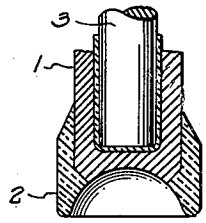
March 27, 1928. 1,664,195

M. CRÉMER

ELECTRIC ARC DEVICE

Filed March 16. 1926



Inventor:
Michel Crémer,
by Alexander S. Lunt.
His Attorney.

Patented Mar. 27, 1928. 1,664,195

UNITED STATES PATENT OFFICE.

MICHEL CRÉMER, OF PARIS, FRANCE, ASSIGNOR TO GENERAL ELECTRIC COMPANY, NEW YORK CORPORATION.

ELECTRIC-ARC DEVICE.

Application filed March 16, 1926, Serial No. 95,163, and in France August 29, 1925.

My invention relates to electric arc devices comprising a plurality of electrodes, and has for its principal object the provision of an improved construction and method of operation whereby the formation of undesirable arcs between the electrodes of such a device is avoided.

In the operation of an arc device, such as the mercury arc rectifier, difficulty is frequently encountered due to reverse arcs between the cathode and an anode, or to arcs between anodes charged to different potentials. These arcs are largely due to the emission of electrons from an anode charged to a negative potential. It has been proposed to prevent their formation by controlling the pressure or temperature of the medium surrounding the anode and by the use of auxiliary electrodes, grids, sheaths, or the like. In accordance with my invention, these undesirable arcs are avoided by protecting the hotter portions of the electrode from the mercury condensed above them.

My invention will be better understood from the following description when considered in connection with the accompanying drawing and its scope will be pointed out in the appended claims.

Referring to the drawing, the figure shows an electrode provided with an insulation shield around the edge of its active surface.

With the anodes located above the cathode as in the usual construction of the mercury rectifier, it is necessary to provide means for preventing the accumulation of condensed mercury drops or globules on the active surface of the anode. It has been proposed to make the active surface of the anode of a concave form to facilitate the removal of the condensed mercury drops or globules from this surface. It may happen, however, that the drops of mercury slip on to the edge of the anode and that this edge may be sufficiently hot to vaporize them and facilitate the production electrons by which a destructive arc is started. As indicated by the drawing, this difficulty may be avoided by the provision of an insulation member 2 around the lower edge of the electrode 1. This insulation member may be made of any suitable material such as quartz, or the like. With this construction the drops of mercury slip onto the insulated portion of the anode and the danger of reverse arcs to the anodes is greatly reduced.

It should be noted that either the electrode 1 may be provided with a core 3 which may be solid as illustrated or may be a liquid utilized to control the anode temperature.

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

1. An electrode comprising an inner conductive member, an outer conductive member provided with an active surface, and an insulation member arranged to form a border about said surface.

2. An electrode comprising a conductive member having an active surface, and a border of insulation about said surface, said surface and said border being arranged to form a spherical cavity at the end of said electrode.

3. An electrode comprising a conductive member having an active surface of concave form, and a border of quartz about said surface.

In witness whereof, I have hereunto set my hand this 23rd day of February, 1926.

MICHEL CRÉMER.