

April 27, 1965

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3,181,109

CONNECTOR FOR TELEPHONE TERMINAL BLOCK

Filed Oct. 9, 1961

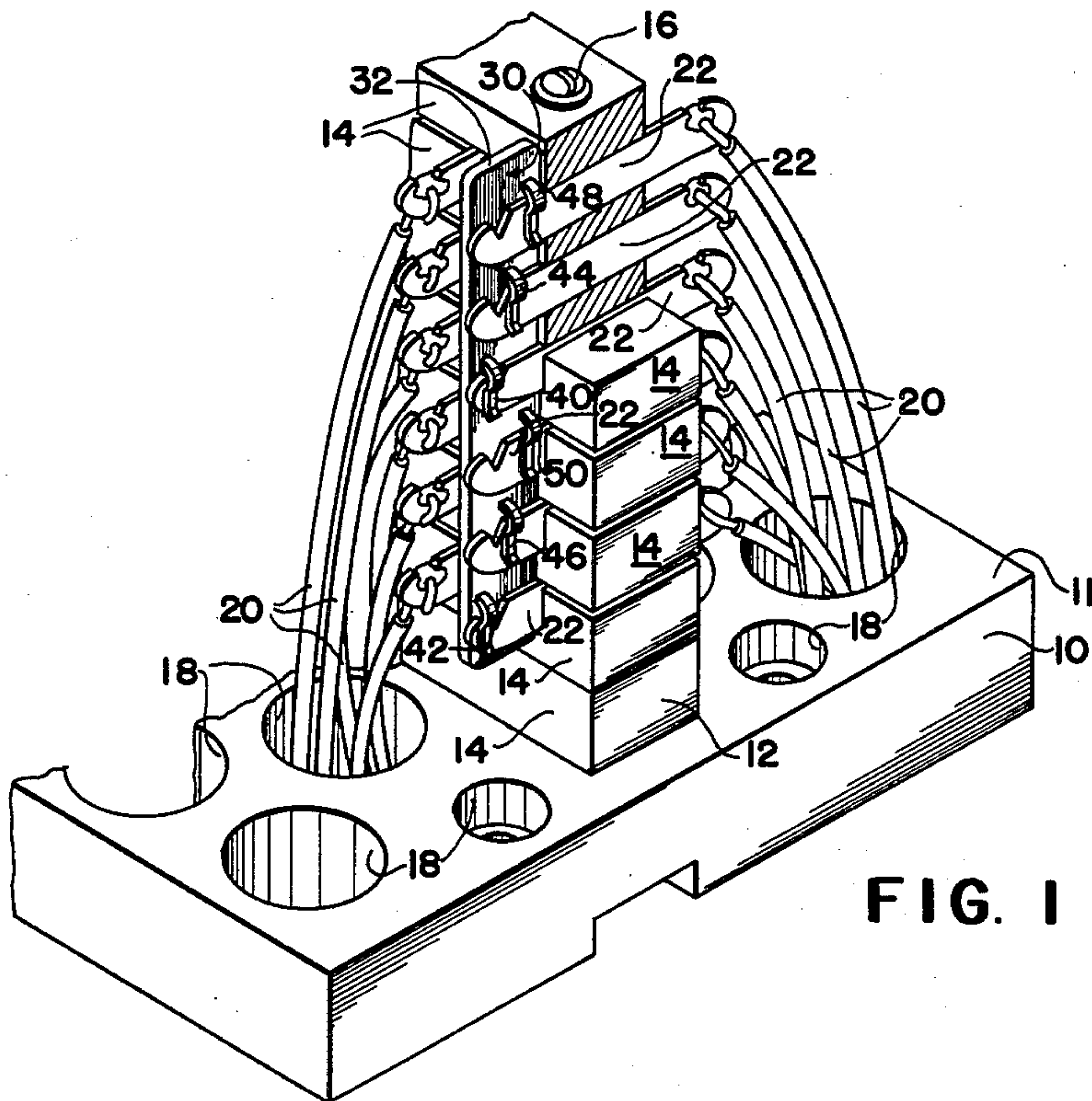


FIG. 1

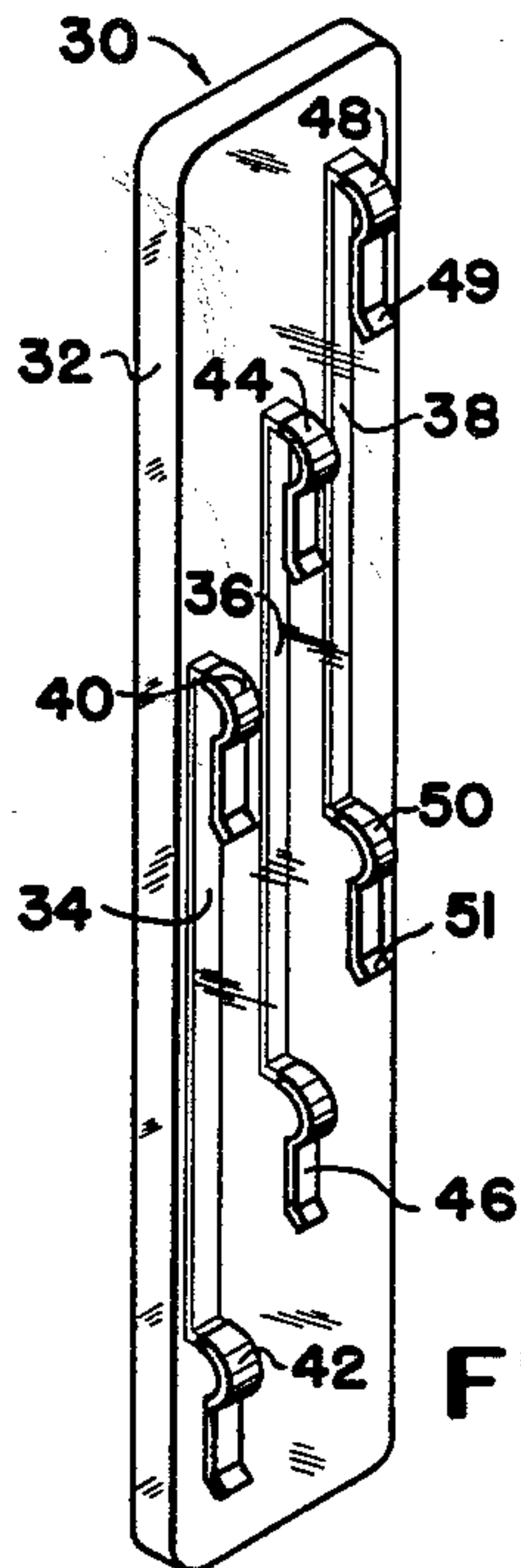


FIG. 2

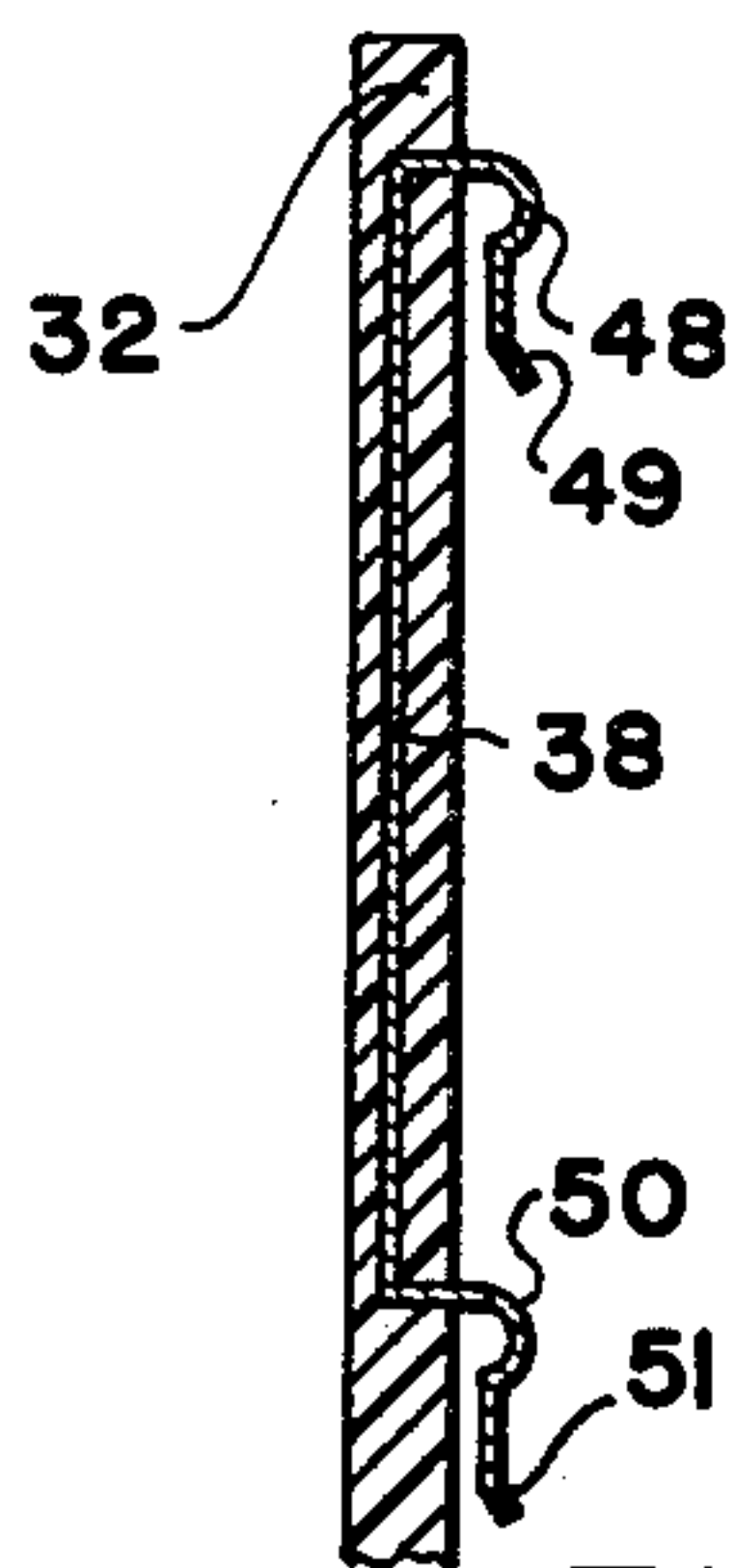


FIG. 3

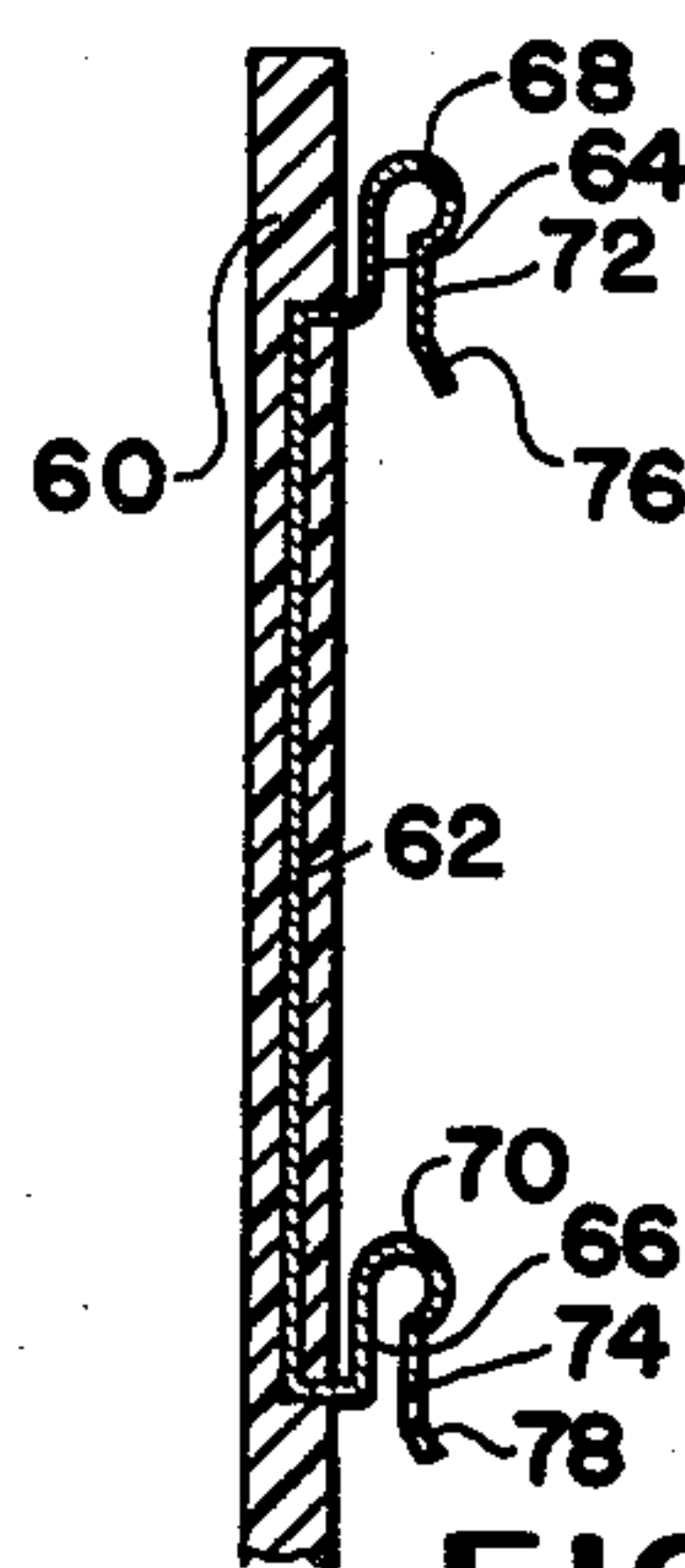


FIG. 4

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3,181,109 CONNECTOR FOR TELEPHONE TERMINAL BLOCK

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Filed Oct. 9, 1961, Ser. No. 143,760
1 Claim. (Cl. 339-198)

This invention relates to connector means, and more specifically to a connector particularly constructed and adapted for use with a terminal block or the like. Still more specifically the invention relates to a connector member for interconnecting electrical conductors on a terminal block or the like. In a more specific aspect, the present invention relates to a connector member for interconnecting in pairs conductors on a terminal block in a telephone distribution system whereby telephone calls directed to a particular number can be routed to a recorded message or to an operator.

Various types of connector means are known to the prior art and include connector means for terminal blocks or the like. The prior art devices are structurally complicated in many instances, requiring specially made clamping or connecting means and in other instances require a great many individual parts and means for interconnecting same in order to obtain the desired function.

In accordance with the present invention, new connector means for a terminal block or the like are provided which includes an insulator member having a plurality of conductor means therewith positioned in spaced relation. Each of the connector means is desirably shaped to form spaced clip means attachable to a conductor on a terminal block or the like to electrically interconnect the conductor means. The individual conductor means carried by the insulator member are electrically insulated or spaced so as to be in non-conducting relation.

In preferred specific embodiments of the invention, a connector is provided for a telephone distribution system having a terminal block with a plurality of rows of six terminal pins mounted in spaced relation with the pins in each row being aligned and projecting from each side of the block and insulated from each other. One end portion of each of the pins is normally connected to a central office switching unit and the other end portion is normally connected to a particular telephone. The connector of the invention includes an elongated and preferably rectangular shaped member formed of a rigid, electric current insulating plastic material. Three metallic conductors are provided and each of the conductors is preferably flat and has an elongated center portion which is embedded in the member and has integrally formed end portions projecting from one face of the member. The end portions of the conductors are preferably shaped to form spring clips facing one end of the member. In one preferred specific embodiment of the invention, the clips formed by the end portions overlie one face of the member with the electrical conductor being positioned between the clip and the face of the member. In another preferred specific embodiment of the invention, the end portions of the conductors are bent so as to form clip means with the terminal pins being received within the clip means and having a portion of the conductor on both sides thereof. In both preferred specific embodiments of the invention, the conductors are preferably of like size and are positioned in spaced relation across the plastic member. The conductors are desirably staggered longitudinally along the plastic member with the middle one of the conductors being centrally located in the member with the various clip means being positioned so that six terminal pins on the terminal block

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of the telephone distribution system are electrically connected in three pairs.

Accordingly, it is an object of the invention to provide new connector means for a terminal block or the like.

Another object of the invention is to provide new connector means having three integrally formed conductors mounted in insulated and spaced relation to electrically interconnect three pairs of spaced electrical conductors.

Another object of the invention is to provide an improved connector member having relatively few parts and which is relatively inexpensive and simple to construct.

Another object of the invention is to provide new connector means for a terminal block or the like wherein electrical contact is obtained on both sides of a terminal pin or the like.

Various other objects, advantages and features of the invention will become apparent to those skilled in the art from the following discussion, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is an isometric view of an end portion of a terminal block or the like of a telephone distribution system showing a preferred specific embodiment of a connector of the invention positioned thereon.

FIG. 2 is an enlarged isometric view of the preferred specific embodiment of the connector of the invention shown in FIG. 1.

FIG. 3 is an enlarged partial longitudinal cross section view through the connector of FIG. 2.

FIG. 4 is a partial longitudinal cross section view through another preferred specific embodiment of the invention illustrating another preferred construction of the clip means.

The following is a discussion and description of preferred specific embodiments of the new connector means of the invention, such being made with reference to the drawings, whereon the same reference numerals are used to indicate the same or similar parts and/or structure. It is to be understood that such discussion and description is not to unduly limit the scope of the invention.

Referring now to the drawings in detail, a terminal block is shown at 10 and the block 10 is of a common construction as used in telephone distribution systems and includes a wall 12 which is normally composed of a plurality of individual segments 14 of an insulating material which are held in assembled relation by a mounting bolt 16 or other suitable means connecting the segments 14 and base 11. The base portion 11 of the block is provided with a plurality of holes or apertures 18 through which common electrical wires 20 pass. The segments 14 of wall 12 receive and mount a plurality of terminal pins 22 in spaced and insulated relation. The pins 22 project from both sides of the wall 12 and the wires 20 are attached thereto in a suitable manner, such as by soldering with the pins 22 and conductor of the wires 20 being in electrical contact. One side of the pins 22 is normally wired to central office switching equipment (not shown) with the other end of the pins being operatively connected to the individual telephone. When the individual telephone is disconnected, out-of-order, or for some other reason it is desired to automatically transfer a call directed to the telephone to the operator or to a recorded message, it is normally necessary to connect the various terminal pins by three separate wires so as to achieve the desired result. The connector member of the present invention eliminates the need for interconnecting or wiring the various terminal pins 22 by separate wires to accomplish this function.

In a preferred specific embodiment of the invention, the connector member is shown generally at 30 and includes an elongated preferably rectangular member 32 which is

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desirably formed of a rigid plastic material which is an insulator for electric current. The member 32 can be formed of other suitable materials having the necessary insulating properties, the plastic material shown and described having been found desirable in construction of the connector. The member 32 is preferably relatively thin as illustrated and three metallic conductors 34, 36 and 38 are preferably provided with each of the conductors having an elongated center portion embedded in the member 32 as best illustrated in FIG. 3. Preferably the conductors 34, 36 and 38 are flat strips of a metallic material having a relatively high electrical conductivity. Each of the conductors 34, 36 and 38 has two integrally formed projecting end portions 40, 42, 44, 46, 48 and 50 which project from one face of the member 32. Each of the projecting end portions are preferably shaped to form spring clips which face one end of the member 32. As illustrated in FIGS. 2 and 3 of the drawings, the clips or end portions in one preferred specific embodiment of the invention project outwardly from the center portion of the conductor at approximately a right angle and have a rounded bent portion and a relatively flat portion projecting therefrom and directly overlying the one face of the member 32. Preferably, the end portion of each of the clip members is flared outwardly as shown at 49 and 51 in FIG. 3, such having been found to facilitate easier mounting of the connector on the terminal pins or the like.

The conductors 34, 36 and 38 are preferably of like size and are positioned in spaced relation transversely across the member 32 and are desirably staggered longitudinally of the member 32 with the middle one of the conductors 36 being centrally located longitudinally relative to the conductors 34 and 38. The conductors 34, 36 and 38 are staggered longitudinally so as to be simultaneously engageable with all of the pins 22 of a terminal block 10 and to be in electrical contact therewith at all times when mounted so that the three upper terminal pins are in electrical contact with like ones of the three lower terminal pins when the clip 30 is mounted thereon.

Another preferred specific embodiment of the invention is illustrated in FIG. 4 of the drawings. This embodiment is quite similar to that illustrated in FIGS. 1-3 and includes a suitable block or member 60 of a non-conducting material, such as a rigid electric current insulating plastic material, and can be of the same size and shape as block 32 described hereinbefore. A plurality of conductor members such as the conductor 62 is provided and normally three such members will be used with the block 60 and embedded therein and positioned and arranged as illustrated for the conductors 34, 36 and 38 of FIGS. 1-3. The conductor 62 desirably has an elongated center portion embedded within the member 60 as illustrated with the end portions projecting therefrom. Preferably the end portions have a portion 64 and 66 which is bent upwardly along one face of the member 60 and generally parallel thereto as illustrated with the portions 64 and 66 merging into rounded end portions 68 and 70 respectively, and with a portion 72 and 74 being positioned in generally parallel planes to the portions 64 and 66 and spaced therefrom a short distance. Preferably, the outermost end portions 76 and 78 of the conductor 62 flare outwardly as illustrated to aid in attaching the connector member to terminal pins or the like. With the clip struc-

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ture formed as illustrated in FIG. 4 of the drawings electrical contact is made on both sides of the terminal pins or the like 22 and such results in better electrical contact between the various members. The operation of the connector member as shown in FIG. 4 is the same as that described previously in connection with FIGS. 1-3.

As will be apparent from the foregoing description of the preferred embodiments of applicant's connector member, relatively simple and inexpensive connector means have been provided which are easily attachable to terminal pins or other electrical conductors so as to provide an interconnecting electrical path between a plurality of same to achieve a desired result. Applicant's construction eliminates a great deal of time consuming and tedious work involved in interconnecting the various terminal pins by individual conductors and removing same as service to the individual telephone changes.

While the invention has been described in connection with preferred specific embodiments thereof, it will be understood that this description is intended to illustrate and not to limit the scope of the invention, which is defined by the claim.

What is claimed is:

A connector for a telephone distribution system having a terminal block with a plurality of rows of six terminal pins mounted in spaced relation with the pins in each row being aligned and projecting from the side of said block and electrically insulated from each other, said connector comprising, in combination an elongated thin rectangular-shaped member of rigid electric current insulating plastic material, three elongated metallic conductors positioned in spaced relation across said member, staggered longitudinally thereof and of substantially the same size, each of said conductors having an elongated center portion embedded in said plastic member and end portions projecting from one face of said member with each end portion defining a U-shaped spring clip having opposite contact portions, said center portions of said conductors positioned in said plastic member with a layer of plastic material disposed between same and said one face, said end portions positioned to extend in the same longitudinal direction thereby defining spring clips opening toward the same direction, said connector being constructed and adapted to be mounted on a row of pins on a terminal block with said pins simultaneously being in electrical contact with both sides of said U-shaped clips and with said conductors electrically connecting three pair of said pins.

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