

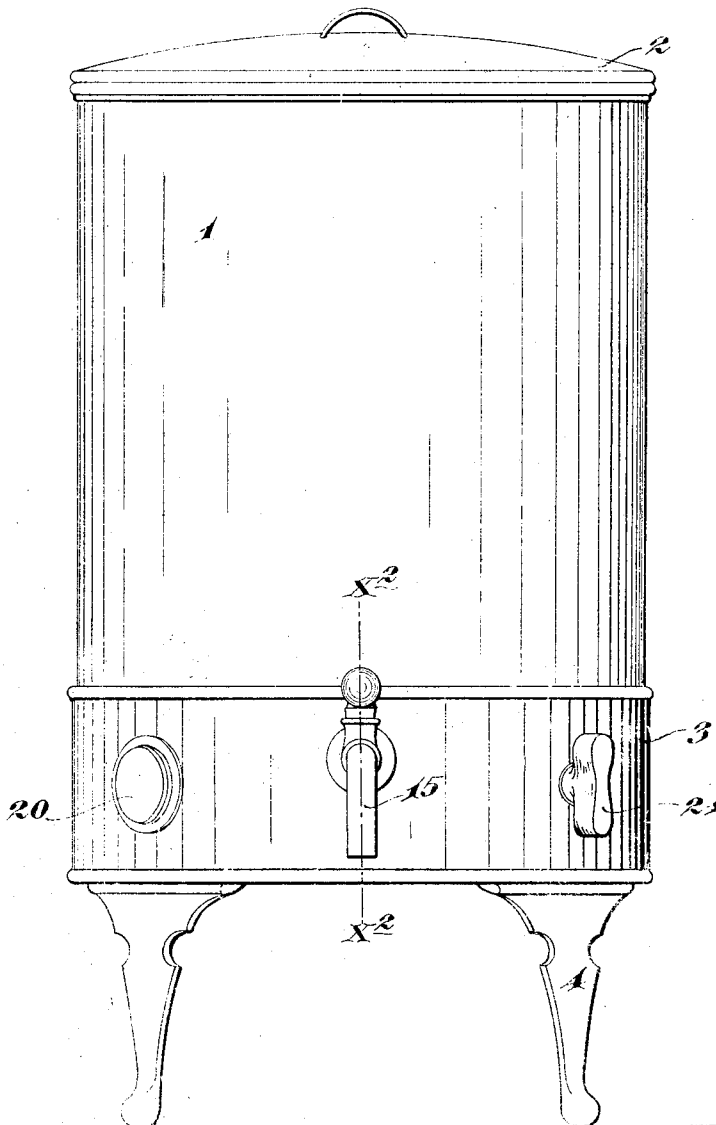
H. D. WOOD, JR.
ELECTRICAL WATER HEATER.
APPLICATION FILED APR. 8, 1909.

958,846.

Patented May 24, 1910.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses:

E. L. Simpson,

R. H. Upshull.

Inventor:

Hiram D. Wood, Jr.

By his Attorneys.

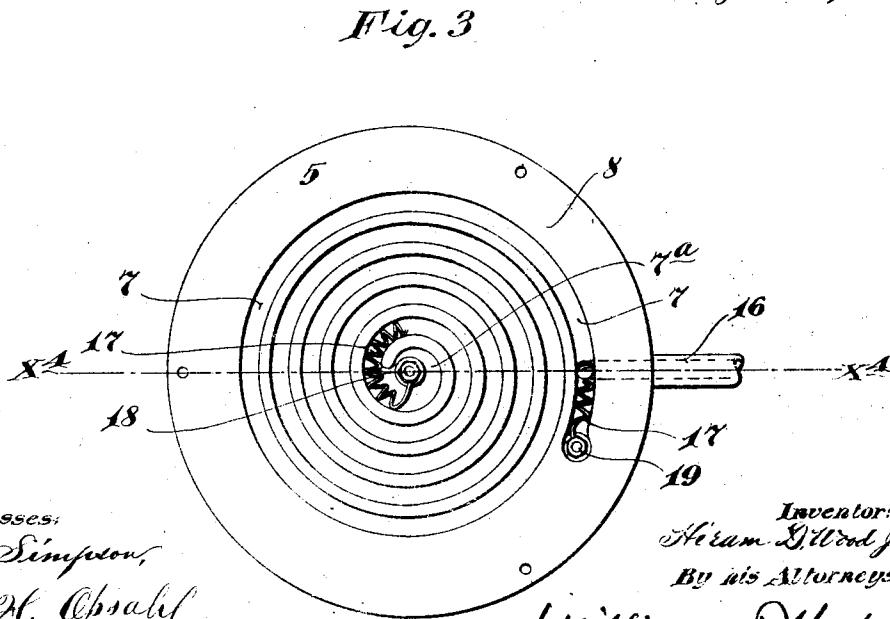
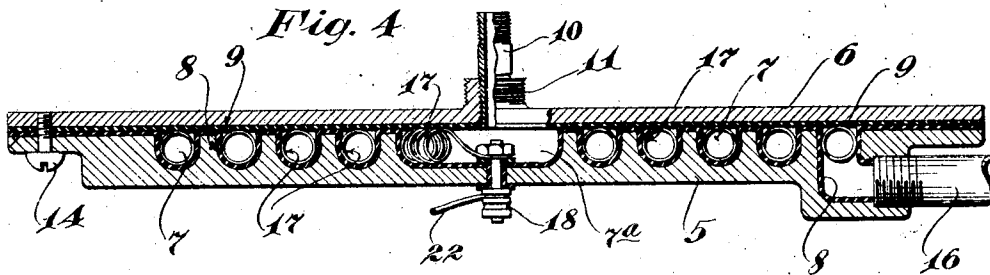
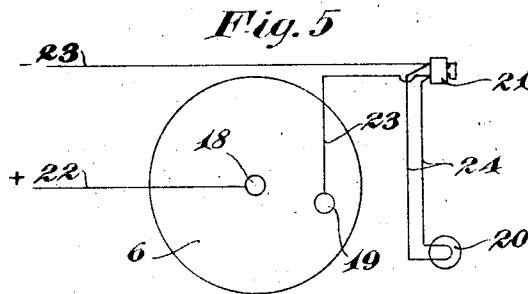
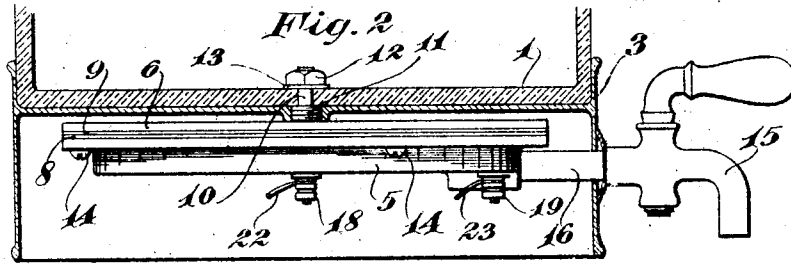
William D. Wood

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ELECTRICAL WATER HEATER.
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958,846.

Patented May 24, 1910.

2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

HIRAM D. WOOD, JR., OF MINNEAPOLIS, MINNESOTA.

ELECTRICAL WATER-HEATER.

958,846.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed April 8, 1909. Serial No. 488,664.

To all whom it may concern:

Be it known that I, HIRAM D. WOOD, JR., a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Electrical 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.

My invention has for its object to provide a simple and highly efficient instantaneous electrical water heater, especially adapted for use at soda water fountains, bars, and various other places where it is frequently necessary to use small quantities of hot water in the mixture of drinks, and for similar purposes.

To the above ends, the invention consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings: Figure 1 is a view in elevation showing the improved water heater; Fig. 2 is a vertical section taken on the line $x^2 x^2$ of Fig. 1, some parts being left in full, some parts being broken away, and some parts being removed; Fig. 3 is a plan view of the water heater proper, with the top plate thereof removed; Fig. 4 is a vertical section through the water heater proper on the line $x^4 x^4$ of Fig. 3; and Fig. 5 is a diagrammatic view showing circuit connections to and from the coil of the water heater.

The numeral 1 indicates a water containing tank, which is preferably of cylindrical form and constructed of glass, so that the purity of the water contained therein may be seen from the exterior. This tank or glass jar is shown as provided with a glass cover 2, and it is seated within the upper portion of a sheet metal supporting base 3 having legs 4.

The heater proper may take different forms, but as illustrated in the drawings, and as preferably constructed, it is made up of two disk-like sections 5 and 6, to-wit, a lower body section 5 and a top or cover section 6. These sections 5 and 6 may be, and preferably are, of cast iron, but they may be of any

other suitable metal or other material such as porcelain. The lower or body member 5 is formed in its upper face with an involute or spiral water conduit or channel 7, the inner extremity of which terminates in a centrally located chamber 7^a. The entire inner surface of the conduit 7 and chamber 7^a is lined with an insulating material, such as porcelain 8, which is glazed or otherwise permanently formed or secured thereto. The under surface of the top plate 6 is covered with the same insulating material indicated at 9. These materials or coatings 8 and 9, make the entire internal surface of the involute or spiral channel a non-conductor of electricity and a very slow radiator of heat.

The inner extremity or chamber 7^a of the conduit 7 is connected to the interior of the tank 1, by a small tube 10, that is extended upward through a perforation in the top plate of the metal base 3, and through a perforation in the bottom of the tank 1. The lower end of the tube 10 is screwed into a hub 11 of the top plate 6, and the latter is screwed into the hub of the top plate of the metal base 3. The upper end of the tube 10 is threaded and provided with a nut 12, that clamps a pliable washer 13 against the bottom of the tank, and thus forms a water tight joint. The plate 6 is secured to the base or body member 5 by screws 14 or other suitable devices, and a water tight joint is formed between the said members 5 and 6.

A faucet 15 is secured to one side of the metal base 3, and is connected by a short pipe 16 to the outer portion of the conduit 7, being as shown, screwed into one side of the body member 5.

Located within the spiral conduit 7 and extending from the inner to the outer portion thereof, is a cylindrically coiled wire or electrical conductor 17, of high electrical resistance, being preferably made of German silver. The coiled wire or conductor 17, like the conduit 7, is, in this preferred form of the heater, of course, bent longitudinally into spiral or approximately involuted form. Its inner extremity is connected to a binding post 18, and its outer extremity is connected to a binding post 19, both of which binding posts, as shown, are secured on the bottom of the body plate 5, and are insulated therefrom.

The numeral 20 indicates a small electric

lamp, and the numeral 21 an electric switch, both of which, as shown, are applied to one side of the metal base 3.

The numerals 22 and 23 indicate respectively, the positive and negative sides of the supply circuit connected to the binding posts 18 and 19 respectively. The switch 21 is interposed in the wire 23 and is arranged to simultaneously open and simultaneously close the circuit through the coil 17 and through the lamp circuit 24.

As is evident, when the faucet 15 is open, water from the tank 1 will run to the faucet through the spiral conduit 7, and through and around the convolutions of the heating coil 17, and will thus be brought or kept in contact with the said heating coil. The form of the coil 17 also exposes a very large amount of wire to the water that is being heated in its passage through the conduit 7. When hot water is required, the electrical current must, of course, be turned onto the heating coil 17. When the current is turned on and the faucet is open, as above stated, water running from the tank to the faucet will be heated to a high temperature while it is passing through the conduit 7, so that this device affords what may be designated as an instantaneous water heater, that is, an apparatus in which the water is heated while flowing from the point of supply to the point of discharge.

As is evident, an electrical water heater of the kind above described, will be found highly efficient and extremely desirable at soda water fountains, bars and numerous other places where small supplies of hot water are frequently required, but where the demand does not justify the maintenance of a continuously heated body of water. The heater, is however, capable of being made in very large as well as very small sizes, and is capable of general use. For domestic purposes and house use, and in restaurants and hotels, it will also be found an extremely convenient water heating ap-

paratus. When made in the required size, it would afford an efficient heater for bath purposes, or general kitchen use.

While the spiral or approximately involute form of the water conduit or channel is preferred, it will, of course, be understood, that the said conduit or channel may take other forms. For instance, it might be in the form of a manifold.

What I claim is:

1. In an electrical water heater, the combination with a two-part member having a water delivery conduit with imperforated walls and open ends adapted to be opened from end to end by separation of the sections of said member, of an electrical conductor placed within and extending longitudinally of said conduit, substantially as described.

2. In an electrical water heater, the combination with a two-part member having a long tortuous water delivery conduit with imperforated walls and open ends adapted to be opened up from end to end by separation of the sections of said member, of a coiled electrical conductor placed within said conduit and extended longitudinally thereof, substantially as described.

3. In an electrical water heater, the combination with a water tank, of a member located at the bottom of said tank and having a long tortuous water delivery conduit with imperforated walls and open ends connected to the bottom of said tank at its inner end portion, a faucet connected to the outer end portion of said conduit, and a coiled electrical conductor located within and longitudinally of said conduit, substantially as described.

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

HIRAM D. WOOD, JR.

Witnesses:

ALICE J. SWANSON,
HARRY D. KILGORE.