(No Model.)

H. LEMP & M. J. WIGHTMAN.

CUT-OUT FOR INCANDESCENT LAMPS.

No. 352,621. Patented Nov. 16, 1886.

Fig. 1.

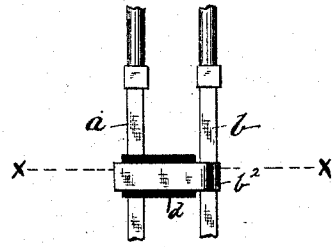


Fig. 3

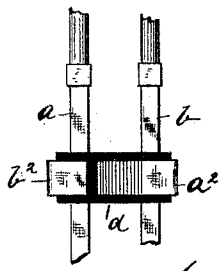


Fig. 2.

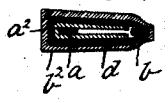


Fig. 4.



Fig. 5.

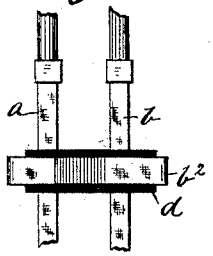


Fig. 6.

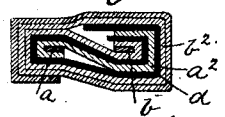


Fig. 7.



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UNITED STATES PATENT OFFICE.

HERMANN LEMP AND MERLE J. WIGHTMAN, OF HARTFORD, CONNECTICUT, ASSIGNORS TO THE SCHUYLER ELECTRIC LIGHT COMPANY.

CUT-OUT FOR INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 352,621, dated November 16, 1886.

Application filed August 19, 1886. Serial No. 211,320½. (No model.)

To all whom it may concern:

Be it known that we, HERMANN LEMP and MERLE J. WIGHTMAN, citizens of the United States, and residents of Hartford, in the State of Connecticut, have invented a certain new and useful Improved Cut-Out for Incandescent Lamps, of which the following is a specification.

In the prior application for patent filed by us March 2, 1886, No. 193,752, we have described an automatic electric cut-out, designed more especially for application to incandescent lamps, and based upon the principle of the fusing action of an electric arc or current, which, on rupture of the lamp filament or other working resistance, is made to involve parts forming or electrically connected with the two poles of the lamp, which parts are so located with reference to each other that the material fused by the arc electrically unites them, thus forming a short-circuiting joint.

In our prior application referred to the parts fused to form the joint are formed of a conducting metal—such as copper—the two poles of the lamp consisting, essentially, of conductors brought into close proximity, so that the arc in playing from one to the other shall fuse one or both, and the molten metal shall unite the poles.

In another application for patent filed by us we employ a similar principle; but the material by whose fusion a joint is formed consists of a substance that is normally, or when cold, an insulator, but which when heated or fused by the action of the arc is transformed into a conducting material.

In the latter case the material forms the insulator, normally separating the two poles of the apparatus, and the electrical joint is in this instance ordinarily formed without fusion of the metal poles.

Our present invention relates to a means whereby the action of devices such as described in our prior applications may be rendered more certain.

The invention consists, essentially, in the combination, with each conductor or pole of the apparatus, of a conducting-extension united therewith and carried into proximity with but normally out of connection with the other pole.

Our invention consists, further, in certain details of construction that will be described in connection with the accompanying drawings, and then recited in the claims.

We have described the invention as applied to an incandescent lamp, but do not limit ourselves to such special application, although the devices herein set forth are specially applicable and are specially designed for application to incandescent lamps.

Referring to the accompanying drawings, Figure 1 is an elevation of a part of an incandescent lamp, showing our invention applied thereto. Fig. 2 is a cross-section on the line x x, Fig. 1. Figs. 3 and 4 are respectively a side elevation and a cross-section of a modification. Figs. 5 and 6 are similar views of another modification. Fig. 7 is a top view of the device shown in Fig. 4, showing the parts after fusion has taken place so as to unite the two poles of the lamp independently of the filament or conductor.

Referring to Fig. 1, a b indicate the two entering or supporting conductors for an incandescent lamp. These conductors or poles are sealed and supported in any desirable manner. At b^2 is indicated a conductor consisting of a sheet or band of copper which is electrically united with the pole b, and is wrapped around or is carried into proximity with the other pole, as indicated. A similar conductor, a^2, is united with the pole a, and is carried into proximity with the pole b. The extensions thus formed from the two poles are insulated from one another by any suitable insulating material—such, for instance, as a strip of mica, d, which need be no thicker than one-sixty-fourth of an inch, but is made somewhat wider than the two strips—so that the distance from one pole-extension, b^2, to the other pole-extension, a^2, around the edge of the mica shall be the same as the distance laterally between the two upright conductors a b. As explained in our application filed, the insulator (mica) might be replaced by an insulator which by fusion would be reduced to a metallic or conducting state.

In the operation of this device the rupture of the filament or incandescent conductor, or the opening of the circuit connecting the two

poles *a b* normally, results in the formation of an arc which, traveling down the conductors *a b*, finally envelops the polar extensions, and fusing them forms a conducting-joint. This is the assumed mode of operation, though in some cases it might happen that with a current of high potential the current will force its way directly across from one conductor, b^2, to the other, a^2, and will in the same way fuse one or both, so that the melted metal will electrically unite the two poles of the apparatus.

A more convenient way of making the device is illustrated in Figs. 3 and 4. In this case we take two strips of copper or other material made sufficiently thin to be pliable, and we attach or solder each strip to one of the conductors or poles *a b*. One of said strips is wrapped around one of the poles—as, for instance, *a*—and the other is wrapped around pole *b*. Between the two strips is located a sheet of mica. Each strip is then carried to the opposite pole and partially wrapped around it, the sheet of mica serving as the insulation, which keeps the two strips out of normal connection with one another, and respectively out of contact with the two poles *a b*.

In Fig. 5 we have shown another modification, in which, to avoid danger of the strips becoming detached, we make one of them much longer than the other, as shown, so that after they have been wrapped, after the manner illustrated in Fig. 4, the longer strip may be wrapped around the whole mass several times, so as to form a retaining-band.

Fig. 7 illustrates in top view a form in which the device is sometimes left after rupture of a filament and the production of a fused joint uniting the two poles of the lamp. As will be here seen, the joint is formed in proximity to both of the conductors *a b*, each of said conductors itself being involved through fusion in the formation of a joint.

It is obvious that our invention may be carried out by using conductors or conducting-extensions formed in other ways instead of from sheet-copper, and that other materials may be used in place of copper.

In applying our device to an incandescent lamp we locate the copper strips or extensions within the vacuous space containing the incandescent conductor or other device.

What we claim as our invention is—

1. In an incandescent lamp, the combination, with the entering-in conductors, of a conducting-extension from each brought into proximity with, but normally insulated from, the other pole.

2. In an electric lamp, the combination, with the poles *a b*, of the conducting-extensions lapping one upon the other and connected each with one of the poles, but normally insulated from the other pole.

3. The combination, with the entering conductors for an incandescent lamp, of two conducting-extensions electrically united with said poles, respectively, and each brought into proximity with, but normally insulated from, the opposite pole, as and for the purpose described.

4. In an automatic cut-out, the combination, with the conductors *a b*, of a wrapping composed of two superposed conductors normally insulated from one another but connected, respectively, with said conductors, as and for the purpose described.

5. The combination, with the entering supporting-conductors for an incandescent lamp, of conducting-extensions connected, respectively, with one of said conductors and brought into proximity with the other, said extensions being formed of two overlapping conductors wrapped around the supporting-conductors of the lamp.

6. In an electric lamp, the combination, with the entering-in conductors, of two flexible conducting-strips electrically united with said conductors, respectively, and wrapped around the same, with an interposed sheet of non-conducting material, as and for the purpose described.

7. In an electric lamp, the combination, with the two entering-in conductors *a b*, of two conducting-strips electrically connected with said conductors, respectively, and each wrapped around but insulated from the opposite pole or conductor.

8. In an electric lamp, the combination, with the entering-in conductors *a b*, of the two flexible enveloping-strips connected, respectively, with the conductors *a b*, but insulated from one another, one of said strips being made longer than the other to form an exterior wrapping.

Signed at Hartford, in the county of Hartford and State of Connecticut, this 28th day of July, A. D. 1886.

HERMANN LEMP.
MERLE J. WIGHTMAN.

Witnesses:
CHAS. A. KELLOGG,
A. GRAY KILBOURNE.