Sept. 20, 1960 E. A. GREASLEY 2,953,765

ELECTRICAL CONNECTOR FOR PRINTED CIRCUIT BOARD

Filed Nov. 25, 1957

FIG. 1.

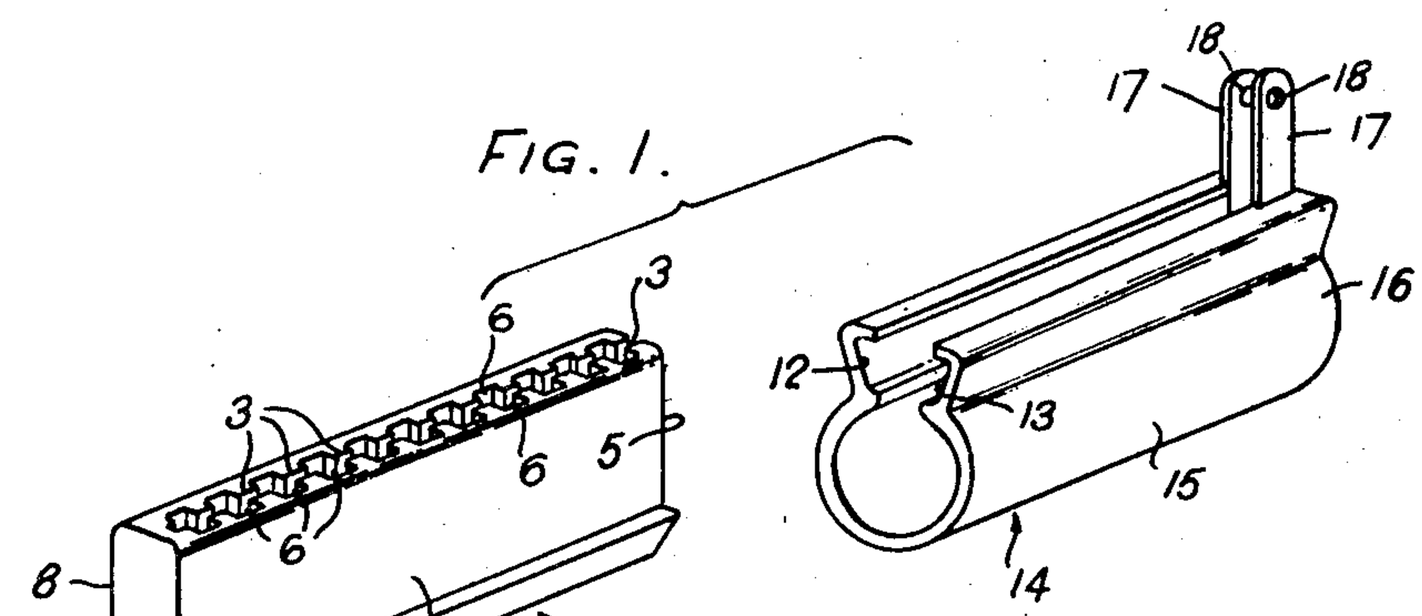


FIG. 4

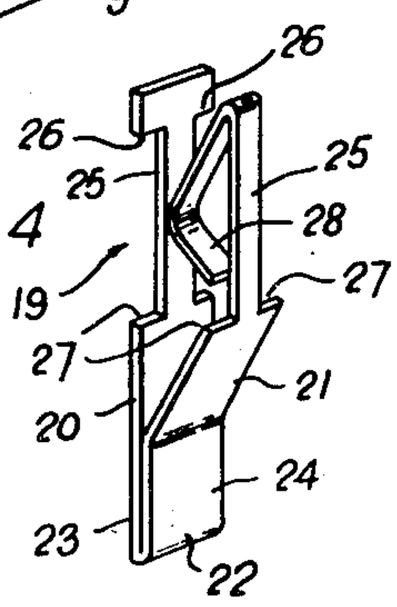


FIG. 2.

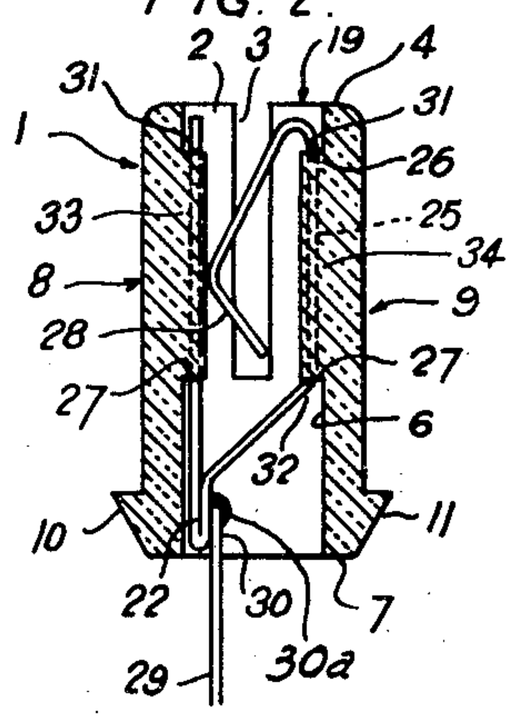
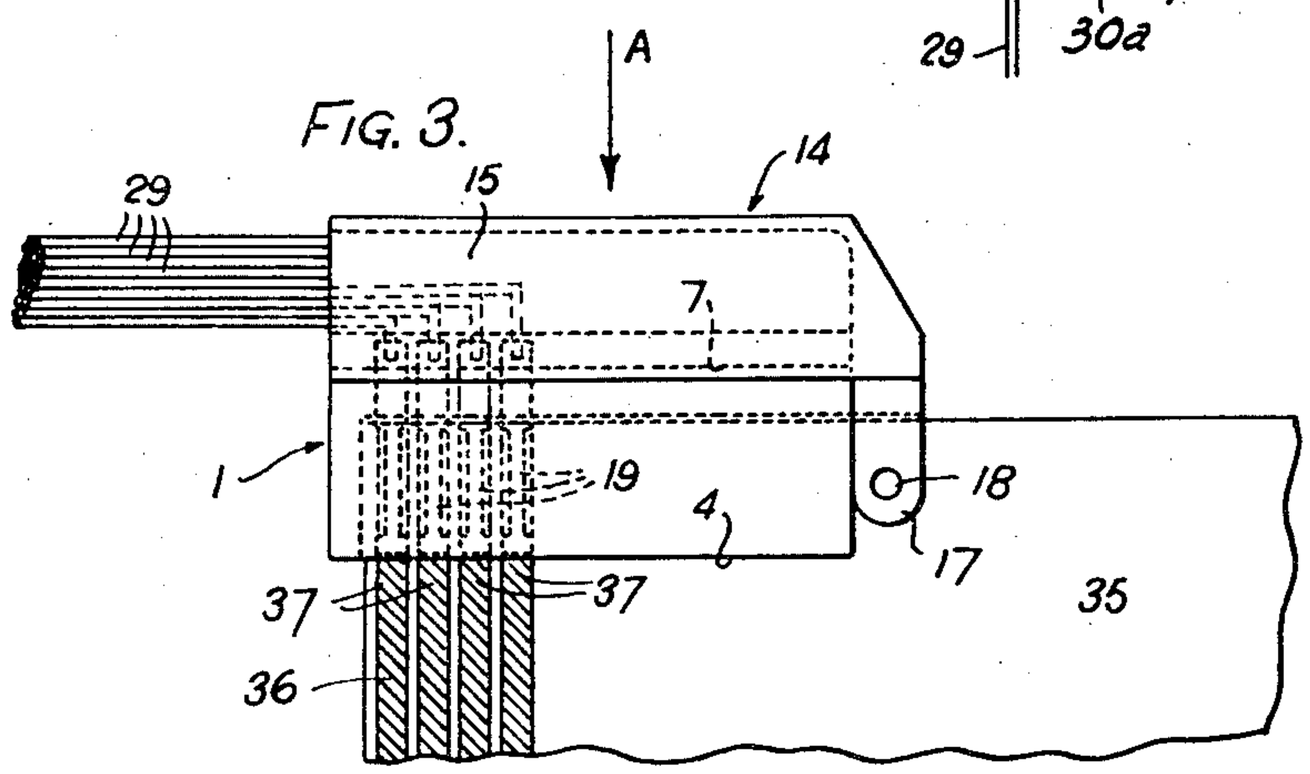


FIG. 3.



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ELECTRICAL CONNECTOR FOR PRINTED CIRCUIT BOARD

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1 Claim. (Cl. 339—17)

This invention relates to printed circuit edge connectors, electrical contacts for said connectors and to assemblies employing the same.

According to the present invention a printed circuit edge connector comprises a body of insulating material having an aperture therein which extends through the body, a plurality of contacts located in the aperture, each of the contacts having means for engaging printed circuitry on a panel and means by which a lead wire can be secured to the contact, and a cover releasably securable to the body in a position in which the cover extends over the end of the aperture through which lead wires extend when they are secured to the contacts, the cover having means for securing it to a panel when the connector is mounted on the edge thereof such that the edge of the panel lies within the aperture and the cover is in said position on the body.

The present invention also provides an electrical assembly comprising a panel provided on one face with printed circuitry portions of which extend to adjacent one edge of the panel, a printed circuit edge connector as defined above, a portion of said one edge of the panel extending into the aperture in the connector such that the means for engaging printed circuitry of a panel of each contact of the connector each engages a corresponding one of said portions of printed circuitry, the cover being releasably secured in said position to the body by the means for so securing the cover and being secured to the panel by the means for so securing the cover, and a plurality of lead wires each secured to a corresponding one of the contacts of the connector by the means by which a lead wire can be secured to the corresponding contact.

The present invention further provides an electrical contact for use in a printed circuit edge connector, the contact being integrally formed from a thin strip of electrically conductive material and comprising a pair of resilient spaced legs, a first portion of one of the legs being a different width from that of the portions of said one leg adjacent said first portion such that there is provided a pair of shoulders spaced longitudinally of the leg.

In addition the present invention provides a printed circuit edge connector comprising a body of insulating material having an aperture therethrough in which is mounted a plurality of contacts each constructed as defined in the preceding paragraph wherein the legs of each of the contacts are resiliently compressed between opposite walls of the aperture and each contact is located in the aperture by engagement of the shoulders of the contact with shoulders provided in the aperture in the body.

One embodiment of the present invention will now be described in greater detail by way of example only, with reference to the drawings accompanying the provisional specification:

Fig. 1 shows a perspective view of one form of a connector constructed according to the present invention,

Fig. 2 shows a transverse cross section of the connector of Fig. 1 on an enlarged scale,

Fig. 3 shows the connector of Fig. 1 assembled on a panel provided with printed circuitry,

Fig. 4 is a perspective view on an enlarged scale of the contact employed in the connector.

As shown in the accompanying drawings, the printed circuit edge connector comprises a body portion **1** formed of electrically insulating material. Extending through the body is an aperture **2** comprising a slot **3** which extends only part way into the body **1** from the front face **4** and the end face **5** of the body and a series of channels **6** each of which extends transversely of the slot **3** and which extends through the body **1** from the front face **4** to the rear face **7**.

The body **1** is provided on each of its side faces **8** and **9** with outwardly extending ridges **10** and **11** respectively which form convex keyways extending in a direction transverse to that in which the aperture **2** extends through the body. Each of the convex keyways of the body are engageable by one of co-operating concave keyways or grooves **12** and **13** formed in a cover **14**. When the cover **14** is assembled on the body **1** (as shown in Fig. 3) by sliding the body keyways into the cover keyways, the main portion **15** of the cover extends over the end of the aperture **2** at face **7** of the body. Situated at one end **16** of the cover and extending away from the main portion **15** is a pair of lugs **17**. The lugs extend substantially parallel to each other each being spaced from the other a distance approximately equal to the width of the slot **3**, and are each provided with a hole **18**, the holes being axially aligned one with the other.

In each channel **6** is located a contact **19** each of which is integrally formed from a single thin strip of electrically conductive material, for example, beryllium copper. The strip is bent to provide a pair of resilient spaced legs **20** and **21** joined together at a corresponding end of each leg at **22** by a portion of the strip being folded so that portion **23** of the strip overlies and is closely adjacent to portion **24** to provide means by which a lead wire can be secured to the contact. Each of the legs is provided with a first portion **25** of different width from that of the portions of the legs adjacent the respective first portions (in the specific embodiment portion **25** is of reduced width) so as to provide on each leg a pair of shoulders **26, 27**, the shoulder **26** of each pair being spaced longitudinally of the respective leg from the shoulder **27** of the pair. At the free end of leg **21** there is provided an integral extension **28** which is bent backwardly upon leg **21** to lie between the two legs and provides means for engaging printed circuitry on a panel inserted in the slot **3**.

The above described connector is assembled into the position shown in Fig. 3 in the following manner:

With the contacts **19** removed from the body portion **1**, each of the contacts is assembled with a corresponding lead wire **29** by baring one end **30** of the lead wire, and soldering or welding to portion **22** of the contact leg as at **30***a*. The contact is then slid into its respective channel **6** (the legs **20** and **21** of the contact being resiliently compressed between the opposing walls of the channel) until the shoulders **26, 27** of the contact engage spaced shoulders **31, 32** respectively of portions **33, 34** of the body **1** which project into the channel **6** and serve to locate the contact in the channel. The contacts are thus assembled with body **1** with the lead wire of each of the various contacts projecting through the end **16** of the respective channel **3**.

If desired, the lead wires **29** may then be assembled into the form of a cable harness.

In any case, the cover **14** is then releasably secured to the body **1** by sliding the convex keyways of the body into the concave keyway of the cover until the lugs **18** abut the end face **5** of the body **1**, the lead wires being

caused to form a bundle which extends outwardly from the main portion **15** of the cover **14**.

The assembled connector is then slid in the direction of arrow A (Fig. 3) on to a panel **35** provided with printed circuitry **36** portions of which extend to adjacent one edge of the panel to form contacts **37** (four only of which are shown in Fig. 3) so that the corner of the panel **35** extends into the slot **3** in the body **1**. When the connector is pushed right home, the holes **18** in the lugs **17** provide means which in co-operation with a similar hole (not shown) provided in panel **35** in axial alignment with hole **18** allow the cover **14** and panel **35** to be secured together, for example, by positioning a screw in the aligned holes and securing a nut thereto.

In the assembled position of the connector to the panel the extension **28** of each contact **19** is in engagement with a corresponding one of the contacts **37** and electrical connection is provided between the contacts **37** and the lead wires **29**.

I claim:

An electrical connector for a printed circuit board comprising a body of insulating material having top and bottom portions, said body having a slot extending lengthwise thereof and intersecting both said top and bottom portions, said body having a plurality of pairs of opposed channels extending transversely of said slot, rib-like side walls defining each of said channels and extending vertically for a portion of the depth of said slot, said side walls projecting laterally into said slot and having upper and lower ends, an electrical contact received in each of said pairs of opposed channels, each of said contacts being integrally formed from a strip of electrically conductive material and having a pair of opposed legs, said first of said legs having a reduced width portion disposed within one of said channels, said first leg having portions of greater width adjacent opposed ends of said reduced width portion engaging said upper and lower ends of said respective side walls of said channel, said other leg having a reduced width portion disposed within said channel opposed to said channel receiving said first leg, said second leg having a portion of greater width adjacent its lower end providing a shoulder element adjacent said bottom end of said respective side walls of said channel receiving said second leg for resilient engagement with said lower ends of said side walls adjacent said channel said second leg being resiliently movable relative to said first leg and being provided at its free end with an integral resilient extension disposed within said slot between said first and second legs.

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