June 20, 1933. J. A. HOEGGER, JR 1,914,805

SAFETY DEVICE FOR GAS BURNERS

Filed Jan. 30, 1932 2 Sheets-Sheet 1

Fig. 1

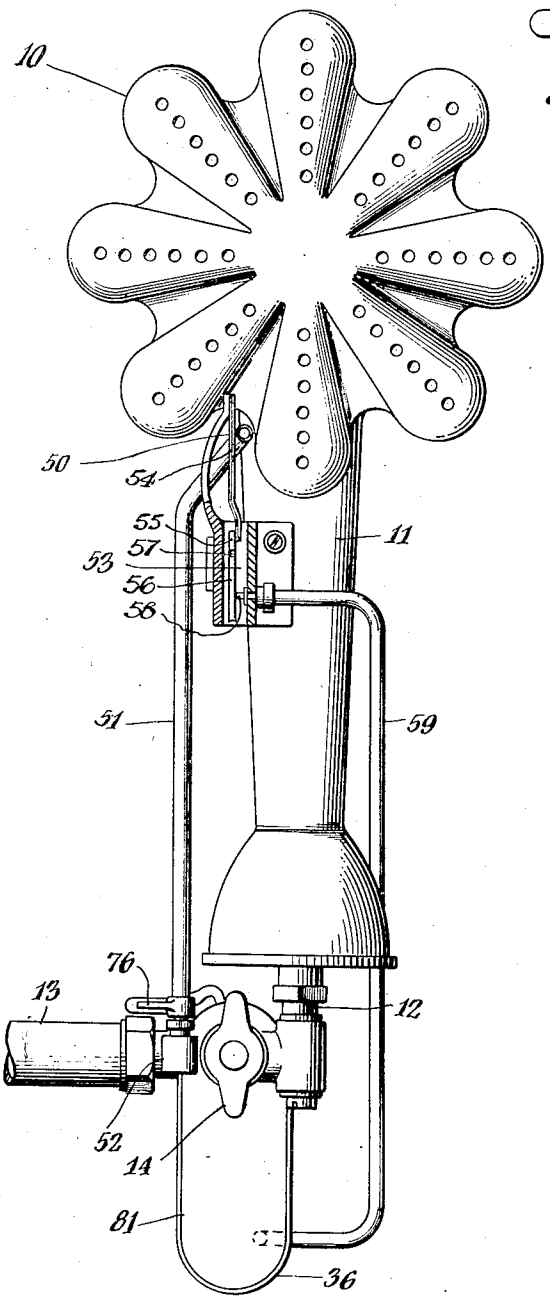


Fig. 2

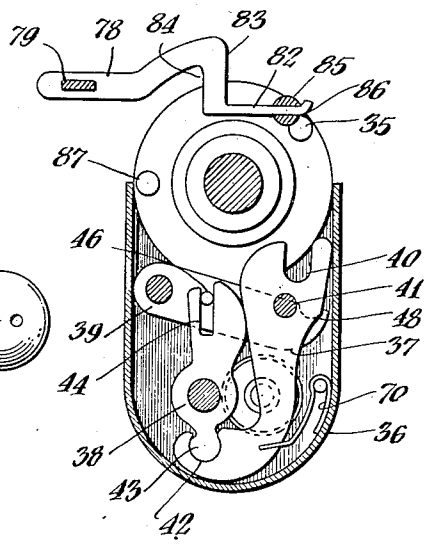
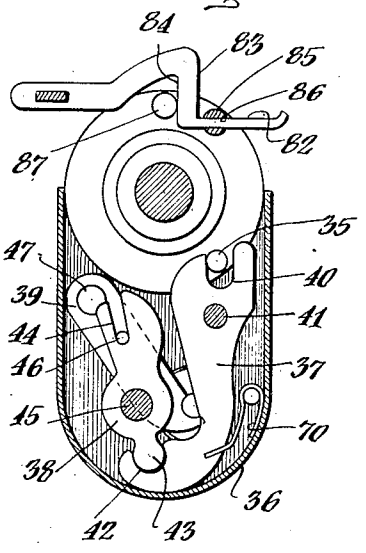


Fig. 3



INVENTOR
Joseph A. Hoegger jr.
BY
Hoguet & Neary
ATTORNEYS

June 20, 1933. J. A. HOEGGER, JR 1,914,805

SAFETY DEVICE FOR GAS BURNERS

Filed Jan. 30, 1932 2 Sheets-Sheet 2

Fig. 4

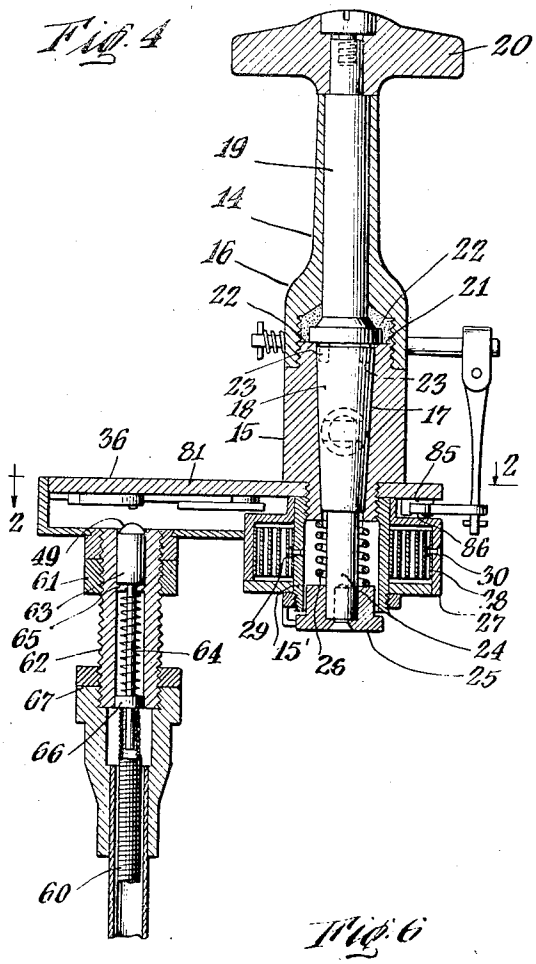


Fig. 5

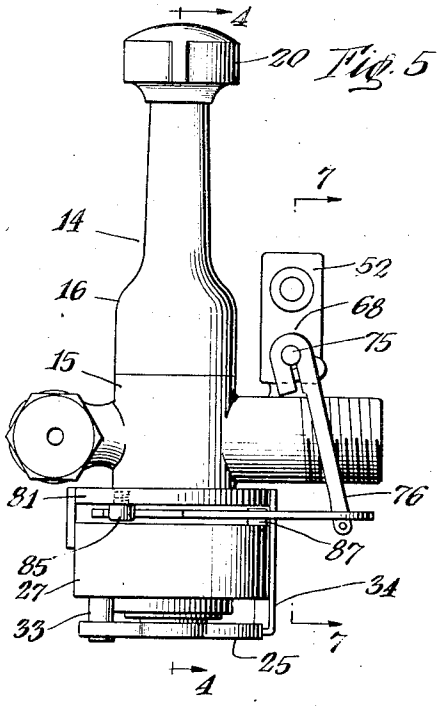


Fig. 7

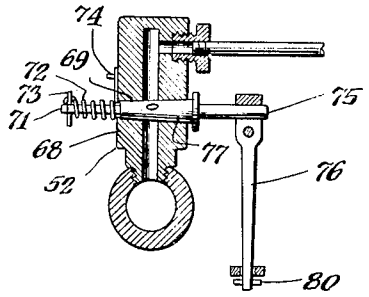
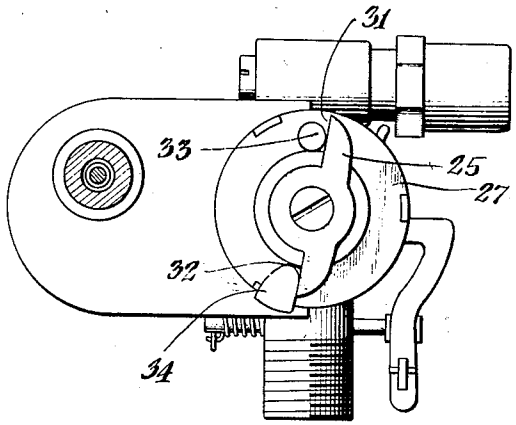


Fig. 6



INVENTOR
Joseph A. Hoegger jr.
BY
Hoguet & Meary
ATTORNEYS

Patented June 20, 1933 1,914,805

UNITED STATES PATENT OFFICE

JOSEPH A. HOEGGER, JR., OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO JOSEPH A. HOEGGER, OF JERSEY CITY, NEW JERSEY

SAFETY DEVICE FOR GAS BURNERS

Application filed January 30, 1932. Serial No. 589,800.

This invention relates to improvements in safety device for gas burners and particularly relates to valves of the type illustrated and described in my pending application for Letters Patent, filed October 10th, 1931, Serial No. 568,014 for improvements in safety attachment for gas burner.

The object of this invention is to provide a safety device in combination with a burner having a pilot light for lighting or relighting the burner as it is to be used.

A further object is to provide a safety device for such a burner to assure the cutting off of the fuel to both the burner and the pilot light should both become extinguished.

A further object is to provide a safety attachment for such burners having a valve controlling the fuel supply and a second valve controlling the pilot light both operating by releasing mechanism controlled by a thermostat located in the heat zone of both the burner and the pilot.

Further objects and advantages will become apparent on consideration of the description and claims when read in conjunction with the accompanying drawings in which

Figure 1 is a plan view of a burner with my improved safety device attached thereto;

Figure 2 is a sectional plan view of the releasing mechanism when both valves are in closed position;

Figure 3 is a view similar to that of Figure 2 showing the position of the mechanism when the device is set and one or both burners lighted;

Figure 4 is a sectional elevation of the valve and its holding and releasing mechanism on the line 4—4 of Figure 5, showing the means controlling the valve for the pilot light;

Figure 5 is an elevation of the valve and its releasing mechanism showing the valve for the pilot;

Figure 6 is a bottom plan view of the valve and holding mechanism; and

Figure 7 is a section on line 7—7 of Figure 5 showing the valve for the pilot.

This invention is applicable to any burner using any fuel controllable by valves although I have here illustrated it in connection with an ordinary gas burner for stoves. In the drawings like reference characters indicate like parts. 10 represents a gas burner having a mixing tube 11, a pipe 12 and a main supply pipe 13 of conventional design.

The valve 14 is of the type shown in my co-pending application Serial No. 568,014 and has a lower casing 15 and 15′ and an upper casing 16 joined by screw threads. In the lower casing 15 is a valve seat 17 in which is a valve body 18, and the upper casing has a separate valve stem 19 provided with a handle 20 for rotation. The end of the valve stem 19 adjacent the valve body 18 is enlarged and abuts against the shoulder or abutment 21 on the lower casing 15. This abutment is positioned above the valve body and prevents contact between the valve stem 19 and the valve body 18, the advantages of which are fully explained in my pending application. The valve stem 19 and the valve body 18 are operably connected for rotation by means of pins 22 on the valve stem which fit into recesses 23 in the valve body.

The valve stem 24 having at its lower end an engaging member 25 extends from the opposite end of the valve body through the lower casing 15′. A spring 26 is located between the engaging member and the casing to urge the valve body 18 into its seat 17.

A spring housing 27 is loosely mounted on casing 15 and around the valve stem 24. Within this spring housing is a spiral spring 28 fastened at one end as at 29 to the casing 15′ and at the other end as at 30 to the spring housing.

Any form of engaging member could be utilized although I have illustrated the engaging member as a cross piece 25 having engaging surfaces 31 and 32.

Projecting from the casing 27 is a pin 33 adapted to be engaged by the surface 31 and stop 34 is provided to engage the surface 32 when the valve is in closed position. The stop 34 tends to limit the movement of the valve in one direction and means, which will be later described, are provided for limiting movement in the other direction. A pin 35, the function of which will be later explained,

is provided on the upper side of housing 27.

When the valve is opened by turning handle 20 the engag ng surface 31 of engaging member 25 engages the pin 33 and rotates the spring housing around the casing 15'. The spring 28 within the housing 27 is so arranged that this rotation of the housing tends to tension the spring.

A housing 36 surrounds a portion of the casing 15, 15' and housing 27. In this housing are pivotally mounted levers 37, 38 and 39. Lever 37 has at one end a notch 40 to engage and hold the pin 35 when the spring housing 27 is rotated by the opening of valve 14 and notch 42 at its other end. Lever 37 is pivoted at 41 so as to give a mechanical advantage to the end of the lever wherein notch 42 is located.

The end 43 of the lever 38 engages notch 42 while at the other end of the lever 38 is a slot or notch 44. Lever 38 is pivoted at 45 so as to give a mechanical advantage to the end of the lever in which the slot 44 is located. A pin 46 located intermediate the ends of lever 39 engages slot 44 and lever 39 is pivoted at one end as at 47 and has a notch 48 at its other end adapted to engage a locking plunger having a half-rounded end 49 so that the lever 39 becomes a lock trigger in a lock comprising the lever and the locking plunger. A spring 70 is provided in the housing 36 and is so arranged as to tend to urge the levers to the position shown in Fig. 2.

The burner 10 is provided with a pilot or pilot burner 50 which is connected with the gas supply pipe 13 through pipe 51 and valve 52 which will be hereinafter described. The pilot 50 is connected to the fuel supply pipe 13 and is so arranged that the valve 14 is between the valve 52 and the burner 10 so that the opening or closing of the valve 14 does not affect the fuel supply to the pilot 50.

A tube 59 wherein is located a flexible shaft 60 leads from housing 36 to a thermostat 53. The shaft 60 is illustrated in the form of a tightly wound spring but any form of flexible shaft can be used if it is of a size to slide freely through the tube 59. The thermostat 53 is illustrated as similar to that illustrated in my co-pending application, but any type of thermostat capable of imparting movement to the shaft 60 can be utilized without departing from my invention. The thermostat 53 may be composed of a thermostatic bimetal element 54 of two strips of material welded or riveted together having two different coefficients of expansion and located within the heat zone of the burner and pilot light. The thermostatic metal 54 is so arranged that when heat is applied, it curves away from the burner and pilot and contacts with the ends 55 of lever 56 which is pivoted at 57 on trunnions.

The housing 36 is provided with an internal threaded nipple 61 into which a bushing 62 is threaded. A locking plunger 63 is provided within the bushing having the half-rounded end hereinbefore described. The operation of the thermostat causes sliding movement of the shaft 60 which because of the arrangement of the bushing 62 forces the locking plunger 63 into housing 36 so that the rounded end 49 engages the notch 48 in lever 39 when the valve is opened and the heat from the burner operates the thermostat.

A spring 64 is provided within the bushing abutting against the shoulder 65 and the end 66 of the flexible shaft 60. This spring resists the action of the thermostat and tends to keep the flexible tube 60 in contact with the operating portion of the thermostat and to keep the end 49 of the locking plunger in retracted position unless the thermostat is operated by application of heat. A threaded joint 67 joins the tube 59 to the bushing 62.

Valve 52 is a self closing valve having a casing 68 provided with a tapered valve seat 69 adapted to receive the valve body 77. A valve stem 71 extends from one end of the valve body and is provided with a spring 72, one end of which is affixed to the stem 71 by means of pin 73 and the other end of which is affixed to the casing 68 by a pin 74. The spring 72 is arranged and tensioned so that it tends to urge the valve to a closed position. At the other end of the valve body is a second valve stem 75 provided with a lever 76 adapted to open and close the valve.

A kick rod 78 is provided having a slot 79 for the reception of lever 76. A pin 80 through lever 76 keeps the lever in said slot. The kick rod 78 extends between the spring housing 27 and the plate 81 which forms the upper surface of housing 36. A portion 82 of kick rod 78 is offset to form shoulders or abutments 83 and 84. The portion 82 of kick rod 78 extends through the slotted pin 85 which extends downward from plate 81 and acts as a guide for the kick rod. A pin 87 projects from the upper side of the spring housing 27 and is so positioned that as the spring housing is turned to the open position for the valve the pin 87 engages the shoulder 84 and moves kick rod 78 thereby opening valve 52 by means of lever 76.

The pin 85 in cooperation with the pins 87 and 35 operates as a stop to limit the range of movement of the valve and the spring housing. When the valve is in the closed position pin 35 engages pin 85 to prevent further movement of the spring housing towards the closed position. When the spring housing is moved to open position the pin 85 and the kick rod 78 operate as a stop to prevent movement of the pin 87 farther than to the full open position. Pins 35 and 87 are here illustrated to limit the movement of the valve to

a one quarter turn but any arrangement comes within the scope of my invention.

The operation of portions of my invention is described in my pending appliation. Opening the valve by turning handle 20 causes member 25 to rotate spring housing 27 by means of engaging member 25 which engages pin 33 to rotate the spring housing and tension spring 28 to tend to urge spring housing 27 in a counterclockwise direction. (See Figure 3). The rotation of spring housing 27 causes pin 35 to engage the notch 40 and rotate lever 37 about point 41 This movement rotates lever 38 in a counterclockwise direction, (see Figure 3) and the lever 39 is rotated in a clockwise direction (see Figure 3). The burner being then lighted heats the thermostat which causes lock plunger 63 to project into the spring housing where the rounded end 49 engages notch 48 thereby locking the mechanism and holding it in the position shown in Figure 3. Through notch 40 and pin 35 the spring housing is held in this position.

As the spring housing 27 revolves the pin 87 is moved in a clockwise direction from the position shown in Figure 2 to the position shown in Figure 3 where it engages the shoulder 84 of the rod 78 causing an opening of the pilot valve 52.

As soon as the heat from either the burner or the pilot is operating on the thermostat, which is located in the heat zone of both the burner and the pilot, the mechanism remains in the position shown in Figure 3 and the valve 14 is left free for rotation by the handle 20 and can be set to any position to regulate the flow of gas or other fuel to the burner.

If, at any time, the flame of the burner and the pilot or both is extinguished the cooling of the thermostat allows the spring 64 to retract the lock plunger 63 releasing the lever mechanism. The spring 70 urges the levers to the position shown in Fig. 2 and the spring 28 in spring housing 27 revolves the spring housing in a counterclockwise direction, see Figs. 2 and 3. This movement releases the kick rod and the spring 72 of the valve 52 closes the same. The pin 33 on the spring housing 27 contacts with the engaging member 25 and turns the valve body 18 to closed position thereby cutting off the flow of gas or fuel to the burner and the pilot. Until either the burner or pilot is lighted and affects the thermostat, the valve will always return to closed position and there can be no further flow of gas from either outlet.

The valve having a separate body and stem with the abutment 21 is fully described and its advantages are explained in my pending application and no further need for such explanation is here necessary.

It can be seen that the structure here disclosed makes it possible to eliminate any loss of fuel when both the burner and pilot become extinguished without causing a complete stoppage of the flow until it is absolutely necessitated by the extinguishing of both flames so that there will be no possibility of either being relighted by the other. The use of the series of levers 37, 38 and 39 with a mechanical advantage toward the locking plunger makes it possible to use a strong spring in spring housing 27 without the necessity for having an unwieldy or heavy locking and holding mechanism.

The device shown is not limited in its application to gas burners as shown but may be used with any burner, and the principles of the invention may be utilized without resort to the specific form here shown and described, and I do not wish to be limited to such form.

I claim:

1. In a safety attachment for a burner having a pilot, a valve controlling the burner fuel supply, closing means adapted to leave said valve free for manual operation and adjustment in one position and to hold said valve closed in another position, a self closing valve controlling the pilot fuel supply, a thermostat located in the heating zone of both the burner and the pilot and means controlled by said thermostat to hold said closing means in its first mentioned position and said self closing valve in open position and to release said closing means and said self closing valve when both the burner and the pilot are extinguished whereby the fuel to both the burner and the pilot is cut off.

2. In a safety device for a burner having a pilot, a burner valve and a self closing valve for the pilot, a spring actuated member operable when in one position to leave the burner valve free for manual operation and to hold the self closing valve in open position, and in another position to hold the burner valve closed and to release the self closing valve, a thermostat located in the heat zone of both the burner and the pilot and locking means controlled by said thermostat to hold said spring actuated member in its first mentioned position and to release said member when both the burner and pilot are extinguished.

3. In combination a burner having a fuel supply pipe with a valve therein, closing means for said valve comprising an engaging member on the stem of said valve and a spring actuated member operable to engage said engaging member to hold said valve closed in one position and to leave said valve free for manual operation in another position, a pilot positioned to light said burner and having a fuel supply pipe with a self closing valve, means for holding said self closing valve in open position and releasing the same comprising a kick rod having an engaging portion and a pin on said spring actu-

ated member operable to engage said engaging portion when said spring actuated member is in its second mentioned position, a thermostat in the heat zone of both the burner and the pilot and locking means actuated by said thermostat to hold said spring actuated member in its second mentioned position and to release the same when both burner and pilot are extinguished whereby said first mentioned valve is closed and said self closing valve is released.

4. In combination a burner having a fuel supply pipe with a valve therein, closing means for said valve comprising an engaging member on the stem of said valve and a spring actuated member operable to engage said engaging member to hold said valve closed in one position and to leave said valve free for manual operation in another position, a pilot positioned to light said burner and having a fuel supply pipe with a self closing valve, means for holding said self closing valve in open position, and releasing the same comprising a kick rod having an engaging portion and a pin on said spring actuated member operable to engage said engaging portion when said spring actuated member is in its second mentioned position, a thermostat in the heat zone of both the burner and the pilot and locking means actuated by said thermostat to hold said spring actuated member in its second mentioned position and to release the same when both burner and pilot are extinguished comprising a series of interconnected levers, one end of which is positioned to engage said spring actuated member, and a locking plunger actuated by said thermostat and positioned to engage the other end of said series of levers.

5. In a safety attachment for a burner having a pilot, a valve controlling the burner fuel supply, closing means operable to leave said valve free for manual operation and adjustment in one position and to hold said valve closed in another position, a pilot valve controlling the pilot fuel supply, a thermostat located in the heating zone of both the burner and the pilot, and means controlled by said thermostat to hold said closing means in its first mentioned position and said pilot valve in open position and to release said closing means and close said pilot valve when both the burner and the pilot are extinguished whereby the fuel to both the burner and the pilot is cut off.

In testimony whereof, I have signed my name to this specification this 27th day of January, 1932.

JOSEPH A. HOEGGER, JR.