

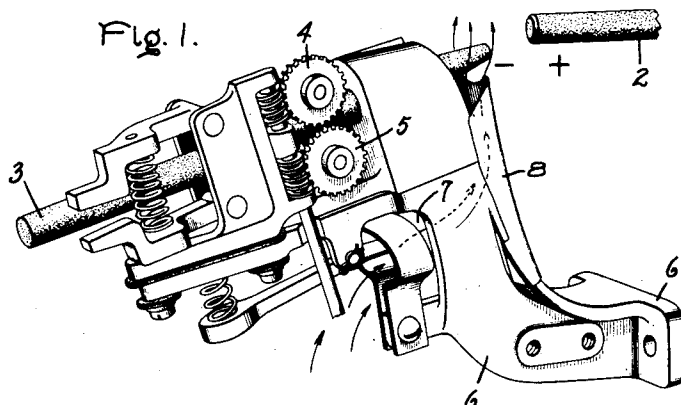
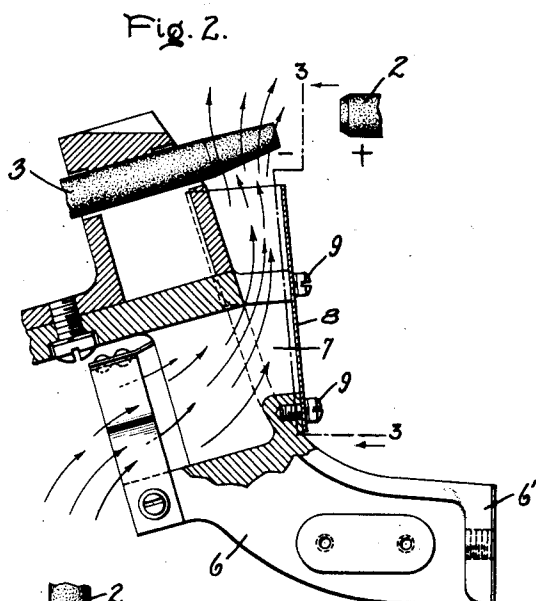
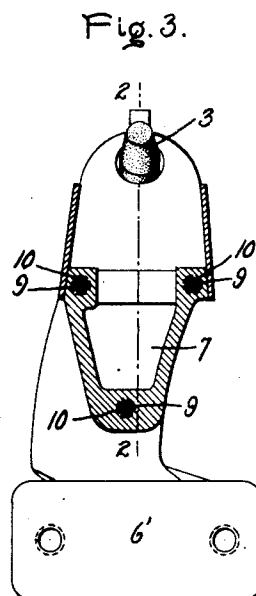
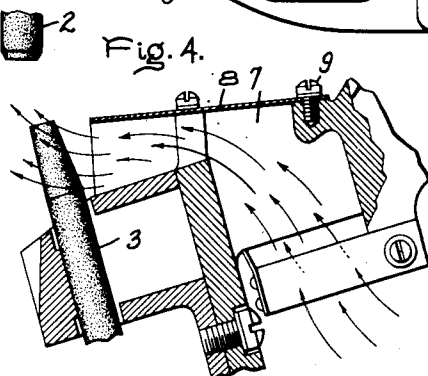
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C. T. CROCKER

1,995,144

ARC LAMP

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UNITED STATES PATENT OFFICE

1,995,144

ARC LAMP

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1 Claim. (Cl. 176—51)

My invention relates to arc lamps. More particularly it relates to arc lamps which are especially adapted for searchlight work, such as, for example, projecting a beam overhead for locating an airship.

Prior to my invention it was found that when a searchlight of the above character was pointing upward at a steep angle, such as, for example, from 45 to 90° with the horizontal, and kept so for a considerable length of time, the beam no longer remained constant, but periodically fluctuated, causing a very serious and substantial variation in the intensity of the beam. These fluctuations were found to recur sometimes at short intervals of a minute more or less and sometimes at intervals from one-quarter to one-half hour, and of even longer duration.

While during normal operation of the lamp one end of the arc is confined more or less to the end of the positive electrode, I have observed that during the fluctuations mentioned a change takes place in the arc during which the arc is no longer confined to the terminal of the positive electrode but has a tendency to spread back of the positive terminal, under it and toward the head of the positive electrode holder. This operation is sometimes referred to as "under-burning". I have also observed that at such time the shape of the terminal section of the negative electrode is no longer normal, but has become distorted with respect to the axis of the negative electrode. For example, the negative electrode sometimes forms a heel considerably below the axis of the electrode from which the streams of the under-burning arc appear to emanate toward the under side of the positive electrode. I find that this action of the arc, which seriously interferes with the effectiveness of the searchlight beam, may be overcome by directing a draft of air or other electrode oxidizing gas against the terminal of the negative electrode. I accomplish this, for example, by mounting the negative electrode over a draft-producing structure.

It is an object of my invention to provide means such as above indicated for preventing under-burning, for maintaining the normal operation of an arc lamp under any inclination of the axis of the searchlight beam whether it be horizontal or whether the inclination be as high as 90° with respect to the horizontal, and for maintaining the negative electrode terminal substantially symmetrical in shape with respect to the axis of the electrode.

The features of my invention will be better understood from the following specification and

claim, reference being had to the accompanying sheet of drawing in which Fig. 1 shows in perspective the positive and negative electrodes of an arc lamp in normal condition and operating relation, the lamp being in position for a horizontal beam. In this figure the negative electrode is shown secured to its support or holding structure, which structure embodies the feature of the invention. Fig. 2 shows the same electrodes and supporting structure as Fig. 1 in the same position, the drawing being shown in elevation and partly in section, the section being taken along an axial plane of the negative electrode, that is, along a plane through line 2—2, Fig. 3. Fig. 3 shows the negative electrode, its supporting structure and a portion of the flue in front elevation and partly in section, the section being taken along the line 3—3, Fig. 2. Fig. 4 is a drawing similar to that of Fig. 2 with the lamp in position for projecting a vertical beam.

Referring more in detail to the drawing, the positive and negative electrodes 2 and 3 respectively are represented in the various figures as being in their normal condition and relation. It will be understood, however, that the reflecting means, the drum and the tilting mechanism for raising and lowering the beam along a vertical plane are not shown, such means being of any suitable well known type. In the drawing, the positive head for holding the positive electrode 2 has not been shown. It will be understood that any suitable form of head in common use is contemplated. The negative electrode is shown held by the usual feed mechanism comprising the feed rollers 4 and 5. The feed mechanism is supported by the arm 6, which latter may be secured in any suitable manner to the frame of the arc lamp. For this purpose the perforated flange 6' is provided. This arm is provided with a cavity in the form of a channel 7, which channel extends behind the plate 8 and along the front of the arm 6 toward the negative electrode. The plate 8 may be secured to the frame of the support in any suitable manner, such as, for example, by means of bolts 9 which engage the threaded holes 10. With this arrangement it will be seen that a draft conducting means or flue is provided from the under side of the arm 6 up to or in proximity of the forward terminal of the negative electrode. A draft, therefore, will flow from the under side of the support through the channel 7, which draft is indicated by the group of arrows, Figs. 2 and 4. This draft bathes the terminal section of the negative electrode next to the arc.

The type of arc lamp indicated in the draw-

ing is that known as the high intensity arc lamp. in which the electrodes are usually arranged at an angle with respect to each other. In this type of lamp, one type of which is shown in U. S. Patent 1,086,311, the arc usually produces a tail which extends upwardly from the terminal of the positive electrode. The draft, therefore, when it strikes the negative electrode bathes the terminal section of the negative electrode and after crossing the axis of the positive electrode merges with the tail of the arc.

It will be understood that while I have elected to illustrate my invention in connection with a specific form of apparatus illustrated in the drawing, I do not wish to be so limited inasmuch as I contemplate modifications and variations within the spirit of the invention and scope of the claim contained herein.

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

In an arc lamp, the combination of a negative carbon, a support therefor which is adjustable to hold said carbon in a substantially horizontal or a substantially vertical position, means for directing a stream of air against the operating end of said carbon comprising a draft flue attached to said support having its discharge end directly adjacent the operating end of said negative carbon and having its intake end below said support and in back of said operating end whereby the intake end of said flue is below said discharge end at both the horizontal and the vertical positions of said carbon.

CLARENCE T. CROCKER.