J. W. DEARING.

BURNER CONTROLLER.

APPLICATION FILED OCT. 14, 1908.

981,844. Patented Jan. 17, 1911.

Fig. 1.

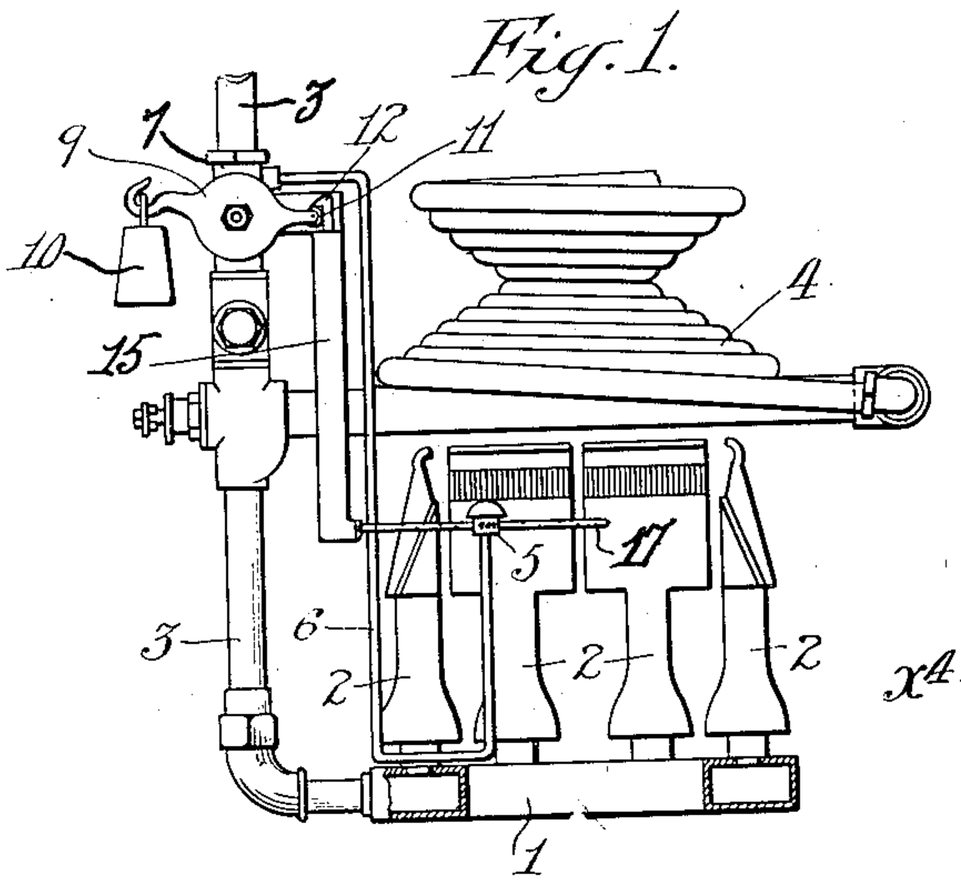


Fig. 3.

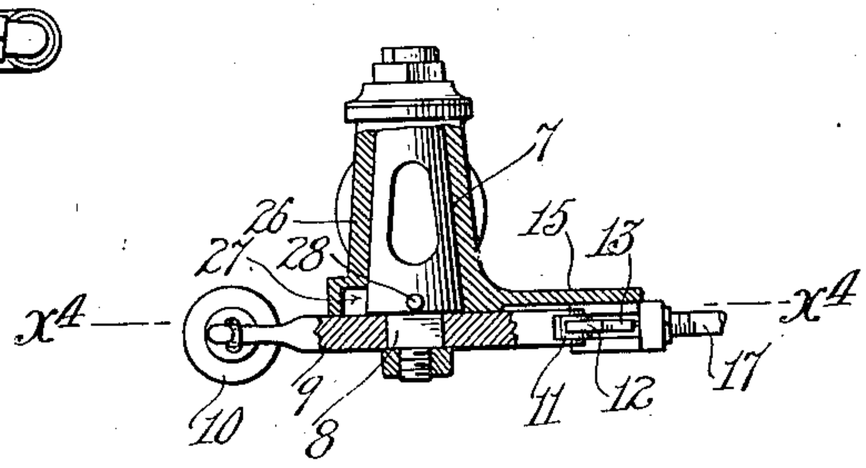


Fig. 4.

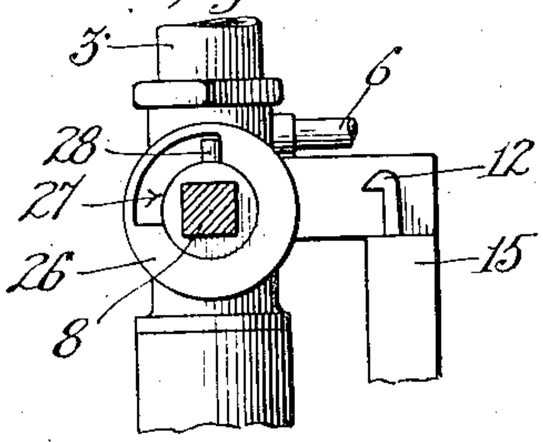


Fig. 2.

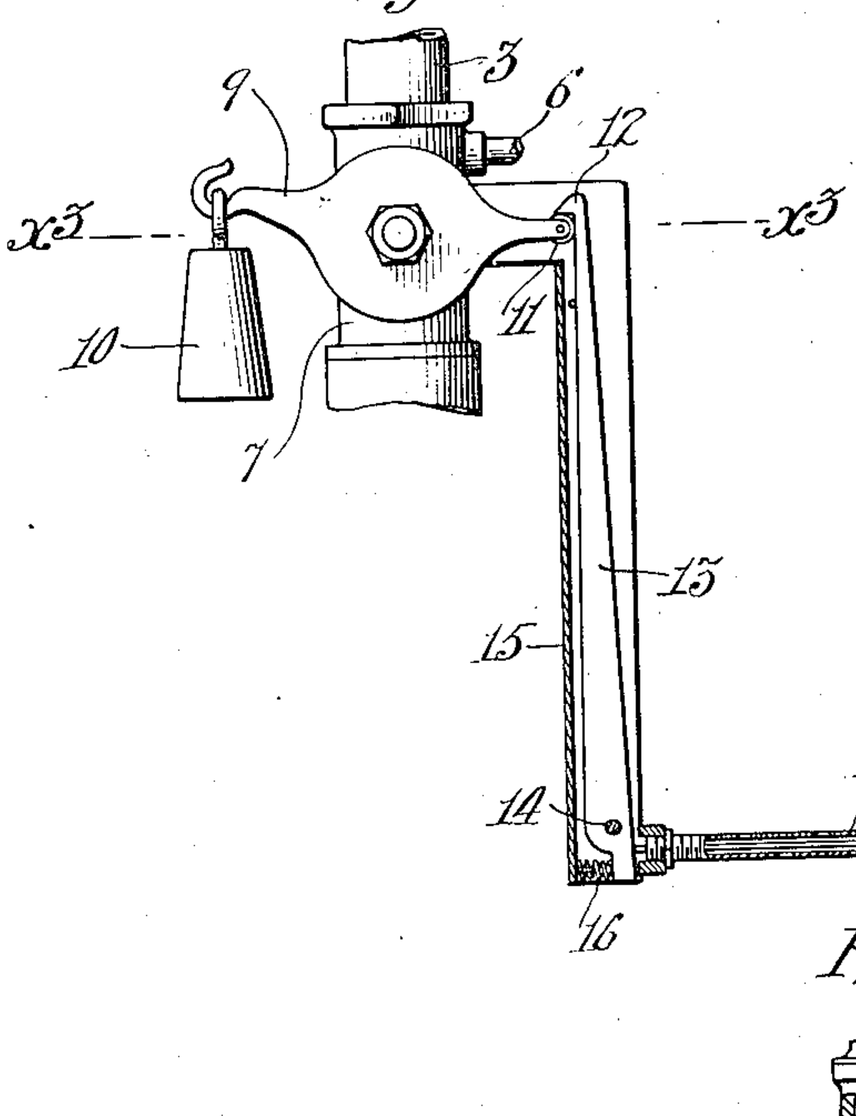
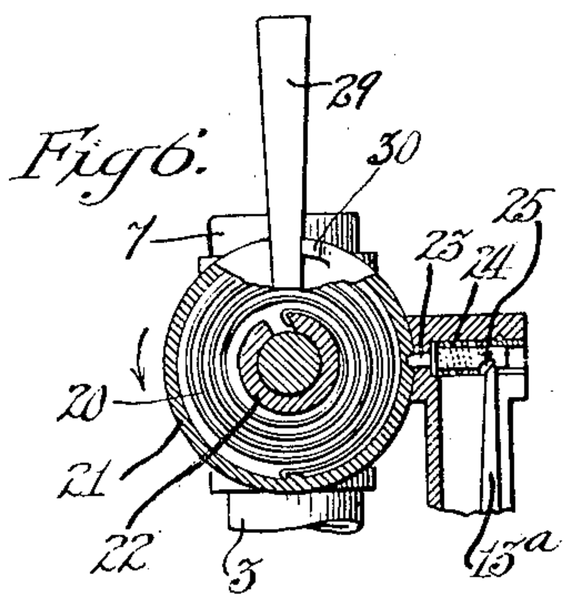
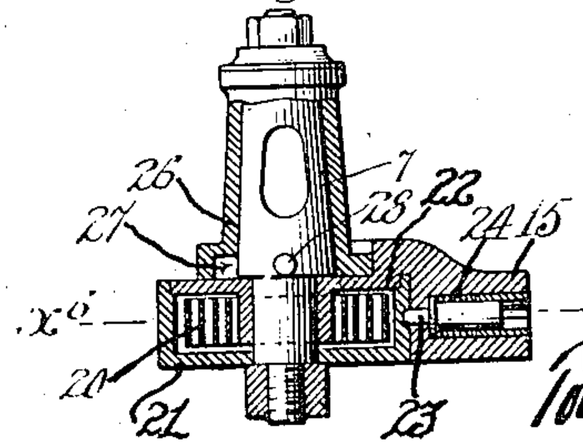


Fig. 5.

Fig. 6.





Witnesses:
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Louis W. Gratz.

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UNITED STATES PATENT OFFICE.

JOSEPH W. DEARING, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF TO W. S. BULLIS, OF LOS ANGELES, CALIFORNIA.

BURNER-CONTROLLER.

981,844. Specification of Letters Patent. **Patented Jan. 17, 1911.**

Application filed October 14, 1908. Serial No. 457,727.

To all whom it may concern:

Be it known that I, JOSEPH W. DEARING, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Burner-Controllers, of which the following is a specification.

This invention relates to automatic cut-offs for burners, and the main object of the invention is to provide a device of the character described, which may be used with burners which burn gasolene or other fuel, which will automatically shut-off the flow of fuel to the burner should the burner become extinguished. The burner which is referred to may consist of the regular burner or it may be the pilot light. In the present case I have shown the device as applied to a water heater and the automatic cut-off device is controlled by the heat from the pilot light, whereby if the pilot becomes extinguished, and the regular burner should be turned on by a person who did not know that the pilot light was extinguished, no gas will escape from the regular burner because the device will automatically shut a valve in the supply pipe for the regular burner if the pilot light becomes extinguished.

Referring to the drawings:—Figure 1 is a side elevation of the invention applied to a water heater, the burner of which is shown in section. Fig. 2 is an enlarged side elevation of the invention, part of the supporting bracket and thermostat being shown in section. Fig. 3 is a section on line x^3—x^3 Fig. 2. Fig. 4 is a section on line x^4—x^4 Fig. 3. Fig. 5 is a view similar to Fig. 3, showing a modified construction for actuating the valve by a spring instead of a weight. Fig. 6 is a section on line x^6—x^6 Fig. 5.

1 designates the header for the burner which connects with a series of burners 2 which collectively form what may be termed the regular burner. Fuel is supplied to the burner through a pipe 3 which connects with the header 1.

4 designates the coil of pipe which is arranged above the regular burner, in which coils the water is heated as it circulates therethrough.

5 designates a pilot burner which is supplied by a pipe 6, the latter connecting with pipe 3 at a point above the main valve 7 so that the pilot is always supplied with fuel. The pilot pipe 6 could be connected to the pipe 3 below the valve 7, if desired. As shown in Fig. 3, the main valve 7 has a square stem 8 on which is a valve lever 9 carrying a weight 10 at one end and being provided with an antifriction roller 11 at its other end. The roller 11 is normally engaged by a hook 12 formed on the upper end of a thermostat lever 13 which is pivoted at 14 to a bracket 15, the latter extending down from the casing of main valve 7 and, preferably, being cast integrally therewith. A compression spring 16 at the lower end of lever 13 serves to hold the hook 12 in engagement with roller 11. The lever 13 is controlled by a thermostat which consists of an outer tube 17 screwed to the lower end of bracket 15. Within the tube 17 is a rod 18, the outer end of which is secured to the tube 17 and the inner end of rod 18 bears against the lower end of thermostat lever 13. As shown in Fig. 1, the thermostat is so arranged that it receives heat from the pilot 5, and the tube 17 and rod 18 have different ratios of expansion, such that when the pilot is burning, which is its normal condition, as it is intended to burn perpetually in this type of heater, the tube 17 is expanded so that the rod 18 barely rests against the lever 13. If the pilot becomes extinguished for any reason, the tube 17 cools and moves rod 18 to the left which swings the upper end of lever 13 to the right and disengages hook 12 from roller 11, thereby permitting weight 10 to close valve 7 which prevents the passage of any gas to the regular burner. In this type of burner, the gas is turned onto the regular burner automatically whenever a person draws water, and as the water is usually turned on from a room located at a distance from the burner, it is not known whether the pilot is burning or not. If the pilot is burning, as it should be, the large burners will become automatically ignited and the water will run hot from the faucet. Should the pilot have been extinguished the regular burner will not be lighted and the water will run cold from the faucet, during which time gas will escape in large quantities from the burner, and should a person attempt to relight the pilot an explosion would be apt to occur, all of which is avoided with the present device which acts to immediately shut the main gas valve 7 should the pilot become extinguished, and as gas

can only escape from the pilot in very minute quantities the pilot may readily be re-lighted, if desired, without danger.

In the form shown in Figs. 4, 5 and 6, the valve 7 is actuated by a coil spring 20, one end of which, as shown in Fig. 6, is secured to a drum 21, and the other end is secured to the hub of a disk 22. The disk 22 forms part of the upper portion of the bracket 15, being cast, preferably, integrally therewith, while the drum 21 is revoluble on the valve stem 8, but the drum is adapted to rotate the valve through the medium of a lug 30 which presses against a handle 29 on the valve, as will be described. The drum 21 has a notch which is normally engaged by a flanged pin 23, being held in position by a compression spring 24. The pin 23 has a notch 25 which is engaged by the upper end of the lever 13a. Spring 16 is not employed in this form. When the tube 17 cools, upon the pilot being extinguished, the rod 18 swings the upper end of lever 13a to the right, disengages the pin 23 from drum 21, whereupon the spring 20 rotates the drum in the direction of the arrow, Fig. 6, and closes the valve. The valve casing 26 has a segmental cavity 27 through which a pin 28 sweeps, the latter projecting from the valve stem and acting as a stop to limit the valve to one-quarter turn. A handle 29 is secured to the valve and bears against the lug 30 on the drum 21 which actuates the valve through the medium of the handle 29, as before described, when the drum is released, but which allows the valve to be closed by moving handle 29 to the left away from lug 30 without actuating the drum 21.

What I claim is:—

In combination, a valve casing having a segmental cavity therein and a bracket extending downwardly therefrom, a valve stem, a pin on said valve stem projecting into the segmental cavity in the valve casing, a valve lever mounted on said valve stem having an arm extending outwardly therefrom, a thermostat lever pivoted to the lower end of said bracket and having a hook at its upper end for engaging the arm on the valve lever, a perforated tube secured to the lower end of said bracket, a rod in said tube secured thereto at the outer end of the tube and having its inner end extending through the inner end of the tube to coact with said thermostat lever below the pivot of said lever, elastic means for holding the lower end of said thermostat lever against the inner end of said rod, and means for rotating the valve lever when the arm on said valve lever is released from engagement with the hook on the thermostat lever.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 9th day of October 1908.

JOSEPH W. DEARING.

In presence of—
G. T. Hackley,
Frank L. A. Graham.