Sept. 23, 1924. 1,509,140

E. GROULX

ELECTRIC WATER HEATER

Filed May 26, 1923

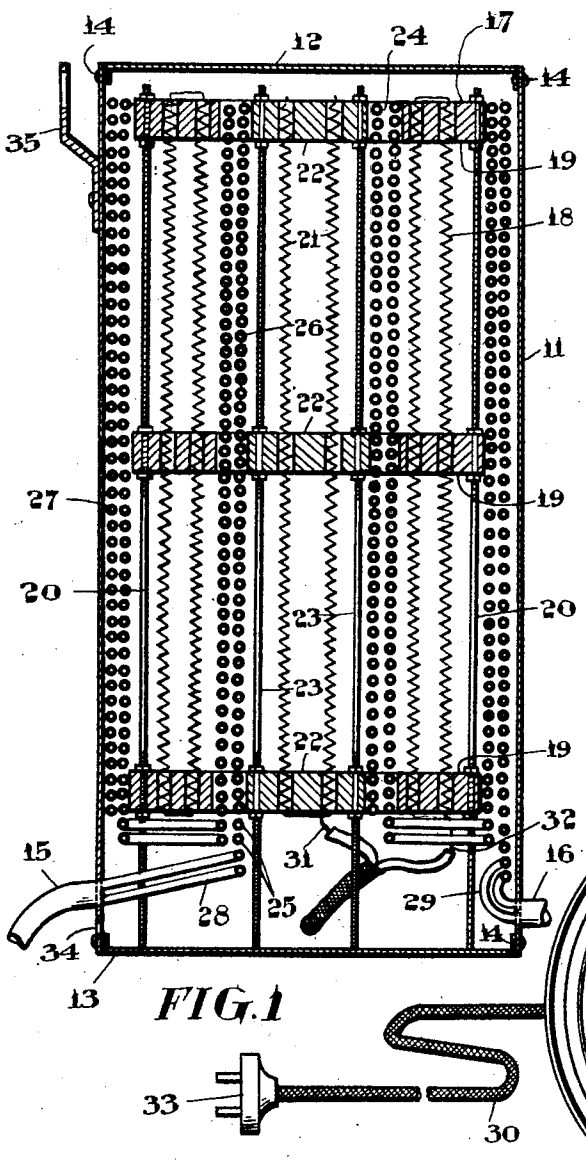


FIG. 1

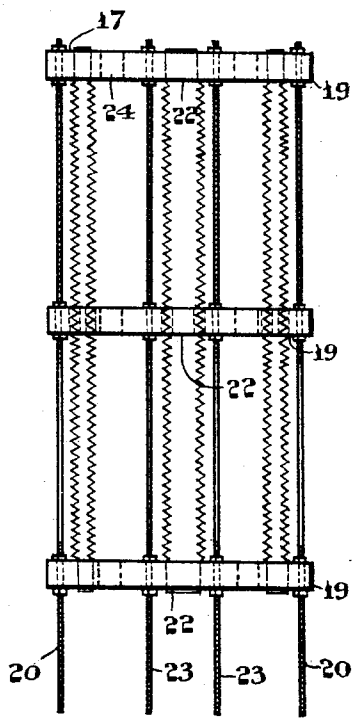


FIG. 2

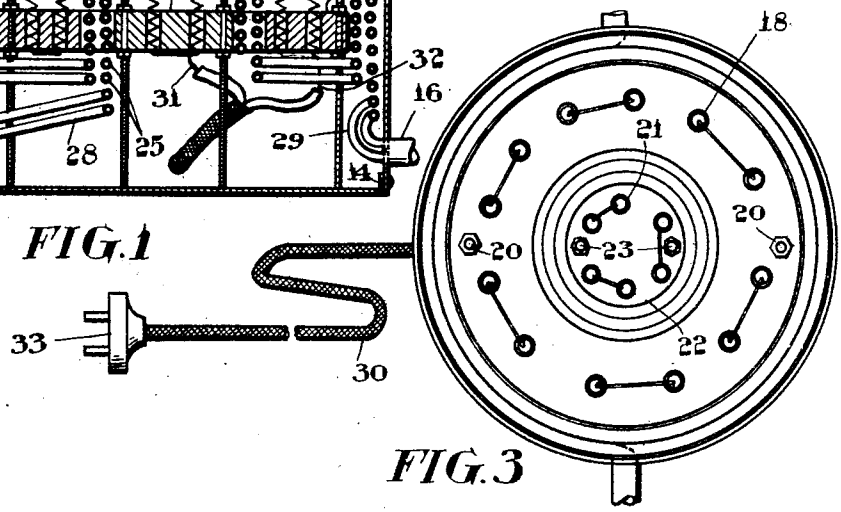


FIG. 3

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ERNEST GROULX, OF MONTREAL, QUEBEC, CANADA, ASSIGNOR TO ARTHUR HOOLAHAN, OF MONTREAL, CANADA.

ELECTRIC WATER HEATER.

Application filed May 26, 1923. Serial No. 641,678.

To all whom it may concern:

Be it known that I, ERNEST GROULX, a subject of the King of Great Britain, and resident of the city of Montreal, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Electric Water Heaters, of which the following is a full, clear, and exact description.

This invention relates to new and useful improvements in electric water heaters, and the object of the invention is to provide a simple, inexpensive and highly efficient water heater.

Another object is to provide a water heater which will be portable and easily handled, and which will be easily connected up to both the power and water sources.

In my invention, I provide a cylinder with a top and bottom cover and, within this cylinder, is placed the heating element, which consists of a plurality of independent heating units placed one within the other and electrically connected to each other and to a plug, which may be connected to a socket placed in the main electrical supply. The heating units consist of a series of wire coils vertically disposed and passing through asbestos or like rings, which are positioned by means of distance bolts. The water is fed into the device through an inlet pipe at the bottom of the cylinder, and may be connected to the water source by means of a rubber tube or the like. This inlet tube is connected first to spirally wound pipe coils, which may be placed between the heating units. The pipe coils are then extended or connected to a spirally wound pipe coil or coils placed between the inner wall of the cylinder and the outer heating unit. The outer pipe or water coil is connected to a discharge pipe situated in the wall of the cylinder. The water coils may consist of a plurality of pipes of small diameter, all connected to the main inlet and outlet pipes This allows a small volume of water in each pipe to come in contact with the heat radiating from the heating elements. A handle may be provided to allow for easy handling of the device.

In the drawings—

Fig. 1 is a sectional elevation of the water heater.

Fig. 2 is an elevation of the heating units.

Fig. 3 is a plan view of the device with the top cover removed.

Referring more particularly to the drawings, 11 designates a cylindrical shell, which is provided with detachable top and bottom covers 12 and 13, which may be held in position by screws 14 or the like. Inlet and outlet pipes 15 and 16 are provided in the walls of the cylinder for the water supply. Within the cylinder is placed a plurality of heating units one within the other and spaced from each other, with the outer unit clear of the inner wall of the cylinder. In the drawings I have shown two heating units, which are shown in detail in Figure 2. The outer heating unit 17 consists of a plurality of vertical wire coils 18, which pass through asbestos rings 19, said rings being spaced from one another on the screw bolts 20. The outer diameter must be smaller than the inside diameter of the cylinder. The inner heating unit comprises a plurality of vertical wire coils 21, which pass through asbestos discs 22 spaced from one another on the screw bolts 23. The bolts 20 and 23 are extended to provide a clear space between the bottom of the cylinder and the bottom asbestos rings and discs. The diameter of the discs 22 is such that a space is left between them and the inside diameter of the rings 19, which space is designated 24. The water is fed through the inlet pipe into a plurality of pipes 25 within the cylinder. These pipes are spirally wound first between the heating units in the space 24 and then between the inner wall of the cylinder and the outer heating unit. The spirally wound pipes may be so arranged as to form double coils 26 and 27 and are connected together at their ends, the inner coil to the inlet pipe and the outer coil to the outlet pipe, as designated at 28 and 29 respectively. Current is supplied to the device through the double cord cable 30, one wire 31 of which is connected to the inner heating element and the other wire 32 to the outer heating unit, both units being in series with one another. A plug 33 may be attached to the end of the doubled cord cable 30. An air valve or aperture 34 may be provided in the outer cylinder to prevent the heated air from distorting or damaging the device. A handle 35 may also be provided for handling the device or attaching the heater to any convenient at-

tachment in close proximity to the power and water supply.

The operation of the device is as follows:—

The inlet pipe may be connected to a water faucet or the like by means of a rubber tube or the like. The electrical supply may be taken from a socket or the like by means of the plug attached to the end of the double cord cable, said cable being attached to the heating units which are in series. The water flows through the inlet pipe into the double pipe coils, which are positioned between the outer and inner heating units, and from thence passes to the outer pipe coils, which are placed between the outer heating unit and the inner wall of the cylinder. The outer coil is connected to a discharge pipe. The small pipes within the cylinder absorb the heat given out by the heating element. The water takes a long spiral course to the outlet, thus exposing the water long enough to bring the same to the boiling point before delivering it through the discharge pipe. When the air within the cylinder expands, it passes through the air valve, thus preventing any distortion in the cylinder or explosion through said expansion. The removable top and bottom provide easy access for cleaning and repairing of the various elements of construction.

Having thus described my invention, what I claim is:—

1. An electric water heater comprising a cylinder with removable top and bottom covers and having an inlet pipe and an outlet pipe, a plurality of heating units placed within and spaced from one another and from the inner wall of the cylinder, a plurality of pipes coiled between the heating units and between the outer heating unit and the inner wall of the cylinder, said coils being connected together and so arranged as to provide a continuous passageway between the inlet and outlet pipes, and means to connect the heating units to a source of electrical supply.

2. An electrical water heater comprising a cylinder with top and bottom covers and having an inlet pipe and an outlet pipe, a plurality of vertically disposed heating units placed within and spaced from one another, the outer unit being spaced from the inner wall of the cylinder, a plurality of vertically disposed coils of pipe coiled between the heating units and also between the outer heating unit and the inner wall of the cylinder, said pipes being so connected and arranged to form a continuous passageway between the inlet and the outlet pipes, means to connect the heating units to a source of electrical supply, and means to prevent bursting of the cylinder through air expansion due to heating from the heating elements.

3. A device according to claim 2, in which each heating unit comprises a plurality of asbestos rings, screw bolts adapted to space the rings from one another and from the top and bottom of the cylinder, and a series of coils of wire passing through said asbestos rings and adapted to form a continuous conductor for an electrical supply.

In witness whereof I have hereunto set my hand.

ERNEST GROULX.