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(54) **Electrical connection device**

Elektrische Verbindungsvorrichtung

Dispositif de connexion électrique

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Description

[0001] The invention concerns an electrical connection device especially suited for use in electric and electronic circuitry.

[0002] It is known that in wiring electric and electronic circuits, often electrical connections are used consisting of a male device and a female device that are plugged together by a push-sliding movement.

[0003] The use of this type of connections makes wiring quicker and moreover also enables the various components to be easily disconnected whenever this need may arise.

[0004] These kinds of electrical connections are made in a variety of shapes and sizes depending on the field of use and power being employed.

[0005] In the case of connections that are used in electronic control units for automobiles, their construction is based on attempts to strike a balance between as miniaturised a design as possible against the possibility of supporting high density currents and thereby enabling them to carry as high a power as possible.

[0006] Since, as experts of the sector know, the current density that passes through an electrical connection is directly proportional to the pressure involved in making the connecting parts close against each other, constructor's efforts have been focused on research for connections that create high pressures between the parts that make up the junction.

[0007] There are known electrical connections consisting of a male device and a female device, the latter having a first section that constitutes the actual electrical contact and a second section working with the first and performing the task of creating a pressure that ensures a mechanical contact between the male and female devices.

[0008] These types of electrical connections have the inconvenience of being somewhat complex in construction and above all being rather bulky, to such an extent that they cannot be used in any constructions that are applied to automobiles, where it is very important that size is kept to a minimum, for instance electronic control units.

[0009] As an alternative to these kinds of connections and above all when limited sized electrical connections are required, there is a widespread use of electrical connections of the type illustrated in fig.'s 1 and 2 where the female device, generally indicated by A, basically consists of a main body B which acts as a base for a basically longitudinal, tubular collar C, whose walls form a socket D where the male contact device is plugged in by a sliding movement, not illustrated in this instance. The tubular collar C includes a U-shaped profiled section E and a laminar body F, which is set parallel to the profiled section E and spaced apart from the facing sides Ea, Eb that define the actual profiled section E.

[0010] The tubular collar C and the main body B are made from a single piece produced by a boxed construction of blanked and bent sheet metal, where the laminar body F is a single body with the main body B and has a free end Fa.

[0011] A ridge G on the laminar body F, facing socket D, presses against a male device, not illustrated, when this is plugged into the actual socket D.

[0012] The laminar body F acts as a encased ledge and flexes upwards by bending along a leverage line located on the main body B when the male device, as it is plugged in, presses against the ridge G.

[0013] The electrical contact is guaranteed by the elastic force exerted by laminar body F as ridge G presses against the male device after it has been plugged into the socket D.

[0014] Female electrical connection devices produced according to the construction described above, when on the one hand offer the advantage of being easy to manufacture and being able to be produced in rather small sizes, on the other hand they have the inconvenience of not being able to develop a sufficiently high pressure against the male device that is plugged into them, at least not enough to allow the passage of intense currents. As a consequence these electrical connections cannot be used to carry high levels of electric power.

[0015] In particular, the aforementioned type of female electrical connection devices are described in patents: US-3 836 947A, EP 0 694 992A, EP 0 353 330A, WO 9511532A, US 3 363 224A.

[0016] Particularly, US 3,836,947 discloses a femal electric receptacle for receiving and making electrical contact with a male electrical terminal, wherein one side of the receptacle is in the form of a resilient leaf spring which engages against a male terminal, said leaf spring having a free terminal end. EP 0694992 discloses a female terminal metal fixture with a resilient contact tongue, the deflection of which occuring when a tab is inserted in said femal terminal, is stopped by bulged restrictive portions provided on right and left walls of the female body.

[0017] In all the above patents the female connection has one or more contact blades that have an end that is free to flex under the thrust of the male device as it is introduced.

[0018] Each blade, in addition to its end being free to flex, is also bent with the outside curve set against the male device, improving its adherence and thereby guaranteeing greater mechanical stability in the connection and favouring the passage of electric current.

[0019] The inconvenience in the electrical connections described in the aforementioned patents arises because the ends of the contact blades are free to flex and through time they tend to lose their elasticity and consequently reduce the electrical efficiency of the connection.

[0020] What's more the thrust against the male device that is plugged into the female connection depends on the size of the curve made in the contact blade and since

this tends to alter with use, through time this causes a progressive decline in the quality of the contact that it creates.

[0021] An additional inconvenience is that the flexible blades are basically equivalent to booms anchored at one end, so they are only capable of creating a somewhat limited contact pressure against the male device. Sometimes this pressure is increased by fitting a stop bar over the blade at about halfway along its length, as can be seen in patent US 3 836 947A, which, by its rigidity, increases the recoil force of the flexible blade against the male device that is plugged in.

[0022] It is clear that this complicates the female electrical connection from a construction standpoint and increases its production costs.

[0023] In some known executions, that are described in patents DE 4410951A1 and FR 2740266A, to increase the rigidity of the flexible blade, a stiffening wall is set above it made of a separate part to the body of the female connection, being held together by means of special snap-in clasps made in the edges.

[0024] Even though these executions manage on the one hand to increase, and sometimes even significantly, the rigidity of the flexible blade of the electrical connection and thereby improve the quality of the electrical contact, on the other hand they have the inconvenience of being more complex and more costly to produce.

[0025] This invention intends to overcome all of said limitations.

[0026] In particular the first scope of the invention is to produce a female electrical connection device that develops, against the male device that is plugged into it, a greater contact pressure than that achieved by known types of female electrical connection devices being equal in size.

[0027] Another scope is that the contact pressure that the female electrical connection device achieves with the male device that is plugged into it, principally relies on the intrinsic mechanical characteristics of the material that makes up the actual connection and not on its construction.

[0028] Another scope is that the connection device invention is made of a single body.

[0029] Another scope is that the connection device invention can be made in miniature sizes.

[0030] Last but not least, a scope is that the connection device invention substantially maintains a constant elasticity through time.

[0031] Said scopes are achieved by the production of an electrical connection device that in accordance with the main claim includes a main body which acts as a base for at least one tubular collar that creates a longitudinal axis and that includes a profiled section and a laminar body flexing elastically against said profiled section, the two being spaced apart and having parallel lengths, suited to form a longitudinal socket which can receive a male electrical connection device plugged in by a push-sliding movement and is characterised in that the end of said laminar body is fixed to said profiled section by anchoring devices so that at least its end is prevented from being raised beyond said profiled section.

[0032] According to a preferred form of execution the main body and the tubular collar are produced by a boxed construction from a single piece of blanked and bent sheet metal, where the profiled section is U-shaped.

[0033] The laminar body is set parallel to the profiled section and is encased within and spaced apart from the flat edges of the two facing sides that define the actual U-shaped profiled section.

[0034] Halfway along the laminar body there is a ridged piece facing the inside of the profiled section, which consists of a drawing suited to press against the surface of the respective male contact device when this is plugged into the socket of the female electrical connection device.

[0035] An advantage of the laminar body is that it is constructed as a boom anchored at both ends and, when pressing against the male contact device, develops a greater pressure than could be exerted by known types of electrical connection devices being equal in size and where the laminar body has a ledge-type construction.

[0036] Therefore this execution allows, against known, equally sized female electrical connection devices, the passage of a larger flow of current and thereby to carry a larger electric power.

[0037] Said scopes and advantages shall be better explained during the description of a preferred form of execution of the invention that refers to the attached diagrams, where:

- fig. 1 illustrates the longitudinal section of a female electrical connection device belonging to known technology;
- fig. 2 illustrates a cross-section along the plane II-II of the female electrical connection device in fig. 1;
- fig. 3 illustrates an isometric view of the female electrical connection device invention;
- fig. 4 illustrates a longitudinal section of the electrical connection device in fig. 3;
- fig. 5 illustrates a front view of the electrical connection device in fig. 4;
- fig.'s 6, 7 and 8 illustrate a longitudinal section of the female electrical connection device invention with its relevant male contact device in the disconnected position, being plugged in and when plugged in, respectively;
- figures 9 to 13 illustrate variants in execution of the female electrical connection device invention.

[0038] As can be seen in figures 3 to 5 the electrical connection device invention, generally indicated by 1, includes a main body 2 which acts as a base for a tubular collar, generally indicated by 3, that creates a longitudinal axis 4 and forms a socket 5 where the male contact

device M is plugged in by a sliding and contrasting movement, as can be seen in figures 6 to 8.

[0039] The central body 2 and the tubular collar 3, constitute a monolithic part since they are made from a single piece of blanked and bent sheet metal that produces the boxed construction of the connection device illustrated in fig. 3.

[0040] The monolithic production of the central body 2 and tubular collar 3 aid construction of the connection against similar connection devices produced in several parts, as for instance, those described in the aforementioned patents DE 4410951A1 and FR 2740266A.

[0041] In particular, the tubular collar 3 includes a U-shaped profiled section, generally indicated by 6, made of flat sides 6a, 6b, 6c where faces 6a and 6c are two opposite, parallel sides connected perpendicularly to the base 6b.

[0042] It is however clear that in different executions of the construction, the profiled section may also have forms that differ from the U-shape described herein.

[0043] The top edges 6d, 6e of sides 6a, 6c respectively, are parallel and spaced apart from a laminar body 7 set parallel to the profiled section 6 and encases within said U-shaped profiled section.

[0044] The appropriate thickness of the laminar body 7 and suitable material used in its construction make it flexible.

[0045] According to the invention said laminar body 7 is withheld at its end 7a by anchoring devices suited to prevent at least the end 7a itself from being raised beyond said profiled section 6.

[0046] In particular the anchoring devices consist of two tabs 8, 9 belonging to the side faces 6a and 6c respectively of the profiled section 6, which are turned over the laminar body 7 and prevent it from being raised beyond the profiled section 6.

[0047] In a different form of execution the profiled section 6 may have ribbing and/or grooving suited to firmly anchor the end 7a of laminar body 7 so that any kind of movement is prevented.

[0048] In another execution the end 7a of laminar body 7 may even be welded to the profiled section 6.

[0049] As regards the laminar body 7, it can be seen in fig.'s 4 and 5 that halfway along its length it has a drawing 10 having a convex surface 11 bent towards the inside of the socket 5 which presses against the male contact device M when this is plugged into the actual socket 5.

[0050] Longitudinal ribbing 14, 15 jutting up from the base face 6b of the profiled section 6 and opposing the drawing 10, increase the contact surface with the male contact device M.

[0051] It can be seen, with reference to fig. 4, that the laminar body 7 presents itself basically as a boom that has one end locked by the main body 2 and its opposite end 7a anchored to the profiled section 6 by tabs 8 and 9, contrary to contact devices belonging to known technology described in the aforementioned patents, where the laminar body is instead constructed as a locked boom with its end free and therefore basically as a ledge.

[0052] When the male contact device M, as can be seen in figures 6 to 8, is plugged into the socket 5 of the tubular collar 3, it presses against the convex surface 11 of the drawing 10 and pushes the laminar body 7 upwards in the vertical direction indicated in fig. 7 by arrow 12. In fact the distance 13 between the convex surface 11 and the longitudinal ribbing 14, 15 made on base face 6b of the profiled section 6, is less than the thickness 16 of the male device M.

[0053] When the male device M has been plugged in, as can be seen in fig. 8, the elastic force that the laminar body 7 has accumulated by its deformation, generates force F directed downwards, by which the convex surface 11, and as a result even the ribbing 14 and 15, create a contact with the male device M guaranteeing electrical continuity between the parts in the junction.

[0054] It is clear that the level of force F depends on the deflection flexed by the laminar body F, which in turn depends on the difference between thickness 16 of the male device M and the distance 13 between the convex surface 11 and the longitudinal ribbing 14, 15 of the profiled section 6 which receives it.

[0055] In other words, by plugging in the male device M an inflection is created in the laminar body 7 that by recoil gives rise to contact force F against the male M.

[0056] It is clear that in the connection invention, laminar body 7, that can be considered as a boom anchored at both ends, against male device M creates a higher compression force F than that exerted by the known type of connection illustrated in fig. 1 having the same length and where the laminar body F flexes to create the same deflection.

[0057] What's more the elastic force developed by the laminar body 7 is created by the deformation and is based on the intrinsic elasticity of the material it is made of and not by any special configurations obtained by shaping that may alter in time thereby reducing the contact's reliability.

[0058] Experimental tests performed on prototypes of the connection device invention where the male M had a contrast of 0,1 mm. with the convex surface 11 of the drawing, have given the means of measuring a force F value of 63 Newtons against 14 Newtons developed by the type of connection illustrated in fig. 1 being equal in size and made of the same materials.

[0059] The connection device invention can also be produced according to the different forms of execution that are described below.

[0060] A variant in execution can be seen in fig. 9 where it is generally indicated by 20 and differs from the connection described earlier for the existence of a pair of tubular collars 3 of the kind described earlier, equal in size or even different, arranged at opposite ends of the main body 2.

[0061] According to another variant in execution illus-

trated in fig. 10, the electrical connection device, generally indicated by 30, includes a single tubular collar 3 and a male laminar body 31, arranged on opposite ends of the central body 2.

[0062] Another variant in execution is illustrated in fig. 11 where it can be seen that the electrical connection device, generally indicated by 40, includes a tubular collar 3 and a clamp piece for electric cable, generally indicated by 41 and arranged on opposite ends of the central body 2.

[0063] Another variant in execution of the invention is illustrated in fig. 12, where the connection device is generally indicated by 50 and where it can be seen that it includes a tubular collar 3 and a contact piece for printed circuits, generally indicated by 51, arranged on opposite ends of the central body 2. In particular the contact piece for printed circuits 51 consists of a bar 52 having a prismatic section, bent towards the longitudinal axis 53 of the tubular collar 3 and with narrowing 54 at its end.

[0064] According to another variant in execution, illustrated in fig. 13 and indicated by 60, that can exist on any of the variants in construction described herein, the anchoring devices at the end 61a of the laminar body 61, consist of a ring 62 that anchors the outside of end 61a of the laminar body 61 to the U-shaped profiled section 63.

[0065] The ring 62 can be attached or can belong to the profiled section 63.

[0066] From the above descriptions it can be understood that the electrical connection device in all its execution variants included herein achieves the set scopes.

[0067] It is clear that according to its use, it may be produced in various sizes.

[0068] However the connection device invention has been described with reference to the attached diagrams, it may also be constructed according to variants in execution that have not been described herein, which nevertheless fall under the inventive concept stated by the claims below and shall therefore be protected by this patent.

Claims

1. Electrical connection device (1; 20; 30; 40; 50; 60) comprising a main body (2) from which protudes at least one tubular collar (3; 62) with a longitudinal axis (4; 53) and comprising a profiled section (6) and a laminar body (7) that flexes elastically against said profiled section (6), each being spaced apart and parallel along the longitudinal axis (4), suited to form a longitudinal socket (5) where the male contact device (M) is plugged in by a sliding and contrasting movement, **characterised in that** the end (7a; 61a) of said laminar body (7) is fixed to said profiled section (6, 63) by enchoring devices (8;9; 62) that prevent at least the end (7a; 61a) from being raised beyond said profiled section (6, 63).

2. Electrical connection device (1; 20; 30; 40; 50, 60) according to claim 1) **characterised in that** said central body (2) and at least one of said tubular collars (3) make a boxed construction produced from blanked and bent sheet metal.

3. Electrical connection device (1; 20; 30; 40; 50; 60) according to claim 1) **characterised in that** said profiled section (6; 63) has a U-shaped form being made of a pair of substantially flat, parallel sides (6a, 6c) connected to a perpendicular base (6b).

4. Electrical connection device (1; 20; 30; 40; 50; 60) according to claim 1) **characterised in that** said anchoring devices (8; 9; 62) of the end (7a; 61a) of said laminar body (7; 61) belong to said profiled section (6; 63).

5. Electrical connection device (1; 20; 30; 40; 50) according to claim 3) **characterised in that** said anchoring devices consist of two opposing tabs (8, 9), each belonging to one of the basically flat sides (6a, 6c) respectively facing each other that form said U-shape of said profiled section (6).

6. Electrical connection device (60) according to claim 4) **characterised in that** said anchoring devices consist of a ring piece (62) that belongs to said profiled section (63) and surrounds the outside surface of the end (61 a) of said laminar body (61).

7. Electrical connection device (1; 20; 30; 40; 50; 60) according to claim 1) **characterised in that** said laminar body (7; 61) has at least one drawing (10) having a convex face (11) curving towards the inside of said socket (5) suited to create a contact with the surface of said male contact device (M) that is plugged into said socket (5).

8. Electrical connection device (1; 20; 30; 40; 50, 60) according to claim 2) **characterised in that** the base face (6b) of said profiled section (6; 62) has one or more longitudinal ribs (14, 15) parallel to each other and to the longitudinal axis (4; 53) of said profiled section.

9. Electrical connection device (20) according to claim 1) **characterised in that** it includes a pair of said tubular collars (3), arranged on opposite ends of said main body (2).

10. Electrical connection device (40) according to claim 1) **characterised in that** it includes a tubular collar (3) and at least one clamp piece (41) for electric cables, arranged on opposite ends of said main body (2).

11. Electrical connection device (30) according to claim 1) **characterised in that** it includes a tubular collar (3) and at least one male blade (31), arranged on opposite ends of said main body (2).

12. Electrical connection device (50) according to claim 1) **characterised in that** it includes a tubular collar (3) and at least one contact piece (51) for printed circuits, arranged on opposite ends of said main body (2).

13. Electrical connection device (50) according to claim 12) **characterised in that** at least one of said contact pieces (51) for printed circuits consists of at least one bar (52) having a prismatic cross-section, bent towards the longitudinal axis (53) of said tubular collar (3) and with narrowing (54) at its end.

Patentansprüche

1. Elektrische Verbindungseinrichtung (1; 20; 30; 40; 50; 60), einen Hauptkörper (2) umfassend, aus dem wenigstens ein röhrenförmiger Bund (3; 62) mit länglicher Achse (4; 53) herausragt sowie einen Profilabschnitt (6) und einen Lamellenkörper (7) umfassend, der sich elastisch gegen den Profilabschnitt (6) biegt, wobei beide voneinander getrennt und an der länglichen Achse (4) entlang parallel angeordnet sind, dazu geeignet, einen länglichen Sockel (5) zu bilden, in welchen die Steckkontaktvorrichtung (M) eingesteckt wird durch eine gleitende und kontrastierende Bewegung, **dadurch gekennzeichnet, dass** das Ende (7a; 61a) des Lamellenkörpers (7) am Profilabschnitt (6; 63) befestigt ist durch Verankerungsvorrichtungen (8; 9; 62), welche zumindest das Ende (7a; 61a) davor bewahren, über den Profilabschnitt (6; 63) hinaus angehoben zu werden.

2. Elektrische Verbindungseinrichtung (1; 20; 30; 40; 50; 60) nach Patentanspruch 1), **dadurch gekennzeichnet, dass** der Hauptkörper (2) und wenigstens einer der röhrenförmigen Bunde (3) eine kastenförmige Konstruktion aus gestanztem und gebogenem Blech bilden.

3. Elektrische Verbindungseinrichtung (1; 20; 30; 40; 50; 60) nach Patentanspruch 1), **dadurch gekennzeichnet, dass** der Profilabschnitt (6; 63) U-förmig ist und aus einem Paar im wesentlichen flacher, paralleler Seiten (6a, 6c) besteht, die mit einer lotrechten Basis (6b) verbunden sind.

4. Elektrische Verbindungseinrichtung (1; 20; 30; 40; 50; 60) nach Patentanspruch 1), **dadurch gekennzeichnet, dass** die Verankerungsvorrichtungen (8; 9; 62) des Endes (7a; 61a) des Lamellenkörpers (7; 61) zum Profilabschnitt (6; 63) gehören.

5. Elektrische Verbindungseinrichtung (1; 20; 30; 40; 50) nach Patentanspruch 3), **dadurch gekennzeichnet, dass** die Verankerungsvorrichtungen aus zwei gegeneinander wirkenden Laschen (8, 9) bestehen, die jeweils zu einer der im wesentlichen flachen Seiten (6a; 6c) gehören, welche einander gegenüberliegen und die U-Form des Profilabschnitts (6) bilden.

6. Elektrische Verbindungseinrichtung (60) nach Patentanspruch 4), **dadurch gekennzeichnet, dass** die Verankerungsvorrichtungen aus einem Ringstück (62) bestehen, welches zum Profilabschnitt (63) gehört und die Außenfläche des Endes (61a) des Lamellenkörpers (61) umgibt.

7. Elektrische Verbindungseinrichtung (1; 20; 30; 40; 50; 60) nach Patentanspruch 1), **dadurch gekennzeichnet, dass** der Lamellenkörper (7; 61) wenigstens eine Vertiefung (10) aufweist mit einer konvexen Seite (11), die sich zum Inneren des Sockels (5) hin krümmt, dazu geeignet, einen Kontakt mit der Oberfläche der Steckkontaktvorrichtung (M) zu erzeugen, der in den Sockel (5) gesteckt wird.

8. Elektrische Verbindungseinrichtung (1; 20; 30; 40; 50; 60) nach Patentanspruch 2), **dadurch gekennzeichnet, dass** die Basisseite (6b) des Profilabschnitts (6; 62) eine oder mehrere, zueinander und zur Längsachse (4; 53) des Profilabschnitts parallele Längsrippen (14, 15) aufweist.

9. Elektrische Verbindungseinrichtung (20) nach Patentanspruch 1), **dadurch gekennzeichnet, dass** sie ein Paar der röhrenförmigen Bünde (3) umfasst, die an einander entgegengesetzten Enden des Hauptkörpers (2) angeordnet sind.

10. Elektrische Verbindungseinrichtung (40) nach Patentanspruch 1), **dadurch gekennzeichnet, dass** sie einen röhrenförmigen Bund (3) umfasst und wenigstens ein Klemmstück (41) für Stromkabel, angeordnet an einander entgegengesetzten Enden des Hauptkörpers (2).

11. Elektrische Verbindungseinrichtung (30) nach Patentanspruch 1), **dadurch gekennzeichnet, dass** sie einen röhrenförmigen Bund (3) umfasst und wenigstens ein Steckblatt (31), angeordnet an einander entgegengesetzten Enden des Hauptkörpers (2).

12. Elektrische Verbindungseinrichtung (50) nach Patentanspruch 1), **dadurch gekennzeichnet, dass** sie einen röhrenförmigen Bund (3) umfasst und wenigstens ein Kontaktglied (51) für Druckschaltun-

gen, angeordnet an einander entgegengesetzten Enden des Hauptkörpers (2).

13. Elektrische Verbindungseinrichtung (50) nach Patentanspruch 12), **dadurch gekennzeichnet, dass** wenigstens eines der Kontaktglieder (51) für Druckschaltungen aus wenigstens einer Stange (52) mit prismatischem Querschnitt besteht, welche zur Längsachse (53) des röhrenförmigen Bunds (3) gebogen ist und an ihrem Ende eine Verengung (54) aufweist.

Revendications

1. Élément de connexion électrique (1, 20, 30, 40, 50, 60) comprenant un corps principal (2) duquel avance au moins un collier tubulaire (3, 62) avec un axe longitudinal (4, 53) et comprenant une section profilée (6) et un corps lamellaire (7) qui fléchit d'une manière élastique contre ladite section profilée (6), chacun étant espacé et parallèle le long de l'axe longitudinal (4), indiqués pour former un socle longitudinal (5) où l'élément de contact mâle (M) est relié au moyen d'un mouvement de coulissement et d'opposition, **caractérisé en ce que** l'extrémité (7a, 61a) dudit corps lamellaire (7) est fixée à ladite section profilée (6, 63) au moyen de dispositifs d'ancrage (8, 9, 62) qui empêchent au moins à l'extrémité (7a, 61a) d'être soulevée au-delà de ladite section profilée (6, 63).

2. Élément de connexion électrique (1, 20, 30, 40, 50, 60) selon la revendication 1) **caractérisé en ce que** ledit corps central (2) et au moins un desdits colliers tubulaires (3) réalisent une construction en caisson produite d'une tôle mince courbée et découpée.

3. Élément de connexion électrique (1, 20, 30, 40, 50, 60) selon la revendication 1) **caractérisé en ce que** ladite section profilée (6, 63) a une forme en U étant constituée d'un couple de côtés essentiellement plats et parallèles (6a, 6c) reliés à une base perpendiculaire (6b).

4. Élément de connexion électrique (1, 20, 30, 40, 50, 60) selon la revendication 1) **caractérisé en ce que** lesdits dispositifs d'ancrage (8, 9, 62) de l'extrémité (7a, 61a) dudit corps lamellaire (7, 61) appartiennent à ladite section profilée (6, 63).

5. Élément de connexion électrique (1, 20, 30, 40, 50) selon la revendication 3) **caractérisé en ce que** lesdits dispositifs d'ancrage se composent de deux ailettes opposées (8, 9) chacune appartenant à un des côtés essentiellement plats (6a, 6c) étant respectivement l'un en face de l'autre et donnant ladite forme en U à ladite section profilée (6).

6. Élément de connexion électrique (60) selon la revendication 4) **caractérisé en ce que** lesdits dispositifs d'ancrage se composent d'une pièce en anneau (62) qui appartient à ladite section profilée (63) et qui environne la surface externe de l'extrémité (61a) dudit corps lamellaire (61).

7. Élément de connexion électrique (1, 20, 30, 40, 50, 60) selon la revendication 1) **caractérisé en ce que** ledit corps lamellaire (7, 61) présente au moins un baissement (10) ayant une face convexe (11) courbée vers la partie interne dudit socle (5) indiqué pour créer un contact avec la surface dudit élément de contact mâle (M) qui est relié dans ledit socle (5).

8. Élément de connexion électrique (1, 20, 30, 40, 50, 60) selon la revendication 2) **caractérisé en ce que** la face de base (6b) de ladite section profilée (6, 62) a une ou plusieurs nervures longitudinales (14, 15) parallèles entre elles et par rapport à l'axe longitudinal (4, 53) de ladite section profilée.

9. Élément de connexion électrique (20) selon la revendication 1) **caractérisé en ce qu**'il comprend un couple desdits colliers tubulaires (3) positionnés sur les extrémités opposées dudits corps principal (2).

10. Élément de connexion électrique (40) selon la revendication 1) **caractérisé en ce qu'**il comprend un collier tubulaire (3) et au moins une pièce en forme d'étau (41) pour câbles électriques, positionnée sur les extrémités opposées dudit corps principal (2).

11. Élément de connexion électrique (30) selon la revendication 1) **caractérisé en ce qu'il** comprend un collier tubulaire (3) et au moins une lame mâle (31) située sur les extrémités opposées dudit corps principal (2).

12. Élément de connexion électrique (50) selon la revendication 1) **caractérisé en ce qu'**il comprend un collier tubulaire (3) et au moins une pièce de contact pour circuits imprimés, située sur les extrémités opposées dudit corps principal (2).

13. Élément de connexion électrique (50) selon la revendication 12) **caractérisé en ce qu'**au moins une desdites pièces de contact (51) pour circuits imprimés se compose d'au moins une barre (52) ayant une section transversale prismatique, courbée vers l'axe longitudinal (53) dudit collier tubulaire (3) et avec un rétrécissement (54) sur son extrémité.

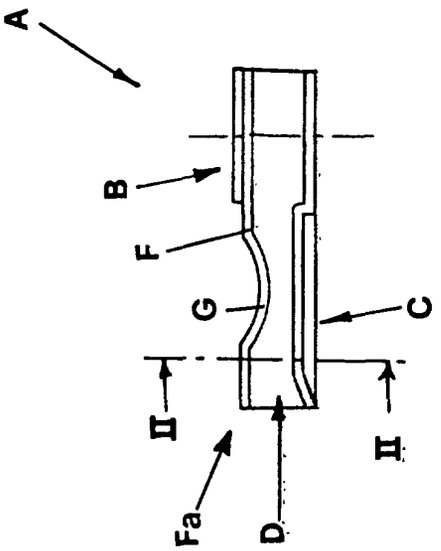

FIG.1 PRIOR ART

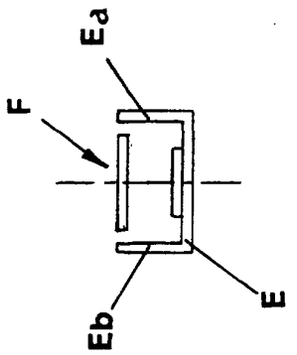

FIG.2 PRIOR ART

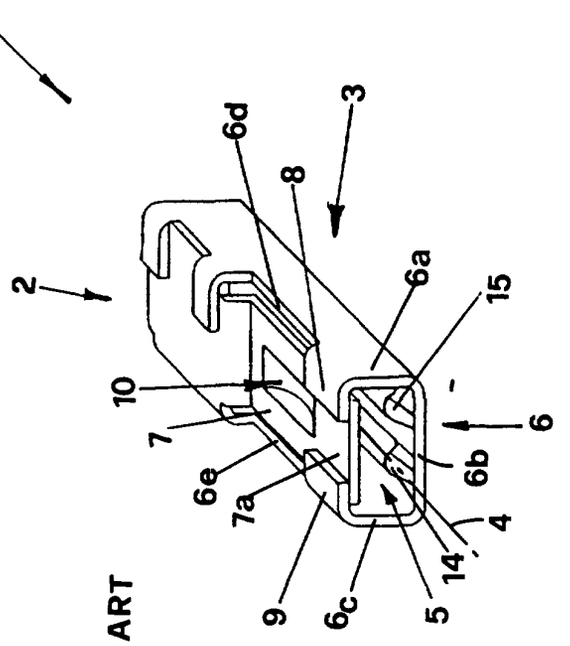

FIG.3

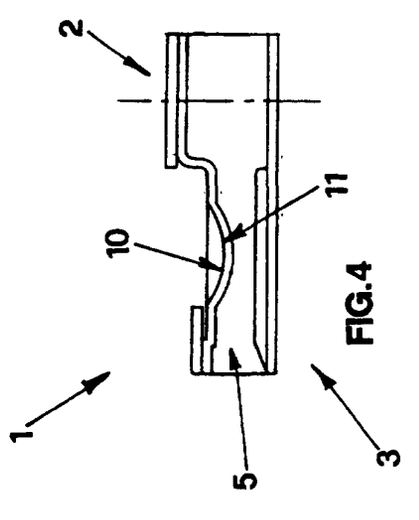

FIG.4

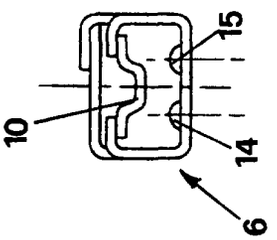

FIG.5

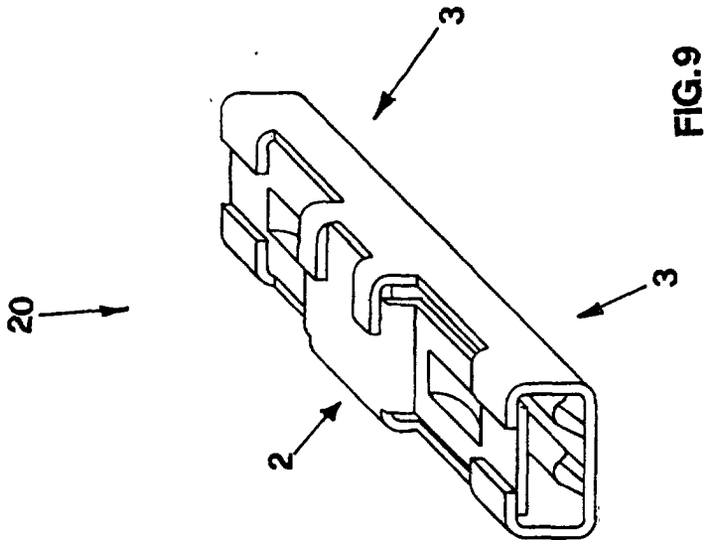

FIG.9

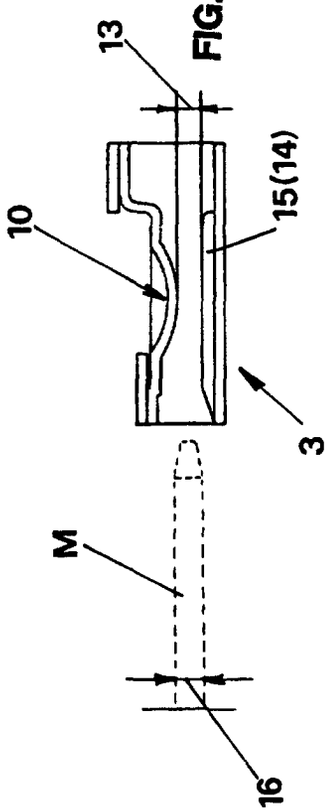

FIG.6

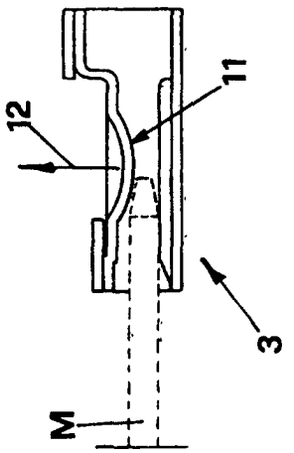

FIG.7

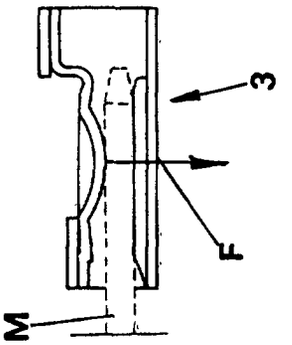

FIG.8

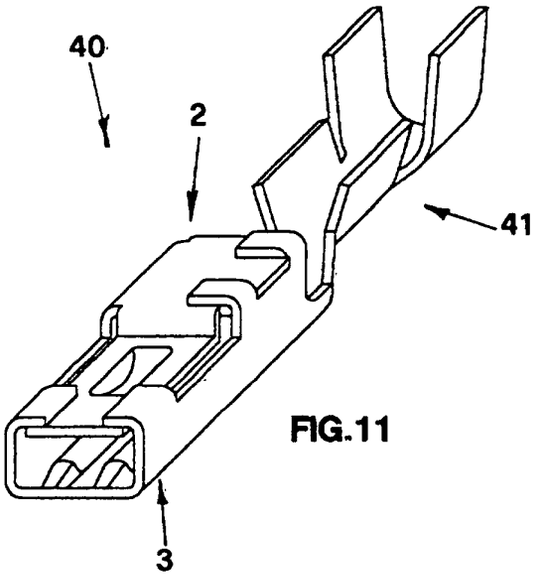

FIG.11

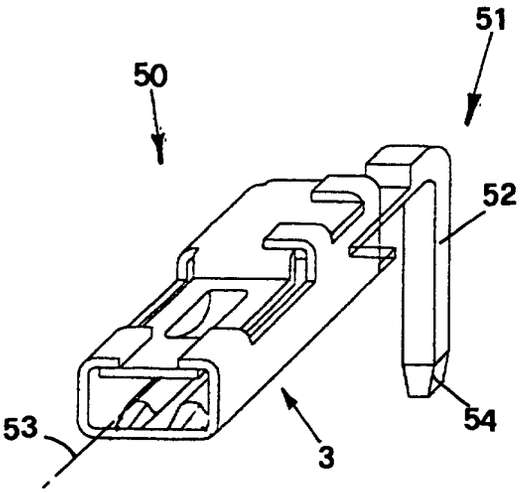

FIG.12

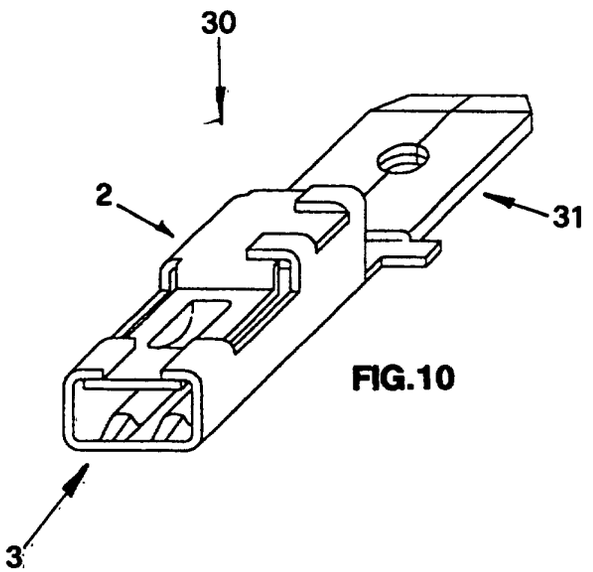

FIG.10

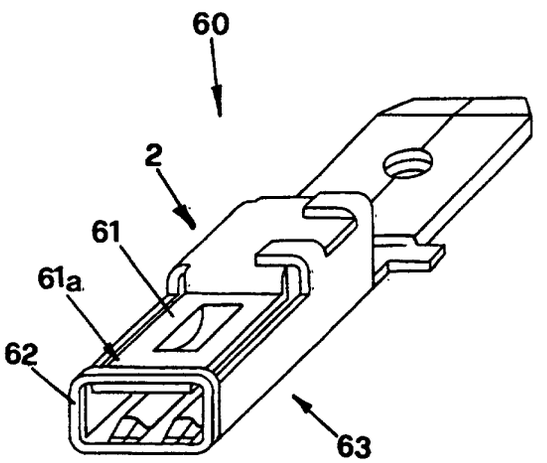

FIG.13