ABSTRACT OF THE DISCLOSURE

Terminal block adapted for mounting in a mounting strip or panel comprising a plastic body having at its base two offsetting lateral projections, one of which is in the form of an upwardly directed flexible arm having a convex outside face.

The present invention relates to terminal blocks and more particularly to fastening means for securing terminal blocks to mounting strips or boards.

In modern electrical and electronic assemblies, use is made of increasing numbers of terminal blocks for effecting electrical connection. These blocks, each of which comprise an insulting body usually made of plastic material and provided with cavities or recesses for receiving the terminal posts, are stacked on mounting strips in order to occupy a minimal amount of space. Of course, it is necessary that each individual block may be easily removed from the mounting strip without disturbing those lying adjacent thereto and accordingly, one of the objects of the invention is to solve this problem which has not up to the present time received any satisfactory solution.

In effect, according to the prior art, the terminal block is provided, on one lateral side of its base, with a projection which engages under the flange member of a substantially C-shaped mounting strip and, on the other lateral side of its base, with a resilient metal glide (often associated with a ball or roller push-piece) slidable engageable under the other flange member of the strip so as to fasten the block thereon.

These fastening means being complicated, require the use of metal parts and are expensive to manufacture when compared to the costs of manufacturing of the terminal block proper.

The present invention relates to a terminal block provided with fastening means which avoid these drawbacks. According thereto the aforesaid metal glide is replaced by a simple projection of the insulting body which latter is made of a flexible plastic, said projection being formed with a slot allowing a resilient deformation upon mounting of the terminal block on a mounting strip or board.

The invention has also for an object to provide a new and improved terminal block which is easy to manufacture and at a low cost.

The invention is generally directed to a terminal block provided with fastening means for enabling it to be mounted in an apertured mounting board characterized in that said terminal block comprises an insulting body made of flexible material and is provided with a base beneath which are positioned offsetting lateral projections, a slotted kerf being formed between the projections to allow the latter to be engaged under the oppositely disposed flanged edge portion of the mounting board.

According to another feature of the invention the lateral face of the projection is provided with a slot which is convex or cam-faced so that during the mounting operation the lips of the slot are drawn at first, closer and closer together, and then, after passing over the point of maximum extent, thereupon separate and at which time the cam-faced projection is still in locking contact with the edge of the aperture.

According to another feature of the invention the aforesaid slot extends along the greater part of the height of the projection and opens at the top thereof, said projection being thus only joined to the body of the terminal block by a narrow strip forming its base.

According to still another feature of the invention the body of the terminal block is provided with an abutment cooperating with the edge of the aperture and preventing the cam-faced projection, provided with the slot, from fully engaging under the edge of the aperture.

Other features and advantages of the invention will appear as the following description proceeds.

In the annexed drawing given merely by way of example:

FIG. 1 is a side elevational view of a terminal block according to the invention;
FIG. 2 is a side elevational view of a glide which protects one of the lateral projections of the terminal block of FIG. 1;
FIG. 3 is a partial end elevational view with the block turned 90° and also showing the glide;
FIG. 4 is a side elevational view showing the terminal block tilted preparatory to its assembly with the mounting strip;
FIG. 5 is a side elevational view showing the terminal block fully assembled with the strip;
FIG. 6 is a side elevational view of another embodiment incorporating the principles shown in FIG. 5; and
FIG. 7 is a side elevational view of the alternative embodiment fully assembled with its strip member.

To clarify this invention and for a better understanding thereof, the terms lower end or base, upper end, left and right sides or like expressions will be used in the course of the ensuing description when considering the positions of the terminal blocks as shown in the drawing, but it is evident that the terminal blocks may be located in other positions.

Turning now to the drawings and particularly the embodiment of the invention shown in Figs. 1-5 an insulating plate made of flexible plastic material and constituting the body of a terminal block is denoted at 10. The details of the electrical connections have not been shown and need not be described since they do not form part of the invention and it is to be understood that the connections may be of any conventional type. At its base the body 10 is provided with right and left lateral projections 14 and 18 respectively. The projection 18 forms a flexible arm extending substantially parallel to the side of the base of the body and is connected at its lower end by a narrow strip to a depending rib 18' and separated from the base of the body by a slightly flared slot 20 opening at the top of arm portion 18.

The lateral face of projection 18 is convex or cam-faced, the apex of the convexity being shown at 24. If desired, it is possible to provide the projection 18 with a protection piece or glide 26, shown in FIG. 2. This glide is preferably metallic and has one of its ends fitted in the slot 20 and its other end inserted in a recess or kerf means 28 provided in the base of body 10. In order to prevent the metallic strip means 26 from moving laterally with respect to the flexible projection 18, a groove 30 (FIG. 3) is formed in the base of the body 10 for receiving said glide.

As clearly shown in the drawing, the base of body 10 is narrower than the upper portion thereof so that a constriction 16 is formed between projections 14 and 18 and the upper portion to prevent the latter from passing through an aperture after the projections have been engaged therein.
3,430,190

The upper portion of body 10 also comprises an abutment 32 extending outwardly above the projection 18, said abutment being pressureless and engaging under the edge of the aperture by cooperating with the edge as shown in the assembled position of FIG. 5.

The fastening of the terminal block on a mounting strip is very easily executed (see FIG. 4). The projection 14 is first engaged under the flange 34 of the mounting strip 12 and thereafter by pushing downwardly the glide 26 is caused to slide against the inturnd edge or flanged extension 36 of strip 12 whereupon the projection 18 is retracted or forced back up until its apex 24 passes over the edge of extension 36. Then, because of the inherent resiliency of the flexible projection 18 it is urged in the opposite direction to the position shown in FIG. 5 at which time it is still slightly compressed, the abutment 32 thus preventing the projection 18 from fully engaging under the horizontal inturnd flange or extension 36. This construction is particularly advantageous in that it facilitates the removal of block 10 from the mounting strip 12.

When it becomes necessary to remove the terminal block from the mounting strip 12, it is sufficient to exert a thrust as indicated by the arrow F7 of FIG. 5. The block then pivots about the inturnd edge of flange 34 and the cam-fused projection 18 slides on the edge of extension 36 until the apex 24 passes over the edge thereof.

FIGS. 6 and 7 relate to another embodiment of the invention which is particularly adapted in case the mounting strip is C-shaped sectional iron or when the terminal block is intended to be mounted in an aperture provided in a mounting board.

In the alternative embodiment of the invention shown in FIG. 6, which may also utilize a C-shaped sectional iron member such as 12 or an apertured board 54, there is shown a terminal block 40 which is canted to the right as viewed in the drawing preparatory to insertion in the board 54.

At the right side of the base of the terminal block 40, there is provided an angular projection 42 which defines thereabove a shoulder 44 and at the left side of its base it is provided with an integral outsticking V-shaped flexible arm 46 connected to the body of the terminal block at the top of the inner leg of the V. Thus, the outer leg of the V projects laterally and upwardly from the base of the terminal block 40, and the junction of the inner leg of the V is located below the base as shown. This shape of the projecting arm 46 carried by the rib 48 is advantageous for particular types of installations since it provides even a greater flexibility.

As described in connection with the inventive embodiments of FIGS. 1 to 5, the laterally extending face of the projecting arm 46 is convex, the apex of the convexity having been designated in the drawing at 50. A downwardly projecting abutment means 52, analogous to abutment 32 of the terminal block of FIG. 1, is provided on block 40 and is of sufficient length to prevent the projecting arm 46 from fully engaging under the edge of the aperture and preventing removal.

For mounting the block 40 on a board 54, a thrust exerted along the line indicated by the arrow F6 after the projection 42 has engaged under the edge of the aperture, causes the projecting arms 46 to retract until its apex 50 has passed over the opposite edge of the aperture thus engaging lip 52 with the upper surface of the board.

For removing the block 40 a thrust exerted, as indicated in the direction of arrow F7, results in a resilient deformation of the projecting arm 46 and in the subsequent disengagement of the projection 42 out of the aperture.

Although two embodiments of the invention have been described and depicted, it will be apparent that these embodiments are illustrative in nature and that a number of modifications in the apparatus and variations in its end use may be effected without departing from the spirit or scope of the invention as defined in the appended claims.

That which is claimed is:

1. A terminal block assembly comprising, a channel-shaped metallic mounting bar having opposed flanges, a terminal block having a base and opposing side and end walls and a first integral rigid projection depending beneath one side wall, a height portion between the side wall and said projection about which the terminal block is rotated into assembly with one flange of the mounting bar, said terminal block further including an integral horizontally disposed abutment engaging with another side wall, and a second integral projection secured to said terminal body by a depending rib and having an upwardly extending flexible arm portion, said arm portion including a camming surface adapted to lock said arm portion in engagement with another flange of said mounting bar.

2. A terminal block for assembly with a mounting strip as claimed in claim 1, wherein the abutment and the terminus of said flexible arm are substantially coplanar.

3. A terminal block assembly as claimed in claim 1, wherein the lower extremity of the rib includes a transversely extending groove, said groove being arranged to communicate with a longitudinally extending kef and a metallic strip means confined in said groove.

4. A terminal block for assembly with a mounting strip as claimed in claim 3, wherein said metallic strip means includes a flexible body having bent free end portions.

5. A terminal block for assembly with a mounting strip as claimed in claim 4, wherein the bent free end portions of said metallic strip means are on said flexible arm and in said kef means respectively.

6. A terminal block for assembly with a mounting strip as claimed in claim 1, wherein the camming surface of the flexible arm includes an offsetting portion which extends into the plane of the other of said side walls of said terminal block.

References Cited

UNITED STATES PATENTS

3,192,927 9/1933 Woertz.
3,135,572 6/1964 Curtis et al.
3,259,876 7/1966 Norden.
1,646,807 10/1927 Benjamin................... 339--91
2,261,703 6/1959 Swengel..................... 339--217
3,079,582 2/1963 Lasar....................... 339--217
3,133,780 5/1964 Dean......................... 339--258
3,199,066 8/1965 Eledge et al.................. 339--258
3,226,668 7/1965 Baer et al................... 339--217
3,202,954 8/1965 Kenkaid..................... 339--217
3,229,239 7/1966 Medrey...................... 339--217
3,270,311 8/1966 Deer et al................... 339--217
3,260,986 7/1966 Staffel..................... 339--198

FOREIGN PATENTS

1,057,199 5/1959 Germany.

RICHARD E. MOORE, Primary Examiner.