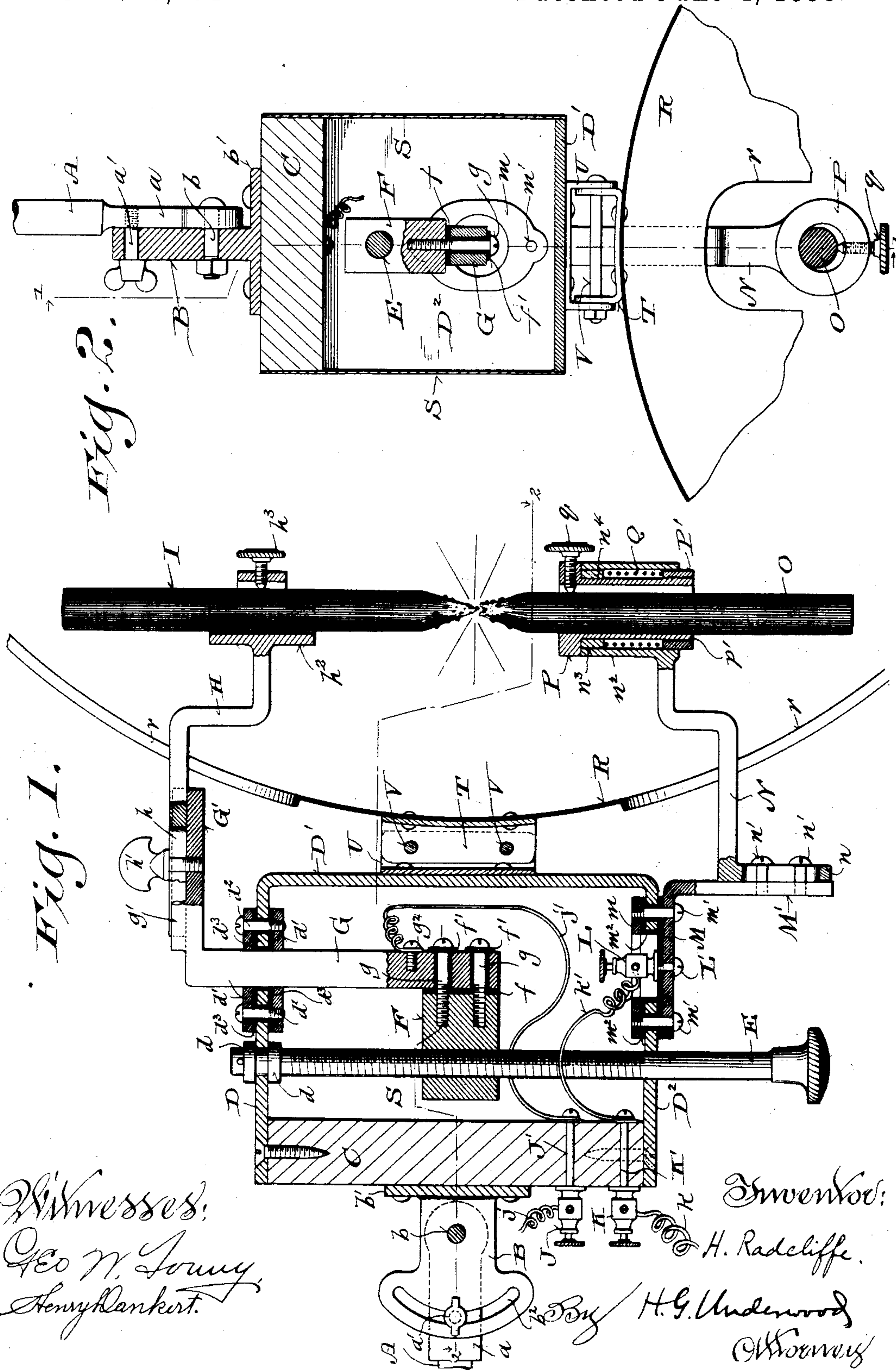


H. RADCLIFFE.
ELECTRIC ARC LAMP.

Patented June 4, 1895.



UNITED STATES PATENT OFFICE.

HENRY RADCLIFFE, OF MILWAUKEE, WISCONSIN, ASSIGNOR OF THREE-FOURTHS TO THOMAS K. CREIGHTON AND JOHN C. SUNDIN, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 540,404, dated June 4, 1895.

Application filed March 19, 1895. Serial No. 542,310. (No model.)

To all whom it may concern:

Be it known that I, HENRY RADCLIFFE, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Electric-Arc Lamps; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has especial reference to electric arc lamps used in theaters and analogous places for throwing an electric light upon a given point on or about the stage, and it consists in certain peculiarities of construction and combination of parts as will be fully set forth hereinafter and subsequently claimed.

In the drawings, Figure 1 is a vertical sectional view through a device embodying my invention, taken on the line 1 1 of Fig. 2. Fig. 2 is a horizontal sectional view there-through, taken on the line 2 2 of Fig. 1.

Heretofore in the use of electric lights designed to take the place of the ordinary incandescence lights, various objections have existed, among these being the tendency of the carbons to hiss and splutter at frequent intervals, thereby interfering with the desired effect, besides which many of these devices have been found exceedingly dangerous to handle, and to obviate these defects and produce a simple, efficient and entirely safe device for this purpose are the principal objects of my present invention.

My device is adapted to be secured by means of the rod A to a movable supporting post (not shown) of any ordinary construction, which post may be located, for example, in the balcony of a theater, to which post one end of said rod A is secured in any suitable manner. The other end of this rod is flattened, as shown at *a*, and pivoted, as shown at *b*, to a flat projecting plate B, having a transverse base *b'* secured to the rear end-piece C, of a casing, hereinafter described. The plate B is provided with an arc-shaped slot *b²*, for the reception of the shank of a screw-bolt *a'*, the end of which passes into a screw-threaded socket in the flat face *a* of the rod A, said screw-bolt *a'* having a head for

tightly securing the parts B *a* together, after adjustment, a slight turn of the screw-bolt serving to loosen these parts, so that the said casing and its attachments may be raised or lowered on the arc of a circle to any desired adjustment and then be instantly secured in the required position. This rear end-piece C is made of suitable insulating material, such as wood, to which is secured a bent metallic sheet D D' D² which forms the top, front and bottom of the casing.

E is a screw-rod passing through holes in the bottom and top of the casing, and fitted with collars *d d* above and below the said top D, the screw-threaded portion of said rod being in engagement with a nut or block F, through which it passes, as shown.

G G' is an angle-piece, preferably of brass, the vertical arm G of which is secured to the nut or block F by screws *g g*, the parts F G being completely insulated from each other, as shown at *f*, this insulating material likewise extending all around said screws, which have washers *f'* of insulating material beneath their heads. The said vertical arm G of the angle-piece passes down inside the casing through an opening in the top D thereof, there being guide plates *d' d'* above and below said opening, held to place by screws *d² d²*, the said plates and screws being completely insulated from the top D of the casing by the insulating material as shown at *d³*, so that as the screw-rod E is turned, the arm G will be raised or lowered in a perfectly straight line by reason of the said guide-plates, but without contact with any part of the casing top D. The horizontal arm G' of the angle-piece is provided with guide flanges *g'* to receive one end of the carbon holder H, said end being slotted, as shown at *h*, and secured to the arm G' in the desired adjustment by the thumb-screw *h'*. The other end of the holder H has a socket *h²* for the carbon I, and a set-screw *h³* for keeping said carbon rigidly in place.

J, K, represent two binding posts, whose shanks extend through the end-piece C of insulating material, at the rear of the casing. These binding posts are connected, respectively, by wires *j, k*, to the dynamo, or source of electricity. From the inner end of the

shank J' of the binding post J a wire j' runs to a screw g^2 on the arm G of the angle-piece described, while from the inner end of the shank K' of the binding post K a wire k' runs to a binding post L.

The bottom D^2 of the casing is cut out, and above this opening is a slotted plate m , while below this opening is a horizontal plate M having a downward flange M' , the parts M m being connected by screws $m'm'$ passing through them and through holes in the bottom D^2 of the casing, the said plates and screws being completely insulated from said casing bottom D^2 , as shown, by the insulating material m^2 , the binding post L resting on the insulated upper surface of the plate M, and being connected to said plate by a screw L' .

N is the holder for the lower carbon O, said holder having a slotted angular inner end n , by means of which and screws $n'n'$ it is adjustably secured to the angular flange M' of the plate M. The outer end of the holder N terminates in a socket n^2 with interior screw-threads n^3 at its upper end, to receive an exteriorly screw-threaded collar n^4 .

P is a thimble having an exterior annular flange at its upper end resting, normally, on the upper edges of the socket n^2 and collar n^4 , the body of said thimble fitting within said collar and depending within and below said socket, and the lower end of the thimble being formed with exterior screw-threads p' to receive an interiorly screw-threaded collar P' , and there being an expanded spiral spring Q interposed between the thimble P and socket n^2 , and between the collars n^4 and P' . The carbon O is held rigidly in place within the thimble P by a set-screw q .

R represents a reflector, of ordinary construction, slotted as indicated at rr to permit the carbon holders H N to pass there-through, while S S indicate the side-pieces of the described casing. The reflector is united to the front D' of the casing by means of the angle-plates T, U, and bolts V V, so as to be rigid therewith, and move with the same.

The operation of my device will be readily understood from the foregoing description of its construction, taken in connection with the accompanying drawings.

When the current is turned on, it will sometimes happen that the arc will not instantly form between the points of the carbons, to accomplish which the carbon O is pushed up till its point is in actual contact with the point of the carbon I, the spring Q instantly forcing the thimble P down to place, with the arc formed. The light will then burn steadily for about fifteen to twenty minutes and then, or

whenever necessary, the screw rod E is turned to bring the carbon I the proper distance from the carbon O, and hence all hissing and spluttering are avoided. Furthermore, by reason of the described perfect insulation, the casing can be freely handled, in the adjustment of the device, while the power is on, and this is of immense advantage in scenic displays, and by reason of the described construction of parts the carbons can be adjusted to the utmost nicety, and practically the entire lengths of said carbons can be utilized, thus avoiding waste.

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

1. In an electric arc lamp, the combination with a suitable casing, of a carbon holder, and a movable arm secured thereto and passing within said casing but insulated therefrom, another carbon holder secured to said casing but insulated therefrom, a nut or block secured to said movable arm but insulated therefrom, and a screw-rod in engagement with said nut or block, substantially as set forth.

2. In an electric arc lamp the combination with a casing comprising a rear end-piece of insulating material, and metallic top, bottom, front and sides, and binding posts for connection with the source of electricity passing through said insulated end-piece, of a screw-rod passing through said casing and journaled in the top thereof, a nut or block movable upon said screw-rod, an angle-piece, one arm of which passes into said casing and is secured to said nut or block, but insulated from both, a carbon holder adjustably secured to the other arm of said angle-piece, an angle-plate secured to said casing but insulated therefrom, a binding post secured to one part of said angle-plate within the casing but insulated therefrom, a carbon-holder adjustably secured to the other part of said angle-plate, and wires within the casing, one connecting the last named binding post to one of the binding posts passing through the insulated end-piece, and the other wire connecting the other binding post that passes through the said insulated end-piece with the described arm of the angle-piece, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

HENRY RADCLIFFE.

Witnesses:

A. W. COSKEY,
H. B. KANDAR.