

W. R. RAY.
ELECTRICAL WATER HEATER.
APPLICATION FILED SEPT. 28, 1910.

991,244.

Patented May 2, 1911.

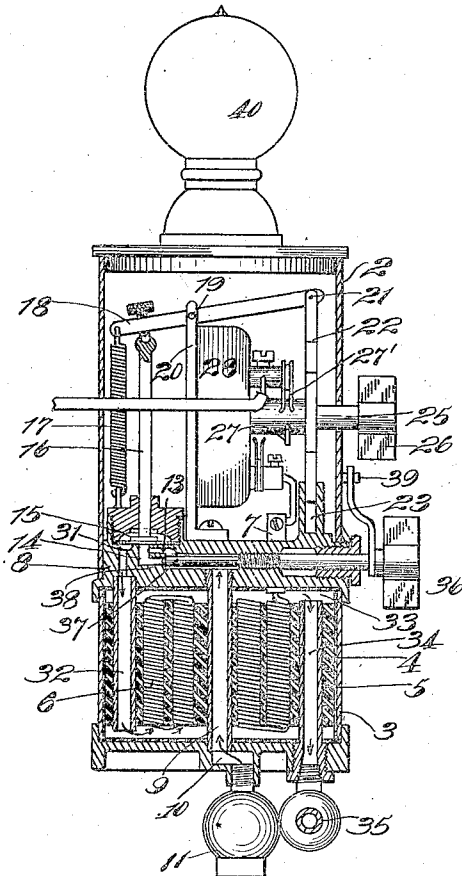


Fig. 1.

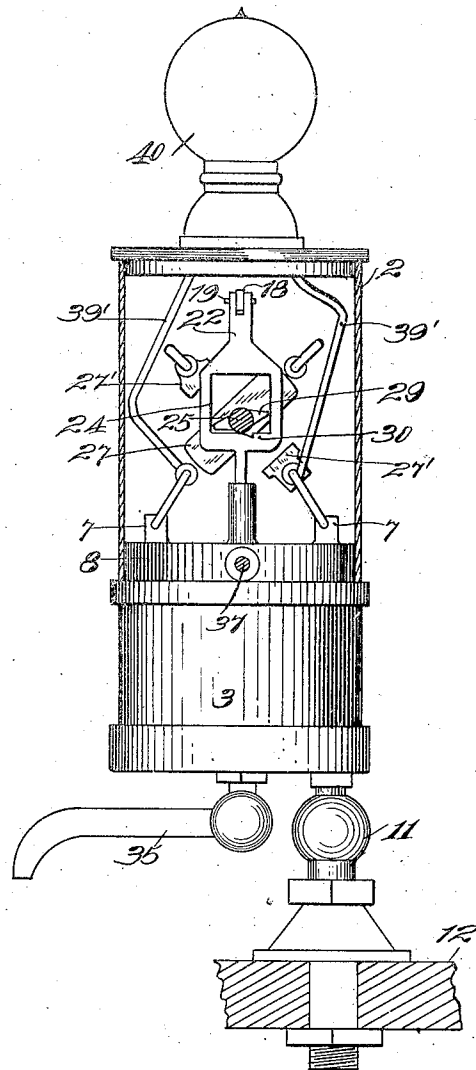


Fig. 2.

Witness:

J. E. Maynard,
Charles Pickles

Inventor;
William R. Ray;
By Geo. H. Strong.
his Atty.

UNITED STATES PATENT OFFICE.

WILLIAM R. RAY, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR TO W. S. RAY MANUFACTURING CO. INC., OF SAN FRANCISCO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

ELECTRICAL WATER-HEATER.

991,244.

Specification of Letters Patent.

Patented May 2, 1911.

Application filed September 28, 1910. Serial No. 584,353.

To all whom it may concern:

Be it known that I, WILLIAM R. RAY, citizen of the United States, residing at 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.

This invention relates to water heating apparatus, and more particularly electric water heating devices.

The object of this invention is to provide a means whereby the required volume of water may be instantaneously heated for immediate use; to provide means whereby when a current controlling switch is manipulated the flow of water is automatically controlled; to provide means whereby the volume of the water and its temperature may be independently controlled from the switch controlling mechanism.

This invention consists of the parts and construction and combination of parts as hereinafter more fully described and claimed having reference to the accompanying drawings, in which—

Figure 1 is a vertical transverse section through the water heater. Fig. 2 is a front sectional elevation of the same.

In the present embodiment of my invention I employ a suitable casing divided into upper and lower sections 2 and 3. Within the lower section 3 is placed an insulating member or block 4 provided with a plurality of perforations 5 and through a portion of the perforations is run a plurality of serially connected bare heating coils 6. The terminals of the serially connected coils are electrically connected to binding posts 7 which are mounted in a transverse valve plate 8.

Water is admitted into the heater and up through the insulating block 4 through a central tube 9 which is secured to the central valve plate 8 and open at its lower end so that connection may be had with a transverse port 10 to which water is conducted through a suitable fitting 11 which may be secured in any appropriate manner to a convenient supporting member, as a washstand or other plate, 12. The water flowing upwardly and out of the central pipe 9 passes through a small by-pass 13 into a chamber 14. The escape of the water from the chamber 14 is controlled by a suitable valve 15 which is normally seated by a suitable rod 16 under tension of a spring 17 which is con-

nected to one end of a lever 18 pivoted at 19 to a suitable supporting bracket 20 which is secured upon the valve plate 8.

For the purpose of releasing the valve 15 and allowing the water to pass from the by-pass 13 into the valve chamber the opposite end of the lever 18 is connected at 21 to a suitable link or yoke member 22 which is guided at its lower end in a bearing 23. The link 22 is formed approximately at its center with a polygonal perforation indicated at 24 and through this perforation projects a switch stem 25 having at its outer end a switch 26 and which carries switch leaves 27 of a standard form of rotary snap switch, indicated at 28.

Secured upon the switch stem 25 are oppositely disposed cam shaped projections 29, which are effective when the switch 26 is turned to engage a transverse wall 30 of the link 22, and depress the same sufficiently to oscillate the lever 18 upon its fulcrum 19, thus relieving the valve rod 16 from the tension of the spring 17 and allowing the pressure of the water in the chamber 14 to lift the valve 15 and pass downwardly through a duct 31 into a tube 32 through which the water passes to the lower portion of the lower casing 3. From thence the water passes upwardly through the perforations 5 and through the heating coils 6 and eventually is discharged from the upper portion 33 through a pipe 34 out of the nozzle 35. If the switch handle be turned a certain degree the end of one of the cams 29 will depress the actuating link 22 sufficiently to allow the valve 15 to be opened by the pressure of the water without actuating the blades 27 of the switch; further rotation of the switch stem 25 causing the switch plates 27 to be snapped over into engagement with their respective contact brushes 27' and complete a circuit through the several serially connected heating coils 6 thus heating the water as it flows upwardly through the coils.

For the purpose of increasing the volume of water discharged from the nozzle 35 to more than that which can pass through the by-pass 13, a handle 36 is provided by which may be turned a needle valve 37 the end of which rests upon a seat 38 which is adjacent the water chamber 14. Thus by turning the valve handle 36 to the left away from its stop 39, a whole turn, the end of the needle valve 37 will uncover the valve seat 38 and

permit a larger volume of water to flow upwardly into the chamber 14 and thence pass the valve 15 into the tube 32.

For the purpose of indicating that current is flowing through the heating coils of the heater the binding posts 7 may be connected by suitable wires 39 to a lamp 40 thus illuminating the same when current is flowing through the apparatus. When the current is broken by the switch 25 the illumination of the lamp 30 ceases.

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

1. The combination in an electric water heating apparatus of a water receiving cylinder, a perforated insulating member secured within the walls of said cylinder and having transverse perforations, a plurality of serially connected electrical heating units within said perforations, a water conductor passing through said insulating member, a valve plate to which the upper end of the water conductor is secured, a valve within the valve plate for controlling the flow of water, a rotary snap switch mounted upon said plate, and mechanism controlled by the switch whereby water may be admitted by a controlling valve to flow into the water heating chamber.

2. The combination in a water heater of a suitable casing, a valve plate secured within the casing, water heating coils mounted within the heating chamber of the casing, an insulating block having perforations through which the water heating coils are threaded, an inlet pipe passing through said insulating member, a valve controlling the discharge of water from the inlet pipe into the heating chamber, and a rotary snap switch effective upon said valve to release the latter when the switch is actuated.

3. In a water heater, a suitable casing comprising a water containing section, electrical heating units serially connected and mounted within said casing, an insulating block in which the heating coils are supported, an inlet pipe connected to the water supply, a valve controlling the passage of water from the supply pipe to the water heating chamber, a rotary snap switch, and means whereby the water controlling valve is released to allow the flow of water when the switch stem is actuated.

4. An electrical water heating apparatus comprising a plurality of serially connected electrical heating units, an insulating block supporting said heating units, a casing surrounding said insulating block, a supply pipe passing through said insulating block and secured in a valve plate, a valve normally effective to control the flow of water from the supply pipe into the water heating chamber, a rotary switch, and means operative by said switch to release the water con-

trolling valve and allow the pressure of water to lift the valve and pass into the water heating chamber when the switch stem is actuated.

5. An electrical water heating apparatus comprising a plurality of serially connected electrical heating units, an insulating block supporting said heating units, a casing surrounding said insulating block, a supply pipe passing through said insulating block and secured in a valve plate, a valve normally effective to control the flow of water from the supply pipe into the water heating chamber, a rotary switch, and means operative by said switch to release the water controlling valve, and allow the pressure of water to lift the valve and pass into the water heating chamber when the switch stem is actuated, said means including a fulcrumed lever, a link mounted on one end of the lever adapted to be reciprocated when the valve stem is turned, and a spring connected to the other end of the lever and normally effective to press the water controlling valve upon its seat.

6. A water heating apparatus comprising a water receiving cylinder, serially connected heating units within said cylinder, a suitable insulating block supporting the several heating coils, means for supplying a volume of water to the heating chamber, a valve controlling the supply of water, an electric rotary snap switch having poles connected to the terminals of the heating coils, and valve controlling mechanism operated conjunctively with the switch.

7. A water heating apparatus comprising a water receiving cylinder, serially connected heating units within said cylinder, a suitable insulating block supporting the several heating coils, means for supplying a volume of water to the heating chamber, a valve controlling the supply of water, an electric rotary snap switch having poles connected to the terminals of the heating coils, valve controlling mechanism operated conjunctively with the switch, and a valve whereby the volume of water passing through the water heating chamber may be increased.

8. A water heater comprising a water heating chamber, a valve plate closing one end of the chamber having a by-pass, a water supply for the admission of water to the by-pass, a valve controlling the flow of water from the by-pass into the water heating chamber, and an electrical rotary snap switch having terminals connected to the heating coils and provided with means for the release of the controlling valve whereby the latter when released may be lifted by the pressure of the water to allow it to flow through the by-pass and into the water heating chamber.

9. A water heater comprising a water

heating chamber, a valve plate closing one
end of the chamber having a by-pass, a
water supply for the admission of water to
the by-pass, a valve controlling the flow of
5 water from the by-pass into the water heat-
ing chamber, an electrical switch having ter-
minals connected to the heating coils and
provided with means for the release of the
controlling valve, whereby the latter when
10 released may be lifted by the pressure of the
water to allow it to flow through the by-
pass and into the water heating chamber.
and a valve mounted in said valve plate
which when opened will allow a larger
15 volume of water to pass through the plate
into the water heating chamber.

10. In a water heater, a water heating
chamber, a heating unit therein, said cham-
ber having an inlet and an outlet, a valve
controlling the inlet, an electrical switch in 20
circuit with the heating unit, and connec-
tions between the switch and the valve,
whereby the valve is released to be opened
by water pressure from the source of supply.

In testimony whereof I have hereunto set 25
my hand in the presence of two subscribing
witnesses.

WILLIAM R. RAY.

Witnesses:

JOHN H. HERRING,
KATHERINE DONGERY.