

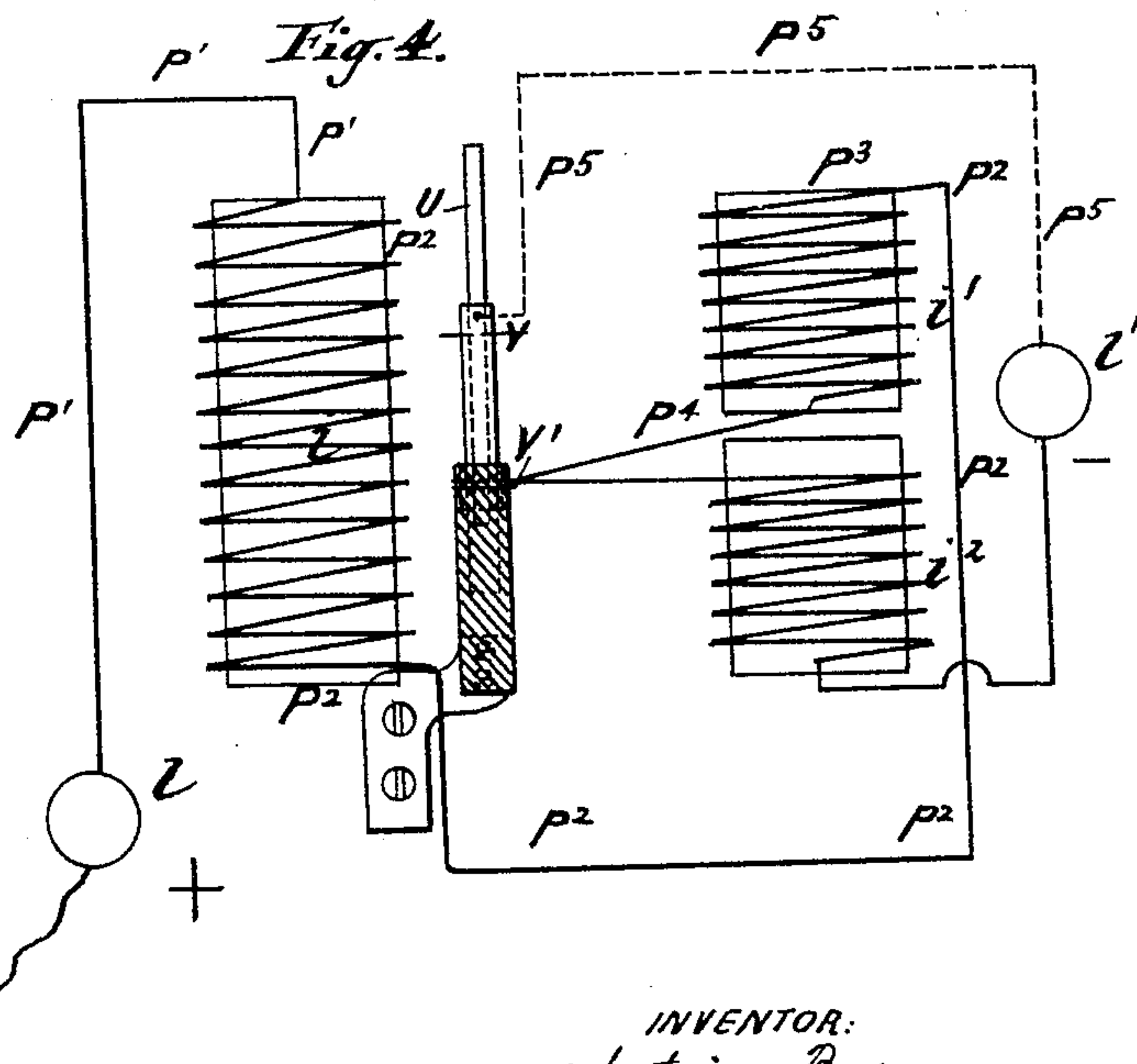
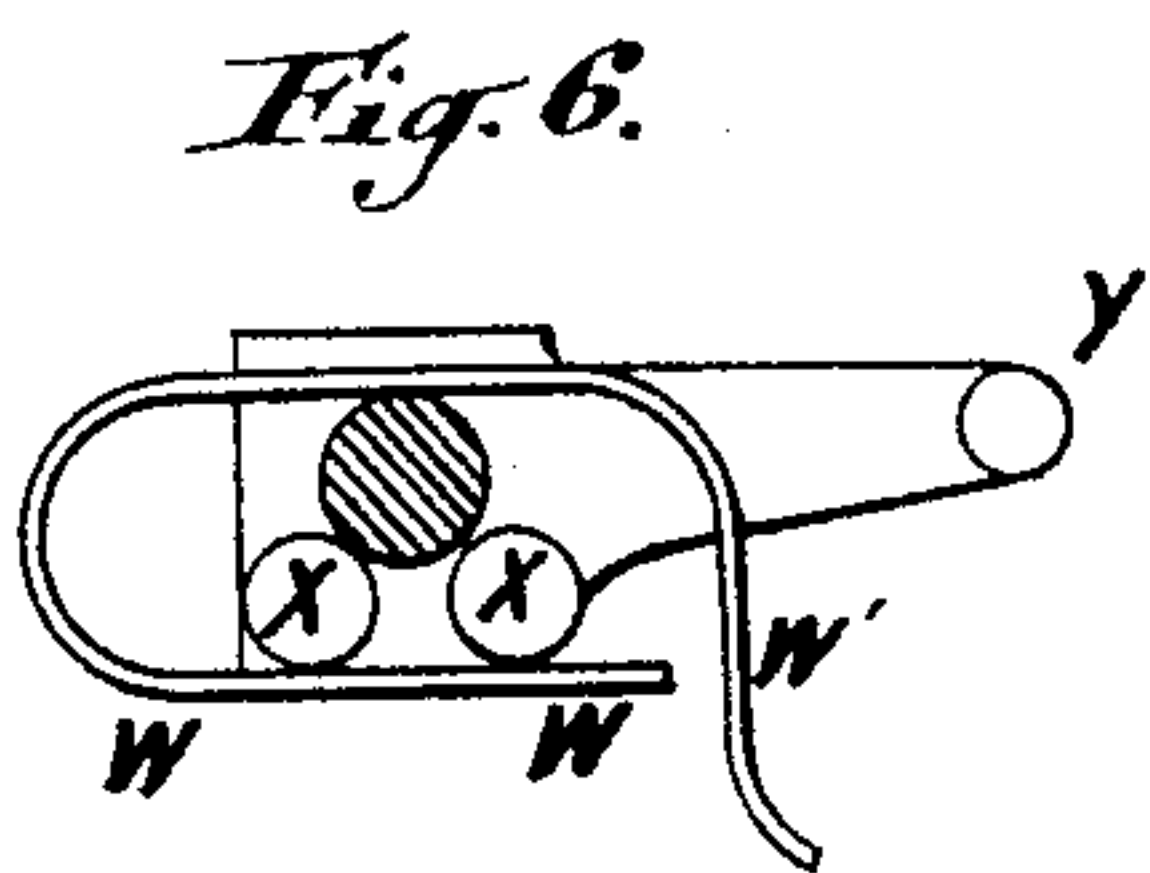
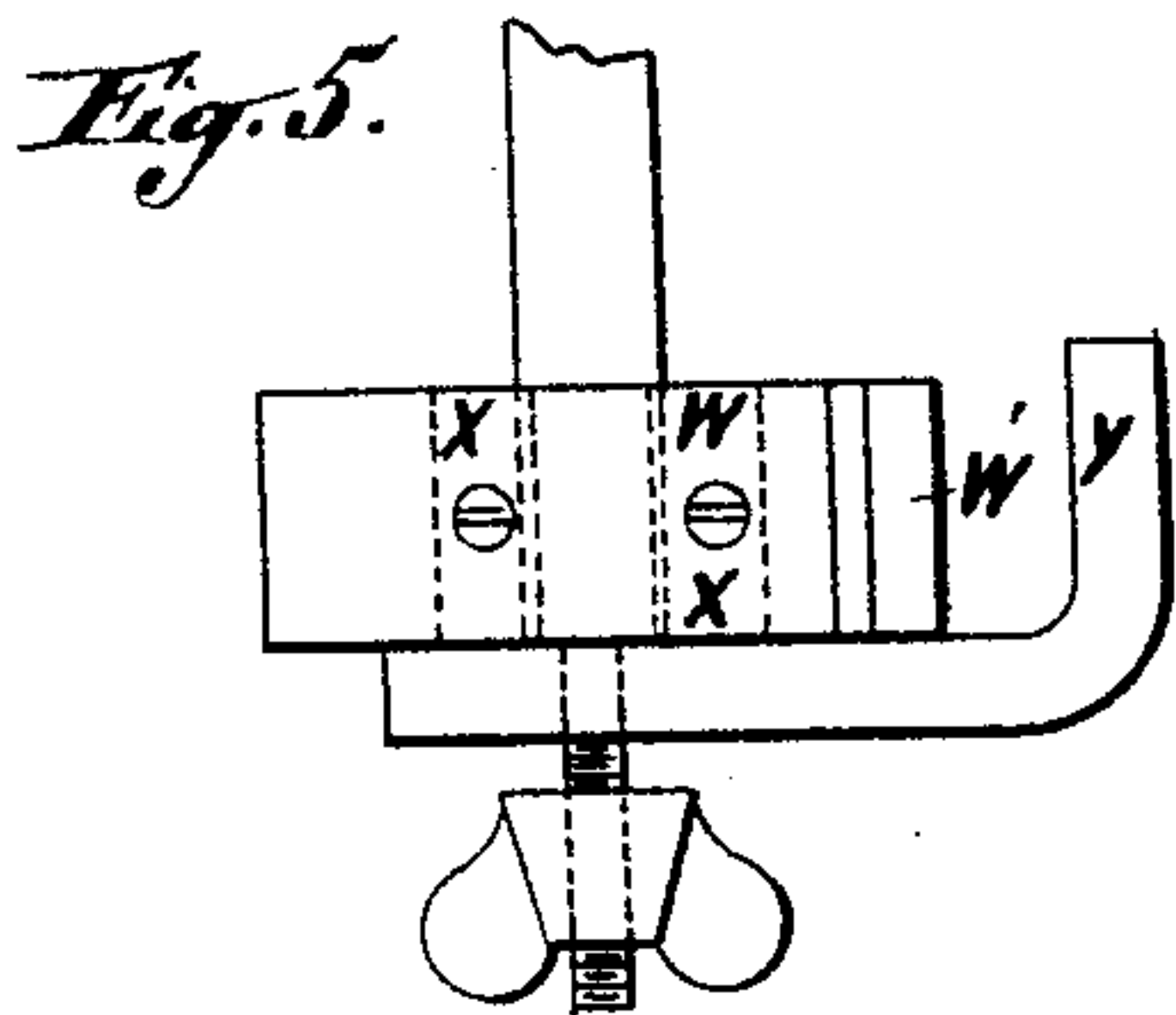
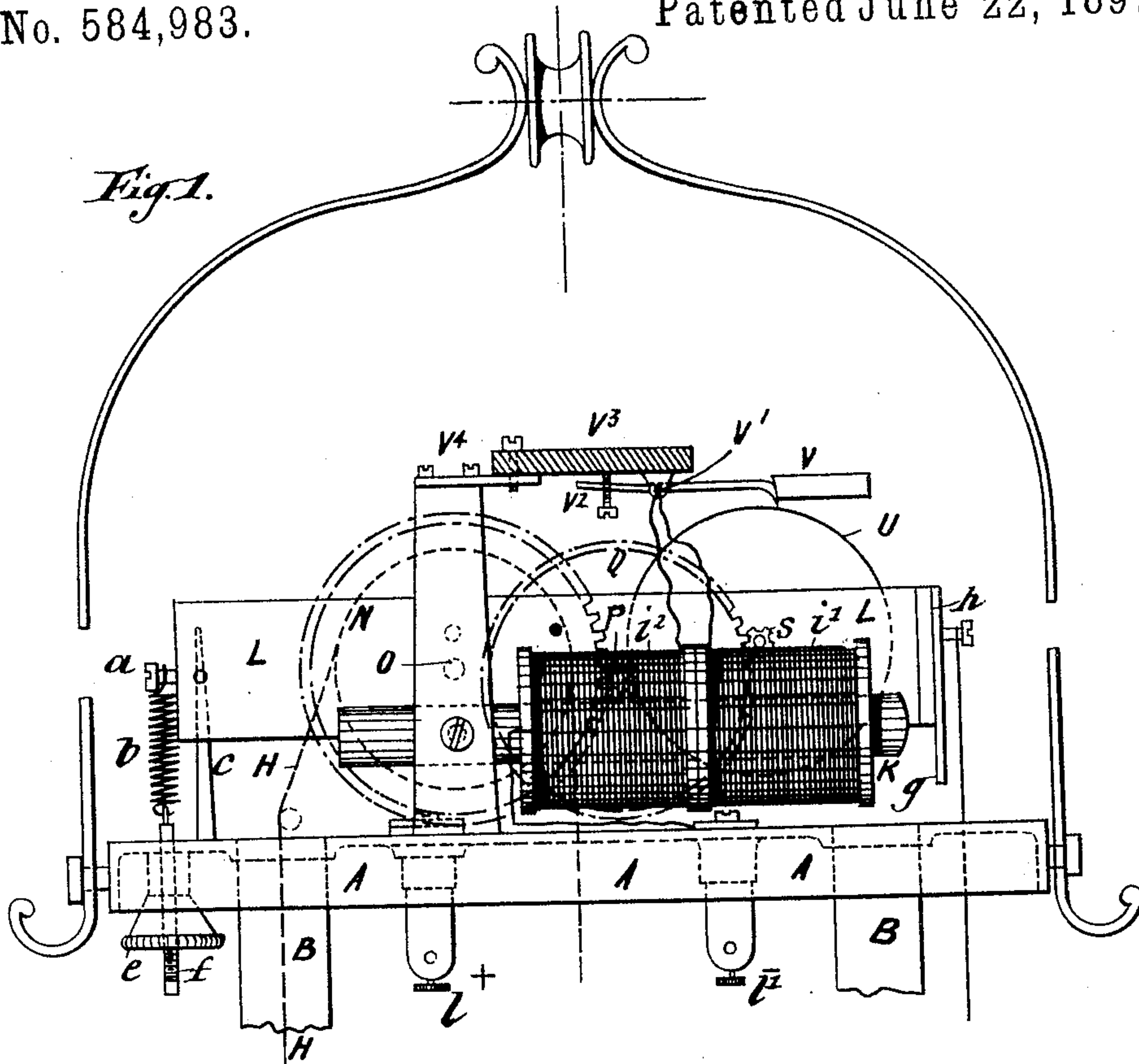
(No Model.)

2 Sheets—Sheet 1.

A. BUREAU.
ELECTRIC ARC LAMP.

No. 584,983.

Patented June 22, 1897.



WITNESSES:

Wm. D. Nell.
Samuel M. Robertson.

INVENTOR:
Antoine Bureau
by *Partners & Co.*

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Fig. 2.

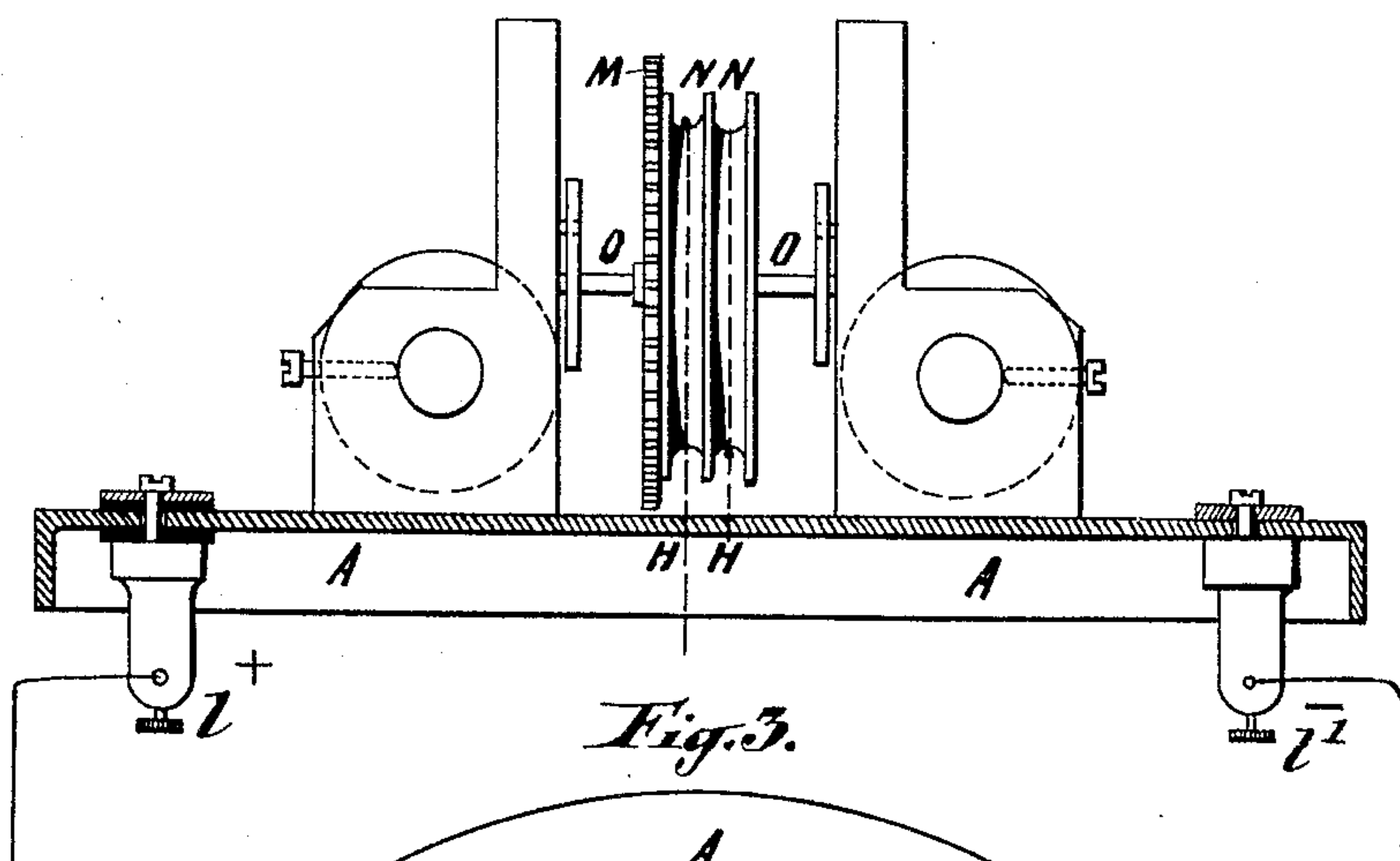
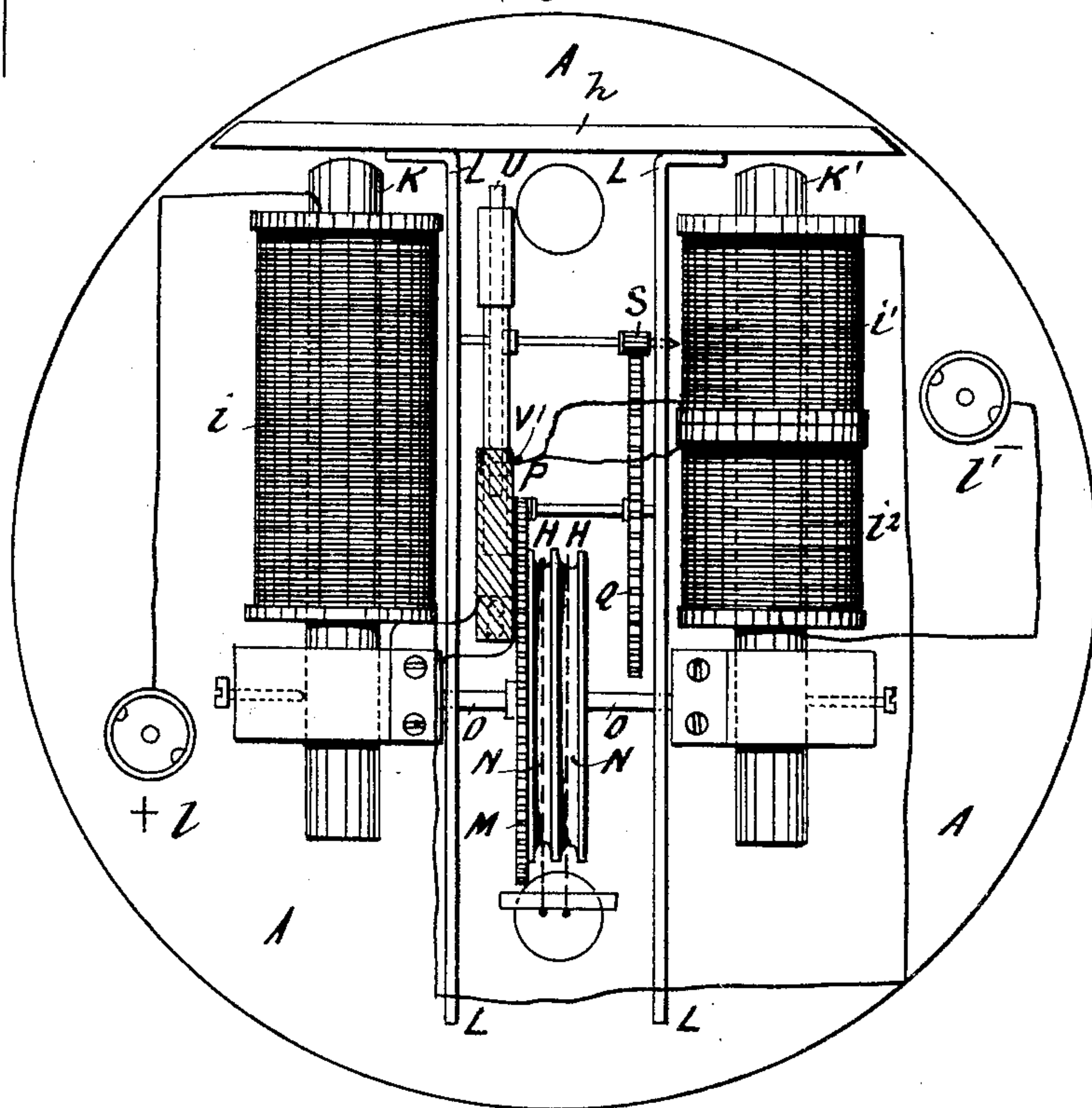


Fig. 3.



WITNESSES:

Wm. D. Bell.
Duncan M. Robertson.

INVENTOR:

Antoine Bureau
by
Partner & Co. Atty.

UNITED STATES PATENT OFFICE.

ANTOINE BUREAU, OF BRUSSELS, BELGIUM.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 584,983, dated June 22, 1897.

Application filed January 27, 1897. Serial No. 620,850. (No model.) Patented in England August 9, 1893, No. 15,231.

To all whom it may concern:

Be it known that I, ANTOINE BUREAU, engineer, administrator of the Société Anonyme l'Arc Voltaïque at Brussels, a subject of the King of Belgium, residing in Brussels, Belgium, have invented certain new and useful Improvements in Electric Lamps, (for which a patent has been granted in Great Britain, No. 15,231, dated August 9, 1893;) and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my present invention is to provide an electric-arc lamp with means for regulating the distance between the two carbons of simple, strong, and durable construction, reliable and automatic in operation.

The invention consists in the improved automatic regulator for arc-lamps, in its connection with an electric circuit and a shunt-circuit, and in the combination and arrangement of the various parts thereof, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claim.

In the accompanying drawings, Figure 1 is a side elevation of my improved regulating mechanism, only those parts of the arc-lamp being shown which are necessary to fully illustrate the nature of my said invention; Fig. 2, a side elevation of Fig. 1 with certain portions removed and others broken away; Fig. 3, a top plan view of Fig. 1; Fig. 4, a diagrammatic view illustrating the interposition of the various parts of the regulator and its connection with the electric circuit; and Figs. 5 and 6, detail views of the carbon clamp or support, as will be described hereinafter.

In said drawings, A represents the frame supported by standards B, which latter support and guide the carbon holders or clamps, as in the usual and well-known construction, and therefore not illustrated in the drawings. Said carbon holders or clamps are connected by a cord or chain H, passing over the double-grooved pulley N. On the frame A are arranged the electromagnets i , i' , and i^2 , the

latter two of which are differentially wound. Said electromagnets are adapted to control an armature h , carried by and projecting from the rear end of the frame L L, mounted on the shaft or axle O, which latter has its bearings in brackets projecting upward from the frame A. On the shaft O, on which is mounted the double-grooved pulley N, is also secured a gear-wheel M, meshing into pinion P on a shaft having its bearings in the fulcrumed frame L L. On said latter shaft is secured a gear-wheel Q, meshing into pinion S, mounted on a shaft also having its bearings in said fulcrumed frame and carrying a brake-wheel or drum U. Pivotaly secured to the under side of an insulating-block V^3 , (supported by suitable brackets,) as at V' , is the metallic brake or lever V, the swinging motion of which is regulated by means of the thumb-screw V^2 , as clearly shown in Fig. 1.

On the forward end of the fulcrumed frame L L is arranged a set-screw, on which is secured one end of a spiral spring b , the other end of which is connected to a screw-threaded vertically-arranged pin f , penetrating the frame A and adapted to be regulated by means of the nut e , as will be manifest.

Binding-posts l and l' are arranged on the bed-plate A (one of which is insulated therefrom) and are adapted to be connected with a source of electricity in the usual manner and with the various parts of my improved regulator, as follows: A wire P' connects the binding-post l with one end of the wire or coil P^2 of the electromagnet i , the other end of which is connected with one end of the coil P^3 of the electromagnet i' . The other end of said coil P^3 is connected with the fulcrum V' of the brake or lever V and the latter with the coil of the electromagnet i^2 . The free end of the coil of electromagnet i^2 is connected with the binding-post l' , and said binding-post, through the frame A, with which latter it is in metallic contact, as indicated by the dotted line P^5 , with the brake-wheel U, all as clearly shown in Fig. 4.

The swinging movement of the fulcrumed frame L is limited by means of the projecting portion g of the armature h striking against the frame A, and, on the other hand, by means of a pin arranged in the standard c , as will be manifest.

In Figs. 5 and 6 is illustrated a clamp or holder for the carbons and preferably used in connection with my improved regulator. On the frame y is arranged a substantially U-shaped spring-plate W , to which are secured the metallic cylinders x , adapted to engage the carbon. (Shown in section.) By simply pressing against the projecting end W' of the spring-plate W the latter is opened and the carbon can be conveniently removed, replaced, or readjusted.

In operation when the carbons are in normal working order—that is to say, not in contact with each other—the shunt-circuit passes through the electromagnets i and i' . The path of said circuit is as follows: binding-post l , wire P^1 , coil P^2 , wire P^2 , coil P^3 , wire P^4 , brake or lever V , brake-wheel U , connection P^5 , and binding-post l' . The cores K and K' attract the armature h , thus drawing the right end of the fulcrumed frame L downward, whereby the brake-wheel U disengages the brake or lever V . The gear-wheels begin to turn, and as the grooved pulley is also rotated the rope or chain H causes the carbons to come closer together. When the said brake-wheel disengages the brake or lever V , the circuit just described is broken and completed through the coil of the electromagnet i^2 . The path is then as follows: binding-post l , wire P^1 , coil P^2 , wire P^2 , coil P^3 , wire P^4 , coil of electromagnet i^2 , and binding-post l' . The resistance is thus increased and the shunt-circuit weakened and the fulcrumed frame L allowed to return to its normal positions. As soon as the brake-wheel U again engages the brake or lever V , the rotation of the gear-wheels and thus of the grooved pulley N is stopped. The carbons are thus securely held at a uniform distance apart until the operation above described is automatically repeated. As the carbons are being used up, the resistance in the arc is increased, thus naturally increasing the strength of the shunt-circuit passing through the electromagnets i and i' . The armature is again attracted, and as the brake-wheel U disengages the brake or lever V the grooved pulley is allowed to rotate, causing the carbons to come closer together.

By the above arrangement the carbons are continuously moved toward each other and the distance between them is thus kept uniform.

By the engaging and disengaging of the brake-wheel U with and from the brake or lever V a second shunt-circuit through electromagnet i^2 is closed and broken, respectively, which causes additional resistance in the regular shunt-circuit, whereby the latter

is weakened. For the above purpose the brake or lever V is connected, through the wires P^4 , with the electromagnets i' and i^2 and the brake-wheel U with the binding-post l' .

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

1. In an arc-lamp, the combination with the frame and the chain connecting and operating the carbons, of a grooved pulley supporting said chain, a fulcrumed frame carrying said grooved pulley, an iron core on each side of the fulcrumed frame, a wire coil on one of said cores, two differentially-wound coils on the other core, an armature supported on one end of said fulcrumed frame and at right angles to said cores and adapted to be controlled thereby, a brake-wheel pivotally secured in the fulcrumed frame and parallel to the grooved pulley, gear connections between said brake-wheel and the grooved pulley and also carried by the fulcrumed frame, a brake fulcrumed in the frame and insulated therefrom and metallically connected with the differentially-wound coils, and metallic connections between the wire coils and the brake-wheel, substantially as and for the purposes described.

2. In an arc-lamp, the combination with the frame and the chain connecting and operating the carbons, of a grooved pulley supporting said chain, a fulcrumed frame carrying said grooved pulley, an iron core on each side of the fulcrumed frame, a wire coil on one of said cores, two differentially-wound coils on the other core, an armature supported on one end of said fulcrumed frame and at right angles to said cores and adapted to be controlled thereby, a brake-wheel pivotally secured in the fulcrumed frame and parallel to the grooved pulley, gear connections between said brake-wheel and the grooved pulley and also carried by the fulcrumed frame, a brake fulcrumed in the frame and insulated therefrom and metallically connected with the differentially-wound coils, spiral springs depending from the other end of the fulcrumed frame, adjusting-screws connected with said spiral springs, and metallic connections between the wire coils and the brake-wheel, substantially as and for the purposes described.

In testimony whereof I have hereto set my hand in the presence of the two undersigned witnesses.

ANTOINE BUREAU.

Witnesses:

J. POHLEY,
GREGORY PHELAN.