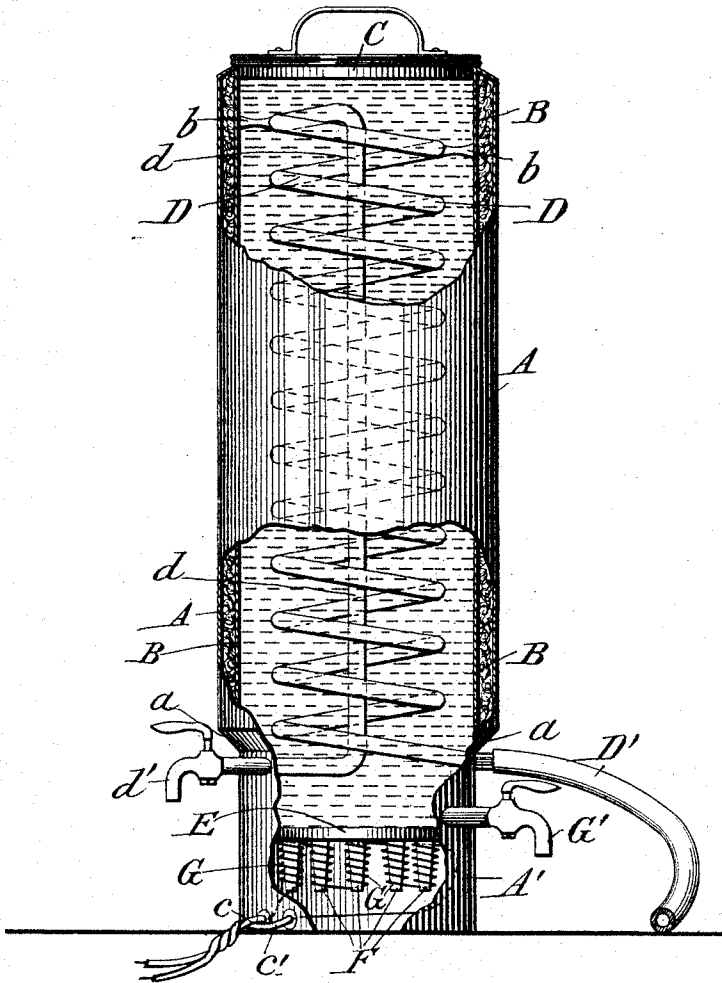


(No Model.)

W. MITCHELL.
ELECTRIC WATER HEATER.

No. 491,320.

Patented Feb. 7, 1893.



Attest:

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UNITED STATES PATENT OFFICE.

WILLIS MITCHELL, OF MALDEN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE
AMERICAN ELECTRIC HEATING COMPANY, OF BOSTON, MASSACHUSETTS.

ELECTRIC WATER-HEATER.

SPECIFICATION forming part of Letters Patent No. 491,320, dated February 7, 1893.

Application filed June 8, 1892. Serial No. 435,932. (No model.)

To all whom it may concern:

Be it known that I, WILLIS MITCHELL, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Electric Water-Heaters; and I do hereby 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.

This invention consists in an electrical water heater having a water coil or worm within a cylindrical chamber, the coil terminating in a pipe which passes through the wall of the said chamber and is provided with a cock outside of it, the said chamber being inclosed in a cylindrical casing which has a transverse partition across the lower part of it, provided with integral cores having electrical conductors in circuit wound or otherwise placed thereon.

The accompanying drawing represents an elevation, partly broken away, of an electrical water heater embodying my invention.

A designates the exterior casing of the inclosing cylinder which may have its lower part A' reduced in diameter as shown a shoulder *a* being formed at the line of such reduction. An inner shell or lining B extends from this shoulder or from just above it to the top of the cylinder, the space between the said outer casing and inner lining being filled with felt horse hair or any other good non conductor of heat which is capable of being packed in that way. The said lining and the reduced part A' of the casing are of the same diameter so as to form a continuous internal chamber extending the length of the cylinder. The upper end of this cylinder is closed by a removable cover C. Near this upper end the inner shell B is provided with inwardly extending brackets *b* which brace in position the upper end of a helicoidal coil or worm D communicating at its lower end with an inlet pipe D' whereby it is supplied and having its upper end extended in a straight pipe *d* down through the center of the said coil, then horizontally out through the side of the said cylinder, where it is pro-

vided with a cock *d'*. A horizontal partition E extends across the said chamber about half way from the bottom of the cylinder to the said shoulder *a*. This partition is rigid with the internal lining B and supports a body of water within the said cylinder, surrounding and in contact with the said coil. The said partition is provided on its under side with cores F formed therewith or made practically integral, they and it being of iron copper or other suitable heat-conducting material. A wire G suitably insulated and forming part of an electric circuit, is wound about these cores forming helices in the air space below the said partition; or other forms of electric heating devices may be applied to the said cores. The ends of the said wire are extended out through the side of the said cylinder at *c c'* and make connection with conductors not shown completing the electric circuit. By the construction thus shown the water-containing part of the cylinder is double-walled and packed with non-conducting material, while the lower part which is not, except for a short space, in contact with any heated substance has a single thickness of metal only.

The electric current heats the cores and partition, and in consequence the mass of water supported thereon. This water in turn heats the water in the coil. This latter heating action of course continues after the electric current ceases and so long as the heat remains in the water outside of the pipe but within the cylinder. A cock G' is provided in the side of the latter just above the said partition, to allow this water to be drawn off at will. After the heating is once effected a low current may be kept up at slight cost to counterbalance the slight escape of heat which will take place and maintain this temperature.

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

1. A receptacle divided by a partition into two spaces, one of which contains water, in combination with cores formed on the opposite side of the said partition, electric heating devices surrounding the said cores and a

worm arranged in the water-containing space and discharging outside of the said receptacle substantially as set forth.

2. In an electrical water heater a cylinder
5 having a partition of heat-conducting material across its inner space or chamber the said partition having cores formed with it, in combination with a conductor forming part of an electric circuit and wound on or applied
10 to the said cores the space above the said par-

tition being adapted to hold water and the space below it containing only air substantially as set forth.

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

WILLIS MITCHELL.

Witnesses:

PELATIAH R. TRIPP,
A. R. TURNER, Jr.