(No Model.)

K. A. LANTAU & C. J. ANDERSON.

ARC LAMP MECHANISM.

No. 546,403. Patented Sept. 17, 1895.

Fig. 1.

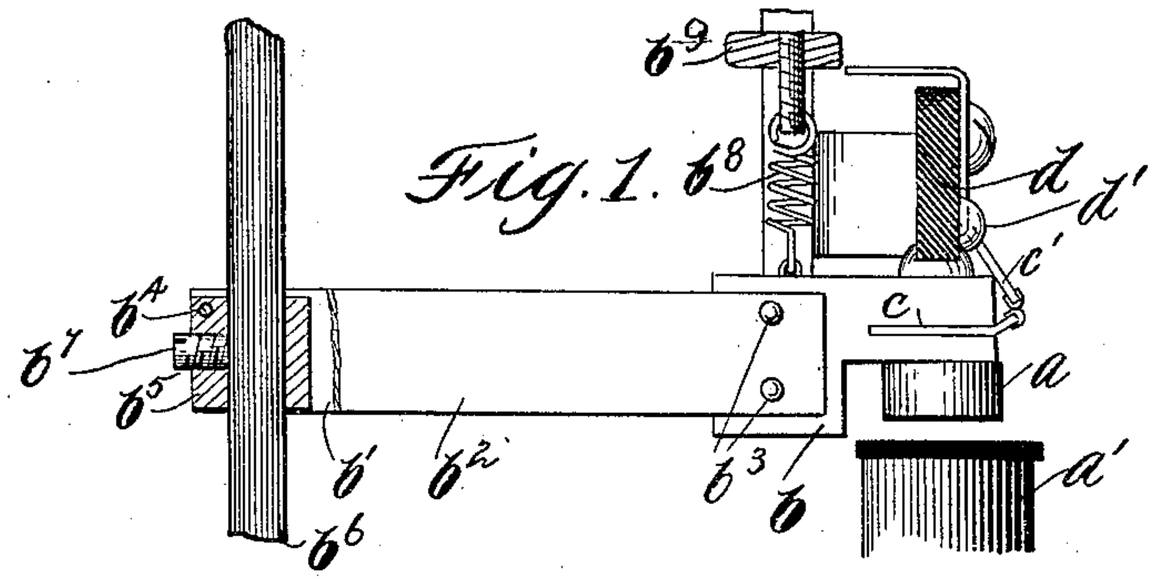

Fig. 2.

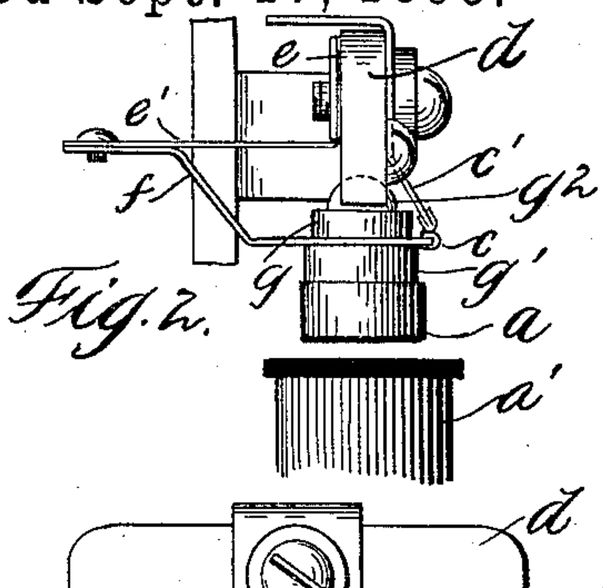

Fig. 3.

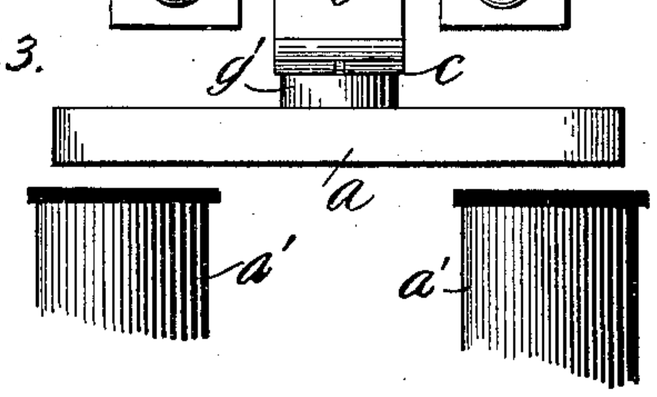

Fig. 4.

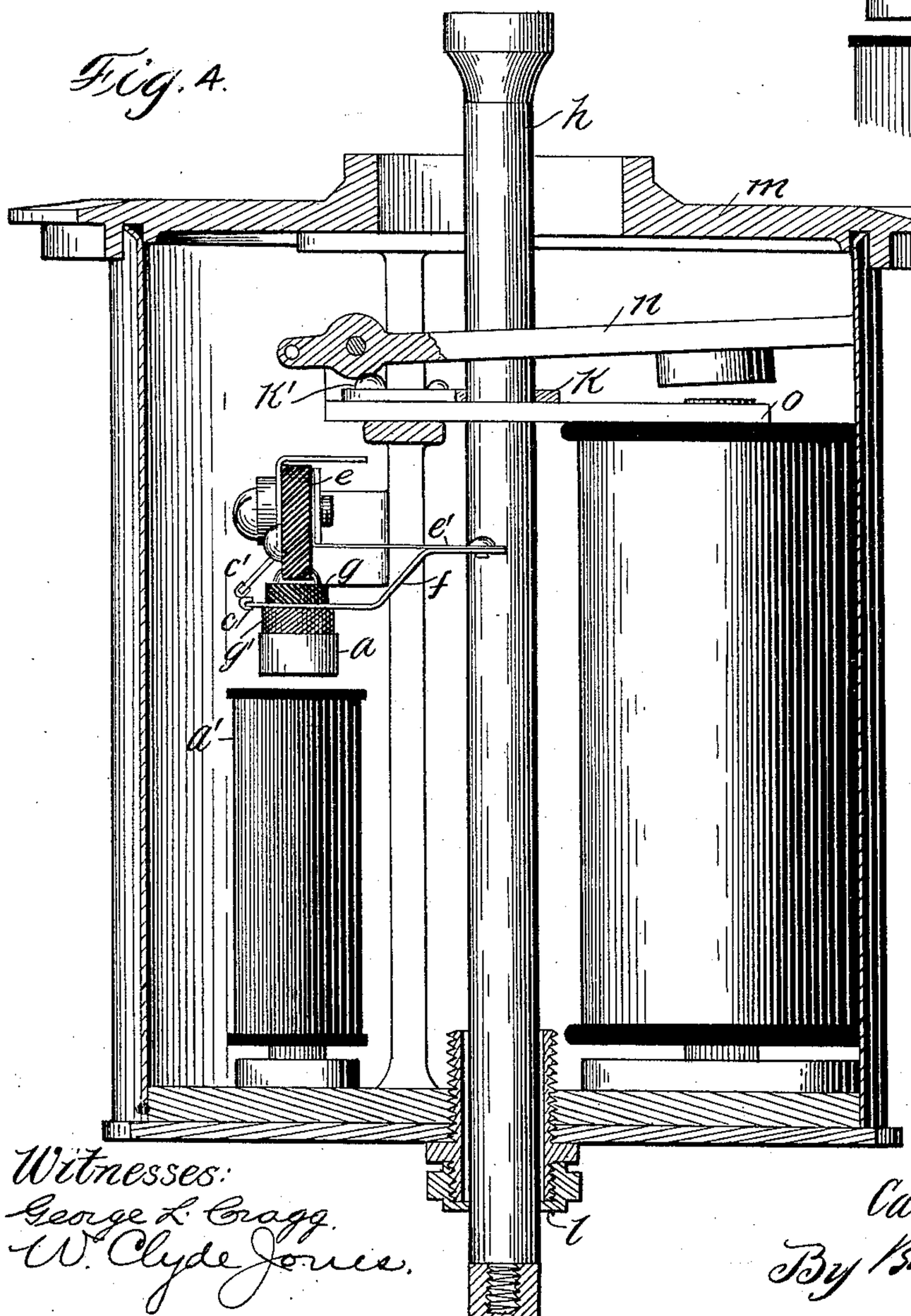

Fig. 5.

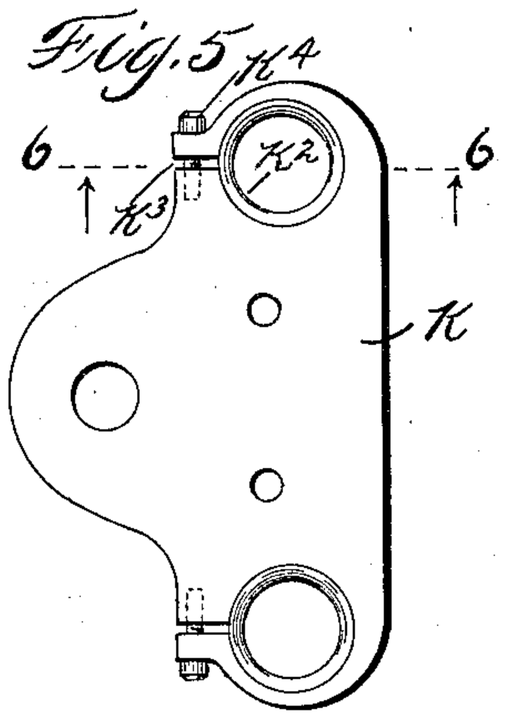

Fig. 6.

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UNITED STATES PATENT OFFICE.

KARL A. LANTAU AND CARL J. ANDERSON, OF CHICAGO, ILLINOIS; SAID ANDERSON ASSIGNOR TO SAID LANTAU.

ARC-LAMP MECHANISM.

SPECIFICATION forming part of Letters Patent No. 546,403, dated September 17, 1895.

Application filed February 28, 1895. Serial No. 540,027. (No model.)

To all whom it may concern:

Be it known that we, KARL A. LANTAU and CARL J. ANDERSON, citizens 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 Arc-Lamp Mechanism, (Case No. 1,) 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.

Our invention relates to improvements in the construction of the feeding and regulating mechanism of arc lamps, and more particularly of the arc lamp known to the trade as the "Thomson-Rice" arc lamp.

The object of our invention is the improvement of certain of the structural features of the lamp whereby more effective operation results and the necessity of frequent repair is avoided.

In the lamp as heretofore constructed the armature of the cut-out magnet has been mounted upon the under side of a block of insulating fiber carried upon the end of a pivoted lever. In the end of the block of fiber is provided a slot or saw-cut, in which is placed a plate, serving as one terminal of the cut-out and adapted to make contact with the other terminal, which is in the form of a plate mounted upon a block of insulating material secured to the frame of the lamp. The pivoted lever to which the block of fiber is secured is in the form of two parallel plates, between which the fiber is placed, the plates being secured to the fiber by pins or rivets passing therethrough. As thus constructed, the fiber, when subjected to dampness or moisture, becomes swollen and upon drying crumbles away, thus loosening the connection between the fiber and the lever upon which it is supported and necessitating the renewal of the block of insulating fiber. This can only be done by taking the lamp apart, and at the expense of considerable labor, and our object is to provide means for supporting the armature and the insulated terminal of the contact without the employment of a block of insulating fiber, as above described, the construction being such that the coiled spring which has heretofore been employed for maintaining the terminals in contact may be dispensed with, the plates upon which the armature is supported being adapted to serve, also, as a spring.

The armature and cut-out as constructed in accordance with our invention may be mounted upon the frame of the lamp in the same position and by the same screws employed for securing the cut-out according to the previous construction, so that no change in the frame of the lamp is necessitated, it being necessary only to remove the elements of the cut-out as heretofore employed and to insert in place thereof the members comprising the cut-out of our invention.

A further feature of our invention comprises an improved upper bushing for the carbon-rod. At the lower end of the framework supporting the feeding and regulating mechanism is provided a bushing, through which the carbon-rod passes, while near the upper end of the framework is provided an upper bushing, through which the upper end of the carbon-rod passes, the carbon-rod being thus maintained accurately in alignment and lateral movement prevented. The continued friction of the carbon-rod sliding through the bushings gradually wears the same away, so that the bushing becomes of considerably-larger diameter than the carbon-rod, lateral play of the carbon-rod being thus permitted. A very slight lateral movement of the carbon-rod at the bushing will serve to impart a very considerable movement to the end of the carbon which is mounted upon the carbon-rod, thus throwing the carbons out of alignment, and it is, therefore, necessary to replace the upper bushing quite frequently as it becomes worn away in order that the carbons may be maintained in alignment. The upper bushing has heretofore been formed by providing a hole in a plate screwed to the framework, through which hole the carbon-rod is adapted to slide. When it is desired to remove the plate to replace it by a new plate, it is necessary to remove the upper plate of the lamp-frame and considerable mechanism that lies above the bushing-plate to thus gain access to the plate. After the worn-out plate has been removed and a new plate placed in position it is necessary to reassemble the parts,

and thus considerable labor is required in making the repair. In accordance with our invention a ring adapted to serve as the bushing is removably secured to the plate, so that the ring, when worn, may be readily removed and replaced without the removal of the plate. The ring is preferably held in position by a screw which is readily accessible, so that by turning the screw the ring may be unclamped to permit its removal and a new ring placed in position, after which the screw may be turned to clamp the new ring in position, the amount of labor necessary in renewing the bushing being thus reduced from several hours to a few minutes.

We will describe our invention by reference to the accompanying drawings, in which—

Figure 1 is a detail view of the cut-out of the prior art. Fig. 2 is a side view of the cut-out mechanism of our invention. Fig. 3 is a front view thereof. Fig. 4 is a sectional view of the lamp-frame, some of the parts being removed for clearness. Fig. 5 is a plan view of the upper bushing-plate of a double-carbon lamp as constructed in accordance with our invention. Fig. 6 is a sectional view on line 6 6 of Fig. 5.

Like letters refer to like parts throughout the several figures.

Referring to Fig. 1, which illustrates the cut-out mechanism heretofore employed, the armature a of the electromagnet a' is mounted upon the under side of a block b of insulating fiber, the block being mounted between the plates b^2 b^2 and secured thereto by pins b^3. The opposite ends of the plates b' b^2 are pivoted at b^4 to a block b^5, secured to a vertical rod b^6 by a set-screw b^7. In the block of insulating material b is provided a slot or saw-cut, in which a plate c is adapted to fit, the end of the plate being upturned and resting normally in contact with a plate c', the plates c and c' forming the terminals of the cut-out. The plate c' is mounted upon a block of insulating material d, which is secured to the frame of the lamp by screws d'. A coiled spring b^8 is secured at one end to the block of fiber b and at the other end to a support b^9, the spring thus serving to maintain the terminals c c' normally in contact. When the armature is attracted, the terminals c c' of the cut-out are separated. As before stated, this construction is disadvantageous, since the block of insulating fiber b soon crumbles away, thus loosening its contact with the plates b' b^2 with the armature a and with the terminal c, it being necessary to replace the block b at a considerable expense. Moreover, the lever occupies considerable space.

In accordance with our invention we employ the block d of insulating material, secured to the frame of the lamp in the usual manner and carrying upon its front surface the plate c', serving as the upper terminal of the cut-out. Upon the back of the block d is secured a plate e, having a horizontal extension e'. To the under side of the extension e' is secured the bent plate f, the opposite end of the plate f serving as the second terminal c of the cut-out. The plates e and f may, if desired, be made in one piece. Upon the opposite sides of the end of plate f are placed washers g g' of insulating material, preferably lava, a screw g^2 being passed through the washers g g' and the plate f and screwing into the armature a. The resiliency of the plate e' or of the plate f serves to normally maintain the terminals c c' in contact, the terminals being separated by the attraction of armature a by the electromagnet, but returning to the position illustrated when the armature is released, due to the resilient mounting. By this construction the employment of the block b of insulating fiber is obviated and the coiled spring b^8 is dispensed with. By relying upon the resiliency of the plate e' instead of a coiled spring b^8 for opposing the attraction of the electromagnet better results are attained, as the spring-plate e' always possesses the same resiliency, whereas the tension of the spring b^8 must be adjusted by hand, and uniformity is thus not always insured. Since the block d of insulating material is retained, the cut-out mechanism may be mounted upon the frame of the lamp without change, and the long lever upon which the armature has heretofore been mounted, occupying considerable space, may be dispensed with. In order that the plate e may be insulated from plate c', a washer of insulating material g^3 is placed between the plate c' and the head of the screw g^4, securing the plates in position.

Referring to Figs. 4, 5, and 6, the carbon-rod h is adapted to slide through an upper bushing k and a lower bushing l. As heretofore constructed, the upper bushing k has been made in the form of a plate provided with an aperture or hole, through which the carbon-rod is adapted to pass, the diameter of the hole being such that lateral movement of the rod is prevented. By the continual sliding of the rod through the plate the walls of the hole become worn away and lateral movement of the rod is permitted and a new plate must be placed in position. The plate is secured to the top of the frame-piece o of the lamp by screws k', and in order to obtain access to the screws and remove the plate it is necessary to take off the upper plate m of the lamp-frame, to remove the lever n, supporting the armature of the feeding-magnet, and to remove considerable other mechanism, which for clearness has been omitted from the drawings. To thus replace a plate takes several hours' labor, and our object is to provide means for renewing the upper bushing without in any manner changing the structure of the lamp and without discontinuing the use of the plate k, in which the bushing has heretofore been provided. The plate k as employed in a double-carbon lamp is illustrated in Fig. 5, and to equip the plate in accordance with our invention we countersink the upper side of the hole through which the

carbon-rod passes to admit the ring-bushing k^2 and provide a slot k^3, extending from the opening through which the rod passes to the edge of the plate. A screw k^4 is provided, by means of which the ring k^2 may be clamped in position, the screw k^4 being placed upon the edge of the plate, whereby it is readily accessible without the removal of any of the lamp mechanism. When the ring k^2 becomes worn, the carbon-rod may be withdrawn from the lamp, screw k^4 unscrewed, and the ring k^2 removed, after which a new ring may be placed in position and clamped by means of the screw k^4, the operation of renewing the bushing being thus performed in a few minutes, whereas by the construction of the prior art several hours' labor was necessary.

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

1. The combination with the block d of insulating material secured to the frame of the lamp, of the plate c' mounted upon the front of said block, the end of said plate serving as one terminal of the cut-out, the plate e mounted upon the rear of said block d and provided with a horizontal extension e', bent plate f mounted by one end upon the end of extension e' and resting by its free end in contact with the end of plate c' to constitute the second terminal of the cut-out, and the armature a mounted upon the under side of plate f and insulated therefrom, substantially as described.

2. The combination with the upper frame plate m of the carbon-rod h passing therethrough, the vertical frame piece or standard o, the top thereof terminating a short distance below said frame plate m, the bushing plate k mounted upon and secured to the top of said standard o and being provided with an opening through which the carbon rod h is adapted to pass, and a bushing ring k^2 formed in one piece and carrying a bore in which said carbon rod is adapted to accurately fit, said ring being removably secured in the opening provided in the bushing plate; substantially as and for the purpose set forth.

In witness whereof we hereunto subscribe our names this 23d day of February, A. D. 1895.

KARL A. LANTAU.
CARL J. ANDERSON.

Witnesses:
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