

(No Model.)

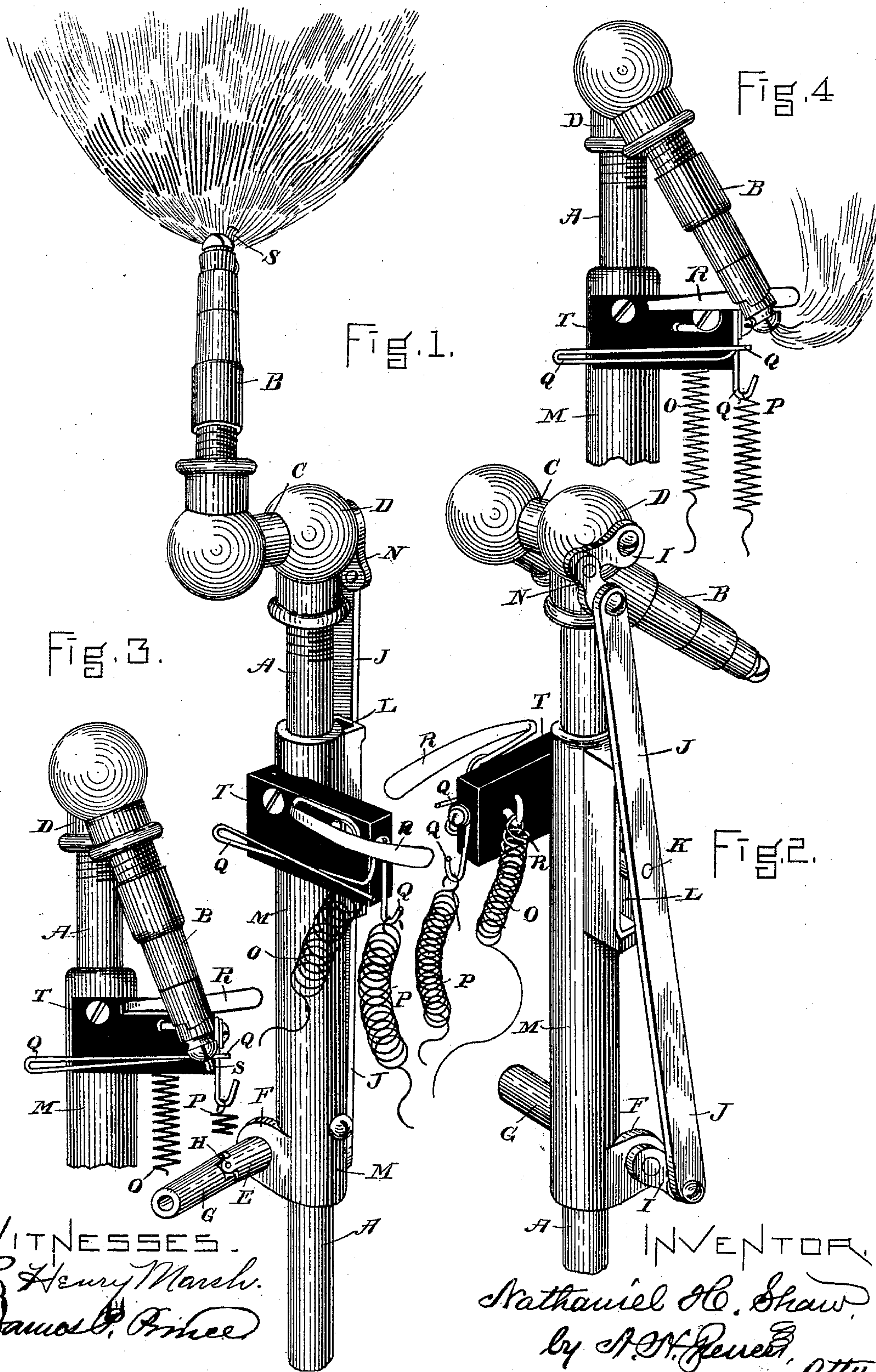
2 Sheets—Sheet 1.

N. H. SHAW.

AUTOMATIC GAS LIGHTING AND EXTINGUISHING APPARATUS.

No. 405,126.

Patented June 11, 1889.



WITNESSES.
R. Henry Marsh.
James C. Prince

INVENTOR,
Nathaniel H. Shaw,
by A. H. Reese, atty

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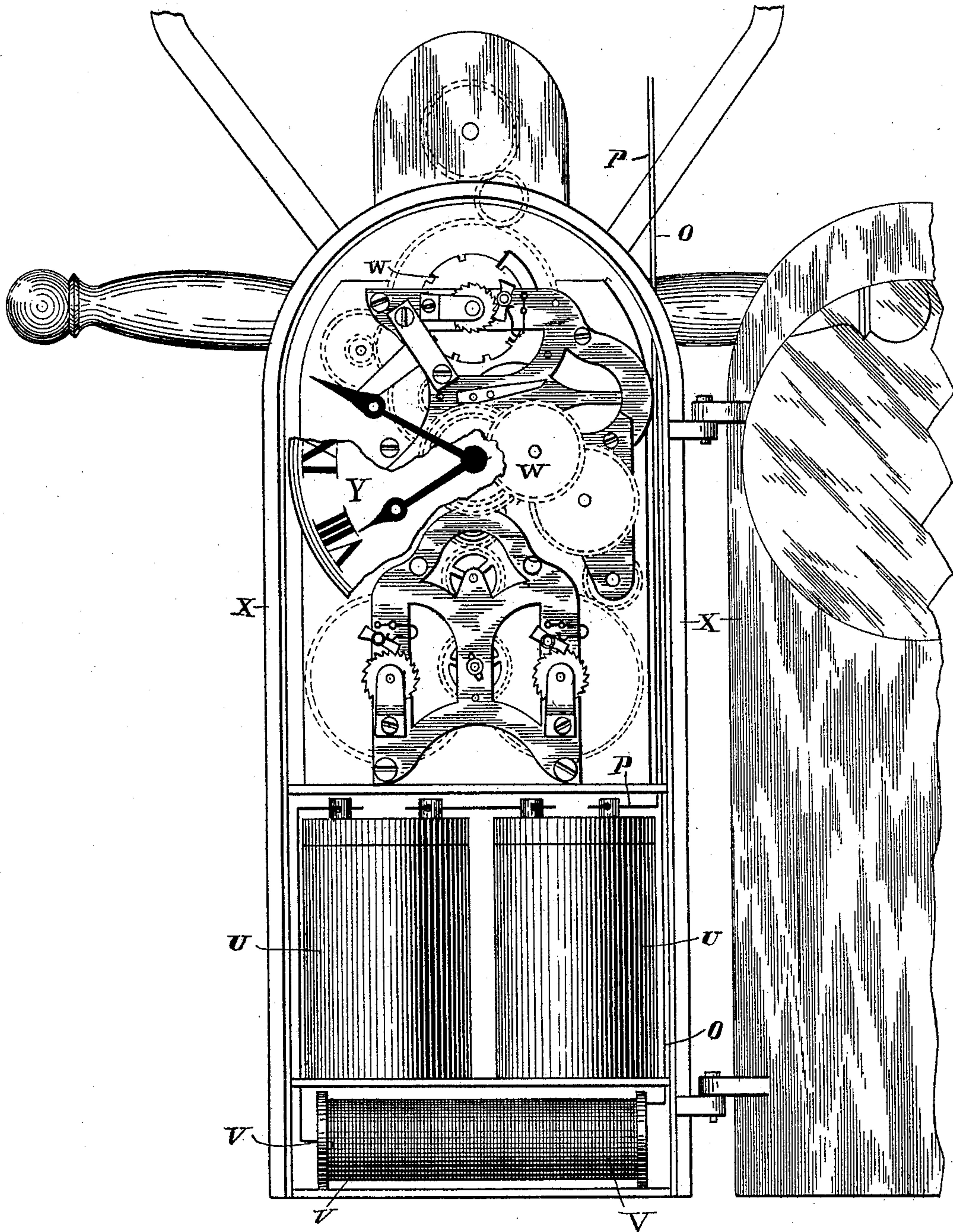


FIG. 5.

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UNITED STATES PATENT OFFICE.

NATHANIEL H. SHAW, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO THE
AMERICAN AUTOMATIC GAS LIGHTING COMPANY, OF PORTLAND, MAINE.

AUTOMATIC GAS LIGHTING AND EXTINGUISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 405,126, dated June 11, 1889.

Application filed May 14, 1888. Serial No. 273,785. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL H. SHAW, of Somerville, in the county of Middlesex and State of Massachusetts, have invented certain
5 new and useful Improvements in Automatic Gas Lighting and Extinguishing Apparatus, of which the following, taken in connection with the accompanying drawings, is a specification.

10 This invention is in the nature of an improvement upon the devices set forth in my Letters Patent No. 393,525, dated November 27, 1888, for automatic gas lighting and extinguishing apparatus. In my former inven-
15 tion a time mechanism was employed to actuate a rotary gas-cock, so as to let on and turn off the gas at predetermined times, and a battery mounted upon the lamp-post served to provide an electric spark in the immediate
20 vicinity of the tip of the burner at the moment when the gas was turned on. I utilize this same general idea in carrying out my present improvements; but instead of the stationary burner, over which passed the rotary
25 electrode of my former plan, I now use a rotary burner and non-rotary electrodes. I introduce, also, various devices to aid in the accomplishment of my present purposes, all of which are hereinafter described, and the novel
30 combinations of which are recited in the appended claims.

In the drawings, Figure 1 is a perspective view of the rotary burner in the position it occupies when in use, with a representation
35 of its operative connections. Fig. 2 shows the same parts from a different point of view in the positions occupied when the gas is shut off. Fig. 3 is a view of the burner at the point where the gas is first turned on and
40 the electric circuit is about being broken to produce the spark. In Fig. 4 the circuit is broken and the gas lighted. Fig. 5 is a front view of the opened case applied to the lamp frame or post, with time mechanism, battery,
45 and spark-coil located therein.

A represents the gas-pipe having at its upper end the burner B, rotating with its axis C to let on and shut off the gas through proper ports in the bulb D. The tubular
50 axis C is revolved once each day by a time-

mechanism attached to the lamp-post, such mechanism acting each evening at about dusk to give somewhat more than a half-turn to said axis and burner, (by which movement the gas is turned on and lighted and the
55 burner brought to its upright working position,) and also acting each morning about dawn to give something less than a half-turn to the axis and burner, (by which movement the gas is shut off and the burner stopped in
60 position ready to begin another rotation.) The means shown for effecting this rotary movement are preferred, because by their use the connection with the time mechanism may be at a point considerably below the burner,
65 and hence be less conspicuous and more readily reached or attended to. Some inches below and parallel with the axis C of the burner is another shaft E, mounted in suitable bearings F, attached to the pipe A. This shaft is
70 connected with the time mechanism in any convenient manner, as by a sliding clutch or coupling, so that the one can be readily disconnected from the other. The drawings represent the shaft E as having an extension G
75 united to it by a universal joint H, which serves to ease the movement in case the parts are not in exact alignment.

The shaft E and hollow axis C are connected for simultaneous rotation. This may be by
80 a vertical shaft and bevel-gearing, or by equivalent means. I prefer the devices shown, each shaft E and C having a crank I, and the two cranks connected by a pitman J. This pitman has a central cylindrical stud K, consti-
85 tuting its fulcrum, which traverses a vertical slot or groove L in a bar or sleeve M attached to the pipe A. By this connection the shaft E and axis C are turned in opposite directions. To avoid the necessity of special nicety in the
90 adjustment of these parts, I connect one end of the pitman J to its crank I by interposing a short link N, Fig. 2, which, standing normally at about a right angle to the crank I, can slightly increase or diminish that angle,
95 as occasion may require, without causing the parts to bind or work with undue friction.

The rotation of the burner and the opening and closing of the gas-cock being thus effected, it is necessary to the automatic action of the
100

apparatus that the gas be lighted at the time it is turned on. I accomplish this by producing an electric spark within the field of the escaping gas as it mixes with the air while the burner is making its partial revolution with the gas-cock open.

With the construction shown in the drawings the cock begins to open just as the burner begins to move upwardly from its lowest position. (See Fig. 4.) At this point, therefore, electrical connection is made and broken by the action of the moving burner coming in contact with both electrodes at the same time and breaking the connection of the one at the tip of the burner first. The wires O and P, extending up from the battery, are connected to the hooked ends of two stationary electrodes Q and R, each having a yielding action to insure proper contact with the burner and completion of the electrical circuit thereby. The burner is provided with a hooked projection S near the tip thereof. When the burner revolves, this hook engages with the electrode Q, and the side of the burner bears against the other one, thus completing the circuit. When the hook S is released from its sliding frictional engagement with the elastic electrode Q, (see Fig. 4,) a spark is produced, the burner being still in contact with the electrode R. As the gas is escaping downwardly against its natural tendency, it mixes with the air and spreads over considerable space, so as to be readily ignited by the spark.

The insulator T is preferably mounted on the sleeve or bar M, and will be located at the proper point to make the electrode correspond with the opening of the gas-cock. The revolving burner may be suitably insulated, if necessary.

The actuating devices, consisting of battery-cells U, spark-coil V, and time mechanism W, with a part of the dial Y, are shown in Fig. 5 inclosed within the partitioned case X, about as indicated in my former patent.

I claim as my invention—

1. In a gas-lighting apparatus, the combination of a rotary burner and gas-cock with electrodes adapted for engagement with said burner in its movement, for the purpose set forth.

2. In a gas-lighting apparatus, the combination of a rotary burner and gas-cock with yielding electrodes, said burner adapted in its rotation to make and break electrical connection through said electrodes, for the purpose set forth.

3. The combination of a rotary burner and gas-cock with a time mechanism adapted to automatically actuate them, and with two electrodes brought into circuit by said burner in its rotation, substantially as and for the purpose set forth.

4. The combination of a rotary burner and gas-cock and a time mechanism for actuating them with a rotating shaft connected to the time mechanism and a pivoted pitman uniting said shaft and cock for simultaneous movement, substantially as set forth.

5. The combination of a rotary burner and gas-cock and a time mechanism adapted to actuate them at predetermined times with a rotating shaft located below said cock, a pivoted pitman connecting said shaft and cock, and a movable fulcrum for said pitman working in grooved ways, substantially as set forth.

6. The combination of a rotary burner and gas-cock, a rotary shaft parallel to their axes, and a time mechanism for actuating them, with a pivoted pitman having midway of its length a sliding fulcrum and at one end a short connecting-link, for the purpose set forth.

7. The combination of a rotary burner and gas-cock, a rotary shaft in a lower plane, and mechanism for moving them simultaneously, as described, with a sleeve or bar attached to the gas-pipe as a support for said shaft, and with two electrodes, also mounted upon said sleeve or bar, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 5th day of May, A. D. 1888.

NATHANIEL H. SHAW.

Witnesses:

A. H. SPENCER,
J. C. KENNEDY.