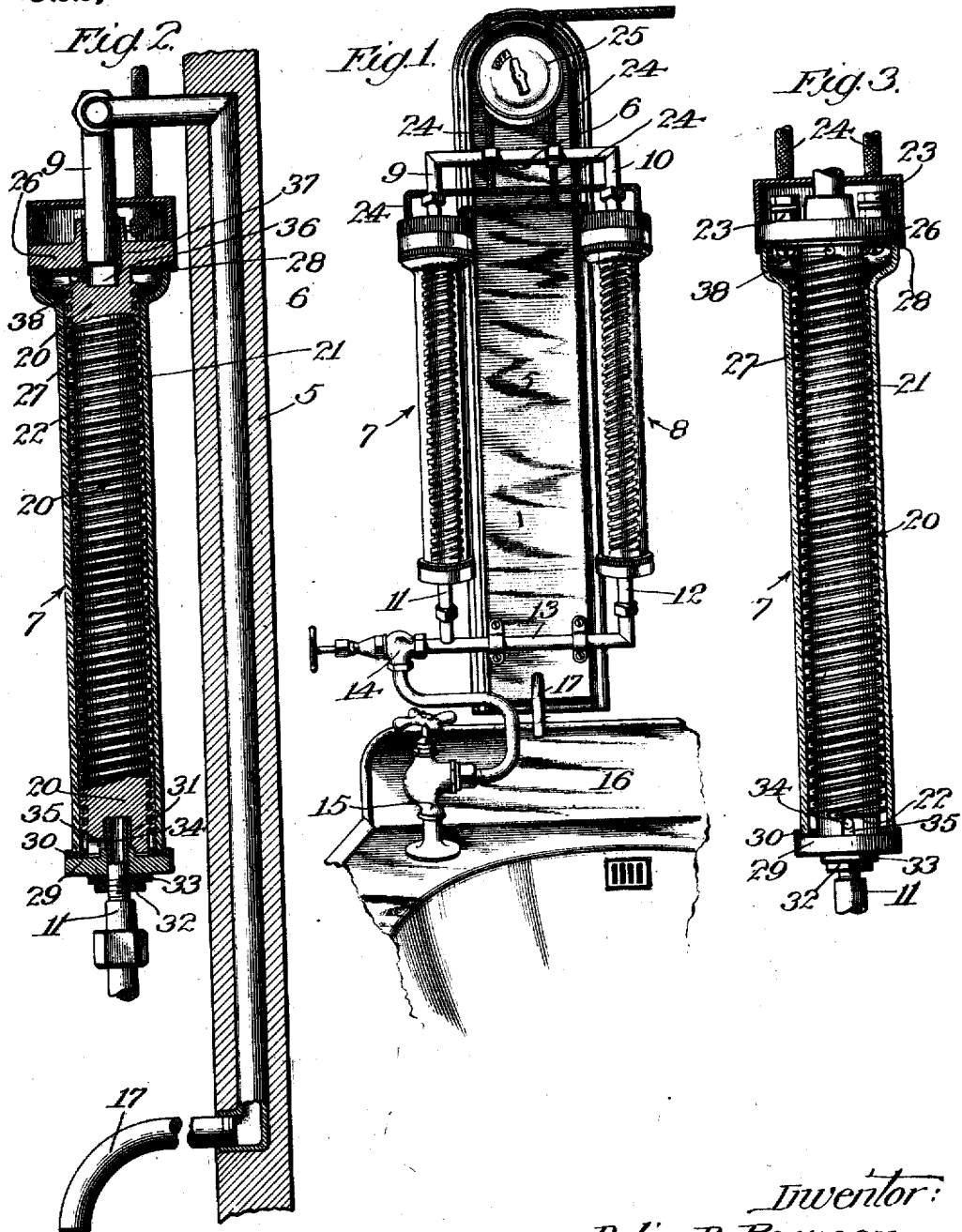


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ELECTRICAL WATER HEATER.
APPLICATION FILED JULY 8, 1907.

Patented May 18, 1909.

922,333.



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UNITED STATES PATENT OFFICE.

DELIA B. RAWSON, OF LOS ANGELES, CALIFORNIA.

ELECTRICAL WATER-HEATER.

No. 922,333.

Specification of Letters Patent.

Patented May 18, 1909.

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To all whom it may concern:

Be it known that I, DELIA B. RAWSON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles 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 improved means for heating water by means of a current of electricity passing through a coil of wire of high resistance, and it is the object of my invention to provide a heater which will withstand sharp changes of temperature without any injury thereto.

A further object is to provide a heater so constructed that it may be easily dismantled and reassembled.

I accomplish these objects by means of the device described herein and illustrated in the accompanying drawings, in which:—

Figure 1,—is a perspective view of my complete heater as it appears installed in connection with a wash bowl. Fig. 2,—is an enlarged vertical section of the heater showing the water passages therethrough. Fig. 3,—is a vertical section taken at right angles to the section of Fig. 2.

Referring to the drawings 5 designates a base preferably formed of artificial stone and cast with discharge tube 6 for the heater embedded therein. I have shown a heater composed of two units 7 and 8 whose discharge pipes 9 and 10 are connected to the common discharge pipe 6 at the top of the heater. Induction pipes 11 and 12 of the two units connect to a common supply pipe 13 controlled by valve 14 which is connected to a source of water supply 15 shown in this particular instance as the cold water cock of a wash bowl 16. The lower end of discharge pipe 6 is turned outwardly and interiorly threaded for the reception of a downwardly curving spout 17 which projects forwardly a sufficient distance to discharge the heated water from the units into the wash bowl. As both of the units are of identical construction I will describe but one in particular.

20 designates a core of insulating material, preferably unglazed porcelain, provided with spiral grooves 21 on its cylindrical face adapted to receive resistance wires 22 whose outer ends are connected to binding posts 23 located at the top of the core. Spiral grooves 21 are two in number, the heating wire starting from the top of the core in one of the

grooves and crossing to the other groove at the bottom of the core as is clearly shown in the lower part of Fig. 3. Binding posts 23 are connected to a source of electrical supply by wires 24 through switch 25 mounted on the upper end of base plate 5, the resistance wires of the two units being connected in parallel as is plainly shown in Fig. 1. Core 20 is provided with a flange 26 on its upper end cast integrally therewith and adapted to receive the upper flared end of a glass casing, 27, the joint between the flange and the casing being made water tight by means of a rubber gasket 28. The body portion of casing 27 is just sufficiently large to fit over core 20 so that any liquid which passes through the casing from one end to the other is largely confined to a passage through spiral grooves 21. The lower end of core 20 is provided with a detachable flange 29 adapted to fit against the lower end of glass casing 27 and form a water tight joint therewith by means of gasket 30. Induction pipe 11 fits into a cavity in the lower end of core 20 being secured therein by means of cement 31, a nut 32 and gasket washer 33 on pipe 11 bearing against flange 29 and holding the same in engagement with the lower end of casing 27. A hole 34 is drilled in induction pipe 11 and a corresponding hole 35 in core 20 to provide for the outward passage of water from pipe 11 to the space between core 20 and casing 27. The upper end of core 20 is also provided with a bore 36 in which discharge pipe 9 is adapted to be cemented with cement 37, the lower end of bore 36 being connected to the space between core 20 and casing 27 by a hole 38 so that the water may pass from that space to discharge pipe 9.

In the operation of my heater water is first admitted to the units in the proper quantity and the current is then turned on by means of switch 25. Resistance wires 21 immediately become heated and the water passing through the grooves in which the resistance wires are wound is also heated in its passage from the bottom to the top of the units. The temperature of the heated water may be regulated by adjusting the quantity of water supplied to the units by means of valve 14.

It will be observed that I have utilized a core which is cast in one solid piece and which is less liable to breakage on that account than a core which is cast hollow or which is filled with a substance of different

expansion ratio from the insulating material of the core. By using a core of one piece I have produced a heater which will withstand sharp changes of temperature much more readily than one with any other kind of a core and I have further provided a heater which is simple in construction and readily dismounted and reassembled.

Having described my invention what I claim as new and desire to secure by Letters Patent is:—

1. In an electrical water heater in combination, a cylindrical insulating casing, a cylindrical insulating core within said casing, said core being provided with spiral grooves on its surface there being an annular space around the core at each end thereof within the casing, an end flange, cast integrally with said core and adapted to close one end of said casing, a feed pipe secured in one end of said core, said feed pipe being in communication with said annular space around the end of said core, an end flange mounted around said pipe, screw means to force said flange against the end of said casing, a discharge pipe secured in the other end of said core, said discharge pipe being connected to the annular space around the end of said core, an electrical heating element in the spiral grooves of said core, said element connecting to binding posts mounted on said integral end flange, and a housing adapted to cover the upper end of said core and said binding posts.

2. In an electrical water heater, in combination, a plurality of cylindrical insulating casings, each of said casings having a cylindrical insulating core therein, each of said cores being provided with spiral grooves on its surface and there being an annular space around the core at each end thereof within the casing, an integral end flange at one end of said core and adapted to close one end of said casing, said core being provided with a passage from its surface beneath said flange out centrally through its end, a pipe gasketed in the outer end of said passage, means

for insuring a water-tight joint between said flange and the end of the casing, a pipe entered centrally into the other end of said core and fixed therein, the pipe and core-end being provided with a passage establishing communication between the pipe and the aforesaid annular space, a cover piece surrounding said pipe and adapted to close the end of the casing, a nut threaded on the pipe and adapted to force said cover against the end of the casing, an electrical heating element in the spiral grooves of said core, the ends of said heating element being attached to binding posts fixed to said flange, and a housing covering said flange and binding posts.

3. In an electric water heater, in combination, a base plate, a plurality of casings mounted on said plate, said casings being enlarged at one end, spirally grooved cores fitting within said casings, said cores having at one end flanges which serve as caps for said enlarged ends of said casings, the opposite ends of said cores being reduced in diameter to form a space between the casing and core, said cores having openings located centrally of their ends, said openings leading into said spaces between the cores and casings, caps of non-conducting material for closing one end of said casings, said caps having central openings therein, a common water supply pipe, pipes connecting said common supply with the openings in the lower ends of said cores, a common discharge pipe embedded in said base plate, pipes connecting said common discharge with the openings in the upper ends of said cores, and electrical conductors lying in the spiral grooves in said cores.

In witness that I claim the foregoing I have hereunto subscribed my name this 28th day of June, 1907.

DELIA B. RAWSON.

Witnesses:

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