

Sept. 30, 1930.

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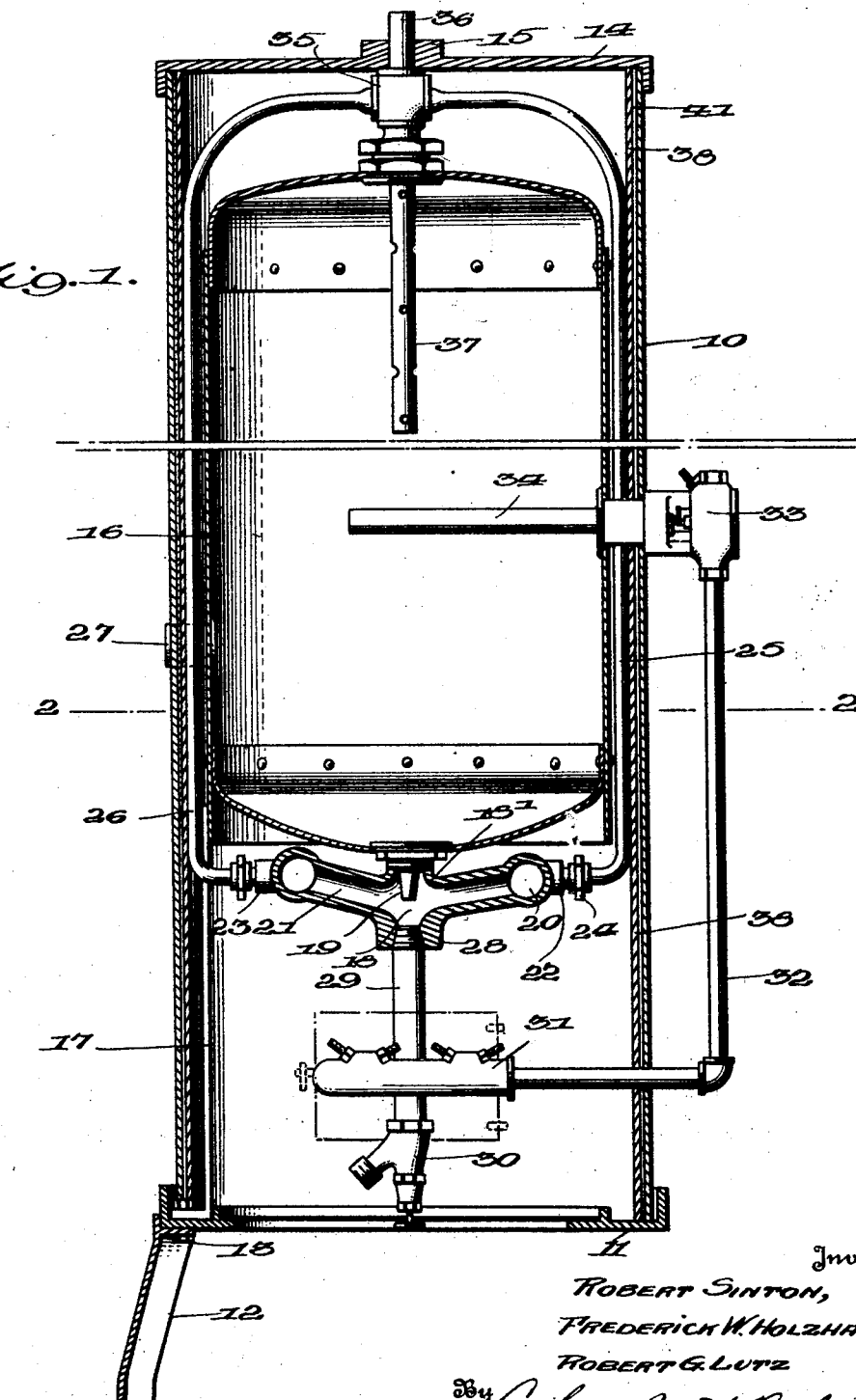
1,776,984

FLUID HEATER

Filed May 2, 1928

2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

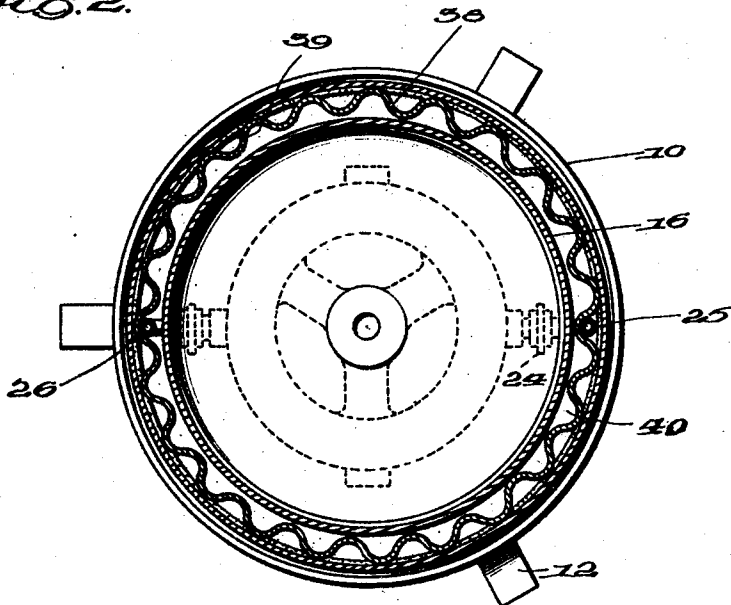
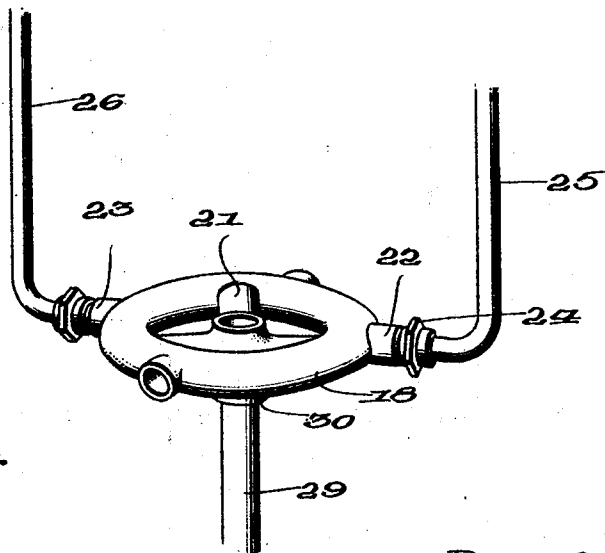


Fig. 3.



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UNITED STATES PATENT OFFICE

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FLUID HEATER

Application filed May 2, 1928. Serial No. 274,552.

The present invention relates to hot water heaters and more especially to an improved apparatus for heating, circulating and distributing water or other fluid through a heating system.

One of the essential objects of the invention is the provision of a simple, efficient and economical hot water heater which is so arranged and constructed that the water may be rapidly heated at a minimum expenditure of fuel.

A further object consists in providing a heat absorbing means within the casing for utilizing the surplus heat which would otherwise be dissipated, which means preferably comprises a corrugated metallic member that fits tightly around the boiler so as to allow the latter to absorb the heat as it passes upwardly through the system.

Other objects and advantages of the invention will become apparent from the following description when taken in conjunction with the accompanying claim.

Referring to the drawings in which is disclosed a preferred embodiment of the invention:

Figure 1 is a vertical sectional view of our improved hot water heater.

Figure 2 is a sectional view taken substantially along the line 2—2 of Figure 1.

Figure 3 is a detail perspective view of the heating drum.

Referring to the drawings in which like numerals indicate like parts in the various views, 10 denotes an enclosed jacket or casing which preferably has at its lower end an annular base supporting member 11 to which is connected the legs 12 by the bolts 13. The upper end of the jacket 10 is closed by a lid or cover 14 that has a central hollow boss 15.

A boiler or tank 16 is mounted within the jacket 10 and is fixedly supported by the arms 17 which are suitably connected to the base 11. A heating drum 18 positioned directly beneath the boiler communicates with the bottom thereof through a centrally disposed nipple 18' in which is mounted a depending nozzle 19. The drum 18 preferably comprises an annular tubular portion 20 which communicates with downwardly inclined hollow arms 21. The tubular portion 20 of the heat-

ing drum is preferably arranged with diametrically opposed outlet nipples 22 and 23 that are connected by the couplings 24 to the upwardly extending pipes 25 and 26 which pipes act as circulating risers for conducting the hot water through the system.

The cold water is delivered to the interior of the boiler 16 through an inlet pipe 27 which extends through the side walls of the jacket and the boiler adjacent the bottom of the latter, in order that the water will be preliminarily heated before being conducted through the nozzle 19 to the interior of the heating drum 18. The nozzle 19 is arranged to extend below the central horizontal line of the outlet nipples 22 and 23 to prevent reverse circulation, and is of such restricted formation as to allow only a small quantity at a time of the preheated water in the boiler 16 to be delivered to the drum 18, thus causing rapid heating of the water at the expense of a very small consumption of fuel. The bottom of the heating drum 18 is formed with a centrally depending hollow boss 28 which is connected to one end of a sediment pipe 29, while the opposite extremity of the pipe 29 has secured thereto a draw-off cock 30 for permitting the removal or draining of the water from the heater.

A burner 31 is positioned beneath the drum 18 to heat the same and is connected by a pipe 32 to any conventional type of automatic supply control valve 33 which valve may be connected to a pipe 34 that extends horizontally within the boiler 16 so that the valve 33 may be thermostatically operated to control the supply of fuel such as gas, oil or the like to the burner 31.

The hot water as it issues from the outlet nipples 22 and 23 of the heating drum is conducted by the circulating pipes 25 and 26 to a coupling 35 preferably positioned within the jacket 10 and above the boiler 16.

A hot water supply pipe 36 which extends through the boss 15 of the cover 14 is connected to the coupling 35 so as to conduct the water to any suitable point of use. A perforated tube 37 which extends through the top of the boiler 16 also is connected to the coupling 35 so that when the supply through the pipe 36 is cut off, the hot water from the cir-

culating pipes 25 and 26 will be returned to the boiler. The tube 37 extends an appreciable distance within the boiler and acts to break up the incoming hot water so as to prevent overheating in the upper portion of the boiler. In order to increase the thermal efficiency of the heater, a corrugated metallic member 38 is preferably mounted within the jacket 10 and is co-extensive therewith. This member 38 snugly fits around the boiler and forms the dead air passages 39 (Figure 2) and the heat conducting passages 40 so that the surplus heat as it issues from the burner and is deflected by the heating drum 18 will be conducted upwardly by the passages 40 and absorbed by the adjacent wall of the boiler while the dead air passages 39 tend to confine the heat within the jacket 10 and thus utilize the products of combustion which otherwise would be dissipated.

The inner wall of the jacket 10 may be provided with a lining of any suitable heat insulating material 41 such as asbestos or the like.

It is to be understood that the form of the invention herewith shown and described is merely illustrative of a preferred embodiment and that such changes as fall within the purview of one skilled in the art may be made without departing from the spirit of the invention and the scope of the appended claim.

We claim:

A heater of the class described, comprising an enclosed jacket having a base supporting member, a boiler within said jacket, an annular tubular drum beneath said boiler and communicating therewith, said drum having diametrically opposed outlets, hot water circulating pipes communicating at their lower ends with said outlets, a centrally disposed coupling within said jacket and positioned above said boiler, means connecting the upper ends of said circulating pipes to said coupling, said coupling having a downwardly extending perforated pipe projecting into said boiler, said pipe extending an appreciable distance within the boiler so as to break up the incoming hot water and prevent overheating in the upper portion of the boiler, a hot water supply pipe extending upwardly from said coupling through the top of said jacket, temperature responsive means for heating said drum, and a corrugated member tightly enclosing said boiler so as to provide spaced dead air and flue passages.

In testimony whereof we have hereunto set our hands.

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