

(No Model.)

C. F. SCOTT & A. WURTS.
FUSE FOR ELECTRIC CIRCUITS.

No. 470,014.

Patented Mar. 1, 1892.

Fig. 1.

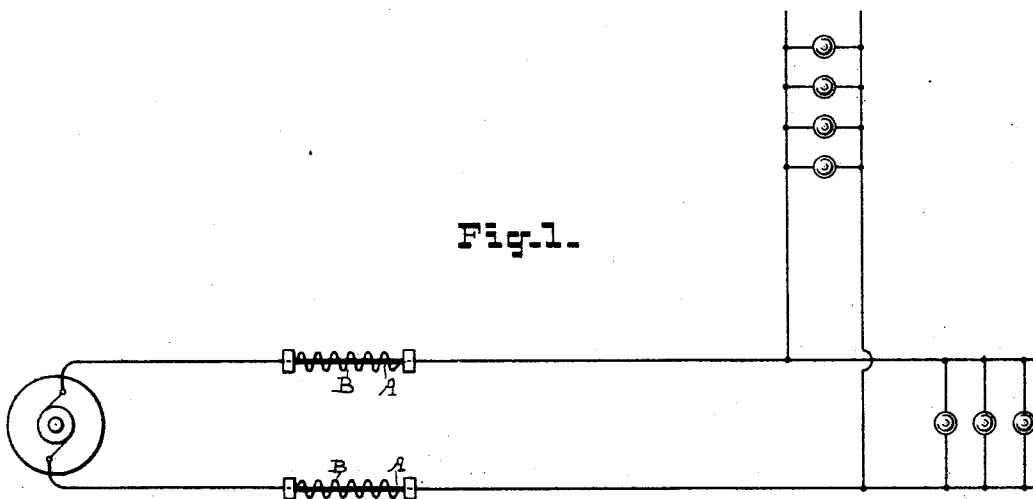
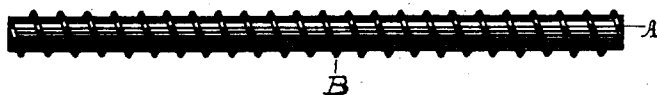


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES F. SCOTT AND ALEXANDER WURTS, OF PITTSBURG, PENNSYLVANIA,
ASSIGNORS TO THE WESTINGHOUSE ELECTRIC AND MANUFACTURING
COMPANY, OF SAME PLACE.

FUSE FOR ELECTRIC CIRCUITS.

SPECIFICATION forming part of Letters Patent No. 470,014, dated March 1, 1892.

Application filed October 16, 1891. Serial No. 408,868. (No model.)

To all whom it may concern:

Be it known that we, CHARLES F. SCOTT and ALEXANDER WURTS, citizens of the United States, residing in the city of Pittsburg, county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Fuses for Electric Circuits, (Case No. 468,) of which the following is a specification.

The invention relates to the class of devices employed for securing the automatic interruption of the connections of an electric circuit by the passage of a current of abnormal quantity.

Heretofore it has been customary to interpose in an electric circuit a section of conductor composed of lead or some suitable fusible alloy which will melt when traversed by a current of predetermined quantity. When fuses of this character are employed in connection with circuits designed to normally carry currents of considerable quantity, they must be of very large cross-section, for the reason that the conductive capacity of the fusible material is comparatively low. Consequently when such a fuse is suddenly traversed by a very heavy current—such as would occur during a short circuit—the time required to heat the large mass of metal is considerable and often sufficient to allow serious damage to the system before the circuit is ruptured. It is also found that the character of some of the metals employed for this purpose is subject to change with age or by reason of the extreme changes of temperature to which they are exposed, so that their subsequent melting-point is liable to differ from that which they originally had. For example, in order to avoid objections experienced by using a large mass of fusible alloy or lead, copper alone is sometimes used; but this, due to its high melting-point, may deteriorate to one-half of its original capacity before it is called upon to operate.

Our invention is designed to provide a fuse having great carrying capacity, low melting-point, small mass, and one which will not deteriorate.

The invention consists in combining with a fusible rod of lead or proper alloy or other conductor of low melting-point a wire or

strand of copper or other good conductor of electricity, the two being connected in close proximity to each other and in such a way that they shall both have the same or nearly the same temperature and each carry its share of the current. As long as this combination remains intact the current is divided, each strip taking a certain proportion of the current. The heat developed in the copper conductor, while not sufficient of itself to melt that conductor, adds to that developed in the lead conductor, and the latter is caused to fuse quickly by reason of the small mass and great heat. When the lead or alloy has melted, the entire current is thrown on the copper wire or strand, which instantly melts and ruptures the circuit. The two conductors may be interwoven or otherwise brought into the required relation to each other.

In the drawings, Figure 1 is a diagram of an electric circuit, showing the improved fuses connected therein. Fig. 2 is a detail of the fuse.

Referring to the figures, A represents a plate, bar, rod, or strip of lead or fusible alloy or other suitable conducting substance having a low melting-point. About this there is wrapped a conductor B, which may be of copper or other suitable conducting metal. The convolutions of the strip B are preferably separated from each other, so that when the strip A is removed the current will be compelled to traverse the whole length of the conductor. The convolutions of the strip B preferably rest in contact with the strip A, and thus the longitudinal carrying capacity of the strip B is increased by reason of the fact that the current may pass from convolution to convolution through the lead strip A so long as both strips are intact, also to insure the uniform temperature of the elements of the combination.

We claim as our invention—

1. The combination, with a strip of lead or fusible metal or alloy, of a conductor in electrical contact therewith and having a different melting-point, the two forming a fuse for electric circuits and being within heat-communicating distance from each other.
2. The combination, with a strip of fusible

conducting material, of a conductor of greater
conducting capacity and higher melting-point
wrapped spirally around the same.

3. A fuse for electric circuits, consisting of
5 the fusible strip A and the fusible strand B,
of different material from the strip A, but in
mechanical contact therewith at points along
its length and within heat-communicating
distance therefrom.

10 4. A fuse for electric circuits, consisting of
two different conducting and fusible materi-

als connected in parallel and arranged within
heat-communicating distance from each other.

In testimony whereof we have hereunto sub-
scribed our names this 12th day of October, 15
A. D. 1891.

CHAS. F. SCOTT.
ALEXANDER WURTS.

Witnesses:

H. C. TENER,
G. A. HILLEMANN.