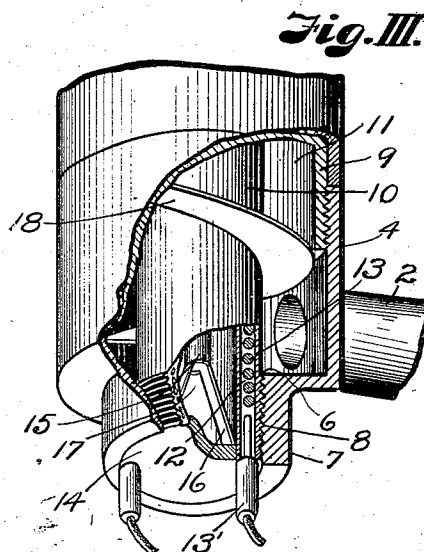
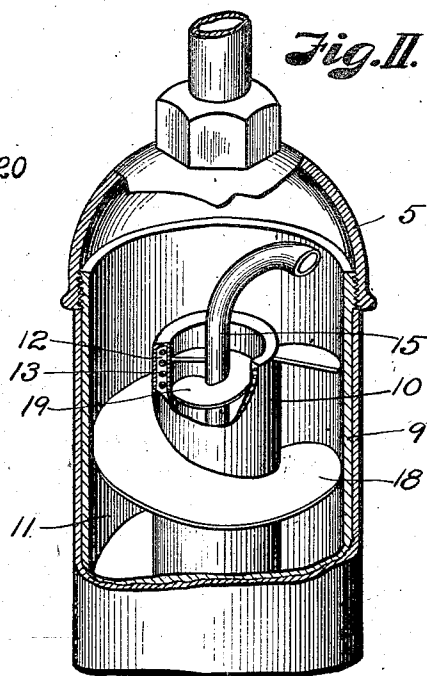
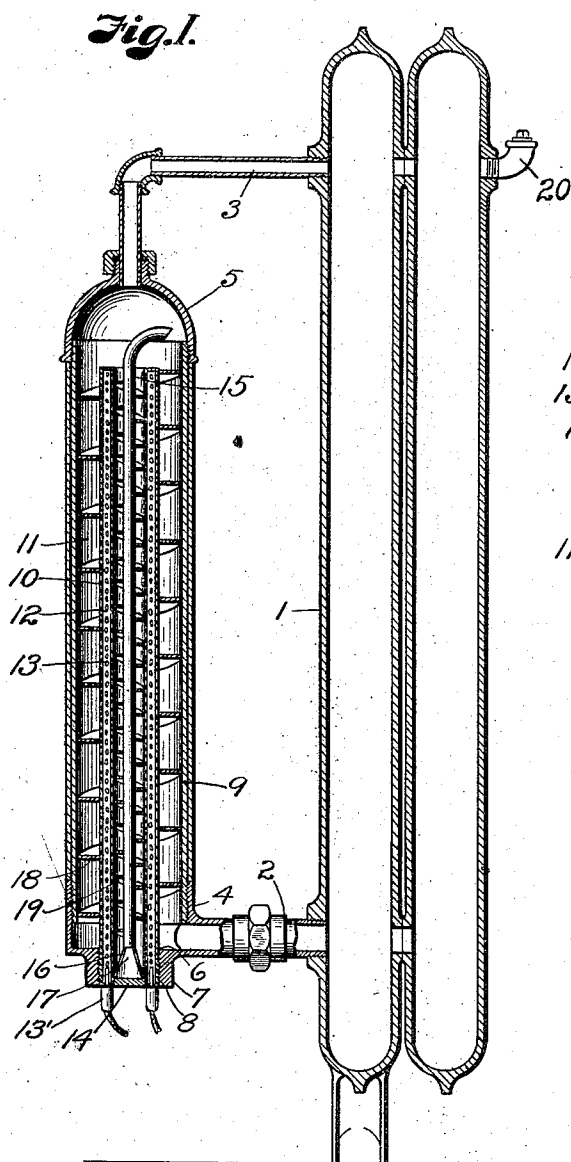


M. HAUSER, Jr.
HEATER.

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1,098,573.

Patented June 2, 1914.



WITNESSES:

Arthur W. Caps.

Leta E. Coats.

INVENTOR

Martin Hauser Jr.

BY

Arthur W. Caps.

ATTORNEY

UNITED STATES PATENT OFFICE.

MARTIN HAUSER, JR., OF KANSAS CITY, MISSOURI, ASSIGNOR OF THREE-EIGHTHS TO THOMAS WIGHT AND ONE-FOURTH TO WILLIAM D. WIGHT, BOTH OF KANSAS CITY, MISSOURI.

HEATER.

1,098,573.

Specification of Letters Patent.

Patented June 2, 1914.

Application filed April 7, 1913. Serial No. 759,526.

To all whom it may concern:

Be it known that I, MARTIN HAUSER, JR., a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Heaters; and I do declare the following to be a full, clear, and exact description of the invention, 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, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to heaters, and more particularly to an apparatus wherein water confined within a radiator is caused to circulate over a heating unit in order to maintain the confined circulating water at a desired temperature, the principal object of the invention being to provide a heater wherein the flow of water is restricted as it passes over and about the heating unit.

In accomplishing this object I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawings, wherein:

Figure I is a vertical section of a radiator equipped with my improved heater. Fig. II is an enlarged perspective of the upper portion of the heater. Fig. III is a similar view of the lower portion of the heater.

Referring more in detail to the parts: 1 designates a radiator of any ordinary type except that it has no connection with the usual service pipes.

Extending from and communicating with the lower and upper portion of one of the end coils of the radiator are pipes 2—3, the former of which carries an upwardly opening socket 4 and the latter a downwardly opening cap 5. The socket 4 has a central opening 6 in the bottom and a downwardly projecting collar 7, the interior of which registers with the opening 6 and is provided with screw threads 8, the upper portion of the socket being interiorly screw threaded to carry a drum 9 which is also threaded into the upper cap 5.

Threaded into the collar 7, and extending upwardly through the drum 9 to near the top thereof is a double tube 10 which is spaced from the drum to form an annular chamber 11, and the annular chamber 12 of which contains a heating element 13, pref-

erably consisting of an ordinary resistance coil. The lower end of the tube is closed by a cap 14, having apertures through which the switch plugs 13' may be projected to close a circuit through the coil.

Extending through the interior of the tube 10 is a conduit 15, the lower end of which is expanded to form the legs 16 which support the conduit on the cap 14 and are spaced to form ports 17 through which water may circulate from the conduit into the annular space around the conduit and within the tube 10, the upper end of the conduit being extended beyond the tube and turned laterally over the end of the tube and into the cap 5.

Seated on the bottom of the socket 4, and extending around the tube 10, is a spiral 18 which fills the space between the tube and drum so that water circulating through the latter must pass in a circuitous path about the coil tube in order to pass upwardly through the drum, the convolutions of the spiral being preferably arranged so that the travel of the water is increased three-fold.

Located within the tube and surrounding the conduit 15 is a spiral 19 which is supported at the bottom of the tube and also extends upwardly throughout the height thereof, so that water delivered to the bottom of the tube through the conduit must pass circuitously around the conduit in order to reach the top of the tube, where it may mingle with the water from the annulus 11 and rise therewith through the pipe 3 to the top of the radiator.

The upper ends of the spirals 18—19 preferably terminate at the side of the drum opposite the mouth of the conduit 15, so that the hot water rising from the annular spaces controlled by the spirals will be delivered away from the mouth of the conduit, so that relatively cooler water may be taken into the conduit to be delivered to the bottom of the heating tube.

The radiator is provided with a filling cap 20 through which the radiator may be filled with water for circulation therein, and the terminal wires may be connected with a suitable switch, although as the latter forms no part of the present invention it is not illustrated herein.

In using the heater, presuming the parts to be constructed and assembled as described, with the radiator and heater full of water,

when current is turned into the heating unit water within the tube and drum is heated and tends to rise, the rising travel of the water being retarded by the spiral so that it
5 contacts the heating tube for a longer period than if the annular spaces were not obstructed. As the hot water rises through the tube and drum and passes into the pipe
10 3 to circulate within the radiator, the cooler water flowing into the bottom of the drum through pipe 2 and socket 4 rises in the spiral path about the tube and is heated during its travel.

Owing to the fact that the inner annulus
15 is of less area than the outer, water within the inner annulus will heat quicker and to a higher temperature than the water in the outer annulus, and as the hotter water will tend to rise more rapidly, there is a tendency to draw the cooler water delivered
20 from the outer annulus down through the conduit 15 so that while a circulation is maintained throughout the entire heater, an auxiliary circulation is maintained through
25 the conduit and inner annulus, thereby inducing a quicker and more effective heating circulation of the water than if the outer annulus alone were used.

Having thus described my invention, what
30 I claim as new therein, and desire to secure by Letters-Patent, is:—

1. A heater comprising a drum, a hollow heating element contained within and spaced from the sides of the drum, and a conduit
35 having its lower end opening into the bottom of the heating element and its upper end opening to the upper portion of the drum.

2. A heater comprising a drum, a hollow heating element contained within and spaced
40 from the drum, with its lower end closed and its upper end opening to the drum, a conduit adapted for taking fluid from within the upper portion of the drum and conducting same to the bottom of the heating element,
45 and spirals surrounding said conduit and said heating element.

3. A heater comprising a heating element having an intake chamber closed at one end,
50 a conduit extending through said chamber and having its opposite ends opening into the closed end of the heating element and above said element respectively, and means for inducing circuitous travel of fluid from

the closed end of said element to the open end thereof.

4. A heater comprising a heating element, having an intake chamber closed at one end, a conduit extending through said chamber and having ports at the inner end thereof
60 through which fluid may be delivered to the closed end of said chamber and having its outer end turned laterally over the open end of the heating element, and means contained within said chamber for inducing circuitous travel of fluid from the closed end of the
65 chamber to the open end thereof.

5. In a heater, a drum having intake and exhaust conduits at opposite ends, a hollow heating element contained within the drum and having a closed end adjacent the intake
70 and an open end directed toward the exhaust, a conduit extending through the heating element, and having ports opening into the closed end of said element and over the open end thereof respectively, for the purpose
75 set forth.

6. In a heater, a drum having intake and exhaust conduits at opposite ends, a hollow heating element contained within the drum and having a closed end adjacent the intake
80 and an open end directed toward the exhaust, a conduit extending through the heating element having ports opening into the closed end of said element and over the open end thereof respectively, and spirals located
85 within the annular spaces within the heating element and between the heating element and the drum, for the purpose set forth.

7. In a heater, a drum having intake and exhaust ports at opposite ends, a tubular
90 heating element arranged centrally within the drum, a spiral arranged within the annular space between the heating element and drum, a conduit located centrally within the heating element with its upper end turned
95 laterally over the discharge end of said spiral and having a port at its lower end, and a spiral within the heating element having its discharge end arranged oppositely to the first named spiral, substantially as set forth.
100

In testimony whereof I affix my signature in presence of two witnesses.

MARTIN HAUSER, JR.

Witnesses:

ARTHUR W. CAPS,
LETA E. COATS.