

Description

The invention relates to a connector as indicated in the heading of the main claim. A connector of this type is known from French patent 2041372.

The connector described in said French patent is intended to connect a flat conductor onto a printed circuit board. The connector comprises a two-piece insulation housing. The bottom piece includes a chamber for receiving a flat contact spring having at one end an anchorable part with at least one tooth for piercing the insulation material of the conductor and having at the other end a spring part with two legs in U-shape. The operation is such that the printed circuit board is presented into the U-shape of the contact spring, subsequently the flat conductor is introduced from the other side and placed in said chamber, and finally the upper housing piece is placed upon the assembly and pressed on it. The flat cable thereby is secured and the one tooth of the flat contact spring is pierced through the flat cable into a corresponding recess in the upper piece. After this connection between the contact spring and flat cable, the two pieces of the insulation housing are fixed to each other by separate screws.

The above construction is rather clumsy and the connecting of the printed circuit board into the contact spring, the subsequent inserting and securing of the flat cable and finally the pressing upon of the upper piece is rather timeconsuming and cumbersome. The fixation with a member of separate screws does not guarantee an even and correct press are onto the assembly of contact spring and flat cable. It is even possible, that in the middle between two adjacent screws the pressure is not sufficient. It is not easy to use above connector in practice when a large number of separate cables have to be connected to a corresponding number of contact strips on a printed circuit board.

The object of the invention is to provide a very small slim connector which easily electrically makes a connection between a number of separate conductors and a corresponding number of contact strips on one side of a printed circuit board or with at least one contact pin of a pinholder. The object of the invention is also to provide a very small slim connector which easily electrically makes a connection between the contact pins of a pinholder and the corresponding number of contact strips of a printed circuit board. A further object of the invention is to construct the insulation housing of said connector in one piece and to construct the contact springs in a manner such that they can be pressed easily in a single process out of a flat spring without supplementary bending operations.

According to the invention these objects are achieved with the measures as indicated in the characterizing clause of the main claim.

The printed circuit board to be contacted is provided near its edge with contact strips on one or on both sides. The connector according to the invention with contact springs constructed as described above will contact (according to the plugging-on requirements) with the contact strips on one or other side of the printed circuit board.

An advantageous embodiment of the invention is characterized in that each groove at the one wide side of the housing has a rib near the plug-on end and a rib near the conductor insertion end which ribs correspond respectively with anchoring notches formed in each contact spring for securing said contact spring within the groove.

Furthermore, transverse to the longitudinal direction at the one wide side in the conductor section, a comb-like part or a row of separate comb parts of the insulation housing is constructed with teeth separated at the desired conductor pitch spacing and directed towards the conductors. The comb-like part or separate comb parts are slidable inwards for maintaining the conductors spaced and for clamping them. These comb-like parts are injection-moulded during the manufacture as a component of the insulation housing. When the conductors are inserted, exerting pressure force on the comb-like part or each separate comb part of the row, will cause it to break free and be pressed inwards until the teeth are situated between the conductors.

From CH-A-160555 a connector is known for receiving a two wire cable in which each wire is to be connected to a contact spring to be plugged into a mains socket. At the conductor insertion end the connector, consisting of two pieces, has a half channel in each piece provided with small ribs to be pressed onto the insulation of the cable. Apart from the number of ribs in each half channel, said half channel comprises a toothlike member on either side of which the two wires are to be positioned as commonly used for connecting electrical appliances in houses to the electrical sockets.

From US-A-4160575 a two-piece connector is known for terminating an electrical cord of a modular telephone system. The connector has an auxiliary piece with tulip-shaped legs which has to be pressed from the outside to a corresponding opening in the one wide side of the connector. This is done in order to secure and captivate the jacket of said cord. The auxiliary piece is impressed transverse to the longitudinal direction of the cable.

The invention may be better understood by reference to the following detailed description when considered in conjunction with the accompanying drawings, in which:

Figs. 1 to 4 are perspective views of a connector according to the invention, partially cut-away in the longitudinal direction, in various stages of assembly of the insulation housing and the associated conductors and contact springs;

Fig. 5 is a perspective view of the other side of an assembled connector according to the invention;

Fig. 6 is a perspective illustration of the manner in which three connectors according to the invention provided with a polarization or positioning clip can be connected to a printed circuit board; and

Figs. 7a to 7c are perspective views of a connector with an auxiliary piece for contacting a plurality of contact pins of a pinholder.

Detailed description of the invention

As shown in figs. 1-5, the connector includes a generally block-shaped insulation housing 1 having a wide or bottom side 2, another wide or top side 3, a cable conductor insertion end 4, and plug-on end 5. The housing also includes a number of partitions 9 extending parallel to the housing's longitudinal direction. The partitions 9 divide the connector housing into a number of narrow chambers with conductor receiving channels at one end of the housing and contact spring grooves 14 at the other end.

The conductor insertion end 4 has a number of openings 6 through which conductors 11 of a multiconductor cable can be inserted into conductor receiving channels 7 until their ends abut against wall 8. The wall 8 essentially divides the conductor housing into two sections. The first section, the conductor section, includes the conductor insertion end 4 and the second section, the plug-on section, includes the plug-on end 5. The latter has a U-shaped jaw projecting from end 5 of the connector. The openings 6 may be rectangular or any other suitable shape. Fig. 1 shows the connector partially cut away prior to insertion of conductors 11 and/or contact springs 10.

The connector of Fig. 1 also includes a comb-like part 12 which is formed as part of the injection-molded insulation housing 1. As can be more clearly seen in Figs. 3 and 4, the comb-like part 12 is provided with separate conical teeth 13, separated at the pitch spacing of the conductors. The function of these teeth will be explained below.

Fig. 3 shows the comb-like part 12 comprising a single block with teeth 13 projecting toward the interior of the insulation housing 1. On the side facing the connector (as indicated in Fig. 1), the comb-like part 12 is joined via its edges to the one on bottom side 2 of the insulation housing 1.

Fig. 2a shows the comb-like part 12 as separate comb elements. Each comb element is formed from a cylinder 26, a small plate 27 and a tooth 13. The comb elements are each secured via the small plate 27 to the one side 2 of the insulation housing 1. In Fig. 2b, it can also be seen that between the outside wall of the conductor insertion end 4 and an inner transverse wall 19, there are disposed small partitions 28 for strengthening the housing construction. These small partitions 28 may extend from the one side 2 up to a plane extending just below the insertion opening 6.

Figs. 2b and 3 illustrate, furthermore, the manner in which a contact spring 10 is partially inserted or prepositioned in its respective groove 14. The contact spring 10 may be slid into a receiving groove 14 from the one side 2 starting from the U-shaped, plug-on end 5. Each contact spring 10 is constructed in its entirety from a flat spring with all parts disposed in one plane, which requires very little room and can be inserted in the plane of a receiving groove 14 and corresponding narrow chamber. Each contact spring 10 has a long, continuous leg which, together with another spring leg 16 forms a U-shaped spring part at the plug-on end 5. Said spring leg 16 may be provided with a contact curvature. The contact spring 10 has at least one, but generally two, teeth 15 at the other end of the continuous leg in the region of the conductor section. The function of these teeth will be explained below. Furthermore, the continuous leg has a recess 10.3 in the region of the plug-on section. Said recess engages a projection in the other side 3 of the housing when the contact spring 10 is inserted.

Fig. 3 illustrates the manner in which the conductors 11 are inserted through the openings 6 and disposed in one plane in the conductor receiving channels until their ends abut against the wall 8. Thereafter, the comb-like part 12, which at this point is still projecting outside the insulation housing 1 in Fig. 1, can be broken free from the insulation housing by pressure force by the user and slid inward into the space available therefor over the width of the insulation housing. In the embodiment of Figs. 2a and 2b each comb element is pressed free separately by the user and slid inward along and between the small partitions 28 between the walls 4 and 19. The conical teeth 13 are each separated at the required pitch spacing and have such a conical shape so that when either the comb-like part 12 of Fig. 3 or the separate comb elements of Fig. 2b are pressed inward, the teeth 13 end up between and separate the conductors from each other while simultaneously clamping them in the inserted state, as shown in Fig. 3. As a result, both good positioning of the separate insulated conductors and a pull or

strain relief are obtained. The length of the teeth 13 and their conical form are chosen in a manner such that account is taken of the penetration of the insulation. The clamped position of the comb-like part 12 in the space in the insulation housing cut out for that purpose prevents the part 12 from coming out again. Furthermore, as can also be seen in Fig. 3, the partially inserted and prepositioned contact spring 10, with their teeth 15 now end up directly opposite each insulated conductor 11.

The flat contact spring 10 can now, as shown in Fig. 4, be pressed inward so that the teeth 15 penetrate through the insulation and pierce into or through each conductor, thereby making electrical contact. Fig. 4 shows the points of the teeth 15 penetrated into the conductor and through its insulation. The contact spring 10 also has a notch 10.1 in the long, continuous leg which facilitates location in the plug-on end of the connector. In conjunction with a corresponding rib 18 formed in the insulation housing, the notch 10.1 permits the contact to pivot during sliding in. There is another notch 10.2. This notch interacts with a corresponding rib 17 in the insulation housing. When the teeth 15 are pressed into the conductor in the last phase of the location, the notch 10.2 will at the same time end up anchored on the corresponding rib 17. As a result, the contact spring 10 is reliably clamped, and an electrical through-contact to the conductor 11 is obtained.

Fig. 5 is a perspective view opposite to that of Fig. 1 wherein the one side 2 and the plug-on end 5 of the connector are better seen. All the receiving grooves 14 are provided with a separate contact spring 10. As shown in Fig. 5, the spring leg 16 of a contact spring is still visible on the right-hand side in its corresponding groove 14. This leg 16 makes contact with a corresponding contact strip on the edge of a printed circuit board.

Finally, Fig. 6 illustrates the manner in which both a round and a flat cable, each consisting of a number of separate conductors, can be respectively connected via the connector of the present invention to printed circuit boards 20 and 21. A number of contact strips 22 are applied in parallel by conventional techniques to either one or both sides of the printed circuit boards. The connectors are all shown with the other side 3 facing upwards. The comb-like section 12 has in this case been omitted in the drawing for the sake of simplicity. In this position of the connectors, the spring legs 16 of the contact springs 10 make contact with the respective contact strips 22 on the printed circuit boards. These contact strips 22 merge into the printed circuit.

There can also be incorporated in one of the receiving grooves 14 of the connector an insulation

plate, referred to as a polarization of positioning clip 23, which interacts with a corresponding groove 24 in the edge of the printed circuit board. Such a polarization or positioning clip prevents the connector from being plugged onto the printed circuit board or card incorrectly whereby contact is not achieved between the correct contact strips and the corresponding legs 16 of the contact springs. It should be understood that the clip and corresponding groove must not be disposed in the center of the corresponding contact plane but in an asymmetric manner.

Figures 7a through 7e show perspective views of an auxiliary insulation piece in two embodiments for receiving two or more contact pins of a pinholder. Said pins have a square, round or flat cross-section as required. Said auxiliary piece is inserted in said connector, by which such an edge card connector in a simple manner is converted in a plug-on pinconnector. These pins generally are fixed in a pinholder. In order to overcome the small pitch spacing between these pins at one side of the pinholder use could be made of a staggered implementation (figure 7a) for a further connection to a printed circuit board or the like.

Figure 7a gives a perspective view how a connector 1 can be connected via an auxiliary piece 30 of insulating material to a plurality of pins 36 having a square cross-section and fixed in a pinholder 38. The auxiliary piece 30 comprises a tulip-shaped insertion end 39 which corresponds with the tulip-shaped end 5 of the plug-on section of the connector 1. Said insertion end 39 includes openings 32 for the pins 36 which have to be inserted and which have to make contact with the spring legs 16 of the contact springs 10. Figure 7d gives a perspective view of another embodiment of such an auxiliary piece 31. In this case the connector 1 has to be connected to two flat pins 37 which via the auxiliary piece 31 engage the spring legs 16 of two contact springs 10. The auxiliary pieces 30, 31 on the one wide side are provided with guiding cams 35 which, upon insertion of said auxiliary piece into the plug-on section of the connector 1, glide in the corresponding grooves 14. Figure 7b gives a cross-section view of a connector together with inserted auxiliary piece 30. The said guiding cam 35 is locked behind a projection of the housing which is intended to engage the notch 10.3 of the spring 10.

Figures 7c and 7e respectively give a view of the other wide side of the auxiliary pieces 30, 31. Figure 7c shows the open guiding channels 33 which serve to guide the pins which have to be inserted. Figure 7e shows the slots 34 which serve to guide the projection 38 of the auxiliary piece 31 on the two corresponding walls between the grooves 14 in the connector 1. The flat pins 37

glide at either side of this projection over the spring legs 16 of two contact springs 10.

Claims

1. A connector for connecting a multiconductor cable having a plurality of conductors (11), each surrounded by insulation material, with a printed circuit board (20; 21) or with contact pins (36) of a pinholder (38), comprising a block-shaped insulation housing (1) consisting of a conductor section having a plurality of conductor receiving channels (7) for inserting and receiving the conductors (11) of the cable at one end (4), and a plug-on section (5) terminating in the form of a U-shape at the other end (5) of the housing (1) capable of being connected to the printed circuit board (20; 21) or the pinholder (38), a plurality of grooves (14) aligned longitudinally along said housing (1) for receiving long contact springs (10), each said contact spring (10) having in the conductor section an anchorable part (15) with at least one tooth (15) capable of piercing through the insulation material of and making electrical contact with the corresponding conductor (11) and having in the plug-on section a spring part, each contact spring (10) in its entirety being a flat spring, the spring part of which in the plug-on section has a U-shape with one leg and another leg (16), and the anchorable part (15) of which spring (10) in the conductor section being in line with said one leg and embodying in the same plane said at least one tooth (15), characterized in that the block-shaped housing (1) is in a single piece, and is divided in the longitudinal direction in narrow chambers by partitions (9) running from one wide side (2) to the other wide side (3) of the housing (1), and that the one leg of each contact spring is designed for contactless support in the plug-on section and the other leg (16) is designed for electrically contacting the corresponding contact strip on the printed circuit board or the corresponding contact pin of the pinholder.
2. A connector according to claim 1, wherein each groove (14), at the one wide side (2) of the housing (1), has a rib (18) near the plug-on end (5) and a rib (17) near the conductor insertion end (4) which correspond respectively with anchoring notches (10.1; 10.2) formed in each contact spring (10) for securing said contact spring within the groove (14).
3. A connector according to claim 1, wherein the other leg (16) of each contact spring (10) has

at its free end a contact curvature.

4. A connector according to claim 1, wherein the insulating housing, at the one wide side (2), further includes a comb-like part (12) formed at said one end (4) of the conductor section, said part having comb-like teeth (13) separated at the corresponding conductor pitch spacing and directed inward to the conductor receiving channels (7), said comb-like part being slidable inward for maintaining the conductors received within the connector properly spaced and clamped.
5. A connector according to claim 4, wherein the comb-like part (12) comprises a number of separate comb elements, each including a cylindrical part (26), a small plate (27) and a comb-like tooth (13).
6. A connector according to claim 4, wherein the comb-like part (12) is formed as part of the insulation housing (1), whereby after the conductors (11) are inserted into the housing, the comb-like part can be broken free by exerting pressure and pressed inwardly until the teeth end up between the conductors.
7. A connector according to claim 1 further comprising a flat auxiliary piece (30; 31) of insulation material to be inserted in the U-shaped plug-on section (5), one wide side of said auxiliary piece including a plurality of guiding cams (35) which cooperate with the grooves (14) at the one wide side (2) in the plug-on section, and the other wide side of which auxiliary piece including two or more open guiding channels, which correspond with the grooves at the other wide side (3) in the plug-on section, for guiding contact pins (36) of a pinholder (38) to electrically contact the contact springs.
8. A connector according to claim 7, wherein the U-shaped plug-on section at the open end (5) and the flat auxiliary piece at the pin inserting end (39) correspondingly widen into a tulip-shape and wherein the auxiliary piece at the pin inserting end (39) includes a row of openings (32) which at the other side of the tulip-shape merge into open guiding channels (33).

Patentansprüche

1. Verbinder zum Verbinden eines Mehrleiterkabels, welches eine Mehrzahl von Leitern (11) hat, die jeweils von einem Isoliermaterial um-



glide at either side of this projection over the spring legs 16 of two contact springs 10.

Claims

1. A connector for connecting a multiconductor cable having a plurality of conductors (11), each surrounded by insulation material, with a printed circuit board (20; 21) or with contact pins (36) of a pinholder (38), comprising a block-shaped insulation housing (1) consisting of a conductor section having a plurality of conductor receiving channels (7) for inserting and receiving the conductors (11) of the cable at one end (4), and a plug-on section (5) terminating in the form of a U-shape at the other end (5) of the housing (1) capable of being connected to the printed circuit board (20; 21) or the pinholder (38), a plurality of grooves (14) aligned longitudinally along said housing (1) for receiving long contact springs (10), each said contact spring (10) having in the conductor section an anchorable part (15) with at least one tooth (15) capable of piercing through the insulation material of and making electrical contact with the corresponding conductor (11) and having in the plug-on section a spring part, each contact spring (10) in its entirety being a flat spring, the spring part of which in the plug-on section has a U-shape with one leg and another leg (16), and the anchorable part (15) of which spring (10) in the conductor section being in line with said one leg and embodying in the same plane said at least one tooth (15), characterized in that the block-shaped housing (1) is in a single piece, and is divided in the longitudinal direction in narrow chambers by partitions (9) running from one wide side (2) to the other wide side (3) of the housing (1), and that the one leg of each contact spring is designed for contactless support in the plug-on section and the other leg (16) is designed for electrically contacting the corresponding contact strip on the printed circuit board or the corresponding contact pin of the pinholder.
2. A connector according to claim 1, wherein each groove (14), at the one wide side (2) of the housing (1), has a rib (18) near the plug-on end (5) and a rib (17) near the conductor insertion end (4) which correspond respectively with anchoring notches (10.1; 10.2) formed in each contact spring (10) for securing said contact spring within the groove (14).
3. A connector according to claim 1, wherein the other leg (16) of each contact spring (10) has

at its free end a contact curvature.

4. A connector according to claim 1, wherein the insulating housing, at the one wide side (2), further includes a comb-like part (12) formed at said one end (4) of the conductor section, said part having comb-like teeth (13) separated at the corresponding conductor pitch spacing and directed inward to the conductor receiving channels (7), said comb-like part being slidable inward for maintaining the conductors received within the connector properly spaced and clamped.
5. A connector according to claim 4, wherein the comb-like part (12) comprises a number of separate comb elements, each including a cylindrical part (26), a small plate (27) and a comb-like tooth (13).
6. A connector according to claim 4, wherein the comb-like part (12) is formed as part of the insulation housing (1), whereby after the conductors (11) are inserted into the housing, the comb-like part can be broken free by exerting pressure and pressed inwardly until the teeth end up between the conductors.
7. A connector according to claim 1 further comprising a flat auxiliary piece (30; 31) of insulation material to be inserted in the U-shaped plug-on section (5), one wide side of said auxiliary piece including a plurality of guiding cams (35) which cooperate with the grooves (14) at the one wide side (2) in the plug-on section, and the other wide side of which auxiliary piece including two or more open guiding channels, which correspond with the grooves at the other wide side (3) in the plug-on section, for guiding contact pins (36) of a pinholder (38) to electrically contact the contact springs.
8. A connector according to claim 7, wherein the U-shaped plug-on section at the open end (5) and the flat auxiliary piece at the pin inserting end (39) correspondingly widen into a tulip-shape and wherein the auxiliary piece at the pin inserting end (39) includes a row of openings (32) which at the other side of the tulip-shape merge into open guiding channels (33).

Patentansprüche

1. Verbinder zum Verbinden eines Mehrleiterkabels, welches eine Mehrzahl von Leitern (11) hat, die jeweils von einem Isoliermaterial um-



geben sind, mit einer gedruckten Leiterplatte (20; 21) oder mit Kontaktstiften (36) eines Stifträgers (38), welcher ein blockförmiges Isoliergehäuse (1) aufweist, welches ein Leiterteil mit einer Mehrzahl von Leiternaufnahmekanälen (7) zum Einführen und Aufnehmen der Leiter (11) des Kabels an einem Ende (4) und ein Steckteil (5) hat, welches in Form einer U-förmigen Gestalt am anderen Ende (5) des Gehäuses (1) endet und mit der gedruckten Leiterplatte (20; 21) oder dem Stifträger (38) verbunden werden kann, welcher ferner eine Mehrzahl von Ausnehmungen (14) aufweist, die in Längsrichtung entlang des Gehäuses (1) weisen und lange Kontaktfedern (10) aufnehmen, wobei jede Kontaktfeder (10) im Leiterteil ein verankerbares Teil (15) mit wenigstens einem Zahn (15) aufweist, welcher das Isoliermaterial durchdringen und einen elektrischen Kontakt mit dem zugeordneten Leiter (11) herstellen kann, und im Steckteil ein Federteil hat, wobei jede Kontaktfeder (10) in ihrer Gesamtheit von einer flachen Feder gebildet wird, deren Federteil im Steckteil eine U-förmige Gestalt mit einem Schenkel und einem weiteren Schenkel (16) hat, und wobei das verankerbare Teil (15) der Feder (10) im Leiterteil in einer Linie zu dem einen Schenkel verläuft und in ein und derselben Ebene den wenigstens einen Zahn (15) bildet, dadurch gekennzeichnet, daß das blockförmige Gehäuse (1) von einem Teil gebildet wird und in Längsrichtung in schmale Kammern durch Unterteilungen (9) unterteilt ist, welche von einer breiten Seite (2) zu der anderen breiten Seite (3) des Gehäuses (1) verlaufen, und daß der eine Schenkel jeder Kontaktfeder derart ausgelegt ist, daß er berührungslos im Steckteil abgestützt ist, und daß der andere Schenkel (16) derart ausgelegt ist, daß er einen elektrischen Kontakt mit der zugeordneten Kontaktbahn auf der gedruckten Leiterplatte oder dem zugeordneten Kontaktstift des Stifträgers herstellt.

2. Verbinder nach Anspruch 1, bei dem jede Ausnehmung (14) an der einen breiten Seite (2) des Gehäuses (1) eine Rippe (18) in der Nähe des Steckendes (5) hat, und eine Rippe (17) in der Nähe des Leitereinführungsendes (4) hat, welche jeweils den Verankerungsausnehmungen (10.1; 10.2) zugeordnet sind, welche in jeder Kontaktfeder (10) zum Festlegen der Kontaktfeder in der Ausnehmung (14) ausgebildet sind.
3. Verbinder nach Anspruch 1, bei dem der andere Schenkel (16) jeder Kontaktfeder (10) an seinem freien Ende eine Kontaktkrümmung

hat.

4. Verbinder nach Anspruch 1, bei dem das Isoliergehäuse an der einen breiten Seite (2) ferner ein kammähnliches Teil (12) aufweist, welches an dem einen Ende (4) des Leiterteils ausgebildet ist, das Teil kammähnliche Zähne (13) hat, welche entsprechend den Leiterzwischenabständen im Abstand angeordnet sind und in Richtung nach innen auf die Leiternaufnahmekanäle (7) zuweisen und bei dem das kammähnliche Teil nach innen gleitbar angeordnet ist, um die aufgenommenen Leiter in dem Verbinder in geeigneter Weise im Abstand und eingespannt zu halten.
5. Verbinder nach Anspruch 4, bei dem das kammähnliche Teil (12) eine Anzahl von gesonderten Kammelementen aufweist, welche jeweils ein zylindrisches Teil (26), eine kleine Platte (27) und einen kammähnlichen Zahn (13) umfassen.
6. Verbinder nach Anspruch 4, bei dem das kammähnliche Teil (12) als ein Teil des Isoliergehäuses (1) ausgebildet ist, wobei nach dem Einführen der Leiter (11) in das Gehäuse das kammähnliche Teil durch Aufbringen einer Druckkraft abgebrochen werden und nach innen gedrückt werden kann, bis die Zähne zwischen den Leitern enden.
7. Verbinder nach Anspruch 1, welcher ferner ein flaches Hilfsstück (30; 31) aus isolierendem Material aufweist, welches in das U-förmige Steckteil (5) einführbar ist, wobei eine breite Seite des Hilfsstückes eine Mehrzahl von Führungsnocken (35) umfaßt, welche mit den Ausnehmungen (14) an der einen breiten Seite (2) im Steckteil (2) zusammenarbeiten, und wobei die andere breite Seite des Hilfsstückes zwei oder mehr offene Führungskanäle umfaßt, welche den Ausnehmungen an der anderen, breiten Seite (3) im Steckteil zur Führung der Kontaktstifte (36) eines Stifträgers (38) zugeordnet sind, um einen elektrischen Kontakt mit den Kontaktfedern herzustellen.
8. Verbinder nach Anspruch 7, bei dem das U-förmige Steckteil am offenen Ende (5) und das flache Hilfsstück an dem Stifteinführungsende (39) in entsprechender Weise in Form einer tulpenähnlichen Gestalt erweitert sind, und bei dem das Hilfsstück an dem Stifteinführungsende (39) eine Reihe von Öffnungen (32) umfaßt, welche an der anderen Seite der tulpenähnlichen Gestalt in offene Führungskanäle (33) übergehen.



Revendications

1. Connecteur destiné à relier un câble multi-conducteur présentant une pluralité de conducteurs (11), chacun entouré d'un matériau isolant, à un circuit imprimé (20, 21), ou à des broches (36) d'une douille à broches (38), comprenant un boîtier d'isolation parallélépipédique (1), constitué à une extrémité (4) d'une section de conducteur présentant une pluralité de canaux de réception de conducteurs (7), dans lesquels sont insérés et qui reçoivent les conducteurs (11) du câble, et une section de branchement (5) qui se termine en forme de U à l'autre extrémité (5) du boîtier (1), et qui est susceptible d'être reliée audit circuit imprimé (20, 21), ou à ladite douille de broches (38); une pluralité de gorges (14) alignées le long de l'axe longitudinal dudit boîtier (1), et destinées à recevoir des ressorts de contact allongés (10), chacun dédits ressorts de contact (10) présentant dans la section de conducteur une partie ancrable (15) présentant au moins une dent (15), susceptible de traverser le matériau isolant du conducteur correspondant (11), et de réaliser un contact électrique avec ledit conducteur, et présentant dans la partie de branchement un élément de ressort, chaque ressort de contact (10) étant constitué entièrement d'un ressort plat, dont la partie à ressort dans la section de branchement présente une forme de U, avec une jambe et une deuxième jambe (16), la partie ancrable (15) de chaque ressort (10) dans la section de conducteur, étant alignée avec ladite première jambe et présentant dans le même plan, ladite au moins une dent (15), caractérisé en ce que ledit boîtier parallélépipédique (1) est constitué d'une seule pièce, et est divisé dans sa direction longitudinale en chambres étroites, par des séparations (9) qui s'étendent d'une face large (2) jusqu'à l'autre face large (3) du boîtier (1), et en ce que la première jambe de chaque ressort de contact est conçue pour se maintenir sans contact dans la partie de branchement, et la deuxième jambe (16) étant conçue pour rentrer en contact électrique avec une bande de contact correspondante sur le circuit imprimé, ou avec la broche de contact correspondante de la douille de broches.
2. Connecteur selon la revendication 1, dans lequel chaque gorge (14), du côté de cette face large (2) du boîtier (1), présente une nervure (18) au voisinage de l'extrémité de branchement (5) et une nervure (17) au voisinage de l'extrémité d'insertion du conducteur (4), qui

correspondent respectivement à des creux d'ancrage (10.1; 10.2) formés dans chaque ressort de contact (10) afin de fixer ledit ressort de contact dans ladite gorge (14).

3. Connecteur selon la revendication 1, dans lequel la deuxième jambe (16) de chaque ressort de contact (10) présente à son extrémité libre une bosse de contact.
4. Connecteur selon la revendication 1, dans lequel le boîtier isolant, du côté de cette face large (2) comprend en outre un élément en forme de peigne (12) disposé au niveau de ladite extrémité (4) de la section de conducteur, chaque élément en forme de peigne présentant des dents de peigne (13) séparées de l'intervalle correspondant au pas des conducteurs, et dirigées vers l'intérieur des canaux de réception de conducteur (7), ledit élément en forme de peigne étant susceptible d'être enfoncé vers l'intérieur de façon à maintenir les conducteurs disposés dans le connecteur séparés et serrés de façon appropriée.
5. Connecteur selon la revendication 4, dans lequel l'élément en forme de peigne (12) comprend un certain nombre d'éléments de peigne indépendants, chacun comprenant une partie cylindrique (26), une petite plaque (27) et une dent de peigne (13).
6. Connecteur selon la revendication 4 dans lequel ledit élément en forme de peigne (12) est constitué comme une partie du boîtier d'isolation (1), de sorte qu'après que les conducteurs (11) sont insérés dans le boîtier, la partie en forme de peigne peut être libérée en exerçant une pression et en enfonçant jusqu'à ce que les dents se trouvent entre les conducteurs.
7. Connecteur selon la revendication 1, comprenant en outre une pièce auxiliaire plane (30; 31) de matériau isolant, destinée à être insérée dans la section de branchement en forme de U (5), une face large de ladite pièce auxiliaire comprenant une pluralité de cames de guidage (35) qui coopèrent avec les gorges (14) du côté de la face large (2) à la section de branchement, et l'autre face large de ladite pièce auxiliaire comprenant deux ou plus de deux rainures de guidage ouverts qui correspondent aux gorges de l'autre face large (3) à la section de branchement, de façon à guider les broches de contact (36) d'une douille à broches (38) pour qu'elles entrent en contact



électrique avec les ressorts de contact.

8. Connecteur selon la revendication 7, dans lequel la section de branchement en forme de U à l'extrémité ouverte (5), et la pièce auxiliaire plane à l'extrémité d'insertion de broches (39) s'élargissent en forme analogue de tulipe, et dans lequel la pièce auxiliaire, du côté de l'insertion des broches (39), comprend une rangée d'ouvertures (32) qui de l'autre côté de ladite forme de tulipe se transforme en canaux de guidage ouverts (33).

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