

Sept. 1, 1925.

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H. G. JENSEN

AUTOMATIC GAS CONTROLLED WATER HEATER

Filed May 10, 1924

Fig. 1.

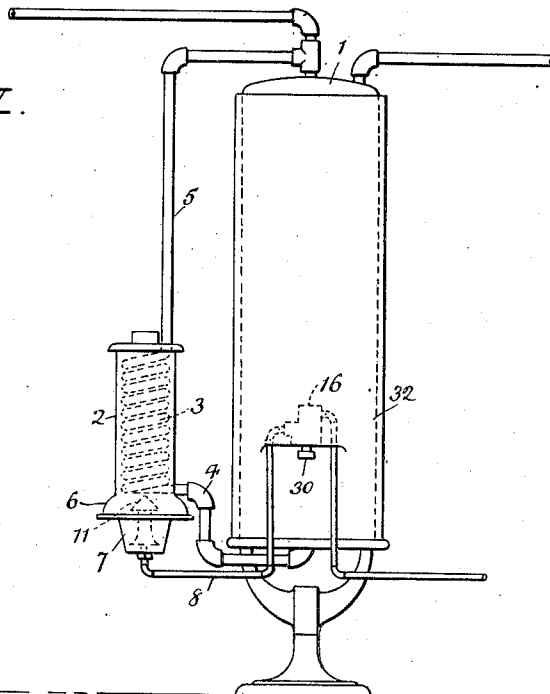


Fig. 2.

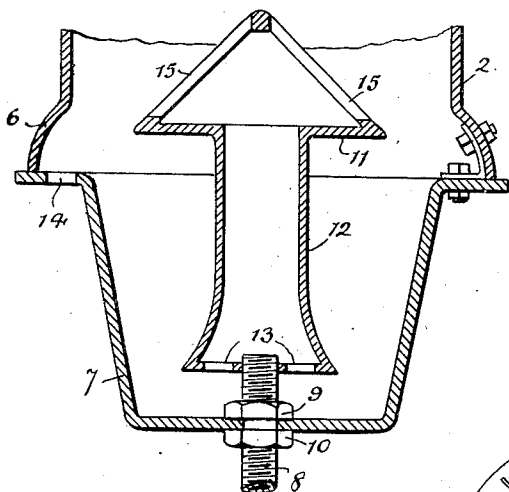


Fig. 4.

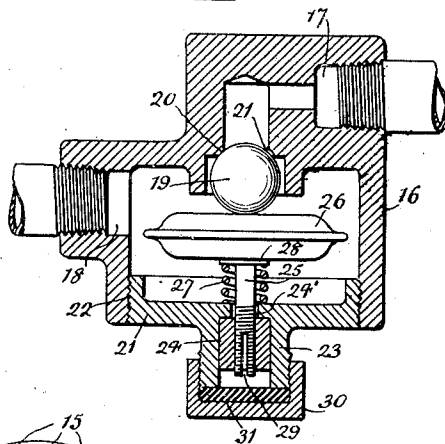
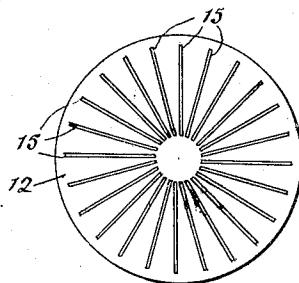


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

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AUTOMATIC GAS-CONTROLLED WATER HEATER.

Application filed May 10, 1924. Serial No. 712,405.

To all whom it may concern:

Be it known that I, HERBERT G. JENSEN, a citizen of the United States, and a resident of Detroit, in the county of Wayne and State of Michigan, have invented a new and Improved Automatic Gas-Controlled Water Heater, of which the following is a full, clear, and exact description.

This invention relates to an improved automatic gas-controlled water heater, an object of the invention being to provide improved thermostatic means controlling the flow of gas to the burner for heating the water and locate this thermostatic means in proximity to the water tank whereby it is sensitive to the temperature of the water and automatically controls the flow of gas in accordance with the temperature of the water. It will thus be noted that such an arrangement insures a practically uniform temperature of water at all times and prevents the possibility of over or underheating.

A further object is to provide an apparatus of this character with improved construction of heater having an improved construction and arrangement of gas burner whereby the maximum of heat and efficiency of operation is had.

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

In the accompanying drawings—

Figure 1 is a view in side elevation illustrating my improved apparatus;

Figure 2 is an enlarged view in longitudinal section through the lower portion of the heater casing and the burner;

Figure 3 is a top plan view of the burner;

Figure 4 is a view in longitudinal section on an enlarged scale illustrating my improved thermostatically controlled valve.

1 represents a tank, which may be of ordinary domestic boiler type, and 2 is the casing of my improved water heater. This casing 2 may enclose a pipe coil 3 connected at its inlet end by a pipe 4 with the bottom of the tank 1, and at its outlet end by a pipe 5 to the top of tank 1, so as to induce a circulation of water through the coil to the heater. It is, of course, to be understood that the invention is not limited to the particular construction and arrangement of cir-

culating unit as this may be varied to suit the trade.

The lower end of the casing 2 is preferably enlarged annularly, as shown at 6, and a well 7 is secured to the lower end of the casing and depends therefrom. Through the bottom of this well 7 a gas pipe 8 projects and is secured by nuts 9 and 10 located above and below the bottom of the well. The upper end of this pipe 8 supports my improved burner 11. This burner 11 at its upper end is of general conical form and is supported upon a vertical manifold 12 communicating therewith. The manifold 12 is provided at its lower end with air inlet openings 13, and air inlet openings 14 are provided in the well adjacent the bottom of the casing, so that these openings constitute the sole air inlets and are out of drafts which might affect the burner.

As above stated, the burner per se is of general conical form and is provided with a circular series of radial slots 15 constituting burner orifices. These slots 15 do not extend to the apex of the cone so that the combustible gas is discharged radially and in sheets through these slots and burns in a flame or flames throughout the lower portion and interior portion of the casing 2 and in direct contact with the coil 3 so as to utilize to a maximum degree the heat utility of the gas.

The gas inlet pipe 8 above referred to is provided between its ends with a valve casing 16, said casing being located against or in close proximity to the tank 1, or rather in close proximity to the water of the tank so that it is sensitive to the temperature of the water.

By reference particularly to Figure 4, it will be noted that the casing 16 has a gas inlet 17 and a gas outlet 18 with a ball valve 19 adapted to engage a seat 20 and shut off the normal supply of gas. This seat 20 is, however provided with a by-pass 21 to allow a sufficient quantity of gas to escape to prevent the burner from being entirely extinguished.

The bottom of the casing 16 is normally closed by a plug 21 screwed into the threaded lower end of the casing, as shown at 22, and provided with a cylindrical externally threaded depending nipple 23 and an opening 23' communicating therewith. In this nipple 23 a bushing 24 is mounted and is capable of longitudinal movement. The

bushing 24 is of tubular form and internally screw-threaded to receive the threaded lower end of a stem 25, the upper end of said stem supporting a thermostatic wafer 26, and a coil spring 27 is located around the stem and interposed between the plug 21 and a flange 28 on the upper end of the stem. The lower end of the stem is split or bifurcated, as shown at 29, so that it can be conveniently adjusted by a screw driver and can also be expanded so as to prevent accidental disengagement from the bushing. A cap 30 is screwed onto the threaded lower end of the nipple 23 and encloses a packing disk 31 engaging the nipple to render the structure gas-tight. To prevent undue radiation of heat I preferably enclose the tank 1 and the valve casing 16 in a casing 32 of asbestos or other suitable non-conducting material.

The operation is as follows:

Figure 4 illustrates the valve 19 in its closed position so that it must be assumed that the burner is turned down to its lowest degree. As the temperature of the water in the tank 1 falls, the thermostatic wafer 26 will contract to allow the ball 19 to move away from its seat 20 thus permitting an increased flow of gas to the burner 11 and

consequent heating of the water. This operation of the flow of gas is therefore entirely automatic so as to maintain the temperature of the water of the tank at the desired degree.

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

I claim:

A thermostatically controlled valve, comprising a casing, a closure for the bottom of the casing having screw-threaded engagement with the casing, a movable bushing in the closure, a threaded stem in the bushing, a thermostatic wafer at the upper end of the stem and of less diameter than the bottom closure, a ball valve above the wafer controlling the flow of fuel, a spring around the stem between the wafer and the closure, and a gas-tight cap on the closure confining the bushing.

HERBERT GRANT JENSEN.