(No Model.)

T. A. EDISON.

CUT-OUT FOR INCANDESCENT ELECTRIC LAMPS.

No. 491,992. Patented Feb. 21, 1893.

Fig. 1.

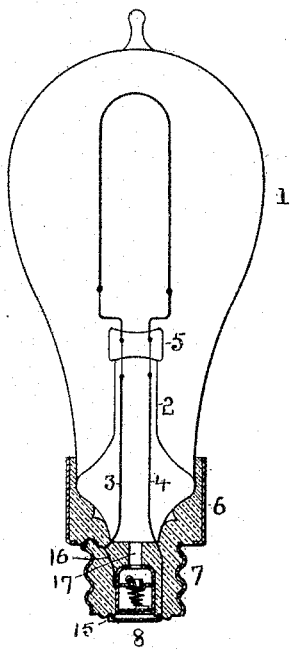
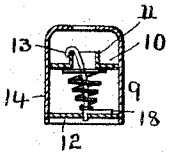


Fig. 2.

Fig. 3.



Witnesses
Norris & Clark.
M. F. Bierly

Inventor
Thomas A. Edison
By his Attorneys
Dyer & Tibbey

UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF LLEWELLYN PARK, NEW JERSEY.

CUT-OUT FOR INCANDESCENT ELECTRIC LAMPS.

SPECIFICATION forming part of Letters Patent No. 491,992, dated February 21, 1893.

Application filed November 12, 1891. Serial No. 411,685. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, a citizen of the United States, residing at Llewellyn Park, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Cut-Outs for Incandescent Electric Lamps, (Case No. 946,) of which the following is a specification.

The object of my invention is to provide a simple and efficient automatic cut-out for incandescent electric lamps to be used in series circuits. Upon the breaking of the filament an arc is usually formed between the wires inside the lamp globe which follows down the wires and through the glass seal, causing the destruction of the same and allowing air to enter the globe. I take advantage of this fact and provide a cut-out device which will be operated by the entrance of the air into the lamp globe, such device being preferably placed in a chamber provided for it, within the lamp structure but outside the vacuum globe.

My invention is illustrated in the accompanying drawings, in which,—

Figure 1 is an elevation of an incandescent electric lamp with its base in section showing the automatic cut-out; Fig. 2 is a perspective view of the cap secured to the base of the lamp to form one of the terminals; Fig. 3 is an enlarged sectional view of the cut-out device.

1 is the lamp globe, 2 the stem through which the leading-in wires 3, 4, pass, and 5 is the seal around the leading-in wires. The lamp globe is supported as usual in a base 6 formed of plaster-of-paris with a metal collar around it. The lower part of the base has a metal ring 7 around it which ring has a screw-thread formed thereon for screwing it into a socket. This ring forms one terminal of the lamp and has wire 3 connected to it. At the bottom of the base is secured the cap 8 which has a small section of its rim cut away as at 15, the object of which will be hereinafter explained. This cap has a wire 4 connected to it and forms the other terminal of the lamp.

Within the lamp, and preferably in the lower part of the base, as shown, is placed a metal cylinder 9 having a small opening at the top preferably of about the same diameter as the passage 17 formed in the plaster directly above the opening. This cylinder is connected to the contact ring 7 by a wire 16. Secured inside the cylinder near the top is a plate 10 having an opening with a flange 11 around it. At or near the bottom of the cylinder is a plate or piston 12 having a stem extending upward, the free end of which is formed into a hook 13 to engage with the flange 11, and between this piston and the plate 10 is a spiral spring 14. The stem on the piston 12 may extend slightly through the same as shown to allow it to be grasped by a tool for readily inserting the parts into the cylinder. The stem has a lug 18 which is soldered to the plate 12 and upon which the spring 14 rests.

The cut-out operates as follows: If upon the destruction of the filament, an arc is formed between the leading-in wires inside the lamp and follows down the wires causing the destruction of the seal, air enters the lamp chamber through the opening 15 in cap 8, around the piston 12, through the openings in the plate 10 and the top of the cylinder, and the passage 17 in the lamp-base. The air entering through the opening 15 forces the piston 12 upward against the pressure of spring 14, disengaging the hook 13 from the flange 11, and upon the lamp chamber becoming filled with air and the pressure against the piston 12 ceasing, the spring 14 will force the piston downward, and by reason of the unequal pressure of the spring caused by its resting on the lug 18, the stem and piston will be tilted sufficiently to allow the hook to clear the flange 11 as the piston is forced downward against the cap 8. This completes the circuit as follows: from cap 8, through piston 12, spring 14, plate 10, cylinder 9, wire 16, to contact ring 7.

What I claim is—

1. The combination with an incandescent electric lamp, of a cut-out device therefor, having a movable member situated in the path of entrance of air to the vacuum globe upon the destruction of the seal, substantially as set forth.

2. The combination with an incandescent electric lamp, of a passage open to the air at one point and closed by the seal through which the leading-in wires enter the vacuum chamber, and a cut-out device for the lamp having

a movable member situated in said passage, substantially as set forth.

3. The combination with an incandescent electric lamp having a vacuum globe, an inner tube or wire support open to the air, and leading-in wires entering said vacuum globe and sealed in the end of said tube, of a cut-out for said lamp having a movable member situated in the path of entrance of air to said tube upon the destruction of the seal, substantially as set forth.

4. The combination with an incandescent electric lamp, of a chamber within the lamp, an air passage from the exterior of the lamp communicating with said chamber, a movable part within said chamber, and contact pieces in the path of said movable part, said movable part being moved into contact with said contact pieces upon the entrance of air into the lamp chamber, to cut-out the lamp, substantially as set forth.

5. The combination with an incandescent electric lamp, of a chamber within the lamp, an air passage from the exterior of the lamp communicating with said chamber, a movable part within said chamber connected to one terminal of the lamp and normally held out of contact with the other terminal, said movable part being released by air entering the lamp chamber upon the seal being destroyed, to cut-out the lamp, substantially as set forth.

6. In a cut-out for incandescent electric lamps, the combination of a chamber formed in the base of the lamp, a stationary contact plate in said chamber connected to one terminal of the lamp, a movable contact plate in said chamber connected to said stationary contact plate and normally out of contact with the other terminal, an opening into said chamber from the exterior of the base of the lamp, and a passage leading from said chamber to the stem of the lamp, substantially as set forth.

7. In a cut-out for incandescent electric lamps, the combination of a cylinder placed in the base of the lamp and connected to one terminal, a passage formed in the base of the lamp communicating with said cylinder and the stem of the lamp, a contact plate forming the other terminal of the lamp situated in proximity to said cylinder, and having an opening therein, a piston in said cylinder normally held out of contact with said contact plate, said piston being released by the entrance of air into the lamp chamber to make contact with said contact plate, substantially as set forth.

8. In a cut-out for incandescent electric lamps, the combination of the cylinder 9, plate 10 secured therein, piston 12 supported from said plate by the hooked-stem 13, spring 14 between said plate and piston, openings in said cylinder and plate, a passage 17 in the base of the lamp communicating with the opening in said cylinder and the stem of the lamp, said cylinder being connected to the ring 7 which forms one terminal of the lamp, cap 8 forming the other terminal and having an opening cut therein, substantially as set forth.

9. In a cut-out for incandescent electric lamps, the combination of the cylinder 9, plate 10 secured therein, piston 12 supported from said plate by the hooked-stem 13, lug 18, spring 14 between said plate and piston, and bearing on said lug, openings in said cylinder and plate, a passage 17 in the base of the lamp communicating with the opening in said cylinder and the stem of the lamp, said cylinder being connected to the ring 7 which forms one terminal, of the lamp, cap 8 forming the other terminal and having an opening cut therein, substantially as set forth.

This specification signed and witnessed this 10th day of November, 1891.

THOMAS A. EDISON.

Witnesses:

JOHN F. RANDOLPH,

THOMAS MAGUIRE.