

(No Model.)

H. J. MÜLLER.

ELECTRIC INCANDESCENT LAMP.

No. 260,600.

Patented July 4, 1882.

Fig. 1

Fig. 2

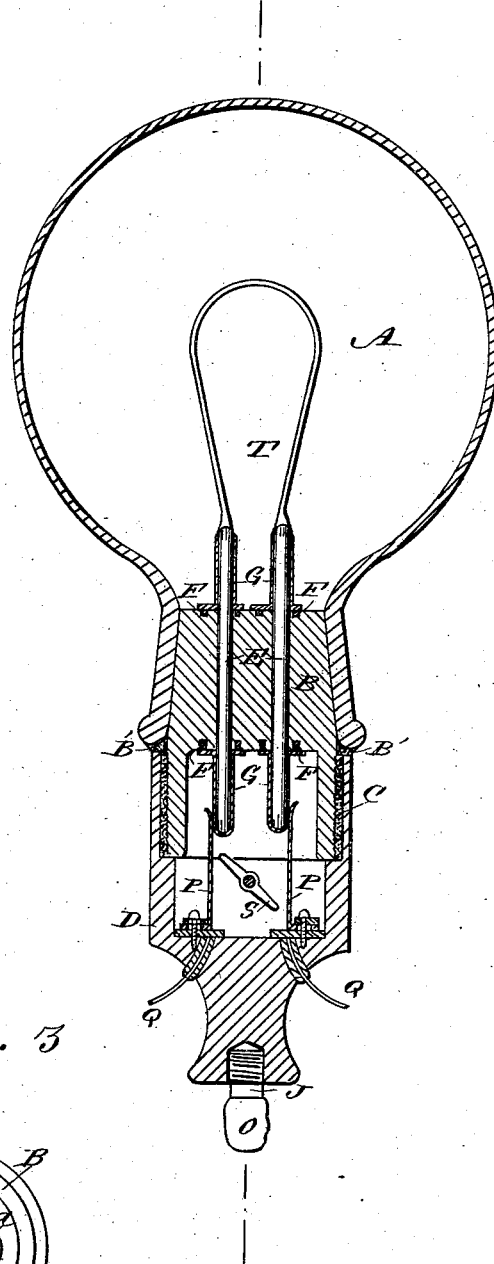
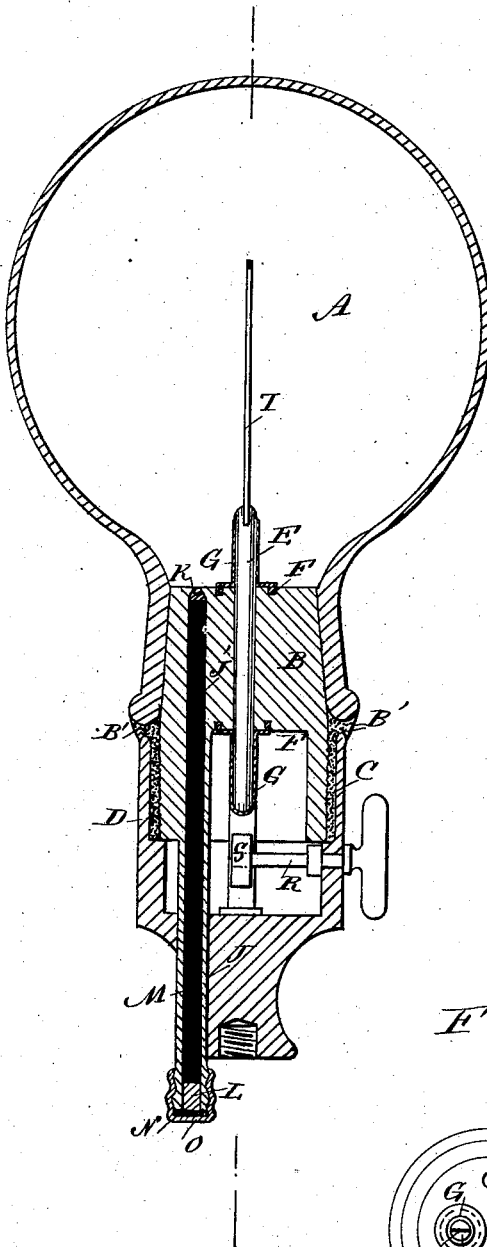
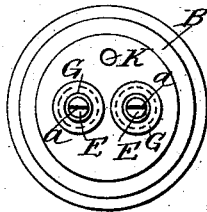


Fig. 3



WITNESSES:

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UNITED STATES PATENT OFFICE.

HANS J. MÜLLER, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND
ALEXANDER LEVETT, OF SAME PLACE.

ELECTRIC INCANDESCENT LAMP.

SPECIFICATION forming part of Letters Patent No. 260,600, dated July 4, 1882.

Application filed April 11, 1882. (No model.)

To all whom it may concern:

Be it known that I, HANS J. MÜLLER, of the city, county, and State of New York, have invented a new and Improved Electric Incandescent Lamp, of which the following is a full, clear, and exact description.

This invention relates to that class of electric lamps in which the light is produced by means of an incandescent carbon filament in a vacuum.

The object of my invention is to permit replacing the carbon filament in the lamp without breaking or rendering useless any parts of the lamp, and to prevent access of air through the joints between the plug and the conductors, passing through them to the carbon filaments.

The invention consists in an electric lamp constructed with carbon conductors passing through the plug into the bulb or globe of the lamp.

The invention further consists in metal rings embedded in the ends of the plug, and in a layer of precipitated metal around the projecting ends of the carbons and the metal rings for the purpose of strengthening the carbons.

The invention further consists in the combination, with the plug and the carbon conductors, of contact-springs in the base of the lamp, and a key for pressing these contact-springs from the carbon conductors.

The invention also consists in a seal-tube projecting downward from the plug, which tube is provided at the ends with rubber or gutta-percha stoppers and has the space between these stoppers filled with mercury.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a cross-sectional elevation of my improved electric lamp. Fig. 2 is a longitudinal sectional elevation of the same. Fig. 3 is a plan view of the plug, showing the globe removed.

The glass globe or bulb A is provided with a flaring strengthened neck, A', which fits very tightly on a beveled glass stopper or plug, B, which is secured air-tight by means of some suitable packing material, C, in a hollow base,

D, adapted to be screwed on or otherwise attached to a bracket or chandelier-arm or on some other suitable object. The plug B and the neck A' of the bulb or globe A are ground in, so as to fit air-tight against each other. A packing, B', is placed around the plug B and the edge of the neck A', as shown. Two carbon conductors, E E, of suitable thickness, are passed through longitudinal openings in the plug B in such a manner that they project from the top and bottom of the plug, and are secured in the plug by means of some suitable cement to form air-proof joints.

Copper rings F are cast or blown into the top and bottom of the plug B around the apertures through which the carbon conductors E pass in such a manner that these rings project slightly from the ends of the plug B. A layer, G, of copper or other metal, is then precipitated by means of electricity around the projecting ends of the carbons E and the rings F, which layers of copper will be firmly attached to the carbons and to the rings, whereby the projecting ends of the carbons will be strengthened and prevented from being broken off. The layer of copper is then varnished. This layer of copper has a firm bearing in the rings F, which are embedded in the plug; and they do not only strengthen the carbons, but shut off the air completely.

The upper ends of the carbons E are provided with slots a, into which the ends of a carbon filament, T, are passed and secured by means of a cement made of carbon dust and some binding substance, such as sirup, sugar, &c. A glass seal-tube, J, projects from the bottom of the plug B through the base D, in which it is secured air-tight by means of some suitable cement. The aperture J' of this tube extends through the plug B, and is contracted at its upper end.

A plug, K, of gutta-percha, rubber, or some other suitable material that is not affected by mercury, is secured in the upper end of the aperture J', and a like plug, L, is secured in the lower end of the tube J, the space between the two plugs K and L being completely filled with mercury M. The lower end of the tube is sealed by means of sealing-wax N or some

other suitable material, and a rubber cap, O, is drawn over and secured on this lower end of the tube J in some suitable manner. Two insulated spring-contact strips, P, project upward from the bottom of the recess in the base D, and are adapted to rest against the lower projecting ends of the carbons E, which strips P are connected with the conducting-wires Q, leading to the electric generator.

10 A key, R, journaled in the base D, is provided at its inner end with a cross-piece, S, which is of sufficient length to separate the strips P and remove them from the ends of the carbons when this cross-piece is in a horizontal position. When the cross-piece S is in a vertical position the strips P are released and rest against the ends of the carbons. If the carbon filament is destroyed or broken, the globe or bulb A is removed, a new filament is inserted, the globe A is replaced, and the air is exhausted by means of an apparatus which is to be the subject-matter of another patent.

The special advantage of the above-described lamp is that it can be provided with a fresh filament without breaking, destroying, or making any parts of the lamp worthless. Carbon is a very poor conductor of heat and shrinks and expands but very little under the action of heat and cold, and the plug will thus not be heated and the conductors E will always remain perfectly air-tight within the plug, whether the lamp is burning or not. By turning the key R so as to spread the strips P the current is short-circuited and cut off from the carbons.

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

1. An incandescent electric lamp made, sub-

stantially as herein shown and described, with carbon conductors passing through the glass stopper or plug of the globe or bulb for the purpose of preventing the formation of apertures for the access of air by the expansion and shrinkage of these conductors, as set forth.

2. In an electric lamp, the combination, with the plug B, of the carbon conductors E, passing through it, the rings F in the ends of the plug, and the layer of precipitated metal around the projecting ends of the carbons and the projecting parts of the rings F, substantially as herein shown and described, and for the purpose set forth.

3. In an electric lamp, the combination, with the globe A, the plug B, and the base D, of the carbon conductors E in the plug, the contact strips P, and the key R, substantially as herein shown and described, and for the purpose set forth.

4. In an electric lamp, the combination, with the globe A, of the plug B, the tube J, the plug K in the upper end of the aperture J', the mercury M, and the plug L in the lower end of the tube J, substantially as herein shown and described, and for the purpose set forth.

5. In an electric lamp, the combination, with the globe A, of the plug B, the tube J, the plug K in the upper end of the aperture J', the mercury M, the plug L in the lower end of the tube J, the sealing-wax N, and the rubber cap O, substantially as herein shown and described, and for the purpose set forth.

HANS J. MÜLLER.

Witnesses:

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