

(No Model.)

E. T. GILLILAND.
ELECTRICAL CIRCUIT PROTECTOR.

No. 307,639.

Patented Nov. 4, 1884.

Fig. 1.



Fig. 2.

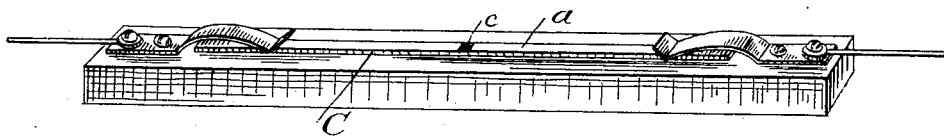


Fig. 3.



Witnesses.

Geo. Willis Pierce

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UNITED STATES PATENT OFFICE.

EZRA T. GILLILAND, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE
AMERICAN BELL TELEPHONE COMPANY, OF SAME PLACE.

ELECTRICAL-CIRCUIT PROTECTOR.

SPECIFICATION forming part of Letters Patent No. 307,639, dated November 4, 1884.

Application filed April 12, 1884. (No model.)

To all whom it may concern:

Be it known that I, EZRA T. GILLILAND, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Electrical-Circuit Protectors, of which the following is a specification.

The object of my invention is to provide a means for obviating the effects of abnormally-strong currents of electricity, which effects are usually manifested by heating or burning the instruments subjected thereto.

My invention consists of a strip of metal or foil of low resistance, fusible at a comparatively low point, which is to be inserted in the protected circuit. This metal strip is attached to an insulating substance for the purpose of giving it the necessary mechanical strength, and show more clearly and noticeably when the said strip has been burned or otherwise injured. Such insulating-strip should be of a color forming a strong contrast to that of the metallic strip used, and of a character to enable the strip of metal to be more easily handled.

Heretofore and prior to my invention it has been customary to employ a strip or wire of smaller cross-section, but of the same material as the main conductor, depending upon the heat likely to be generated therein to burn or fuse such strip or wire. Besides introducing resistance, the difficulty of this form of protection is that it may be raised to a heat sufficient to ignite any combustible surroundings without itself fusing to open the circuit. Another objection is that when it is placed under the care of inexperienced parties and subjected to a strength of current sufficient to burn or fuse it the mark or indication of such fusion, which, in the case of copper wire, is usually a small black speck, will not attract notice unless the attention be specially called thereto. In my invention I choose a metal—such as tin-foil—the fusing-point of which is comparatively low, and, using a strip of extreme thinness, but sufficient width to give the requisite conductivity, I shellac or paste to it a strip of card-board, (say red colored,) which gives mechanical strength, and enables it to

be readily handled and used. If the card-board be placed behind or below the strip and the foil be acted upon by a strong current, the color of the insulating-strip will plainly show the break or gap in cross-section caused by fusion of the strip of metal. Protectors of the nature indicated may be manufactured in quantities and carried about by line-men or inspectors, to be applied in the manner described, as occasion may require. They are well adapted to protect telephone and telegraph lines from the effects of dynamo-currents, and the drawings illustrate a construction intended for such use.

Figure 1 is a view of the protector complete. Fig. 2 shows the effect of an abnormally-strong current upon the protector. Fig. 3 is a modification in form.

a is a strip of tin-foil, the dimensions of which may be an eighth of an inch wide, one-thousandth of an inch thick, by four inches long. *C* is a strip of card-board, the superficial area of which is equal to that of strip *a*. The color of this strip upon the side next to strip *a* is, by preference, red or black. The resistance of strip *a* of course depends upon the quality of metal employed. The tin-foil strip described, however, should not exceed a small fraction of an ohm. As in Fig. 2, two springs should be provided in the circuit to be protected, under which the ends of the protector may be placed. At *c* the metal strip has been fused by an abnormally-strong current, and a space left by fusing, exposing to view the colored face of the insulating-strip *C*. The strip *a* is attached to strip *C* by shellac or varnish in a well-known manner.

In Fig. 3 is shown a form of metal strip, which, while fusing with the same strength of current, is widened at the ends, where contact is made, thus affording still greater strength or resistance to mechanical injury. The insulating-strip, also, has a larger surface, giving greater strength.

What I claim is—

1. A protector for electrical circuits, consisting of a strip of metal foil attached to an insulating substance of a color in strong contrast

to that of the said metal, whereby a rupture or rent in the metal strip will be rendered visible, substantially as described.

2. In a protector for electrical conductors,
5 a thin strip of tin-foil attached to a strip of card-board of substantially equal superficial area, and colored upon the side adjacent to such metal strip, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 9th day of April, 1884.

EZRA T. GILLILAND.

Witnesses:

WM. B. VANSIZE,
GEO. WILLIS PIERCE.