

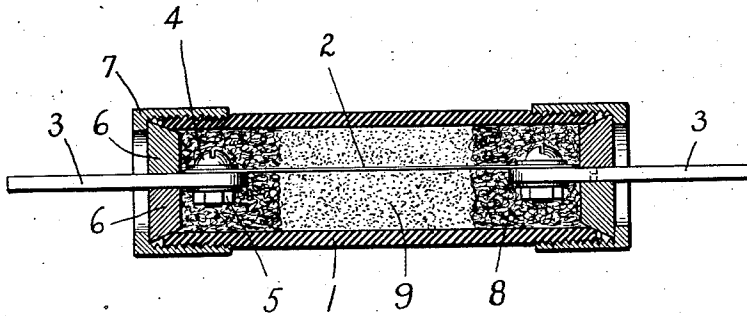
W. C. BANKS.

FUSE.

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1,097,964.

Patented May 26, 1914.



WITNESSES
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FUSE.

1,097,964.

Specification of Letters Patent.

Patented May 26, 1914.

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To all whom it may concern:

Be it known that I, WILLIAM C. BANKS, a citizen of the United States, residing in the borough of Bronx, city and State of New York, have invented certain new and useful Improvements in Fuses, of which the following is a specification.

This invention relates to inclosed electric fuses for insertion in an electric circuit as a protective means against loss due to the flow of an excessive current in the circuit.

The invention is directed to the provision of a novel filling for such an inclosed fuse surrounding the fusible element and the terminals to which it is connected whereby danger incident to blowing of the fuse is greatly reduced.

One feature of the invention resides in the provision of a filling material for an inclosed fuse consisting of a non-conducting, non-combustible material in the form of a multiplicity of threads or filaments, these threads being arranged irregularly in any relation which they happen to occupy in the mass of material so that a multiplicity of minute air spaces are provided throughout the body of filamentary material. As a result of the employment of material of this character, minute air spaces are provided throughout the material into which the gases generated when the fuse is disrupted may expand and which therefore serve to relieve high pressure conditions within the inclosure of the fuse. The material which I have found most suitable for this purpose is a material known as glass wool, this being in the form of a multiplicity of threads of glass intertwined irregularly. This material is a good non-conductor, is non-combustible and melts only at very high temperature.

Another feature of the invention resides in the provision of a powdered non-conducting, non-combustible material around the central portion of the fusible element which is reduced in cross-section so as to cause rupture at that point and a thread-like material around the ends of the fusible strip and particularly around the terminals within the inclosure of the fuse to which the fusible strip is connected.

In accordance with the invention, an inclosed fuse of the usual or any suitable construction is provided with a filling of a powdered non-conducting material of the char-

acter now commonly used around the central portion of the fusible strip, but at both ends of the inclosure different material is used, this latter being in the form of a multiplicity of threads so that minute air spaces are provided throughout the mass of threads. Preferably, a silicate in powdered form is employed in the central portion of the inclosure and glass wool is employed on either side of this around the terminals to which the fusible strip is connected. With this form of filling, the powdered material is effective in preventing the holding of an arc when the fuse is blown and the air spaces throughout the filamentary material at the ends of the fuse assist in relieving high pressure conditions which may occur as a result of the generation of gas when the fuse is blown.

An embodiment of the invention is illustrated in the accompanying drawing which shows an inclosed fuse of a construction which may be employed having therein a filling of the character forming the subject-matter of the present invention.

Referring to the drawing, a tube of insulating material is shown at 1 and within it is a fusible strip 2. The ends of the strip 2 are connected to terminals 3 which are preferably flat strips of copper. The strip 2 is connected to the terminals 3 in any suitable manner as by means of screws 4 and nuts 5 whereby a new strip 2 may be readily inserted in place of one which has been disrupted. At each end of the fuse, gripping members 6 semi-circular in form and tapered on their curved faces are provided, one lying on either side of the terminal 3. The tapered surfaces of these gripping members 6 are adapted to engage the end of the tube 1. A cap 7 is provided adapted to have threaded engagement with the end of tube 1 and to engage the gripping members 6 so as to force them into the end of tube 1 as a result of which they will be forced toward each other and grip the terminal 3 between them. This construction permits of readily removing the fusible strip 2 or the parts thereof after the strip has been broken and insertion of a new strip.

Within the tube 1 is a filling 8 of a non-combustible, non-conducting material in the form of a multiplicity of threads irregularly disposed so that a multiplicity of mi-

nute air spaces are provided between the threads. Preferably I employ for this purpose a material known as glass wool. This thread-like material does not fill the entire interior of the tube 1; instead, a powdered non-combustible, non-conducting material of the character heretofore commonly employed in inclosed fuses is employed in the central portion of the tube 1, that is, entirely around that portion of the fusible strip 2 where disruption is caused to take place by the diminution of the cross-sectional area of the strip. This powdered material is shown at 9. The thread-like material is employed at the ends of the tube 1 inclosing the ends of the terminals 3 which extend within the tube 1 and the connections between the terminals and the ends of the fusible strip.

I have found in practice that with a material of the character herein set forth, the danger incident to blowing of the fuse on the passage of an abnormally high current is greatly reduced.

Having now described my invention, what

I claim as new therein and desire to secure by Letters Patent is as follows:

1. An inclosed fuse comprising an inclosure of insulating material, metallic members at the ends thereof, a fusible strip within the inclosure connected to said members, and a filling of glass wool within the inclosure, substantially as set forth.

2. An inclosed fuse comprising an inclosure of insulating material, metallic members at the ends thereof, terminals connected to said members and projecting within the inclosure, a fusible strip within the inclosure connected to the terminals, and a filling in said inclosure consisting of a powdered, non-combustible, non-conducting substance about said strip and glass wool about said terminals, substantially as set forth.

This specification signed and witnessed this 2nd day of September, 1913.

WILLIAM C. BANKS.

Witnesses:

CHARLES W. SCOTT,
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