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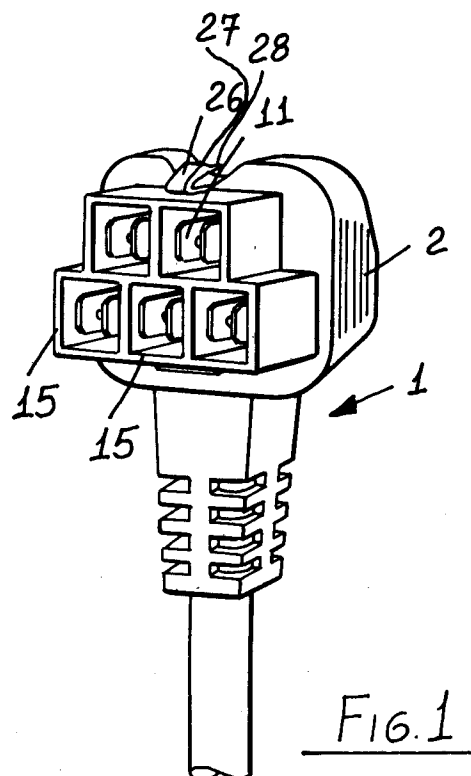
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I-20122 Milano (IT)(54) **Integrated terminal block fixedly associated with a plug.**

(57) The present invention relates to an integrated terminal block construction fixedly coupled to a plug, which comprises a terminal block body connected with a cable which is associated with a plug, the terminal block body including, on a surface thereof, electrical contacts which are wired or connected with the electrical conductors of the cable, the terminal block body being moreover provided with means for connecting the body to a supporting sheet metal plate to which the ground contact of the terminal block can be connected.

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BACKGROUND OF THE INVENTION

The present invention relates to an integrated terminal block construction fixedly associated with an electric plug.

As is known, a very great problem to be solved in making electrical apparatus and, more specifically, household electrical apparatus and appliances is that of easily performing the electrical connections between the electrical cable coupling the apparatus to the electric mains and the inner wires of the apparatus.

At present very great problems are, in particular, encountered for properly connecting the cable to the plug since it is necessary to perform coupling operations which require a comparatively long time thereby greatly increasing the labour cost.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to solve the above mentioned problem by providing an integrated terminal block construction, fixedly connected to an electric plug, which can be directly coupled to the housing of the electric apparatus, while providing an easy access to the electric contacts for the connection of the inner electric elements of the apparatus, and being simultaneously already coupled to the plug for coupling the apparatus to the mains.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such a terminal block construction which allows to make very simple connection operations and which, moreover, provides very accurate low contact resistance electrical connections.

Another object of the present invention is to provide such an integrated terminal block construction, which is very safe and reliable in operation.

Yet another object of the present invention is to provide such a terminal block construction which can be easily made starting from easily available elements and materials and which, moreover, is very competitive from a mere economic standpoint.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an integrated terminal block construction, fixedly connected to an electric plug, characterized in that said terminal block construction comprises a terminal block body coupled to an electric cable associated with an electric plug, said terminal block body further comprising, on a surface thereof, electric contacts which are coupled with the wires of said electric cable, said terminal block body also including coupling means for coupling said body to a supporting sheet metal plate with which the ground contact of

said terminal block construction can be associated.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the present invention will become more apparent hereinafter from the following detailed disclosure of a preferred, though not exclusive, embodiment thereof, which is illustrated, by way of an indicative but not limitative example, in the figures of the accompanying drawings, where:

Figure 1 illustrates a perspective view of the terminal block construction according to the present invention, as seen from the electric contact side thereof;

Figure 2 is another perspective view of the subject terminal block construction, seen from the side opposite to the electric contact side thereof; Figure 3 is a schematic cross-sectional view showing the terminal block construction applied to a supporting sheet metal plate;

Figure 4 illustrates a window arrangement to be made through the supporting sheet metal plate;

Figure 5 illustrates a possible wiring or connection arrangement of the power supply electric cable and the electric contacts;

Figure 6 is a schematic side elevation view illustrating means for coupling or latching the terminal block to the sheet metal supporting plate;

Figure 7 is a front view of the electric contacts;

Figure 8 illustrates a terminal block construction according to the invention including an electric plug holder seat, seen from the electric contact side thereof;

Figure 9 illustrates a terminal block construction according to the present invention including electric Plug holder seats or housings, seen from the side opposite to the electric contact side thereof; and

Figure 10 is a schematic side view illustrating the terminal block construction according to the invention applied to the supporting sheet metal plate therefor and with the electric plug thereof being schematically represented in its assembled condition.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the drawings, the integrated terminal block construction, fixedly coupled to an electric plug, generally indicated at the reference number 1, is provided with a terminal block body 2, made of a plastic material which, advantageously, is connected to an electric cable 3 which in turn can be fixedly coupled to an electric plug for connection with the electric mains.

The terminal block body 2 is provided with lug elements 4 for locking the cable, provided for preventing said cable from accidentally disengaging from the terminal block body 2.

On a surface thereof, the terminal block body 2 is provided with a plurality of electric contacts, generally of the so-called "Faston" type, which can be separated, for each pole, by separating elements 15 made of an electrically insulating plastic material, or they can also receive a coupling movable portion either of a single or multiple type.

Advantageously, each contact 10 has a U-shape configuration with two arms 11 of Faston shape, said arms 11 being connected at the central portion thereof by a bridging element 12 in which, by a cutting operation, is separated an intermediate portion, indicated at 12a, which can be spread apart with respect to the remaining portions so as to provide a passage therein the conductors 3a of the cable can be engaged and locked in the engaged position by mechanically deforming the central portion 12a.

Thus, it is possible to make a very accurate and efficient electric contact, and, moreover, the assembling time is greatly reduced.

The terminal block body is moreover provided with coupling or latching means for connecting it to a shaped window arrangement 20, which is formed through the holding sheet metal material or housing of the apparatus to which the terminal block must be connected.

Said coupling or latching means are provided with a cut-out seat 25, formed in the bottom portion thereof, which will be practically arranged bridging an edge portion of the window arrangement, whereas, at the other side, there is provided a resilient lug 27 including a locking tooth element 27 and a projection 28 which outwardly projects and which allows a tool to be engaged therein in order to obtain, if required, the disengaging thereof.

Moreover, said terminal block body is further provided with a laterally projecting plate 30, for providing a ground contact, which is directly performed by restraining it on the sheet metal 21 which, advantageously, can comprise a plurality of holes 31 for applying fixing screws or rivets.

As shown in figures 8 to 10, the above disclosed terminal block can also be provided, on its portion opposite to the electric contact portion, with plug holder seats 40 for receiving the electric plug for connecting the apparatus to the mains, as the electric cable is disengaged from the power supply mains, thereby preventing the cable from being held in a free condition.

In a preferred embodiment, in the terminal block body there are provided two seats or recesses, corresponding to the plug elements of the electric plug, which will allow the electric plug to be

properly removably restrained in its condition coupled to the electric cable.

The number of the contacts provided on the front face, as well as the mutual arrangement thereof, can be varied according to the requirements.

From the above it should be apparent that the invention fully achieves the intended aim and objects.

In particular, the fact is to be pointed out that an integrated terminal block construction has been provided which is fixedly coupled to an electric plug and which can be assembled in a very reduced time owing to the provision of the window arrangement and on which, moreover, there is already provided the ground contact.

Moreover, another important aspect of the present invention is that the wires of the electric cable are clamped to the central portion of the Faston-type contacts, which have a U-shape, by exploiting a cut-out of the central portion which, practically, defines a passage therein the conductor can be restrained.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to several modifications and variations all of which will come within the spirit and scope of the appended claims.

Claims

1. An integrated terminal block construction, fixedly connected to an electric plug, characterized in that said terminal block construction comprises a terminal block body coupled to an electric cable associated with an electric plug, said terminal block further comprising, on a surface thereof, electric contacts which are coupled with the wires of said electric cable, said terminal block body also including means for coupling said body to a supporting sheet metal plate with which the ground contact of said terminal block construction can be associated.
2. A terminal block construction according to Claim 1, characterized in that said cable is coupled to said terminal block body by means of antidisengaging lug means.
3. A terminal block construction according to Claims 1 and 2, characterized in that said contacts have a substantially U-shape including two arms joined by a central bridging element thereon, by means of a material cutting operation, there is separated a central portion which can be spread apart, with respect to the remaining portion, in order to allow the con-

ductor to be engaged and clamped therein by mechanically deforming said central portion.

4. A terminal block construction according to one or more of the preceding claims, characterized in that said contacts are separated, for each pole, by electrically insulating separating means for housing therebetween a movable connection portion either of a single or multiple type. 5
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5. A terminal block construction according to one or more of the preceding claims, characterized in that said coupling or latching means comprise a cut-out seat which can be arranged in a bridging relationship on an edge portion of said window arrangement formed through said sheet metal plate, on the side thereof opposite to said cut-out seat, there being moreover provided a resilient tooth element which can abut against said sheet metal plate and being provided with a lug which can be engaged by a tool for disengaging the terminal block body from said sheet metal plate. 15
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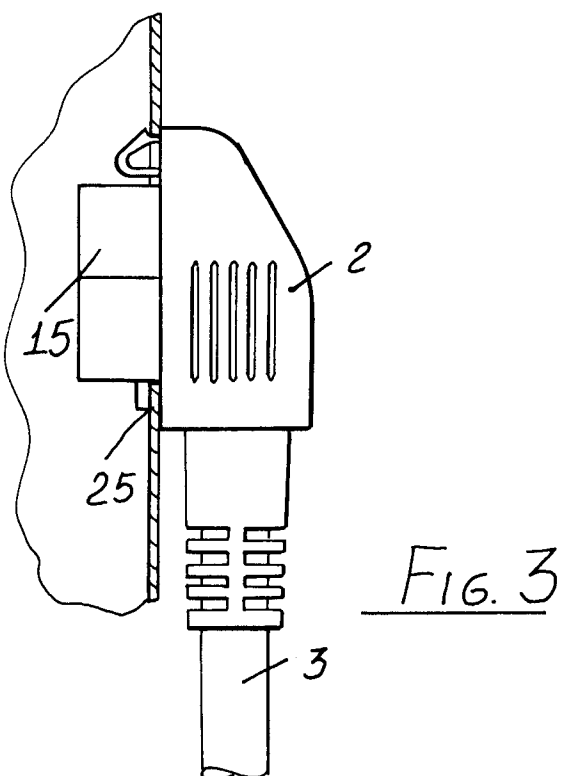
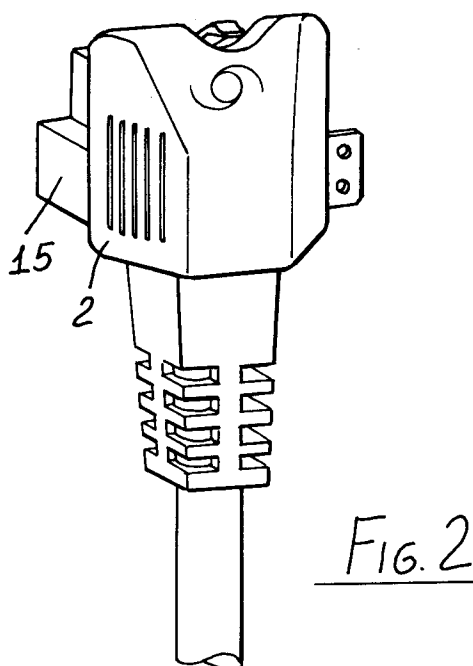
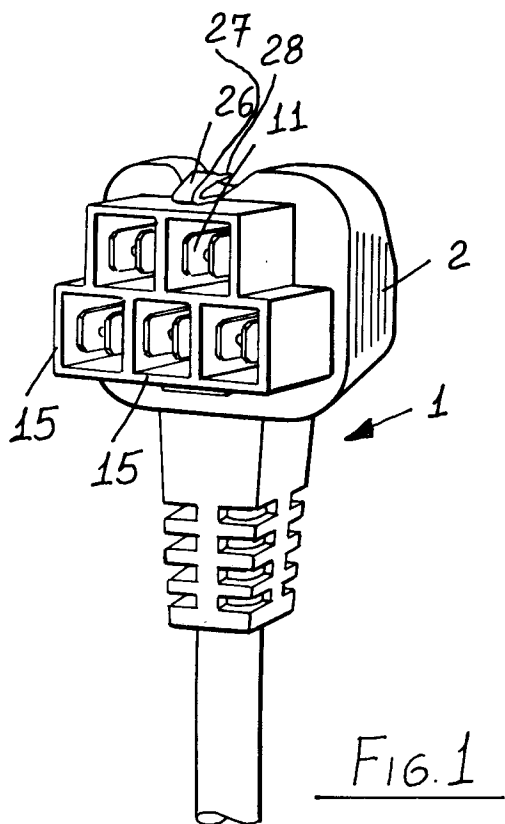
6. A terminal block construction according to one or more of the preceding claims, characterized in that said sheet metal plate is provided with a window arrangement adjoining at least a hole for coupling a ground contact plate laterally projecting from said terminal block body. 25
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7. A terminal block construction according to one or more of the preceding claims, characterized in that said terminal block body is provided, on the side thereof opposite to said electric contacts, with a seat for removably housing therein the plug elements of said electric plug. 35
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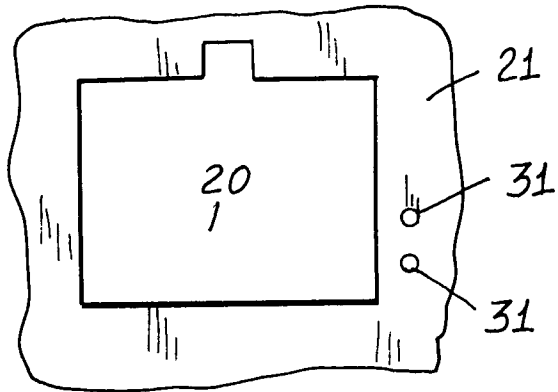


FIG. 4

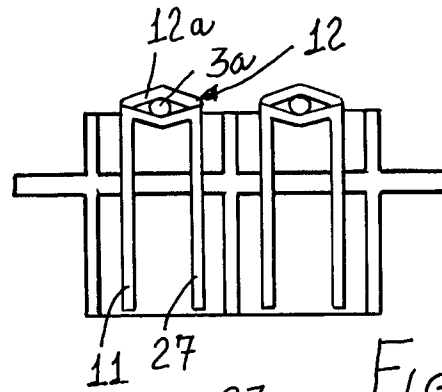


FIG. 5

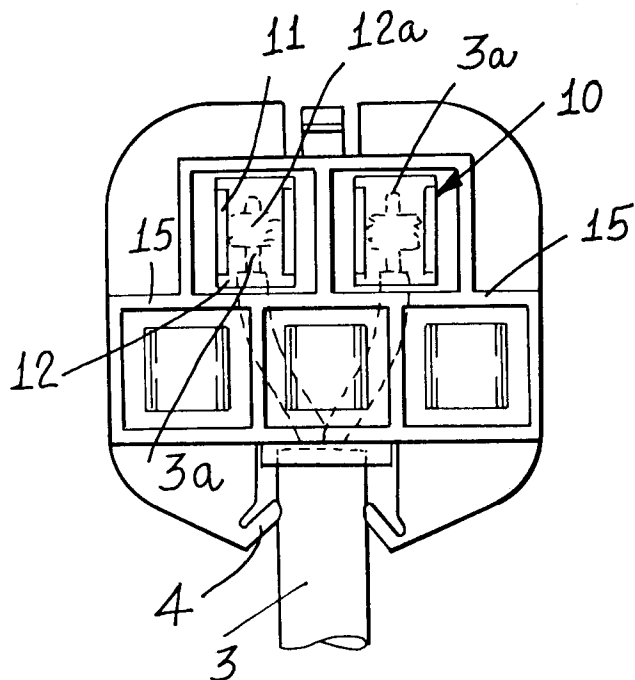


FIG. 7

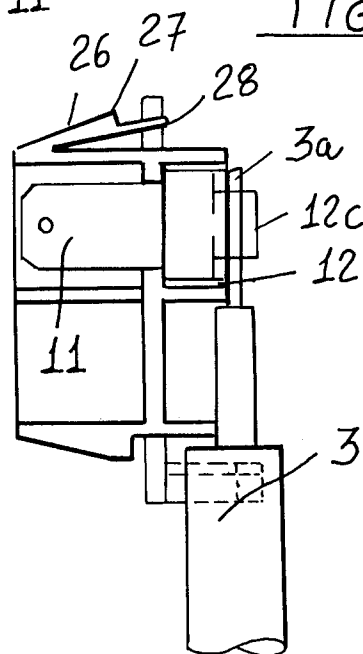


FIG. 6

