

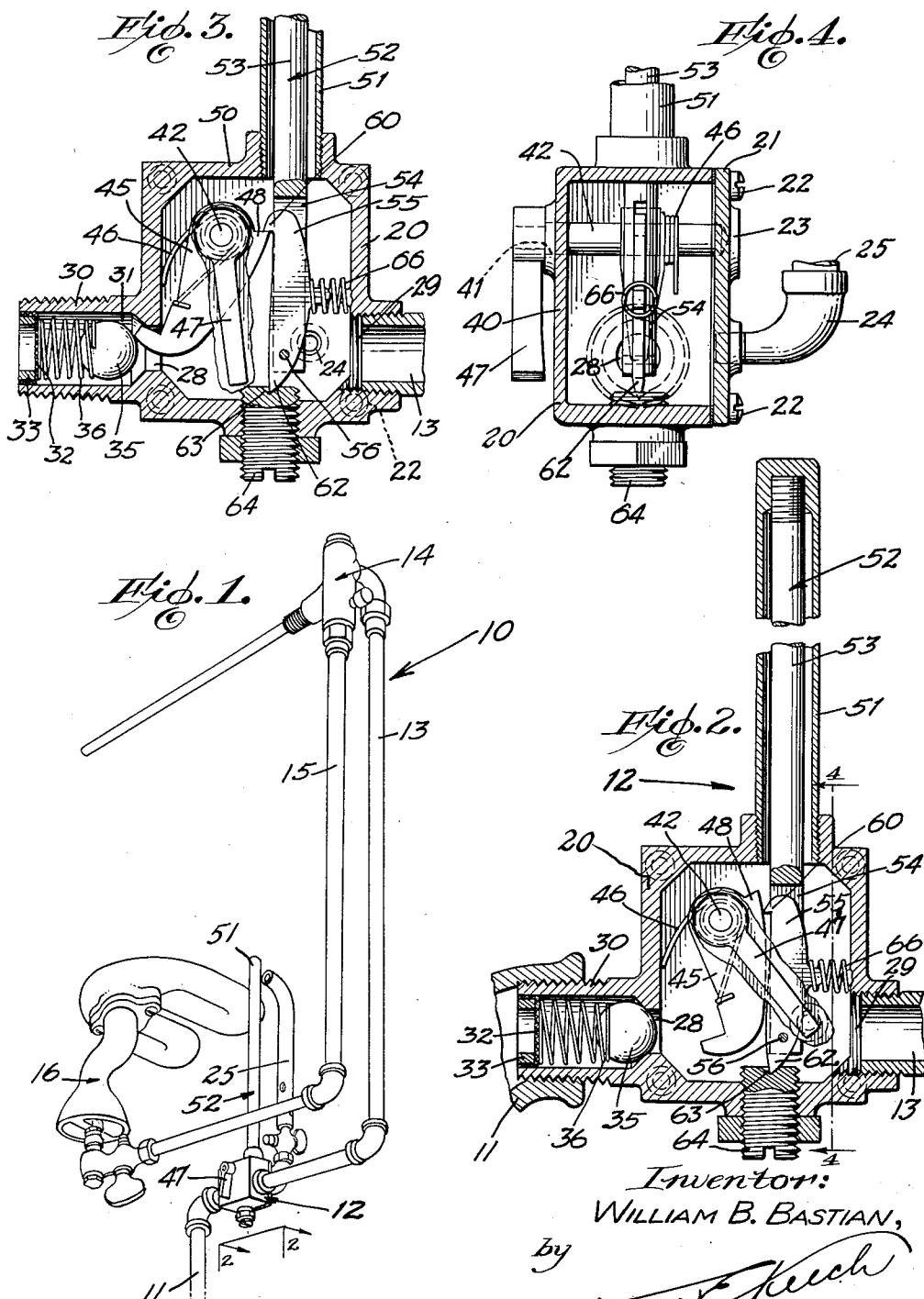
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W. B. BASTIAN

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GAS BURNER CONTROL DEVICE

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# UNITED STATES PATENT OFFICE

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## GAS BURNER CONTROL DEVICE

Application filed August 4, 1930. Serial No. 473,001.

My invention relates to gas burner control devices, and it is particularly adapted for use as a safety device in connection with a pilot lighted gas burner, the device operating to 5 turn off the supply of gas to the burner when the pilot is accidentally extinguished.

While I am aware that devices for this purpose have been previously invented, none of these has been practical for general employment in connection with domestic and 10 industrial automatic water heaters, on account of these devices being likely to get out of order.

It is an object of my invention to provide a 15 gas burner control device which is compact, self-contained, and having few parts, which perform their functions with but slight movement, so that the device will operate perfectly over long periods of time without any attention being given to it.

The manner of accomplishing the foregoing objects, as well as further objects and advantages, will be made manifest in the following description taken in connection with 25 the accompanying drawing, in which:

Fig. 1 is a perspective view showing the gas system of a thermostatically controlled water heater in which my invention is incorporated.

Fig. 2 is an enlarged, fragmentary, vertical, sectional view taken on a line 2—2 of Fig. 1, showing the valve of my invention in closed position.

Fig. 3 is a view similar to Fig. 2, showing the valve in open position.

Fig. 4 is a fragmentary, vertical, sectional view taken on a line 4—4 of Fig. 2.

Referring specifically to the drawing, the 40 gas system 10 shown in Fig. 1 includes an incoming gas line 11; a burner control device 12, which embodies my invention; a pipe 13; a thermostatically operated snap action valve 14 (upon which I have filed co-pending application for U. S. Letters Patent, Serial No. 473,002, filed Aug. 4, 1930); a pipe 15; and a combined cock and air mixer gas burner 16.

The burner control device 12 of my invention includes a casing 20, access to which is provided by a face plate 21 held on to the

casing 20 by screws 22. The plate 21 is provided with a boss 23 inwardly apertured for a purpose to be described later, and with a right angle nipple 24 which connects with and supports a pilot burner 25, as shown in 55 Fig. 1.

Provided in the casing 20, preferably at opposite points therein, are an inlet valve opening 28 and an outlet opening 29. Surrounding the inlet opening 28 is an inlet valve 60 body 30, formed integral with the casing 20, and with which the pipe 11 connects. The valve body 30 has a chamber 31 in the entrance to which a screen 32 is secured as by a ring 33. Disposed in the chamber 31 is a 65 valve ball 35 which is larger than the opening 28 and which is urged into seating relation with said opening by a compression spring 36 disposed in said chamber 31.

Provided on a wall 40 of the casing 20, 70 opposite the face plate 21, is an aperture 41 which is in alignment with the apertured boss of the face plate 21. Extending through said opening and into said aperture so as to be journaled therein is a shaft 42, upon which 75 is fixed a valve contacting arm 45, which is adapted to be swung so that its lower end contacts the ball 35 and moves this out of seating relation with the inlet opening 28. Disposed about the shaft 42 is a spring 46 which urges 80 the arm 45 out of valve contacting position. Provided on the outer end of the shaft 42 is a handle 47 which is adapted to be engaged 85 manually for a purpose to be described later. Provided on the valve contacting member 45 is a latch shoulder 48.

Screwed into a suitable opening in an upper wall 50 of the casing 20 is a tube 51 of a thermostat device 52, an expansion rod 53 of which extends downwardly into the casing 20, and is bifurcated to provide legs 54 between which a latch 55 is pivotally mounted on a pin 56. The latch 55 has a hook 60 at its upper end disposed adjacent to the latch shoulder 48 of the member 45 and has a point 62 at its lower end which is adapted to rest in a recess 63 formed in an upper surface of an adjusting screw 64, which is threadedly received upwardly into the casing 20. 95

Disposed between the wall of the casing 20 100

and the latch 55 is a compression spring 66 which urges the latch 55 into latching relation with the shoulder 48.

The pipe 13 connects with the outlet opening 29 of the casing 20 for conveying gas discharged therefrom through the thermostat 14 and the pipe 15 to the burner 16.

The operation of my invention is as follows:

10 In a normal operation of the heater with which the gas system 10 is incorporated, the parts of my burner control are disposed as shown in Fig. 3. The gas constantly passes from supply pipe 11 into the casing 20 and 15 thence into the pilot burner 25, from which flame is constantly directed against the upper end of the thermostat tube 51, which causes this tube to expand and thus retain the relatively inexpensive rod 53 in an upward 20 position.

Should the pilot burner 25 be extinguished when the burner is not lighted, as by a gust of wind or the temporary turning off of the supply of gas in the gas mains, the tube 51 25 will cool off and with the contraction of the tube 51 the rod 53 will be forced downwardly, with the result that the point 62 of the latch 55 will be brought pressurably against the screw 64, thus swinging the latch 55 into non- 30 engaging position relative to the shoulder 48 of the valve contact member 45. This will release the valve contact member so that it will be swung by the spring 46 into the position shown in Fig. 2, in which it releases the 35 valve ball 35 permitting this to be seated in the opening 28 and stop the flow of gas to the system 10.

After the gas has been shut off, as above described, it is very easy to manually reset the 40 control device 12 by manually rotating the shaft 42 with the handle 47 so as to open the valve 35 and permit gas to flow therethrough and out at the mouth of the pilot burner 25.

This is then ignited with a match. While 45 the valve 35 is held open by the hand engaging the lever 47, the flame from the pilot burner 25 quickly heats up the thermostat tube 51, which raises the rod 53 and permits the spring 66 to swing the latch 55 over the 50 shoulder 48, which holds the valve 35 in open position when the hand is removed from the lever 47.

It is thus seen that I have provided a very compact burner control device, having few 55 parts, of inexpensive and simple construction, which will operate satisfactorily over a long period of time without expert attention, and which, therefore, offers a maximum value as a safety device.

60 While I have shown and described a single embodiment of my invention, it is to be understood that various changes and modifications may be made in this without departing from the spirit of the invention or the scope 65 of my claims.

What I claim is:

1. In a gas burner control device the combination of: a casing; a valve contact member pivotally mounted therein, there being gas inlet and outlet openings in said casing; an inlet valve controlling said inlet opening and adapted to be contacted and held open by said valve contact member; spring means for urging said contact member away from said valve; manual means for actuating said contact member from the outside of said casing; means for yieldably urging said valve into closed position; a latch for holding said valve contact member against said valve to hold the latter in open position; and a thermostat 70 supporting said latch and acting directly thereon for disengaging same from said valve contact member upon a predetermined change of temperature of said thermostat taking place.

2. A combination, as in claim 1, in which means are provided for manually determining from the outside of said casing the temperature at which said thermostat withdraws said latch from contact with said valve contact member.

3. In a burner control device the combination of: a casing, there being inlet and outlet openings on opposite sides thereof; a valve in said inlet opening having means yieldably urging it into seated position; a valve contact member pivotally mounted in an upper portion of said casing and adapted to swing into contact with said valve to open the same; yieldable means for urging said contact member out of contact with said valve; latch means in said casing for holding said contact member in valve opening position; yieldable means for urging said latch into latching position with said valve contact member; a thermostat for forcing said latch out of latching relation with said valve contact member; and means for manually swinging said valve contact member to open said valve after said member has been released by said latch.

4. In a burner control device the combination of: a casing, there being inlet and outlet openings therein; a valve in said inlet opening; a valve contact member for opening said valve, pivotally mounted in said casing; an adjustment screw in said casing extending upwardly into said casing; a latch fulcrumed on said screw and adapted to hold said contact member in position to open said valve; a thermostatic element, including a tube and a rod enclosed therein which extends into said casing, the lower end of said rod being bifurcated to provide legs extending on opposite sides of said latch; a pin extending through said legs and said latch out of alignment with the point of contact of said latch with said screw; means for urging said latch into latching position relative to said contact member; and manual means for swinging said contact 110 member to open said valve.

member to reopen said valve when said member has been disengaged by said latch.

5. In a burner control device the combination of: a casing, providing a gas tight chamber, there being inlet and outlet openings therein; a valve controlling said inlet opening; valve opening means provided in said casing; latch means in said casing; means for yieldably urging said latch means to engage said valve opening means and hold the latter in valve opening position; thermostatic means provided on said casing and extending into said chamber to disengage said latch means from said valve opening means 10 upon a certain change in temperature taking place; yieldable means for urging said valve opening means out of valve opening position when released from said latch; and means for manually moving said valve opening 15 means into valve opening position from outside of said casing.

6. In a burner control device the combination of: a casing, providing a gas tight chamber, there being inlet and outlet openings 25 therein; a valve controlling said inlet opening; a valve opening means provided in said casing; latch means in said casing; means for yieldably urging said latch means to engage said valve opening means and hold the latter in valve opening position; a thermostat, including a tube mounted in said casing, communicating with said chamber and with its outer end sealed, and a rod fixed at one end to said tube and extending therethrough 30 into said chamber, said rod being bifurcated to straddle said latch, and pivotally connected to said latch to disengage said latch means from said valve opening means upon a certain change in temperature taking place; yieldable means for urging said valve opening 35 means out of valve opening position when released from said latch; and means for manually moving said valve opening means into valve opening position from outside of said 40 casing.

7. A combination, as in claim 5, in which an adjustable screw fulcrum is threadedly received in a suitable opening provided in said casing, to engage said latch, said fulcrum being manually adjustable from outside of said casing to determine the temperature at which said latch is disengaged from said valve opening means.

8. A combination, as in claim 6, in which an adjustable screw fulcrum is threadedly received in a suitable opening provided in said casing, to engage said latch, said fulcrum being manually adjustable from outside of said casing to determine the temperature at which said latch is disengaged from said valve opening means.

In testimony whereof, I have hereunto set my hand at Glendale, California, this 24th day of July, 1930.

65 WILLIAM B. BASTIAN.