A. U. SÄRNMARK.

AUTOMATIC SHUT-OFF DEVICE FOR BURNERS.

APPLICATION FILED APR. 3, 1919.

1,364,145. Patented Jan. 4, 1921.

FIG. 1.

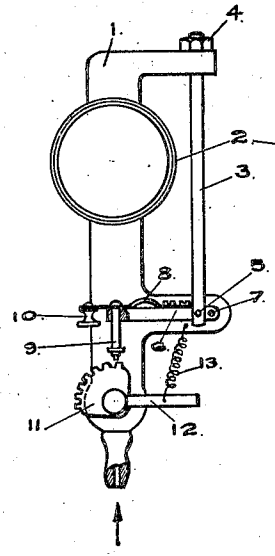


FIG. 2.

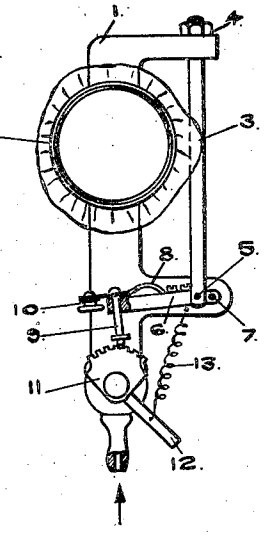
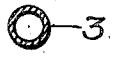


FIG. 3.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC SHUT-OFF DEVICE FOR BURNERS.

1,364,145. Specification of Letters Patent. Patented Jan. 4, 1921.

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To all whom it may concern:

Be it known that I, AXEL UNO SÄRNMARK, subject of the King of Sweden, residing at Gottenborg, Sweden, have invented certain new and useful Improvements in Automatic Shut-Off Devices for Burners, of which the following is a specification.

This invention relates to automatic shut-off devices for burners and the object is more particularly to provide means for shutting off the supply of fuel to the burner should, for any reason, the flame thereof be extinguished.

The invention consists of the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims.

Referring to the drawings wherein I have, merely for illustrative purposes, disclosed one embodiment of my invention:

Figure 1 is a plan view of a burner equipped with a shut-off device embodying the features of this invention, the parts thereof being shown in their normally closed positions;

Fig. 2 is a plan view similar to Fig. 1 illustrating the parts in the positions occupied thereby when the burner is lighted; and

Fig. 3 is a detail transverse section of the thermostat.

In the drawings, 1 is a stand and 2 a burner supported upon said stand. A thermostat 3 herein consisting of a thin-walled metal cylinder or tube is arranged adjacent to the burner 2 with one end thereof fixed to the stand 1 by a nut 4. This thermostat is connected herein by means of a pivot or pin 5 with a lever 6 which in turn is fulcrumed upon a pin 7 fixed in stand 1. The positions of the pins 5 and 7 may obviously be varied in their relation to each other in order that the throw of the lever 6 may be changed as desired. The lever 6 is herein included in means to check the movements of the valve hereinafter described for controlling the supply of fluid, either liquid or gaseous, to the burner 2 and in addition to said lever 6 I have herein provided resilient means, interposed between said lever and portions of the valve referred to, whereby certain variations may take place in the movements of the lever 6 without affecting the position of said valve.

The resilient means referred to herein includes a stop-pin 9 slidably mounted in said lever 6 and secured thereto by means of a spring 8 which is fastened to said lever 6 and to the end of said pin 9. A press-button 10 is attached to said spring to facilitate the manual movement of said pin with respect to said lever.

The pin 9 is arranged to engage the teeth of a ratchet 11 secured to and movable with the valve 12, hereinbefore referred to, and serves to check further movements of said valve as long as such engagement is maintained. The valve 12 is herein shown as a self acting valve, it being connected by means of a spring 13 attached to the operating lever thereof, with a portion of the stand 1, the normal tendency of the spring 13 being in the present example to close said valve.

If the gas is to be lighted the valve 12 is first opend by hand so that the gas will be permitted to pass from the main supply tube or pipe into the burner 2. When the gas is ignited the flame produced thereby is adapted to engage the thermostatic tube 3 and cause it to expand or become elongated, and the movement produced by this expansion is transmitted to and effects the rocking of the lever 6 about its pivot 7 thus causing the end of the pin 9 to engage the ratchet or toothed disk 11. Until the tube 3 has expanded sufficiently to move the pin 9 into engagement with said ratchet, the valve 12 must be held in the desired position by hand, extending the spring 13.

As indicated in the drawings the ratchet disk is provided with a plurality of teeth whereby said valve may be maintained in a plurality of positions in order that the amount of fuel to the burner may be regulated to provide the desired intensity of heat or light as the case may be.

By providing the resilient means including the spring 8 it will be obvious that there may be considerable variation in the expansion and contraction of the tube 3 provided the stop-pin 9 is set with respect to the lever 6 so that the initial movements of said lever will effect the engagement of the stop-pin with the teeth of said ratchet. Upon expansion of said tube 3 the lever 6 moves from its position shown in Fig. 1 toward and into that shown in Fig. 2 so as to move the lower end of the pin 9 into engagement with selected teeth of the ratchet 11. Should there be further expansion of the tube 3 after said pin has engaged said ratchet, the

lever 6 will continue to move while the pin 9 will remain stationary and thus effect a deflection of the resilient member or spring 8.

Should for any reason the flame be extinguished and the part 3 permitted to cool and contract the lever 6 will be returned by such contraction to its original position as shown in Fig. 1 and after the idle movement of the lever 6 relatively to the pin 9 has been taken up by the action of the spring 8, said pin 9 will be withdrawn from the teeth of said ratchet and the spring 13 then acts automatically to close said valve and thereby shut-off the supply of fuel to the burner. When it is necessary or desirable to shut-off the supply of fuel or to regulate the same the button 10 is pressed by hand so as to withdraw the pin 9 from engagement with the teeth of said ratchet 11 and when freed therefrom the valve may be turned in a direction opposite to said spring or it may be released so as to permit said spring to entirely close the valve.

While I have herein shown and described merely for illustrative purposes one specific embodiment of my invention, and have disclosed and discussed in detail the construction and arrangement incidental to such disclosure it is distinctly to be understood that the invention is limited neither to the mere details or relative arrangement of parts nor to the specific application herein shown but extensive variations from the illustrations may be made without departing from the principles thereof.

Claims—

1. In combination, a burner, a valve therefor, a toothed disk attached to said valve, a pivoted member, a thermostat connected with said member and adapted to be expanded by heat from said burner to rock said pivoted member, a disk-engaging member movably mounted in said pivoted member to engage the teeth of said disk, and resilient means interposed between said pivoted member and said disk-engaging member adapted normally to effect a combined movement of said members and to effect an idle movement of said pivoted member relatively to said disk-engaging member.

2. In combination, a burner, a valve therefor, a toothed disk attached to said valve, a pivoted lever, a thermostat connected with said lever and adapted to expand by heat from said burner to rock said lever, a pin slidably mounted in said lever to engage said teeth and maintain said disk in a predetermined position, and a spring interposed between said pin and said lever to effect a combined movement of said pin and lever.

3. In combination, a burner, a valve therefor, a toothed disk attached to said valve, a pivoted lever, a thermostat connected with said lever and adapted to expand by heat from said burner to rock said lever, a pin slidably mounted in said lever to engage said teeth and maintain said disk in a predetermined position, a spring interposed between said pin and said lever to effect a combined movement of said pin and lever, and manual means to move said pin independently of said lever to release said valve.

In testimony whereof I affix my signature in presence of two witnesses.

AXEL UNO SÄRNMARK.

Witnesses:
GUS HYLANDER,
GUST AD WÄHLSTRÖM.