

(No Model.)

D. ROUSSEAU.

ELECTRIC GAS LIGHTING BURNER.

No. 285,682.

Patented Sept. 25, 1883.

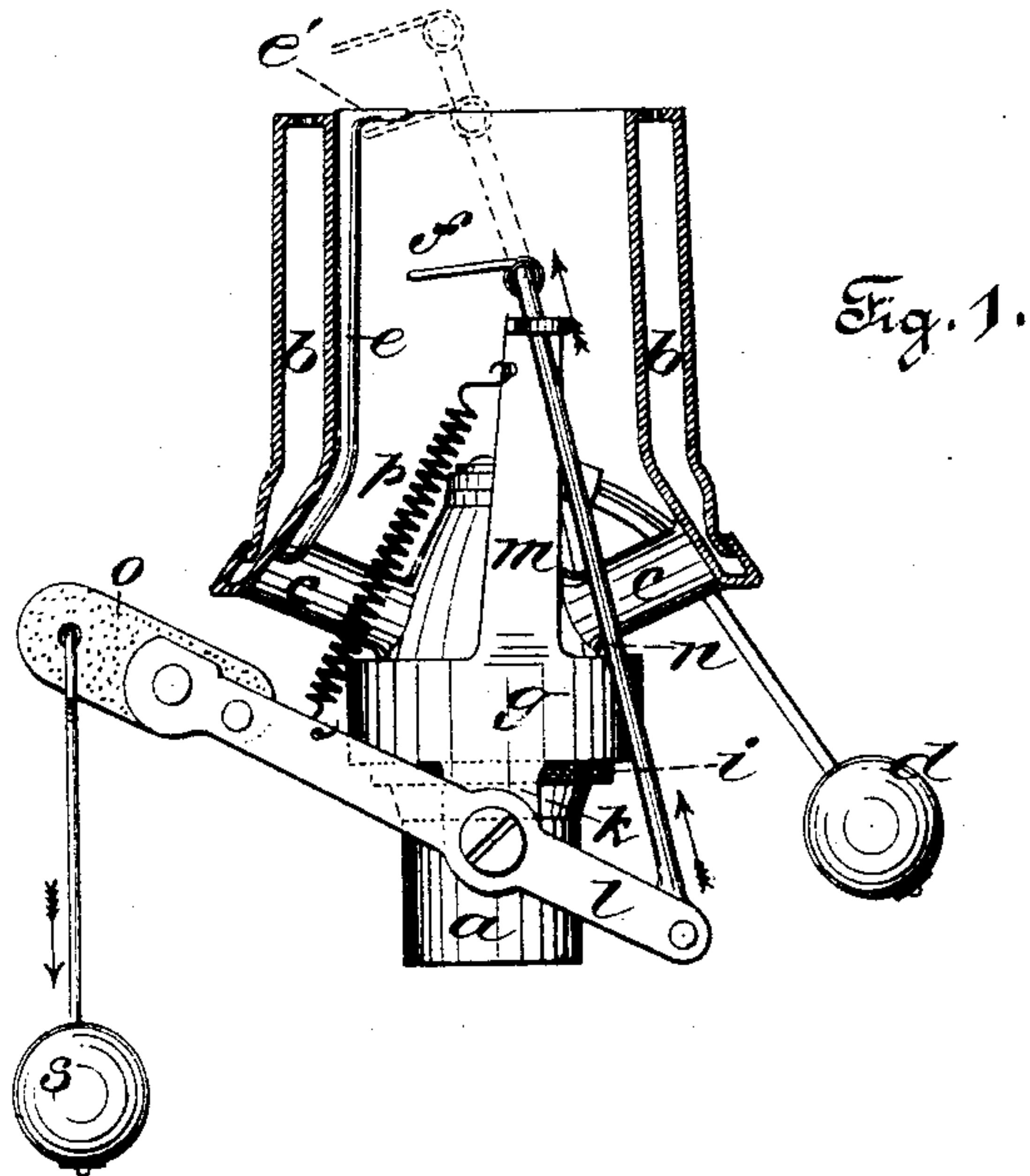


Fig. 1.

Fig. 2.

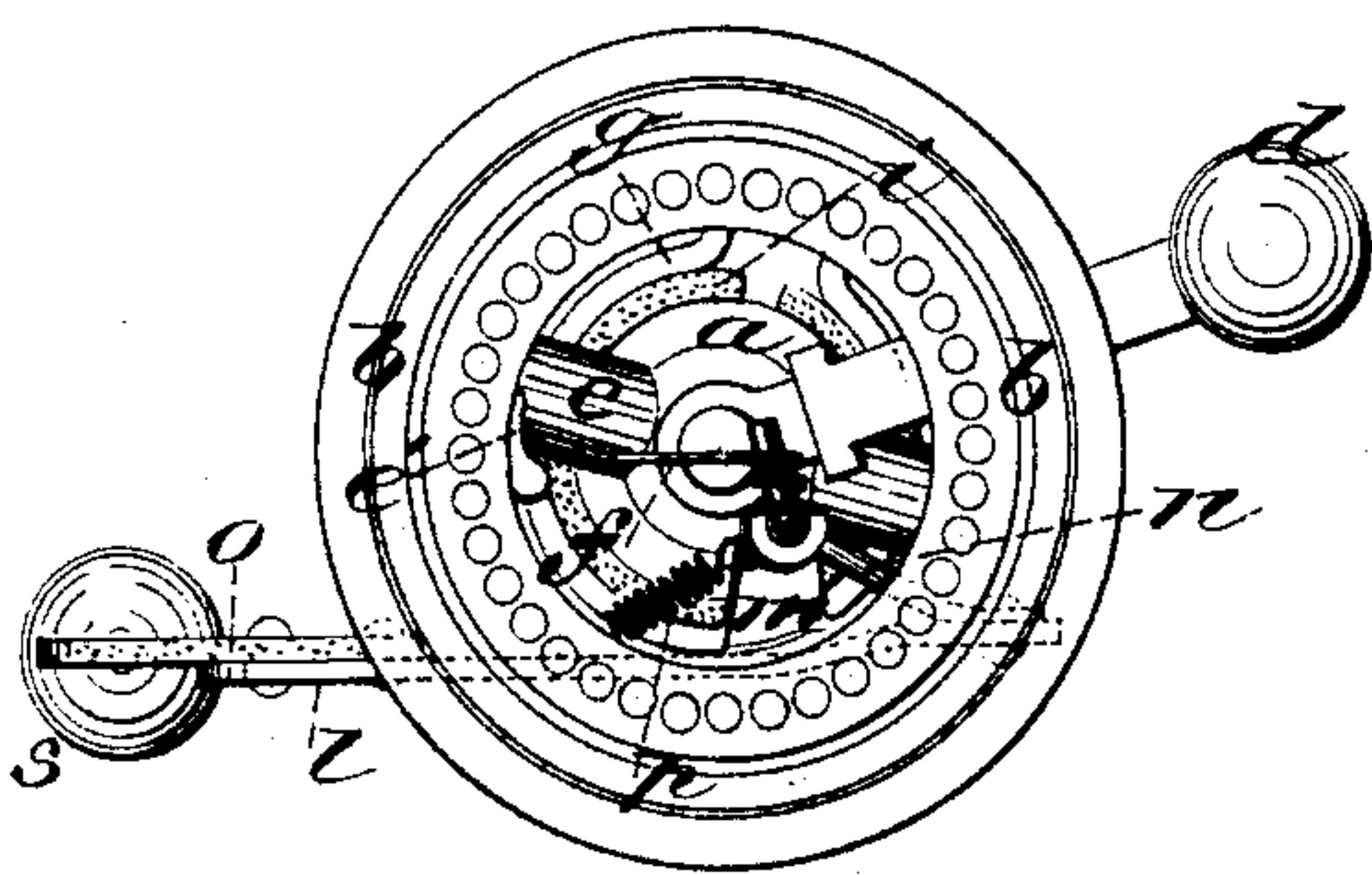
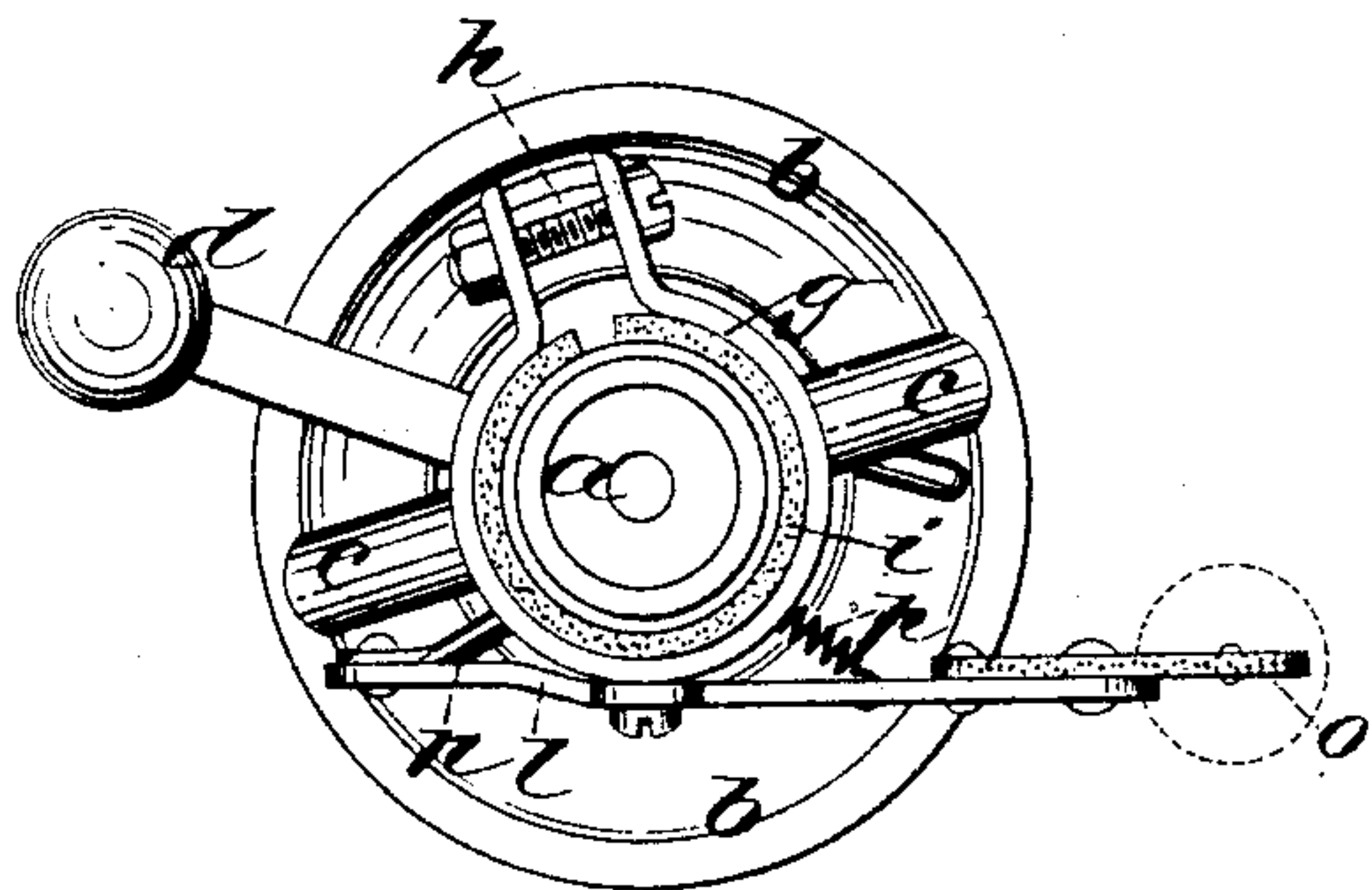


Fig. 3.



Witnesses:

Geo. E. Gavin  
Henry D. Parker

Inventor.

David Rousseau,  
by Chas. M. Higgins,  
Attorney.



# UNITED STATES PATENT OFFICE.

DAVID ROUSSEAU, OF NEW YORK, N. Y.

## ELECTRIC GAS-LIGHTING BURNER.

SPECIFICATION forming part of Letters Patent No. 285,682, dated September 25, 1883.

Application filed February 12, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID ROUSSEAU, of New York, county and State of New York, have invented certain new and useful Improvements in Electric Gas-Lighting Burners, of which the following is a specification.

My present invention relates to burners of the Argand form, and it aims to so arrange or apply the sparking electrodes thereon that they will not be subject to derangement by contact with any of the external attachments of the burner, and will not obstruct the exterior of the burner or interfere with the attachment of the usual chimney or shade holders thereto, and at the same time be so disposed as to emit the electric spark in a direction which will insure the certain ignition of the gas. To these ends I arrange the electrodes within the interior of the Argand burner, the fixed electrode being arranged at or on the inner wall of the burner, near the perforated edge thereof, while the movable electrode is arranged to move up and down within the interior or throat of the burner and to make and break contact with the fixed electrode in an oblique direction over the perforated edge thereof, retiring after the sparking action down within the throat out of reach of the flame. This construction is very effective and simple, and the arrangement safe and convenient, and the features here outlined constitute the main points of my invention, as hereinafter fully set forth.

Figure 1 in the annexed drawings presents a sectional elevation of an ordinary Argand gas-burner provided with sparking-electrodes according to my invention. Fig. 2 is a plan view thereof, and Fig. 3 an inverted plan of the same.

In the drawings, *a* indicates the neck of the burner, which is adapted to screw, as usual, upon the gas-fixture, and *b* indicates the annular cylinder of the burner, which communicates at the base by the usual branches, *c c*, with the top of the neck *a*, while the top of said cylinder is perforated in the usual manner, as seen in Figs. 1 and 2, to emit an annular or tubular stream of gas to form the usual Argand flame when ignited.

*d* represents the ordinary "switch" or regulator to control the flow of gas and regulate or turn down the flame as required.

Now, according to the usual system in electric

gas-lighting, one of the electrodes is fixed to and is in metallic connection with the burner, and therefore with the gas-pipes, and one pole of the battery is connected with the gas-pipes, while the other or movable electrode is insulated from the burner and connected by an insulated wire with the other pole of the battery. These battery-connections are not, however, shown in the drawings, as they are well known and form no part of the present invention.

In the drawings, *e* indicates the fixed electrode, which is fixed to the burner, and is hence metallically connected through the burner and gas-pipes with one pole of the battery, usually the positive pole. According to my improvement this fixed electrode extends up the inside of the annular cylinder of the burner, lying closely to the surface thereof, being preferably soldered at its lower end to the base of the cylinder *b* at its junction with one of the branches *c*, while its upper end terminates flush with or a little below the perforated top of the cylinder, as seen in Fig. 1. This electrode is preferably made of a stout wire, of brass or German silver, and from its tip a curved lateral prong or point, *e'*, projects, and lies close to the inner circumference of the Argand cylinder, just at the top edge thereof, as seen in Figs. 1 and 2, this prong being preferably made of a short piece of German silver or platinum wire brazed or silver-soldered to the wire *e*.

Now, *f* indicates the movable electrode, which, with its several operating devices, is sustained on a divided sleeve or ring, *g*, which is clasped around the neck of the burner, just below the branches *c c*, by the screw *h*, and is insulated from the burner by the interposed ring *i*, of vulcanized fiber or other non-conductor. From the lower edge of this ring *g* an ear, *k*, depends, on which is pivoted the lever *l*, and from the upper edge of the ring a long arm, *m*, projects and rises into the interior of the Argand cylinder and terminates at about the middle thereof. The upper end of the arm *m* is bent over at right angles and perforated, forming a bearing or guide through which the upper end of a rod, *n*, is guided. The upper end of this rod is bent laterally, as seen in Fig. 2, and on the bend is mounted the movable electrode *f*, while the lower end of the rod is jointed to the short arm of the lever *l*. On the end of the long arm of the le-



ver *l* is riveted a plate, *o*, of non-conducting material, the edge of which approaches the lower edge of the Argand cylinder, and from its outer end depends a manipulating-knob, *s*, or other device to permit the grasp of the hand. The movable electrode *f* consists, preferably, of a small spiral spring of German-silver wire encircling the bent tip of the rod *n*, having one end silver-soldered thereto and the opposite end projecting freely in a salient radial position to engage the prong of the fixed electrode when moved toward the same, as will be understood from Figs. 1 and 2. A spiral spring, *p*, is connected at one end to the top of the arm *m*, and at the opposite end to the long arm of the lever *l*, and its contraction tends constantly to so sway the lever as to withdraw the movable electrode *f* down into the center of the burner close to the top of the arm *m*, and to bring the non-conducting tip *o* of the lever into contact with the lower edge of the Argand cylinder, which position will be the quiescent position of the parts, so that hence the tip *o* forms a non-conducting stop for the retiring motion of the lever *l* against the edge of the burner, which is of positive polarity, while the lever is negative, so that the tip *o* prevents the circuit being closed when the parts are in their quiescent position, as will be understood.

It will therefore be readily seen, by referring to Fig. 1, that if the knob *s* be pulled down, as there indicated, the lever *l* will be swayed and the rod *n*, with its attached electrode *f*, moved up through the interior or throat of the Argand cylinder, and in an oblique direction toward and over the edge of the burner, where the projecting end of the movable electrode *f* will first contact with the fixed electrode *e e'*, thus closing the circuit, and the continued motion of the parts will then cause the movable electrode to scrape over and spring away from the fixed electrode, thus breaking contact therewith, and thereby emitting an electric spark between the separating electrodes and in an oblique direction over and into the rising gas-jet, thus igniting the same, as will be understood. When the knob *s* is released the spring *p* will cause the parts to retire, thus bringing the movable electrode down within the interior of the burner, as partly seen in Fig. 1.

It may therefore be noted that by this construction the electrodes, particularly the movable electrode, is inclosed within the throat of the Argand burner, where it is safely protected from all injuries or derangements which it would be likely to receive if on the outside of the burner, and at the same time the outside of the burner is left free for the attachment of the usual shade or chimney holders without any possibility of interfering with the electrodes. It will also be noted that, as the movable electrode retires down into the throat of the burner when out of action, it is thus brought to a position which is remote from the flame and heat, and into the current of air

which is rising through the burner. The electrode is thus always kept protected from great heat, which would be likely to oxidize or injure it, and would necessitate the electrode being made of the more expensive platinum, if it should remain exposed to the flame at the top of the burner instead of being withdrawn therefrom, as described. It will also be observed that the oblique direction in which the electrodes break contact over the edge of the burner insures certain ignition, as it throws the electric spark directly into the gas-jet. It is not essential, however, that the movable electrode be arranged to have the oblique motion described, as it may move straight up and down in the throat of the burner to engage the fixed electrode. It is not essential either that the fixed electrode be attached to the inside of the cylinder, as it may, without much objection, be attached to the outside or the top edge of the cylinder, but projecting inwardly so as to properly engage the movable electrode.

I do not confine myself to having the movable electrode arranged to move obliquely within the Argand cylinder, as this electrode may be arranged to move in any other desired manner, so as to engage the fixed electrode, provided this electrode be inclosed by and arranged to move within the throat of the burner and engage the fixed electrode in substantially the same manner and with the same effect as that described, as this forms the chief feature of my invention.

It may also be understood that it is not at all essential to employ a distinct wire or projection on the burner to form the electrode *e'*, for as the burner is itself connected with one pole of the battery, the upper and inner edge or angle of the Argand cylinder may serve as the electrode itself, against which the movable electrode *f* will scrape, and thence break contact when moved upward with the same effect as if a projecting wire had been used to make contact with the electrode *f*.

I am aware that a flat-flame burner has been provided with an electrode arranged to move within the internal gas-passage of the burner, and to work in and project from the jet-slot of the burner, but this is obviously quite distinct from my invention, and I hereby disclaim it. My invention relates distinctly to burners of Argand or annular form, and my movable electrode is not arranged to work within the gas-passage of the burner, but in the air or draft throat or passage within the annular cylinder of the burner, as herein shown and described, which is both new and advantageous, as above set forth.

What I claim is—

1. The combination, with an Argand gas-burner, of a movable electrode disposed within the interior or throat of the burner, and means for moving it within said throat to engage or disengage the opposite electrode at or near the angle or edge of the throat, substantially as and for the purpose set forth.

2. An Argand gas-burner provided with a



fixed electrode projecting internally from its upper edge, in combination with a movable electrode arranged to move up and down within the interior or throat of the burner to engage and disengage the opposite electrode, substantially as herein set forth.

3. The combination, with an Argand gas-burner of a movable electrode arranged to move obliquely up and down within the interior or throat of the burner, and to break contact with the opposite electrode by an oblique movement over the edge of the burner, substantially as and for the purpose set forth.

4. The combination, with an Argand gas-burner having an electrode of one polarity arranged at or near the inner edge of the burner, of a movable electrode of opposite polarity disposed within the throat of the burner, and

arranged to move up and out of the same to make and break contact with the first electrode, and thence retire down into the throat out of range of the flame, substantially as herein set forth.

5. In combination with a gas-burner, the clasp-sleeve *g*, formed with the guiding-arm *m*, the electrode rod *n*, guided by said arm, the operating-lever *l*, pivoted on said sleeve and connected with said rod, and a spring arranged to bring said lever and rod into their retiring positions, substantially as herein shown and described.

D. ROUSSEAU.

Witnesses:

JNO. E. GAVIN,  
CHAS. M. HIGGINS.