May 1, 1951 G. J. GANLEY 2,551,259

ELECTRICAL TERMINAL BOARD

Filed Jan. 6, 1948

Fig. 1.

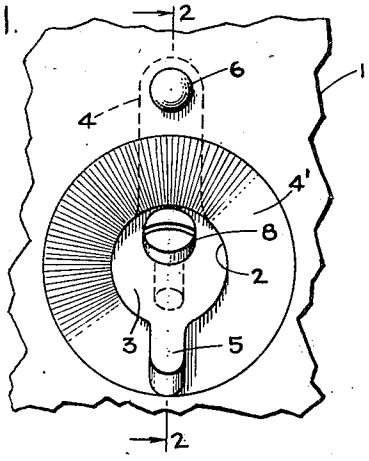


Fig. 2.

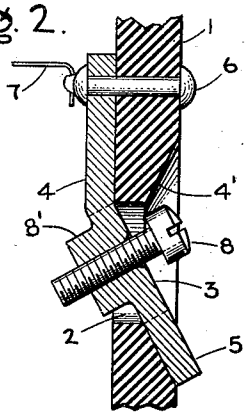


Fig. 3.

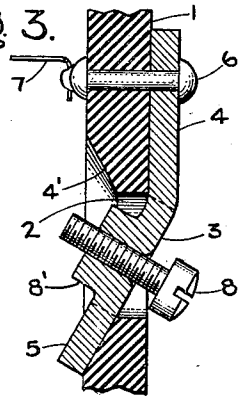


Fig. 4.

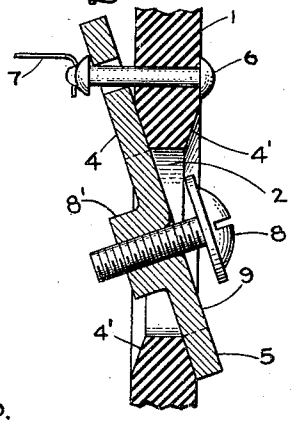


Fig. 5.

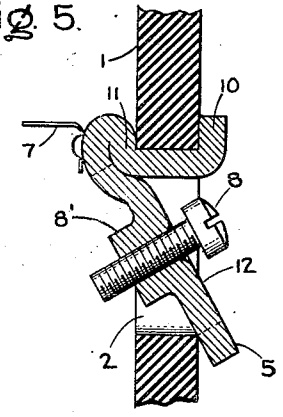
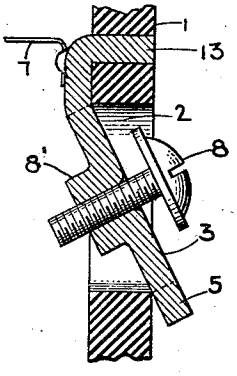


Fig. 6.



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Patented May 1, 1951

2,551,259

UNITED STATES PATENT OFFICE

2,551,259

ELECTRICAL TERMINAL BOARD

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Application January 6, 1948, Serial No. 687

1 Claim. (Cl. 173—324)

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This invention relates to electric terminal boards and more particularly to an electric terminal board with tilted screw terminals.

An electric terminal board serves as a junction or electrical connector for two or more leads. It is usually mounted on encased electrical apparatus and it serves to make the electrical connections between the inside, or internal leads, and the outside, or external leads of such apparatus. The conventional type of electric terminal board is constructed of insulating material to the outer side of which a strip of conductor is fastened by means of a rivet or eyelet. A screw terminal passes through the conductor strip and usually the insulator also.

One disadvantage of this conventional type of terminal board is that the wire or external lead which is fastened to the terminal tends to extrude from under the screw head, and it is necessary to use keepers to hold the lead in place. Also, at times, the terminal board is located in such a way that it is difficult to reach the screw head with a screw driver. Furthermore, because of the outside mounting of the metal parts on the insulator board the overall thickness of the device is sometimes objectionably great.

In accordance with this invention these disadvantages are eliminated by attaching the conductive strip to the terminal board in such a manner as to have the conductive strip pass from one surface of the board through a hole in the insulating material to the other surface of the board, so that the terminal screw is tilted from its usual angle of perpendicular to the plane of the insulating board with the result that the externally accessible conductive parts of the terminal board are effectively flush mounted.

An object of the invention is to make accessible the screw member of the electric terminal board in cases where it would otherwise be difficult to reach.

Another object of the invention is to eliminate the use of keepers for holding a wire in place on a terminal board.

Still another object of the invention is to provide a screw terminal which is almost flush with the terminal board and which occupies less space on the surface of the board.

The invention will be better understood from the following description taken in connection with the accompanying drawing, and its scope will be pointed out in the appended claim.

In the drawing, Fig. 1 shows a front elevation of a preferred form of the invention and Fig. 2 shows a sectional view on the line 2—2 of Fig. 1.

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Figs. 3, 4, 5 and 6 are similar sectional views of alternative methods of construction of the tilted screw terminal board.

Referring now to the drawing, there is shown a sheet or board 1 made of any suitable insulating material. Through the board 1 is a hole 2 which serves as a passageway for a bent conducting strip or plate 3, which will ordinarily be made of copper or other highly conductive metal. The circular edge of board 1, which forms the hole 2, is beveled to form the chamfer 4'. This is done so that the strip 3 which is preferably bent to form the parts 4 and 5 will be flat against the terminal board 1. It is obvious that the chamfered edge 4' is not a prerequisite of the construction of the terminal board 1 as shown in Figs. 5 and 6. Part 4 of the conducting strip 3 is fastened to the back of the terminal board 1 by any suitable means, which may be an integral part of the conducting strip 3 or an eyelet or rivet 6 as illustrated in Fig. 2. Part 5 of the conducting strip 3 passes through the hole 2 and rests against the chamfered edge 4' of the terminal board 1. Since the conducting strip 3 passes through the terminal board 1, possible rotation of the conducting strip 3 about the rivet 6 as an axis is prevented. Rivet 6 may serve as one electric terminal having attached to it by solder or other suitable material a wire 7. The other terminal is achieved by using a screw 8 which passes through a hole which has been drilled and tapped in part 5 of the conducting strip 3. The metal from which the conducting strip 3 is made is usually too thin to be tapped. If this is the case, as shown in the drawing, the material which would ordinarily be removed to form the hole through which the screw 8 passes is bent back to form the lip 8' which is tapped so as to retain the screw 8. Since the screw 8 is inclined to the plane of the terminal board 1 and the screw head is nearly flush with the terminal board surface a shorter screw, which does not extend as far behind the terminal board 1, may be used. Since the edge of the hole 2 is chamfered, when the screw 8 is securely tightened its attached lead is locked between the screw head and the sides of the opening in terminal board 1. This eliminates the need for keepers.

Fig. 3 illustrates a terminal board very similar to that in Fig. 2 except that the inside and outside of the terminal board have been interchanged and the screw 8, is inserted from the side opposite that shown in Fig. 2. A board constructed in this way would be simpler to manufacture than the preferred form of the invention but would

have the disadvantages of conducting strip 3 and screw 8 not being as flush as in the construction shown in Figs. 1 and 2, and pressure on the screw 8 would tend to bend the plate 3 which is supported only at the rivet 6. Another method of construction is shown in Fig. 4 wherein both the inside and outside edges of the hole 2 of the board 1 are chamfered and the rivet 6 is placed close to the large hole 2 so that it is not necessary to bend the conducting plate 9 and a straight strip of metal is used. In another modification a "snap-in" arrangement is employed. Fig. 5 illustrates such a construction in which prongs 10 and 11 of curved conducting plate 12 securely hold the conducting strip to the terminal board 1. Fig. 6 illustrates an alternative construction wherein the conducting strip 3 is fastened to the board 1 by the integrally formed pin 13. This construction eliminates the need for rivets or other external fastening means.

While there has been shown and described certain particular embodiments of the invention, it will be obvious to those skilled in the art that changes and modifications can be made without departing from the invention, and, therefore, it is aimed in the appended claim to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

A wire terminal assembly for electric apparatus comprising, in combination, a flat board of insulating material having a round opening extending perpendicularly therethrough, one edge of said opening being chambered, a unitary strip of electrical conducting material having a thickened intermediate portion of rounded configuration extending diagonally through said opening so that one diameter of said rounded central portion is wholly within the lateral confines of said board and so that another diameter of said rounded central portion perpendicular to the first-mentioned diameter extends parallel to the chamfered edge of said opening from beyond one side of said board to beyond the other side of said board, said intermediate portion being of such size as substantially to close said opening and having a substantially centrally located screw threaded hole, a terminal screw threaded in said hole whereby it extends diagonally through said opening perpendicularly to said intermediate portion, the thickness of said flat board of insulating material being at least equal to the thickness of the head of said screw whereby when said screw is turned all the way in said head will be substantially within the lateral confines of said board, said strip having an end portion angularly related to said intermediate portion so as to be parallel to and in contact with one side of said board, and means for fastening said end portion to said board.

GREGORY J. GANLEY.

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