(No Model.)

G. L. THUNEN.

SAFETY ATTACHMENT FOR GAS BURNERS.

No. 471,914. Patented Mar. 29, 1892.

FIG. 1.

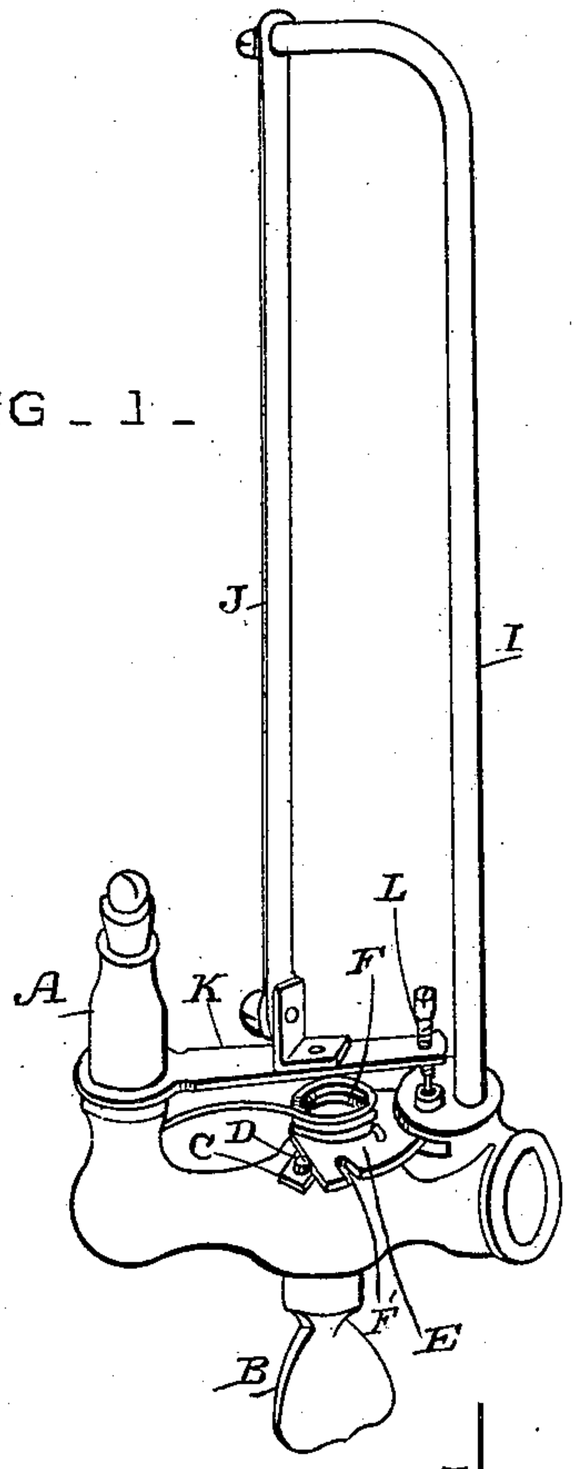


FIG. 2.

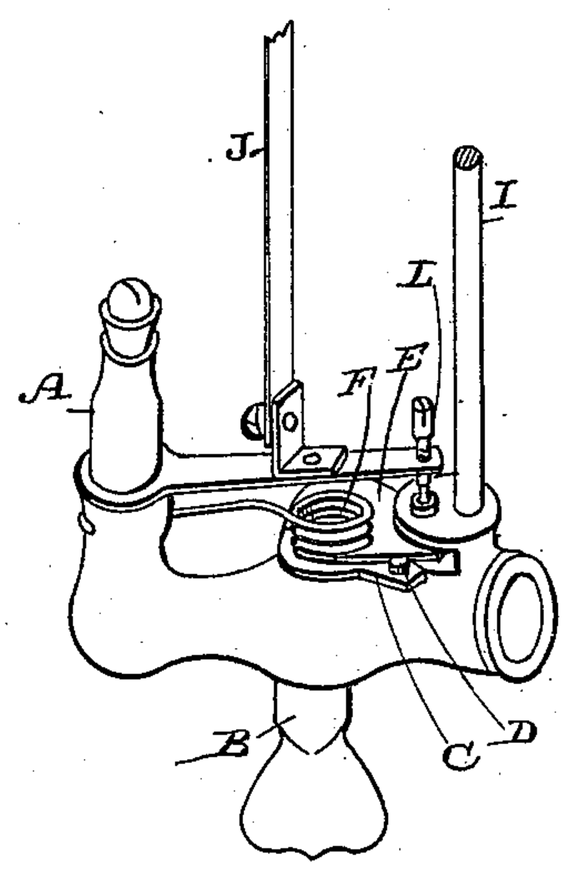


FIG. 3.

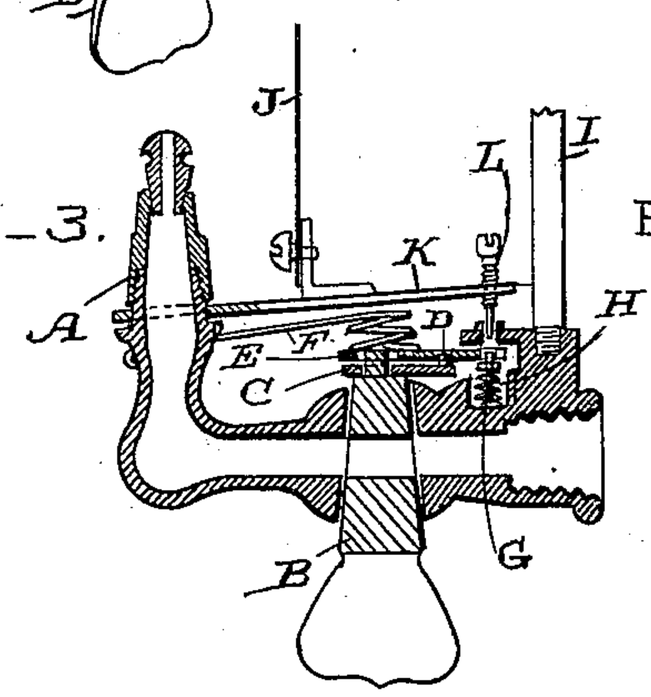
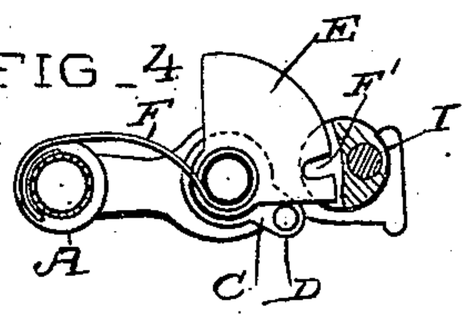


FIG. 4.



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UNITED STATES PATENT OFFICE.

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SAFETY ATTACHMENT FOR GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 471,914, dated March 29, 1892.

Application filed May 25, 1891. Serial No. 394,046. (No model.)

To all whom it may concern:

Be it known that I, GERHARD L. THUNEN, a citizen of the United States, residing at Oroville, Butte county, State of California, have invented an Improvement in Safety Attachments for Gas-Burners; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an attachment for gas-burners whereby the supply cock or valve is automatically closed whenever the gas is extinguished accidentally or otherwise.

It consists of a segment or quadrant loosely fixed to the upper end of the cock, so as to be turned with it or independently of it, a latch by which it is held when the cock is open, a disengaging device actuated by the cooling and contraction of certain parts whenever the gas is extinguished, and a spring acting upon the segment, so that when the latter is released from its holding device the spring will turn it and cause it to close the cock and cut off the supply of gas.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a view of the burner with the parts in position for closing the valve. Fig. 2 shows the burner closed. Fig. 3 is a transverse section of the burner, showing it open. Fig. 4 is a horizontal section.

A is a gas-burner of any suitable or ordinary description, and B the key by which the cock or valve is turned so as to admit gas from the supply-pipe to the burner or cut it off therefrom.

Upon the end of the key or cock which projects above the tube is fixed an arm C, which turns with the key. This arm has an upturned point or pin D at its outer end. Above the plate C is a second plate E, which is in the form of a segment of a circle, the center being fitted loosely around a projecting end of the key, so that it may turn independently of the latter.

F is a coil or other spring having one end fixed to the burner-tube or other point and the other end acting upon the rotary segment E. The tension of this spring is sufficient to cause the segment to stand in the position shown in Fig. 1 when the cock is closed and the segment free to move. When the cock is opened, the action of turning the cock causes the pin D to press against the side of the segment, thus turning it one-quarter of a revolution when the cock is being opened. When the cock stands fully open, a notch F′ in the edge of the segment is engaged by a vertical spring-actuated pin G, which is movable in a chamber H, this chamber containing the spring which forces the pin upward. This pin will retain the segment in this position, whether the cock be closed or open, until such time as the gas has been lighted at the burner.

I is a bent arm or post extending upward with the upper end curved, as shown. To this upper end is fixed an expansible slip of metal J, which extends down in close proximity to the burner, so that when the flame is lighted it will be heated by it.

From the base of the burner an elastic arm K extends to a point just above the spring-actuated pin G, which holds the movable segment in place. Through the end of this elastic arm passes a pin L, which is screw-threaded and adjustable. The point of the pin stands just above the pin G, which locks the segment. The lower end of the expansible slip of metal is connected with the horizontal elastic arm K, which carries the pin L, and when the parts are cold this arm and the pin are held up just above the rotating segment. The cock being opened and the gas lighted, the slip J, upon which the flame of the burner acts, will expand in length, and by this expansion it allows the horizontal spring-plate K and the pin L at its end to move downward. As this pin moves downward it forces the locking-pin G, previously described, down into its socket by reason of the superior pressure of the spring K, carrying the upper pin. This releases the segment from the lower locking-pin; but it is at the same time engaged by the upper pin L, and is thus held in this position as long as the gas remains lighted. If for any reason the gas should become extinguished, the expansible strip J immediately cools, and, drawing the horizontal spring-plate K upward, it draws the end of the pin L out of engagement with the rotatable segment E. The spring F, by which this segment is rotated into the position shown in Fig. 1, is strong enough to turn the segment and also the cock by reason of the edge of the segment engaging the pin D on the arm C,

which is fixed to the cock. By this means the cock will be immediately closed as soon as the gas is extinguished, even though it be left open, and if the cock is properly closed the only action produced by the cooling of the expansible strip will be to release the segment and allow it to follow the cock to its closed position, where it retains it.

To prevent the spring-bolt G following the pin L when the latter is withdrawn, I may make the point of the pin smaller than the diameter of the bolt, so that when the bolt is pressed down the tendency of the spring F will be to turn the segment back to first position, and as the pin has a smaller diameter than the bolt it will be manifest enough movement is allowed the segment to carry one of the walls of the slot F′ beyond the top of the bolt, whereby the bolt is retained in its depressed condition during the time the pin L is being withdrawn. When the segment has been returned by the spring, the bolt G is enabled to rise, as before stated.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A safety attachment for gas-burners, consisting of the spring-actuated segment turning loosely upon the projecting end of the cock or key, an arm fixed to this end of the cock, having a point to engage the segment and turn it a part of a revolution when the cock is opened, a spring-actuated pin G, fitted to the burner and engaging a notch or perforation in the segment, whereby it is held when the cock is open, a second spring-plate carrying a disengaging pin L, and a means for releasing said plate by the heat of the burner, so that the pin will be substituted for the first-named locking-pin, substantially as herein described.

2. The safety attachment for gas-burners, consisting of a spring-actuated segment fitted loosely upon the projecting end of the cock or key, an arm fixed to the cock or key and turning with it and having a pin which engages and turns the segment when the cock is opened, a spring-actuated locking-pin G, whereby the segment is held in position to prevent it from acting to close the cock after the latter is open, a spring-plate carrying a disengaging pin L, which stands in line above the locking-pin, and an expansible strip having one end connected with this spring-plate and the other with a standard, whereby the strip is held in position to be heated by the action of the gas-flame when the latter is lighted, so that the expansion allows the spring-plate and disengaging pin to descend and this pin to take the place of the primary locking-pin, substantially as herein described.

3. A safety attachment for gas-burners, consisting of a spring-actuated segment turning loosely upon the projecting end of the cock or key of the gas-burner, an arm fixed to said cock or key, having a point engaging the segment, so that the latter is turned when the cock is opened, a spring-actuated locking-pin G, which engages and holds the segment in this position until the gas is lighted, a disengaging pin L, with an actuating-spring of superior tension to that of the locking-pin G, and an expansible and contractile slip J, connected with this spring, expanding so as to allow the disengaging pin L to be substituted for the locking-pin G when the flame is lighted and contracting when the flame is extinguished, so as to withdraw the disengaging pin L and allow the segment to act to close the cock or valve, substantially as herein described.

In witness whereof I have hereunto set my hand.

GERHARD L. TIIUNEN.

Witnesses:
S. H. NOURSE,
J. A. BAYLESS.