Nov. 17, 1953 J. F. DUNN 2,659,804

WATER HEATER

Filed May 23, 1952

FIG_1_

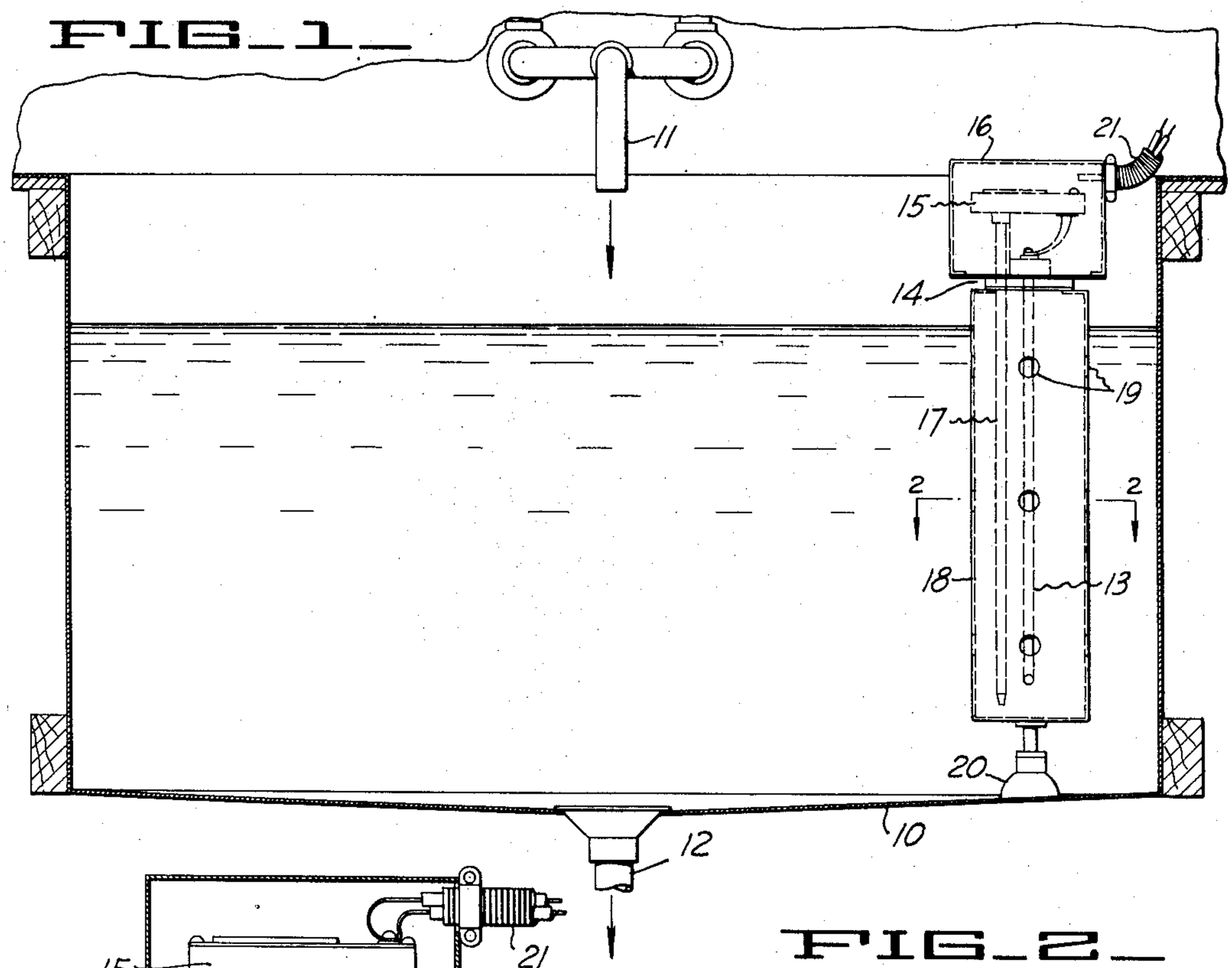


FIG_2_

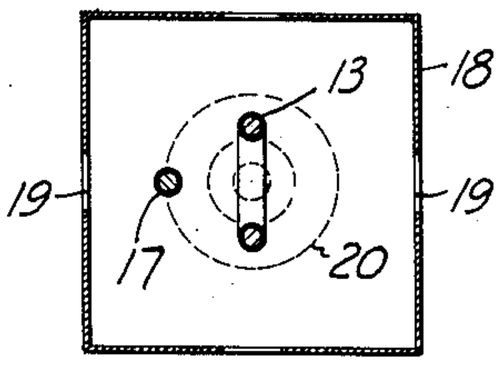


FIG_3_

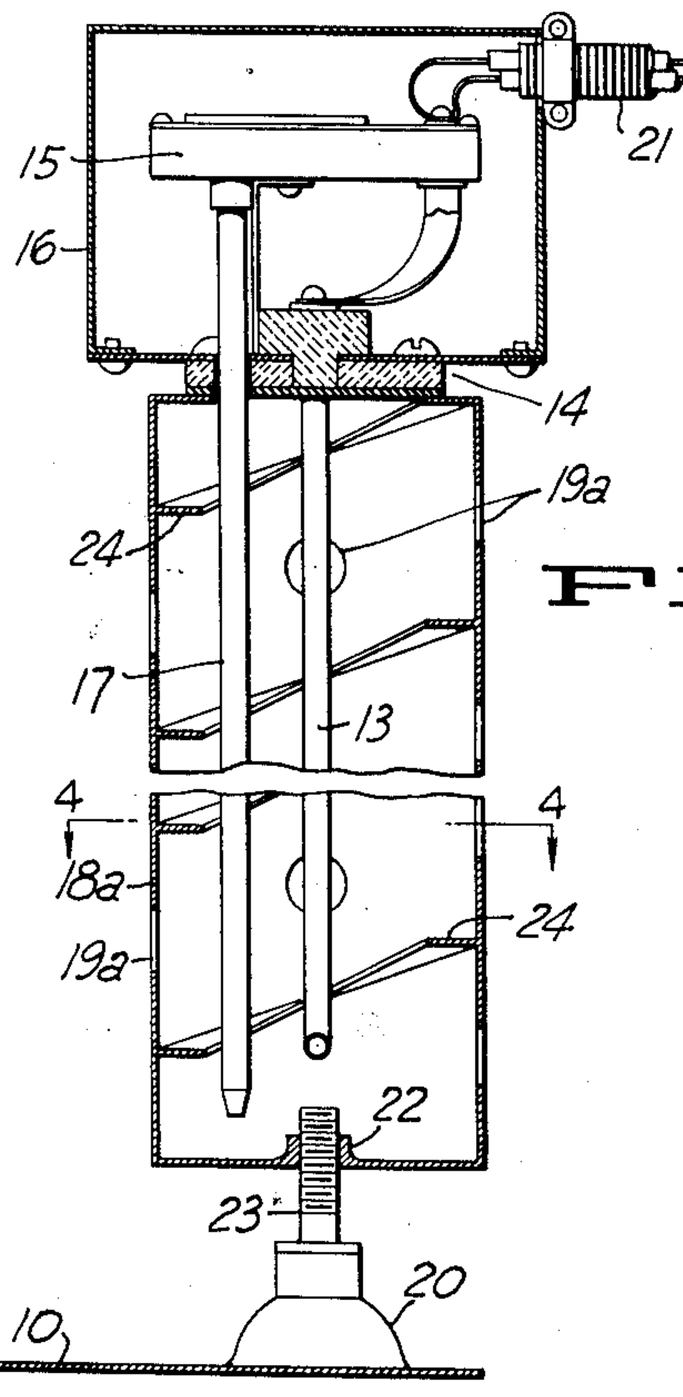
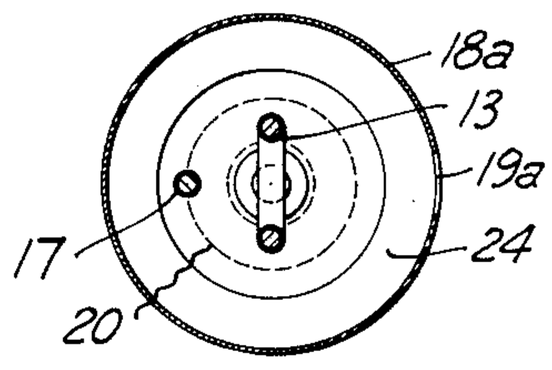


FIG_4_



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Patented Nov. 17, 1953 2,659,804

UNITED STATES PATENT OFFICE

2,659,804

WATER HEATER

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Application May 23, 1952, Serial No. 289,592

2 Claims. (Cl. 219—41)

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This invention relates to water heaters and particularly to electric water heaters of the immersion type in which an electrically heated element is adapted to be positioned in such a manner that it extends into a body of water to be warmed. It is particularly adapted to be used in connection with thermostatic means which control the flow of electric current to the heating element dependent upon temperature of the water within the vessel or chamber containing the same.

This invention is particularly adapted to be used in connection with the heating and maintaining at a proper heat of water within an open vessel, chamber, or sink. For example, it is well known to those whose duty it is to wash china and glassware in restaurants, bars, and other establishments, that in an open sink or vessel the washing water rapidly loses its temperature and will ultimately become sufficiently cold to be of little assistance in connection with the washing operation. At present, hot water is customarily poured into such a sink and there is no method of keeping the same warm. When the water becomes cold it is necessary that the tank or vessel be drained and new water introduced. This results in a substantial loss of detergent or soap and disinfectant. Naturally it is not my desire to provide this device solely for the purpose of making it possible to use the same dishwater many times as that activity would promote unsanitary conditions. However, it is my intent to produce a device which maintains the water sufficiently warm or at a predetermined temperature to permit its use until other factors, that is factors other than the temperature of the water, render it advisable to drain the tank.

Other objects and advantages of the present invention will appear from the following specification taken in conjunction with the accompanying drawings in which:

Figure 1 is a side elevational view in cross section showing my device mounted in a suitable sink;

Figure 2 is a cross sectional detail taken along the line 2—2 of Figure 1;

Figure 3 is a cross sectional view of a modification of the device illustrated in Figures 1 and 2; and

Figure 4 is a cross sectional detail taken along the line 4—4 of Figure 3.

As illustrated in the drawings, my device is adapted to be positioned in a tank 10 into which water is introduced through a conventional faucet 11, and from which it is drained through a conventional drain 12. Without my device it is

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apparent that the surface of the water and the side walls and bottom of the tank 10 will provide such a large radiating area that the heat of the water will rapidly be lost.

My device consists generally of an electrical heating element 13 and may be of the type known as "calrod" unit. A calrod unit 13 terminates in a mounting block 14. The mounting block 14 also supports a thermostatic element 15 or thermostatic switch of the type illustrated in Kercher Patent No. 2,314,989 granted March 30, 1943.

The switch elements and contacts are maintained in a water-proof shroud or cover 16. The heating element and the thermally responsive portion 17 of the thermostat 15 are retained in a casing 18 which is provided with a plurality of orifices 19, as shown. The device is adapted to be supported from the bottom of tank 10 by means of a rubber suction cup 20. Suitable electrical conduit 21 is provided so that the device may be connected to a suitable source of electric current, preferably 220 volts A. C.

Operation of the device may briefly be described as follows: The device is connected to a suitable source of electric current as previously explained and is positioned within the tank 10, in such a manner that the suction cup 20 engages the bottom of the tank and maintains the device in the predetermined position with respect to the tank. The thermostatic switch 15 is set at a predetermined temperature and, assuming the water within the tank 10 to be below that temperature, a circuit will be closed through the thermostatic switch 15 to the heating element 13. The water is heated to the desired temperature and because of the action of the thermally responsive element 17 the thermostatic switch is opened, thereby opening the circuit and preventing the water from being heated to a higher temperature.

In this manner it is apparent that the water within the tank or vessel 10 will be maintained at a substantially constant temperature regardless of the radiation from the surface of the water and from the walls and bottom of the container 18. It will be unnecessary therefore, to drain the tank simply because of the lowered temperature of the water. The factors controlling the changing of the water will be sanitary factors alone.

A modification of the device is illustrated generally in Figure 3. The casing 18*a* is circular in cross section, as viewed in Figure 4, and the bottom wall of the casing 18*a* is provided with an orifice and a threaded stud 22. The threaded stud 22 is adapted to cooperate with a thread in

elongated threaded member 23 to the long end of which there is attached a suction cup 20. By turning the member 23, the distance between the suction cup 20 and the bottom of the casing 18*a* may be adjusted. In this way it is possible to adapt my device to different depth tanks so that the mounting block 14 is always well above the surface of the water.

The tubular casing 18*a* is also provided with an appropriate number of orifices 19*a* to permit the water to flow in and out of the casing through the orifices. In addition it will be noted that a baffle 24 in the form of a helical flight secured to the inner walls of the tubular casing is provided. The effect of these baffles will be to take advantage of the convection currents of the water through my device and to provide better circulation of the water through the entire apparatus.

It is apparent from the foregoing that I have provided a device which is readily adaptable to various depth tanks and which will maintain the water within the tanks at a predetermined temperature. The casing 18 will prevent the user from coming into direct contact with the heating element. The device is portable and may be used in various locations. The thermally responsive element is easily regulated to provide the varying degrees of temperature, as may be required.

I claim:

1. In an immersion type heating element adapted to heat the water in a sink, an electric resistance element connected to a suitable source of electric energy, a thermally responsive member in series therewith and adapted to control the flow of electric energy to said resistance element, a casing surrounding said resistance element and said thermally responsive element, passageways in said casing permitting the inflow and outflow of water with respect to said casing,

and means for positioning said casing within said sink, said means comprising a suction cup adapted to engage the bottom of said sink and adjustable means connecting said suction cup to said casing comprising a threaded element adapted to engage the threaded member in said casing.

2. In an immersion type heating element adapted to heat the water in a sink, an electric resistance element connected to a suitable source of electric energy, a thermally responsive member in series therewith and adapted to control the flow of electric energy to said resistance element, a casing surrounding said resistance element and said thermally responsive element, passageways in said casing permitting the inflow and outflow of water with respect to said casing, a baffle in said casing in the form of a helical flight to impart a whirling motion to the upwardly rising water within said casing, and means for positioning said casing within said sink, said means comprising a suction cup adapted to engage the bottom of said sink and adjustable means connecting said suction cup to said casing comprising a threaded element adapted to engage the threaded member in said casing.

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