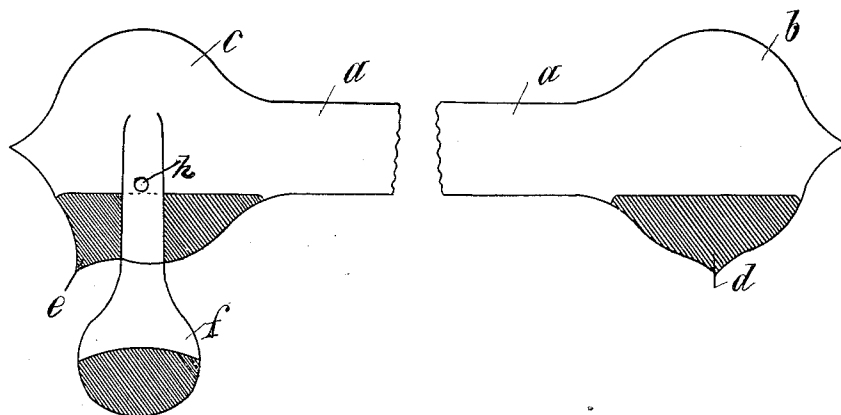


No. 838,280.

PATENTED DEC. 11, 1906.

H. V. SIIM-JENSEN.
MERCURY VAPOR LAMP.

APPLICATION FILED APR. 25, 1905. RENEWED NOV. 14, 1906.



Witnesses:

Waldo G. Chapin
May Bird.

Inventor:

Hans Viggo Siim-Jensen
by
Rorbaum & Seckmeyer atts.

UNITED STATES PATENT OFFICE.

HANS VIGGO SIIM-JENSEN, OF COPENHAGEN, DENMARK.

MERCURY-VAPOR LAMP.

No. 838,280.

Specification of Letters Patent

Patented Dec. 11, 1908.

Application filed April 25, 1905. Renewed November 14, 1908. Serial No. 343,437.

To all whom it may concern:

Be it known that I, HANS VIGGO SIIM-JENSEN, physician, a citizen of the Kingdom of Denmark, residing in Copenhagen, Denmark, have invented certain new and useful Improvements in and Relating to Mercury-Vapor Lamps, of which the following is a specification.

The original method of forming an electric arc between two mercury electrodes inclosed in a vacuum has been to produce by a simple mechanical operation—such as tilting, shaking, or the like—an evanescent metallic connection of mercury between the electrodes, through the subsequent interruption of which the arc is formed.

Where a short arc is concerned, same may be formed easily and securely in the aforesaid manner; but when it is desired to produce arc of a greater length—for instance, one meter or thereabout—the above method is unsatisfactory and cannot be relied upon, as the interruption of the metallic mercury connection established between the electrodes by the mechanical operation takes place too quickly and suddenly, and consequently the arc formed is generally extinguished. This defect may now be remedied in various ways. Thus an inductive resistance may be inserted in the electric conductor in such a manner that by the sudden interruption of the arc an induced current of a high electromotive force is produced which is sufficient to strike the interrupted arc afresh. Advantage may also be taken of the fact that a prolongation of the negative electrode extending close to the positive may exist during the burning of the mercury-lamp without affecting the formation of the arc which travels along the said prolongation of the negative electrode until it reaches that part of same which is farthest from the positive electrode. Consequently it is only necessary to make and again interrupt the connection between the positive electrode and the prolongation of the negative electrode—that is to say, the connection is only interrupted suddenly to strike a short arc—and the arc produced then travels slowly along the prolongation of the negative electrode, which continues to exist during the burning of the lamp. Both the said methods are already known; but a third method may, however, be adopted by taking care that the metallic mercury connection between the electrodes produced by the mechanical operation

is interrupted slowly and that the distance between the electrodes is increased gradually in such a manner as to give the arc time to assume its full length between the receding electrodes, and the particular way in which this may be accomplished is the object of the present invention.

In the annexed drawing is shown, by way of example, one embodiment of the present invention.

a is a glass tube having at each end a receptacle *b* and *c*, filled with mercury surrounding in the ordinary manner the electrodes *d* and *e*. The receptacle *c* has fused into it an auxiliary alembic-shaped glass receiver *f*, the neck *g* of which is open at the top and has a small opening *h* level with the surface of the mercury. The vessel *f* contains a certain amount of mercury. The striking of the arc is accomplished in the following manner: If we imagine the tube *a* standing in an inclined position, with the vessel *f* lowermost, the mercury in the vessel *f* will run out of same when the tube *a* is sufficiently inclined. When next the tube *a* is turned back to its former horizontal position, with the vessel *f* in the position shown in the drawing, the tube *a* will contain sufficient mercury to permit of metallic conducting connection between the electrodes. It will be understood that the mercury flows back to the vessel *f* very slowly through the hole *h*. By means of this slow return the metallic conducting connection between the mercury electrodes is gradually interrupted, and if the current is flowing an arc will be formed at one end of the tube, which will extend very slowly as the mercury recedes. When the mercury has resumed its normal position, the arc will have attained its full length between the electrodes. Consequently there will be no other conducting matter in the space between the electrodes when the lamp is burning than mercurial vapors, and when the lamp is lighted either electrode may form the anode or the cathode.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a mercury-vapor lamp, a tube having receptacles for mercury electrodes, an auxiliary vessel fused into one of said receptacles, said auxiliary vessel being open at the top and adapted to contain a certain amount of mercury and having a hole in its neck portion, said hole being situated at the level of the

mercury electrode, substantially as described with reference to the accompanying drawings and for the purpose specified.

2. In a mercury-vapor lamp, a tube having
5 receptacles for mercury electrodes, one of said electrodes having an auxiliary vessel or chamber therein from which the mercury is adapted to be displaced when the tube is tilted, and means whereby the mercury reenters said
10 vessel or chamber slowly, whereby it is grad-

ually withdrawn from the tube portion and the arc lengthened slowly, as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HANS VIGGO SIIM-JENSEN.

Witnesses:

CECIL VILHELM SCHON,
F. A. USSING.