

Description

The present invention relates to an electrical connector assembly and more particularly to a low profile electrical connector assembly for mounting on a printed circuit board.

It is often desirable that electrical connector assemblies for mounting on printed circuit boards be of a low profile, that is, extend only a short distance above the surface of the printed circuit board, to permit a plurality of printed circuit boards to be closely spaced together in densely packed electronic equipment.

A known electrical connector assembly of this type comprises a post header including a row of post contact or terminals secured in a first insulating housing, with one end of each post contact or terminal extending out of the housing for receipt in a hole in a printed circuit board and the other end of the post contact or terminal being turned back to define a resilient hooked portion which extends about a support rib which extends from a wall of the first housing in the mating direction, the free end of the hooked portion being spaced from the wall, and a female connector including a row of female contacts (terminals) secured in a second insulating housing, each female contact having a fork contact at one end and a wire-connecting portion at the other end, the fork contact of the female contact resiliently engaging the corresponding hooked portion of the post contact when the female connector and the post header are mated.

The advantage of this known electrical connector is that the resilient hooked portion of the post contact provides relatively small resistance to insertion in the forked female contact, which may, therefore, have relatively short forked arms so that a low profile female connector can be realized.

However, the female contact of the known electrical connector assembly has a contact portion and a wire-connecting portion which are aligned in the longitudinal direction; therefore, the female contact has a long length, thereby preventing the electrical connector assembly from having a low profile.

An object of the present invention is to provide an electrical connector assembly which includes a low profile female electrical contact.

According to one aspect of the present invention an electrical connector assembly for mounting on a printed circuit board, comprising a post header having a row of post contacts or post terminals secured in a first insulating housing with one end of each post contact in the form of a hooked contact portion upstanding from a wall thereof and disposed about a supporting rib and with the other end extending out of the housing for disposition in a hole in a printed circuit board, and a female connector having a corresponding row of female contacts or terminals secured in a second insulating housing for mating with the hooked contact portions of the post contacts or terminals when the female connector and the

post header are mated, characterised in that each female contact or terminal comprises a base plate which extends parallel to the mating direction of the female contact, the base plate having at one of its sides a contact portion which mates in an interference fit with the hooked contact portion and one of the ends of the base plate has a conductor-connecting portion, the contact portion and the conductor-connecting portion extending transversely with respect to the mating direction.

The invention also includes a female electrical terminal or contact for matable engagement with a matable electrical terminal or contact, comprising a conductor-connecting portion and a contact portion as part of a base plate, characterised in that the conductor-connecting portion comprises parallel plates having conductor-terminating slots and extending outwardly from respective ends of the base plate in one direction, the contact portion comprises parallel plates extending outwardly from respective sides of the base plate in a direction opposite to the one direction and includes contact surfaces extending parallel to a mating direction of the female contact.

The invention will now be described, by way of example, with reference to the accompanying partly diagrammatic drawings, in which:—

Figure 1 is a part perspective view of the electrical connector assembly according to the invention.

Figure 2 is a top plan view of the first insulating housing.

Figure 3 is a perspective view of the female contact.

Figure 4 is a part cutaway bottom plan view of the second insulating housing.

Figure 5 is a cross-sectional view taken along the line V—V of Figure 4.

Figure 6 is a part perspective view of Figure 5 seen in the direction of the arrow A.

Figure 7 is a perspective view of the male contact.

Figure 8 is a part cutaway side elevational view of the mated electrical connector assembly.

Figure 9 is a cross-sectional view taken along the line IX—IX of Figure 8.

Figure 10 is a side elevational view of the mated electrical connector assembly.

The electrical connector assembly according to the present invention comprises a post header 10 and a female connector 40 matable to the post header, as shown in Figure 1. Post header 10 comprises a first insulating housing 11 molded into one piece from a suitable dielectric material which has desirable strength and dielectric characteristics and includes a pair of opposed walls 12 and 13. A step 14 is formed along the inside of wall 12 and has thereon a plurality of contact-supporting ribs 15 which extend upwardly from step 14 in a mating direction and which are equidistantly spaced from each other, one side of each rib 15 being integral with side wall 12. As shown in Figure 2, an L-shaped post-inserting aperture 16 and a slot 17 are formed about the base of each supporting rib 15. Also, a

(3)

post contact-supporting recess 18 is formed adjacent to each L-shaped aperture 16 on step 14.

The other side wall 13 has along an inside surface thereof a plurality of equidistantly-spaced projections 19 extending parallel to the mating direction, as shown in Figures 1 and 2. Each projection 19 includes a pair of inclined surfaces 19a which guide female connector 40 (to be described later) during mating engagement with post header 10. Projections 19 also serve to prevent female connector 40 from being mis-mated.

Post header 10 has at both ends resilient arms 21, each arm 21 having a latching projection 21a, and a space 22 formed between each resilient arm 21 and an end wall 20 extending from side wall 12, the space 22 receiving a latching arm 55 (described later).

Post contact 31, shown in Figure 7, is stamped and formed from a metal strip having desirable conductive and spring characteristics which comprises a terminal portion 33 and a short leg 34 extending downward and from which a resilient contact portion 37 extends upward. Resilient contact portion 37 includes a vertical portion 36 and an arcuate portion which forms a contact portion as a resilient hook 35. As can be seen from Figure 7, the free end of resilient hook 35 normally diverges from vertical portion 36. The part of the base 32 having terminal portion 33 is provided, at its upper end, with a lug 38 which is bent outwardly at a right angle and a barb 39 at the lower portion of base 32.

Post contacts 31 are each inserted into first housing 11 with terminal portions 33 and short legs 34 disposed in L-shaped apertures 16, with vertical portions 36 disposed in slots 17 as a force fit. As a result, lugs 38 of post contacts 31 are disposed in respective post contact-supporting recesses 18, and barbs 39 dig into the walls of apertures 16 thereby securing post contacts 31 in housing 11. Resilient hooked contact portions 37 extend about respective supporting ribs 15 as shown in Figures 1 and 8. Short legs 34 protruding from the bottom surface of housing 11 with terminal portions 33 are subsequently bent into an arcuate shape as shown in Figures 9 and 10. These arcuately-shaped legs 34 resiliently engage the inner surface of the holes of a printed circuit board when legs 34 and terminal portions 33 are inserted into the holes of the printed circuit board so that post header 10 is frictionally mounted on the printed circuit board, whereafter legs 34 and terminal portions 33 are flow-soldered to the conductive paths of the boards.

Female connector 40 comprises a second insulating housing 41 molded in one piece from a suitable material having desirable dielectric and strength characteristics and includes an L-shaped base 43 from which extends a vertical wall 42 extending in the mating direction. A plurality of separating walls 44 intersect at right angles to vertical wall 42, as shown in Figures 4 through 6. Each separating wall 44 comprises an inner wall 45 extending inwardly along L-shaped base 43

from vertical wall 42 and an outer wall 46 extending outwardly therefrom. A pair of adjacent inner walls and outer walls form therebetween a first contact cavity 47 and a second contact cavity 48, respectively, which communicate through a rectangular opening 49 extending through vertical wall 42.

Each outer wall 46 has at the lower central portion of its inside surface a surface 50 for contact retention, surface 50 being formed by a channel 51 extending to the end of inner wall 45. A pair of recesses 52 is formed at both sides of outer wall 46. Each pair of recesses 52 is opposite another pair of recesses 52 of adjacent outer walls 46. A pair of outer walls 46 form at one end a U-shaped slot 53 (Figure 1) which receives an insulated electrical conductor 65 and which has a pair of opposite projections 54 extending inward. The pair of projections 54 prevent conductor 65 inserted into the slot 53 from coming out of the slot. Each inner wall 45 has on its surface 45a a step 45b which provides a shoulder 56.

The ends of second insulating housing 40 is provided with flexible latching arms 55 (Figure 1), each arm 55 being inserted into space 22 on post header 10 to engage with latching projection 21a of resilient arm 21, whereby both housings 10 and 40 are latched together when mated as shown in Figure 10.

Female contact 60 accommodated in second housing 41 is made from a metal strip having desirable conductive and spring characteristics by stamping and forming and includes a rectangular base plate 61 which extends parallel to the mating direction. Base plate 61 has a conductor-connecting portion and a contact portion. The conductor-connecting portion comprises a pair of parallel plates 62 which have conductor-receiving slots 62a, 62b, respectively, and which extend at right angles from an upper end and a bottom end perpendicular to the mating direction of plate 61. The contact portion comprises a pair of parallel arms 63 which extend at right angles from the sides of base plate 61 and extend in a direction opposite that of the conductor-connecting portion. Thus, contact arms 63 have contact surfaces that extend parallel to the mating direction when female contact 60 mates with post contact 31. Each contact arm 63 is provided at its inner central portion with a retention lance 64 extending outwardly. The minimum width (W) of the pair of contact arms 63 is slightly larger than the sum of the thickness of the supporting rib 15 plus twice the stock thickness of the hooked contact portion 37. Thus, the height of female contact or terminal 60 is confined to the length of plate 61.

In mounting each contact 60 in housing 41, contact 60 is inserted into housing 41 such that the free ends of contact arms 63 pass through respective apertures 49 of housing 41 and the edges of conductor-connecting arms 62 are disposed in recesses 52 of outer walls 46 as shown in Figure 8. As a result, contact arms 63 extend into the first contact cavity 47 so that one edge portion of each contact arm 63 engages with a respective

shoulder 56 and each retention lance 64 thereof resiliently engages with a respective surface 50 of channels 51 so that contact arms 63 and conductor-connecting arms 62 are retained in the first contact cavity 47 and in the second contact cavity 48, respectively. Female connector 60 is terminated to an insulated electrical conductor 65 via conductor-receiving slots 62a, 62b in a conventional manner.

On mating female connector 40 with post header 10, resilient hooked contact portion 37 of each post contact 31 is received as an interference fit within the pair of contact arms 63 of female contact 60. The maximum resilient deflection occurs at the free end of the hooked contact portion 37 which provides a low resistance to insertion and a reliable electrical and mechanical connection. Also, latching arm 55 of female connector 40 engages resilient arm 21 of post header 10 so that female connector 40 and post header 10 are latchably mated together.

According to the present invention, since the female contact is constructed such that the conductor-connecting portion and the post-contacting portion are substantially coplanar transversely with respect to the mating direction, there are advantages in that the female contact height can be shorter; therefore, a low profile female connector is realized. Thus, the electrical connector assembly can be accommodated in small spaces. Also, the female contact is simple in construction and can be made economically without wasting material so that the manufacturing cost can be substantially reduced. Moreover, contact arms 63 engage hooked contact portion 37 over a large contact area and the resilient forces generated between hooked contact portion 37 and contact arms 63 when in an engaged position are substantial. The construction of hooked contact portion 37 enables contact arms 63 to initially engage contact portion 37 with a low insertion force which gradually increases until complete contact engagement takes place between hooked contact portion 37 and contact arms 63. At this point, maximum contact pressure takes place resulting in an excellent mechanical and electrical connection. Also, as contact arms 63 and hooked contact portion 37 are moving relative to one another, wiping action is taking place therebetween which cleans the contact surfaces therebetween.

Claims

1. An electrical connector assembly for mounting on a printed circuit board, comprising a post header (10) having a row of post contacts or post terminals (31) secured in a first insulating housing (11) with one end of each post contact in the form of a hooked contact portion (37) upstanding from a wall thereof and disposed about a supporting rib (15) and with the other end (33) extending out of the housing (11) for disposition in a hole in a printed circuit board, and a female connector (40) having a corresponding row of female contacts or terminals (60) secured in a second insulat-

ing housing (41) for mating with the hooked contact portions (37) of the post contacts or terminals (31) when the female connector (40) and the post header (10) are mated, characterized in that each female contact or terminal (60) comprises a base plate (61) which extends parallel to the mating direction of the female contact (60), the base plate having at one of its sides a contact portion (63, 63) which mates in an interference fit with the hooked contact portion (37) and one of the ends of the base plate (61) has a conductor-connecting portion (62, 62), the contact portion (63, 63) and the conductor-connecting portion (62, 62), extending transversely with respect to the mating direction.

2. An electrical connector assembly as claimed in claim 1, characterized in that the conductor-connecting portion (62, 62) comprises parallel plates (62, 62) having conductor-receiving slots (62a, 62b) therein, the parallel plates (62, 62) extend outwardly from respective ends of the base plate (61) and the contact portion (63, 63) comprises parallel contact arms (63, 63) that extend outwardly from respective sides of the base plate (61) and having contact surfaces extending parallel with respect to the mating direction.

3. An electrical connector assembly as claimed in claim 1 or claim 2, characterized in that the height of the female contact (60) is confined to the height of the base plate (61).

4. An electrical connector assembly as claimed in any preceding claim, characterized in that the housings (11, 41) have latching members (21, 55) latching the housings (11, 41) together when mated.

5. A female electrical terminal or contact for matable engagement with a matable electrical terminal or contact, comprising a conductor-connecting portion (62, 62) and a contact portion (63, 63) as part of a base plate (61), characterized in that the conductor-connecting portion (62, 62) comprises parallel plates (62, 62) having conductor-terminating slots (62a, 62b) and extending outwardly from respective ends of the base plate (61) in one direction, the contact portion (63, 63) comprises parallel plates (63, 63) extending outwardly from respective sides of the base plate (61) in a direction opposite to the one direction and includes contact surfaces extending parallel to a mating direction of the female contact (60).

Patentansprüche

1. Elektrische Verbindieranordnung zur Montage auf einer gedruckten Schaltungsplatte, mit einem Stiftsockel (10), der eine in einem ersten Isoliergehäuse (11) befestigte Reihe von Stiftkontakten oder Stiftanschlüssen (31) aufweist, wobei ein Ende jedes Stiftkontakts in Form eines hakenförmigen Kontaktbereichs (37) vorliegt, der von einer Wand des Gehäuses (11) hochsteht und um eine Trägerrippe (15) herum angeordnet ist, und wobei sich das andere Ende (33) zur Anordnung in einem Loch in einer gedruckten Schaltungs-

shoulder 56 and each retention lance 64 thereof resiliently engages with a respective surface 50 of channels 51 so that contact arms 63 and conductor-connecting arms 62 are retained in the first contact cavity 47 and in the second contact cavity 48, respectively. Female connector 60 is terminated to an insulated electrical conductor 65 via conductor-receiving slots 62a, 62b in a conventional manner.

On mating female connector 40 with post header 10, resilient hooked contact portion 37 of each post contact 31 is received as an interference fit within the pair of contact arms 63 of female contact 60. The maximum resilient deflection occurs at the free end of the hooked contact portion 37 which provides a low resistance to insertion and a reliable electrical and mechanical connection. Also, latching arm 55 of female connector 40 engages resilient arm 21 of post header 10 so that female connector 40 and post header 10 are latchably mated together.

According to the present invention, since the female contact is constructed such that the conductor-connecting portion and the post-contacting portion are substantially coplanar transversely with respect to the mating direction, there are advantages in that the female contact height can be shorter; therefore, a low profile female connector is realized. Thus, the electrical connector assembly can be accommodated in small spaces. Also, the female contact is simple in construction and can be made economically without wasting material so that the manufacturing cost can be substantially reduced. Moreover, contact arms 63 engage hooked contact portion 37 over a large contact area and the resilient forces generated between hooked contact portion 37 and contact arms 63 when in an engaged position are substantial. The construction of hooked contact portion 37 enables contact arms 63 to initially engage contact portion 37 with a low insertion force which gradually increases until complete contact engagement takes place between hooked contact portion 37 and contact arms 63. At this point, maximum contact pressure takes place resulting in an excellent mechanical and electrical connection. Also, as contact arms 63 and hooked contact portion 37 are moving relative to one another, wiping action is taking place therebetween which cleans the contact surfaces therebetween.

Claims

1. An electrical connector assembly for mounting on a printed circuit board, comprising a post header (10) having a row of post contacts or post terminals (31) secured in a first insulating housing (11) with one end of each post contact in the form of a hooked contact portion (37) upstanding from a wall thereof and disposed about a supporting rib (15) and with the other end (33) extending out of the housing (11) for disposition in a hole in a printed circuit board, and a female connector (40) having a corresponding row of female contacts or terminals (60) secured in a second insulat-

ing housing (41) for mating with the hooked contact portions (37) of the post contacts or terminals (31) when the female connector (40) and the post header (10) are mated, characterized in that each female contact or terminal (60) comprises a base plate (61) which extends parallel to the mating direction of the female contact (60), the base plate having at one of its sides a contact portion (63, 63) which mates in an interference fit with the hooked contact portion (37) and one of the ends of the base plate (61) has a conductor-connecting portion (62, 62), the contact portion (63, 63) and the conductor-connecting portion (62, 62), extending transversely with respect to the mating direction.

2. An electrical connector assembly as claimed in claim 1, characterized in that the conductor-connecting portion (62, 62) comprises parallel plates (62, 62) having conductor-receiving slots (62a, 62b) therein, the parallel plates (62, 62) extend outwardly from respective ends of the base plate (61) and the contact portion (63, 63) comprises parallel contact arms (63, 63) that extend outwardly from respective sides of the base plate (61) and having contact surfaces extending parallel with respect to the mating direction.

3. An electrical connector assembly as claimed in claim 1 or claim 2, characterized in that the height of the female contact (60) is confined to the height of the base plate (61).

4. An electrical connector assembly as claimed in any preceding claim, characterized in that the housings (11, 41) have latching members (21, 55) latching the housings (11, 41) together when mated.

5. A female electrical terminal or contact for matable engagement with a matable electrical terminal or contact, comprising a conductor-connecting portion (62, 62) and a contact portion (63, 63) as part of a base plate (61), characterized in that the conductor-connecting portion (62, 62) comprises parallel plates (62, 62) having conductor-terminating slots (62a, 62b) and extending outwardly from respective ends of the base plate (61) in one direction, the contact portion (63, 63) comprises parallel plates (63, 63) extending outwardly from respective sides of the base plate (61) in a direction opposite to the one direction and includes contact surfaces extending parallel to a mating direction of the female contact (60).

Patentansprüche

1. Elektrische Verbindieranordnung zur Montage auf einer gedruckten Schaltungsplatte, mit einem Stiftsockel (10), der eine in einem ersten Isoliergehäuse (11) befestigte Reihe von Stiftkontakten oder Stiftanschlüssen (31) aufweist, wobei ein Ende jedes Stiftkontakts in Form eines hakenförmigen Kontaktbereichs (37) vorliegt, der von einer Wand des Gehäuses (11) hochsteht und um eine Tragerippe (15) herum angeordnet ist, und wobei sich das andere Ende (33) zur Anordnung in einem Loch in einer gedruckten Schaltungs-



platte aus dem Gehäuse (11) herausgestreckt, und mit einem Aufnahmeverbinder (40), der eine in einem zweiten Isoliergehäuse (41) befestigte entsprechende Reihe von Aufnahmekontakten oder Aufnahmeanschlüssen (60) zur Verbindung mit den hakenförmigen Kontaktbereichen (37) der Stiftkontakte oder Stiftanschlüsse (31), wenn der Aufnahmeverbinder (40) und der Stiftsockel (10) miteinander verbunden sind, aufweist, dadurch gekennzeichnet, daß jeder Aufnahmekontakt oder Aufnahmeanschluß (60) eine Basisplatte (61) aufweist, die sich parallel zur Verbindungsrichtung des Aufnahmekontakts (60) erstreckt, daß die Basisplatte an einer ihrer Seiten einen Kontaktbereich (63, 63) aufweist, der im Klemmsitz mit dem hakenförmigen Kontaktbereich (37) verbindbar ist, und daß eines der Enden der Basisplatte (61) einen Leiteranschlußbereich (62, 62) aufweist, wobei sich der Kontaktbereich (63, 63) und der Leiteranschlußbereich (62, 62) quer zur Verbindungsrichtung erstrecken.

2. Elektrische Verbindieranordnung nach Anspruch 1, dadurch gekennzeichnet, daß der Leiteranschlußbereich (62, 62) parallele Platten (62, 62) mit darin ausgebildeten Leiteraufnahmeschlitzten (62a, 62b) umfaßt, daß sich die parallelen Platten (62, 62) von den jeweiligen Enden der Basisplatte (61) nach außen erstrecken, und daß der Kontaktbereich (63, 63) parallele Kontaktarme (63, 63) umfaßt, die sich von den jeweiligen Seiten der Basisplatte (61) nach außen erstrecken und Kontaktflächen aufweisen, die sich parallel zur Verbindungsrichtung erstrecken.

3. Elektrische Verbindieranordnung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Höhe des Aufnahmekontakts (60) auf die Höhe der Basisplatte (61) begrenzt ist.

4. Elektrische Verbindieranordnung nach einem der vorausgehenden Ansprüche, dadurch gekennzeichnet, daß die Gehäuse (11, 41) Verriegelungsglieder (21, 55) aufweisen, die die Gehäuse (11, 41) im miteinander verbundenen Zustand aneinander verriegeln.

5. Elektrischer Aufnahmeanschluß oder Aufnahmekontakt zum verbindenden Eingriff mit einem damit verbindbaren elektrischen Anschluß oder Kontakt, mit einem Leiteranschlußbereich (62, 62) und einem Kontaktbereich (63, 63) als Bestandteil einer Basisplatte (61), dadurch gekennzeichnet, daß der Leiteranschlußbereich (62, 62) parallele Platten (62, 62) umfaßt, die Leiteranschließschlitze (62a, 62b) aufweisen und sich von den jeweiligen Enden der Basisplatte (61) in einer Richtung nach außen erstrecken, daß der Kontaktbereich (63, 63) parallele Platten (63, 63) umfaßt, die sich von den jeweiligen Seiten der Basisplatte (61) in einer der genannten Richtungen entgegengesetzten Richtung nach außen erstrecken, und daß der Kontaktbereich (63, 63) Kontaktflächen aufweist, die sich parallel zu einer Verbindungsrichtung des Aufnahmekontakts (60) erstrecken.

Revendications

1. Ensemble à connecteur électrique destiné à être monté sur une plaquette à circuit imprimé, comprenant un socle à broches (10) comportant une rangée de broches de contact ou de bornes à broches (31) fixées dans un premier boîtier isolant (11), une extrémité de chaque broche de contact ayant la forme d'une partie de contact en crochet (37) s'élevant d'une paroi du boîtier et disposée autour d'une nervure (15) de support, et l'autre extrémité (33) partant vers l'extérieur du boîtier (11) pour être disposée dans un trou d'une plaquette à circuit imprimé, en un connecteur femelle (40) possédant une rangée correspondante de contacts ou bornes femelles (60) fixés dans un second boîtier isolant (41) afin de s'accoupler avec les parties de contact en crochet (37) des broches ou bornes de contact (31) lorsque le connecteur femelle (40) et le socle à broches (10) sont accouplés, caractérisé en ce que chaque contact ou borne femelle (60) comprend une plaque de base (61) qui s'étend parallèlement à la direction d'accouplement du contact femelle (60), la plaque de base comportant, à l'un de ses côtés, une partie de contact (63, 63) qui s'accouple, par ajustement serré, avec la partie de contact en crochet (37) et l'une des extrémités de la plaque de base (61) comporte une partie (62, 62) de connexion de conducteur, la partie de contact (63, 63) et la partie (62, 62) de connexion de conducteur s'étendant transversalement par rapport à la direction d'accouplement.

2. Ensemble à connecteur électrique selon la revendication 1, caractérisé en ce que la partie (62, 62) de connexion de conducteur comprend des plaques parallèles (62, 62) présentant des encoches (62a, 62b) de réception de conducteur, les plaques parallèles (62, 62) s'étendent vers l'extérieur à partir d'extrémités respectives de la plaque de base (61) et la partie de contact (63, 63) comprend des bras de contact parallèles (63, 63) qui partent vers l'extérieur de côtés respectifs de la plaque de base (61) et présentant des surfaces de contact s'étendant parallèlement à la direction d'accouplement.

3. Ensemble à connecteur électrique selon la revendication 1 ou la revendication 2, caractérisé en ce que la hauteur de contact femelle (60) est limitée à la hauteur de la plaque de base (61).

4. Ensemble à connecteur électrique selon l'une quelconques des revendications précédentes, caractérisé en ce que les boîtiers (11, 41) comportent des éléments de verrouillage (21, 55) verrouillant les boîtiers (11, 41) l'un à l'autre lorsqu'ils sont accouplés.

5. Borne ou contact électrique femelle destiné à s'enclencher de façon complémentaire avec une borne ou un contact électrique complémentaire, comprenant une partie (62, 62) de connexion d'un conducteur et une partie de contact (63, 63) faisant partie d'une plaque de base (61), caractérisé en ce que la partie (62, 62) de connexion d'un conducteur comprend des plaques parallèles (62, 62) présentant des encoches (62a, 62b) de termi-



naison d'un conducteur et s'étendant vers l'extérieur à partir d'extrémité respectives de la plaque de base (61) dans une première direction, la partie de contact (63, 63) comprend des plaques parallèles (63, 63) s'étendant vers l'extérieure à partir

de côtés respectifs de la plaque de base (61) dans une direction opposée à la première direction et présente des surfaces de contact s'étendant parallèlement à une direction d'accouplement du contact femelle (60).

23

10

15

20



25

30

35

40

45

50

55

60

65

6