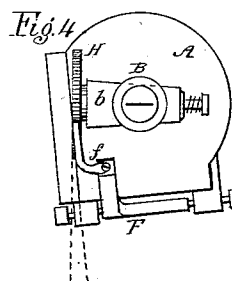
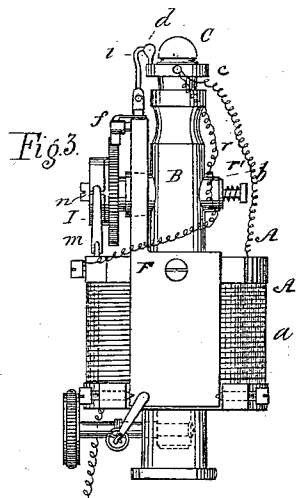
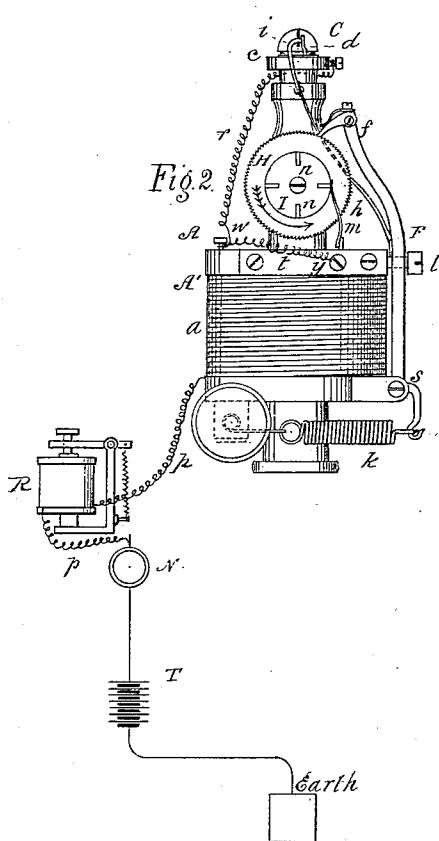
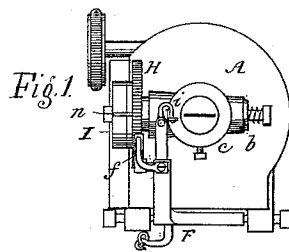


(No Model.)

A. L. BOGART.
ELECTRIC DEVICE FOR TURNING ON, LIGHTING, AND EXTINGUISHING
GAS JETS.

No. 259,267.

Patented June 6, 1882.



WITNESSES:

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ELECTRIC DEVICE FOR TURNING ON, LIGHTING, AND EXTINGUISHING GAS-JETS.

SPECIFICATION forming part of Letters Patent No. 259,267, dated June 6, 1882.

Application filed January 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, A. LIVINGSTON BOGART, a citizen of the United States, residing in the town of Jamaica, in the county of Queens and State of New York, have invented certain new and useful Improvements in Electric Devices for Turning on, Igniting, and Extinguishing Gas-Jets; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

The object of this invention is to produce a gas-burner in which the three operations of turning on the gas, igniting the same, and extinguishing it are effected by means of electricity, and to construct the burner in such a manner that it shall be of compact and convenient form, easily managed, and certain in its operations, without liability to become disarranged or put out of working order, and to provide means whereby the burner may be operated with certainty when at a distance and out of sight of the person operating it.

The said invention consists in an improved construction of the body of the burner in connection with appliances for producing electric sparks at or near the orifice of the gas-tip; also, in devices for preventing the further rotation of the plug when it has reached a certain predetermined point, and retaining it in that position until the gas is again turned off; also, in improved devices for preventing the gas being turned on inadvertently, said devices being arranged so that two or more pressures shall be required on the operating-knob or press-button before the gas begins to flow through the gas-tip; also, in improved means for compensating for unequal expansion, and thereby preventing the plug from binding, all of which is hereinafter particularly described and claimed.

In the accompanying drawings, Figure 1 represents a plan view of my improved burner. Fig. 2 is a front elevation of the same; Fig. 3, a side elevation; and Fig. 4, a plan view, showing the means by which the plug is prevented from binding.

Similar letters of reference indicate the same parts in all the several figures.

A is a gas-burner of suitable form, made of

iron, around the lower portion of which is wound a helix, *a*, of insulated wire, thus forming a magnet, *A'*, the core of which is the stem of the burner. Above this magnet is an ordinary one-way cock, *B*, provided with an ordinary plug, *b*.

C is a lava gas-tip, upon which is fitted a metal collar, *c*, carrying a fixed electrode, *d*, which is insulated from the body of the burner by the non-conducting gas-tip *C*.

F is a vibrating armature, pivoted at *s*, the upper part of which is prolonged and carries a pawl, *f*, which rests upon and rotates a ratchet-wheel, *H*, which is firmly attached to the plug of the cock. Attached to the prolongation of the armature *F* is a flat spring, *h*, which terminates in a platinum or other electrode, *i*, that makes and breaks contact with the fixed electrode *d* as the armature *F* is released or attracted, said armature being retracted by means of a spring, *k*, and held thereby in the position shown in the drawings when no current is passing through the magnet.

l is a screw for determining the distance which the armature may move away from the magnet.

I is a circuit-breaker, of suitable construction, attached to the ratchet-wheel *H*, and arranged to alternately make and break metallic connection with a spring-arm, *m*, attached to but insulated from the magnet. In the drawings I have represented this circuit-breaker in the form of a rubber disk having radial pieces of metal *n*, connected with the ratchet-wheel *H*, so that an electric circuit through the magnet is thereby alternately closed and broken as the said disk rotates with said ratchet-wheel, for the purpose hereinafter explained; but I do not confine myself to this particular form or construction, as the same may be modified or changed.

p is a wire extending from the grounded battery *T* to one end of the helix *a*, and *r* is a wire connecting the other end of said helix with the collar *c*. A wire, *t*, connects the wire *r*, as at *w*, with the insulated spring-arm *m* at *y*; or, for convenience, it can be run from said collar to said arm *m*, as shown by the wire *r'*.

As before stated, the burner itself forms the core of the magnet, and it will be seen that the

current is divided at w between the wires r and t .

N represents an ordinary press button or knob for operating the burner by connecting the circuit.

The armature in its normal position—that is, when not attracted by the magnet—is held away from the latter, as shown in the drawings, by the force of the spring k , and while in that position the electrodes are held in contact with each other; and I may here state that the spring k is arranged in such relation to the armature F and electrode d that the two electrodes are brought into contact with each other before the armature is fully retracted, and also that the contact continues during the first part of the movement of the armature toward its magnet, and by this means a proper contact between the electrodes is insured.

When the button N is pressed, connecting the circuit, the current, after having first passed through the magnet A' , is divided at w , and part of the same passes along the wire r and part along the wire t ; and by the attraction of the armature F the electrode i begins to move away from the electrode d , thus breaking the circuit at the tip, and if one of the points n is at that time in contact with the spring-arm m the current continues to pass through the latter until either the said button is released or the said point is carried beyond and out of contact with m .

The points n are arranged in such relation to the opening in the plug b that one of them is in contact with m whenever the gas is fully turned on or off; and when this is the case the armature remains attracted and the current continues to pass through m until the button is released. On releasing and again pressing the button, if n and m are still in contact, the same effect is produced; but when the said point has been carried beyond the arm m by the rotation of the ratchet-wheel H and disk I , on pressing the button, the current passes along the wire r and causes the vibration of the electrode i and the rotation of the plug, which vibration continues, causing a number of sparks to be produced until the next point n comes in contact with m . The points n are to be of such width that two or more pressures on the button, and consequently two or more strokes of the armature, are required before they pass out of contact with the spring-arm m and before the gas commences to pass through the tip. By these means the first part of the advance of the plug will be step by step, or one tooth of the ratchet at once corresponding to repeated pressures on the press-button, and the latter part of its advance continuous during the continued pressure of said button until said plug has completed its quarter-turn, and hence the danger of accidentally or inadvertently turning on the gas is obviated.

The operation is as follows: On pressing the button N (n and m being in contact) the armature is attracted and the electrode i moves away from d , the current then passing through m ,

and the ratchet H is rotated the space of one tooth. On releasing the button (n and m still being in contact) and again pressing it, the same effect is produced. These pressures being repeated until the point n passes out of contact with m , the current then passes along the wire r and causes the vibration of the electrode i and the rotation of the plug until the next of the points n comes in contact with m , the gas being then fully turned on, and the current passes through m , keeping the armature attracted and preventing the further rotation of the plug. On releasing the button the apparatus is then in the same position as at the commencement of the operation.

To turn off the gas the above manipulations are repeated and the button pressed a sufficient number of times to bring the next of the points n into contact with m , and when in this position the gas is turned off.

For the purpose of operating the apparatus with certainty when at a distance and out of sight of the person operating, I employ a "rattler" or sounder, R , which I place in the circuit near the press-button N . This rattler may be of suitable form, and similar in construction to an ordinary telegraph-sounder, and, being in the circuit, is operated simultaneously with the vibration of the electrode i , and thus indicates to the operator the fact that the gas is turned on or off; but I do not claim this as part of my present invention.

In Fig. 4 is shown the means which I employ for preventing the plug b from binding by reason of unequal expansion of the parts by the heat of the burning gas. It consists in setting the plug b and ratchet-wheel H in such relation to the pawl f that the axes of the said plug and wheel shall form an angle of less than ninety degrees with the line of motion of the pawl f , so that the latter produces an outward thrust tending to draw the plug (which is tapering) outwardly from its bearings.

I do not claim as my invention a gas-burner having a fixed electrode and a vibrating electrode which are brought into contact by means of a ratchet-wheel fixed upon the plug of the cock, and operated by the armature of an electro-magnet irrespective of the construction and arrangement of such magnet. Neither do I claim a device for throwing the current from the magnet at one burner into the magnet at another burner.

What I claim as my invention is—

1. The magnet A' , composed of the stem B of the burner and the helix a , said stem forming the core of the magnet, in combination with the fixed and insulated electrode d , the vibrating electrode i , secured to the armature of said magnet, as described, the pawl f , pivoted at the upper end of said armature, and the ratchet-wheel H , secured upon the plug b of the stop-cock, all as herein shown and described, for the purpose set forth.

2. In combination, with the magnet A' , constructed as described, and the ratchet-wheel H , attached to the plug of the cock and ro-

tated by the pawl *f*, pivoted to the armature R, the circuit-breaker I, provided with the points *n*, the spring-arm *m*, and the wires *p*, *t*, and *r*, the whole being constructed to operate
5 in the manner set forth for the purpose of shunting the current to the ground, and thus preventing the further movement of the plug *b* after it has reached a predetermined point in its rotation.

10 3. The combination, with a gas stop-cock in which the plug is rotated by means of a ratchet operated automatically by a pawl on the armature of a magnet by means of a series of electric impulses, of a circuit-breaker, I, provided
15 with points *n* to make contact with an insulated spring-arm, *m*, as described, an insulated

fixed electrode, *d*, electrically connected with the magnet, a vibrating electrode, *i*, attached to the armature of the magnet, a battery-wire, *p*, and a shunting-wire, *t*, connecting said electrode *d* with said arm *m*, the whole being constructed as described, for the purposes set forth. 20

4. In a gas-burner, the plug *b*, provided with the ratchet-wheel H, operated by the pawl *f*,
25 attached to the armature F, when said plug is set at an angle with the line of motion of said pawl, as described, for the purpose set forth.

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Witnesses:

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