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(54) **Electrical connector.**

(57) An electrical connector which includes a right-angle header (10) having at least one row of contact pins (20, 25) comprises stabilizing means (30) positioned at at least one end of the row of pins, and means (50) for retaining a printed circuit board against the stabilizing means when soldering the connector to the printed circuit board. The stabilizing means preferably includes a pair of wings (30), one at each end of the row of pins, wherein one face of each wing is planar which is adapted to contact the side of the printed circuit board on which the electrical connector is mounted. The retaining means preferably includes at least one projection (50) which cooperates with the stabilizing means to retain the connector in position on the printed circuit board.

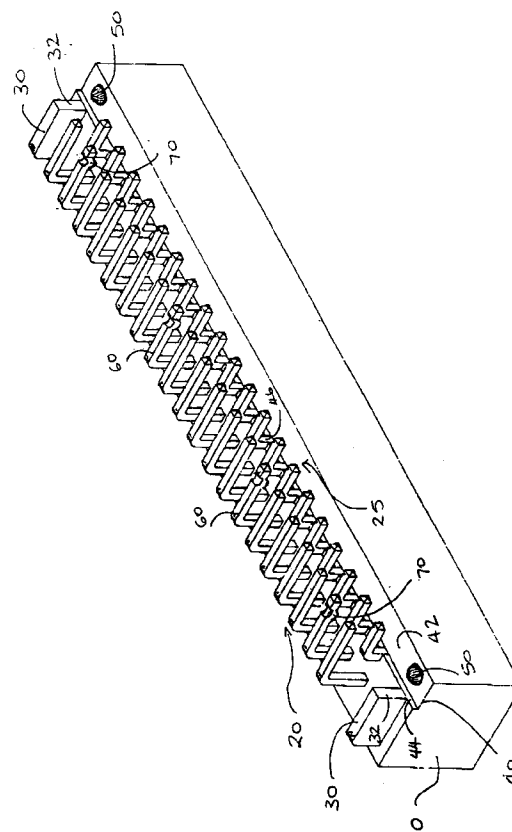


FIGURE 1

FIELD OF THE INVENTION:

This invention relates to an electrical connector. In particular it relates to an electrical connector of the type known as "headers" which are generally used for providing connections from printed circuit boards by insertion into holes in an edge of the printed circuit board and soldering to contact pads around the holes and on the printed circuit board. A complementary connector connected to a cable may then be mated with the printed circuit board header.

BACKGROUND OF THE INVENTION:

Connectors of this type are known which, in use, are inserted into the edge of a printed circuit board so that a lower wall of the connector is flush with the printed circuit board. Problems arise during soldering since the connector must be held in position to prevent connector pins from floating out of their holes in the printed circuit board during the soldering operation. One solution to this problem has been proposed in which a pair of pins are crimped in opposite directions so that opposite normal forces are exerted on their respective holes across the header. Retention of the connector is dependent on the complementary normal forces against two opposing printed circuit board holes.

Unfortunately, this design presents some further problems. Whilst the crimping helps to retain the connector in the printed circuit board, it is still possible for the connector to tilt up during soldering, thus causing misplacement of the connector. When a complementary connector is disconnected, or unmated, a shrouded wall of the printed circuit board mounted connector is easily broken. Furthermore, such connectors are insert moulded and costly.

SUMMARY OF THE INVENTION:

The present invention seeks to overcome the above problems for right-angled connectors. These connectors have pins which are bent through 90° prior to entry into a printed circuit board.

According to the present invention, there is provided an electrical connector comprising a right-angle header having at least one row of pins, stabilizing means positioned at at least one end of the row of pins, and means for retaining a printed circuit board against the stabilizing means when soldering the connector to the printed circuit board.

The stabilizing means may comprise a pair of wings, one at each end of the row of pins. One face of each wing is preferably planar so that the whole of the face will contact that side of the printed circuit board on which the connector is mounted, the other side of the printed circuit board having solder contact pads thereon.

The retaining means may comprise at least one projection which cooperates with the stabilizing means to retain the connector in position on the printed circuit board. Usually the printed circuit board will be sandwiched between the stabilizing means and the projection(s) once the connector is mounted on the board.

Alternatively, the retaining means may comprise an offset portion of one or more pins. Where a plurality of pins include offset portions, the offset portions are offset in the same direction for all the pins, i.e. the offset portions are single-sided. Preferably the offset portions are in a single row of pins. Still more preferably, the offset portions are offset towards an adjacent row of pins.

The retaining means may comprise both projection(s) and offset portion(s). The connector may thus be held in position not only by action of the projection(s) which bias the printed circuit board against the stabilizing means but also by the offset portion(s) which lock the pins within holes in the printed circuit board, through which the pins are inserted.

A preferred embodiment of connector will now be described by way of example only, with reference to the drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS:

Figure 1 is a perspective view of a right-angle connector; and

Figure 2 is a section of the connector of Figure 1, mounted on a printed circuit board.

Figure 1 shows a connector comprising a right angle header 10 from which two rows of pins 20, 25 extend. At each end of the rows, there is a stabilizing wing 30 in the form of a rectangular block.

The header 10 includes a step or stepped portion 40. As seen in Figure 1, the stepped portion 40 includes a horizontal part 42 and a vertical part 44. It will be appreciated that orientations 42 and 44 will vary according to the way in which the connector is viewed. Vertical part 44 is in the same plane as faces 32 of the stabilizing wings 30. The row of pins 25 also extends from this vertical part 44. Since the pins are generally square in cross-section, one face 46 of each pin in row 25 forms part of the vertical part 44, prior to the pins bending through 90°.

Two projections, or bumps, 50 are located on the horizontal part 42 of stepped portion 40, adjacent their respective stabilizing wings 30 and spaced from the vertical part 44 of the stepped portion 40.

Four of the pins 60 in row 20 include offset portions 70. All these offset portions, or kinks, are offset in the same direction, i.e. towards row of pins 25. The kinked pins 60 are spaced more or less equally apart along the row 20 and from the stabilizing wings 30 and bumps 50 so that points of retention of the connector are evenly distributed.

Figure 2 shows the connector prior to soldering, mounted on a printed circuit board 80. The rows of pins are pushed through holes 90 in the printed circuit board 80. The connector is pushed firmly against the printed circuit board so that the printed circuit board is located between, on the one side, stabilizing wings 30, face 46 of pin 65 and the vertical part 44 of step 40 and, on the other side, bumps 50. Further retention of the connector on the printed circuit board is achieved by the action of offset portions 70. These offset portions or kinks are so located that, when the connector is in its correct position, each pin 60 contacts its hole 90 at two points 72, 74 and adjacent pin 65 contacts its hole 90 along the upper face of the pin 65. Opposing normal forces are thus achieved by adjacent pins to retain the connector in position for soldering.

It will be appreciated that the invention has been described above by way of example only and that changes may be made without departing from the scope of the invention.

Claims

1. An electrical connector comprising a right-angle header having at least one row of pins, stabilizing means positioned at at least one end of the row of pins, and means for retaining a printed circuit board against the stabilizing means when soldering the connector to the printed circuit board.
2. An electrical connector according to claim 1, in which the stabilizing means comprises a pair of wings, one at each end of the row of pins.
3. An electrical connector according to claim 2, in which one face of each wing is planar, whereby the whole of that face will contact that side of the printed circuit board on which the electrical connector is mounted.
4. An electrical connector according to any one of claims 1 to 3 in which the retaining means comprises at least one projection which cooperates with the stabilizing means to retain the connector in position on the printed circuit board.
5. An electrical connector according to any one of claims 1 to 4 in which the retaining means comprises an offset portion of one or more pins.
6. An electrical connector according to claim 5 in which a plurality of pins include offset portions, the offset portions being offset in the same direction for all the pins.
7. An electrical connector according to claim 6 in

which the offset portions are in a single row of pins.

8. An electrical connector according to claim 7 in which the offset portions are offset towards an adjacent row of pins.

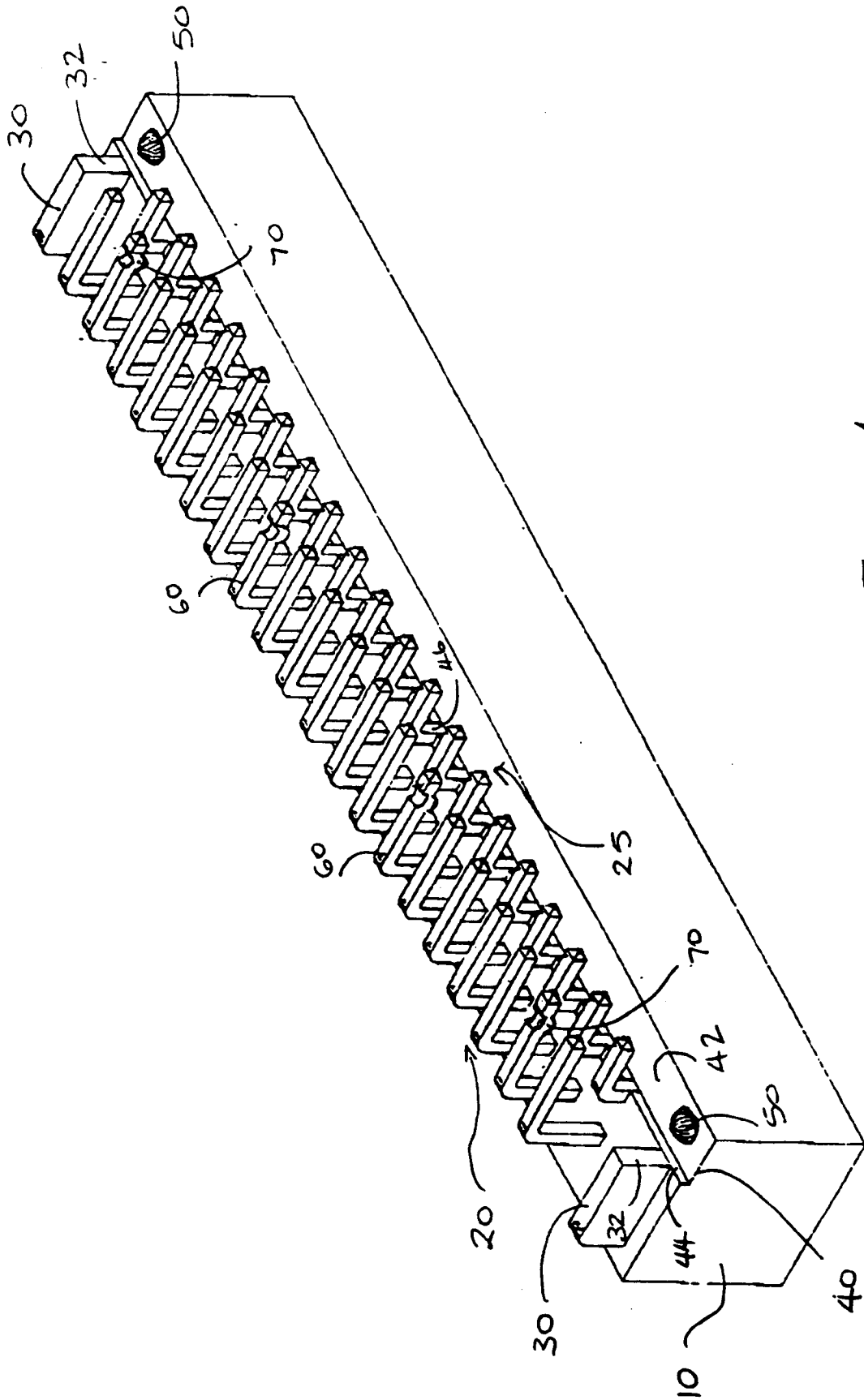


FIGURE 1

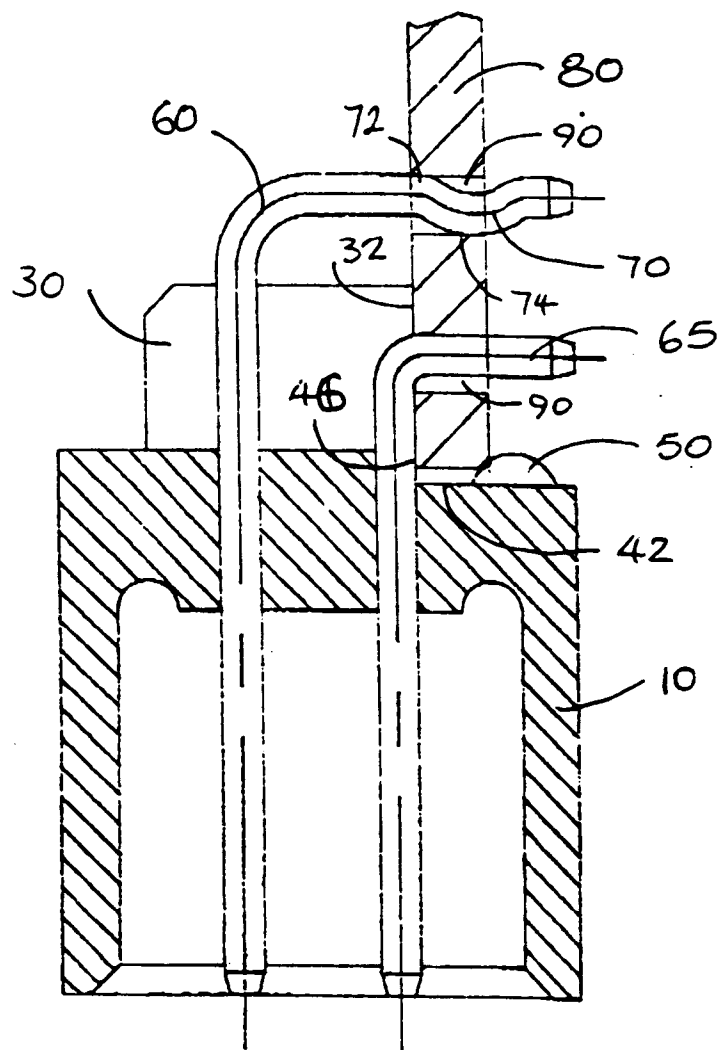


FIGURE 2