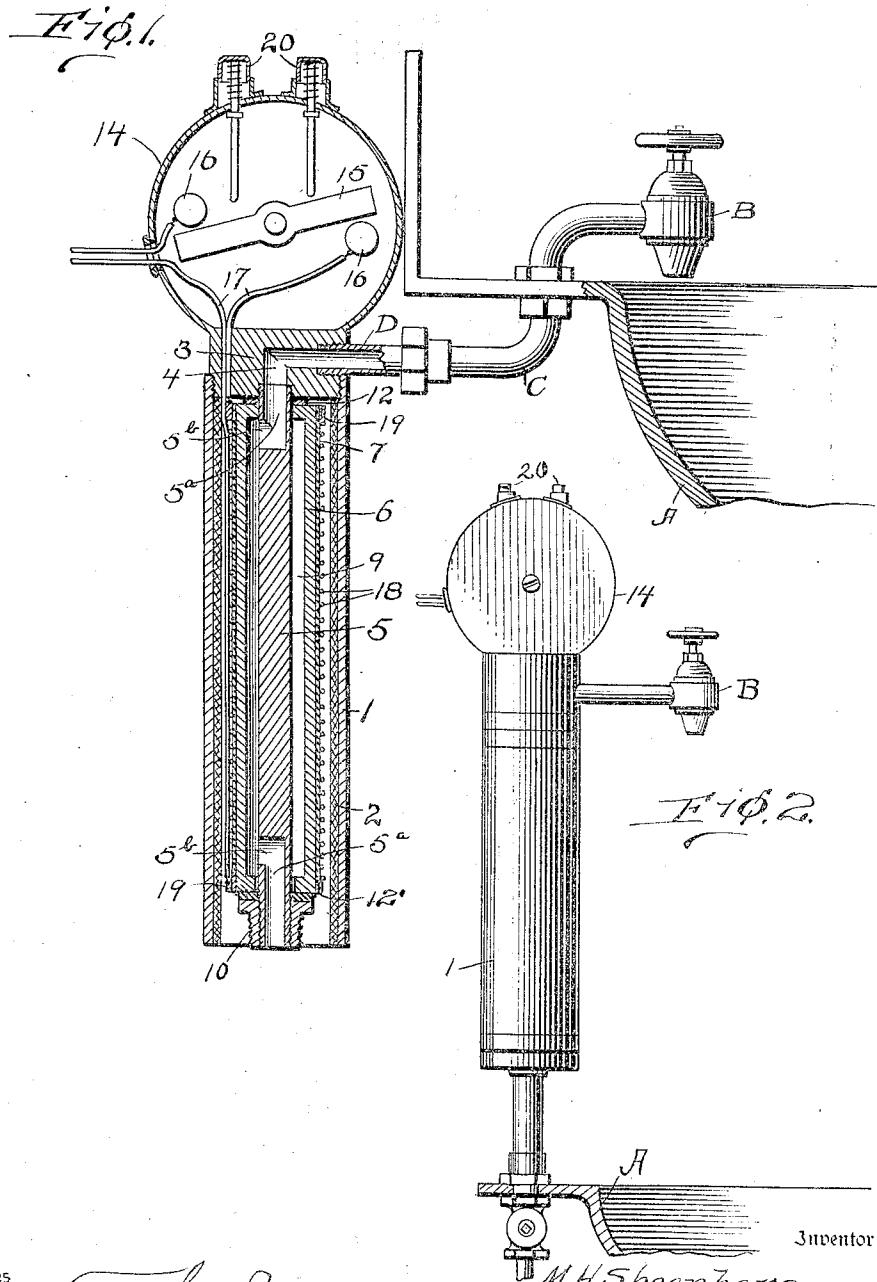


M. H. SHOENBERG.
ELECTRIC WATER HEATER.
APPLICATION FILED JAN. 27, 1911.

993,206.

Patented May 23, 1911.



Witnesses

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MILTON H. SHOENBERG, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO PRESTO ELECTRICAL MANUFACTURING COMPANY, OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

ELECTRIC WATER-HEATER.

993,206.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed January 27, 1911. Serial No. 605,007.

To all whom it may concern:

Be it known that I, MILTON H. SHOENBERG, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Electric Water-Heaters, of which the following is a specification.

My invention relates to an apparatus for heating a flowing stream of water, and is especially designed for use in connection with a water faucet such as is used with dental cuspidors, although the device is of such a nature as to be readily applicable for use with any water faucet or valve from which it is desired to draw hot water.

One object of my invention is to provide an apparatus wherein water in its passage there-through will be caused to contact with a heated element in a comparatively thin annular column in order that it may be heated quickly.

Another object of my invention resides in the structural arrangement or combination of the electrical heater and the means for controlling the flow of the electric current there-through.

Furthermore, my apparatus provides an exceedingly compact structure, which can be quickly and easily attached or detached as a unit, and in which there are no external switches or other attachments.

My invention will be clearly understood from the following description, in connection with the accompanying drawing, in which—

Figure 1 is a central vertical section of an apparatus embodying my invention; and Fig. 2 is a side elevation of the same.

For purposes of illustration, I have shown my apparatus applied to a dental basin or cuspidor A, having a faucet B and a supply pipe C.

Referring now to the construction of the heater proper, my invention comprises an outer tubular casing or shell 1, having a lining 2 of heat-insulating material, which may consist of asbestos or similar substance. The tubular casing 1 is internally screw threaded at the upper end to receive the cap 3, which also forms the base of the switch chamber. The cap piece is provided with a channel or bore 4, having screw-threaded inlet and outlet openings, into the latter of which is

screwed the connection D which may form the support and be secured to the dental basin or cuspidor. A cylindrical core 5, extending centrally through the casing, is threaded at one end into the cap piece 5, and at the other end receives the nut 10 which secures the parts in position.

Surrounding the core 5 is a tube 6, having an outer covering 7, of mica or insulating material, upon which is wound a resistance coil 8, the whole constituting the heating element. The tube is preferably provided with inwardly directed flanges at either end to slidably engage the core 5, leaving an annular water passage or channel 9, between the inner wall of the tube and the core. The heating element is supported upon the core 5 by means of a nut 10, which forces the ends thereof into water-tight engagement with the gaskets 12 and 12', and may be externally threaded for engagement with the union of a water supply pipe. The opposite ends of the core piece are provided with a central bore 5^a, having lateral openings 5^b to form inlet and outlet connections for the water channel. Inasmuch as my heater unit is very compact, the entire device may be placed above the basin, or cuspidor and screwed to the faucet connection as shown in Fig. 2, or it may be connected to any faucet or valve.

For the purpose of controlling the electric current, I provide a chamber 14, integral with the cap piece, within which is pivotally mounted the switch arm 15, and the contacts 16. The conductors 17, leading to the opposite ends of resistance wire 18, may be connected to contact rings 19, secured to the heater tube. The electric current is switched on or off by means of the spring push buttons 20, which may be operated alternately upon the switch blade. The switch chamber may be provided with a suitable closure or cover for the purpose of giving access to the interior.

It will be observed that the water passing through the heater element will be spread out into an annular column, so that a comparatively thin tubular body of water is brought into direct contact with the inner wall of the heating tube, whereby the water will be heated very much more quickly, uniformly, and to a higher temperature than would be the case if it merely passed through

a tube in a solid stream. I have found that the efficiency of the heater is greatly enhanced by thus spreading the water out into a thin sheet or shell, and that the water issuing from the faucet can be raised to a higher temperature with the same expenditure of electric energy than where the entire bore of the tube is used as a water channel. The inner heat insulating lining or shell 2, not only conserves the heat by preventing radiation but also serves to keep the outer metal shell from becoming heated.

The advantages of having the electric switch embodied within the heater unit, and thus avoiding all external switches and connections will be appreciated by those who have had any experience in using electric heaters. The faucet and push buttons can be operated by the same hand and the current can be switched on just before the hot water is required, and immediately turned off when no longer needed. The unit is thus a complete article of manufacture, and is ready for immediate attachment to the water and electric connections without external appliances.

While I have described in detail the particular apparatus disclosed in the drawings for the purpose of illustration, yet I am aware that changes may be made therein without departing from the spirit of my invention or from the scope of my claims.

What I claim is:

1. An electric water-heater comprising a tubular casing, a tubular heater element within said casing having a resistance coil insulated therefrom and surrounding the exterior only of said heater element, a solid core, extending through said heater whereby an annular channel is formed through which channel only the water passes, and fluid inlet and outlet passages connected to the opposite ends of said channel.

2. An electric water-heater comprising a tubular casing, an inner tubular heat-insulating lining therefor, a tubular heater element within said casing having a resistance coil insulated therefrom and surrounding the exterior only of said heater element, a solid core extending through said heater whereby an annular channel is formed through which channel only the water passes, fluid inlet and outlet passages connected to the opposite ends of said channel, and means for removably supporting said heater element upon said core.

3. An electric water-heater comprising a tubular casing, a tubular heater element within said casing having a resistance coil insulated therefrom and surrounding the exterior only of said heater element, a solid core extending through said heater whereby an annular channel is formed through which channel only the water passes, fluid inlet and outlet passages connected to the opposite sides of said channel, and means for removably supporting said heater element upon said core and forming a water-tight seal about the core for the ends of said heater.

4. An electric water-heater comprising a tubular casing, a cap secured thereto having a chamber provided with an electric switch, a tubular heater element within said casing having a surrounding insulated resistance coil connected to said switch, a core extending through said heater and secured to said cap, means for removably supporting said heater upon said core, and means projecting within said cap for operating said switch.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

MILTON H. SHOENBERG.

Witnesses:

LEWIS AURES DORFER,
M. MEAGHER.