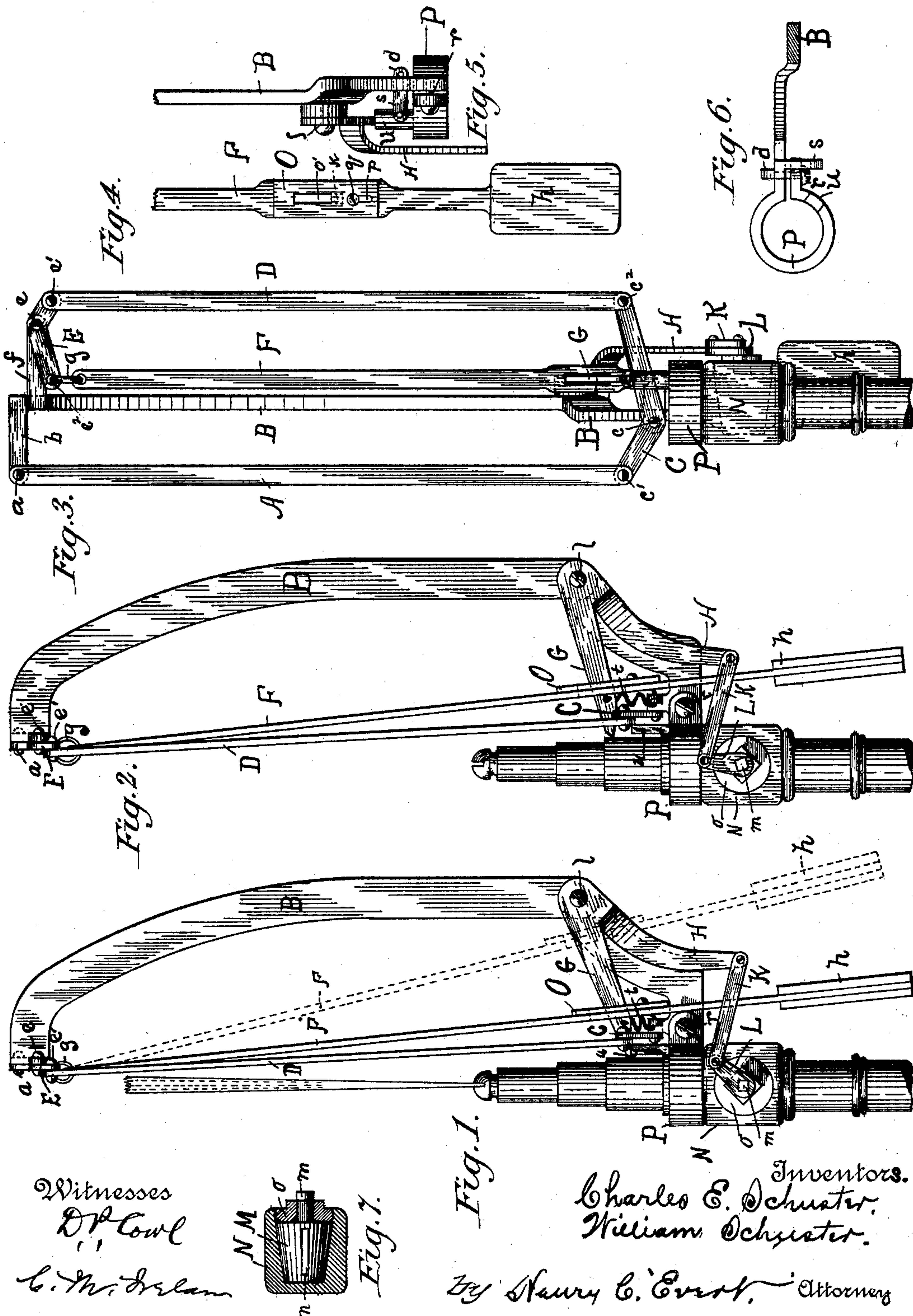


(No Model.)

C. E. & W. SCHUSTER.  
AUTOMATIC GAS SHUT-OFF.

No. 592,597.

Patented Oct. 26, 1897.



Witnesses  
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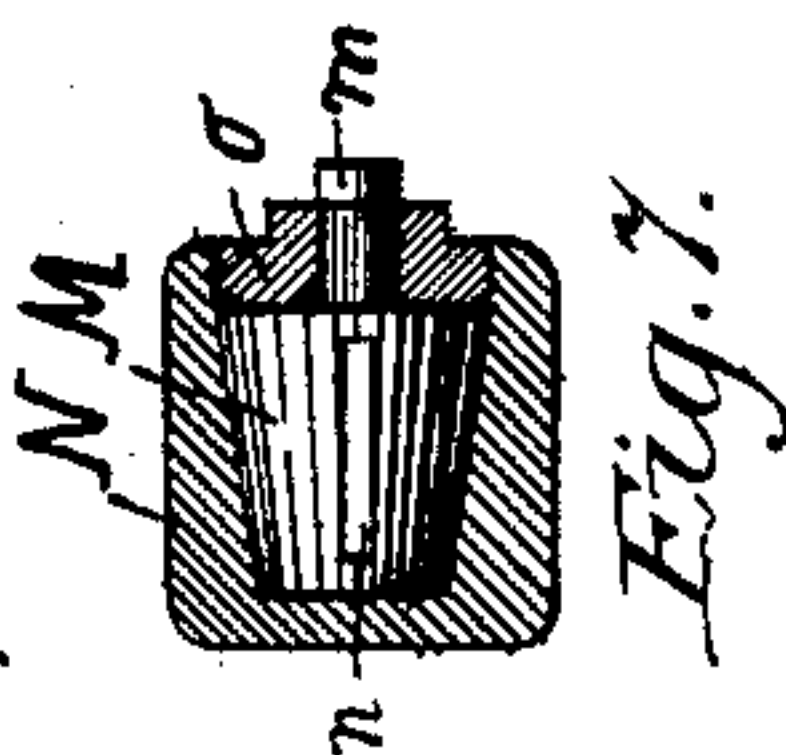


Fig. 1.

Inventors.  
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By Harry C. Ernst, Attorneys



# UNITED STATES PATENT OFFICE.

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## AUTOMATIC GAS SHUT-OFF.

SPECIFICATION forming part of Letters Patent No. 592,597, dated October 26, 1897.

Application filed January 22, 1897. Serial No. 620,291. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES E. SCHUSTER, residing at Allegheny, and WILLIAM SCHUSTER, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, citizens of the United States of America, have invented certain new and useful Improvements in Automatic Gas Shut-Offs, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in automatic gas shut-offs, and has for its object to construct a device that may be attached to the ordinary gas-jet, that will automatically close the outlet-port for the gas in case of the extinguishing of the light from any cause, and prevent the escape of the unburned gas into the room.

The invention further aims to construct a device of the above-described class that will be extremely simple in its construction, strong, durable, effectual in its operation, and comparatively inexpensive to manufacture; furthermore, a device that will be entirely automatic in its operation in so far as it relates to the closing of the outlet-port after the light has been extinguished, and, further, to provide means for adjusting the device to conform to any changes that may be caused by the expansion and contraction of the apparatus.

Still further objects of our invention reside in the novel construction, combination, and arrangement of parts to be hereinafter more specifically described, and particularly pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like letters of reference indicate similar parts throughout the several views, in which—

Figure 1 is a side elevation of our improved automatic shut-off secured in position on an ordinary gas-jet. Fig. 2 is a similar view showing position of pendulum when gas is extinguished. Fig. 3 is a front view with the tip removed. Fig. 4 is a front view of a part of the pendulum. Fig. 5 is a rear view of a portion of the supporting-pole crank and securing-clamp. Fig. 6 is a plan view of a portion of the supporting-pole, partly in section,

showing securing-clamp. Fig. 7 is a longitudinal sectional view of the cock-plug casing and retaining-plug.

Referring now to the drawings by reference- letters, A represents the first expansion-bar, which extends vertically and is rigidly secured at *a* to a lug *b* on the vertical pole B, said expansion-bar A being also pivotally connected at *c'* to one end of a beam C, fulcrumed at *c* to a lug *d* on the pole B, the opposite end of said beam C fulcrumed at *c''* to the vertical expansion-bar D, said bar being pivotally connected at *e'* to a beam E, said beam being fulcrumed at *e* to a lug *f*, carried by the pole B, near its upper end, and the opposite end of said beam being connected at a point *e''* by a link *g* to the upper end of the third expansion-bar or pendulum F, said bar or pendulum being provided at its lower end with a weight *h* and with an elongated slot *k* to receive the portion G of the crank, said crank being provided with a downwardly-curved portion H and pivoted at *l* to the pole B, the downwardly-extending portion H being connected by a link K to the crank L of the head *m* of the cock-plug M, said plug being provided with an elongated slot *n* and secured in the casing N by a screw-plug *o*. The pendulum F is provided with an adjustable plate O, provided with a slot *o'* in alinement with the slot *k* in the pendulum, said plate being secured by a set-screw *q*, operating in a slot *p*. The supporting-pole B is provided at its lower extremity with a clamp P, which embraces the casing N and is secured by a screw *r*, said pole carrying near this connection a lug *s*, to which is attached the portion G of the crank, the free end of said portion G resting on a stop *u*.

The operation is as follows: To place the device on an ordinary jet, the tip of the same is removed and the casing N is secured on the pipe, as shown in Figs. 1 and 2. Assuming that the screw-cock on the pipe (not shown) is open, the gas passes through the cock-plug M to the tip, where it is ignited and becomes a flame, the pendulum then being in the position shown in dotted lines in Fig. 1. As the heat from the flame comes in contact with the expansion-bars A, D, and F it expands these bars, which cause expansion-



bar or pendulum F to slide on portion G of the crank until in the position shown in full lines in Fig. 1, where it remains until the flame is extinguished. When the flame is extinguished, contraction of the expansion-bars A, D, and F takes place, which in turn lifts portion G of the crank from its resting position on the stop *u*, this operation in turn moving portion H of the crank and link K, operating the crank L, and turning cock-plug M so as to close the outlet for the gas, in which position it remains until the gas is again ignited.

To ignite the gas, it is necessary to return pendulum F to the position shown in dotted lines in Fig. 1, which operation permits the spring *t* to return the portion G of the crank to its resting position on the stop *u*, which, through the medium of the portion H of the crank and link K, operates the crank L of the stop-plug and opens the outlet-port for the gas, allowing the same to pass to the tip, where it may be ignited.

The fulcrum-point *c* is one-half the distance from the point *c'* as from the said fulcrum-point *c* to the point *c''*, and by the same arrangement at the upper ends of the expansion-bars D and F—that is, the distance from said point *e* to point *e''*—the expansion of the bars is thereby multiplied. In order to illustrate this fully, we will assume that the expansion of the bars is one thirty-second, point *a* of bar A being a stationary point, and the expansion of bar A being one thirty-second the same is recorded at *c'* and is doubled at *c''* by reason of fulcrum-point *c''* being in proportion of two to one in favor of *c''*, this total, which is now one-sixteenth, in addition to the expansion of the bar D, or one thirty-second, making a total of three thirty-seconds at *e'*. This total of three thirty-seconds is doubled or increased to three-sixteenths at point *e''* by means of the beam E, whose fulcrum-point *e* is in favor of *e''* in the proportion of two to one. Added to this total of three-sixteenths is the expansion of bar F, or one thirty-second, making a grand total of seven thirty-seconds at point *d'*, which is sufficient to operate cock heretofore described.

By reason of the pendulum F being provided with weight *h* at its lower end it serves to keep a tension on the expansion-bars A, D, and F and reduce the possibility of the same bending or cramping when expansion takes place.

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

1. An automatic gas shut-off, consisting of a vertical pole B, which is rigidly connected to the burner and which forms a support for the other operating parts, and which is provided at its upper end with supporting-arms one of which carries a pivoted lever, an ex-

pansion-bar which is rigidly secured to one of the arms at its upper end, a second expansion-bar which is loosely connected at its upper end to the pivoted lever, and a cross-bar to which both of the expansion-bars are connected at their lower ends, combined with a swinging weighted lever, provided with a slot, and a pivoted lever which is operated by the swinging weighted lever, and a cock, which is operated by the pivoted lever, for turning on and shutting off the gas; substantially as shown.

2. In an automatic gas shut-off, a vertical pole B, which is rigidly connected to the burner and which is provided with outwardly-turned arms at its upper end, an expansion-bar which is rigidly connected at its upper end to one of the said arms, a second expansion-bar which is pivoted at its upper end to one end of a lever that is pivoted upon the other arm of the pole, and a swinging weighted lever that is pivoted to the opposite end of said lever, combined with a cross-beam that is pivoted upon a suitable support, and to the opposite ends of which the lower ends of the expansion-bars are connected, the pivoted spring-actuating lever that is connected to the cock for turning on and shutting off the gas, and which spring-actuated lever is operated by the movement of the pivoted swinging lever; and a suitable stop limiting the movement of the lever in one direction, substantially as described.

3. In an automatic gas shut-off, a vertical pole which is rigidly connected to the burner, and which is provided at its lower end with a stop for the lever which turns on and shuts off the gas, a spring, and an arm to which one end of the spring is connected, said pole being provided at its upper end with arms which are turned in opposite directions, an expansion-bar which is rigidly connected to one of the arms at its upper end, a lever that is pivoted upon the arm on the upper end of the pole, a second expansion-bar which is connected at its upper end to said lever, and a pivoted cross-beam to which the lower ends of the two expansion-bars are pivoted, a pivoted swinging lever that is weighted at its lower end and provided with a suitable slot, a spring-actuated lever pivoted upon the vertical pole and having one of its ends pass through the slot in the swinging lever, and having its other end pivoted to the cock by which the gas is turned on and shut off, substantially as set forth.

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

CHARLES E. SCHUSTER.  
WILLIAM SCHUSTER.

Witnesses:

H. C. EVERT,  
THOS. M. BOYD, JR.