

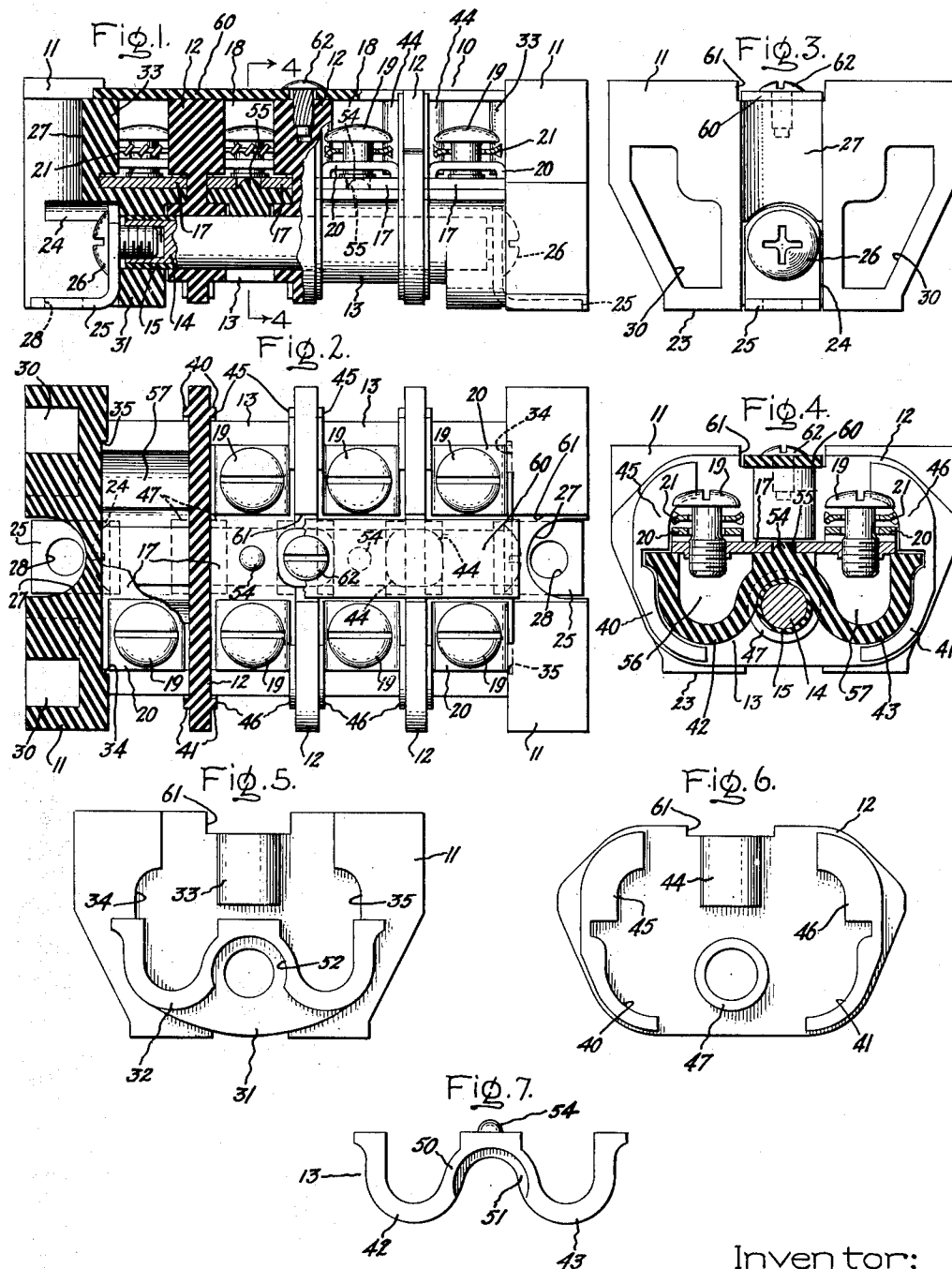
Dec. 23, 1952

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2,623,087

FABRICATED TERMINAL BOARD

Filed Dec. 9, 1949



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UNITED STATES PATENT OFFICE

2,623,087

FABRICATED TERMINAL BOARD

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Application December 9, 1949, Serial No. 132,118

5 Claims. (Cl. 173-324)

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The invention relates to terminal boards, particularly terminal boards that can be built up or fabricated of duplicate standard parts formed to axially interlock and encompass a selected number of duplicate terminal connectors when the separate parts are rotatably mounted on an axial tie rod and non-rotatably clamped together by axial clamping means at the ends of the rod.

The principal object is to provide an improved fabricated cellular terminal board construction whereby a selected number of duplicate terminal connector bars carrying terminal binding screws can be mounted in spaced-apart alignment by means of a plurality of duplicate intermediate spacer yokes and barriers and end mounting blocks each molded of insulating material in a special form to be laterally interlocked together into a rigid cellular unit with each terminal connector bar locked in place in a separate insulated cell by means of an axial tie rod that passes through only the end blocks and rotatably mounts the intermediate barriers with the spacer yokes rotatably straddling the rod for radial removal therefrom.

Another object is to construct all the duplicate spacer yokes of triple reverse form so that the middle yoke will straddle the tie rod for radial removal therefrom and seat for the terminal connector bar across the reverse end yokes and the latter will provide spaced apart insulating pockets for the terminal screws on opposite sides of the rod.

Another object is to provide each end mounting block of the fabricated cellular terminal board with an integral molded triple reverse spacer yoke both for reinforcing the block and for interlocking with an adjacent barrier to form a terminal connector bar mounting cell with spaced insulating pockets for the terminal binding screws.

Another object is to provide each end mounting block with intersecting recesses in the outer face thereof for nesting a metal mounting bracket within the edgewise perimeter of the block as well as the holding screw that anchors the mounting bracket to the tie rod so as to not only eliminate all mounting projections at the ends of the terminal board unit, but also effectively isolate the metal mounting bracket and tie rod parts from the terminal connector mounting cells as well as relieve the end blocks of direct mounting strains.

Further objects and advantages will appear in the following description of the accompanying drawing in which Fig. 1 is a side view of a fabricated cellular terminal board embodying the

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axial tie rod mounting improvements of the present invention with some of the parts broken away in order more clearly to show the detailed structure thereof; Fig. 2 is a top view of the terminal board shown in Fig. 1 with one of the end mounting blocks and one of the intermediate barriers in section to show the details of construction thereof; Fig. 3 is an end view of the terminal board shown in Fig. 1 showing further details of construction of the molded end mounting block and the metal mounting bracket recessed therein; Fig. 4 is a sectional view of the terminal board shown in Fig. 1 on the line 4-4 showing the details of construction of one of the radially removable triple reverse yoke spacer elements as well as the details of the terminal connector bar seated on the spacer in a cell and provided with a pair of terminal binding screws; Fig. 5 is an inside view of one of the end terminal mounting blocks showing the triple reverse yoke spacer projections that are formed integral therewith; Fig. 6 is a front view of one of the barriers showing the lateral projections with which both sides of the barrier are provided for interlocking engagement with the adjacent spacers; and Fig. 7 is a front view of one of the triple reverse yoke spacers that is adapted for interlocking engagement with the lateral projections on each side of the barriers and leaving the middle yoke formed for straddling the tie rod as indicated in Fig. 4.

As shown in Fig. 1, a selected four terminal form of the improved cellular terminal board unit indicated generally by the reference character 10 may be built up or fabricated of two duplicate end mounting blocks 11, three duplicate intermediate barriers 12 and two intermediate duplicate triple reverse sinuous spacer yokes 13 that are rotatably mounted for radial removal from tie rod 14 in alternate alignment between the end mounting blocks 11. As described more in detail hereinafter these parts all are provided with lateral projections specially formed to laterally interlock together in the rigid cellular unit 10 with the separate terminal connector mounting cells 13 formed therein and are clamped together by means of the axial tie rod 14 that is provided with an insulating covering 15 and extends through each of the intermediate barriers 12 to interconnect the end blocks 11 with the radially removable spacer yokes 13 rotatably straddling the tie rod as indicated in Fig. 4. In this way all the intermediate barriers 11 and spacer yokes 13 are interlocked together and clamped between the end mounting blocks in non-rotatable suspension on the tie rod 14. A terminal connector

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bar 17 is seated on the corresponding spacer yoke 13 in each of the cells 18 formed by the spacer yoke 13 interlocking laterally between the adjacent barriers 12. As shown more clearly in Figs. 2 and 4, each connector bar 17 is provided with a pair of terminal binding screws 19 having a wiring clip 20 and a securing washer 21 carried by each screw.

Each end block 11, as shown in Fig. 3, is molded of insulating material to provide a narrowed face 23 for mounting the terminal board unit 10 on a flat surface and is provided with a central deep recess 24 in its outer face for receiving the right angled metal mounting bracket 25 therein so that one leg of the bracket can be secured to the tie rod 14 by means of the axial clamping screw 25 with the other leg of the mounting bracket 25 entirely within the edgewise perimeter of the end mounting block 11, as shown in Figs. 1 and 2. The end block 11 also is provided with an intersecting recess 27 of semicylindrical shape for providing easy access with a screwdriver to the mounting screw passing through the opening 28 in the other leg of the mounting bracket 25 that is substantially aligned with the mounting face 23 of the end block. Other suitably formed recesses 30 may be provided in each of the end blocks 11 in order to reduce the amount of molded material required.

As shown in Fig. 5, the inner face of each end block 11 is provided with a reinforcing transverse rib 31 spanning the intersecting recesses 24 and 27 so as to rigidly interconnect the opposite end portions of the block 11. This transverse rib 31 is integral with the triple reverse spacer yoke projection 32 that is adapted for lateral interlocking engagement with the complementary projections on either side of the barrier 12 to form a terminal connector bar mounting cell 18 in the same way as each spacer 13. Each end block 11 also is provided with a central interlocking projection 33 of semicylindrical form for overhanging interlocking engagement with the terminal connector bar 17 that is seated on the integral spacer yoke 32 in the cell 18 to lock the connector bar against radial movement from its seat. The opposite shoulders 34 and 35 projecting from the inner surface of each end block 11 serve to engage with the corners of the connector bar 17 and thereby prevent lateral displacement of the bar 17 from its seat in the cell 18 formed between the end plate 11 and the adjacent interlocking barrier 12 as shown in section in Fig. 1.

Each of the duplicate intermediate barriers 12 (as shown in Fig. 6) is molded of suitable insulating material into substantially flat plate form adapted to register generally within the flatwise perimeter of the end block 11 as shown in Fig. 4, and is provided with lateral complementary projections on each side thereof for interlocking engagement with either one of the triple reverse yoke spacers 13 or with the integral triple reverse yoke spacer projection 32 of either end block 11 to prevent relative rotary movement therebetween. Thus, the opposite shoulders or projections 40 and 41 are complementary in shape with the end loops 42 and 43 of the triple reverse yoke spacer 13 so as to effect lateral interlocking of these parts together to form a terminal connector bar mounting cell with the spacer 13 interposed between two of the barriers 12. Also each side of the barrier 12 is provided with a central projection 44 of a semicylindrical shape similar to the projection 33 on the end mount-

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ing block 11 for interlocking engagement with the upper face of the terminal connector bar 17 to prevent upward movement of the bar from its seat when it is seated in cell 18 on a spacer 13. The opposite shoulders 45 and 46 likewise are provided on each side of the barrier 12 to prevent lateral movement of the bar 17 from its seat in the same way as the shoulders 34 and 35 formed on the end block 11. Each barrier 12 also is provided with an annular boss 47 on each side thereof for rotatably mounting the barrier 12 on the tie rod 14 that extends through the barrier.

Each of the intermediate spacers 13 is molded with a middle yoke 50 interconnecting two reverse end yokes 42 and 43 with the middle yoke adapted to rotatably straddle the axial tie rod 14 for radial removal therefrom as shown in Fig. 4. Recess 51 is formed on each side of the middle yoke 50 for receiving the annular boss 47 of a barrier 12 therein when the spacer 13 is nested in interlocking engagement between two barriers 12 to prevent relative rotary movement therebetween and form a cell 18 as shown in Fig. 1. A similar recess 52 is provided on each of the end blocks 11 for receiving the annular boss 47 of the barrier 12 in interlocking engagement therein as shown in Fig. 1.

Each triple reverse yoke spacer 13 is provided with a rounded knob 54 on the middle yoke 50 for registering with the central aperture 55 in the terminal connector bar 17 when the bar is seated on the yoke as shown in Fig. 4 with the ends of the bar extending across the end reverse yokes 42 and 43 so that each of the screws 19 can be extended into the insulating pockets 56 and 57. In this way the terminal connector bar 17 is held seated in its central position on the yoke 13 by the rounded knob 54 during the assembly of the parts into the rigid cellular unit 10.

For this purpose the barriers 12 and the spacers 13 are rotatably mounted in alternate alignment or juxtaposition on the tie rod 14 with a terminal connector bar 17 seated on each spacer 13 in the cell 18 formed between the adjacent barriers 12 and with the middle yoke of the spacer 13 rotatably straddling the tie rod 14 as shown in Fig. 4. Each end block 11 is then provided with a terminal connector bar 17 seated on the integral triple yoke spacer projection 32 thereof in interlocking engagement with the projections 33, 34, and 35 and the end mounting block 11 slid into nested interlocking relation with the outer barriers 12 to form the selected four terminal bar assembled unit as shown in Fig. 1. The mounting brackets 25 are then inserted into the recesses 24 and clamped in position by tightening the holding screws 26 to axially clamp all of the parts together and prevent relative rotary movement therebetween and thereby form a rigid cellular unit wherein each terminal connector bar 17 is securely locked in a corresponding cell 18. If desired, a terminal identifying marker plate 60 may be seated in the channel grooves 61 formed in the upper edge of each of the intermediate barrier plates 12 and the end blocks 11 and held in place by a drive screw 62 to complete the unit. When the axial clamping screw 26 at either end of the axial tie rod 14 is loosened, the intermediate barriers 12 adjacent any spacer 13 can be slid apart sufficiently to disengage the spacer from the lateral projections 40 and 41 formed on the opposite sides of the adjacent barriers and thereby enable the spacer yoke 13 and the terminal connectors 17 radially removably seated thereon

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to be removed radially from the tie rod 14 for inspection, repair or replacement by duplicate parts. In this way the improved terminal board construction of the present invention provides for a quick replacement of any terminal connector bar that may become mutilated or damaged and of any spacer yoke that may be warped or crack without requiring the dis-assembly of the adjacent barriers.

A terminal board mounting any desired number of terminal connectors may be provided from a stock of standard parts by merely assembling more barriers 12 and spacers 13 between the end mounting blocks 11 and correspondingly increasing the length of the tie rod 14. In case a minimum of only two terminal connectors are required, then only a single barrier 12 need be assembled in interlocking relation between the triple yoke projections 32 of each end block 11. In any case as indicated in Figs. 1 and 2, the terminal binding screws 19 are readily accessible for interconnection of two or more wires to each terminal connector bar 17 and the seating of each bar 17 within an insulating cell 18 effectively reduces the chance of accidental contact with the live terminal parts. Furthermore, any desired number of terminal board units can be mounted in abutting endwise alignment due to the fact that the mounting brackets of each unit are located entirely within the edgewise perimeter of the end mounting blocks.

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

1. A fabricated terminal board having in combination an axial tie rod, a plurality of spacer yokes rotatably straddling the tie rod and each having a radially projecting knob and a perforate terminal connector removably seated thereon, a plurality of barriers rotatably mounted on the tie rod in alternate juxtaposition with the spacer yokes and each barrier having complementary lateral projections on opposite sides thereof for overlapping engagement with the adjacent edges of the spacer yoke and the terminal connector seated thereon for laterally locking each yoke in alignment with each adjacent barrier to prevent relative rotary movement thereof and radially locking the terminal connector on the knob of the yoke, and axial clamping means at each end of the tie rod for clamping the barriers and spacer yokes together with each spacer yoke rotatably straddling the rod for radial removal therefrom when the clamping means is loosened sufficiently to axially disengage the complementary locking projections of the adjacent barriers from the yoke and terminal connector.

2. A fabricated terminal board having in combination an axial tie rod, a plurality of triple reverse yoke spacers each having the central yoke thereof rotatably straddling the tie rod for radial removal therefrom and provided with a radially projecting knob, a plurality of terminal connectors, each having a perforation for removably seating the connector on the knob of a corresponding yoke spacer and provided with binding screws extending into the pockets formed within the reverse end yokes thereof, a plurality of barrier plates rotatably mounted on the tie rod in alternate juxtaposition with the yoke spacers and each provided with complementary lateral projections on opposite sides thereof for overlapping engagement with the adjacent edges of a spacer and the terminal connector seated thereon for axially interlocking each yoke in alignment between the adjacent barriers to prevent relative

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rotary movement therebetween and radially locking the terminal connector on the radially projecting knob of the yoke, and axial clamping means at each end of the tie rod for clamping the juxtaposed barriers and spacer yokes in interlocking relation.

3. A fabricated terminal board having in combination a pair of spaced apart end blocks of molded insulating material each provided with an integral spacer yoke projecting from the inner face thereof, an axial tie rod extending through the integral spacer yokes, a plurality of separate barrier plates and intermediate spacer yokes of molded insulating material rotatably mounted on the axial tie rod in alternate juxtaposition between the integral spacer yokes and each barrier plate provided with opposite lateral projections for overlapping engagement with each adjacent integral and intermediate spacer yoke to prevent relative rotary movement thereof on the axial rod, a plurality of conducting terminal connectors each radially removably seated on a corresponding integral and intermediate spacer yoke for engaging a lateral projection on each adjacent barrier plate for locking the connector in position and a pair of mounting brackets having screw means at the ends of the axial tie rod for clamping the integral spacer yokes, the barrier plates and the intermediate spacer yokes in non-rotatable juxtaposition on the tie rod and locking each terminal connector against radial removal.

4. A fabricated terminal board having in combination a pair of spaced apart end blocks formed of insulating material and each provided with a recess in the outer face thereof and an integral spacer yoke projecting from the inner face thereof, a tie rod extending through the integral spacer yokes with the ends of the rod adjacent the recesses in the outer faces of the end blocks, a plurality of insulating barrier plates and intermediate spacer yokes rotatably mounted on the rod in alternate juxtaposition between the inner yokes of the end blocks and each plate provided with opposite lateral projections for overlapping interlocking engagement with each adjacent integral and intermediate yoke to prevent relative rotary movement thereof, a plurality of terminal connectors, each radially removably seated on a spacer yoke, a pair of mounting brackets each nested in the recess in a corresponding end block and having a mounting screw removably secured to the corresponding end of the axial tie rod for clamping the integral yokes, the barrier plates and intermediate spacer yokes in non-rotatable juxtaposition on the rod and locking each terminal connector against radial removal.

5. A fabricated terminal board having in combination a single axial tie rod having axial clamping means at each end thereof, a plurality of barrier plates rotatably mounted in spaced apart relation on the rod and each provided with lateral projections on the opposite sides thereof, a plurality of spacer yokes rotatably straddling the rod in alternate juxtaposition with the barriers for separate radial removal from the rod when the clamping means is loosened and for clamping into locking engagement with one portion of the lateral projections to align adjacent barriers and yokes and prevent relative rotary movement therebetween when the clamping means is tightened, and a plurality of terminal connectors each having means for radially re-

movable seating on a corresponding yoke when the clamping means is loosened and for locking engagement with another portion of the lateral projections on each adjacent barrier to prevent radial removal thereof when the clamping means is tightened.

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