Aug. 17, 1943. J. C. JOYCE 2,327,048

TERMINAL BLOCK

Filed June 18, 1941

Fig. 1

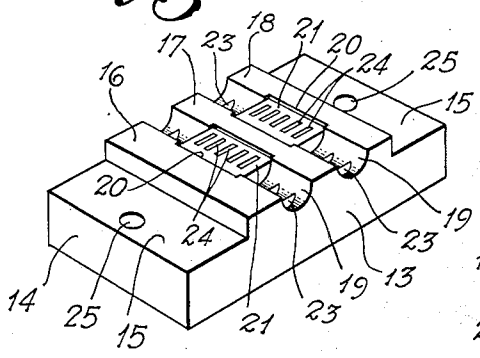


Fig. 2

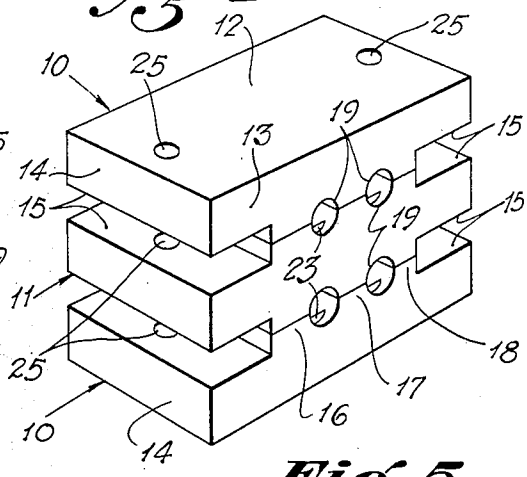


Fig. 3

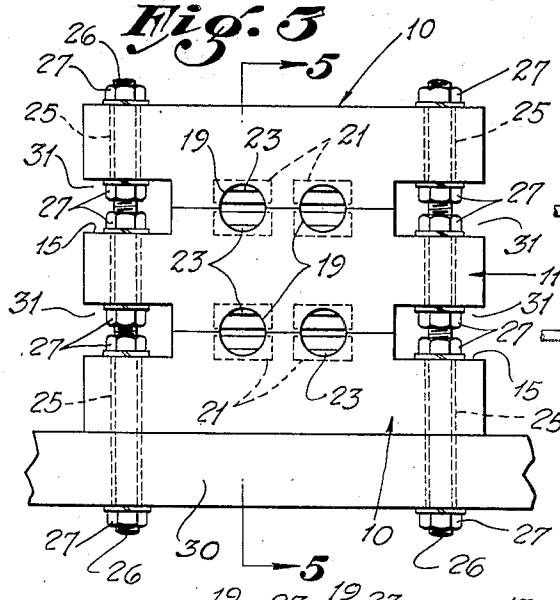
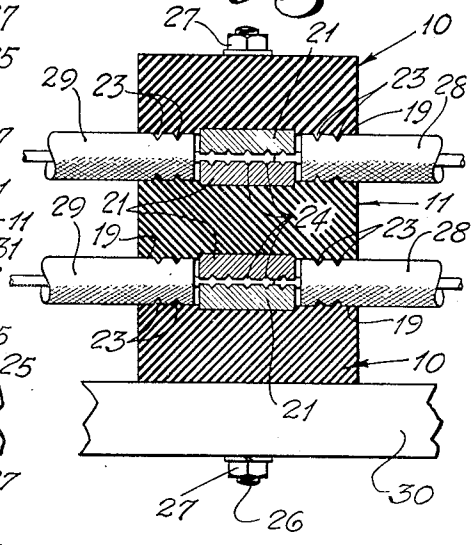


Fig. 5



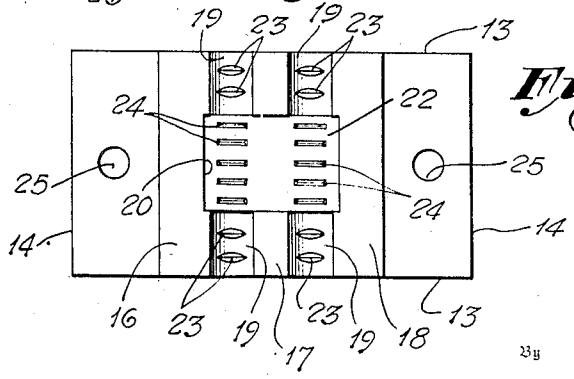


Fig. 4

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TERMINAL BLOCK

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6 Claims. (Cl. 173—324)

This invention relates to electrical equipment and particularly pertains to a terminal block.

At the present time electrical conductors are used in installations which require that one or more conductors shall be secured in position, and in some cases disposed at remote and inaccessible points. This is particularly true in connection with aviation control panels, junction boxes, switch boards, and other light voltage electric circuits. In aviation work particularly it is desirable to provide fastening means, such as terminal blocks, which may be rapidly installed and which will engage and support and when necessary make electrical connections between conductors in a rapid and efficient manner. It is the principal object of the present invention, therefore, to provide a terminal block made of dielectric material and which comprises units by which a composite block may be assembled to accommodate any desired number of conductors and to insure that these conductors will be electrically insulated with relation to each other and with the structure upon which they are supported. It is also an object of the present invention to supply a composite terminal block, sections of which may be removed without disturbing or loosening the remaining conductors.

The present invention contemplates the provision of a terminal block comprising a plurality of sections made of dielectric material and carrying metallic bridging inserts, the sections cooperating to grip the insulation covering of the conductors and to positively engage the conductor itself in a manner to provide a bridging connection, the said sections being further designed so that contiguous sections may be independently secured together so that other sections may be removed without interfering with the assembly of selected contiguous sections.

The invention is illustrated by way of example in the accompanying drawing, in which:

Figure 1 is a view in perspective showing one of the base terminal block units.

Fig. 2 is a view in perspective showing the assembly of two base terminal block units and an intermediate unit.

Fig. 3 is a view in elevation showing the structure indicated in Fig. 2 and disclosing the manner in which the blocks are individually secured in their assembled relation.

Fig. 4 is a view in plan showing the contact face of a terminal block.

Fig. 5 is a view in transverse section through the assembled terminal block as seen on the line 5—5 of Fig. 3.

Referring more particularly to the drawing, 10 indicates base block units, and 11 indicates an intermediate block unit. The base block units are interchangeable and are preferably rectangular in plan. They have a flat bottom wall 12. Opposite side walls 13 define the length of the block, and opposite end walls 14 define the width of the block. The face of the block opposite the plane face 12 is formed with flat portions 15 at the ends thereof and a plurality of intermediate ribs 16, 17 and 18. The ribs are parallel and extend transversely of the block parallel to the ends 14. Between these ribs are semicircular parallel grooves 19. As shown in Fig. 1, each of the grooves 19 is formed with a rectangular seat 20 midway its length to receive metal inserts 21. In the form of the invention shown in Fig. 4 a bridging insert 22 is substituted for the inserts 21. It is to be understood of course that the terminal block units 10 and 11 are made of suitable dielectric material, and that the inserts 21 and 22 are preferably made of copper. A plurality of transverse serrations 23 are formed in the grooves 19 and 20, and a plurality of serrations 24 extend transversely of the exposed face of the inserts 21 and 22. Bolt holes 25 are formed through the ends of the units 10 and 11 and when aligned will receive bolts 26. Nuts 27 are mounted on these bolts and hold the parts in a manner to be hereinafter described.

In use of the terminal block with which the present invention is concerned, a desired number of conductors 28 and 29 may be secured together between the block units. If only one set of conductors is secured in position these may be held between the base blocks 10. If more than two sets of conductors are to be secured in position a plurality of intermediate block units 11 may be placed between the two base blocks and secured together by the bolts 26. The assembled structure may be mounted on a suitable mounting panel 30 with the bolts 26 passing through the panel, or if desired screwed into the panel. When the block units have been assembled it will be seen that spaces 31 occur between the faces 15 of contiguous units. These are designed to accommodate nuts 27 and lock washers 27' which are screwed onto the bolts 26 and may be separately manipulated to make it possible for contiguous block units to be spread apart or entirely separated without disturbing the set position of adjacent block units. When the screws have been tightened it will be seen that the conductors 28 and 29 will be placed with their insulated portions seated within the recesses 19 and 20, and a length

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of the exposed ends of the electrical conductors positioned directly between the metallic inserts 21 and 22. The screws 26 will tighten the metallic inserts so that there will be a tendency for the ductile metal of the conductors to be extruded into the grooves 24 of the inserts, and at the same time the ridges 23 in the members 19 and 20 will be imbedded into the insulation of the conductors with the result that the terminal block will positively grip the insulation of the conductors as well as the metallic conductors themselves.

From the foregoing it will be seen that the terminal block is self-insulating and may be mounted either upon a frame, panel or junction box, or if desired may be suspended by a bracket at any point. With this structure it is not necessary to use insulated bridge mountings or superfluous accessories to support the conductors, and thus the necessity for numerous stud screws and the operations for placing them is eliminated.

It is to be understood that while the separate block units are shown as accommodating pairs of conductors that the structure may be enlarged to accommodate any number of conductors. It will also be evident that the terminal blocks may be used either for straight circuit wires, in which instance the inserts 21 are arranged as shown in Fig. 1, or that the terminal blocks may be used as bridging connections in which the inserts 22 are provided as shown in Fig. 4. Furthermore, the terminal blocks may be made to accommodate electric conductors of different diameters and may be color-coded to insure proper assembly according to wire size combinations.

Attention is directed to the fact that the terminal block here shown is light in weight, will secure a conductor by positive pressure, and will hold the parts so that there will not be any loose connections, and so that the parts will not become separated by vibration.

It will thus be seen that the invention here disclosed is simple in its construction, inexpensive as to manufacturing cost, may be readily applied to connect and hold any desired number of electrical conductors and hold them firmly and under pressure without possibility of loosening by vibration.

While I have shown the preferred form of my invention as now known to me, it will be understood that various changes may be made in combination, construction, and arrangement of parts by those skilled in the art, without departing from the spirit of my invention as claimed.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A terminal block for holding an insulated conductor having a portion with the insulation removed, comprising separate block units adapted to lie face to face, said faces being formed with transverse semicircular conductor grooves, and metallic inserts disposed at a point in the length of each of said grooves and by which pressure is exerted upon the exposed length of a conductor disposed within the grooves and between the inserts to grip the same, the portions of the grooves at opposite ends of the inserts embracing and simultaneously gripping the insulation on said conductor.

2. A terminal block for holding an insulated conductor having a portion with the insulation removed, comprising separate block units adapted to lie face to face, said faces being formed with transverse semicircular conductor grooves, metallic inserts disposed at a point in the length of each of said grooves and by which pressure is exerted upon the exposed length of a conductor disposed within the grooves and between the inserts to grip the same, the portions of the grooves at opposite ends of the inserts embracing and simultaneously gripping the insulation on said conductor, and means on the walls of said groove portions at opposite ends of the metallic inserts acting to be imbedded in the insulation to positively hold the same.

3. A terminal block, comprising a series of complementary block units, means for securing said block units in assembled superimposed relation abutting to each other and whereby pairs of units may be independently secured together, the series of blocks being formed with their contiguous faces shaped to receive and hold electric conductors, the block units being of dielectric material, and metallic elements incorporated in the opposed faces of said pairs of block units intermediate the ends thereof whereby electrical connections may be made between the conductors.

4. A terminal block, comprising a pair of complementary block units, an intermediate block unit secured between the faces of said complementary block units, said units being formed with transverse openings in register and with contiguous faces abutting, a fastening member passing through said openings to hold the units in fixed assembled relation to each other, complementary transverse grooves in the abutting faces of the various units to receive electrical conductors which are clamped into position by said fastening means, metallic elements at a point in the length of said grooves to form electrical connections, the block units being of dielectric material, and means carried by the fastening means for engaging the block units and independently holding the separate units in fixed relation.

5. A terminal block, including a pair of terminal block units, said units being formed with openings through their ends, a fastening bolt passing through the openings to clamp the contiguous faces of said blocks together, said faces being relieved at their opposite ends to form a space between a portion of said end faces sufficient to accommodate nuts to individually engage the block units and to permit manipulation of said nuts, the contiguous faces of said units being formed with complementary semicircular grooves to embrace the insulation of conductors lying within the grooves, and metallic inserts filling the center portion of said grooves to engage the wire of said conductor.

6. A terminal block, comprising a pair of complementary block units, said units being substantially rectangular and of dielectric material, each unit having separate parallel transverse grooves of semicircular section extending across one face of the block and designed to receive an insulation covered electric conductor, said conductor having a section from which the insulation has been removed, metallic elements fitted into the grooves at points intermediate the ends of the grooves whereby the bare section of the electric conductor will lie along said metallic portion and the insulation covering of the conductor and will abut against the opposite ends of the insert and will lie along the grooves at opposite sides of the metallic member, the transverse ridges formed across the grooves and the inserts whereby to engage and grip the insulation and the conductor.

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