

D. ROUSSEAU.  
Electric Gas Lighting Burner.  
No. 235,024. Patented Nov. 30, 1880.

FIG. 1.

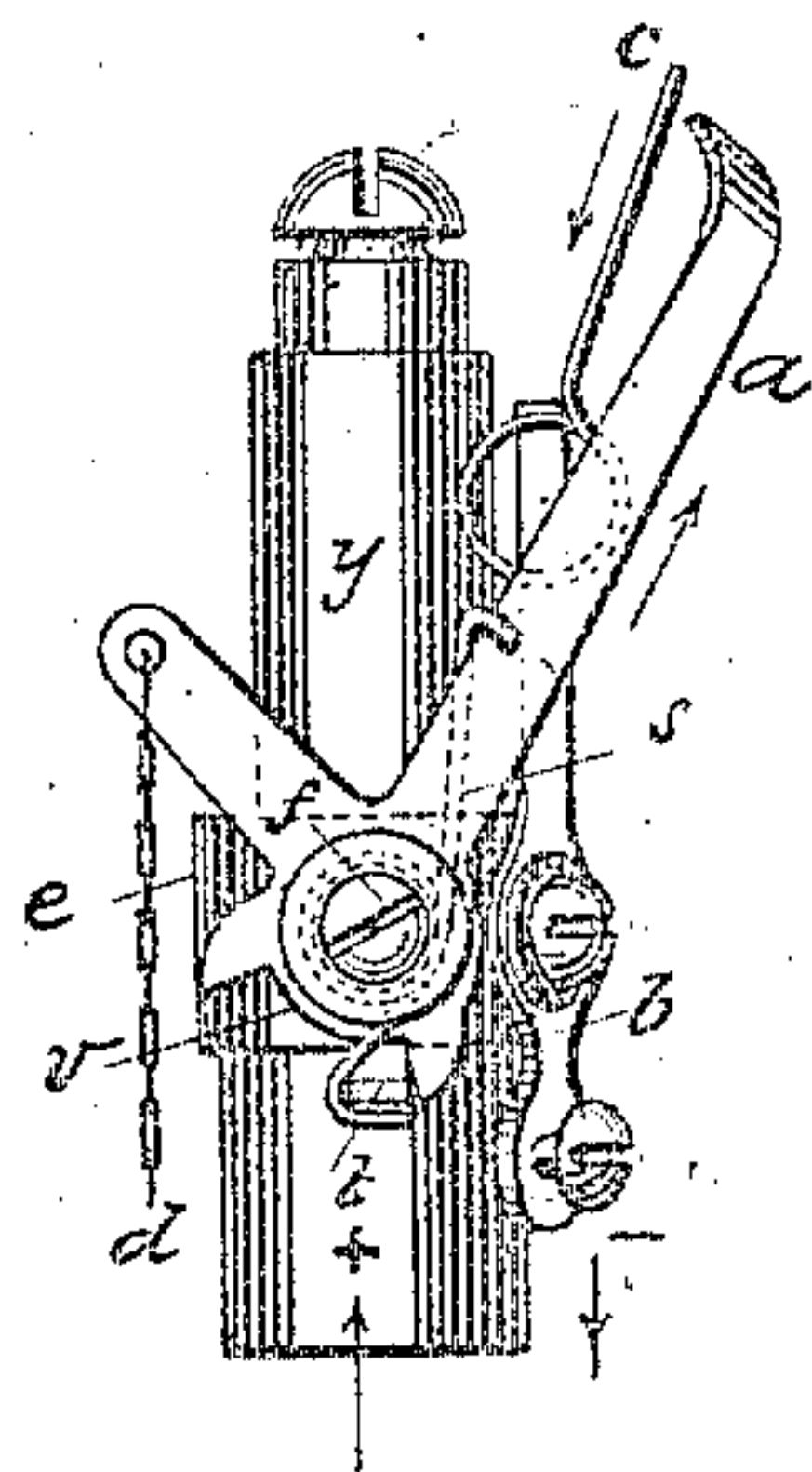


FIG. 2.

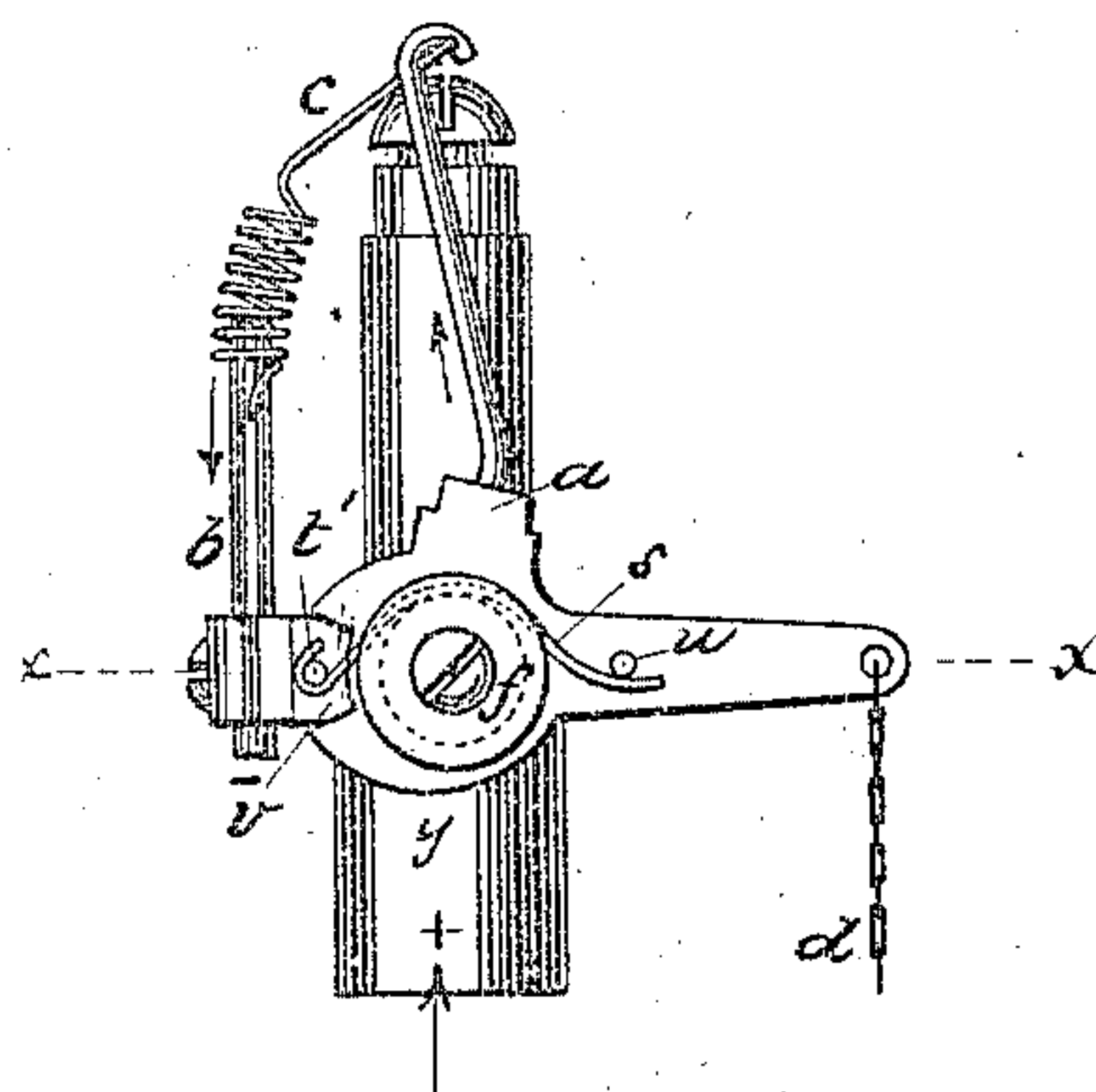


FIG. 3.

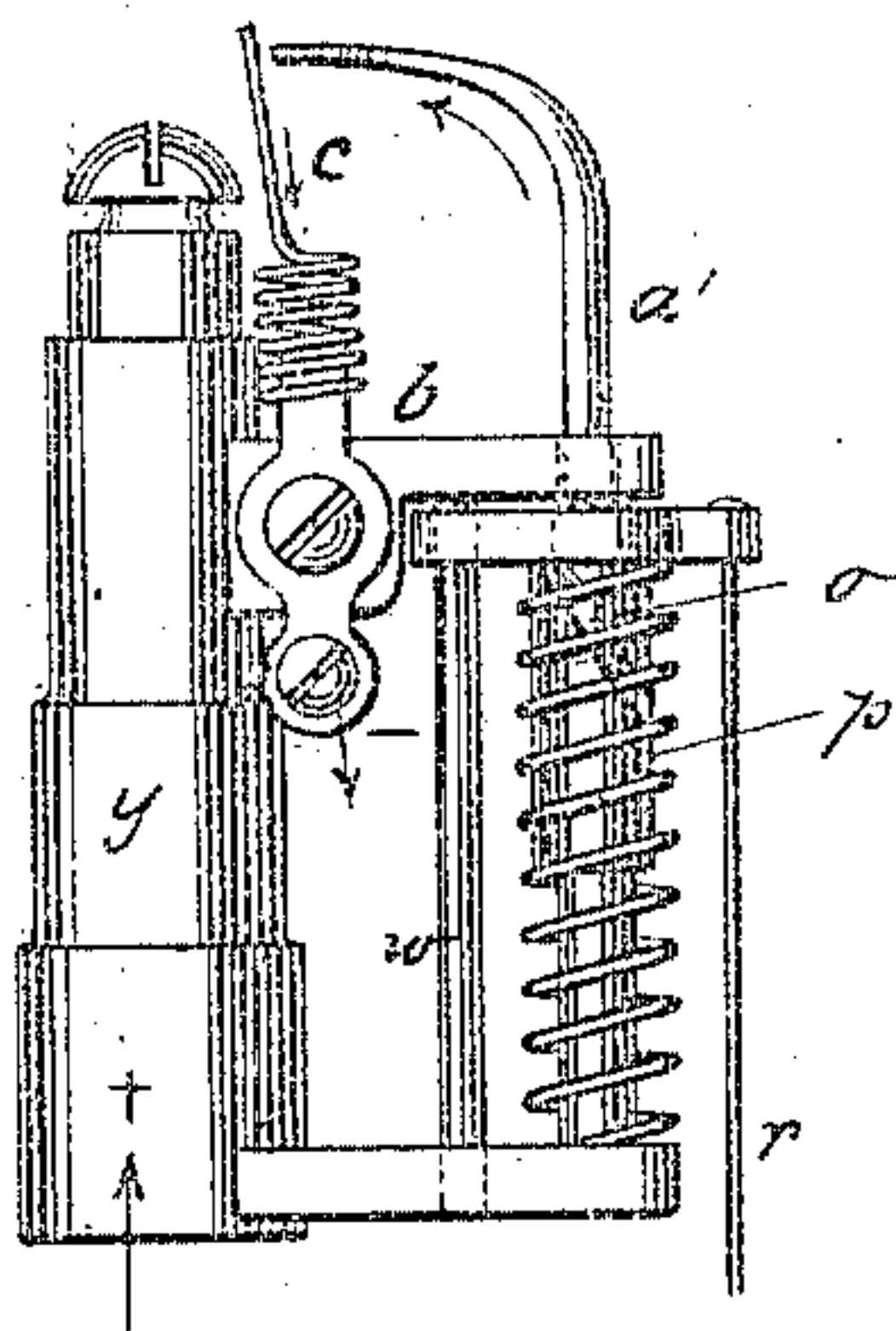


FIG. 4.

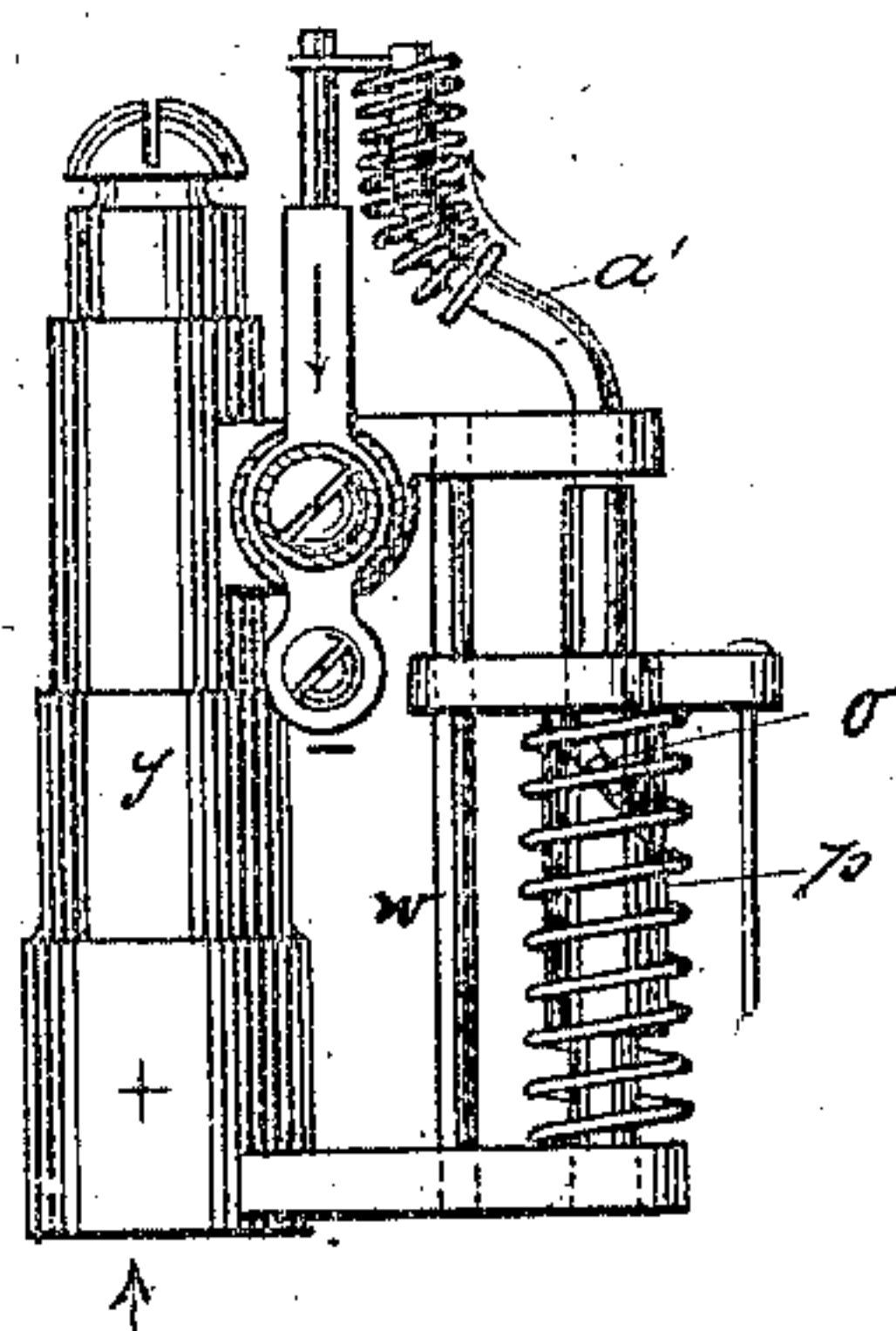


FIG. 6.

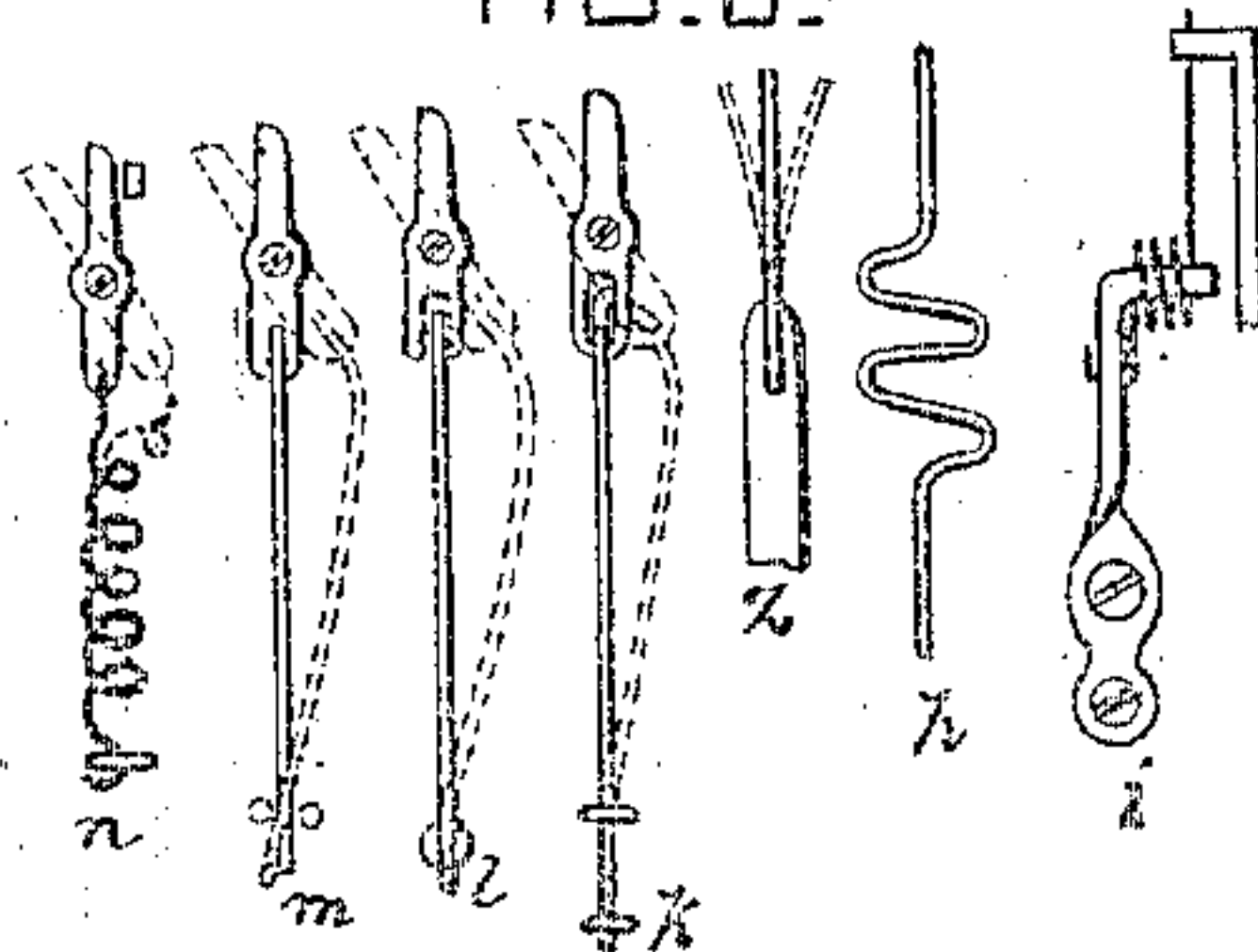
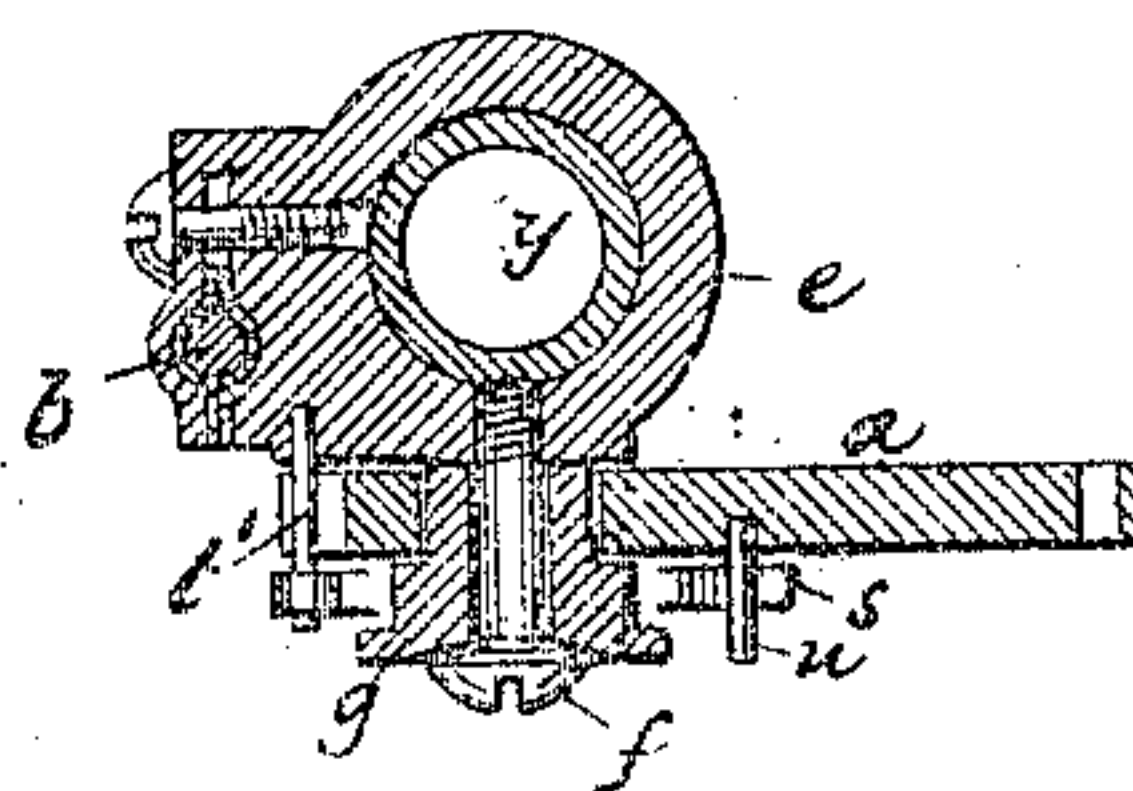


FIG. 5.



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# UNITED STATES PATENT OFFICE.

DAVID ROUSSEAU, OF NEW YORK, N. Y.

## ELECTRIC GAS-LIGHTING BURNER.

SPECIFICATION forming part of Letters Patent No. 235,024, dated November 30, 1880.

Application filed July 28, 1880. (Model.)

*To all whom it may concern:*

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

My invention relates to those burners in which an electric current from a battery is momentarily established through two terminals or electrodes on the burner, one of which is movable by the hand to make and break contact with the other, whereby a spark is produced in the issuing gas-jet to ignite the same. In burners of this class heretofore it has been usual to have one electrode rigid and fixed close to the gas-jet, so that it remains in the flame when the jet is ignited, and hence requires to be made of platinum to resist the heat and oxidation which would injure other metals; and furthermore the movable electrode or wiper has usually been provided with some elastic or springy end to engage with the fixed electrode, and thus make the necessary prolonged contact and sudden break therewith.

Now, my invention is distinguished in that I employ, in connection with the movable electrode or wiper, which is preferably rigid, an elastic or springy or yielding electrode normally retired from the burner-jet and out of the range of its flame, but in the path of motion of the tip of the wiper, so that when the same is moved to light the gas it makes contact with the elastic electrode, bends or moves the same over the gas-jet, and then breaking contact produces the spark and lights the gas, after which both parts retire to their normal position out of range of the flame. Hence both electrodes may be made of cheap metals, are not liable to injury, and are kept in a condition to produce an effective spark, which points constitute the leading advantages of my invention.

My invention embodies minor features of construction, as hereinafter set forth.

Figure 1 of the annexed drawings presents an elevation of a burner embodying my invention, both electrodes being shown retired into their normal positions. Fig. 2 represents a slightly-modified construction, and shows the electrodes on the point of breaking contact over the gas-jet. Figs. 3 and 4 represent

further modifications. Fig. 5 gives a cross-section on line *xx* of Fig. 2, and Fig. 6 shows various forms for the elastic or yielding electrode.

In the arrangement and operation of burners of this class one pole of the battery—say the positive—connects directly to the system of gas-pipes on which the burners are fixed, and hence this pole is in connection with the movable electrode or wiper *a*, which is pivoted on and in metallic connection with the burner, while the negative pole connects by separate wires to the terminal *b*, which is fixed to but insulated from the burner, and also provided at its tip with the opposite electrode, *c*. This opposite electrode, *c*, is according to my invention elastic, springy, or yielding, its elasticity or tendency being such that it constantly tends to retire from the gas-jet, so as to remain well out of range of the flame when the jet is ignited. In Fig. 1 it consists of a piece of spring-wire, preferably German silver, which is coiled at one end into a few spiral turns and fixed to the terminal *b*, while the opposite end projects saliently upward, and inclines away from the tip of the burner, out of range of the flame, and lies in front of the tip of the wiper *a*.

The wiper *a* has the preferred and usual form of a bent lever, is preferably made of stiff sheet-brass and rigid throughout, its long arm projecting upward on an outward incline, with its tip resting a little behind the elastic electrode *c*, while its short arm is provided with a pendent cord or chain, *d*, which may be pulled by the hand to cause the wiper to contact against the elastic electrode, bend the same over the gas-jet, and then passing over the same break contact and produce the spark just on the edge of the gas-jet to ignite the same, (see Fig. 2,) after which both parts again retire out of range of the flame, as seen in Fig. 1.

It may thus be readily seen that as the electrode *c* always retires from the flame it is not subject to overheating or oxidation, and may be made of some cheap metal, such as brass or German silver, instead of the expensive platinum heretofore used, and is moreover always in a condition to produce an energetic spark; and, furthermore, as the wiper *a* is made of one rigid part, its construction is



simplified, thus producing a cheap and very effective burner of this class.

In Figs. 1 and 2 both electrodes are mounted on a ring, *e*, as seen best in Fig. 5, which encircles the lower part of the burner *y*, and is clamped thereon by the screw *f*, which forms at the same time the fulcrum for the wiping electrode or lever *a*. A long washer or hub, *g*, interposed between the head of the screw and the ring, takes the pressure of clamping and prevents any binding of the lever, which turns freely on the hub, as shown. This construction is not only cheap and simple, but enables my device to be furnished separate from the burner, which may then be readily attached to any of the ordinary burners in use in a quick and convenient manner.

I propose, also, however, to construct the burner specially for the permanent attachment of my devices.

The tip of the wiping-lever *a* is bent at right angles to engage the elastic electrode and this bend is inclined at the back edge, as seen in Fig. 1, so that it will pass over and behind the elastic wire on the return movement in an easy manner. The return movement of the lever is effected by a spring, *s*, which, in case of Fig. 1, is made of wire coiled around the hub *g*, with one hooked end engaged with the fixed projection *t*, and the other hooked end pressing against the long arm of the lever. In Fig. 2 the spring is a flat bowed one, having one end hooked over a fixed pin, *t'*, thence curved over the hub *g*, and bearing at the opposite end on a pin, *u*, fixed to the lever.

To limit the movement of the lever in either direction the ends of a notch, *v*, formed therein, strikes the fixed projections *t* or *t'*, as will be understood from the drawings.

It may be readily observed that the elastic or yielding electrode and the wiping-electrode may be arranged and constructed in various ways without departing from the essential features of my invention. Thus in Fig. 1 the spiral of the elastic electrode is placed horizontal, and is fixed to the terminal *b*, as best seen at *i* in Fig. 6.

In Fig. 2 the spiral is placed with its axis vertical, and is fastened centrally on the terminal *b*, which in this case is a round wire clasped in a cleft-socket in the ring *e*, as seen in Fig. 5, and of course insulated from the ring, as illustrated. Instead, however, of having the wire of the elastic electrode bent spirally, as in Figs. 1, 2, and 3, it may be bent zigzag, as at *h* in Fig. 6, or a simple straight, flat, or round spring-wire may be used, fixed at one end and elastically free at the other end to engage with the wiper, as at *z* in Fig. 6. Again, instead of either of the foregoing forms, this part may be made in the form of a pivoted tongue, one arm of which is free to engage the wiper, while the other arm is connected with a spring which constantly tends to give it the same direction or position as in the case with Figs. 1 and 2, as seen at *k*, *l*, *m*, and *n* in Fig. 6, where different forms and ar-

rangements of springs are shown. Furthermore, as the essential feature of this part of my invention lies in having the electrode *c* yielding in the direction of the wiper's movement, with a constant tendency to retire from the burner-jet and normally remain so, hence this electrode may, without any departure from the principle of my invention, be in itself rigid, but pivoted—say, about midway—with its lower arm weighted, and its sparking-arm normally retired from the burner, but free to engage with the wiper in substantially the same manner as in the other forms illustrated. The springy construction is, however, always to be preferred.

In Fig. 1 the wiping-lever is represented as formed of one piece of sheet or of cast metal, while in Fig. 2 the main part is represented as cast, while the long arm is formed of a bent wire inserted in the cast part.

Instead of having the wiper in the form of a lever, it may be made in the form of a rotary cranked wire, as seen in Fig. 3, the cranked portion of which engages the yielding electrode with the same effect as in the case of Figs. 1 and 2, while the straight or axial part is provided with a projecting pin, *o*, which is engaged by a spiral slot in a sliding sleeve, *p*, which is normally raised by a spring to cause the wiper to retreat, but is pulled down to produce the spark by the pull-cord *r*. A cross-head on the sleeve is guided by a rod, *w*, parallel with its axis, so as to prevent the turning of the sleeve.

In Fig. 4 the negative electrode is rigid and fixed close to the gas-jet in the old way; but the same form of cranked wiper is used as in Fig. 3, except that its cranked end carries an elastic spiral to engage with the negative electrode and make and break the contact in the required manner. I do not, however, specially recommend this latter form.

What I claim as my invention is—

1. An electric gas-lighting burner provided with two electrodes attached thereto, one being movable and provided with an operating device extending from the burner, and the other being elastic or yielding and normally retired from the jet, while the movable electrode is arranged to contact with the yielding electrode, bend or move it over or into the gas-jet, and there break contact to produce the igniting-spark, after which both parts retire from the jet while remaining upon the burner, substantially as and for the purpose set forth.

2. A movable or wiping electrode to engage the opposite electrode of an electric gas-lighting burner, consisting of a rotary cranked rod or wire, the cranked portion of which makes and breaks contact with the opposite electrode, while the axial part is impelled by a rotating device, substantially as herein shown and described.

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