March 31, 1925. 1,531,868

W. A. MERRICK

BURNER CONTROL

Filed June 16, 1924

Fig. 1

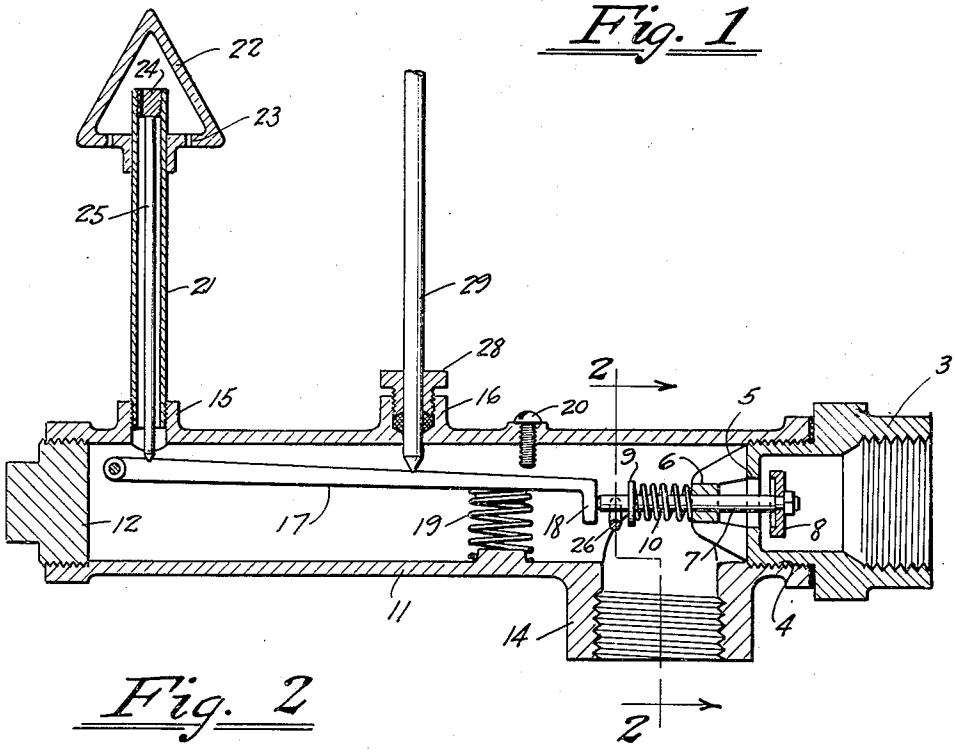
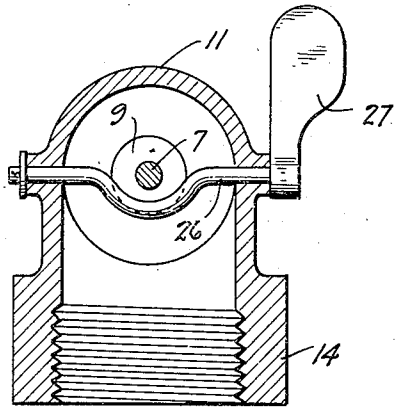


Fig. 2



INVENTOR.

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BY Westall and Wallace

ATTORNEYS

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UNITED STATES PATENT OFFICE.

WILLIAM ALFORD MERRICK, OF LOS ANGELES, CALIFORNIA.

BURNER CONTROL.

Application filed June 16, 1924. Serial No. 720,247.

To whom it may concern:

Be it known that I, WILLIAM ALFORD MERRICK, a citizen of the United States and resident of Los Angeles, in the county of Los Angeles, State of California, have invented new and useful Improvements in a Burner Control, of which the following is a specification.

This invention relates to a device for shutting off the supply of fuel to a burner when either the temperature of a body heated thereby has reached a selected maximum or when a pilot light has become extinguished. The present invention is more especially adaptable for use with a water heater having a burner of gaseous fuel. In such installations, it is common practice to have a burner which is lighted from a pilot upon gas being admitted to the main burner. The burner may be automatically or manually controlled, as desired. If the pilot light becomes extinguished, gas admitted to the main burner, will escape from the burner into the combustion chamber, and from thence into the room. It is obvious that the escape of gas in this manner is disagreeable and dangerous, and that the application of a light may cause an explosion. The primary object of this invention is to provide a control which will shut off the fuel supply upon the pilot light becoming extinguished.

In water heaters, it is desirable to have a device which will automatically shut off the burner, upon the temperature of the water reaching a maximum degree. Another object of this invention is to provide a control, which is also actuable by the heat of the water in a tank reaching a selected maximum value.

These objects together with other objects and corresponding accomplishments are obtained by means of the embodiment of my invention illustrated in the accompanying drawing, in which:

Fig. 1 is a sectional view through a control; and Fig. 2 is a section as seen on the line 2—2 of Fig. 1.

Referring more particularly to the drawing, 3 indicates an inlet fitting adapted to be connected to piping supplying gas to a burner. The inlet has a valve cage 4 forming an extension thereon and is provided with a valve seat 5. A crown 6 provides a guide for a valve stem 7. Secured to the end of the stem 7 is a valve disk 8 arranged for seating upon seat 5. Secured to the valve stem is a washer 9, and interposed between the washer and the crown of the cage is a compression spring 10, which tends to seat the valve disk.

Secured to the valve cage 4 is a housing consisting of an elongated chamber portion 11 closed at the end by a plug 12 and provided with an internally threaded boss 14, forming a discharge outlet. The discharge 14 is adapted to be connected to fittings leading to a burner. A boss 15 having an internally threaded bore is adapted to be connected to a pipe leading to the pilot, and a boss 16 is provided for the passage of a thermostat member into the chamber. A lever 17 is pivotally mounted within the chamber and has an end 18 adapted to be disposed in front of the stem 7. A compression spring 19 is interposed between the bottom wall of the chamber and the lever 17, tending to force the latter upwardly. An abutment screw 20 limits the upward movement of the lever so that in its upper position the extension 18 is in line with the valve stem.

A pipe 21 is threaded into boss 15 and has mounted upon the top thereof a pilot head 22 having openings 23 through which the gas emerges. A perforate plug 24 is mounted at the top of pipe 21 and has secured thereto a rod 25 formed of a material having a coefficient of expansion less than that of the pipe 21. The rod 25 engages lever 17. The parts are so arranged and adjusted that when the pilot light is burning, the heat therefrom will cause an expansion of pipe 21 sufficient to raise rod 25 to a position such that the lever is disposed as shown in Fig. 1. In this position, end 18 on lever 17 is in front of valve stem 7, and valve disk 8 is maintained off its seat, permitting the free flow of gas from the inlet 3 to the discharge 14 and thence to the burner. However, if the pilot light becomes extinguished, tube 21 contracts thereby causing rod 25 to be pressed downwardly upon lever 17 and the extension 18 to be moved downwardly and away from valve stem 7. Thereupon, spring 10 acting against washer 9 forces the valve stem and valve disk outwardly, so that the disk seats and shuts off the flow of fuel. In order to light the burner, it becomes necessary to lift valve disk 8 from its seat. This is accomplished by means of the crank 26

which is journalled in the sides of the chamber 11 and has an operating handle 27 on the outside of the chamber. By turning handle 27, the crank 26 may be moved to engage the washer 9 and force the stem 7 inwardly and the valve 8 from its seat. Spring 19 will restore the lever 17 to its open position, upon rod 25 being retracted. This is accomplished by lighting the pilot, which causes expansion of tube 21 and retraction of rod 25.

Mounted in boss 16 is a packing gland 28, through which slidably extends a thermostat rod 29. The rod 29 is adapted to be fixed at its upper end to a tank containing the heated water. The parts are so arranged, that, below the critical maximum temperature desired, rod 29 is so positioned as to permit lever 17 to be disposed in the position shown in Fig. 1. Upon the critical temperature being approached, rod 29 expands and moves lever 17 so that end 18 is moved away from the stem 7. This will permit spring 10 to close valve disk 8 upon its seat and shut off the flow of gas. When the temperature of the tank has decreased sufficiently, and rod 29 retracted so that lever 17 can be moved to its open position, handle 27 is moved so as to lift valve disk 8 upon its seat. Spring 19, will then restore lever 17 to its open position.

In storage heaters, wherein the supply of fuel to a burner is controlled by a thermostat, the water in the storage tank being maintained at a substantially selected temperature, gas is admitted to the main burner upon the temperature of the water in the storage heater dropping to the lower limit. If the pilot light has become extinguished, and the gas is turned on, it is obvious that a dangerous condition is created. My pilot control will prevent the turning on of the gas to the burner when the pilot is extinguished. The control trips a main control by means of a trigger arrangement. The same trigger arrangement is tripped by the maximum temperature control. This provides a safety arrangement. It may also be useful in cases where it is desired to heat water in a tank to a desired temperature without attention after the burner has been lighted. There are many other uses to which the control may be put and which will be obvious to one skilled in the art.

What I claim is:

1. A device of the character described adapted to be connected to a tank comprising the combination of a pilot light, a gas valve controlling the flow of gas, a trigger for holding the gas valve open, a thermostatic member actuated by the heat of said pilot light and arranged to trip said trigger upon extinguishment of said pilot light and a thermostatic member actuated by the heat of the tank arranged to trip said trigged upon the tank's temperature reaching a selected maximum value.

2. A device of the character described adapted to be connected to a tank comprising the combination of a pilot light, a gas valve having a stem, resilient means tending to close said valve, a trigger lever disposed so that it may engage said stem and hold said valve in open position, resilient means tending to hold said lever in open position, a thermostatic member actuated by the heat of said pilot light connected to said lever and arranged to trip the latter upon extinguishment of said pilot light and thereby effect the closure of said valve, and a thermostatic member actuated by the heat of the tank connected to said lever and arranged to trip the lever upon the tank's temperature reaching a selected maximum value.

3. A device of the character described comprising the combination of a pilot light having a fuel supply tube and a burner head, a gas valve having a stem, resilient means tending to close said valve, a trigger lever disposed so that the end thereof may engage said stem and hold said valve in open position, resilient means tending to hold said lever in position with said valve open, a rod of a different coefficient of expansion than said tube connected thereto and to said lever and arranged to trip the lever upon extinguishment of said pilot light and thereby effect closure of said valve, and manually operable means to open said valve and permit restoration of said trigger lever to open position.

4. A device of the character described adapted to be connected to a tank comprising the combination of a pilot light, a gas valve having a stem, a spring mounted about said stem tending to close said valve, a trigger lever disposed so that the end thereof may engage said stem and hold said valve in open position, a spring tending to hold said lever in open position, a thermostatic member actuated by the heat of said pilot light engaging said lever and arranged to trip the latter upon the extinguishment of said pilot light and thereby effect the closure of said valve, a thermostatic member actuated by the heat of the tank engaging said lever arranged to trip the latter upon the tank reaching a selected maximum temperature, and manually operable means to open said valve and permit restoration of said lever.

5. In a device of the character described, the combination of a fixed support, a pilot light comprising a heat expansible gas supply tube provided with a burner head at the end thereof, a gas valve having a stem, resilient means tending to close said valve

a trigger lever exposed so that it may engage said stem and hold said valve in open position, resilient means tending to hold said lever with said valve in open position, a rod of a different coefficient of expansion than said tube secured thereto and being connected to said lever so as to trip the latter upon extinguishment of said pilot light and thereby effect closure of said valve.

In witness that I claim the foregoing I have hereunto subscribed my name this 9th day of June, 1924.

WILLIAM ALFORD MERRICK.