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TERMINAL BLOCK

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FIG. 1

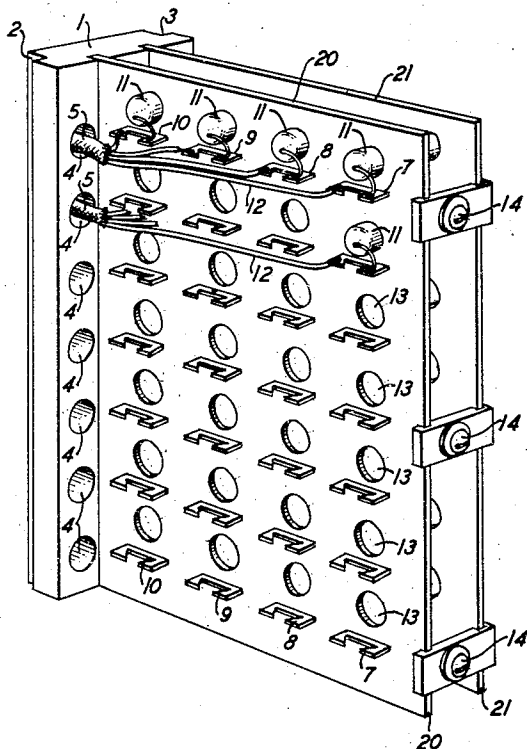
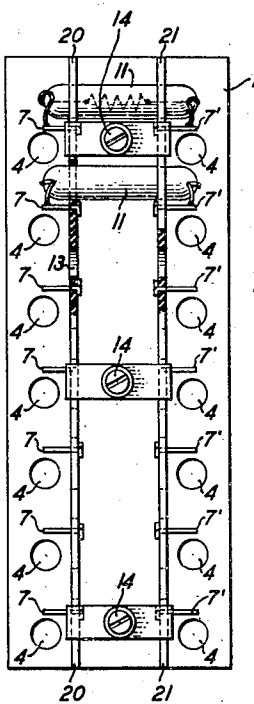


FIG. 2



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TERMINAL BLOCK

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2 Claims. (Cl. 175—298)

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This application is a division of application Serial No. 421,592, filed December 4, 1941, now abandoned, and covers an invention that relates to a terminal block device such as used, for example, in telephone systems to interconnect different pieces of apparatus. The object of the invention is to improve such a terminal block device by a construction that will permit interwiring apparatus units to be mounted on the block and will provide for heat dissipation from such units consequent to the passage of electric current therethrough or for any other cause.

Other novel features and advantages of the invention will appear from the following description and by the claims appended thereto, reference being had to the accompanying drawing, in which:

Fig. 1 is a perspective view of a terminal block embodying the principle of my invention; and

Fig. 2 is a front view of the terminal block showing apparatus elements in position in the two upper rows of the block, a portion of the top apparatus element being exposed to indicate the electrical element thereof.

A terminal block of the present invention, as shown in Figs. 1 and 2, for example, comprises a base 1 of any suitable insulating material having recessed rear corners 2 and 3 for the support of a protecting cover, and vertically aligned openings 4 on each of its vertical sides for the passage therethrough of cables 5 the individual wires of which are preferably to be connected to terminals in horizontal alignment with the opening 5 through which the cable is passed. Supported in any suitable manner at right angles upon the base 1 are two preferably rectangular strips 20 and 21 of any suitable electrically insulating and heat resisting material. These strips are of a suitable thickness to insure rigidity, and are disposed upon the base 1 as far apart as is necessary (preferably in parallel spaced relationship) to provide for the passage of sufficient air between the strips to cool the apparatus elements which are mounted upon the strips 20 and 21 as hereinafter set forth. To prevent buckling and insure the stability of the terminal block as a unit, the strips are held fixedly apart at the forward end by a suitable number of brackets which are mounted along the ends of the strips, said brackets being held in position by the bolts 14 which are suitably secured to the base 1 by nuts and interposed lock washers (not shown).

Upon the front surface of strip 20 (that is, the surface that faces the reader in Fig. 1), is secured in any suitable manner for each hole 4 in

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base 1 and in substantial horizontal alignment therewith a plurality of soldering terminals 7, 8, 9 and 10, (for example) forming a row, with correspondingly numbered terminals in each row being vertically aligned to form columns which are parallel to each other. Upon the front surface of strip 21 (that is, the surface which is opposite to the front surface of strip 20 shown in Fig. 1), is secured a corresponding plurality of soldering terminals 7', 8', 9' and 10' also formed in rows (terminal columns 8', 9' and 10' in Fig. 2 are behind terminal column 7' and, therefore, are obscured from view), the correspondingly designated terminals on each of the two strips 20 and 21 being oppositely disposed in substantial horizontal alignment. Since the two strips 20 and 21 are spaced apart, their corresponding terminals are, of course, out of contact with each other.

Each of the terminals, such as terminal 7, for example, is preferably U-shaped in form to provide two soldering lugs, one for the conductor of the cable 5 and the other for the conductor that connects with the apparatus element 11. However, any other design which is suitable for the purpose will do.

Associated with each pair of oppositely disposed terminals on the two supporting strips 20 and 21, such as terminals 7—7', for example, is a pair of aligned but oppositely disposed apertures 13 of any desired configuration to support, loosely or tightly, an apparatus element 11 which is to be electrically connected to said terminals, as shown in Fig. 2. If the apparatus element is cylindrically-shaped and is to be snugly supported within the two supporting apertures, said apertures would be circular but, of course, the contour of the apertures would have to conform to the shape of the element to be supported therein. Moreover, the apertures may be located anywhere within proximity of each of the oppositely disposed pairs of terminals, but the preferred location is immediately above the terminals.

The apparatus elements 11 are inserted in the two oppositely disposed apertures 13 associated with the two oppositely disposed terminal pairs to which they are to be connected as shown, for example, by the top horizontal rows of terminals on strip 20 for each aperture 13 of which an apparatus element 11 is supplied, and their lead conductors are soldered to one of the soldering lugs of the associated terminals, such as terminals 7 and 7', for example, while the conductor of the cable 5 which is to be connected to the same terminal (as, for instance, conductor 12 for terminal 7), is soldered to the other solder-

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ing lug of said terminal. With respect to the terminals on strip 21, the connection of the different apparatus elements 11 with their respectively associated terminals thereon is exactly the same so that, for the corresponding terminals on strip 20, the conductors of the cable 5 pass through the right aperture 4 aligned with a row of terminals and are connected to the other soldering lug of each of the terminals. Thus each apparatus element 11 is electrically inserted between the "in" and "out" wires connected to terminals oppositely disposed on the two strips 20 and 21.

It is clear that the terminal block of my invention provides the advantages of reducing soldered connections, of replacing easily the apparatus elements 11 without affecting other portions of the circuits of which they are parts, and because of the separation of the strips 20 and 21, provides for air circulation between the strips that will dissipate the heat produced in the apparatus elements.

As an additional precaution, a suitable cover (not shown) may be provided for the terminal block which may be supported on the two rear edges 2 and 3 of the base 1 of the block.

While I have described my invention in connection with its specific application to a particular type of terminal block, it is to be understood that various other applications and embodiments thereof may be made by those skilled in the art without departing from the spirit of the invention as defined within the scope of the appended claims.

What is claimed is:

1. A terminal block unit comprising a base having a plurality of openings, two aligned sheets of insulating material affixed perpendicularly to said base and in spaced parallel relation with each other to allow for the passage and circulation of air therebetween, a plurality of terminals secured in vertical and horizontal alignment to each of said sheets to form rows and columns with each row in substantial horizontal alignment to an opening in said base and with each terminal in each row in one section oppositely aligned with a corresponding termi-

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nal in the corresponding row in the other section, each of said sheets having an aperture for each of said terminals, each aperture in one section being in horizontal alignment with a corresponding aperture in the other section, whereby an apparatus unit is supported in each pair of oppositely aligned apertures for connection to the pair of terminals associated with the pair of apertures, and whereby conductors passed through the openings in said base which are horizontally aligned with the rows of terminals may also be electrically connected to said terminals.

2. A terminal block unit comprising a base having a plurality of openings and two recessed rear corners, two sections of insulating material secured to said base in spaced relationship to allow for the passage and circulation of air therebetween, and a plurality of coordinately aligned terminals secured to each of said sections, each terminal in one section being substantially in opposite alignment with the corresponding terminal in the other section, each of said sections being provided with an opening for each one of said oppositely aligned terminals, each of said openings being located in the proximity of its associated terminal, each of said pair of oppositely aligned openings being for the support of an apparatus element adapted for electrical connection to an associated pair of terminals, all of said terminals being also adapted for electrical connection with conductors passed through one or more of said openings in said base.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,002,533	De Mayo	Sept. 5, 1911
1,615,219	Franfield	Jan. 25, 1927
1,628,398	Casper et al.	May 10, 1927
1,668,012	Gardner	May 1, 1928
1,862,571	Goff	June 14, 1932
822,590	Dommerque	June 5, 1906