(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 131 248**
B1

(12) # EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: **28.09.88**

(51) Int. Cl.[4]: **H 01 R 13/658**, H 01 R 17/12

(21) Application number: **84107756.3**

(22) Date of filing: **04.07.84**

(54) **Connector for coaxially shielded cable.**

(30) Priority: **11.07.83 US 512754**

(43) Date of publication of application:
16.01.85 Bulletin 85/03

(45) Publication of the grant of the patent:
28.09.88 Bulletin 88/39

(84) Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

(56) References cited:
EP-A-0 042 231
EP-A-0 074 205
FR-A-2 334 267

(73) Proprietor: **W.L. GORE & ASSOCIATES, INC.**
555 Paper Mill Road P.O. Box 9329
Newark Delaware 19711 (US)

(72) Inventor: **Hansell, George A. III**
80 Spring Lake Drive
Newark Delaware 19713 (US)

(74) Representative: **Taylor, Derek George et al**
Mathisen, Macara & Co. The Coach House 6-8
Swakeleys Road
Ickenham Uxbridge UB10 8BZ (GB)

EP 0 131 248 B1

Courier Press, Leamington Spa, England.

Description

This invention relates to connectors for connecting conductors of coaxially shielded cables to non-coaxial male contacts.

Coaxially shielded cables are well known as the highest fidelity signal wiring for digital signals and analogue signals through the microwave frequency range. The advent of large scale integrated circuits has increased the density and complexity of electronic circuitry to the point where coaxially shielded cables are often required for interconnection in high density applications. However, the usefulness of coaxially shielded cables has been limited by cumbersome and time consuming connection methods.

In our EP—A—74205 we described a connector which allows the use of coaxially shielded cables in existing, well-developed hardware systems for packaging electronic circuitry. This connector, which is illustrated in Figures 1 and 2 of the present specification, is for connecting conductors of coaxially shielded cables to non-coaxial male contacts disposed in a row. This connector has a first inner contact compatible with each of a plurality of the male contacts, said first inner contact being electrically and mechanically connected to a first inner conductor of one of the coaxially shielded cables; an electrically insulating element surrounding the first inner contact; an outer rectangular contact surrounding the insulating element, electrically and mechanically connected to an outer conductor of one of the coaxially shielded cables and fastened to the jacket of said coaxial cable; and an auxiliary contact disposed adjacent the male contacts and electrically connecting one or more of the outer contacts to one or more of said male contacts or to an external circuit.

The present invention is directed to improvements on the connector of EP—A—74205.

According to one aspect of the present invention, there is provided a connector for connecting conductors of coaxially shielded cables to non-coaxial male contacts disposed in a row, said connector having a first inner contact compatible with each of a plurality of the male contacts, said first inner contact being electrically and mechanically connected to a first inner conductor of one of the coaxially shielded cables; an electrically insulating element surrounding the first inner contact; an outer rectangular contact surrounding the insulating element, electrically and mechanically connected to an outer conductor of one of the coaxially shielded cables and fastened to the jacket of said coaxial cable and an auxiliary contact disposed adjacent the male contacts and electrically connecting one or more of said male contacts or to an external circuit characterised in that said auxiliary contact has a base portion and two resilient side portions extending therefrom, said auxiliary contact having a generally U-shaped cross-sectional dimension, said base portion including a plurality of holes in spatial alignment with said male contacts, and said auxiliary contact being disposed with said male contacts passing through said holes in said base portion and extending generally parallel to said side portions.

According to another aspect of the present invention, there is provided a connector for connecting conductors of coaxially shielded cables to non-coaxial male contacts disposed in a row, said connector having a first inner contact compatible with each of a plurality of the male contacts, said first inner contact being electrically and mechanically connected to a first inner conductor of one of the coaxially shielded cables; an electrically insulating element surrounding the first inner contact; an outer rectangular contact surrounding the insulating element, electrically and mechanically connected to an outer conductor of one of the coaxially shielded cables and fastened to the jacket of said coaxial cable and an auxiliary contact disposed adjacent the male contacts and electrically connecting one or more of said male contacts or to an external circuit characterised in that said auxiliary contact has a top portion compatible with a first male contact, and at least one resilient side portion connected to said top portion and extending towards, but separated from, a second male contact adjacent said first male contact.

According to a further aspect of the present invention, there is provided a connector for connecting conductors of coaxially shielded cables to non-coaxial male contacts disposed in a row, said connector having a first inner contact compatible with each of a plurality of the male contacts, said first inner contact being electrically and mechanically connected to a first inner conductor of one of the coaxially shielded cables; an electrically insulating element surrounding the first inner contact; an outer rectangular contact surrounding the insulating element, electrically and mechanically connected to an outer conductor of one of the coaxially shielded cables and fastened to the jacket of said coaxial cable and an auxiliary contact disposed adjacent the male contacts and electrically connecting one or more of said male contacts or to an external circuit characterised by a housing having a plurality of passages, said housing being positioned over said male contacts such that each of said passages is disposed over a corresponding one of said male contacts, said auxiliary contact being located within said passages of said housing.

The invention will now be particularly described by way of example with reference to the accompanying drawings in which:-

Figures 1 and 2 are respectively a perspective view and an axial cross-sectional view of the connector of EP—A—74205.

Figure 3 is an axial cross-sectional view of a portion of a first embodiment according to the present invention;

Figure 4 is a perspective view of the first embodiment of the present invention shown in Figure 3;

Figure 5 is a perspective view of a second embodiment according to the present invention;

Figure 6 is a perspective view of the top plan of a

third embodiment according to the present invention; and

Figure 7 is a perspective view of the metallic auxiliary contact of the third embodiment of the present invention shown in Figure 6.

The coaxial connector according to EP—A—74205 is described with reference to Figures 1 and 2. A first inner contact 10 comprising a standard contact, which is fully compatible with the standard, non-coaxial round pin or square post male contact 80 commonly used in packaging electronic circuitry, is connected to a first inner conductor 90 of a coaxial cable 100 at junction 91. The standard square post male contacts 80 have lengths varying from approximately 0.2 (0.51 cm) to approximately 1" (2.54 cms) and transverse facial dimensions of 0.025" x 0.025" (0.064 cm x 0.064 cm). Round pin male contacts are typically between .020" (0.051 cm) and .035" (0.089 cm) in diameter.

An electrically insulating medium 20 surounds the first inner contact 10 and extends axially along the surface of the first inner contact 10.

The insulating medium 20 is surrounded by an outer contact 30 to which is connected an outer conductor 92 of a coaxial cable 100. The axes of the first inner contact 10 and the outer contact 30 are substantially parallel. The outer contact 30 is a hollow rectangular solid having a transverse face of which the dimension of one side is slightly smaller than the centre-to-centre distance of the standard male contacts 80. This centre-to-centre distance can be as small as .100" (.254 cm).

An auxiliary contact 40 is installed among a row of standard male contacts 80 by connecting a socket 50 thereof onto a standard male contact 80 so that the auxiliary contact 40 contacts an outer contact 30 whenever that outer contact 30 is connected to one of the standard male contacts 80 disposed in a row.

The auxiliary contact 40 can be made from a strip of any highly conductive material. The shape of the auxiliary contact 40 is such that a portion of the auxiliary contact 40 contacts a portion of the outer contact 30 whenever an outer contact 30 is connected to one of the standard male contacts disposed in a row. For example, the auxiliary contact 40 can be shaped as a square wave and installed among a row of standard male contacts 80 such that whenever an outer contact 30 is connected to one of the standard male contacts, three axial faces of that outer contact 30 contact portions of the auxiliary contact 40. Of course, other shapes are possible which will also provide sufficient contact between the auxiliary contact 40 and an outer contact 30.

The outer contact 30 can be selectively supplied with an electrically insulating coating to leave exposed only portions of the outer contact 30 which serve as electrical contact points.

The advantage of the auxiliary contact 40 is that the outer conductors of several coaxial cables can be efficiently connected together and to the electronic circuitry. This prevents a wasting of space that otherwise occurs if the outer conductors are separately tied together or if each outer conductor is separately tied to the electronic circuitry. For example, the outer conductors can all be tied to ground by connecting the socket 50 of the auxiliary contact 40 to a standard male contact which is grounded. This eliminates the need for separately grounding each outer conductor.

A modification of this embodiment can be achieved by selectively applying an electrically insulating coating to the outer contact 30 and to the auxiliary contact 40 to leave said contacts exposed substantially only at their interface.

A first embodiment of a coaxial connector according to the present invention will now be discussed with reference to Figures 3 and 4, the same reference numerals being used as in relation to Figures 1 and 2 for like elements. According to this embodiment, auxiliary contact 40 includes a base portion 102 having two resilient side portions 104 and 106 extending therefrom. As illustratively shown in Figures 3 and 4, the cross-sectional dimension of auxiliary contact 40 is preferably an inverted omega shape, although other dimensioning may be utilised, as discussed further hereinbelow.

Base portion 102 of auxiliary contact 40 is provided with a plurality of holes 108 arranged in spacial alignment symmetrically about each of male contacts 80. In this fashion, auxiliary contact 40 may be disposed among the male contacts such that each of male contacts 80 passes through a corresponding one of holes 108. Furthermore, each of male contacts 80 extends generally parallel to side portions 104 and 106, without contacting either side.

As shown in Figure 3, when an inner contact 10 (not shown) is fitted onto a male contact 80, the corresponding outer contact 30 mechanically and electrically connects with the adjacent one of side portions 104 and 106. In the case of Figure 3, outer contact 30 engages with side portion 104, whereas a second inner contact 10 (not shown) placed over the other male contact 80 in Figure 3 would result in connection between its outer contact 30 and side portion 106.

As set forth above, side portions 104 and 106 are resilient, which provides for secure electrical and mechanical engagement with outer contact 30. That is, in the absence of an outer contact 30, side portion 104 would be displaced slightly towards the right in Figure 3. As the inner contact is forced down onto one of the male contacts 80, corresponding outer contact 30 engages and subsequently displaces side portion 104 towards the left. Due to the resilient nature of side portion 104, this contact is able to be maintained over numerous insertion and removal operations.

So that the presence of one outer contact 30 will not displace one of side portions 104 and 106 to an extent such that an adjacent outer contact 30 would not be able to make contact therewith, each side portion 104 and 106 is comprised of a plurality of longitudinal ribs 110 defining a corresponding plurality of slots 112, according to a preferred arrangement of this embodiment.

These are arranged such that the longitudinal median of each rib lies in the same plane as the central axis of the immediately adjacent male contact 80. Conversely, the centre of each slot 112 corresponds to the space between the adjacent male contacts 80. In this manner, each outer contact 30 connects with a unique one of ribs 110 such that the presence of a first outer contact 30 and corresponding displacement of the contacting side portion has substantially no effect upon placement of adjacent ribs. Thus, consistent electrical contact may be maintained regardless of the number or positioning of outer contacts 30.

Auxiliary contact 40 may be maintained in place amongst male contacts 80 by being directly affixed to the plastic medium 114 in which male contacts 80 are disposed. This may be accomplished, for example, by gluing base portion 102 to medium 114 in a well known fashion, or by utilizing any other suitable means for securing one element to another. To assist in positioning auxiliary contact 40 with respect to male contacts 80, medium 114 may be provided with a raised portion 116 coaxially aligned with each one of male contacts 80. By making each of holes 108 sufficiently large to encase raised portion 116, accurate positioning of auxiliary contact 40 is accomplished in that the cooperation of raised portions 116 with holes 108 causes appopriate centering of each male contact within its corresponding hole.

In general, it is desirable to avoid electrical connection between auxiliary contact 40 and male contacts 80. By means of the raised portion 116 described above, the auxiliary contact may be disposed among the male contacts such that each of the latter protrudes through a corresponding hole 108 without contacting any edges thereof. It is to be recognised, however, that at some point it may be desirable to provide electrical connection between the auxiliary contact and a selected one or more of male contacts 80 inasmuch as this arrangement can be used to provide a ground connection to all of the outer contacts 30 connected to the auxiliary contact. This coupling may be accomplished in any one of many well known ways for electrically connecting two components. For instance, the selected one of male contacts 80 may be directly wired to the adjacent section of base portions 102 of auxiliary contact 40, or an outer contact 30 may be provided in which the inner contact 10 thereof is shunted to the outer contact or one or more of the holes 108 can be made small enough that the base portion 102 directly connects to one or more of the male contacts 80.

The auxiliary contact 40 can be made from any highly conductive material having the resiliency sufficient to obtain consistent electrical connection with an outer contact 30. According to a preferred embodiment, auxiliary contact 40 is made from a unitary leaf of springy metal which has been folded to form the generally U-shaped configuration illustrated in Figures 3 and 4.

A second embodiment of the present invention is shown in perspective view in Figure 5. According to this embodiment, auxiliary contact 40 has a top portion 118 compatible with one of male contacts 80, and a plurality of resilient side portions 120 that are each connected to a top portion 118 and extend towards, but are separated from, adjacent male contacts 80. The side portions 120 are shaped so that the end opposite top portion 118 is closely adjacent, or contacting the same male contact 80 to which top portion 118 is fitted.

Side portions 120 are resilient in nature and are sufficiently close to adjacent male contacts 80 such that when an inner contact 10 (not shown) is engaged with one of the adjacent male contacts, the corresponding outer contact 30 (not shown) mechanically and electrically connects with the respective side portion 120. The outer contact 30 is thus electrically connected to the male contact 80 on which auxiliary contact 40 is disposed such that the shield of the corresponding cable can be grounded simply by grounding the male contact 80 on which auxiliary contact 40 is positioned.

As shown in Figure 5, a preferred arrangement of this embodiment of auxiliary contact 40 includes four side portions 120, each side portion extending from top portion 118 at a right angle to the adjacent side portion. In this fashion, up to four shields may be coupled together and to a common circuit element by means of auxiliary contact 40, provided male contacts 80 have been disposed adjacent each side portion 120. Furthermore, by providing a plurality of auxiliary contacts 40 in electrical connection with one another either directly or via intermediate outer contacts 30, more than four shields may be connected together.

As in the case of the auxiliary contacts described above, an auxiliary contact according to this second embodiment is preferably made of a resilient or springy metal, and may be constructed from a unitary blank. Alternatively, the auxiliary contact may be constructed in parts which are mechanically and electrically coupled, such as by soldering discrete side portions 120 to a separate top portion 118.

A third embodiment of the present invention is shown in perspective view in Figure 6, the auxiliary contact 40 of which is shown in partial perspective view in Figure 7. According to this embodiment, auxiliary contact 40 comprises a comb 200 having a plurality of separate teeth 202 extending from a common shank 204. Auxiliary contact 40 is preferably made of a springy metal with teeth 202 being crimped and bent back toward the shank, as shown best in Figure 7.

In order to position auxiliary contact 40 among the male contact ends of a connector according to the present invention, a housing 206 is provided as shown in Figure 6. According to a presently preferred arrangement of this embodiment, housing 206 is generally rectangular in shape and has a plurality of longitudinal passages 208 extending completely therethrough. Auxiliary contact 40 is disposed in housing 206 by embedding shank 204 of comb 200 into the common wall 209 of housing

206 which is adjacent passages 208. Teeth 202 extend from the wall of housing 206 and are exposed within the interior passages 208. Comb 200 is positioned relative housing 206 such that each one of teeth 202 is exposed within a different one of passages 208. Each tooth 202 within a passage 208 is flush with the common wall 209 of housing 206 at the outwardly facing end (shown) of passage 208, but extends away from the common wall towards the inner end (not shown) of passage 208.

In order to provide a connector according to the present invention, housing 206 with auxiliary contact 40 disposed therein is positioned over a corresponding plurality of male contact posts 80 (as shown in Figure 3) such that each of passages 208 is positioned over a corresponding one of the male contact posts. Preferably, each male contact post is positioned precisely in the centre of the corresponding passage 208 and in a manner such that it does not contact any of the exposed teeth 202 of auxiliary contact 40. Housing 206, once positioned over the male contact posts as described hereinabove, may be affixed to medium 114 (Figure 3) in which male contact posts 80 are disposed. Housing 206 may be securely affixed to medium 114 by gluing, heat bonding, or other suitable bonding methods. Alternatively, the housing need not be affixed but can be used as a means to connect and disconnect a group of contacts simultaneously.

With the housing and auxiliary contact positioned over and amongst the male contact posts as described above, placing of an inner contact 10 (Figure 2) over one of the male contact posts 80 will simultaneously result in electrical and mechanical connection between the corresponding outer contact 30 (Figure 2) and the immediately adjacent tooth 202 of auxiliary contact 40. Additional outer contacts 30 may be inserted into the other passages 208 and, in each case, will result in mechanical and electrical connection with auxiliary contact 40 via teeth 202. In this manner, electrical connection can be made between all of the outer contacts 30 due to the common shank 204 to which each tooth 202 of the auxiliary contact is connected. Furthermore, since each tooth 202 is separated from its adjacent teeth, displacement of one tooth by an outer contact will not affect the ability of the adjacent teeth to maintain connection with a corresponding outer contact.

To ease assembly of housing 206, the housing may be manufactured in separate halves with each half being connected to a central wall 210. Each half of housing 206 is provided with its own auxiliary contact 40, such that, when the halves are assembled together, teeth 202 are disposed within passages 208 directly opposite central wall 210. In this case, the two auxiliary contacts 40 will not be electrically connected to one another so that if electrical coupling of both auxiliary contacts is desired, it will be necessary to provide a separate connecting means. For example, a short length of wire connecting contacts 40 may also be embedded within housing 206.

Whereas auxiliary contact 40 is preferably made of a springy metal, housing 206 is constructed of a plastic or an AS resin compound which is non-conductive. Housing 206 may be made of the same material as medium 114 (Figure 3) which supports male contact posts 80. Central wall 210 may likewise be made of a nonconductive material.

Claims

1. A connector for connecting conductors of coaxially shielded cables to non-coaxial male contacts (80) disposed in a row, said connector having a first inner contact (10) compatible with each of a plurality of the male contacts, said first inner contact being electrically and mechanically connected to a first inner conductor (90) of one of the coaxially shielded cables; an electrically insulating element (20) surrounding the first inner contact; an outer rectangular contact (30) surrounding the insulating element, electrically and mechanically connected to an outer conductor (92) of one of the coaxially shielded cables and fastened to the jacket of said coaxial cable and an auxiliary contact (40) disposed adjacent the male contacts and electrically connecting one or more of said male contacts or to an external circuit characterised in that said auxiliary contact has a base portion (102) and two resilient side portions (104, 106) extending therefrom, said auxiliary contact having a generally U-shaped cross-sectional dimension, said base portion including a plurality of holes (108) in spatial alignment with said male contacts (80), and said auxiliary contact being disposed with said male contacts passing through said holes in said base portion and extending generally parallel to said side portions.

2. A connector according to claim 1, characterised in that said side portions (107, 106) are provided with a plurality of longitudinal ribs (110), each being in alignment with an adjacent one of said male contacts (180).

3. A connector according to claim 1, characterised in that said base (102) and side portions (104, 106) are arranged to give said auxiliary contact (40) an inverted omega-shaped cross-sectional dimension.

4. A connector according to claim 1, characterised in that said auxiliary contact (40) is formed of a unitary springy metal leaf.

5. A connector for connecting conductors of coaxially shielded cables to non-coaxial male contacts (80) disposed in a row, said connector having a first inner contact (10) compatible with each of a plurality of the male contacts, said first inner contact being electrically and mechanically connected to a first inner conductor (90) of one of the coaxially shielded cables; an electrically insulating element (20) surrounding the first inner contact; an outer rectangular contact (30) surrounding the insulating element, electrically and mechanically connected to an outer conductor (92) of one of the coaxially shielded cables and fastened to the jacket of said coaxial cable and an auxiliary contact (40) disposed adjacent the male

contacts and electrically connecting one or more of said male contacts or to an external circuit characterised in that said auxiliary contact has a top portion (118) compatible with a first male contact, and at least one resilient side portion (120) connected to said top portion and extending towards, but separated from, a second male contact adjacent said first male contact.

6. A connector according to claim 5, characterised in that said resilient side portion (120) has a top end connected to said top portion (118) and a bottom end in contact with said first male contact (80), and is nearest to said second male contact at a point approximately equidistant from said top and bottom ends.

7. A connector according to claim 5, characterised in that said auxiliary contact (70) is formed of a unitary spring metal piece.

8. A connector according to claim 5, characterised in that said auxiliary contact has four resilient side portions (120), each side portion extending at a right angle relative to an adjacent side portion.

9. A connector for connecting conductors of coaxially shielded cables to non-coaxial male contacts (80) disposed in a row, said connector having a first inner contact (10) compatible with each of a plurality of the male contacts, said first inner contact being electrically and mechanically connected to a first inner conductor (90) of one of the coaxially shielded cables; an electrically insulating element (20) surrounding the first inner contact; an outer rectangular contact (30) surrounding the insulating element, electrically and mechanically connected to an outer conductor (92) of one of the coaxially shielded cables and fastened to the jacket of said coaxial cable and an auxiliary contact (40) disposed adjacent the male contacts and electrically connecting one or more of said male contacts or to an external circuit characterised by a housing (206) having a plurality of passages (208), said housing being positioned over said male contacts such that each of said passages is disposed over a corresponding one of said male contacts, said auxiliary contact (40) being located within said passages of said housing.

10. A connector according to claim 9, characterised in that said auxiliary contact is formed of a comb (200) having a plurality of separate teeth (202) connected to a common shank (204), each one of said teeth being located within a different one of said passages of said housing.

11. A connector according to claim 10, characterised in that said shank (204) of said auxiliary contact (40) is embedded in a wall of said housing.

12. A connector according to any preceding claim further characterised by an insulating coating selectively applied to the outer contact (30), and to the auxiliary contact (40) to leave said contacts exposed substantially only at the connection between said outer contact (30) and the auxiliary contact (40).

Patentansprüche

1. Steckverbindung zum Verbinden von Leitern eines abgeschirmten Koaxialkabels mit nicht-koaxialen Kontaktstiften (80), die in einer Reihe angeordnet sind, welche Steckverbindung einen mit jedem einer Mehrzahl der Kontaktstifte kompatiblen ersten inneren Kontakt (10), der elektrisch oder mechanisch mit einem ersten inneren Leiter (90) eines der abgeschirmten Koaxialkabel verbunden ist; ein den ersten inneren Kontakt umgebendes elektrisch isolierendes Element (20); einen das isolierende Element umgebenden äußeren, rechteckigen Kontakt (30), der elektrisch und mechanisch mit einem äußeren Leiter (92) eines der abgeschirmten Koaxialkabel verbunden und am Mantel des Koaxialkabels befestigt ist, und einen Hilfskontakt (40) aufweist, der benachbart den Kontaktstiften angeordnet ist und die elektrische Verbindung eines oder mehrerer der Kontaktstifte oder zu einem externen Schaltkreis bildet, dadurch gekennzeichnet, daß der Hilfskontakt einen Unterteil (102) und zwei sich hievon erstreckende federnde Seitenteile (104, 106) aufweist, wobei der Hilfskontakt eine allgemein U-förmige Querschnittsabmessung hat, der Unterteil eine Mahrzahl von Löchern (108) in räumlicher Ausrichtung zu den Kontaktstiften (80) enthält, und der Hilfskontakt so angeordnet ist, daß die Kontaktstifte durch die Löcher im Unterteil ragen und sich allgemein parallel zu den Seitenteilen erstrecken.

2. Steckverbindung nach Anspruch 1, dadurch gekennzeichnet, daß die Seitenteile (104, 106) mit einer Mehrzahl von Längsrippen (110) versehen sind, die je zu einem benachbarten Kontaktstift (80) ausgerichtet sind.

3. Steckverbindung nach Anspruch 1, dadurch gekennzeichnet, daß die Unter- (102) und Seitenteile (104, 106) so angeordnet sind, daß sie dem Hilfskontakt (40) im Querschnitt die Form eines umgekehrten Omega verleihen.

4. Steckverbindung nach Anspruch 1, dadurch gekennzeichnet, daß der Hilfskontakt (40) aus einem einheitlichen Federmetallblättchen gebildet ist.

5. Steckverbindung zum Verbinden von Leitern eines abgeschirmten Koaxialkabels mit nicht-koaxialen Kontaktstiften (80), die in einer Reihe angeordnet sind, welche Steckverbindung einen mit jedem einer Mehrzahl der Kontaktstifte kompatiblen ersten inneren Kontakt (10), der elektrisch oder mechanisch mit einem ersten inneren Leiter (90) eines der abgeschirmten Koaxialkabel verbunden ist; ein den ersten inneren Kontakt umgebendes elektrisch isolierendes Element (20); einen das isolierende Element umgebenden äußeren, rechteckigen Kontakt (30), der elektrisch und mechanisch mit einem äußeren Leiter (92) eines der abgeschirmten Koaxialkabel verbunden und am Mantel des Koaxialkabels befestigt ist, und einen Hilfskontakt (40) aufweist, der benachbart den Kontaktstiften angeordnet ist und die elektrische Verbindung eines oder mehrerer der Kontaktstifte oder zu einem externen Schaltkreis

bildet, dadurch gekennzeichnet, daß der Hilfskontakt einen mit einem ersten Kontaktstift kompatiblen Oberteil (118) und wenigstens einen federnden Seitenteil (120) aufweist, der mit dem Oberteil verbunden ist und sich in Richtung auf einen zweiten Kontaktstift benachbart dem ersten Kontaktstift erstreckt, jedoch von ihm getrennt ist.

6. Steckverbindung nach Anspruch 5, dadurch gekennzeichnet, daß der federnde Seitenteil (120) an einem oberen Ende mit dem Oberteil (118) verbunden ist und an einem unteren Ende in Kontakt mit dem ersten Kontaktstift (80) steht, und dem zweiten Kontaktstift an einer Stelle ungefähr in gleichem Abstand vom oberen und vom unteren Ende am nächsten ist.

7. Steckverbindung nach Anspruch 5, dadurch gekennzeichnet, daß der Hilfskontakt (40) aus einem einheitlichen Federmetallstück gebildet ist.

8. Steckverbindung nach Anspruch 5, dadurch gekennzeichnet, daß der Hilfskontakt vier federnde Seitenteile (120) hat, wobei sich jeder Seitenteil unter einem rechten Winkel relativ zu einem benachbarten Seitenteil erstreckt.

9. Steckverbindung zum Verbinden von Leitern eines abgeschirmten Koaxialkabels mit nicht-koaxialen Kontaktstiften (80), die in einer Reihe angeordnet sind, welche Steckverbindung einen mit jedem einer Mehrzahl der Kontaktstifte kompatiblen ersten inneren Kontakt (10), der elektrisch oder mechanisch mit einem ersten inneren Leiter (90) eines der abgeschirmten Koaxialkabel verbunden ist; ein den ersten inneren Kontakt umgebendes elektrisch isolierendes Element (20); einen das isolierende Element umgebenden äußeren, rechteckigen Kontakt (30), der elektrisch und mechanisch mit einem äußeren Leiter (92) eines der abgeschirmten Koaxialkabel verbunden und am Mantel des Koaxialkabels befestigt ist, und einen Hilfskontakt (40) aufweist, der benachbart den Kontaktstiften angeordnet ist und die elektrische Verbindung eines oder mehrerer der Kontaktstifte oder zu einem externen Schaltkreis bildet, gekennzeichnet durch ein Gehäuse (206) mit einer Mehrzahl von Durchgängen (208), das über den Kontaktstiften derart in Position gebracht ist, daß jeder Durchgang über einem entsprechenden Kontaktstift angeordnet ist, wobei der Hilfskontakt (40) innerhalb der Durchgänge des Gehäuses vorgesehen ist.

10. Steckverbindung nach Anspruch 9, dadurch gekennzeichnet, daß der Hilfskontakt durch einen Kamm (200) gebildet ist, der eine Mehrzahl von getrennten Zähnen (202) hat, die mit einem gemeinsamen Schaft (204) verbunden sind, wobei jeder Zahn in einem anderen Durchgang des Gehäuses angeordnet ist.

11. Steckverbindung nach Anspruch 10, dadurch gekennzeichnet, daß der Schaft (204) des Hilfskontaktes (40) in eine Wand des Gehäuses eingebettet ist.

12. Steckverbindung nach einem der vorhergehenden Ansprüche, gekennzeichnet durch einen isolierenden Überzug, der am äußeren Kontakt (30) und am Hilfskontakt (40) selektiv aufgebracht ist, um die Kontakte im wesentlichen nur an der Verbindung zwischen dem äußeren Kontakt (30) und dem Hilfskontakt (40) freizulassen.

Revendications

1. Connecteur pour la connexion de conducteurs de câbles à blindage coaxial à des contacts mâles non coaxiaux (80) disposés en rangée, ce connecteur comportant un premier contact intérieur (10) compatible avec chaque contact mâle d'une série de contacts mâles, ce premier contact intérieur étant connecté électriquement et mécaniquement à un premier conducteur intérieur (90) d'un des câbles à blindage coaxial, un élément électriquement isolant (20) entourant le premier contact intérieur, un contact rectangulaire extérieur (30) entourant l'élément isolant, connecté électriquement et mécaniquement à un conducteur extérieur (92) d'un des câbles à blindage coaxial et fixé à la gaine de ce câble coaxial ainsi qu'un contact auxiliaire (40) agencé à proximité des contacts mâles et connectant électriquement un ou plusieurs des contacts extérieurs à un ou plusieurs de ces contacts mâles ou à un circuit extérieur, caractérisé en ce que le contact auxiliaire comporte une partie de base (102) et deux parties latérales résilientes (104, 106) s'étendant à partir de celle-ci, ce contact auxiliaire ayant une dimension en coupe d'allure générale en forme de U, la partie de base comprenant une série de trous (108) dans l'alignement spatial des contacts mâles (80) précités, ce contact auxiliaire étant agencé avec ces contacts mâles passant par les trous précités dans la partie de base susdite et s'étendant généralement parallèlement aux parties latérales précitées.

2. Connecteur suivant la revendication 1, caractérisé en ce que les parties latérales (104, 106) sont pourvues d'une série de nervures longitudinales (110), chacune étant dans l'alignement d'un des contacts mâles (80) adjacent.

3. Connecteur suivant la revendication 1, caractérisé en ce que les parties de base (102) et latérales (104, 106) sont agencées pour conférer au contact auxiliaire (40) une dimension en coupe en forme d'oméga inversé.

4. Connecteur suivant la revendication 1, caractérisé en ce que le contact auxiliaire (40) est constitué par une feulle de métal flexible unitaire.

5. Connecteur pour la connexion de conducteurs de câbles à blindage coaxial à des contacts mâles non coaxiaux (80) agencés en rangée, ce connecteur comportant un premier contact intérieur (10) compatible avec chaque contact mâle d'une série de contacts mâles, ce premier contact intérieur étant connecté électriquement et mécaniquement à un premier conducteur intérieur (90) d'un des câbles à blindage coaxial, un élément électriquement isolant (20) entourant le premier contact intérieur, un contact rectangulaire extérieur (30) entourant l'élément isolant, connecté électriquement et mécaniquement à un conducteur extérieur (92) d'un descâbles à blindage coaxial et fixé à la gaine de ce câble coaxial ainsi qu'un contact auxiliaire (40) agencé à proximité

des contacts mâles et connectant électriquement un ou plusieurs des contacts extérieurs à un ou plusieurs de ces contacts mâles ou à un circuit extérieur, caractérisé en ce que le contact auxiliaire comporte une partie supérieure (118) compatible avec un premier contact mâle et au moins une partie latérale résiliente (120) connectée à la partie supérieure précitée et s'étendant vers un second contact mâle adjacent au premier contact mâle précité, mais séparée de celui-ci.

6. Connecteur suivant la revendication 5, caractérisé en ce que la partie latérale résiliente (120) précitée comporte une extrémité supérieure connectée à la partie supérieure (118) et une extrémité inférieure en contact avec le premier contact mâle (80) et est la plus proche du second contact mâle en un point approximativement équidistant des extrémités supérieure et inférieure précitées.

7. Connecteur suivant la revendication 5, caractérisé en ce que le contact auxiliaire (40) est constitué d'une pièce métallique flexible unitaire.

8. Connecteur suivant la revendication 5, caractérisé en ce que le contact auxiliaire comporte quatre parties latérales résilientes (120), chaque partie latérale s'étendant à angle droit par rapport à une partie latérale adjacente.

9. Connecteur pour la connexion de conducteurs de câbles à blindage coaxial à des contacts mâles non coaxiaux (80) agencés en rangée, ce connecteur comportant un premier contact interieur (10) compatible avec chaque contact mâle d'une série de contacts mâles, ce premier contact intérieur étant connecté électriquement et mécaniquement à un premier conducteur intérieur (90) d'un des câbles à blundage coaxial, un élément électriquement isolant (20) entourant le premier contact intérieur, un contact rectangulaire extérieur (30) entourant l'élément isolant, connecté électriquement et mécaniquement à un conducteur extérieur (92) d'un des câbles à blindage coaxial et fixé à la gaine de ce câble coaxial ainsi qu'un contact auxiliaire (40) agencé à proximité des contacts mâles et connectant électriquement un ou plusieurs des contacts extérieurs à un ou plusieurs de ces contacts mâles ou à un circuit extérieur, caractérisé par une enveloppe (206) comportant une série de passages (208), cette enveloppe étant positionnée sur le contacts mâles de telle sorte que chacun de ces passages soit disposé sur l'un de ces contacts mâles correspondant, ce contact auxiliaire (40) étant agencé à l'intérieur des passages de l'enveloppe précitée.

10. Connecteur suivant la revendication 9, caractérisé en ce que le contact auxiliaire est constitué par un peigne (200) comportant une série de dents séparées (202) reliées à une branche commune (204), chacune de ces dents étant agencée dans un passage différent de l'enveloppe précitée.

11. Connecteur suivant la revendication 10, caractérisé en ce que la branche (204) du contact auxiliaire (40) est incorporée dans une paroi de l'enveloppe précitée.

12. Connecteur suivant l'une quelconque des revendications précédentes, caractérisé en outre par un revêtement isolant appliqué sélectivement au contact extérieur (30) et au contact auxiliaire (40) pour ne laisser les contacts exposés que pratiquement à la connexion entre le contact extérieur (30) et le contact auxiliaire (40).

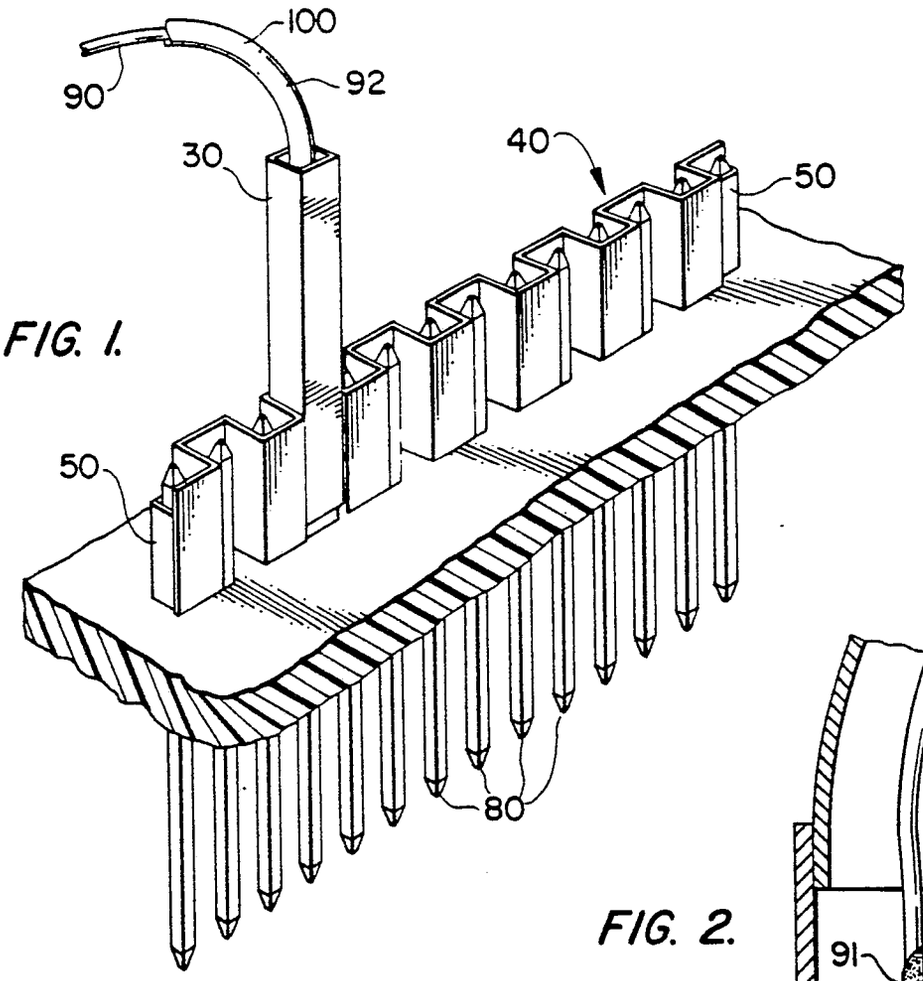

FIG. 1.

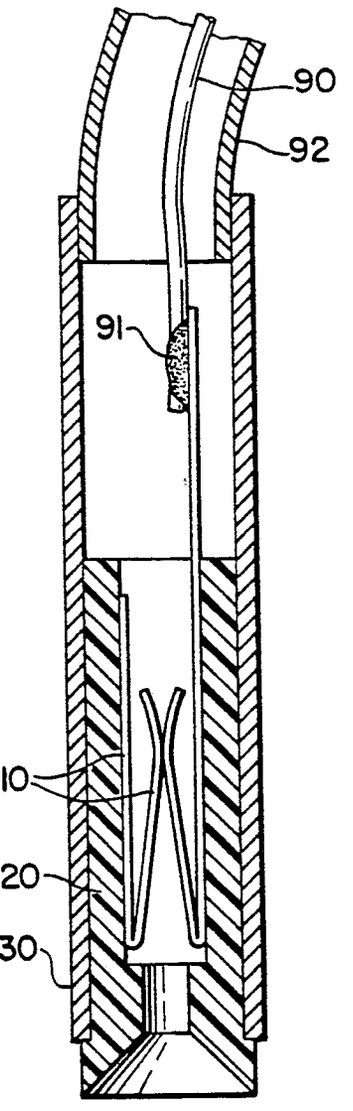

FIG. 2.

FIG. 5.

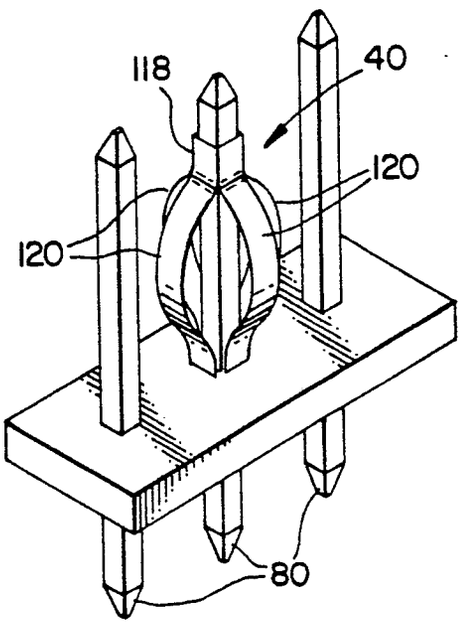

FIG. 3.

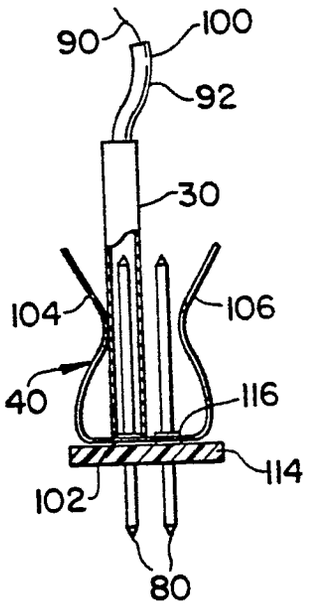

FIG. 4.

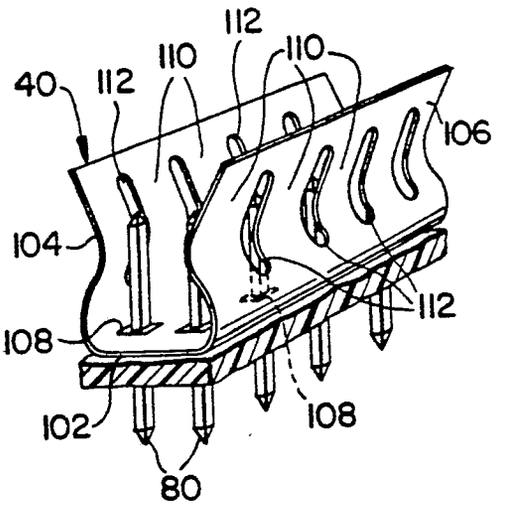

FIG. 6.

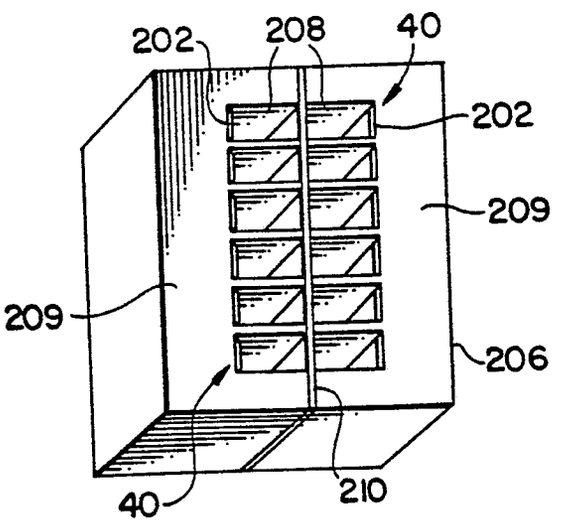

FIG. 7.