

(No Model.)

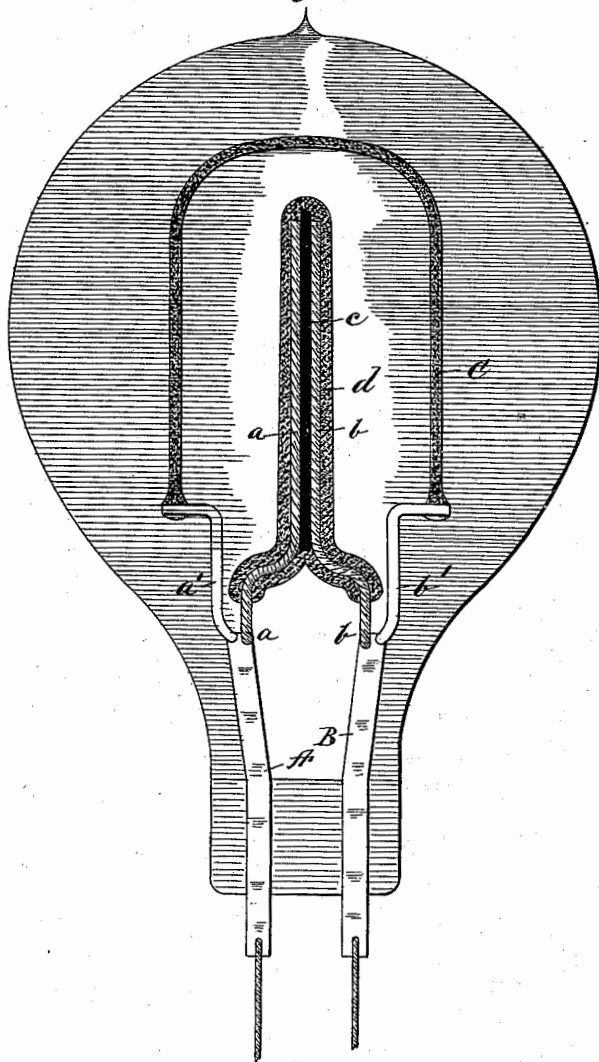
H. LEMP & M. J. WIGHTMAN.

CUT-OUT FOR INCANDESCENT LAMPS.

No. 383,891.

Patented June 5, 1888.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

HERMANN LEMP AND MERLE J. WIGHTMAN, OF HARTFORD, CONNECTICUT.

## CUT-OUT FOR INCANDESCENT LAMPS.

SPECIFICATION forming part of Letters Patent No. 383,891, dated June 5, 1888.

Application filed June 21, 1887. Serial No. 241,995. (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 county of Hartford and State of Connecticut, have invented a certain new and useful Cut-Out for Incandescent Lamps, of which the following is a specification.

Our invention relates to the construction of incandescent lamps adapted to be used in series upon arc-light circuits, and involves more particularly devices for cutting out or short-circuiting such lamps in case of rupture of the filament.

In a prior application for patent filed by us March 2, 1886, Serial No. 193,752, we have described an automatic electric cut-out in which the leading-in conductors are brought near together electrically at a given point, whereby they will be fused together by the heat of the arc formed on the rupture of the filament, thus offering a shorter path for the current, and thus short-circuiting the arc and cutting out the lamp from the circuit.

Our present invention is an improvement upon the invention described and claimed in the application referred to, and is designed to render the operation of the cut-out more speedy and certain.

We have discovered in practice that it takes some considerable time for the arc which forms between the broken ends of the filament to consume the remainder of the filament and to work its way down to the point where the leading-in conductors are brought near together. It also sometimes happens that the globe of the lamp will be filled with smoke and gases under these circumstances, which crack the glass and destroy it as a lamp.

To overcome these defects, our present invention consists in carrying the leading-in conductors, or extensions of the same, into the space between the two legs of the filament and into proximity with each other electrically, so that, at the very moment when the filament breaks, the arc that plays across between the broken ends of the conductor will at once fuse the leading-in conductors or their extensions and thus short-circuit the lamp without delay.

In the accompanying drawings, which form part of this specification, Figure 1 illustrates a form of lamp embodying our present inven-

tion. Fig. 2 is a cross-section view of the cut-out wires.

A and B are the leading-in conductors, arranged on opposite sides of the lamp and in electrical connection with the main circuit. These leading-in conductors are preferably made of flat platinum sheets, as shown.

*a b* are copper wires electrically connected with the leading-in conductors and supporting the filament C.

From any convenient point along the line of the leading-in conductors metallic extensions *a' b'*, preferably copper wires, and electrically connected with said conductors, are carried up into the space between the two legs of the filament, as shown. The extensions are in very close proximity with each other electrically, so that they may be electrically united by fusion under the influence of the arc formed between the broken ends of the conductor. They may be separated, if desired, by a thin sheet of mica, which will readily melt in the heat of the arc and allow the melting wires to fuse together. The wires may be surrounded with cement, as indicated at *d*, which holds them securely in position and facilitates the fusion under the heat of the arc. This cement may be composed of plaster of paris mixed with borax and silicate of soda, or it may be made of a metallic salt, such as peroxide of lead.

The operation of the lamp will be readily understood from this description.

When the incandescent filament breaks, a voltaic arc is formed between the broken ends of the conductor, which plays across the space between the legs, melting the cement and the mica insulation and fusing the copper wires *a' b'* together into a solid joint, thereby short-circuiting the arc and cutting out the lamp.

It will be understood, of course, that the fusing contacts or conductors may be formed in any desired manner, the sole condition of the invention in this respect being that the opposite sides of the electric circuit of the lamp shall be brought together electrically, as described, in the space between the legs of the filament and adapted to be fused together by the heat of the arc.

What we claim as our invention is—

1. An incandescent lamp having its entering conductors brought into proximity elec-

trically in the space between the legs of the filament and sufficiently near to be electrically united by fusion under the influence of the arc formed between the broken ends of the conductor upon the rupture of the filament, as and for the purpose described.

2. An incandescent lamp having its entering conductors brought into proximity electrically in the space between the legs of the filament and continued in such proximity substantially the whole height of the filament, whereby they may be electrically united by fusion under the influence of the arc formed between the broken ends of the conductor upon the rupture of the filament, as and for the purpose set forth.

3. An incandescent lamp having its entering conductors brought into proximity electrically, and normally held in such proximity by a fusible cement, whereby they may be electrically united by fusion under the influence of the arc formed between the broken ends of

the conductor upon the rupture of the filament, as and for the purpose described.

4. An incandescent lamp having its entering conductors brought into proximity electrically, said conductors being embedded in fusible cement at that point and insulated from each other by a thin sheet or layer of insulated material, whereby the conductors may be electrically united at that point by fusion under the influence of the arc formed between the broken ends of the conductor upon the rupture of the filament, as and for the purpose described.

Signed at Hartford, in the county of Hartford and State of Connecticut, this 28th day of February, A. D. 1887.

HERMANN LEMP.  
MERLE J. WIGHTMAN.

Witnesses:

LOUIS M. SCHMIDT,  
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