E. F. DEBLEY.

AUTOMATIC CUT-OFF VALVE FOR FLUID HYDROCARBON BURNERS.

APPLICATION FILED DEC. 26, 1911.

1,038,097. Patented Sept. 10, 1912.

Fig. 1.

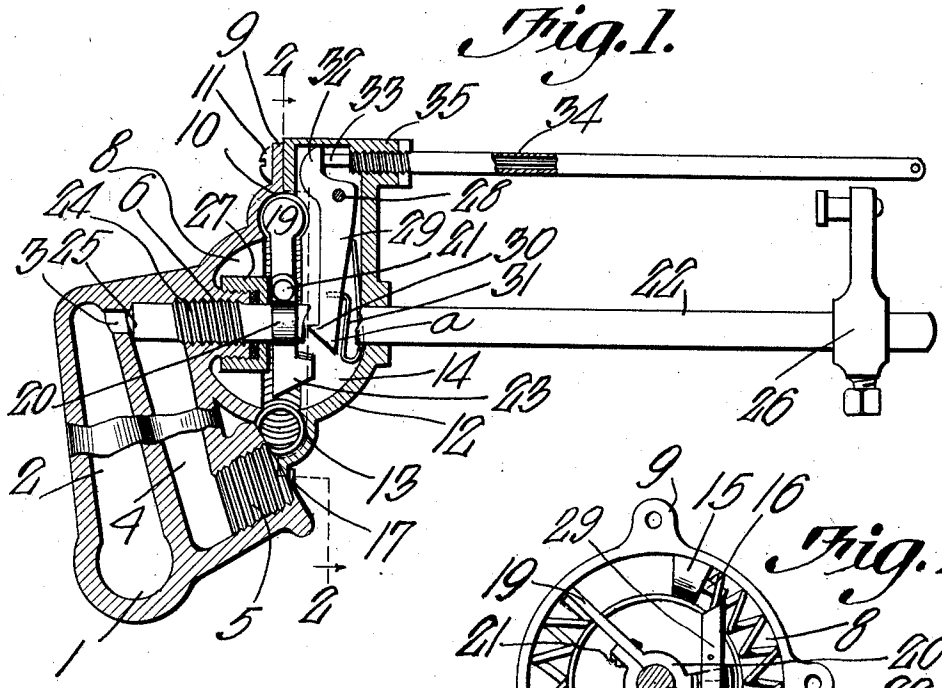


Fig. 2.

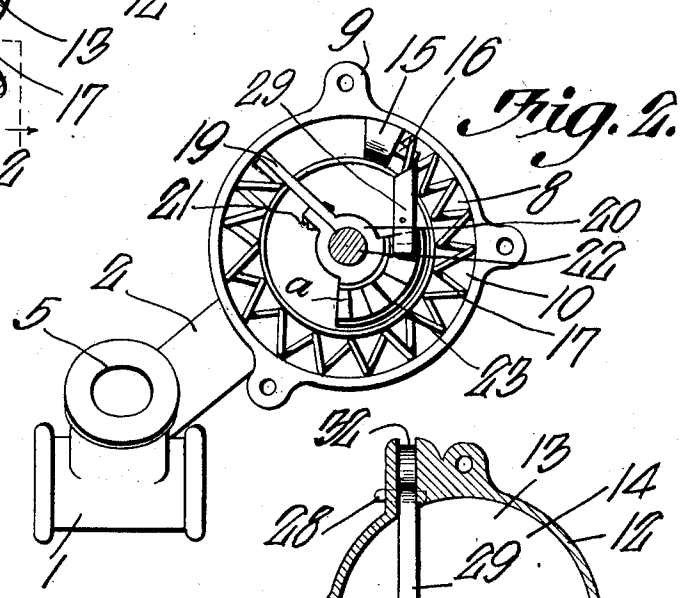


Fig. 4.

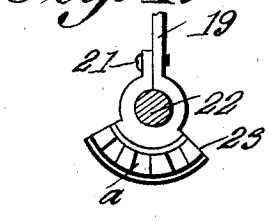
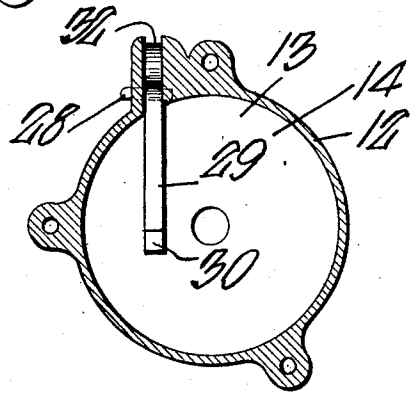


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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AUTOMATIC CUT-OFF VALVE FOR FLUID-HYDROCARBON BURNERS.

1,038,097. Specification of Letters Patent. **Patented Sept. 10, 1912.**

Application filed December 26, 1911. Serial No. 667,694.

To all whom it may concern:

Be it known that I, EDWARD F. DEBLEY, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Automatic Cut-Off Valve for Fluid-Hydrocarbon Burners, of which the following is a specification.

The present invention relates to improvements in automatic cut-off valves for fluid hydrocarbon burners, the primary object of the present invention being the provision of a novel thermostatically controlled valve releasing mechanism, whereby should the flame become extinguished from any known reason, or any unknown reason, the gas control valve will be automatically released and closed, the present construction embodying primarily a two part mechanism carrying casing provided with an annularly disposed spiral spring for normally exerting a tension to close the gas valve, in combination with a spring actuated trigger device disposed in the path to engage and lock the valve in open position, said last mentioned trigger device being operably connected with a thermostatically controlled mechanism whereby the same is permitted to lock the valve in open position or to automatically release the trigger to permit the valve to automatically close.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of invention herein disclosed can be made within the scope of what is claimed without departing from the spirit of the invention.

In the drawings Figure 1 is a longitudinal sectional view through the main casing of the valve with the control portion of the valve actuating stem in elevation, the parts being shown in valve closed position. Fig. 2 is a section taken on line 2—2 of Fig. 1, the parts being in the position they assume when the valve is open. Fig. 3 is a section taken on a similar line looking in the opposite direction to the arrow in Fig. 1. Fig. 4 is a plan view of the spring actuated valve operating lever *per se*.

Referring to the drawings the numeral 1 designates the inlet of the main casing which is provided with the duct 2 leading through the valve port 3 into the downwardly extending duct 4, which is in communication with the burner or gas supply connection 5.

Provided in alinement with the valve port 3 is a threaded bore 6, in which is mounted the threaded portion 24 of the stem 22, carrying the valve 25 to control the port 3. This stem passes concentrically through the two substantially semi-spherical members 8 and 14 which constitute the main mechanism carrying casing of the device, each of said members being provided with the annular channels 10 and 13 respectively, which form an annular chamber for the retention of the valve closing spring 17. The member 8 is provided with a connecting lug 9, whereby the screws 11 are employed to connect the two members 8 and 14 together to form the complete casing 12.

Formed integral with the member 8 and projecting into the annular channel 10 thereof is a segmental lug 15 carrying the pin 16 which connects and holds the spring 17 at such point, while the other free end 18 of said spring is normally in engagement with the valve actuating lever or arm 19, which is carried by the split ring 20 and secured by means of the screw 21 upon the valve stem 22. The arm 19 is shown projected through an annular slot into the auxiliary casing to engage the spring and permit the proper rotation of the valve stem 22.

Formed integral with and extending in opposite directions from the arm 19 upon the split ring 20 is a segment 23 provided with the radial teeth *a* which are disposed in the path to be engaged by the hooked end 30 of the valve stem locking trigger 29, which is normally held toward the said segment 23 by means of the spring 31 mounted within the member 14. The inner end of the stem 22 is provided with the valve 25 which seats within the valve port 3 and has the threaded portion 24 engaging the threaded aperture 6 of the valve casing, whereby the rotation of the stem by means of the adjustable handle 26 will move the arm 19 against the tension of the spring 17 to assume the dotted line position in Fig. 2 and will permit the hooked end 30 to engage the teeth *a* of the segment 23 and lock the valve 25 at the desired open position.

In order to prevent the escape of gas through the threaded portions of the cas-

ing, and into the mechanism holding casing, a stuffing box 27 is employed.

The trigger 29 is mounted within the auxiliary casing and held in proper relation therewithin by means of the pins 28, the upper end of said trigger 29 being provided with the hooked terminal 32 which is disposed in the path of to be engaged by the inner end of the rod 33 connected in and carried by the expansible tube 34 which is connected at 35 to the auxiliary casing and is disposed so as to be acted upon by the heat from the flame of the burner (not shown).

From the foregoing description taken in connection with the drawings, and assuming the parts to be in the position as shown in Figs. 1 and 2, the operation of the valve is as follows.

Heat is applied to the expansible tube 34 which due to the expansion thereof will move the inner end of the rod 33 outwardly and thereby moving the hooked terminal 32 so as to permit the trigger engaging end 30 of the trigger 29 to be placed under the tension of the spring 31, the handle 26 is now operated so as to rotate the stem 22 and bring the toothed segment 23 into line to be engaged by the hooked end 31 of the trigger 29, thus the valve at 25 will open the port 3 to permit the flow of gas through the burner attachment 5, the valve being locked in this position by means of the trigger 29. The automatic closing of the valve is accomplished through the contraction of the tube 34 and the consequent projection of the rod 33, which releases the upper end 32 of the trigger 29 and permits the rod 33 to be pushed inward to engage the hooked end 32 releasing the hooked end 30 of the trigger 29 so as to cause the same to disengage the teeth *a* of the segment 23, thus permitting the spring 17 to move the valve upon the arm 19 from the dotted line position Fig. 2 to the full line position, the inner face of the arm 19 abutting the face of the segmental lug 15 and the opposite face to the pin 16 in valve closed position.

What is claimed is:—

A valve of the class described, having a main casing provided with a circular spring incasing portion having an inwardly opening annular slot, a valve stem mounted concentrically of the main casing, a spring mounted in the circular portion of the main casing, an arm carried by the valve stem and projecting through the annular slot to engage one end of the spring, means for retaining the other end of the spring to normally hold the valve toward closing position, a toothed segment carried by the stem upon the opposite side thereto to the arm, a vertically swinging trigger mounted in the casing and having its free end disposed to engage the segment to retain the valve stem in open position, and a thermostatically controlled means operably disposed with relation to the trigger to release the same due to a lowering temperature.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

EDWARD F. DEBLEY.

Witnesses:

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