C. DANTSIZEN.

ELECTRICAL CUT-OUT.

APPLICATION FILED AUG. 8, 1917.

1,343,039.

Patented June 8, 1920.

Fig. 1

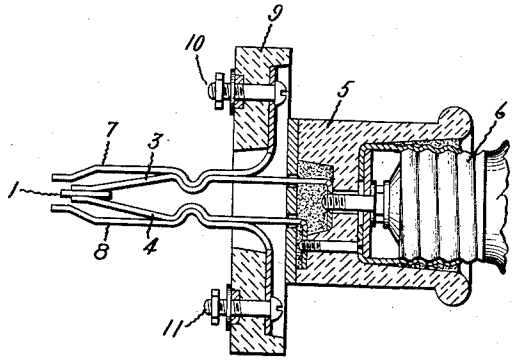


Fig. 2

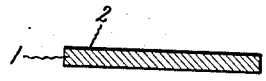
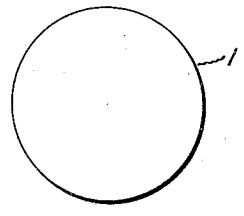


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ELECTRICAL CUT-OUT.

1,343,039. Specification of Letters Patent. Patented June 8, 1920.

Application filed August 8, 1917. Serial No. 185,176.

To all whom it may concern:

Be it known that I, CHRISTIAN DANTSIZEN, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Electrical Cut-Outs, of which the following is a specification.

The present invention relates to safety devices for electrical apparatus, particularly devices such for example, as electrical lamps, which are connected in series. In order that the electrical circuit shall not become interrupted upon the failure of one such devices, each of the series is commonly provided with a cut-out, that is a device which is an insulator at the normal working voltage of the device to be protected but becomes a conductor by break-down of its resistance at a predetermined increase of voltage. It is important that a cut-out device of this kind should have a reliable break-down voltage at a given value, and should withstand without injury high temperatures encountered in some cases, for example, adjacent a high powered gas-filled incandescent lamp.

In accordance with my invention, I utilize in a cut-out device, metallic aluminum or its alloy, having at least one surface coated with an insulating compound of the underlying metal, for example, an oxid coating produced by electrolysis. I have found this cut-out to be more reliable and resistant to high temperatures than other forms of cut-out heretofore used.

In the accompanying drawing, Figure 1 is a sectional view of an incandescent lamp base provided with suitable clips for holding a cut-out; Fig. 2 shows an enlarged section of a cut-out, and Fig. 3 is a top view of a cut-out.

While I do not desire to be limited to any one particular method of manufacturing a cut-out embodying my invention, I shall describe the best method at present known to me for producing the same.

Preferably the aluminum cut-out is oxidized on one side only. This may be done by bending a plate back on itself to cause the edges to match, and then crimping the edges to make a water-tight seam. The inner surface of the aluminum is thus protected and no film is formed thereon. The double plate thus produced preferably is provided with an insulated coating by electrolysis in a solution of an alkali silicate, preferably a solution of sodium silicate of about 5% concentration. Preferably both electrodes consist of aluminum but as the anode only is coated with oxid when direct current is used, the cathode when using direct current may consist of carbon or other inert conductive material. Of course, when using alternating current both electrodes are coated. The electrolyzing voltage preferably is about double the desired break-down voltage in the cut-out.

After the electrolytic treatment which may be continued until a steady condition is obtained, the current falling to a very low value, say after several minutes, the plates are washed, dried and punched into disks of desired size, say ½ inch in diameter. Each disk 1, Figs. 2 and 3, is provided with a strong, closely adherent, hard, whitish insulating coating 2.

The cut-out may be used in any convenient way so as to provide, when its resistance is broken down, a shunt path for the current around the apparatus with which it is being used. For the purpose of illustration, Fig. 1 shows a suitable apparatus. The cut-out 1 prepared as above described, is mounted in spring clips 3, 4, which are attached to the terminal of a socket 5 adapted to receive an incandescent lamp. When the base 6 of a lamp is screwed into place the cut-out is connected across the lamp terminals, the oxid coating 2 intervening to prevent a short-circuit. The clips 3, 4 are forced into engagement with clips 7, 8 mounted on a base 9 and are connected thereby to the current terminals 10, 11.

As long as the lamp is operating properly, the film cut-out will conduct substantially no current, but if the lamp should be broken, burn out, or otherwise fail, the full voltage of the line is impressed on the cut-out and causes it to break down at the predetermined voltage. For example, if the cut-out has been formed at about 460 volts, the insulating film will "break down" at about 230 volts, that is, its resistance will change abruptly from a very high to a negligibly low value, thereby short-circuiting the translating device to which it may be applied.

In place of aluminum I may use an alloy of aluminum, for example, an alloy of magnesium or copper with aluminum, and in

some cases I may use oxidized zirconium or titanium. I mean by the appended claims which call specifically for aluminum, to cover also the above equivalent alloys and metals.

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

1. An electrical circuit containing a current-consuming device and an electrical cut-out comprising oxidized aluminum connected to complete a shunt circuit across the terminals of said device when subjected to a predetermined difference of potential.

2. An electrical cut-out for series-connected devices comprising a plate of aluminum having at least one surface thereof coated with an insulating compound of aluminum, and electrical terminals contacting with opposite surfaces of said plate.

3. The combination in a series circuit of a current-consuming device, contact-making conductors connected to opposite terminals of said device and an oxidized plate of aluminum interposed between said conductors, the oxid coating maintaining a circuit through said plate open at voltages below a predetermined voltage in excess of which electrical breakdown of said film occurs.

In witness whereof I have hereunto set my hand this 7th day of August, 1917.

CHRISTIAN DANTSIZEN.