

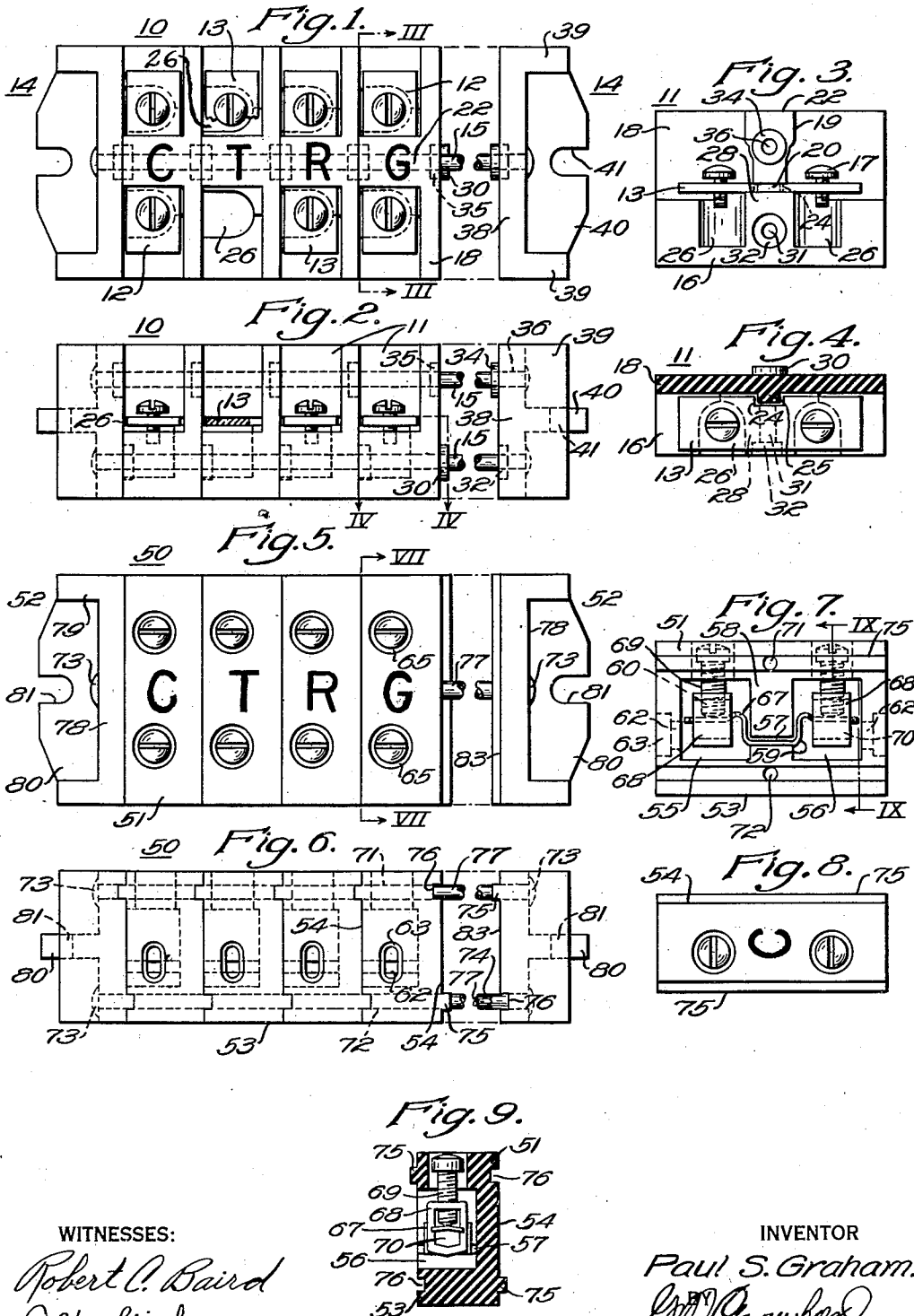
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TERMINAL BLOCK

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TERMINAL BLOCK

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My invention relates, generally, to terminal blocks and it has reference in particular to multiple terminal blocks suitable for use in wiring electrical apparatus.

Generally stated, it is an object of my invention to provide a multiple terminal block which is simple and inexpensive to manufacture and is readily assembled and installed.

More specifically, it is an object of my invention to provide a flexible terminal block construction whereby different numbers of similar terminal block members may be readily connected together to form multiple terminal blocks of different sizes.

It is also an object of my invention to provide for assembling a plurality of terminal block members in interfitted relation and using interchangeable end members therewith.

Another object of my invention is to provide for loosely positioning a terminal member in a recess on one side of a terminal block member and securing it therein by means of an adjacent member.

Yet another object of my invention is to provide an infinite number of sizes of sectional terminal blocks by using assemblies of different numbers of similar terminal block members with interchangeable end members.

Still another object of the invention is to provide an easily assembled sectional multiple terminal block.

It is also an important object of the invention to provide a substantially enclosed multiple terminal block.

Another important object of my invention is to provide for interfitted a number of terminal block members so as to increase the leakage path between the terminals and between the terminals and ground.

Yet another important object of the invention is to provide a multiple terminal block construction utilizing a minimum number of different parts.

Other objects will in part be obvious, and will in part be explained hereinafter.

In accordance with my invention, multiple terminal blocks are provided with any number of terminal members by assembling the desired number of terminal block members in side-by-side relation and connecting them together between end members. Each terminal block member has its own terminal member and connecting means with an upstanding barrier along one side thereof. A transverse web projects over the terminal member intermediate the ends

so that the terminal member is secured thereunder when an adjoining member is placed in position. Interchangeable end members are positioned at each end of the assembled terminal block members, and rods passing through the terminal block members and end members connect them together in a unitary construction.

For a more complete understanding of the nature and scope of my invention, reference may be had to the accompanying drawing, in which:

Figure 1 is a partly broken plan view of a multiple terminal block embodying the principal features of the invention;

Fig. 2 is a side elevational view of a terminal block shown in Fig. 1.

Fig. 3 is a view taken along the line III—III of Fig. 1, showing one of the terminal block members in end elevation.

Fig. 4 is a view taken along the line IV—IV of Fig. 2.

Fig. 5 is a partly broken plan view of a terminal block embodying a modification of the invention.

Fig. 6 is a side elevational view of the terminal block shown in Fig. 5.

Fig. 7 is a view taken along the line VII—VII of Fig. 5;

Fig. 8 is a plan view of one of the terminal block members; and

Fig. 9 is a sectional view taken along the line IX—IX of Fig. 7.

Referring to Figs. 1 and 2, the reference numeral 10 may denote generally a multiple terminal block comprising a plurality of terminal block members 11 provided with terminal members 12 and assembled in side-by-side relation between end members 14. While only four terminal block members are shown in the drawing, it is to be understood that any number may be used, depending on the number of circuits for which terminal connections may be required. The terminal block members 11 and end members 14 may be connected together to provide a unitary construction by suitable connecting means 15.

Referring to Figs. 2, 3 and 4, it will be seen that each individual terminal block member 11 may comprise generally a base portion 16 of insulating material such as hard rubber, a phenolic resin, or other plastic material, having an upwardly projecting longitudinal wall or barrier portion 18 along one side thereof. This wall or barrier serves to separate the different termi-

nal members 12 when a number of terminal block members are assembled in side-by-side relation.

As best shown in Figs. 1 and 3, a transverse barrier or web portion 19 may be provided intermediate the ends of the terminal block member, which may be spaced from the base portion so as to provide a recess 20 between the web and base portions open on one side. For example, the transverse web or barrier may be formed integral with the upstanding longitudinal barrier 18. The web 19 may further be provided with a plane upper surface 22 extending substantially the width of the terminal block member. Thus when a number of terminal block members 11 are assembled in side-by-side relation, the surface portions 22 of the barriers are in alignment and provide a marker strip whereon may be placed suitable circuit indicia for the different terminal members. For example, the terminal blocks may be provided with the indicia, C, T, R and G respectively, reading from left to right, these indicia indicating in this instance "close" and "trip" circuits, and circuits for red and green "close" and "open" indicating lamps. Other indicia may be used in a similar manner as desired.

The terminal members 12 may be of any suitable construction comprising, for example, in one form an elongated terminal plate 13 having terminal screws 17 threaded therein adjacent the opposite ends. In order to position the terminal member relative to the terminal block member, suitable means may be provided for effecting an interlocking relation between the terminal member 12 and the terminal block member 11 to prevent longitudinal movement of the terminal member relative to the terminal block member when a number of terminal block members are assembled. For example, as shown in Fig. 3, means such as the notch or recess 24 may be provided on one side of the terminal plate 13 intermediate the ends for receiving a projection 25 from the wall or barrier portion 18. Thus, when a terminal member is placed in position on a terminal block member, and another terminal block member or an end member is positioned alongside, the recess 20 is closed, and the terminal member is locked in place.

Recesses 26 may be provided in the base portion 16 of the terminal block member to accommodate the lower portions of the terminal screws 17. If desired, the recesses 26 may be made to extend to the ends of the terminal block member, so that the terminal plate 13 is in effect secured between the central upstanding web portion 28 defined by the recesses 26 below the terminal plate and the web portion 19 above.

In order to assist in the assembly of the terminal block members 11 into a unitary structure with the individual terminal block members in proper alignment, interfitting portions may be provided on the opposite sides of each terminal block member. For example, a projecting boss 30 may be provided on one side of the terminal block member at one end of a transverse opening 31 through the base portion for receiving suitable connecting means, while a complementary recess 32 may be provided about the opening 31 on the other side of the terminal block member. A similar projecting boss 34 and recess 35 may be provided at the ends of an upper transverse opening 36 in the web 19 for additional securing means, only on opposite sides of the terminal block member. The transverse openings are preferably symmetrically located relative to the edges

of the terminal block members to facilitate interchangeability of the end members. Thus when a plurality of terminal block members 11 are assembled in side-by-side relation with the terminal members 12 positioned in the recesses 20, the projecting bosses and recesses at the ends of the transverse openings 31 and 36 interfit. Alignment of the terminal block members is thus readily secured.

As shown in Figs. 1 and 2, the end members 14 may comprise generally relatively flat body portions 38 having angularly related end flanges 39. Transverse webs 40 may extend across the body portions between the end portions 39 intermediate the upper and lower edges, provided with means, such as the slots 41, for receiving screws or the like (not shown) for fastening the terminal block to a suitable support.

In order to permit the end members 14 to be used in interchangeable relation they may be provided with projecting bosses 30 and recesses 32 about the transverse openings for the connecting means 15. When an end member is used at one end of an assembled stack of terminal block members the right end in Fig. 1, for example, it serves only as a receiving means. When used at the other end the body portion 39 forms a barrier for the adjacent terminal block, and also serves to block its terminal member in position. To interchange the end members, they need merely be turned top for bottom or vice versa so that the bosses 30 and recesses 32 are changed from top to bottom or vice versa.

Referring to Figs. 5 and 6, the reference numeral 50 may denote generally a substantially enclosed multiple terminal block comprising a plurality of terminal block members 51 assembled in side-by-side relation between end members 52.

As shown in Figs. 7, 8 and 9, each terminal block member 51 may comprise a substantially rectangular block of insulating material such as hard rubber, phenolic resin, or the like having a base portion 53 with an upstanding longitudinal wall or barrier portion 54 along one side thereof and lateral recesses 55 and 56 opening on the other side of the terminal block member. A constricted opening or recess 57 may be provided between the intermediate transverse web portion 58 defined by the recesses 55 and 56 for receiving the intermediate portion 59 of a suitable terminal member 60. End openings 62 may be provided in the terminal block members for receiving conductors to be connected to the terminal members. As shown, the openings 62 may be relatively long and narrow to accommodate different sizes of conductors, and they may be provided with enlarged outer bores 63 to receive the insulation of conductors, so as to prevent possible contact with the bare conductors. Transverse openings 65 may be provided on the upper side of the terminal block member for gaining access to the terminal member.

The terminal member itself may be of any suitable design comprising, for example, a relatively flat terminal plate with terminal screws adjacent the ends as shown in Figs. 1 through 4, or it may comprise a terminal plate 67 having a dropped intermediate portion 69 positioned in the recess 57 provided with connector loops 68 adjacent the ends having screws 69 for adjusting them relative to the terminal plate for securing the end of a conductor in the adjustable openings 70.

Transverse openings 71 and 72 may be provided

in the terminal block members substantially equidistant from the upper and lower edges thereof for receiving connecting means to secure the terminal block members and the end members together. The connecting means may be of any suitable type comprising, for example, an elongated metal tube 77 spun over at the ends to provide a shoulder 73, or it may comprise an elongated bolt having a head at one end and a nut at the other. If it is desired to minimize the possibility of leakage between terminal block members, the connecting means may comprise an elongated rod or tube 77 having a coating of suitable insulating material 74 such as paper, mica, varnish, phenolic resin, or the like.

In order to assist in assembling the terminal block members and to increase the leakage path between the terminal members and the support whereon the terminal block may be mounted, the terminal block members may be provided with complementary interfitting projections and recesses. For example, longitudinal projecting ribs 75 may be provided substantially equidistant from the upper and lower edges of the members on opposite sides thereof while complementary longitudinal grooves 76 may be provided substantially opposite the ribs 75.

The end members 52 may comprise generally substantially flat body portions 78 having upturned end portions 79 with longitudinal webs or flanges 80 extending therebetween intermediate the upper and lower edges. Openings or recesses 81 may be provided in the flanges 80 for receiving screws or other suitable means of securing the terminal block to a support. Complementary longitudinal ribs 75 and grooves 76 may be provided along the surface 83 of the body portion 78 on the side opposite the flange 80 to cooperate with the ribs and grooves of the terminal block members for effecting interfitting relation therewith.

As in the terminal block construction shown in Figs. 1 through 4, the terminal block of Figs. 5 through 9 may comprise any desired number of terminal block members 51 assembled in side-by-side relation. The interfitting ribs and grooves 75 and 76 assist greatly in aligning the members. When a number of terminal block members are thus assembled, the lateral recesses 55 and 56 thereof are substantially enclosed so that no live portions of the terminal members are exposed. A safe and neat terminal block is thus provided.

From the above description and the accompanying drawing, it will be apparent that I have provided a multiple terminal block construction whereby a large number of different combinations may be provided. As many terminal block members as desired may be readily assembled and clamped between end members without requiring more than one type of terminal block member and one type of end member to be carried in stock. The provision of numerous different sizes of terminal blocks for different numbers of circuits is thus greatly facilitated with a minimum expenditure.

Since certain changes may be made in the above description and different embodiments of the invention may be made without departing from the spirit thereof, it is intended that all the matter claimed in the above description or shown in the accompanying drawing, shall be considered as illustrative and not in a limiting sense.

I claim as my invention:

1. A terminal block comprising, a plurality of similar terminal block members having upwardly projecting barrier portions along one side and

partially enclosed recesses opening on the other side to receive terminal members, said terminal block members having complementary projections and recesses to effect mechanical interlocking between adjacent members in side by side relation, and means including identical reversible end members having complementary recesses and projections for mechanically interlocking with the end terminal block members to secure the members together.

2. An enclosed terminal block member comprising spaced apart base and cover portions integral with an upstanding barrier extending along one side and having a transversely projecting web intermediate the ends with an opening there-through and transverse end walls integral with the base and cover portions cooperative to define recesses opening on the other side, and a terminal member positioned within the recesses having an intermediate portion positioned in said opening.

3. A terminal block member comprising, a body member of insulating material having integral base and cover portions connected by integral wall portions along one side and at the ends defining a pair of spaced enclosures open on one side connected by a constricted opening from the same side, and a terminal member having an intermediate portion positionable in the constricted opening provided with connecting means adjacent the ends positioned in the spaced enclosures so as to be accessible through the openings into said enclosures.

4. A multiple terminal block comprising, a plurality of terminal block members assembled in side-by-side relation, base and cover portions integral with side and end walls defining enclosures having openings on one side to receive terminal members and restricted openings into said enclosures through the end walls and covers for gaining access to the terminal members when assembled, said terminal block members being provided with interfitting recesses and projections on adjoining sides, interchangeable end members having projections and recesses to interfit with those of the terminal block members, and means securing the end members and terminal block members together.

5. A multiple terminal block comprising, a plurality of terminal block members of insulating material positioned in side-by-side relation each having base and cover portions connected by side and end walls defining a recess in one side to receive and substantially enclose an elongated terminal member having securing means adjacent the ends, said end walls being provided with end openings into the recess for receiving conductors and the cover being provided with openings for gaining access to the securing means, said terminal block members having aligned transverse openings, an end member having transverse openings aligned with those of the terminal block members, and common connecting means positioned in the openings of the terminal block and end member.

6. An interchangeable end member for use at either end of one or more multiple unit terminal block members having complementary recessed and projecting portions on opposite sides for effecting an interlocking relationship comprising, a substantially upright elongated wall portion having a flange projecting on one side intermediate the longitudinal edges with an opening for securing means and transverse spaced wall openings substantially equidistant from the said edges

of the wall portion, said wall portion having complementary recessed and projecting portions substantially equidistant from the said edges on the side of the wall portion opposite the flange for effecting interlocking engagement with the projecting and recessed portions of the terminal block members.

7. A terminal block member for a multiple assembly comprising, a base portion of insulating material having an upstanding barrier along one edge and a transverse web intermediate the ends spaced from the base portion, an elongated ter-

minal member having conductor connecting means adjacent the ends positioned between the web and the base portion, said base portion and web being provided with openings extending transversely of the member and equidistant from the upper and lower edges thereof, and means for mechanically interlocking adjacent members including complementary projections and recesses at opposite ends of the transverse openings in opposite senses.

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