May 3, 1927. 1,627,335

B. MIDULLA

ELECTRIC WATER HEATER

Filed May 21, 1925

Fig. 1.

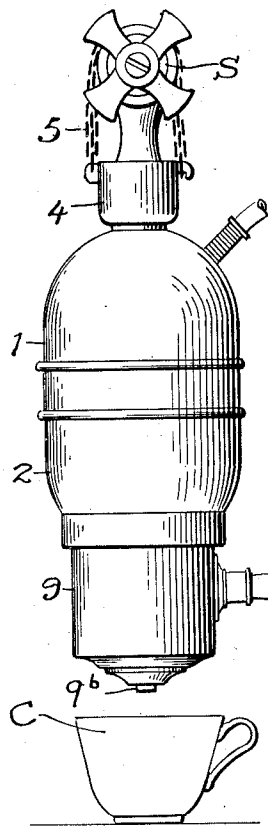


Fig. 2.

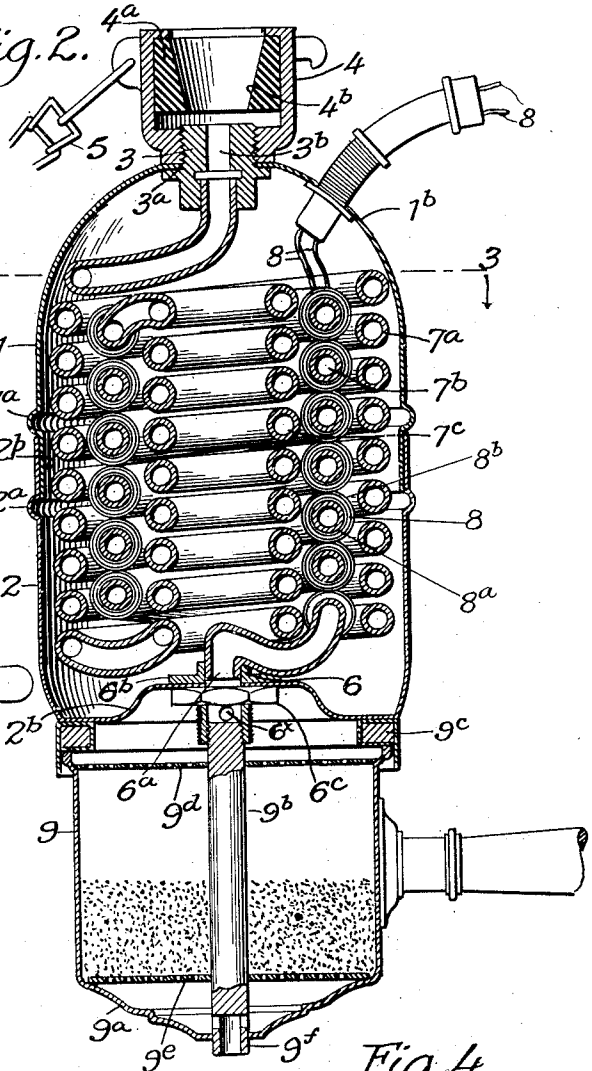


Fig. 3.

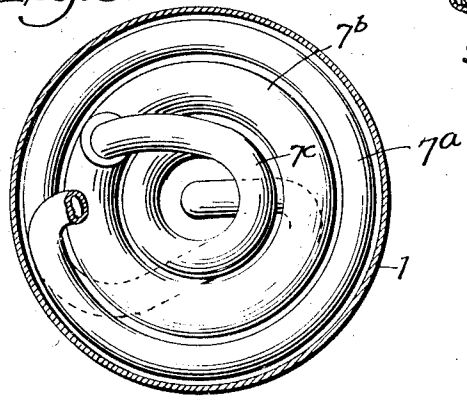
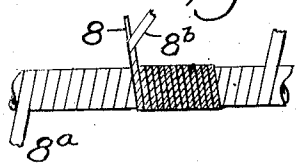


Fig. 4.



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UNITED STATES PATENT OFFICE.

BENJAMIN MIDULLA, OF NEW YORK, N. Y.

ELECTRIC WATER HEATER.

Application filed May 21, 1925. Serial No. 31,936.

This invention relates to instantaneous electric water heaters and the principal object thereof is to provide a novel, efficient, and simple heater embodying certain novel features hereinafter set forth.

I will explain the invention with reference to the accompanying drawing which illustrates one practical embodiment thereof to enable others to adopt and use the same, and will summarize in the claims the novel features of construction, and the novel combinations of parts, for which protection is desired.

In the drawings:

Figure 1 is an elevation of the heater attached to a spigot.

Fig. 2 is an enlarged vertical section through the heater.

Fig. 3 is a section on the line 3—3, Fig. 2.

Fig. 4 is a diagram showing the method of wrapping the coil with insulating material and the heating element.

As shown in the drawings, the heater preferably comprises a casing of suitable material and preferably of cylindrical shape, made in two sections 1 and 2, having beads 1^a, 2^a, adjacent their meeting edges, one of the sections 2 making a sliding fit, as at 2^p, within the section 1. The casing may however be made of any other desired shape and the sections 1 and 2 fitted together in any other desired manner.

The upper end of section 1 is open at its bottom, and the top thereof is contracted as at 1^b, and an externally threaded plug 3, having an annular shoulder 3^a and central bore 3^b extends through a perforation at the center of the top of section 1, the shoulder 3^a engaging the inner side of said top 1^b.

Upon the threaded portion of plug 3 is a cup-shaped member 4, screwed down upon said plug until the same engages the outer side of top 1^b. In cap 4 is an annular rubber washer 4^a, the bore 4^b of which is preferably conical or contracted at its lower end, and adapted to receive the end of a water spigot or pipe S inserted into said bore, as shown in Fig. 1.

A chain 5 is provided attached to cap 4 for conveniently suspending the heater adjacent the water spigot S, or the like, in any desired manner.

The top of section 2 is preferably open. Section 2 is preferably closed at its bottom by a plate 2^b which plate 2^b is provided with a central perforation through which extends a plug 6, having a bore 6^a, and an annular shoulder 6^b adapted to seat upon the inner face of bottom plate 2^b. The plug 6 below the shoulder 6^b is preferably externally threaded for a locknut 6^c which holds plug 6 in place.

Within the casing are coaxial coils (three being shown at 7^a, 7^b, 7^c) which coils are preferably made of copper tubing or the like. As shown in Fig. 2, the upper end of the outer coil 7^a is connected directly to the bore 3^b of plug 3, and the bottom end of the outer coil 7^a is connected to the bottom end of the inner coil 7^c, the upper end of the inner coil 7^c being connected to the upper end of the middle coil 7^b. The lower end of middle coil 7^b is connected directly to the bore of plug 6. Hence the water from the spigot or pipe passes down through the outer coil 7^a, then up through the inner coil 7^c and from thence down through the middle coil 7^b and out through the bore in plug 6.

Around the middle coil 7^b is wrapped an electrical resistance wire or heating element 8, the wires passing into the casing 1 adjacent its top in any desired manner, such as shown in Fig. 2. Preferably asbestos wire or ribbon 8^a is first wrapped around the tubing of coil 7^b for its entire length, as diagrammatically shown in Fig. 4, and then resistance wire 8, which has itself been previously wrapped with asbestos wire or ribbon 8^b (see Fig. 4) is then wrapped around the asbestos covering 8^a of said coil. By the above construction and arrangement of the resistance element 8, heat is absorbed by the water or other liquid running through coils 7^a, 7^b, 7^c, the water in coils 7^a and 7^c absorbing the heat of radiation of the external surface of the coil 7^b, and the water in coil 7^b being heated directly by the heating element 8. The temperature of the water issuing from the heater depends upon the quantity of water passing through the coils.

The coils 7^a, 7^b, 7^c, may be either integral or separable and connected by pipe joints,

unions, or the like, and if desired, the three coils may be made in the form of flat coils disposed in three different planes, the coil in the middle layer carrying the heating element.

The heater above described is capable of many uses where hot water at different temperatures is desired, and will raise the temperature of the water, or other liquid, to the boiling point in very quick time.

One of the uses to which the heater may be put is illustrated in the drawings as a percolator for coffee, and the like. A cup 9 having an open top and a closed bottom 9^a is provided with a central stem 9^b which is preferably solid and extends slightly above and below the cup 9. Preferably the upper end of stem 9^b is threaded for engagement with internal threads in the bore of plug 6 whereby the cup 9 is securely fastened to the underside of section 2. A gasket 9^c interposed between the upper edge of cup 9 and the bottom of section 2 makes the connection sufficiently tight. Radially disposed holes 6^x in the plug 6 above the top of stem 9^b permit the boiling liquid issuing from the bore of plug 6 to pass into cup 9, the liquid spreading over a screen or sieve 9^d in the upper end of the cup. A second screen or sieve 9^e near the bottom of cup 9 may hold a quantity of coffee or other beverage ingredient, the boiling water passing through coffee or the like on screen 9^e and out through a bore 9^f in the lower part of stem 9^b.

By the time the water from the spigot S has reached plug 6 its temperature will be near the boiling point, and in passing through the percolator 9 will make coffee or the like which may be collected in a cup C or the like placed below the bore 9^f of stem 9^b. The cup 9 is readily detachable from the casing 2 and can be refilled with coffee as desired.

The above illustrates only one use to which the heater may be applied, and I therefore do not limit my invention to the exact form shown in the drawing, for obviously changes in the details of construction may be made within the scope of the claims.

I claim:

1. An apparatus of the character specified, comprising a casing having an inlet plug in its upper end, and an outlet plug in its lower end; a coil within said casing having its ends connected with the inlet and outlet plugs respectively; means for heating said coil; means for connecting the inlet plug with a source of liquid supply; and a percolator detachably connected with the outlet plug.

2. In apparatus as set forth in claim 1, said percolator comprising a cup-shaped casing provided with means for engagement with the outlet plug; and a screen in said cup adapted to retain a beverage making ingredient; said cup having an outlet below the screen.

3. An apparatus of the character specified, comprising a casing having an inlet plug in its upper end, and an outlet plug in its lower end; a coil within said casing having its ends connected with the inlet and outlet plugs respectively; means for heating said coil; said inlet plug having a tapered resilient washer therein adapted to be engaged by the end of a liquid supply pipe; a flexible member on said plug adapted to support the casing from said pipe; and a percolator detachably connected with the outlet plug.

4. In apparatus as set forth in claim 1, said percolator comprising a cup-shaped casing provided with means for engagement with the outlet plug; and a screen in said cup adapted to retain a beverage making ingredient; said cup having an outlet below the screen.

5. An apparatus of the character specified, comprising a casing having an inlet plug in its upper end, and an outlet plug in its lower end; a coil within said casing having its ends connected with the inlet and outlet plugs respectively; means for heating the coil; means for connecting the inlet plug with a source of liquid supply; a gasket mounted around the lower periphery of the casing; and a percolator detachably connected with the outlet plug, the upper end of the percolator engaging said gasket.

6. In apparatus as set forth in claim 1, said percolator comprising a cup-shaped casing provided with means for engagement with the outlet plug; and a screen in said cup adapted to retain a beverage making ingredient, said cup having an outlet below the screen.

7. An apparatus of the character specified, comprising a casing having an inlet plug in its upper end, and an outlet plug in its lower end; a coil within said casing having its ends connected with the inlet and outlet plugs respectively; means for heating the coil; means for connecting the inlet plug with a source of liquid supply; said outlet plug being tapped and provided with openings above the tapped portion; a cup shaped member having a threaded vertical stem adapted to engage the outlet plug below the openings therein; and a screen in said cup adapted to retain a beverage making ingredient, said cup having an outlet below the screen.

8. An apparatus of the character specified, comprising a casing having an inlet plug in its upper end, and an outlet plug in its lower end; a coil within said casing having its ends connected with the inlet and outlet plugs respectively; means for heating the coil; means for connecting the inlet plug with a source of liquid supply; a gasket

mounted around the lower periphery of the casing; said outlet plug being tapped and provided with openings in its side; a cup-shaped member having a threaded vertical stem adapted to engage the outlet plug below the openings; the upper end of the cup-shaped member engaging said gasket; and a screen in said cup adapted to retain a beverage making ingredient; said cup having an outlet below the screen.

In testimony that I claim the foregoing as my own I affix my signature.

BENJAMIN MIDULLA.