Aug. 26, 1924. 1,506,676

J. SHAHAN

WATER HEATER

Filed Jan. 12, 1924

Fig. 1.

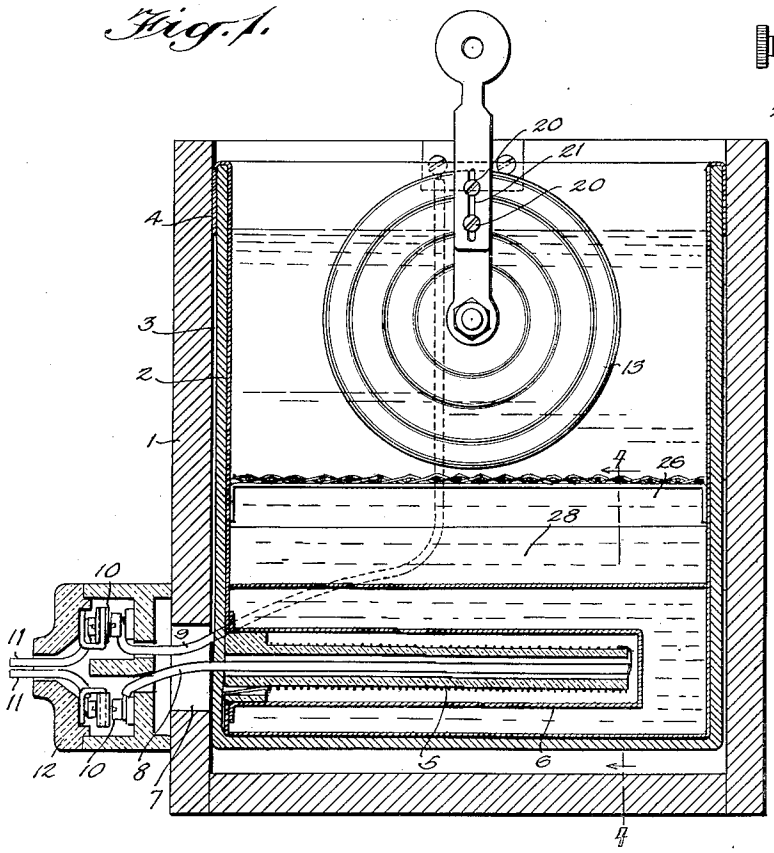


Fig. 2.

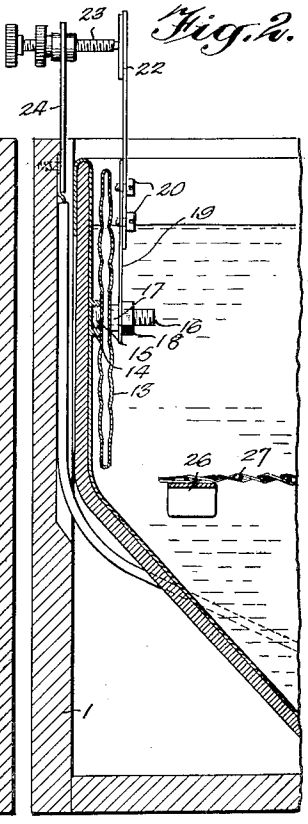


Fig. 3.

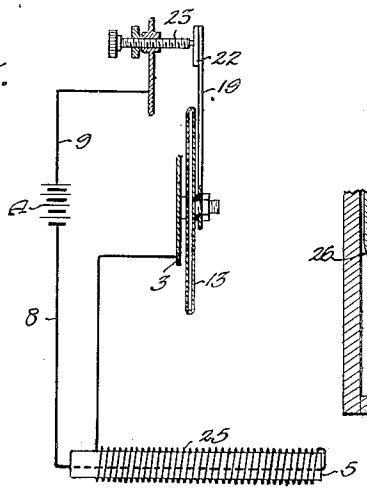
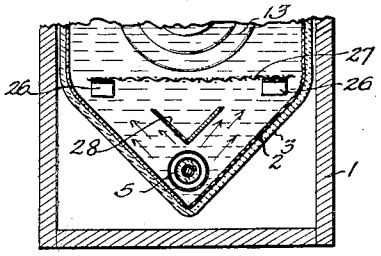


Fig. 4



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN SHAHAN, OF GADSDEN, ALABAMA.

WATER HEATER.

Application filed January 12, 1924. Serial No. 685,915.

To all whom it may concern:

Be it known that I, JOHN SHAHAN, a citizen of the United States, and a resident of Gadsden, in the county of Etowah and State of Alabama, have invented a new and Improved Water Heater, of which the following is a full, clear, and exact description.

This invention relates to improvements in water heaters, and more particularly to an electrically heated water bath used in bacteriological and serological work and in other similar procedures requiring a given constant temperature.

An object of the invention is to provide a device of the character stated in which the temperature of the water is automatically maintained through the medium of a thermostatic element which controls the opening and closing of the circuit to the electric heater in the tank.

With these and other objects in view, the invention consists in certain novel features of construction, and combinations and arrangements of parts, as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings—

Figure 1 is a view in vertical longitudinal section illustrating my improved device;

Fig. 2 is a fragmentary view in section at right angles to Fig. 1;

Fig. 3 is a diagrammatic view illustrating the electric circuit; and

Fig. 4 is a fragmentary view in transverse section on the line 4—4 of Fig. 1.

In constructing my improved device, I provide an outer casing 1, which may be made of wood or any other suitable material and which is preferably of general rectangular shape. Within this casing 1 I provide a tank 2 and so shape the tank in its transverse cross-sectional dimensions as to fit snugly within the casing 1 but permit its ready removal and replacement as may be desired. This tank 2 is formed preferably of copper or other non-corrosive material and provided with an outer covering or lining 3 of asbestos, or other suitable material, with the upper edge of the metal of tank 2 drawn backwardly over the same, as shown at 4, to secure the lining thereto and to provide a smooth metallic upper edge to the tank.

The lower end of the tank is of general V-shape in cross section, and in the lower extremity of the tank an electric heating element 5 is provided. This element 5 is confined in a tubular casing 6 which is fixed to the wall of tank 2 and is located in line with an opening 7 in the wall of casing 1 for the passage of the wires 8 and 9, respectively. These wires 8 and 9 communicate with contacts 10, and the latter with wires 11 of any electric lighting circuit, any suitable form of coupling 12 being employed to connect the wires as shown.

Within the tank 2, and at one side thereof, a thermostatic element 13 is located. This thermostatic element is preferably of the ordinary wafer type and may contain ether or acetone in accordance with the temperatures to be maintained. A screw-threaded socket 14 is formed on the tank 2 to receive a screw-threaded stud 15 on the element 13. The opposite side of the element 13 is provided with a screw-threaded stud 16 with a suitable ring or shoulder element 17 thereon against which a nut 18 is employed to clamp a contact arm 19. This arm 19 is made in two sections connected by screws 20 extending through a slot 21 in one of the members to allow radial or longitudinal adjustment of the contact arm, and at the outer end of the contact arm a relatively large contact 22 is provided which is capable of engagement with a contact screw 23 at various positions of lateral or circumferential adjustment of the arm. This position is desirable as it is sometimes necessary to provide a new contact surface for best results. The screw 23 is carried by an arm 24 fixed to the casing 1 and connected to the wire 9 above referred to. The resistance wire 25 of the heating element 5 is connected to the casing 1 so that the circuit is made through the casing and thermostat, as indicated most clearly in Fig. 3, which will be hereinafter described in detail. Within the tank 4 supports 26 are provided for a screen or other tray 27, and a V-shaped baffle 28 is located in the V-shaped lower end of the tank to constitute a reflector to compel the circulation of the water to give best results.

The operation is as follows: Referring particularly to Fig. 3, it will be noted that contacts 22 and 23 are together, hence the circuit is closed from the source of electricity A through wire 8 to the heating element 5, and thence to casing 1, through the thermostatic element 13 and arm 19, to contacts 22 and 23 and thence through wire 9 to the source. When the temperature be-

comes excessive or above that desired, the thermostatic element operates to open the circuit and will again close the circuit when the temperature falls.

Various slight changes might be made in the general form and arrangement of the parts described without departing from the invention, and hence I do not limit myself to the precise details set forth but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:—

1. A device of the character described, comprising a casing, a tank located in the casing and having a V-shaped bottom, an electric heating element in the lower end of the V-shaped bottom, a thermostatic element in the tank, and electric circuit closing means between the thermostatic element, the heating element and the source of electricity.

2. A device of the character described, comprising a casing, a tank removably supported in the casing and having a V-shaped lower end, a heating element supported in the lower end of the tank, and a V-shaped baffle above the heating element in the V-shaped lower end of the tank having its walls substantially parallel to the walls of the lower end of the tank.

3. A device of the character described, comprising a casing, a tank in the casing, an electric heating element in the tank, a thermostatic wafer removably supported by one wall of the tank, a radial arm adjustably secured to the center of the wafer and comprising two sections adjustable relative to each other, a relatively large contact on the free end of the arm, an upwardly projecting fixed arm on the tank, and an adjustable screw contact carried by the said last-mentioned arm and adapted to engage the first-mentioned contact.

4. A device of the character described, comprising a casing, a tank removably supported in the casing and having a V-shaped lower end, a perforated tray supported in the tank in substantial alinement with the point of juncture of the V-shaped bottom and the side walls thereof, a heating element in the V-shaped lower end of the tank, and a V-shaped reflector above the heating element and substantially parallel to the walls of the bottom of the tank.

JOHN SHAHAN.