

(19)



(11)

EP 0 967 686 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
07.05.2008 Bulletin 2008/19

(51) Int Cl.:
H01R 13/436 ^(2006.01)

(21) Application number: **99111409.1**

(22) Date of filing: **11.06.1999**

(54) **Electrical connector with terminal position assurance device**

Elektrischer Stecker mit Vorrichtung zur Lagesicherung der Endkontakte

Connecteur électrique avec dispositif pour assurer la position des terminaux

(84) Designated Contracting States:
AT BE DE ES FR GB SE

(30) Priority: **23.06.1998 IT TO980543**

(43) Date of publication of application:
29.12.1999 Bulletin 1999/52

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EP 0 967 686 B1

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Description

[0001] The present invention relates to an electric connector and in particular to an electric connector fittable in an assembly direction inside a receptacle of a complementary connector.

[0002] Connectors of the above type are known which comprise an insulating casing defining a number of cavities having respective axes parallel to the assembly direction and for housing respective electric terminals, which are connected to respective electric cables and retained inside the cavities by primary retaining means.

[0003] Connectors of this sort also comprise a secondary retaining device normally defined by a movable member, which is fitted frontally to the casing in a preassembly position partially engaging a hollow front portion of the casing and therefore projecting frontwards from the casing, and is movable, in the assembly direction, between the preassembly position and a closed position closing the hollow front portion of the casing and cooperating with the primary retaining means to determine correct engagement, and prevent release, of the terminals by the primary retaining means.

[0004] The movable member can only be moved into the closed position on the casing when all the terminals are correctly inserted and retained inside the respective cavities by the primary retaining means, which normally comprise an elastically deformable lance forming part of the casing.

[0005] If any one of the terminals is not fully or correctly inserted, the primary retaining means remain deformed, thus preventing the movable member from being fitted fully and into the closed position inside the hollow front portion of the casing, and so preventing complete connection of the connector inside the receptacle of the complementary connector.

[0006] Nevertheless, even when the movable member is not in the closed position, so that at least one of the terminals is not properly engaged by the primary retaining means, the connector described above can still be inserted inside the receptacle of the complementary connector and may therefore be forced into the complementary connector despite the movable member interfering with the primary retaining means, thus resulting, for example, in breakage or deformation of the contacting parts. In which case, the misinserted terminal may go undetected when tested, by being so positioned, for example, as to determine, in use, some measure of electric contact, albeit precarious, but which, in applications in which the connector is subjected to vibration, as on a vehicle, is bound to fail eventually, with the obvious consequences this entails.

[0007] Also known from US Patent US 4,629,271 is a connector for a printed-circuit board, and which comprises a casing having a number of parallel receiving chambers; an elastic member housed inside each chamber to retain the printed-circuit terminals; and a press-on insertion member which clicks onto the front of the casing into

a closed position to keep the terminals in a fixed position. The insertion member comprises a number of wedges, each for engaging a respective receiving chamber; and a pair of flexible U-shaped members located on opposite sides of the wedges, having parallel arms, and which click inside respective seats on the casing by means of respective teeth.

[0008] DE-A-19 538 613 discloses an electric connector as defined in the preamble of claim 1.

[0009] It is an object of the present invention to provide an electric connector designed to eliminate, in a straightforward, reliable, low-cost manner, the aforementioned drawback typically associated with known connectors.

[0010] According to the present invention, there is provided an electric connector as claimed in claim 1.

[0011] A preferred, non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a view in perspective of an electric connector in accordance with the present invention and in a preassembly position;

Figure 2 shows a larger-scale longitudinal section of the Figure 1 connector;

Figure 3 shows a larger-scale longitudinal section of the Figure 1 connector in a fully assembled position;

Figure 4 shows a section along line IV-IV in Figure 3.

[0012] Number 1 in Figures 1 to 4 indicates as a whole an electric connector in accordance with the present invention.

[0013] In the example shown, connector 1 is a "female-holder" connector fittable in an assembly direction A (Figures 2 and 3) inside a receptacle of a complementary "male-holder" connector (not shown).

[0014] Connector 1 comprises a box-shaped insulating casing 3, which defines a number of longitudinal cavities 4 having respective axes parallel to direction A and for receiving respective female electric terminals 5 connected to respective electric cables 6 and retained inside cavities 4 by known primary retaining means described later on.

[0015] In particular, casing 3 comprises a parallelepiped main portion 7; and a parallelepiped secondary portion 8 projecting from a lateral wall 9 of portion 7 and extending along an intermediate longitudinal strip of wall 9. More specifically, casing 3 defines four cavities 4, three of which are formed in portion 7 and aligned in a transverse row, while the fourth cavity is formed in portion 8 and located alongside an intermediate cavity in said transverse row.

[0016] With reference to Figures 2 to 4, each terminal 5 comprises a box-shaped front contact portion 12, which has a retaining seat 13 for the primary retaining means and is connected to a corresponding male terminal (not shown) of the complementary connector; and a rear portion 14 for connection to respective electric cable 6.

[0017] Each terminal 5 is inserted inside respective

cavity 4 through a rear opening 15 of cavity 4, formed in a substantially T-shaped rear wall 16 of casing 3, and is positioned with contact portion 12 facing a front opening 17 of cavity 4, formed in a substantially T-shaped front wall 18 opposite wall 16. In use, cables 6 extend out of casing 3 through respective openings 15.

[0018] With reference to Figure 4, the primary retaining means comprise, for each terminal 5, a first and second elastic lance 20, 21 projecting on opposite sides inside respective cavity 4 and in direction A towards front opening 17. More specifically, lances 20 project from wall 9; lances 21 housed in cavities 4 of portion 7 of casing 3 project from a wall 22 of portion 7 opposite and parallel to wall 9; and the lance 21 housed in cavity 4 of portion 8 of casing 3 projects from a wall 23 of portion 8 also opposite and parallel to wall 9. Walls 22, 23 of respective portions 7 and 8 of casing 3 define, at lances 21, respective rectangular end openings 24 communicating with corresponding cavities 4.

[0019] The surface of each lance 20, 21 facing inwards of respective cavity 4 has a tooth 28 with a substantially right-trapezium-shaped profile and which clicks inside retaining seat 13 of relative terminal 5.

[0020] More specifically, teeth 28 of each pair of lances 20, 21 permit insertion of relative terminal 5, which, sliding along respective oblique sides of teeth 28 facing opening 15, elastically deforms lance 20 towards wall 9 and lance 21 inwards of respective opening 24; and, once terminal 5 is inserted fully inside respective cavity 4 (Figures 3 and 4), lances 20, 21 are restored to the undeformed position by teeth 28 clicking inside retaining seat 13 of terminal 5 so that respective sides of the teeth, perpendicular to direction A and opposite the respective oblique sides, define a stop preventing withdrawal of terminal 5.

[0021] With reference to Figures 1 and 4, connector 1 also comprises a secondary retaining device, indicated as a whole by 30, for retaining terminals 5.

[0022] Device 30 comprises a movable member 31 formed separately from casing 3 and which is fitted, in direction A, to the front of casing in a closed position (Figures 3 and 4) to determine correct insertion of terminals 5 inside respective cavities 4 and prevent withdrawal of the terminals.

[0023] More specifically, movable member 31 comprises a substantially T-shaped plate 32 which is positioned contacting wall 18 of casing 3 in the closed position of movable member 31; and a number of first wedges 33, one for each cavity 4, projecting integrally from plate 32 and parallel to direction A, and each of which is inserted, inside respective cavity 4, between lance 20 and wall 9 from which lance 20 originates, so as to prevent deformation of lance 20 (Figure 4).

[0024] Movable member 31 also comprises a number of second wedges 34 projecting integrally from plate 32 and parallel to wedges 33, and engaging respective openings 24 in walls 22, 23 of casing 3.

[0025] Plate 32 also comprises a number of through seats 35 coaxial with front openings 17 of respective cav-

ities 4 and which are engaged, in use, by respective contact portions of the male terminals of the complementary connector.

[0026] Movable member 31 is fitted to the front of casing 3 in a preassembly position (Figures 1 and 2) - in which plate 32 is positioned facing and parallel to wall 18, and wedges 33 and 34 engage the inlets of respective cavities 4 and are separated, in direction A, from respective lances 20, 21 to permit deformation of the lances when assembling terminals 5 - and is movable, in direction A, between the preassembly position and said closed position (Figures 3 and 4) in which plate 32 is positioned contacting wall 18, wedges 33 are inserted inside respective cavities 4, between lances 20 and wall 9 from which lances 20 originate, so as to prevent deformation of lances 20, and wedges 34 are positioned closing respective openings 24.

[0027] According to the present invention, device 30 also comprises a pair of elastic members 40 which project from respective lateral end portions of plate 32 of movable member 31, on the same side as wedges 33, 34, are located on opposite sides of wedges 33, 34, cooperate in sliding manner with casing 3 as movable member 31 is moved between said preassembly and closed positions, and are deformable, by interaction with casing 3, between a disabling configuration (Figures 1 and 2) in which elastic members 40 project partly outwards of casing 3 and prevent insertion of connector 1 inside the receptacle of the complementary connector, and an enabling configuration (Figures 3 and 4) reached when movable member 31 is in the closed position, and in which elastic members 40 are housed entirely within the outer contour of casing 3 and permit insertion and connection of connector 1 inside the receptacle of the complementary connector.

[0028] Each elastic member 40 is defined by a substantially U-shaped blade positioned with the concavity facing plate 32 and which comprises a first arm 41 having one end integral with plate 32, and a second arm 42 facing and free to flex with respect to arm 41. More specifically, arms 42 of elastic members 40 are located on opposite sides with respect to arms 41, and diverge from arms 41 towards plate 32 when undeformed and in the disabling configuration of elastic members 40. Each arm 42 has, at a respective free end adjacent to plate 32, a pair of projections 43 projecting outwards with respect to casing 3 in the disabling configuration of elastic member 40.

[0029] Elastic members 40 are engaged inside respective longitudinal through seats 44 formed in portion 7 of casing 3, on opposite sides of the relative row of cavities 4.

[0030] With reference to Figures 2 and 3, each elastic member 40 also comprises a pair of teeth 45, 46 which click onto respective teeth 47, 48 associated with respective seat 44 to respectively define said closed and preassembly positions.

[0031] More specifically, teeth 45 and 47 defining the closed position of movable member 31 project respec-

tively from an intermediate portion of arm 42 of each elastic member 40 and from an inlet portion of the lateral edge of relative seat 44, and have a substantially isosceles-trapezium-shaped profile with the respective oblique sides facing opening 15 and opening 17 respectively.

[0032] Similarly, teeth 46 and 48 defining the preassembly position of movable member 31 project respectively from an end portion of arm 41 of each elastic member 40 and from the inlet portion of the lateral edge of relative seat 44, and both have a substantially isosceles-trapezium-shaped profile with the respective oblique sides facing opening 15 and opening 17 respectively.

[0033] Teeth 45 and 46 of each elastic member 40 are located in succession in direction A from plate 32 towards the inside of relative seat 44; and teeth 47 and 48 of each seat 44 are positioned facing each other.

[0034] In the undeformed and disabling configuration of each elastic member 40, arm 41 extends perpendicularly from plate 32 and cooperates in sliding manner with a side of tooth 48 parallel to direction A, while arm 42 diverges from arm 41 towards plate 32, so that projections 43 project outwards of casing 3, and cooperates with the oblique side of tooth 47.

[0035] In the enabling configuration of each elastic member 40, arms 41 and 42 are positioned parallel to each other, and projections 43 are aligned with the lateral edge of portion 7 of casing 3.

[0036] Connector 1 is assembled as described below, and commencing from an initial condition in which movable member 31 is fitted to casing 3 in the preassembly position with elastic members 40 in the disabling configuration, and terminals 5 are located inside respective cavities 4 (Figure 2). The preassembly position is defined by teeth 46 of elastic members 40 engaging teeth 48 associated with respective seats 44.

[0037] If one of terminals 5 is not inserted properly inside respective cavity 4, relative lances 20, 21 remain deformed towards wall 9 and inwards of respective opening 24 respectively. The deformation of lance 20 prevents the corresponding wedge 33 of movable member 31 from being inserted fully inside cavity 4, between lance 20 and wall 9, and so prevents movable member 31 from being moved into the closed position, so that projections 43 of elastic members 40 project outwards of casing 3 and prevent insertion of connector 1 inside the receptacle of the complementary connector.

[0038] Conversely, if terminals 5 are all engaged properly by respective lances 20, 21, wedges 33 may be inserted fully between lances 20 and wall 9, wedges 34 may be positioned closing respective openings 24, and movable member 31 may therefore be moved into the closed position defined by teeth 45 of elastic members 40 engaging teeth 47 associated with respective seats 44; in which case, elastic members 40 assume the enabling configuration in which projections 43 are aligned with the lateral edge of casing 3 (Figure 3), thus permitting insertion and complete connection of connector 1 inside the receptacle of the complementary connector.

[0039] The advantages of connector 1 according to the present invention will be clear from the foregoing description.

[0040] In particular, when movable member 31 is not set to the closed position on the casing, arms 42 of elastic members 40 diverge with respect to respective arms 41 so that respective projections 43 project outwards with respect to casing 3 to increase the normal overall transverse dimension of casing 3 and so prevent insertion of connector 1 inside the receptacle of the complementary connector. Connector 1 is thus fault-proof. In fact, if movable member 31 is set to other than the closed position, there is absolutely no way of connecting connector 1 to the complementary connector, not even by forcing the contacting parts.

[0041] Moreover, device 30 is particularly straightforward and inexpensive by requiring no relatively complex additional parts on casing 3 other than a pair of through seats 44 formed in a conventional casing.

[0042] Clearly, changes may be made to connector 1 as described herein without, however, departing from the scope of the present invention.

Claims

1. An electric connector (1) comprising:

- an insulating casing (3) fittable in an assembly direction (A) inside a receptacle of a complementary connector, and defining a number of cavities (4) having respective axes parallel to said assembly direction (A) and for housing respective electric terminals (5);
- primary retaining means (20, 21) for retaining said terminals (5) inside respective said cavities (4) and preventing withdrawal of the terminals; and
- secondary retaining means (30) in turn comprising at least one movable member (31) fitted frontally to said casing (3) in a preassembly position and movable, in said assembly direction (A), between said preassembly position and a closed position cooperating with said primary retaining means (20, 21) to determine correct engagement and prevent release of said terminals (5) by the primary retaining means;

said secondary retaining means (30) comprising elastic means (40), which are carried by said movable member (31), cooperate in sliding manner with said casing (3) as said movable member (31) is moved between said preassembly and closed positions, and are deformed, by interaction with the casing (3), between a disabling configuration, in which said elastic means (40) project at least partly outwards of said casing (3) and prevent insertion of said connector (1) inside said receptacle of said comple-

mentary connector, and an enabling configuration reached when said movable member (31) is in said closed position, and in which said elastic means (40) are housed entirely within the outer contour of said casing (3) and permit insertion and connection of said connector (1) inside said receptacle of said complementary connector;

said elastic means (40) including an arm (42) free to flex with respect to the rest of the movable member (31) to define said disabling and enabling configurations;

characterized in that said arm (42) has a locking portion (45) for coupling to the casing (3) in said enabling configuration to define said closed position.

2. A connector as claimed in Claim 1, **characterized in that** said movable member (31) comprises a plate (32) facing a front wall (18) of said casing (3) in said preassembly position; and a number of interacting elements (33, 34) interacting with said primary retaining means (20, 21) and projecting from said plate (32); said elastic means comprising a pair of substantially U-shaped elastic members (40), which project from respective lateral end portions of said plate (32), on the same side as said interacting elements (33, 34) have respective concavities facing said plate (32), define respective said arms (42) and are engaged inside respective seats (44) formed in said casing (3) and having respective axes parallel to said assembly direction (A).
3. A connector as claimed in Claim 2, **characterized in that** said arm (42) of each elastic member (40) extends on the prolongation of a further arm (41) having one end integral with said plate (32); each said arm (42) facing the relative further arm (41), and having, at a free end adjacent to said plate (32), projecting means (43) projecting outwards with respect to said casing (3) in said disabling configuration.
4. A connector as claimed in Claim 3, **characterized in that** said arms (42) of said elastic members (40) are located on opposite sides with respect to said further arms (41), and, when undeformed and in said disabling configuration of said movable member (31), diverge with respect to the further arms (41) towards said plate (32).
5. A connector as claimed in Claim 3 or 4, **characterized in that** each said elastic member (40) comprises a first and a second tooth (45, 46), which click respectively onto a third and a fourth tooth (47, 48) of the respective said seat (44) to respectively define said closed and preassembly positions; each first tooth (45) defining said locking portion and projecting from said arm (42) of the relative elastic member (40), and each second tooth (46) projecting from said further arm (41) of the relative elastic member (40).

6. A connector as claimed in Claim 5, **characterized in that** said first and second tooth (45, 46) of each said elastic member (40) are located in succession in said assembly direction (A) and from said plate (32) towards the inside of the respective said seat (44); and **in that** said third and fourth tooth (47, 48) of each said seat (44) are positioned facing each other and are carried by a lateral edge of said seat (44).

Patentansprüche

1. Ein elektrischer Verbinder (1) umfassend:

- ein nicht: leitendes Gehäuse (3), das in einer Zusammenbauichtung (A) inwendig in eine Aufnahme eines komplementären Verbinders einfügbar ist und eine Anzahl von Kavitäten (4) definiert, die jeweils parallele Achsen zur Zusammenbauichtung (A) aufweisen und zur Aufnahme entsprechender elektrischer Anschlüsse (5);
- primäre Haltemittel (20, 21) zum Halten der Anschlüsse (5) innerhalb der jeweiligen Kavitäten (4) und um einen Rückzug der Anschlüsse zu verhindern; und
- sekundäre Haltemittel (30), die ihrerseits zumindest ein bewegliches Bauteil (31) umfassen, das stirnseitig zum Gehäuse (3) in einer vormontierten Position eingepasst ist und das in der Zusammenbauichtung (A) zwischen der vormontierten Position und einer geschlossenen Position beweglich ist und mit dem primären Haltemitteln (20, 21) zusammenwirkt, um einen einwandfreien Eingriff zu bestimmen und um eine Freigabe der Anschlüsse (5) durch die primären Haltemittel zu unterbinden;
- die sekundären Haltemittel (30) umfassen elastische Mittel (40), die durch das bewegliche Bauteil (31) gestützt werden, die in einer gleitverschieblichen Art und Weise mit dem Gehäuse (3), in dem das bewegliche Bauteil (31) zwischen der vormontierten und der geschlossenen Position bewegt wird, zusammenwirken und die verformt werden durch Interaktion mit dem Gehäuse (3) zwischen einer Sperrkonfiguration, in welcher die elastischen Mittel (40) zumindest teilweise aus dem Gehäuse (3) hervorstehen und ein Einführen des Verbinders (1) ins Inneren der Aufnahme des komplementären Verbinders verhindern und eine Freigabekollfiguration, die erzielt wird, wenn das bewegliche Bauteil (31) in der geschlossenen Position ist und in welcher die elastischen Mittel (40) vollständig innerhalb der Außenkontur des Gehäuses (3) aufgenommen werden und ein Einführen und Verbinden des Verbinders (1) im Inneren

der Aufnahme des komplementären Verbinders erlaubt;

- die elastischen Mittel (40) umfassen einen Arm (42), beweglich, um sich mit Bezug auf den Rest des beweglichen Bauteils (31) zu biegen, um die Sperr- und Freigabekonfigurationen zu definieren;

dadurch gekennzeichnet, dass der Arm (42) einen Verriegelungsabschnitt (45) zum Verbinden an dem Gehäuse (3) in der Freigabekonfiguration aufweist, um die geschlossenen Position zu definieren.

2. Ein Verbinder, wie in Anspruch 1 beansprucht, **dadurch gekennzeichnet, dass** das bewegliche Bauteil (31) eine Platte (32) umfasst, die einer vorderen Wandung (18) des Gehäuses (3) in der vormontierten Position zugewandt ist; und eine Anzahl von interagierenden Elementen (33, 34), die mit den primären Haltemitteln (20, 21) interagieren und von der Platte (32) hervorstehen; wobei die elastischen Mittel ein Paar von im Wesentlichen U-förmigen elastischen Bauteilen (40) umfassen, die von jeweiligen lateralen Endabschnitten der Platte (32) hervorstehen, wobei auf derselben Seite wie die interagierenden Elemente (33, 34) jeweilige Wölbungen, die der Platte (32) zugewandt sind, vorgesehen sind, um die jeweiligen Arme (42) zu definieren und die innerhalb jeweiliger Sitze (44), die in dem Gehäuse (3) geformt sind, eingerastet werden und jeweils zur Zusammenbauichtung (A) parallele Achsen aufweisen.

3. Ein Verbinder, wie in Anspruch 2 beansprucht, **dadurch gekennzeichnet, dass** der Arm (42) eines jeden elastischen Bauteils (40) sich in der Verlängerung eines weiteren Arms (41) erstreckt, aufweisend ein Ende integral mit der Platte (32); wobei jeder der Arme (42) dem relativen weiteren Arm (41) zugewandt ist und an einem freien Ende, benachbart zur Platte (32) Vorsprungmittel (43) aufweist, die in Bezug auf das Gehäuse (3) in der Sperrkonfiguration nach außen hervorstehen.

4. Ein Verbinder, wie in Anspruch 3 beansprucht, **dadurch gekennzeichnet, dass** die Arme (42) der elastischen Bauteile (40) an gegenüberliegenden Seiten bezüglich der weiteren Arme (41) angeordnet sind und bezüglich der weiteren Arme (41) in Richtung der Platte (32) ausemendergehen wenn diese unverformt sind und in der Sperrkonfiguration des beweglichen Bauteils (31).

5. Ein Verbinder, wie in Anspruch 3 oder 4 beansprucht, **dadurch gekennzeichnet, dass** jedes der elastischen Bauteile (40) einen ersten und einen zweiten Zahn (45, 46) umfasst, die jeweils auf einen dritten und einen vierten Zahn (47, 48) eines jeweiligen Sitzes (44) klicken, um jeweils die geschlossene

ne und vormontierte Position zu definieren; wobei jeder erste Zahn (45) den Verriegelungsabschnitt definiert und vom Arm (42) des relativen elastischen Bauteils (40) hervorsticht und jeder zweite Zahn (46) vom weiteren Arm (41) des relativen elastischen Bauteils (40) hervorsticht.

6. Ein Verbinder, wie in Anspruch 5 beansprucht, **dadurch gekennzeichnet, dass** der erste und der zweite Zahn (45, 46) eines jeden elastischen Bauteils (40) in Zusammenbauichtung (A) und von der Platte (32) in Richtung des Inneren eines jeweiligen Sitzes (44) nacheinander angeordnet sind; und **dadurch dass** der dritte und der vierte Zahn (47, 48) eines jeden Sitzes (44) einander zugewandt positioniert sind und gestützt werden durch eine laterale Kante des Sitzes (44).

Revendications

1. Connecteur électrique (1) comprenant ;

un boîtier isolant (3) ajustable dans une direction d'assemblage (A) à l'intérieur d'un logement d'un connecteur complémentaire, et définissant un nombre de cavités (4) ayant des axes respectifs parallèles à ladite direction d'assemblage (A) et destinées à loger des bornes électriques respectives (5) ;

des moyens de retenue primaires (20, 21) pour retenir lesdites bornes (5) à l'intérieur desdites cavités respectives (4) et pour empêcher le retrait des bornes et

des moyens de retenue secondaires (30) comprenant à leur tour au moins un élément mobile (31) ajusté frontalement audit boîtier (3) dans une position de préassemblage et mobile, dans ladite direction d'assemblage(A), entre ladite position de préassemblage et une position fermée coopérant avec lesdits moyens de retenue primaires (20, 21) pour déterminer une mise en prise correcte et empêcher la libération desdites bornes (5) par les moyens de retenue primaires ; lesdits moyens de retenue secondaires (30) comprenant des moyens élastiques (40), qui sont portés par ledit élément mobile (31), coopèrent d'une manière coulissante avec ledit boîtier (3) alors que ledit élément mobile (31) est déplacé entre lesdites positions de préassemblage et fermée, et sont déformés, par interaction avec le boîtier (3), entre une configuration de désactivation, dans laquelle lesdits moyens élastiques (40) font saillie au moins en partie vers l'extérieur dudit boîtier (3) et empêchent l'insertion dudit connecteur (1) à l'intérieur dudit logement dudit connecteur complémentaire, et une configuration d'activation obtenue quand le-

dit élément mobile (31) est dans ladite position fermée, et dans laquelle lesdits moyens élastiques (40) sont logés entièrement à l'intérieur du contour extérieur dudit boîtier (3) et permettent l'insertion et la connexion dudit connecteur (1) à l'intérieur dudit logement dudit connecteur complémentaire ;
 lesdits moyens élastiques (40) comprenant un bras (42) libre de se plier par rapport au reste de l'élément mobile (31) pour définir lesdites configurations de désactivation et d'activation ;

caractérisé en ce que ledit bras (42) possède une partie de verrouillage (45) pour le couplage au boîtier (3) dans ladite configuration d'activation pour définir ladite position fermée.

2. Connecteur selon la revendication 1, **caractérisé en ce que** ledit élément mobile (31) comprend une plaque (32) faisant face à une paroi avant (18) dudit boîtier (3) dans ladite position de préassemblage ; et un nombre d'éléments d'interaction (33, 34) interagissant avec lesdits moyens de retenue primaires (20, 21) et faisant saillie à partir de ladite plaque (32) ; lesdits moyens élastiques comprenant une paire d'éléments élastiques sensiblement en forme de U (40), qui font saillie à partir de parties d'extrémité latérales respectives de ladite plaque (32), sur le même côté que lesdits éléments d'interaction (33, 34) possèdent des concavités respectives faisant face à ladite plaque (32), définissent lesdits bras respectifs (42) et sont mis en prise à l'intérieur des sièges respectifs (44) formés dans ledit boîtier (3) et ayant des axes respectifs parallèles à ladite direction d'assemblage (A).
3. Connecteur selon la revendication 2, **caractérisé en ce que** ledit bras (42) de chaque élément élastique (40) s'étend sur le prolongement d'un bras supplémentaire (41) ayant une extrémité solidaire de ladite plaque (32) ; chacun desdits bras (42) faisant face au bras supplémentaire relatif (41), et ayant, à une extrémité libre adjacente à ladite plaque (32), des moyens de saillie (43) faisant saillie vers l'extérieur par rapport audit boîtier (3) dans ladite configuration de désactivation.
4. Connecteur selon la revendication 3, **caractérisé en ce que** lesdits bras (42) desdits éléments élastiques (40) sont situés sur des côtés opposés par rapport auxdits bras supplémentaires (41), et, lorsqu'ils sont non déformés et dans ladite configuration de désactivation dudit élément mobile (31), divergent par rapport aux bras supplémentaires (41) vers ladite plaque (32).
5. Connecteur selon la revendication 3 ou 4, **caractérisé en ce que** chacun desdits éléments élastiques

(40) comprend une première et une deuxième dent (45, 46), qui s'encliquettent respectivement sur une troisième et une quatrième dent (47, 48) dudit siège respectif (44) pour définir respectivement lesdites positions fermées et de préassemblage ; chaque première dent (45) définissant ladite partie fermée et faisant saillie à partir dudit bras (42) de l'élément élastique relatif (40), et chaque deuxième dent (46) faisant saillie à partir dudit bras supplémentaire (41) de l'élément élastique relatif (40).

6. Connecteur selon la revendication 5, **caractérisé en ce que** lesdites première et deuxième dents (45, 46) de chacun desdits éléments élastiques (40) sont situées en succession dans ladite direction d'assemblage (A) et à partir de ladite plaque (32) vers l'intérieur dudit siège respectif (44) ; et **en ce que** lesdites troisième et quatrième dents (47, 48) de chaque dit siège (44) sont positionnées en face l'une de l'autre et sont portées par un bord latéral dudit siège (44).

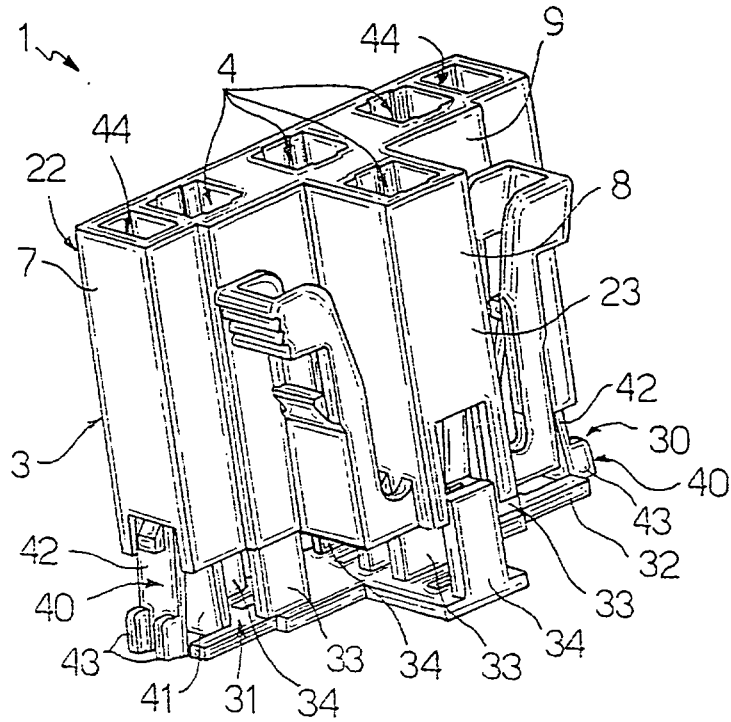


Fig.1

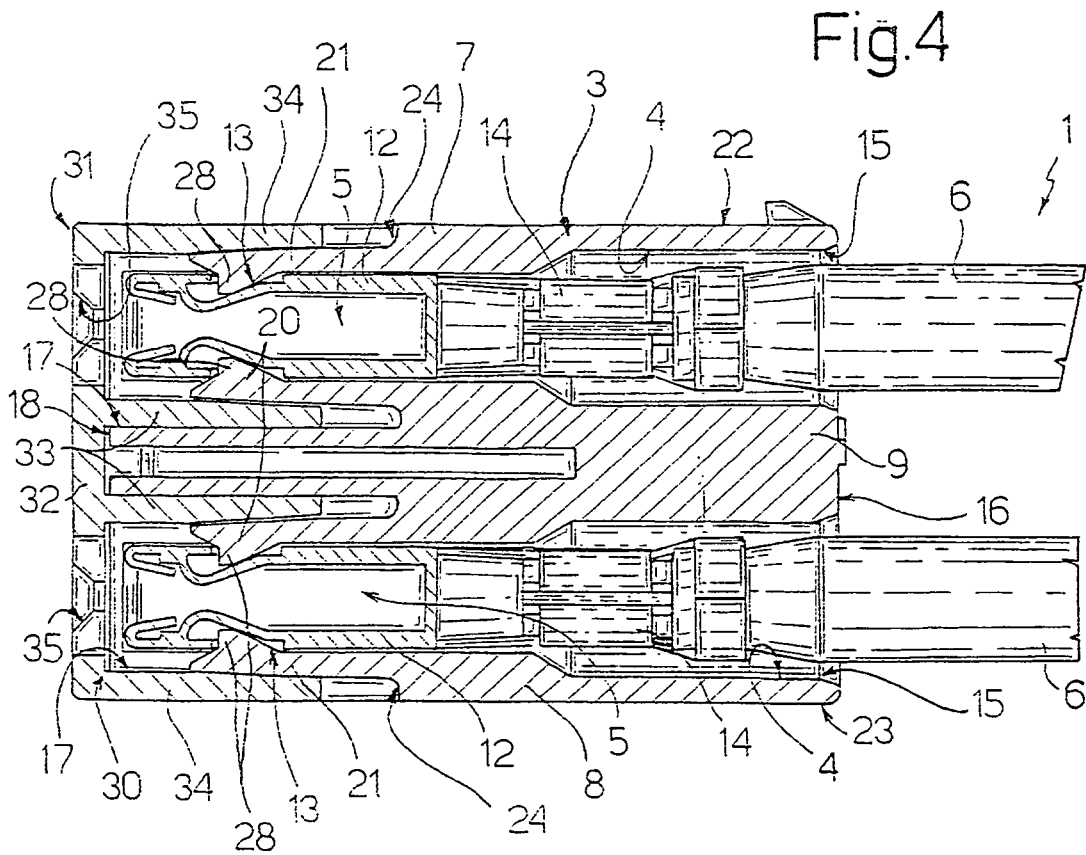


Fig.4

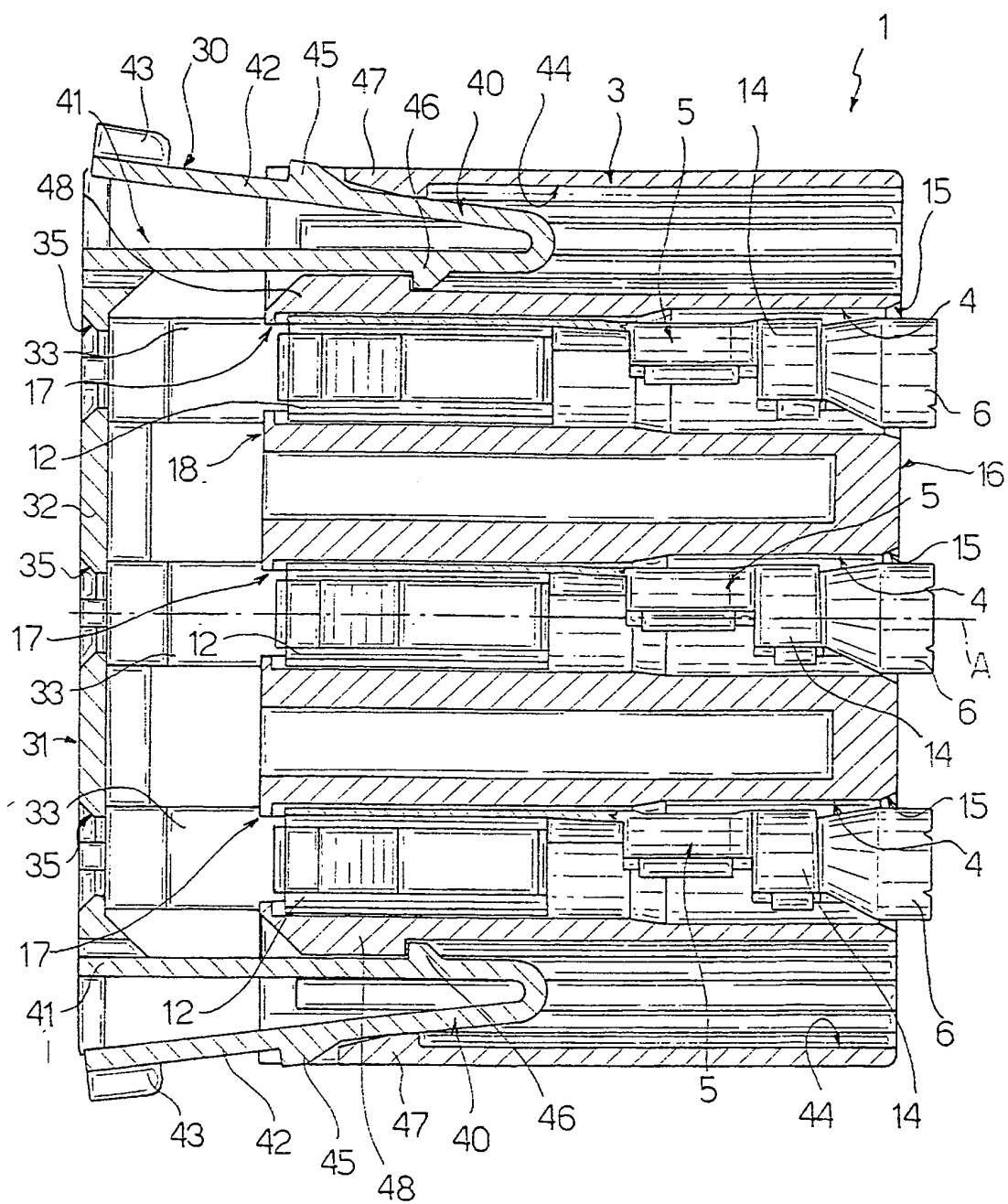


Fig.2

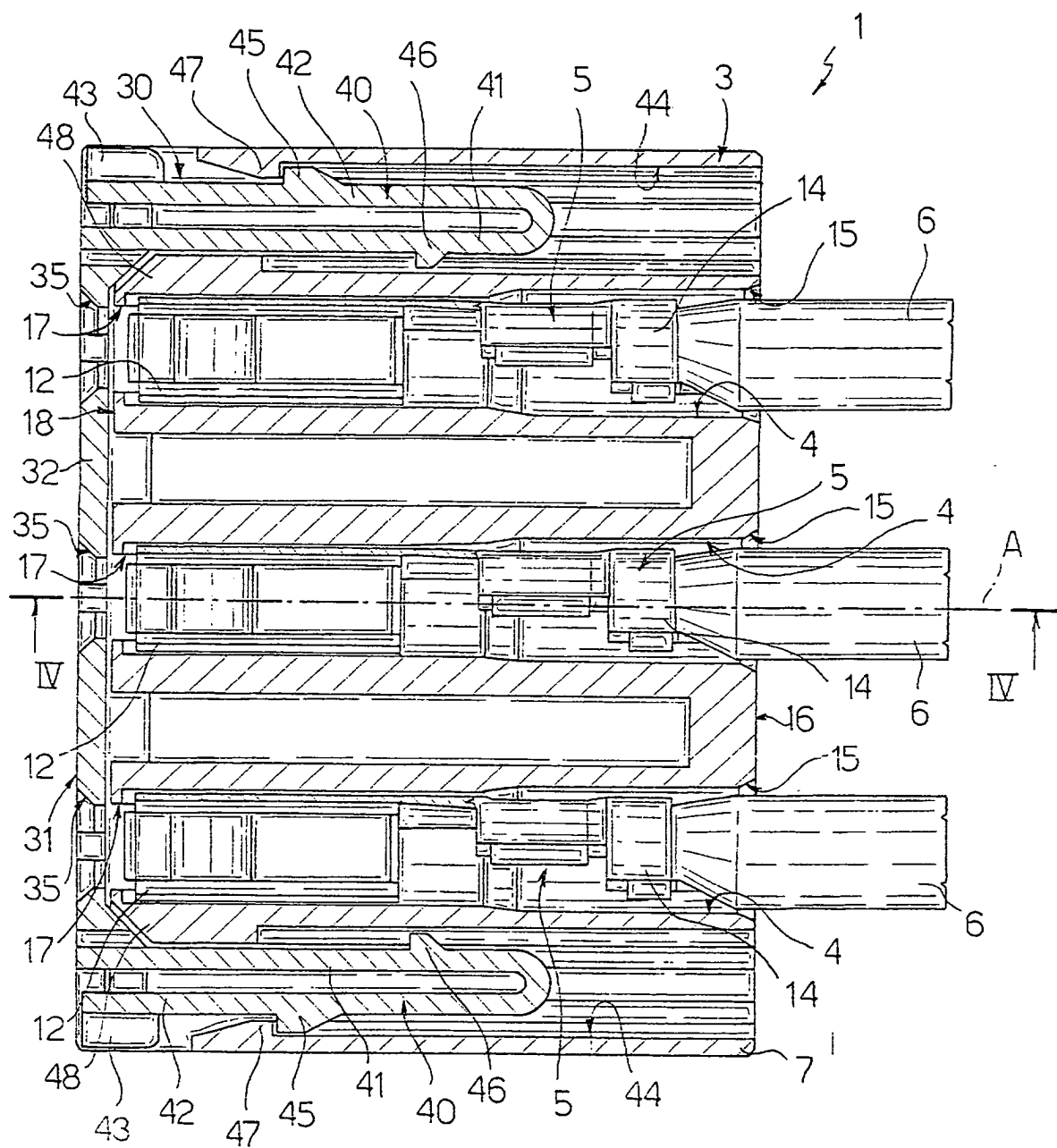


Fig.3

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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