(No Model.)

E. THOMSON.

ELECTRIC ARC LIGHT.

No. 265,993. Patented Oct. 17, 1882.

Fig. 1.

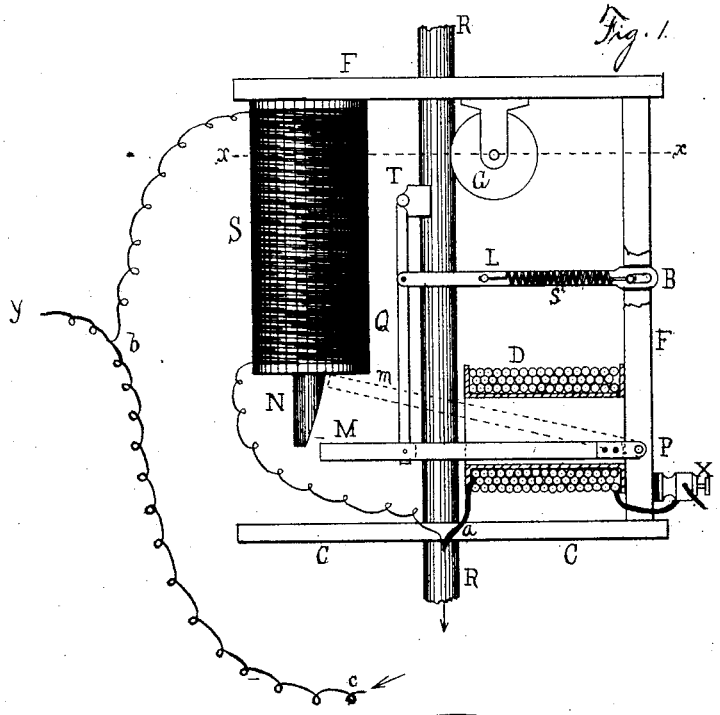
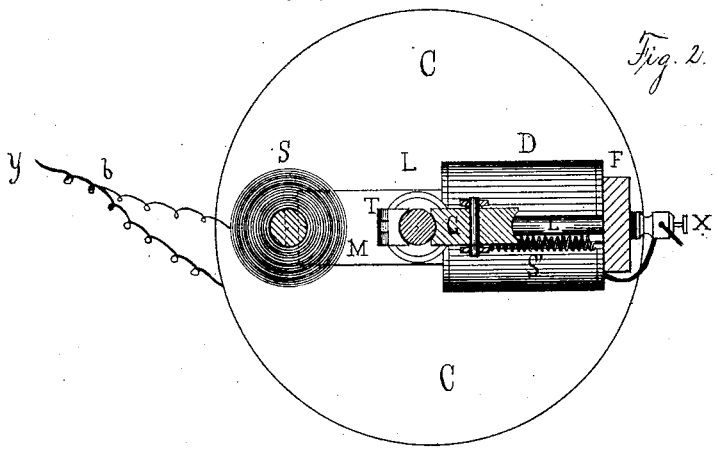


Fig. 2.



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ELIHU THOMSON, OF NEW BRITAIN, CONNECTICUT.

ELECTRIC-ARC LIGHT.

SPECIFICATION forming part of Letters Patent No. 265,993, dated October 17, 1882.

Application filed February 16, 1882. (No model.)

To all whom it may concern:

Be it known that I, ELIHU THOMSON, a citizen of the United States, and a resident of New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Electric-Arc Lights, of which the following is a specification.

My invention relates to an improved regulating magnet system for carbon points of electric lights, by means of which I secure great simplicity and constancy of operation.

Figure 1 is a front elevation of the regulating mechanism of an electric lamp constructed according to my invention. Fig. 2 is a top view or plan partly in section through the line *x x*, Fig. 1.

In Fig. 1, R R is a carbon pencil or carbon-supporting rod, it matters not which. The lower carbon is not shown, being used, as usual, fixed in a suitable support. A direct magnet coil, D, wound with coarse wire, is held in the position shown, and in its interior there passes a bar of iron, M, one end of which is pivoted at P upon an iron frame, F F, of the lamp. The end of the bar M nearest the frame F is allowed to move very closely thereto, while the other end, M, has a range upward to the position shown at *m* in dotted lines, in which upward range it approaches a fixed pole, N, of a shunt-magnet, S, wound with fine wire, and placed in a derived circuit around the carbon arc of the lamp. The bar M has therefore a movement transversely to the axis of the coil D. The shunt-pole N is preferably curved or tapered to prolong its action and render the attraction of M to it more nearly uniform. The movements of the bar M are utilized to separate and feed the carbons in any well-known manner by clutches or gear-work, or the like.

I have shown a simple form of lifting and feeding device adapted to feed a carbon pencil in a gradual way. It consists of a shoe, T, bearing upon the carbon rod R laterally, and forcing the said rod over against a grooved roller, G. A bar, Q, connects the magnet M and shoe T together and accommodates for changes of position. The horizontal arm L is pivoted to Q, as shown, and also at B, by means of a pin fastened in the frame F, and a slot in the arm L. The spring S′ tends to hold the bar Q and shoe T laterally against the carbon rod R R. However, the length of the bar L is made such that in the position of the parts shown the shoe T is scarcely bearing upon the rod R; but when the magnet M rises to the position shown at *m* in dotted lines the shoe T is held against the rod R and has raised it slightly by virtue of the force of the spring S′ coming upon the shoe T and bar Q when raised, the length of the bar L being now insufficient to hold the shoe T off.

The course of the current through the lamp is as follows: Entering at X, it passes through the open coil D; thence to the rod R at *a*, where it divides, the main branch passing down through the arc and back at *c* and out at Y. The derived current or small branch from *a* passes through the shunt-magnet coil S and joins the main at *b* and out at Y.

In Fig. 2, S is the derived-circuit magnet in section; T, the shoe for raising the carbon rod; G, the roller, as before; D, the direct coil, seen from above; C C, the base of the regulating mechanism; S′, the friction-spring for the shoe T; L L, the arm for holding the shoe T off the rod R when the magnet M is down. The direction of the current in each of the coils D and S is such that the ends M N or magnet-poles are of like polarity at any moment.

The action of my invention is as follows: The circulation of current in the coil D magnetizes the bar M, which immediately attracts itself toward the pole N, which is unmagnetized, because no current circulates in the coil S, the carbon pencils of the lamp being supposedly in contact at the start. The bar M continues to rise until the shoe T, having been drawn against the rod R by the spring S′, lifts and separates the carbons and establishes an arc. This lift and separation continues until the shunt-pole N is sufficiently energized by its coil S to restrain further attraction of the magnet M toward N. This restraint is of course due to the current derived from the arc passing through the coil S and tending to make the pole N of the same polarity as that of M near it. By the consumption of the carbons the amount of current diverted to the shunt-magnet S increases, and the magnet M falls away from the pole N in consequence. This continues until the bar or arm L, having arrived at a lower position, jams between the pin at B and

the bar Q and forces the shoe T to release the rod R. This action occurs at intervals more or less small, and a regular feed of the carbon rod R is thus effected.

I claim—

1. In an electric lamp, a coil traversed by the direct current, surrounding a movable magnetizable bar, pivoted, as described, to an iron frame, in combination with a coil traversed by the derived circuit surrounding a separate fixed core, the pole of which is placed in juxtaposition with the movable bar aforesaid, said movable bar having a transverse play inside the direct coil aforesaid, substantially as described.

2. In an electric lamp, the combination of a fixed shunt-magnet with a movable bar inclosed by the direct coils, leaving sufficient space in the interior thereof for the transverse movement of said movable bar, and the adjoining poles of which shunt-magnet and movable bar-magnet are of the same polarity in action.

3. In an electric lamp, a friction-shoe, T, bearing upon the carbon rod, in combination with the lifting-bars Q and M, releasing bar L, and spring S′, or their equivalents, substantially as described.

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Witnesses:
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