the front of the tubes and so on alternately from end to end of said tubes. Said baffle plates conduct heat into the tubes 17—18, and serve to prevent the escape of heat forwardly and rearwardly from the interior of the coils 15 and 16, thus retaining the heat within the coils and increasing the heating efficiency of the heater.

The other arm 30 of elbow 23 extends downwardly and is associated with a burner 35, such, for instance as is shown in the patent granted me February 9th, 1926, entitled Water heater burner and bearing No. 1,572,203. The burner 35 which serves to heat the water in the coils and arm 30, form no part of my invention, so need not be described in detail.

Having thus described my invention what I claim is:

1. A water heater comprising a casing, a pair of water heating coils in said casing, said coils being intercoiled between each other and connected at their upper ends, the lower end of one coil being connected to a water supply pipe, two tubes extending through said coils, the lower end of one tube being connected to the lower end of the other coil, the upper ends of said tubes being connected together, the lower end of the other tube leading from the casing, and a burner in the lower end of the casing.

2. A water heater comprising a casing, a pair of water heating coils in said casing, said coils being intercoiled within each other and connected at their upper ends, the lower end of one of said coils being connected to a water supply pipe, two tubes extending through said coils, the lower end of one of said tubes being connected to the lower end of the other coil, the upper ends of said tubes being connected together, the lower end of the other tube being led from the casing, a burner in the lower end of said casing, and baffle plates on said tubes within said coils at different heights.

3. A water heater comprising a casing, a pair of water heating coils in said casing, said coils being intercoiled within each other and connected at their upper ends, the lower end of one of said coils being connected to a water supply pipe, two tubes extending through said coils, the lower end of one of said tubes being connected to the lower end of the other coil the upper ends of said tubes being connected together, the lower end of the other tube being led from the casing, a burner in the lower end of said casing.

4. A water heater comprising a casing, a pair of water heating coils in said casing, said coils being intercoiled within each other and connected at their upper ends, the lower end of one of said coils being connected to a water supply pipe, two tubes extending through said coils, the lower end of one of said tubes being connected to the lower end of the other coil, the upper ends of said tubes being connected together, the lower end of the other tube being led from the casing, a burner in the lower end of said casing, and baffle plates secured alternately on opposite sides of said tubes at different elevations.

In testimony whereof I affix my signature.

ALBERT L. HALL.