

(No Model.)

A. L. REINMANN.
INCANDESCENT ELECTRIC LAMP.

No. 460,991.

Patented Oct. 13, 1891.

Fig. 1

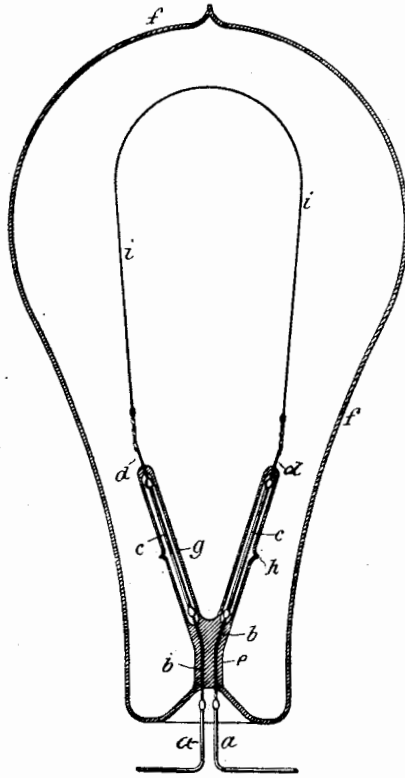
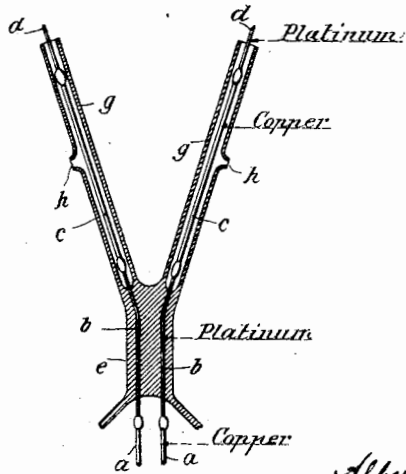


Fig. 2



WITNESSES:

Raphael Netter
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INVENTOR

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UNITED STATES PATENT OFFICE.

ALBERT L. REINMANN, OF NEW YORK, N. Y., ASSIGNOR TO THE WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 460,991, dated October 13, 1891.

Application filed February 11, 1891. Serial No. 381,025. (No model.)

To all whom it may concern:

Be it known that I, ALBERT L. REINMANN, of the city, county, and State of New York, have invented a new and useful Improvement in Incandescent Electric Lamps, of which the following is a specification.

A large item in the expense of making incandescent electric lamps is the cost of the platinum wire which is used to form the leading-in wires of the lamp. The platinum is used for those portions of the leading-in wires which are sealed in the glass because its co-efficient of expansion and contraction is nearly the same as that of glass. It is very desirable to reduce the amount of platinum as much as is consistent with the making of a proper joint between the bulb and the leading-in wires, and my invention is directed to effecting a saving in that particular. It is especially useful in the manufacture of large lamps where long leading-in wires are necessary.

To enable others skilled in the art to make and use my invention, I will now describe it by reference to the accompanying drawings, in which—

Figure 1 is a sectional view of a large incandescent lamp, and Fig. 2 is a view of the leading-in wires partially secured in the glass stem or support in which they are fused.

Like letters of reference indicate like parts in each.

The part of the lamp which contains the leading-in wires and supports the carbon conductor or filament is made separately from the bulb, and in this separated condition is called a "mount." I show a mount in Fig. 2 in a partially-completed condition. The leading-in wires are composed of a section *a* of copper wire, a section *b* of platinum, a section *c* of copper wire, and a section *d* of platinum. The platinum section *b* is surrounded by a piece of glass *e*, which is fused around the two wires, and this portion in the completed lamp closes the open end of the bulb or globe *f*, the open end of the bulb being fused to the glass part *e*, so as to hermetically seal the bulb. The copper section *c* is surrounded by a small glass tube *g*, which is sealed at the upper end around the platinum section *d*, so that the copper section *c* when

inserted in the lamp shall not be exposed to the inside of the lamp, the object being to protect the carbon conductor from the action of any oxide which might be present upon the surface of the carbon wire. Upon the sides of the glass tubes *g* are formed small openings or tubes *h*. The glass tubes *g* are placed over the leading-in wires and first fused to the glass part *e*, as shown in Fig. 2. Then the upper ends are fused to the platinum sections *d*, the tubes *h* being open to prevent the increased pressure of the air inside of the tubes occasioned by the heating of the ends in sealing to the platinum wires from acting upon the soft glass at the joint and thereby preventing a tight and permanent joint from being made. After the glass has cooled at the ends the tubes *h* are closed up, so as to hermetically seal the copper wires inside of the tubes. Then the carbon conductor *i* is secured to the platinum sections *d* in any well-known way, and the mount is completed and is inserted into the bulb *f* and secured thereto in the ordinary way. In this way I produce a lamp in which those portions of the leading-in wires which pass through the glass are composed of platinum, thereby insuring tight joints with the glass, and those portions which are required only for conducting purposes are formed of a suitable cheaper metal, such as copper, aluminium, or German silver.

When I speak in the claims of copper wire, I include other cheap suitable conductors as equivalents.

The small tubes or openings *h* necessary to vent the tubes *g* during process of sealing them on the platinum sections may be formed either before the tubes are placed over the wires or after they have been placed over them and secured to the glass post *e* by heating the sides of the tubes *g* and drawing the tubes *h* out from the heated portions.

The copper sections *a* are the usual copper wires by which the lamp is connected to its base.

In my improved lamp I am able to dispense with the use of platinum in that portion of the leading-in wires which extends from the lower seal *e* up to a point near where the car-

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bon conductor *i* is secured thereto, and this saving in manufacture of large lamps is very considerable.

5 What I claim as my invention, and desire to secure by Letters Patent, is—

1. The method of making incandescent electric lamps having leading-in wires composed of two sections of platinum wire with an intermediate section of copper wire, which consists in forming a glass seal around the lower section of the platinum wire, surrounding the copper sections with glass tubes having vent-openings in the sides, then sealing the upper ends of the tubes around the upper platinum sections, then closing the vent-openings, securing the carbon conductor to the leading-in wires, and sealing the mount so formed

into the lamp-bulb in the usual way, substantially as and for the purposes described.

2. An incandescent electric lamp the leading-in wires of which are each composed of two separate sections of platinum wire with an intermediate section of copper wire, the platinum sections being sealed in the glass and the intermediate section of copper wire being inclosed in a glass tube, substantially as and for the purposes described. 20 25

In testimony whereof I, the said ALBERT L. REINMANN, have hereunto set my hand this 30th day of January, A. D. 1891.

ALBERT L. REINMANN.

Witnesses:

THOMAS B. KERR,
ROBT. F. GAYLORD.