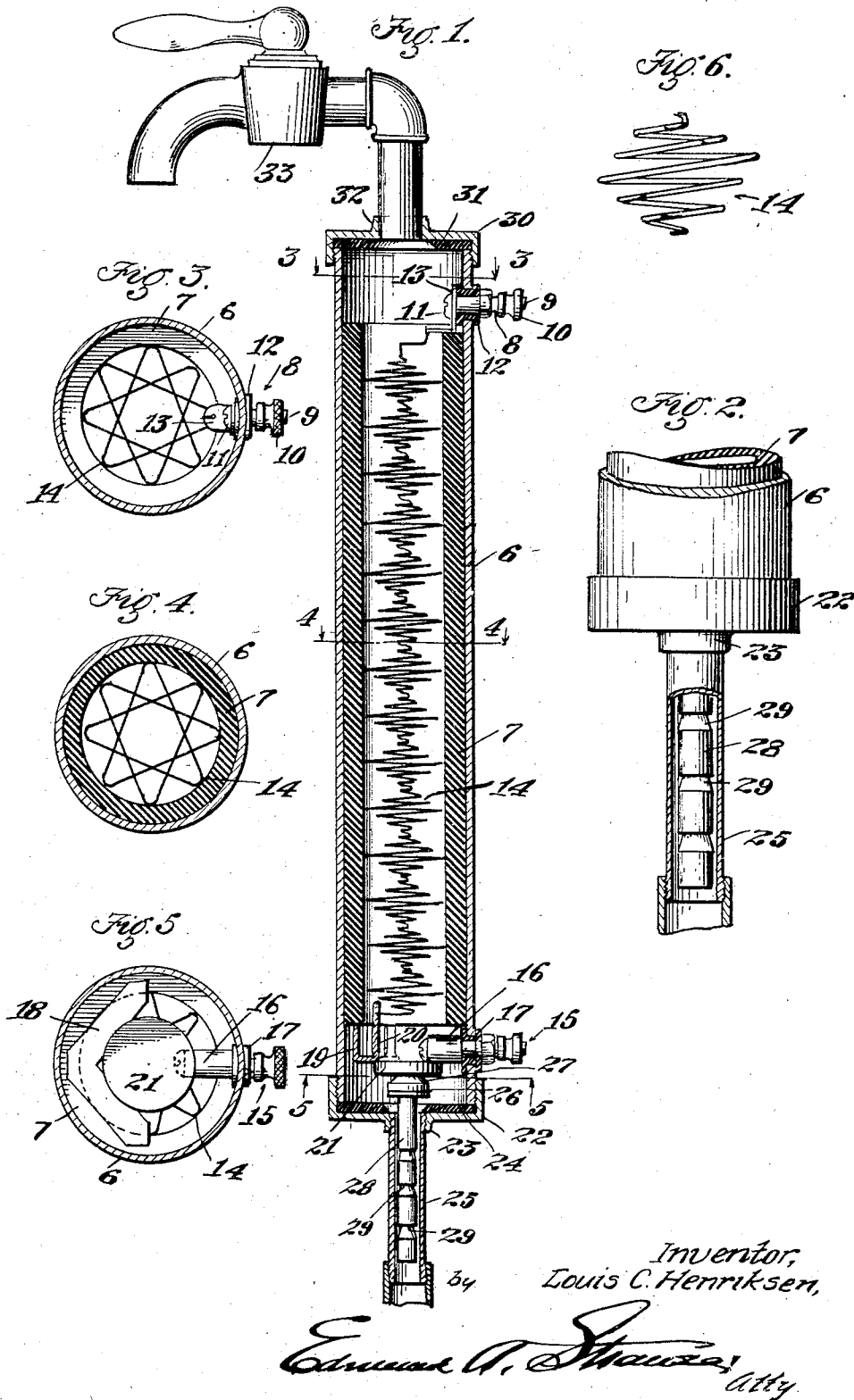


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ELECTRIC WATER HEATER.
APPLICATION FILED MAY 19, 1915.

1,163,536.

Patented Dec. 7, 1915.



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ELECTRIC WATER-HEATER.

1,163,536.

Specification of Letters Patent.

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Application filed May 19, 1915. Serial No. 29,196.

To all whom it may concern:

Be it known that I, LOUIS C. HENRIKSEN, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented new and useful Improvements in Electric Water-Heaters, of which the following is a specification.

This invention relates to hot water heaters and especially to heaters of the instantaneous type.

The main object of this invention is to provide a heater which may be connected into the piping system of a house and which will be automatically operated by the flow of water through the system.

Another object is to provide a heater having an electrical resistance coil inclosed in a container which is in communication with the house system and an electrical contact making means for closing the electrical circuit which will be operated by the flow of water so that if any valve in the system is opened for the discharge of water, the heater will be thrown into operation.

It is a further object to provide an electrical heater which comprises a container embodying the heating element and a valve which will close and prevent the circulation of heated water contained therein back into the feeder system when water is not being used in the house system.

A still further object is to provide a heater with a resistance coil which is wound in a manner to present a large surface to the water.

I attain these objects by means of the embodiment of my invention disclosed in the accompanying drawing, in which:

Figure 1 is a sectional elevation of the heater. Fig. 2 is an enlarged fragmentary detail elevation with parts broken away to show the valve contact making means. Fig. 3 is a horizontal section on the line 3—3 of Fig. 1. Fig. 4 is a horizontal section on the line 4—4 of Fig. 1. Fig. 5 is a horizontal section on the line 5—5 of Fig. 1, looking in the direction indicated by the arrows. Fig. 6 is an elevation of one unit of the heating element.

More specifically, 6 indicates a tubular member which may be of metal such as brass.

7 is an insulating tube closely fitting the tubular member 6 and preferably formed of porcelain, and 8 a terminal which is con-

nected into the walls of the tubular member 6 and insulated therefrom. The terminal 8 comprises a threaded stem 9 adapted to receive a thumb nut 10 and a half round head 11 provided with a groove for a screw driver. A bushing 12 insulates the terminal post 8 from the tubular member 6. An angle member 13 is disposed upon the post 8 and in contact with the head 11. Connected to the angle member 13 is one end of a heating element which comprises units as illustrated in Fig. 6 forming a star skeleton expanded laterally of the plane of the star, thereby presenting a large surface to the water which will pass through the tube 7. A terminal post 15 is disposed near the lower end of tubular member 6 and comprises a threaded stem having a head grooved to receive a screw driver. A member 16 is mounted upon the stem of the post 15 and between the head of the post and a bushing 17 which insulates the post from the tubular member 6.

The member 16 provides one contact for a circuit closing device. Connected to the lower end of heating element 14 is an angle member 18 which is provided with upturned portions 19 and 20. The upturned portion 20 provides the point of connection to the heating element. The legs of the angle member provide a contact of the circuit closing device. A metallic disk 21 is disposed below contact members 16 and 18 and is adapted to be moved against them to close an electrical circuit between the members 16 and 18. A threaded cap 22 provided with a threaded nipple 23 is secured to the tubular member 6 by means of threads or any other well known attaching means. A washer 24 is interposed between the cap 22 and tubular member 6 to form a tight non-leak joint.

A tube 25 is secured in the nipple 23 and the lower end thereof is attached to the piping for the house. A valve 26 which has an insulated head 27 and a stem 28 is disposed within the tubular member 6 with its stem extending into the tube 25. Disk 21 is secured to insulation 27 so that the disk moves with stem 28. Stem 28 is provided with grooves 29 which have a substantially right angle shoulder at the upper portion and form surfaces against which the water impinges in its flow into the heater. A cap 30 is secured to the upper end of the tubular member 6, a washer 31 being interposed between the cap and tubular member to pro-

vide a non-leak joint. The cap 30 has a threaded nipple 32 into which piping to the hot water is attached.

33 indicates an ordinary faucet.

- 5 Terminal posts 8 and 15 are adapted to be connected to any source of electrical energy.

Referring particularly to the construction shown in Fig. 1 with faucet 33 closed, no
10 water is flowing through the system, valve 26 will be seated and the electrical circuit is open by reason of the break between contact points 16 and 18. The valve 26 prevents water in the heater from circulating
15 back into the system beyond the heater. Upon opening the faucet 33 the pressure of water lifts valve 26 and the inflowing water impinging against the shoulders forming recesses 29 and the head 27 will maintain the valve in its upward position in
20 which it forces disk 21 against terminals 16 and 18, thereby closing the electrical circuit. The flow of electricity along the heating element 14 causes heating of the same
25 and the water flowing through the heater comes into intimate contact with the several units so that it is thoroughly heated. When faucet 33 is closed valve 26 drops due to its weight and entraps water which has been
30 heated in the heater, thus preventing the loss of heated water back into the cold water part of the system.

What I claim is:

1. An electrical water heater, comprising
35 a tubular member adapted to be connected to a water system, an insulating tube disposed therein, a heating element disposed in said insulating tube, a terminal connected to one end of said heating element and
40 adapted to be connected to a source of electrical energy, a contact member connected

to one pole of a source of electrical energy, a contact member connected to the other end of said heating element, a terminal disposed adjacent said first named contact member
45 adapted to be connected to said source of electrical energy, a reciprocable contact member disposed to close the circuit, and a valve including a stem with channels thereon adapted to be acted upon by the
50 impact of flowing liquid, and disposed to actuate said reciprocable contact member.

2. An electrical water heater, comprising a liquid container, a heating element disposed in said container, means to supply
55 electrical energy to said heating element, one terminal thereof connected to said heating element, a stem, a reciprocable disk of electrical conducting material mounted upon said stem and disposed for engagement with
60 a terminal of the heating element and the other terminal of the source of electrical energy, said stem being provided with impact surfaces for the water.

3. An electrical water heater, comprising
65 a liquid container, a heating element disposed in said container, means to supply electrical energy to said heating element, one terminal thereof connected to said heating element, a tubular inlet conduit connected to said container, a stem, a reciprocable disk of electrical conducting material mounted upon said stem and disposed for engagement with a terminal of the heating
70 element and the other terminal of the source of electrical energy, said stem being disposed in said tubular inlet conduit and provided with impact surfaces for the water.

In witness that I claim the foregoing I have hereunto subscribed my name this
80 30th day of April, 1915.

LOUIS C. HENRIKSEN.