INTERLOCKING ELECTRICAL TERMINAL BLOCK

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This invention relates generally to electrical terminal block structures, and more specifically to a block which is built up of two or more sections to accommodate as many circuits as desired without the use of auxiliary attaching hardware such as screws and/or long bolts, and to components of the block.

Terminal blocks are known and used in which sections are assembled to accommodate a plurality of circuits, but so far as I am aware all of these prior devices require the use of components in addition to the sections themselves to hold the sections together. This results in awkward, time-consuming assembly as well as high initial cost.

In addition, in many instances, the sections are such that it is necessary that they be mounted on a plate to hold them together.

A terminal block in accordance with this invention is comprised of sections which can be readily assembled with each other by hand or a suitable fixture and which are completely self-sustaining when assembled.

In addition, a terminal block in accordance with the invention has many other advantages, among which are the following:

(a) A wide variety of contact types can be used;
(b) A wide range of wire sizes and_manager types can be used;
(c) Of whatever type, the contacts can be preassembled with the block sections in self-sustaining relationship, so that the contacts and the blocks will not become accidentally separated, or, if desired, the contacts can be assembled with the block sections at the same time as the block sections are assembled with each other;
(d) The wires are automatically properly positioned in the block, thus eliminating so-called "blind" assembly;
(e) The contacts are fully enclosed and the contact screws never project above the block sections, thus eliminating the need for terminal block covers; and
(f) A marking strip can be secured to the block, if desired, without the use of auxiliary hardware such as screws.

Important objects of the invention are to provide a terminal block and sections thereof possessing the advantages set forth above.

Briefly, in its broad aspects, a terminal block in accordance with the invention comprises a body section including first and second ends having first and second complementary configurations, a first end section including an end having the first configuration and a second end section including an end having the second configuration.

As many body sections as desired can be secured together by merely pressing the complementary surfaces together, so that one end of the assembly of body sections will have the first configuration, and the other end will have the second configuration. The end sections can then be added in the same manner. If desired, only one body section can be used, or even none, in which case the two end sections are secured directly together.

Other objects and advantages will appear from the following description of a preferred form of terminal block and components thereof and the accompanying drawings in which:

Fig. 1 is a plan view of a terminal block in accordance with the invention, and including six body sections;
Fig. 2 is a side elevation of the terminal block of Fig. 1 and showing a first form of contact, with certain contacts omitted for clarity;
Fig. 3 is an exploded side view of the terminal block of Figs. 1 and 2 on larger scale than Figs. 1 and 2, but showing only one body section, the sections being in position to be assembled;
Fig. 4 is a plan view of what is shown in Fig. 3;
Fig. 5 is a view partly in section on line 5—5 of Fig. 3;
Fig. 6 is a view on line 6—6 of Fig. 3;
Fig. 7 is a view on line 7—7 of Fig. 3;
Fig. 8 is a view on line 8—8 of Fig. 3;
Fig. 9 is a sectional view on line 9—9 of Fig. 1 on larger scale;
Fig. 10 is a view similar to Fig. 5 but showing a modified form of the contact shown in Fig. 5;
Fig. 11 is a bottom view of a component of the contact of Fig. 10;
Fig. 12 is a fragmentary side view of the contact component shown in Fig. 11 on larger scale;
Fig. 13 is a side view of the contact component shown in Fig. 11;
Fig. 14 is a view similar to Fig. 5 but showing another type of contact;
Fig. 15 is a sectional view on line 15—15 of Fig. 14; and
Fig. 16 is a partial sectional view substantially on line 16—16 of Fig. 14.

Reference is now made to the drawings in general and at first particularly to Figs. 1, 2 and 9 wherein there is shown a terminal block assembly 20 comprising a plurality (six as shown) of insulating body sections 22, a first insulating end section 24 and a second insulating end section 26, the sections being assembled in self-sustaining relationship which will be described later in detail.

Terminal block 20 has a flat bottom 28 (Fig. 2) formed by the bottom surfaces of the sections, and end sections 24 and 26 are provided with vertical slots 30 and 32, respectively, therethrough, providing means for mounting terminal block 20 to another structure.

Body sections 22 are all identical, as illustrated particularly in Figs. 3, 4, 6, 7 and 9, each having a flat bottom surface 34 and an essentially similar flat top surface 36 parallel thereto, surfaces 34 and 36 being joined by side surfaces 38 and 40 which are parallel to each other and perpendicular to surfaces 34 and 36 for the major portion of the distance from surface 34 to surface 36 and then taper inwardly to the locations where they join surface 36. For reasons which will appear, surface 38 does not lie directly above surface 34 but is offset lengthwise of terminal block 20 relative thereto.

Each body section 22 further has first and second ends 42 and 44 (Figs. 3 and 4) spaced from each other and intersecting surfaces 34, 36, 38 and 40. From bottom to top, as shown particularly in Figs. 3 and 6, end 42 includes essentially rectangular surfaces each of which extends from surface 38 to surface 40, as follows: a surface 46 perpendicular to surface 34; a surface 48 parallel to surface 34 and extending from surface 46
toward end 44; a surface 50 perpendicular to surface 34 and extending toward surface 36 from surface 34; a surface 52 parallel to surface 34 and extending from surface 50 away from end 44 from surface 50, but not as wide as surface 48; a surface 54 perpendicular to surface 34 and extending toward surface 56 from surface 34; a surface 56 parallel to surface 34 and extending away from end 44 from surface 54; and a surface 58 perpendicular to surface 34 and connecting surfaces 56 and 36.

As shown particularly in Figs. 3 and 7, end 44 includes essentially rectangular surfaces each of which extends from surface 38 to surface 40, as follows: a surface 60 parallel to and spaced from surface 50 substantially the same distance as the width of surface 34; a surface 66 parallel to surface 24 and extending toward end 42 from surface 64, surface 66 being substantially coplanar with surface 52; a surface 68 parallel to and of the same height as surface 54 and extending toward surface 36 from surface 66; a surface 70 coplanar with and of the same width as surface 56 and extending away from end 42 from surface 68; and a surface 72 parallel with surface 58 and joining surfaces 70 and 36.

Projecting outwardly from end 42 are a plurality of pins which as shown are integral with section 22 but which may be separate parts suitably secured thereto. In the illustrated example of the invention (see Figs. 3, 4, 6 and 9) the pins are three in number, namely, a pin 73 projecting from surface 58 on the vertical centerline of section 22, and pins 74 and 76 projecting from surface 50 and equidistant from the vertical centerline.

Pins 73, 74 and 76 are identical, each having a cylindrical body and a frusto-conical end. The pin axes are parallel to each other and perpendicular to the surfaces from which the pins project. Furthermore the cylindrical portions of pins 73, 74 and 76 are preferably longitudinally serrated, as shown in Figs. 3, 4 and 9, for reasons which will appear.

Projecting inwardly from end 44 are three like cylindrical holes 78, 80 and 82 (Fig. 7) of diameter equal to or marginally less than the diameter of the circular defined by the tips of the pin serrations and preferably greater than the diameter of the circle defined by the roots of the serrations, for reasons which will appear. Holes 78, 80 and 82 are coaxial with pins 73, 74 and 76, respectively. Hole 78 lies in surface 72, and holes 80 and 82 lie in surface 64.

End section 24, which is shown particularly in Figs. 3, 4, 5, 9, 10 and 13, has a flat bottom surface 83, an end 84 comprising surfaces 86, 88, 90, 92, 94, 96 and 98 which with one exception which will be mentioned are identical with surfaces 60, 62, 64, 66, 68, 70 and 72, respectively, of section 22, and end section 26, which is shown particularly in Figs. 3, 4, 8 and 9, has a flat bottom surface 79 and an end 100 comprising surfaces 102, 104, 106, 108, 110, 112 and 114 which with one exception which will be mentioned are identical with surfaces 46, 48, 50, 52, 54, 56 and 58, respectively, of section 22.

End section 24 has a hole 116 in surface 98 on the vertical centerline of section 24 and identical with hole 78 of section 22 and holes 118 and 120 in surface 90 spaced from the vertical centerline the same distance as and identical with holes 80 and 82 of section 22. Hole 116 is located the same distance above surface 83 as is hole 78 above surface 34, and holes 118 and 120 are the same distance above surface 83 as are holes 80 and 82 above surface 34. In this connection compare Figs. 5 and 7.

End section 26 has a pin 122 projecting from surface 75 on the vertical centerline of section 26 and identical with pin 73 of section 22 and pins 124 and 126 projecting from surface 100 spaced from the vertical centerline the same distance as and identical with pins 74 and 76 of section 22. Pin 122 is located the same distance above surface 79 as is pin 73 above surface 34, and pins 124 and 126 are located the same distance above surface 79 as are pins 74 and 76 above surface 34. Compare Figs. 6 and 8.

The respective end surfaces of sections 22, 24 and 26 are so dimensioned that a section 22 can be joined with another section 22 and/or with end section 24 and/or with end section 26.

In the first case, that is, where two sections 22 are to be assembled, end 43 of one is placed facing end 44 (with a suitable contact assembled with end 44 as will be described) of the other and the two sections are pushed together, with pins 73, 74 and 76 entering holes 78, 82 and 80, respectively, in a self-sustaining press fit engagement until further movement is prevented by the abutment of surfaces 54, 56, 58 and 50 of the first section and surfaces 60, 64, 68 and 72 of the second section, respectively. When the two sections 22 are assembled there is a generally rectangular opening extending from one side to the other of the assembly (Figs. 1 and 9) and defined by surfaces 54 and 56 of end 42 of the first section and by surfaces 66, 68 and 70 of end 44 of the second section. Furthermore, surface 48 mates with surface 62 and surface 52 mates with surface 66. For reasons which will appear hereinafter it is highly desirable that the mating of all surfaces be accurate and tight.

A section 22 can be similarly assembled with section 24, by placing the sections with ends 22 and 44 (with a suitable contact assembled with end 44 as will be described) facing each other and pushing the two sections together, with pins 73, 74 and 76 entering holes 116, 120 and 118, respectively, again in self-sustaining press fit engagement until further movement is prevented by the abutment of surfaces 46, 50, 54 and 58 of section 22 against surfaces 86, 90, 94 and 98 of section 24, respectively. Again there is a generally rectangular opening extending from one side to the other of the assembly and defined by surfaces 54, 56, 92, 94 and 96.

A section 22 can also be similarly assembled with section 26, by placing the sections with ends 44 and 100 facing each other and pushing the two sections together, with pins 122, 124 and 126 entering holes 120, 128 and 126, respectively, once more in self-sustaining press fit engagement until further movement is prevented by the abutment of surfaces 60, 64, 68 and 72 of section 22 against surfaces 102, 106, 110 and 114 of section 26, respectively. Again there is a rectangular opening extending from one side to the other of the assembly and defined by surfaces 66, 68, 70, 110 and 112.

In any case the pins and holes serve not only to hold the sections together, but also properly to locate the sections with respect to each other.

Thus a terminal block assembly can be made up comprising as many sections 22 as desired and with a second 24 at one end and a section 26 at the other, with a contact between each pair of adjacent sections. Obviously sections 24 and 26 can be assembled directly together with no intervening section 22 if desired. The number of sections 22 which are used depends upon the number of circuits to be served by the block.

The cylindrical portions of the pins are serrated as aforesaid to insure a press fit at a nominal assembly pressure. The root diameter of the serrations is preferably slightly less than the diameter of the holes into which the pins fit and the outside diameter of the serrations is slightly greater; thus the serrations dig into or are sheared by the mating holes assuring an interference fit. If the pins were smooth the interference
could be achieved only by making the pins of larger diameter than the holes, which would require a greater assembly pressure. Furthermore, if the pins are not serrated they are likely to break off as they enter or leave their mating holes.

Section 22 is provided with a projection 128 at the vertical centerline. Projection 128 is quite thin horizontally and extends upwardly from surface 66 and away from end 44 from surface 68, so as partially to block horizontally and vertically the rectangular hole formed by the assembly of section 22 and either another section 22 or section 26 described above. Projection 128 has an undercut portion 130 which is clearly shown in Fig. 9. The top of projection 128 is semi-cylindrical with its axis perpendicular to surface 68. The purposes of projection 128 will be set forth.

Section 24 has a projection 129 identical with projection 128 extending upwardly from surface 66 and away from end 84 from surface 94, partially to block the opening formed by the assembly of section 24 and end 42 of section 22.

Surface 72 of section 22 is provided with similar recesses 132 and 134 (Figs. 4, 5, and 6) extending from surfaces 72 and 70. Recess 132 includes an upper semi-cylindrical portion 136 intersecting surface 36, a lower semi-cylindrical portion 138 of larger diameter intersecting surface 70 and a semi-frusto-conical portion 140 therebetween. Portions 136, 138 and 140 are coaxial, and the common axis is perpendicular to surfaces 36 and 70. Recess 134 is identical, having upper, lower and intermediate portions 142, 144 and 146, respectively. The axes of recesses 132 and 134 are equidistant from the vertical centerline of section 22, but not as far therefrom as holes 80 and 82.

Surface 58 of section 22 is provided with recesses 148 and 150 (Figs. 4 and 6) extending from surface 36 to surface 56 and which are identical with recesses 132 and 134. Likewise surface 98 of section 24 is provided with two recesses 152 and 154 (Figs. 4, 5, 10 and 14), and surface 114 of section 26 is provided with two recesses 156 and 158 (Figs. 4, 8 and 9), recesses 12, 130, 154, 156 and 158 being identical with recesses 132 and 134.

Thus when any two sections are assembled as aforesaid, two recesses of one section mate with two recesses of the other section to provide two holes from the top of the assembly to the rectangular opening described earlier with one of the holes on each side of projection 128 or 129.

Surface 66 of section 22 is provided with two recesses 160 and 162 (Figs. 4, 7 and 9) directly beneath recesses 132 and 134, and surface 92 is provided with two recesses 164 and 166 (Figs. 4, 5, 10 and 14) directly beneath recesses 152 and 154, respectively. The purpose of these recesses 160, 162, 164 and 166 will appear.

Surface 54 of section 22 is provided with a shallow rectangular recess 168 extending from side 38 toward the vertical centerline and with a similar recess 170 extending from side 40 toward the centerline (Fig. 6). Surface 68 is provided with similar recesses 172 and 174 extending inwardly from sides 38 and 40, respectively, to projection 128 (Fig. 7). Likewise, surface 82 of section 24 is provided with two similar recesses 176 and 178 (Figs. 8) identical with recesses 168 and 170 and surface 94 of section 24 has two recesses 180 and 182 (Figs. 5, 14 and 15) extending inwardly to projection 129.

Sections 24 and 26 are provided with upward extensions 184 and 186, respectively, having ends which are contiguous with surfaces 98 and 114 of ends 84 and 100, respectively. Extensions 184 and 186 are provided with rectangular slots 188 and 190 opening at ends 84 and 100, respectively, the bottoms of which are positioned above surfaces 83 and 79 substantially the same distance as that between surfaces 34 and 36 of section 22.

It was mentioned earlier that ends 44 and 84 on the one hand and ends 42 and 100 on the other hand are identical with one exception. The exception is the addition of extension 184 and slot 188 to end 84 and the addition of extension 186 and slot 190 to end 100. Slots 188 and 190 are positioned to receive the ends of a terminal marking strip 192 of relatively flexible material which can be bowed to insert its ends into slots 188 and 190 after a terminal block has been assembled from sections 24 and 26 and at least one section 22 and which will then lie flat along the top of the terminal block. The width of strip 192 is sufficiently small, that strip 192 will not cover any portion of the vertical holes opening at the top of the terminal block.

Strip 192 may be of any desired color, and its purpose is to provide rapid circuit identification. If not desired or needed it may be omitted.

There remains to be described various types of contacts which may be used with the terminal block.

One type of contact is shown in Figs. 2 through 5 and 9 and comprises a rectangular tubular body member 194 of conductive material such as copper open at the ends and of a length less than the width of sections 22, 24 and 26. One side of member 194 is provided at its center with a vertical slot 196 of the same width as projection 128 and 129, and the bottom of member 194 is provided at its center with a slot 198 which is in effect a continuation of slot 196 at right angles thereto. The height of member 194 is, as shown, the same as the distance between surfaces 66 and 70 (and between surfaces 92 and 96), and the height of slot 196 is greater than the height of projections 128 and 129.

Thus member 194 can be assembled with section 22 by placing member 194 on surface 66 (or surface 92) with slots 196 and 198 aligned with projection 128 and pressing member 194 against surface 66 (or surface 94) (Fig. 3), the sides of slots 196 and 198 interfering with and engaging the sides of projection 128 (or projection 129) in a press fit self-sustaining relationship with the projection in effect dividing member 194 lengthwise into two parts, one opening at each side of section 22 (or section 24). There is a clearance between the end of projection 128 (or projection 129) and the inner wall of member 194 as shown in Fig. 9.

The top of member 194 is provided with two holes placed to be aligned with recesses 132 and 134 (or recesses 152 and 154) between the member 194 and section 22 (or section 24) are assembled as aforesaid, and the inner walls of member 194 are tapped from top to bottom for engagement by screws 200 with the screw axes aligned with recesses 132 and 134 (or recesses 152 and 154).

The inside surface of the bottom of member 194 is serrated crosswise of member 194 as indicated at 202.

Therefore it is convenient to assemble a member 194 and its two screws 200 and then to assemble that subassembly with each section 22 and 24 and to stack and/or ship the sections with the contacts assembled therewith. There is no danger that the sections and the contacts will become separated accidentally, the only peril being that screws 200 might become loosened and fall out under vibration, but this peril can be substantially eliminated by bottoming screws 200 against the bottom of member 194.

To complete the terminal block with a contact installed in section 24 and in each section 22, the sections are merely assembled as described above and strip 192 is installed if it is going to be used. As shown in Fig. 1 the screws are readily accessible through the hollow opening at the top of the terminal block.

Member 194 may be slightly compressed between surfaces 56 and 96 on the top and surface 92 at the bottom thereof, thereby to aid the pins in holding the sections together.

To wire the block it is merely necessary to turn
screws 200 so that they ride upwardly to leave a sufficient gap between the screws and the bottom of member 194 to receive the bare conductors which are to be inserted, insert the conductors between the bottom of the screws and the bottom of member 194, the insertion being automatically limited by projections 126 and 129, and retighten screws 200 securely between screws 200 and the bottom of member 194. Serrations 202 render it more difficult to remove the wires.

A typical connection as just described is shown in Fig. 5, wherein two screws 200 are assembled with member 194 and member 194 is assembled with section 24, it being understood that normally the wires would not be inserted until the terminal block has been completely assembled, but that is by no means necessary.

As shown in Fig. 5 the contact comprising member 194 and screws 200 is used to make electrical connection between a solid conductor 204 at a stripped end of a first wire 206 and a solid conductor 208 at a stripped end of a second wire 210 of larger size.

It should be understood that member 194 is accurately and permanently held by projection 128 (or projection 129) so that even if removed from member 194 the latter cannot become separated from the terminal block. The projections also perform the function of positioning the wires in the block automatically, thus eliminating any element of blind assembly.

A contact as heretofore described is of particular utility where the conductors are solid, and where therefore the direct bearing of screws 200 thereon will have no damaging effect on the conductors. This contact is also useful with stranded conductors of relatively large diameter.

In Figs. 10 through 13 there is shown a modification of the contact heretofore described, which modification is of especial usefulness where the wires to be used therewith have fairly fine stranded conductors. In such a case it is desirable to spread the clamping force over a fairly large area to reduce the shearing force on each strand, and that is accomplished in the contact of Figs. 10 through 13. The illustrated contact is identical with the contact previously described in so far as it includes member 194 and screws 200.

In addition, the contact of Figs. 10 through 13 includes a one-piece deformable shoe 212 of Phosphor Bronze or spring steel, for example, and of length substantially equal to that of member 194, and comprising two generally rectangular end portions 214 joined by a central web portion 218 at right angles to portions 214, to provide a notch 216 between portions 214. From Fig. 13 it will be seen that portions 214 define a dihedral angle when shoe 212 is unstressed. The ends of portions 214 remote from web portion 218 are bent slightly upwardly, as at 220. From Figs. 4 and 9 and as previously mentioned it will be seen that there is a clearance space between the end of projection 129 (and projection 128) and the wall of member 194. The thickness of web portion 218 is less than the width of the clearance space just mentioned. Shoe 212 can be assembled in member 194 with notch 216 facing slot 196 of member 194 and with web portion 218 adjacent the wall of member 194 remote from slot 196. When shoe 212 is assembled in member 194 as just described, portions 214 extend upwardly from the center of member 194 toward its ends due to the dihedral angle.

Member 194 is assembled with section 24 as shown (or with section 22) in the manner previously described, with portions 214 of shoe 212 on opposite sides of projection 129 (or projection 128) and with notch 216 straddling the projection. Thus shoe 212 is held captive in the assembly.

The width of portions 214 is sufficiently great that web portion 218 will be held clear of the end of projection 129 (or projection 128) so that shoe 212 can move freely vertically with web portion 218 in the clearance space between the end of the projection and the member 194.

For storage and shipping purposes, screws 200 are turned down until they flex shoe portions 214 slightly downwardly to set up restoring forces therein acting against screws 200 to prevent them from becoming loose under vibration.

As shown in Fig. 10 the contact comprising member 194, screws 200 and shoe 212 is used to make electrical connection between stranded conductors 224 at a stripped end of a first wire 226 and stranded conductors 228 at a stripped end of a second wire 230 of smaller size.

To effect this connection it is merely necessary to back off screws 200, insert conductors 224 and 228 as far as they will go between shoe portions 214 and the bottom of member 194, that is, until they abut projection 129 (or projection 128) and retighten screws 200 to deform shoe 212 tightly to clamp the conductors in member 194.

As shown in Figs. 11 and 12 the bottom surface of shoe portions 214 are serrated at 232 crosswise of the contact and so arranged to enhance the conductor gripping properties of the contact.

Figs. 14, 15 and 16 illustrate a different type of contact for use with terminal ended wire and comprising a contact bar 234 and two screws 236. Contact bar 234 is provided with a notch 238 (Fig. 15) of the same width as projection 129 (or projection 128) and is of the same thickness as the height of the undercut portion of the stop. Thus bar 234 is adapted to lie on surface 92 (or surface 66) with its notch 238 facing projection 129 (or projection 128) and to be pressed against surface 94 (or surface 68) with notch 238 straddling a portion of the projection and with bar 234 held between the projection and surface 92 (or surface 66) in self-sustaining press fit engagement. Bar 234 has two tapped holes 240 therethrough which are spaced to be in alignment with recesses 152 and 154 (or recesses 132 and 134) when bar 234 is assembled with section 24 as shown or with section 22 and directly above recesses 164 and 166 (or recesses 160 and 162).

Screws 236 are identical and each has a threaded shank with a tapered point and a head having a flanged portion adjacent the shank, and slotted end portion. The flanged portion is shaped in general to conform to the bottom portion of recesses 152 and 154 (or recesses 132 and 134) so that screw 236 can ride up in these recesses but cannot pass through them.

Tapped holes 240 of bar 234 are adapted to receive the threaded shank of screws 236 in screw-threaded engagement, and for purposes of storage or shipping, screws 236 are screwed into bar 234 until the bottoms of the screw flange engage bar 234. The assembly of bar 234 and screws 236 is then assembled with section 24 (or section 22) as aforesaid, with the portions of screws below bar 234 lying within recesses 164 and 166 (or recesses 160 and 162). To secure a terminal ended wire to this type of contact, it is merely necessary to turn each screw until it no longer threadedly engages bar 234, insert a terminal between bar 234 and the flange of screw 236, raise the terminal until the top of screw 236 protrudes above section 24 (or section 22), push the top of screw 236 sideward, lower the terminal to clear screw 236, push the terminal inwardly as far as it will go, that is, until it abuts projection 129 (or projection 128), release screw 236 and tighten it.

Figs. 14 and 15 show two ring type terminals 242 crimped onto the bared ends of two wires and electrically connected by means of contact bar 234 and screws 236 in a terminal block section 24. Each terminal 242 has a hole therethrough of sufficient diameter and is otherwise so dimensioned that when the end of the terminal abuts projection 129 (or projection 128) there will be clearance
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between the terminal hole and the associated tapped hole 240 through 234. When screws 236 are released the threaded portions thereof drop through the holes of the terminals, and the tapered end portions aid screws 236 in "finding" holes 240.

The construction is such that screws 236 are captive with respect to a terminal block in which they are located, so that there is nothing which can fall out or otherwise become lost.

As shown in Fig. 15, the edges of terminals 242 lie in recesses 180 and 182. In an assembled terminal block the opposite edges of terminals 242 lie in recesses 172 and 174 of section 22 and the purpose of recesses 168 and 170 of section 22 and of recesses 176 and 178 of section 26 is also to accommodate ring type terminals.

From Fig. 16 it will be seen that the bottom of the flanged portion of each screw 236 is provided with circumferential serrations 244 to secure a better grip on the terminals.

The terminal block sections are shaped as they are, particularly as to surfaces 52, 66, 92 and 108 and those surfaces below surfaces 52, 66, 92 and 108 in order to provide as long and tortuous a leakage path as possible between sections. This can be observed particularly by referring to Figs. 2 and 3.

To assemble a terminal block for any desired number n of circuits, it is merely necessary to select the type of contact desired, assemble one contact with section 24, assemble n minus 1 contacts with n minus 1 sections 22 and assemble sections 22, 24 and 26 in the manner previously described. If the sections have been previously assembled with the contacts, the step involving assembling the sections and the contacts is omitted.

From the foregoing it will be seen that the invention well attains the stated objects. Many changes will occur to those skilled in the art which can be made without departing from the invention. Accordingly the embodiments illustrated and described are to be taken as examples only of the invention and not as limitations except as the limitations are included in the appended claims.

1 claim:

1. In combination, an electric terminal block section of insulating material comprising an end adapted for interengagement with a complementary portion of another section of insulating material, a portion of said end providing a recess across said end and a projection in said recess integral with said first-mentioned section and constricting the central portion of said end, and an electric contact in said recess and held therein at least in part by press fit engagement of said contact and said projection, said projection further providing a stop for electric conductors inserted into said recess from the ends thereof.

2. In combination, an electric terminal block section of insulating material, and an electric contact comprising a box-like member open at opposite ends and having an opening in one side to receive a projection of said terminal block section in self-sustaining press fit engagement therewith with a clearance space between said projection and the side of said member opposite said opening, two tapped holes through the top of said member and on opposite sides of said projection, clamping screws threadedly engaging said holes, and a clamping member within said box-like member having resilient end portions positioned for engagement by said screws and a central portion in said clearance space and joining said end portions.

3. An electrical terminal block comprising first and second sections of insulating material having interengaging ends shaped to provide through their opposed end a projection for limiting the depth of insertion of conductors into said opening extending into said opening from and integral with one of said first and second sections and constricting the central portion of said opening, and an electric contact in said opening and having a recess having confronting surfaces straddling said projection to position said contact lengthwise of said opening.

4. An electrical terminal block comprising first and second sections of insulating material having interengaging ends providing a conductor-receiving opening between, a projection extending into said opening from and integral with one of said sections and having parallel side walls facing away from each other, and constricting the central portion of said opening, and an electric contact in said opening and having parallel confronting surfaces straddling and in frictional engagement with said walls.

5. An electrical terminal block comprising first and second sections of insulating material, said first section having a first end including a cylindrical pin integral with said first section, said second section having a second end including a cylindrical hole therein, said pin in said hole and in snug engagement with the wall thereof thus to locate said sections with respect to each other and to hold said sections together in self-sustaining relationship, said ends shaped to provide an opening therebetween, one of said ends further including a projection integral with one of said sections and constricting said opening in the central portion thereof, and an electric contact in said opening and having end portions on opposite sides of said projection and a central portion passing said projection, said contact in frictional engagement with said projection.

6. An electrical terminal block comprising first and second sections of insulating material having respectively first and second interengaging ends, said first end having a contact-supporting surface and a surface spaced from and confronting and overlapping a part only of said contact-supporting surface, said surfaces partly defining a recess extending crosswise of said first section and said first end further having a projection in said recess and constricting the central portion thereof and between said surfaces, said second end having a surface spaced from and confronting and overlapping a part only of said contact-supporting surface, and an electric contact in said recess and interengaging said projection and in frictional engagement with all said surfaces.

7. In combination, an electrical terminal block section of insulating material having an end adapted for interengagement with another section of insulating material, said end having a contact-supporting surface and a projection integral with said first-mentioned section and having a surface overlapping and spaced from and confronting the central portion of said contact-supporting surface, and an electric contact resting on said contact-supporting surface and having a central portion between said surfaces and end portions integral with said central portion of said contact and on opposite sides of said projection, said contact in frictional engagement with both said surfaces.

8. In combination, an electrical terminal block section of insulating material having an end adapted for interengagement with another section of insulating material, said end having a contact-supporting surface and a projection integral with said first-mentioned section and having a pair of oppositely-facing surfaces, and an electric contact resting on said contact-supporting surface and having a notched central portion straddling and in frictional engagement with both said oppositely-facing surfaces and end portions integral with said central portion and on opposite sides of said projection.

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