No. 821,470. PATENTED MAY 22, 1906.

J. T. H. DEMPSTER.

ELECTRIC LAMP.

APPLICATION FILED DEC. 19, 1903.

Fig. 1.

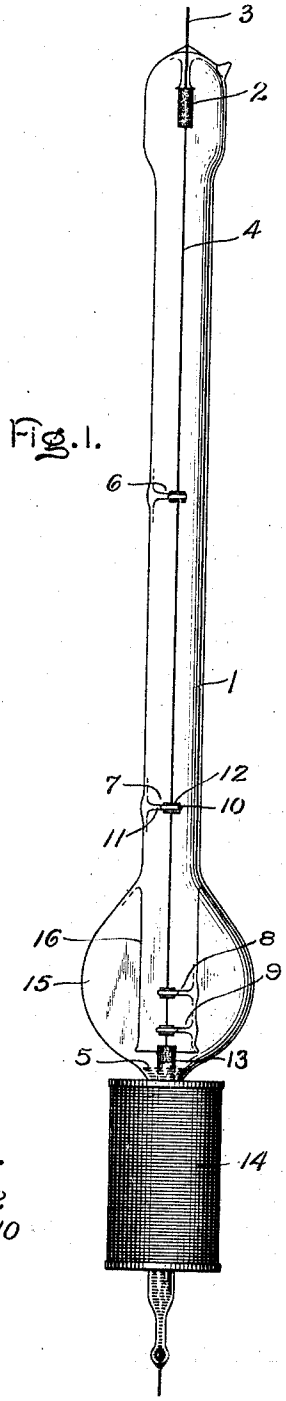
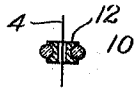


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN T. H. DEMPSTER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC LAMP.

No. 821,470. Specification of Letters Patent. Patented May 22, 1906.

Application filed December 19, 1903. Serial No. 185,770.

To all whom it may concern:

Be it known that I, JOHN T. H. DEMPSTER, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Electric Lamps, of which the following is a specification.

My invention relates to electric lamps, and more especially to the supports or anchoring devices for filaments used in such lamps.

My invention is intended more particularly for use with mercury-vapor lamps of that type in which a carbon or similar filament is used for starting purposes; but it is to be understood that my invention is also applicable to other types of lamps.

It has heretofore been customary to anchor the starting-filaments of mercury-vapor lamps of the type described by means of a small glass ring encircling the filament and carried integrally by a post extending from the wall of the lamp. Under ordinary conditions of starting lamps the filament does not become heated even to a red heat. It occasionally happens, however, for one reason or another, that the lamp fails to start, whereupon the filament is heated to a more or less high degree of incandescence. Under these circumstances the filament may stick to the glass anchoring devices and upon cooling contract and snap apart. I have found that this difficulty may be avoided by providing the anchoring devices with bushings of some material which will not stick to the filament when the latter is heated. For this purpose I prefer to make use of bushings of carbon, graphite, or the like.

The novel features which characterize my invention I have pointed out with particularity in the appended claims. The invention itself, however, will be made clear by reference to the following description when taken in connection with the accompanying drawings, in which—

Figure 1 shows my invention applied, by way of illustration, to a mercury-vapor lamp; and Fig. 2 is a detail view, on a slightly-enlarged scale, of a bushing arranged according to my invention.

The mercury-vapor lamp shown in the drawings comprises a glass containing vessel or tube 1, having electrodes at either end. The electrode at the top of the tube comprises a cylindrical tube 2, of carbon, secured by a suitable leading-in conductor 3. From this electrode depends a filament 4, of carbon, which extends the whole length of the tube and into close proximity to the lower electrode 5. Anchoring devices 6, 7, 8, and 9 are located at suitable intervals in the tube and hold the filament in a central position. Each anchoring device consists of a ring, such as 10, carried by a post or projection 11, fused into the side of the tube 1. The ring portion of the anchoring device is provided with a bushing 12, which may be of carbon, graphite, or other similar material. The construction and location of the bushing will be made clear by reference to Fig. 2, which is a sectional view, on an enlarged scale, of a bushing and its ring-support. The bushing (represented at 12) is put in place in the ring after the latter is softened by heat. The glass ring while thus soft is pressed into position in the groove in the bushing 11 and when it becomes cool holds the bushing firmly in place. A central opening in the bushing permits the free passage of the filament 4.

The lamp to which my invention is applied is started by producing a starting-arc at the lower end of the filament 4. This result is secured by means of a magnetically-actuated plunger, the upper end of which is indicated at 13. This plunger is magnetically controlled by means of the solenoid 14, which is in series with the lamp. When this solenoid is not energized, the plunger floats in the body of mercury 5, so that the upper portion thereof projects into the position shown. The upper end of the plunger is hollowed out, so that when the plunger comes to the surface after being submerged it dips up a certain amount of mercury and brings the mercury thus dipped up into contact with the lower end of the filament 4. When current is turned on to the lamp, the solenoid 14 draws down the plunger until it is submerged in the mercury 5. In performing this operation the engagement between the lower end of filament 4 and the mercury carried by the plunger is broken, thereby causing current to flow between the parts as an arc. This arc extends upward along the filament 4 to the upper electrode 2, and thus puts the lamp into normal operation.

The bulb 15 at the lower end of the lamp serves as a condensing-chamber for the mer-

cury-vapor. The main tube 1 extends downward through this chamber, as indicated at 16, and into close proximity to the mercury-electrode 5. The open lower end of this projection 16 receives the arc-discharge and prevents the same from straying about in the condensing-chamber.

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

1. The combination of an exhausted envelop, a filament therein, and an anchoring device for the filament consisting of a support and a bushing carried by the support and loosely surrounding the filament.

2. The combination of an exhausted envelop, a filament therein, and an anchoring device for the filament consisting of a support and a carbon bushing carried by the support and loosely surrounding the filament.

3. The combination of an exhausted envelop, a filament therein, and an anchoring device for the filament consisting of a support and a bushing carried by the support and loosely surrounding the filament, said bushing being of the same material as the filament.

4. The combination of an exhausted envelop, a filament therein, and an anchoring device for the filament consisting of a support and a refractory bushing carried by the support and loosely surrounding the filament.

5. The combination of a filament, and a plurality of anchoring devices therefor, each having an engaging surface of carbon loosely embracing said filament.

6. The combination of an exhausted envelop, a filament therein, and a plurality of anchoring devices for the filament located at points along the filament, each anchoring device consisting of a support carrying a bushing loosely engaging said filament.

In witness whereof I have hereunto set my hand this 15th day of December, 1903.

JOHN T. H. DEMPSTER.

Witnesses:

BENJAMIN B. HULL,

HELEN ORFORD.