

(No Model.)

C. M. NOBLE.

ELECTRIC LAMP.

No. 362,852.

Patented May 10, 1887.

Fig. 1.

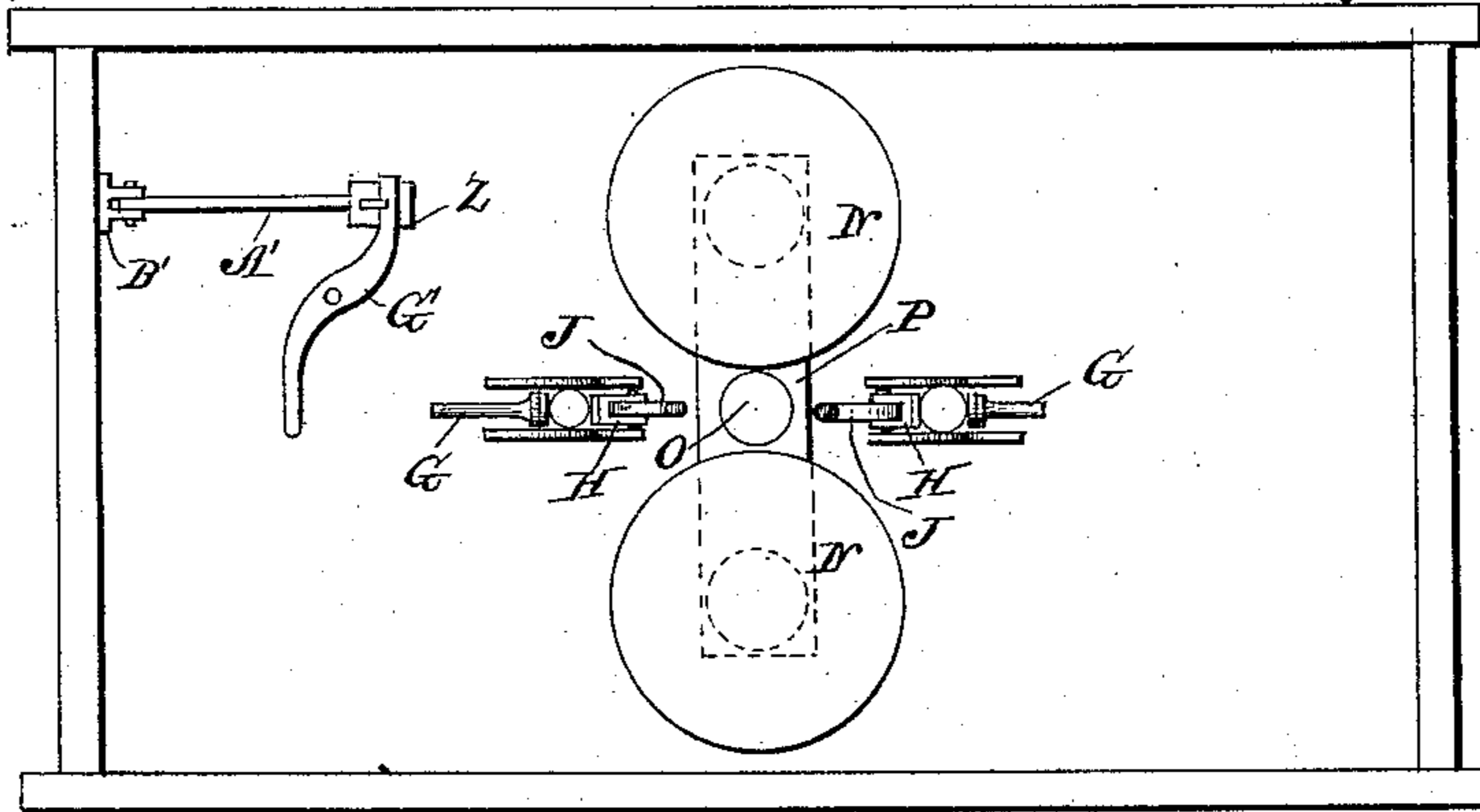


Fig. 2.

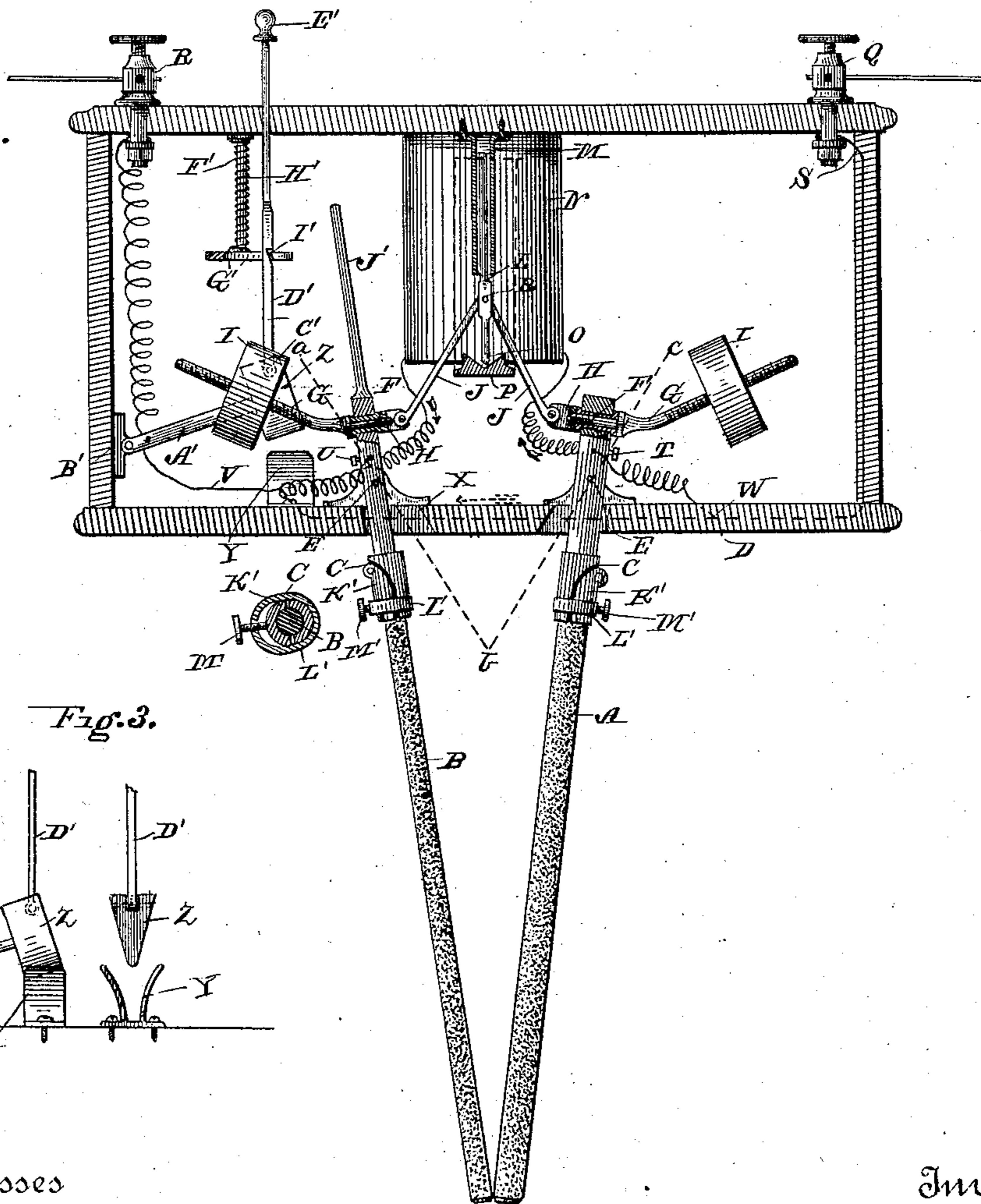
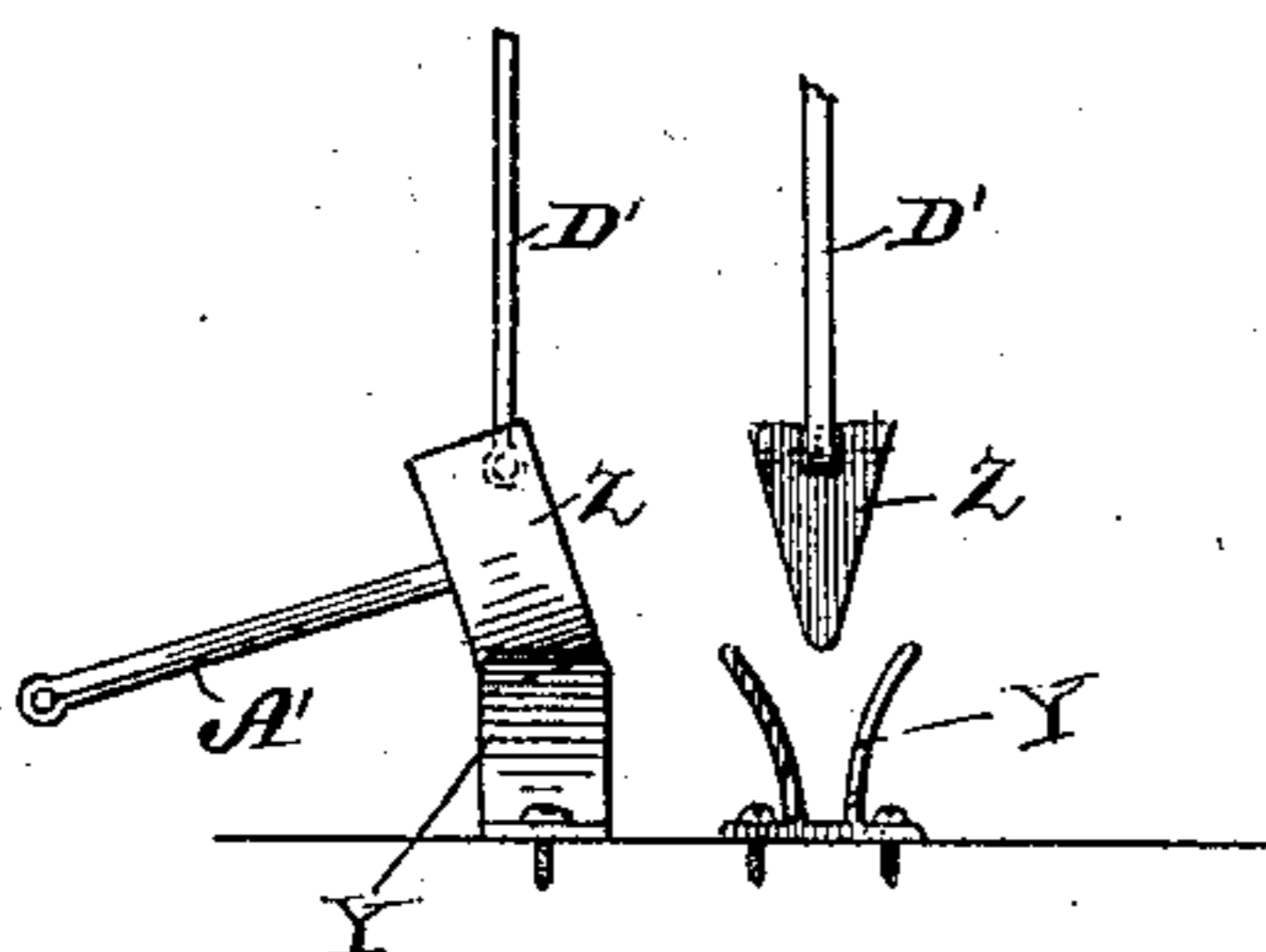


Fig. 3.



Witnesses
F. L. Ouraud.
A. L. Mossell.

Inventor.

Charles M. Noble,
By his Attorneys
Louis Bagges & Co.

UNITED STATES PATENT OFFICE.

CHARLES MILTON NOBLE, OF ANNISTON, ALABAMA.

ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 362,852, dated May 10, 1887.

Application filed November 11, 1886. Serial No. 218,599. (No model.)

To all whom it may concern:

Be it known that I, CHARLES MILTON NOBLE, a citizen of the United States, and a resident of Anniston, in the county of Calhoun and State of Alabama, have invented certain new and useful Improvements in Electric Lamps; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a diagrammatical plan view of the controlling mechanism of my improved lamp. Fig. 2 is a vertical central section of said lamp, and Fig. 3 is a view showing in detail a side and end view of a portion of the switch used in said lamp.

Like letters of reference indicate corresponding parts throughout all the figures.

My invention has relation to electric arc lamps, and more especially to that class of arc lamps in which carbons of equal length are used, and so arranged as to converge from their point of support to their tips; and said invention consists in the improved construction and combination of parts constituting such a lamp, as will be hereinafter fully set forth.

In lamps of the above-mentioned class difficulties have arisen in maintaining a regular feed for the carbons, which in most instances have been arranged so as to slide toward the point of convergence as they were consumed. I overcome the disadvantages arising in such a system by so pivoting the carbon-holders that the tips of the carbons shall swing to the point of convergence. To regulate this swinging so that said tips shall meet in the proper manner, I attach weights to the carbon-holders, which tend to keep said tips together, and at the same time I link said holders to a rod controlled by an electro-magnet in a manner such that the portion of the current of the lamp which passes through said magnet shall counteract the tendency of the weights sufficiently to keep the tips of the carbons at the proper distance to produce the desired arc. I also construct an automatic switch, which shall operate to cut the lamp out of the circuit when the carbons have burned to such a point as to allow a prolongation of one of the carbon-

holders to trip a lever controlling the contact-points of said switch.

To the accomplishment of these ends I construct the lamp as illustrated in the accompanying drawings, in which A designates the positive carbon, which, as is common when carbons of equal length are used, has double the area in cross-section of the negative carbon B. These carbons are retained in holders C, which extend through apertures in the bottom of the casing D, and are pivoted upon pintles E in bearings secured to said bottom. Through the upper end of each holder is formed a perforation, in which is placed an insulating-bushing, F. In said bushings are placed the shanks of the weight-arms G, and upon the screw-threaded end of said shank is turned a nut, H, which has two parallel perforated lips projecting therefrom.

The weight-arms are screw-threaded, and cylindrical weights I are provided with axial screw-threaded perforations, that they may be rendered adjustable upon said arms, so as to cause the tips of the carbons to be borne together with greater or less force, as the strength of the magnets, the resistance of the carbons, or the condition of the circuit may require. Between said lips of each nut H is hinged one end of a link, J. The other ends of these upwardly-extending links are hinged by a pintle, K, to a rod, L, which is adapted to slide vertically in the guide M, said guide being secured to the casing between the helices N of the electro-magnet. The lower end of the rod L is rounded and adapted to rest in the cup O, secured upon the middle of the bar P, which connects the movable cores of said helices.

The line-wires are connected to the lamp by the binding-posts Q and R, and from the positive one, Q, a wire, S, within the casing, leads to and is secured in the positive carbon-holder by the screw T. This same screw also binds to said holder one end of the wire of the electro-magnet, the other end of said wire being joined in a like manner by a screw, U, to the negative carbon-holder. This screw likewise binds the end of the wire V, which leads to the negative binding-post R.

To the wire S, at a point, W, is connected a wire, X, (shown in dotted lines,) which makes direct connection with the anvil Y of the switch. This anvil consists of two springs se-

cured to the bottom of the casing, forming a V-space between them, into which strikes the hammer Z when the current is to pass through the switch. The handle A' of this hammer, which is directly connected to the wire V, is hinged to the side of the casing in a bearing, B'. In the head of the hammer is formed a slot, in which is pivoted upon the pintle C' the lower end of the stem D', which stem passes up through the casing and is capped by a button, E'. From the upper side of the casing, and parallel to said stem, there depends a post, F', upon whose lower end is pivoted a trigger, G', which is actuated by a spring, H', coiled about said post and secured thereto by its upper end, while its lower end bears against the side of said trigger.

In setting the switch the hammer is lifted from the anvil by pulling upon the button E', and when raised to the desired height it is maintained there by one end of the trigger engaging in a notch, I', in the stem D', in which notch said trigger is held by the coiled spring.

When the lamp is to be automatically cut out of the circuit, which occurs when the carbons have been consumed till they assume the positions indicated by the broken lines *a b* *b c*, the prolongation J' of the negative carbon-holder bears gently against the free end of the trigger till its engaged end is freed from the support of the hammer, then said hammer falls to the anvil, and the line-current passes directly through the casing by way of the wire X and the switch.

In a lamp constructed as above described it is essential that the carbons be very rigidly secured in the holders. Therefore I construct a holder which has one side, K', of its socket hinged to the rigid portion, said hinged side being clamped against the carbons by means of the ring L', which embraces both portions of the socket, and the set-screw M', which turns through said ring and bears against the hinged portion.

In the operation of the lamp, on starting the current through it, the switch being set and the tips of the carbon bearing against each other, the current through the helices causes the bar P to rise, which brings the cup O to bear against the lower end of the rod, causing it to ascend and in ascending to draw the upper ends of the carbon-holder toward each other, thereby allowing the tips of the carbons to separate sufficiently to cause the current passing through them to form the required arc. As the carbons gradually burn away the weights force the points into close proximity, their nearness to each other being governed by the action of the electro-magnet, as described, and when the carbons have been consumed to the desired extent the prolongation of one of the carbon-holders trips the switch and the lamp is cut out of the circuit.

Any other known form of switch may be used with my lamp, being connected thereto in any of the common ways; but the switch described is the one I prefer to use.

Having thus fully described my invention, I claim—

1. The combination of the casing, carbon-holders connected to the line-wire and pivoted in a vertical plane to the lower side of said casing, insulating-bushings secured in perforations through the upper ends of said holders, weight-arms secured by their shanks in said bushings, adjustable weights upon said arms, and means, substantially as described, for controlling the tendency of said weights.

2. The combination of the carbon-holders connected to the line-wire and pivoted in a suitable support, weight-arms whose shanks are passed through insulating material in said holders, adjustable weights upon said arms, lip-bearing nuts turned upon the ends of said shanks, an electro-magnet whose coils are connected to said carbon-holders, and links pivoted in said lips and connected to the bar of said magnet.

3. The combination of the carbon-holders connected to the line-wire and pivoted in a suitable support, weights adjustably secured to said holders, a pair of helices whose coils are connected to said carbon-holders, a bar connecting the movable cores of said helices, a cup upon the middle of said bar, a rod secured in a vertical guide over said cup, and links pivotally connected to said rod and to the upper ends of the carbon-holders.

4. The combination of the casing, a V-shaped anvil connected to one end of the line-wire, a hammer pivoted by its handle to the side of the casing and connected to the other end of the line-wire, a stem pivoted to said hammer and provided with a notch in its side, and a trigger adapted to fit in said notch to hold the hammer from the anvil.

5. The combination of the casing, the anvil connected to one end of the line-wire, the hammer connected to the other end of said wire, the notched stem pivoted in a slot in the head of the hammer and passing up through the top of the casing, the dependent post, the trigger pivoted to the lower end of said post, and the coiled spring secured by one end to the post and bearing by the other against said trigger.

6. In an electric-arc lamp provided with pivoted carbon-holders, one of which is formed with a prolongation at its upper end, the combination, with said carbon-holder, of the pivoted spring-actuated trigger, the notched stem, the hammer connected to one end of the line-wire, and the anvil connected to the other end of said wire.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

CHARLES MILTON NOBLE.

Witnesses:

E. L. TURNER,
N. H. MARSHALL.