Jan. 7, 1941. S Q. EWING 2,228,004

DOMESTIC ELECTRIC WATER HEATER

Filed Sept. 27, 1939 2 Sheets-Sheet 1

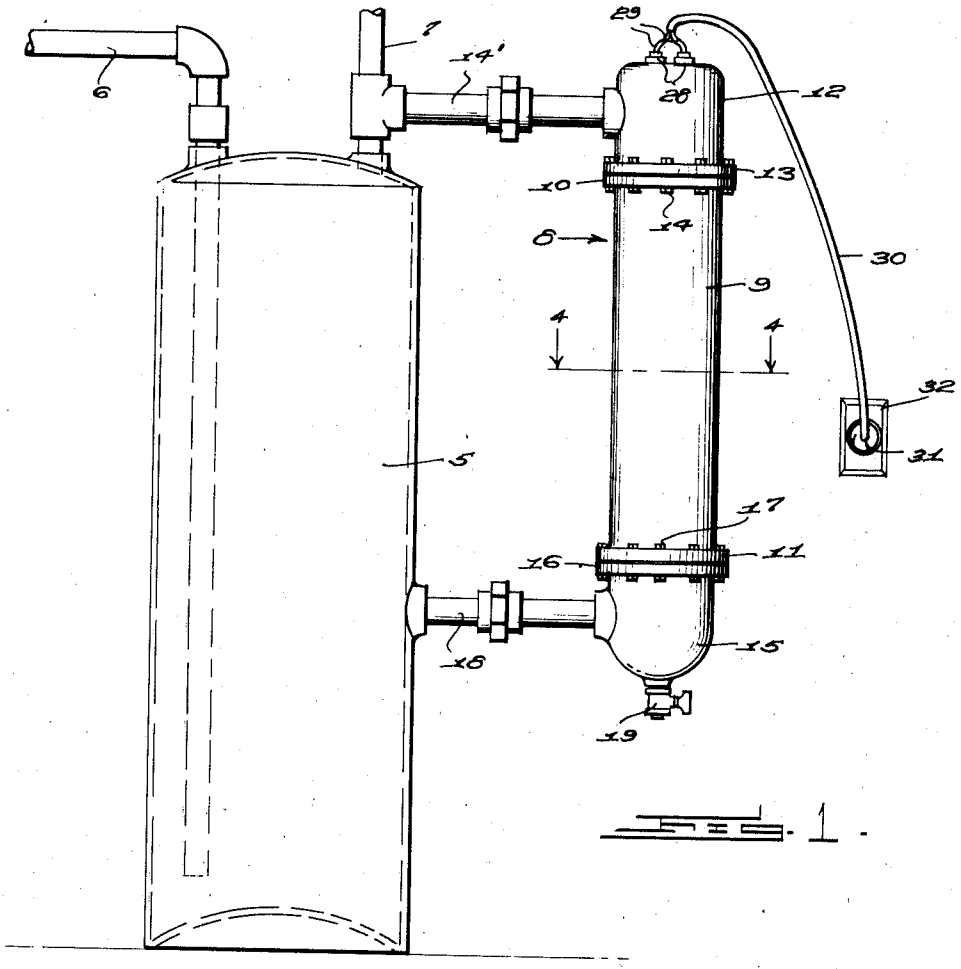


FIG. 1.

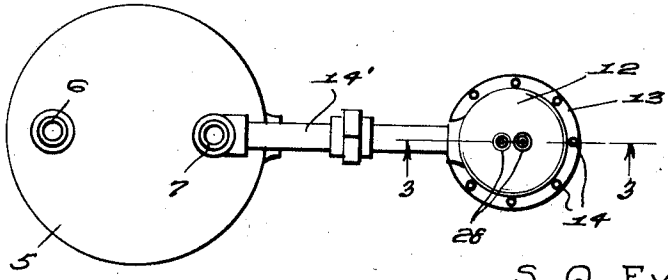


FIG. 2.

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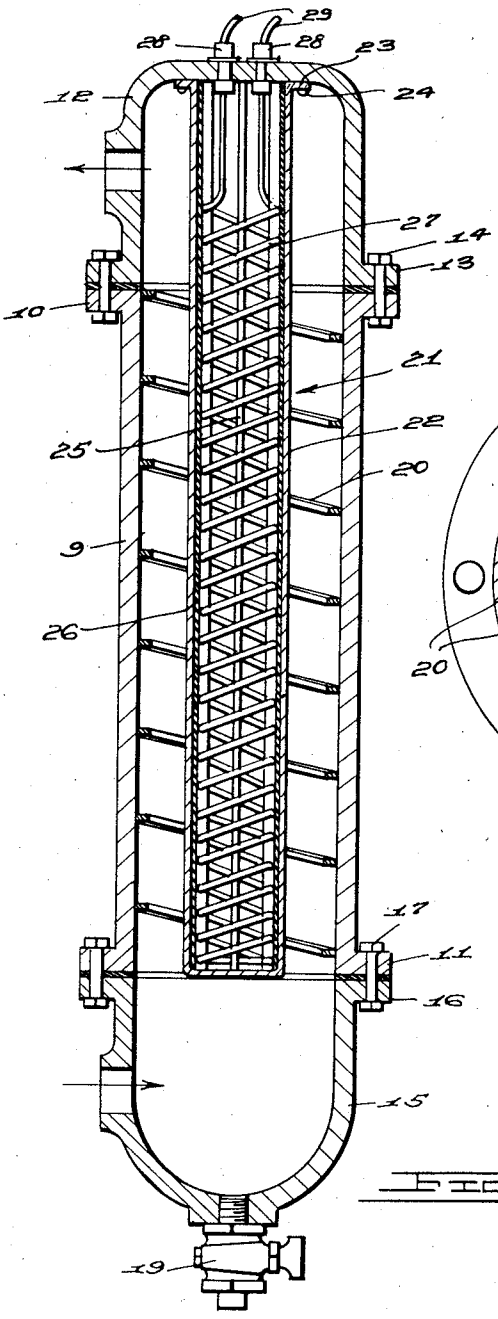


FIG. 2.

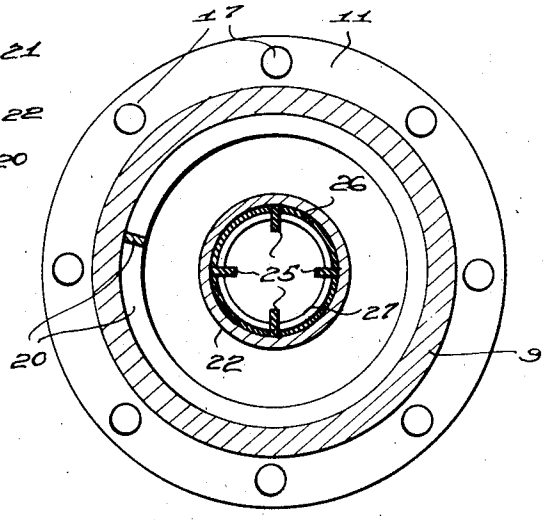


FIG. 4.

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UNITED STATES PATENT OFFICE

2,228,004

DOMESTIC ELECTRIC WATER HEATER

S Q. Ewing, St. Louis, Mo.

Application September 27, 1939, Serial No. 296,865

1 Claim. (Cl. 219—39)

This invention relates broadly to water heaters, and more particularly to such heaters as are designed for domestic use in the heating of water in a storage tank.

Particularly, the invention has reference to an electric heater of this type, and, generally, the objects of the invention are to improve upon such type of heaters now known and in use; and the invention together with its objects and advantages being best understood from a study of the following description taken in connection with the accompanying drawings, wherein:

Figure 1 is an elevational view illustrating the application of the invention.

Fig. 2 is a top plan view.

Fig. 3 is an enlarged sectional view through the heater taken substantially on line 3—3 of Fig. 2, and

Fig. 4 is an enlarged transverse sectional view taken substantially on the line 4—4 of Fig. 1.

Referring to the drawings more in detail, it will be seen that the numeral 5 indicates an ordinary or conventional domestic boiler used as a storage tank supplied with water through the medium of a pipe 6, and from which the water is withdrawn through a pipe 7.

My improved heater indicated generally by the reference numeral 8 is arranged preferably as shown in Fig. 1.

In the preferred embodiment of the invention, the heater 8 comprises a casing 9 flanged at the top and bottom thereof as at 10 and 11 respectively.

For the top of the casing 9 there is provided a header 12 equipped with a flange 13 through the medium of which and bolts 14, the header is secured to the flanged end 10 of the casing 9. The header 13 is connected with the boiler 5 through the medium of a pipe 14'. For the bottom end of the casing 9 there is provided a header 15 that is also equipped with a flange 16 through the medium of which and bolts 17, said header 15 is secured to the flanged end 11 of the casing 9.

It will be understood that in actual practice suitable gaskets will be interposed between the pairs of flanges 10 and 13 and 11 and 16.

The header 15 is connected with the boiler 5 through the medium of a pipe 18 so that when there is no water being drawn out through the pipe 7, the water passing from the boiler 5 through the pipe 18 into the heater 8 and heated during its passage through the heater 8, will pass through the pipe 14' into the upper part of the boiler 5, it being apparent that the colder water at the bottom of the boiler 5 passes into the heater 8.

The bottom header 15 for the heater casing is provided with a drain cock 19 as shown.

Arranged in the casing 9 of the heater 8 is a spiral vane or rib assembly 20 that fits somewhat snugly within the casing 9 and serves to cause the water to take a somewhat circuitous path in flowing upwardly through the heater casing thus insuring maximum heating of the water.

Also arranged within the casing 9 of the heater is an electric heating unit indicated generally by the reference numeral 21.

The heating unit 21 comprises an elongated tubular casing 22 that is closed at one end and at its opposite end is open and provided with a flange 23 through the medium of which and bolts 24 said casing is secured to the crown of the header 12 as shown in Fig. 3.

Arranged within the casing 22 is a series of circumferentially spaced strips 25 of mica or other suitable material. These strips extend substantially for the full length of the casing 22 and are separated by arcuate elongated strips 26 of insulating material, such as asbestos.

The mica strips 25 are provided with longitudinal series of perforations to accommodate the convolutes of a spirally wound resistance wire 27 that, as shown in Fig. 4, is confined within the insulating casing formed by the aforementioned strips 26 of asbestos.

The terminals of the resistance wire 27 are electrically connected as at 28 with the wires 29 of a conventional electric cord 30.

The cord 30 is provided with the usual plug 31 to be engaged with an electrical receptacle or other suitable electric outlet 32 for supplying current to the resistance wire 27, and as suggested in Figs. 1 and 3.

It will thus be seen that the electrical heating unit 21 will serve to heat the water feeding from the boiler 5 through the pipe 18 and as said water passes upwardly through the heater 8 to return to the boiler 5 through the pipe 14.

From the above it will be seen that in actual practice, the heater can be readily connected to the boiler and the electric cord 30 readily connected to a suitable electric current supply and the water in its passage through the heater thoroughly heated by the heat from the casing 22 of the heating unit 21.

It is thought that a clear understanding of the construction, utility, operation and advantages of an electric water heater of the character

of the present invention will be had, without a more detailed description thereof.

Having thus described the invention, what is claimed as new is:

In a water heater, a casing adapted to contain water and equipped at the top and bottom thereof with removable headers, an electric heating unit arranged within said casing, and a spiral rib assembly fitting snugly within the said casing, said rib contacting the internal wall of the casing and being spaced from the heating unit to provide an unobstructed annular space between the rib and the heating unit.

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