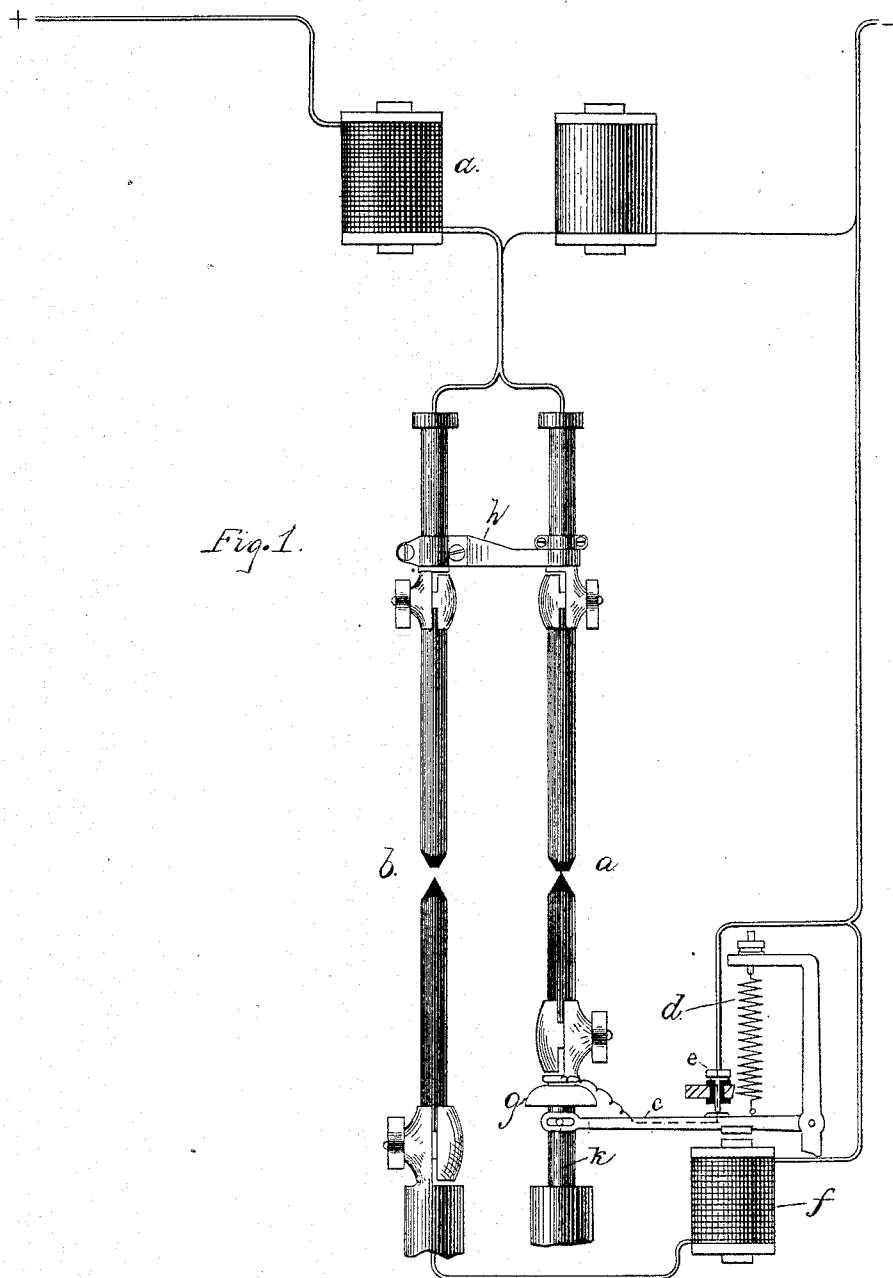


C. E. SCRIBNER.
DUPLEX ELECTRIC ARC LAMP.

No. 491,251.

Patented Feb. 7, 1893.



Witnesses,
George L. Bagg
Ella Edler

Inventor,
C. E. Scribner
By *George P. Barton*
att'y.

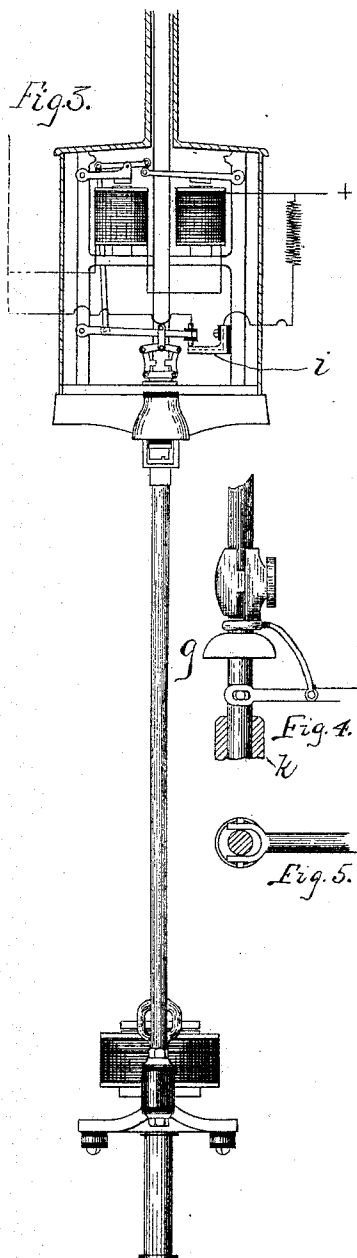
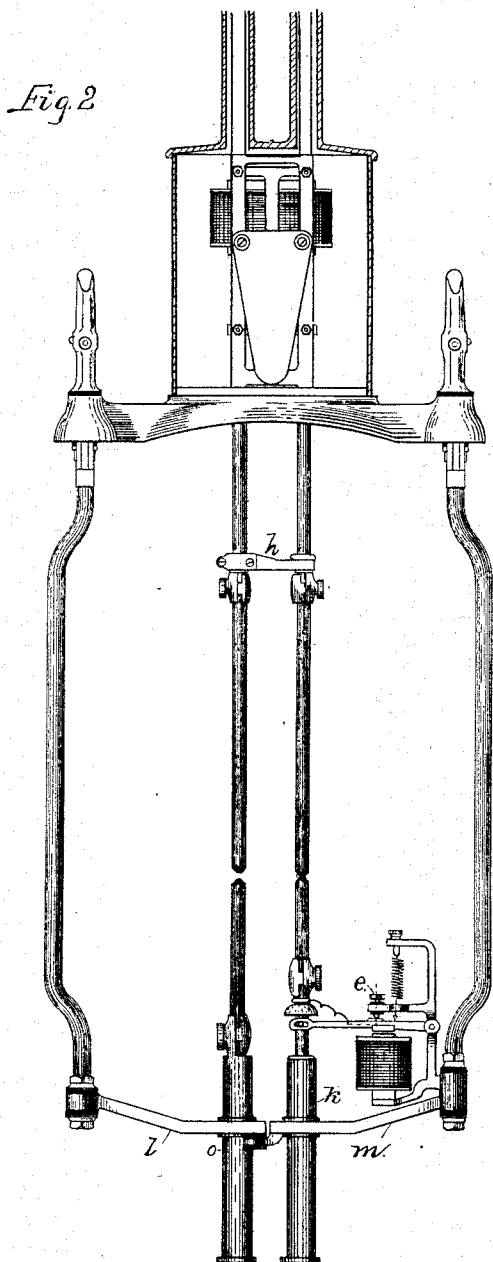
(No Model.)

2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN
ELECTRIC COMPANY, OF SAME PLACE.

DUPLEX ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 491,251, dated February 7, 1893.

Application filed October 20, 1890. Serial No. 368,654. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Double-Carbon Arc Lamps, (Case No. 238,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to arc lamps in which two sets of carbons are employed and its object is to provide means for automatically transferring the arc from one set of carbons to the other from time to time at such intervals as may be desired.

In United States Letters Patent No. 418,758 granted me January 7, 1890, I have shown a double carbon lamp in which the different sets of carbons are so arranged that one set will be completely consumed before the other set begins to burn. In some instances heretofore the retaining magnets of my said lamp have been dispensed with and the upper carbon rods of the different sets have been secured together in such manner that the separating and feeding movements of the upper carbons from the lower carbons respectively will be in unison, thus effecting an alternation of the arc from time to time between the different sets as is desired. The clamping device which has been thus used is secured rigidly to one rod above the carbon clamp and is provided at the other with prongs which are placed on opposite sides of the other rod above its carbon clamp and below an adjustable collar provided above the prongs. My invention herein is adapted to be applied to such modified form of my lamp shown in said patent or it may be applied to any other form of lamp in which the two upper carbons are secured together.

My invention, speaking generally, consists in an electro magnetic device connected with one of the lower carbon supports and so connected with the circuit of the lamp that said support will be lowered when the lamp is first brought into service and raised again carrying with it both the upper carbons, the operation being repeated each time the arc is

shifted, the length of the stroke of the movable support determining the amount of carbon that is consumed between each shifting of the arc. By adjusting the stroke of the lower movable carbon support the frequency of the shifting may be regulated.

My invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a diagram of the circuits. Fig. 2 is a front elevation of a double carbon arc lamp embodying my invention. Fig. 3 is a side elevation thereof. Figs. 4 and 5 are detailed views showing the armature lever connected with the movable carbon support of one of the lower carbons.

Like parts are indicated by similar letters of reference throughout the different figures.

As shown in Fig. 1 the circuit may be traced from wire + through lifting magnet *a* and thence to the upper carbons. Assuming that the lamp is in the position shown, that is, that it has been trimmed and no current established carbons *a* will be in contact and carbons *b* may be separated. Therefore the circuit will be opened at carbons *b* and closed through carbons *a* to armature lever *c* which is held by retractile spring *d* against contact screw *e*; from contact *e* the circuit may be traced out to line. When the current is first established the upper carbons will be lifted together and an arc established between the carbons of set *a*. The lamp will continue to burn in the usual manner until the carbons of set *b* are fed together, whereupon current will be established through carbons *b* and magnet *f*, the first arc being shunted; magnet *f* being thus excited will overcome the tension of spring *d* and draw armature *c* down. In this manner the movable support will be lowered and the carbons *a* will be separated, the amount of separation being determined by the stroke of armature *c*. By adjusting the screw forming the contact *e* the circuit of the lever may be varied. The current is thus diverted from carbons *a* and directed through carbons *b*; the arc will thus be shifted to carbons *b* and will be there maintained until carbons *a* are again fed together. Thereupon the further descent of

the upper carbons will be prevented until the electro motive force of the arc at *b* will be so great as to close the automatic cut out about the lamp. The arc between carbons *b* will thus be shunted and magnet *f* will be de-energized and armature *c* will be raised carrying with it carbon support *g*, the carbons *a* being already in mechanical contact. Therefore as armature *c* moves upward the upper carbons will be carried upward also. As soon as contact *e* is closed the circuit will be established through carbons *a*, and the lifting magnet being thus brought again into circuit will act to establish the arc again at carbons *a*. A usual solenoid may be used instead of the electro magnet *f* and its armature, and thus the stroke of the movable carbon support *g* may be made as great as may be desired, for example, one or two inches. The clamping device *h* may be used when it is desired to apply my invention herein to double carbon arc lamps having independent carbon rods.

A well known form of cut out *i* is shown in Fig. 3. The movable support *g* may be placed in any suitable guide or tube *k* so that it may be held in vertical position while being acted upon by the electro magnetic device.

It will be observed that the globe pan is formed of two insulated sections *l m*. The lower carbon support of set *b* resting upon section *l* must be connected through the electro magnet *f*; section *m* of the globe pan upon which the movable carbon support is mounted is insulated from the rod *o* as shown. By this construction I am enabled to burn two carbons in the same lamp one after the other, making the alterations as frequent or as far apart as may be desired. This result is accomplished by means of an electro magnetic device included in the circuit of one of the carbons, the electro magnetic device controlling the position of the lower carbon of the other pair of carbons and the two upper carbons so that a considerable length of carbon is offered for consumption before the arc can alternate.

Having thus described my invention I claim

as new and desire to secure by Letters Patent:—

1. In an electric arc lamp, the combination with the upper carbon rods adapted to move in unison, of corresponding carbon holders for the lower carbons, one of said lower carbon holders being fixed and the other being movable and controlled by an electro-magnetic device in circuit with said fixed carbon holder; substantially as described.

2. In an electric arc lamp one electrode holder having two carbons and mechanism for regulating the same, an electro magnetic device connected with and adapted to move one of the carbons of the lower pair, the said electro magnetic device being in the circuit of the other lower carbon, a contact point included in the circuit of the lower carbon controlled by the electro magnetic device and an automatic cut out operated by an abnormal arc, whereby the lamp may be extinguished and the upper carbons raised and the arc alternated by the electro magnetic device, substantially as and for the purpose specified.

3. In an electric arc lamp the combination with the upper carbon rods adapted to move in unison, of corresponding holders for the lower carbons, one of said lower holders being controlled by an electro magnetic device in circuit with the fixed lower carbon holder, substantially as and for the purpose specified.

4. In an electric arc lamp two pairs of carbons, the upper members of the two pairs being adapted to move in unison and the corresponding lower carbons being the one fixed and the other movable, in combination with an electro magnetic device in circuit with the fixed lower carbon and mechanically connected with the support of the movable carbon to raise and lower the same, substantially as and for the purpose specified.

In witness whereof I hereunto subscribe my name this 14th day of October, A. D. 1890.

CHARLES E. SCRIBNER.

Witnesses:

ELLA EDLER,

GEORGE L. CRAGG.