

This invention relates to carriers for cartridge fuses, which fuse carriers are suitable for use in detachably connecting cartridge fuses in electric plugs, electric sockets or other electric fittings.

The invention is particularly concerned with a known form of fuse carrier comprising an elongate base of electrically insulating material and, intermediate of the ends of the base, a continuous or discontinuous arch which is integral with and extends transversely across the base and through which a cartridge fuse extends when supported on the base, the arch limiting lateral movement of the cartridge fuse with respect to the base. In some cases, the base has, at or near each of its ends or adjacent each open face of the arch, a saddle or pad on which a cartridge fuse extending through the arch is supported.

In use, a fuse carrier supporting a cartridge fuse is inserted into an elongate fuse recess in the body of an electric plug, socket or other fitting and the metal end terminals of the cartridge fuse are gripped by and effect electrical contact with two substantially U-shaped fuse contacts of resilient metal or metal alloy mounted in and spaced lengthwise of the recess, the base of the fuse carrier effectively closing the recess with the outer surface of the base and the neighbouring outer

surface of the body of the plug, socket or other fitting lying in a substantially common plane. Usually, the base of the carrier has, intermediate of its ends, an aperture serving as a window to enable a user to effect a visual check to see that a cartridge fuse is of the required rating.

We have found that since a cartridge fuse is loosely supported by a fuse carrier of this kind, unless particular care is taken during introduction of a fuse carrier supporting a cartridge fuse into a fuse recess in a plug or other fitting, the cartridge fuse may slip off the carrier.

According to the present invention, we provide an improved fuse carrier comprising an elongate base of electrically insulating material and, intermediate of the ends of the base, a continuous or discontinuous arch which is integral with and extends transversely across the base and through which a cartridge fuse extends when supported on the base, wherein the base has, between each end of the base and the neighbouring open face of the arch and integral with the base, guide means which will permit limited lengthwise movement of a cartridge fuse relative to the base but which will restrain the cartridge fuse against lateral movement with respect to the base, each guide means being so located and of such a form that, when the carrier supporting a cartridge fuse is introduced into the fuse recess in an electric plug or

other electric fitting, said guide means will not prevent or restrict the neighbouring metal end terminal of the cartridge fuse from being resiliently gripped by a fuse contact of the electric plug or other fitting.

The guide means between each end of the base and the neighbouring open face of the arch preferably comprises a pair of transversely spaced upstanding guides between which the barrel of a cartridge fuse can slide. Preferably, each pair of upstanding guides comprises a pair of transversely spaced pillars which upstand substantially perpendicular to the base of the carrier. In some instances, however, each pair of upstanding guides may comprise a pair of transversely spaced, longitudinally extending bars and, in such cases, preferably the upper surface of each bar of each pair is inclined downwardly in a direction towards the arch.

Both in the case when the arch is continuous and in the case when the arch is discontinuous and comprises a pair of transversely spaced, upstanding curved limbs, to facilitate introduction of a cartridge fuse lengthwise through the arch, the transversely spaced pillars, bars or other upstanding guides may be sufficiently resilient to permit passage between them of one of the metal end terminals of a cartridge fuse. The internal edges of the pillars, bars or other upstanding guides, and the internal edge of each end face of the arch, may be smoothly curved or otherwise radiused to facilitate further the lengthwise introduction of a cartridge fuse.

In the case when the arch is discontinuous and comprises a pair of transversely spaced upstanding curved limbs, to facilitate introduction of a cartridge fuse downwardly between the free ends of the curved limbs towards the base, preferably the free ends of the curved limbs are so spaced apart and the curved limbs are of such resilience as to permit the barrel of a cartridge fuse to be forced downwardly between the free ends of the limbs towards the base of the carrier and into the arch and, to facilitate disconnection of a cartridge fuse supported by the fuse carrier from fuse contacts mounted in a recess of an electric plug or other fitting, the free ends of the curved limbs of the discontinuous arch are so shaped and are of such rigidity that the free ends of the curved limbs will retain the cartridge fuse within the arch during withdrawal of the carrier.

To limit the extent of lengthwise movement of a cartridge fuse with respect to the base, preferably the end faces of the two pairs of pillars, bars or other upstanding guides which are remote from one another are so spaced apart that said end faces will engage the edges of the metal end terminals of the cartridge fuse that are remote from the end faces of the fuse.

To reduce the risk that, when a fuse carrier supporting a cartridge fuse is introduced into the fuse recess of an electric plug or other electric fitting, the metal end terminals of the cartridge fuse are not

fully inserted into the resilient fuse contacts, preferably there is provided between each pair of pillars, bars or other upstanding guides, a pad which is integral with the base and which is of such a height that it will limit movement of the fuse in a direction towards the base when the fuse carrier with a cartridge fuse supported thereon is introduced into the fuse recess of an electric plug or other fitting. Preferably, the end faces of the pads which are remote from one another and the remote end faces of the two pairs of pillars, bars or other upstanding guides lie in common planes.

With a view to strengthening the base of the carrier, preferably at each end of the carrier the wall of the arch is integral with a wall which upstands from the base and which extends around the periphery of that end of the base.

The part of the base underlying the arch preferably has an aperture serving as a window for visual inspection of a cartridge fuse when supported on the carrier.

The invention is further illustrated by a description, by way of example, of three preferred forms of fuse carrier with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of the first preferred form of fuse carrier;

Figures 2 and 3, respectively, are top and bottom views of the fuse carrier shown in Figure 1;

Figures 4 and 5, respectively, are end and side views of the fuse carrier shown in Figure 1;

Figure 6 is a perspective view of the second preferred form of fuse carrier;

Figures 7 and 8, respectively, are top and bottom views of the fuse carrier in shown in Figure 6;

Figures 9 and 10, respectively, are end and side views of the fuse carrier shown in Figure 6;

Figure 11 is a perspective view of the third preferred form of fuse carrier;

Figures 12 and 13, respectively, are top and bottom views of the fuse carrier shown in Figure 11, and

Figures 14 and 15, respectively, are end and side views of the fuse carrier shown in Figure 11.

Referring to Figures 1 to 5, the first preferred form of fuse carrier comprises an elongate base 1 of electrically insulating plastics material and, intermediate of the ends of the base, a discontinuous arch 2 which is integral with and extends transversely across the base and which comprises a pair of transversely spaced, upstanding curved limbs 3. At the free ends 4 of the curved limbs 3, the wall thickness of each limb is increased to reduce the flexibility of the free end of the limb and each limb has an end face 5, the end faces being so inclined one to another as to provide a throat of gradually decreasing width to facilitate introduction of a barrel of a cartridge fuse downwardly between the free ends of the limbs into the discontinuous arch.

Between each end of the base 1 and the neighbouring open face of the discontinuous arch 2 and integral with the base is a pair of transversely spaced pillars 7 which upstand substantially perpendicular to the base. The upper edge 8 of each pillar 7 is smoothly curved to facilitate introduction of a cartridge fuse downwardly between the free ends of the curved limbs 3 and between the pairs of pillars. A pad 9 is provided between each pair of pillars 7, the pad being integral with the base 1 and being of such a height that it will support the barrel of a cartridge fuse and so limit movement of the fuse in a direction towards the base when the fuse carrier with the fuse supported thereon is introduced into the fuse recess of an electric plug or other fitting and the metal end terminals of the fuse are gripped

by and effect electrical contact with two substantially U-shaped fuse contacts of resilient metal mounted in and spaced lengthwise of the recess. The end faces 10 of the two pairs of pillars 7 which are remote from one another and the end faces 11 of the pads 9 which are remote from one another lie in common planes and are so spaced apart that these end faces will engage the edges of the metal end terminals of the cartridge fuse that are remote from the end faces of the fuse to limit the extent of lengthwise movement of the cartridge fuse with respect to the base.

At each end of the fuse carrier, the transversely upstanding curved limbs 3 of the discontinuous arch 2 are integral with a wall 12 which upstands from the base 1 and which extends around the periphery of that end of the base. The part of the base 1 underlying the discontinuous arch 2 has an aperture 14 of approximately octagonal shape serving as a window for visual inspection of a cartridge fuse when supported on the carrier.

Referring to Figures 6 to 10, the second preferred form of fuse carrier comprises an elongate base 21 of electrically insulating plastics material and, intermediate of the ends of the base, a continuous arch 22 which is integral with and extends transversely across the base. Between each end of the base 21 and the neighbouring open face of the arch 22 and integral with the base is a pair of transversely spaced upstanding pillars 27 and between the pillars of each pair is a pad 29 on which a barrel of a cartridge fuse will be supported when the cartridge fuse is positioned in the fuse carrier.

To limit the extent of lengthwise movement of a cartridge fuse with respect to the base when the barrel of the cartridge fuse is supported on the pads 29, the end faces 30 of the two pairs of pillars 27 which are remote from one another are so spaced apart that these end faces will engage the edges of the metal end terminals of the cartridge fuse that are remote from the end faces of the fuse.

To facilitate lengthwise introduction of one of the metal end terminals of a cartridge fuse between the pillars 27 and through the continuous arch 22, the pillars are flexible and the upstanding internal edges of the pillars and the internal edges of the arch are smoothly curved or otherwise radiused.

At each end of the base 21, the wall of the continuous arch 22 is integral with a wall 32 which upstands from the base and extends around the periphery of that end of the base. The part of the base 1 underlying the continuous arch 22 has an aperture 34 serving as a window for visual inspection of a cartridge fuse when supported on the carrier.

The third preferred form of fuse carrier shown in Figures 11 to 15 comprises an elongate base 41 of electrically insulating plastics material and, intermediate of the ends of the base, a continuous arch 42 which is integral with and extends transversely across the base. As in the previous two examples, at each end of the base 41, the wall of the continuous arch 42 is integral with a wall 52

which upstands from the base and which extends around the periphery of that end of the base.

Between each end of the base 41 and the neighbouring open face of the continuous arch 42 and integral with the base is a pair of transversely spaced longitudinally extending bars 47, the upper surface of each bar of each pair being inclined downwardly in a direction towards the arch and having a transverse cross-section of concave form. Between each pair of transversely spaced, longitudinally extending bars 47 is a pad 49 on which the barrel of a cartridge fuse will be supported when the cartridge fuse is positioned in the carrier. The end faces 51 of the pads 49 that are remote from one another are co-planar with the end faces 50 of the longitudinally extending bars 47 that are remote from one another, the end faces 50, 51 of the two pairs of bars and of the pads being so spaced apart that they will engage the edges of the metal end terminals of a cartridge fuse that are remote from the end faces of the fuse to limit the extent of lengthwise movement of the cartridge fuse relative to the base.

An aperture 54 in the part of the base 41 underlying the continuous arch 42 serves as a window for visual inspection of a cartridge fuse when supported on the carrier.

In use, when a cartridge fuse is introduced lengthwise through the arch 42, the longitudinally extending bars 47 flex apart to permit passage of the leading metal end terminal of the cartridge fuse and, after passage of the metal end terminal, the bars return to their original positions to permit limited lengthwise movement of the cartridge fuse between them relative to the base 41 with the barrel of the cartridge fuse supported on the pads 49, such lengthwise movement being restricted by inter-engagement between the remote faces 50, 51 of the bars and pads and the edges of the metal end terminals.

CLAIMS:

1. A carrier for a cartridge fuse suitable for use in an electric plug, electric socket or other electric fitting, which fuse carrier comprises an elongate base of electrically insulating material and, intermediate of the ends of the base, a continuous or discontinuous arch which is integral with and extends transversely across the base and through which a cartridge fuse extends when supported on the base, wherein the base has, between each end of the base and the neighbouring open face of the arch and integral with the base, guide means which will permit limited lengthwise movement of a cartridge fuse relative to the base but which will restrain the cartridge fuse against lateral movement with respect to the base, each guide means being so located and of such a form that, when the carrier supporting a cartridge fuse is introduced into the fuse recess in an electric plug or other electric fitting, said guide means will not prevent or restrict the neighbouring metal end terminal of the cartridge fuse from being resiliently gripped by a fuse contact of the electric plug or other fitting.

2. A carrier for a cartridge fuse suitable for use in an electric plug, electric socket or other electric fitting, which fuse carrier comprises an elongate base of electrically insulating material and, intermediate of the ends of the base, a discontinuous or continuous arch



which is integral with and extends transversely across the base and through which a cartridge fuse extends when supported on the base, wherein the base has, between each end of the base and the neighbouring open face of the arch and integral with the base, a pair of transversely spaced upstanding guides between which the barrel of a cartridge fuse can slide in a lengthwise direction relative to the base but which will restrain the cartridge fuse against lateral movement with respect to the base, each pair of upstanding guides being so located and of such a form that, when the carrier supporting a cartridge fuse is introduced into the fuse recess in an electric plug or other electric fitting, the upstanding guides will not prevent or restrict a neighbouring metal end terminal of the cartridge fuse from being resiliently gripped by a fuse contact of the electric plug or other fitting.

3. A fuse carrier as claimed in Claim 2, wherein each pair of upstanding guides comprises a pair of transversely spaced pillars which upstand substantially perpendicular to the base of the carrier.

4. A fuse carrier as claimed in Claim 2, wherein each pair of upstanding guides comprises a pair of transversely spaced, longitudinally extending bars.



5. A fuse carrier as claimed in Claim 4, wherein the upper surface of each bar of each pair of bars is inclined downwardly in a direction towards the arch.

6. A fuse carrier as claimed in any one of Claims 2 to 5, wherein, to facilitate introduction of a cartridge fuse lengthwise through the arch, the transversely spaced pillars, bars or other upstanding guides are sufficiently resilient to permit passage between them of one of the metal end terminals of a cartridge fuse.

7. A fuse carrier as claimed in Claim 6, wherein the internal edges of the pillars, bars or other upstanding guides, and the internal edge of each end face of the arch, are smoothly curved or otherwise radiused to facilitate further the lengthwise introduction of a cartridge fuse.

8. A fuse carrier as claimed in Claim 2 or 3 in which the arch is discontinuous and comprises a pair of transversely spaced upstanding curved limbs, wherein, to facilitate introduction of a cartridge fuse downwardly between the free ends of the curved limbs towards the base, the free ends of the curved limbs are so spaced apart and the curved limbs are of such resilience as to permit the barrel of a cartridge fuse to be forced downwardly between the free ends of the limbs towards the base of the carrier and into the arch and, to



28

facilitate disconnection of a cartridge fuse supported by the fuse carrier from fuse contacts mounted in a recess of an electric plug or other fitting, the free ends of the curved limbs are so shaped and are of such rigidity that the free ends of the curved limbs will retain the cartridge fuse within the arch during withdrawal of the carrier.

9. A fuse carrier as claimed in any one of Claims 2 to 8, wherein, to limit the extent of lengthwise movement of a cartridge fuse with respect to the base, the end faces of the two pairs of pillars, bars or other upstanding guides which are remote from one another are so spaced apart that said end faces will engage the edges of the metal end terminals of the cartridge fuse that are remote from the end faces of the fuse.

10. A fuse carrier as claimed in any one of Claims 2 to 9, wherein the base has, between each pair of pillars, bars or other upstanding guides, a pad which is integral with the base and which is of such a height that it will limit movement of a cartridge fuse in a direction towards the base when the fuse carrier with the cartridge fuse mounted thereon is introduced into the fuse recess of an electric plug or other fitting.

11. A fuse carrier as claimed in Claim 9, to 9, wherein the base has between each pair of pillars,



bars or other upstanding guides, a pad which is integral with the base and which is of such a height that it will limit movement of a cartridge fuse in a direction towards the base when the fuse carrier with the cartridge fuse supported thereon is introduced into the fuse recess of an electric plug or other fitting, the end faces of the pads which are remote from one another and the remote end faces of the two pairs of pillars, bars or other upstanding guides lying in substantially common planes.

12. A fuse carrier as claimed in any one of the preceding Claims, wherein at each end of the carrier the wall of the arch is integral with a wall which upstands from the base and which extends around the periphery of that end of the base.

13. A fuse carrier as claimed in any one of the preceding Claims, wherein the part of the base underlying the arch has an aperture serving as a window for visual inspection of a cartridge fuse when supported on the carrier.

14. A carrier for a cartridge fuse suitable for use in an electric plug, electric socket or other electric fitting substantially as hereinbefore described with reference to and as shown in Figure 1 to 5 of the accompanying drawings.



15. A carrier for a cartridge fuse suitable for use in an electric plug, electric socket or other electric fitting substantially as hereinbefore described with reference to and as shown in Figures 6 to 10 of the accompanying drawings.

16. A carrier for a cartridge fuse suitable for use in an electric plug, electric socket or other electric fitting substantially as hereinbefore described with reference to and as shown in Figures 11 to 15 of the accompanying drawings.

17. An electric plug, electric socket or other electric fitting having a fuse recess in which is fitted a fuse carrier as claimed in any one of the preceding Claims.

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