

No. 631,748.

Patented Aug. 22, 1899.

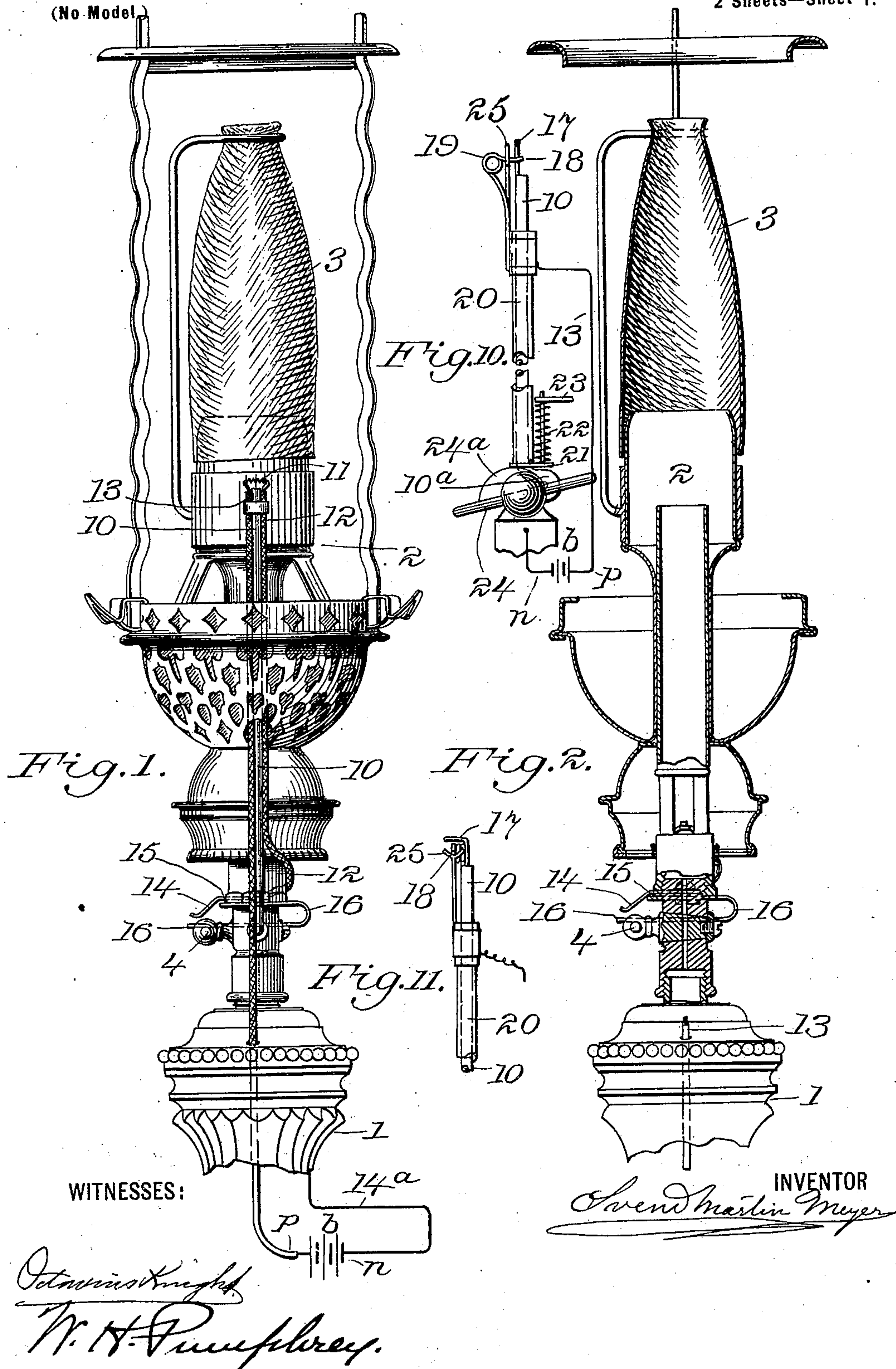
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ELECTRIC LIGHTING DEVICE FOR INCANDESCENT GAS BURNERS.

(Application filed June 23, 1898.)

2 Sheets—Sheet 1.

(No Model)



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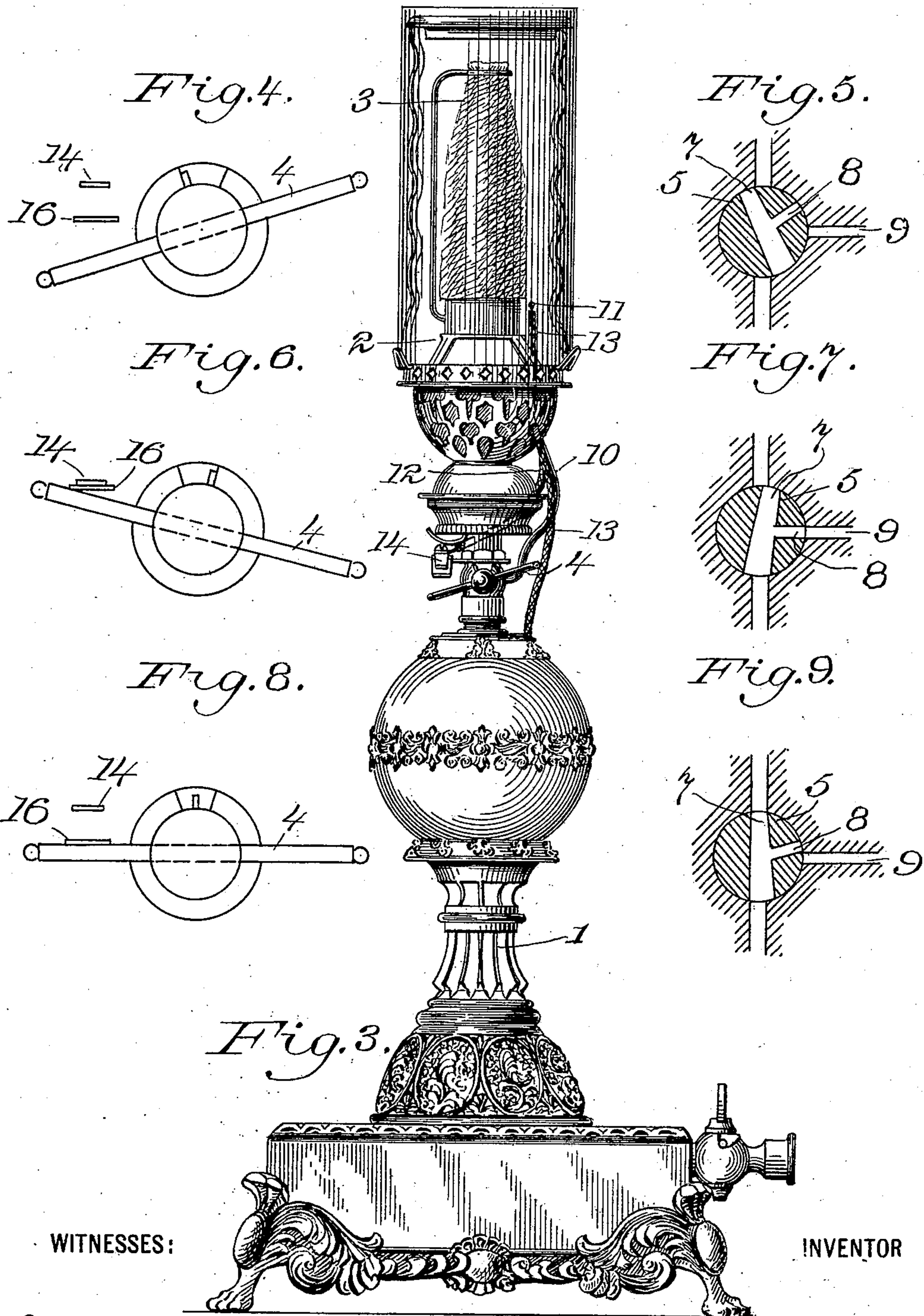
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(No Model.)

2 Sheets—Sheet 2.



WITNESSES:

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ELECTRIC LIGHTING DEVICE FOR INCANDESCENT GAS-BURNERS.

SPECIFICATION forming part of Letters Patent No. 631,748, dated August 22, 1899.

Application filed June 23, 1898. Serial No. 684,261. (No model.)

To all whom it may concern:

Be it known that I, SVEND MARTIN MEYER, a citizen of Denmark, and a resident of the borough of Brooklyn, city of New York, State of New York, have invented a new and useful Improvement in Electric Lighting Devices for Incandescent Gas-Burners, of which the following is a specification.

The subject of my invention is an electric lighting device for incandescent gas-burners of the "Welsbach" type, in which a fibrous incandescent mantle is employed.

In my device a pilot or lighting jet is provided in contact with a resistance-coil or sparking device in an electric circuit, which is closed by the act of turning on the gas, the construction and arrangement being such that in turning on the gas at the burner the main duct is first opened, delivering a flow of gas within the mantle, and by an extension of the same movement the main duct is nearly closed, leaving a very small flow of gas within the mantle, and the lateral pilot-duct is opened, which results in shooting up a pilot-jet on the exterior of the mantle, this extended opening movement of the cock serving also to close an electric circuit, which by means of an incandescent coil or a sparker, as preferred, ignites the pilot-jet, and thereby flame is communicated to the slight flow of gas on the burner proper within the mantle. Then on releasing the key a spring automatically restores the stop-cock to full-open position, closing the pilot-jet, in which position the cock remains until turned off by hand in customary manner. It will be understood that as soon as the pilot-flame is ignited the gas inside the mantle ignites, burning very low on the cone, so that when the gas is turned on full there can be no explosion inside the mantle.

In the accompanying drawings, Figure 1 is an elevation of a self-lighting incandescent gas-burner, illustrating my invention. Fig. 2 is a vertical section of the same. Fig. 3 is an elevation on a smaller scale, showing the burner mounted upon a stand. Figs. 4 to 9, inclusive, are diagrammatic representations of the gas-cock in the three different positions. Figs. 4 and 5 are respectively an ele-

vation and a section showing the gas turned off. Figs. 6 and 7 are respectively an elevation and a section showing the extreme position of the gas-cock with the pilot-duct open and the main duct nearly closed. Figs. 8 and 9 are respectively an elevation and a section showing the normal position of the cock when the gas is turned on and the pilot-duct closed, the cock being returned from the position shown in Figs. 6 and 7 to that shown in Figs. 8 and 9 automatically by the resilience of a spring, as hereinafter described. Fig. 10 is a front elevation of the pilot-tube, gas-cock, and their accessories, illustrating the application to the invention of a movable sparking device instead of the lighting-coil. Fig. 11 is a side elevation of the same.

The improved self-lighting burner may be used as herein illustrated, mounted upon a table-stand 1, of ordinary form, or upon a permanent fixture, drop-light, or other suitable support. The burner proper, 2, and mantle 3 and the support thereof may be of a form common with incandescent burners in which a mantle is used. The gas-key 4 is connected to a cock 5 of peculiar construction, (illustrated in Figs. 5, 7, and 9,) having a main duct or port 7, leading to the burner 2, and the lateral pilot-duct 8, leading to a pilot-tube 10. The main port 7 is of tapering form, as represented, in order that its inlet end may remain in full communication with the induct in the fixture while the cock is turned, so as to be in full communication with the outlet while the lateral duct 8 is off, as shown in Fig. 9, and so as to nearly close the main outlet-duct while the lateral duct is on full, as shown in Fig. 7. The lateral duct 8 communicates with a lateral port 9 in the burner, and this with a pilot duct or tube 10, which extends upward through the shell of the burner within the chimney-support to the space between the mantle 3 and the lamp-chimney, so that when the pilot-duct is opened, as shown in Fig. 7, a vertical jet will shoot up within the lamp-chimney on the outside of the mantle, which jet will be ignited by contact with a resistance-coil 11, of platinum wire or the like, or by a sparking device, through which an electric current is passed by the closure of

the circuit by suitable means in the act of turning on the gas.

For the purpose of illustration I have shown in Fig. 1 insulated conductors 12 and 13, connected with the respective ends of the lighting-coil 11. The conductor 12 is connected at its lower end with an insulated contact-spring 14, mechanically mounted upon the burner through a suitable insulating-plate 15. Electrically grounded in the metal of the burner and mechanically mounted thereon beneath the insulated contact-spring 14 is a U-shaped contact-spring 16, which is adapted to be thrown up into contact with the spring 14 by the movement of the gas-key 4, as illustrated in Fig. 6. The insulated conductor 13 is connected at its lower end with one pole p of a battery or other suitable source of electricity b , the other pole n of which is grounded on the metal of the lamp by a conductor 14^a.

The operation is as follows: The gas being turned off, as illustrated in Figs. 4 and 5, in order to turn it on and light the gas the key 4 is moved by hand to the position shown in Figs. 6 and 7, passing the intermediate position shown in Figs. 8 and 9, at which point the further movement of the key is resisted by the resilience of the spring 16. On reaching the extreme position shown in Figs. 6 and 7, or a little before this point, electrical contact is formed between the springs 16 and 14, so as to close an electric circuit through the lighting-coil 11. It will now be understood that in turning on the gas when the cock reaches the position shown in Figs. 8 and 9 the gas is turned on through the main burner, delivering a slight flow of gas within the mantle, which percolates through the same in readiness for ignition. A further movement to the point shown in Figs. 6 and 7 nearly closes the main duct through the cock, leaving, however, a slight flow, and opening the lateral ducts 8 9 causes a vertical pilot-jet to shoot up through the duct 10 upon the outside of the mantle, which jet is instantly ignited by the incandescent coil 11 and serves to light the gas which has escaped through the main duct within the mantle, and on releasing the key this is automatically restored to the normal full-on position shown in Figs. 8 and 9, closing the pilot-duct 8 9.

In Figs. 10 and 11 I have shown the application to my invention of a sparking-lighter of common form instead of the incandescent coil 11. In this modification the pilot-tube 10 is bent at 10° to adapt it to connect in proper position, as before, with the lateral duct 9 of the gas-cock and to adapt the main portion of the pilot-tube to assume a straight and vertical position, as represented. On top of the pilot-tube 10 is a stationary sparking-spring 17, with which engages the movable sparking-point 18 of a spring 19, which is carried by a tube 20, mounted to slide vertically on the tube 10 and insulated therefrom. On the base of the sliding insulated tube 20 is a plate or lug 21, held down by a spring 22,

which bears upward against the abutment 23 and restores the tube 20 to normal position after it has been raised and released. Upon the gas-key 24 is a cam or eccentric 24^a, which when the key is turned from the normal position shown in Fig. 10 in order to turn on the gas and open the pilot-duct 9 raises the sliding insulated tube 20 by pressure upon the lug 21, thereby bringing the sparking-point 18 into engagement with the fixed point 17 and causing it to escape therefrom with a sudden movement, so as to cause a lighting-spark in contact with the jet of gas from the pilot-tube 10. In order to insure a sudden movement of the movable sparking-spring 17 in the upward sparking-stroke, the horizontal end of the sparking-wire 18 rests in a yoke 25, carried by the sliding insulated tube 20, so as to leave but little resilience in the end of the moving sparking-spring 18 in its upward effective stroke. When the key 24 is released by the hand, it is restored by the action of the spring 22 to the normal open position illustrated in Figs. 8 and 9, cutting off the flow from the lateral pilot-duct 9 and tube 10, and in this action the spring 18, having extended resilience by reason of its coil 19, escapes with an easy movement in passing the fixed spring 17 and assumes its normal position underneath the same in readiness for the next lighting movement. The sliding tube 10 is electrically connected by the insulated conducting-wire 13 with one pole p of the battery or other suitable source of electricity b , so as to close the electric circuit by contact with the fixed sparking-wire 17, which is mounted on the tube 20, and hence is in electrical connection with the metal of the lamp, in which the other pole n of the battery is grounded.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In an electric lighting device for incandescent gas-burners, the combination of a gas-burner, a jet-tube for igniting the same, a gas-cock opening communication with the gas-burner and subsequently with the igniting-jet by a further movement in the same direction, an electric lighting device for the jet-tube and a circuit-closing device closed by the extreme movement of the cock by which the lighting-jet is opened and broken in the intermediate position in which the main burner-duct is open; as explained.

2. The combination of the main burner 2, three-way cock 5, key 4, lighting-duct 9, 10 lighting-coil 11, suitable conductors of electricity and circuit-closing spring 16 acted on by the key 4 to close the electric circuit when the lighting-duct is open and automatically closing the lighting-duct and breaking the electric circuit, when the key is released; as explained.

3. The combination of the main gas-burner 2, jet-pipe 10 for igniting the same, a suitable source of electricity and conductors with an

incandescing-coil in proximity to the igniting-jet, a circuit-closing spring, a three-way cock 5, 7, 8 constructed and operating as described to first open the passage to the main burner and subsequently with the igniting-pipe by a further movement in the same direction, by which the main gas-duct is nearly closed, and an operating key or arm for said gas-cock engaging with the circuit-closing spring to close

the circuit when the igniting-duct is open and to restore the cock automatically to its intermediate position, with the igniting - duct closed, the gas-duct to the main burner open and the electric circuit broken; as explained.

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Witnesses:

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