

No. 644,143.

Patented Feb. 27, 1900.

R. N. NOYES.

ELECTRIC GAS LIGHTING CANDLE BURNER.

(Application filed Apr. 10, 1899. Renewed Jan. 2, 1900.)

(No Model.)

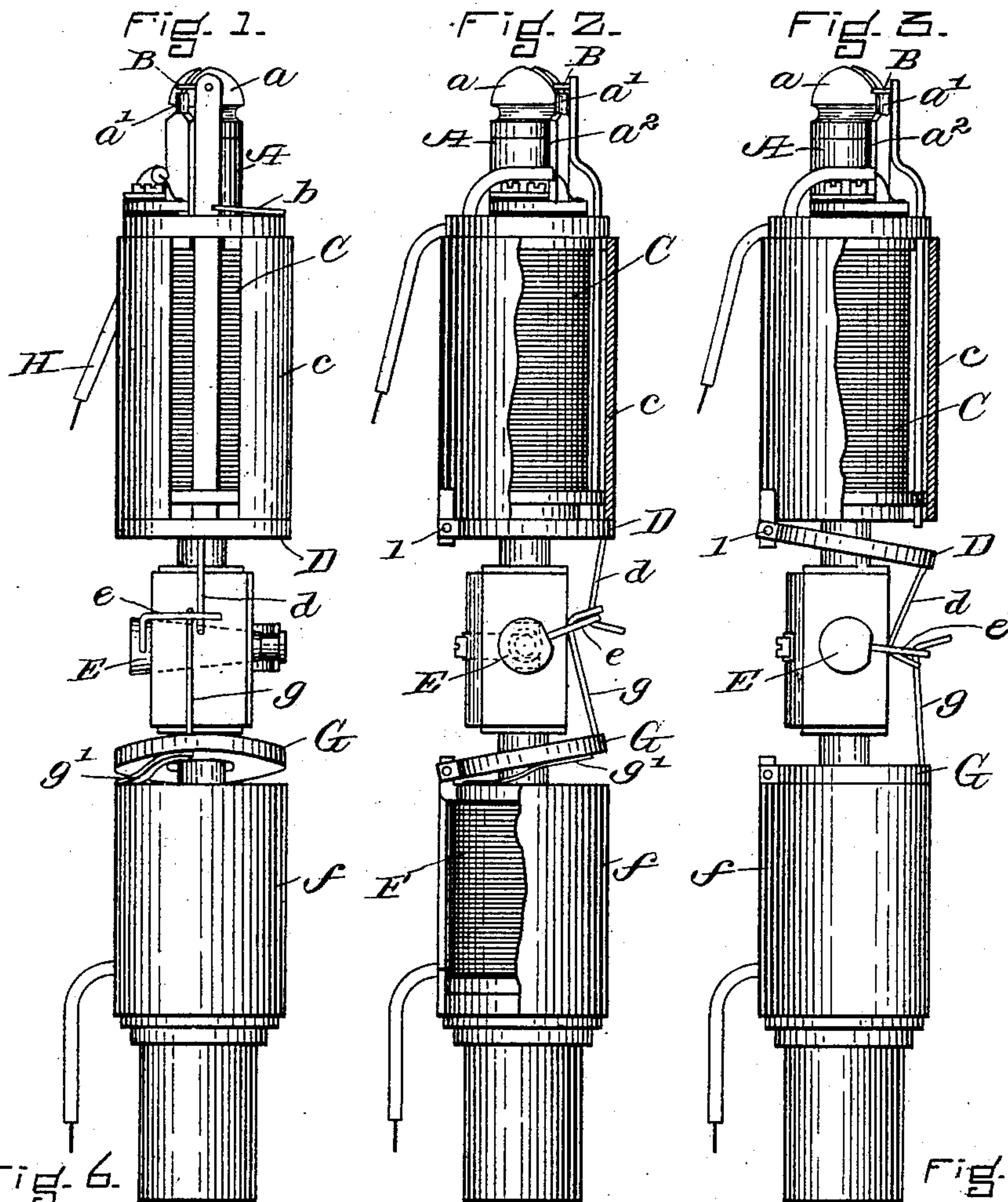


FIG. 6.

FIG. 7.

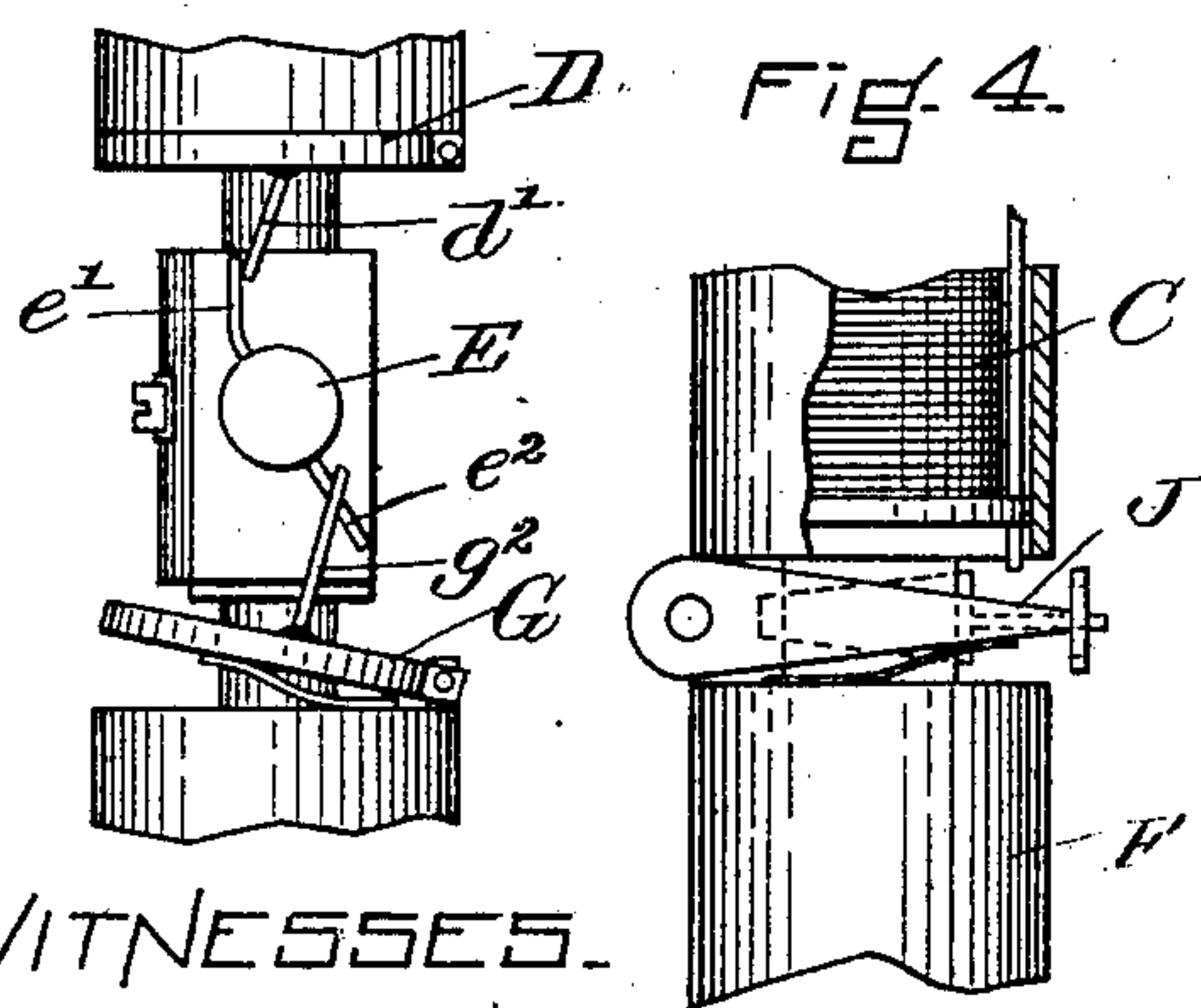


FIG. 5.

WITNESSES.

A. D. Grover.
H. Chamberlin.

INVENTOR.

Ray N. Noyes

UNITED STATES PATENT OFFICE.

RAY N. NOYES, OF HAVERHILL, MASSACHUSETTS, ASSIGNOR TO THE ELECTRIC GAS LIGHTING COMPANY, OF BOSTON, MASSACHUSETTS.

ELECTRIC GAS-LIGHTING CANDLE-BURNER.

SPECIFICATION forming part of Letters Patent No. 644,143, dated February 27, 1900.

Application filed April 10, 1899. Renewed January 2, 1900. Serial No. 165. (No model.)

To all whom it may concern:

Be it known that I, RAY N. NOYES, of Haverhill, Essex county, Massachusetts, have invented a new and useful Improvement in Electric Gas-Lighting Candle-Burners, of which the following is a specification.

My invention relates to that class of electric hand-lighting gas-burners which are designed to be used in connection with porcelain or other tubes surrounding the same and intended to resemble a candle, which requires that the apparatus be of such limited circumference as to enable the inclosing of the same in a proper tube.

My invention consists in adapting one electromagnet and armature to bring a catch in contact with a pin attached to the spindle of the gas-cock to let on the gas and to at the same time separate two electrodes to cause an igniting-spark and a second magnet and armature to close the gas-cock.

My invention will be easily understood by reference to the annexed drawings, in which—

Figure 1 is a front elevation of the candle-burner with the candle-tube removed, the gas turned on, and the electrodes separated. Fig. 2 is a side elevation with the parts in the same position as in Fig. 1. Fig. 3 is a side elevation, like Fig. 2, with the gas turned off. Figs. 4 and 5 are modifications in which but one armature is used. Fig. 6 is a detail showing in front view a different arrangement of the armature-pins and valve-pins, and Fig. 7 is a detail showing a side view of the same arrangement as that of Fig. 6.

I will now describe my invention, reference being had to the drawings.

A is the ordinary burner-pillar having the lava tip *a* and the fixed electrode *a'* near the tip and insulated by a bit of mica *a''*.

B is the movable electrode, normally in contact with the fixed electrode, but as shown in Figs. 1 and 2 separated therefrom.

b is a flat spring so arranged as to tend to force B downward, and thereby preserve contact between the two electrodes.

C is an electromagnet surrounding the burner-pillar A. *c* is a circular iron collar very nearly surrounding said magnet, which may, however, be omitted, if desired. It is intended, partly, to somewhat increase the

magnetic power which is applied to the armature.

D is the armature of the magnet C and is loosely pivoted at 1 and carries the catch *d*, and in Figs. 1 and 2 it is shown as drawn up close to the magnet, so as to elevate the movable electrode and so as to open the gas-cock.

E is the conical-shaped oscillating gas-valve, and *e* a curved pin attached thereto, and, as shown in Fig. 1, said curved pin *e* is in contact with the armature-pin *d*.

F is the lower magnet, substantially like the upper magnet and having a similar surrounding collar or casing *f*.

G is the armature of magnet F, and it carries a curved pin *g*, which is intended to pull down upon the gas-valve pin *e* when it is desired to turn off the gas, and *g'* is a slight flat spring normally holding the armature G in the position shown in Figs. 1 and 2. When the gas is being turned off, the armature G and its pin *g* will be in the position shown in Fig. 3 and the spring *g'* will not be visible. Upon said magnet being deenergized the armature G will resume the position shown in Fig. 2.

H represents an insulated circuit-wire.

It will be understood that the circuit is normally broken at the ordinary press-button. (Not shown.) When electricity is admitted to magnet C from the battery by pushing the said button, the electric circuit is through the helix of the magnet, then through the fixed electrode, the movable electrode, and the ground. The rapid vibration of the movable electrode caused by the continuous make and break of circuit between it and the fixed electrode, which causes rapid vibration of the armature, constantly interrupts and reestablishes this circuit. The circuit in the case of magnet F is simply over the circuit-wire to the helix and then to ground.

The operation of this apparatus will be already plain from the description of the drawings. When the press-button is pushed, admitting the current to the magnet C, its armature is attracted and accomplishes two things—first, the rotation and consequent opening of the gas-cock, thereby admitting the gas to the burner-tip, and, second, the elevation of the movable electrode away from

the fixed electrode, thereby furnishing an igniting-spark. Upon the said magnet being deenergized its armature falls back by gravity, as shown in Fig. 3. When it is desired to
 5 extinguish the gas, upon admitting the current to the lower magnet F its armature G is attracted against the force of the spring g' and draws down its pin g , thereby rotating the gas-cock in the contrary direction and
 10 turning off the gas. The operation of the apparatus is secured by the alternate use of these two magnets in the method pointed out.

An alternative construction not departing from the general character of my invention is shown in Fig. 5, of which and its operation I will now give a description. This modification is intended to use but one armature for the three purposes of operating the movable electrode, turning on the gas, and turning off the gas in candle-burners. The armature must therefore be placed in such contiguity to the two magnets and be so constructed as to enable it to be operated alternately by each of said magnets. To this end I modify
 25 the invention as shown in the prior figures as follows: Near the edge of the stem of the gas-cock is placed a straight pin. The single armature J is loosely pivoted one-quarter farther around the burner-pillar than in Figs. 1
 30 and 2 and is constructed with a slot j , so that upon its being attracted by the upper magnet C the lower part of the curve of the slot will rotate the gas-cock to let on the gas. In order to enable the contrary movement to turn
 35 off the gas, it is necessary that this slot should be substantially as shown in Fig. 5—that is, so constructed that when the armature falls by gravity after ignition is completed the upper part of the slot j of the armature J will
 40 not come in contact with the projecting pin upon the gas-cock. Further, a slight spring j' is necessary to prevent said armature J from normally falling below the position shown in Fig. 5. When the lower magnet F is energized, the armature J will be drawn down
 45 against the stress of said spring, and the upper part of the slot j will then be brought in contact with said gas-cock pin and so will rotate the gas-cock to turn off the gas.

50 In Figs. 6 and 7, which illustrate an alternative construction, d' and g^2 represent the two pins on the armatures D G, respectively. e' e^2 represent two pins projecting from the extension of the gas-cock E. The detail
 55 shown in Figs. 6 and 7 will be readily substituted, if desired, for the pin e , shown in Figs. 1, 2, and 3 as attached to the gas-cock stem, and for the pins d g , which extend from the armatures D G to gear with the pin e . The
 60 purpose of this modification is not to in any way change the general character of the de-

vice, but to reduce the length of the pin e , as shown in Figs. 1, 2, and 3, and bring this part of the apparatus within the narrower compass. In this detail two pins e' e^2 replace pin
 65 e , one on the upper and one on the lower part of the gas-plug spindle and one gearing with the pin d' and the other with the pin g^2 . The detail simply provides for slightly changing the shape of the pins d g , Fig. 1, and for duplicating the pin e with two shorter pins, as
 70 shown.

Figs. 4 and 5 show the wedge shape of the armature J; but it might be practical to use an armature of uniform thickness and give
 75 the slope to the part against which the armature is to come in contact. It is of course desirable when the armature vibrates in either direction that there should be a complete contact made between it and the part against
 80 which it comes in contact. I prefer the construction illustrated in Figs. 2 and 3; as less material will be used, and, if accurately calculated in matters of construction, this modification will be found to operate satisfactorily.
 85

Having described my invention, what I claim is—

1. In combination with a burner-tube, two helical magnets surrounding said burner-tube, one located above and one below the
 90 gas-valve, one or more armatures to be operated by said magnets, one or more armature-pins, an oscillating gas-cock E, a pin or pins extending from its stem and adapted to make contact with said armature pin or pins, a
 95 spring to normally hold the armature up from the lower magnet, a fixed electrode a' at and insulated from the burner-tip, a movable electrode B to be operated by the armature when it rotates the gas-cock to turn on the
 100 gas, a spring b holding said electrodes normally in contact, and proper electric circuits to alternately energize the magnets, substantially as and for the purposes described.

2. In combination with a gas-burner pillar
 105 and tip, a magnet C, the collar c , the armature D, the armature-pin d , a rotating gas-cock E, a projecting pin e thereon, a lower magnet F, a collar f therefor, an armature G, an armature-pin g , a spring g' normally hold-
 110 ing armature G separated from the magnet F, a fixed electrode at the burner-tip, a movable electrode to be operated by said armature D, and proper electric-circuit connections for alternately energizing said magnets,
 115 substantially as described and claimed.

In witness whereof I hereunto sign my name this 28th day of February, 1899.

RAY N. NOYES.

Witnesses:

F. C. CHAMBERLIN,
 E. P. PAYSON.