Jan. 9, 1923. 1,441,550

F. H. WESTON.
FUSE LINK.
FILED MAR. 26, 1921.

Fig.1.

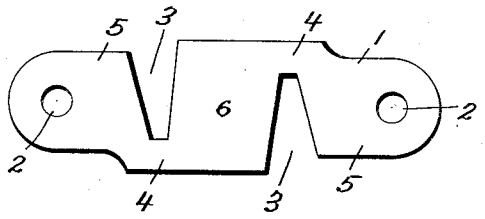
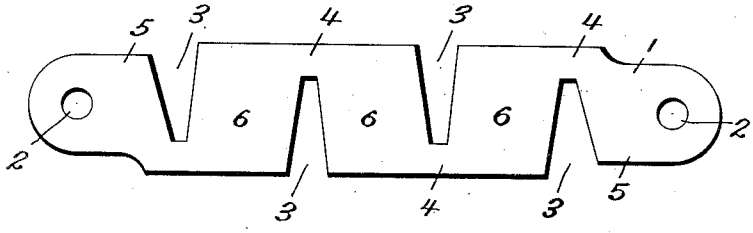


Fig.2.



Inventor:
Frederick H. Weston,
by Albert G. Davis
His Attorney.

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UNITED STATES PATENT OFFICE.

FREDERICK H. WESTON, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

FUSE LINK.

Application filed March 26, 1921. Serial No. 455,883.

To all whom it may concern:

Be it known that I, FREDERICK H. WESTON, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Fuse Links, of which the following is a specification.

The present invention relates to electric protective devices and more especially to fuse links which, when intercalated in an electric circuit, constitute weak links in the chain of conductors of the circuit and operate automatically to open the circuit whenever an excess current flows therein.

When an ordinary fuse link is fused or blows under the action of a short circuit or a flow of current greatly in excess of the safe volume for the conductors of the circuit protected thereby, more or less of the metal of the fuse link is converted into gases in a very short time period producing an explosive action.

In order to reduce the explosive action incident to the blowing of fuses under short circuits, it has been proposed heretofore to provide the links with two or more reduced sections or points in series so that the blowing action will start at those points and permit the unreduced portions between any two such points to drop out unfused and open the circuit. On account of the short time element in the blowing of a fuse under short circuit, these drop-out portions are apt to be fused before they can move out of the path of the current, and the heavier the short circuit the more liable is this failure to occur.

My invention has for its object to provide an improved form of fuse link which will function very positively and effectually under all conditions of excess current and with a minimum amount of conversion into gas.

In carrying out my invention, I form the link into alternate wide and restricted current carrying portions so arranged that there shall be one or more loops or bends in the path of the current through the fuse so as to effect an unequal distribution of the magnetic field accompanying the flow of current. This unequal distribution of the magnetic field produces a transverse force or magnetic blowout action upon the unreduced portions of the fuse link and tends to displace them sidewise. Although the time element of the blowing of a fuse is inversely proportional to the strength of the current in a short circuit, the magnetic force tending to displace a section of the link is directly proportional to that strength and as a consequence the operation of such a link is certain and reliable under all excess current conditions.

For a detailed understanding of my invention, reference may be made to the accompanying drawing in which Fig. 1 is a plan of a fuse link having two portions of reduced section, and Fig. 2 is a similar view of a fuse link having four portions of reduced section.

As shown in the drawing, the fuse link consists of a ribbon or strip 1 of sheet metal, such as aluminum, zinc, copper, etc., the length of which depends upon the normal potential of the circuit to be protected, the character of its support and whether enclosed or exposed. Each end of the strip 1 is provided with a hole 2 to enable it to be passed over the usual binding screw and clamped in place.

The ribbon or strip 1 has notches 3 cut therein extending alternately from opposite edges to form the portions of reduced section 4. In the fuse link shown in Fig. 1 there are two notches 3 which divide it into end portions 5 connected by reduced portions 4 to a single displaceable portion 6. This arrangement provides two loops or bends in the current as it passes therethrough from one binding screw to the other. In the fuse link shown in Fig. 2 there are four notches 3, and three displaceable portions 6 so that the current traverses four bends or loops.

While I have shown and described the best form of embodiment of the invention known to me, I do not desire to be restricted thereto.

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

1. A fuse link comprising a bodily displaceable portion and having provision therein for creating a magnetic blowout effect upon said displaceable portion.

2. A fuse link comprising alternate portions of reduced and unreduced cross section so connected as to create distortion of the magnetic field upon passage of current therethrough.

3. A fuse link having end portions

adapted for connection to circuit terminals, a displaceable intermediate portion, and contracted connecting portions between said intermediate portion and said end portions, said several portions being so disposed with relation to one another as to form loops or bends in the current path through the link.

4. A fuse link comprising a strip of sheet metal having portions of reduced current carrying capacity alternately disposed adjacent opposite edges of said strip.

5. A fuse link comprising a parallel sided strip of sheet metal with spaced transverse notches extending therein from alternate sides.

In witness whereof, I have hereunto set my hand this 25th day of March, 1921.

FREDERICK H. WESTON.