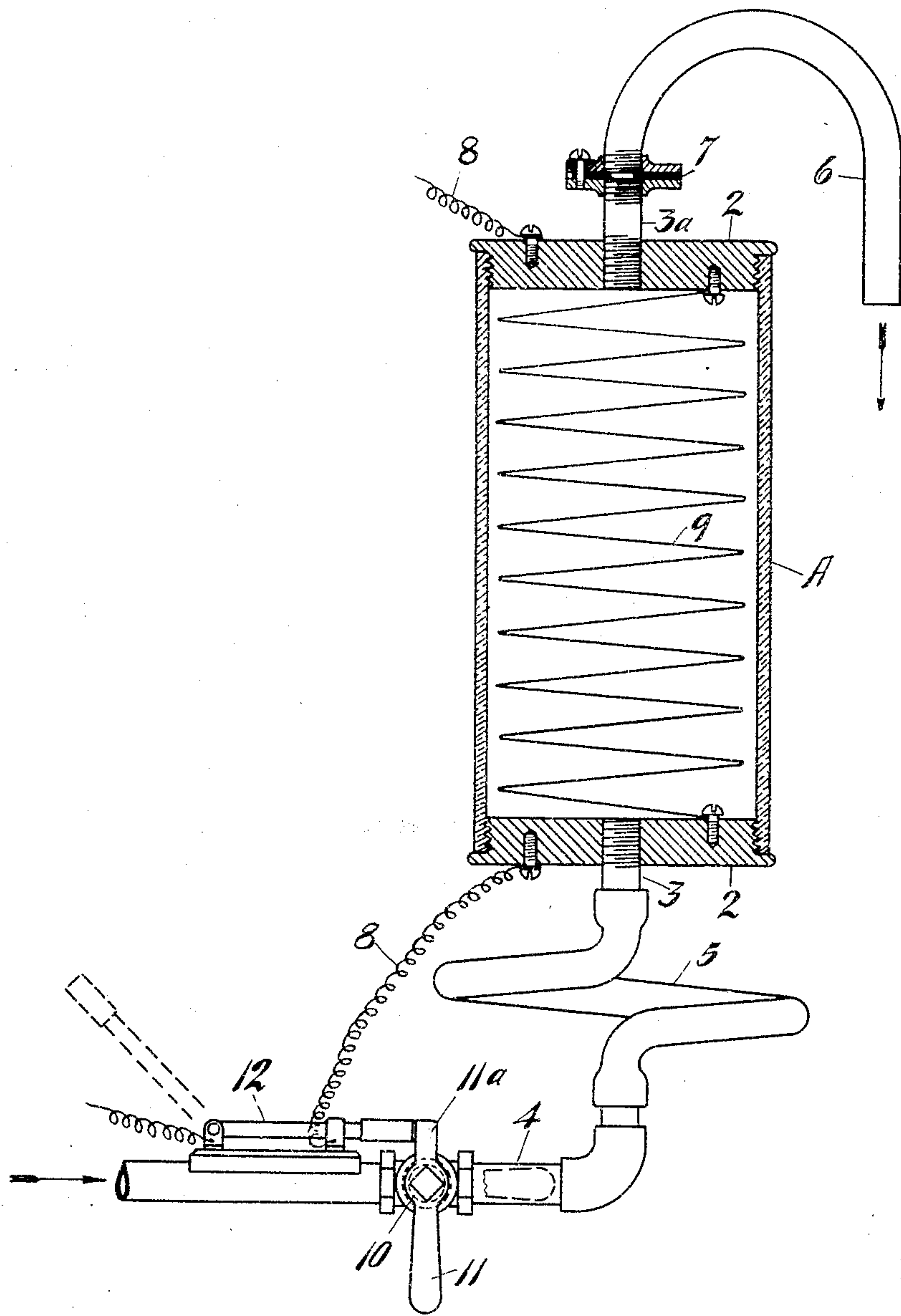


No. 782,525.

PATENTED FEB. 14, 1905.

M. H. SHOENBERG.
ELECTRICAL WATER HEATER.
APPLICATION FILED JUNE 30, 1904.



WITNESSES,
Chas. E. Chapin.

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UNITED STATES PATENT OFFICE.

MILTON H. SHOENBERG, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO
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ELECTRICAL WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 782,525, dated February 14, 1905.

Application filed June 30, 1904. Serial No. 214,829.

To all whom it may concern:

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

My invention relates to an apparatus which is designed for continuously heating a flowing stream of water.

It consists in the combination with an insulated heating-chamber having supply and discharge passages at opposite ends of an electrical conductor located within said chamber and immersed in the liquid to be heated and in the combination and arrangement of mechanism, which will be more fully explained by reference to the accompanying drawing, which is a section through my invention.

As shown in the drawing, A is a chamber of any suitable length and diameter. This chamber is made of porcelain, hard rubber, or other equivalent insulating material and has metal ends, as at 2. Supply and discharge pipes 3 and 3" are connected, respectively, with the lower and upper ends of the cylinder or chamber A. The inlet-pipe 3 is connected with a supply-pipe 4 by a pipe 5, made of insulating material. This pipe may be conveniently made of flexible rubber. The discharge-pipe 3" has a flange to which is bolted the flange of the conducting-pipe 6, and between these two flanges is secured an insulating-washer or equivalent device, as at 7. The apparatus thus constructed is entirely insulated from short circuits, and the conducting-wires 8 are connected by suitable binding-posts with the metal heads 2 of the chamber A. Between these metal heads a coil of any suitable conducting-wire is extended, as shown at 9. This wire having a less resistance than that of the surrounding water, the electrical current will pass through the wire between the heads 2 and complete the circuit through the wires 8 with any suitable source of electrical energy. The size of the coil 9 will be such that it will offer sufficient resistance so that the passage of the current

will heat the wire sufficiently to impart heat to the water flowing through the chamber A.

In order to control the water-supply, I have shown a cock or faucet, as at 10, having a lever arm or handle 11 fixed to its outer end, and this handle may have an extension at its opposite end, as shown at 11^a.

The conducting-wires 8 of the apparatus and the source of electrical energy are connected with a suitable switch, as at 12, which may be closed to allow an electrical current to pass or opened to cut it off. The switch which I have here shown is of the form known as the "knife-switch," in which the lever 12 is fulcrumed to one post to which one of the conducting-wires is connected and is capable of making contact with another post, insulated from the first one and with which the other conducting-wire is connected. When the lever is thus closed to complete the electrical circuit, the movable end of the lever stands in line with the fixed lever or handle 11 or its extension 11^a, and under these conditions the faucet must be opened when the switch is closed, and before the faucet can be closed the switch must be opened in order to allow the handle or lever of the faucet to be turned to close the water-supply. In this manner I insure the cutting off of the electrical current before the water-supply can be cut off, and thus protect the conducting-wire from being destroyed by overheating.

It should be understood that the words "wire coil" or "resistance-coil" are intended to indicate any suitable conductor in which such resistance may be opposed to the passage of an electrical current as will develop sufficient heat to raise the temperature of the water within which it is located and that the form of the conductor may also be varied to suit requirements or taste.

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

1. In an electrical water-heater, a casing formed of insulating material and having supply and discharge pipes, a resistance-coil ex-

tending through said casing, supply and discharge pipes connecting with the chamber, and connections whereby an electrical current is passed through said coil.

5 2. In an electrical water-heater, a casing composed of insulating material having metallic ends, supply and discharge pipes connecting with said ends, means for insulating said pipes from the casing, an electrical resistance-coil extending between the metallic heads of
10 the casing and into direct contact with which the fluid flows in its passage from the supply-pipe to the discharge-pipe, and conducting-wires extending from the heads of the casing
15 to a source of electrical energy.

3. In an electrical water-heater, an insulated chamber an electrical resistance-coil extending through said chamber conducting-wires by which an electric circuit may be es-
20 tablished through said coil and a controlling-switch therefor, insulated water-supply and discharge pipes connecting with opposite ends of the chamber, a cock or faucet by which the water-supply is controlled, and a switch mem-

ber in the electric circuit and movable into 25 and out of the range of action of the faucet whereby said faucet is prevented from closing while the electrical switch is closed.

4. In an electrical water-heater an insulated water-chamber with insulated supply and 30 discharge pipes, an electrical resistance-coil extending through the chamber in the direct path of the water, conducting-wires connected with the coil, a controlling-switch with which said wires connect, a cock to control 35 the flow of water through the chamber, said cock having an operating-handle provided with a stop with which the switch is adapted to engage, a stop whereby the switch must be opened before the water-cock can be closed. 40

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

MILTON H. SHOENBERG.

Witnesses:

S. H. NOURSE,
EUGENE W. LEVY.