

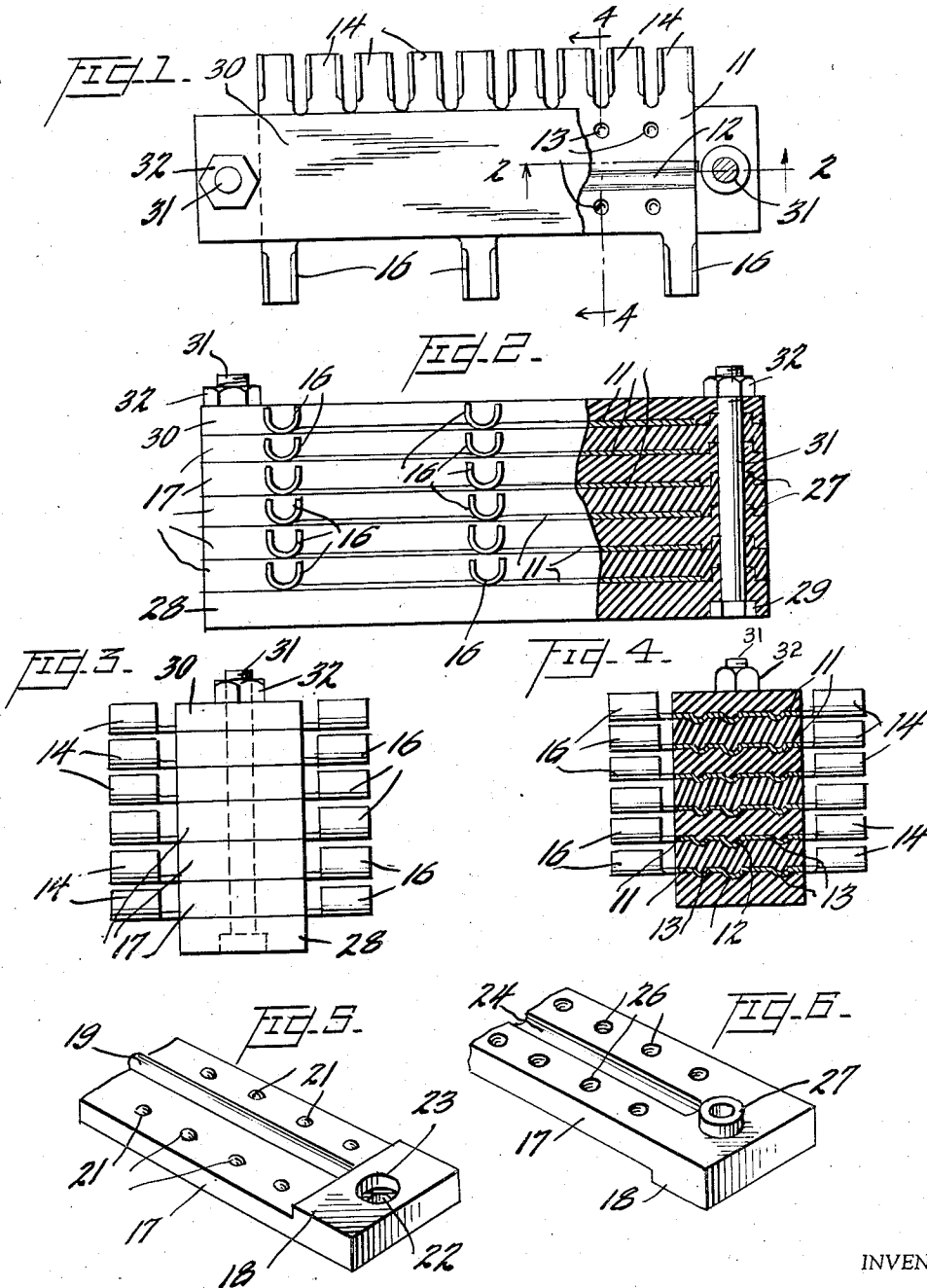
April 28, 1959

R. F. CHANDLER, JR., ET AL

2,884,613

ELECTRICAL TERMINAL BLOCK

Filed March 25, 1955



INVENTORS

Robert F. Chandler, Jr.
John H. Judd, Jr.,

BY *A. C. Schwarz, Jr.*
ATTORNEY

1

2,884,613

ELECTRICAL TERMINAL BLOCK

Robert F. Chandler, Jr., and John H. Judd, Jr., Winston-Salem, N.C., assignors to Western Electric Company, Incorporated, New York, N.Y., a corporation of New York

Application March 25, 1955, Serial No. 496,835

2 Claims. (Cl. 339—198)

The present invention relates to electrical connectors, and more particularly to an electrical contact assembly or terminal block.

It is often desirable in the use of electrical connectors or terminal blocks to have a varied number of electrical connector contacts because of the varying requirements in the wiring of electrical components. Further, in many electrical assemblies there is a need to connect many circuits to a common point, such as ground. In the majority of available electrical connectors there is no provision made whereby electrical connectors may be readily added or deleted, nor is there provision made so that many circuits may be connected to a single source, such as ground or battery.

Accordingly, an object of the present invention is to provide a new and improved electrical connector assembly.

A further object of the invention is to provide an electrical connector assembly which is constructed of relatively simple parts and which may be easily and quickly assembled.

A still further object of the invention is to provide an electrical contact assembly to which additional contact connectors may be easily and quickly added or deleted in accordance with particular wiring needs.

Yet another object of the invention is to provide an electrical contact assembly wherein a plurality of electrical circuits may be readily connected to a common lead.

In general, the connector assembly or terminal block is composed of a plurality of flat electrical conducting plates formed with electrical connectors extending from opposite sides thereof which are separated from each other in stacked form by preformed insulator blocks. Both the plates and blocks are provided with cooperating aligning and slip preventing elements. After assembly the stacked plates and blocks are held together by suitable securing means. The individual conducting plates may be provided with extending connectors in any pattern or sequence.

A more complete understanding of the invention may be had by reference to the following detailed description thereof when read in conjunction with the accompanying drawing, wherein—

Fig. 1 is a plan view, partly broken away, of the contact assembly or terminal block;

Fig. 2 is a front elevational view, partly in section, of the assembly shown in Fig. 1;

Fig. 3 is an end elevational view of the assembly of Fig. 1, looking from the left;

Fig. 4 is a cross-sectional view taken substantially on the line 4—4 of Fig. 1 and looking in the direction of the arrows;

Fig. 5 is a partial view of an insulator block, as viewed from the bottom in the assembly of Fig. 1; and

Fig. 6 is a partial view of an insulator block, as viewed from the top in the assembly of Fig. 1.

2

By reference to the drawings it may be seen that the terminal block or terminal assembly consists of a plurality of similar conducting elements or members 11, which in the specific embodiment illustrated are relatively flat and preferably made of copper. The conducting members 11 are formed with a concave integral portion 12, a plurality of indentations 13, and contacts or electrical connectors 14 and 16 extending from opposite sides thereof. The connectors 14 and 16 may be substantially U-shaped to receive a conductor for soldering thereto, or may be of any suitable configuration. The concave portion 12 and indentations 13 may be punched, so as to form a convex lower portion and projections or dimples on the lower or opposite surface thereof.

In the disclosed embodiment the conducting elements 11 are illustrated as each being continuous and each having a plurality of contacts 14 and a lesser number of contacts 16. However, it should be understood that each member 11 may have any desired number of contacts 14 and one or more contacts 16, or may comprise separate sections not contacting each other, and each having one or more of the contacts 16 connecting any desired number of contacts 14.

It is contemplated that in the assembled terminal block adjacent conducting members 11 will be separated by an insulating block or member 17, a plurality of which are utilized in the assembled unit. The insulating members 17 are substantially the width of the conducting members 11 not including the contacts 14 and 16 extending therefrom, and are each provided on one surface with a raised or step portion 18 formed near the opposite extremities thereof. The surface between the step portions 18 is formed with a longitudinally extending rib or convex portion 19 and a plurality of raised projections or dimples 21. The members 17 are provided at the step portions 18 with apertures 22 and circular countersunk portions 23, the apertures extending through the members. The step portions 18 are approximately of a height equal to the thickness of the conducting members 11, and the convex portion 19 and the projections 21 are such as to engage and nest with the concave portion 12 and indentations 13 of the conducting members 11, respectively.

The surface of the insulating members 17 opposite from the surface having the step portions 18 are substantially level and are provided with a longitudinally extending groove or concave portion 24 and a plurality of indentations 26. Surrounding the apertures 22 which extend through the members 17 are raised circular bosses or projections 27. The concave portion 24 and indentations 26 are aligned with the convex portion 19 and the projections 21 and are such as to receive the concave lower portion 12 and lower dimples 13, respectively, of the conducting members 11. Further, the bosses 27 will nest in countersinks 23 when the terminal block is assembled, and should be of a height approximately equal to the depth of the countersink. The grooves or concave portions 24 terminate at approximately the start of the step portion 18.

In order to produce a more desirable final assembly, it is contemplated that a top insulating member or cover 30 will be provided with a smooth upper surface and a lower surface having the countersinks 23, rib 19 and projections 21 (Fig. 5). Likewise, a lower insulating member 28 may be utilized which has a smooth lower surface and an upper surface such as illustrated in Fig. 6. The members 28 may be provided with countersinks 29 surrounding the apertures 22 at the lower side.

The conducting members 11 and insulating members 17 may be secured together in any suitable manner, such as by headed bolts 31 passing through the apertures 22 and

being secured in place by retaining nuts 32. The head of the bolts 31 may enter the countersinks 29 in the lower member 28.

In assembling the terminal block the lower insulating member 28 may have the bolts passed through the apertures 22 and conducting members 11 and insulating members 17 may then be stacked thereon in alternate arrangement until the desired number of electrical contacts are provided. The top insulating member or cover 30 may then be placed in position and the retaining nuts 32 secured in place. In building up the stacked assembly, it should be understood that the various projections and indentations of the conducting and insulating members will nest as described above. It should also be noted that as the bolts 31 pass through the step portions 18 they will therefore not be in electrical engagement with the conducting members 11, which terminate short of the step portion 18. Further, it will be readily possible to provide as many electrical connections as desirable by adding or deleting the conducting members 11 and corresponding insulating members 17, in which event varied length bolts 31 may be used.

While a specific embodiment of the invention has been disclosed and described it is understood that the invention is not limited thereto, but that other embodiments may be utilized within the scope and spirit of the invention.

What is claimed is:

1. An electrical terminal block comprising a plurality of insulating members each being formed with a convex portion, a plurality of projections and a countersunk aperture on one surface thereof, the aperture passing through the member; and a corresponding concave portion, a plurality of indentations, and a boss around the aperture on the opposite surface thereof, a plurality of conducting members each having a body portion substantially the same size as said insulating members but not extending to the boss and countersunk apertures with electric contacts extending therefrom, each of said conducting members being formed with a concave portion and a plurality of indentations in one surface thereof and a corresponding convex portion and a plurality of projections on the opposite surface thereof, each of said conducting members being positioned against movement by interengagement of the projections and indentations and concave and convex portions between a pair of said insulating members, adjacent pairs of said insulating members being nested by said bosses and countersinks, and means passing through the apertures in said insulating members for securing said

conducting members and said insulating members in a unitary terminal block.

2. An electrical terminal block, which comprises a plurality of electrical conducting members having electrical contacts extending therefrom, said conducting members having a concave portion in one side and a convex portion on the opposite side, a plurality of insulating members, each insulating member having a groove on one surface, a rib extending from the opposite surface, a raised step portion on one surface near each end and an aperture extending through the insulating member at each of the raised step portions, said aperture having a countersunk portion in the surface of the raised step portion and a cylindrical boss surrounding the aperture on the surface of the insulating member opposite the surface having the raised step portion thereon, said conducting members and said insulating members being positioned in stacked alternate relationship with the sides of the conducting members having the convex portions therein adjacent to the surfaces of the insulating members having the grooves therein and the sides of the conducting members having the concave portions therein are adjacent to the surface of the insulating members having the ribs formed therein, the convex portion of each conducting member nesting within the groove of the insulating member adjacent thereto and the concave portion of each conducting member receiving the rib of the insulating member adjacent thereto, the conducting members being of such size as to be received between the raised step portions of the insulating members, adjacent layers of said insulating members being nested together with the bosses of one insulating member received closely within the countersunk portions of the insulating member adjacent thereto, and a fastener inserted within the apertures of the insulating members to hold the insulating members and conducting members in a unitary assembly, said fastener being electrically insulated from the conducting members.

References Cited in the file of this patent

UNITED STATES PATENTS

1,149,599	Small	Aug. 10, 1915
2,134,402	Hines	Oct. 25, 1938
2,199,219	Edwards et al.	Apr. 30, 1940
2,327,048	Joyce	Aug. 17, 1943
2,397,102	Graham	Mar. 26, 1946
2,441,393	Buchanan et al.	May 11, 1948
2,643,365	Rose	June 23, 1953