

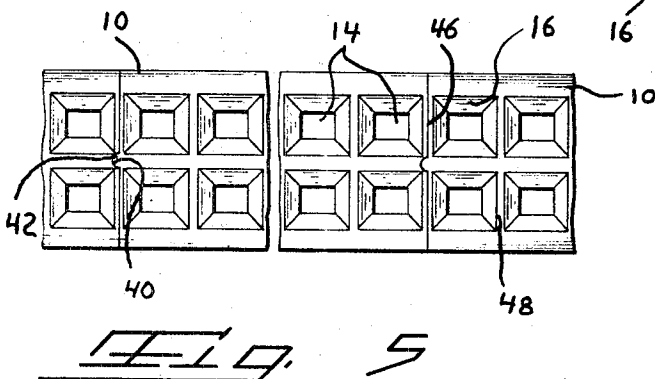
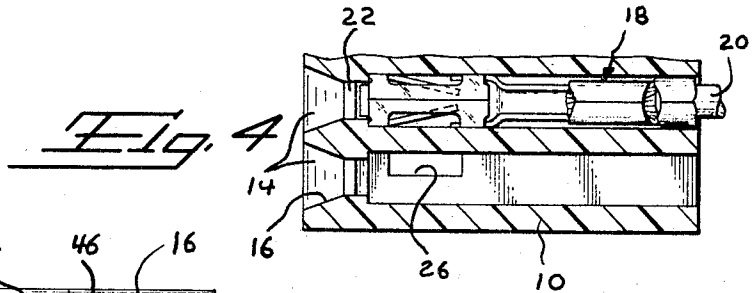
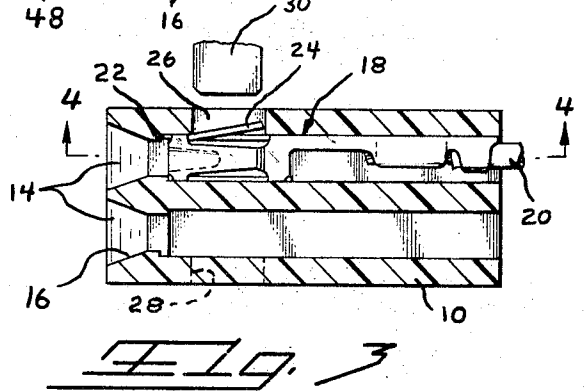
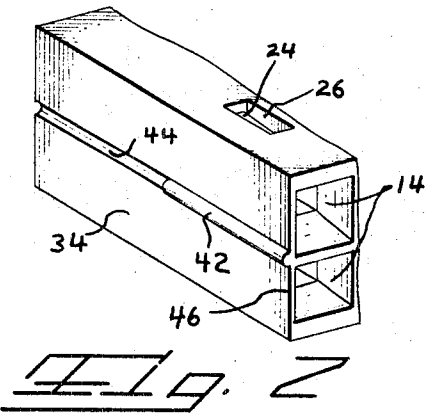
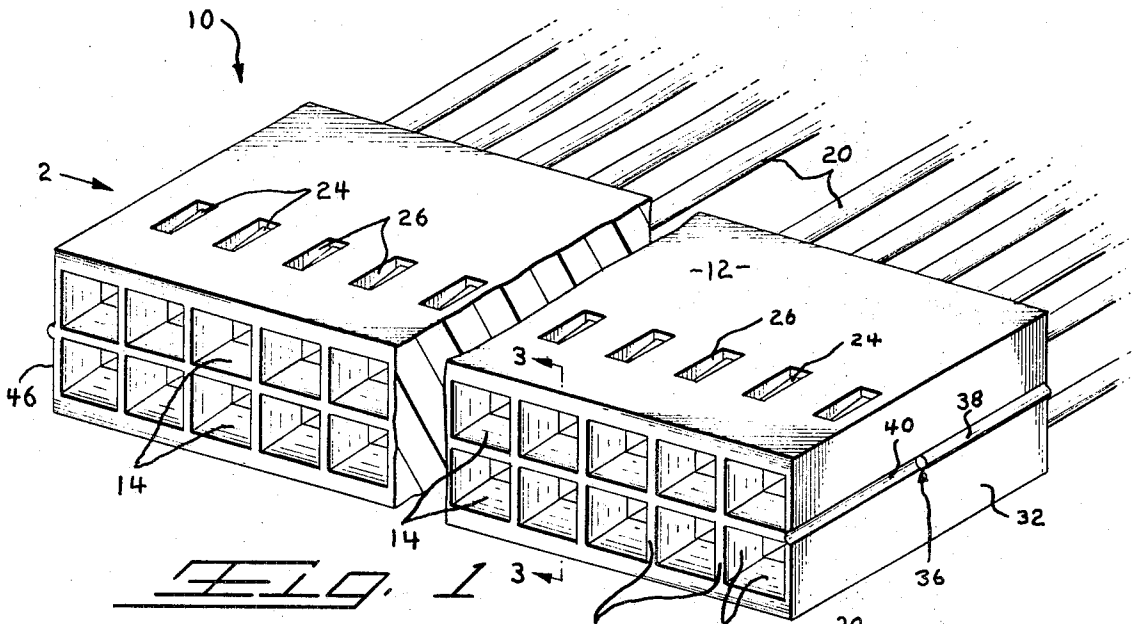
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3,538,489

CONNECTOR BLOCK

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1

3,538,489

CONNECTOR BLOCK

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9 Claims

ABSTRACT OF THE DISCLOSURE

An electrical connector comprising a connector block having a plurality of electrical contacts therein and having keying means for permitting stacking of the connectors without interruption of contact spacing and for preventing improper stacking of the connectors. Windows are disposed along opposite faces of the connector for facilitating removal of the contacts from the connector block.

This invention relates to the art of electrical connectors and, in particular, to a connector having a plurality of electrical contacts and capable of being stacked without disturbing the spacing between adjacent contacts. The connector block has complementary keying means disposed in its opposite end faces which permit connector stacking but which prevent improper positioning of one connector relative to its adjacent connector. Provision is also made in the connector block for the entry of a tool to effect removal of the electrical contacts from the connector block.

It is an object of this invention to provide a connector having stacking and orienting means formed in the connector block.

A further object is to provide a connector having means to permit withdrawal of the electrical contacts from the connector block.

A further object is to provide an electrical connector of simple and inexpensive construction and wherein the connector block may be conveniently formed as a one-piece molded part.

BRIEF DESCRIPTION OF THE DRAWING

In the drawings in which like reference numerals refer to like parts:

FIG. 1 is an overall perspective view showing a preferred form of electrical connector made in accordance with the teachings of this invention;

FIG. 2 is a fragmentary perspective view of one end of the connector as seen looking generally in the direction of the arrow 2 of FIG. 1;

FIG. 3 is a cross-sectional view taken along the line 3—3 of FIG. 1;

FIG. 4 is a cross-sectional view taken along the line 4—4 of FIG. 3; and

FIG. 5 is a front elevational view showing the method of stacking the connector of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The attainments of the present invention will become apparent to those skilled in the art upon a reading of the following detailed description when taken in conjunction with the drawings in which there is shown and described an illustrative embodiment of the invention; it is to be understood, however, that this embodiment is not intended to be exhaustive nor limiting of the invention but is given for purpose of illustration in order that others skilled in the art may fully understand the invention and the principles thereof and the manner of applying it in practical use so that they may modify it in various forms,

2

each as may be best suited to the conditions of a particular use.

In FIG. 1 there is shown an electrical connector indicated generally at 10 and comprises a connector block 12 formed of a suitable dielectric material such as diallyl phthalate. The block 12 has a plurality of regularly spaced apertures 14 extending therethrough, said apertures being disposed generally along two parallel rows. The forward end of the apertures are beveled as at 16 to assist in entry of a mating electrical connector.

Located within each of the apertures 14 is an electrical contact indicated generally at 18 (see FIG. 3). Various electrical contacts may be used without departing from the scope of this invention. For an example of one such electrical contact reference is made to U.S. Pat. No. 3,363,224 having a common assignee with the instant invention. The contact 18 is crimped or otherwise secured at its rearward end to conductor means 20 in a conventional manner. Forward movement of the contacts within the apertures 14 is limited by shoulder means 22 located at the forward end of the apertures and positioned to engage the forward end of the contacts. Each of the contacts 18 is provided with a resilient lance 24 struck from the contact body along one side thereof. The connector block 12 is provided with a series of windows 26 disposed along the upper face of the block and a series of windows 28 disposed along the lower face of the block. Each of the windows 26 and 28 intersect one of the apertures 14 and are positioned to receive the lances 24 of the contacts. The lances will move into the space provided by the windows during insertion of the contacts and these lances will prevent withdrawal of the contacts from the block or housing 12. The windows 26 and 28 also provide means by which a tool such as indicated at 30 in FIG. 3 may be inserted to engage the lances of the contacts to thereby depress the lances and permit withdrawal of the contacts from the connector block. The tool 30 may be of any suitable configuration to effect this function. The lances 24 of the electrical contacts are not centrally located along the contact edge as set forth more fully in the above mentioned patent and, therefore, the windows 26 and 28 are offset with respect to each other so that each row of windows is aligned with the lances of the two rows of contacts.

The connector block 12 is of rather simple construction and, therefore, may be conveniently formed as a molded part thereby reducing the manufacturing costs of the connector. However, the connectors must be sufficiently versatile to permit their use in many various systems. The requirements of particular uses will vary with regard to the number of electrical contacts which are necessary and, therefore, most connector blocks must be available in various lengths and separate molds must be provided for each of these lengths. The connector block of the instant invention, however, is designed with a relatively small number of contact apertures but the block is capable of being stacked with adjacent blocks to provide the required versatility to the connector. This is accomplished by a keying means to be now described.

The connector block 12 has opposite end faces 32 and 34 between which the apertures are disposed. The end face 32 has a keying means 36 integrally formed therein and comprises a male portion 38 and a female portion 40. The portion 38 consists of an elongated cylindrical member which extends generally parallel to the apertures 14. The portion 40 consists of a recess formed within the face 32 and of a shape generally complementary to the portion 38. The portion 38 is of slightly smaller longitudinal extent than the portion 40. The opposite end face 34 is similarly provided with a cylindrical portion 42 and a recessed portion 44 although the relative position of these portions is opposite to that of face 32. In this man-

3

ner a plurality of connectors 10 may be stacked in side-by-side relation such as shown in FIG. 5 thereby providing connectors having varying numbers of contact positions for use in various electrical systems.

When plural connectors 10 are arranged and stacked in position it is essential that the spacing between contacts remain constant throughout the entire length of the connector. The keying means 36 of this invention permits such uniformity of spacing because of its complementary configuration. In addition, the end walls 46 of the connector blocks are one half the width of the remaining walls 48 of the connector block disposed between each of the contact apertures. Therefore, when the connectors are stacked in end-to-end relation the two end wall thicknesses will be equal to the remaining wall thicknesses and the contact spacing will be uniform.

Changes in construction will occur to those skilled in the art and various apparently different modifications and embodiments may be made without departing from the scope of the invention. The matter set forth in the foregoing description and accompanying drawings is offered by way of illustration only. The actual scope of the invention is intended to be defined in the following claims when viewed in their proper perspective against the prior art.

We claim:

1. A connector block for receiving electrical contacts, said block being formed of a dielectric material and comprising a plurality of contact-receiving apertures regularly spaced along said block, a pair of end faces disposed on opposite ends of said block, said apertures being located between said end faces, and keying means located in said end faces, the keying means on one end face being complementary to the keying means on the opposite end face whereby a plurality of said connector blocks may be stacked in end-to-end relation, said keying means on each said end face comprising a male portion and a complementary female portion, said male and female portions being adjacent each other and collinear.

2. A connector block as set forth in claim 1 wherein said male portion comprises an elongated cylindrical member formed integrally with said end face and wherein said female portion comprises an elongated recess shaped to receive said cylindrical member.

3. A connector block as set forth in claim 2 wherein said cylindrical member and said recess extend generally parallel to said contact-receiving apertures.

4. A connector block as set forth in claim 2 further comprising window means disposed along top and bottom faces of said block and intersecting said contact receiving apertures for facilitating contact removal.

4

5. A connector block as set forth in claim 4 wherein said window means disposed along said top face are offset relative to said window means disposed along said bottom face.

6. A connector block as set forth in claim 5 wherein said contact-receiving apertures are disposed along two rows, one row being adjacent said top face and one row being adjacent said bottom face.

7. An electrical connector comprising a connector block formed of a dielectric material, a plurality of contact-receiving apertures regularly spaced along said block, a plurality of electrical contacts disposed respectively in said apertures, conductor means extending from each said contact, lance means for securing said contacts within said connector block, a pair of end faces disposed on opposite ends of said block, and keying means located on said end faces, the keying means on one end face being complementary to the keying means on the opposite end face of said block whereby a plurality of said electrical connectors may be stacked in end-to-end relation, said keying means on each said end face comprising a male portion and a complementary female portion, said male and female portions being adjacent each other end collinear.

8. An electrical connector as set forth in claim 7 further comprising window means disposed along top and bottom faces of said block for cooperating with said lance means.

9. An electrical connector as set forth in claim 7 wherein said male portion comprises an elongated cylindrical member formed integrally with said end face and wherein said female portion comprises an elongated recess shaped to receive said cylindrical member.

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