

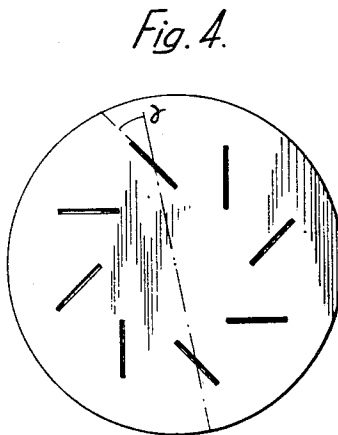
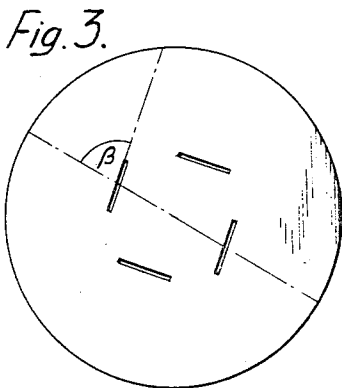
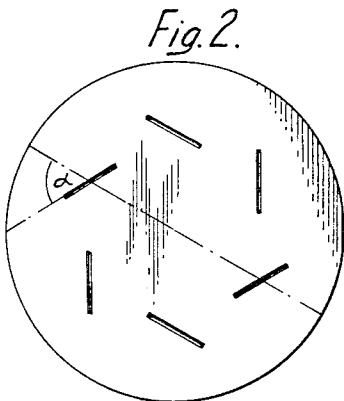
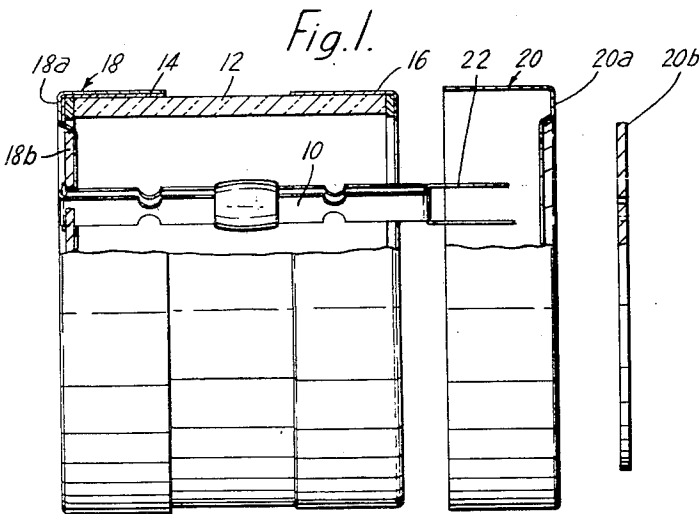
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ELECTRIC FUSES

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ELECTRIC FUSES

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4 Claims. (Cl. 200—131)

This invention relates to electric fuses and more specifically to cartridge fuses comprising a number of fuse links arranged in parallel within a cylindrical insulating casing. Fuses of this kind are described, for example, in our British specification No. 669,378.

In the specification referred to above, the individual fuse links are held in position by having their ends passed through slits in a pair of circular metal caps or discs which cover the ends of the cartridge casing. The projecting ends of the fuse links are then turned down and soldered to the outer faces of the end caps.

For the purpose of spacing the fuse links from each other so that the arc formed on rupture of one does not interfere with those lying adjacent to it, it has hitherto been considered the best practice to cut the slits in the end caps along radii thereof. This disposition has the disadvantage however, that one of the longitudinal edges of each fuse link is made to lie very near to the inner surface of the cartridge casing (which is frequently made of ceramic material), and rupture of the fuse links too often gives rise to cracking or scorching of the casing even when the fuse links are embedded in arc-quenching powder.

It would appear feasible to avoid this disadvantage by forming the slits in the end caps along lines lying at right angles to the radii of the caps, but this disposition brings the longitudinal edges of the fuse links too near each other if four or more links are provided.

The aim of the present invention is to avoid the disadvantages outlined above, and according to the invention the slits in the end caps or discs are cut along lines lying at an angle with respect to the radii of the caps or discs which pass through the mid-points of the slits so that the fuse links are made to lie as far as possible from each other as is consistent with their being as far as possible from the inner surface of the cylindrical casing. In other words, the slits lie on lines which are between the two positions mentioned above.

The angle at which the slits lie with respect to the radii depends on the number of fuse links provided in parallel within the cartridge casing. In general, the angle decreases with increase in the number of links provided. Thus, in a cartridge fuse having four links, the angle made with the radii will usually be between 70 and 80°. This angle generally decreases to between 60 and 70° in a fuse having six links and to between 35 and 45° in a fuse having eight links.

In order that the invention may be thoroughly understood, a number of fuses in accordance with it will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 is an exploded view, partly in section, of a cartridge fuse in accordance with the invention; and

Figures 2-4 are plan views of end discs forming part of three different types of cartridge fuse.

The cartridge-type fuse shown in Figure 1 comprises

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a number of fuse links one of which is shown at 10 arranged in parallel within a cylindrical ceramic casing 12. A pair of metal rings 14, 16 are force-fitted over each end of the casing 12 and these rings are adapted to receive a pair of end caps 18, 20. Each end cap comprises an annular portion 18a, 20a and a disc 18b, 20b which is soldered onto the annular portion during assembly of the fuse. If desired, the annular portion 18a, 20a and the disc 18b, 20b of each end cap may be made in one piece.

Each of the discs 18b, 20b is provided with a number of slits as shown, for example, in Figures 2-4. The fuse links 10 are held in position in the casing 12 by having their ends passed through these slits, a piece of wire 22 generally being used to do this. The projecting ends of the fuse links are then turned down and soldered to the outer faces of the discs 18b, 20b.

The disposition of the slits in the discs 18b, 20b is very important. Figure 2 shows a disc having six uniformly spaced slits, and in order that the fuse links may lie as far as possible from each other as is consistent with their being as far as possible from the inner surface of the cylindrical casing, the slits extend along lines lying at an angle α of between 60 and 70° to the radii of the disc which pass through the mid-points of the six slits. In the specific disc shown in Figure 2, the angle α is about 63°.

Figure 3 shows a disc having four uniformly spaced slits. Here, the slits extend along lines lying at an angle β of between 70 and 80° to the radii of the disc which pass through the mid-points of the four slits. In the specific disc shown in Figure 3, the angle β is about 78°.

Figure 4 shows a disc having eight uniformly spaced slits which extend along lines lying at an angle γ of between 35 and 45° to the radii of the disc which pass through the mid-points of the eight slits. In the specific disc shown in Figure 4, the angle γ is about 39°.

It will be seen therefore that the angle at which the slits lie with respect to the radii depends on the number of fuse links provided, and that the angle decreases with increase in the number of links provided. The invention is, of course, applicable to cartridge fuses carrying any reasonable number of fuse links above four.

I claim:

1. An electric fuse comprising a cylindrical insulating cartridge casing, a single chamber within said casing, a number of strip-like fuse links arranged in parallel within said chamber, circular metal end caps on the ends of said casing, slits in each of said end caps whereby the ends of said fuse links are supported, said slits lying at an angle not exceeding 80° and substantially above 0° with respect to the radii of said end caps which pass through the mid-points of said slits, said angle being such that said fuse links are made to lie as far as possible from each other as is consistent with their being as far as possible from the inner surface of said casing.

2. An electric fuse comprising a cylindrical insulating cartridge casing, a single chamber within said casing, four strip-like fuse links arranged in parallel within said chamber, circular metal end caps on the ends of said casing, four uniformly spaced slits in each of said end caps whereby the ends of said fuse links are supported, said slits lying at an angle of between 70 and 80° to the radii of said end caps which pass through the mid-points of said slits.

3. An electric fuse comprising a cylindrical insulating cartridge casing, a single chamber within said casing, six strip-like fuse links arranged in parallel within said chamber, circular metal end caps on the ends of said casing, six uniformly spaced slits in each of said end caps

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whereby the ends of said fuse links are supported, said slits lying at an angle of between 60 and 70° to the radii of said end caps which pass through the mid-points of said slits.

4. An electric fuse comprising a cylindrical insulating cartridge casing, a single chamber within said casing, eight strip-like fuse links arranged in parallel within said casing, circular metal end caps on the ends of said casing, eight uniformly spaced slits in each of said end caps whereby the ends of said fuse links are supported,

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said slits lying at an angle of between 35 and 45° to the radii of said end caps which pass through the mid-points of said slits.

References Cited in the file of this patent

FOREIGN PATENTS

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