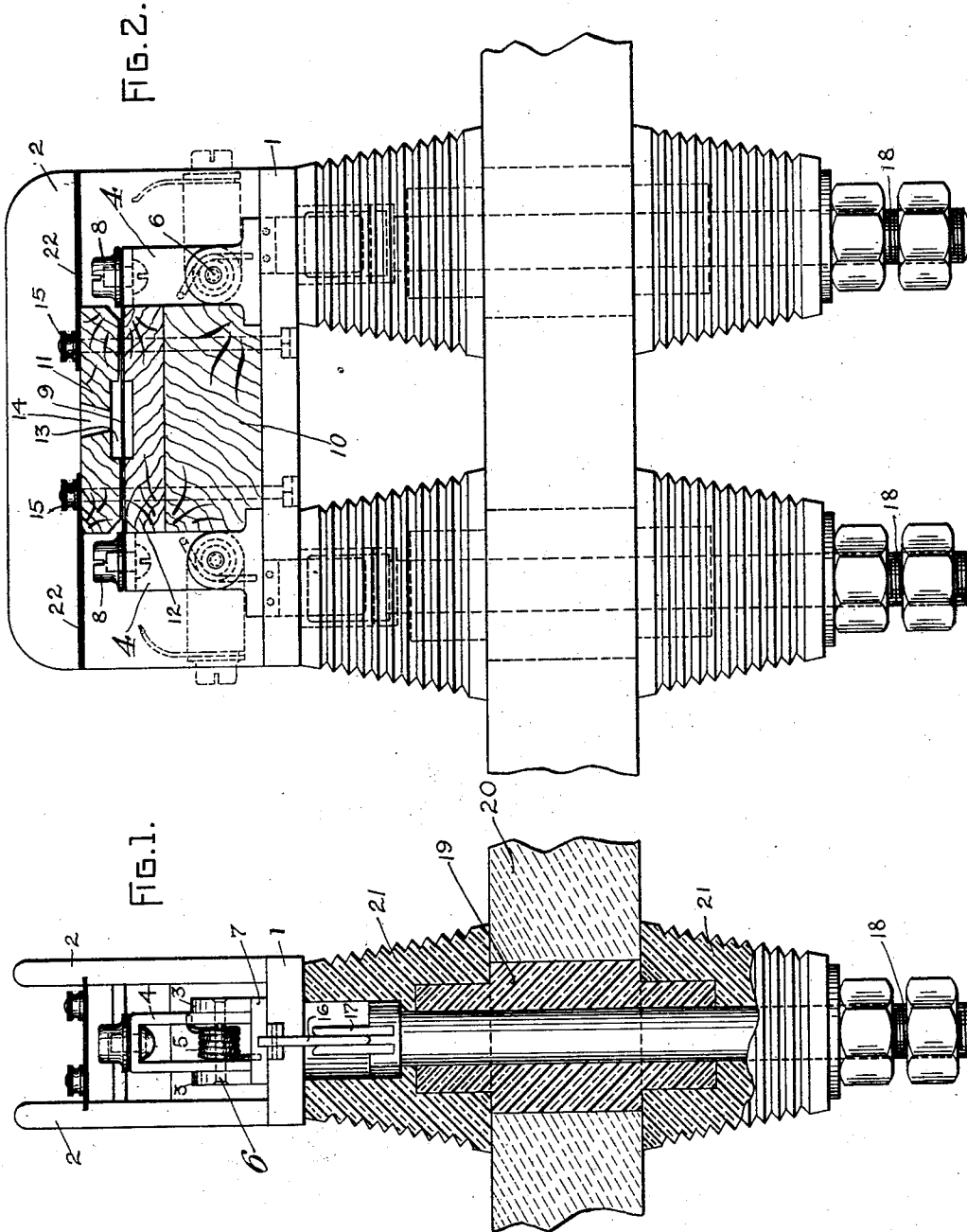


W. L. R. EMMET.
FUSE.

(Application filed Aug. 24, 1898.)

(No Model.)



WITNESSES.

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UNITED STATES PATENT OFFICE.

WILLIAM L. R. EMMET, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE
GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

FUSE.

SPECIFICATION forming part of Letters Patent No. 716,398, dated December 23, 1902.

Application filed August 24, 1898. Serial No. 689,378. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LE ROY EMMET, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Fuses, of which the following is a specification.

The present invention relates to apparatus for extinguishing the arc formed by the blowing of a safety-fuse. The object of the invention is to provide a fusible cut-out in which the arc formed by the melting of the fuse will be quickly and with certainty broken and blown out.

The nature of my invention will be more clearly apprehended by reference to the following description, taken in connection with the accompanying drawings. The scope of the invention will be particularly pointed out in the appended claims.

Figure 1 is an end elevation, partly in section, of a cut-out made in accordance with my invention. Fig. 2 is a side view of the same, partly in section.

The cut-out proper is composed of a base-plate 1, of insulating material, having attached thereto side plates 2 2, which serve as guards. Mounted on the base-plate at suitable distances apart are two castings having ears 3 3. Pivoted to each pair of ears is a bifurcated or U-shaped spring-actuated arm 4. The actuating-spring 5 is coiled about the pivot 6 between the bifurcations of the arm 4. One end of the spring engages the arm and the other end the body of the supporting-casting 7. The springs are so arranged as to urge the upper ends of the arms away from each other. Suitable clamping devices 8 are arranged at the outer extremity of the arms, between which a fuse 9 is secured, so as to hold the arms in a position perpendicular to the base 7, as shown. The fuse is thus normally maintained in a state of tension. Permanently mounted between the arms and overlapping an end of each of the castings 7 is a block of insulating material 10. Superposed thereon are two renewable blocks 11 and 12, of insulating material, each block having a hollow formed therein, so that when placed together as shown in the drawings a chamber 13 is formed. An opening 14 in the

upper block 11 communicates with the chamber so formed.

The arms and insulating-blocks are so proportioned and arranged as to allow the fuse 9 to pass freely between the blocks 11 and 12 and through the chamber 13. That portion of the fuse passing through this chamber is made of smaller cross-section than the remaining parts in order to insure the formation of the arc within the chamber instead of between the insulating-blocks.

In order to prevent any possibility of the arc formed in the chamber 13 from passing to either of the spring-actuated arms, I find it advisable to provide barriers, which in this case are plates 22, of fiber or other insulating material, sliding in grooves in the side plates 2. The barriers, together with the insulating-blocks, are all held in place by bolts provided with thumb-screws 15. By removing the thumb-screws and pressing back the bolts the barriers may be slid out of the grooves, and so withdrawn in order to permit the insertion or renewal of the fuse.

In order to make connections with the fuse, I provide the castings 7 with fins 16, which extend through the base-plate and are adapted to engage spring-clips 17, carried by the connecting-bolts 18. The connecting-bolts are passed through a bushing 19, which is fitted in an opening in the switchboard 20. Insulators 21 fit over the reduced ends of each of the bushings. The insulators and bushings are held firmly in place by the clamping-nuts on the connecting-bolts.

When the fuse blows, the air within the central recess or chamber is very suddenly heated, and the resulting pressure causes the vaporized metal and other gases to be violently expelled through the opening in the chamber, thus blowing out the arc. As soon as the fuse parts the spring-arms come into action and instantly withdraw the ends of the fuse from the chamber and from contact with the insulating-blocks. By the simultaneous expulsion of the gases from the chamber and the withdrawal of the fuse ends the continuance of the arc formed by rupture of the fuse is rendered practically impossible.

A further incident of the separation of the terminals formed when the fuse melts and

between which the arc is sprung is a much more rapid stretching of the arc within the confined space between the two blocks, thereby effecting a rapid augmentation of the resistance of the arc stream by reason of the smallness of cross-section of the space between the blocks, which quickly results in an extinguishment of the arc. Both effects take place simultaneously, the expulsion effect due to the pressure through the vent and the increase of resistance due to the stretching of the arc, the net result being a very effective action.

No claim is herein made to the method of extinguishing an arc described in the present application, said matter being claimed in a companion application, which is a division hereof.

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

1. A fusible cut-out comprising a fusible conductor extending through an opening in insulating walls, substantially the same size as the conductor and of sufficient length to rupture the arc before the same is stretched to the ends of the opening, and means for

stretching the arc to its rupturing-point within said opening and while wholly inclosed thereby when the fuse melts.

2. A fuse-block having a contracted passage for the fuse, a spring-retracted terminal outside of said passage, and a vent of less resistance to the expulsion of arc gases than the fuse-passage and located between the fuse-terminals.

3. A fuse-block having a contracted passage for the fuse, a chamber communicating with said passage, a spring-retracted terminal outside of the passage, and a vent in the chamber.

4. In a fusible cut-out, the combination of a fuse having a spot of reduced conductivity, means for maintaining the fuse under spring tension, and an inclosure around the fuse having an opening to the outside air opposite the reduced fuse-spot.

In testimony whereof I have hereunto set my hand.

WILLIAM L. R. EMMET.

Witnesses:

SAM P. WIGG,

W. H. CUTCHIN.