(No Model.)

D. HIGHAM.

CUT-OUT FOR ARC LAMPS.

No. 547,753. Patented Oct. 8, 1895.

FIG. 1.

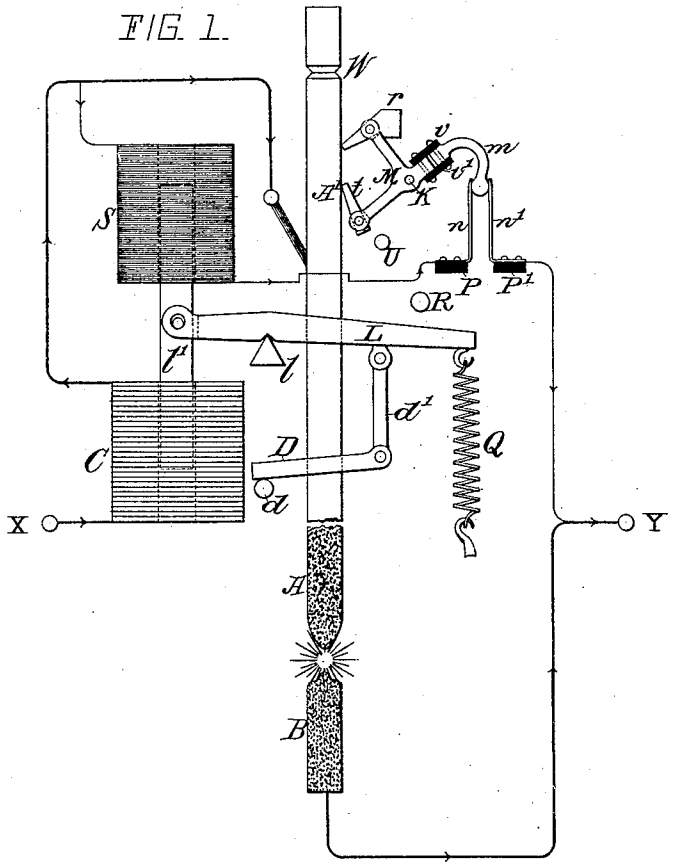


FIG. 2.

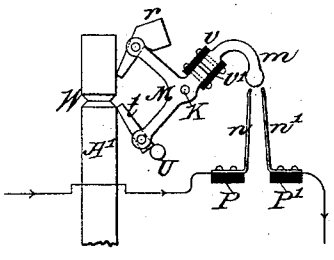
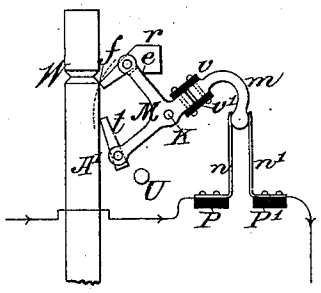


FIG. 3.



WITNESSES:

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DANIEL HIGHAM, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE HIGHAM ELECTRIC COMPANY, OF PORTLAND, MAINE.

CUT-OUT FOR ARC LAMPS.

SPECIFICATION forming part of Letters Patent No. 547,753, dated October 8, 1895.

Application filed June 27, 1895. Serial No. 554,265. (No model.)

To all whom it may concern:

Be it known that I, DANIEL HIGHAM, a citizen of the United States, and a resident of Boston, Suffolk county, Massachusetts, have invented Improved Cut-Outs for Arc Lamps, of which the following is a specification.

This invention relates more particularly to constant-potential arc lamps; and its object is to produce an effective automatic cut-out for such lamps without any liability of it binding or holding the carbon-rod during normal working of the lamp, as more fully shown and described hereinafter.

In the accompanying drawings, Figure 1 is a diagram of a simple form of clutch arc lamp provided with my invention, and Figs. 2 and 3 are diagrams illustrating the action of my invention.

In Fig. 1, A represents the upper carbon carried by a movable rod A′, while B is the lower or fixed carbon. Acting upon the movable carbon-rod A′ is a clutch D, one end of which touches upon a stop *d* on the frame, while the other end is connected through a link *d′* to a lever L, pivoted at *l*. Wire windings S in a shunt-circuit around the arc act magnetically upon a solenoid-core *l′*, supported by lever L. Coarse-wire windings in the main circuit also act magnetically upon solenoid-core *l′* in opposition to the windings S.

Q is a spring to act upon the lever L against the magnetic action of the series windings C, while R is a stop on the frame to limit the movement of the lever L.

In the carbon-rod A′ is a groove W to engage with a pawl *t*, actuated by its own gravity, when the carbon-rod is fully fed down, to tip a lever M, pivoted on the frame at K, and pull a contact-piece *m*, which is carried by the lever, from between contact-springs *n* and *n′*. These latter are connected in the circuit of the shunt-windings S and are carried by, but insulated from, the frame by insulating-blocks P and P′. The contact-piece *m* is insulated from the lever M by insulation-plates *v* and *v′*.

U is a stop on the frame to limit the movement of lever M, while *r* is a pawl upon the lever to engage with the groove W in the rod A′ when the latter is raised upward, and so cause the lever M to tilt over from position Fig. 2 to position Fig. 3 to close contact of piece *m* with springs *n* and *n′*. The circuits between the terminals X Y of the lamp are indicated by arrow-heads.

It will be seen from Fig. 1 that as the carbon-rod A′ is fed down the groove W will not engage with the pawl *r*, but pass the same and engage when the rod A′ is fed down sufficiently with the pawl *t*, whereby the carbon-rod will pull out the contact-piece *m* from between the contact-springs *n* and *n′*, and the lever M will tip downward on the pawl end, which should be slightly heavier than the end having the contact-piece *m* and rest upon stop U, as shown in Fig. 2, in which position the shunt-circuit will be held open and the carbon-rod can be raised up by the series windings C (not being opposed by the magnetic effect of the shunt-windings S) as far as the limited movement of the mechanism would raise it without closing the shunt-circuit, as will be readily understood. When the carbon-rod is raised up by hand, however, to put in a new set of carbons, for instance, it will be seen that the groove W will engage with the pawl *r* and tip over the lever M to force the contact-piece *m* between the contact-springs *n* and *n′*, in which position the springs *n* and *n′* will hold the lever M during the normal working of the lamp, as shown in Fig. 1.

Fig. 3 will serve to show how the pawl *r* will be disengaged from the groove W after the lever M is tipped over sufficiently to close the shunt-circuit, in order to allow the carbon-rod to be pushed fully up. It will be seen that the pawl *r* will bear or strike on the lever M at *e*, whereas the point *f* of the pawl *r* will follow the circle indicated by the dotted line, and consequently draw out of the groove W, as shown, to allow the carbon-rod to pass up, as will also be readily understood.

It will be seen that during the normal working of the lamp there will be no possible chance of this cut-out binding or holding the carbon-rod, as there is nothing to bear against the carbon-rod but the delicate pressure of the pawls *r* and *t*, and they are so pivoted to the lever M that they can in no way lock or wedge the rod. It will also be seen that by the use of the groove W the carbon-rod can be round in cross-section, inasmuch as the groove wlll engage with the pawls *r* and *t*, no

matter to what position the rod might be turned.

I claim as my invention—

An electric arc lamp provided with suitable feeding mechanism having shunt windings, in combination with a carbon rod having a groove, a lever having a pawl to engage with said groove when the carbon rod is fed down and open the circuit of said shunt windings, and a second pawl to engage with said groove when the rod is pushed up by hand to close the circuit of said shunt windings, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL HIGHAM.

Witnesses:

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