

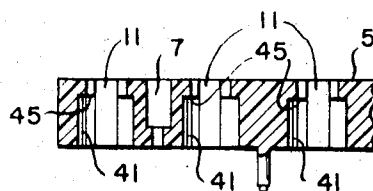
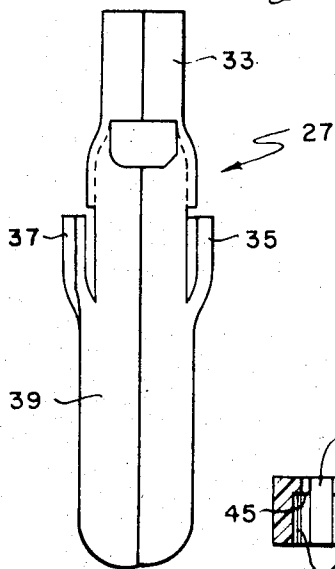
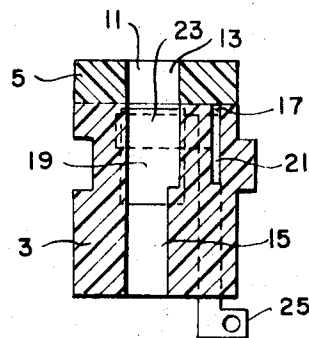
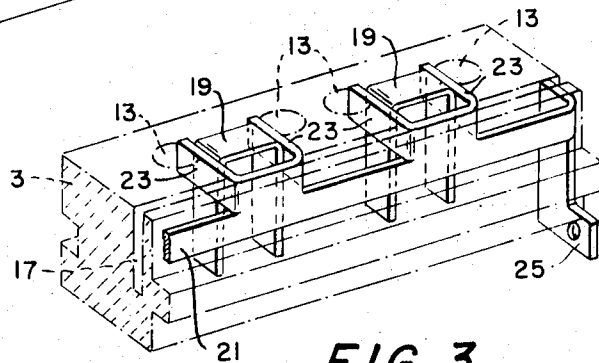
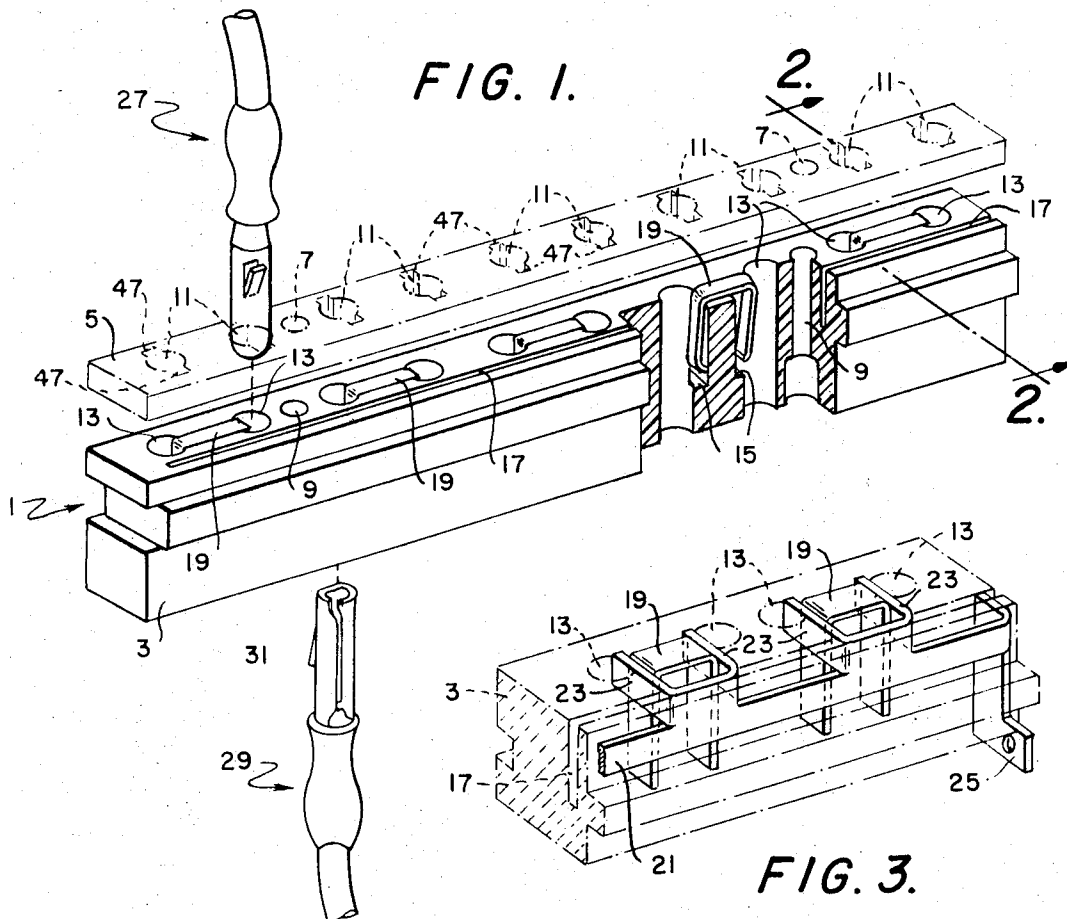
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PIN CONTACT AND CONNECTOR BLOCK THEREFOR

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1

3,562,697

PIN CONTACT AND CONNECTOR BLOCK THEREFOR

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4 Claims

ABSTRACT OF THE DISCLOSURE

The disclosure relates to a connector block and a pin contact therefore, the connector block including top and body portions, the body portions having a plurality of apertures therethrough with spring contacts bridging predetermined adjacent pairs of the apertures. The body portion of the connector block includes a groove therein running adjacent all of the apertures conductive members such as a copper strip with fingers being positioned in the groove, the copper strip interconnecting predetermined ones of the spring contacts to provide a connecting pattern. An external connector member can also be provided which connects to the conductive members in the groove and extends outwardly or externally of the connector block. The top portion of the connector block includes apertures aligned with the apertures of the body portion and of the same diameter as the apertures thereof except that the bottom portion of the walls thereof include a stopping member in the form of steps and the top portion includes a pair of inwardly extending shoulders with sufficient room between shoulders to receive pin contact tynes. Also included is a pin contact for mating with the connector block having a pair of tynes whereby the pin contact can be inserted into the connector block apertures between the shoulders and rotated by ninety degrees to provide a locking action therein with the shoulders. Rotation of the pin contact is possible in only one direction due to the stopping member therein.

This invention relates to a connector block and a pin contact therefore and, more specifically, to a connector block having connector spring contact interconnections of predetermined manner within the block and a pin contact capable of locking within the block in one position and capable of removal therefrom without the use of a tool when placed in a second position.

Connector blocks and pin contacts therefore have been well known in the art and many examples thereof are presently shown in the prior art as well as in public use. Connector blocks and pin contacts therefore are of great use and it is always desirable to improve such devices in any one of a number of ways. Prior art connector blocks have been capable of receiving and locking pin contacts therein and have also been capable of providing predetermined interconnections between spring contacts or other types of contacts therein. Prior art connector blocks have also been capable of receiving locking pin contacts therein. These prior art pin contacts, however, required a special tool for removal if they were to provide a good locking engagement under operating conditions. Furthermore, the interconnection between spring contacts in prior art connector blocks was normally unwieldy and expensive to produce.

In accordance with the present invention, there is provided a connector block including top and body portions, the body portion having a plurality of spaced apertures therethrough having parallel axes with spring contact members bridging predetermined adjacent pairs of the apertures and extending therein a substantial distance. The connector can be arranged as a programming sys-

2

tem, a bus bar or the like by interconnecting all or predetermined ones of the spring contact members by means of a thin conductive member with inwardly extending fingers positioned within a groove in the connector block that runs along and adjacent each of the spring contact members, the conductive member with fingers interconnecting predetermined ones of the spring contacts to provide the connecting pattern. An external connector member can be attached to a part of the conductive

10 member.

The connector block also includes a top member which is attached thereto and has apertures aligned with the apertures of the connector block body portion and of the same diameter as the apertures thereof except that the bottom portion of the walls thereof include a stopping member in the form of steps and the top portion thereof includes a pair of inwardly extending shoulders with sufficient distance between adjacent shoulder ends to receive pin contact tynes therein.

A pin contact, in accordance with the present invention, which has a pair of resilient tynes can be inserted with the tynes passing through the space between adjacent shoulders. A 90 degree rotation of the pin contact will cause the tynes to be rotated and be locked against the aperture wall and under the shoulders. The pin contact is removed by rotation thereof of 90 degrees whereby the tynes are positioned along the space between the shoulders and can thereby be easily removed without the use of a special tool. Rotation of the pin contact is possible in only one direction due to the stopping member.

It is therefore an object of the present invention to provide a connector block which is easily programmable in various circuit configurations or as a bus bar at low economic cost.

It is a further object of this invention to provide a connector block which is capable of receiving a pin contact with locking member and allow removal of same without the use of special tools, and, at the same time, a pin contact from the opposite side that requires a special tool for removal.

It is a further object of this invention to provide a pin contact member which can be inserted and removed from a connector block without the use of special tools.

The above objects and still further objects of this invention will immediately become apparent to those skilled in the art after consideration of the following specification of a preferred embodiment of the invention which is provided by way of example and not by way of limitation wherein:

FIG. 1 is a pictorial view showing the pin contact, terminal block and a further contact in accordance with the present invention;

FIG. 2 is a view taken along the line 2—2 of FIG. 1;

FIG. 3 is a part of a cross sectional view of the embodiment of FIG. 1 taken through the groove 17 thereof;

FIG. 4 is a cross sectional view of a portion of the top portion of the connector block in accordance with the present invention; and

FIG. 5 is a pictorial view of the pin contact 27 of FIG. 1.

Referring now to FIGS. 1 to 4, there is shown a connector block 1 having a main connector block body portion 3 and a top portion 5. The connector block body portion 3 is secured to top portion 5 by means of rivets, screws of the like passing through the key hole shaped openings and apertures 7 and 9 which are aligned. The top portion 5 of the connector block 1 includes apertures 11 aligned with the apertures of the body portion 3 and of the same diameter as the apertures thereof except that the bottom of the aperture wall includes a stopping member 41 in the form of plural steps to allow rotation of a pin contact therein in only one direction. Also provided is

3

a pair of shoulders 45 with a spacer 47 therebetween to allow for insertion of a pin contact. Upon rotation of the pin contact, the pin tynes lock under the shoulders.

The connector block includes a groove 17 extending out to one edge thereof and extending at its other end to the last aperture. The apertures 13 include resilient pin contact members 19 which bridge adjacent apertures 13 and extend therein. A conductor member is positioned within the groove 17 and includes, integral therewith, inwardly extending pairs of fingers 23, which extend through grooves cut from the grooves 17 into the apertures 13 and make electrical contact with the spring contact members 19. It should be understood, that the electrical conductor 21 and inwardly extending fingers 23 can be attached to all of the spring contact members 19 to provide a bus bar type of action or, alternatively, it can be attached to predetermined ones of the spring contacts to provide a programming system, the programming being determined by removal of pins from one of the apertures and inserting them into other ones of the apertures. The conductor 21 can also have an outwardly extending conductive member 25 for attachment to an external source of any desired type, such as for example a voltage source or reference voltage.

Contact can be made through the apertures at their top portion of the connector block by means of the pin contact 27 which is shown in greater detail in FIG. 5 and will be described in more detail hereinbelow. The apertures at the lower portion of the connector block within the block portion 3 are contacted by a pin contact member 29 of well known type which includes a tyne member 31 and can be locked within the connector block as described in greater detail hereinbelow.

Referring now to FIG. 5, there is shown the pin contact 27 which includes a wire barrel 33, a body 39 and a pair of resilient tyne members 35 and 37. The tynes are locking members as will be described hereinbelow.

The connector block 1 is keyed to accept the spring locking tynes 35 and 37 of the pin contact 27 through the aperture 47 between shoulders 45. The tynes are depressed as the pin contact enters the block and the pin therefore enters and is depressed therein until the tynes have passed below the bottommost part of the shoulder 45. At this time the pin contact is rotated by 90 degrees, rotation being possible in only one direction due to the stop member 41. The rotation by 90 degrees of the spring contact 27 will now cause the tynes to open, thereby locking underneath the shoulders 45 within the apertures 11 with body 39 making contact against spring contact members 19. To remove the pin contact from the connector block, the reverse operation is provided whereby the pin contact is turned by 90 degrees in the counterclockwise direction, depressing the types 35 and 37 whereupon the tyne members 35 and 37 are positioned at the apertures 47 between the shoulders 45 and removed without the use of a tool.

4

Though the invention described with respect to a specific preferred embodiment thereof, many variations and modifications thereof will immediately become apparent to those skilled in the art. It is therefore the intention that the appended claims be interpreted as broadly as possible in view of the prior art to include all such variations and modifications.

What is claimed is:

1. An electrical connector block comprising a body member having a plurality of spaced apertures arranged in coplanar parallel axes, spring contacts positioned in at least some of the apertures for engagement with contact members positioned in the apertures means at one end of each aperture for locking engagement with a contact member to prevent axial withdrawal of the contact from the associated aperture, and means on the wall of each aperture for limiting rotation of each said contact member in one direction only when inserted in the aperture, said body member comprising a bottom member and a top member secured thereon and said spring contacts are positioned in the bottom member and said rotation limiting means are in the top member.

2. A block as defined in claim 1 wherein said locking means comprises a key hole opening having a minimum diameter less than the diameter of the aperture.

3. An electrical connector block as set forth in claim 1 wherein said bottom portion comprises a first groove extending parallel to the plane of the axes of the apertures therein, and a further groove extending from said first groove into said apertures in said bottom portion.

4. An electrical connector block as set forth in claim 3 wherein an electrical conductor is positioned in said first groove, said conductor having electrically conductive means integral therewith, extending into predetermined ones of said further grooves and contacting said predetermined ones of said spring contact members.

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U.S. Cl. X.R.

339—189, 206, 214