

PATENT SPECIFICATION

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(54) CLIP FOR PRINTED CIRCUIT BOARD EDGE CONNECTOR

(71) We, AMP INCORPORATED, a corporation organised and existing under the laws of the State of New Jersey, United States of America, of Eisenhower Boulevard, Harrisburg, Pennsylvania, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a locking clip for insertion into a contact receiving cavity of a printed circuit board edge connector.

According to the invention, a locking clip for insertion into a contact receiving cavity of a printed circuit board edge connector, comprises a pair of spaced cantilever spring arms extending in the same direction from a body portion, each arm being formed with an inwardly directed tine at its free end for receipt in an aperture in a printed circuit board and an outwardly directed projection intermediate its ends defining both a rearwardly facing shoulder for engagement with the cavity walls in a snap fit to latch the clip in the cavity and a fulcrum for pivotal movement apart of the free ends to receive between them the printed circuit board.

Preferably the arms diverge from the body to the latching projection.

Desirably outer edges of the arms converge from the latching projection to the free end.

The invention includes an assembly of a printed circuit board edge connector and a locking clip as described above.

An example of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a perspective view of an assembly of locking clip and printed circuit board edge connector;

Figure 2 is a cross-sectional view of the assembly with a printed circuit board at a first stage of insertion into the connector; and,

Figure 3 is a cross-sectional view of the assembly with the printed circuit board fully inserted into the connector.

A low insertion force printed circuit board edge connector housing 10 has an elongate board receiving aperture 12 with a plurality of contact channels 14 in parallel spaced relation on opposite sides of the aperture 12. A plurality of contacts 16 are mounted in respective channels 14. The connector housing also has flanges 18 each provided with an aperture 20 for mounting the connector on an associated device, not shown. A printed circuit board 22 has a plurality of contact pads 24 and apertures 26 are formed in remote pads spaced from the edge 28 of the board.

The locking clip 30 includes a body portion 32 having a pair of divergent cantilever arms 34, 36 extending therefrom. An inwardly directed tine 38, 40 is located on the free end of each arm and directed towards the opposite arm. A locking shoulder 42, 44 is formed on each arm 34, 36, respectively, intermediate the ends thereof.

In use, the locking clip may be substituted for a pair of contacts and inserted into the empty contact channels 14 by hand or by automatic machinery until the locking shoulders 42, 44 engage the steps 46, 48 of the housing.

When they are inserted into the housing, as shown in Figures 2 and 3, the cantilever arms are resiliently biased toward one another by the engagement of the shoulders 42, 44 with the respective steps 46, 48 so that the tines 38, 40 are normally in contact with one another forming a V-shaped entry as shown in Figure 2. The arms of the locking clip are sufficiently flexible for the clip to be removed by gripping the body portion 32 with appropriate means, such as pliers, and exerting a force on the clip in the rearward direction.

On inserting the printed circuit board into the connector, the tines will be cammed apart with the arms 34, 36 pivoting about

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their respective shoulders 42, 44. When the aperture 26 in the printed circuit board reaches the correct position, the tines 38, 40 will snap into the aperture to secure the printed circuit board in place as shown in Figure 3.

It should be noted that it is also possible to use the locking clip by inserting a printed circuit board into the connector, having previously removed appropriate pairs of contacts, and subsequently locking the board in place by inserting the locking clip into the connector housing.

WHAT WE CLAIM IS:—

1. A locking clip for insertion into a contact receiving cavity of a printed circuit board edge connector comprising a pair of spaced cantilever spring arms extending in the same direction from a body portion, each arm being formed with an inwardly directed tine at its free end for receipt in an aperture in a printed circuit board and an outwardly directed projection

intermediate its ends defining both a rearwardly facing shoulder for engagement with the cavity walls in a snap fit, to latch the clip in the cavity and a fulcrum for pivotal movement apart of the free ends to receive between them the printed circuit board.

2. A locking clip according to claim 1 in which the arms diverge from the body to the latching projection.

3. A locking clip according to claim 1 or claim 2 in which outer edges of the arms converge from the latching projection to the free end.

4. A locking clip substantially as described with reference to the accompanying drawings.

5. An assembly of a printed circuit board edge connector and a locking clip as claimed in any one of the preceding claims.

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