

Description

This invention relates to electrical connectors and electrical plug connectors and receptacles therefor, for example of the DIN type.

Electrical connectors of the DIN type are known and they include a dielectric housing in which three to eight electrical terminals are moulded. The terminals are soldered to electrical conductors of a shielded cable. Metal clamshell members are mounted onto the housing with one of the clamshell members having a U-shaped ferrule that is crimped onto the metal shield of the cable to terminate the shield and provide strain relief. An insulating strain relief member is disposed or moulded onto the clamshell members and engages the cable adjacent the U-shaped ferrule thereby holding the clamshell members in position on the housing and providing a strain relief.

Soldering of conductors to terminals is time-consuming and cold solder connections can take place. The crimping of the U-shaped ferrule onto the metal shield does not result in a good termination or an effective strain relief. If the insulating strain relief member is pushed onto the clamshell members, this is not a desirable approach to holding the clamshell members in position. If the insulating strain relief member is moulded onto the clamshell members, the open area of the back end of the clamshell members must be covered or viscous dielectric material positioned therein prior to moulding to prevent material of the strain relief member from entering the soldered terminations which may break the terminations.

According to the present invention, an electrical connector of the plug type comprises a dielectric housing member in which electrical terminals are secured, contact sections of the electrical terminals extend outwardly from a front surface of the dielectric housing member, and conductor-securing sections of the electrical terminals are to be connected to electrical conductors of a shielded cable. Metal clamshell members are mounted on the dielectric housing member forming an outer contact surrounding the dielectric housing member so that a front section covers the contact sections of the electrical terminals and a rear section is to be connected to a shield of the shielded cable. An insulating sleeve is disposed on the clamshell members and the cable.

The connector is characterised in that said housing member has terminal-receiving passageways which have stop surfaces therein; said conductor-securing sections are crimpable onto conductive cores of insulated electrical conductors of the shielded cable and said electrical terminals have latching members and stop sections for engagement with said stop surfaces in said terminal-receiving passageways to latchably secure said electrical terminals in said terminal-receiving passageways; said clamshell members have U-shaped rear sections which together form an annular member over which an end of a shield of the shielded cable can be positioned, a ferrule member is positionable onto said annular member

over the shield end and is crimpable thereon to electrically connect the shield to said outer contact and to secure the clamshell members together.

The invention includes a receptacle for electrical connection with an outer contact member and contact sections of electrical terminals of a plug connector comprising dielectric housing means having a terminal-receiving section in which terminal-receiving passageways are located, said housing means having a channel surrounding said terminal-receiving section; electrical terminal means secured in said terminal-receiving passageways and including contact section means disposed within said terminal-receiving passageways and other contact-section means extending outwardly from said housing means; characterised by said housing means having a recess in communication with said channel; ground terminal means having spring contact means disposed in said recess and extending into said channel for electrical contact with the outer contact member of the plug connector when the outer contact member is inserted within said channel and the contact sections of electrical terminals of the plug connector are inserted into said terminal-receiving passageways in electrical engagement with said contact section means, said ground terminal means having ground contact means positioned exteriorly of said housing means for electrical connection with a ground member; and means provided by said ground terminal means and said housing means securing said ground terminal means in said housing means.

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

Figure 1 is an exploded and perspective view of the parts of the electrical plug connector and receptacle therefor.

Figure 2 is a perspective view of the assembled receptacle and plug connector but exploded from each other.

Figure 3 is a cross-sectional view of Figure 2.

Figure 4 is identical to Figure 3 but with the plug connector and receptacle in mated electrical engagement.

A plug connector 10 and receptacle 12 therefor is illustrated in the drawings and they are electrically matable with one another to interconnect a wide variety of electronic equipment, especially computer equipment. Plug connector 10 comprises a dielectric housing 14, clamshell members 16 and 18, and a cable guard member 20.

Dielectric housing 14 is moulded from a suitable plastic material and has terminal-receiving passageways 22 extending therethrough and preferably varies in number from three to eight. As shown in Figures 3 and 4, each of terminal-receiving passageways 22 has a forward retention surface 24 and a rear stop surface 26. Projections 28, 30 extend outwardly from housing 14 and a U-shaped recess 32 extends along housing 14 on each side of projection 28 and passes there-through.

Electrical terminals 34 are stamped and formed from a suitable metal in accordance with conventional stamping and forming operations and they include pin contact sections 36 and conductor-securing sections 38 which are crimped in accordance with conventional crimping practices onto the conductive cores of insulated electrical conductors 40 of a shielded electrical cable 42. As shown, cable 42 has insulated electrical conductors 40 positioned within an inner dielectric sheath 44 around which is disposed a braided metallic shield 46 that is covered by an outer insulating jacket 48. Alternatively, shielded electrical cable 42 can be formed with electrical conductors twisted together and wrapped with a thin plastic film and the shield can be in the form of a thin metal foil wrapped around the plastic film encased electrical conductors with a stranded electrical wire extending along the cable within the wrapped metal foil. The cable can, of course, take other forms as desired.

After cable 42 has been stripped to expose the conductive cores of electrical conductors 40 and a suitable amount of shield 46, conductor-securing sections 38 of electrical terminals 34 are crimped onto the conductive cores of electrical conductors 40 whereafter terminated terminals 34 are latchably secured in terminal-receiving passageways 22 of housing 14 via spring lances 50 engaging forward retention surfaces 24 and stop sections 52 of conductor-securing sections 38 engaging rear stop surfaces 26 so that pin contact sections 36 extend outwardly from the forward surface of housing 14 as shown in Figures 3 and 4. In this way, electrical terminals 34 are latchably secured in passageways 22 for removal therefrom by depression of lances 50 to clear surfaces 24 if desired. Moreover, conductor-securing sections 38 of electrical terminals 34 are completely enclosed within housing 14.

Clamshell members 16 and 18, which are stamped and formed from suitable metal, are U-shaped and are now positioned on housing 14 with projections 28 and 30 extending through openings 54 and 56 in members 16 and 18 respectively while inwardly-directed arcuate projection 58 of clamshell member 16 is disposed in U-shaped recess 32 of housing 14. Members 16 and 18 have flanges 60 that engage each other and lugs 62 on member 18 are disposed in recesses 64 of flanges 60 on member 16 to position members 16 and 18 relative to one another prior to members 16 and 18 being secured together. Clamshell members 16 and 18 are necked down at their rear ends to smaller U-shaped sections 66 which form an annular member surrounding conductors 40 onto which braid 46 is positioned and ferrule member 68, which has been slidably positioned on cable 42, is moved onto the shield and controllably crimped onto the annular member and the outer jacket 48 to electrically connect shield 46 between ferrule member 68 and the annular member thereby forming an excellent mechanical and electrical connection as well as a strain relief for cable 42 in addition to securing

clamshell members 16 and 18 onto housing 14 so that clamshell members 16 and 18 form an outer contact for the plug connector with a forward section surrounding contact sections 36 as shown in Figures 3 and 4.

Cable guard member 20 is moulded from a suitable plastic material and includes a clamshell-engaging section 70 and a cable-engaging section 72. Cable-engaging section 72 comprises a plurality of concentrically moulded and connected rings of external decreasing diameter towards the rear end which are dimensioned to closely receive cable 42 therethrough as shown in Figure 4. The rings serve to resiliently reinforce cable 42 from extreme lateral manipulation thereof. After clamshell members 16 and 18 have been secured in position on dielectric housing 14 via ferrule member 68, cable guard member 20 after having been positioned onto cable 42 is moved along cable 42 with clamshell-engaging section 70 being positioned onto clamshell members 16 and 18 as shown in Figures 2 through 4. Section 70 has diametrically opposed internal slots 74 into which flanges 60 of members 16 and 18 are disposed and they are wide enough to permit member 20 to rotate about 30° relative to clamshell members 16 and 18. A latching hook 76 extends outwardly from the front end of section 70 and a series of ribs 78 extend outwardly from the outer surface of section 70 adjacent section 72. As can be discerned, section 70 covers clamshell members 16 and 18 so that the forward end of section 70 is coincident with the forward surface of housing 14 as shown in Figures 3 and 4 and an opening 80 is located in section 70 to permit projection 30 of housing 14 to be disposed therein to maintain housing and cable guard member 20 in position on clamshell members 16 and 18.

Receptacle 12 comprises a dielectric housing 82 which is moulded from a suitable dielectric material such as, for example, glass-filled nylon or the like, and it includes a terminal-receiving section 84 which is surrounded by a channel 86. A U-shaped recess 88 is located in terminal-receiving section 84 and is in communication with channel 86. An oppositely-disposed U-shaped recess 90 is located in hood section 92. Terminal-receiving passageways 94 extend through terminal-receiving section 84 in alignment with respective terminal-receiving passageways 22 in dielectric housing 14 of plug connector 10 and they include diametrically-opposed recesses in communication therewith as shown in Figures 1 and 2. Electrical terminals 96 are disposed in terminal-receiving passageways 94 and are secured therein by lances 98 in engagement with stop surfaces (not shown) located within the passageways. Electrical terminals 96 have forked contact sections 100 which are located in the opposed recesses of the passageways and the free ends of contact sections 100 are provided with arcuate contact surfaces 102 on the inner surfaces thereof for wiping and spring electrical contact with pin contact sections 36 of electrical terminals 34 when the plug connector 10 is electrically mated

with receptacle 12 as shown in Figure 4. Other contact sections 104 of electrical terminals 96 are disposed at right angles with respect to forked contact sections 100 and they extend through holes 106 in printed circuit board 108 for electrical connection with respective conductive paths 110 by solder connection therewith. Contact sections 104 can be in the form of «action pins» for electrical connection with plated through holes in the printed circuit board or the conductive paths.

Ground terminal 112 is positioned within a recess 114 in housing 82 with spring contact member 116 in the form of a cantilever beam extending into channel 86 while hook members 118 engage the top surface of support member 120 within recess 114 and legs 122 of ground terminal 112 are disposed in bottom recess 124 with lances 126 of legs 122 in engagement with the rear surface of support 120 through an opening in the bottom surface of the housing 82 in communication with channel 86, thereby latchably securing ground terminal 112 in position in housing 82 as shown in Figures 3 and 4. In this way, the front section of clamshell members 16 and 18 forming the outer contact of plug connector 10 is electrically connected with spring contact 116 of ground terminal 112 when this forward section is positioned in channel 86 as shown in Figure 4 with arcuate projection 58 being disposed in U-shaped recess 88 thereby polarizing plug connector 10 in receptacle 12. After plug connector 10 has been matably connected within receptacle 12 and illustrated in Figure 4, member 20 is rotated so that latching hook 76 is moved into engagement with the rear surface of hood section 92 through an opening 93 in the top of housing 82 in communication with recess 90 and channel 86, thereby latchably securing plug connector 10 in position in receptacle 12. Ground terminal 112 has other contact sections 128 which extend through holes 130 in printed circuit board 108 for electrical connection via soldering to ground plane 132.

Other embodiments of the ground terminal are illustrated in Figure 1 with ground terminal 112A being the same as ground terminal 112 with the exception that spring contact member 116 is replaced by an almost circular contact 134 having spring contacts 136 which is disposed in channel 86 for electrical engagement with the forward section of the outer conductor of plug connector 10. Ground terminal 112B has circular contact 134 but includes a planar contact 138 which is electrically connected to a metal chassis by screw through hole 140 to form the ground connection therewith. Ground terminal 112C is the same as ground terminal 112A except that the circular contact 134 is formed from planar metal which is clinched onto hood section 92 and ground terminal 112D is a combination of ground terminal 112C and ground terminal 112B. Ground terminals 112A, 112B, 112C and 112D provide excellent connection as well as EMI protection.

As can be discerned, a plug connector has been

described that is easy to assemble to securely maintain the clamshell members in engagement and to form an excellent electrical and mechanical connection between the conductors and shield of the cable and the contacts and outer contact of the connector. A receptacle for the plug connector has also been described that is easy to assemble and solder or connect to circuit paths and a ground plane of a circuit board as well as to provide excellent EMI protection for the connection between the plug connector and receptacle.

Claims

1. An electrical connector of the plug type comprising a dielectric housing member (14) in which electrical terminals (34) are secured, contact sections (36) of the electrical terminals (34) extend outwardly from a front surface of the housing member (14) and conductor-securing sections (38) of the electrical terminals (34) are adapted to be connected to electrical conductors (40) of a shielded cable (42), metal clamshell members (16 and 18) are mounted on the housing member (14) forming an outer contact surrounding the housing member (14) and including a forward section covering the contact sections (36) of the electrical terminals (34) and a rear section for connection to a conductive shield (46) of the shielded cable (42), an insulating sleeve (20) for disposition onto the clamshell members (16 and 18) and including a section (72) for engagement with the cable (42), characterized in that:

said housing member (14) has terminal-receiving passageways (22) which have stop surfaces (24 and 26) therein;

said conductor-securing sections (38) are crimpable onto conductive cores of insulated electrical conductors (40) of the shielded cable (42) and said electrical terminals (34) have latching members (50) and stop sections (52) for engagement with said stop surfaces (24 and 26) in said terminal-receiving passageways (22) to latchably secure said electrical terminals (34) in said terminal-receiving passageways (22);

said clamshell members (16 and 18) have U-shaped rear sections (66) which together form an annular member over which an end of a shield (46) of the shielded cable (42) can be positioned, a ferrule member (68) is positionable onto said annular member over the shield (46) end and is crimpable thereon to electrically connect the shield (46) to said outer contact and to secure the clamshell members together.

2. A plug connector as set forth in claim 1, characterized in that said electrical terminals (34) are completely disposed in said terminal-receiving passageways (22) except for said contact sections (36).

3. A plug connector as set forth in claim 1, characterized in that said clamshell members (16 and 18) are securable around said housing member (14) by crimping said ferrule member (68) to said U-shaped rear sections (66) after said terminals (34) secured to said conductors (40) are posi-

with receptacle 12 as shown in Figure 4. Other contact sections 104 of electrical terminals 96 are disposed at right angles with respect to forked contact sections 100 and they extend through holes 106 in printed circuit board 108 for electrical connection with respective conductive paths 110 by solder connection therewith. Contact sections 104 can be in the form of «action pins» for electrical connection with plated through holes in the printed circuit board or the conductive paths.

Ground terminal 112 is positioned within a recess 114 in housing 82 with spring contact member 116 in the form of a cantilever beam extending into channel 86 while hook members 118 engage the top surface of support member 120 within recess 114 and legs 122 of ground terminal 112 are disposed in bottom recess 124 with lances 126 of legs 122 in engagement with the rear surface of support 120 through an opening in the bottom surface of the housing 82 in communication with channel 86, thereby latchably securing ground terminal 112 in position in housing 82 as shown in Figures 3 and 4. In this way, the front section of clamshell members 16 and 18 forming the outer contact of plug connector 10 is electrically connected with spring contact 116 of ground terminal 112 when this forward section is positioned in channel 86 as shown in Figure 4 with arcuate projection 58 being disposed in U-shaped recess 88 thereby polarizing plug connector 10 in receptacle 12. After plug connector 10 has been matably connected within receptacle 12 and illustrated in Figure 4, member 20 is rotated so that latching hook 76 is moved into engagement with the rear surface of hood section 92 through an opening 93 in the top of housing 82 in communication with recess 90 and channel 86, thereby latchably securing plug connector 10 in position in receptacle 12. Ground terminal 112 has other contact sections 128 which extend through holes 130 in printed circuit board 108 for electrical connection via soldering to ground plane 132.

Other embodiments of the ground terminal are illustrated in Figure 1 with ground terminal 112A being the same as ground terminal 112 with the exception that spring contact member 116 is replaced by an almost circular contact 134 having spring contacts 136 which is disposed in channel 86 for electrical engagement with the forward section of the outer conductor of plug connector 10. Ground terminal 112B has circular contact 134 but includes a planar contact 138 which is electrically connected to a metal chassis by screw through hole 140 to form the ground connection therewith. Ground terminal 112C is the same as ground terminal 112A except that the circular contact 134 is formed from planar metal which is clinched onto hood section 92 and ground terminal 112D is a combination of ground terminal 112C and ground terminal 112B. Ground terminals 112A, 112B, 112C and 112D provide excellent connection as well as EMI protection.

As can be discerned, a plug connector has been

described that is easy to assemble to securely maintain the clamshell members in engagement and to form an excellent electrical and mechanical connection between the conductors and shield of the cable and the contacts and outer contact of the connector. A receptacle for the plug connector has also been described that is easy to assemble and solder or connect to circuit paths and a ground plane of a circuit board as well as to provide excellent EMI protection for the connection between the plug connector and receptacle.

Claims

1. An electrical connector of the plug type comprising a dielectric housing member (14) in which electrical terminals (34) are secured, contact sections (36) of the electrical terminals (34) extend outwardly from a front surface of the housing member (14) and conductor-securing sections (38) of the electrical terminals (34) are adapted to be connected to electrical conductors (40) of a shielded cable (42), metal clamshell members (16 and 18) are mounted on the housing member (14) forming an outer contact surrounding the housing member (14) and including a forward section covering the contact sections (36) of the electrical terminals (34) and a rear section for connection to a conductive shield (46) of the shielded cable (42), an insulating sleeve (20) for disposition onto the clamshell members (16 and 18) and including a section (72) for engagement with the cable (42), characterized in that:

said housing member (14) has terminal-receiving passageways (22) which have stop surfaces (24 and 26) therein;

said conductor-securing sections (38) are crimpable onto conductive cores of insulated electrical conductors (40) of the shielded cable (42) and said electrical terminals (34) have latching members (50) and stop sections (52) for engagement with said stop surfaces (24 and 26) in said terminal-receiving passageways (22) to latchably secure said electrical terminals (34) in said terminal-receiving passageways (22);

said clamshell members (16 and 18) have U-shaped rear sections (66) which together form an annular member over which an end of a shield (46) of the shielded cable (42) can be positioned, a ferrule member (68) is positionable onto said annular member over the shield (46) end and is crimpable thereon to electrically connect the shield (46) to said outer contact and to secure the clamshell members together.

2. A plug connector as set forth in claim 1, characterized in that said electrical terminals (34) are completely disposed in said terminal-receiving passageways (22) except for said contact sections (36).

3. A plug connector as set forth in claim 1, characterized in that said clamshell members (16 and 18) are securable around said housing member (14) by crimping said ferrule member (68) to said U-shaped rear sections (66) after said terminals (34) secured to said conductors (40) are posi-



tioned in said terminal-receiving passageways (22) of said housing member (14).

4. A plug connector as set forth in claim 1, characterised in that said clamshell members (16 and 18) have flanges (60) along their edges in engagement with each other, lugs (62) of one of the clamshell members (18) disposed in recesses (64) in the other clamshell member (16) positioning said clamshell members (16 and 18) together.

5. A plug connector as set forth in claim 4, characterised in that said insulating sleeve (20) has internal slots (74) in which said flanges (60) are disposed, said slots (74) are substantially larger than said flanges (60) to permit said insulating sleeve (20) to rotate relative to said outer contact within the confines of said slots (74).

6. A plug connector as set forth in claim 5, wherein said section (72) of said insulating sleeve (20) in engagement with the cable (42) comprises a series of interconnected ring members of decreasing external diameter.

7. A plug connector as set forth in claim 1, characterised in that said housing member (14) has a U-shaped recess (32) in which an inwardly-directed arcuate projection (58) of one of the clamshell members (16) is disposed.

8. A receptacle (12) for electrical connection to an outer contact member and contact sections (36) of electrical terminals (34) of a plug connector (10), comprising: dielectric housing means (82) having a terminal-receiving section (84) in which terminal-receiving passageways (94) are located, said housing means having a channel (86) surrounding said terminal-receiving section (84); electrical terminal means (98) secured in said terminal-receiving passageways (94) and including first contact sections (100) disposed within said terminal-receiving passageways (94) and other contact-sections (104) extending outwardly from said housing means (82); characterised by said housing means (82) having a recess (114) in communication with said channel (86); ground terminal means (112) having spring contact means (116) disposed in said recess (114) and extending into said channel (86) for electrical contact with the outer contact member of the plug connector (10) when the outer contact member is inserted within said channel (86) and the contact sections (36) of electrical terminals (34) of the plug connector (10) are inserted into said terminal-receiving passageways (94) in electrical engagements with said contact section means (100), said ground terminal means (112) having ground contact means (128 or 138) positioned exteriorly of said housing means (82) for electrical connection with a ground member (132); and means provided by said ground terminal means (112) and said housing means (82) securing said ground terminal means (112) in said housing means (82).

9. A receptacle (12) as set forth in claim 8 characterised in that said terminal-receiving section (84) has a U-shaped recess (88) for engagement with an inwardly-directed arcuate projection (58)

in the outer contact member of the plug connector (10).

10. A receptacle (12) as set forth in claim 8 characterised in that a front section of said housing means (82) has a hood section (92), said securing means comprises a support member (120) extending across said recess (114) and forms another recess in a bottom surface of said housing means (82), and said ground terminal means (112) having hook members (118) engaging said support member (120) and legs (122) disposed in said other recess, lances (126) in said legs (122) engaging said support member (120).

11. A receptacle (12) as set forth in claim 10 characterised in that said spring contact means (116) is a cantilever beam.

12. A receptacle (12) as set forth in claim 10 wherein said spring contact means (116) is a near circular member (134) having spring contact fingers (136).

13. A receptacle (12) as set forth in claim 10, characterised in that said spring contact means (116) is part of a planar member (138) secured to said hood section (92).

Patentansprüche

1. Elektrischer Verbinder des Stecker-Typs, mit einem dielektrischen Gehäuseelement (14), in dem elektrische Anschlüsse (34) befestigt sind, wobei sich Kontaktabschnitte (36) der elektrischen Anschlüsse (34) aus einer vorderen Fläche des Gehäuseelements (14) herauserstrecken und Leiterbefestigungsabschnitte (38) der elektrischen Anschlüsse (34) dazu ausgelegt sind, mit elektrischen Leitern (40) eines abgeschirmten Kabels (42) verbunden zu werden, und wobei Schalelemente (16 und 18) aus Metall auf dem Gehäuseelement (14) unter Bildung eines das Gehäuseelement (14) umgebenden äusseren Kontakts auf dem Gehäuseelement (14) montiert sind und einen die Kontaktabschnitte (36) der elektrischen Anschlüsse (34) überdeckenden vorderen Abschnitt sowie einen hinteren Abschnitt für die Verbindung mit einer leitfähigen Abschirmung (46) des abgeschirmten Kabels (42) beinhalten, und mit einer isolierenden Hülse (20) zur Anordnung auf den Schalelementen (16 und 18), wobei die isolierende Hülse (20) einen Abschnitt (72) zum Angreifen an dem Kabel (42) beinhaltet, dadurch gekennzeichnet, dass das Gehäuseelement (14) Anschlussaufnahmekanäle (22) aufweist, in denen sich Anschlagflächen (24 und 26) befinden; dass die Leiterbefestigungsbereiche (38) auf leitfähige Seelen der isolierten elektrischen Leiter (40) des abgeschirmten Kabels (42) crimpbar sind und die elektrischen Anschlüsse (34) Verriegelungselemente (50) und Anschlagabschnitte (52) zum Angreifen an den Anschlagflächen (24 und 26) in den Anschlussaufnahmekanälen (22) besitzen, um die elektrischen Anschlüsse (34) in den Anschlussaufnahmekanälen (22) in verriegelbarer Weise zu befestigen; und dass die Schalelemente (16 und 18) U-förmige hintere Abschnitte (66) aufweisen, die zusammen ein ringförmiges Element bil-



den, über dem sich ein Ende einer Abschirmung (46) des abgeschirmten Kabels (42) positionieren lässt, und dass ein Zwingenelement (68) auf dem ringförmigen Element über dem Ende der Abschirmung (46) positionierbar ist und auf dieses aufcrimpbar ist, um die Abschirmung (46) mit dem äusseren Kontakt elektrisch zu verbinden und die Schalelemente aneinander zu befestigen.

2. Steckverbinder nach Anspruch 1, dadurch gekennzeichnet, dass die elektrischen Anschlüsse (34) mit Ausnahme der Kontaktabschnitte (36) vollständig in den Anschlussaufnahmekanälen (22) angeordnet sind.

3. Steckverbinder nach Anspruch 1, dadurch gekennzeichnet, dass sich die Schalelemente (16 und 18) um das Gehäuseelement (14) herum dadurch befestigen lassen, dass das Zwingenelement (68) auf die U-förmigen hinteren Abschnitte (66) gecrimpt wird, nachdem die an den Leitern (40) befestigten Anschlüsse (34) in den Anschlussaufnahmekanälen (22) des Gehäuseelements (14) positioniert sind.

4. Steckverbinder nach Anspruch 1, dadurch gekennzeichnet, dass die Schalelemente (16 und 18) Flansche (60) entlang ihrer aneinander angreifenden Kanten aufweisen, und dass Fortsätze (62) des einen Schalelements (18) in Ausnehmungen (64) in dem anderen Schalelement (16) angeordnet sind, wodurch die Schalelemente (16 und 18) zusammen positioniert sind.

5. Steckverbinder nach Anspruch 4, dadurch gekennzeichnet, dass die isolierende Hülse (20) innere Schlitze (74) aufweist, in denen die Flansche (60) angeordnet sind, und dass die Schlitze (74) wesentlich grösser als die Flansche (60) sind, um eine Rotationsbewegung der isolierenden Hülse (20) relativ zu dem äusseren Kontakt innerhalb der Grenzen der Schlitze (74) zu gestatten.

6. Steckverbinder nach Anspruch 5, bei dem der an dem Kabel (42) angreifende Abschnitt (72) der isolierenden Hülse (20) eine Reihe von miteinander verbundenen Ringelementen mit abnehmendem Aussendurchmesser aufweist.

7. Steckverbinder nach Anspruch 1, dadurch gekennzeichnet, dass das Gehäuseelement (14) eine U-förmige Ausnehmung (32) aufweist, in der ein nach innen gerichteter bogenförmiger Vorsprung (58) des einen Schalelements (16) angeordnet ist.

8. Buchse (12) zur elektrischen Verbindung mit einem äusseren Kontaktelement und mit Kontaktabschnitten (36) von elektrischen Anschlüssen (34) eines Steckverbinders (10), mit: einer dielektrischen Gehäuseeinrichtung (82) mit einem Anschlussaufnahmeabschnitt (84), in dem sich Anschlussaufnahmekanäle (94) befinden, wobei die Gehäuseeinrichtung einen den Anschlussaufnahmeabschnitt (84) umgebenden Kanal (86) aufweist; und mit elektrischen Anschlusseinrichtungen (98), die in den Anschlussaufnahmekanälen (94) befestigt sind und innerhalb der Anschlussaufnahmekanäle (94) angeordnete erste

Kontaktabschnitte (100) sowie sich aus der Gehäuseeinrichtung (82) herauserstreckende weitere Kontaktabschnitte (104) beinhalten, dadurch gekennzeichnet, dass die Gehäuseeinrichtung (82) eine mit dem Kanal (86) in Verbindung stehende Ausnehmung (114) aufweist; dass eine Erdungsanschlusseinrichtung (112) eine Federkontakteinrichtung (116) aufweist, die in der Ausnehmung (114) angeordnet ist und sich in den Kanal (86) hineinerstreckt, um eine elektrische Kontaktgabe mit dem äusseren Kontaktelement des Steckverbinders (10) herzustellen, wenn das äussere Kontaktelement in den Kanal (86) eingeführt ist und die Kontaktabschnitte (36) der elektrischen Anschlüsse (34) des Steckverbinders (10) in die Anschlussaufnahmekanäle (94) eingeführt sind und sich in elektrischem Eingriff mit der Kontaktabschnitteinrichtung (100) befinden, wobei die Erdungsanschlusseinrichtung (112) eine ausserhalb der Gehäuseeinrichtung (82) positionierte Erdungskontakteinrichtung (128 oder 138) zur elektrischen Verbindung mit einem Erdungselement (132) aufweist; und dass durch die Erdungsanschlusseinrichtung (112) und die Gehäuseeinrichtung (82) eine Einrichtung geschaffen ist, die die Erdungsanschlusseinrichtung (112) in der Gehäuseeinrichtung (82) befestigt.

9. Buchse (12) nach Anspruch 8, dadurch gekennzeichnet, dass der Anschlussaufnahmeabschnitt (84) eine U-förmige Ausnehmung (88) zum in Eingriff Treten mit einem nach innen gerichteten bogenförmigen Vorsprung (58) in dem äusseren Kontaktelement des Steckverbinders (10) aufweist.

10. Buchse (12) nach Anspruch 8, dadurch gekennzeichnet, dass ein vorderer Abschnitt der Gehäuseeinrichtung (82) einen Abdeckabschnitt (92) aufweist, dass die Befestigungseinrichtung ein sich über die Ausnehmung (114) erstreckendes Trageelement (120) aufweist und eine weitere Ausnehmung in einer Bodenfläche der Gehäuseeinrichtung (28) bildet, und dass die Erdungsanschlusseinrichtung (112) an dem Trageelement (120) angreifende Hakenglieder (118) sowie in der genannten weiteren Ausnehmung angeordnete Schenkel (122) aufweist, wobei in den Schenkeln (122) ausgebildete Zungen (126) an dem Trageelement (120) angreifen.

11. Buchse (12) nach Anspruch 10, dadurch gekennzeichnet, dass es sich bei der Federkontakteinrichtung (116) um einen freitragenden Arm handelt.

12. Buchse (12) nach Anspruch 10, dadurch gekennzeichnet, dass es sich bei der Federkontakteinrichtung (116) um ein nahezu kreisförmiges Element (134) mit Federkontaktspitzen (136) handelt.

13. Buchse (12) nach Anspruch 10, dadurch gekennzeichnet, dass die Federkontakteinrichtung (116) Teil eines planaren Elements (138) ist, das an dem Abdeckabschnitt (92) befestigt ist.



Revendications

1. Connecteur électrique du type à fiche comprenant un élément de boîtier diélectrique (14) dans lequel sont fixées des bornes électriques (34), des parties (36) de contact des bornes électriques (34) partent vers l'extérieur d'une surface avant de l'élément de boîtier (14) et des parties (38) de fixation à des conducteurs des bornes électriques (34) sont conçues pour être connectées à des conducteurs électriques (40) d'un câble blindé (42), des éléments métalliques (16 et 18) de coque sont montés sur l'élément de boîtier (14), formant un contact extérieur autour de l'élément de boîtier (14) et comprenant une partie avant recouvrant les parties de contact (36) des bornes électriques (34) et une partie arrière destinée à une connexion sur un blindage conducteur (46) du câble blindé (42), un manchon isolant (20) destiné à être disposé sur les éléments de coque (16 et 18) et comprenant une partie (72) destinée à s'ajuster avec le câble (42), caractérisé en ce que:

ledit élément de boîtier (14) présente des passages (22) de réception de bornes qui renferment des surfaces d'arrêt (24 et 26);

lesdites parties (38) de fixation à des conducteurs peuvent être serties sur les âmes conductrices de conducteurs électriques isolés (40) du câble blindé (42) et lesdites bornes électriques (34) comportent des éléments (50) de verrouillage et des parties d'arrêt (52) destinées à s'enclencher avec lesdites surfaces d'arrêt (24 et 26) situées dans lesdits passages (22) de réception de bornes pour fixer de manière verrouillée lesdites bornes électriques (34) dans lesdits passages (22) de réception de bornes;

lesdits éléments de coque (16 et 18) comportent des parties arrière (66) de forme en U qui forment ensemble un élément annulaire sur lequel une extrémité d'un blindage (46) du câble blindé (42) peut être positionnée, un élément de virole (68) peut être positionné sur ledit élément annulaire au-dessus de l'extrémité du blindage (46), et peut y être serti pour connecter électriquement le blindage (46) audit contact extérieur et pour fixer les éléments de coque entre eux.

2. Connecteur à fiche selon la revendication 1, caractérisé en ce que lesdites bornes électriques (34) sont totalement disposées dans lesdits passages (22) de réception de bornes à l'exception desdites parties de contact (36).

3. Connecteur à fiche selon la revendication 1, caractérisé en ce que lesdits éléments de coque (16 et 18) peuvent être fixés autour de l'élément de boîtier (14) par sertissage dudit élément de virole (68) sur lesdites parties arrière (66) de forme en U après que lesdites bornes (34) fixées sur lesdits conducteurs (40) ont été positionnées dans lesdits passages (22) de réception de bornes dudit élément de boîtier (14).

4. Connecteur à fiche selon la revendication 1, caractérisé en ce que lesdits éléments de coque (16 et 18) comportent des rebords (60) le long de leurs bords, enclenchés entre eux, des pattes (62) de l'un des éléments de coque (18), dispo-

sées dans des évidement (64) de l'autre élément de coque (16), positionnant lesdits éléments de coque (16 et 18) assemblés.

5. Connecteur à fiche selon la revendication 4, caractérisé en ce que ledit manchon isolant (20) présente des rainures internes (74) dans lesquelles sont disposés lesdits rebords (60), et lesdites rainures (74) sont sensiblement plus grandes que lesdits rebords (60) pour permettre audit manchon isolant (20) de tourner par rapport audit contact extérieur dans les limites desdites rainures (74).

6. Connecteur à fiche selon la revendication 5, dans lequel ladite partie (72) dudit manchon isolant (20), ajustée sur le câble (42), comprend une série d'éléments annulaires reliés entre eux, de diamètre extérieur décroissant.

7. Connecteur à fiche selon la revendication 1, caractérisé en ce que ledit élément de boîtier (14) présente un évidement (32) de forme en U dans lequel est disposée une saillie incurvée (58), dirigée vers l'intérieur, de l'un des éléments de coque (16).

8. Prise (12) pour une connexion électrique sur un élément de contact extérieur et des parties de contact (36) de bornes électriques (24) d'un connecteur à fiche (10), comprenant: des moyens de boîtier diélectrique (82) comportant une partie (84) de réception de bornes dans laquelle sont situés des passages (94) de réception de bornes, lesdits moyens de boîtier présentant un canal (86) entourant ladite partie (84) de réception de bornes; des moyens à bornes électriques (98) fixés dans lesdits passages (94) de réception de bornes et comprenant des premières parties de contact (100) disposées à l'intérieur desdits passages (94) de réception de bornes et d'autres parties de contact (104) partant vers l'extérieur desdits moyens de boîtier (82); caractérisée en ce que lesdits moyens de boîtier (82) présentent un évidement (114) en communication avec ledit canal (86); des moyens à bornes de masse (112) comportant des moyens de contact à ressort (116) disposés dans ledit évidement (114) et pénétrant dans ledit canal (86) pour établir un contact électrique avec l'élément de contact extérieur du connecteur à fiche (10) lorsque l'élément de contact extérieur est inséré dans ledit canal (86) et que les parties de contact (36) des bornes électriques (34) du connecteur à fiche (10) sont insérées dans les passages (94) de réception de bornes en contact électrique avec lesdits moyens (100) à parties de contact, lesdits moyens (122) à bornes de masse comportant des moyens de contact de masse (128 ou 138) positionnés à l'extérieur desdits moyens de boîtier (82) pour une connexion électrique avec un élément de masse (132); et des moyens présentés par lesdits moyens à bornes de masse (112) et lesdits moyens de boîtier (82) et fixant lesdits moyens à bornes de masse (112) dans lesdits moyens de boîtier (82).

9. Prise (12) selon la revendication 8, caractérisée en ce que ladite partie (84) de réception de bornes présente un évidement (88) de forme en U



destiné à s'enclencher avec une saillie incurvée (58), dirigée vers l'intérieur, de l'élément de contact extérieur du connecteur à fiche (10).

10. Prise (12) selon la revendication 8, caractérisée en ce qu'une partie avant desdits moyens de boîtier (82) comporte une partie de capot (92), lesdits moyens de fixation comprennent un élément de support (120) s'étendant en travers dudit évidement (114) et forment un autre évidement dans une surface de fond desdits moyens de boîtier (82), et lesdits moyens à bornes de masse (112) comportant des éléments de crochet (118) s'enclenchant avec ledit élément de support (120) et des pattes (122) disposées dans ledit autre évidement, des pointes (126) situées sur les

pattes (122) s'enclenchant avec ledit élément de support (120).

11. Prise (12) selon la revendication 10, caractérisée en ce que lesdits moyens de contact à ressort (116) comprennent une poutre en porte-à-faux.

12. Prise (12) selon la revendication 10, dans laquelle lesdits moyens de contact à ressort (116) comprennent un élément presque circulaire (134) comportant des doigts de contact à ressort (136).

13. Prise (12) selon la revendication 10, caractérisée en ce que lesdits moyens de contact à ressort (116) font partie d'un élément plan (138) fixé à ladite partie (92) de capot.

