

No. 835,138.

PATENTED NOV. 6, 1906.

H. LYON.  
AUTOMATIC LIGHTING BURNER.  
APPLICATION FILED MAY 2, 1905.

FIG. 1

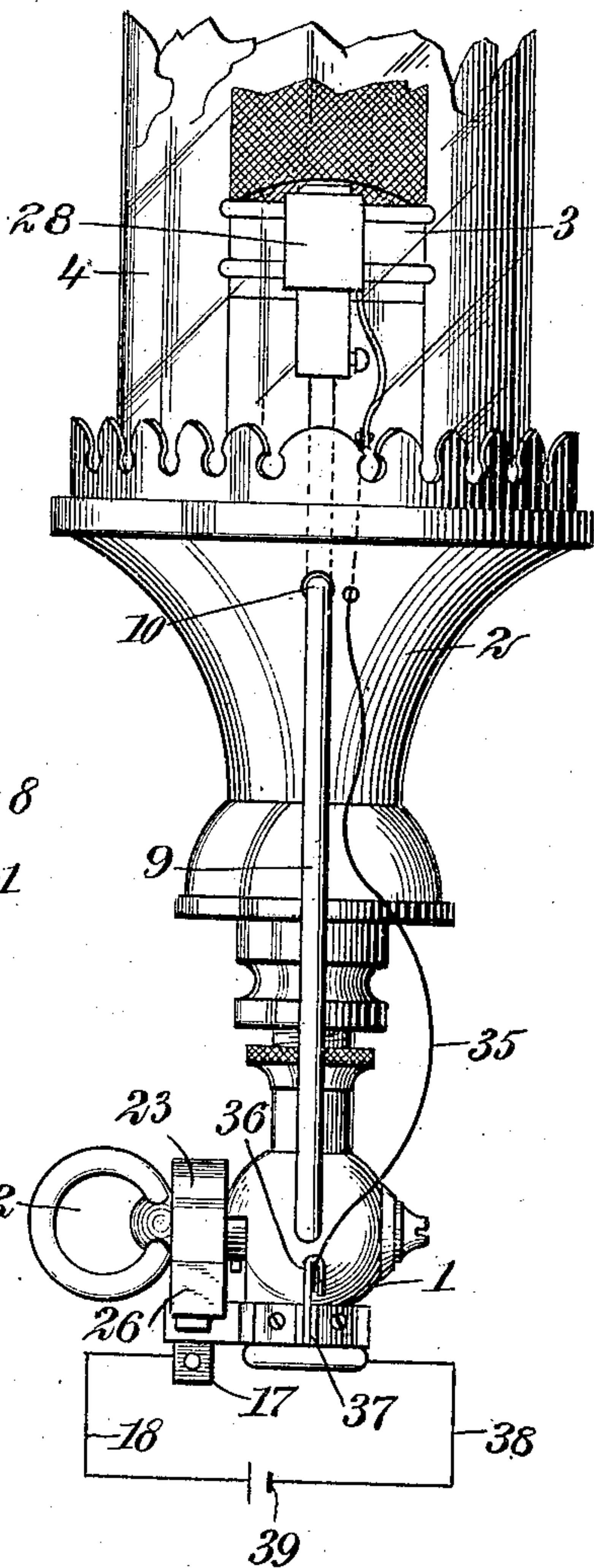


FIG. 4

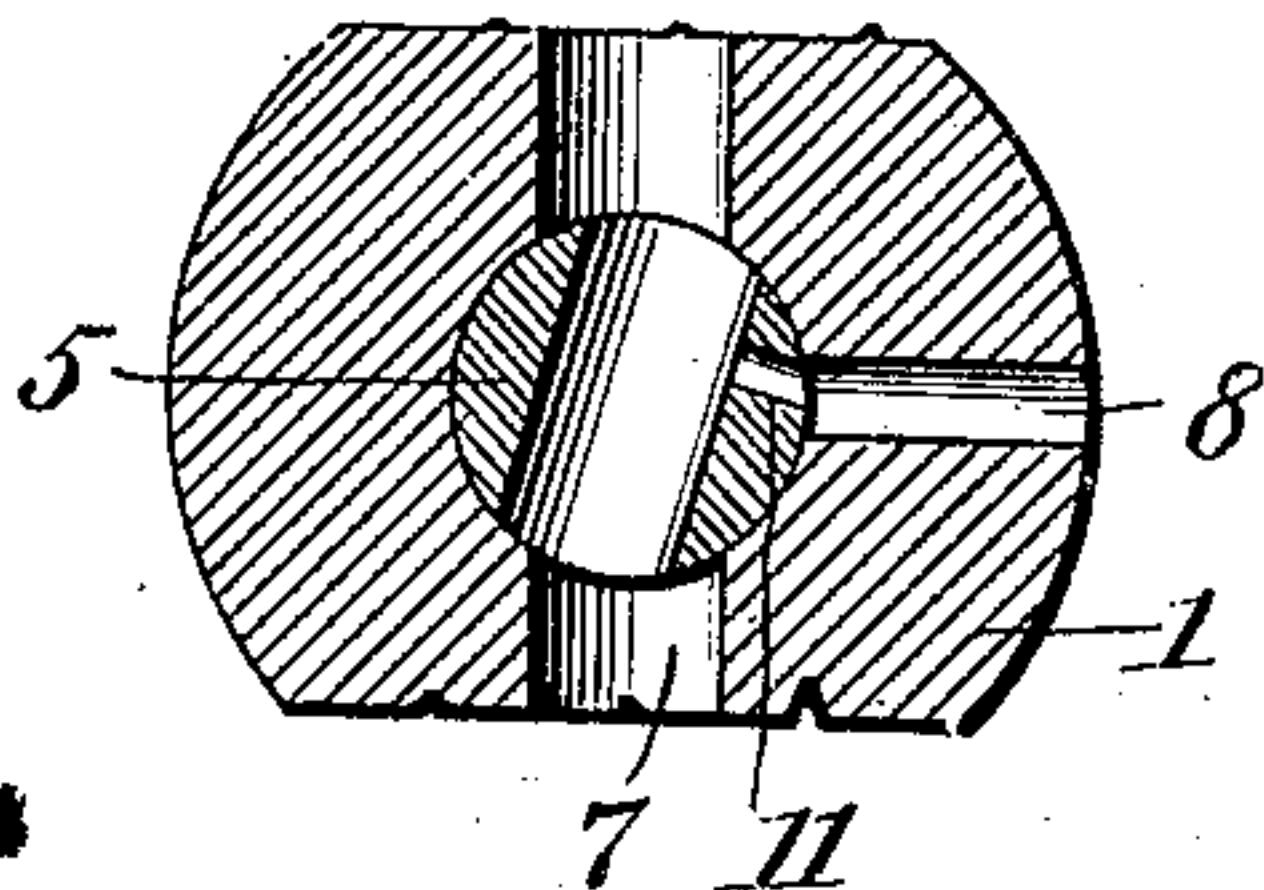


FIG. 5

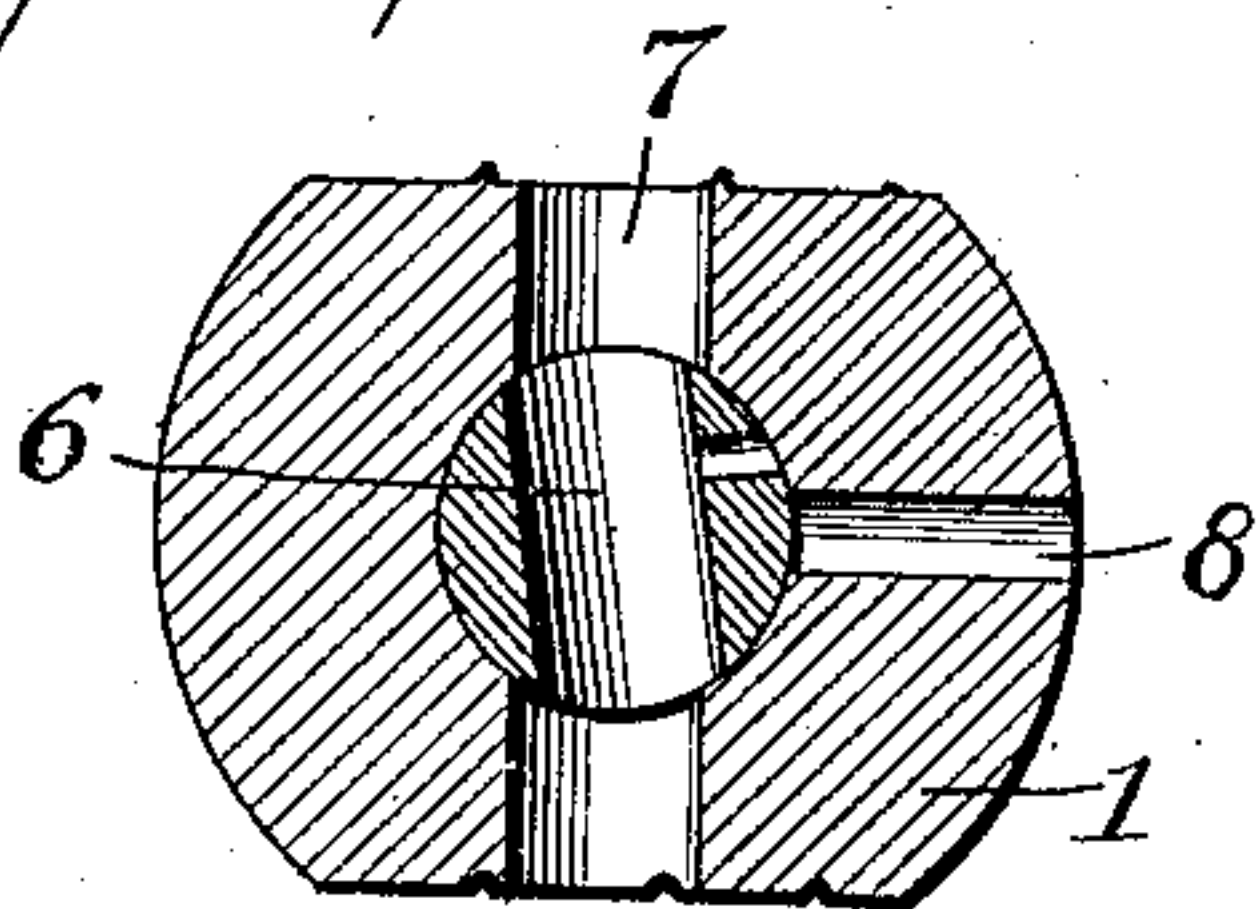


FIG. 2

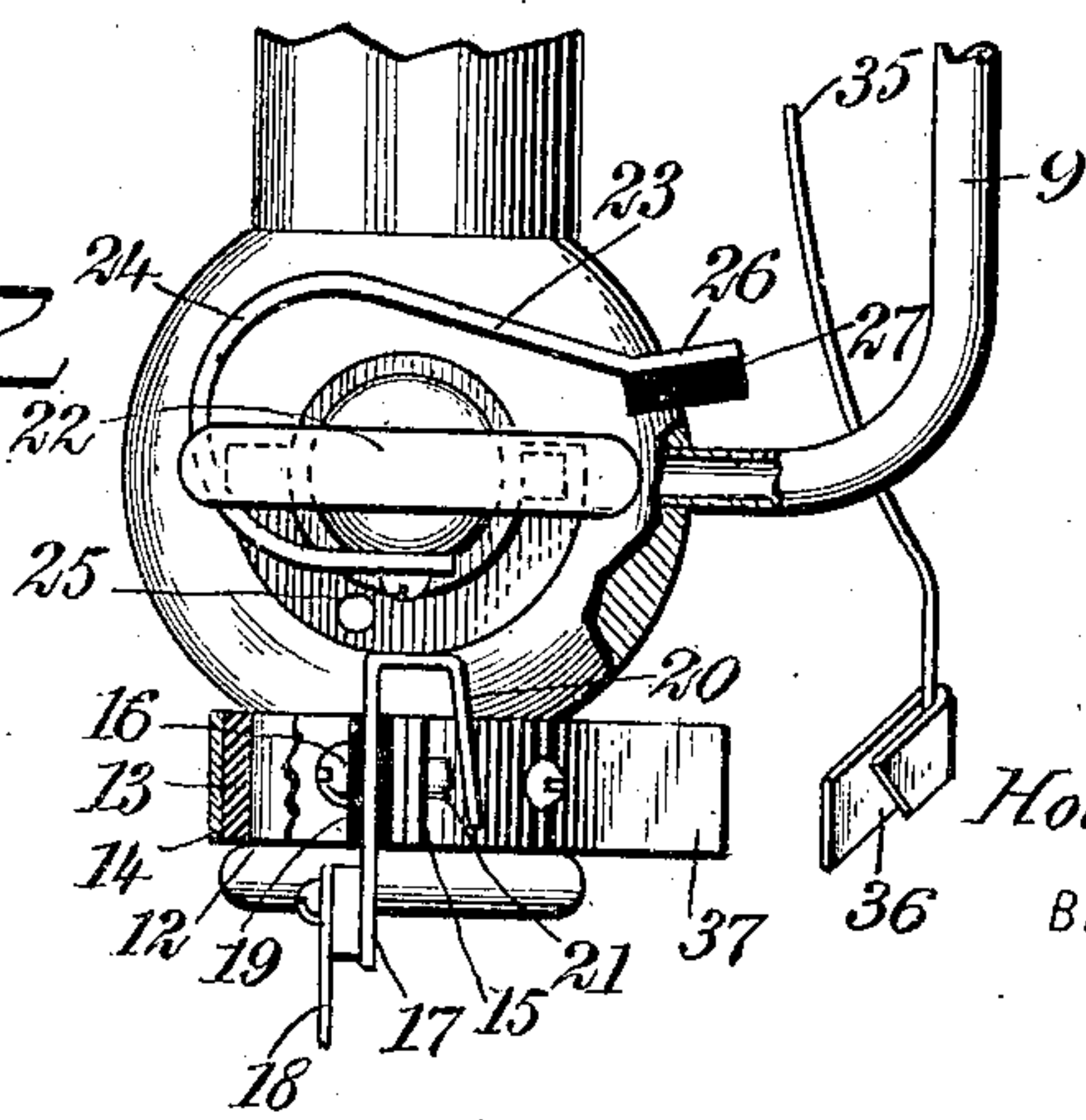


FIG. 3

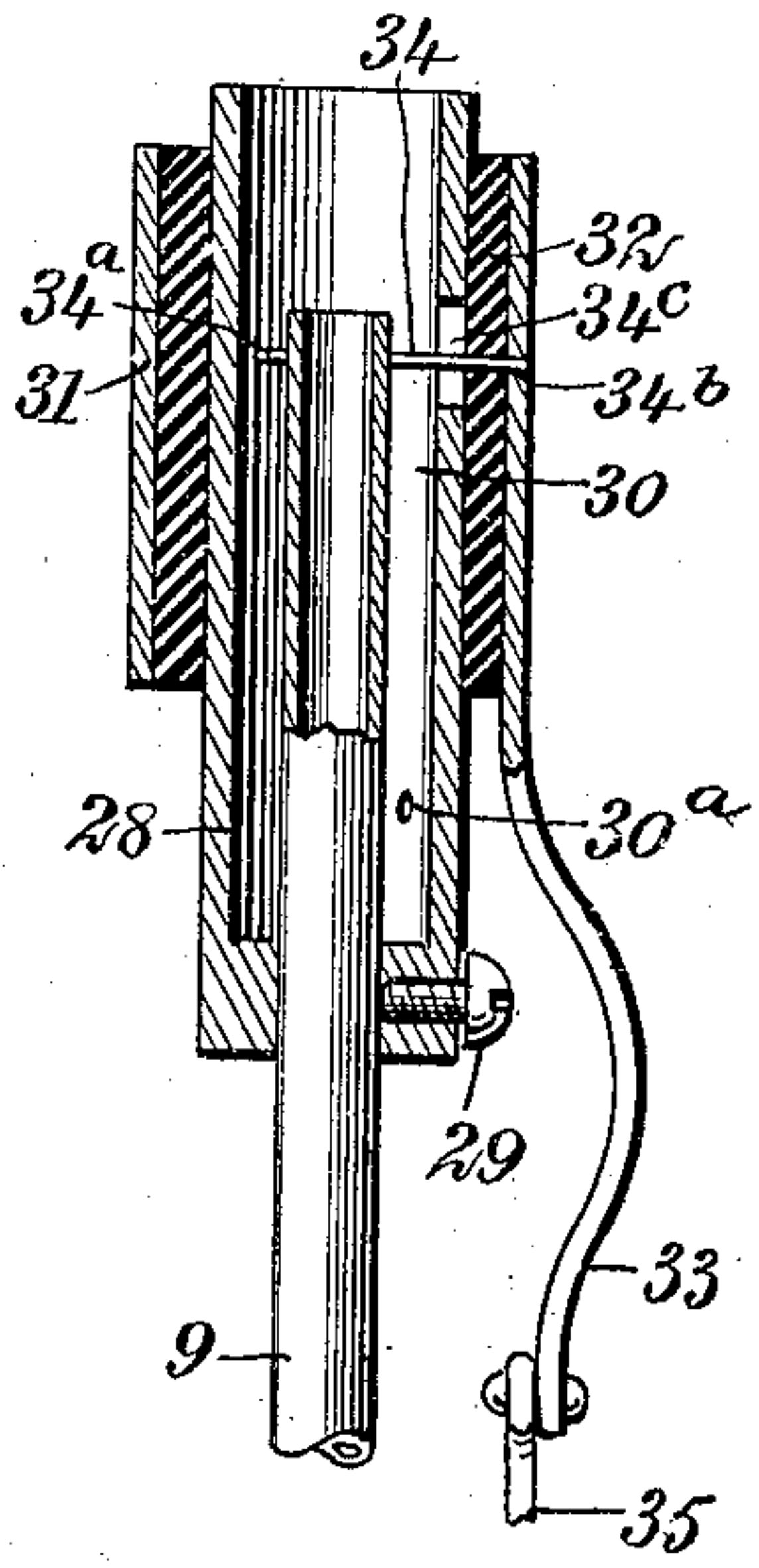
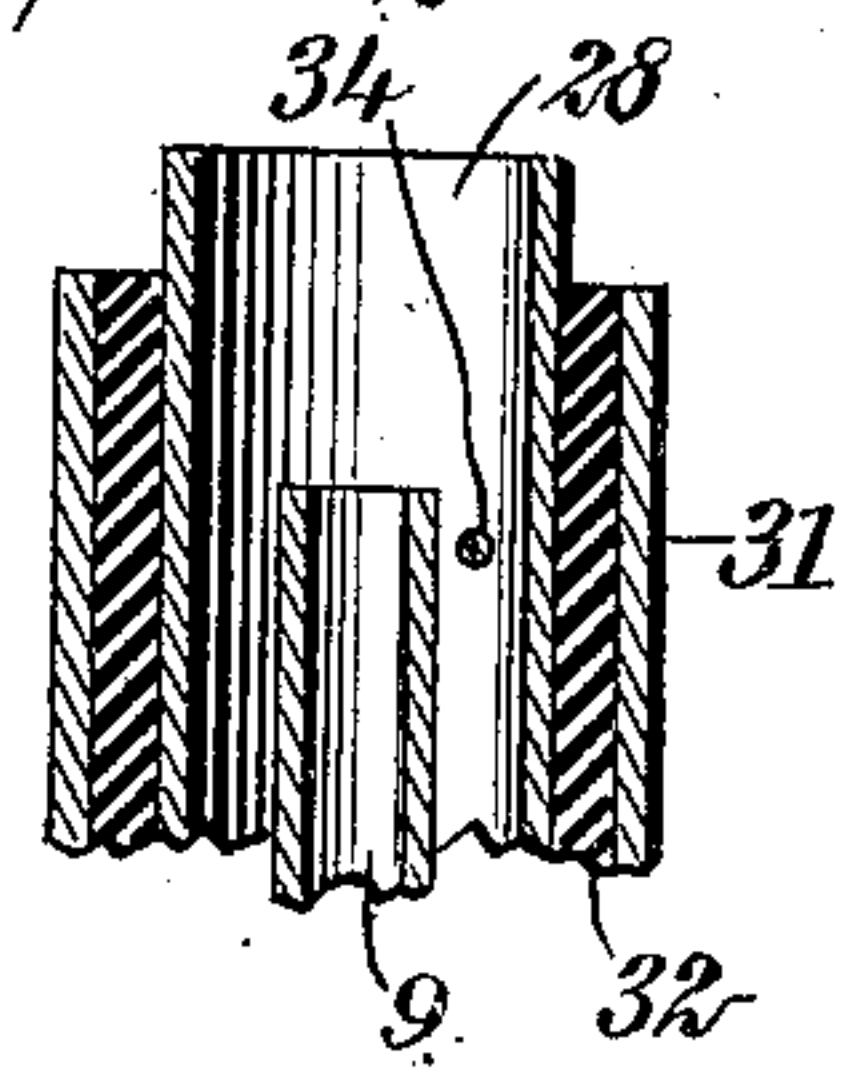


FIG. 6



WITNESSES:

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# UNITED STATES PATENT OFFICE.

HOWARD LYON, OF ONEONTA, NEW YORK.

## AUTOMATIC-LIGHTING BURNER.

No. 835,138.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed May 2, 1905 Serial No. 258,492.

*To all whom it may concern:*

Be it known that I, HOWARD LYON, a citizen of the United States, and a resident of Oneonta, in the county of Otsego and State of New York, have invented a new and Improved Automatic-Lighting Burner, of which the following is a full, clear, and exact description.

This invention relates to lighting; and the object of the invention is to provide simple and improved means for automatically lighting a burner, such as a gas-burner.

The invention consists in the construction and combination of parts, to be more fully described hereinafter and definitely set forth in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation showing a burner provided with my invention, the upper portion of the chimney of the burner being represented as broken away. Fig. 2 is an enlarged side elevation of the cock of the burner, certain parts being broken away and represented in section, as will appear. Fig. 3 is substantially a vertical section through the upper portion of a pilot-burner constituting a feature of the invention. Fig. 4 is a cross-section through the cock, showing the manner of admitting the gas to the pilot-burner. Fig. 5 is a view similar to Fig. 4, but representing how the flow of gas to the pilot-burner is cut off; and Fig. 6 is a vertical section through the pilot-burner, taken in a plane at right angles to that of Fig. 3.

The invention is applicable to gas, gasoline, or petroleum burners of all kinds used for heating or lighting purposes and seems especially useful in connection with gas-burners used in houses for illuminating purposes, and its application in this instance will now be described.

Referring especially to Fig. 1, 1 represents a gas-cock, above which there are provided a chimney-holder 2 and a main burner 3, said burner being surrounded by the usual chimney 4, of glass. The cock 1 comprises a rotatable plug 5, having a transverse port 6, which enables the flow of gas through the bore 7 of the cock to be controlled in the usual manner. The body of the cock 1 is provided with a pilot-opening 8, from which a pilot-tube 9 leads outwardly and upwardly, as indicated most clearly in Fig. 2. The body of

this pilot-tube is disposed substantially vertically, as shown, and passes upwardly to a point near the main burner 3 and through an opening 10, formed in the side of the chimney-holder for this purpose.

The plug 5 is provided with a pilot-bore 11, which coöperates with the pilot-opening 8 in a manner which will appear more fully hereinafter.

The cock 1 is illustrated as provided with the usual neck 12 near its lower portion. Around this neck I place an insulating-collar 13, of fiber, mica, or similar material, and around this collar is attached a band 14, of conducting material, such as metal. As indicated most clearly in Fig. 2, this band terminates in outwardly-projecting ears 15, which are clamped together by means of a bolt 16, enabling the band to be firmly attached to the cock, as will be readily understood. This bolt 16 affords means for attaching a contact-plate 17, to the lower portion of which a leading-in wire is attached, as indicated. This contact-plate 17 is suitably insulated from the ears 15 by an insulating-block 19. The body of this plate projects upwardly to a point above the ears 15, where a horizontal extension is formed, as indicated. Beyond this extension the material of the contact-plate is bent downwardly, so as to form an inclined extension 20. As indicated in Fig. 2, on the side of the ears 15 adjacent to the extension 20 a contact-point 21 is placed. It should be understood that when the gas is turned on by rotating the plug 5 the movement operates to make contact between the extension 20 and the contact-point 21, in this way closing the metallic connection between the leading-in wire 18 and the band 14.

The plug 5 is provided with the usual enlarged head or wing 22, which is adapted to be grasped between the fingers, so as to enable the plug to be rotated. As usual, when this wing is disposed in a horizontal position, as indicated in Fig. 2, the flow of gas through the burner is shut off. To the plug, adjacent to its head 22, there is attached a spring 23, the body of which is formed into a bow 24, which is rigidly attached by means of a screw 25 or a similar fastening device. At its extremity the spring is preferably bent outwardly to form a shoe 26, to which an insulating-block 27 is attached, as indicated. The extension 20 of the contact-plate is located so that it lies in the path of the shoe 26 as the plug 5 is rotated, and the force or re-



silieny of the spring 23 is sufficient to overcome that of the contact-plate 17. From this arrangement when the gas is turned on the insulating-block 27 strikes the outer face 5 of the extension 20 and makes a contact between this part and the contact-point 21 in the manner suggested above.

When the plug 5 is rotated in the manner suggested to its most extreme position and 10 when the contact is being made at the point 21, the pilot-port 11 will be in communication with the pilot-bore 8, as indicated in Fig. 4, so that gas will be admitted into the pilot-tube 9. However, as the plug 5 is released the resiliency of the contact-plate 17 15 will operate to displace the shoe 26 and rotate the plug 5 backwardly through a small angle, and after this slight reverse motion has taken place communication between the pilot-port 11 and the pilot-opening 8 will be cut off, as indicated in Fig. 5.

Upon the upper extremity of the pilot-tube 9 I attach a pilot-burner 28, comprising a tubular body open above and having an 25 opening in its lower extremity receiving the tube, as indicated. A set-screw 29 affords means for securing the pilot-burner in position and for adjusting the same. The upper end of the burner 28 projects above the extremity of the pilot-tube, as shown. The 30 inner diameter of the burner 28 is greater than the diameter of the tube 9, so that an ignition-chamber 30 is formed.

Around the burner 28 a metal sleeve 31 is 35 secured over a suitable insulating-ring 32, said sleeve having an extension 33, to which an insulated conductor 35 is attached, as shown. In the upper portion of the burner 28 a transverse igniting-filament 34 is placed, 40 preferably passing across a slight distance below and to one side of the mouth of the tube, as indicated in Fig. 6. One extremity is attached at 34<sup>a</sup> to the inner side of the burner, and the opposite extremity 34<sup>b</sup> 45 passes through the insulating-ring 32 to the sleeve 31. In order to prevent its contacting the burner 28 at this point, an enlarged opening 34<sup>c</sup> is formed, through which the filament passes.

50 In the lower portion of the ignition-chamber 30 an air-inlet opening 30<sup>a</sup> is formed, which facilitates the lighting of the burner, as will appear more fully hereinafter.

As indicated most clearly in Fig. 2, the 55 insulated conductor 35 has attached thereto, at its lower extremity, a shoe 36. Arrangement is made for enabling this shoe to engage the band 14. For this purpose to the outer side of the band 14 a pair of oppositely-disposed clips 37 are attached, and between these clips the body of the shoe 36 is adapted to be thrust, as indicated in Fig. 1. 60 When contact is made in this manner, it should now appear that a complete metallic

65 circuit exists from the band 14 and through

the conductor 35 to the filament 34. From the filament a complete metallic contact exists through the pilot-tube back to the cock 1.

At a suitable point, such as the neck 12 of 70 the cock-body, or to any similar point of the gas-fixture, an electric wire 38 is attached which leads to a dry cell 39, the opposite terminal of the said battery being in communication with the contact-plate 17 through the 75 wire 18. In Fig. 1 the arrangement of the battery and wiring is of course largely diagrammatic. In practice the battery would be located in some concealed position and only the wiring would be visible at certain 80 points.

I attach importance to the composition of the filament 34. This filament is preferably of No. 40 gage and composed of an iridio-platinum containing twenty-five to thirty 85 per cent. of iridium. This composition is substantially infusible. I prefer also to mount the filament out of alinement with the flame of the pilot-burner, as indicated in Fig. 6. With this arrangement the heat devel- 90 oped by the burner is not added to that of the filament which is incident to the passing of the electric current, and this material adds to the life of the filament. While the filament is far enough away from the issuing 95 gas to prevent its receiving great heat therefrom, it is sufficiently near to enable its incandescence to be operative in igniting the pilot-burner.

The mode of operation should now appear 100 fully from the foregoing. However, to recapitulate, it will be stated that in turning on the gas the rotation of the plug 5 operates to admit the gas into the pilot-burner. The rotation of the plug operates to move the shoe 105 26 of the spring 23 in a circular path and operates to close the contact between the contact-plate 17 and the contact-point 21. The shoe 36 having been first inserted between the clips 37, the electric circuit is thus closed 110 from the battery 39 through the wire 18, band 14, and conductor 35 to the filament 34. From the filament 34 the current returns through the pilot-tube and other parts of the fixture to the wire 38. Before the gas is ad- 115 mitted into the pilot-burner it is admitted into the main burner. The first operation in turning on the burner is the ignition of the pilot-burner, which takes place immediately upon incandescence of the filament 34. The 120 pilot-burner operates to ignite the main burner. As soon as the plug 5 is released the resiliency of the contact-plate 17 operates to rotate the plug back sufficiently to cut off the gas from the pilot-burner and also breaks 125 contact at the point 21.

The position of the filament indicated in Figs. 3 and 6 is considered the most advantageous to insure reliability in ignition. As the air enters the opening 30<sup>a</sup> and rises to the 130



level of the mouth of the tube 9 a mixture of gas and air is formed near the filament which it easily ignites when incandescent. While the burner 28 constitutes a reliable igniting device, its construction is such as to protect the filament in handling or shipment. Evidently the burner may be readily attached or detached without exercising special skill. The height of this burner can be nicely adjusted to particular conditions of gas-pressure or other special circumstances.

Special attention is called to the fact that in turning on the stop-cock the gas is admitted first to the main burner and then to the pilot-burner, thus preventing an explosion of gas, which is destructive to the mantle of the main burner. The air-inlet 30<sup>a</sup> of the pilot-burner not only serves to assist the ignition, but affords means for cooling the filament after ignition of the burners by furnishing a supply of cool air which rushes up in the pilot-burner in such a manner as to cool the incandescent filament.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a device of the class described, in combination, a main burner, a pilot-burner, a cock adapted to admit gas to said burners, an igniting-filament adjacent to said pilot-burner, a contact-point, a resilient contact-plate lying adjacent to said point and normally out of engagement therewith, and a spring attached to said cock and having an insulating-shoe adapted to engage said contact-plate and affording means for forcing

the same against said contact-point, whereby a circuit may be closed through said filament.

2. In a device of the class described, in combination, a main burner, a pilot-burner, a cock having a rotatable plug adapted to admit gas to said burners, an insulated band attached to said cock, an insulated resilient contact-plate attached to said band, a contact-point on said band adjacent to said contact-plate, a spring attached to said plug and having a shoe in the path of which said contact-plate lies, whereby said spring may force said contact-point and plate into engagement and an incandescent filament lying adjacent to said pilot-burner and in metallic connection with said band.

3. In a device of the class described in combination, a pilot-burner, an insulating-sleeve surrounding the same, and an incandescent filament in metallic connection with said sleeve and said burner.

4. A pilot-burner comprising, in combination, a tube, a tubular burner surrounding said tube and projecting thereabove, whereby an ignition-chamber is formed near the mouth of said tube, and an incandescent filament within said chamber and below the mouth of said tube.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HOWARD LYON.

Witnesses:

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