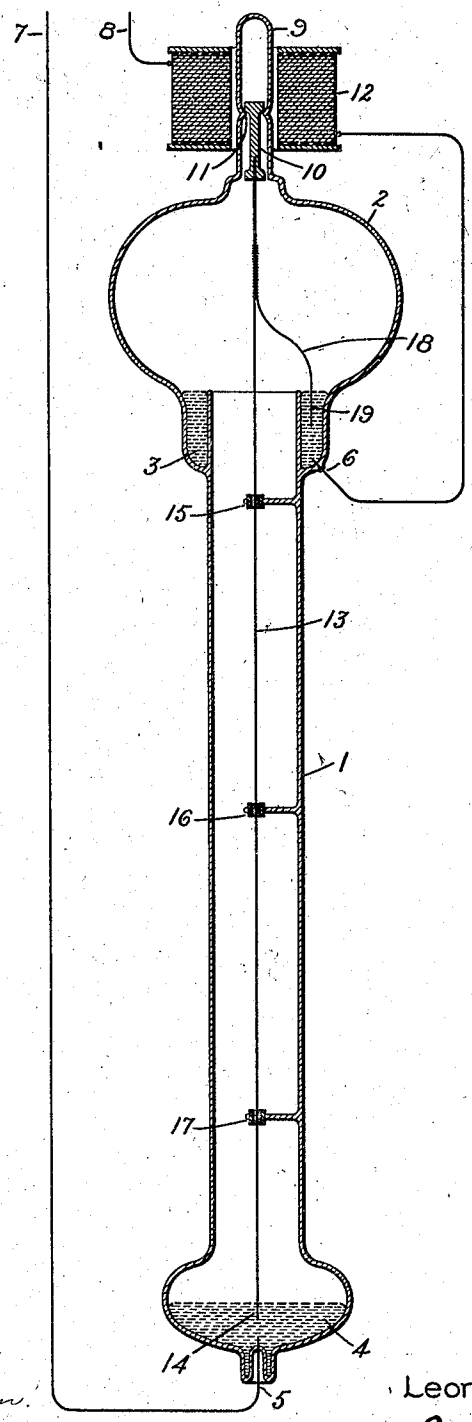
L. E. DEMPSTER.

VAPOR ELECTRIC APPARATUS.

APPLICATION FILED MAR. 19, 1904.

942,378. Patented Dec. 7, 1909.



Witnesses

George W. Tibbetts.

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UNITED STATES PATENT OFFICE.

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VAPOR ELECTRIC APPARATUS.

942,378. Specification of Letters Patent. Patented Dec. 7, 1909.

Application filed March 19, 1904. Serial No. 198,886.

To all whom it may concern:

Be it known that I, LEONARD E. DEMPSTER, a subject of the King of Great Britain, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Vapor Electric Apparatus, of which the following is a specification.

My present invention relates to the starting of vapor electric devices such, for example, as mercury vapor lamps or the like.

The novel features characteristic of my invention are pointed out with particularity in the appended claims.

The invention itself, however, will be made clearer by reference to the following description taken in connection with the accompanying drawings which represent my invention as applied to the starting of a mercury vapor lamp.

In the drawings the highly exhausted envelop or container of the lamp consists of a tube 1 of suitable material such as glass. This tube is of indefinite length and is provided at its upper portion with an enlargement or bulb 2 constituting a condensing chamber. The tube 1 projects into the condensing chamber so as to form an annular recess in which is located a body of mercury 3 constituting one of the electrodes of the lamp. A body of mercury 4 at the lower end of the lamp constitutes the coöperating electrode. Suitable leading-in conductors 5 and 6 are provided for effecting electrical connection with the electrodes and are connected to the supply leads 7 and 8 of the lamp.

A tubular extension of the condensing chamber is provided at 9 and within this extension I locate an armature or core 10 of magnetic material. An inwardly projecting ridge 11 limits the movement of the core 10 in either direction and supports the core when the latter is in its lowest position. A solenoid or magnet coil 12 surrounds the extension 9 and serves, when energized, to lift the core.

A filament 13 of carbon or other suitable material is supported from the core and dips at its lower end 14 into the mercury 4. This filament preferably passes through centralizing guides such as 15, 16 and 17 the inner surfaces of which, if desired, may be bushed with graphite, mica or other suitable material. A laterally and downwardly extending filament 18 is secured to the upper portion of the filament 13 and dips at its lower end 19 into the mercury 3. An electrical connection is thus afforded from the main 8, through the solenoid 12, to the mercury 3, thence through the filaments 18 and 13 to the mercury 4 and to the other main 7. The solenoid 12 being thus energized, the armature 10 is lifted, thus first lifting the lower end 14 of the filament out of the mercury 4, whereupon the main arc starts between the two mercury electrodes, and then lifting the filament 18 out of the mercury 3 thus cutting the two filaments out of circuit. When the lower electrode 4 is to be the negative or cathode, the filament 13 should be separated from the mercury 4 before the filament 18 separates from the mercury 3. The arrangement should be reversed when the upper electrode is made the cathode. Disintegration of that end of the filament last to break connection is thus prevented.

By making the conductor 13 of filamentary form and therefore of small cross section a considerable resistance is secured which has the effect of causing ready transfer of the starting arc from the end of the filament at which the break first occurs, to the mercury anode.

It is evident that numerous changes may be made in the practical embodiment of my invention without departing from the spirit of the invention. I therefore do not wish to be limited to the exact details shown and described, especially since the construction shown is intended merely as an illustration of but one of the many ways in which my invention may be embodied in practice.

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

1. In a vapor electric apparatus, the combination of a plurality of mercury electrodes, a filamentary conductor initially connecting said electrodes, and means for dissimultaneously breaking the connections at the working surfaces of the respective electrodes.

2. In a vapor electric apparatus, the combination of an exhausted envelop or container provided with electrodes, a filament extending from one electrode and making electrical connection with the other, and

means for moving the filament relative to the envelop for breaking the electrical connection at each electrode.

3. In a vapor apparatus, the combination of a container, electrodes therein, a filamentary conductor electrically connecting said electrodes, and means for moving said conductor so as to break the electrical connection at the negative electrode and subsequently to break the electrical connection at the positive electrode.

4. In a vapor apparatus the combination of a container, electrodes therein, a filamentary conductor electrically connecting said electrodes, and electrical means for moving said conductor so as to break the electrical connection at the negative electrode and subsequently to break the electrical connection at the positive electrode.

5. In a vapor electric apparatus, the combination of a container, electrodes therein, a filament electrically connecting said electrodes, a magnetic core attached to said filament, and means for creating a magnetic field for moving said core.

6. The combination with a gas or vapor electric apparatus comprising a conducting gas or vapor, a positive and a negative electrode therefor, of a continuous conductor between the positive and the negative electrode, and automatic means for separating the said conductor from both electrodes, the rupture at the negative electrode taking place prior to that at the positive.

In witness whereof, I have hereunto set my hand this 18th day of March, 1904.

LEONARD ERNEST DEMPSTER.

Witnesses:

BENJAMIN B. HULL,

HELEN ORFORD.