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A. B. CLEWES

2,953,766

CONNECTOR FOR PRINTED CIRCUIT PANELS

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FIG. 1.

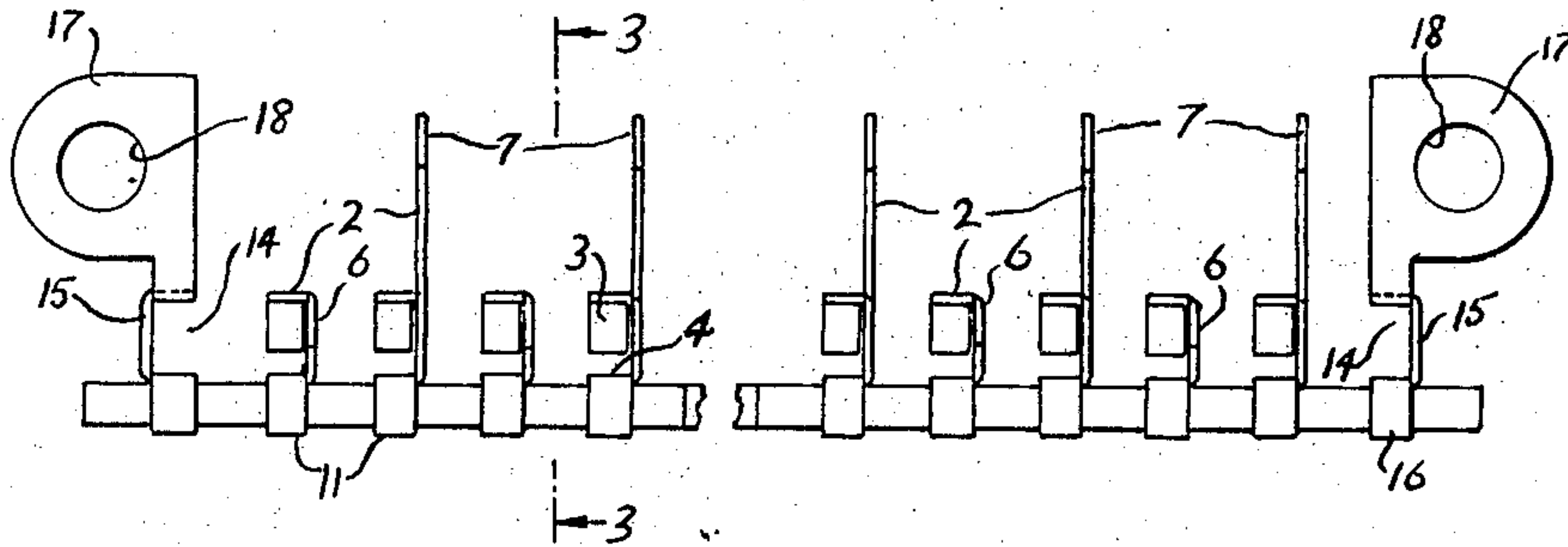


FIG. 2.

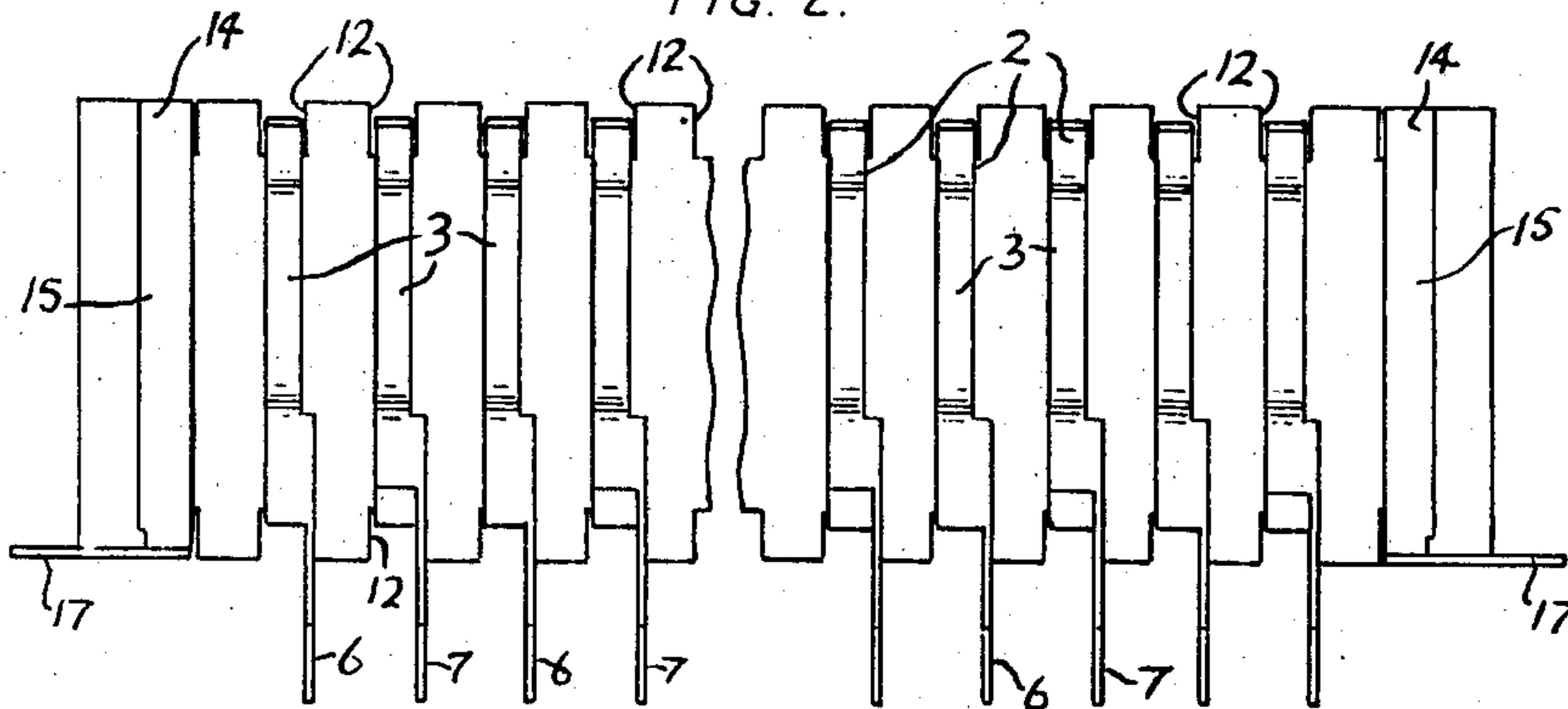


FIG. 3.

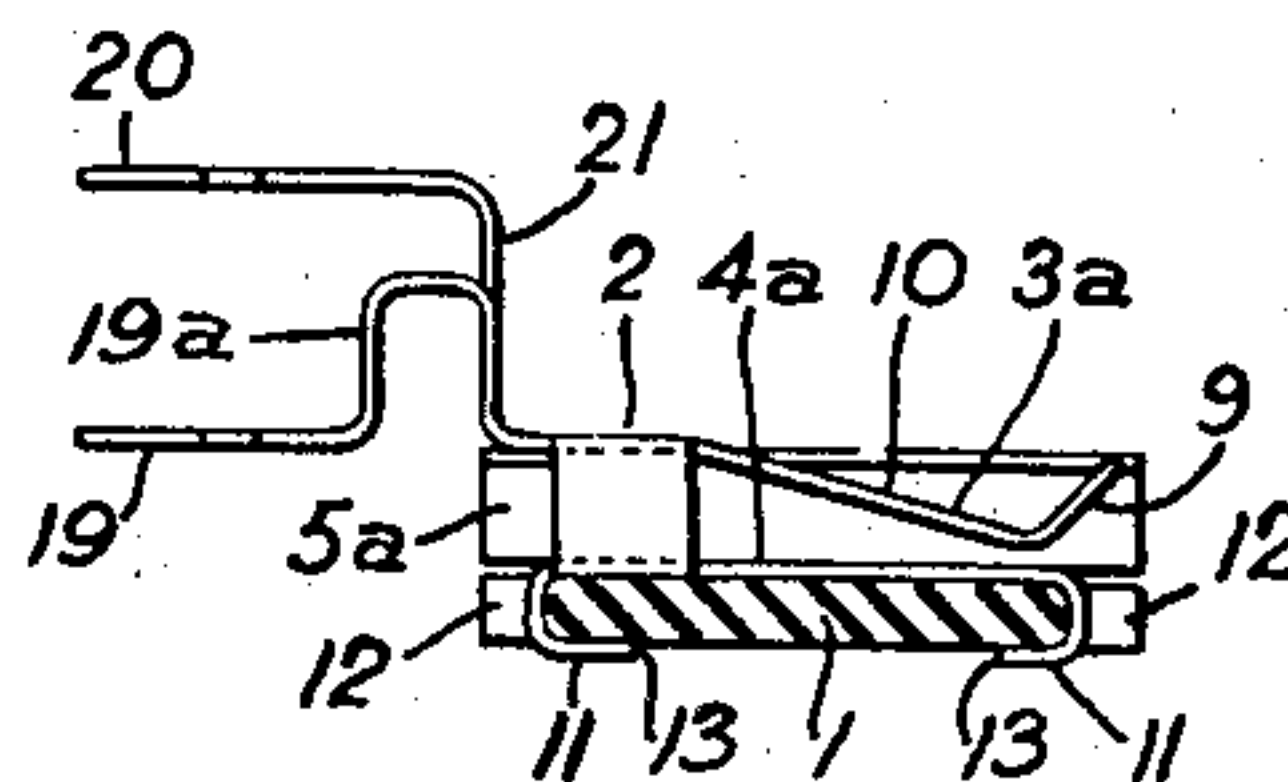
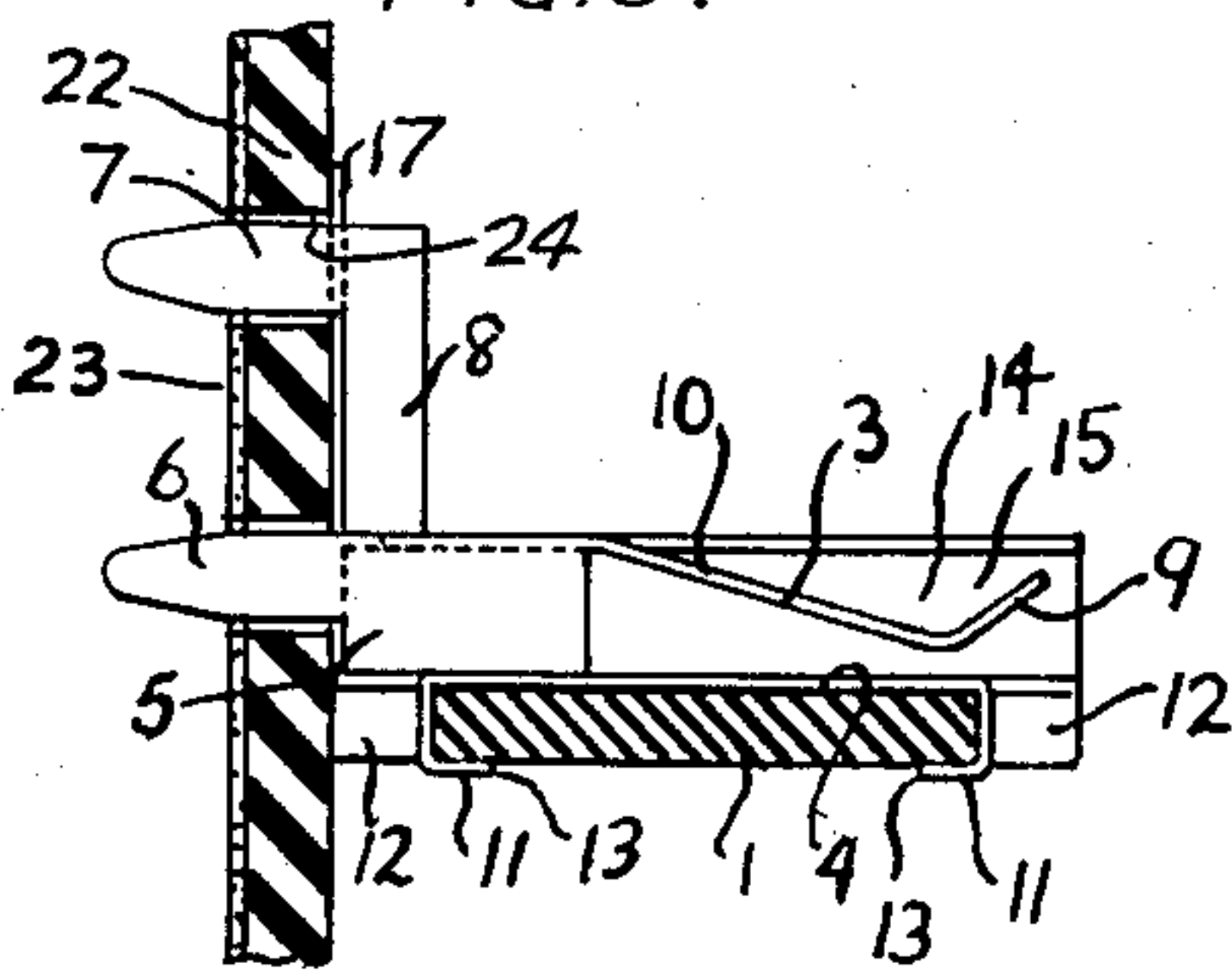


FIG. 4.

INVENTOR  
ANTHONY B. CLEWES

BY

John Todd

ATTORNEY



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## CONNECTOR FOR PRINTED CIRCUIT PANELS

Antony Brasher Clewes, Wollaton Park, England, assignor, by mesne assignments, to United-Carr Fastener Corporation, Boston, Mass., a corporation of Delaware

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4 Claims. (Cl. 339-17)

This invention relates to electrical connectors and to assemblies including such connectors.

According to the present invention an electrical connector comprises a panel-like member of insulating material having a plurality of contacts mounted on one face, each of the contacts having a pair of legs extending substantially parallel to said face of the panel-like member, each leg being provided with a side edge, the free end of at least one of the legs being resiliently displaceable away from the free end of the other leg, the side edge of each leg in the region adjacent the base of the leg being integrally connected to a web portion of the contact, one of the legs having a pair of ears by which the contact is secured to the panel-like member, each contact of the connector being provided with an integral lug extending in an opposite direction to that of the legs, the lugs on one or more contacts being disposed in a different plane from those on other contacts. The lugs may extend substantially parallel to the plane of the panel-like member of the connector and may be formed integrally with the web portion of the contact or integrally with an extension of one of the legs.

The connector may form part of an electrical assembly including two panels or the like of insulating material, each panel being provided on one face with a printed circuit diagram. One of the panels is inserted edge-wise between the legs of the connector such that the legs make contact with portions of the circuit diagram extending to the edges of the panel, and the other panel having apertures into which the lugs of the contacts of the connector are inserted so as to make contact with portions of the circuit diagram of that panel.

Embodiments of the present invention will now be described in greater detail, by way of example only, with reference to the drawings in which:

Fig. 1 is a rear view of a connector according to the invention,

Fig. 2 is a plan view thereof,

Fig. 3 is a cross sectional view taken along the line 3-3 of Fig. 1, and

Fig. 4 is a cross sectional view of a modification of the invention.

As shown in Figs. 1 to 3 of the drawing the electrical connector comprises a panel-like member 1 of insulating material to which is secured a plurality of contacts 2 arranged side by side, each contact having legs 3 and 4 extending in the same general direction substantially parallel to the plane of the panel-like member 1.

Each leg 3, 4 of each contact is joined by the other leg at the region of the base of the leg by a web 5 integral with the side edges of the legs. In alternate contacts there extends directly from the web 5 in the direction opposite to that in which the legs 3 and 4 extend, a tapered lug 6, while in the other contacts a similarly extending tapered lug 7 is integral with the respective web 5 through an arm 8 extending upwardly (in Figs. 1 and 3) from the respective web 5; the lugs 6 are disposed in different planes from the lugs 7 and are

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thus in staggered relation. The ends of the lugs of each contact remote from the web 5 are resiliently displaceable relative to each other, and the free end portion of the leg 3 is upwardly turned (Fig. 3) at 9 to assist in the insertion of an edge of a panel between the legs, the portion 10 of the leg being inclined towards leg 4. Leg 4 of each of the contacts is provided with means 11 by which the contact is secured to the member 1. As shown the means 11 of each contact comprises ears bent downwardly from the leg 4 away from leg 3 the ears engaging within notches 12 provided in opposite longitudinal edges of the panel-like member 1, the ears being bent under the panel at 13 (Fig. 3) to secure the contact.

Also secured to the panel-like member 1 at each end thereof, are locating guides 14. These guides each comprises a channel-shaped body portion 15 from which depends means 16 identical in construction and purpose as the means 11 of the contacts 2. Projecting upwardly (in Figs. 1 and 3) from the body portion 15 of each guide 14 is a tab 17 provided with a hole 18 for the reception of a screw, rivet or the like, the tabs 17 being aligned one with the other in the same plane.

According to the modification illustrated in Fig. 4, the electrical connector comprises two legs 3a and 4a the side edges of which are integrally connected to a web 5a.

In alternate contacts, there extends as an extension of the leg 3a in a direction opposite to that in which the legs 3a and 4a extend, a lug 19, while in the other contacts a similarly extending lug 20 is integral with the respective leg 3a through an arm 21 extending upwardly from the respective leg 3a.

As shown the lug 19 is connected to the leg 3a by a cranked or U-shaped portion 19a. The provision of the cranked portion increases the resiliency of the lug 19 and enables both lugs 19 and 20 to have substantially the same degree of resiliency.

The extension from which the lug 19 is formed is longer than that of the lug 20 but when the crank 19a is formed the free end of the lug 19 is co-terminous with that of lug 20.

The above described electrical connectors are adapted to cooperate with panel 22 provided with printed circuitry 23, and another panel (not shown) having printed circuitry extending to adjacent one edge of the panel to form contacts. This panel edge is inserted between the legs 3 and 4 or 3a, 4a of the contacts 2 of the respective connectors such that the edge of the panel is resiliently gripped between the said legs, each of the contacts of the connector engaging a corresponding contact of the panel; the guides 14 each engaging one of two opposite sides of the panel to locate the connector on the panel. Alternatively the guides may be adapted to enter apertures in the panels. In the other panel 22 there is provided a plurality of apertures each positioned adjacent a portion of the printed circuitry on the other panel and into which the lugs 6 and 7 or 19 and 20 are inserted, one in each aperture, the tapered construction of the lugs facilitating such insertion; the lugs 6 and 7 or 19 and 20 each being adjacent a portion of the printed circuitry 23 on the panel 22. Advantageously, the panel 22 is dip-soldered to secure the lugs to the respective portions of printed circuitry. In the case of the connector described with reference to Figs. 1-3 of the drawings the other of the panels is also provided with two further apertures which are aligned, when the connector is assembled as above described with the other of the panels, with the holes 18 in the tabs 17 so that the tabs 17 can be secured to the other of the panels by screws, rivets or the like.

The lugs 19, 20 may be of less width than the lugs 6 and 7 of Fig. 3 and may have tapered ends. If desired each lug 6, 7, 19, 20 may be formed with a lateral pro-



jection or projections spaced from its free end serving as a stop to limit the extent the free ends enter the panel apertures.

I claim:

1. An electrical connector comprising a panel-like member of insulating material having a plurality of contacts mounted on one face, each of the contacts having a pair of legs extending substantially parallel to said face of the panel like member, each leg being provided with a side edge, the free end of at least one of the legs being resiliently displaceable away from the free end of the other leg, the side edge of each leg in the region adjacent the base of the leg being integrally connected to a web portion of the contact, one of the legs having a pair of ears by which the contact is secured to the panel-like member, each contact being provided with a lug extending in an opposite direction to that of the legs, the lugs of one or more contacts of the connector being disposed in a different plane from the plane of the lugs on other contacts.

2. An electrical connector according to claim 1 wherein

each lug extends in a plane parallel to that of the panel-like member of the connector.

3. An electrical connector according to claim 1 wherein the lug is formed as an integral extension of the web portion of the contact.

4. An electrical connector according to claim 1 wherein the lug is formed as an integral extension of one of the legs of the contact.

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