Feb. 22, 1927. 1,618,735

J. W. STOREY

WATER HEATER

Filed Dec. 18, 1925

FIG. 1

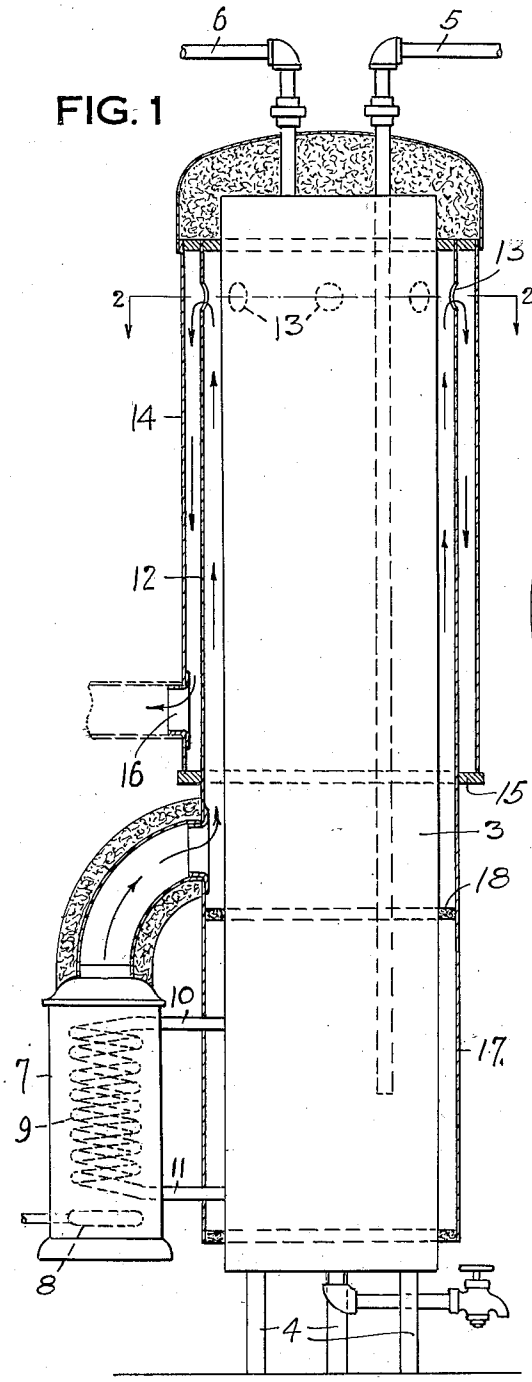
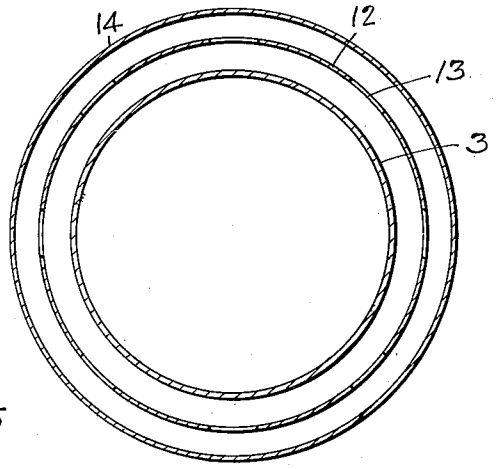


FIG. 2



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Patented Feb. 22, 1927. 1,618,735

UNITED STATES PATENT OFFICE.

JOHN W. STOREY, OF IRWIN, PENNSYLVANIA.

WATER HEATER.

Application filed December 18, 1925. Serial No. 76,267.

My invention relates to water heaters and particularly to those of the type involving a burner and a storage tank, the water to be heated being conducted past the burner to the tank from which it is drawn for consumption.

One object of my invention is to provide heating apparatus of the type described, wherein provision is made for utilizing to a greater extent than heretofore the heat generated by the combustion of fuel.

Another object of my invention is to provide water heating apparatus of such form that there is a minimum disturbance of sediment within the storage tank and less tendency for such sediment to be drawn through the hot water outlet of the tank.

Another object of my invention is to simplify and improve generally the structure and operation of water heaters of the class described.

One form which my invention may take is shown in the accompanying drawing, wherein Fig. 1 is an elevational sectional view of water heating apparatus embodying my invention, and Fig. 2 is a view taken on the line 2—2 of Fig. 1.

The apparatus comprises a tank 3 that may be of somewhat the usual form. The tank is supported by pipe connections 4 that are welded thereto, or in any other suitable manner. An inlet pipe 5 extends into the tank preferably to a considerable distance, as shown by the dotted lines, and the heated water is withdrawn from the tank through an outlet pipe 6. A heater 7 having an oil or gas burner 8 is provided, and a heating coil 9 is supported within the heater. The coil 9 communicates with the boiler through connections 10 and 11. A jacket 12 surrounds the boiler and is secured thereto at its upper end. The jacket 12 is spaced from the boiler a suitable distance so that products of combustion from the heater 7 may flow into such space and thence upwardly along the boiler as indicated by the arrows. A plurality of openings 13 are provided at the upper end of the jacket 12, for exit of the gases.

An outer jacket 14 surrounds the jacket 12 and a sealing ring 15 is provided at the lower end of the jacket 14 to serve as a closure for the space between the jackets 12 and 14. A flue opening 16 is provided at one side of the jacket 14. The gaseous products of combustion which flow from the heater 7 and through the openings 13 are then directed downwardly along the outer wall of the jacket 12 and thence to the flue opening 16. The gases of combustion are therefore brought into contact with the coils 9, the surface of the tank 3, and again against the outer wall of the jacket 12, thus being directed into contact with heat-absorbing surfaces at three distinct locations. The tortuous path which is provided for the gases of combustion retards the flow thereof to an extent which provides sufficient time for a maximum amount of heat to be absorbed therefrom.

Another advantage present in the apparatus resides in the provision of the coil connections 10 and 11 at a relatively low point in the tank. By this arrangement there is less circulation of water within the upper portion of the tank than would be the case if the connections were placed at a considerably higher point. The passage of the exhaust gases along the upper portion of the tank also tends to reduce the rate of circulation of the water in the tank, in that it increases the temperature of the water above the connection 10, and there is less tendency for the water flowing from the connection 10 to rise before sediment contained therein has had time to settle to the bottom of the tank.

A heat insulating jacket 17 of any suitable material is disposed below the jacket 12. This jacket 17 may be a continuation of the jacket 12, if desired. A drip ring 18, of asbestos or any suitable material, is provided for catching moisture of condensation which may flow down the side of the tank 3. The condensation will of course be greatest when the tank contains cold water and heat is applied thereto. The moisture caught by the ring 18 will be evaporated after the water in the tank becomes heated.

I claim as my invention:

1. Water heater structure comprising a tank, a heater, a circulating coil disposed in said heater and having its ends connected to the tank adjacent to the lower end thereof, a jacket surrounding said tank and extending to a point adjacent to the upper end thereof, a flue leading from said heater into the space between the jacket and the tank at a point above said coil ends, and a second jacket surrounding the first-named jacket, the first-named jacket being provided with openings adjacent to the upper end thereof,

to afford communication from the interior of said first jacket to the space between the two jackets.

2. Water heater apparatus comprising an upright tank, a jacket surrounding said tank, a combustion heater, a circulation coil in said heater and having its ends connected to said tank at points adjacent to the lower end thereof, and means for conducting products of combustion to the space between said jacket and tank only at a point above the said coil connections.

In testimony whereof I, the said JOHN W. STOREY, have hereunto set my hand.

JOHN W. STOREY.