Jan. 19, 1943. T. W. DRURY 2,308,596

ELECTRICAL CONNECTION MEANS

Filed Dec. 9, 1940

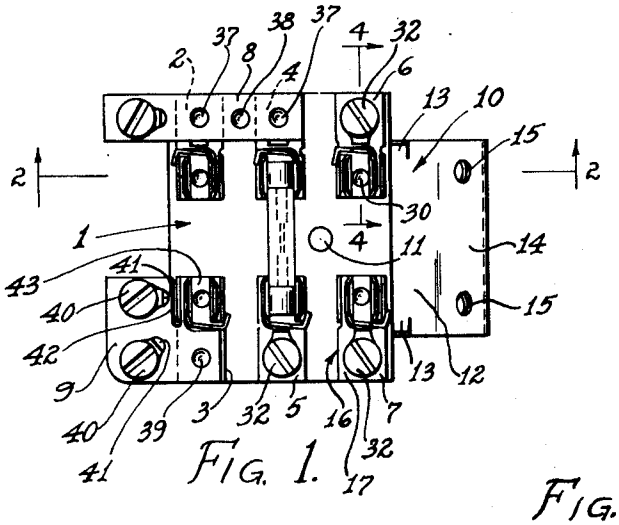


FIG. 1.

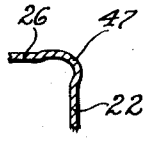


FIG. 5.

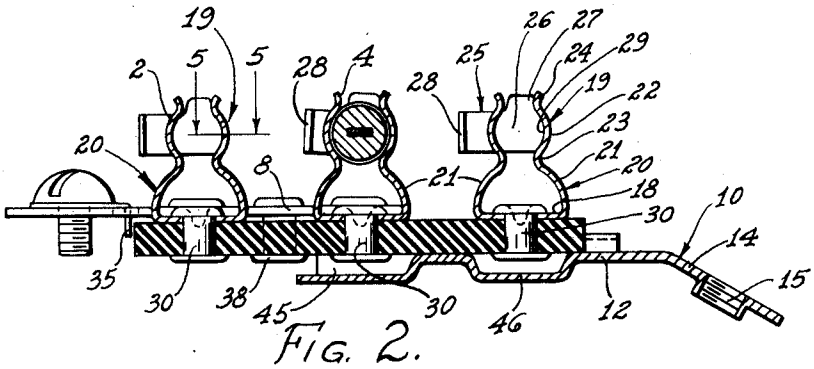


FIG. 2.

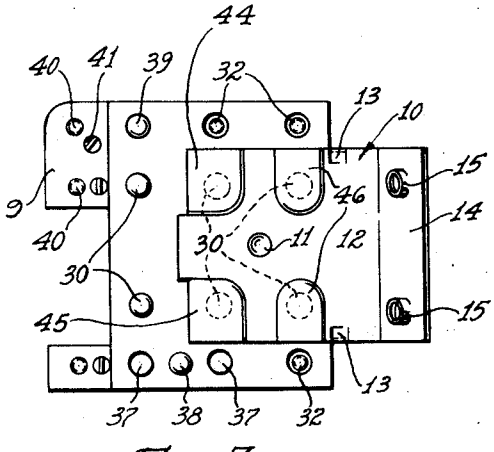


FIG. 3.

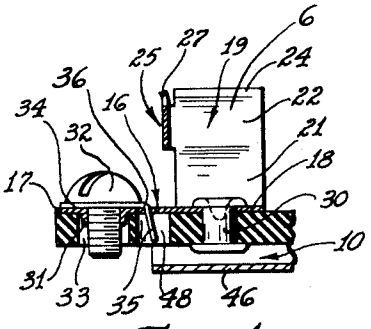


FIG. 4.

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ELECTRICAL CONNECTION MEANS

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4 Claims. (Cl. 200—134)

This invention relates generally to electrical connection means, including what is known in the trade as a junction or fuse block.

The junction block hereinafter described may be used wherever found applicable but is preferably designed for attachment adjacent the back of the instrument panel of an automotive vehicle, and includes, among other things, a carrier of insulating material having terminals and fuse clips associated therewith and a bracket for securing the block with respect to the panel or some other desirable support.

One object of the invention is to provide an improved bracket for a junction block whereby portions thereof are so constructed and arranged with respect to certain electrical connections that the bracket is completely insulated from said connections.

Another object is to provide an improved form of fuse clip and a terminal plate which interlock with each other in a particular manner.

A further object is to provide a fuse clip having means associated therewith whereby to prevent or limit undue expansion of the clip when a fuse is inserted into or removed from same. In this connection it is also an object to provide the means just referred to with a bulge or other form of reinforcement whereby to maintain said means in a rather substantially fixed predetermined position with respect to a portion of the clip.

Other objects and advantages of the invention will be evident by reference to the description hereinafter set forth in conjunction with the drawing annexed hereto:

Referring to the drawing:

Figure 1 is a top view, regular size, of the junction block;

Figure 2 is an enlarged vertical section taken substantially on line 2—2 of Figure 1;

Figure 3 is a bottom view, regular size, of the block shown in Figure 1;

Figure 4 is an enlarged section taken substantially on line 4—4 of Figure 1, showing certain details of construction; and

Figure 5 is an enlarged partial section taken on line 5—5 of Figure 2, through a portion of one of the fuse clips, and illustrates in detail the reinforcement as applied to that part of the clip which limits the expansion thereof.

The junction or fuse block clearly illustrated in the drawing includes, among other things, a carrier generally designated 1 of some desirable insulating material such as a phenolic condensate. The block is preferably made of fairly thin, flat, yet substantial stock, and a plurality of fuse clips and other electrical connections are secured to one side thereof. These electrical connections include a pair of fuse clips 2 and 3, a second pair 4 and 5, and a third pair or set 6 and 7, which pairs are arranged longitudinally in spaced apart parallel relation on the block. Each pair of clips is adapted to receive a fuse of the character shown in Figures 1 and 2. As most clearly shown in these figures, the clips 2 and 4 are preferably electrically and mechanically connected by means of a rectangular flat jumper plate 8 which overlies the base portions of the clips. One extremity of the jumper extends outwardly beyond one of the longitudinal marginal edges of the carrier and may be provided with a screw or some other desirable means so that the end of a conductor wire may be secured to the jumper. The means employed for connecting the jumper plate 8 to the clips 2 and 4 and to the carrier 1 will be described later. A substantially flat generally square terminal plate 9 is connected to the clip 3 and the carrier in a particular manner and will also be described later.

A bracket generally designated 10 is secured to one flat side of the carrier of insulating material by means of a rivet 11. This bracket includes, among other things, a generally flat portion 12, which engages the carrier, and in order to prevent lateral movement of the bracket relative to the carrier, the marginal edges of the portion 12 are preferably deformed so as to preferably provide a pair of lateral tongues 13 which engage one of the longitudinal edges of the carrier. Obviously other means than the tongues 13 may be employed to counteract lateral movement of the bracket as, for example, a rivet in addition to rivet 11 may be used to further tie the bracket in place. The bracket also includes an angular flat portion 14 which is preferably provided with a plurality of threaded apertures 15 through which means such as screws may be inserted for securing the junction block relative to a support.

It is clearly evident that each of the clips 2 through 7 are identical, and therefore a description of one will suffice. The clip 6 includes a substantially flat elongated base portion generally designated 16. One extremity of this base constitutes a tail portion 17 and the other extremity 18 is provided with upstanding integral portions which are designed to grip the fuse.

The clip also includes a generally tubular fuse receptacle generally designated 19 which is se-

cured to the base 16 by a resilient channel part generally designated 20. More specifically the channel 20 is comprised of upwardly and inwardly curved wall portions 21. The wall portions 21 are provided with continuations which extend outwardly and inwardly to form the arcuate wall portions 22 which comprise the receptacle 19. The upper extremities of the portions 22 are preferably flared outwardly at 24 in order to assist in piloting the fuse into the receptacle. The receptacle 19 and channel 20 are joined together by a waist or junction 23, and among other things, this waist provides a stop and rest for the fuse. The channel is preferably made somewhat larger than the receptacle so as to afford sufficient resilient support for the receptacle.

In order to prevent undue expansion of the clip when a fuse is either being inserted or removed from the receptacle, one extremity of one of the walls 22 forming the receptacle 19 is provided with an integral offset portion generally designated 25 which is in the form of an arm 26. The arm 26 is arranged transverse with respect to the longitudinal axis of the receptacle and in a plane substantially parallel to the base of the clip. This arm is preferably made and arranged so as to substantially close off one open end of the receptacle, and the upper extremity of the arm may be provided with an outwardly flared portion 27 similar to the flared portions 24 whereby all of the portions cooperate to provide means assisting to pilot the fuse into the receptacle. Specifically the arm and flared portion 27 also assist in guiding the fuse into a predetermined position so that the contact or terminal ends thereof are always in engagement with the walls of the receptacle.

The arm 26 is preferably of a length whereby to extend beyond the wall of the receptacle opposite the wall from which the arm is connected, and the arm is provided with a transverse stop 28 which is arranged in spaced apart parallel relation to the receptacle. Accordingly, it is evident that when a fuse is inserted or withdrawn from the receptacle, that the wall of the receptacle opposite the one to which the arm is connected will engage or fall just short of engaging the stop 28 thus preventing undue expansion and possible distortion of the clip. By the provision of the guard arm 26, it is also evident that the life of the clip proper is prolonged.

In order to maintain the arm 26 comparatively rigid or fixed with respect to the receptacle, the junction between the arm and that portion 22 of the receptacle to which the arm is connected is preferably provided with an outwardly projecting bulge or depression 47, as shown in Figure 5. This depression is so constructed and arranged that it is rather difficult to bend the arm relative to the receptacle.

The base extremity 18 of each clip is permanently secured to the dielectric carrier 1 by a rivet 30 which passes through the base and carrier as clearly indicated in Figures 2 and 4. The tail part 17 of each of the clips 5, 6, and 7 is provided with a laterally extending tubular internally threaded part 31 so as to receive the screws 32. The part 31 is disposed within an aperture 33 provided therefor in the carrier. A washer 34 is carried by each of the screws 32, and an angular tongue 35 projects from the washer into an aperture 36 provided in the base 16 of the clip and also into a recess 48 provided in the carrier. The purpose and function of the washer is well known. The tail part 17 of each of the clips 2, 3, and 4 is provided with a hole through which a rivet extends whereby to secure the clips permanently in place. Rivets 37 secure the jumper plate 8 upon the clips 2 and 4, and a rivet 38 secures this plate to the carrier. Holes are provided in the carrier opposite the rivets 37 so as to allow for clearance. A rivet 39 in addition to the rivet 30 secures the terminal plate 9 to the clip 3 and to the carrier.

The terminal plate 9 is preferably provided with a pair of screws 40 which are threadedly secured to the free side of the plate for securing conductor wires to the plate. Each screw preferably carries a washer of the character above described having a tongue which projects into an aperture 41 provided in the plate.

As most clearly shown in Figure 1 of the drawing, the terminal plate 9 is preferably provided with a narrow slot 42 which intersects one marginal edge of the plate and receive the wall 21 forming a part of the channel 20 whereby to interlock the plate and clip. By this construction, a portion 43 of the plate is arranged within the channel 20 and upon the base 16 of the clip.

The portion 12 of the bracket generally designated 10 is preferably provided with a plurality of spaced apart depressions which prevent certain rivets from engaging the bracket in order to prevent short-circuiting. This portion 12 is provides with a corner depression 44 which prevents the rivet 30 and the washer 34 of the clip 5 from coming in contact with the bracket. A similar depression 45 adjacent the other corner of the portion 12 prevents the rivet 30 securing the clip 4 to the carrier from engaging the bracket. A pair of depressions 46 are also provided in the portion 12 so as to prevent the rivets 30 and washers 34 associated with the clips 6 and 7 from coming into engagement with the metal bracket.

In view of the foregoing it should be apparent that improved principles of design and construction have been embodied in a junction block and that among other things improved means have been provided whereby to improve the durability and efficiency of the fuse clips.

Having thus described my invention, it is obvious that various modifications may be made in the same without departing from the spirit of the invention; and, therefore, I do not wish to be understood as limiting myself to the exact form, construction, arrangement, and combination of parts herein shown and described.

I claim:

1. A carrier of insulating material having a planar surface, electrical connection means carried by said carrier, a mounting bracket secured to said carrier, and a depression provided in said bracket opposite said electrical connection means for maintaining said bracket out of electrical engagement therewith.

2. Electrical connection means including, a carrier of insulating material, a terminal having a flat base engaging said carrier, an aperture provided in said carrier, a metal take-off member overlapping and engaging said terminal base, an aperture provided in said take-off member, a rivet passing through the aperture in said carrier and through the aperture in said take-off member for attaching the take-off member to said carrier, means securing said terminal base and said take-off member together, and a recess formed in said carrier providing relief for said securing means.

3. Electrical connection means including, a

horizontally disposed generally U-shaped portion and a vertically disposed generally U-shaped portion integrally connected together to provide a unit, one of the sides of the vertically disposed U-shaped portion and one of the sides of the horizontally disposed U-shaped portion being fashioned to provide a receptacle adapted to receive a plug conductor terminal, and said one side of the vertically disposed U being adapted for movement between the said one side and the opposite side of the horizontally disposed U when a plug conductor is inserted into said receptacle.

4. Electrical connection means including, a horizontal base portion, a first portion integrally connected to said base portion extending in a generally vertical position with respect to said base portion, the upper extremity of said vertical portion being fashioned to provide a part of a horizontally disposed terminal receptacle adapted to receive a plug conductor terminal, said part being provided with an integral continuation extending in a direction generally transverse to said part and substantially horizontal to and in spaced apart relation with respect to said base portion, the free extremity of said continuation also being provided with an integral stop portion arranged opposite and substantially in spaced apart parallel relation with respect to said part of said receptacle and also substantially horizontal with respect to said base portion, said base portion also being provided with a second integral portion extending in a generally vertical plane in spaced apart relation with respect to said first generally vertical portion, the upper extremity of said second generally vertical portion being fashioned to provide a second horizontally disposed part of the terminal receptacle complemental to said first part and being adapted for movement in the space between said first part of said receptacle and said stop portion of said continuation.

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