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[54] **RF CONNECTOR**
7 Claims, 3 Drawing Figs.

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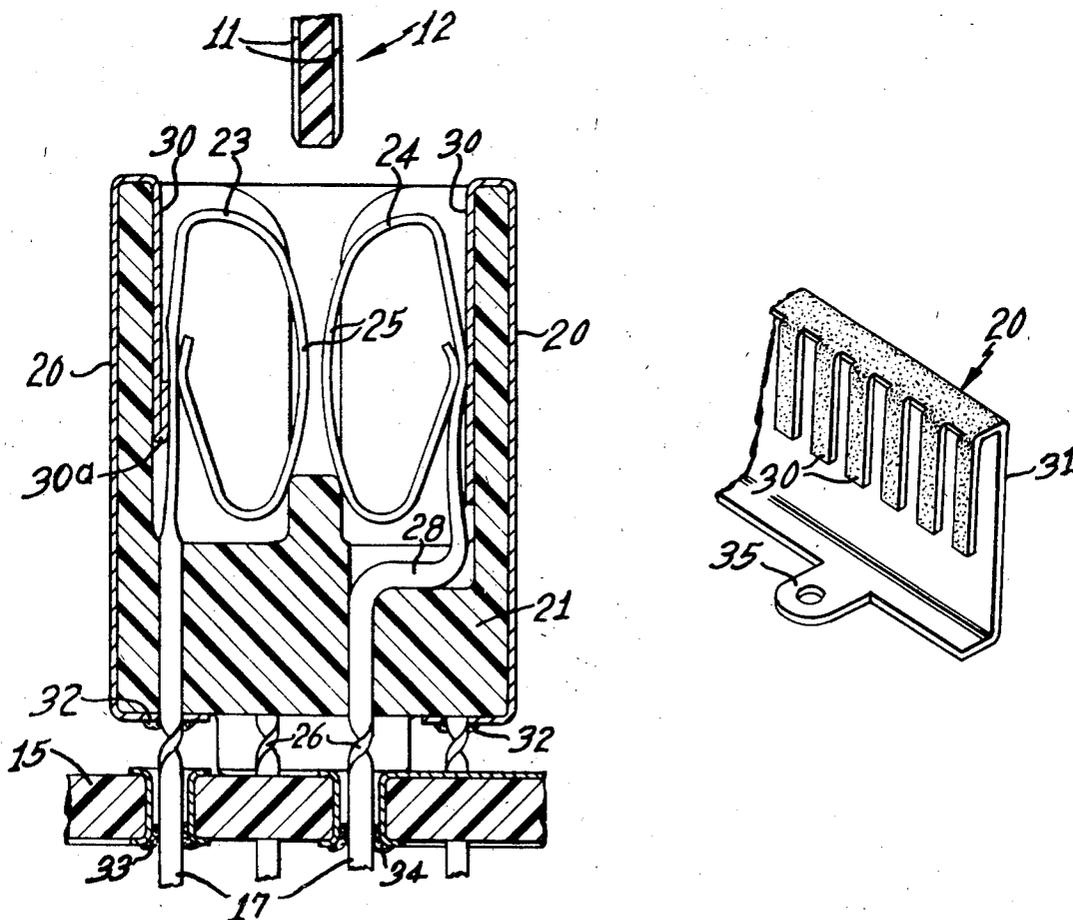
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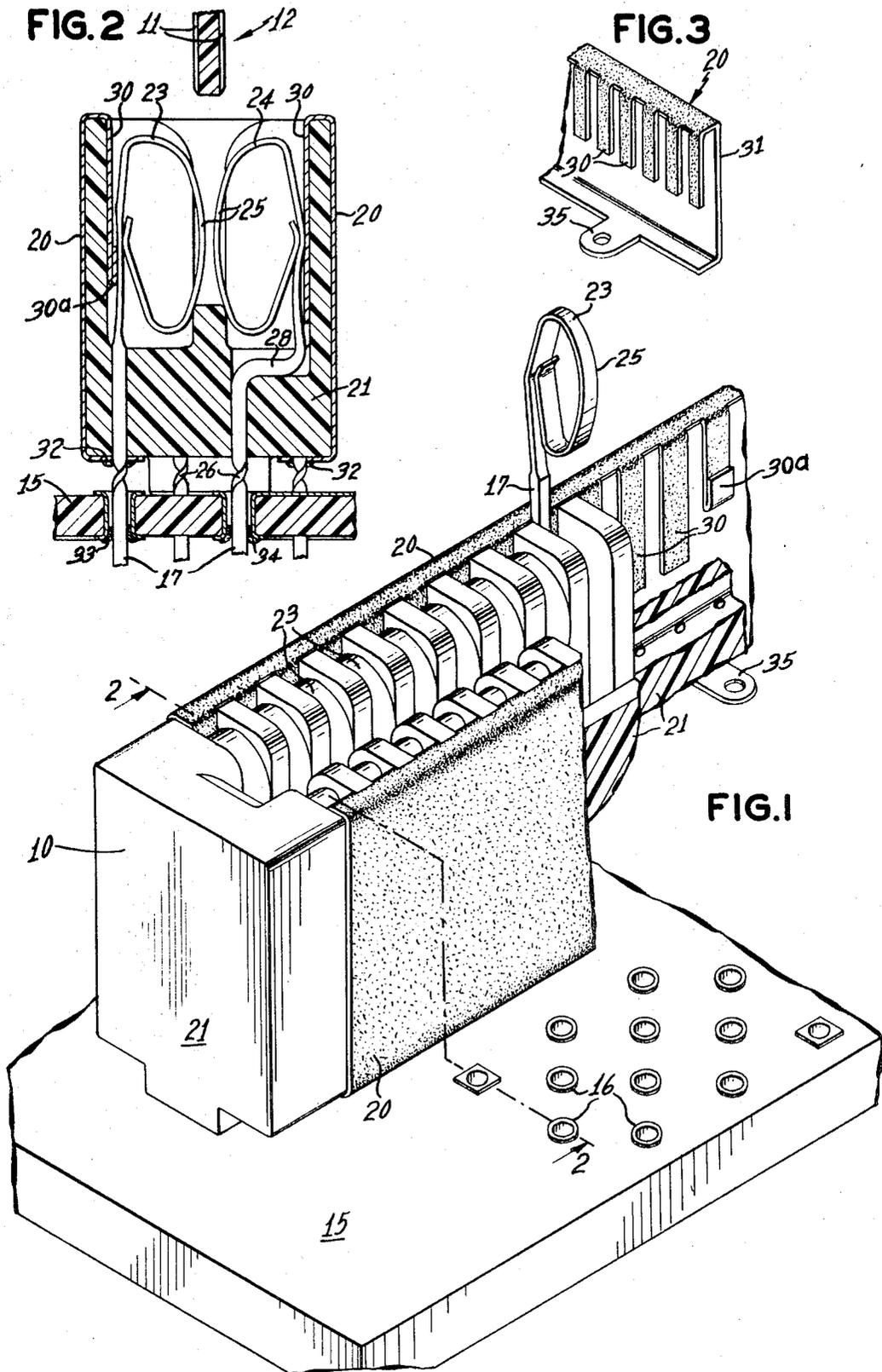
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ABSTRACT: An RF connector for printed circuit boards, strip line cards, printed circuit cables and the like, particularly for micro-system packaging. The connector is adapted to be mounted on a baseboard or strip line card provided with a ground plane. A copper shield is mounted on the body of the connector with individual insulated tabs or fingers and one or more uninsulated tabs or fingers inserted behind the contacts of the connector. The lower edge of the shield is attached to a ground contact or directly to the baseboard or card. The impedance of a signal circuit can be varied by varying the length of the insulated tab that is in close proximity to the signal contact. Preferably the shield is provided with an insulating coating on one side so that electrical contact can be made with a ground contact of the connector by merely folding over the tip end of the grounding tab.





RF CONNECTOR

BACKGROUND OF THE INVENTION

The invention pertains to a conductive shield for a multicontact electrical connector which provides reduced spacing of the signal and ground contacts both in the connector and on the baseboard or strip line card on which the connector is mounted. Hitherto the physical separation of conflicting contacts has been wasteful of contact positions both on the connector and the cooperating motherboard or car.

SUMMARY OF THE INVENTION

The invention relates to an improved edgeboard connector for printed circuit boards and the like and designed to economize on space, particularly in the use of microminiature components. The connector comprises one or two rows of interspaced signal and ground contact members disposed in a recess in the connector body and adapted to make contact with the terminals of the plug-in board when the board is inserted in the recess. The connector preferably is designed to be dip soldered to a baseboard or motherboard or to a ground plane, for example on a strip line card.

A metallic conductive shield on the outside of the body of the connector is provided with insulated and uninsulated tabs or fingers extending into the recess in the connector and adapted to make contact with the respective contact members. The grounded shield is provided with a thin insulating coating on one surface thereof to provide insulation between the shield and signal contacts but permit electrical contact with a ground contact member, for example by folding the tip end of the tab or finger to expose the uninsulated surface at that point. The length of the insulated tabs or fingers may be altered to vary the impedance of the signal circuit through the adjacent contact member.

In general terms the object of the invention is to provide a compact and effective arrangement for shielding the connector contact members, providing a path for current flow from the ground contact or contacts and for impedance matching.

Another object of the invention is to simplify the shield and grounding functions in a small or miniature connector and facilitate the electrical connections to a baseboard or other component associated with the connector.

A still further object of the invention is to obtain impedance matching with a signal cable or the like through the contact members of the connector.

BRIEF DESCRIPTION OF THE DRAWING

In the drawing, FIG. 1 is a partial perspective view to an enlarged scale of a connector embodying the invention mounted on a baseboard or associated circuit component;

FIG. 2 is a sectional view of the connector taken on the line 2-2 of FIG. 1; and

FIG. 3 is a detailed view of the insulating copper shield.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The illustrative embodiment of the invention shown in FIGS. 1 and 2 of the drawing is a miniature edgeboard electrical connector 10 provided with a double row of contact members disposed in a recess in the connector body in position to engage the terminal contacts 11 of a printed circuit board or similar circuit component 12. As shown, the connector 10 is mounted on a baseboard or panel 15 having spaced terminals 16 to which the terminals 17 of the contact members are soldered. The general construction of the connector and cooperating circuit components is conventional and may be modified for use with other types of circuit boards or with strip line cards or flexible printed circuit cables, as well known to those skilled in the art. In accordance with the invention, a novel metallic grounding shield 20 is provided on one or both of the outer surfaces of the insulating connector body 21.

As shown by way of example, the resilient contact members 23 and 24 of the connector 10 each comprises an arcuate contact section 25 (see FIG. 2) integral with the terminal portion 17, the latter being square in cross section so that the contact members are locked in place by twisting the ends of the terminals as indicated at 26. The terminal portion of the contact members may be straight as shown for the contact member 23 or may be deformed as indicated at 28 on the contact member 24 in order to locate adjacent terminals in staggered relation if desired.

The metallic shield 20, as shown, consists of a copper plate or flat section on the outside of the connector body with integral fingers or tabs 30 extending into the recess in a position to engage the outer portions of the contact members 23 and 24. One surface of the shield 30 is coated with a thin durable adhesive insulating coating as shown more clearly in FIG. 3. After the fingers 30 are formed in the sheet stock by a punching operation, the sheet is folded to provide opposed fingers and skirt section 31 of the required dimensions. In the construction shown by way of example, the contact members 23 and 24 from an array of interspersed ground and signal contacts. The finger 30 associated with one of the contact members 23 has the tip end 30a thereof folded to expose the uninsulated surface and make electrical contact with a ground contact member. The lower end of the shield 20 is soldered to the contact terminal as shown at the point 32 and to the ground plane of the baseboard 15 at the point 33. The insulated finger or tab 30 associated with signal contacts 23, 24 does not make electrically conductive contact with said contacts. The terminal portion of a signal contact 24 is shown as soldered to a signal element of the circuit component 15 at the point 34. The shield 20 may also be provided with an integral tab 35 to form a ground lead for the shield.

When used in an RF connector where impedance matching with a printed circuit cable is desired, the length of the insulated fingers or tabs 30 associated with signal contacts may be altered to effect this result, which is an important feature for many applications.

A thin insulating coating on the tabs provides the desired close spacing between the shield 20 and the signal contact.

It will be apparent that the invention provides a compact and effective construction for shielding and grounding the contact members of a small edgeboard connector, which can be readily adapted for use with printed circuit board and cables strip line cards and similar circuit components.

It avoids the requirement for physical separation of the conflicting signal and ground contacts along the length of the connector, which is wasteful of contact positions both on the connector and on the motherboard. Furthermore the positioning of the ground contact is not fixed by the shield stamping and the shield embodying the invention is adaptable to different printed circuit boards. Thus special tooling for different contact arrangements is not required.

What I claim is:

1. In an electrical connector comprising an insulating connector body provided with an inner recess adapted to receive a plug-in member and a row of interspersed signal and ground contacts in said recess each having terminal portions projecting from said connector body, the improvement comprising a grounded metallic shield having a main section outside said connector body and integral tabs or fingers extending into said recess in close proximity to said contacts, one of said tabs or fingers being disposed in electrical contact with said ground contact.

2. An electrical connector according to claim 1, in which the grounded shield is provided with an insulating coating on the tabs or fingers adjacent the signal contacts in said recess.

3. An electrical connector according to claim 1, in which said tabs or fingers on the grounded metallic shield are selectively coated with insulation in certain areas to provide conductive contact with some of the connector contacts only.

4. An electrical connector according to claim 1, in which the surface of at least one of said tabs or fingers is disposed in

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intimate contact with the surface of a signal contact but insulated therefrom.

5. An electrical connector comprising a row of interspaced ground and signal contacts, a metallic ground plate having integral tabs or fingers in physical contact with the respective connector contacts, said tabs or fingers being provided with an insulating coating on the areas where the tabs or fingers engage the signal contacts, and a ground connection for said ground plate.

6. An electrical connector comprising an insulating connector body provided with an inner cavity or recess, a plurality of resilient contact members mounted in said cavity or recess and adapted to cooperate with the terminal contacts of a printed circuit component inserted in said cavity or recess,

said contact members having integral terminal portions projecting from the connector body for mounting the connector on a second circuit component having a ground plane, and a metallic grounding shield on the outside surface of said insulating connecting body and provided with integral tabs or fingers projecting inside said cavity or recess in a position to engage the surface of the respective contact members, said tabs or fingers having an insulating coating on the surface engaging said connector contact members.

7. An electrical connector according to claim 6, in which one of the tabs or fingers is folded over at the tip to make electrical contact with a predetermined one of the contact members.

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