(No Model.)

L. JOHNSON & L. FRIDLUND.

AUTOMATIC GAS CUT-OFF.

No. 531,123. Patented Dec. 18, 1894.

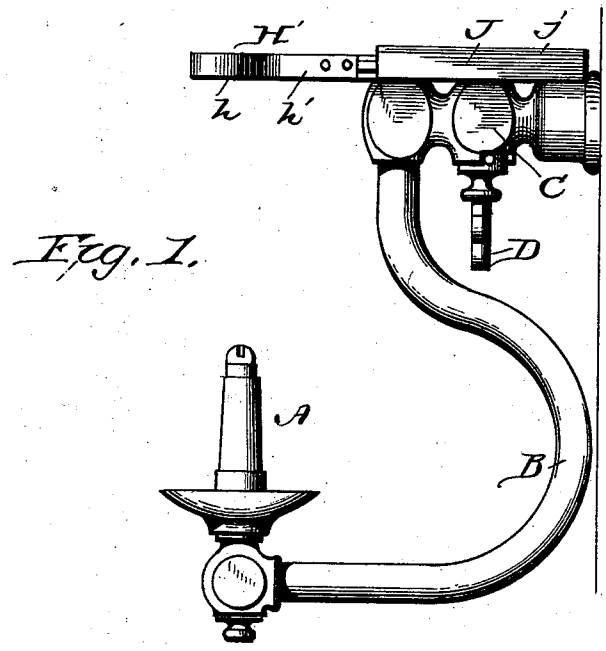

Fig. 1.

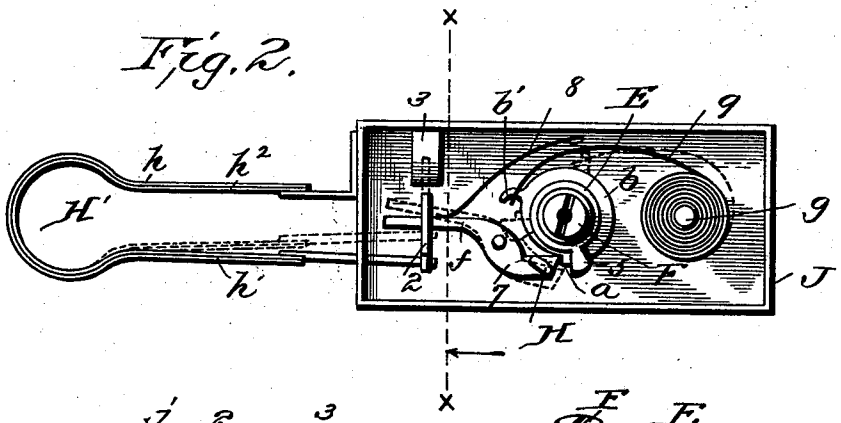

Fig. 2.

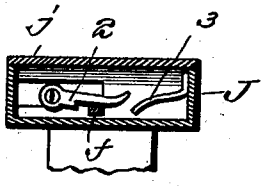

Fig. 3.

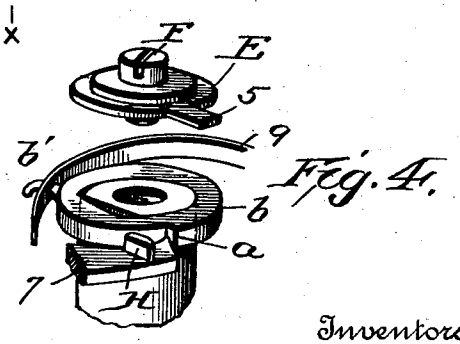

Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

LEWIS JOHNSON AND LEWIS FRIDLUND, OF WILLMAR, MINNESOTA.

AUTOMATIC GAS CUT-OFF.

SPECIFICATION forming part of Letters Patent No. 531,123, dated December 18, 1894.

Application filed May 9, 1894. Serial No. 510,646. (No model.)

To all whom it may concern:

Be it known that we, LEWIS JOHNSON and LEWIS FRIDLUND, citizens of the United States, residing at Willmar, in the county of Kandiyohi and State of Minnesota, have invented certain new and useful Improvements in Automatic Gas Cut-Offs; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The purpose of the invention is to prevent asphyxiation from escaping gas resulting from blowing out the light or from other causes other than by shutting off the flow of gas in the manner provided. By this invention should the light be extinguished, either by blowing, or by turning off the gas and again turning it on as frequently happens, the automatic appliances will be brought into play and shut off the supply of gas.

The improvement consists of the novel instrumentalities and the peculiar combinations thereof which hereinafter will be more fully described and claimed.

In the drawings, forming a part of the specication—Figure 1 is a side elevation of a gas fixture having the invention applied thereto. Fig. 2 is a top plan view on a larger scale showing the relative position of the parts when the light is burning by the full lines and the position they will assume when the light is out by the dotted lines. Fig. 3 is a cross section on the line *x*—*x* of Fig. 2 looking in the direction of the arrow. Fig. 4 is a detail view of the upper end of the key, the stop plate having a limited movement thereon, and the trip for releasing the key when the latter is turned back by hand to shut off the gas in the ordinary manner.

Referring to the drawings similar letters and numerals indicate corresponding parts in the several views.

The letter A represents a burner of any desired pattern attached to a pipe B.

C indicates a valve casing having the key D for purposes of shutting off or turning on the gas as required. The upper end of the key is provided with a plate *b* having a shoulder or stop *a* which is engaged by one end of a catch 7 when the key is open, and with a hook *b'* to which one end of a spiral spring 9 is attached for returning the key to a normal position after the catch 7 is disengaged from the stop *a*. This plate *b* has a limited movement on the key and one side of the opening therein through which the key passes, is flattened to engage with a corresponding flattened side of the key to cause the key and the plate to turn together. Any construction which will admit of the key and the plate having an independent movement within certain limits will answer, but the construction shown is preferred because of its simplicity and compact arrangement. The trip 5 is a projecting arm forming part of a plate or washer E secured to the key so as to turn therewith. This washer is clamped between a shoulder or the end of the key and the head of a screw F let into the end of the key in the usual manner by means of which the said key is secured in its case.

The catch 7 is a lever pivoted between its ends, one end being adapted to engage with the stop *a* to hold the key open against the tension of the spring 9, the other end *f* being extended and adapted to be engaged by a gravity dog 2. The pivotal support of the catch is close to the peripheral edge of the plate *b* and the inner arm is deflected to enable its end to engage with the stop *a* to one side of the key so that the thrust will be received on the said pivot.

A projection H rising from the inner end of the catch and extending across the path of the trip 5 is beveled in opposite directions on the side facing the key to enable the trip to ride on the beveled faces and move the inner end of the catch outward sufficiently far to cause its end to clear the stop *a*.

The spiral spring 9 has one end attached to the stop plate *b* and the other end to a pin or post *g* and is designed to turn the key to a normal position to shut off the gas after the catch 7 is disengaged from the stop *a*. This spring may be replaced by any well known form of spring which may be so disposed as to return the key to a normal position when not held open by the catch 7.

A thermostat H' having a loop *h* and approximately parallel members *h'* *h*², is disposed to have the loop *h* come over the flame so as to be affected by the heat. The member *h*² is rigidly attached to the fixture and

the member h' is free and carries the dog 2 which is pivotally connected therewith. This thermostat is constructed of metal of unequal expansion and arranged to have the ends of the members h' h^2 separate under the influence of the heat of the flame, thereby carrying the dog 2 into position to engage with the arm f of the catch so that when the flame is extinguished the thermostat cooling will contract and move the dog and release the catch from the stop a. The spring 9 regaining itself will close the key and shut off the gas. This operation takes place only in the event of the light being blown out or the gas shut off and quickly turned on again without igniting. When the gas is turned off by the key and the latter is not instantly turned on again the automatic appliances are not brought into active operation. A spring 8 holds the catch in position to engage with the stop a. The end of the dog 2 is beveled and is adapted to ride upon an incline 3 by means of which it is disengaged from the arm f to permit the catch to act and engage with the stop a when the key is turned to light the gas.

It will be understood that the operating parts will be suitably located, preferably on the valve casing, and will be housed to prevent the lodgment of dust and dirt therein and tampering therewith by persons of a mischievous or inquisitive turn of mind. For this purpose a closure J will be attached to or form part of the valve case and will be open on one side to admit of access for repairs. A cap j will cover the open side of the closure and is secured in place in any desirable manner so as to be easily removed by authorized persons acquainted with the manner of detaching the same.

To light the gas the key is turned in the usual manner and the gas ignited. The catch engaging with the stop holds the key open. The flame expands the thermostat and the dog 2 is carried thereby into position to engage with the arm f and disengage the catch from the stop on the contraction of the thermostat due to its cooling when the light is extinguished. Should the light be extinguished by a proper use of the key, the trip 5 will move with the key during its initial movement and disengage the catch from the stop a. An instant later the key and the stop plate will interlock and move in unison to the limit of the movement of the key when the gas is shut off.

It is essential that the trip release the catch a little in advance of the interlocking of the key and the stop plate to prevent any binding of the parts.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a gas fitting, the combination with a key for turning on and off the supply of gas, of a thermostat arranged to be acted upon by the flame and having one end firmly attached to the fixture, a dog loosely connected with the free end of the thermostat, a catch pivoted between its ends and engaged by the said dog, an incline to engage with the free end of the dog to automatically disengage it from the catch, a stop plate mounted directly upon the key and having a limited movement relative thereto and operated upon by a retracting spring, and a trip firmly attached to the key so as to move therewith and disengage the catch from the stop plate in advance of the key reaching the limit of its movement relative to the said stop plate, substantially as set forth.

2. In combination with a gas fitting of a thermostat disposed to be acted upon by the flame, a catch arranged to be operated upon by the thermostat, a stop plate mounted upon the key and having a limited movement relative thereto, a retracting spring operatively connected with the stop plate, a trip secured to the key so as to move therewith and adapted to disengage the catch from the stop plate, and a gas controlling key, substantially as described for the purpose set forth.

3. In a gas fitting, the combination of a gas controlling key, a stop plate mounted on the key, and having a limited movement relative thereto, a trip fixedly attached to the key so as to move therewith, a catch pivoted between its ends and adapted to engage with the stop plate and having a projecting portion to be engaged by said trip, a thermostat arranged to be acted upon by the flame, a dog pivotally attached to the free end of the thermostat and adapted to engage the said pivoted catch, an incline to engage with the dog and automatically disengage it from the said catch, and a retracting spring having connection with the stop plate to normally close the key to shut off the flow of gas when said stop plate is released, substantially as set forth.

4. The combination with a key for turning on and off the gas in a gas fixture, of a stop plate mounted on the key and having a limited movement relative thereto, a spring connected with the stop plate for returning the key to a normal position when released a catch to engage with the stop plate and hold the key open, and having a projection beveled in opposite directions on the side facing the key, a spring for holding the catch in operative relation, a trip movable with the key to engage with the projection and release the catch, a thermostat operated by the heat of the gas jet, a pivoted dog carried by the thermostat, and an incline to automatically disengage the dog from the catch, substantially as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

LEWIS JOHNSON.
LEWIS FRIDLUND.

Witnesses:
OLOF OLSON,
AXEL F. ELFSTRUM.