

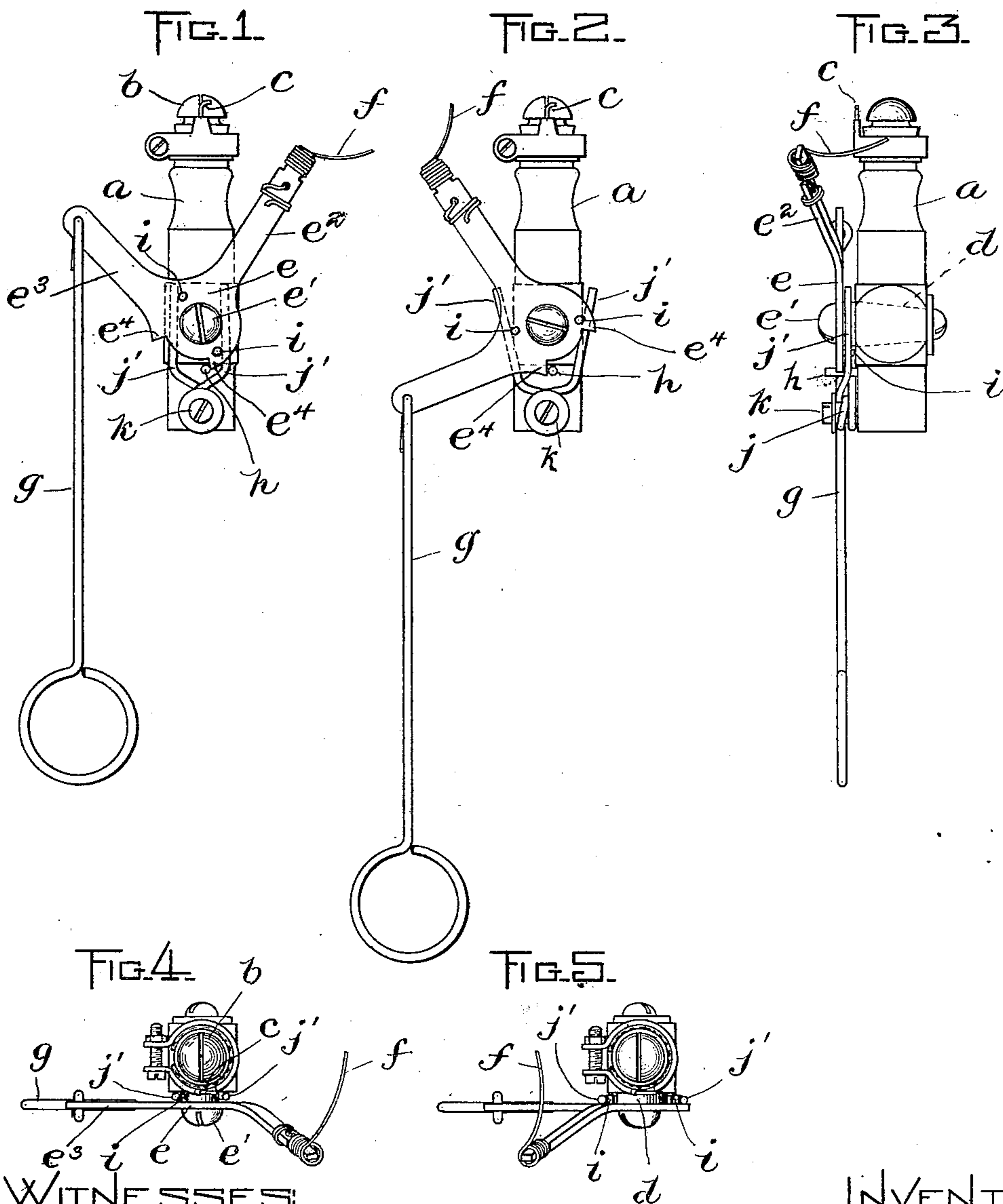
No. 636,057.

Patented Oct. 31, 1899.

R. C. NOURSE.
ELECTRIC LIGHTING GAS BURNER.

(Application filed May 12, 1899.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

RUFUS C. NOURSE, OF BOSTON, MASSACHUSETTS.

ELECTRIC-LIGHTING GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 636,057, dated October 31, 1899.

Application filed May 12, 1899. Serial No. 716,533. (No model.)

To all whom it may concern:

Be it known that I, RUFUS C. NOURSE, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and
5 useful Improvements in Electric-Lighting Gas-Burners, of which the following is a specification.

This invention has relation to electric-lighting gas-burners; and its principal objects are
10 to increase the life and safety of such burners and to insure their positive action.

The invention consists in the novel features of construction and arrangement, which I shall now proceed to describe and claim.

15 Of the accompanying drawings, Figure 1 represents a front elevation of a gas-burner constructed in accordance with my invention, being shown with the valve in closed position. Fig. 2 represents a similar view with
20 the valve in open position. Fig. 3 represents a side elevation of the burner shown with the valve in closed position. Figs. 4 and 5 represent top plan views showing the burner with its valve respectively in closed and open posi-
25 tions.

The same reference characters indicate the same parts in all the figures.

Referring to the drawings, *a* designates a gas-burner having the usual tip *b*, with a fixed
30 electrode *c* arranged in proximity thereto.

d is the valve or plug of the burner, and *e* is a plate attached by a screw *e'* to one end of the said plug and having an arm *e²*, carrying the movable electrode *f*, and a second
35 arm *e³*, from the end of which depends an operating-rod *g*. The lower edge of the plate *e* is recessed to form two stops or abutments *e⁴* *e⁴*, which coöperate with a pin or stud *h*, projecting from the side of the burner, to
40 limit the opening and closing movements of the valve or plug.

Secured to the plate *e* on opposite sides of the axis of the plug and projecting inwardly toward the burner are two cam pins or studs
45 *i i*, which occupy a nearly-vertical position relative to each other when the valve is closed, as represented in Fig. 1, and a position slightly inclined from the horizontal when the valve is in open position, as shown
50 in Fig. 2. In passing from one position to

the other the pins *i* cross a horizontal plane passing through the axis of the valve.

j designates a spring loosely surrounding a stud *k*, projecting from the burner *a* below the plug *d*, said spring having two arms *j' j'*,
55 which project upwardly into engagement with the pins *i i* and exert an inward pressure thereon.

The operation of the burner is as follows:

A downward pull on the operating-rod *g* 60 moves the parts from the position shown in Fig. 1 to that shown in Fig. 2, opening the valve to produce a flow of gas through the tip of the burner and drawing the spring-electrode *f* past the fixed electrode *c*, so as to
65 produce a gas-igniting spark when the electrodes separate. The pins *i* during this movement spread the spring-arms *j j*, increasing their pressure against the pins, and at the limit of the movement the pins occupy
70 such a position with respect to the spring-arms that said arms tend to hold the valve open. It will be noted that during the movement of the valve the radius of each cam-pin—that is, the line joining it and the axis of the
75 valve—occupies a varying angular relation to the spring-arm which engages it, said radius being at right angles to the arm just before the valve reaches its open position. The spring-arms have their greatest spread
80 when the radii of the pins are at right angles to them. To close the valve and shut off the gas, upward pressure is exerted on the operating-rod *g*, and the parts are moved from the position shown in Fig. 2 to that shown in
85 Fig. 1. The radii of the cam-pins during this movement tend to become parallel with the spring-arms, and the closing movement of the valve is therefore assisted by the spring *j*. The described construction and
90 arrangement produce a quick closing of the valve and insure its remaining closed until sufficient pressure is exerted to overcome the tension of the spring *j* and oscillate the plate *e* in a valve-opening direction.
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The fixed electrode *c* is made hook-shaped, so that the movable electrode *f* when it moves in a valve-opening direction takes under the hook and has a long-continued contact with
said fixed electrode, while on its return move- 100

ment it slips over the top of said hooked electrode and has only a short contact therewith.

I am aware that gas-burners have been constructed with a spring which assists the closing movement of the valve or plug, but in such burners, so far as I am aware, the spring has always been so disposed as to produce an unbalanced side strain on the plug, a construction which tends to make the plug turn stiffly. An attempt to ease the working of the plug by loosening its adjusting-screw to give it more end play usually results in causing the burner to leak. In my improved burner, however, by providing, as I do in effect, two springs and applying them to the plug on opposite sides of its axis of oscillation I balance the side strain produced by each spring, making the plug turn easily and minimizing the spring force required; and, furthermore, by constructing these springs of a single piece of metal, bent around and mounted loosely on a stud, I equalize their pressure against the plug. It is therefore possible with this device to work with a much tighter plug than with devices of a similar character heretofore in use and to use springs of comparatively light power.

I claim—

1. In an electric gas-lighting device the combination of a burner having a plug or valve, an operating device connected with said plug and carrying the movable electrode, cams on opposite sides of the axis of the valve and arranged to move therewith, and a plurality of springs applied to said cams and disposed so

as to assist the closing movement of the plug, said springs exerting opposing side pressures on the cams.

2. In an electric gas-lighting device the combination of a burner having a plug or valve, an operating device connected with said plug and carrying the movable electrode, cams mounted on said plug on opposite sides of its axis of oscillation, a stud mounted on the burner, and a spring member loosely surrounding said stud and having two spring-arms embracing the cams and exerting inward equalized and balanced pressures thereon, which tend to assist the closing movement of the plug.

3. In an electric gas-lighting device the combination of a burner having a plug or valve, a plate attached to the end of said plug and having an operating-arm, and an arm carrying the movable electrode, two cam studs projecting from said plate on opposite sides of its axis of oscillation, a fixed stud mounted on the burner, and a spring member loosely surrounding said fixed stud and having two spring-arms embracing the cam-studs and exerting inward, equalized and balanced pressures thereon, which tend to assist the closing movement of the plug.

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

RUFUS C. NOURSE.

Witnesses:

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A. D. HARRISON.