

## Description

The present invention pertains to shielded connector assemblies which are mateable with a shielded plug connector. More particularly, the present invention pertains to shielded receptacle assemblies having an overlying metallic shield with one or more fingers for engaging the plug shield as the plug and receptacle are mated.

Shielded electrical connector systems are enjoying popularity today, due in part to the recent limitations placed on radio frequency emissions generated by electronic equipment, such as computers and other digital information systems.

One type of shielded connector system is shown in U.S. Patent No. 4,337,989 which provides a shielding kit for use with a conventional plug and receptacle connector assembly, such as that used as an input/output (I/O) interface for electronic communications equipment. The receptacle, which is mounted on a printed circuit board, includes a dielectric housing having a mating edge and a plug-receiving cavity extending into the housing from the mating edge, an end wall opposite the mating edge, and a plurality of sidewalls joining the end wall to define the plug receiving cavity. Terminals, typically extending from the end wall, are mounted in the receptacle housing for making contact with corresponding plug terminals. The kit includes a metallic shroud, generally U-shaped in cross-section, which fits over the dielectric receptacle, having board engaging ears for mounting to the same printed circuit board as the receptacle connector. The metallic shroud includes a number of reversely bent cantilever spring fingers located near the top housing wall, and extending into the plug receiving cavity from the mating edge. The cantilever spring fingers mate with the outer metallic shell surrounding the plug member, as the plug is inserted in the receptacle housing. The cantilever spring fingers formed as part of the metallic shroud are typically provided in groups of three or more to engage the mating plug shield at a plurality of contact points. The plurality of spring fingers offers advantages over a single contact finger design in that any warpage or other malformation of the plug shield can be accommodated more readily by a plurality of independently operating spring finger members. Such members are deflected so as to close the reverse bend during mating of the plug and receptacle assemblies.

While the conventional receptacle shown in U.S. Patent No. 4,337,989 includes a top wall extending to the mating edge a popular design in use today has omitted the upper housing wall portion to allow freedom of movement of the resilient spring fingers. The upper metallic shroud wall from which the fingers extend is thereby made subject to outward bowing or deflection during mating with a plug connector. In order to overcome outward bowing, and to provide the resilient forces required for proper electrical mat-

ing with the plug shield, the metallic shroud is typically formed of metal stock somewhat thicker than would otherwise be required. For example, the metallic shield in widespread use today is formed of a phosphor-bronze composition, in thicknesses of approximately .020 inches (0.5 mm). A thinner shield material would offer cost saving advantages, and would afford greater compliance in conforming to a mating plug configuration, but, as explained above, the shield would be subjected to outward bowing, with an attendant reduction in the contact pressure of the centrally located spring fingers.

The kit referred to above, and particularly the receptacle-shield portion thereof, is intended for manual installation by an operator who is otherwise required to provide other assembly operations in the appliance manufacture. However, certain electronic appliances are being produced by automated assembly techniques, and the manufacturers of this equipment realise cost savings if the connector components provided to them can be installed automatically, as by a robotic insertion head, or the like.

It is, therefore, a need for a shielded receptacle assembly of the type described above which can be provided by the connector manufacturer, for simple one-step mounting by an appliance manufacturer.

EP—A—0,108,477 describes a shielded connector assembly mateable with a plug connector having an external metallic shield, said connector assembly including an insulating receptacle housing having a mating edge with a plug-receiving cavity extending into the housing from the mating edge, an end wall opposite the mating edge and at least three sidewalls joining said end wall to define said plug receiving cavity, first terminals mounted in the receptacle housing for making contact with corresponding plug terminals, said first terminals including board engaging portions extending in a predetermined direction to engage mounting apertures of a printed circuit board, a metallic conductive shield mounted on the outside of said receptacle housing having resilient plug shield engaging cantilever finger members extending from said mating edge into said plug receiving cavity, one of the housing sidewalls overlying said finger members and extending to said mating edge, said shield having at least three sidewalls, a substantially open end for slidably receiving said housing, and board engaging portions depending from said sidewalls in said predetermined direction to engage other mounting apertures in said printed circuit board.

The present invention provides a shielded connector assembly as described in EP—A—0,108,477 characterised in that said receptacle housing further includes outwardly projecting shield mounting stud means integrally formed on at least two of said housing sidewalls, said one of said housing sidewalls lying intermediate the housing sidewalls formed with said stud means, in that at least two of said shield sidewalls include slot means extending from said

open end of said shield for slidably receiving and engaging said stud means therein whereby the shield is securely held onto the housing so as to maintain the finger members in a fixed relationship to said mating edge of said receptacle housing and to said first terminals, before and after plug insertion in said cavity, and in that said shield further includes strap means straddling said slot means adjacent said open housing end to maintain a predetermined alignment between said board engaging portions of said first terminals and said shield.

In the shielded connector assembly of the invention, the shield is securely held onto the housing so as to maintain the finger members in a fixed relationship to the mating edge of the receptacle housing. In this fixed relationship the shield finger members engage the top housing wall in a predetermined manner to prevent outward bowing of the shield, as well as unintended wedging of the housing top wall in the reverse bend (between the shielding top wall and the spring fingers) which would cause an outward deflection of the spring fingers toward terminals mounted in the receptacle housing.

The shielded connector assembly of the invention is suitable for insertion in a printed circuit board by a robot insertion head or the like automatic apparatus.

The shield is held captive on the housing in the aforementioned predetermined close tolerance arrangement, without requiring plastic forming of the receptacle housing. Rather, the slot means formed in the shield sidewall may include stud engaging barbs which bite into the housing studs as the shield is slid onto the housing.

Some ways of carrying out the present invention as discussed above will now be described in detail with reference to drawings which show two specific embodiments by way of example and not by way of limitation.

In the drawings, wherein like elements are referenced alike,

Fig. 1 is an elevation view of a shielded receptacle assembly of the present invention;

Fig. 2a is an end elevation view of the assembly of Fig. 1;

Fig. 2b is an end elevation view of an assembly similar to that of Fig. 2a, but showing a misalignment of the shield and housing terminal solder tails that is eliminated by the present invention;

Fig. 3 is a bottom view of the assembly of Figs. 1 and 2;

Fig. 4 is a cross-sectional elevation view taken along the lines 4—4 of Fig. 1;

Fig. 5 is an enlarged detail view of the upper left hand portion of Fig. 4; and

Fig. 6 is a cross-sectional elevation view of an in-line shielded receptacle assembly according to the present invention.

Referring now to the drawings, and in particular to Figs. 1 to 5, a shielded connector assembly shown generally at 10, includes a shield 12 disposed about a header-type receptacle connector 14. Connector 14 includes an insulating receptacle

housing 16 having a mating edge 18 with a plug-receiving cavity 20 extending into the housing from the mating edge. Also included is an end wall 22 opposite mating edge 18, and a plurality of sidewalls 24 joining endwall 22 to define the plug receiving cavity 20. Sidewalls 24 include a top sidewall 24a joined between lateral sidewalls 24b.

Terminals 30 are mounted in housing 16 for mating contact with corresponding plug terminals of a mating plug connector. Terminals 30 have a right angle configuration, with contact engaging portions 32 extending generally parallel to the top housing sidewall 24a, and solder tails or printed circuit board engaging portions 34 extending generally parallel to the rear endwall 22. Connector 14 is of a typical header connector construction wherein terminals 30 are staked in mounting apertures 36 formed in endwall 22, and are bend over mandrel-like portions 38 of endwall 22 to form the right angle bends. Connector 14 is intended for installation on a printed circuit board, with a lower board engaging surface 40 comprising the lower edge of endwall 22 and sidewalls 24b. Surface 40 engages an upper printed circuit board surface, while solder tail portions 34 are received in mounting apertures formed in the circuit board.

Connector 14 forms a receptacle which receives the forward end of a mating plug portion, inserted along the axis of circuit engaging terminal portions 32. The connector assembly of Fig. 1 comprises a segmented header having first and second plug receiving portions 44, 46 arranged in lateral side-by-side relationship, separated by an interior wall member 48. In the particular embodiment of Fig. 1, the left hand plug receiving portion 44 receives an 18 circuit plug connector, while the right plug receiving portion 46 receives a six circuit plug connector, an arrangement typical of many input/output communication ports found in electronic appliances today. If desired, interior wall 48 could be removed, and a 24 circuit plug connector could be mated and unmated with all of the housing terminals 30.

In order to reduce radio frequency emissions of signals carried by terminals 30, connector assembly 10 is provided with an integral stamped metallic shield 12 which is disposed about the sidewalls 24 of housing 16. In particular, the shield 12 covers the housing top wall 24a, which is positioned between lateral sidewalls 24b. Each housing sidewall 24b has integrally formed, outwardly projecting shield mounting studs 50 with enlarged ear portions 52 at their free end. Shield member 12 has corresponding sidewalls, a top sidewall 12a and lateral sidewalls 12b. A leading edge 54 of shield 12 engages housing 16 during assembly of two components. An opposing mating edge 56 is positioned adjacent mating edge 18 of housing 16.

Slots 60 are formed in each shield sidewall 12b for slidably receiving and engaging the housing stud 50 therein. Each slot 60 has opposed stud engaging edges 62 and a stop edge 64 which

engages a vertical edge of stud 50 to position shield 12 about housing 16 during assembly. Each stud engaging edge 62 has outwardly extending barbs 66 which bite into stud 50 during insertion, to provide a fixed positioning of shield 12 about housing 16. As can be seen in Fig. 2a, studs 50 and slots 60 are elongated in the direction of plug insertion, the direction parallel to the terminal circuit engaging portions 32. Continuous contact between stud engaging edges 62 and stud 50 over this elongation precludes rocking of shield 12, particularly the mating edge 56 thereof, with respect to housing 16.

Referring now to Figs. 2a and 2b, shield 12 is electrically connected to printed circuit board traces with depending solder tails 76 which extend in the direction of housing terminal board engaging portions 34. Slots 60 extend from the leading shield edge 54, creating upper and lower leg-like portions 70, 72 elongated in the direction of plug insertion. As indicated in diagrammatic form in Fig. 2b, stresses generated in the tightly fitting shield, when mounted on housing 16, cause an outward bowing of the two leg-like portions 72. A resulting misalignment, denoted by the letter "A" would prevent proper insertion of the shield solder tail portions 76 in the printed circuit board, during mounting of assembly 10. To prevent this misalignment, strap means 80, (see Fig. 2a) are integrally formed with shield 12, so as to straddle slot 60 adjacent the mating open end 54 of shield 12. Strap means 80 conveniently includes a reverse bend 82 formed adjacent the mating open end 54 of shield 12 (see Fig. 3). A central slot-like aperture 84 formed in reverse bend 82 allows reception of the enlarged housing ear portion 52 during assembly of shield 12 and connector 14. The misalignment shown in Fig. 2b is prevented by straps 80, thereby ensuring the parallel alignment of the shield and housing terminal solder tail portions 76, 34 respectively. Thus, with the parallel predetermined spacing already provided by the connector manufacturer, the appliance manufacturer need only unpackage the connector assemblies 10, presenting them for automated insertion in a printed circuit board.

Connector assembly 10 is intended for mating with a shielded plug connector of the type having an external metallic shield disposed about its mating end. An example of this type of plug connector is shown in a commonly assigned United States Patent Application Serial No. 688,676, filed January 4, 1985. As is shown most clearly in Fig. 4, shield 12 includes a plurality of reversely-bent cantilever spring finger members 90 integrally joined to top shield sidewall 12a through well defined reverse bend, or bight portions 92. Fingers 90 include camming edges 94 which make initial contact with the external plug shield, as the plug is mated with connector assembly 10. Thereafter, a substantial portion of each finger 90 is in contact with the external plug shield member.

The plug shield engaging fingers 90 have the predetermined resilience or spring force needed

to ensure proper electrical engagement with the plug shield, while maintaining predetermined insertion and withdrawal forces between the mating plug and receptacle assemblies. With reference to Fig. 1, the close tolerance in the spring force of the several fingers is needed despite the varying distances from the supporting shield sidewalls 12b. As will be readily appreciated by those skilled in the art, both before mating, and particularly after mating the upper shield sidewall 12a will tend to bow outwardly, being lifted above the upper surface of top housing sidewall 24a. This outward bowing is due in part to the inherent spring nature of the stamped metallic shield member, and also in response to the collapsing deflection of fingers 90 as they approach shield topwall 12a. Such bowing, if permitted to occur, would cause a decrease in the contact pressure of the middle finger 90. However, spring fingers 90 are allowed a maximum range of deflection, as provided by channel-like recesses 98 formed in the top sidewalls 24a of housing 16. Connector assembly 10 is dimensioned for a close fit with the plug connector, with receiving cavity 20 closely conforming to the leading end of a mating plug assembly, with a minimum amount of spacing between external plug walls, and the housing sidewalls 24 defining cavity 20.

Associated with a close tolerance fit between plug and receptacle assemblies, is a further outward bowing of top housing sidewall 24a due to an interference contact between that wall and the mating plug member. To further strengthen housing top sidewall 24a and to prevent its upward, or outward bowing, enlarged stiffening ribs are provided in the integral molding of housing 16. The strengthening ribs include corner ribs 102, a medial rib 104, and a strengthening rib 106 formed adjacent interior wall 48. It is contemplated that the upper external plug wall would come very close to, and possibly engage, the lower surface of these strengthening ribs.

The contour of bight portion 92 is well defined with respect to the edge contour of housing mating edge 18, to ensure proper deflection of finger 90, and prevent outward bowing of top shield sidewall 12a. As indicated in the enlarged detailed view of Fig. 5, as shield 12 is slidably inserted over housing 16, fingers 90 engage a lower corner of housing mating edge 18. Due to the angle of finger 90, with respect to housing topwall 24a, the shield topwall 12a is drawn downwardly in close contact with housing sidewall 24a. This drawing down of the top shield sidewall 12a occurs principally in the central portions of the shield sidewall, at points remote from the strengthening effect of shield lateral sidewalls 12b and corrects any pre-assembly bowing in shield 12, arising from the inherent spring quality of the integral shield stamping.

During assembly of shield 12 to housing 16, slots 60 engage studs 50 to provide the required seating of top shield wall 12a. As can be seen with reference to Fig. 4, any over-insertion of shield 12 with respect to housing 16 would tend to wedge

fingers 90 away from top shield sidewall 12a, making contact with the upper row of housing terminals 30. This shorted condition between terminals 30 would cause an erroneous indication during routine electrical testing of the completed circuit board assembly, a step performed by various appliance manufacturers. To prevent this wedging action, the positioning of stop edges 64 of slot 60 with respect to bight portions 92 is provided by the connector manufacturer in the close tolerance stamping operation.

Stop edge 64 of slot 60 limits the insertion of shield 12 about housing 16 not only to prevent the aforementioned wedging action but also to ensure a close tolerance spaced relation between bight 92 and the mating edge 18 of housing top wall 24a. As indicated in Fig. 5, this spacing allows for the predetermined amount of unimpeded deflection of fingers 90 with respect to housing top wall 24a. As shown, the spacing takes on a crescent-shape gap appearance in cross-section, with the bottom corner of the top sidewall mating edge engaging a portion of finger 90 immediately adjacent bight 92.

Upon the full excursion of that predetermined deflection, a further portion of fingers 90 adjacent bight 92 engage the mating edge 18 and underside surface of housing top wall 24a to support any upward forces that might be exerted on shield topwall 12a during plug insertion within connector assembly 10. The close tolerance stamping by the connector manufacturer, ensuring the proper relation between slot stop edge 64, and the configuration and location of bight portion 92, ensures proper shield operation during mating with a plug assembly. With the present arrangement, this precision metal forming is not only conveniently formed by the connector manufacturer, but is maintained during storage and subsequent delivery to a user.

This close tolerance control is especially critical in segmented headers, or in headers having a plurality of spring fingers, owing to their elongated plug receiving opening. It is important that a predetermined electrical engaging force between the various fingers 90 and the external plug shields be maintained, even if those fingers are located remote from supporting shield lateral walls 12b.

With the present arrangement, shield 12 can be formed from a substantially thinner, more compliant and less costly metal blank. Typically, prior art shields comprised of a phosphor-bronze composition have a typical thickness of .020 inches (0.5 mm). With the present arrangement, the shield thickness can be cut in half, with the shield being formed from .010 inch (0.25 mm) thick stock. The thinner stock contributes to the accuracy of the precision stamping required between stop edge 64 and bight portion 92, and further prevents dislocation of bight 92 since the reverse bend is easier to form and control.

The interengagement between the shield, and the housing mating edge 18 and the studs 50 of housing 16 allow a thinner improved shield con-

struction which maintains the cantilever spring forces constant, while preventing outward bowing of the shield topwall, and while maintaining alignment between the depending shield solder tails and the housing terminal solder tails, during shipment of the connector assembly 10, during installation of connector assembly 10 on a printed circuit board, and thereafter during plug insertion and electrical mating with a plug assembly. These features are provided in a single piece shield member which is installed on the receptacle housing with an inexpensive, reliable single-step sliding insertion. Further, the aforementioned advantages of reliable alignment between shield 12 and housing 16 are maintained with the biting engagement of barbs 66 and studs 50.

If still greater control against outward bowing of the shield is desired, a strengthening bend or fold 13 can be made in the leading edge of top shield sidewall 12a (see Fig. 4). The bend is conveniently formed using the housing endwall 22 as a mandrel, after shield 12 is secured to the housing.

Referring now to Fig. 6, an alternative in-line embodiment of shielded receptacle assembly is shown generally at 210. The in-line connector assembly 210 is substantially identical to connector assembly 10 described above, but is designed for straight line insertion in a printed circuit board, as opposed to the right angle configuration of connector assembly 10.

Housing 216 differs from that described above having a fourth sidewall 224c, wherein the housing forms a totally enclosed plug receiving cavity 220. All other features of housing 216 are identical to those of housing 16 described above with reference to Figs. 1 to 5 (and where corresponding features are indicated by reference numerals, the reference numerals are advanced by 200).

Shield 212 has a fourth wall 212c corresponding to housing wall 224c which it overlies in its fully installed condition. Thus, whereas shield 12 is generally U-shaped in cross-section, shield 212 is a fully enclosed rectangular member. As described above with respect to shield 12, shield 212 is dimensioned for a tight fit about housing 216. However, to ensure proper alignment between the bight portions 292 and the mating edge 218 of housing 216, the fourth shield sidewall 212c, that opposing fingers 290, has a minimum spacing with respect to its corresponding housing wall, a spacing not present in the other shield sidewalls of this embodiment, or the previous embodiment described above with reference to Figs. 1 to 5.

Circuit board engaging solder tails 276 extend from the shield leading edge 254 in the same direction as housing terminal solder tail portions 234. All other features of construction installation and operation of assembly 210 are identical to those of connector assembly 10 as described above.



## Claims

1. A shielded connector assembly (10; 210) mateable with a plug connector having an external metallic shield, said connector assembly including:

an insulating receptacle housing (16; 216) having a mating edge (18; 218) with a plug-receiving cavity (20; 220) extending into the housing from the mating edge, an end wall (22) opposite the mating edge (18; 218) and at least three sidewalls (24; 224) joining said end wall (22) to define said plug-receiving cavity;

first terminals (30; 230) mounted in the receptacle housing for making contact with corresponding plug terminals, said first terminals including board engaging portions (34; 234) extending in a predetermined direction to engage mounting apertures of a printed circuit board;

a metallic conductive shield (12; 212) mounted on the outside of said receptacle housing (16; 216) having resilient plug shield engaging cantilever finger members (90; 290) extending from said mating edge (18; 218) into said plug-receiving cavity, one (24a) of the housing sidewalls (24; 224) overlying said finger members (90; 290) and extending to said mating edge (18; 218), said shield having at least three sidewalls (12a, 12b; 212c) a substantially open end (54) for slidably receiving said housing, and board engaging portions (76; 276) depending from said sidewalls (12b) in said predetermined direction to engage other mounting apertures in said printed circuit board, characterised in that

said receptacle housing further includes outwardly projecting shield mounting stud means (50; 250) integrally formed on at least two of said housing sidewalls (24), said one (24a) of said housing sidewalls (24) lying intermediate the housing sidewalls (24b) formed with said stud means (50; 250); in that

at least two of said shield sidewalls (12b) include slot means (60) extending from said open end of said shield for slidably receiving and engaging said stud means (50; 250) therein whereby the shield (12; 212) is securely held onto the housing (16; 216) so as to maintain the finger members (90; 290) in a fixed relationship to said mating edge (18; 218) of said receptacle housing and to said first terminals (30; 230), before and after plug insertion in said cavity; and in that

said shield (12; 212) further includes strap means (80) straddling said slot means (60) adjacent said open housing end to maintain a predetermined alignment between said board engaging portions (34; 234) of said first terminals (30; 230) and said shield (12; 212).

2. An assembly as claimed in claim 1, wherein said strap (80) comprises a reverse bight portion (82) of said sidewalls (12b) adjacent the housing receiving end.

3. An assembly as claimed in claim 2, wherein said strap bight (82) defines a slot-like opening

(84) for receiving said stud means (50; 250) during securement of said shield (12; 212) to said housing (16; 216).

4. An assembly as claimed in any preceding claim, wherein said stud means (50; 250) and said slot means (60) are elongated in the direction of insertion of said receptacle housing (16; 216) within said shield (12; 212) to prevent misalignment of said shield with respect to said housing in a second, normal direction.

5. An assembly as claimed in any preceding claim, wherein said slot means (60) includes barb-like housing engaging teeth (66) formed on said shield (12; 212) for biting engagement with said stud means (50; 250) as said shield is secured to said housing (16; 216).

6. An assembly as claimed in any preceding claim, wherein said intermediate housing sidewall (24a) includes a plurality of spaced-apart channel-like recesses (98) extending from said mating edge (18; 218), for receiving said finger members (90; 290) during deflection thereof in response to insertion of a plug in said cavity; and said slot means (60) include stop surfaces (64) for engaging said stud means (50; 250) to limit insertion of said housing (16; 216) in said shield (12; 212) so as to maintain a predetermined spaced relation between said finger members (90; 290) and said mating edge (18; 218) of said intermediate housing sidewall (24a), whereby deflection of said finger members (90; 290) toward said first terminals (30; 230) during shield mounting is prevented, and outward bowing of said shield (12; 212) is controlled in a predetermined manner during insertion of said plug in said cavity.

## Patentansprüche

1. Mit einem Steckverbinder koppelbare abgeschirmte Verbindungsvorrichtung (10; 210) mit einem äußeren Metallschild, bestehend aus einem isolierten Steckgehäuse (16; 216) mit einem Koppelrand (18; 218) mit einem sich in das Gehäuse vom Koppelrand erstreckenden Steckeraufnahmeraum (20; 220), einer Endwand (22) gegenüber dem Koppelrand (18; 218) und zumindest drei mit der Endwand (22) vereinten Seitenwänden (24; 224) zur Begrenzung des Steckeraufnahmeraums,

ersten, in dem Steckgehäuse angebrachten Anschlüssen (30; 230) zur Herstellung eines Kontakts mit entsprechenden Steckeranschlüssen, wobei die ersten Anschlüsse sich in einer vorbestimmten Richtung erstreckende Platteneingriffsteile (34; 234) für einen Eingriff in Montageöffnungen einer gedruckten Leiterplatte aufweisen,

einem an der Außenseite des Steckgehäuses angebrachten leitenden Metallschild (12; 212) mit sich von dem Koppelrand (18; 218) in den Steckeraufnahmeraum erstreckenden vorstehenden elastischen Steckschild-Eingriffsfingerteilen (90; 290), wobei eine (24a) der Gehäuseseitenwände (24; 224) die Fingerteile (90; 290) übergreift und sich zum Koppelrand (18; 218)



erstreckt, der Schild zumindest drei Seitenwände (12a, 12b; 212c) sowie ein im wesentlichen offenes Ende (54) zur gleitbaren Aufnahme des Gehäuses aufweist und Platteneingriffsteile (76; 276) von den Seitenwänden (12b) in der vorbestimmten Richtung für einen Eingriff mit anderen Montageöffnungen in der gedruckten Leiterplatte abstehen, dadurch gekennzeichnet, daß

das Steckgehäuse ferner nach außen vorstehende, einstückig an zumindest zwei der Gehäuseseitenwände (24) angeformte Schildmontageansätze (50; 250) aufweist und die eine (24a) der Gehäuseseitenwände (24) zwischen den mit den Ansätzen (50; 250) ausgebildeten Gehäuseseitenwänden (24b) liegt, daß

zumindest zwei der Schildseitenwände (12b) vom offenen Ende des Schilds ausgehende Schlitze (60) zum gleitbaren Aufnehmen und Erfassen der Ansätze (50; 250) in diesen aufweisen, wodurch der Schild (12; 212) sicher am Gehäuse (16; 216) gehalten ist, derart, daß die Fingerteile (90; 290) in einem festen Verhältnis zum Koppelrand (18; 218) des Steckgehäuses und zu den ersten Anschlüssen (30; 230) vor und nach einem Steckereinsatz in den Raum verbleiben, und daß

der Schild (12; 212) ferner die Schlitze (60) angrenzend an das offene Gehäuseende übergreifende Bügel (80) zur Aufrechterhaltung einer vorbestimmten Ausrichtung zwischen den Platteneingriffsteilen (34; 234) der ersten Anschlüsse (30; 230) und dem Schild (12; 212) aufweist.

2. Vorrichtung nach Anspruch 1, bei der der Bügel (80) einen umgewendeten Ausbuchtungsbereich (82) der Seitenwände (12b) angrenzend an das Gehäuseaufnahmeende umfaßt.

3. Vorrichtung nach Anspruch 2, bei der die Bügelausbuchtung (82) eine schlitzzartige Öffnung (84) zur Aufnahme der Ansätze (50; 250) bei der Festlegung des Schilds (12; 212) am Gehäuse (16; 216) bildet.

4. Vorrichtung nach einem beliebigen vorhergehenden Anspruch, bei der die Ansätze (50; 250) und die Schlitze (60) in Richtung des Einsetzens des Steckgehäuses (16; 216) in den Schild (12; 212) langgestreckt sind, um eine Fehlausrichtung des Schilds in bezug auf das Gehäuse in einer zweiten, senkrechten Richtung zu verhindern.

5. Vorrichtung nach einem beliebigen vorhergehenden Anspruch, bei der die Schlitze (60) widerhakenförmige, am Schild (12; 212) gebildete Gehäuseeingriffszähne (66) für einen Verhaukungeingriff mit den Ansätzen (50; 250) beim Festlegen des Schilds am Gehäuse (16; 216) aufweisen.

6. Vorrichtung nach einem beliebigen vorhergehenden Anspruch, bei der die zwischenliegende Gehäuseseitenwand (24a) eine Mehrzahl mit Abstand voneinander angeordneter kanalartiger, vom Koppelrand (18; 218) ausgehender Ausnehmungen (98) zur Aufnahme der Fingerteile (90; 290) bei deren Auslenkung infolge des Einsetzens eines Steckers in den Raum aufweist und

die Schlitze (60) Anschlagflächen (64) für einen Eingriff mit den Ansätzen (50; 250) zur Begren-

zung des Einsetzens des Gehäuses (60; 216) in den Schild (12; 212) aufweisen, derart, daß ein vorbestimmtes Abstandsverhältnis zwischen den Fingerteilen (90; 290) und dem Koppelrand (18; 218) der zwischenliegenden Gehäuseseitenwand (24a) aufrechterhalten wird, wodurch eine Auslenkung der Fingerteile (90; 290) zu den ersten Anschlüssen (30; 230) hin während der Schildmontage verhindert und das Auswärtswölben des Schilds (12; 212) in vorbestimmter Weise während des Einsetzens des Steckers in den Raum kontrolliert wird.

## Revendications

1. Ensemble connecteur blindé (10, 210) pouvant être raccordé avec un connecteur mâle à broche comportant un blindage métallique externe, cet ensemble connecteur comportant un boîtier femelle isolant (16, 216), comportant un bord de contact associé (18, 218), avec une cavité (20, 220) de réception de broche, s'étendant à l'intérieur du boîtier à partir du bord de contact associé, une paroi frontale (22) opposée au bord de contact associé (18, 218) et au moins trois parois latérales (24, 224) reliées à la paroi frontale (22), afin de délimiter la cavité de réception des broches, des premières bornes (30, 230) montées dans le boîtier femelle afin d'établir un contact avec des broches correspondantes, ces premières bornes comportant des portions (34, 234) de mise en contact avec une carte, lesquelles s'étendent dans une direction prédéterminée afin de s'engager dans des ouvertures de montage s'une carte de circuit imprimé, un blindage conducteur métallique (12, 212) monté sur l'extérieur du boîtier femelle (16, 216), ce blindage comportant des doigts élastiques (90, 290) en porte-à-faux, venant en contact avec le blindage du connecteur à broches, ces doigts s'étendant à partir du bord de contact associé (18, 218) vers et dans la cavité de réception des broches, l'une (24a) des parois latérales (24, 224) du boîtier s'étendant au-dessus des doigts (90, 290) et jusqu'au bord de contact associé (18, 218), ce blindage comportant au moins trois parois latérales (12a, 12b; 212c), une extrémité sensiblement ouverte (54), pour pouvoir recevoir à coulissement le boîtier, et des portions (76, 276) de mise en contact avec une carte, ces portions s'étendant à partir des parois latérales (12b) du blindage, dans ladite direction prédéterminée, afin de s'engager dans d'autres ouvertures de montage prévues dans la carte de circuit imprimé, caractérisé en ce que le boîtier femelle comporte des bossages (50, 250), en saillie vers l'extérieur, prévus pour le montage du blindage, ces bossages étant formés d'une manière intégrale sur au moins deux des parois latérales (24) du boîtier, ladite paroi latérale (24a), parmi les parois latérales (24) du boîtier, s'étendant entre les parois latérales (24b) du boîtier qui sont formées avec les bossages (50, 250), en ce qu'au moins deux des parois latérales (12b) du blindage comportent des encoches (60) s'étendant à partir de l'extrémité ouverte du blindage,



afin de recevoir à l'intérieur les bossages (50, 250) et de venir en contact avec ceux-ci, de manière que le blindage (12, 212) soit maintenu fermement sur le boîtier (16, 216) afin de maintenir les doigts (90, 290) dans une relation constante par rapport au bord de contact associé (18, 218) du boîtier femelle et par rapport aux premières bornes (30, 230), avant et après l'insertion des broches dans la cavité, et en ce que le blindage (12, 212) comporte en outre des étriers (80) s'étendant en travers des encoches (60), à proximité immédiate de l'extrémité ouverte de réception du boîtier, afin de maintenir un alignement prédéterminé entre les portions (34, 234) des premières bornes (30, 230) qui viennent en contact avec une carte, et le blindage (12, 212).

2. Ensemble suivant la revendication 1, caractérisé en ce que l'étrier (80) est constitué par une portion (82), recourbée sur elle-même, des parois latérales (12b) qui est adjacente à l'extrémité de

3. Ensemble suivant la revendication 2, caractérisé en ce que la partie cambrée (82) de l'étrier définit une ouverture en forme de fente (84) pour laisser passer le bossage (50, 250) pendant la fixation du blindage (12, 212) sur le boîtier (16, 216).

4. Ensemble suivant l'une quelconque des revendications précédentes, caractérisé en ce que les bossages (50, 250) et les encoches (60) sont allongés dans la direction d'insertion du boîtier femelle (16, 216), à l'intérieur du blindage (12,

212), afin d'empêcher un défaut d'alignement du blindage par rapport au boîtier, dans une seconde direction normale.

5. Ensemble suivant l'une quelconque des revendications précédentes, caractérisé en ce que l'encoche (60) comporte des dents en forme de barbes (66) venant en contact avec le boîtier, ces dents étant formées sur le blindage (12, 212), afin de mordre dans les bossages (50, 250) lorsque le blindage est fixé au boîtier (16, 216).

6. Ensemble suivant l'une quelconque des revendications précédentes, caractérisé en ce que la paroi latérale intermédiaire (24a) du boîtier comporte une pluralité d'évidements espacés (98) en forme de rainures, s'étendant à partir du bord de contact associé (18, 218), afin de recevoir les doigts (90, 290) pendant la flexion de ceux-ci à la suite de l'insertion d'une broche dans la cavité, et les encoches (60) comportent des surfaces d'arrêt (64) venant en contact les bossages (50, 250) afin de limiter l'insertion du boîtier (16, 216) dans le blindage (12, 212), de manière à maintenir une relation d'espacement prédéterminée entre les doigts (90, 290) et le bord de contact associé (18, 218) de la paroi latérale intermédiaire (24a) du boîtier, si bien que la flexion des doigts (90, 290) en direction des premières bornes (30, 230), pendant le montage du blindage, est empêchée, et qu'une cambrure du blindage (12, 212) vers l'extérieur est contrôlée d'une manière prédéterminée pendant l'insertion de la broche dans la cavité.