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F. L. TEUSCHER ET AL

3,172,720

TERMINAL BLOCK

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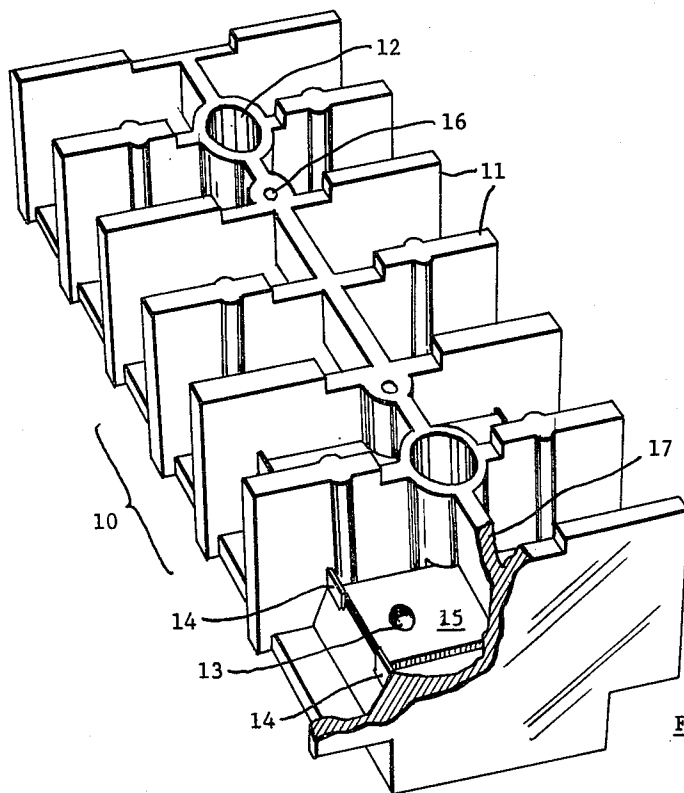


FIGURE 1

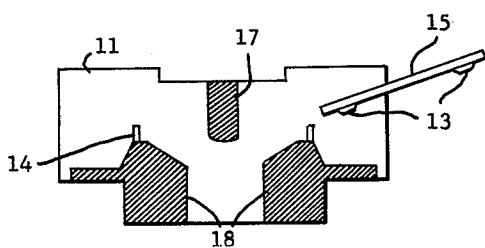


FIGURE 2

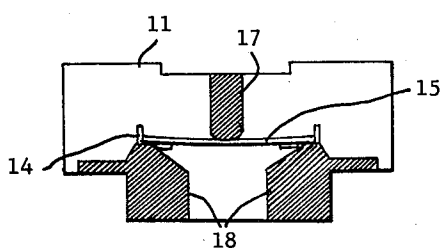


FIGURE 4

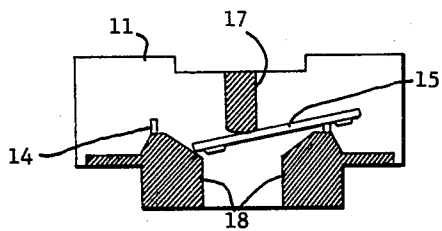


FIGURE 3

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TERMINAL BLOCK

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3 Claims. (Cl. 339-198)

This invention relates to electrical terminal connections in electrical apparatus having multiple components, and more particularly to an arrangement for an improved electrical terminal block in such types of electrical equipment.

In multiple component electrical apparatus it is customary to provide electrical input and output connections from each component, joining common or interrelated connections in a junction device or terminal block. This practice is not only useful in the assembly of the final structure, but also is essential in the maintenance and servicing of many electrical devices in order to return the electrical apparatus promptly to its intended functional operation.

Essentially electrical terminal blocks have consisted of conductive elements fastened in some manner to a common insulating member, which is in turn fastened mechanically to the electrical apparatus. A well known form of terminal block provides a series of metal strips, spaced at regular intervals upon a block of insulating material and fastened to the block by rivets. Each end of each strip is provided with a screw-type connection, or binding post, for attaching the connections, which may be lugs forming the terminals of the wiring or the wires' ends of the wiring leading to and from the electrical components of the apparatus. Additionally insulating partitions may be provided between each of the metal strips of the block, or the strips may be molded into the block. This type of block is costly in manufacture requiring either complex jigs for holding the strips and consequent secondary "cleanup," or jigs for carrying out the riveting operation that are equally complex. Furthermore, the riveting of metal into insulating material is not only time consuming and costly, but also may result in mechanical stresses set up in the material, not readily observed, whereby the riveting parts become disrupted. Frequently, the riveted strips become loose or the rivets are pulled from the insulating material during attachment of the wiring, resulting in electrical failures.

The present invention is directed to an improved terminal block in which the conductive metal strips are securely and permanently fastened without the use of rivets and the like and which does not require complex jigs or molding operations.

The present invention provides also a terminal block for electrical connections that is economical to manufacture, simple in construction and reliable in service.

The novel features of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof, may best be understood by referring to the following description and the accompanying drawing.

In the drawing:

FIGURE 1 is a perspective view of the improved terminal block having a portion cut away to reveal its construction.

FIGURES 2, 3 and 4 are cross-sectional views illustrating the novel manner in which terminal strips are mechanically fastened and retained in the terminal block.

With reference to FIGURE 1 a molded block 10 of suitable insulating material is provided with spaced openings between the partitions 11 for the insertion of metal conductive strips 15. These strips 15 may be of any

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flexible metal capable of conducting electric current such as brass, Phosphor-bronze, et cetera. The block is also provided with well-like holes 12 for attaching the block to an electrical apparatus and tapped holes 16 for attaching a cover (not shown) to the top of the block 10. Each of the spaced openings between the partitions 11 is provided with a pair of ears 14 at each side of the opening, the ears being integral with the block 10. A rib 17, common to all the openings and to the partitions 11, extends the full length of the block 10.

FIGURES 2, 3 and 4 represent also a cross-sectional view of the block 10 between any two of the partitions 11, and, as indicated, show the bottom of the rib 17, together with a pair of shoulders 18 of which the inner corner of each is cut away at an angle. A salient feature of the construction of the block is that the lower edge of the rib 17 projects into the plane of the top portions of the shoulders 18 with the ears 14 extending above and beyond the aforesaid plane.

Referring now to FIGURE 2, the conductive strip 15 is provided at each end with a tapped hole 13 into which a terminal screw (not shown) may be inserted for fastening the electrical connection (lug or wire end). The tapped holes 13 may be extended into buttons formed on the underside of the strip 15 to insure firm contact with the connection by the terminal screws; however, these buttons are not of sufficient depth to interfere with the insertion of the strips 15 into the block 10.

FIGURE 3 illustrates the manner in which the strips 15 are inserted into the block 10. Each strip 15 is mechanically forced between the shoulders 18 and the lower edge of the rib 17 to be finally seated between the ears 14 on each side of the block 10, the sloping or angular portions of the shoulders 18 permitting such insertion. It is to be noted (see FIGURE 4) that since the lower edge of the ribs 17 projects below the plane of the tops of the shoulders 18, in the final position of each strip 15 a slight bending of the strip results; consequently, each strip is securely locked into place from movement after being seated and the ears 14 prevent any sliding of the strip from the block.

A terminal block constructed as described above is not only economical of construction, but also a very secure and trouble-free type of connection strip arrangement is provided. Although actual use of this type of block has produced very few, if any, incidents where strips 15 were required to be replaced, it is possible by wedging the strip from its final seating to remove and replace a strip with equal effectiveness as compared to the original insertion.

While this invention has been explained and described with the aid of a particular embodiment thereof, it will be understood that the invention is not limited thereby and that many modifications will occur to those skilled in the art. It is therefore contemplated by the appended claims to cover all such modifications as fall within the scope and spirit of the invention.

What is claimed is:

1. An electrical terminal device comprising a block of insulating material having a plurality of spaced locations therein, each said location including a cut-out portion of the said block having inwardly sloping, facing shoulders, each said shoulder having a seat at its top, protrusions extending vertically from the top of each shoulder adjacent said seats, an insulating member common to each said location extending into said cut-out portion, a plurality of flexible, conductive strips, each strip being insertable between said sloping shoulders and said member into said cut-out portion to ultimately rest upon said seats and confined in position by said protrusions, and means for connecting wires to the ends of said strips.

2. An electrical terminal device comprising a block of insulating material having a plurality of spaced locations

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therein, each said location including a cut-out portion of the said block having inwardly sloping, facing shoulders, each said shoulder having a seat at its top protrusions from the top of each shoulder adjacent said seats, an insulating member common to each said location extending into said cut-out portion, a plurality of flexible, conductive strips, each strip being insertable into said cut-out portion guided by said sloping shoulders and said member into position to rest ultimately upon said seats, being clamped by said member and locked by said protrusions into said position, and means for making electrical connections to the ends of said strips.

3. An electrical terminal device comprising a block of insulating material having a cut-out portion therein including a pair of inwardly sloping, facing shoulders, a seat at the top of each shoulder, protrusions adjacent the said seat upon each shoulder, an insulating member extending into the said cut-out portion, a flexible, conductive strip insertable into said cut-out portion between said

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member and said shoulders to rest ultimately upon said seats, being clamped thereon by said member and restricted in position by said protrusions, and means for attaching electrical connections to the ends of said strip.

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