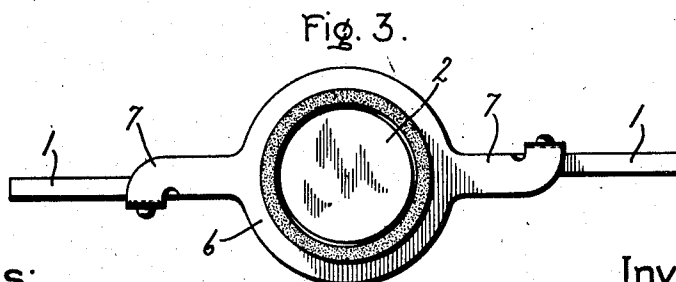
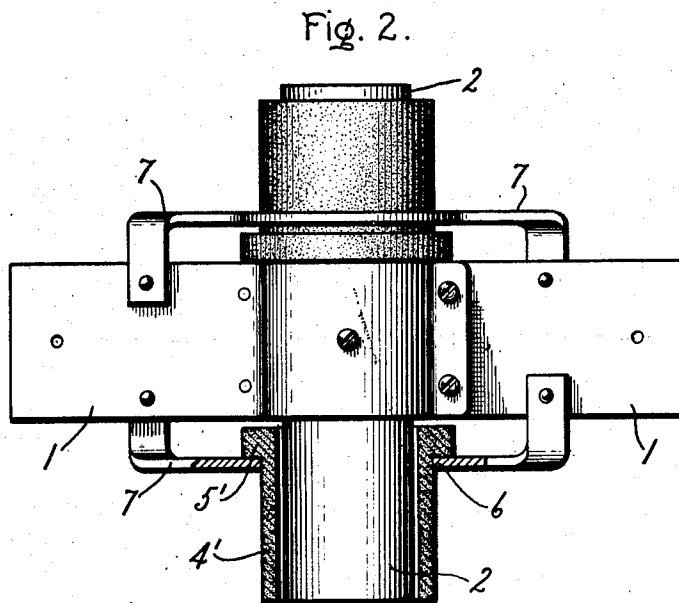
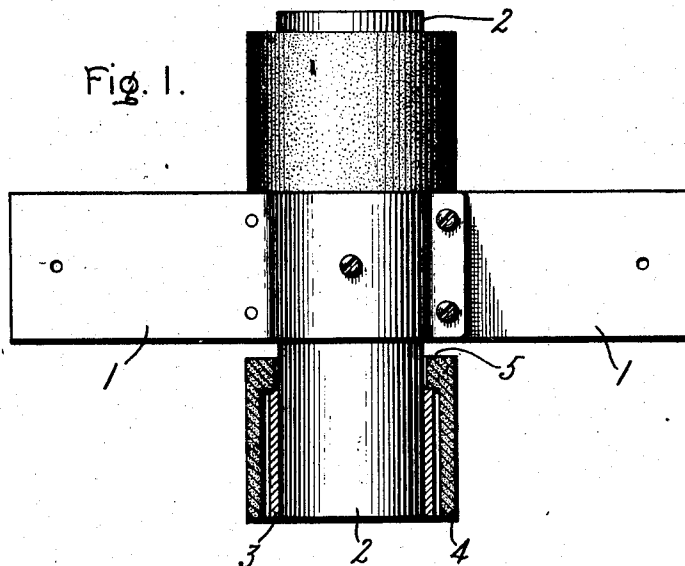


E. WEINTRAUB.
NON-CONSUMING ARC LAMP ELECTRODE.
APPLICATION FILED JUNE 16, 1910.

1,027,162.

Patented May 21, 1912.



Witnesses:
Earl S. Klock.
J. Ellis Klock

Inventor:
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by *Albert S. Davis*
His Attorney.

UNITED STATES PATENT OFFICE.

EZECHIEL WEINTRAUB, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

NON-CONSUMING ARC-LAMP ELECTRODE.

1,027,162.

Specification of Letters Patent.

Patented May 21, 1912.

Application filed June 16, 1910. Serial No. 567,120.

To all whom it may concern:

Be it known that I, EZECHIEL WEINTRAUB, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Non-Consuming Arc-Lamp Electrodes, of which the following is a specification.

My invention relates to arc lamp electrodes particularly adapted for use as the positive in coöperation with negative electrodes which yield up the necessary materials for producing luminous or flaming arcs.

It has been observed that the restlessness or wandering of the anode spot is aggravated in a flaming or luminous arc by the continual condensation of arc products upon the positive from the negative electrode. In fact this restlessness often becomes so pronounced that the arc, assisted by the natural draft, climbs from the end surface onto the side of the electrode, thus causing an abnormal increase in arc length and arc voltage and thereby resulting in a premature feeding operation. Such restlessness of the anode spot and consequent unsteadiness in arc length and voltage result in undue flickering and variations in the intensity of the light. Moreover, the deposits of arc products upon the positive electrode are in some cases, especially in their cold state, of high resistance and thus impede the starting of the arc.

The object of this invention is to construct an electrode in which these inconveniences are eliminated, which I accomplish by providing an ordinary non-consuming anode with means for confining the arc to the end surface. This means may consist in shielding the inactive surface of the electrode with a non-conducting and highly refractory mantle, such as a sheath of magnesium oxid, aluminum oxid, zirconium oxid, or other like oxids.

In the accompanying drawing my invention is shown as applied to an electrode used as the upper and positive in such a lamp as is described in United States Patent No. 913,209 to C. A. B. Halvorson, Jr., as follows:

Figure 1 is a front view of a double ended non-consuming copper electrode, provided with my improvement, and showing a vertical section through one end of the man-

tle; Fig. 2 is a front view of a modification of a similar electrode; and Fig. 3 is an end view of the electrode shown in Fig. 2.

Referring to the drawings by numerals, 1, 1 represent the ordinary wrought iron lateral supporting wings, secured to each other and to the copper portion 2 of the electrode, by screws, as shown.

In Fig. 1 an iron sleeve shrunk onto the copper rod 2 is shown in section at 3 and an oxid mantle 4 surrounds the body of the copper rod at its upper end, and also surrounds the whole length of the sleeve 3. The oxid sheath or mantle is so wide that a perceptible air space is left between it and the metal part of the electrode, as indicated in the drawing, and it is only held in position by the iron sleeve, upon the upper edge of which it rests with its inwardly projecting flange 5. The space between the metal body of the electrode and oxid sheath or mantle must be quite perceptible in order to allow for the expansion of the metal body under the heat to which it is subjected. If this provision was not made, the oxid sheath would promptly crack and drop away. The oxid sheath or mantle need be only of the required thickness to withstand the mechanical jolts incident to striking the arc, since its function is not to contribute to the arc products of combustion; its thickness is therefore shown small in comparison with the diameter of the electrode. In assembling these parts, the oxid sheath is slipped over the copper rod first, after which the iron sleeve is securely shrunk on.

In the construction shown in Figs. 2 and 3, the iron sleeve is omitted, necessitating some other supporting means for the oxid sheath 4'. This supporting means consists in this case of an iron ring 6 secured by rivets, or in any convenient manner, to the wings 1 by the upwardly bent portions of the outwardly projecting arms 7, as shown. The sheath 4' is formed with an outwardly projecting flange 5' which rests upon the ring 6. Both ends of the copper rod are equally equipped, so that either end may be used. The non-conducting and refractory oxid sheath effectively shields the side surface of the electrode from the arc and the arc deposits. By preference I use the oxid of magnesium (magnesia) in the construction of the sheath, and the latter may be manufactured as follows: Highly cal-

cined, finely ground magnesium oxid is mixed either with an organic binder, such as tar or glucose, or with a magnesium chlorid solution. It is then pressed in a mold into the desired shape, dried at a low temperature, and then fired very slowly by gradually increasing the temperature. The sheath thus obtained may be further heated in an electric furnace until it becomes translucent.

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

1. A non-consuming arc lamp anode provided with a freely surrounding non-conducting sheath, of oxid of magnesium, the ends of said sheath and said electrode being in substantially the same plane.

2. A non-consuming arc lamp anode provided with an annular support therearound, and a non-conducting mantle resting upon said support and freely surrounding the anode.

3. A non-consuming arc lamp anode having an iron sleeve shrunk thereon, and a refractory oxid mantle resting upon the upper end of said sleeve and freely surrounding the anode.

In witness whereof, I have hereunto set my hand this thirteenth day of June, 1910.

EZECHIEL WEINTRAUB.

Witnesses:

JOHN A. McMANUS, Jr.,
CHARLES A. BARNARD.