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WIRE CONDUCTORS IN ELECTRICAL CONNECTION FIELDS

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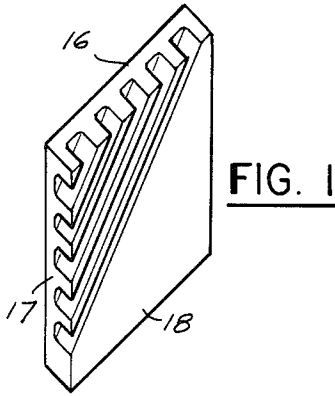


FIG. 1

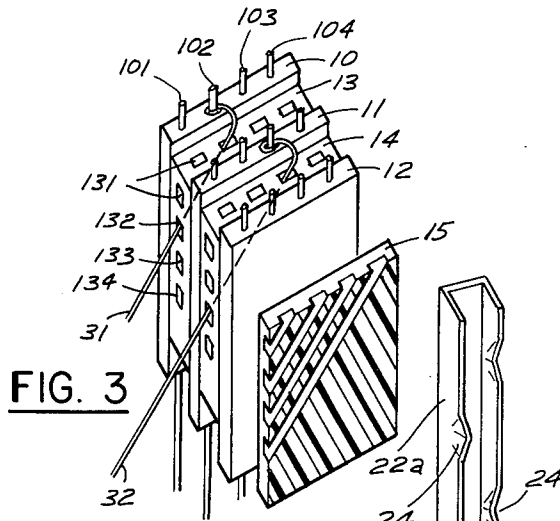


FIG. 3

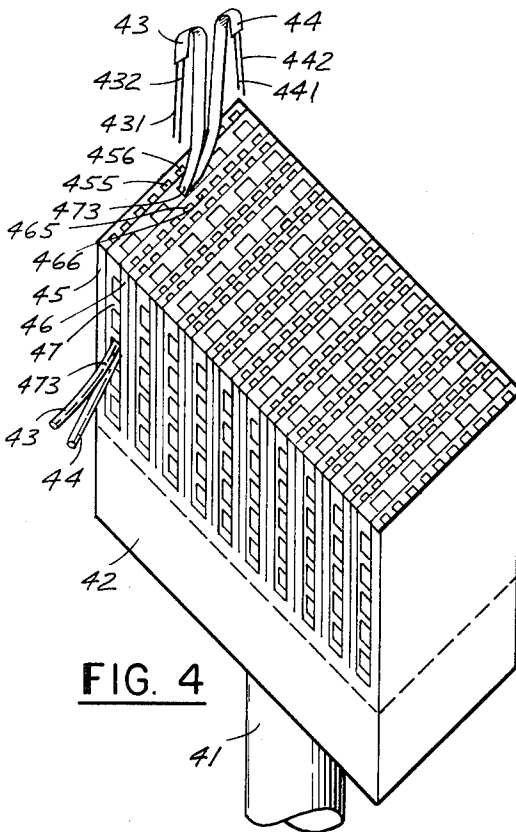


FIG. 4

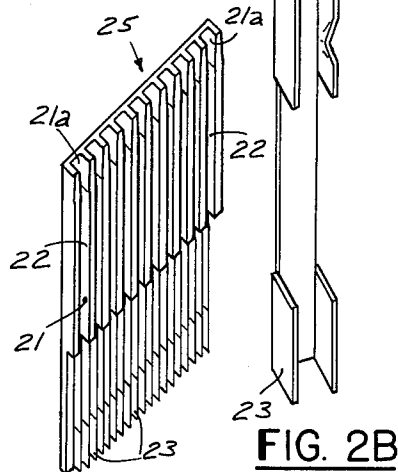


FIG. 2A

FIG. 2B

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## 3,226,669 WIRE CONDUCTORS IN ELECTRICAL CONNECTION FIELDS

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12,927/61

6 Claims. (Cl. 339-198)

In many technical fields, particularly in the telecom-  
munication fields, there is a need for jointing a plurality  
of conductors in or adjacent to the set of apparatus to  
be used, using terminal block arrangements. In such  
block arrangements the concentration of the conductors  
may be great, for example, in blocks composed of contact  
devices formed as rectangular plates having the in-  
dividual contact members placed in one plane side by  
side. Whether the connection of these conductors is car-  
ried out by means of screw, soldered, or plug-and-socket  
connections, it is advantageous to arrange the conductors  
in a clearly observable manner, at least in the immediate  
proximity of the connections.

The invention has for its purpose to provide a wire guide  
which, especially in such block terminal arrangements,  
simplifies said problem of order. This is achieved accord-  
ing to the invention in such a way that the wire guides  
are shaped as suitably rectangular plates having parallel  
grooves or ducts for the wires, each of the grooves hav-  
ing a first end which opens into one of two edge surfaces  
arranged beside the connecting points of the contact  
members, and a second end which opens into the other  
edge surface running preferably perpendicularly to the  
first-mentioned edge surface.

The invention will be further described with reference  
to the accompanying drawing:

FIG. 1 shows an example of a wire guide plate;

FIG. 2A shows a contact device shaped as a rectangu-  
lar plate;

FIG. 2B shows a contact element on an enlarged  
scale;

FIG. 3 illustrates how wire guides and contact plates  
can be put together to form terminal block arrange-  
ments; and

FIG. 4 shows an example of a terminal block arrange-  
ment ready for use.

In the example shown in FIG. 1, the wire guide is  
shaped as a rectangular plate. From the upper edge sur-  
face 16 extend five ducts or grooves which open into the  
adjacent left vertical edge surface 17. The surfaces 16  
and 17 form an angle of 90° with each other. The ducts  
in the example shown are open on side 18. They can  
of course be completely covered and extend inside the  
plate. The ducts are parallel and straight or slightly  
bent.

In FIG. 2A there is shown an example of a contact  
device shaped as a rectangular plate of insulating mate-  
rial with ten parallel grooves 21 in which ten individual  
contact members 22, of U-shaped cross section, are in-  
serted. FIG. 2B shows one of said contact members 22  
on a larger scale. As appears from said figure, the mem-  
ber 22 has between two U-shaped portions a plane por-  
tion connecting them with each other. The grooves 21  
of the insulating plate are provided at one end with  
widened inlets 21a, and the shanks 22a of the contact  
members are provided with indentations 24 so that a  
wire that is inserted from above into the contact member  
must bend in one or the other direction, making contact  
at several points with the contact member, whereby a  
high quality electrical connection is formed. The lower  
parts 23 of the contact members have a form such that  
the incoming fixed conductors can be secured by means

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of soldering or swaging. The contact plates used can,  
of course, be arranged in another way, for example, as is  
shown in FIG. 3.

According to FIG. 3, contact plates 10, 11, 12 each  
have four contact members 101, 102, 103, 104 consisting  
of parallel wires of conductive material molded into the  
insulating material of the plate. The wires are shown pro-  
truding from the plates at the bottom of FIG. 3, where  
the incoming conductors are connected permanently there-  
to, and at the top of the same figure, where the outgoing  
conductors can be optionally connected. The contact  
plates 10-12 are joined to form terminal blocks together  
with an equal number of guide plates 13-15 made of in-  
sulation material. The guide plates 13 and 14 are joined  
together with the contact plates 10, 11, the guide plate 15  
being shown displaced and in section so as to illustrate  
the ducts therein more clearly. The wire guide plates  
consist of a plastic material and are provided with ribs  
that fit corresponding grooves in the contact plates when  
the side surfaces of the plates are placed together. In the  
wire guide plates are a number of ducts 131-134 corre-  
sponding to the number of contact members of the plates.  
These ducts have an area that corresponds to the dimen-  
sions of the outgoing optional conductors of the arrange-  
ment. The guide plates are placed so that one mouth of  
each of the ducts is located near a separate contact mem-  
ber and the other mouth of the duct is located in a plane  
perpendicular to the plane in which said one mouth lies.  
In the arrangement shown in FIG. 3, two outgoing op-  
tional conductors 31, 32 are illustrated. One conductor  
31 is inserted through the duct 132 in the wire guide 13  
and is connected to a contact member 102 in the plate 10.  
In the same manner each contact member 101-104 can,  
in the arrangement shown, be reached by means of one  
optional conductor. The space necessary for the con-  
nection of the conductor to a connecting point by means  
of screwing, soldering, squeezing or the like is not con-  
cealed by the other conductors. Each connected con-  
ductor is furthermore clearly definable as to the connect-  
ing point and also in the mouth of the duct into which  
it is passed.

In FIG. 4 another terminal block arrangement is  
shown, ready for use, which is built up of ten guide  
plates each having five grooves (according to FIG. 1).  
To the terminal block arrangement are connected two  
hundred conductors formed in a cable 41. They are  
permanently connected to the two hundred contact mem-  
bers. The whole arrangement, except for the outgoing  
optional conductors—for example, 43, 44—is formed as  
an integral unit fixed to the cable 41, which unit forms  
a composite rectangular block. The arrangement is filled  
below the dotted line with a self-hardening plastic mass  
42.

In FIG. 4 two outgoing optional pairs of wires 43, 44  
are run through the same duct 473 in the wire guide plate  
47. They are both bent at their free ends and stripped so  
that their four individual conductors form bare wires  
431, 432 and 441, 442, respectively. These conductors  
constitute plugs which fit into corresponding grooves or  
jacks in the adjacent contact plate, namely, the pair of  
wires 431, 432 fitted into grooves 455, 456 in a plate 45  
and the pair of wires 441, 442 fitted into grooves 465, 466  
in a plate 46. The connections are formed by using a  
bending and stripping pair of pliers after the pairs of  
conductors 43, 44 are passed through a duct 473. The  
plugs are pushed into their respective grooves by longi-  
tudinal displacement; that is, by pulling back the pairs  
of conductors. In the same manner all the one hundred  
pairs of outgoing conductors can be connected individu-  
ally with optional pairs of incoming permanent conduc-  
tors and remain unmistakably definable.

The grooves in the wire guide plates are, in the ex-

ample shown according to FIG. 4, assumed to be so wide that two pairs of wires can be pushed through each of the five grooves in a plate. Consequently, twenty conductors can be run through one wire guide plate. Since the contact plates are each provided with ten individual contact members, two such contact plates must be provided for each wire guide plate; that is, one contact device on each side of a guide plate. Such an arrangement has been found to be advantageous from the view of saved space in many cases, but other arrangements also may be used, such as the arrangement shown in FIG. 3 having at least one guide plate and one contact plate cooperating with each other.

I claim:

1. A terminal block assemblage for interconnecting electric conductors, said assemblage comprising a contact plate having inserted therein a plurality of contact elements electrically insulated from each other and exposed on one side of the plate, and a wire guide plate made of insulation material and having in one of its sides a plurality of parallel grooves extending from one edge of said guide plate to an adjacent edge, said contact plate and said guide plate being superimposed with the side of the contact plate on which the contact elements are exposed and the grooved side of the guide plate facing in the same direction.

2. A terminal block assemblage for interconnecting electric conductors, said assemblage comprising a substantially rectangular contact plate having in one of its sides a plurality of grooves extending substantially parallel to two opposite sides of said plate, contact elements inserted into said grooves secured therein and electrically insulated from each other, and a substantially rectangular wire guide plate made of insulation material and having in one of its sides a plurality of parallel grooves extending from one edge of said plate to an adjacent edge, said plates being superimposed with the grooved sides thereof facing in the same direction, said grooves in the guide plate terminating at one end in substantial juxtaposition with the grooves in the contact plate.

3. An assemblage according to claim 2, wherein one edge of said contact plate extending crosswise to the direction of the grooves therein and one of the edges of said guide plate from which the grooves therein extend are disposed in substantial registry.

4. An assemblage according to claim 1, wherein a contact plate is superimposed upon each side of said guide plate.

5. A terminal block assemblage for interconnecting electric conductors, said assemblage comprising a contact plate including a plurality of contact elements electrically insulated from each other and protruding from one edge of said plate, and an insulation wire guide plate superimposed upon said contact plate with one edge in substantial registry with the edge of the contact plate from which said contact elements protrude, said guide plate including a plurality of substantially parallel wire ducts extending from said one edge thereof to an adjacent edge.

6. A terminal block assemblage for interconnecting electrical conductors, said assemblage comprising a substantially rectangular contact plate including a plurality of contact elements electrically insulated from each other, said contact elements having exposed portions, and a substantially rectangular insulation wire guide plate superimposed upon said contact plate, said guide plate including a plurality of wire guides extending from one edge of the plate to an adjacent edge.

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