

E. A. SPERRY.
ELECTRIC ARC LAMP.

Patented July 19, 1892.



UNITED STATES PATENT OFFICE.

ELMER A. SPERRY, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE SPERRY ELECTRIC COMPANY, OF SAME PLACE.

ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 479,029, dated July 19, 1892.

Application filed April 18, 1890. Serial No. 348,459. (No model.)

To all whom it may concern:

Be it known that I, ELMER A. SPERRY, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric Lights, of which the following is a full, clear, and exact specification.

My invention relates to arc lamps, specially such as are operated with one or more pairs of carbons, and has for its object to provide means whereby the operation of the carbons may be made more simple and effective and the parts be held more securely in position.

My improvement is illustrated in the accompanying drawings, wherein—

Figure 1 is a cross-section of the upper part of the lamp; Fig. 2, a detail side view of the upper portion thereof; Fig. 3, a detail of the cut-out magnet, and Fig. 4 a diagrammatic view showing the carbons in their normal positions.

Like parts are indicated by the same letter in all of the drawings, and such details of the lamp as are not material to an understanding of the device are with it.

A is the case which surrounds the operating mechanism, having the top B and the bottom C.

D D are the rods which support the lower-carbon-securing devices.

E E' are the carbon-rods projecting into the guides F F, the rod E provided with the cap G and the rod E' with the annular groove H and surrounding clamp J, one end of which normally rests on the ledge K, and the other on the end of the lever L, from the other end of which extends a rod M into the guide F, which receives the carbon-rod E. This rod E' is also provided with a second annular groove V, surrounded by one of the carbon-separating devices N³, the object of which is, as the two carbon-separating levers work together, that when the rod E' is raised by being held in position by clamp J in its groove H the groove V allows its separating-lever to rise and fall, as occurs in the process of feeding, without touching or disturbing the rod E' until the other pair of carbons is burned out.

N is a spring-supported frame resting upon the springs N' N' and carrying the carbon-rod-operating devices, which embrace, briefly, the main-circuit electro-magnet N² and the carbon-separating device N³ N³, connected with the armature N⁴ of the said magnet. These parts are more fully described in my patent, No. 405,440, dated June 18, 1889, to which reference is had, should further light on the state of the art be thought desirable for an understanding of the features therein described, though it is not believed that any such reference is necessary.

O is a dash-pot wherein the piston O' and rod O², which connect with the armature N⁴ to regulate its movement, are situated.

P P are the guides supported on the standards R, from which the spring-frame N is also supported, and the two guides P P are rigid and independently receive each one of the carbon-rods.

On one side of the elastically-supported frame N is the arm S, which rides upon the roller T on the lever T', which is controlled by the shunt-magnet T².

U is a rod having an angularly-bent end to engage the roller T, connected with the armature U' of the cut-out magnet U², which armature is adapted to engage the piece U³, and thus form a circuit through the conductors U⁴ and U⁵, which lead to the main conductors X X'.

X² and X³ are small conductors which connect the main conductors with the shunt-magnet T², and X⁴ X⁵ are the conductors which connect the main conductors, respectively, with the upper and lower carbons.

The use and operation of my invention are as follows: The carbon-rod D⁴ is retained permanently in an elevated position, suspended in the air, and free from contact with the carbon D⁵ by means of clamp J, and it is not until by the gradual feeding away or consuming of the carbon D³, held by the carbon-rod E', and the consequent engagement of head G with the rod M that the carbon-rod E' is released. The clamp J is normally at all times (from the trimming of the lamp or supplying of carbons until the carbon D⁴ is set in effective operation) in the position shown in Fig. 1. The office of the groove H is to give the clamp

J a firmer grip on the rod E', thereby reducing the liability of being jarred off, as might occur on the plane surface of the rod, and also to afford a permanent stop for the clamp J, so that the groove V will always be encircled by the lever N³ when rod E' is at rest at its upper position before starting. The rod E' remains in the position shown in Fig. 1 from the time the lamp is trimmed till by the burning out of the carbons D³ and D⁶ the cap on rod E strikes the rod M, which tilts the lever L, which in turn raises and keeps raised the ring-clamp J, letting the rod E' descend, and thereby contacting the carbons D⁴ and D⁵, bringing the groove V out of range of lever N³, and now, as the lever N³ is working on the plane surface of the rod E', the feeding proceeds as in the case of rod E; but when the carbon D³ is burned out the head G has descended upon the rod M, the lever L is to move in opposition to its commanding spring, and the clamp J is brought and retained in a horizontal position, whereupon the rod N' is free to slide thereto. It immediately drops, bringing the two carbons D⁴ and D⁵ together and establishing a circuit, which has been interrupted by the burning out of the carbon D³, and the lamp proceeds to feed in the usual manner. The carbon D⁴ is hung up, as it were, in the air, and may be any desired distance from the carbon D⁵ and is never brought in contact therewith until the other carbons D³ and D⁶ have been burned out.

The office of the guides P P is to prevent injury to the parts and strain to the more delicate portions of the spring-frame when the same is manipulated by careless persons. The office of guide W is to steady the rod E' near the clamp J, and also to keep the clamp in position. The office of the rod U is to close the cut-out circuit and cut out the entire lamp when so great a current has been diverted into the shunt-circuit as to bring the spring-frame down a distance, the rod U so acting by reason of its contact with the roller T, which must descend with such spring-frame.

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

1. In an arc lamp, the combination of two pairs of carbons with encircling feeding-

clamps for the two upper carbon-rods and a similar suspending-clamp for one of such carbon-rods, and a groove or ledge encircling said carbon-rod and receiving such clamp, so as to retain such carbon-rod at a proper elevation for a determinate period, as and for the purpose shown and described.

2. In an electric-arc lamp, the combination of a spring-supported frame with a shunt-magnet, a lever on which such frame rests, a cut-out magnet normally open, and an angularly-bent rod one end of which is attached to a lever by which the cut-out magnet can be closed and the other placed in proximity to a moving portion of the spring-supported frame of the shunt-magnet lever.

3. In an arc lamp, the combination of two pairs of carbons with feeding-clamps for the two upper carbon-rods and a suspending-clamp for one of such carbon-rods, and a groove or ledge encircling one of said carbon-rods and receiving such clamp so as to retain such carbon-rod at a proper elevation, the same carbon-rod being also provided with a second groove or ledge encircled by one of the feeding-clamps, so as to prevent feeding of this carbon when the other carbon is burning.

4. In an arc lamp, the combination of two pairs of carbons with feeding-clamps for the two upper carbon-rods and a suspending-clamp for one of such carbon-rods, the same carbon-rod being also provided with a second groove or ledge encircled by one of the feeding-clamps, so as to prevent feeding of this carbon when the other carbon is burning.

5. In an arc lamp, the combination of two pairs of carbons with feeding-clamp N³ for the two upper carbon-rods E and E' and a suspending-clamp J, encircling a groove or ledge H on carbon-rod E' at a proper elevation, the carbon-rod E' being also provided with a second groove or ledge V, the said groove or ledge V being encircled by one of the feeding-clamps N³, so as to prevent feeding of carbon D⁴ when carbon D³ is burning, the said rod E' being released by action of the rod E raising the clamp J, thereby allowing rod E' to descend.

ELMER A. SPERRY.

Witnesses:

W. R. GOODMAN,
D. LEVIN.