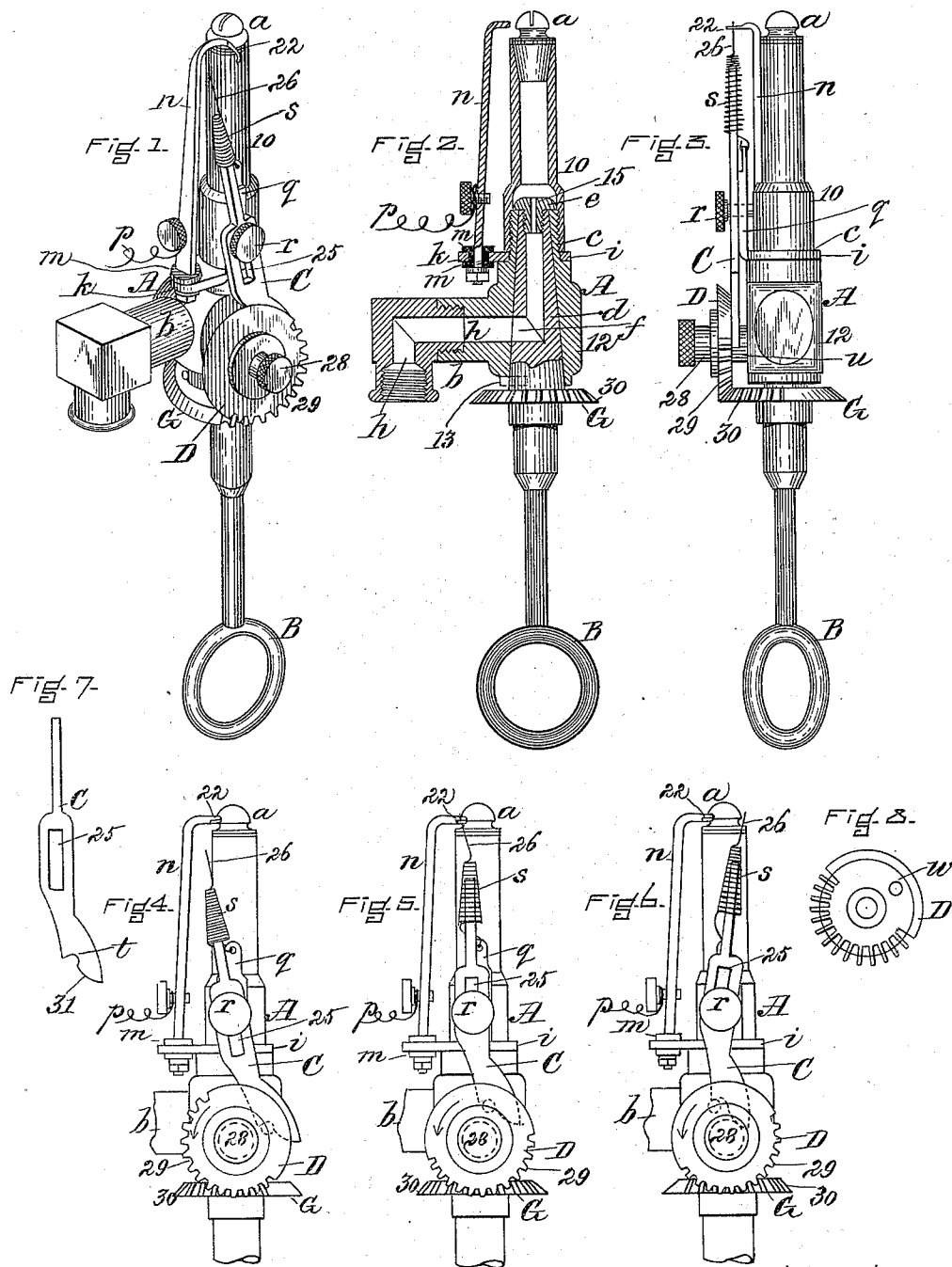


(No Model.)

J. E. SWENDEMAN.
ELECTRIC GAS LIGHTING BURNER.

No. 552,594.

Patented Jan. 7, 1896.



WITNESSES.

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UNITED STATES PATENT OFFICE.

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ELECTRIC GAS-LIGHTING BURNER.

SPECIFICATION forming part of Letters Patent No. 552,594, dated January 7, 1896.

Application filed June 7, 1895. Serial No. 552,031. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH E. SWENDEMAN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Electric Gas-Lighting Burners, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of an electric gas-lighting burner constructed in accordance with my invention, the stop-cock being open. Fig. 2 is a vertical section through the center of the same. Fig. 3 is a side elevation of the same, the electrodes being represented in contact with each other. Figs. 4, 5, and 6 are views representing the movable electrode in different positions. Figs. 7 and 8 are details to be referred to.

My invention relates to electric gas-lighting burners in which the gas is alternately let on and shut off by turning a gas-cock having connected therewith suitable mechanism for simultaneously producing an electric spark to ignite the gas by causing the terminal of a movable electrode to be wiped past or swept into and out of contact with the terminal of a fixed electrode situated in close proximity to the orifice at the tip of the burner; and my invention consists in certain novel mechanism whereby as the gas-cock is turned to let on the gas the movable electrode is raised and caused to make and break contact with the fixed electrode to produce the spark to ignite the gas, and then returned to its original level below the fixed electrode and out of the way of the flame, as hereinafter more fully set forth, and pointed out in the claims.

In the said drawings, A represents the hollow vertical shell or body of the gas-burner, which is provided at its upper end, as usual, with a tip *a*, and on one side near its lower end with a supply-pipe *b*. The shell or body A is composed of two portions 10 12, screwed together at *c*, and within the lower portion 12 is fitted the vertically-arranged tapering plug *d* of the stop-cock, as shown in Fig. 2, the plug *d* being held in place and drawn up snugly into its seat by a vertical screw *e*, the head of which

fits within a concave recess at the bottom of the portion 10 and rests upon the top of the portion 12, said screw having a vertical central aperture 15 extending therethrough and forming a portion of the gas-passage leading to the tip *a*. In the side of the plug *d* is formed an aperture *f*, which communicates with its vertical gas-passage and is so placed that by turning the plug it can be brought into or out of line with the gas-inlet passage *h* to admit the gas to the portion 10 and tip *a* or shut it off therefrom, as required. The stem of the plug *d* extends down below the shell A, and has formed upon its lower end or attached thereto in any suitable manner a thumb-piece or handle B, by which it can be turned by hand to let on or shut off the gas, a suitable stop-pin 13, Fig. 2, being provided, as usual, to limit the movement of the plug in either direction.

Between the portions 10 12 is clamped a collar *i*, having on one side a projection *k*, provided with a vertical aperture within which is placed a sleeve or bushing *m*, composed of hard rubber or other suitable insulating substance, for the reception of the lower end of the fixed electrode *n*, which is secured in place by a nut and washer, as shown. The upper end of this electrode, which is bent at a right angle, as shown, extends up to a point in close proximity with the orifice at the tip of the burner, and said electrode is connected, as usual, with one pole of the battery by a wire *p*.

To an arm *q*, projecting up vertically from the collar *i* and made integral therewith, is fulcrumed on a headed screw-pin *r* a lever C, which forms the movable electrode, and is provided with a longitudinal slot 25, through which said fulcrum-pin *r* passes, said slot permitting a vertical movement of the lever C as it is swung or vibrated on its fulcrum-pin. Around the upper end of the lever C is coiled a light spiral spring *s*, which forms the upper portion of the movable electrode, which is connected through the burner and the gas-pipe with the other pole of the battery. The lower end of the spring *s* is secured to the arm *q*, and the upper portion of the coil, which is of slightly-reduced diameter and of conical form at the top, extends some distance above the top of the lever C, its terminal consisting

of a straight upright piece 26, the elasticity of which permits it to be wiped or swept past the rigid terminal 22 of the fixed electrode, thus producing a spark to ignite the gas.

5 The lower end of the lever C is curved to the right, as shown, and is provided with a notch *t*, Fig. 7, which is adapted to be engaged by a pin *w*, Fig. 8, projecting from the inner surface of a disk or oscillating piece D, which is
10 mounted on a stud or hub *u*, Fig. 3, projecting from the side of the shell A, and is secured in place thereon by a nut 28. A portion of the periphery of this disk D is provided with teeth 29, which mesh with teeth 30 on a
15 horizontal disk or wheel G, secured to or made integral with the plug *d* of the gas-cock or its stem, whereby as said plug *d* is turned by means of the thumb-piece or handle B to let on the gas the disk D is rotated in the direction
20 of the arrow, Figs. 4, 5 and 6, causing the pin *w* to engage the notch *t* at the lower end of the lever C and raise said lever on the pin *r* against the resistance of the spring *s*, the terminal 26 of which is thus carried upward by
25 the end of the lever C, and thereby raised above the level of the horizontal terminal of the fixed electrode, as shown in Figs. 3 and 5, the upper end of the lever C being at the same time swung upon its fulcrum-pin *r* to the
30 right, causing the elastic terminal 26 to be brought into contact with the terminal 22 of the fixed electrode and wiped past the same, thus producing the spark to ignite the gas, the stop-cock being open to let on the gas when
35 the parts are in this position.

As the terminal 26 of the movable electrode is wiped past the terminal of the fixed electrode the inner curved side 31, Fig. 4, of the lever C is brought into contact with the hub
40 *u*, as shown dotted in Fig. 6, which acts as a stop to prevent further movement of the lever in this direction, and as the pin continues to travel it instantly disengages itself from the notch *t* in the lever C, when the said lever is
45 instantly carried back to its original position, as shown in Figs. 1 and 4, by the retraction of the springs *s*. The lever C does not come into contact with the hub *u* until the instant after the separation of the terminals 22 and 26, and
50 the rotation of the disk D ceases immediately after the pin *w* has passed out of the notch *t*, the gas-cock having then been fully turned to let on the gas. When the lever C has been carried back to its lowest level after the gas
55 has been ignited, the terminal 26 will be entirely out of the way of the flame, as shown in Figs. 1 and 4, as is necessary to prevent its being injured thereby, and when the stop-cock is rotated in the opposite direction to shut off
60 the gas the backward rotation of the disk D causes its pin *w* to merely swing the lever C on its fulcrum without raising it. Hence there is no contact of the two electrodes while the gas is being shut off, no spark being required
65 at that time. Furthermore there is no liability of the electrodes being left in contact with each other, as the turning of the gas-cock to

let on the gas is sure to separate them and permit the movable electrode to be drawn down by its spring *s*, while no contact is made
70 on the return movement of the gas-cock to shut off the gas.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an electric gas-lighting burner, the
75 combination with the fixed electrode, of a movable electrode provided with a longitudinal slot and swinging on a fulcrum pin passing through said slot, said movable electrode being provided with a suitable terminal and having
80 a notch in its lower portion, an oscillating disk or member having a pin or projection adapted to engage the said notch in the movable electrode, and raise and swing the latter
85 on its fulcrum to cause its terminal to make and break contact with the fixed electrode, and a spring for retracting the movable electrode after its release, substantially as set forth.

2. In an electric gas-lighting burner, the combination with the plug of the stop-cock
90 arranged vertically within the shell and provided with a thumb-piece or handle projecting below the same, of a toothed disk mounted on a stud projecting from the side of the shell and provided with a pin or projection
95 a second toothed disk secured to the lower end of the plug of the stop-cock or its stem, and meshing with the first named disk, a fixed electrode, and movable electrode, the latter
100 provided with a longitudinal slot and swinging on a fulcrum pin passing through said slot, said movable electrode being provided with an elastic terminal and having a notch *t*, at its lower end adapted to be engaged by the
105 pin *w*, whereby said electrode is raised and its terminal caused to make and break contact with the fixed electrode when the gas-cock is turned to let on the gas, and a spring for retracting the movable electrode after its release, all operating substantially as described.

3. In an electric gas-lighting burner of the character described, the combination with the fixed electrode and the movable electrode provided with a longitudinal slot and swinging
115 on a fulcrum pin passing through said slot, said movable electrode having a notch *t*, at its lower end, of the oscillating disk or member D, mounted on a stud or hub *u*, projecting from the side of the burner, and having a pin
120 *w*, adapted to engage the notch at the lower end of the movable electrode and raise the latter, said stud or hub *u*, forming a stop to arrest the movement of the fixed electrode, and enable the pin *w*, to disengage itself from the notch *t*, as the disk D, continues its movement,
125 and a spring for retracting the movable electrode after its release, substantially as described.

Witness my hand this 30th day of April,
A. D. 1895.

JOSEPH E. SWENDEMAN.

In presence of—

P. E. TESCHEMACHER,
EDWIN F. EDGETT.