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No. 891,254.

PATENTED JUNE 23, 1908.

H. M. HILL.
ELECTRICAL WATER HEATER.
APPLICATION FILED JULY 29, 1907.

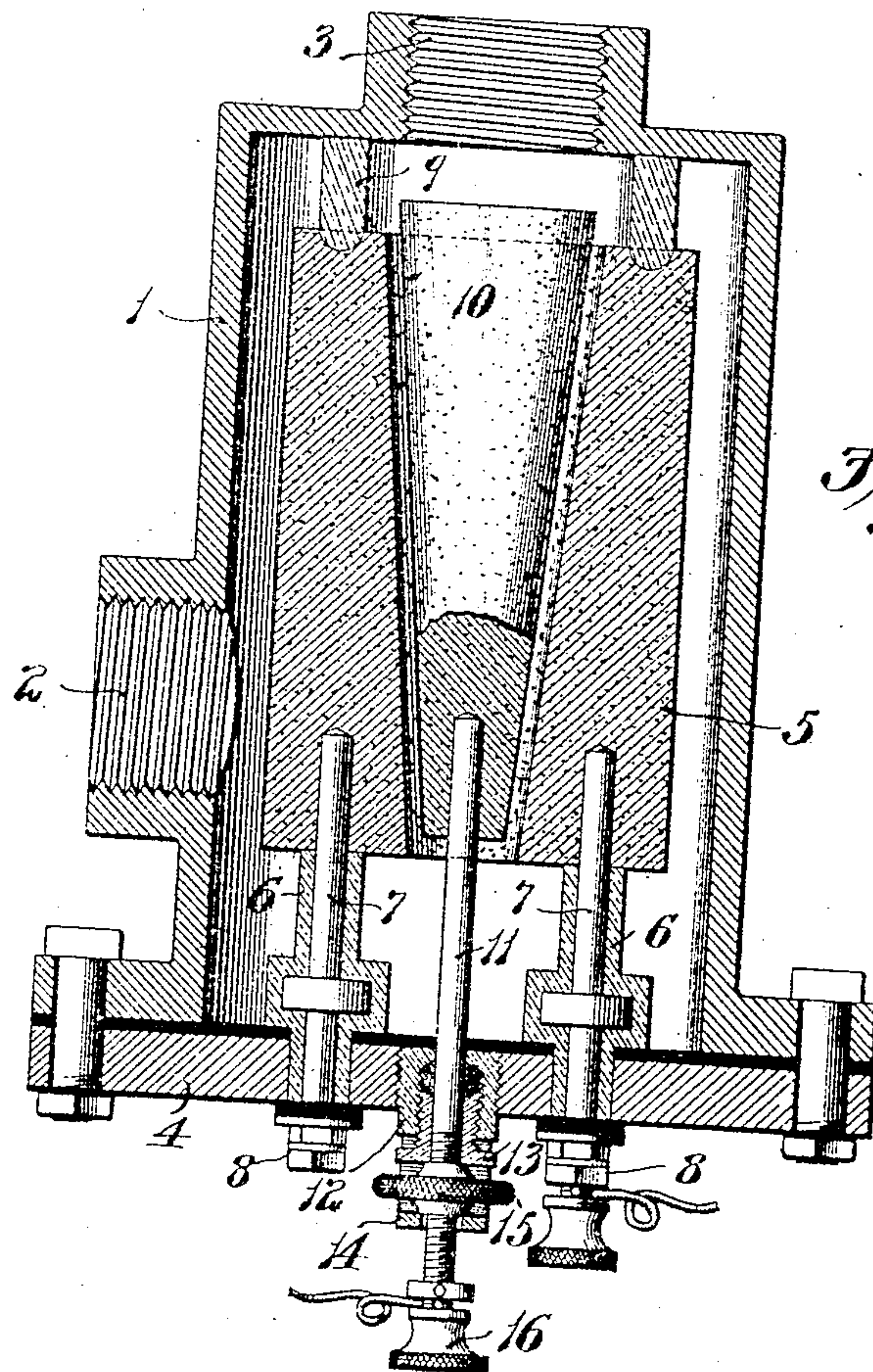


Fig. 1.

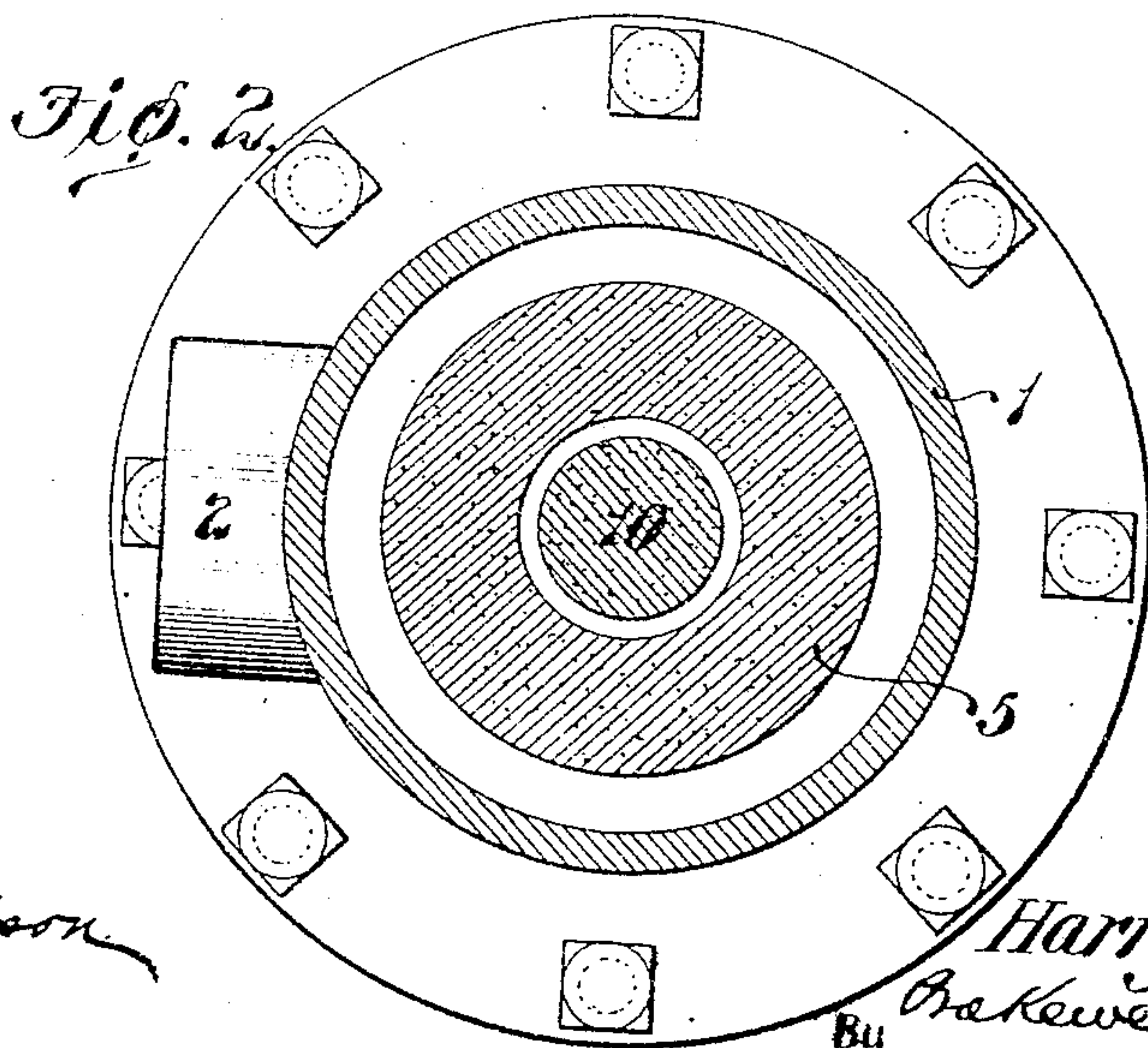


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

HARRY M. HILL, OF ST. LOUIS, MISSOURI, ASSIGNOR TO HILL ELECTRICAL MANUFACTURING COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

ELECTRICAL WATER-HEATER.

No. 891,254.

Specification of Letters Patent.

Patented June 23, 1908.

Application filed July 29, 1907. Serial No. 386,163.

To all whom it may concern:

Be it known that I, HARRY M. HILL, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Electrical Water-Heaters, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical sectional view through my improved electrical water heater; and Fig. 2 is a horizontal sectional view through the same.

This invention relates to a new and useful improvement in electrical water heaters, the object being to construct a device of the character described which is capable of being adjusted from the exterior, whereby the contiguous faces of the electrodes may be moved toward or from each other for the purpose of regulating the available space through which the water to be heated passes. It has been determined that waters from different localities possess different resisting properties so far as currents of electricity are concerned, and consequently different waters which are to be heated to the same or approximately the same degree of heat require different adjustments of the electrodes.

In the drawings, 1 indicates the casing or shell provided with a water inlet opening or tap 2 and a water exit opening or tap 3. One end of this casing is open so that the electrodes may be bodily removed from or inserted into the shell.

4 is a cap plate covering the open end of the casing, said cap plate being secured in position by suitable fastening devices and insulated from the shell 1.

5 is the outer electrode, preferably in the form of a cylinder having a tapered opening throughout its length, said electrode being supported from the cap 4 by suitable shouldered insulating posts 6. Through these posts 6 pass electrical conductors 7 having appropriate shoulders to prevent endwise movement in the posts, the outer ends of these conductors being provided with suitable threads to receive nuts 8 which form binding posts for the connection of the wire. These conductors 7 are preferably insulated from the cap piece 4.

9 is a ring of insulating material supported in a groove in the upper end of the outer elec-

trode 5, said ring 9 surrounding the opening in the electrode 5 and extending between the upper end of said electrode and the upper end wall of the housing or shell 1. In this manner communication between the upper end of the opening in the electrode 5 and the space between said electrode and the shell 1 is closed at this point by the ring 9.

10 is an inner electrode of an inverted conical shape, said electrode being arranged in the opening in the electrode 5, and being supported in position by a metallic conducting post 11. This post 11 passes through suitable packing box 12, preferably made of insulating material, the gland 13 of which being provided with a loop-shaped portion 14 which holds in position an adjusting nut 15 threaded on the rod 11. By turning the nut 15, the electrode 10 may be adjusted vertically, such movement increasing or diminishing the water space between said electrode 10 and the surrounding electrode 5. The outer end of post 11 is provided with a nut 16 forming a suitable binding post.

In effecting the adjustment of the electrode 10 it is obvious that the rod 11 must be held stationary while the nut 15 is being turned. This of course could be done by the use of a feather or key on the rod 11, but I prefer to omit this and rely on the operator holding said rod stationary by means of the nut 16, or rotating said rod and holding the nut 15 stationary.

I am aware that minor changes in the construction, arrangement and combination of the several parts of my device can be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In an electrical water heater, the combination with a shell or casing, of a cylindrical outer electrode arranged therein, a solid inner electrode arranged within the cylindrical electrode and providing a space for the passage of water therebetween and said outer electrode, said shell or casing being provided at its upper end with a discharge opening for the heated water in axial alinement with the inner electrode, and an insulation ring interposed between the outer electrode and the upper wall of the shell or casing to prevent the water from flowing over the upper edge of the outer electrode and thus

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cause it to pass through the discharge opening; substantially as described.

2. In an electrical water heater, the combination with a shell or housing provided with an open end, a cap piece for closing said open end, a cylindrical electrode arranged in said shell or housing and insulation posts secured to said cap piece for supporting said electrode in position; substantially as described.

3. In an electrical water heater, the combination with a shell or housing, of an electrode arranged therein, a post for supporting said electrode in position in said shell or housing, and means on said post for adjusting said electrode; substantially as described.

4. In an electrical water heater, the combination with a shell or housing open at one end, a cap piece for closing said open end, an outer cylindrical electrode, insulation posts for supporting said cylindrical electrode in position, electrical conductors passing through said post and said electrode, an inner electrode, a post for supporting said inner electrode in position, and means on said post for adjusting said inner electrode; substantially as described.

5. In an electrical water heater, the combination with an open-ended shell or casing, of a cap piece for closing the open end of said shell or casing, two electrodes supported from said cap piece, one of said electrodes, the outer, being in the form of a cylinder and being spaced from the end wall of the shell or housing by an insulation ring, and the other

of said electrodes being supported by a post from the cap piece, and means cooperating with said post for adjusting the cap piece; substantially as described.

6. In an electrical water heater adapted for heating flowing water and provided with inlet and outlet passages for the flow of water therethrough, the combination with two electrodes so located as to leave a liquid channel therebetween, one of said electrodes being adjustable from the exterior, with its face at an angle to its line of adjustment, and exteriorly arranged means for adjusting said electrode; substantially as described.

7. In an electrical water heater adapted for heating flowing water and provided with inlet and outlet passages for the flow of water therethrough, the combination with an electrode having an inclined face, of an adjustable electrode having an inclined face at an angle to its line of adjustment and so disposed as to leave a passage between said electrodes, and exteriorly arranged means for adjusting the last-mentioned electrode so as to regulate the area of said passage, thereby regulating the quantity of water passing through the same; substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this sixteenth day of July 1907.

HARRY M. HILL.

Witnesses:

F. R. CORNWALL,
GEORGE BAKEWELL.