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SAFETY CUT-OUT FOR INCANDESCENT ELECTRIC LAMPS.

APPLICATION FILED APR. 30, 1917.

1,280,227. Patented Oct. 1, 1918.

Fig. 1

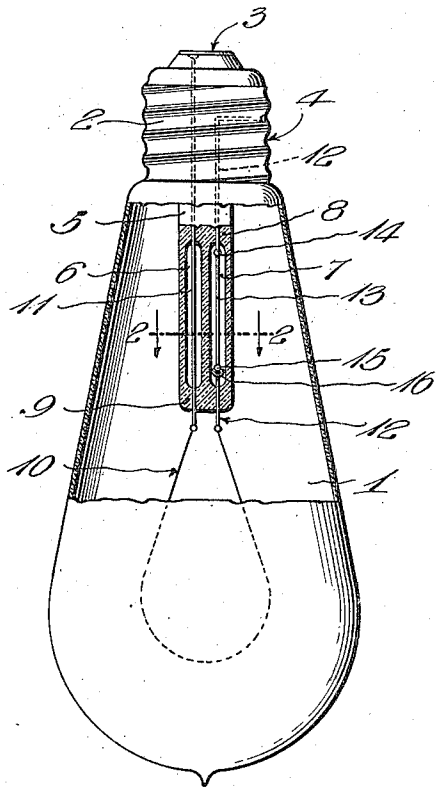
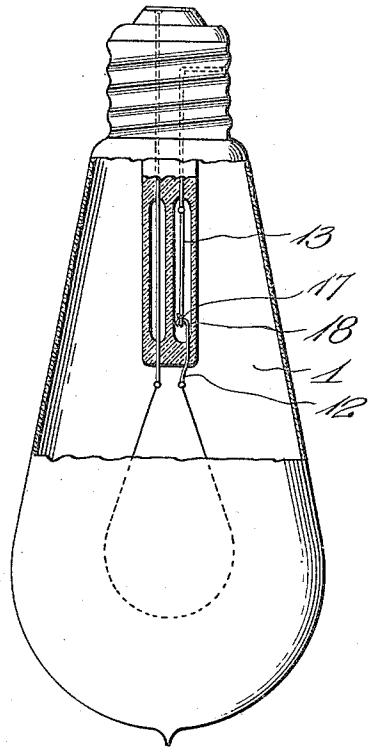


Fig. 3



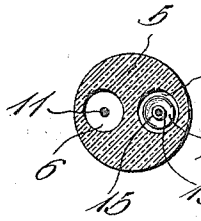


Fig. 2

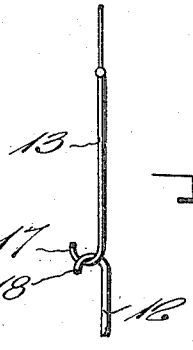


Fig. 4

Witness

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SAFETY CUT-OUT FOR INCANDESCENT ELECTRIC LAMPS.

1,280,227. Specification of Letters Patent. Patented Oct. 1, 1918.

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To all whom it may concern:

Be it known that I, ALFRED W. HOUCHIN, a citizen of the United States, residing at Kirkwood, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Safety Cut-Outs for Incandescent Electric Lamps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates generally to incandescent electric lamps and more particularly to incandescent electric lamps containing safety cut-outs.

The primary object of the invention is to provide a means for incandescent electric lamps whereby when an excessive amount of electric current is supplied to the lamp, it is cut out of the circuit, thereby preventing the filament of the lamp from injury.

Another object of the invention is to provide a device of this character which will be extremely simple and inexpensive in construction, and yet comparatively strong and durable and one which will be efficient and reliable in operation, and well adapted to the purpose for which it is designed.

With these and numerous other objects in view, the invention consists in the novel details of construction and the combination and arrangement of parts as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of the application and in which similar reference characters designate like parts throughout the several views:

Figure 1 is a central vertical sectional view, partly in elevation, of a lamp constructed in accordance with this invention;

Fig. 2 is a transverse sectional view across a portion of the lamp, said view being taken on the plane indicated by the line 2—2 of Fig. 1;

Fig. 3 is a central vertical sectional view, partly in elevation, of a slightly modified form of lamp embodying the principle of this invention; and,

Fig. 4 is a detail perspective view of the hook-shaped contact elements of the modified form.

In the embodiment illustrated, the incandescent electric lamp is shown comprising a bulb 1 secured at its upper end in any convenient manner to the usual form of base 2. The base 2 is provided with a projecting center contact 3 and screw contact 4. These elements form no part of the present invention, although they are described for the sake of clearness.

Disposed centrally within the upper end of the bulb 1 and secured to the base 2 in any suitable manner is a supporting neck 5. Although it is not essential as to the material from which the neck 5 is formed, yet it must be of non-conducting material and is preferably of glass. The neck 5 is provided with a pair of longitudinally extending openings 6 and 7, and is closed or sealed shut at its upper and lower ends as at 8 and 9.

The numeral 10 represents a filament, which may be of any construction desired. The filament 10 is shown as being connected to the lower end of a pair of leads 11 and 12, said leads 11 and 12 extending through the ends of the neck 5 and being disposed in the openings 6 and 7 therein. These leads 11 and 12 are respectively connected in the usual manner with the center and screw contacts 3 and 4 of the base 2. A portion of the lead 12 consists of a thermostatic current conducting member 13 which is shown secured at its upper end in any convenient manner as at 14 to the lower end of the upper portion of the lead 12.

In Figs. 1 and 2 of the drawings, this member 13 is illustrated as consisting of a substance which contracts under the heat of electric resistance. This substance is preferably an alloy of bismuth. The lower end of the member 13 is provided with a ball contact element 15, while the upper end of the lower portion of the lead 12 is provided with a cup-shaped coöperating contact 16. It is to be understood that as long as the member 13 is cool, the ball 15 will be in engagement with the cup-shaped contact 16 and current will pass through the leads and the filament 10. In case, however, the current is turned on and an excessive amount should be supplied, the heat of resistance of the thermostat member 13 will cause the same to contract, thereby drawing contact element 15 out of engagement with the contact element 16. The lamps will thus be cut out until the member 13 cools and expands and takes its normal position. Should the current still be excessive, the member 13

will again heat up and contract. This operation will be repeated until a safe current is supplied.

In Figs. 3 and 4 of the drawings, a slightly modified form of the invention is shown wherein the member 13 is formed of a substance which expands upon the heat of electric resistance. This member is in this case connected as before at its upper end to the lower end of the upper portion of the lead 12, while at its lower end it is provided with a hook-shaped contact element 17 which coöperates with a similar contact element 18 carried by the upper end of the lower portion of the lead 12. The substance from which this expanding member 13 is constructed is preferably an alloy of copper. The operation of this form of the invention is the same as the other form with the exception that upon the supply of an excessive current to the lamp, the member 13 expands instead of contracts.

It is to be here understood that the opening 6 in the supporting neck 5 provides a space to allow for the expansion, if any, of the lead 11. The opening 7 in the neck 5 allows for the proper expansion and contraction of the thermostat member, whichever form is used, and acts as a suitable guiding means, should there be any tendency on the part of said member to buckle.

From the foregoing description, taken in connection with the accompanying drawings, the construction, use and operation of the invention will be readily understood without a more extended explanation.

As numerous changes in form, proportion, and in the minor details of construction may be resorted to without departing from the spirit of this invention, it is to be understood that I do not wish to be limited to the construction herein shown and described, other than as claimed.

I claim:—

1. An incandescent lamp of the class described comprising a base, a bulb attached to said base, a filament disposed within said bulb and capable of being heated to incandescence by its electrical resistance, a pair of leads attached to said base and connected to the ends of said filament, a portion of one of said leads consisting of a thermostatic current conducting member normally in contact with the adjacent portion of this lead and adapted to move out of engagement with the same to break the circuit through the lamp upon the supply of an excessive current to the latter.

2. An incandescent lamp of the class described comprising a bulb, a supporting neck disposed within said bulb, a filament connected to said neck and having leads extending therethrough and connected to the base of the lamp, a portion of one of said leads consisting of a thermostatic current conducting member having a contact element at one end thereof, and a coöperating contact on the adjacent portion of the last mentioned lead.

3. An incandescent lamp of the class described comprising a bulb, a supporting neck disposed within said bulb and having a pair of longitudinally extending openings therein, a filament connected to said neck and having leads extending through the ends thereof and the openings therein and connected to the base of the lamp, a portion of one of said leads consisting of a thermostatic current conducting member fixed at one end and having a contact element at its other end, and a coöperating contact element on the adjacent portion of the last mentioned lead.

4. An incandescent lamp of the class described comprising a bulb, a supporting neck disposed within said bulb and having a pair of longitudinally extending openings therein, a filament connected to said neck and having leads extending through the ends thereof and the openings therein and connected to the base of the lamp, a portion of one of said leads consisting of a current conducting member which contracts under the heat of electrical resistance, said member having a fixed connection at one end to said neck and having a contact element at its other end, and a coöperating contact element on the adjacent portion of the last mentioned lead.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALFRED W. HOUCHIN.

Witnesses:
ALFRED W. HOUCHIN, Jr.,
J. M. BIRCKS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."