

Jan. 12, 1937.

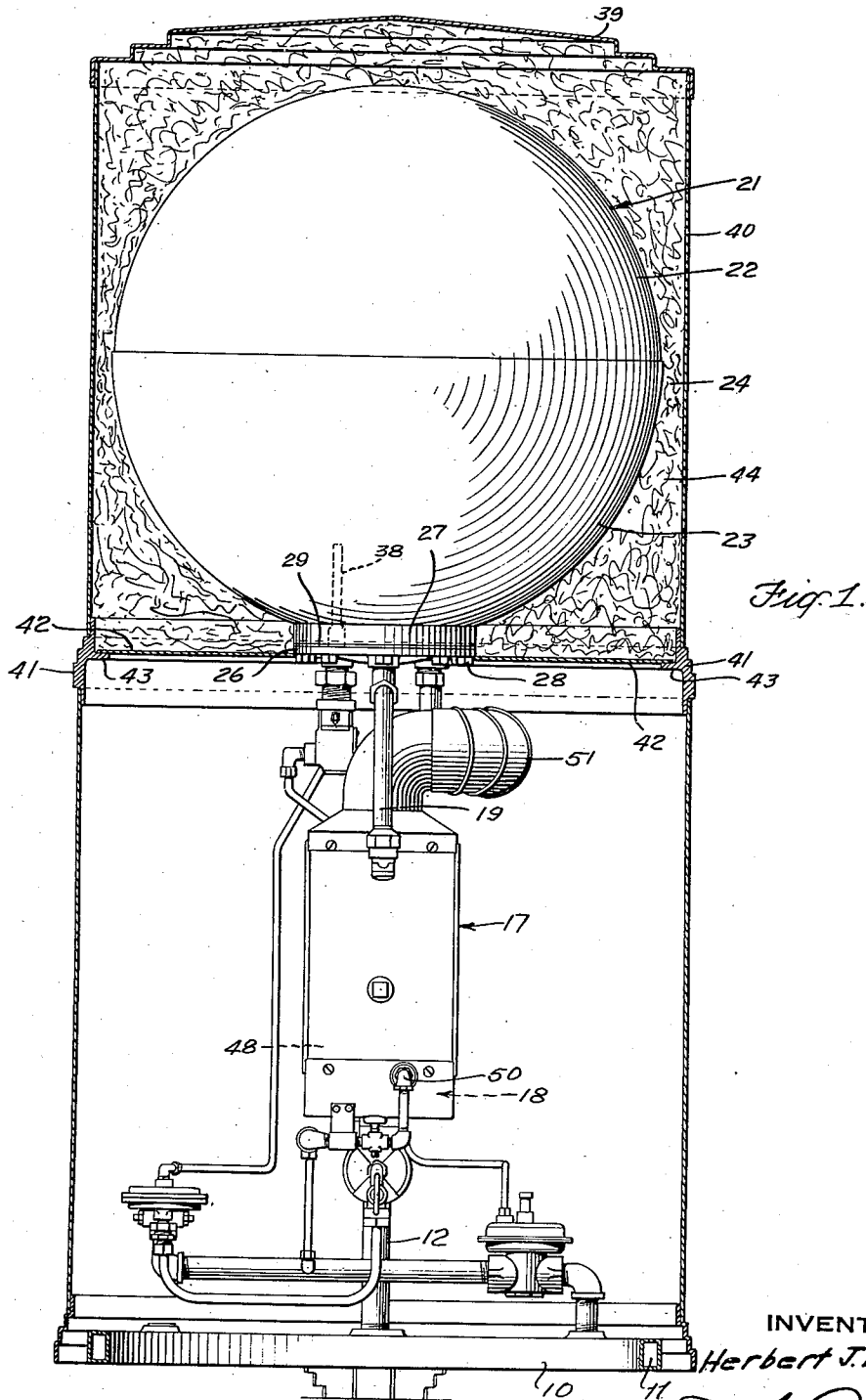
H. J. LONG

2,067,495

WATER HEATER

Filed Dec. 29, 1934

3 Sheets-Sheet 1



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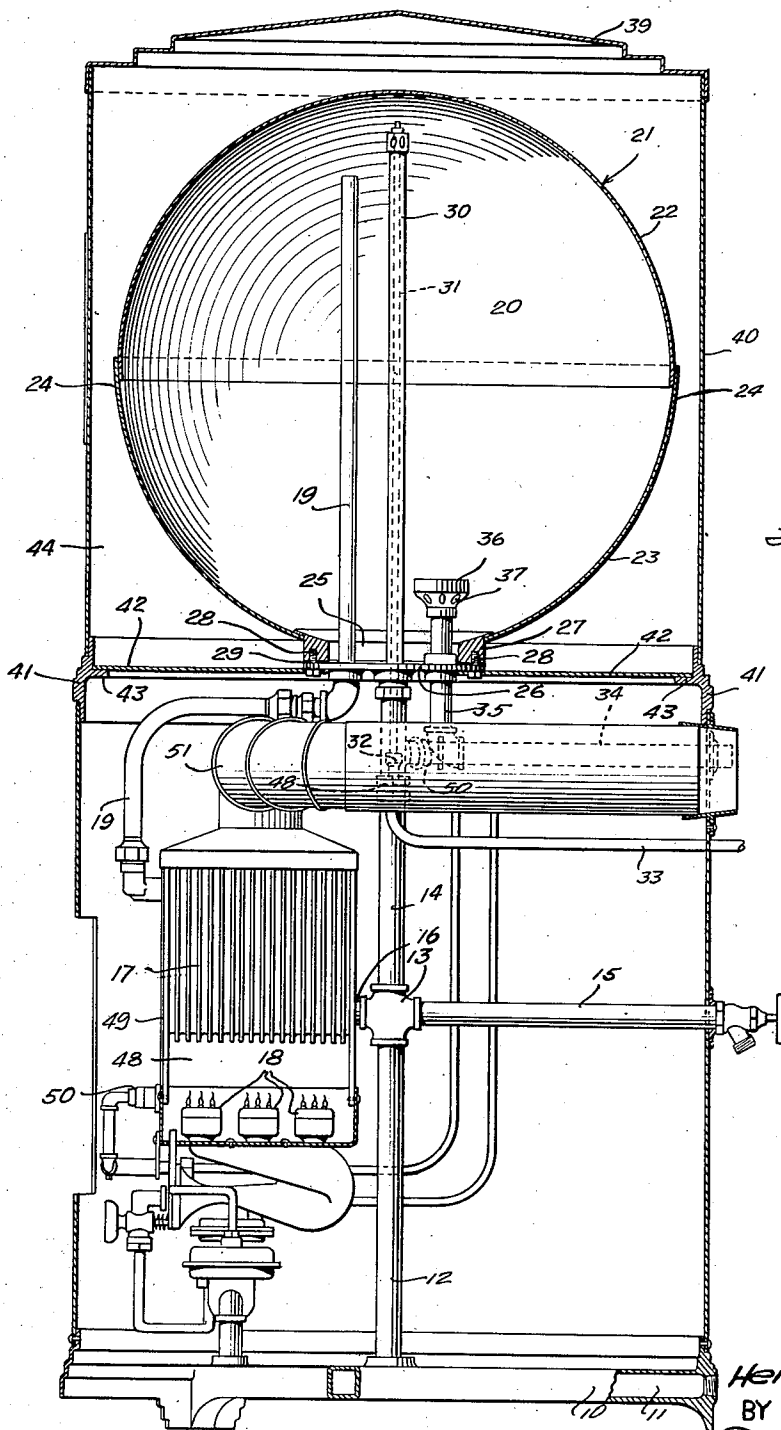
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WATER HEATER

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3 Sheets-Sheet 2



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WATER HEATER

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3 Sheets-Sheet 3

Fig. 3.

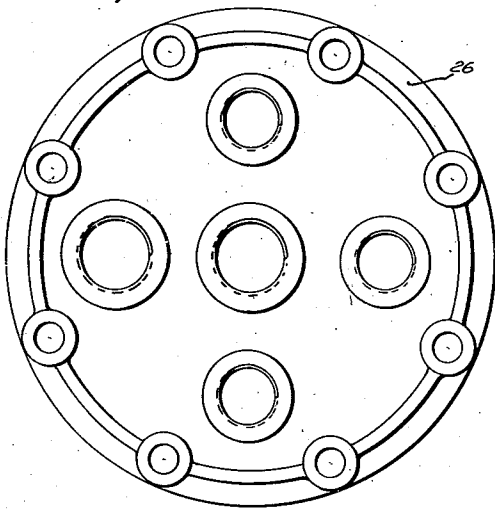


Fig. 5

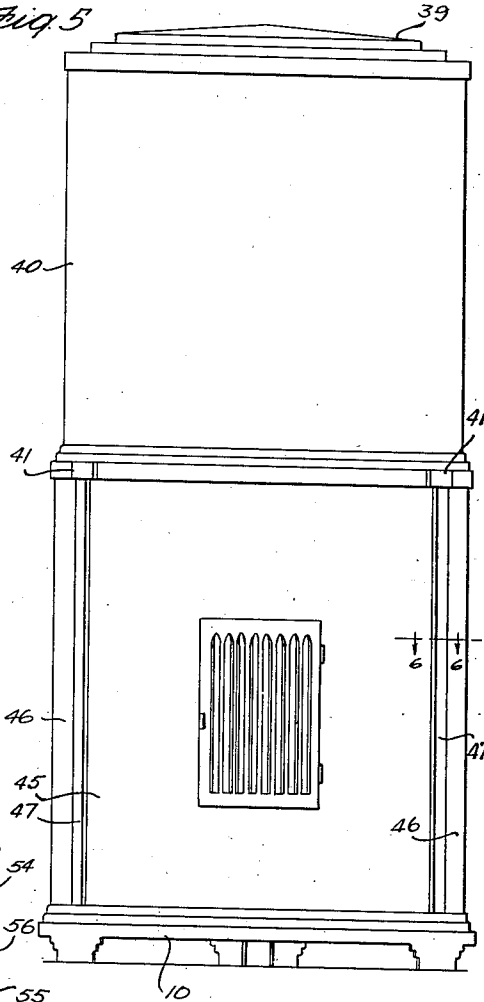


Fig. 4.

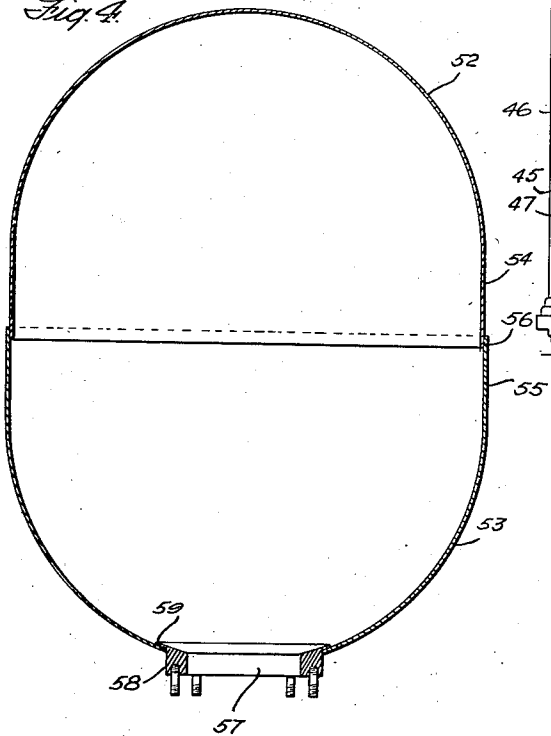
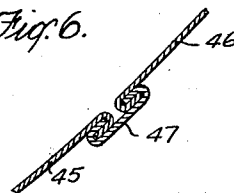


Fig. 6.



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UNITED STATES PATENT OFFICE

2,067,495

WATER HEATER

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Application December 29, 1934, Serial No. 759,680

1 Claim. (Cl. 126—350)

This invention relates to water heaters and more particularly to the construction of the storage tank therefor and the arrangement, jacketing and insulation thereof.

5 An object of this invention is to provide a construction in which all parts of the heater will be readily accessible for purposes of inspection or repair. To this end the invention contemplates a jacket construction which is in large
10 part easily removable.

Other objects will in part be obvious and in part be pointed out hereinafter.

To the attainment of the aforesaid objects, the invention still further resides in the novel
15 details of construction, combination and arrangement of parts, all of which will be first fully described in the following detailed description, then be particularly pointed out in the appended claim, reference being had to the accompanying drawings in which:

Fig. 1 is a longitudinal sectional view through the heater jacket, parts of the heater proper being shown in side elevation; Fig. 2 is a view similar to Fig. 1 but taken at right angles thereto, certain parts being removed to show the interior
25 construction; Fig. 3 is a bottom plan view on an enlarged scale of the closing plate of the tank; Fig. 4 is a view showing in side elevation a modified form of the tank shown in Fig. 1; Fig. 5 is a front view of the heater on a reduced
30 scale; and Fig. 6 is a detail showing the construction of one of the rods for notching the front panel of the heater jacket in position.

Referring to the drawings, the reference numeral 10 indicates a base of cast metal having a passage 11 therein adapted to be connected to a source of gas supply. This passage is internally or externally hot galvanized or otherwise treated to close all pores of the casting.
40 A central standard 12 extends upwardly therefrom and forms the main support for the heater assembly. The standard 12 terminates in an X-coupling 13, one arm of which connects to a cold water pipe 14, another arm of which connects to a drain pipe 15 and the remaining arm of which is connected with a nipple 16 forming the cold water intake to one or more elements
45 17 of the heater.

The heating elements one of which is shown at
50 17 are preferably of the type in which the heat absorbing surfaces extend vertically and are provided with vertically extending fins thereon as disclosed in my copending application Serial No. 697,484, filed November 10, 1933. A gas burner
55 18 is positioned below the heating elements 17

from the upper end of which hot water is discharged by pipe 19 extending upwardly into the upper portion of the interior 20 of the storage tank or boiler 21.

The tank 21 is formed of an upper hemispherical shell 22 and a similar lower shell 23. These shells are preferably stamped or spun from relatively light sheet copper. The two halves are united by a soldered seam as indicated at 24. The solder used is preferably of the type having
10 a relatively low melting point of 400° to 500° F. so that in the fusion thereof the sheet copper will not be subjected to destructive temperature. So united the two hemispherical halves form a substantially perfect sphere. An opening 25 is
15 provided in the lower half 23 which opening is adapted to be closed by a bottom plate 26. This plate carries all connections with the interior of the tank and in order to fasten it securely to the relatively thin copper sheet forming the
20 lower shell 23, a collar 27 is provided around the opening to which the sheet copper is welded or brazed, as will be hereinafter more particularly described. The collar 27 is provided with screw threaded openings to accommodate fastening
25 bolts 28. An annular gasket 29 is interposed between the collar and the bottom plate so that upon tightening of the bolts 28 a water tight joint is formed at this juncture.

A hot water outlet pipe 30 extends from the
30 upper portion of the tank through the bottom plate 26. This pipe is preferably provided with a rod 31 which functions as a thermostat to control a relief valve 32 permitting the discharge of water through pipe 33 in the event that the
35 water should become too hot. Normally the relief valve 32 is closed and the hot water is drawn through pipe 34. A cold water inlet pipe 35 also extends through the bottom plate 26 and terminates in the lower portion of the tank. In
40 order to prevent the cold water from rushing upwardly due to its high velocity on entering the tank and thereby reducing the temperature of the hot water in the upper portion thereof, a cap 36 is provided at the discharge end of pipe
45 35 which cap is provided with openings 37 directed downwardly to insure that the cold water will be diffused in the lower portion adjacent the bottom plate 26 without cooling the warmer
50 water in the upper part of the tank. A thermostat 38 also extends through the bottom plate 26 into the interior of the tank to control the flow of gas to the burner in accordance with the temperature of the water in the tank.

The entire water heater assembly is enclosed 55

in an outer jacket of thin sheet metal which, since it does not support any portion of the tank or heater, may be made of light material that can be readily stamped into such form as to give the assembly a pleasing external appearance. The jacket is so constructed that large parts thereof are readily removable to permit access to various parts of the assembly for purposes of repair or inspection. This jacket is divided into two parts, the uppermost part of which comprises a removable cover 39, a cylindrical portion 40 surrounding the tank 21 and united at its lower end with a cast metal ring 41. A flat sheet 42 rests upon an inwardly projecting shoulder 43 of the cast metal ring 41 and is provided with a central opening registering with the opening 25 of the tank.

The cover 39, cylindrical portion 40 and sheet 42 define a chamber 44 surrounding the spherical tank which chamber is preferably filled with some insulating material, such as rock wool. It will be seen that when so filled the tank is completely surrounded with insulating material and that there are no uninsulated portions excepting at the bottom plate 26.

The jacket for the lower portion of the assembly is formed in two parts 45 and 46. These portions together form a cylindrical casing for the lower part of the heater and are united by means of a pair of rods 47 in such manner that upon removing the rods the entire front portion 45 of the jacket may be removed for inspection and repair of the heater assembly.

The combustion chamber 48 is separately enclosed and provided with a removable panel 49. The pilot burner 50 is positioned outside of the combustion chamber 48 but is so directed as to project a pilot flame horizontally thereinto. By this construction the pilot burner is protected from the direct heat of the burners 18 when the same are in operation. A flue 51 conducts the products of combustion from chamber 48 so that the same have no opportunity to condense or corrode the connections to the boiler, although indirectly warming the same to prevent heat losses therefrom.

While the spherical construction of the tank shown in Figs. 1 and 2 is to be preferred, some of

the structural advantages of my invention may be attained by a tank which is not a perfect sphere such as that shown in Fig. 4. As shown in this figure, the tank is formed of two substantially hemispherical end portions 52 and 53 each having a short cylindrical extension 54 and 55. It will be seen that this construction also consists of two stamped or spun parts united by a single circumferential seam 56. A single opening 57 is provided as before for the insertion of all connections with the interior of the tank. The opening 57 is reinforced as before by a collar 58. In both constructions the collar 58 has a thin upwardly extending lip 59 conforming to the spherical surface of the tank and to which the thin sheet metal of the tank is welded or soldered. The thin lip 59 facilitates this operation in that it does not conduct heat away from the joint as rapidly as where the same is made with a heavier metallic member.

It will be seen from the above description that I have provided a water heater in which the parts are of extremely light yet sturdy construction, and which may be easily manufactured and readily assembled or repaired. Insulation of the tank is rendered comparatively simple while the entire assembly is compact and housed in a light casing of pleasing external appearance.

While there is herein described but a single embodiment of my heater together with a modified form of the water tank thereof, it will be obvious that other modifications within the scope of the appended claim will be apparent to those skilled in the art.

Having described the invention, what is claimed is:

A water heater including a casing, a tank in the casing having an opening in the lower end thereof, a plate closing the opening and having inlet and discharge connections for the tank, a light sheet metal partition extending from the plate to the walls of the casing and forming a chamber therebelow, water heating means in the chamber in communication with the connections, and a supporting column in the chamber extending from the bottom of the casing to the plate to support the tank independently of the partition.

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