

No. 654,009.

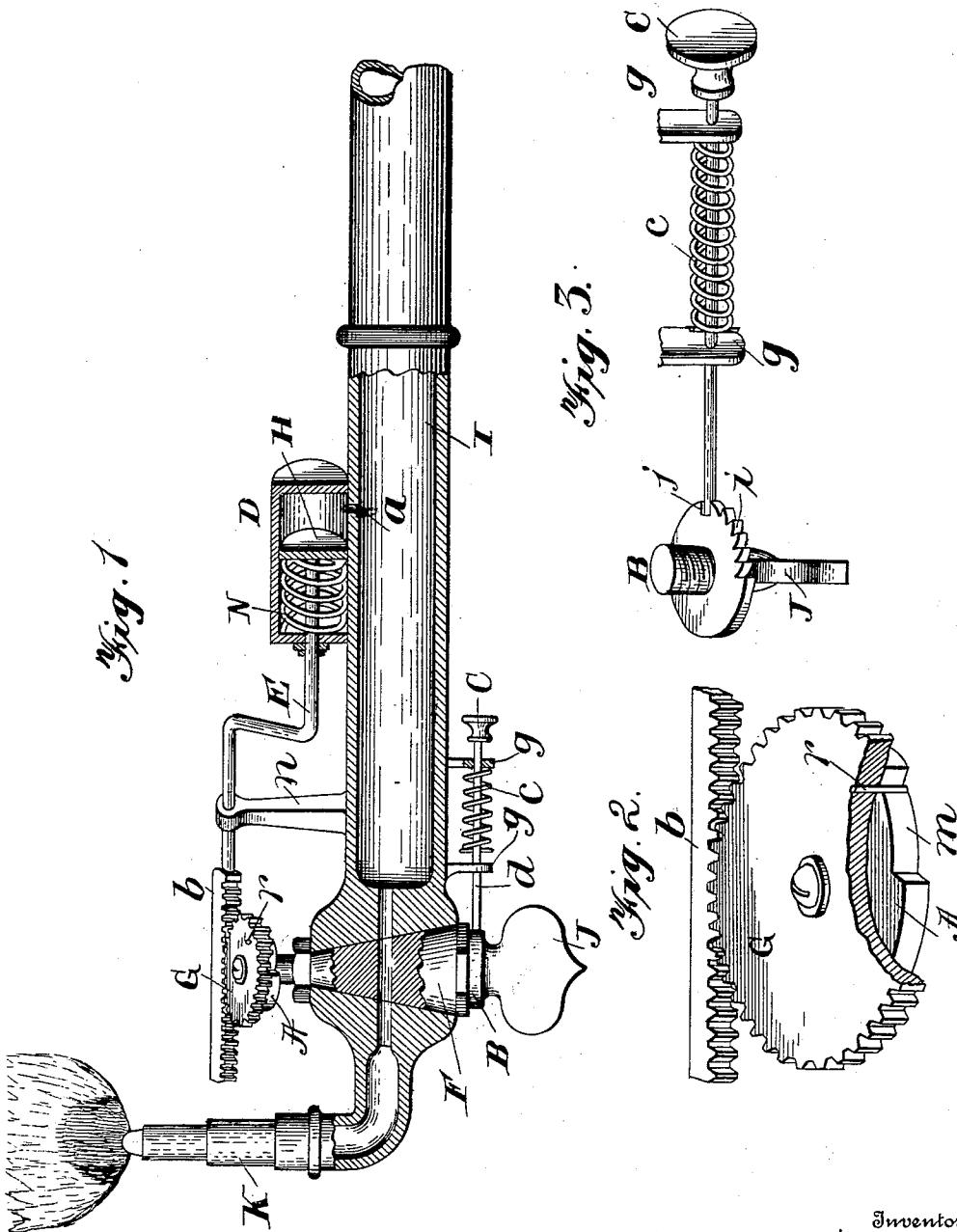
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F. KITTINGER & F. MOTTINGER.

AUTOMATIC CUT-OFF.

(Application filed Dec. 22, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

FRANK KITTINGER AND FRANK MOTTINGER, OF AKRON, OHIO.

AUTOMATIC CUT-OFF.

SPECIFICATION forming part of Letters Patent No. 654,009, dated July 17, 1900.

Application filed December 22, 1899. Serial No. 741,331. (No model.)

To all whom it may concern:

Be it known that we, FRANK KITTINGER and FRANK MOTTINGER, citizens of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented new and useful Improvements in Automatic Cut-Offs, of which the following is a specification.

Our invention relates to improvements in automatic cut-offs which are especially intended to be used in connection with gas, water, oil, &c., all of which will be fully described hereinafter, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a view, partly in perspective and partly in section, of our invention, showing it applied to a gas-burner. Fig. 2 is an enlarged detached perspective view, partly in section, of the gear-wheel, the rack-bar, and the gear-wheel connection with the cut-off valve. Fig. 3 is an enlarged detached perspective view of the automatic lock.

The object of our invention is to provide a safety mechanism for automatically cutting off the flow of gas, oil, water, or other fluid when the pressure-supply becomes dangerously low and to lock the mechanism against being again opened when the pressure is restored.

Referring now to the drawings, I is a supply-pipe, and K a burner in communication therewith. Situated within the supply at a point inside of the burner is a suitable valve F, carrying at its upper end a rigid disk A, and loosely mounted upon this disk A is a gear-wheel G. This gear-wheel G has an operative connection with the disk A through the medium of a pin *r*, passing through the said gear-wheel and entering in an elongated slot *m*, the object of which will be fully described presently.

A cylinder D is connected with the supply-pipe I and is in communication therewith through an orifice *a*. Situated within this cylinder D is a piston H, the piston-rod of which passes through one end of the cylinder and is guided by an arm *n*, extending from the supply-pipe I. The outer end of this piston-rod E is provided with a rack-bar *b* in engagement with the gear-wheel G and adapted to revolve the gear-wheel G when the rod is moved endwise, as will be readily under-

stood. Situated also within the cylinder D is a spring N, one end of the said spring N being in engagement with one end of the cylinder and the opposite end of the spring in engagement with the piston H, whereby the piston H is normally held toward that end of the cylinder D at which the communication *a* is situated.

The lower end of the valve F is provided with a disk B, which is provided with a plurality of ratchet-teeth *i* and a positive locking-notch *j*, and supported below the supply-pipe I in the depending arms *g* is a spring-actuated locking-rod *d*, one end of which is adapted to engage the said notches of the disk B. Situated upon this rod *d* is a spring *c*, one end of which engages a pin upon the rod and the opposite end engages one of the depending arms *g*, whereby the rod is normally held with its outer end in contact with the notches of the disk B for engagement therewith. The opposite end of this rod *d* is provided with a handle C, of any desired and convenient construction, whereby the rod can be thrown endwise out of engagement with the notches upon the disk B. Projecting from this disk B is a handle J, by means of which the valve can be rotated.

In operation the fluid-supply in the pipe I enters also the cylinder D and forces the piston H outward, and thereby rotates the gear-wheel G and which will hold the valve F open; but when the pressure in the supply-pipe I becomes lowered to a dangerous degree, whereby the flame of the burner K is likely to be extinguished, the spring N in the cylinder D forces the piston H inward, and thereby rotates the wheel G, causing also a corresponding rotation of the valve F, and consequently the cutting off of the supply to the burner K. The rotation of the valve F causes an engagement of the locking-rod *d* with the notch *j*, and the valve is then locked, so that when the pressure is again restored the valve will not be opened, (as it otherwise would,) thus turning on the fluid-supply automatically, which would be dangerous unless the fluid was lighted, as will be readily understood.

In order to provide for a slight variation of the pressure of the supply without affecting the flame, the gear G is loose upon the disk A and the pin *r* will vibrate in the circumferen-

tially-elongated slot *m* without affecting the disk A, and consequently without affecting the valve, and in turn without affecting the flame; but, however, when the pressure becomes dangerously low the piston H will move in the cylinder D under the tension of the spring N sufficiently to cause the closing of the valve, and thereby the cutting off of the supply to the burner K, and when cut off the valve is locked, so that it cannot be again opened when the pressure is restored, as just described.

The disk B is provided with a plurality of notches *i*, whereby the flame can be turned low or to any degree desired by means of the said notches and endwise-moving locking-rod *d*, so that the pressure within the supply-pipe I cannot further open the valve F for the purpose of changing the size of the flame, which has been regulated by the turning of the valve by means of its handle J.

From this description it will be noted that we use a pressure-actuated member (the piston or its mechanical equivalent) for automatically closing the valve, and thereby automatically cutting off the flow of the gas, oil, water, or other liquid to the burner or other source when the pressure has become dangerously low. The spring situated within the chamber D will be set so that its tension will be just sufficient to cause the closing of the valve when the pressure has fallen to that point which is considered dangerous. It will also be noted that we have provided an automatic cut-off which when the supply is cut off automatically the valve is locked, so that when the pressure is again at its normal the valve will not be opened, and thus permit the escape of gas, oil, water, or liquid, as the case may be, and that the parts are so constructed that the valve can be set to regulate the amount of liquid or gas that is flowing to the outlet whatever the pressure within the pressure-supply pipe may be and perfectly independent of the said pressure.

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

1. An automatic cut-off comprising a supply-pipe, a chamber having communication with the supply-pipe, a piston within the chamber, the valve having at one end a gear-wheel having a limited independent movement in respect thereto, and an operative connection between the piston and the said gear-wheel, substantially as described.

2. An automatic cut-off comprising a pressure-supply pipe, a valve therefor, a pressure-actuated member in operative relation with the supply-pipe, an operative connection between the pressure-actuated member and the valve, and an automatic locking device for locking the said valve closed, substantially as described.

3. An automatic cut-off comprising a pressure-supply pipe, a pressure-actuated member in operative relation therewith, a valve for the supply-pipe, an operative connection between the valve and the pressure-actuated member, the valve having a locking-notch, and an automatic locking member adapted to coact with the locking-notch for holding the valve closed, substantially as described.

4. An automatic cut-off comprising a pressure-supply pipe, a valve therefor, a pressure-actuated member in operative relation with the supply-pipe, an operative connection between the pressure-actuated member and one end of the said valve, and an automatic locking member engaging the opposite end of the said valve, substantially as described.

5. An automatic cut-off comprising a pressure-supply pipe, a pressure-actuated member in operative relation therewith, a valve for the pipe, the valve having at one end a disk with a peripheral slot, an oscillating operative member connected with and movable independent of the valve, said operating member having a projection movable in the slot of the disk, and a connection between the pressure-actuated member and the valve-operating member, substantially as described.

6. An automatic cut-off, comprising a pressure-supply pipe, a valve therein, a chamber or cylinder having communication with the said pressure-supply pipe, a piston within the chamber, a spring adapted to force the piston against the said pressure, the valve having at one end a gear-wheel having a limited movement independent of the valve, the piston having a piston-rod provided with a rack-bar engaging said gear-wheel and an automatic holding and locking device attached to the opposite end of the valve, substantially as described.

7. An automatic cut-off comprising a pressure-supply pipe, a valve therein, a chamber in communication with the said supply-pipe and carrying a piston which is operatively connected to the valve, a disk carried by the lower end of said valve and having a number of ratchet-teeth thereon and a locking-notch, and a spring-pressed catch engaging said ratchet-teeth and adapted to enter the said notch whereby the valve can be held in the desired position against the pressure or securely locked, substantially as described.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

FRANK KITTINGER.
FRANK MOTTINGER.

Witnesses:

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