(No Model.)

W. HOLZER.

INCANDESCENT ELECTRIC LAMP.

No. 356,199. Patented Jan. 18, 1887.

Fig. 1.

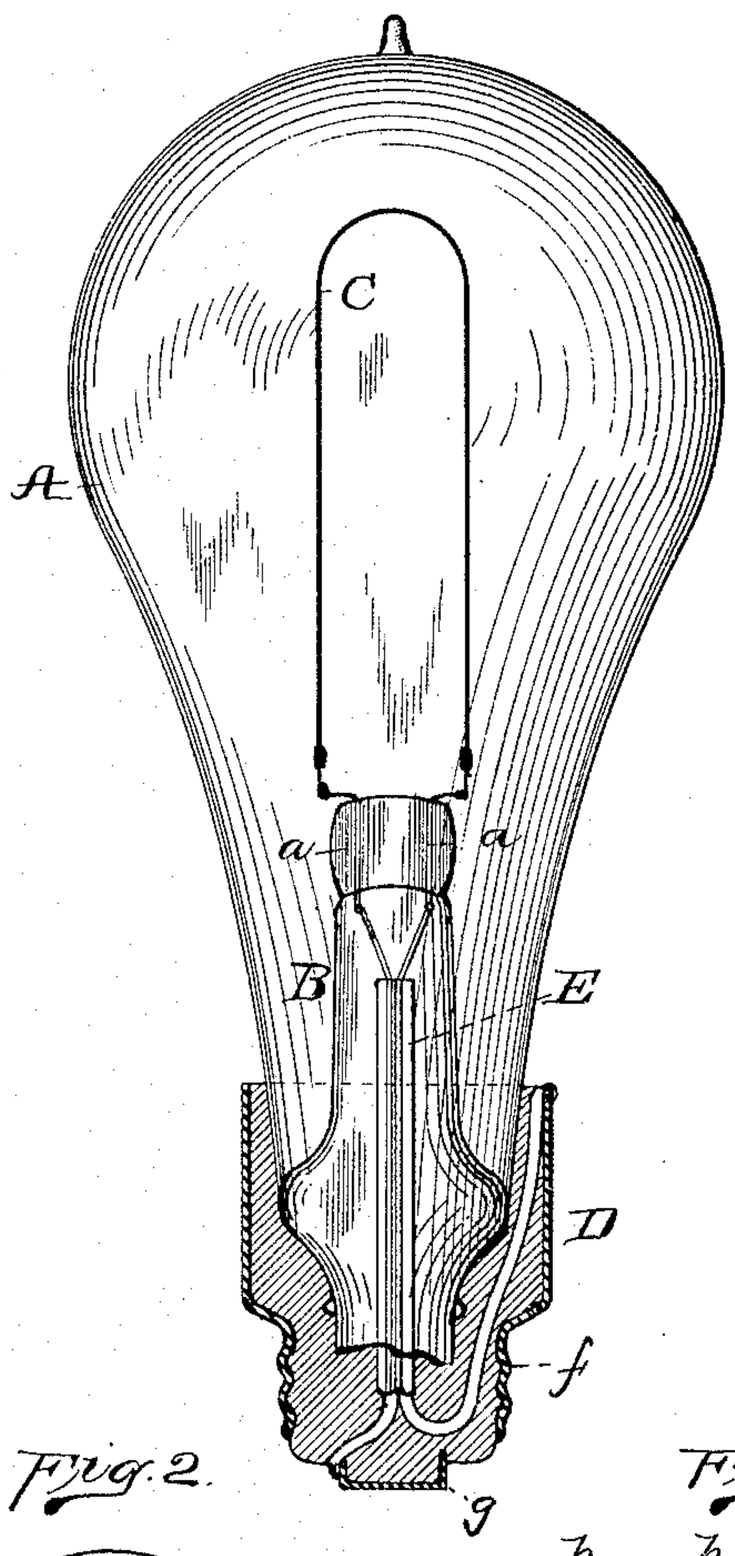

Fig. 2.

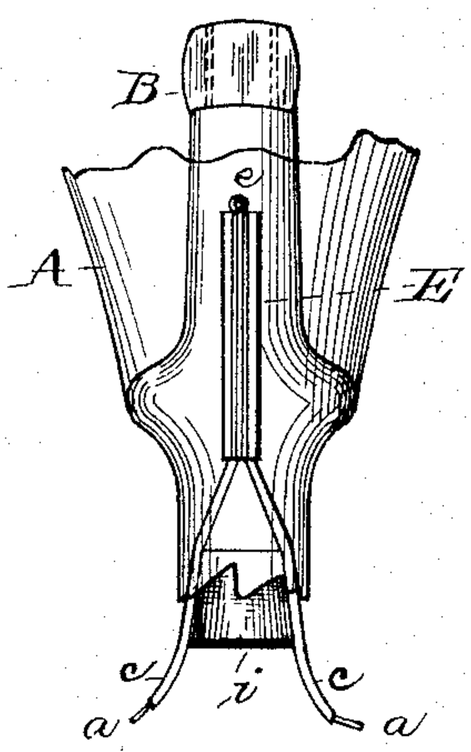

Fig. 3.

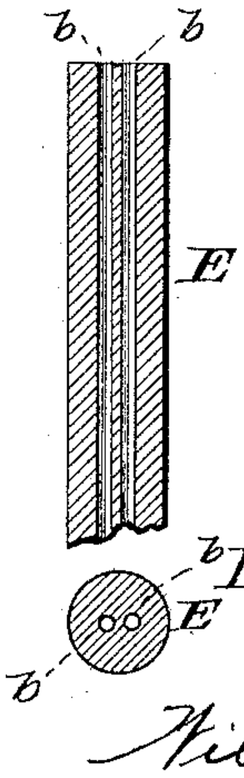

Fig. 4.

ATTEST:

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WILLIAM HOLZER, OF HARRISON, NEW JERSEY.

INCANDESCENT ELECTRIC LAMP.

SPECIFICATION forming part of Letters Patent No. 356,199, dated January 18, 1887.

Application filed March 24, 1886. Serial No. 196,360. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HOLZER, of Harrison, in the county of Hudson and State of New Jersey, have invented a certain new and useful Improvement in Incandescent Electric Lamps, of which the following is a specification.

My invention relates to incandescent electric lamps designed to be used in series with one another with a current of high electromotive force; and my object is, generally, to prevent the arc, which usually forms across the carbon loop when the same is broken, from proceeding down the wires into the base of the lamp and destroying the socket and the cut-out mechanism, and particularly my object is to overcome the defects of constructions heretofore proposed for this purpose.

My invention is illustrated in the annexed drawings. Figure 1 is a view in elevation of a lamp embodying my invention, with the plaster base in section; Fig. 2, a view of the lower portion of a lamp containing a modified form of the invention after the arc has been formed and broken; Fig. 3, a longitudinal section; and Fig. 4, a transverse section, on an exaggerated scale, of the tube in which the leading-in wires are inclosed.

A is the globe and B the inner stem of the lamp, and C the carbon filament.

D is the plaster base.

The leading-in wires *a a* pass through the stem B to the lamp.

E is a glass tube having two perforations, *b b*. This double-barrel tube is placed upon the leading-in wires which pass through said perforations. From the upper end of the tube the wires spread apart to the points where they are sealed into the glass, and from the lower end of the tube they spread apart to make connection with the metal terminals *f g* on the lamp-base. The double-barrel glass tube may be long enough to pass entirely through the glass neck of lamp into the plaster or other insulating material of which the base is formed, as shown in Fig. 1; or this double-barrel glass tube may be shorter and be wholly within the neck of lamp, in which case it will be supported in position by the spread of the wires to the side walls of the neck below the tube, where they are held by the cork *i*, with which the lower end of the neck will in this case be closed, as shown in Fig. 2. With this latter construction, as well as with the former, the lamp will have plaster base and metal terminals, like the same parts shown in Fig. 1.

It will be observed that the wires in the perforations of E are bare wires, being insulated from each other by the thin glass partition which separates the perforations. These bare wires pass out of the upper ends of the perforations, and at this point, just above the tube, are separated only by a correspondingly small air-space. When the arc follows down the wires, it melts the wires as it progresses, until the top of the glass tube is reached, where, the wires being in soldering proximity, with no separating solid insulation, the molten metal of the two wires flows together and forms a short circuit, which stops the arc. Heretofore devices of this character have been uncertain in their action, because of the wires being covered with solid insulation throughout their length. In order to cause the metal of the wires to solder together with the construction referred to, the insulation covering such wires would have to be removed by the arc. It more frequently, however, carbonizes or remains as an ash upon the wires, preventing the soldering of the wires, the result being generally a partial or complete failure in action. This uncertainty in action is avoided by my device. This feature of having the wires bare at and above the point of soldering proximity is independent of the character of insulation below that point. The double-barrel glass tube, however, is preferred as the construction best adapted to meet all the electrical and mechanical requirements.

Below the double-barrel glass tube the wires *a* are covered with a solid insulation, *c*, which preferably extends into the perforations of the tube; or this insulation, in the construction shown in Fig. 1, may be the plaster of the base, although the wires may also be separately covered. The object of this construction is to prevent the springing of an arc across the wires below the double-barrel glass tube when the carbon breaks, since an arc at this point would probably follow back into the socket without soldering the wires together.

The operation is as follows: When the carbon filament breaks, an arc usually springs

across from the broken side to the other. Such arc then follows down the carbon and the leading-in wires (preventing the cut-out mechanism from acting) to the stem, the glass of which, being heated, becomes a good conductor, and the arc continues its progress until it reaches the point where the wires are brought close together in soldering proximity at the end of the tube. At this point the heat of the arc will fuse or solder the wires together. A drop, *e*, of the melted metal is carried across, forming a good connection between the wires, which stops the arc, cuts out the lamp, and keeps the circuit closed to the other lamps in series with it. In case the arc fails to form when the carbon breaks, which sometimes occurs, the cut-out used with the lamp will act and close the line to the other lamps.

I do not claim the wires placed in soldering proximity in the stem of an incandescent lamp and insulated from each other, since I believe this to be the invention of another.

What I claim is—

1. In an incandescing electric lamp, the combination, with the neck thereof, of the leading-in wires held in soldering proximity at a point within such neck, at which point said wires are bare, to permit the metal of the wires to fuse together as they are melted by the arc, substantially as set forth.

2. In an incandescing electric lamp, the combination, with the neck thereof, of the leading-in wires held in soldering proximity within such neck, such wires spreading apart from the point of soldering proximity to the points where the wires are sealed into the glass, and being bare from the seal to the soldering-point, substantially as set forth.

3. In an incandescing electric lamp, the combination, with the neck thereof, of the leading-in wires held in soldering proximity within such neck, said wires being bare and separated by only air-space above the point of soldering proximity, and being separated by solid insulation below this point, substantially as set forth.

4. In an incandescing electric lamp, the combination, with the leading-in wires within the stem, of a double-barrel glass tube separate from said stem, and inclosing and separating said wires for a portion of their length within the stem, substantially as set forth.

5. In an incandescing electric lamp, the combination, with the leading-in wires, of a double-barrel glass tube placed upon a portion of the length of such wires within the neck of the lamp, such wires being bare above said double-barrel glass tube, substantially as set forth.

6. In an incandescing electric lamp, the combination, with the leading-in wires, of a double-barrel glass tube placed upon a portion of the length of such wires within the neck of the lamp, such wires being bare above said double-barrel glass tube, and being separated by solid insulation below such tube, substantially as set forth.

This specification signed and witnessed this 22d day of March, 1886.

WILLIAM HOLZER.

Witnesses:
A. W. KIDDLE,
E. C. ROWLAND.