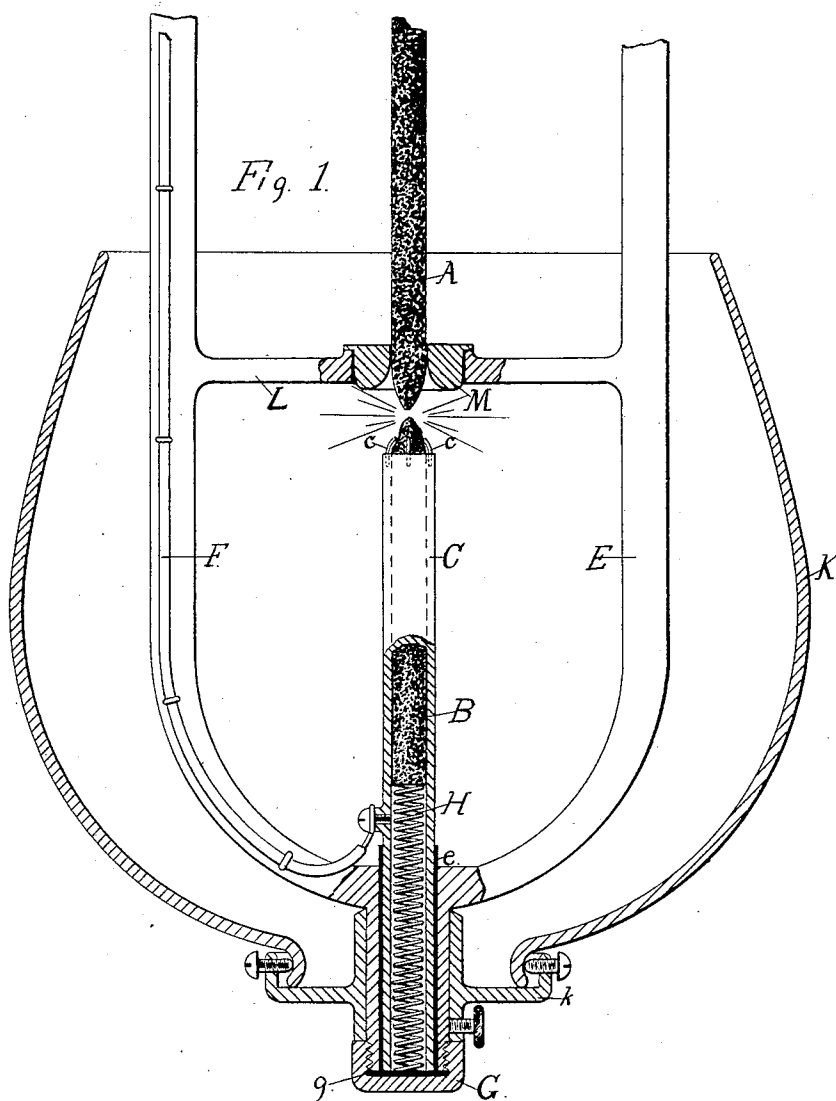


(No Model.)

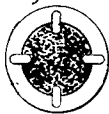
D. HIGHAM.  
ELECTRIC ARC LAMP.

No. 562,609.

Patented June 23, 1896.



*Fig. 2*



WITNESSES:

*Geo. C. Abby*  
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INVENTOR

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BY

*Horton and Horton*  
ATTORNEYS

# UNITED STATES PATENT OFFICE.

DANIEL HIGHAM, OF BOSTON, MASSACHUSETTS.

## ELECTRIC-ARC LAMP.

SPECIFICATION forming part of Letters Patent No. 562,609, dated June 23, 1896.

Application filed March 31, 1896. Serial No. 585,607. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL HIGHAM, a citizen of the United States, and a resident of Boston, Suffolk county, Massachusetts, have invented Improvements in Electric - Arc Lamps, of which the following is a specification.

This invention relates to electric-arc lamps, and has for its object to provide means whereby the life or burning hours of an arc-lamp can be increased without reducing its light-giving efficiency or without interfering with the proper distribution of light in the lamp-globe, as more fully described hereinafter.

One way in which the carbon life in an arc-lamp has been greatly prolonged has been by inclosing the arc in a nearly air-tight glass bulb or globe, but this, as is well known, greatly reduces the light-giving efficiency in comparison with an arc-lamp having its carbon points burning in the open air. Another means known to the art for increasing the carbon life in an arc-lamp is to place immediately over the arc a sort of hood having a hole in its center for the upper carbon to pass through and controlled by suitable means to lower the same as the lower carbon burns away in order that the hood shall be continually held immediately over the arc; but in this case, although the light-giving efficiency is not noticeably reduced, the hood casts a heavy shadow in the upper part of the globe, which at the later burning hours of the lamp causes all the light to be in the very bottom of the lamp-globe, and thereby interferes with the proper distribution of light.

It is the object of this invention, however, to make use of the second-described means of increasing the carbon life in an arc-lamp and to overcome the objectionable feature of having to lower the hood down in the globe with the burning away of the lower carbon and the consequent improper distribution of light, by fixing the hood stationary to the lamp-frame and provide means for feeding up the lower carbon in exact relation to the hood, as will be best understood from the accompanying drawings, in which—

Figure 1 represents the globe and lower portion of the lamp-frame of an ordinary arc-lamp having my invention applied thereto,

while Fig. 2 shows in plan view, drawn to a larger scale, the lower carbon and its holder.

In Fig. 1, A is the upper carbon to be controlled by suitable feeding mechanism in the usual manner. E is the lower portion of the lamp-frame, forming part of which is a bridge L, supporting a hood M, shown in cross-section. This hood is intended in the present instance to be of porcelain or other insulating material capable of withstanding a high degree of heat, and encircles and fits closely around the upper carbon immediately above the arc. Fixed to frame E is a tube C, electrically insulated from the frame by an insulation *e*. An insulated conductor F connects the tube C to the negative terminal of the lamp in the usual manner of forming the circuit to the lower carbon. B is the lower or negative carbon, which is free to move in the tube C, but is prevented from passing upward and out through the same by teats or holding-fingers *c*, driven in or otherwise secured to or formed on the tube C, as shown in the drawings. These teats should be of platinum or other suitable material capable of withstanding a high degree of heat and should project slightly inward over the edge of the lower carbon point, as shown in Figs. 1 and 2.

H is a spring compressed for tension to push the lower or negative carbon B upward against the holding-fingers *c*, and is held in compression by a cap G, electrically insulated from the spring H by an insulation *g*. The lower carbon can be removed when necessary by taking off cap G and withdrawing the spring H. The lamp-globe K is held by a suitable holder *k*.

The operation of my invention will, of course, be apparent, for it will be seen that as fast as the lower carbon burns away at the point the spring H will push the same up against the holding-fingers *c*, and thereby cause the arc to maintain an exact relation to hood M and continually give a proper distribution of light in the lamp-globe, inasmuch as the hood M will remain stationary with the lamp-frame. From actual trial runs I have found this means to work very satisfactorily and to increase the carbon life about double that of a purely open-air arc-lamp and to give equally as good a light-giving efficiency.

I am aware that an arc-lamp has been provided with a chamber around the carbon points, with openings up through and out of the top of the chamber, and that an arc-lamp  
5 has been provided with a covering above the arc but with a hole in its center large enough for the upper carbon to pass through without contact. Such devices, although perhaps useful for the purposes for which they were intended, would have little carbon-saving qualities, since the gas formed by the arc would  
10 readily pass up through and out of such openings and leave the arc surrounded by oxygen.

In my lamp the hood closely fits the upper  
15 carbon and is without openings leading from the arc up through and out of its top, and it is to define such a construction that I use the term "closed hood" in my claim.

I claim as my invention—

An electric-arc lamp provided with a frame 20 and an upper carbon adapted to be fed down by suitable means, in combination with a closed hood fixed stationary with the lamp-frame, said hood closely fitting and encircling the upper carbon immediately above the arc, 25 and means for feeding up the lower carbon in proper relation to said hood, substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification in the presence of 30 two subscribing witnesses.

DANIEL HIGHAM.

Witnesses:

A. N. BONNEY,  
C. G. GRAYDON.