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- **Asif, Asif**
573120 Hassan (IN)
- **C R, Gurumurthy**
560048 Bangalore (IN)
- **Bidi, Vikram Vilas**
560072 Bangalore (IN)

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(74) Representative: **Grünecker, Kinkeldey, Stockmair & Schwanhäusser**
Anwaltssozietät
Leopoldstrasse 4
80802 München (DE)

(71) Applicant: **TE Connectivity India Private Limited**
Bangalore, 560048 (IN)

(72) Inventors:
• **Hugar, Danappa**
560019 Bangalore (IN)

(54) **Connector housing with a monolithically integrated terminal positioning assurance device**

(57) The invention relates to a connector housing (1) for an electrical connector (69), the housing comprising at least one terminal receptacle for an electric contact element. The invention further relates to an electrical connector (69). To provide a connector housing (1) which securely locks electric contact elements (63) inside the terminal receptacles (5) and which is fast, easy and cost-effective to manufacture, it is intended according to the invention that the housing (1) further comprises at least one terminal positioning assurance device (19) which is

formed mono-lithically with the housing (1) and which is accessible from an outside (21) of the housing (1), the terminal positioning assurance device (19) having an actuator head (23), which, in an unlocked position, is spaced apart from the rest of the housing (1) and, in a locked position, is positively engaged with and protrudes into a lateral opening (25) of the housing, whereby, in the locked position, a terminal locking element (29), which is operatively coupled to the actuator head (23), protrudes into at least one terminal receptacle (5).

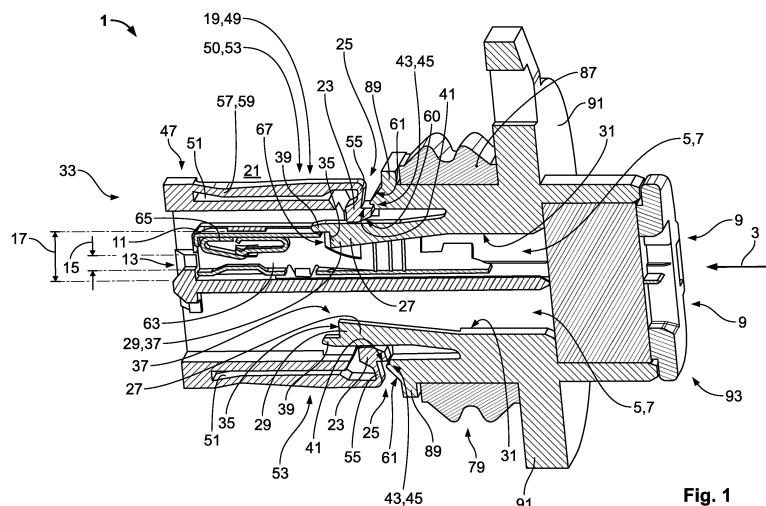


Fig. 1

Description

[0001] The invention relates to a connector housing for an electrical connector. The invention further relates to a contact assembly.

[0002] Connector housings for electrical connectors are well known and widely used as electric components. In an often used design, the connector housings comprise at least one receptacle or cavity for the insertion of an electric contact element such as a terminal. In order to keep an inserted terminal in place and to avoid the terminal being pushed out of the housing upon mating of two electrical connectors, a locking member or primary lock is often used. The locking member is generally formed as an elastically deformable arm, which extends basically parallel to the terminal. During insertion of a terminal into the receptacle, the locking member is elastically deflected away from the terminal, and, when the terminal reaches its final position, protrudes at least partially into a recess of the terminal.

[0003] If a connector as described above is used in a harsh environment, for example in vehicles, or if two electrical connectors are mated and unmated with the use of excessive forces, the locking member may be bent away from the terminal and therefore fails in keeping the terminal in the desired position.

[0004] It is therefore an object of the present invention, to provide a connector housing, which securely locks an inserted contact element in the housing and which is fast and cost-effectively to produce.

[0005] This object is reached according to the invention for a connector housing as mentioned in the beginning in that the housing comprises at least one terminal receptacle for an electric contact element, the terminal receptacle opening into a terminal insertion direction for insertion of the electric contact element, the housing further comprising at least one terminal positioning assurance device which is formed monolithically with the housing and which is accessible from an outside of the housing, the terminal positioning assurance device having an actuator head which, in an unlocked position, is spaced apart from the rest of the housing and, in a locked position, is positively engaged with and protrudes into a lateral opening of the housing, whereby, in the locked position, a terminal locking element, which is operatively coupled to the actuator head, protrudes into at least one terminal receptacle.

[0006] For the above mentioned contact assembly, the object is reached in that the contact assembly comprises an electrical connector which comprises a connector housing according to the invention, and in that at least one electric contact element is inserted in a terminal receptacle, the electric contact element being positively locked in the terminal receptacle by a terminal positioning assurance device which is formed monolithically with the housing, wherein the electric contact element is positively locked between a forward wall of the terminal receptacle and a displaceable transmission member, which is part

of the terminal positioning assurance device, and being pushed against a side wall of the terminal receptacle by a pushing portion of the displaceable transmission member, and wherein the displaceable transmission member is locked against movement away from the contact element by an actuator head, which is part of the terminal positioning assurance device.

[0007] The terminal positioning assurance device securely locks an inserted terminal in the terminal receptacle. The lateral opening allows an easy access for the actuator head into the housing. The terminal positioning assurance device is formed monolithically with the housing. This allows for a production of the housing and the terminal positioning assurance device in one single piece, which leads to a cost-effective production. Furthermore, the risk of losing an external terminal positioning assurance device during manufacturing, transport or usage is eliminated as long as the housing is not damaged.

[0008] In the following, further improvements of the connector housing and the contact assembly according to the invention are described. These additional improvements may be combined independently of each other, depending on whether a particular advantage of a particular improvement is needed in a specific application.

[0009] A simple design and easy manufacturing can be achieved, when the actuator head is formed as a widening of the terminal positioning assurance device.

[0010] According to another advantageous improvement, the terminal positioning assurance device may further comprise, between the terminal receptacle and the actuator head, a displaceable transmission member, which, in the locked position, is elastically deflected into the terminal receptacle, the displaceable transmission member comprising the terminal locking element. The displaceable transmission member may be adapted to be displaced by an electric contact element during insertion of the electric contact element into the terminal receptacle in order to allow an easy insertion of the electric contact element. In the locked position, the displaceable transmission member may securely lock an inserted electric contact element against a movement against the terminal insertion direction.

[0011] To provide a compact design of the connector housing, the displaceable transmission member may be formed monolithically with the housing as part of a side wall of the terminal receptacle.

[0012] The terminal receptacle may be formed as a shaft, in particular with a shaft bottom arranged on a side of the terminal receptacle opposite to the opening of the terminal receptacle. The shaft may comprise an access opening, wherein a diameter of the opening is smaller than a diameter of the shaft. The wall of the shaft may positively lock an inserted electric contact element in a desired position and prevents a further movement along the terminal insertion direction. The access opening in the wall of the shaft may allow a contacting portion of an inserted electric contact element to extend at least par-

tially outside the housing in order to establish an electric contact with a mating contact element or to allow a contacting portion of a mating contact element to protrude into the terminal receptacle to establish an electric contact with the inserted electric contact element.

[0013] An advantageous arresting of an inserted electric contact element can be achieved, when the terminal positioning assurance device comprises an elastically deformable pushing portion, adapted to push an inserted electric contact element against a side wall of the terminal receptacle, opposite to the pushing portion.

[0014] An advantageous insertion of an electric contact element into the terminal receptacle may be achieved when the elastically deformable pushing portion is situated on the displaceable transmission member.

[0015] According to another advantageous improvement, in the locked position, the actuator head may press against the displaceable transmission member in a direction towards the terminal receptacle. The actuator head may then lock the displaceable transmission member against movement away from the electric contact element and therefore improve the seat of the electric contact element in the terminal receptacle.

[0016] A secure position of the actuator head in the locked position may be achieved when the actuator head comprises at least one locking shoulder, adapted to positively lock in the locked position with a corresponding arresting portion which is formed by a rim of the lateral opening.

[0017] According to another advantageous improvement, the terminal positioning assurance device may comprise a base and a free end and is separated from the rest of the housing by a straight side-pull shaft, which extends continuously from the outside of the housing between the free arm and the rest of the housing when the terminal positioning assurance device is in the unlocked position. The straight side-pull shaft may allow an easy and cost-effective manufacturing of the housing, especially when methods such as injection molding are used.

[0018] According to another advantageous improvement, at least one of the terminal positioning assurance device and the displaceable transmission member may be formed at least in part as a cantilever beam. A cantilever beam allows for a compact design, easy manufacturing, good moveability and also elastically deformation of the terminal positioning assurance device and/or the displaceable transmission member.

[0019] A good moveability of the actuator head with respect to the rest of the housing can be achieved when the actuator head is situated at the free end of a cantilever beam which is part of the terminal positioning assurance device.

[0020] A compact and robust cantilever beam can be achieved when the terminal positioning assurance device is formed as a cantilever beam which comprises a stiff first part and a more resilient second part.

[0021] A solid and compact design of a connector housing can be achieved when the terminal positioning

assurance device is formed as cantilever beam which has a base at a forward end of the housing.

[0022] According to another advantageous improvement, the terminal positioning assurance device may be formed as a cantilever beam which may comprise at least two spring sections which are perpendicular to each other, and wherein a longer spring section extends parallel to an insertion direction of the electrical connector, and wherein a shorter spring section extends in the direction of the lateral opening. The longer spring section may be adapted to press the actuator head in a direction towards the terminal receptacle, whereas the shorter spring section may be adapted to press the actuator head in a direction towards an arresting portion.

[0023] To achieve a secure locking between the actuator head and the arresting portion, the housing may comprise at least one guiding surface which is adapted to guide the actuator head in a direction with a component perpendicular to the shorter spring section to apply a spring force in the cantilever beam which pressurises the actuator head in a direction towards the arresting portion when the terminal positioning assurance device is situated in the locked position.

[0024] The monolithically integrated terminal positioning assurance device as described before is not limited to be used with a single electric contact element. One monolithically integrated terminal positioning assurance device may extend perpendicular to the terminal insertion direction and can be used to assure the position of a plurality of electric contact elements at the same time. In this case, the electric contact elements may be aligned in a parallel row which, extends perpendicular to the terminal insertion direction. The terminal locking element will then protrude in the plurality of terminal receptacles, assuring the position of the electric contact elements.

[0025] An advantageous improvement of a contact assembly according to the invention may be achieved, when the contact assembly further comprises a second connector housing for a mating electrical connector, wherein the second connector housing comprises at least one cover member, which is adapted to cover at least one terminal positioning assurance device of the first connector housing at least in parts when the electrical connectors are mated.

[0026] The cover member may protect the terminal positioning assurance device of the first connector housing when both electrical connectors are mated. The terminal positioning assurance device is therefore protected against damage and against accidental removal of the terminal positioning assurance device from the locked position.

[0027] In order to form a sealed connection between a contact element and a mating contact element according to the invention, wherein also at least one of the terminal positioning assurance devices of at least one of two mating electrical connectors is located in a sealed environment, at least one of the connector housings may comprise a sealing arrangement which is adapted to pos-

itively lock with a corresponding cover member of the connector housing of the mating electrical connector.

[0028] According to another advantageous improvement of an contact assembly according to the invention, at least one of the connector housings may comprise a terminal positioning assurance device which is formed as a cantilever beam, wherein an outer portion of the cantilever beam is aligned with an outer wall of the connector housing at least in parts, and wherein the outer portion of the cantilever beam forms a barrier-free guiding portion for the connector housing of a mating electrical connector upon mating of the electrical connectors. The guiding portion may allow a smooth mating of two electrical connectors and, at the same time, avoid forces on the terminal positioning assurance device, which may hold the risk of damaging the terminal positioning assurance device.

[0029] To avoid damaging of the terminal positioning assurance device during mating of two electrical connectors, the cantilever beam may be based at a forward end of the housing.

[0030] A safe operation can also be achieved when the housing comprises at least one barrier which encircles the connector housing perpendicular to the terminal insertion direction at least in part. One of the at least one barriers can be situated adjacent to the guiding surfaces. The barrier may prevent objects from interfering with the terminal positioning assurance device, which could lead to malfunction. Further, if a sealing arrangement is used, a sealing member such as a ring can be situated between two barriers, an inner barrier adjacent to the guiding surfaces and an outer barrier at a rearward end of the connector housing. The barriers may thus keep the sealing member in place, preventing a displacement of the sealing member during mating or unmating of the connector and a mating connector.

[0031] In the following, the invention and its improvements are described in greater detail using an exemplary embodiment and with reference to the figures. As described above, the various features shown in the embodiment may be used independently of each other in specific applications.

[0032] In the following figures, elements having the same function and/or the same structure will be referenced by the same reference signs.

[0033] In the figures:

Fig. 1 shows a schematic cut view of an embodiment of a connector housing according to the invention;

Fig. 2 shows a schematic cut view of an a contact assembly according to the invention in a mated position.

[0034] Fig. 1 shows a connector housing 1 according to the invention in a schematic cut view parallel to a terminal insertion direction 3. The cut view cuts through two

terminal receptacles 5 of the housing 1. The housing 1 may comprise more terminal receptacles 5 which are not shown.

[0035] In the following, the elements of the connector housing 1 and the electrical connector 69 according to the invention are described exemplary for a single terminal receptacle 5 and its related components even if the housing 1 may comprise a plurality of receptacles 5 which may be formed according to the invention.

[0036] The terminal receptacles extend longitudinally in parallel with the terminal insertion direction 3. The terminal receptacles 5 may be basically formed as a shaft 7. The terminal receptacle 5 is opened into the terminal insertion direction 3. The open side of the terminal receptacle 5 may form a terminal insertion opening 9. On the opposite of the terminal insertion opening 9, the terminal receptacle 5 may comprise a shaft wall 11. The shaft wall 11 may comprise an access opening 13, wherein a diameter 15 of the access opening 13 is smaller than a shaft diameter 17 adjacent to the access opening 13.

[0037] A terminal positioning assurance device 19 is formed monolithically with the housing 1. The terminal positioning assurance device 19 is accessible from an outside 21 of the housing 1. The terminal positioning assurance device 19 has an actuator head 23. The actuator heads 23 in Fig. 1 are shown in the locked position. The actuator head 23 is positively engaged and protrudes into a lateral opening 25 of the housing 1.

[0038] The embodiment shown in Fig. 1 has a terminal positioning assurance device 19 which comprises a displaceable transmission member 27. The displaceable transmission member 27 comprises a terminal locking element 29. In the locked position, the terminal locking element 29 protrudes into the terminal receptacle 5. The displaceable transmission member 27 is located between the actuator head 23 and the terminal receptacle 5. It is elastically deflected into the terminal receptacle 5. The terminal locking element 29 is adapted to positively lock an inserted electric contact element against movement against the terminal insertion direction 3. The displaceable transmission member 27 is formed monolithically with the housing 1 as part of a side wall 31 of the terminal receptacle 5.

[0039] The displaceable transmission member 27 is formed as a cantilever beam, which extends basically in parallel with the terminal insertion direction 3. The displaceable transmission member 27 is based on the side of the housing 1 which comprises the terminal insertion opening 9 and extends towards a forward end 33 of the connector housing 1.

[0040] The terminal locking element 29 is formed as an edge 35 at the free end 37 of the displaceable transmission member 27. The edge 35 of the displaceable transmission member 27 extends basically perpendicular to the terminal insertion direction 3. The terminal positioning assurance device 19 comprises an elastically deformable pushing portion 39 which is situated at the free end 37 of the displaceable transmission member 27.

The pushing portion 39 may be shaped as a finger and extends from the displaceable transmission member 27 towards the forward end 33 of the housing 1.

[0041] In the locked position, the actuator head 23 presses against the displaceable transmission member 27 in a direction towards the terminal receptacle 5. The actuator head 23 comprises a locking shoulder 41. In the locked position, the locking shoulder 41 is positively locked with a corresponding arresting portion 43 of the housing 1. The arresting portion 43 is formed as a rim 45 in the lateral opening 25.

[0042] The terminal positioning assurance 19 has a base 47 and a free end 49. The terminal positioning assurance device 19 is separated from the rest of the housing 1 by a straight side pull shaft 51. The straight side pull shaft 51 extends continuously from the outside of the housing 21 between the free end 49 and the rest of the housing 1. The terminal positioning assurance device 19 is partially formed as a cantilever beam 50. The base 47 of the terminal positioning assurance device 19 is situated at the forward end 33 of the housing 1 and is identical with the base 47 of the cantilever beam 50.

[0043] The terminal positioning assurance device 19, which is formed as a cantilever beam, comprises a longer spring section 53, which extends basically in parallel to the terminal insertion direction 3 and a shorter spring section 55 which extends perpendicular to the longer spring section 53. For an improved stability of the terminal positioning assurance device 19, the longer spring section 53 comprises a stiff first part 57 and, in order to improve the elasticity for the moving the actuator head 23, a more resilient second part 59. The actuator head 23 comprises a guiding surface 60 and the housing 1, at the lateral opening 25, comprises a complementary guiding surface 61. The guiding surface 61 of the housing 1 has a component along the terminal insertion direction 3 and a component perpendicular to the terminal insertion direction 3. The guiding surface 60 of the actuator head 23 is formed complementary to the guiding surface 61.

[0044] In the following, the function of the terminal positioning assurance device 19 is explained: Prior to insertion of an electric contact element 63, the terminal positioning assurance device 19 is in an unlocked position (not shown). In the unlocked position, the terminal positioning assurance device 19 is spaced apart from the rest of the housing 1 (not shown). In the unlocked position, the guiding surface of the actuator head 23 faces the guiding surface 61 of the housing 1. In the unlocked position, the displaceable transmission member 27 is not locked against elastic displacement in a direction away from the terminal receptacle 5.

[0045] When an electric contact element 63 is inserted through the terminal insertion opening 9 along the terminal insertion direction 3, a head portion 65 of the electric contact element 63 engages the displaceable transmission member 27 and presses it in a direction away from the terminal receptacle 5. When the electric contact element 63 is fully inserted into the terminal receptacle 5,

the head portion 65 of the electric contact element 63 abuts the shaft wall 11 of the terminal receptacle 5.

[0046] The electric contact element 63 comprises a recess 67 which is opened in a direction towards the displaceable transmission member 27. Since the displaceable transmission member 27 was elastically deformed by the head portion 65 of the electric contact element 63, it will now elastically move back into the terminal receptacle 5. The terminal locking element 29 of the displaceable transmission member 27 protrudes into the recess 67 and positively locks the electric contact element 63 against a movement against the terminal insertion direction 3.

[0047] To assure the position of the electric contact element 63, the actuator head 23 is now moved into the lateral opening 25 in a direction towards the terminal receptacle 5. In order to move the actuator head 23, a force can be applied onto the longer spring section 57 of the terminal positioning assurance device 19. During insertion, the guiding surface 60 of the actuator head 23 slides along the guiding surface 61 of the housing 1. Thereby, upon insertion of the actuator head 23, the actuator head 23 is pressed into the direction towards the forward end 33 of the housing 1, whereby a spring force is loaded into the shorter spring section 55 of the cantilever beam.

[0048] When the locking shoulder 41 of the actuator head 23 engages the arresting portion 43 of the housing 1, the actuator head 23 is pressed by the spring force which was loaded in the shorter spring section 55 in a direction towards the arresting portion 43. The locking shoulder 41 is then positively locked with the arresting portion 43. The terminal positioning assurance device 19 is then finally in the locked position as shown in Fig. 1 and the electric contact element 63 is securely locked inside the terminal receptacle 5.

[0049] As an alternative embodiment, the locking element 29 can be formed as a portion of the actuator head 23 so that the terminal positioning assurance device 19 does not comprise a displaceable transmission member 27.

[0050] Fig. 2 shows a cut view of a contact assembly 68 according to the invention with an electrical connector 69 which comprises a connector housing 1 as described above and shown in Fig. 1. The housing 1 comprises an electric contact element 63 which is inserted in the terminal receptacle 5. The housing 1 according to the invention can comprise a plurality of electric contact elements 63 and is not limited to the two terminal receptacles 5 as shown in Figs. 1 and 2.

[0051] The head portion 65 of the electric contact element 63 abuts the shaft wall 11 so that a movement into the terminal insertion direction 3 is prevented. A terminal locking element 29, which is situated on a displaceable transmission member 27, protrudes into the recess 67 of the electric contact element 63 and positively locks the inserted electric contact element 63 against movement in a direction opposite to the terminal insertion direction 3.

[0052] A pushing portion 39, which is located at the

free end 37 of the displaceable transmission member 27, is adapted to press the electric contact element 63 against a side wall 31 of the terminal receptacle 5 on a side opposite to the pushing portion 39. The displaceable transmission member 27 is secured against movement away from the electric contact element 63 by the actuator head 23. The actuator head 23 is positively locked between the displaceable transmission member 27 and the arresting portion 43 of the housing 1.

[0053] The contact assembly 68 comprises a second housing 71 for a mating connector 73. In the second housing 71, a mating contact element 75 is inserted. The mating contact element 75 may be adapted to protrude into the terminal receptacle 5 of the connector housing 1 through the access opening 13 to establish an electric contact with the electric contact element 63. In an alternative embodiment, the electric contact element 63 can be adapted to protrude through the access opening 13 to mate with the mating electric contact element 75 of a mating connector 73.

[0054] The second housing 71 may comprise a cover member 77, which is adapted to cover the terminal positioning assurance device 19 of the housing 1. The cover member 77 can be formed as a portion of an outer wall 78 of the second housing 71.

[0055] The housing 1 may comprise a sealing arrangement 79. Alternatively, the sealing arrangement 79 can be formed as a part of the second housing 71. When the connectors are mated, the sealing arrangement 79 positively locks with the cover member 77 so that an enclosure 81 is formed, in which the terminal positioning assurance device 19 is located. In an advantageous improvement, the enclosure 81 may form a sealed environment to protect the inner parts of the connectors 69 and 73.

[0056] The sealing arrangement 79 comprises a sealing member 87, made from a soft material. Depending on the shape of the connector housing 1, the sealing member 87 may be formed in a shape which fits around the connector housing 1, encircling the connector housing perpendicular to the terminal insertion direction 3. The sealing member 87 may be a ring. In parallel to the terminal insertion direction 3, the sealing member 87 is situated between an inner barrier 89 and an outer barrier 91 of the connector housing 1.

[0057] The inner barrier 89 is situated adjacent to the guiding surfaces 61. The inner barrier 89 may prevent a movement of the sealing member 87 onto the terminal positioning assurance device 19 when the electrical connectors 69, 73 are mounted. If the sealing member 87 is moved against the terminal positioning assurance device 19, it may lead to a removal of the actuator head 23 from its position between the connecting portion 43 and the displaceable transmission member 27. Therefore, the inner barrier 89 may prevent malfunction of the terminal positioning assurance device 19.

[0058] The inner barrier 89 may also be present when no sealing member 87 is used. The inner barrier 89 then

protects the terminal positioning assurance device 19 from colliding with other elements such as the housing of a mating connector.

[0059] Also, the outer barrier 91 may be used without the need for a sealing member 87 as a stop means for a mating connector.

[0060] The outer barrier 91 is located at a rearward end 93 of the connector housing 1. During mating of the connectors 69, 73, the outer barrier 91 may stop the movement of the connectors 69, 73 when the second housing 71 abuts on the outer barrier 91. The outer barrier 91 prevents a displacement of the sealing member 87 against the terminal insertion direction 3 during mating.

[0061] The outer barrier 91 comprises a fixation opening 95. A fixation member 97 of the second housing 71 may protrude through the fixation opening 95 during mating and fixate the connectors 69, 73 by a fixation latch 99.

[0062] The terminal positioning assurance device 19 is formed as a cantilever beam 50 and has a base 47 at the forward end 33 of the housing 1. The terminal positioning assurance device 19 extends basically in parallel with the terminal insertion direction 3. An outer portion 83 of the cantilever beam 50 forms a barrier-free guiding portion 85 for the second housing 71 upon mating of the two connectors. Upon insertion of both connectors 69, 73, portions of the second housing 71 may slide along the outer portion 83 and are guided to simplify the mating of both connectors 69, 73 without risking damaging or unlocking of the terminal positioning assurance device 19.

Claims

1. Connector housing (1) for an electrical connector (69), the housing (1) comprising at least one terminal receptacle (5) for an electric contact element (63), the terminal receptacle (5) opening into a terminal insertion direction (3) for insertion of the electric contact element (63), the housing (1) further comprising at least one terminal positioning assurance device (19) which is formed monolithically with the housing (1) and which is accessible from an outside (21) of the housing (1), the terminal positioning assurance device (19) having an actuator head (23) which, in an unlocked position, is spaced apart from the rest of the housing (1) and, in a locked position, is positively engaged with and protrudes into a lateral opening (25) of the housing (1), whereby, in the locked position, a terminal locking element (29), which is operatively coupled to the actuator head (23), protrudes into at least one terminal receptacle (5).
2. Connector housing (1) according to claim 1, wherein the terminal positioning assurance device (19) further comprises between the terminal receptacle (5) and the actuator head (23), a displaceable transmission member (27), which, in the locked position, is

elastically deflected into the terminal receptacle (5), the displaceable transmission member (27) comprising the terminal locking element (29).

3. Connector housing (1) according to claim 2, wherein the displaceable transmission member (27) is formed monolithically with the housing (1) as part of a side wall (31) of the terminal receptacle 5.
4. Connector housing (1) according to claim 2 or 3, wherein the terminal positioning assurance device (19) comprises an elastically deformable pushing portion (39), adapted to push an inserted electric contact element (63) against a side wall (31) of the terminal receptacle (5), opposite the pushing portion (39).
5. Connector housing (1) according to one of the claims 2 to 4, wherein, in the locked position, the actuator head (23) presses against the displaceable transmission member (27) in a direction towards the terminal receptacle (5).
6. Connector housing (1) according to one of the claims 1 to 5, wherein the actuator head (23) comprises at least one locking shoulder (41), adapted to positively lock in the locked position with a corresponding arresting portion (43) which is formed by a rim (45) of the lateral opening (25).
7. Connector housing according to one of the claims 1 to 6, wherein the terminal positioning assurance device (19) comprises a base (47) and a free end (49) and is separated from the rest of the housing (1) by a straight side pull shaft (51), which extends continuously from the outside (21) of the housing (1) between the free end (49) and the rest of the housing (1) when the terminal positioning assurance device (19) is in the unlocked position.
8. Connector housing (1) according to one of the claims 2 to 7, wherein at least one of the terminal positioning assurance device (19) and the displaceable transmission member (27) is at least in part formed as a cantilever beam (50).
9. Connector housing (1) according to claim 8, wherein the terminal positioning assurance device (19) is at least in part formed as a cantilever beam (50), which has a base at a forward end (33) of the housing (1).
10. Connector housing (1) according to claim 8 or 9, wherein the terminal positioning assurance device (19) is at least in part formed as a cantilever beam (50), which comprises at least two spring sections (53, 55) which are perpendicular to each other, and wherein a longer spring section (53) extends parallel to the insertion direction (3), and wherein a shorter

spring section (55) extends in the direction of the lateral opening (25).

11. Connector housing (1) according to claim 10, wherein the housing (1) comprises at least one guiding surface (60, 61) which is adapted to guide the actuator head (23) in a direction with a component perpendicular to the shorter spring section (55) to apply a spring force in the cantilever beam (50) which pressurizes the actuator head (23) in a direction towards the arresting portion (43) when the terminal positioning assurance device (19) is situated in the locking position.
12. Connector assembly (68), comprising an electrical connector (69) which comprises a connector housing (1) according to one of the claims 1 to 11, wherein at least one electric contact element (63) is inserted in a terminal receptacle (5), the electric contact element (63) being positively locked in the terminal receptacle (5) by a terminal positioning assurance device (19) which is formed monolithically with the housing (1), wherein the electric contact element (63) is positively locked between a forward wall (33) of the terminal receptacle (5) and a displaceable transmission member (27), which is part of the terminal positioning assurance device (19), and being pushed against a side wall (31) of the terminal receptacle (5) by a pushing portion (39) of the displaceable transmission member (27), and wherein the displaceable transmission member (27) is locked against movement away from the contact element (63) by an actuator head (23), which is part of the terminal positioning assurance device (19).
13. Connector assembly (68) according to claim 12, further comprising a second connector housing (71) for a mating electrical connector (73), wherein the second connector housing (71) comprises at least one cover member (77), which is adapted to cover at least one terminal positioning assurance device (19) of the first connector housing (1) at least in parts when the electrical connectors (69, 73) are mated.
14. Connector assembly (68) according to claim 12 or 13, wherein at least one of the connector housings (1, 71) comprises a sealing arrangement (79) which is adapted to positively lock with a corresponding cover member (77) of the connector housing (71) of the mating electrical connector (73).
15. Connector assembly (68) according to one of the claims 12 to 14, wherein at least one of the connector housings (1, 71) comprises a terminal positioning assurance device (19) which is at least in part formed as a cantilever beam (50), wherein an outer portion (83) of the cantilever beam (50) is aligned with an outer wall of the connector housing (1) at least in

parts, and wherein the outer portion (83) of the cantilever beam (50) forms a barrier-free guiding portion (85) for the connector housing (71) of a mating electrical connector (73) upon mating of the electrical connectors (69, 73).

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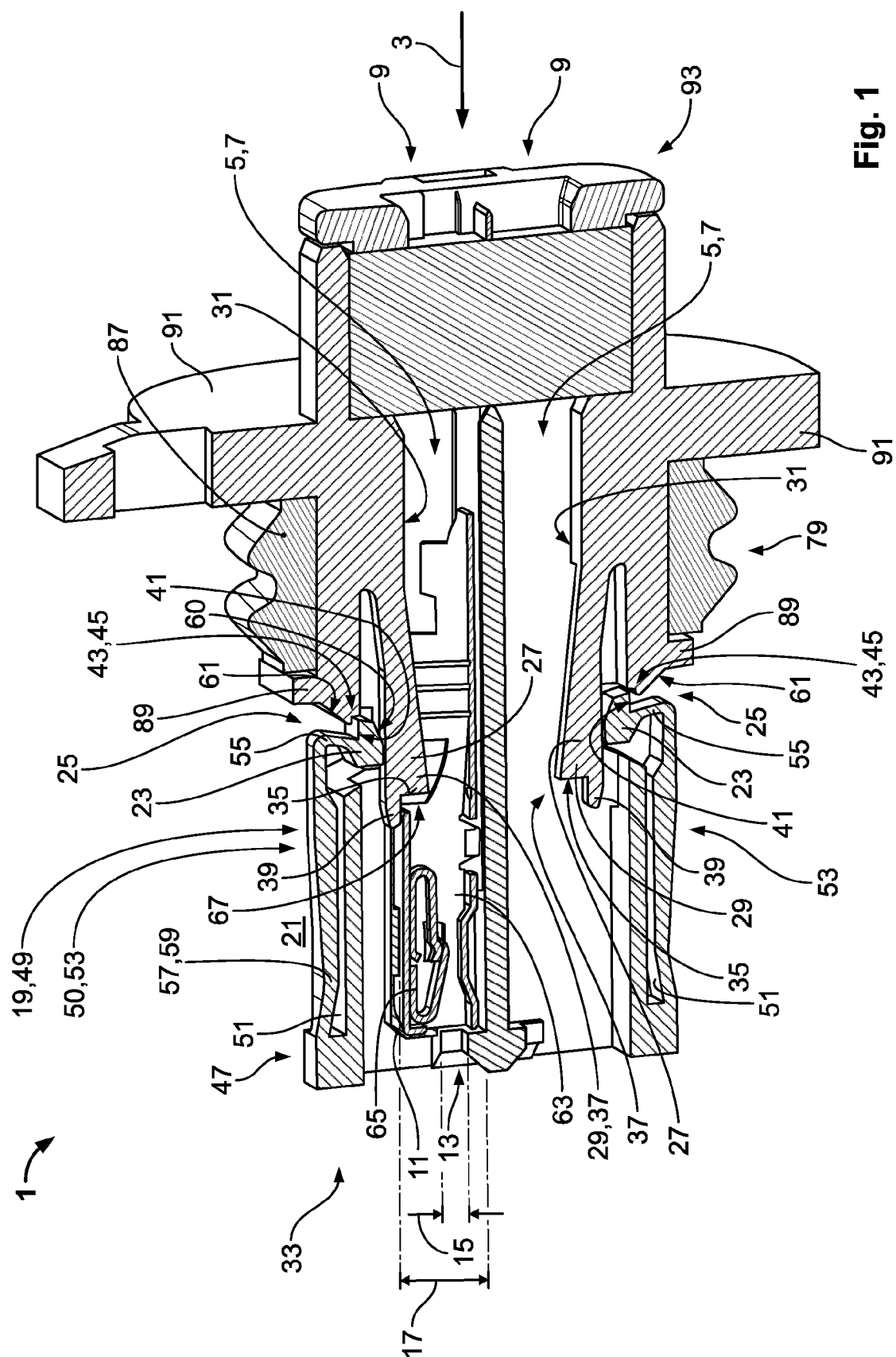
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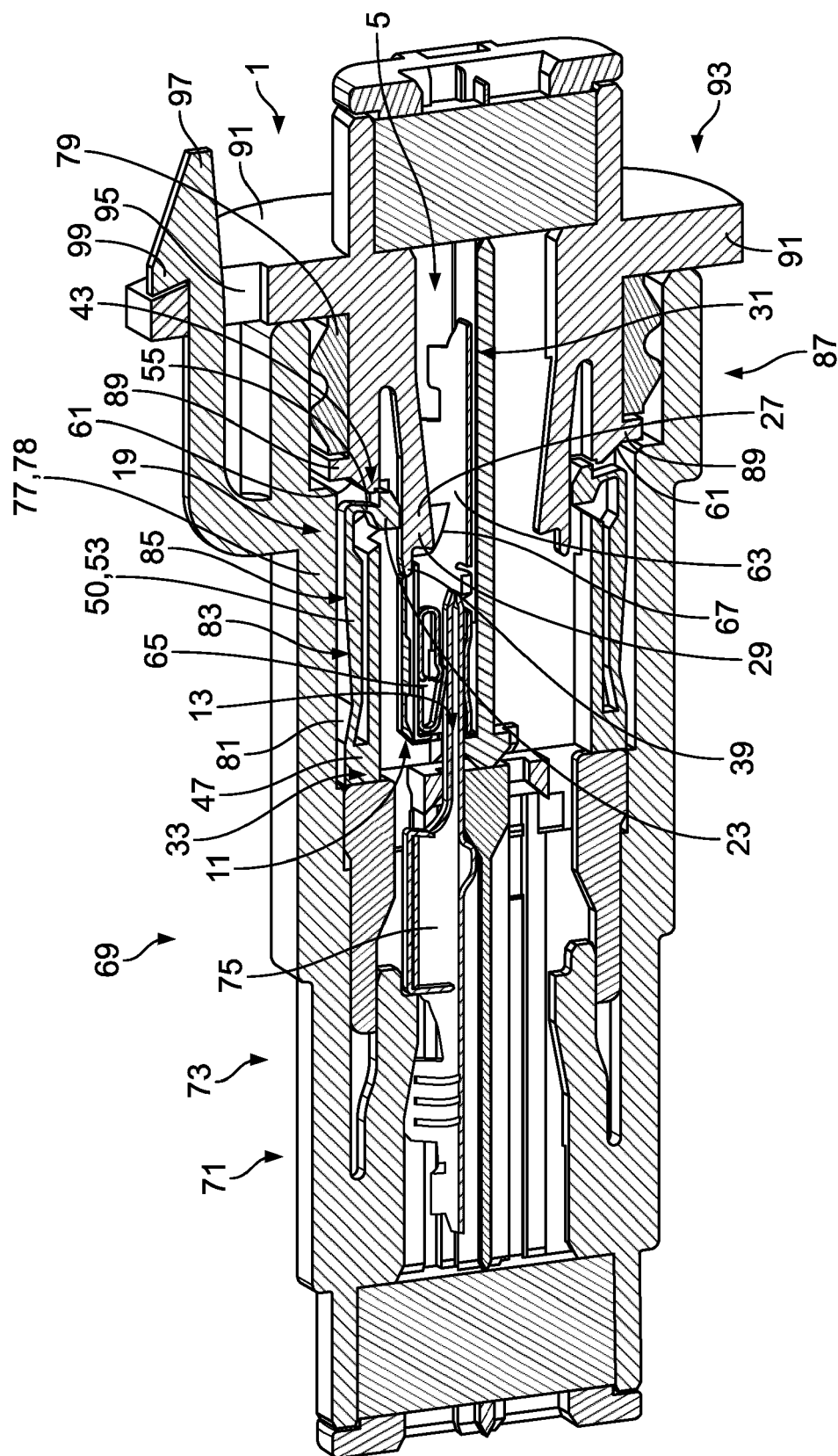


Fig. 2



EUROPEAN SEARCH REPORT

Application Number
EP 14 18 1927

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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