M. H. SHOENBERG & G. T. MARSH.

ELECTRICAL HEATER.

APPLICATION FILED JAN. 28, 1909.

972,131. Patented Oct. 4, 1910.

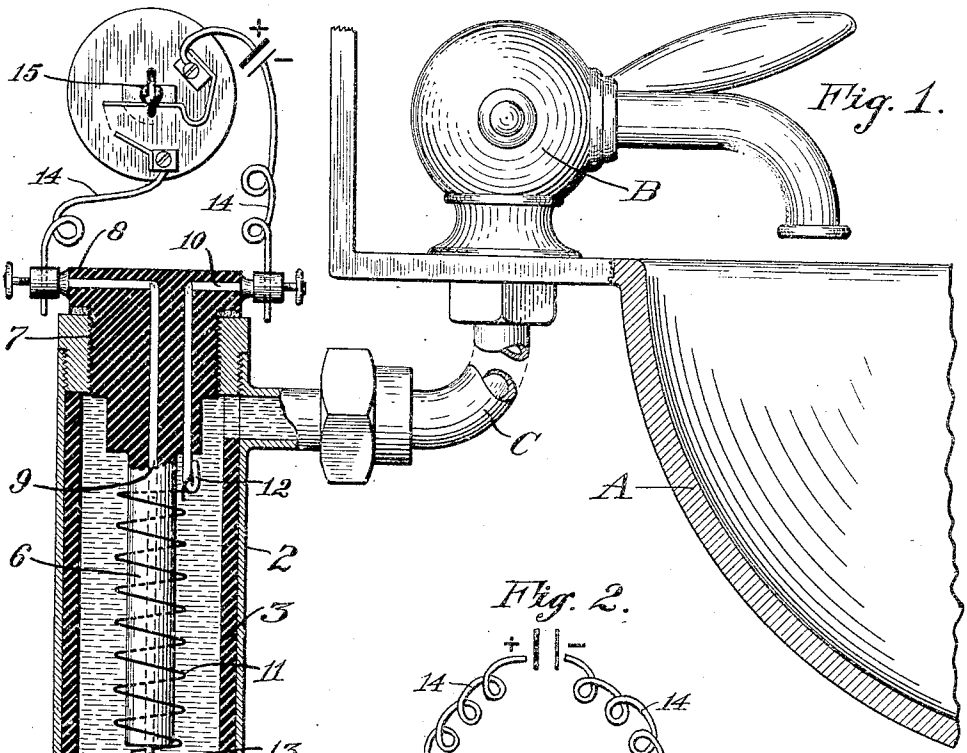

Fig. 1.

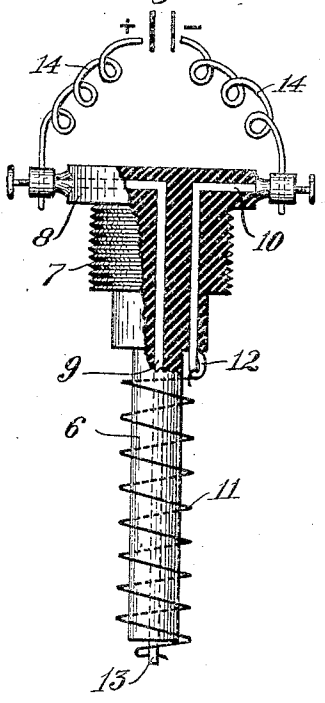

Fig. 2.

WITNESSES;

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MILTON H. SHOENBERG AND GEORGE T. MARSH, OF SAN FRANCISCO, CALIFORNIA, ASSIGNORS TO APPLIANCE AND ELECTRIC DEVICE COMPANY, A CORPORATION OF CALIFORNIA.

ELECTRICAL HEATER.

972,131. Specification of Letters Patent. Patented Oct. 4, 1910.

Application filed January 28, 1909. Serial No. 474,789.

To all whom it may concern:

Be it known that we, MILTON H. SHOENBERG, a citizen of the United States, and GEORGE T. MARSH, a citizen of Australia, both residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Electrical Heaters, of which the following is a specification.

Our invention relates to a system for electrically heating water so that a single supply pipe may be employed for both cold and hot water, and for other heating purposes.

It consists in a combination of parts, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of our device, showing its application. Fig. 2 is a side elevation of the insulating tube removed, showing parts broken away.

It is the object of our invention to provide a system of water-heating whereby only single conducting pipes are necessary, and either cold or hot water may be delivered from a single faucet to wash-basins, bath-tubs, sinks, or other receptacles where needed.

We have illustrated our invention as applied to a wash-basin A, having a faucet B on the supply pipe C.

In our invention we introduce at some point within the length of the supply pipe, and preferably convenient to the point where the water is to be used, a tube 2 of sufficient length and diameter. Within this tube is an insulating lining 3, which may be of porcelain, or other suitable material, the insulating effect of which will not be altered by the contact of water with it. The lower end of the tube 2 may be screwed or otherwise connected with a cock 4, which is also connected with the cold water supply pipe 5. The upper end of the tube 2 is connected with the pipe C, preferably by a nipple extending out from the side of the pipe 2 as shown.

6 is an insulating tube which may be made of porcelain or other suitable material, and is screw-threaded near the upper end, as shown at 7, so that it may be screwed into the upper end of the tube 2, and it has a head 8 which fits down upon the upper end of the tube 2, and makes a tight joint therewith, either by use of a gasket or other means. The central portion of this tube 6 has an opening 9 extending through the bottom, and opening out at one side of the head 8. 10 is a similar opening made through the side of the head 8, and thence turning and extending down through the enlarged portion of the insulator, and opening through the bottom of this enlarged portion, and contiguous to the side of the insulating tube 6.

A conducting coil 11 of any suitable character is wound around the exterior of the smaller lower portion of the insulating tube 6, and the upper end is engaged with a conducting bar 12, which is here shown as fitting into the vertical portion of the tubular passage 10, with a hook at the lower end so turned as to be engaged by a loop in the upper end of the coil 11. The conducting wire is wound around the insulating tube, with its coils separate from each other, and at the lower end it is connected with a rod 13 which extends through the central passage 9 of the insulator.

Contact members extend into each of the horizontal openings of the two passages 9 and 10, and by means of binding-screws, connecting electrical conducting wires 14 are in circuit with the hook rod 12, the rod 13 and the intermediate coil 11. The character of this coil is such that it forms a resistance to the passage of the electrical current, and its temperature is thus raised to as high a degree as desired.

The length of the insulating tube 6, and its surrounding resistance coil, bear such relation to the interior of the insulated lining 3 that when the cocks are opened to allow the water to flow, and the electrical current is passing, the water may be heated to any desired degree.

A suitable switch 15 controls the electrical current. By cutting off this current cold water may be drawn from the same faucet; thus the basin or other receptacle need only be provided with a single faucet and a single water supply pipe. As long as the electrical current is not flowing, cold water may be drawn by opening the faucet at B. When it is desired to have hot water, it is only necessary to turn on the switch 15, and allow the electrical current to pass through the resistant coil, when the water flowing through the apparatus will be heated so that when

the cock B is opened it will then discharge hot water.

A cock 4 at the bottom of the apparatus controls the supply of water to the tube 2, and when this is closed, the apparatus may be entirely removed from the exterior tube for inspection or repair as may be desired.

It will be manifest that a device of this character may be employed at each point where hot water may be needed, and the whole expense of these independent heating systems will not be as great as that of a single heater to supply all points as is commonly employed.

It will be understood that this device forms a heating unit which may be indefinitely multiplied or extended, and it is also capable of being used for heating elastic or aeriform fluids, or generally to produce an elevation of temperature by the introduction of a conductor, of any desired form and of high resistance.

Having thus described our invention, what we claim and desire to secure by Letters Patent is—

1. The combination with a supply pipe and a controlling cock, of a casing having axially alined openings at opposite ends, a non-conducting lining within the casing, said casing having its upper end internally threaded and having an extension from the lower end adapted to connect with said supply pipe, a non-conducting tube within the casing having an enlarged head externally threaded to engage the internal threads on the casing, said tube having the portion below the head of reduced diameter, and terminating above the lower end of said casing, a resistant conducting coil surrounding the reduced body of the tube, an electrical conductor projecting from the lower end of the tube and connected with one end of the coil, a second conductor passing through the head and connected with the upper end of the coil, and binding posts upon the opposite sides of the head exterior to the casing, with which posts the conductors are connected.

2. The combination with a water supply system of a heating device, said device including an enlarged casing with insulating lining, interposed in the water conducting pipe, an insulating tube of smaller diameter extending axially into the casing and out of contact therewith, said tube having an enlarged screw-threaded upper end connecting it with the casing, and an exterior flange or head, said head having conductors extending into it transversely, and turning at right angles, one of said conductors extending through the center of the inner tube, and the other through the shoulder formed at the junction of the tube and its head, and an electric resistance wire coiled about the tube having one end connected with each of the conductors.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

MILTON H. SHOENBERG.
GEORGE T. MARSH.

Witnesses:
CHARLES A. PENFIELD,
THOS. CASTBERG.