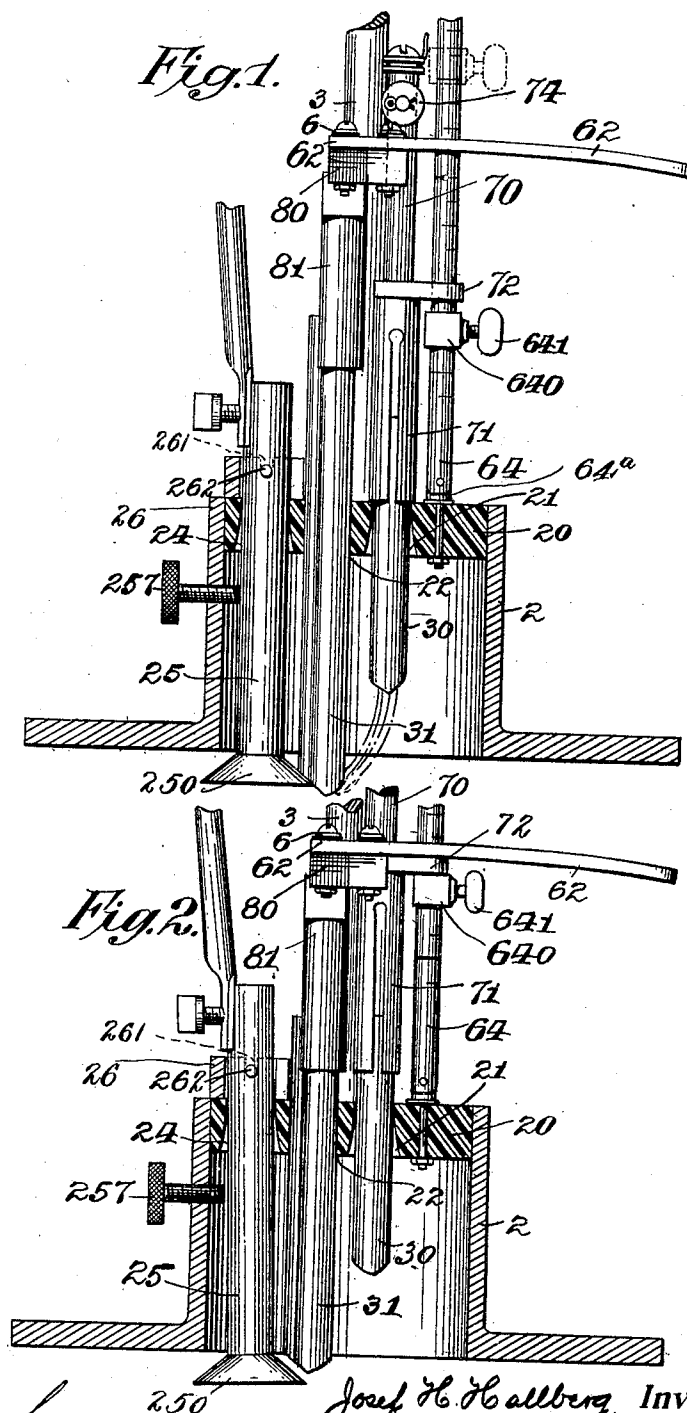


J. H. HALLBERG.
ELECTRIC ARC LAMP.
APPLICATION FILED JUNE 22, 1908.

994,835.

Patented June 13, 1911.



Attest:
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UNITED STATES PATENT OFFICE.

JOSEF H. HALLBERG, OF NEW YORK, N. Y., ASSIGNOR TO THE BECK FLAMING LAMP COMPANY, OF CANTON, NEW YORK, A CORPORATION OF NEW YORK.

ELECTRIC-ARC LAMP.

994,835.

Specification of Letters Patent. Patented June 13, 1911.

Application filed June 22, 1908. Serial No. 439,666.

To all whom it may concern:

Be it known that I, JOSEF H. HALLBERG, a citizen of the United States, and resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Electric-Arc Lamps, of which the following is a specification.

My invention relates to electric arc lamps and its novelty consists in the construction and adaptation of the parts as will be more fully hereinafter pointed out, and specifically to the means employed for limiting and controlling the movement of one or both electrodes whereby the automatic extinguishment of the lamp is secured at proper or predetermined times.

In an application for Letters Patent of the United States filed by me on the 13th day of June, 1908, Serial No. 438,277, I have described a novel form of lamp comprising two electrodes, one supported from the other, and means adapted normally to bring their points into contact when the lamp is not energized, including an obliquely placed holder for the supported electrodes, and means whereby the electrodes are automatically brought to a vertical parallel position and their points separated a proper distance when the lamp is energized.

I take advantage of the form of electrode holders employed in the mechanism described in that case for the purpose of controlling the time of extinguishing the lamp, and limiting the period of its combustion, in the manner hereinafter stated.

In the drawings, Figure 1 is a side elevation of the lower portion of an electric arc lamp, the base of the lamp being shown in vertical section; and Fig. 2 is a view of the same parts in a different position.

In the drawings 2 is the base of the lamp provided with a transverse plate 20 of insulating material, for instance steatite. This plate is formed with apertures 21 and 22 through which the electrodes 30 and 31 extend into the combustion chamber formed by the base 2 and said plate. Hinged to an upwardly extending bracket or other suitable device 64^a carried by this plate is a rod 64 adapted to serve as a guide and support for one of the electrode holders, which comprises a slitted sleeve 71 having a projection 72 which is slidably mounted on the rod 64, and a rod 70 which rises from it and is provided with one or more rollers 74. The electrode

30 is mounted in this sleeve. The holder for the other electrode 31 similarly consists, preferably, of a slitted tube 81 supported and guided by means similar to those for like purpose disclosed in my application hereinbefore referred to, and for this reason it is not necessary to set them forth in detail herein. It is considered to be sufficient to state that the tube 81 depends from a plate 6 which moves between and is guided by the frame-uprights, one of which is shown at 3. This plate also has a laterally extending longitudinal slotted bracket 62. The rods 64 and 70 extend through the slot in this bracket and are moved together back and forth therein to adjust the electrode 30 into and out of parallel relation with the electrode 31. The wheels 74 traverse the upper surface of the bracket in such movement of the rods. Thus far the structure is like that illustrated and described in my before-mentioned application by way of example of structures to which my present improvements are applicable.

Arranged at the arcing end of the electrode 31 and engaging the rib thereof is a support 250 therefor. This support is in the form of a foot, here shown as arranged at the lower end of a carrier 25, suspended from a ring 26 by pins 262 seated in apertures 261 in the ring. In practice this carrier is preferably a sleeve through which extends a rod which is suitably attached thereto, said rod extending from the foot, all as in my previous construction hereinbefore referred to. I do not consider it necessary to show this detail herein as it is not essential to the present invention. In the present illustrated form of the device the support is adjusted laterally by a set screw 257 having a threaded engagement with the base and provided with an insulated tip to engage the carrier 25.

At the upper end of the carrier is an upwardly extending arm serving for instance, as fully disclosed in my application No. 439,897 as a means for conveying thereto current to energize the support and also tending to hold the support in one position.

The rod 64 is graduated and is provided with a slidable ring 640 having a set screw 641 by which it may be secured at any place along the rod.

As explained in the application above referred to, the electrode 30 before the lamp is

energized, is swung into an oblique position by reason of the engagement of its holder with the rod 64, and the lower point of the electrode 30 is in contact with the lower point of the electrode 31. When the lamp is energized the rod 64 is swung on its pivot and the holder of the electrode 30 is brought to a vertical position parallel with the holder of the other electrode, and the electrodes 30 and 31 are brought to a substantially vertical parallel position with their lower points properly spaced apart.

Let us suppose that the sleeve 71 is located nearer to a detaining element therefor (as the plate 20, for example) than the sleeve 81, as indicated in Fig. 1. As the electrodes burn they descend and finally reach a point where the lower end of the sleeve 71 contacts with the upper part of the plate 20. As the electrode 30 is unable to move downward any longer it burns away at its lower end and the arc gradually lengthens as indicated in Fig 1 until finally it goes out. It is thus obvious that by varying the distance of the sleeves 71 and 81 from a detaining element the time of extinguishing the lamp could be thus approximately predicted. But I have designed a more certain method of controlling the matter, which comprises the before referred to ring 640 adjustably fixed in the path of downward movement of the projection 72 from the tube 71. The slip ring 640 may be arranged at any point along the rod 64. Wherever it is placed, when the projection 72 contacts therewith the descent of the latter is interrupted as shown in Fig. 2 and the electrode 30 burns away until the distance between the ends of the electrodes becomes so great that the arc is extinguished.

The graduations on the rod 64 may be noted in terms of hours and fractions thereof and by adjusting the slip ring 640 at a point so indicated the lamp can be made to extinguish itself without any further attention.

If as a result of the energizing of the support, the arc continues to burn for a short time after movement of the electrode 30 has ceased, a time will come when it will burn away from the foot 250 and form an arc between the electrode and said foot in addition to the arc between the two electrodes, thus causing the extinction of the lamp in a shorter time than if the gradual lengthening of the arc between the two electrodes was alone relied upon. By adjusting the foot 250 to and from this electrode the extinguishing action can be made more delicate and slower or more rapid as the case may be and therefore increases the certainty of the automatic action of the lamp in extinguishing itself at the proper time.

What I claim is:

1. In an electric arc lamp, a movable elec-

trode, a second electrode, means whereby the second electrode is supported by the one first mentioned, adapted to permit feeding movement of the latter relative to the second electrode, and a detaining means for the second electrode, mounted in the path of movement thereof in position to restrain its movement with the first mentioned electrode before the cessation of feeding movement of the latter.

2. In an electric arc lamp, a movable electrode, a second electrode, means whereby the second electrode is supported by the one first mentioned, adapted to permit feeding movement of the latter relative to the second electrode, and a detaining element for the second electrode, adjustably mounted in the path of movement thereof to restrain its movement with the first mentioned electrode before the cessation of the feeding movement of the latter.

3. In an electric arc lamp, a first electrode and a second electrode arranged for feeding movement in substantially the same direction, a support for the first electrode, means for connecting the electrodes with each other, adapted to support the second electrode from the first electrode for movement simultaneously and to permit the first electrode to move relatively to the second electrode when movement of the latter is restrained, said means comprising interengaging elements respectively extending from the electrodes and loosely engaging with each other, the element from the second electrode being supported by the element from the first electrode, and means for restraining movement of the second electrode at a predetermined time.

4. In an electric arc lamp, a first electrode and a second electrode arranged for feeding movement in substantially the same direction, a support for the first electrode, means for connecting the electrodes with each other, adapted to support the second electrode from the first electrode for movement simultaneously and to permit the first electrode to move relatively to the second electrode when movement of the latter is restrained, said means comprising interengaging elements respectively extending from the electrodes and loosely engaging with each other, the element from the second electrode being supported by the element from the first electrode, a graduated member, a projection from the second electrode, and a stop adjustably mounted on said member, in the path of said projection and acting thereon to restrain movement of the second electrode.

5. In an electric arc lamp, a first and a second electrode, movable in substantially the same direction, holding members at one end of each thereof, a supporting means at the arcing end of the first electrode, means

carried by the holding members for connecting the electrodes for simultaneous movement, said means being adapted to support the second electrode from the first electrode and to be disconnected from each other by restraining the movement of the second electrode and to permit the first electrode then to move relatively to the other, and adjustable means for restraining the movement of the second electrode at a predetermined time.

6. In an electric arc lamp, a first and a second electrode movable in substantially the same direction, holding members at one end of each thereof, a supporting means at the arcing end of the first electrode, means carried by the holding members for connecting the electrodes for simultaneous movement, comprising means extending from the holding members respectively and so related to each other that the means of the holding member of the second electrode will be supported by the means of the holding member of the first electrode and will be disconnected from the latter by restraining the movement of the second electrode, a projection from the holder of the latter electrode, and adjustable means arranged in the path of said projection for restraining the movement of the second electrode at a predetermined time.

7. In an arc lamp, whose electrodes are movable in substantially the same direction, holding members respectively connected to the electrodes, and provided with interengaging elements adapted to support one electrode from the other for movement simultaneously and to be disconnected from each other when the movement of the supported electrode is restrained before movement of the other electrode ceases, the latter electrode being movable relatively to the other, and means for restraining movement of the supported electrode.

8. In an arc lamp, whose electrodes are movable in substantially the same direction,

holding members respectively connected to the electrodes, and provided with interengaging elements adapted to support one electrode from the other for movement simultaneously and to be disconnected from each other when the movement of the supported electrode is restrained before movement of the other electrode ceases, the latter electrode being movable relatively to the other, a projection from the supported electrode, a graduated member, and a stop adjustably mounted on the graduated member in the path of said projection.

9. In an arc lamp, an electrode, a support therefor arranged at the arcing end thereof, a second electrode mounted to have movement into and out of substantially parallel relation with the first electrode, a holder for the second electrode having a projection, a swinging member slidably engaged by said projection, a stop adjustably mounted on said member in the path of movement of said projection, for restraining movement of the second electrode, a holder for the first-mentioned electrode, guiding means with which the same is slidably engaged, and means for supporting the second electrode from the first-mentioned electrode adapted to permit feeding movement of the first-mentioned electrode relatively to the second electrode when feeding movement of the latter has been restrained, comprising an element extending laterally with relation to the holder of the first-mentioned electrode and an element connected with the holder of the second electrode and resting upon said laterally extending element and movable with relation thereto.

Witness my hand this 18th day of June 1908, at New York, N. Y.

JOSEF H. HALLBERG.

Witnesses:

WILLIAM R. BAIRD,

ALAN C. McDONNELL.