

(No Model.)

O. P. LOOMIS.
CUT-OUT.

No. 402,753.

Patented May 7, 1889.

Fig. 1.

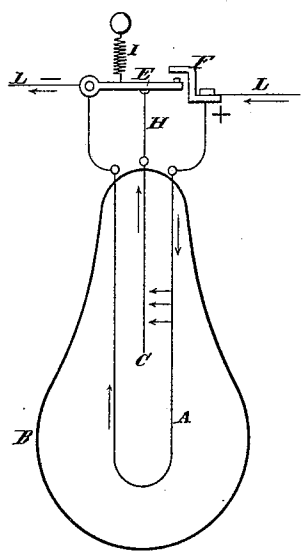


Fig. 2.

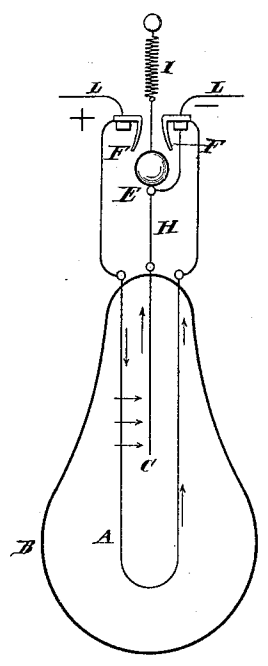
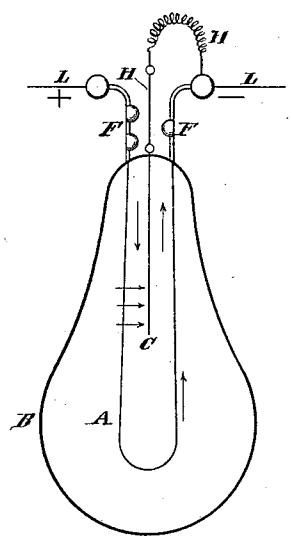


Fig. 3.



Witnesses:
Charles Pickles,
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UNITED STATES PATENT OFFICE.

OSBORN P. LOOMIS, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO THE
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CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 402,753, dated May 7, 1889.

Application filed January 24, 1887. Serial No. 225,318. (No model.)

To all whom it may concern:

Be it known that I, OSBORN P. LOOMIS, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Cut-Outs for Electric Lamps, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates more particularly to incandescent electric lamps when used in series in an arc circuit, but is not necessarily confined to such lamps.

The object of my invention is to cut out an incandescent lamp by means of the current itself should the filament become broken or impaired.

The invention consists of a conductor located near the filament or near the leading-in wires, which conductor is connected at one end to one of the line-terminals, and has in connection with it a fusible wire, which controls safety devices to cut the lamp out of circuit when the filament becomes impaired. When the filament is so impaired, the current is diverted from the circuit to the aforesaid conductor, causing the fusible wire to melt and allowing the cut-out to operate.

Figure 1 is a diagrammatic view of an organization embodying one form of my invention. Fig. 2 is a modification thereof, and Fig. 3 a still further modification thereof.

Like letters of reference indicate like or corresponding parts throughout the three figures of the drawings.

A represents a filament, which is suitably located in a globe, B, with a stout metal conductor or idle wire, C, sealed, preferably, in the globe between the branches of the filament. This conductor is connected at one end to one of the terminals of the main line L, and has in its circuit a fusible wire, H, which normally holds the circuit-closer E away from the terminal F, which is connected to the main line. The circuit-closer E is operated by a spring, I, when the fusible wire is melted. When the filament becomes de-

stroyed or broken at any point, an arc will be formed from one arm of the filament to the other, and will sooner or later play in the vicinity of the conductor C, no matter where the break takes place, so that the current will be diverted from the filament to the conductor C in course of time, and will pass over said conductor and the fusible wire H to the opposite terminal of the main line. The current passing over the fusible wire H will melt it and allow the circuit-closer E to come in contact with the terminal F and cut the lamp out of circuit, the circuit-closer E being drawn in contact with the terminal F by spring I, as before explained. The conductor C could be arranged in proximity to the leading-in wires, the relation being such that when the filament becomes impaired the current will be forced over the conductor and the fusible wire and operate the cut-out as before.

Where the conductor is sealed within the lamp, the filaments should be made extra stout at some distance beyond where they enter the glass of the globe, so as to insure against rupture of the filament at this point, for the reason that should the filament be ruptured at the point where it enters the glass no opportunity would be given for the current to leap to the conductor C.

In Fig. 2 the modification described has two contacts, F—one connected with each terminal of the main line. The circuit-closer E in this case takes the form of a ball of metal, which, when the wire H is fused, will be drawn by the spring I between the contacts F, and thus establish the short circuit.

In Fig. 3 the modification described is more widely different still. The conductor C in this case is connected with a fusible wire, H, arranged as shown, and the contacts F are fusible round bodies. When the current is forced over the conductor C and through the fusible wire H, the latter melts and falls down between the round bodies F, making contact between the same. These latter also fuse and the whole mass runs together and fuses in one body, making a conductor of a large cross-section, so that it will no longer be kept at the fusible point, and the lamp will be permanently and effectively cut out of

circuit. All forms of the invention described can be placed in the socket of the lamp and hidden from view.

The advantages of the invention are that a very sensitive cut-out is provided, the efficiency of which does not become affected by age, so that its operativeness is always insured. In this latter respect it is superior to the electro-magnetic cut-out. Especially is the fusible cut-out better adapted to the purpose for which it is here used than an electro-magnetic one, since it is rendered particularly sensitive by the heat of the lamp raising its temperature, so that the current flowing thereover upon rupture of the filament will easily melt the connection.

What I desire to claim and secure by Letters Patent of the United States as my invention is—

1. A cut-out for an incandescent electric lamp, embodying, essentially, a normally-idle conductor arranged in proximity to the lamp-circuit in the path of the arc forming on the

rupture of the filament, and connected by way of a fusible wire to one side of the circuit, and a cut-out controlled by said fusible wire for cutting out the lamp upon fusion of said wire.

2. In an incandescent electric lamp, the combination, with a normally-idle conductor, C, sealed within the lamp between the branches of the lamp-filament in the path of the arc forming on the rupture of the filament and connected to line by way of the fusible wire H, of a cut-out held from operation by said fusible wire and acting to cut out the lamp upon fusion of said wire, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand and seal, this 21st day of January, 1887, in the presence of the two subscribing witnesses.

OSBORN P. LOOMIS. [L. s.]

Witnesses:

GEO. L. STEVENS,
ALBERT C. WARREN.