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T. W. BOWLEY ET AL

3,359,532

ELECTRICAL CONTACT AND EDGE CONNECTOR HAVING SUCH A CONTACT

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2 Sheets-Sheet 1

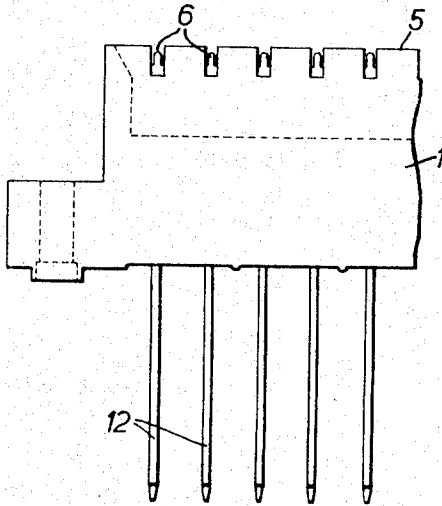


FIG. 1.

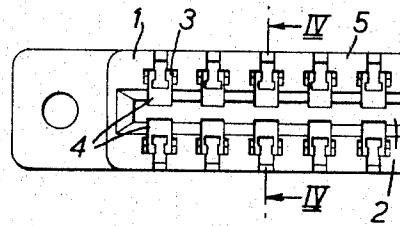


FIG. 2.

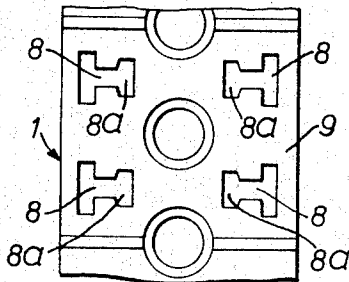


FIG. 3.

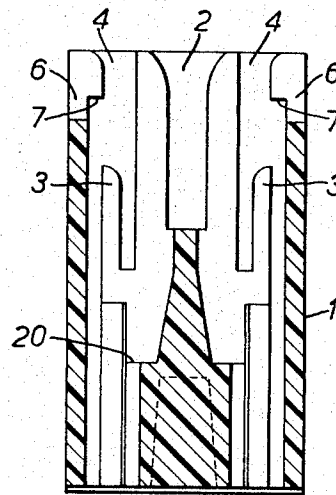


FIG. 4.

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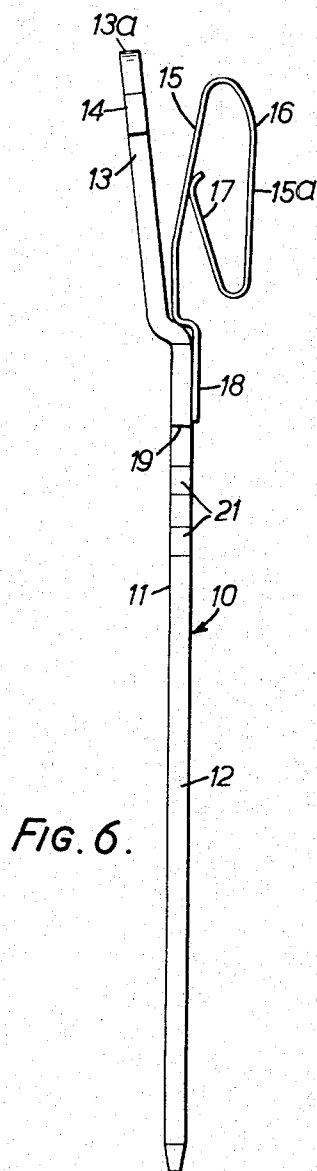
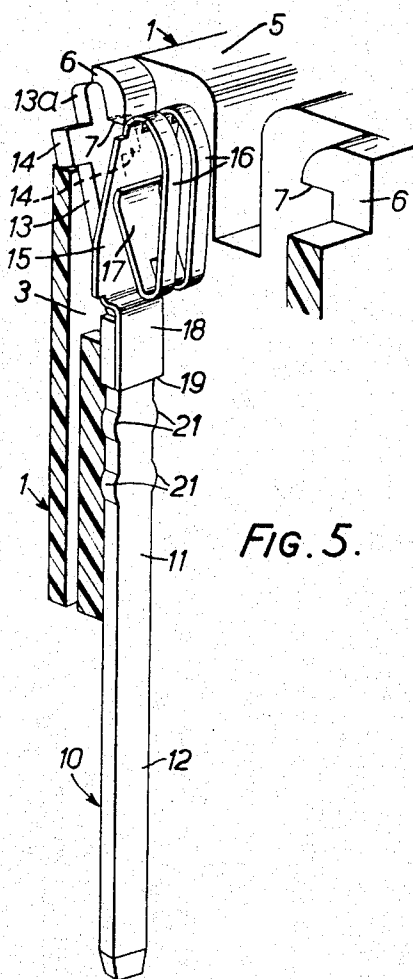
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**ELECTRICAL CONTACT AND EDGE CONNECTOR
HAVING SUCH A CONTACT**

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5 Claims. (Cl. 339—217)

ABSTRACT OF THE DISCLOSURE

This invention is directed at an electrical connector having an insulating body with a cavity formed therein and a series of two-piece contacts assembled in the cavity, with the contacts having rigid tail portions.

This invention relates to electrical connectors and contacts for assembly therein.

According to the present invention, an electrical connector comprises a body of insulating material having a cavity opening at one end on to one face of the body to define a conductor receiving opening, a contact assembled in the cavity through said opening and including a rigid metal post element extending axially within said cavity and a resilient metal arm secured to the post and extending inwardly of the cavity for resiliently engaging a conductor to be inserted, the post element including an angularly disposed end portion formed with lateral projections for snapping under a shoulder in the connector body adjacent the open end of the conductor receiving opening, the post element also including a tail projecting outwardly of the opposite face of the connector body for attachment to a lead wire.

The engagement of the post element with the shoulder serves to prevent the contact being displaced within the cavity in the direction of the open end of the conductor receiving opening and also serves to take up the thrust normally imparted to the contact when a tool is used to attach a lead wire to the tail.

Movement of the contact in an opposite direction is prevented by projections on the post element abutting a shoulder in the cavity.

The invention also includes a contact for assembly in an electrical connector comprising a rigid metal post element including an elongated body having an end portion extending in angular relation to the remainder and provided with lateral projections, a resilient metal arm being secured to the post element adjacent the inner end of said angularly disposed end portion.

To enable the invention to be fully understood, it will now be described, by way of example, with reference to the accompanying drawings in which:

FIGURE 1 is a side view of part of an electrical edge connector for a printed panel;

FIGURE 2 is a plan view thereof;

FIGURE 3 is a fragmentary view in under plan of the connector;

FIGURE 4 is a sectional view on the line IV—IV of FIGURE 2;

FIGURE 5 is a part sectional view on an enlarged scale of the body of the connector with a contact assembled therein; and

FIGURE 6 is a side view of the contact.

As illustrated in the drawings, an edge connector for a printed circuit panel comprises a body 1 of insulating material formed with a longitudinally extending panel receiving slot 2 and contact receiving cavities 3 opening

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on to the slot, each cavity including an opening 4 opening on to the upper or panel receiving face 5 of the body 1.

Each outer side wall of the body is formed with a recess 6 adjacent the face 5, and the portion of the side wall on each side of the recess being shaped to provide a shoulder 7. Each cavity 3 extends axially through the body 1 and terminates in an aperture 8 opening on to the under face 9 of the connector body.

It will be understood that the connector body is provided with a plurality of cavities 3 in opposed relation on opposite sides of the slot 2.

The contact assembly for mounting in the connector is particularly illustrated in FIGURES 5 and 6 and, as shown, comprises an elongated rigid metal post element 10 of oblong shape in cross-section and a resilient metal element. The post includes a medial body portion 11, a tail 12 at one end and an angularly disposed resilient portion 13 at the opposite end having lateral projecting arms 14 so that it is of generally cruciform shape.

The resilient metal element comprises a base 15, reversely bent arm portions 16, and end portions 17 which are further reversely bent so as to extend between the portions 15 and 16 and abut the portion 15 so as to urge the arms 16 outwardly.

The base 15 has an extension 18 which is secured, as by welding, to the body portion 11 of the post adjacent the inner end of the angularly disposed end portion 13.

The contacts are adapted to be assembled with the connector by inserting them tail first into the cavities 3 through the openings 4, and as they are inserted, the portion 13 of the post will flex to ride over the side wall of the cavity 3 until the lateral projections 14 snap under the shoulders 7 with the tip 13a extending into the recess 6. When thus assembled, the shoulders 19 on the main body 11 of the post will rest on shoulders 20 in the recess so that the contact is retained against axial movement in the opposite direction.

Preferably the main body of the post is formed with protuberances 21 which are adapted to make an interference fit with the walls of the cavity so as to centralise the contacts and prevent any tendency for lateral displacement.

It will be noted that when the contacts are assembled, the main body portion 11 of the post element is disposed within the cavity 3, and the tail 12 projects outwardly of the end face 9 of the connector body through a slot 8a. The resilient arms 16 project inwardly of the slot 2 so as resiliently to engage the printed circuitry of a panel when the latter is inserted edgewise into the slot.

The abutment of the lateral projections 14 of the post with the shoulders 7 positively prevents axial movement of the contact in a direction of withdrawal, and this is an important feature when lead wires are to be attached to the tails 12 by a tool for example, a wire wrapping tool, which in use would tend to exert a considerable axial and inward thrust on the tailpieces 12. With the arrangement according to the present invention, this thrust is taken up by the shoulders 7.

Another important advantage of the invention is that the contacts are insertable from the panel receiving face of the connector body and are readily withdrawn when desired through this face by deflecting the portion 13 of the post inwardly to clear the lateral projections 14 from the shoulders 7. Accordingly, each contact can be individually withdrawn for replacement should any fault develop in the contact or circuitry connected therewith.

It will be noted that the tip 13a of the post element is exposed in the recess 6, and accordingly provides a convenient test point to enable the contact or the circuitry connected therewith to be checked by a suitable test probe.

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While in the particular embodiment described and illustrated, pairs of opposed contact receiving cavities 3 are provided, if desired, the connector may be formed with a single row of cavities on one side of the slot 2.

We claim:

1. An electrical connector comprising a body of insulating material having a cavity opening at one end on to one face of the body to define a conductor receiving opening, a two-piece contact assembled in the cavity through said opening and including as one piece rigid metal post element extending axially within said cavity and as a second piece a resilient metal arm secured to the post and extending inwardly of the cavity for resiliently engaging a conductor to be inserted, the post element including an angularly disposed end portion formed with lateral projections for snapping under a shoulder in the connector body adjacent the open end of the conductor receiving opening, the post element also including a tail projecting outwardly of the opposite face of the connector body for attachment to a lead wire.

2. An electrical connector according to claim 1, wherein the shoulder is located in a recess in an outer side wall of the body so that a portion of the post element extends into the recess so as to be accessible for engagement by an externally applied test probe.

3. An electrical connector according to claim 2, wherein the post element comprises an elongated metal body having a portion at one end extending at an angle to the

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remainder of the body for snapping under the shoulder, the resilient arm being secured to the body of the post element adjacent the inner end of the angular end portion.

5 4. An electrical connector according to claim 3, wherein the angular end portion is of cruciform shape including opposed laterally extending arms each engaging the said shoulder.

10 5. An electrical connector according to claim 3, wherein the elongated body of the post element is formed with protuberances on opposed side edges adapted to engage the respective adjacent walls of the cavity to centralise the contact in the cavity.

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