

[54] ELECTRICAL CONNECTOR FOR VEHICLE INSTRUMENTS

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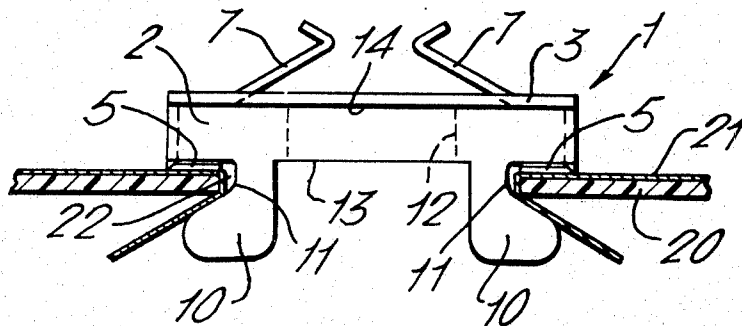
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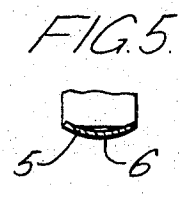
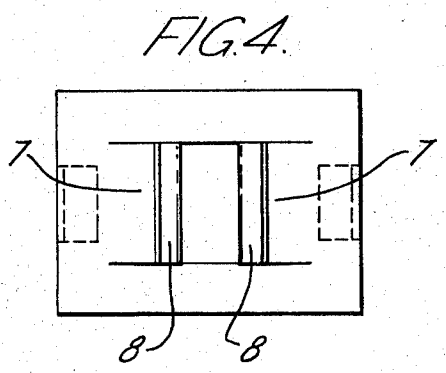
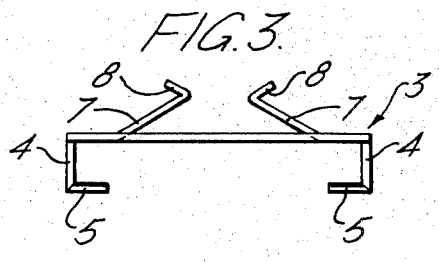
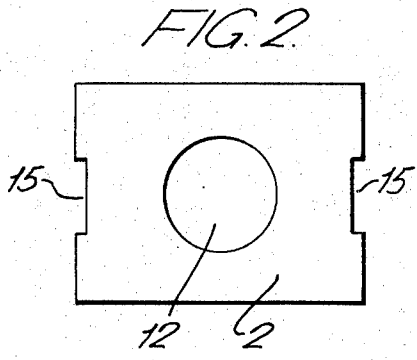
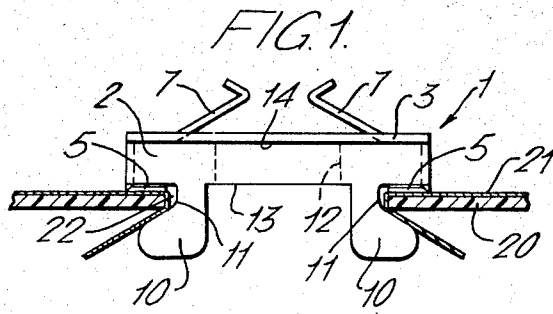
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[57] ABSTRACT

An electrical connector is disclosed and comprises a body part which is preferably formed as an extrusion and has a contact part secured thereto. The contact part has a pair of contact arms for engaging an electrical component such as a vehicle instrument and further has a pair of contact surfaces located adjacent a pair of resilient legs formed on the body part whereby the contact surfaces and the legs cooperate to engage a conductive track on an insulating panel and make electrical connection therewith.

1 Claim, 5 Drawing Figures





ELECTRICAL CONNECTOR FOR VEHICLE INSTRUMENTS

This invention relates to an electrical connector and in particular to an electrical connector for making electrical contact between a conductor of an insulating panel and an electrical component or instrument.

It is known to mount instruments in a vehicle on a dashboard. It is also known to use printed circuit boards in the electrical systems of vehicles. It is sometimes difficult to obtain a reliable electrical connection between the conductors of a printed circuit and the various instruments when mounted on a dashboard.

An electrical connector for electrically connecting an electrical component and a conductive track on an insulating panel having an aperture to receive the connector, according to this invention, comprises a body part extruded from resilient electrically insulating material and having a pair of generally parallel legs projecting from one of a pair of opposite surfaces of the body part adapted to pass through the panel aperture latchingly to engage the connector and the panel, a bore extending between the opposite surfaces of the body part for receiving part of the electrical component, and an electrically conductive contact part mounted on the body part overlying at least a portion of one of the opposite surfaces for contacting a panel conductive track and having a resilient contact arm to engage a contact element of the electrical component when received in the bore of the body part.

Preferably the contact part overlies the surface of the body part remote from the legs and has two resilient contact arms projecting above that surface and overlying the bore, the ends of the contact part engaging opposite ends of the body part.

An electrical assembly according to this invention comprises a connector, an apertured insulating panel having a conductive track, and an electrical component, the legs of the connector being received in the panel aperture with a contact part of the connector being in electrical engagement with the conductive track, and the resilient contacts in electrical engagement with the contact element of the instrument.

An embodiment of this invention will now be described, by way of example, reference being made to the accompanying drawings, in which:

FIG. 1 is a diagrammatic sketch partly in section showing an electrical connector mounted on a panel carrying a flexible printed circuit board;

FIG. 2 is a plan view of a body part of the electrical connector of FIG. 1;

FIG. 3 is an end view of a contact part of the electrical connector of FIG. 1;

FIG. 4 is a plan view of the contact part of FIG. 3; and

FIG. 5 is a sectional view of a detail of FIG. 3.

As shown, an electrical connector 1 comprises a body part 2 made from an extruded strip of resilient electrically insulating material such as polypropylene, and a contact part 3 formed from a strip of electrically conductive material such as brass.

The contact part 3 is formed with a pair of spaced-apart legs 4 depending from opposite sides of the contact part 3. Each leg 4 has an turned part 5 which is of generally arcuate shape, having a convex contact surface 6. A pair of arms 7 are formed out of the contact part 3, each arm 7 having a turned-back part 8.

The body part 2 is generally rectangular in plan view and has a pair of substantially parallel spaced-apart legs 10 extending outwardly from one surface 13. Each leg 10 is formed with a groove 11 on its outer side surface. A through hole 12 extends from the surface 13 to an opposite surface 14. Recesses 15 are formed on opposite sides of the body part, in which recesses 15, the legs 4 are received. The contact part 3 is mounted on the body part 2 by springing apart the legs 4 of the contact part 3 and sliding the body part 2 between the legs 4 until the legs 4 register with the recesses 15. The engagement of legs 4 in recesses 15 prevents relative sliding movement of the contact part 3 over the body part 2 and the parts 5 prevent accidental movement of the contact part 3 normally away from the body part 2. In this position, the space left in the contact part 3 by the forming out of the arms 7 is substantially coaxial with the hole 12.

On assembling the connector 1 to a panel 20 carrying a flexible printed circuit board 21 having electrical conductors on its upper surface (as seen in FIG. 1), the legs 10 of the body part 2 are resiliently squeezed together so that they pass through a hole 22 in the panel 20, and then released so that opposed edges of the hole 22 seat in the grooves 11 of the legs 10. In this position, the resilience of the body part 2 causes the contact surfaces 6 to press down on conductors of the flexible printed circuit board 21.

The panel 20 is arranged immediately behind the dashboard of a vehicle (not shown), with the legs 10 of the body part 2 extending towards the dashboard. An instrument, for example, a fuel gauge, is mounted on the vehicle dashboard and has a contact screw which can also act as a mounting screw in the dashboard. This screw will be arranged to pass through hole 12 and between arms 7 so that the arms 7 resiliently engage the screw. A conductive path is thereby made between the conductors of the printed circuit board and the instrument.

Although, throughout the description, reference has been made to a panel and a flexible printed circuit board, clearly a stiff printed circuit board could be used together with the electrical connector described.

Modifications can be made to the above described embodiment. For example, if the contact screw of the instrument is replaced by a plain pin then the arms 7 can be formed with V-slots at the apex of the arm 7 and its respective turned-back part 8 to enhance the engagement of the arms 7 with the plain pin.

I claim:

1. An electrical connector for electrically connecting an electrical component and a conductive track on an insulating panel having an aperture to receive the connector, the connector comprising a body part of generally constant cross-sectional configuration, permitting extrusion thereof, and formed from resilient electrically insulating material, a pair of generally parallel legs projecting from one of a pair of opposite surfaces of the body part, each said leg having a groove portion for engaging the panel aperture upon passing said legs through the aperture, a bore extending between the opposite surfaces of the body part for receiving the electrical component, and an electrically conductive contact part mounted on the body part overlying the surface of the body part remote from the

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legs and having two resilient contact arms projecting above that surface and overlying the bore, the ends of the contact part engaging opposite ends of the body part and having contact surfaces disposed adjacent the legs of the body part.

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