

Description

This invention relates to electrical terminals having a wire-receiving slot for establishing contact with a wire inserted into the slot and to electrical connectors containing terminals having wire-receiving slots. The invention is particularly concerned with terminals which are intended for use with extremely fine wires.

U.S. Patent 3,444,506 describes a multicontact electrical connector for flat cable having contact terminals therein which have wire-receiving slots into which the conductors of the cable are inserted when electrical contact is made. The terminals are of flat conductive sheet metal and have a free end into which the wire-receiving slot extends. The width of the slot is less than the conducting cores of the conductors so that as the conductor moves into the slot, the edges of the slot contact the conductor to form the electrical contact.

Terminals of the type described in the above-identified U.S. patent are widely used for wires having a diameter of at least about 0.33mm (0.013 inches) which is the equivalent of an AWG 28 wire but they are not used to any significant extent for wires having a diameter less than about 0.33mm. The reason for this limitation on the use of wire-in-slot or insulation displacement terminals is that it is impractical to produce terminals having extremely narrow slots which are required for very fine wires. For example, an AWG 32 wire has a diameter of about 0.20mm (0.008 inches) and the slot required for a wire of this size must have a width of about 0.1mm (0.004 inches). The wire-receiving slots are produced in the sheet metal from which the terminals are manufactured by means of conventional punch and die techniques, that is, a punch is provided having a width equal to the width of the slot and a die is also provided having an opening into which the punch moves. The sheet metal is supported on the die and when the punch moves into the die, the slot is formed.

As a practical matter, it is not possible to produce slots in sheet metal of a given thickness which have a width which is significantly less than the thickness of the sheet metal. In other words, if the stock metal has a thickness of about 0.30 mm, it is impractical to punch a slot in the stock metal having a width which is much less than 0.30 mm. It follows that if the wire has a diameter of 0.20 mm, the slot width should be about 0.10 mm and a slot having this width cannot be produced in stock metal having a thickness of 0.30 mm. This limitation on slot width exists for the reason that if it is attempted to punch an extremely narrow slot in a relatively thick stock metal, the punch will break because of the extremely high stresses imposed on the punch when it moves against the stock metal.

It might appear that the terminals for extremely fine wires might be produced from extremely thin stock metal thereby to permit the formation of extremely narrow slots in the stock

metal. However, if the stock metal used for the terminals is extremely thin, the resulting terminals will be flimsy and will be useless for that reason.

Attention is also drawn to French patent 2,206,598, which discloses a sheet metal electrical terminal having opposed parallel faces, and to US patent 4,417,780 which discloses a sheet metal electrical terminal having a contact end portion adapted for piercing flat cable conductors.

The present invention, which is defined in the appended claims, is directed to the achievement of an improved terminal which can be used in connectors intended for flat ribbon cable without stripping insulation from the cable. The invention is further directed to the achievement of terminals which are more compact than previously available terminals and which, for that reason, are desirable for use with extremely fine wires.

In order that the present invention may be more readily understood, reference will now be made to the accompanying drawings in which:-

Figure 1 is a perspective view of a terminal in accordance with the invention.

Figures 2, 3 and 4 are views looking in the direction of the arrows 2—2, 3—3 and 4—4 of Figure 1.

Figure 5 is a plan view of a flat blank from which the terminal of Figure 1 is produced.

Figure 6 is a perspective view with parts exploded from each other of a multicontact electrical connector for flat cable having terminals in accordance with the invention.

Figure 7 is a fragmentary sectional view showing the body portion and the cover portion of the connector of Figure 6 and illustrating the positions of the terminals relative to a cable on which the connector is being installed.

Figure 8 is a view similar to Figure 7 but showing the positions of the parts when the connector is installed on the cable and the terminals are in contact with the conductors in the cable.

Figure 9 is a view looking in the direction of the arrows 9—9 of Figure 7.

Figures 10, 11 and 12 are views looking in the direction of the arrows 10—10, 11—11 and 12—12 of Figure 8.

Figure 13 is a perspective view of an alternative embodiment.

Figures 14 and 15 are views looking in the direction of the arrows 14—14 and 15—15 on Figure 13.

Figure 16 is a view showing the two parts of the terminal of Figure 13.

One form of terminal 2 in accordance with the invention comprises a shank portion 4 having an arm 6 extending from an inner end 20 of the shank. The arm 6 may take the form of a solder post, for example, or other device for connecting the terminal to a complementary terminal or other conductor.

The shank portion 4 comprises first and second generally rectangular plate-like members

8, 10 which have oppositely facing first and second major surfaces 12, 14. The shank portion has first and second side edges 16, 18 which extend from the inner end 20 to the free end 22 thereof.

As will be explained below, the terminal is produced by folding a flat blank so that the first side edge 16 has a fold or bight as shown at 24 and the plate-like members 8, 10 are the sidewalls which extend from the bight. The bight 24 extends from an intermediate location 23, which is spaced from the free end 22, towards the inner end 20 and the portion of the shank between the bight and the free end 22 can be considered as a conductor-receiving section 26.

The plate-like members 8, 10 have opposed internal first and second surfaces 28, 30 and, in the conductor-receiving section 26, these internal surfaces have opposed contact surface sections 32 which are on the right-hand side of the terminal as viewed in Figure 3 so that they are adjacent to the bight 24. The significance of this feature will be explained below.

The wire-receiving slot of the terminal is the space between the opposed plate-like members in the conductor-receiving section 26 and a wire can therefore be aligned with this slot and moved laterally of its axis into the slot until it is between the opposed contact surface sections 32. It will be noted that the ends 34 of these contact surfaces 32 are spaced from the free end 22 and the zones 36, 40 which surround the contact surface sections 32 are of reduced thickness as shown in Figure 2. This reduced thickness is achieved by simply coining the flat blank as shown in Figure 5 prior to folding of the blank and this coining operation results in the provision of a wire lead-in section as shown at 36 in Figures 2 and 3. The distance between the opposed coined surfaces 36 is greater than the thickness of the conductor for which the terminal is extended so that the conductor can be moved easily into the slot until it encounters the end 34 of the contact surface sections 32. It is also desirable to swage the ends of the plate-like members as shown at 38 to thereby provide tapered opposed surfaces at the slot which will guide the wire into the lead-in section 36.

The leading edge 35 of each contact surface section 32 may be made relatively sharp if the wire for which the terminal is intended has a varnish-type insulation (if it is a magnet or coil wire) so that these sharp leading edges will penetrate the varnish-type insulation and establish electrical contact. On the other hand, if the wires are provided with conventional relatively soft plastic insulation, these leading edges 35 should be smooth for best results.

Figure 5 shows the coined blank 43 from which the terminal of Figures 1 to 4 is produced. Ordinarily, a succession of blanks will be stamped from a continuous strip of conductive sheet metal and the finished terminals will be connected to a continuous carrier strip so that the terminals can be removed from the strip by an assembly

machine and inserted into a multicontact connector as described below. The blank after being stamped from sheet metal is coined in the areas 36, 40 and swaged as shown at 38. Advantageously, dimples are provided as shown at 31 on one side of the fold line so that when the blank is folded to produce the terminal of Figure 1, the internal surfaces of the plate-like members will be spaced apart by a precisely predetermined amount and the width of the slot particularly as measured between the contact surface sections 32 is thereby precisely controlled. The blank shown is provided with lances 42 by means of which it is retained in the connector housing shown in Figure 6.

Terminals in accordance with the invention can be produced in a wide range of sizes for wires of varying diameters however, as noted above, the invention has particular advantages for relatively fine wires. In order to illustrate this advantage, the approximate dimensions of a terminal intended for an AWG 32 wire having a diameter of about 0.20mm (0.008 inches) will be described.

The terminal is produced from sheet metal having a thickness of about 0.30mm (0.012 inches), the material preferably being a phosphor bronze in temper 5 or temper 6, that is to say, material which has been work hardened by extensive cold rolling. The blank is stamped as shown in Figure 5 and the swaging, coining and dimpling operations are carried out to produce the dimples 31 the reduced thickness areas 36, 40 and the lead-in surfaces 38 adjacent to the free end 22. Thereafter, the blank is folded along the fold lines indicated through an angle of 180° until the internal surfaces are against or opposed to each other. The closeness of the opposed surfaces is controlled during manufacturing by the stamping and forming die with the aid of the dimples 31 and the distance between the opposed internal surfaces can thus be very closely controlled. In the finished terminal, the distance between the opposed internal surfaces in the coined areas 36, 40 is approximately 0.20mm (0.008 inches) and the spacing between the opposed contact surface sections 32 is approximately 0.10mm (0.004 inches). A wire-receiving slot of these dimensions is thus properly dimensioned to receive a wire having a diameter of 0.20mm. It will be apparent from the discussion previously presented that it would be impossible to produce a slot having this width by conventional stamping operations with a punch and die for the reason that the punch would not withstand the forces developed. The overall length of the shank portion of the terminal described above is about 6.3mm (0.25 inches) and the width is 1.3mm (0.05 inches).

A terminal as described above which is manufactured from stock metal having a thickness of 0.30mm is sufficiently robust to withstand the handling to which it must be subjected when it is manufactured and assembled to an electrical connector. The disclosed form of the terminal is particularly strong in that the folded bight portion 24 of the shank is composed of material which

has been severely work hardened by the folding operation. The material itself is preferably in a relatively hard temper and the added folding operation to produce the bight further hardens the material in the zone 24 of the terminal. It will be noted that the contact surface sections 32 are immediately adjacent to and in alignment with the bight 24. The stresses thus imposed on the terminal during insertion of the wire can thus be transmitted to the strongest part of the terminal so that it is able to withstand these forces.

Figure 6 shows a connector assembly 50 containing terminals in accordance with the invention which is intended to be installed on a multiconductor cable 48 having a plurality of conductors 44 in side-by-side relationship contained in insulating material 46. The connector assembly comprises a housing body 52 and a cover 54 which is assembled to the housing 52 against the conductor-receiving surface 56 thereof. The housing body has a plurality of openings 58 (Figure 7) which receive the shank portions of the terminals in a manner such that the conductor-receiving section 26 extends beyond the surface 56 as shown in Figure 7. Advantageously, the bight portions of the terminals are recessed slightly from the surface 56 as shown.

The cover 54 has a scalloped surface as shown at 60 for supporting the cable and has a plurality of U-shaped openings 62 which receive the sections 26 of the terminals. Ribs 66 in these openings are dimensioned to be received in the coined zones 40 of the terminals and function to support the conductor immediately adjacent to the wire contacting surface sections 32 when the wires are being pushed into the wire-receiving slots. Installation of the connector on the cable merely requires that the cable be placed on the surface 60 of the cover 54 and the connector body or housing 52 be aligned with the cable and assembled to the cover as illustrated in Figures 7 and 8. During such assembly, the conductors will move into the wire-receiving slots and will be received between the surface portions 32 which will establish electrical contact. The previously described lances 42 serve to retain the terminals in the cover 54. The cover may be dimensioned so that the openings 62 will support the free ends of the plate-like members in the contact section 26 against outward flexure. In other words, the contact sections 26 may be dimensioned to have an interference fit in the openings 62 so that the contact surfaces will be held against the wire by the sidewalls of the housing cover.

Figures 13 through 16 show an alternative embodiment of a terminal 68 in accordance with the invention which is manufactured by welding two plate members 70, 70' to each other rather than by folding a single plate member as described above. Where appropriate, the reference numerals used in the description of the embodiment of Figures 1 through 5 have been applied to Figures 13 through 16 and the features of the Figure 13 embodiment which are different are identified by new reference numerals.

The two plate members 70, 70' are mirror images of each other as shown in Figure 16 and are produced by stamping flat blanks from sheet metal and then coining to produce the contact surfaces as described above. The two blanks shown in Figure 16 are then positioned against each other so that their surfaces 74, 74' are against each other and the two blanks are welded or otherwise bonded to each other at these surfaces as shown at 76 in Figures 14 and 15. Advantageously, the blanks are produced in strip form and the two strips can then be passed through a welding station so that the assembly operation can be carried out rapidly.

The terminal shown in Figures 13 through 16 does not have a single post as does the terminal shown in Figures 1 through 5, but each of the plate-like members rather has a spring arm 78, 78' extending therefrom and the spring arms can serve as a receptacle for a blade-type terminal. If desired, spring arms as shown in Figure 13 can also be provided on the terminal of Figures 1 through 5.

The embodiment shown in Figures 13 through 16 can be made in small sizes as can the previously described embodiment, and has in general the advantages of the previously described embodiment.

Terminals and connectors in accordance with the inventions can be of any desired dimensions, however, the principles of the invention offer particular advantages where the conductors are contained in a flat cable 48 and the distance between adjacent conductors 44 is extremely small. Cables 48 are now being used which have a center-to-center spacing of 0.025 inches (0.64 mm). Connectors of the type shown in Figure 6 must also be capable of being installed on the cable 48 without stripping the insulation 48 from the cable. It follows that the terminals must be sufficiently strong to withstand the forces imposed when they are pushed through the cable insulation and when the conductors enter the terminals as shown in Figures 7 and 8. Terminals in accordance with the present invention are extremely robust as noted above by virtue of the fact that the bight 24 extends along one of the side edges of the shank portion and the contact surfaces 32 are immediately adjacent to the bight portion in the preferred embodiment.

It will be apparent from the foregoing description that an electrical terminal has been described which can be produced from stock metal of substantial thickness and which nonetheless is capable of being produced with extremely narrow wire-receiving slots so that a sturdy and durable terminal can be manufactured which is capable of being used with extremely fine wires.

Claims

1. A sheet metal electrical terminal (2, 68) of the type comprising a shank portion (4) having an inner end and a free end (20, 22), oppositely facing first and second major surfaces (12, 14) on

has been severely work hardened by the folding operation. The material itself is preferably in a relatively hard temper and the added folding operation to produce the bight further hardens the material in the zone 24 of the terminal. It will be noted that the contact surface sections 32 are immediately adjacent to and in alignment with the bight 24. The stresses thus imposed on the terminal during insertion of the wire can thus be transmitted to the strongest part of the terminal so that it is able to withstand these forces.

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the shank portion between the inner end and the free end, and a wire-receiving slot extending inwardly from the free end, the shank portion (4) having first and second plate-like members (8, 10, 70, 70') provided in a side-by-side parallel relationship, the oppositely facing first and second major surfaces (12, 14) being on the first and second plate-like members (8, 10, 70, 70') respectively, the first and second plate-like members having first and second opposed internal surfaces (28, 30, 74, 74'), the shank portion having first and second side edges (16, 18) which extend from the free end (22) to the inner end (20), the shank portion having a conductor-receiving section (26) which extends from the free end (22) to an intermediate location (23) which is between the free end (22) and the inner end (20), the first and second internal surfaces being spaced apart by a gap in the conductor-receiving section, the terminal being characterized in that:

the wire-receiving slot comprises the space between the first and second internal surfaces;

the first and second side edges (16, 18) are open in the conductor-receiving section.

2. A sheet metal electrical terminal (68) as set forth in claim 1 characterized in that the first and second internal surfaces (74, 74') are against each other and bonded to each other in a zone which is between the intermediate location (23) and the inner end (20).

3. A sheet metal electrical terminal (2) as set forth in claim 1 characterized in that the shank portion comprises a folded section of sheet metal, the first and second platelike members being connected to each other by a bight (24) which extends along the first side edge (8), the bight extending from the intermediate location (23) towards the inner end (20).

4. A sheet metal electrical terminal (2) as set forth in claim 1 characterized in that the shank portion (4) comprises a folded section of sheet metal having a U-shaped cross-section comprising a bight (24) and walls extending from the bight, the bight (24) extending along the first side edge (16), the walls being the first and second platelike members (8, 10), the bight (24) having one end (23) which is spaced from the free end (22), the bight extending from the one end (23) thereof towards the inner end (20) of the shank portion (4).

5. A sheet metal electrical terminal (2) as set forth in claim 4 characterized in that the first and second internal surfaces (28, 30) have opposed contact surface portions (32) which are spaced apart by a distance which is less than the diameter of a wire for which the terminal is intended, the opposed contact surface portions (32) extend from a location adjacent to, but spaced from the free end (22) to a location adjacent to the one end (23) of the bight (24), the first and second internal surfaces (28, 30) being recessed from the opposed contact surface portions (32) and being spaced apart by a distance which is greater than the spacing between the opposed contact surface portions whereby the wire-receiving slot has a

lead-in portion extending from the free end (22) to the contact surface portions (32).

6. A sheet metal electrical terminal (2) as set forth in claim 5 characterized in that the contact surface portions (32) extend beside the first side edge (16).

7. A combination of a sheet metal electrical terminal (2) as set forth in any of the preceding claims with an insulation housing characterized in that the terminal is mounted in the housing, the housing having a conductor-receiving face (56), the terminal (2) having a projecting portion (26) which contains the wire-receiving slot and which projects beyond the conductor-receiving face (56) with the free end (22) of the terminal spaced from the conductor-receiving face.

8. A combination as set forth in claim 7 characterized in that the insulating housing has a plurality of terminals (2) mounted therein in spaced-apart relationship, the housing and the terminals constituting a multicontact connector.

9. A combination as set forth in claim 8 characterized in that the terminals in the housing are arranged in at least two rows, the terminals in each row being in side-by-side spaced-apart relationship with their plate-like portions (8, 10) in parallel planes, the terminals (2) in one row being offset relative to terminals (2) in the other row, the connector being intended for use on a flat multiconductor cable.

10. A combination as set forth in claim 9 characterized in that an insulating cover (54) for the conductor-receiving face is provided, the cover having openings (62) therein for the projecting portions (26) of the terminals, the openings having ribs (66) therein which enter the wire-receiving slots in the terminals (2) when the cover is assembled to the housing.

Patentansprüche

1. Elektrischer Anschluß (2, 68) aus Metallblech des Typs mit einem Schaftbereich (4) mit einem inneren Ende und einem freien Ende (20, 22), mit einer ersten und einer zweiten Hauptfläche (12, 14) an dem Schaftbereich zwischen dem inneren Ende und dem freien Ende, wobei die Hauptflächen in entgegengesetzte Richtungen weisen, und mit einem Drahtaufnahmeschlitz, der sich von dem freien Ende nach innen erstreckt, wobei der Schaftbereich (4) ein erstes und ein zweites plattenartiges Element (8, 10, 70, 70') aufweist, die parallel zueinander seitlich nebeneinander vorgesehen sind, wobei die erste und die zweite Hauptfläche (12, 14), welche in entgegengesetzte Richtungen weisen, an dem ersten bzw. dem zweiten plattenartigen Element (8, 10, 70, 70') vorgesehen sind, wobei das erste und das zweite plattenartige Element eine erste und eine zweite Innenfläche (28, 30, 74, 74') aufweisen, die einander gegenüberliegen, wobei der Schaftbereich eine erste und eine zweite Seitenkante (16, 18) aufweist, die sich von dem freien Ende (22) zu dem inneren Ende (20) erstrecken, wobei der Schaftbereich einen Leiteraufnahmeabschnitt (26)



aufweist, der sich von dem freien Ende (22) zu einer zwischen dem freien Ende (22) und dem inneren Ende (20) gelegenen Zwischenstelle (23) erstreckt, wobei die erste und die zweite Innenfläche durch einen Spalt im Leiteraufnahmeabschnitt voneinander beabstandet sind, wobei der Anschluß dadurch gekennzeichnet ist, daß der Drahtaufnahmeschlitz den Raum zwischen der ersten und der zweiten Innenfläche umfaßt und daß die erste und die zweite Seitenkante (16, 18) in dem Leiteraufnahmeabschnitt offen ausgebildet sind.

2. Elektrischer Anschluß (68) aus Metallblech nach Anspruch 1, dadurch gekennzeichnet, daß die erste und die zweite Innenfläche (74, 74') in einer zwischen der Zwischenstelle (23) und dem inneren Ende (20) gelegenen Zone aneinander anliegen und miteinander verbunden sind.

3. Elektrischer Anschluß (2) aus Metallblech nach Anspruch 1, dadurch gekennzeichnet, daß der Schaftbereich einen gefalteten Abschnitt aus Metallblech umfaßt, wobei das erste und das zweite plattenartige Element durch einen sich entlang der ersten Seitenkante (8) erstreckenden Krümmungsbereich (24) miteinander verbunden sind und wobei sich der Krümmungsbereich von der Zwischenstelle (23) zu dem inneren Ende (20) erstreckt.

4. Elektrischer Anschluß (2) aus Metallblech nach Anspruch 1, dadurch gekennzeichnet, daß der Schaftbereich (4) einen gefalteten Abschnitt aus Metallblech mit Uförmigem Querschnitt umfaßt, der einen Krümmungsbereich (24) sowie sich von dem Krümmungsbereich wegerstreckende Wände aufweist, wobei sich der Krümmungsbereich (24) entlang der ersten Seitenkante (16) erstreckt, wobei es sich bei den Wänden um das erste und das zweite plattenartige Element (8, 10) handelt, wobei der Krümmungsbereich (24) ein von dem freien Ende (22) beabstandetes Ende (23) aufweist und wobei sich der Krümmungsbereich von seinem einen Ende (23) zu dem inneren Ende (20) des Schaftbereichs (4) erstreckt.

5. Elektrischer Anschluß (2) aus Metallblech nach Anspruch 4, dadurch gekennzeichnet, daß die erste und die zweite Innenfläche (28, 30) einander gegenüberliegende Kontaktflächenbereiche (32) aufweisen, die in einem Abstand voneinander angeordnet sind, der geringer ist als der Durchmesser eines Drahts, für den der Anschluß verwendet werden soll, daß sich die einander gegenüberliegenden Kontaktflächenbereiche (32) von einer nahe bei dem freien Ende (22) gelegenen, jedoch von diesem beabstandeten Stelle zu einer nahe bei dem inneren Ende (23) des Krümmungsbereichs (24) gelegenen Stelle erstrecken wobei die erste und die zweite Innenfläche (28, 30) gegenüber den einander gegenüberliegenden Kontaktflächenbereichen (32) zurückgesetzt ausgebildet und in einem Abstand voneinander angeordnet sind, der größer ist als der Abstand zwischen den einander gegenüberliegenden Kontaktflächenbereichen, wodurch der Drahtaufnahmeschlitz einen sich von dem freien

Ende (22) zu den Kontaktflächenbereichen (32) erstreckenden Einführbereich aufweist.

6. Elektrischer Anschluß (2) aus Metallblech nach Anspruch 5, dadurch gekennzeichnet, daß sich die Kontaktflächenbereiche (32) neben der ersten Seitenkante (16) erstrecken.

7. Kombination aus einem elektrischen Anschluß (2) aus Metallblech nach einem der vorausgehenden Ansprüche mit einem isolierenden Gehäuse, dadurch gekennzeichnet, daß der Anschluß in dem Gehäuse montiert ist, wobei das Gehäuse eine Leiteraufnahmeseite (56) aufweist und wobei der Anschluß (2) einen abstehenden Bereich (26) aufweist, der den Drahtaufnahmeschlitz enthält und über die Leiteraufnahmeseite (56) hinausragt, wobei das freie Ende (22) des Anschlusses von der Leiteraufnahmeseite beabstandet ist.

8. Kombination nach Anspruch 7, dadurch gekennzeichnet, daß das isolierende Gehäuse eine Mehrzahl darin im Abstand voneinander montierter Anschlüsse (2) aufweist, wobei das Gehäuse und die Anschlüsse einen Mehrfach-Kontakt-Verbinder bilden.

9. Kombination nach Anspruch 8, dadurch gekennzeichnet, daß die Anschlüsse in dem Gehäuse in wenigstens zwei Reihen angeordnet sind, wobei die Anschlüsse in jeder Reihe im Abstand voneinander seitlich nebeneinander angeordnet sind und sich ihre plattenartigen Bereiche (8, 10) dabei in zueinander parallelen Ebenen befinden, wobei die Anschlüsse (2) in der einen Reihe relativ zu den Anschlüssen (2) in der anderen Reihe versetzt angeordnet sind und wobei der Verbinder zur Verwendung bei einem Mehrfachleiter-Flachkabel dient.

10. Kombination nach Anspruch 9, dadurch gekennzeichnet, daß eine isolierende Abdeckung (54) für die Leiteraufnahmeseite vorgesehen ist, wobei in der Abdeckung Öffnungen (62) für die abstehenden Bereiche (26) der Anschlüsse vorgesehen sind und wobei in den Öffnungen Rippen (66) vorgesehen sind, die bei Montage der Abdeckung an dem Gehäuse in die Drahtaufnahmeschlitz in den Anschlüssen (2) eintreten.

Revendications

1. Borne électrique en tôle (2, 68) du type comprenant une tige (4) comportant une extrémité interne et une extrémité libre (20, 22), une première et une seconde surface principale opposées (12, 14) sur la tige, entre l'extrémité interne et l'extrémité libre, et une fente de réception de fil qui s'étend vers l'intérieur depuis l'extrémité libre, la tige (4) comportant une première et une seconde plaque (8, 10, 70, 70') disposées parallèlement côte à côte, la première et la seconde surface principale opposées (12, 14) étant situées sur la première et la seconde plaque (8, 10, 70, 70') respectivement, la première et la seconde plaque comportant une première et une seconde surface interne opposées (28, 30, 74, 74'), la tige comportant un premier et un second bord latéral (16, 18) qui vont de



l'extrémité libre (22) jusqu'à l'extrémité interne (20), cette tige comportant une section de récepteur de conducteur (26) qui va de l'extrémité libre (22) jusqu'à un endroit intermédiaire (23) situé entre l'extrémité libre (22) et l'extrémité interne (20), la première et la seconde surface interne étant espacées l'une de l'autre d'un intervalle dans la section de réception de conducteur, la borne étant caractérisée en ce que:

la fente de réception de fil comprend l'espace entre la première et la seconde surface interne;

le premier et le second bord latéral (16, 18) sont ouverts dans la section de réception de conducteur.

2. Borne électrique en tôle (68) suivant la revendication 1, caractérisée en ce que la première et la seconde surface interne (74, 74') sont disposées l'une contre l'autre et sont soudées l'une à l'autre dans une zone qui est située entre l'endroit intermédiaire (23) et l'extrémité interne (20).

3. Borne électrique en tôle (2) suivant la revendication 1, caractérisée en ce que la tige comprend une section pliée en tôle, la première et la seconde plaque étant reliées l'une à l'autre par un coude (24) qui s'étend le long du premier bord latéral (16), le coude partant de l'endroit intermédiaire (23) et s'étendant en direction de l'extrémité interne (20).

4. Borne électrique en tôle (2) suivant la revendication 1, caractérisée en ce que la tige (4) comprend une tôle pliée de section transversale en U comprenant un coude (24) et des parois qui partent du coude, le coude (24) s'étendant le long du premier bord latéral (16), les parois étant constituées par la première et la seconde plaque (8, 10), le coude (24) comportant une extrémité (23) qui est espacée de l'extrémité libre (22), ce coude s'étendant à partir de sa première extrémité (23) en direction de l'extrémité interne (20) de la tige (4).

5. Borne électrique en tôle (2) suivant la revendication 4, caractérisée en ce que la première et la seconde surface interne (28, 30) comportent des sections de surfaces de contact opposées (32) qui sont espacées l'une de l'autre d'une distance inférieure au diamètre d'un fil pour lequel la borne est prévue, les sections de surfaces de contact opposées (32) vont d'un endroit adjacent

à l'extrémité libre (22), mais espacé de celle-ci, jusqu'à un endroit adjacent à la première extrémité (23) du coude (24), la première et la seconde surface interne (28, 30) étant disposées en retrait par rapport aux sections de surface de contact opposées (32) et étant espacées d'une distance qui est supérieure à l'espacement des sections de surfaces de contact opposées, la fente de réception de fil comportant une partie d'entrée qui va de l'extrémité libre (22) jusqu'aux sections de surfaces de contact (32).

6. Borne électrique en tôle (2) suivant la revendication 5, caractérisée en ce que les sections de surfaces de contact (32) s'étendent à côté du premier bord latéral (16).

7. Combinaison d'une borne électrique en tôle (2) suivant l'une quelconque des revendications précédentes et d'un boîtier isolant, caractérisée en ce que la borne est montée dans le boîtier, le boîtier comportant une face de réception de conducteur (56), la borne (2) comportant une partie saillante (26) qui contient la fente de réception de fil et qui s'étend au-delà de la face de réception de conducteur (56), l'extrémité libre (22) de la borne étant espacée de la face de réception de conducteur.

8. Combinaison suivant la revendication 7 caractérisée en ce que le boîtier isolant comporte plusieurs bornes (2) montées dans ce boîtier à distance les unes des autres, le boîtier et les bornes constituant un connecteur multicontact.

9. Combinaison suivant la revendication 8, caractérisée en ce que les bornes dans le boîtier sont disposées en au moins deux rangées, les bornes de chaque rangée étant espacées les unes à côté des autres et leurs plaques (8, 10) étant disposées dans des plans parallèles, les bornes (2) d'une rangée étant décalées en quinconce par rapport aux bornes (2) de l'autre rangée, le connecteur étant destiné à être utilisé sur un câble plat à conducteurs multiples.

10. Combinaison suivant la revendication 9, caractérisée en ce qu'une coiffe isolante (54) pour la face de réception de conducteur est prévue, la coiffe contenant des ouvertures (62) pour les parties saillantes (26) des bornes, les ouvertures comportant des nervures (66) qui pénètrent dans les fentes de réception de fil dans les bornes (2) lorsque la coiffe est assemblée avec le boîtier.



* C L M S *