C. C. CHESNEY & H. B. WILSON.

ELECTRIC FLUID HEATER.

APPLICATION FILED MAR. 12, 1908.

925,155.

Patented June 15, 1909.

Fig. 1.

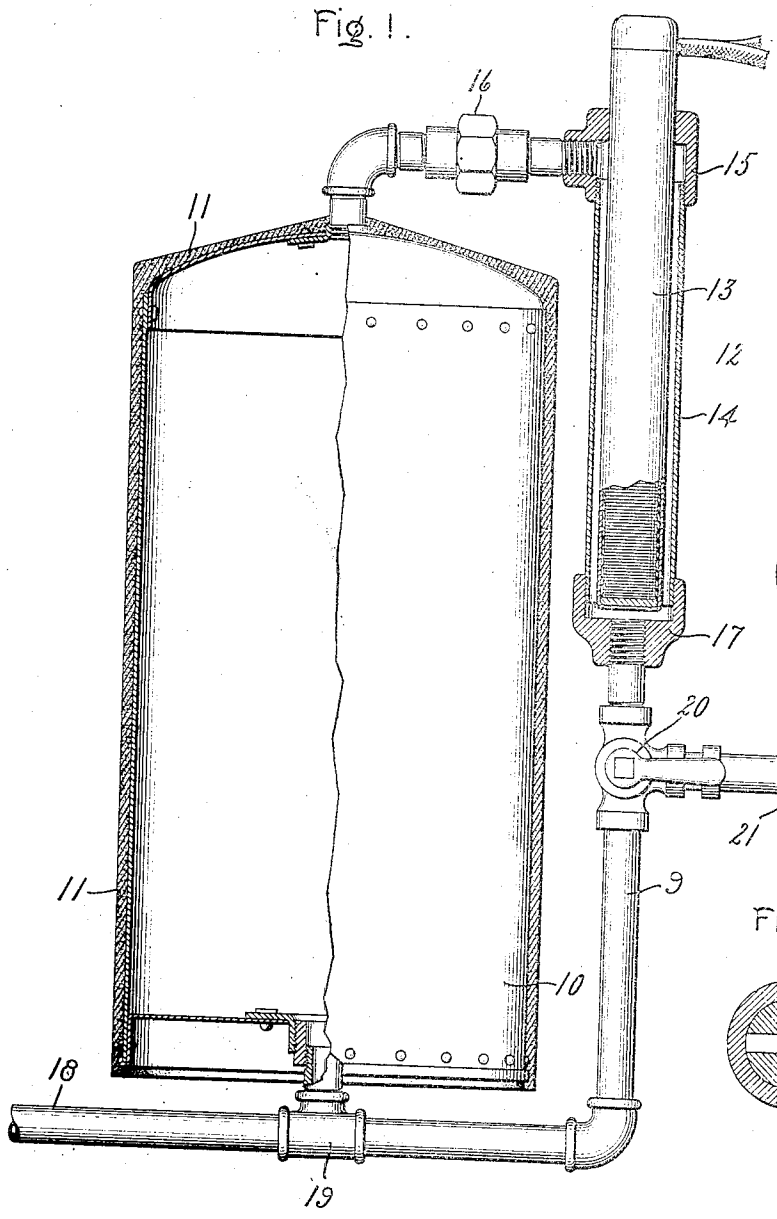


Fig. 2.

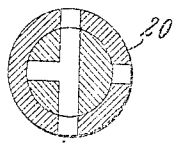


Fig. 3.

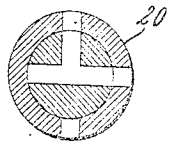
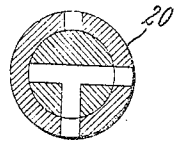


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

CUMMINGS C. CHESNEY, OF PITTSFIELD, MASSACHUSETTS, AND HOWARD B. WILSON, OF SCHENECTADY, NEW YORK, ASSIGNORS TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC FLUID-HEATER.

No. 925,155. Specification of Letters Patent. Patented June 15, 1909.

Application filed March 12, 1908. Serial No. 420,616.

To all whom it may concern:

Be it known that we, CUMMINGS C. CHESNEY, a citizen of the United States, residing at Pittsfield, county of Berkshire, State of Massachusetts, and HOWARD B. WILSON, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Electric Fluid-Heaters, of which the following is a specification.

This invention relates to electric heaters and has for its object the provision of a device of this character in which a fluid may be heated and maintained at a relatively high temperature in a simple and efficient manner.

Our invention relates more specifically to fluid heaters of the type known as continuous flow heaters, in which type of heater the fluid, as for instance water, may be heated continuously as it is drawn off.

In carrying out our invention we provide a storage tank in which a quantity of water or other fluid may be stored. This tank communicates with an electric heater having a heating surface along which the fluid is caused to circulate. During normal operation the water will pass upward over the heater and be circulated around through the tank. A three-way cock is so arranged that when it is desired to draw hot water, communication is open between the atmosphere and the water in direct contact with the surface so that the hottest water will be drawn off. By reversing the cock water may be drawn directly from the supply pipe.

In the accompanying drawing in which we have shown our invention embodied in concrete form, Figure 1 is an elevation of our device partly in section, and Figs. 2, 3 and 4 show diagrammatically the arrangement of the three-way cock.

Referring to the drawing, 10 is a storage tank of any desired size and form preferably made of metal and covered with heat insulating material 11. The tank is preferably elongated and has pipes communicating with its top and bottom. An electric heater 12 comprising a heating unit 13 surrounded by a casing 14 is supported adjacent to the tank. This casing is provided with an upper cap 15 in which the heating unit is secured and into which the upper pipe connection 16 is screwed. The casing 14 is large enough to leave a space between the casing and the unit so as to permit the water to circulate therethrough. The lower cap 17 is likewise screwed to the casing and the lower pipe connection 9 is screwed to the cap. This lower connection is brought into the bottom of the tank by means of suitable pipe fittings. The supply pipe 18 which may be connected with any suitable source of supply, such for instance as the water mains, is connected to the tank and the lower pipe connection 9 by means of the tee fitting 19. A three-way cock 20 is inserted in the pipe connection 9 and is adapted to make direct communication between the heater casing and the pipe connection 9 so that a circulation may take place between the casing and the tank. This arrangement of the cock is shown in Fig. 2. By turning the cock through 90°, the casing 14 is caused to communicate with the spout 21 of the cock so that hot water will be drawn directly out of contact with the heating unit. The circulation normally being upward, the hot water which is drawn off is brought into contact with the heater twice, *i. e.* it travels upward and when the cock is open to the atmosphere it will return along the heating surface. In this way a higher temperature is obtained at a greater heat efficiency. This arrangement of the cock is shown in Fig. 3. By turning the cock backward from the position shown in Fig. 2 through 90°, the parts will occupy the position shown in Fig. 4 in which the pipe connection 9 communicates directly with the spout. In this position, the water will come directly from the supply pipe and will be at the temperature of the supply as soon as the water standing in the pipe 9 has run off.

It will be seen that we have provided a simple fluid heater in which a large quantity of water may be heated gradually by the heating unit which will be worked at a high efficiency. At the same time either hot water may be drawn out of direct contact with the heater or cold water may be drawn directly from the supply.

It should be understood that while we have shown our invention embodied in concrete structure and as operating in a definite manner we do not limit our invention in

these particulars inasmuch as various modifications will suggest themselves to those skilled in the art without departing from the spirit of our invention, the scope of which is set forth in the annexed claims.

What we claim as new and desire to secure by Letters Patent of the United States, is,—

1. An electric heating device comprising a fluid tank, an electric heater, pipe connections for maintaining a circulation between the tank and the heater, a three-way cock in the connections arranged to draw fluid directly from the heater, and a supply pipe connected to the cock.

2. An electric heating device comprising a fluid tank, a heater casing, pipe connections from the casing to the upper and lower portions of said tank, a three-way cock in the lower connections, and a supply pipe connected to said cock.

3. An electric heating device comprising a fluid tank, an electric heating unit, pipe connections between the tank and the heating unit arranged to cause a circulation from the tank upward over the heating surface of the unit, and a cock arranged to draw fluid downward through the heating unit.

4. An electric heating device comprising a fluid tank, an electric heating unit, pipe connections between the tank and the heating unit arranged to cause a circulation from the tank upward over the heating surface of the unit, a three-way cock arranged to draw fluid downward from the heating unit, and a supply pipe connected to said cock.

5. An electric heating device comprising a fluid tank, an electric heating unit, pipe connections from the unit to the upper and lower portions of said tank, a supply pipe communicating with the tank and said lower connection, and a three-way cock in the lower connection.

In witness whereof, we have hereunto set our hands this 3rd day of March, 1908.

CUMMINGS C. CHESNEY.
HOWARD B. WILSON.

Witnesses:
W. S. O'BRIEN,
P. A. SMITH.