MOLDED PLASTIC FUSE CONSTRUCTION

G. W. WIARD

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Fig. 1.

Fig. 2.

Fig. 3.

G. W. Wiard

Inventor

By Mason Ferrell, Attorney
This invention relates to the manufacture of fuses and particularly fuses of the knife blade type. It has for its object to provide a plastic molded casing for enclosing the fuse link and anchoring and supporting the knife blades.

According to variants within the scope of the invention, the casing may be molded in sections and fabricated with the link unit, or molded unitarily therewith.

The invention relates to fuse construction within the bounds of this inventive concept.

Other objects of the invention will appear as the following description of several embodiments thereof proceeds.

In the drawings which accompany and form a part of the following specification and throughout the several figures of which the same reference characters have been used to denote identical parts:

Figure 1 is a longitudinal sectional view of a fuse casing divided in a longitudinal plane perpendicular to the flat dimension of the knife blades:

Figure 2 is a longitudinal section taken in a plane perpendicular to the section plane of Figure 1;

Figure 3 is a cross-section taken along the line 3-3 of Figure 1;

Figure 4 is a fragmentary perspective view of one-half of the divided casing;

Figure 5 is a longitudinal view in elevation showing one of the identical halves of a molded fuse casing in another modification of the invention;

Figure 6 is a longitudinal section in a plane perpendicular to that of Figure 5;

Figure 7 is a cross-section taken along the line 14-14 of Figure 6.

Referring now in detail to the several figures, and first advertising to that form of the invention shown in the group of Figures 1 to 4, inclusive, the fuse link unit comprises the longitudinally spaced knife blades 1 and 2 with the intervening fusible link 3 secured at its ends thereto. The middle portion of the link 3 is narrowed as at 4 by the provision of the lateral indentations 5, which is conventional in the art.

A plastic casing 6 surrounds the fuse link 3 and the adjacent ends of the knife blades 1 and 2, defining a chamber 7 about the fuse link which may be air filled, contain any suitable inert gas, or be filled with a powdered heat diffusing substance, as may be desired.

Since the plastic casing 6 may be transparent, it is preferred to have the chamber 7 either air or gas filled so that the condition of the link may be readily observed. In order that its condition may be made visible in the dark, the fuse link may be coated with a stripe 8 of paint, which is luminous in the dark, extending across the narrow portion of the link and for some distance thereafter in both directions. Such a stripe appears as a single long line when the fuse is intact, and as a broken line when the fuse is blown.

Inasmuch as the knife blades are generally arranged perpendicular to the fuse panel, it is preferred to have the stripe of luminous paint applied to the edge of the fuse link, where it will be visible when viewed from a forward direction with respect to the fuse panel.

The casing 6 is preferably formed of pre-molded longitudinally divided halves 9 and 10, one of which is shown in perspective in Figure 4. These halves are divided in a diametrical plane perpendicular to the flat sides of the knife blade. Each half is provided at its opposite ends with a semi-head 11 formed with a slot 12 of such length and width as to snugly embrace one-half of the adjacent knife blade. The knife blades are provided with the diametrically opposite indentations 14 and 15 and the casing halves 9 and 10 with the integrally molded lugs 16 at the ends of the slots 12, which interdigitate with the indentations 14 and 15 and securely anchor the knife blades in position.

The longitudinal edges 17 and 18 of the respective casing halves are formed with stepped joints, as shown, whereby once automatically interfits with the other when the two are placed in juxtaposition in assembly, without the necessity of any particular precision in their allocation. The interlocking of the lug 16 into the respective recesses 14 and 15 assures that the casing halves will be assembled with their ends flush in the same plane.

The surfaces of the stepped longitudinal joints are preferably moistened with a volatile solvent for the plastic of which the casing halves are made so that upon evaporation of this solvent the two halves of the casing are autogenously joined.

Now referring to that form of the invention shown in Figures 5 and 7, the head construction is similar to that shown in Figure 1 in that there is a slot 38 in each head to receive the knife blade and having lugs 39 extending inwardly from the ends of said slot interfitting with recesses 40 formed in the knife blade. In the interest of strengthening the heads adjacent the respective knife blades, the underides of said heads are provided with the flanges 41 bordering the sides of
the slots 38. The sidewalls of the casing are also thickened at diametrically opposite points by the grooved ribs 42, which extend longitudinally to the inner ends of the knife blades, the grooves of said ribs snugly receiving the lateral marginal portions of said knife blades. This adequately strengthens the fuse construction against the sometimes severe stresses imposed upon the fuse when the knife blades are inserted in the clips of the fuse panel.

The casing is preferably molded in two identical halves, 43 and 44, which are joined in a longitudinal plane perpendicular to the longitudinal plane of the slot 38. The walls of the casing are thickened, as indicated at 45 and 46, longitudinally in a region intersected by the plane of juncture of the two halves so as to increase the area of the faces of the joint sufficiently to make the joint at least as strong as the rest of the wall structure. The opposite longitudinal joint faces of each half are provided, one with a ridge 47, and the other with a groove 48, said ridge and said groove being of equal length and terminating equal distances from the ends of the casing and being of complementary cross sectional contour throughout, whereby said halves when put together register in flush conformance through the matching of the ridge and groove of one half with the groove and ridge of the other. The two halves are cementingly united throughout their plane of juncture. The fact that the halves of the fuse casing in this form of the invention are identical in all particulars, enables both halves to be made in the same mold.

While I have in the above description disclosed what I believe to be preferred and practical embodiments of the invention, it will be understood to those skilled in the art that the details of construction and the arrangement of parts as shown and described are by way of example, and not to be construed as limiting the scope of the invention as defined in the appended claims.

What I claim as my invention is:

1. Electrical fuse construction comprising a link unit consisting of spaced flat knife blades with an intervening flat fusible link rigidly fixed thereto with the flat sides of said link and blades in parallel planes, said blades having recesses extending inward from opposite lateral edges, a hollow molded casing of insulation material surrounding said link and the adjacent ends of said knife blades, said casing having ends formed with transverse slots snugly fitting about said blades in the zone of said recesses, through which slots said blades extend, the end walls of said slots interfitting with said recesses to hold said blades longitudinally immovable, said casing being longitudinally divided in a plane perpendicular to the flat side of said link unit whereby in assembly, the parts of said casing may be pressed into tight engagement with the lateral edges of said blades, said parts being cementingly united.

2. Electrical fuse construction comprising a link unit consisting of spaced flat knife blades with an intervening flat fusible link rigidly fixed thereto with the flat sides of said link and blade in parallel planes, said blades having recesses extending inward from opposite lateral edges, a hollow molded casing of insulation material surrounding said link and the adjacent ends of said knife blades, said casing having ends formed with transverse slots snugly fitting about said blades, through which slots said blades extend, the end walls of said slots being formed with inwardly extending lugs, spaced from the planes which bound the opposite faces of said slots, said lugs interfitting with said recesses to hold said blades immovable, said casing being longitudinally divided in a plane perpendicular to the flat side of said link unit, whereby in assembly, the parts of said casing may be pressed into tight engagement with the lateral edges of said blades, said parts being cementingly united.

3. Electrical fuse construction comprising a link unit consisting of spaced flat knife blades with an intervening flat fusible link rigidly fixed thereto with the flat sides of said link and blades in parallel planes, said blades having recesses extending inward from opposite lateral edges, a hollow molded casing of insulation material surrounding said link and the adjacent ends of said knife blades, said casing having ends formed with transverse slots snugly fitting about said blades in the zone of said recesses, through which slots said blades extend, the end walls of said slots interfitting with said recesses to hold said blades longitudinally immovable, the side walls of said casing being formed with diametrically opposite longitudinal slots snugly receiving the opposite lateral edges of said blades in the zone of union between said blades and link, said casing being longitudinally divided in a plane perpendicular to the flat side of said link unit whereby in assembly, the parts of said casing may be pressed into tight engagement with the lateral edges of said blades, said parts being cementingly united.

4. Electrical fuse construction as claimed in claim 3, the longitudinal meeting faces of the parts of said divided casing being formed on one side with a longitudinal feather and on the opposite side with a complementary feather receiving channel.