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(54) **An arrangement applicable to a combination of an electronic module and a connector**

(57) The invention refers to an arrangement applying to the combination of electronic moduli with connectors, in such a way that through the upper part of a connector can be assembled in a first instance a module in a pre-assembling position and afterwards another position of assembly, whilst it is possible through the opposite portion the previous introduction of the male and female terminals with the corresponding spacers. The shape characteristics of the module integrating the proposed arrangement allows incorporating at the same time the positioning and immobilization elements of said module, including also the corresponding guiding elements that perform also as spacers of the terminals lodging the connector.

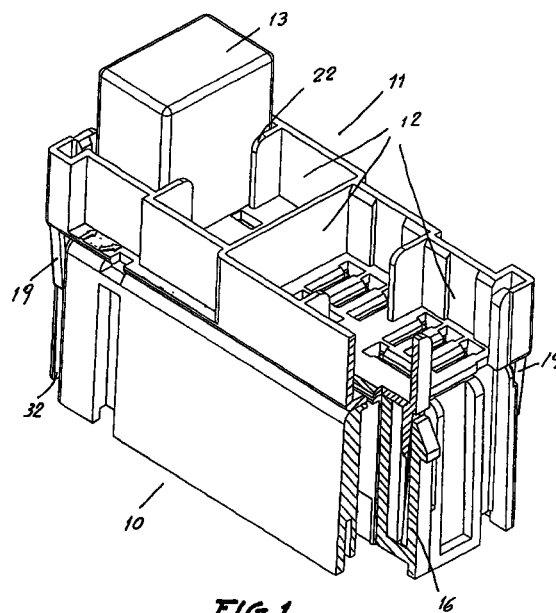


FIG. 1

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Description

[0001] The present application for a Patent of Invention consists, as indicated in its title, in "AN ARRANGEMENT APPLICABLE TO A COMBINATION OF AN ELECTRONIC MODULE AND A CONNECTOR", whose novel characteristics of manufacturing, shaping and design fulfill the object for which it has been specifically designed with a maximum of safety and efficiency.

[0002] More exactly, the invention refers to an arrangement applying to the combination of electronic moduli with connectors, in such a way that through the upper part of a connector can be assembled in a first instance a module in a pre-assembling position and afterwards another position of assembly, whilst it is possible through the opposite portion the previous introduction of the male and female terminals with the corresponding spacers.

[0003] The shape characteristics of the module integrating the proposed arrangement allows incorporating at the same time the positioning and immobilization elements of said module, including also the corresponding guiding elements that perform also as spacers of the terminals lodging the connector.

[0004] There exist in the market and therefore may be considered the State of the Art a plurality of connectors to which it is possible to attach the corresponding electronic moduli, however, after the assembly is mandatory to provide spacers for immobilizing the union connector-module, in order to avoid that same may become separated as a result of vibrations, blows and other undesired causes.

[0005] The proposed arrangement is formed by a module of a noticeably prismatic configuration, fully open, in which upper portion are arranged a set of walls forming cavities to which are assembled the corresponding electronic components, such as CPU, relays, fuses and other, whilst in the lower portion of said module is arranged a set of positioning and immobilizing elements and other, performing as spacers, as above disclosed.

[0006] The connector working in combination with said module has a noticeably prismatic configuration and has inside a series of cavities, in which are arranged the corresponding flexible tongues, having the corresponding means for immobilizing the terminal which are mounted inside such cavities.

[0007] Other details and characteristics will be manifest through the reading of the description given herebelow, in which reference is made to the figures attached to this description where the above details are depicted in a rather schematic way. These details are given as an example, referring to a case of a possible practical embodiment, but is not limited to the details outlined; therefore this description must be considered from an illustrative point of view and with no limitations whatsoever.

[0008] There follows a detailed report of the several

elements named in the present description: (10) connector, (11) module, (12) open cavities, (13) electric or electronic components, (14) module's base, (15) tongues, (16) elastic arms, (16.1) protuberances, (17) cavities of connector (10), (18) connector's upper base, (19) end's catch, (19.1) protuberance, (20) positioning sheets, (20.1) channels, (21) skirt, (22) walls, (23) guiding wall, (24) swellings, (24.1) channel, (24.2) ribs, (25) intermediate catch, (25.1) reinforcing rib, (26) recess in the minor lateral walls of (10), (27) recesses, (28) major lateral faces, (29) minor lateral faces, (30) positioning portion, (31) projection, (32) channel, (33) catch, (34) catches, (34.1) swellings.

Figure 1 is a perspective view of the combined connector (10) and module (11) in the assembly position.

Figure 2 is a section by 2-2 as per Figure 4.

Figure 3 is a section by 3-3 as per Figure 4.

Figure 4 is an upper plan view of the connector (10) and its base (18).

Figure 5 is a section by 5-5 of Figure 4

Figure 6 is a partial elevation front view as per the proposed arrangement.

Figure 7 is a lower perspective view of the module (11).

Figure 8 is an upper perspective view of the module (11).

Figure 9 is a plant lower view of the module (11).

Figure 10 is an elevation front view of the module (11) side.

Figure 11 is a section by 11-11 as per Figure 9.

Figure 12 is an upper plant view of the module (11).

Figure 13 is a section by 13-13 as per Figure 9.

Figure 14 is a section by 14-14 as per Figure 9.

Figure 15 is a section by 15-15 as per Figure 9.

[0009] In one of the preferred embodiments of what is the object of the present Patent of Invention and as can be seen in Figure 1, the arrangement proposed is formed by the combination of a module (11) and a connector (10), being able said elements of having two positions, one of pre-assembly, as can be seen in Figure 2, and another of assembly, see Figure 3.

[0010] The module (11), see Figures 1, 2, 3, 7, 8, 9, 10, 11 and 12, is formed by a module's base (14) from which extends upwards a skirt (21) which has inside a series of walls (22) defining same a series of open cavities (12) which are configured as per the nature of the electric or electronic components which are to be incorporated to the module (11) through the upper portion of the module's base (14).

[0011] From the lower portion of the module's base (14) extends downwards a series of elements, such as the end's catches (19), the swellings (24), the positioning sheet (20), the intermediate catch (25) and the positioning portion (30).

[0012] In the surface of the module's base (14) are

provided, as is a conventional solution, a series of holes for passing the terminals of the elements placed in the module (11) and in its open cavities (12), which will penetrate inside the cavities (17) of the connector (10) in which will be arranged another set of terminals which will enter through the lower base of the connector (10).

[0013] The above elements (19, 20, 24 and 25) of the module (11) fit in the connector (10), which presents a noticeably prismatic configuration, which bases or major lateral faces (28) show recesses (26), and the minor lateral faces (29) show recesses (27).

[0014] The function of the recesses (26 and 27) is that of allowing the fitting of the connector (10) inside the protecting box or connector-holder, not shown in the Figures.

[0015] For the setting of the end catches (19) and (25) as well as the positioning sheet (20) and the swellings (24) the inside of the connectors body is provided with a series of cavities (17) of the connector (10) which different configurations and geometries is a function of the shape characteristics of the above elements, see Figure 4.

[0016] For placing the module (11) in the connector (10) in the pre-assembly position, as it is shown in Figures 4 and 6, it is foreseen that in the major lateral faces (28) and in its channels (32) is provided a projection which allows the rest of the end catch (19) and its protuberance (19.1) in the projection in said position, whilst the intermediate catch (25), see Figure 5, fit in the catch (33) provided inside the cavities (17) of the connector, see Figure 5.

[0017] In order to avoid errors in the assembly had been designed in the lower portion of the base (14) of the module (11) a series of positioning elements or positioning sheet (20) which fit into the corresponding cavities (17) of the connector of the connector (10), in this way it is only possible the assembly of the module (11) in the connector (10) in a single position, see Figure 4, and it is impossible any type of error as well as an undesired fitting, since it is not possible the untrue pre-assembly position of the module (11) in the connector (10) in grace to the design of such positioning sheets (20).

[0018] In order to pass from the pre-assembly position to that of the assembly a pressure is exerted on the module (11) passing from the position indicated in Figure 2 to that indicated in Figure 3, moment in which the elements (16, 19, 20, 24 and 25) behave as follows:

[0019] The elastic arms (16) situated in the minor lateral faces (29) of the connector (10) open outwards when entering in the several cavities (17) of the connector whilst the swellings (24) which have convergent faces and are provided with a channel (24.1) limited by the ribs (24.2), embrace the guiding wall (23) provided in the lateral face of the cavities (17) of the connector.

- The end catches (19) and its protuberance (19.1) situated in the four apices of the module pass the

projection and slid by the channel (32) placed in the major lateral faces (28) of the connector (10).

- The positioning sheets (20) enter into the cavities (17) of the connector, acting in the way of spacers and pushing forward the catches (34) and the swellings (34.1) which will lodge over the corresponding terminals, not shown in the figures, housed in said cavities (17) of the connector, immobilizing same.
- The intermediate catch (25) with reinforcing rib (25.1) enter into the cavities (17) of the connector and its projection (25.2) fits in the catch (33) provided in one of the walls of cavities (17) of the connector, see Figure 5, and in this situation it is very difficult the module (11) and connector (10) separation in grace to the retaining force of said intermediate catch (25), by which results perfectly insured the electric connection of the electric or electronic components (13) and its terminals passing through the holes provided in the base (14) of the module (11) and fitting in the terminals retained by the swellings (34.1) of the catches (34).

[0020] Enough described that in what consists the present Patent of Invention and in relation with the attached figures, it is understood that may be introduced in same any detail modifications deemed convenient provided that the variations introduced do not change the spirit of the Patent of Invention which is summarized in the following Claims.

Claims

1. "AN ARRANGEMENT APPLICABLE TO A COMBINATION OF AN ELECTRONIC MODULE AND A CONNECTOR" such as those serving as fitting and aligning elements for immobilizing a module (11) provided with a set of electric or electronic components (13) and a connector (10) characterized in that the projections (31) arranged in the channels (32) and these in the major lateral faces (28) of the connector (10) in combination with the elastic arms (16) and its protuberances (19.1) which extends from the module (11) corners allow two relative positions, that of the module (11) pre-assembly in the connector (10) in which the protuberances (19.1) remain over said projection and that of assembly of (11) in (10) in which the projections (31) are overtaken by the end catches (19) sliding by the channels (32) placed in the major lateral faces (28) of the connector (10) and the module (11) fully immobilized to said connector (10).
2. "AN ARRANGEMENT APPLICABLE TO A COMBINATION OF AN ELECTRONIC MODULE AND A CONNECTOR" as per Claim 1 characterized in that the module (11) extends from a module base (14) in which perimeter extends a skirt (21) perpendicular to same from which interior face extends walls

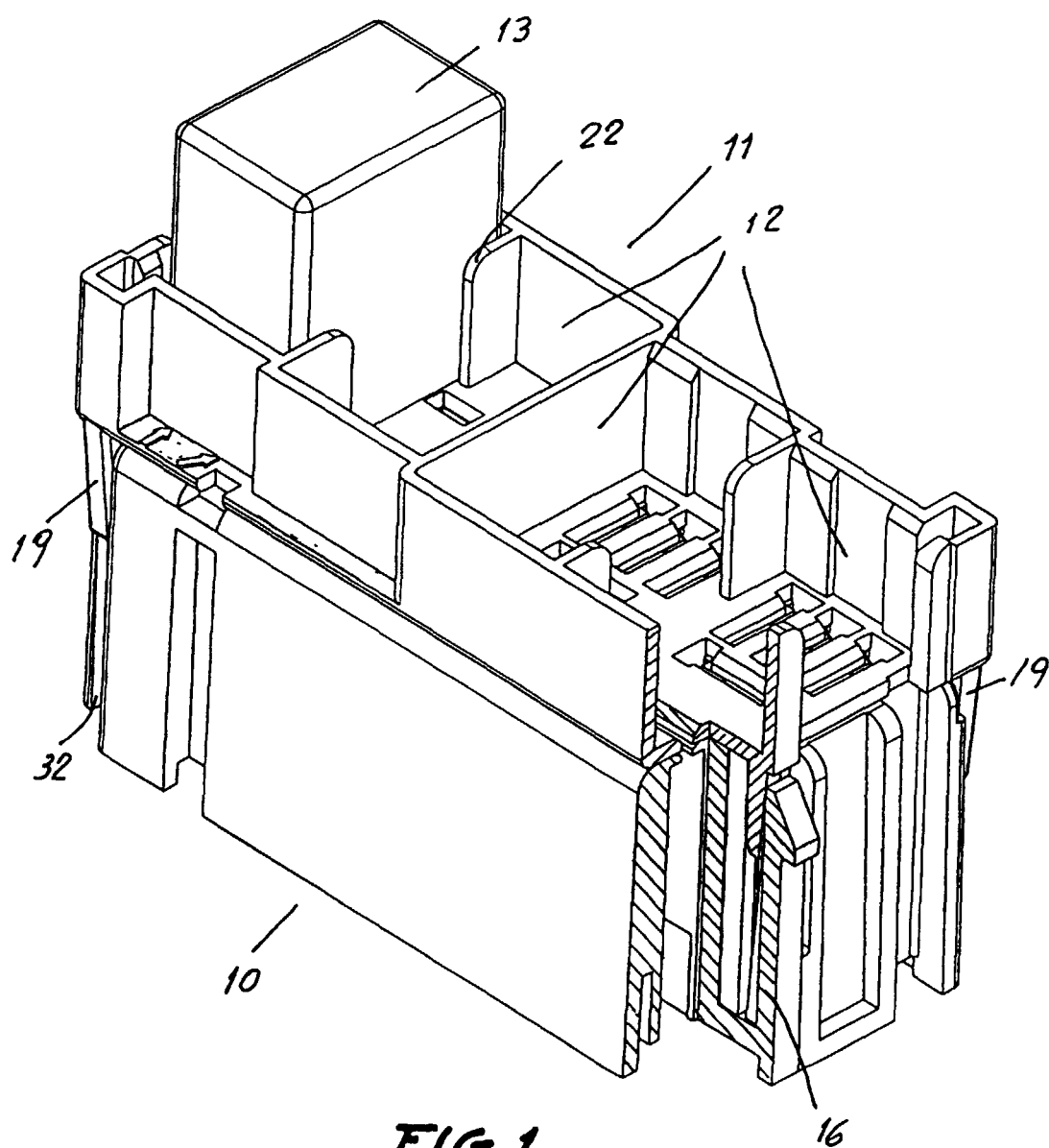
(22) limiting open cavities (12) for the setting of electric or electronic components (13) whilst in the lower portion of the module (11) and the module s base (14) extends outwards and perpendicular to same the elastic arms (16), the positioning sheets (20), the swellings (24) and the intermediate catch (25).

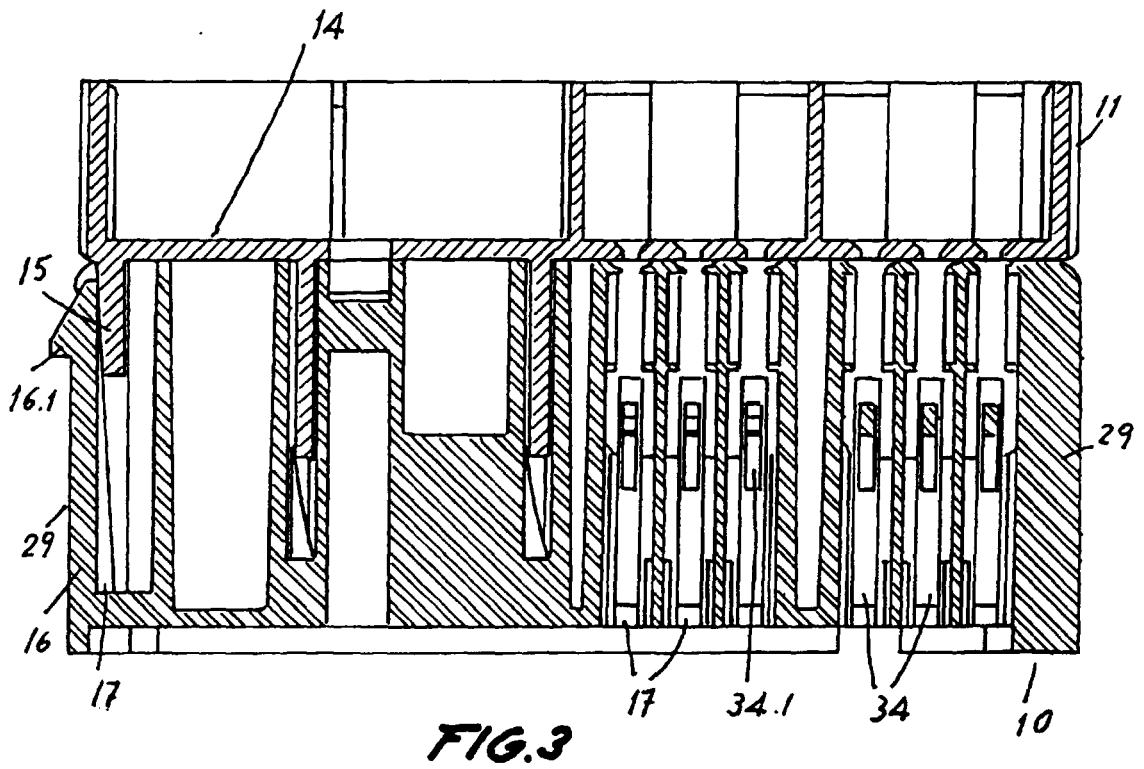
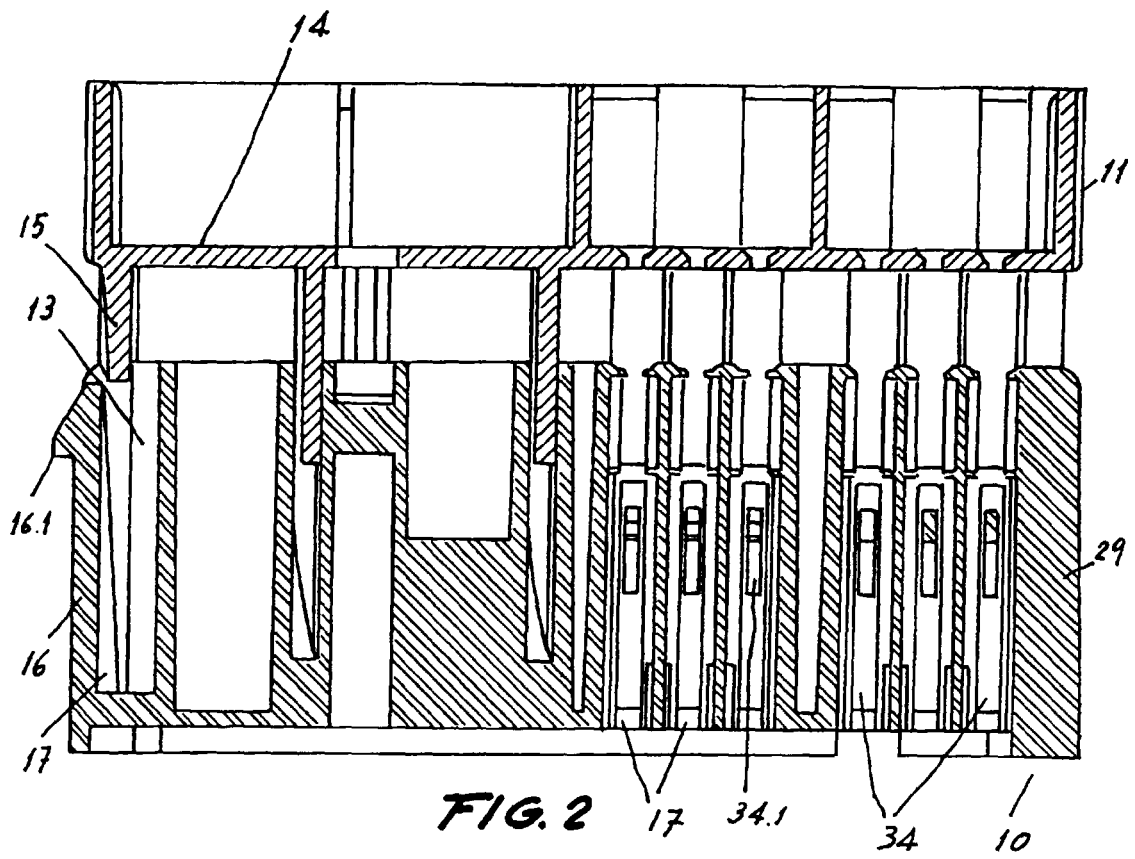
3. "AN ARRANGEMENT APPLICABLE TO A COMBINATION OF AN ELECTRONIC MODULE AND A CONNECTOR" as per Claim 1 and 2 characterized in that the positioning sheet (20) set in the cavities (17) of the connector (10) and push forward the catches (34) acting in the way of spacers and immobilizing the corresponding terminals through their swellings (34.1).
4. "AN ARRANGEMENT APPLICABLE TO A COMBINATION OF AN ELECTRONIC MODULE AND A CONNECTOR" as per Claim 1 and 2 characterized in that the intermediate catches (25) reinforced with reinforcing ribs (25.1) fit in the catches (33) provided in the lateral faces of the cavities (17) of the connector.
5. "AN ARRANGEMENT APPLICABLE TO A COMBINATION OF AN ELECTRONIC MODULE AND A CONNECTOR" as per Claim 1 and 2 characterized in that the minor lateral faces (29) of the connector (10) and in the neighbourhood of the corners where converge the minor lateral faces (29) and the major lateral faces (28) extends elastic arms (16) which protuberances (16.1) are serving as an immobilization element of the module (11) and the connector (10) to a box holding the connector (10).
6. "AN ARRANGEMENT APPLICABLE TO A COMBINATION OF AN ELECTRONIC MODULE AND A CONNECTOR" as per Claim 1 and 2 characterized in that the swellings (24) that show convergent faces have in the surface of said faces channels (24.1) setting (24.1-24.2) in the guiding wall (23) extending from one of the walls (17)

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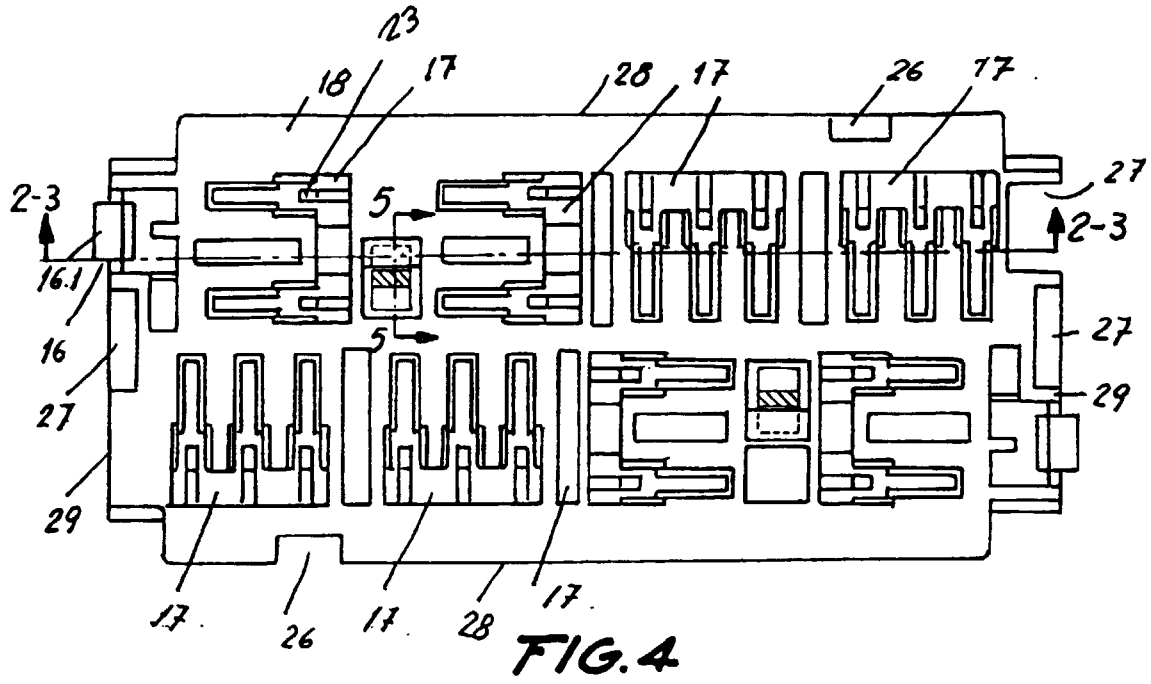


FIG. 5

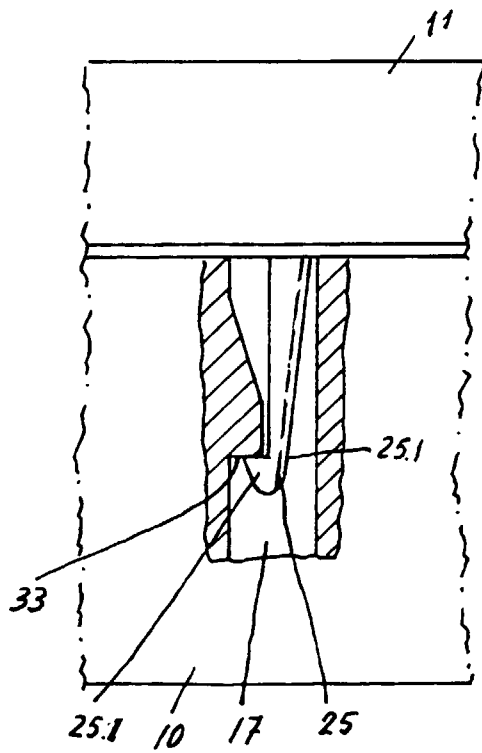
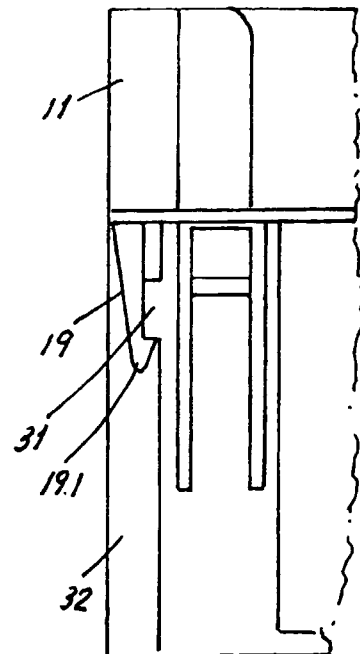
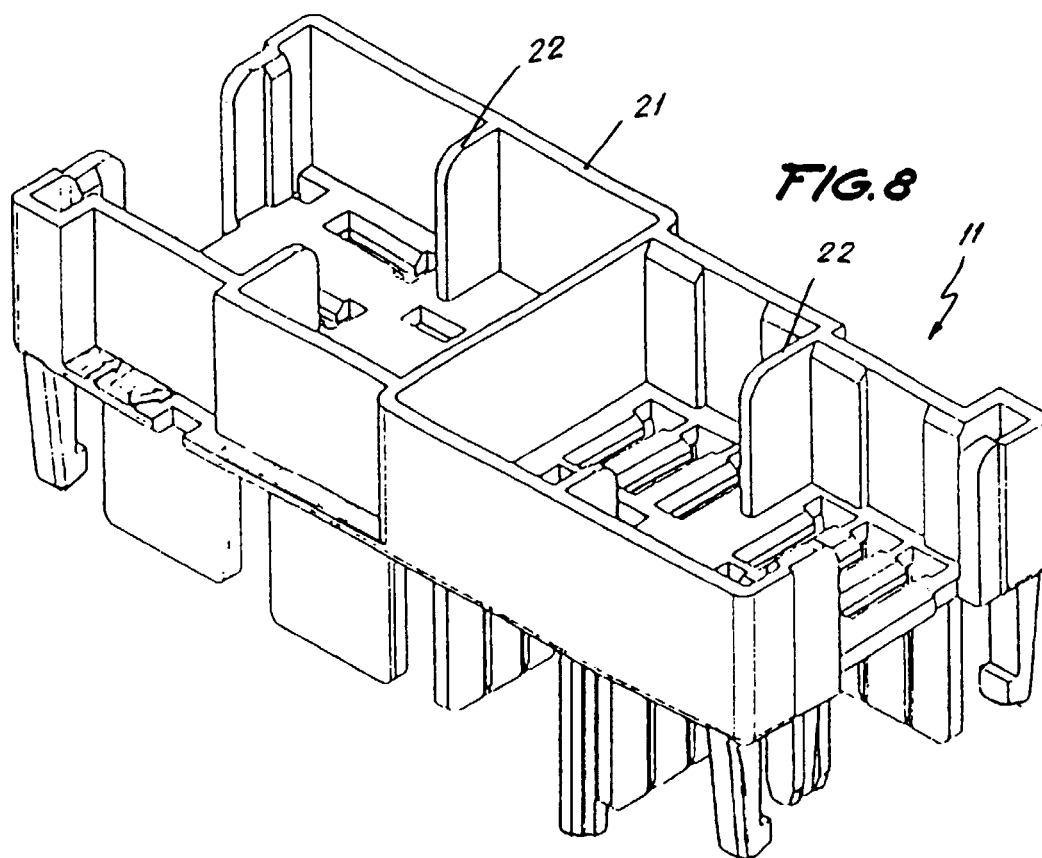
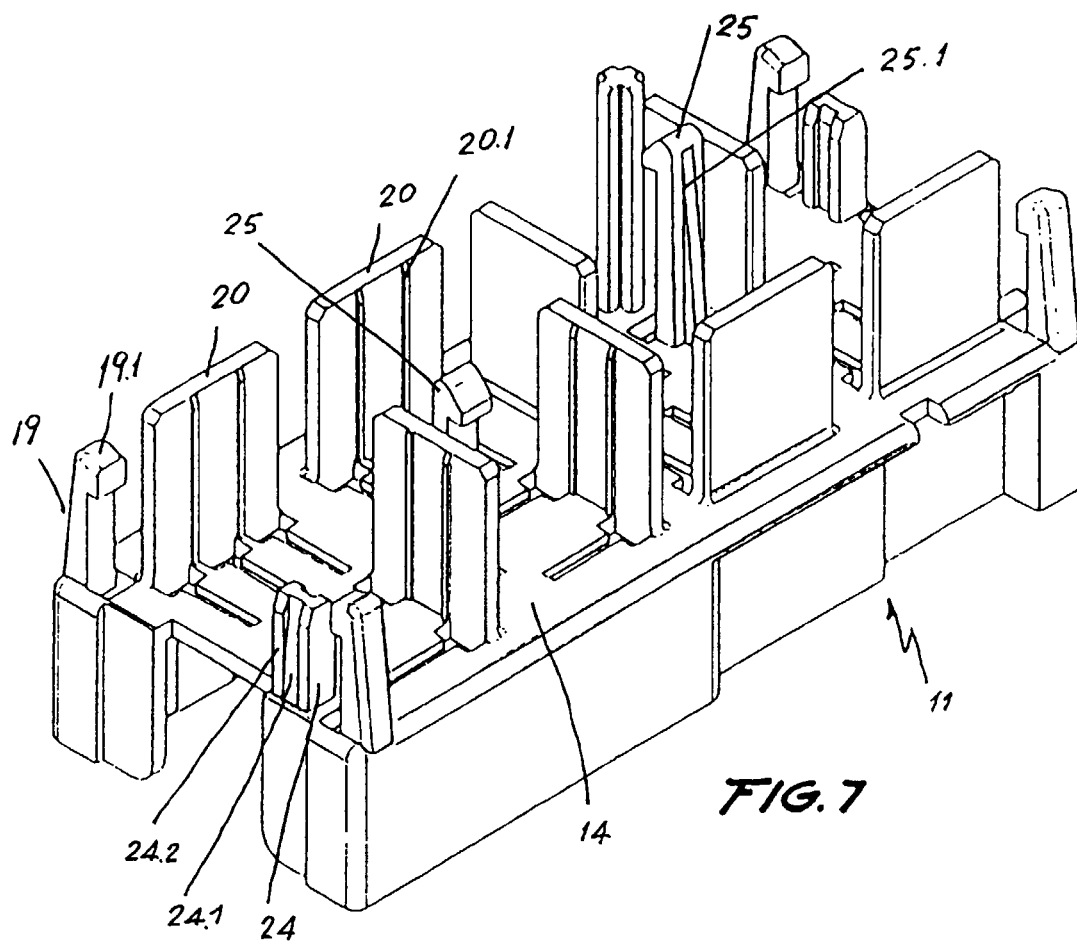


FIG. 6





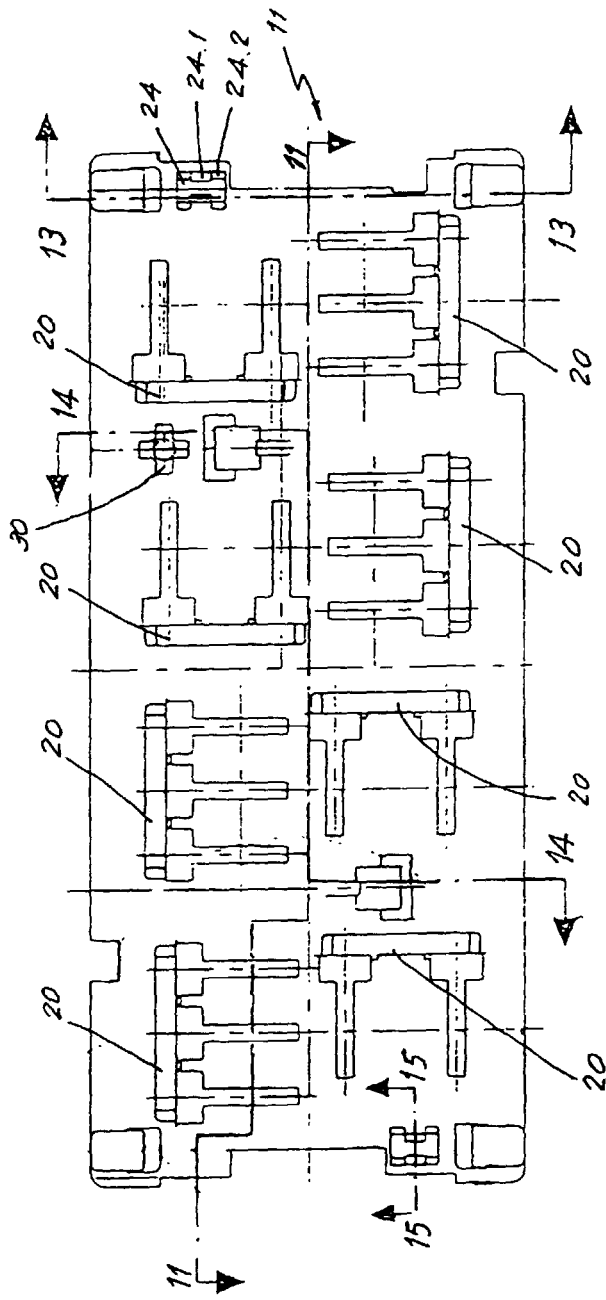


FIG. 9

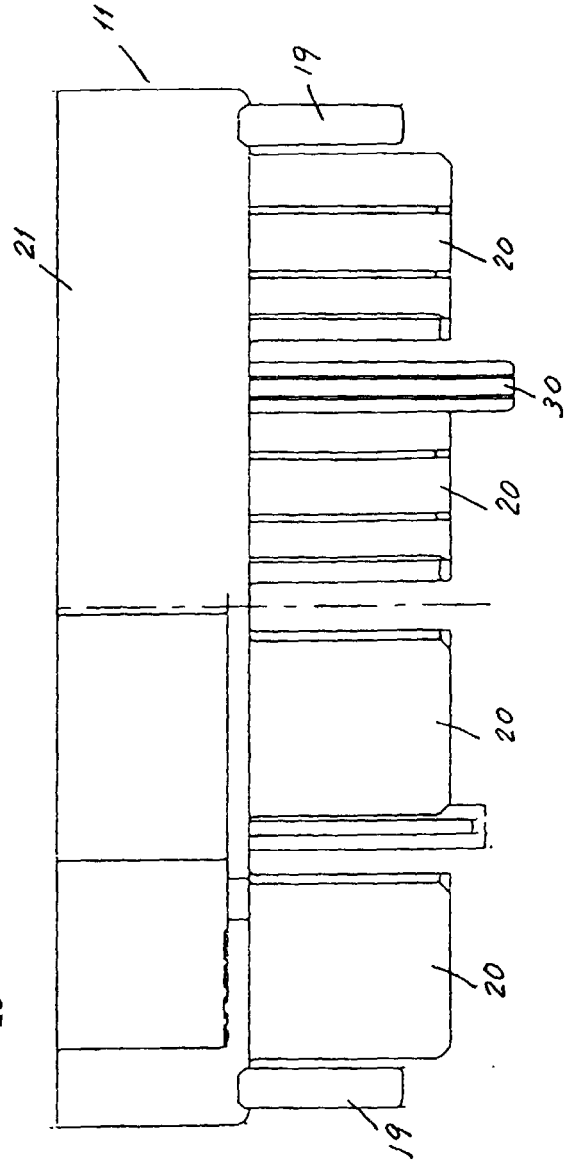


FIG. 10

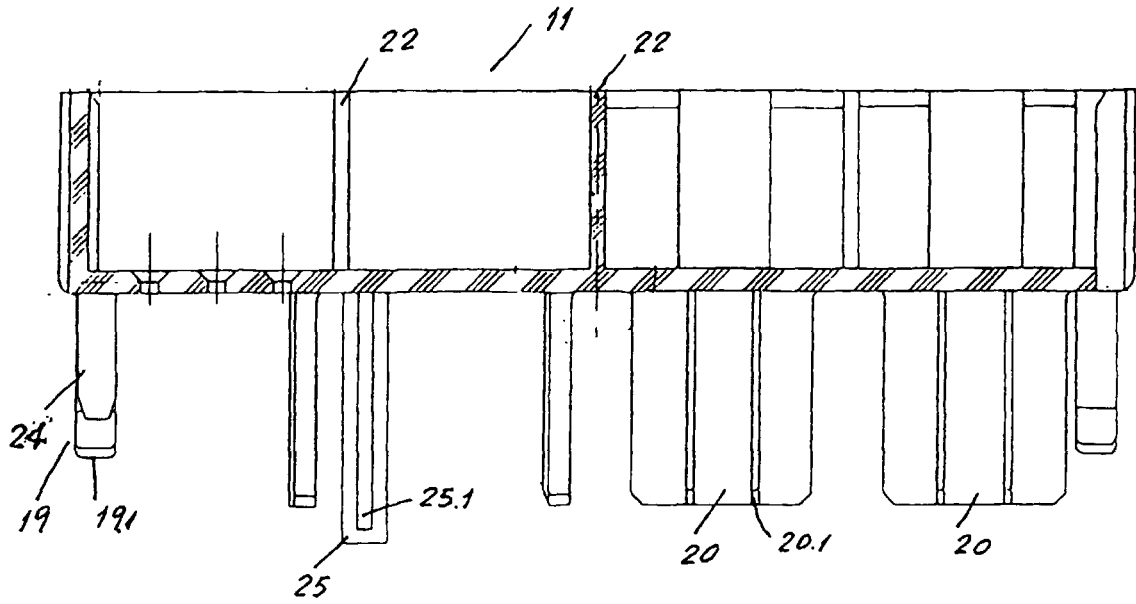


FIG. 11

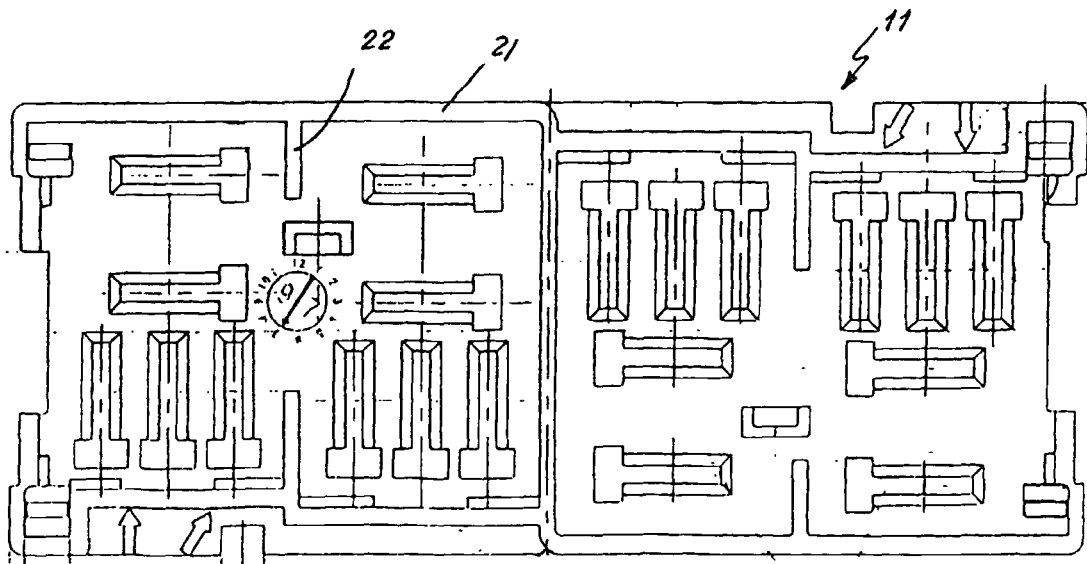


FIG. 12

FIG. 13

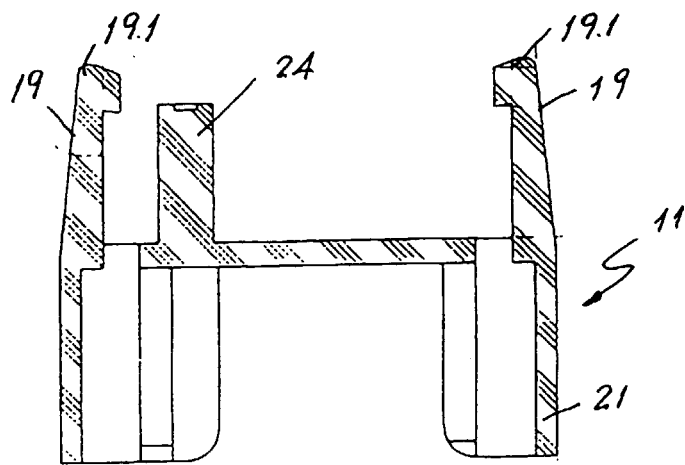


FIG. 14

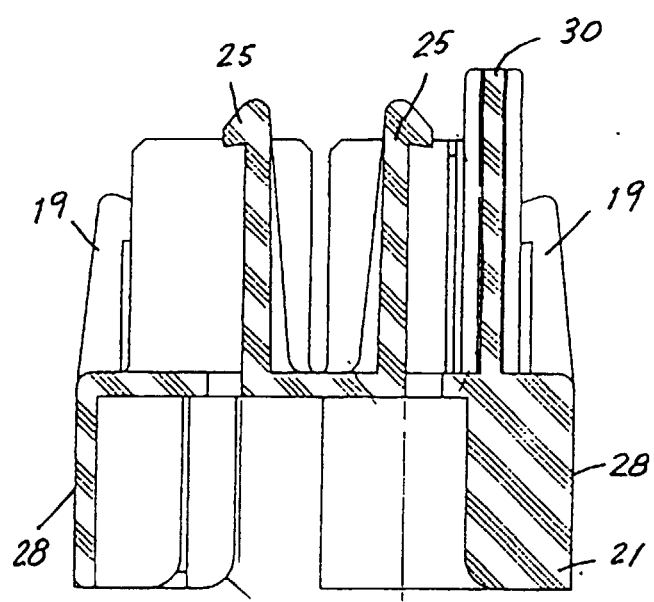


FIG. 15

