

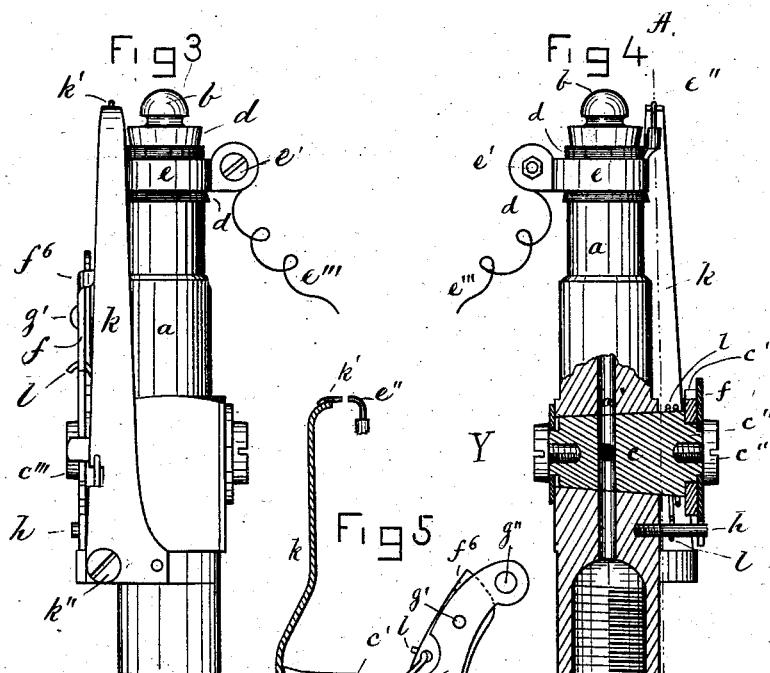
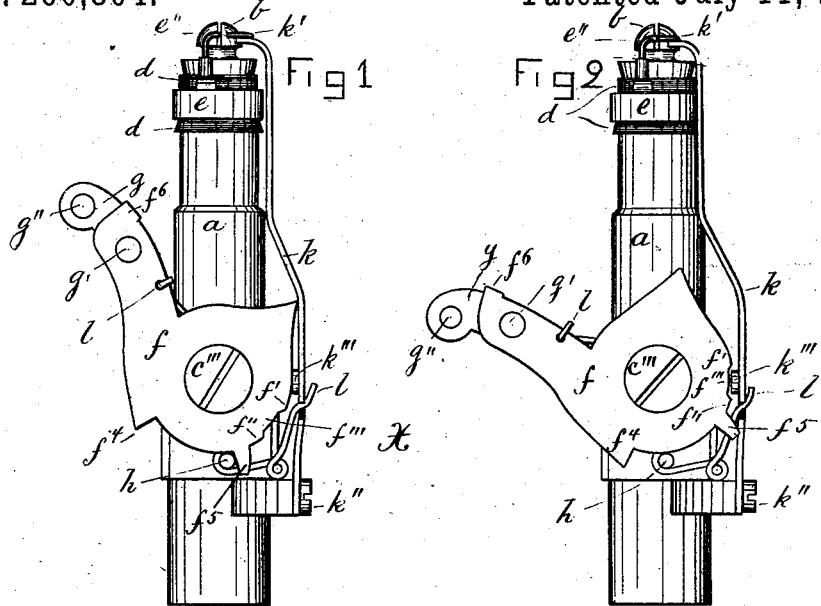
(No Model.)

J. P. TIRRELL.

ELECTRIC GAS LIGHTING APPARATUS.

No. 260,804.

Patented July 11, 1882.



Witnesses.

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# UNITED STATES PATENT OFFICE.

JACOB P. TIRRELL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE ELECTRIC GAS LIGHTING COMPANY, OF PORTLAND, MAINE.

## ELECTRIC GAS-LIGHTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 260,804, dated July 11, 1882.

Application filed January 16, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB P. TIRRELL, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Electric Gas-Lighting Apparatus; and I do hereby declare that the same are fully described in the following specification and illustrated in the accompanying drawings.

This invention relates to improvements in electric gas-lighting apparatus, and it is carried out as follows, reference being had to the accompanying drawings, on which—

15 Figure 1 represents a front elevation of the invention. Fig. 2 represents a front elevation, showing the lever turned so as to bring the electrodes at the top of the burner in contact with each other. Fig. 3 represents an 20 end elevation, seen from X in Fig. 1. Fig. 4 represents a longitudinal sectional elevation through the center of the gas-cock; and Fig. 5 represents a longitudinal section on the line A B, as seen from Y in Fig. 4.

25 Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

a represents the burner, with its lava or other tip, b, at the top, as usual, and c represents the ordinary four-way stop-cock.

a' is the central perforation through the burner a.

d is a band of suitable insulating material placed around the top of the burner a, around 35 which insulator is secured the metallic ring e by means of the screw e'.

e' is a platinum point attached to and in metallic connection with the metal ring e, as shown.

40 e'' is a wire leading from a spark-coil and galvanic battery of any of the usual kinds.

To the forward end of the cock c is secured, or made in one piece with it, a ratchet-wheel or toothed wheel, c', as shown.

45 Outside of the ratchet-wheel c' is a lever, f, loosely hinged on the shank c'' of the cock c.

c''' is a screw screwed into the forward end of the gas-cock, and provided with a head, so as to prevent the lever f from getting detached

50 from the cock c when the apparatus is in use.

g is a pawl hinged to the lever f at g', and having its lower end adapted to engage with the ratchet-wheel c' to turn the gas-cock c, and to open it to allow the gas to pass out at the tip by turning the lever f to the position as 55 shown in Fig. 2, which may be done by the pulling downward of the eye g'' of the pawl g.

f' and f'' are cam faces or projections on the lever f, between which projections is a recess, 60 f''', as shown.

h is a stop-pin secured to the burner a, and f<sup>4</sup> f<sup>5</sup> are stop-projections on the lever f to limit its throw when turned in either direction on its fulcrum.

k is a ground-connected lever having platinum point k' in its upper end, opposite the insulated platinum point e'' at the tip of the burner. The lever k is hung to the burner a in its lower end by means of the set-screw k'', which latter serves as a fulcrum on which the 70 lever k may rock slightly. The lever k is provided with a side projection, k''', which rests against the cam-face f' when the lever f is in its normal position, as shown in Fig. 1.

l is a wire spring attached to stop-pin h, and 75 having one of its free ends pressing on the outside of lever k or its projection k''', and after passing round the cock c its other end is attached in a suitable manner to the upper end of the lever f.

f<sup>6</sup> is a lip in the upper end of the lever f, which serves as a stop for the upper end of the pawl g, so as to prevent the lower end of said pawl from moving too far from the teeth of the ratchet c'.

80 The operation is as follows: The normal portions of the various parts are represented in Fig. 1, and the wire e''' is supposed to be in electrical connection with a suitable spark-coil and its electric battery, the projection k''' of the lever k being held by the influence of the spring-wire l against the cam-face f' and the electrode k' held away from the insulated electrode e'', as shown, the lever f being held by the influence of the spring l in such a manner that the stop-pin h serves as a stop against the stop-projection f<sup>5</sup> on said lever f. To turn on the gas and to light it, it is only necessary to pull on the eye g'' of the pawl g, when its lower end comes in contact with the ratchet-wheel c', and thereby 85 90 95 100

causes the cock *c* to be sufficiently open to allow the gas to pass out at the tip *b* of the burner, and with it the lever *f* is turned on its fulcrum *c''*, and when it reaches the position 5 as shown in Fig. 2 the spring *l* forces the lever *k* inward, so that its platinum point *k'* comes in contact with the insulated electrode *e''*, and thus closes the circuit from the battery, the lever *k* and burner *a* serving as ground-connections. If, now, the lever *f* is turned a little farther, its cam-projection *f''* will force the lever *k* outward by coming in contact with the projection *k'''*, and thereby disconnect the electrode *k'* from the insulated electrode *e''*, causing a 10 spark to pass between them in breaking the circuit. By letting go the hold of the pawl-eye *g''* the electrodes *k'* *e''* are again brought in contact and again disconnected by the contact of projection *f'* with lever-projection *k'''*, causing 15 the circuit a second time to be broken and a second spark to pass between the electrodes *e''* *k'*, and this return to the normal position of the lever *f* is done by the influence of the wire spring *l*, during which return motion of the lever *f* its pawl *g* passes freely by the teeth of the ratchet-wheel *c'*, leaving the cock open and the 20 gas burning. The gas is extinguished and the cock closed by pulling down the lever *f* in the same manner as by lighting it, when it remains 25 closed until the lever *f* and pawl *g* are again operated, as above described.

Heretofore electric gas-lighting apparatus have been made with a lever on the gas-cock and a pawl jointed to said lever, which pawl, 30 by the influence of a spring acting directly on it, is caused to engage in the teeth of a ratchet-wheel on the stop-cock when the lever is pulled down; but such is not my invention, as I em-

ploy instead a loosely-hinged pawl, *g*, hinged to the lever *f*, supported loosely on the gas-cock spindle *c''*, and the cock *c* is turned by manipulation of the said pawl *g*, causing its lower end to act on the ratchet-wheel *c'*, and thus to turn the gas-cock for the admission of gas to the top of the burner. 40

I am aware of the patents granted respectively to Sanford, September 14, 1880, No. 232,304, and to Tirrell, July 16, 1878, No. 206,057, and I desire to state that I do not claim combinations and arrangements as there- 45 in shown and described; but

What I wish to secure by Letters Patent, and claim, is—

1. In a gas-lighting apparatus, the combination of burner *a* and insulated electrode *e''*, lever *f*, pawl *g*, ratchet-wheel *c'*, spring *l*, surrounding the stop-cock and acting in one end on lever *f* and in the other on lever *k*, the lever *k*, and its electrode *k'*, as described. 55

2. In a gas-lighting apparatus, the combination of lever *f*, pawl or lever *g*, and spring *l*, surrounding the stop-cock and acting in one end on lever *f* and in its other end on lever *k*, as described. 60

3. In a gas-lighting apparatus, the lever *f*, 65 with its cam-faces *f'* *f''* *f'''*, in combination with lever *k*, its projection *k''*, and the spring *l*, surrounding the stop-cock and acting in one end on lever *f* and in its other end on lever *k*, as set forth and described.

In testimony whereof I have affixed my signature in presence of two witnesses.

JACOB P. TIRRELL.

Witnesses:

ALBAN ANDRÉN,  
HENRY CHADBOURN.