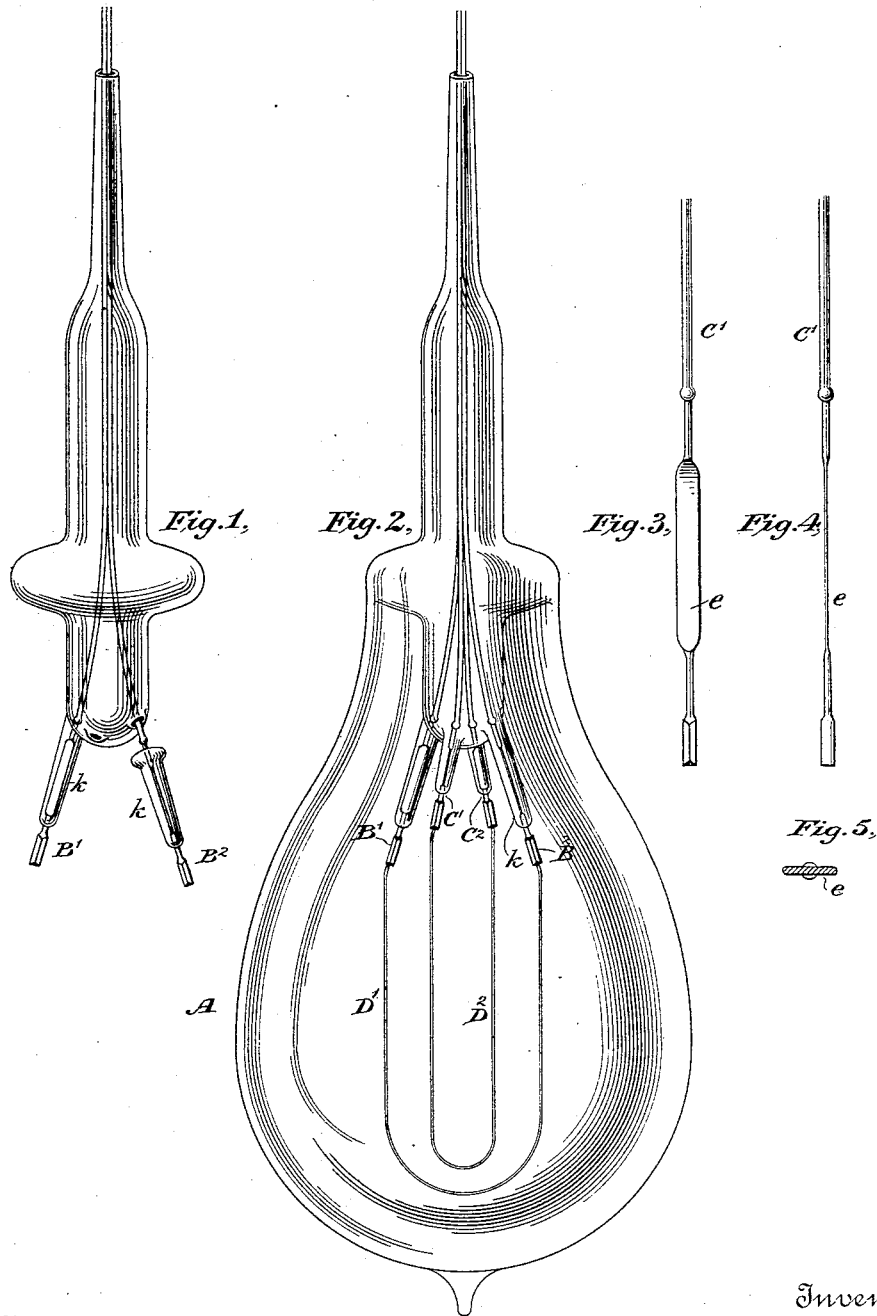


(No Model.)

A. L. REINMANN.
INCANDESCENT ELECTRIC LAMP.

No. 390,903.

Patented Oct. 9, 1888.



Witnesses.
Geo. W. Dreyer
Edward Thorpe

Inventor,
Albert L. Reinmann,
By his Attorneys
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UNITED STATES PATENT OFFICE

ALBERT L. REINMANN, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE
WESTINGHOUSE ELECTRIC COMPANY, OF SAME PLACE.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 390,903, dated October 9, 1888.

Original application filed December 9, 1887, Serial No. 257,392. Divided and this application filed March 20, 1888. Serial No. 267,803. (No model.)

To all whom it may concern:

Be it known that I, ALBERT L. REINMANN, a citizen of the United States, residing at Pittsburg, in the county of Allegheny, in the State of Pennsylvania, have invented certain new and useful Improvements in Leading-In Conductors for Incandescent Electric Lamps, (Case 206,) of which the following is a specification.

The invention relates to the construction of the leading-in wires or conductors employed for conveying currents to the filaments or incandescing portions of incandescent electric lamps. When lamps of relatively high candle-power and designed to be used in circuits of low potential are employed, the leading-in conductors must be of such size as to carry the current without undue heating. The coefficient of expansion of platinum, the metal usually employed, is so nearly the same as that of the glass that it offers no great obstacle in the construction of small lamps, or lamps consuming small currents; but with lamps of from one hundred to five hundred candle-power the conductors required are of such size as to render this difference a matter of considerable importance, for the reason that it is frequently sufficient to break the globes. It has been proposed in some instances to divide the leading-in conductors into separate wires, so that the expansive effects will be somewhat distributed through the glass. This, however, is open to the objection that a greater number of openings must be closed, and also an additional expense is incurred in manufacturing. One plan is to twist several small conductors together, separating the strands through the portion passing through the glass from each other, and sealing the glass around the individual conductors. This requires that there shall be several different seals for each portion passing through the glass. It has also been proposed to employ a thin foil of metal of even thickness throughout as the leading-in conductor. The object of this invention is to provide a leading-in conductor for incandescent electric lamps which shall be capable of carrying the currents of low potential and of the quantity required for lamps of comparatively high can-

dle-power without endangering the glass inclosing globes, and which shall in general be free from the objections mentioned.

The invention consists in employing a conductor, the section passing through the glass being flattened through the greater portion of its length and of greater width and less thickness through the portion within the globe. This secures the required firmness of the leading-in wires within the globe and secures a seal through which the required currents may be transmitted.

The conductor is preferably formed by rolling out or flattening through the required portion a conductor of circular or elliptical cross-section, the rounded corners or edges being retained through the flattened portion.

In another application, Serial No. 257,392, filed by me December 9, 1887, of which this is a division, claims are made upon a leading-in wire of circular or elliptical cross-section, flattened through the portion within the globe, the flattened portion having rounded edges. In the present case claims are made upon the conductor flattened through the portion in contact with the glass of the globe and of greater thickness and less width through the portion within the globe.

In the accompanying drawings, Figure 1 is a view of a lamp-neck equipped with the leading-in conductors. Fig. 2 is a view of a complete lamp; and Figs. 3, 4, and 5 are enlarged details of one of the conductors.

Referring to the figures, A represents the globe of an incandescent lamp, and $D^1 D^2$ the filaments, two of which are employed in this instance. These filaments are respectively supported upon leading-in conductors $B^1 B^2$ and $C^1 C^2$. These conductors are all of the same construction. Each consists of a conducting-wire of metal, preferably platinum, of approximately circular cross-section. The portion e , however, of each conductor which passes through the glass of the globe is rolled out or otherwise flattened, as shown, so that its thickness is very considerably diminished, and therefore when heated the expansion is distributed throughout a wider area and the difference in the expansion of the glass and

the metal at any given point is correspondingly diminished. The edges or sides of the flattened portions of the wires are rounded, retaining the shape of the wire, and present
 5 no corners or sharpened angles to the glass. This renders it possible to form a better seal between the glass and the metal than could be obtained were sharp angles or corners presented, and the glass is less liable to crack.

10 In constructing lamps of the character described it is found desirable to extend the seal to a long distance, as shown at *k*, to prevent the air and gases from entering between the glass and the metal. The flattened portion of
 15 each conductor is of sufficient length to extend through or nearly through such a seal, while the inner and outer ends of the wire preferably remain of circular or elliptical cross-section, thus affording a more firm support for
 20 the filaments than would be the case were the entire length of the wire flattened, and also offering convenient means for attaching the supply-conductors.

25 In manufacturing the lamp it is found convenient to first form the glass seal *k* upon the

leading-in conductor, and then seal the end of this into the wall of the globe.

I claim as my invention--

1. In an incandescent electric lamp, leading-in conductors supporting the filaments, each constructed of conducting-wire, the section passing through and in contact with the glass of the globe being flattened throughout its greater portion and having rounded edges and of greater width and less thickness than
 35 the portion within the globe.

2. A leading-in wire for an incandescent electric lamp, consisting of an electric conductor of circular cross-section, the section passing through the glass of the globe being flat
 40 throughout its greater portion, while the portion within the globe remains of circular cross-section, substantially as described.

In testimony whereof I have hereunto subscribed my name this 1st day of February, A.
 45 D. 1888.

ALBERT L. REINMANN.

Witnesses:

LOUIS MOESER,
 FRANZ MARLIER.