

A. C. MATHER.
ELECTRIC HEATER.
APPLICATION FILED NOV. 25, 1918.

1,351,779.

Patented Sept. 7, 1920.

FIG. 1.

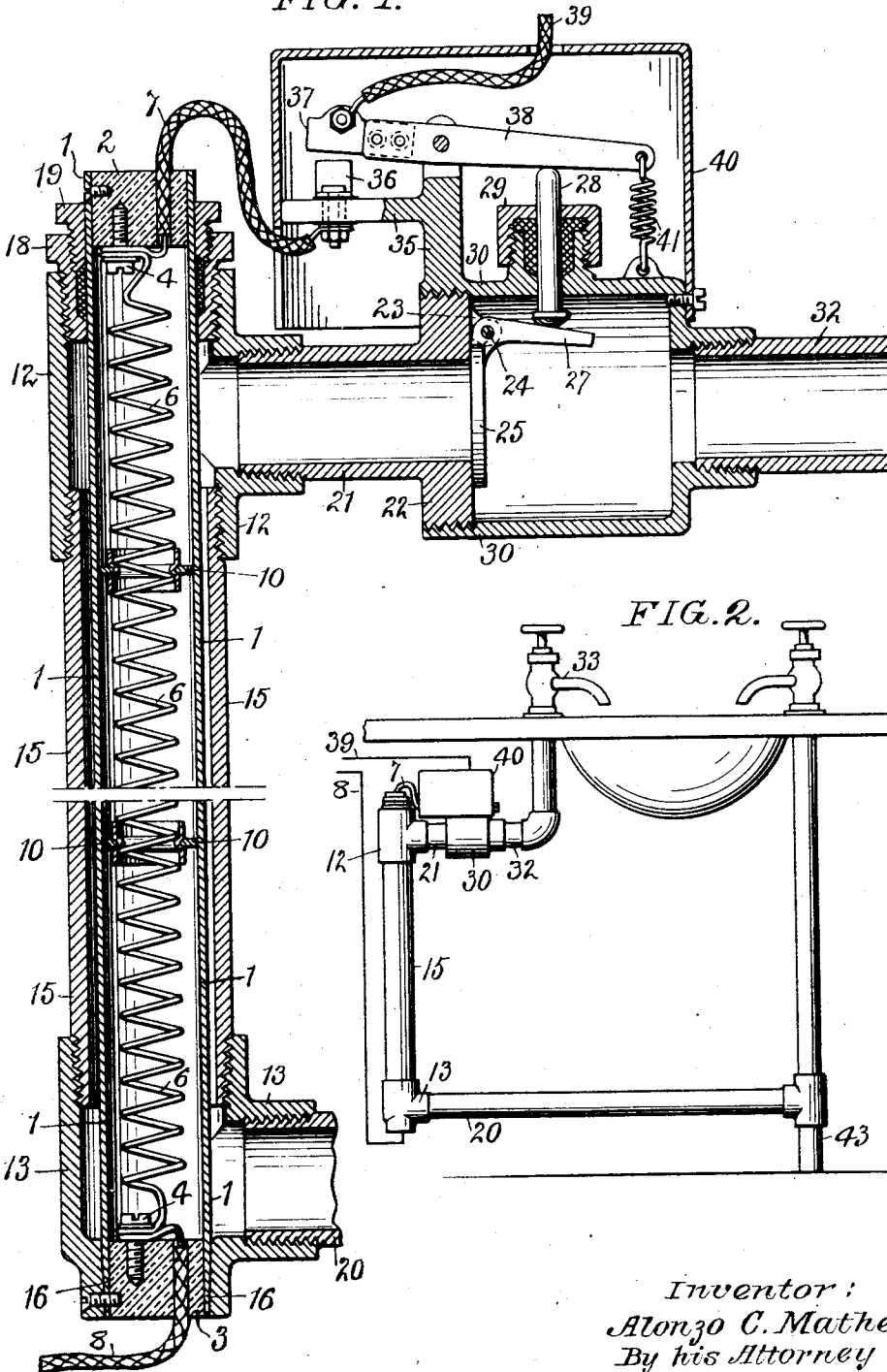
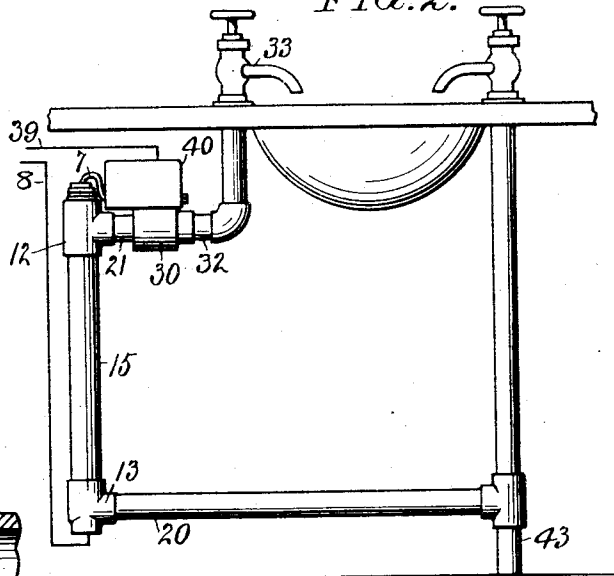


FIG. 2.



Inventor:
Alonzo C. Mather
By his Attorney
F. DelWitt Goodwin

UNITED STATES PATENT OFFICE.

ALONZO C. MATHER, OF CHICAGO, ILLINOIS.

ELECTRIC HEATER.

1,351,779.

Specification of Letters Patent.

Patented Sept. 7, 1920.

Application filed November 25, 1918. Serial No. 263,966.

To all whom it may concern:

Be it known that I, ALONZO C. MATHER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

My invention relates to an electric heater for heating liquid and is particularly adapted for heating water for household purposes. The object of my invention is to provide a device which will heat water quickly; which may be installed with but slight change in the plumbing system and may be located adjacent to the outlet faucet; a further object of my invention is to operate the device by electricity and to provide means for controlling the device automatically by an electric switch operated by the flow of the water through the device. These together with various other novel features of construction and arrangement of the parts constitute my invention which will be hereinafter fully described and claimed.

Referring to the accompanying drawing, Figure 1, is a vertical section of the heating device illustrating my invention, and Fig. 2, is a front view of a wash stand showing how my improved water heater may be applied thereto.

In the drawings in which like reference characters refer to like parts, 1 represents a tube, preferably of copper, with plugs 2 and 3 of insulating material secured in either end.

The plugs 2 and 3 are provided with fastening devices 4, between which is connected a resistance wire 6 for heating the tube 1. Wires 7 and 8 are attached to said fastening devices 4 and carry the electric current to the resistance wire 6. The plugs 2 and 3 may be provided with apertures for ventilation or fit tightly depending on the nature of the resistance wire 6. Washers 10 of insulating material are secured on the coil of resistance wire to separate the latter from the metal tube 1.

The tube 1 is brought in contact with the liquid to be heated by mounting the tube within the pipe line through which the liquid passes. The tube 1 is secured in T-fittings 12 and 13, between which is connected a pipe 15 of slightly larger internal diameter than the external diameter of the tube 1, so that only a small quantity of liquid will be in contact with the tube. The

tube 1 may be secured in the T-fittings by tapering one end 16, and forcing it into the fitting 13, and by providing a stuffing box 18 and gland nut 19 to secure the tube in the fitting 12—thus making the joints watertight, and also making the tube removable. A supply pipe 20 is connected with the fitting 13 and an outlet pipe 21 is connected with the fitting 12.

The outlet pipe 21 is provided with an enlarged flange 22, with lugs 23 formed thereon, carrying a pin 24, on which is loosely mounted a disk 25 adapted to cover the opening in the flange 22. An arm 27 is provided upon the disk 25, for moving a rod 28 mounted in a stuffing box 29 on a casing 30, which latter is screwed upon the flange 22 and provided with an outlet pipe 32, leading to the outlet faucet 33, shown in Fig. 2.

The casing 30 is provided with a post 35 carrying an electric switch consisting of a fixed contact plate 36 to which the wire 7 from one end of the resistance coil is connected. A contact plate 37 is mounted on a movable arm 38, pivoted on said post 35, and to which contact plate 37 the line wire 39 is connected. The switch is inclosed in a suitable box 40. The arm 38 of the switch rests upon the rod 28 and a spring 41 tends to hold the arm 38 down and force the rod 28 inwardly, so as to hold the disk 25 over the opening in the flange 22, when the water is not flowing through the pipes.

The operation of my device is as follows: The faucet 33 is opened causing the water to flow through the casing 30, which will cause the disk 25 to rotate on the pin 24 and the arm 27 will force the rod outwardly against the switch arm 38 and move the latter so that contact will be made between the contact plates 36 and 37. The electric current will flow from the source of supply through wires 39 and 7, the resistance coil 6 and line wire 8. The current will heat the resistance coil 6, which in turn will heat the tube 1, and the water coming in contact with the tube will be heated. When the faucet 33 is closed the spring 41 will operate the switch arm 38 and break the electric circuit and also move the disk 25 over the opening in the flange 22. The inlet pipe 20 may be connected with the cold water supply pipe 43 at any convenient point, as shown in Fig. 2.

Having thus described my invention I claim and desire to secure by Letters Patent:

1. A device of the character described comprising, a pipe, T-fittings on either end of said pipe, inlet and outlet pipes connected with the said fittings, a tube located in said first mentioned pipe, means for securing the ends of said tube in said fittings, plugs in the ends of said tube, a resistance wire extending between the said plugs, means for insulating the resistance wire from the tube and an electric circuit for heating the resistance wire.

2. A device of the character described comprising, a pipe, T-fittings on either end of said pipe, inlet and outlet pipes connected with the said fittings, a tube located in said first mentioned pipe, said tube having a conical surface formed on one end thereof, one of said T-fittings having a conical aperture formed therein to receive said conical end of the tube, a stuffing box located in the opposite one of said T-fittings, a removable gland nut in said stuffing box adapted to embrace the tube whereby the tube may be removed through the stuffing box, a resistance wire extending through the said tube,

and an electric circuit for heating the resistance wire.

3. A device of the character described comprising, an electric circuit, a heating member in said circuit, a receptacle containing liquid in which the heating member is located, inlet and outlet pipes connected with the said receptacle, an enlarged flange on the outlet pipe with a passageway formed therethrough, a ball-crank-lever pivoted on said flange, a disk on one arm of the bell-crank-lever adapted to cover said passageway through the flange, a circular casing attached to said flange and inclosing the bell-crank-lever, a rod extending through the wall of the casing adapted to be actuated by the bell-crank-lever, a post formed upon the outside of said circular casing, a switch arm pivoted on said post, a spring upon said arm adapted to move the said rod when not actuated by the bell-crank-lever, and contact plates controlled by the movement of the switch arm.

In testimony whereof I affix my signature.

ALONZO C. MATHER.