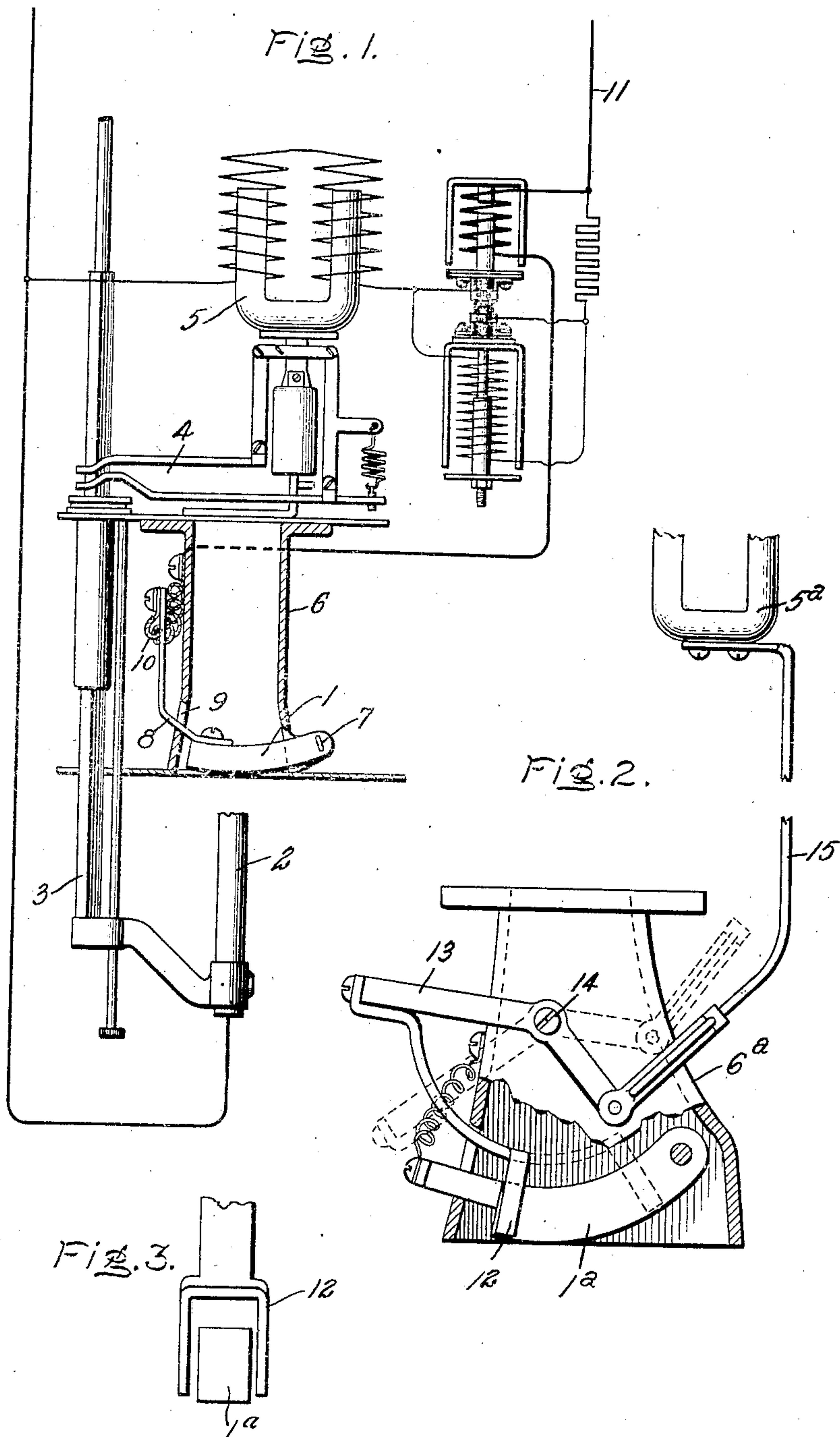


C. A. B. HALVORSON, JR.
 ARC LAMP.
 APPLICATION FILED OCT. 31, 1906.

905,514.

Patented Dec. 1, 1908.



WITNESSES:
George A. Thorne
Walter O. Ford

INVENTOR:
 Cromwell A. B. Halvorson Jr.,
 By *Albert B. Davis*
 Att'y.

UNITED STATES PATENT OFFICE.

CROMWELL A. B. HALVORSON, JR., OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ARC-LAMP.

No. 905,514.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed October 31, 1906. Serial No. 341,409.

To all whom it may concern:

Be it known that I, CROMWELL A. B. HALVORSON, Jr., a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Arc-Lamps, of which the following is a specification.

My invention relates to electric lamps of the type employing electrodes of such a character that a flaming or luminous arc is obtained.

It is customary to use a non-consuming positive electrode made of copper or some other good conductor of electricity and heat. As the negative electrode is consumed fumes are given off and these condense more or less on the positive electrode, forming thereon an objectionable coating which, if not removed, interferes with the successful operation of the lamp.

The present invention contemplates means for preventing the formation of any considerable coating by periodically removing such material as may be deposited upon the electrode.

To this end my invention comprises a novel construction and arrangement of parts to be hereinafter particularly pointed out in the claims. For a full understanding of my invention, however, and of its objects and advantages reference may be had to the following detailed description taken in connection with the accompanying drawing.

In said drawing, Figure 1 shows conventionally a lamp and the circuit connections thereto, the positive electrode being pivotally supported in accordance with one modification of my invention; Fig. 2 is a side elevation of a chimney within which a positive electrode is supported, together with an auxiliary cleaning device for said electrode, a portion of the wall of the chimney being broken away to more clearly show the electrode and cleaning device; and Fig. 3 is an end view of the electrode and a portion of the cleaning device shown in Fig. 2.

The lamp shown in Fig. 1 of the drawing is, with the exception of the positive electrode, identical with that disclosed in an application, Serial No. 296,304, filed by Richard Fleming and myself on the 16th day of January, 1906; but it will, of course, be understood that my invention is applicable to any form of luminous arc lamp and

is not confined to the particular lamp illustrated.

Referring to the drawing, 1 and 2 are the positive and negative electrodes, respectively. The electrode 2 is of any usual kind supported upon a rod or tube 3 and being fed in the usual manner by clutch mechanism 4 controlled by an electromagnet 5. All these parts, with the exception of the positive electrode, may take any usual forms and need therefore not be described in detail.

6 is a chimney arranged in line with and above the negative electrode and is adapted to carry away the fumes.

According to my invention the positive electrode 1 is pivoted to the chimney so that when the negative electrode is brought up against it in starting or in feeding, the positive electrode is oscillated through a limited distance and any material which may have been deposited thereon is dislodged. The form of the positive electrode and the manner of movably supporting it in the path of the negative electrode may be varied, but the electrode may conveniently consist of a bar extending transversely of the chimney and pivoted at one end, as at 7, to some part of the chimney. The free end of the electrode, or a part 8 secured thereto, may extend through an elongated slot 9 in the opposite wall of the chimney, whereby the electrode, while supported at both ends after the arc is struck, is free to swing through a limited angle determined by the length of the slot. The member 8 may conveniently serve as the terminal to which a lead 10, connected to the positive side of the line 11, is secured. This lead may be in electrical engagement with the chimney so that current may also flow to the positive electrode through the chimney and the pivot upon which the electrode is supported. It will be seen that whenever the lower electrode is raised, the positive electrode will be swung about its pivot and the member 8 caused to strike against the upper end of the slot. When the negative electrode is again lowered to the operative position, the positive electrode drops until the member 8 strikes the lower wall of the slot and the electrode then remains in that position until the next feeding operation takes place. The jarring of the electrode produced by this succession of blows causes

any deposit to be loosened and to drop away.

In Fig. 2 there is shown a further modification wherein the jarring action upon the positive electrode is assisted by a mechanical scraping device. The electrode 1^a may be similar to the electrode 1, being pivoted at one side of the chimney 6^a. 12 is a fork which embraces the electrode 1^a; this fork being supported upon one end of a bell crank lever 13 pivoted to the chimney at 14, and being adapted, when the lever is rocked from the position shown in full lines to the position shown in dotted lines, to scrape along the sides of the electrode and remove therefrom any foreign substance which may have collected thereon. The bell crank lever may be operated in any suitable manner; the operation being conveniently effected by means of a rod 15 connected to the core 5^a of the main regulating magnet, so that, whenever the lamp is started or the lower electrode is fed, the scraper is operated across the electrode in the manner described.

While I have illustrated and described in detail the best forms of my invention known to me, it will be evident that the cleaning of the positive electrode may be carried out in various ways and that therefore my invention, in its broadest aspects, is not limited to the particular construction and arrangement of parts shown.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. In an arc lamp, a pendulously support-

ed electrode, stops in the path of the oscillatory movements of that electrode, a second electrode, and means for operating the latter electrode to strike the first named electrode to oscillate the same between and into forcible contact with the stops.

2. In an arc lamp, a pendulously supported positive electrode and a negative electrode, means for actuating the latter to oscillate the former, a scraper, and means for moving said scraper across the surface of the positive electrode while the same oscillates.

3. In an arc lamp, positive and negative electrodes, a scraper, an electromagnet for actuating the negative electrode to strike and oscillate the positive electrode, and a connection between said electromagnet and said scraper for causing the latter to move across the surface of the positive electrode when the negative electrode is actuated.

4. In an arc lamp, a positive electrode having a limited movement out of its normal position, a negative electrode, a scraper, and means for operating said negative electrode to cause it to strike the positive electrode and carry it out of its normal position and for moving the scraper across the surface of the positive electrode.

In witness whereof, I have hereunto set my hand this 30th day of October, 1906.

CROMWELL A. B. HALVORSON, JR.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.