

Description

This invention relates to an electrical connector comprising the features of claim 1 and to a method of fabricating a shunted modular jack type connector.

A connector of the kind referred to above is known from EP-A-0 158 531. An insulating member is provided to take up the pair of shunts with an insulating sheet therebetween. The shunts have contact fingers which are different among the shunts. All fingers have similarly curved ends.

There are a variety of known shunted electrical connectors, including connectors of the modular jack type, wherein selected different terminals of the connector are shunted or shorted for various proposals. Examples of such connectors are shown in US-A-4,274,691; US-A-4,552,423; US-A-4,863,393; and US-A-4,874,333. All of these patents show one form or another of a modular jack type connector which includes such components as shorting elements, bridging cards, shunting strips and the like to shunt or short selective different terminals of the connectors, particularly when the connectors are not receiving a mating connector plug. For instance, the shunting elements may be used to maintain line continuity when no plug is inserted into the jack.

Generally, electrical connectors of the character described include "spring beam contacts" which protrude from a portion of the jack housing into the plug receiving cavity of the jack, the contacts or terminals being separated from each other by molded walls of the jack. The terminals include terminal portions, usually in the form of terminal pins for mating with the terminals of a complementary electrical component. For instance, the terminal pins may form solder tails for insertion into holes in a printed circuit board. In some instances, the terminal pins or solder tails are arranged in a single row, and in many other instances the terminal pins or solder tails are arranged in two rows.

US-A-4,552,423 discloses a shunting strip which is programmable to shunt selective different terminals in a given row. The strip is fabricated from sheet metal and includes a web portion from which a series of individual contact fingers have been stamped to lie adjacent the plane of the web portion. The shunt is secured in the jack housing, with preselected individual contact fingers having been bent to project out of the plane of the web into the jack cavity and into engagement with free end portions of the spring beam contacts, thereby to common the terminals when a plug is not received in the jack cavity. The unselected contact fingers remain adjacent the plane of the web portion of the stamped and formed shunt.

One of the problems with programmable shunted electrical connectors as shown in US-A-4,552,423 is that the programmable shunt is very specifically formed and is designed to shunt selective terminals

in a single row. If the terminals of a modular jack are to be arranged in two rows, as is quite common, a different sized and shaped shunting strip must be fabricated, adding significantly to the overall assembly costs of the jack connector. More importantly, the shunting strip can shunt only one combination of terminals. For instance, the shunting strip could shunt terminals 1, 2, 4 and 6 in a given row. However, the strip could not shunt terminals 1 and 2 independent of shunting terminals 4 and 6.

The present invention is directed to solving the above problems by providing a modular jack type connector with programmable shunting means in the form of a shunting strip stamped of a given size and shape and which can be formed in different configurations to shunt independent configurations of terminals.

Summary of the Invention

An object, therefore, of the invention is to provide a modular jack type connector with a new and improved shunting means.

More particularly, the jack connector includes a dielectric housing means defining a plug receiving cavity which is open at a plug receiving mouth at one end of the housing means. A plurality of terminals are mounted in the housing. The terminals include terminal portions such as terminal pins or solder tails, disposed in two rows, with contact portions of the terminals extending in cantilever fashion in a single row within the plug receiving cavity.

The invention contemplates a pair of programmable shunts substantially identically sized and stamped and differently formed from sheet metal material. Each shunt includes a web and a series of contact fingers projecting from the web. One shunt is mounted at a first position on the jack housing, with the contact fingers thereof in engagement with a first selected combination of the contact portions, and the other shunt is mounted on the housing at a second position, with the contact fingers thereof in engagement with a second selected combination of the contact portions.

Each of the two shunts are programmed for a given jack circuitry by removing selected different contact fingers of the respective shunt so that the remaining contact fingers engage only selected ones of the contact portions of the terminals.

Other objects, features and advantages of the invention will be apparent from the following detailed description taken in connection with the accompanying drawings.

Brief Description of the Drawings

The features of this invention which are believed to be novel are set forth with particularity in the appended claims. The invention, together with its ob-

jects and the advantages thereof, may be best understood by reference to the following description taken in conjunction with the accompanying drawings, in which like reference numerals identify like elements in the figures and in which:

- FIGURE 1 is an exploded perspective view of a modular jack type connector incorporating the novel shunting means of the invention;
- FIGURE 2 is a plan view of a blank from which the shunts of the connector are formed;
- FIGURE 3 is a fragmented section through a portion of the connector housing, illustrating the position of one of the shunts of the connector; and
- FIGURE 4 is a view similar to that of Figure 2, illustrating the position of the other of the shunts of the connector.

Detailed Description of the Preferred Embodiment

Referring to the drawings in greater detail, and first to Figure 1, the invention is embodied in a modular jack type connector which includes a two-part housing means. The housing means include a first part in the form of a modular jack housing, generally designated 10, and a second part 12 which is a component of an insulator subassembly, generally designated 13, including a plurality of terminals, generally designated 14a and 14b.

Housing 10 is a unitarily molded component of dielectric material, such as plastic or the like. As is known in the art, the housing defines a plug receiving cavity, generally designated 16, open at a plug receiving mouth at one end 18 of the housing. The cavity is sized and shaped for receiving a complementary jack plug connector which is inserted into cavity 16 from the open or mating end 18 of the housing. A plurality of partitions 20 are molded integrally with housing 10 to define slots 22 therebetween for receiving spring contact portions of terminals 14a and 14b, as described hereinafter. Housing 10 further includes a pair of mounting pegs 24 for surface mounting the connector through appropriate holes in a printed circuit board, as is known in the art.

Housing component 12 is unitarily molded of dielectric material, such as plastic or the like, and is shaped in the form of a housing plug for insertion through a mouth 26 at the top of housing 10. Component 12 is fabricated separate from housing 10 to facilitate assembly of terminals 14a and 14b within the two-part housing means. Specifically, the terminals are assembled to housing component 12 to form subassembly 13, as seen at the left-hand end of Figure 1, and the subassembly is inserted through a mouth 26 of housing 10 so that the terminals are substantially within the insulating housing, and with spring contact portions 28a of terminals 14a and spring contact portions 28b of terminals 14b alternately disposed in slots 22 between partitions 20. It can be seen that

spring contact portions 28a and 28b are coplanar or in a single row.

Terminals 14a and 14b also have terminal portions 30a and 30b, respectively. The terminal portions form terminal pins or solder tails of the terminals and are insertable through appropriate holes in a printed circuit board (not shown). Whereas spring contact portions 28a and 28b of terminals 14a and 14b, respectively, are in a single row, it can be seen that terminal portions 30a and 30b of terminals 14a and 14b, respectively, are offset and alternate in two distinct rows.

The invention contemplates providing shunt means for the modular jack connector; the shunt means providing shorting for selected different combinations of terminals 14a and 14b. Notwithstanding the fact that terminal pins 30a and 30b of terminals 14a and 14b, respectively, are disposed in two different rows, the invention contemplates that a pair of shunting strips can be fabricated in an identical original shape and subsequently formed and programmed for mounting on housing parts 10 at different positions to shunt discrete or independent combinations of terminals which form the two rows of terminal pins.

More particularly, Figure 1 shows a pair of shunt strips, generally designated 32a and 32b. The shunt strips are provided for shunting selected ones of terminal pins 30a, 30b of terminals 14a, 14b by engaging the respective spring contacts 28a, 28b, as described hereinafter.

Referring to Figure 2 in conjunction with Figure 1, shunt strips 32a and 32b are fabricated of stamped and formed sheet metal material. A blank, generally designated "B", is stamped from a continuous strip of sheet metal. This blank will be formed in the shape of shunt strips 32a and 32b (Fig. 1). Specifically, the blank includes a web 34 having a series of contact fingers 36 coplanar therewith and projecting from one side thereof. Opposite ends of the web are formed with recesses 38. Contact fingers 36 may have gold plated distal ends, as at 40. Preferably, only the side of the contact fingers which will engage spring contact fingers 28a and 28b of terminals 14a and 14b, respectively, are plated. It should be understood that this single, identically sized and shaped blank "B" (Fig. 2) is used to form both shunt strips 32a and 32b.

To that end, referring back to Figure 1, housing 10 has a pair of integrally molded mounting bosses 42 over which recesses 38 of shunt strip 32a are press-fit to mount shunt strip 32a onto the housing. It should be noted that only the left-hand mounting boss 42 is visible in Figure 1, but an identical boss is identically positioned behind the right-hand mounting peg 24 in the depiction. A similar pair of mounting bosses 44 are integrally molded on housing 10 for mounting shunt strip 32b, with the recesses 38 thereof press-fit over bosses 44. It can be seen in Figure 1 that

mounting bosses 42 are vertically and horizontally spaced from mounting bosses 44 in order to distinctly separate shunt strips 32a and 32b.

In comparing shunt strips 32a and 32b shown in Figure 1 with blank "B" shown in Figure 2, it can be seen that some of the contact fingers 36 of each shunt strip have been removed. In fact, it can be seen that each alternating contact finger of each respective shunt strip has been removed, and in comparing the two shunt strips, the alternately disposed contact fingers longitudinally of the respective shunt strips have been removed relative to each other. In this manner, the remaining contact fingers 36 of shunt strip 32a are longitudinally disposed for engagement with spring contact portions 28a of terminals 14a, and contact fingers 36 of shunt strip 32b are longitudinally disposed for engagement with spring contact portions 28b of terminals 14b. In addition, it can be seen that contact fingers 36 of shunt strip 32a are bent or formed out of the plane of web 34 at points closer to the web than are contact fingers 36 of shunt strip 30b. This will be explained below in relation to Figures 3 and 4.

In comparing contact portions 28a and 28b of terminals 14a and 14b, respectively, with shunt strips 32a and 32b, it should be noted that there are ten terminals with five terminal pins in each row as illustrated at the left of Figure 1. Consequently, each shunt strip 32a and 32b originally has ten contact fingers 36 for potential engagement with any one of the terminal contact portions. However, Figure 1 shows that only selected ones of contact fingers 36 are provided for engaging the respective spring contact portions 28a or 28b of terminals 14a or 14b. Specifically, Figure 1 shows that shunt 32a has (starting from the left) the "1st", "3rd", "5th", "7th" and "9th" contact fingers projecting from web 34. Shunt 32b has the "2nd", "4th", "6th", "8th" and "10th" contact fingers projecting from its web 34. All of the remaining contact fingers of both shunts have been severed from the webs. Therefore, each shunt is capable of shunting a discrete or independent combination of terminals 14a or 14b by engaging respective selected ones of the contact portions of the terminals when a complementary plug is not positioned in modular jack housing 10. The illustration in Figure 1 is but an example.

Figures 3 and 4 show how the differently formed shunt strips 32a and 32b (from an identical blank "B") are staked on mounting bosses 42 and 44 of housing 10 so that the contact fingers 36 of both shunt strips are coplanar for engagement with the single row of spring contact portions 28a and 28b of terminals 14a and 14b. More particularly, it can be seen in Figure 3 that shunt strip 32a is mounted on bosses 42, the bosses being disposed higher and outwardly of bosses 44. Consequently, contact fingers 36 of shunt strip 32a are bent, as at 50, so that the contact fingers are relatively long to project inwardly a sufficient distance

to underlie and engage spring contact portions 28a of respective terminals 14a.

Figure 4 shows shunt strip 32b mounted on bosses 44 of housing 10. It can be seen that bosses 44 are disposed below bosses 42 and inwardly thereof relative to the housing. Consequently, shunt strip 32b is bent, as at 52, to form shorter contact fingers 36 for engagement with spring contact portions 28b of the respective terminals 14b. It can be seen in Figures 3 and 4 that, notwithstanding the fact that the shunt strips are mounted at different positions on housing 10, all of the spring fingers 36 of both shunt strips are coplanar for engagement with the selected spring contact portions 28a and 28b which are in a single row, or coplanar. Preferably, housing 10 has a flange 54 (Figs. 3 and 4) at the bottom of the slots defined by partitions 20 and on top of which the contact fingers of the two shunt strips are in engagement. This provides an anti-stress feature for the contact fingers against which spring contact portions 28a and 28b are in engagement.

From the foregoing, it can be seen that a shorting means or system has been provided by the invention wherein shorting strips can be fabricated in identical original stamped configurations (i.e., blank "B" in Fig. 2) and then subsequently formed as shown in Figures 1, 3 and 4 to shunt different and independent combinations of terminals. The originally, identically stamped shunt strips can be individually programmed by removing selected contact fingers 36 so that each shunt strip can be individually programmed to shunt selected ones of the terminals in that row. The shunt strips are very simply staked by a press-fit onto their respective bosses 42 and 44 of housing 10, and the subassembly of housing component 12 and terminals 14a, 14b is inserted into mouth 26 of housing 10 to provide a very simple programmable modular jack connector, with the programmed contact fingers in shunting engagement with the selected different spring contact portions of the terminals as illustrated in Figures 3 and 4.

Claims

1. An electrical connector comprising:
 - a dielectric housing (10),
 - a plurality of terminals (14a, 14b) mounted at different positions on the housing, and including contact portions (28a, 28b) in a linear array, and
 - at least a pair of shunts (32a, 32b), each having a base member (34) and contact fingers (36) for engaging selected ones of said contact portions (28a, 28b) and being mounted in the housing (10), characterized in that the base members (34) are disposed one below the other and in different planes, and
 - in that the contact fingers (36) of one shunt (32a)



mounting bosses 42 are vertically and horizontally spaced from mounting bosses 44 in order to distinctly separate shunt strips 32a and 32b.

In comparing shunt strips 32a and 32b shown in Figure 1 with blank "B" shown in Figure 2, it can be seen that some of the contact fingers 36 of each shunt strip have been removed. In fact, it can be seen that each alternating contact finger of each respective shunt strip has been removed, and in comparing the two shunt strips, the alternatingly disposed contact fingers longitudinally of the respective shunt strips have been removed relative to each other. In this manner, the remaining contact fingers 36 of shunt strip 32a are longitudinally disposed for engagement with spring contact portions 28a of terminals 14a, and contact fingers 36 of shunt strip 32b are longitudinally disposed for engagement with spring contact portions 28b of terminals 14b. In addition, it can be seen that contact fingers 36 of shunt strip 32a are bent or formed out of the plane of web 34 at points closer to the web than are contact fingers 36 of shunt strip 30b. This will be explained below in relation to Figures 3 and 4.

In comparing contact portions 28a and 28b of terminals 14a and 14b, respectively, with shunt strips 32a and 32b, it should be noted that there are ten terminals with five terminal pins in each row as illustrated at the left of Figure 1. Consequently, each shunt strip 32a and 32b originally has ten contact fingers 36 for potential engagement with any one of the terminal contact portions. However, Figure 1 shows that only selected ones of contact fingers 36 are provided for engaging the respective spring contact portions 28a or 28b of terminals 14a or 14b. Specifically, Figure 1 shows that shunt 32a has (starting from the left) the "1st", "3rd", "5th", "7th" and "9th" contact fingers projecting from web 34. Shunt 32b has the "2nd", "4th", "6th", "8th" and "10th" contact fingers projecting from its web 34. All of the remaining contact fingers of both shunts have been severed from the webs. Therefore, each shunt is capable of shunting a discrete or independent combination of terminals 14a or 14b by engaging respective selected ones of the contact portions of the terminals when a complementary plug is not positioned in modular jack housing 10. The illustration in Figure 1 is but an example.

Figures 3 and 4 show how the differently formed shunt strips 32a and 32b (from an identical blank "B") are staked on mounting bosses 42 and 44 of housing 10 so that the contact fingers 36 of both shunt strips are coplanar for engagement with the single row of spring contact portions 28a and 28b of terminals 14a and 14b. More particularly, it can be seen in Figure 3 that shunt strip 32a is mounted on bosses 42, the bosses being disposed higher and outwardly of bosses 44. Consequently, contact fingers 36 of shunt strip 32a are bent, as at 50, so that the contact fingers are relatively long to project inwardly a sufficient distance

to underlie and engage spring contact portions 28a of respective terminals 14a.

Figure 4 shows shunt strip 32b mounted on bosses 44 of housing 10. It can be seen that bosses 44 are disposed below bosses 42 and inwardly thereof relative to the housing. Consequently, shunt strip 32b is bent, as at 52, to form shorter contact fingers 36 for engagement with spring contact portions 28b of the respective terminals 14b. It can be seen in Figures 3 and 4 that, notwithstanding the fact that the shunt strips are mounted at different positions on housing 10, all of the spring fingers 36 of both shunt strips are coplanar for engagement with the selected spring contact portions 28a and 28b which are in a single row, or coplanar. Preferably, housing 10 has a flange 54 (Figs. 3 and 4) at the bottom of the slots defined by partitions 20 and on top of which the contact fingers of the two shunt strips are in engagement. This provides an anti-stress feature for the contact fingers against which spring contact portions 28a and 28b are in engagement.

From the foregoing, it can be seen that a shorting means or system has been provided by the invention wherein shorting strips can be fabricated in identical original stamped configurations (i.e., blank "B" in Fig. 2) and then subsequently formed as shown in Figures 1, 3 and 4 to shunt different and independent combinations of terminals. The originally, identically stamped shunt strips can be individually programmed by removing selected contact fingers 36 so that each shunt strip can be individually programmed to shunt selected ones of the terminals in that row. The shunt strips are very simply staked by a press-fit onto their respective bosses 42 and 44 of housing 10, and the subassembly of housing component 12 and terminals 14a, 14b is inserted into mouth 26 of housing 10 to provide a very simple programmable modular jack connector, with the programmed contact fingers in shunting engagement with the selected different spring contact portions of the terminals as illustrated in Figures 3 and 4.

Claims

1. An electrical connector comprising:
 - a dielectric housing (10),
 - a plurality of terminals (14a, 14b) mounted at different positions on the housing, and including contact portions (28a, 28b) in a linear array, and
 - at least a pair of shunts (32a, 32b), each having a base member (34) and contact fingers (36) for engaging selected ones of said contact portions (28a, 28b) and being mounted in the housing (10), characterized in that the base members (34) are disposed one below the other and in different planes, and
 - in that the contact fingers (36) of one shunt (32a)



are formed differently to the contact fingers (36) of the other shunt (32b).

2. The connector of claim 1 wherein said shunts (32a,32b) are prepared from stamped sheet metal blanks (B) which have substantially identical sizes and shapes.
3. The connector of claim 2 wherein selected ones of the contact fingers (36) of each blank (B) have been removed so that the base member and the remaining contact fingers form the respective shunt (32a,32b).
4. The connector of any of claims 1 to 3 wherein said shunts (32a,32b) are mounted in said housing (10) by interengaging mounting means (42,44) fixed to said housing (10) and engaging said shunts (32a,32b).
5. The connector of any of claims 1 to 4 wherein the contact fingers (36) of one shunt (32a) are bent at first positions relative to the base member (34) thereof and the contact fingers (36) of the other shunt (32b) are bent at second different position relative to the base member (34) thereof in such a manner that all contact fingers (36) lie in a single row notwithstanding the spacing of the shunts (32a,32b) on the housing (10).
6. The connector of claim 5 wherein said contact fingers (36) of each shunt (32a) are bent into a common plane relative to its base member (34) different from the common plane for the other shunt (32b).
7. The connector of any of claims 1 to 6 wherein said base member comprises an elongated web (34) of sheet metal with said contact fingers (36) projecting from said web.
8. The connector of claim 7 wherein all of the contact fingers (36) are of equal length.
9. A method of fabricating a shunted modular jack type connector which includes a dielectric housing (10,12) defining a plug receiving cavity (16) open at one end (18) of the housing and a plurality of terminals (14a,14b) mounted in the housing with contact portions (28a,28b) disposed in a single row extending in cantilever fashion within the plug receiving cavity, comprising the steps of: stamping a pair of substantially identical blanks (B) from sheet metal material including a series of contact fingers (36) in a single row; forming the two blanks (B) so that the respective contact fingers (36) thereof are in different positions but engageable with the single row of con-

tact portions (28a,28b) when the stamped and formed blanks are mounted at different positions (42,44) on the housing;

removing selected ones of the contact fingers of each blank so that the remaining contact fingers (36) engage only selected ones of the contact portions (28a,28b); and

mounting the so produced shunts (36a,36b) at said different positions (42,44) on the housing.

10. The method of claim 9 wherein said forming step comprises bending the contact fingers (36) of each respective shunt (32a,32b) at different respective locations, whereby the bent contact fingers of each shunt are in a common plane when mounted at said different positions on the housing.

Patentansprüche

1. Elektrischer Steckverbinder mit folgenden Merkmalen:

ein dielektrisches Gehäuse (10),

eine Mehrzahl von Klemmen (14a, 14b), die an unterschiedlichen Stellen des Gehäuses montiert sind und Kontaktteile (28a, 28b) in einer linearen Anordnung umfassen,

mindestens zwei Überbrückungen (32a, 32b), die jeweils ein Basisabschnitt (34) und Kontaktfinger (36) zur Anlage an ausgewählte Kontaktteile (28a, 28b) aufweisen und in dem Gehäuse montiert sind,

dadurch gekennzeichnet,

daß die Basisabschnitte (34) untereinander und in unterschiedlichen Ebenen angeordnet sind und daß die Kontaktfinger (36) der einen Überbrückung (32a) unterschiedlich zu den Kontaktfingern (36) der anderen Überbrückung (32b) geformt sind.

2. Steckverbinder nach Anspruch 1, dadurch gekennzeichnet, daß die Überbrückungen (32a, 32b) aus gestanztem Metallblech (B) vorbereitet sind, die im wesentlichen gleiche Größen und Gestalten aufweisen.

3. Steckverbinder nach Anspruch 2, dadurch gekennzeichnet, daß ausgewählte Kontaktfinger (36) jedes Stanzteils (B) entfernt worden sind, so daß der Basisabschnitt und die verbleibenden Kontaktfinger die jeweilige Überbrückung (32a, 32b) bilden.

4. Steckverbinder nach einem der Ansprüche 1 bis 3, dadurch gekennzeichnet, daß die Überbrückungen (32a, 32b) in dem Gehäuse (10) mittels inein-



andergreifender Befestigungsmittel (42, 44) montiert sind, die in dem Gehäuse (10) angebracht sind und an den Überbrückungen (32a, 32b) anliegen.

5. Steckverbinder nach einem der Ansprüche 1 bis 4, dadurch gekennzeichnet, daß die Kontaktfinger (36) der einen Überbrückung (32a) an ersten Stellen relativ zu dem Basisabschnitt (34) gebogen sind und daß die Kontaktfinger (36) der anderen Überbrückung (32b) an zweiter unterschiedlicher Stelle relativ zu dem Basisabschnitt (34) in solcher Weise gebogen sind, daß alle Kontaktfinger (36) in einer einzelnen Reihe unabhängig vom Abstand der Überbrückungen (32a, 32b) am Gehäuse (10) angeordnet sind.

6. Steckverbinder nach Anspruch 5, dadurch gekennzeichnet, daß die Kontaktfinger (36) jeder Überbrückung (32a) in einer gemeinsamen Ebene relativ zu dem Basisabschnitt (34) gebogen sind, die unterschiedlich zur gemeinsamen Ebene der anderen Überbrückung (32b) ist.

7. Steckverbinder nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß der Basisabschnitt einen länglichen Steg (34) aus Blech umfaßt, von dem die Kontaktfinger (36) vorstehen.

8. Steckverbinder nach Anspruch 7, dadurch gekennzeichnet, daß die Gesamtheit der Kontaktfinger (36) von gleicher Länge ist.

9. Verfahren der Herstellung eines überbrückten modularen Steckverbinders vom Buchsentypp, der ein dielektrisches Gehäuse (10, 12) zur Bestimmung eines Steckeraufnahmehohlraums (16) am offenen Ende (18) des Gehäuses und eine Mehrzahl von Klemmen (14a, 14b) umfaßt, die in dem Gehäuse montiert sind, wobei die Kontaktteile (38a, 38b) in einer einzelnen Reihe angeordnet sind und in den Steckeraufnahmehohlraum vorkragen, mit folgenden Schritten:

zwei im wesentlichen identische Rohlinge (B) werden aus Blechmaterial gestanzt, die eine Reihe von Kontaktfingern (36) in einer einzelnen Reihe aufweisen;

die beiden Rohlinge (B) werden so verformt, daß die jeweiligen Kontaktfinger (36) sich in unterschiedlichen Stellungen befinden, aber mit der einzelnen Reihe der Kontaktteile (38a, 38b) in Eingriff kommen können, wenn die ausgestanzten und geformten Rohlinge in unterschiedlichen Stellungen (42, 44) am Gehäuse montiert werden;

ausgewählte Kontaktfinger jedes Roh-

lings werden entfernt, so daß die verbleibenden Kontaktfinger (36) nur ausgewählte Kontaktteile (28a, 28b) berühren und

die so hergestellten Überbrückungen (36a, 36b) werden an unterschiedlichen Stellungen (42, 44) des Gehäuses montiert.

10. Verfahren nach Anspruch 9, dadurch gekennzeichnet, daß der Verformungsschritt das Biegen der Kontaktfinger (36) der jeweiligen Überbrückung (32a, 32b) an unterschiedlichen Stellen umfaßt, wobei die gebogenen Kontaktfinger jeder Überbrückung in einer gemeinsamen Ebene zu liegen kommen, wenn sie an unterschiedlichen Stellungen in dem Gehäuse montiert sind.

Revendications

1. Connecteur électrique comprenant:
 - un boîtier diélectrique (10);
 - une pluralité de bornes (14a, 14b) montées au niveau de différentes positions dans le boîtier, et comprenant des portions de contact (28a, 28b) alignées; et
 - au moins une paire de shunts (32a, 32b), montés dans le boîtier (10), chacun des shunts ayant une partie de base (34) et des doigts de contact (36) pour entrer en contact avec des portions de contact (28a, 28b) sélectionnées, caractérisé en ce que les parties de base (34) sont disposées l'une sous l'autre, dans des plans différents, et
 - en ce que les doigts de contact (36) de l'un des shunts (32a) sont formés différemment que le sont les doigts de contact (36) de l'autre shunt (32b).
2. Connecteur électrique selon la revendication 1, caractérisé en ce que lesdits shunts (32a, 32b) sont fabriqués à partir de flans de métal en feuille poinçonnés (B) qui ont substantiellement les mêmes formes et tailles.
3. Connecteur électrique selon la revendication 2, caractérisé en ce que des doigts de contact (36) sélectionnés ont été retirés de façon à ce que la partie de base et les doigts de contact restants forment le shunt correspondant (32a, 32b).
4. Connecteur électrique selon l'une quelconque des revendications 1 à 3, caractérisé en ce que lesdits shunts (32a, 32b) sont montés dans ledit boîtier (10) par des moyens de montage par interconnexion (42, 44) fixés audit boîtier (10) et raccordés auxdits shunts (32a, 32b).



5. Connecteur électrique selon l'une quelconque des revendications 1 à 4, caractérisé en ce que les doigts de contact (36) de l'un des shunts (32a) sont pliés au niveau de premières positions relativement à la partie de base (34) correspondante et les doigts de contact (36) de l'autre shunt (32b) sont pliés au niveau de secondes positions, différentes, relativement à la partie de base (34) correspondante, de telle manière que tous les doigts de contact (36) s'étendent selon une seule rangée, malgré l'espacement des shunts (32a, 32b) dans le boîtier.

6. Connecteur électrique selon la revendication 5, caractérisé en ce que les doigts de contact (36) de chaque shunt (32a) sont pliés, relativement à la partie de base (34) correspondante, dans un plan commun différent du plan commun de l'autre shunt (32b).

7. Connecteur électrique selon l'une quelconque des revendications 1 à 6, caractérisé en ce que ladite partie de base comprend un plat allongé (34) en métal en feuille, les doigts de contact (36) s'étendant à partir dudit plat.

8. Connecteur électrique selon la revendication 7, caractérisé en ce que tous les doigts de contact (36) sont de longueur égale.

9. Procédé de fabrication d'un connecteur de type jack modulaire à dispositif de shuntage qui comprend un logement diélectrique (10, 12) définissant une cavité de réception de fiche (16), ouverte au niveau d'une extrémité (18) du logement, et une pluralité de bornes (14a, 14b) montées dans le logement avec des portions de contact (28a, 28b) disposées selon une seule rangée s'étendant en porte à faux à l'intérieur de la cavité de réception de fiche, comprenant:

une étape d'obtention, par poinçonnage d'un matériau métallique en feuille, d'une paire de flans (B) substantiellement identiques comprenant une série de doigts de contact (36) disposés selon une seule rangée;

une étape de mise en forme des deux flans (B), de manière à ce que leurs doigts de contact (36) respectifs se trouvent dans des positions différentes mais dans lesquelles il peuvent entrer en contact avec une seule rangée de portions de contact (28a, 28b) lorsque les flans poinçonnés et mis en forme sont montés au niveau de positions différentes (42, 44) du logement;

une étape consistant à retirer des doigts de contact sélectionnés de chacun des flans, de telle sorte que les doigts de contact (36) restant n'entrent en contact qu'avec des portions de

contact sélectionnées (28a, 28b); et

une étape de montage des shunts ainsi obtenus (36a, 36b) au niveau desdites positions différentes (42, 44) dans le logement.

10. Procédé selon la revendication 9, caractérisé en ce que ladite étape de mise en forme comprend des étapes de pliage des doigts de contact (36) de respectivement l'un et l'autre shunt (32a, 32b), en des endroits différents, de manière à ce que les portions pliées des doigts de contact de l'un et l'autre shunt s'étendent dans un plan commun lorsque lesdits shunts sont montés en des endroits différents dans le logement.

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