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(54) **HIGH VOLTAGE ELECTRICAL CONNECTOR WITH CPA ASSEMBLED ON SLIDER**

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Description

TECHNICAL FIELD OF INVENTION

[0001] The present invention relates to a high voltage electrical connector having a mate assistance system and the connector position assurance device that locks the electrical connector to a counter connector.

BACKGROUND OF INVENTION

[0002] The upcoming of electrical vehicles affordable for everyone makes it necessary to solve technical problems and lower the price for production of this electrical vehicles. To provide electrical energy to the electrical devices of the electrical vehicles high voltages and also high currents have to be distributed by an electrical wired harness. The wiring of electrical vehicles requires electrical wires with big cross-sections and huge electrical connectors. The electrical connectors have to provide space for big electrical terminals and also improved insulation capability. The result of all this requirements are huge and heavy wire harnesses that makes them difficult to assemble in the car body while production of the electrical vehicle. To make the assembly easier mate assist devices are provided on the electrical connectors. This mate assist devices has integrated gears that support the handicraft while meeting the electrical connector to a counter connector. Document EP Tyler discloses such a connector having a mate assist device. This kind of mate assist devices I used in the art because there are small in size and activation direction is the same as the meeting direction of the electrical connector warts the counter connector. Furthermore, the electrical connector needs a connector position assurance device that makes sure that the mated connectors stay connected while in operation in the electrical vehicle. This connector position assurance devices causes problems when activated before the two electrical connectors are mated properly. Once activated the connector position assurance device blocks a correct meeting and makes a repair and to reset of the connector position assurance device necessary. This is time-consuming and costly especially when parts are damaged.

[0003] The documents US9455523 and EP3211729 disclose an electrical connector comprising a mate assist device, and a connector position assurance device.

[0004] Thus, there is the need in the art to provide an electrical high-voltage connector having a mate assist device and a connector position assurance device with improved handling abilities, when mating the electrical connector to a counter connector while assembly often electrical vehicle.

[0005] These and objects which become apparent upon reading the following description are solved by an electrical connector according to independent claim 1.

SUMMARY OF THE INVENTION

[0006] The present application relates to an electrical connector comprising a connector housing having a mating axis and a mate assist device attached to the connector housing, surrounding the connector housing. The mate assist device is movable, along the mating axis in a mating direction, from a first position to a second position. A connector position assurance device is attached at the mate assist device, movable from a third position to a fourth position along the mating axis in the mating direction. The connector position assurance device is locked, by first locking means in the third position when the electrical connector is not mated to an electrical counter connector and wherein the connector position assurance device is released by first unlocking means, attached at the electrical counter connector, when the electrical connector and the electrical counter connector are mated. The released connector position assurance device securely locks the electrical connector to the electrical counter connector by second locking means, attached on the position assurance device, when the connector position assurance device is moved to the fourth position.

[0007] The disclosed invention uses a position assurance device that is operated along the mating axis of the electrical connector. This makes handling much easier because the worker can activate the position assurance device after mating with his thumb, without taking away his hand from the mate assist device. Because there are means that prevent accidentally activation of the connector position assurance device damages while assembly are not possible. Even if the worker presses on the connector position assurance device while he moves the mate assist device, the connector position assurance device will not be activated.

[0008] The mate assist device is sleeve shaped and surrounds the connector housing and the mating axis, wherein the mate assist device comprises a cavity adapted to movably hold the connector position assurance device. The cavity is integrated into the mate assist device and the position assurance device can be preassembled into the cavity.

[0009] The cavity comprises a cavity opening for inserting and operating the connector position assurance device, wherein the cavity opening is located on a second end opposite from a first end of the mate assist device, wherein the first end is facing the counter connector. The connector position assurance device can also be mounted when the mate assist device is already mounted on the connector housing and even shortly before the electrical connector is mated for the counter connector.

[0010] Preferably the cavity comprises guiding means to guide the connector position assurance device while being moved from the third position towards the fourth position along the mating axis.

[0011] The mate assist device comprises a flexible first arm protruding into the cavity, wherein the flexible first

arm protrudes against the mating direction.

[0012] The flexible first arm comprises a first arm end, wherein the first arm end comprises a rounded or wedge-shaped portion, pointing opposite to the mating direction.

[0013] The connector position assurance device comprises a slider member, comprising a flexible second arm protruding into the cavity, wherein the second arm protrudes in mating direction.

[0014] The second arm comprises a second arm end, wherein the second arm end comprises a dented surface facing in the mating direction.

[0015] The rounded or wedge shaped portion of the first arm end is adapted to cooperate with the dented surface of the second arm end, to prevent slipping perpendicular to the mating axis, when the first arm end is pressed against the second arm end, while the electrical connector and the electrical counter connector are in unmated position. Because the shapes of the two end portions of the arms are adapted to fit in each other the danger that the end portions slip away when pressed against each other is not present.

[0016] In a preferred embodiment, the first arm end is hemispherical shaped and wherein the intention in the second arm end is hemispherical shaped.

[0017] Advantageously, the first arm end comprises a rounded bar shape and wherein the intention in the second arm end comprises a u-shaped groove corresponding with the rounded bar shape.

[0018] Preferably the first arm end comprises a wedge shape and wherein the intention in the second arm end comprises a v-shaped groove corresponding with the wedge shaped bar

[0019] Advantageously, the first locking means comprises first protrusions and second protrusions protruding from the connector position assurance device and wherein the mate assist device comprises a support bar. The support bar is arranged between the first protrusions and second protrusions to hold the position assurance device in the third position. This is an easy design that needs no additional parts.

[0020] The unlocking means comprises a protrusion arranged on a shroud of the electrical counter connector, wherein the protrusion comes in engagement with the flexible first arm end and the flexible second arm end thereby flexible deforming the flexible second arm perpendicular to the mating axis and separate the first arm end from the second arm end thereby unlocking the connector position assurance device.

[0021] The second locking means comprise a locking bar arranged on the connector position assurance device extending along the mating axis, preventing flexible deformation of the flexible first arm when the connector position assurance device is in the fourth position.

Description of the preferred embodiments

[0022] In the following, the invention is described exemplarily with reference to the enclosed figures, in which

- Fig. 1 shows a perspective, view of the electrical connector and the counter connector;
 Fig. 2 shows perspective, view of the connector position assurance device;
 Fig. 3 shows a perspective view to the mate assist device
 Fig. 4 shows a perspective view of the unmated electrical connector
 Fig. 5 shows details of the cavity enter connector position assurance device in blocked position in a cut view;
 Fig. 6 shows the shape of the first arm end and the second arm end enlarged, in cut view;
 Fig. 7 shows a perspective view of the electrical connector in the counter connector in a mated position;
 Fig. 8 shows details of the cavity and connector position assurance device in an activated/released position, in a cut view;
 Fig. 9 shows a perspective view of the electrical connector in the counter connector in a mated position;
 Fig. 10 shows details of the cavity and connector position assurance device in a mated position, in a cut view;
 Fig. 11 shows a perspective view of the electrical connector in the counter connector in a mated position;
 Fig. 12 shows details of the cavity and connector position assurance device in a mated position showing the locking bar, in a cut view;

[0023] Figure 1 shows a perspective, view of the electrical connector 10 and the counter connector 100. The electrical connector comprising a connector housing 12 having a mating axis X and a mate assist device 20 attached to the connector housing 12. The mate assist device 20 surrounding the connector housing 10. The mate assist device 20 is movable, along the mating axis X in a mating direction M, from a first position P1 to a second position P2. A connector position assurance device 60 is attached at the mate assist device 20, movable from a third position P3 to a fourth position P4 along the mating axis X in the mating direction M. The connector position assurance device 60 is locked, by first locking means in the third position P3 when the electrical connector 10 is not mated to an electrical counter connector 100.

[0024] Figure 2 shows perspective, view of the connector position assurance device. The connector position assurance device 60 comprises a slider member 62, comprising a flexible second arm 64. The second arm 64 protrudes in mating direction M. The second arm 64 comprises a second arm end 66, wherein the second arm end 66 comprises a dented surface facing in the mating direction M.

[0025] An electrical connector 10 according to claims 6 and 8, wherein the rounded or wedge shaped portion of the first arm end 28 is adapted to cooperate with the

dented surface of the second arm end 66

[0026] Figure 3 shows a perspective view to the mate assist device. The mate assist device 20 is sleeve shaped and surrounds the connector housing 12 and the mating axis X. The mate assist device 20 comprises a cavity 30 adapted to movably hold the connector position assurance device 60. The cavity 30 comprises a cavity opening 34 for inserting and operating the connector position assurance device 60. The cavity opening 34 is located on a second end 24 opposite from a first end 22 of the mate assist device 20, wherein the first end 22 is facing the counter connector 100. The cavity 30 comprises guiding means to guide the connector position assurance device 60 while being moved from the third position P3 towards the fourth position P4 along the mating axis X.

[0027] Figure 4 shows a perspective view of the unmated electrical connector. The mate assist device 20 is in a first position P1 the connector position assurance device 60 is attached at the mate assist device 20 and hold in the third position P3.

[0028] Figure 5 shows details of the electrical connector 10 shown in figure 4. The cavity 30 and the connector position assurance device 60 is shown in a cut view. The mate assist device 20 comprises a flexible first arm 26 protruding into the cavity 30. The flexible first arm 26 protrudes against the mating direction M. The flexible first arm 26 comprises a first arm end 28. The first arm end 28 comprises a rounded or wedge-shaped portion, pointing opposite to the mating direction M.

[0029] The flexible second arm 64 of the connector position assurance device 60, protruding into the cavity 30 in mating direction M. The second arm 64 comprises a second arm end 66, wherein the second arm end 66 comprises a dented surface facing in the mating direction M. The rounded or wedge shaped portion of the first arm end 28 is adapted to cooperate with the dented surface of the second arm end 66, to prevent slipping perpendicular to the mating axis X, when the Second arm end 66 is pressed against the first arm end 28, while the electrical connector 10 is in unmated position. The first locking means comprises first protrusions 70 and second protrusions 72 protruding from the connector position assurance device 60 and wherein the mate assist device 20 device comprises a support bar 21. The support bar 21 is arranged between the first protrusions 70 and second protrusions 72 to hold the position assurance device 60 in the third position P3.

[0030] Figure 6 shows the shape of the first arm end 28 and the second arm end 66 enlarged in cut view. The first arm end 28 comprises a wedge shape and wherein the intention in the second arm end 66 comprises a v-shaped groove corresponding with the wedge shaped bar.

[0031] Figure 7 shows a perspective view of the electrical connector 10 and the counter connector 100 in a mated position.

[0032] Figure 8 shows details of the cavity 30 and connector position assurance device 60 in a released position, in a cut view. The connector position assurance device 60 is released by first unlocking means that are attached at the electrical counter connector 100 when the electrical connector 10 and the electrical counter connector 100 are mated. The unlocking means comprises a protrusion 115 arranged on a shroud 110 of the electrical counter connector 100. The protrusion 115 comes in engagement with the flexible first arm 26 and the flexible second arm 64 thereby flexible deforming the second arm 64 perpendicular to the mating axis and separate the first arm end 28 from the second arm end 66 thereby unlocking the connector position assurance device 60. The connector position assurance device 60 is movable to the fourth position P4 along the mating axis X in mating direction.

[0033] Figure 9 shows a perspective view of the electrical connector 10 in the counter connector 100 in the mated position.

[0034] Figure 10 shows details of the cavity 30 and connector position assurance device 60 in a mated position, in a cut view. The connector position assurance device 60 is releasable hold in the fourth position P4 by the second protrusions 70 interacting with the support bar 21.

[0035] Figure 11 shows a perspective view of the electrical connector 10 in the counter connector 100 in a mated position.

[0036] Figure 12 shows details of the cavity 30 and connector position assurance device 60 in a mated position showing the locking bar, in a cut view. The released connector position assurance device 60 securely locks the electrical connector 10 to the electrical counter connector 100 by second locking means, attached on the position assurance device 60, when the connector position assurance device 60 is moved to the fourth position P4. The second locking means comprise a locking bar 68 arranged on the connector position assurance device 60 extending along the mating axis X, preventing flexible deformation of the flexible first arm 26 when the connector position assurance device 60 is in the fourth position P4.

Claims

Claims

1. An electrical connector (10) comprising a connector housing (12) having a mating axis (X) and a mate assist device (20) attached to the connector housing (12), surrounding the connector housing (10), wherein the mate assist device (20) is movable, along the mating axis (X) in a mating direction (M), from a first position (P1) to a second position (P2), a connector position assurance device (60) attached at the mate assist device (20), movable from a third position (P3) to a fourth position (P4) along the mating axis (X) in the mating direction (M), wherein the mate assist device (20) is sleeve shaped and surrounds the connector housing (12) and the mating

axis (X), wherein the mate assist device (20) comprises a cavity (30) adapted to movably hold the connector position assurance device (60), wherein the connector position assurance device (60) is locked, by first locking means in the third position (P3) when the electrical connector (10) is not mated to an electrical counter connector (100) **characterized in that** the connector position assurance device (60) comprises a slider member (62) comprising a flexible second arm (64) protruding into the cavity (30) in mating direction (M), wherein the mate assist device (20) comprises a flexible arm (26) protruding into the cavity (30) against mating direction (M), wherein the flexible first arm (26) comprises a first arm end (28), wherein the first arm end (28) comprises a rounded or wedge-shaped portion, pointing opposite to the mating direction (M), wherein the second arm (64) comprises a second arm end (66), wherein the second arm end (66) comprises a dented surface facing in the mating direction (M), wherein the rounded or wedge shaped portion of the first arm end (28) is adapted to cooperate with the dented surface of the second arm end (66), to prevent slipping perpendicular to the mating axis (X), when the first arm end (28) is pressed against the second arm end (66), while the electrical connector (10) is in unmated position, wherein the connector position assurance device (60) is released by first unlocking means, attached at the electrical counter connector (100), when the electrical connector (10) and the electrical counter connector (100) are mated, wherein the unlocking means comprises a protrusion (115) arranged on a shroud (110) of the electrical counter connector (100), wherein the protrusion (115) comes in engagement with the flexible first arm (28) and the flexible second arm (66) thereby flexible deforming the flexible second arm (64) perpendicular to the mating axis and separate the first arm (28) from the second arm (66) thereby unlocking the connector position assurance device (60), wherein the released connector position assurance device (60) securely locks the electrical connector (10) to the electrical counter connector (100) by second locking means, attached on the position assurance device (60) and wherein the second locking means comprise a locking bar (68) arranged on the connector position assurance device (60) extending along the mating axis (X) preventing flexible deformation of the flexible first arm (26), when the connector position assurance device (60) is moved to the fourth position (P4).

2. An electrical connector (10) according to the preceding claim, wherein the cavity (30) comprises an cavity opening (34) for inserting and operating the connector position assurance device (60), wherein the cavity opening (34) is located on an second end (24) opposite from a first end (22) of the mate assist de-

vice (20), wherein the first end (22) is facing the counter connector (100).

3. An electrical connector (10) according to any preceding claim, wherein the cavity (30) comprises guiding means to guide the connector position assurance device (60) while being moved from the third position (P3) towards the fourth position (P4) along the mating axis (X).
4. An electrical connector (10) according to any preceding claim, wherein the first arm end (28) is hemispherical shaped and wherein the intention in the second arm end (66) is hemispherical shaped.
5. An electrical connector (10) according to any preceding claim, wherein the first arm end (28) comprises a rounded bar shape and wherein the intention in the second arm end (66) comprises a u-shaped groove corresponding with the rounded bar shape.
6. An electrical connector (10) according to any preceding claim, wherein the first arm end (28) comprises a wedge shape and wherein the intention in the second arm end (66) comprises a v-shaped groove corresponding with the wedge shaped bar.
7. An electrical connector (10) according to any preceding claim, wherein the first locking means comprises first protrusions (70) and second protrusions (72) protruding from the connector position assurance device (60) and wherein the mate assist device (20) device comprises a support bar (21), wherein the support bar (21) is arranged between the first protrusions (70) and second protrusions (72) to hold the position assurance device (60) in the third position (P3).

Patentansprüche

1. Elektrischer Steckverbinder (10), umfassend ein Steckverbindergehäuse (12) mit einer Steckachse (X) und einer am Steckverbindergehäuse (12) befestigten Steckunterstützungsvorrichtung (20), die das Steckverbindergehäuse (10) umgibt, wobei die Steckunterstützungsvorrichtung (20), entlang der Steckachse (X) in einer Steckrichtung (M), von einer ersten Position (P1) in eine zweite Position (P2) bewegbar ist, eine Steckverbinderpositions-Sicherungsvorrichtung (60), befestigt an der Steckunterstützungsvorrichtung (20), bewegbar, entlang der Steckachse (X) in der Steckrichtung (M), von einer dritten Position (P3) in eine vierte Position (P4), wobei die Steckunterstützungsvorrichtung (20) hülsenförmig ist und das Steckverbindergehäuse (12) und die Steckachse (X) umgibt, wobei die Steckunterstützungsvorrichtung (20) einen Hohlraum (30) um-

fasst, der dazu angepasst ist, die Steckverbinderpositions-Sicherungs Vorrichtung (60) bewegbar zu halten, wobei die Steckverbinderpositions-Sicherungs Vorrichtung (60) durch erste Verriegelungsmittel in der dritten Position (P3) verriegelt ist, wenn der elektrische Steckverbinder (10) nicht in einen elektrischen Gegenverbinder (100) gesteckt wird, **dadurch gekennzeichnet, dass** die Steckverbinderpositions-Sicherungs Vorrichtung (60) ein Schieber element (62) umfasst, das einen flexiblen zweiten Arm (64) umfasst, der in Steckrichtung (M) in den Hohlraum (30) hineinragt, wobei die Steckunterstützungs Vorrichtung (20) einen flexiblen Arm (26) umfasst, der entgegen der Steckrichtung (M) in den Hohlraum (30) hineinragt, wobei der flexible erste Arm (26) ein erstes Armende (28) umfasst, wobei das erste Armende (28) einen gerundeten oder keilförmigen Teil umfasst, der der Steckrichtung (M) entgegengesetzt zeigt, wobei der zweite Arm (64) ein zweites Armende (66) umfasst, wobei das zweite Armende (66) eine eingekerbte Oberfläche umfasst, die in die Steckrichtung (M) zeigt, wobei der gerundete oder keilförmige Teil des ersten Armendes (28) angepasst ist zum Zusammenwirken mit der eingekerbten Oberfläche des zweiten Armendes (66), um Rutschen senkrecht zur Steckachse (X) zu verhindern, wenn das erste Armende (28) gegen das zweite Armende (66) gepresst wird, während der elektrische Steckverbinder (10) in einer ungesteckten Position ist, wobei die Steckverbinderpositions-Sicherungs Vorrichtung (60) durch erste Entriegelungsmittel freigegeben wird, die am elektrischen Gegenverbinder (100) befestigt sind, wenn der elektrische Steckverbinder (10) und der elektrische Gegenverbinder (100) zusammengesteckt werden, wobei das Entriegelungsmittel einen Vorsprung (115) umfasst, der an einer Verkleidung (110) des elektrischen Gegenverbinders (100) angeordnet ist, wobei der Vorsprung (115) in Eingriff mit dem flexiblen ersten Arm (28) und dem flexiblen zweiten Arm (66) kommt, so den flexiblen zweiten Arm (64) senkrecht zur Steckachse flexibel verformend, und Trennen des ersten Arms (28) vom zweiten Arm (66), so die Steckverbinderpositions-Sicherungs Vorrichtung (60) entriegelnd, wobei die freigegebene Steckverbinderpositions-Sicherungs Vorrichtung (60) den elektrischen Steckverbinder (10) durch zweite Verriegelungsmittel, die an der Steckverbinderpositions-Sicherungs Vorrichtung (60) befestigt sind, sicher mit dem elektrischen Gegenverbinder (100) verriegelt und wobei die zweiten Verriegelungsmittel eine Verriegelungsstange (68) umfassen, die an der Steckverbinderpositions-Sicherungs Vorrichtung (60) angeordnet ist und sich entlang der Steckachse (X) erstreckt, flexible Verformung des flexiblen ersten Arms (26) verhindernd, wenn die Steckverbinderpositions-Sicherungs Vorrichtung (60) in die vierte Position (P4) bewegt wird.

2. Elektrischer Steckverbinder (10) nach dem vorhergehenden Anspruch, wobei der Hohlraum (30) eine Hohlraumöffnung (34) zum Einsetzen und Betreiben der Steckverbinderpositions-Sicherungs Vorrichtung (60) umfasst, wobei die Hohlraumöffnung (34) an einem zweiten Ende (24) gegenüber einem ersten Ende (22) der Steckunterstützungs Vorrichtung (20) befindlich ist, wobei das erste Ende (22) zum Gegenverbinder (100) zeigt.
3. Elektrischer Steckverbinder (10) nach einem der vorhergehenden Ansprüche, wobei der Hohlraum (30) Führungsmittel zum Führen der Steckverbinderpositions-Sicherungs Vorrichtung (60) umfasst, während diese von der dritten Position (P3) entlang der Steckachse (X) in Richtung der vierten Position (P4) bewegt wird.
4. Elektrischer Steckverbinder (10) nach einem der vorhergehenden Ansprüche, wobei das erste Armende (28) halbkugelig geformt ist und wobei die Einkerbung im zweiten Armende (66) halbkugelig geformt ist.
5. Elektrischer Steckverbinder (10) nach einem der vorhergehenden Ansprüche, wobei das erste Armende (28) eine gerundete Stangenform umfasst und wobei die Einkerbung im zweiten Armende (66) eine u-förmige Nut umfasst, die der gerundeten Stangenform entspricht.
6. Elektrischer Steckverbinder (10) nach einem der vorhergehenden Ansprüche, wobei das erste Armende (28) eine Keilform umfasst und wobei die Einkerbung im zweiten Armende (66) eine v-förmige Nut umfasst, die der keilförmigen Stange entspricht.
7. Elektrischer Steckverbinder (10) nach einem der vorhergehenden Ansprüche, wobei das erste Verriegelungsmittel erste Vorsprünge (70) und zweite Vorsprünge (72) umfasst, die aus der Steckverbinderpositions-Sicherungs Vorrichtung (60) herausragen und wobei die Steckunterstützungs Vorrichtung (20) eine Stützstrebe (21) umfasst, wobei die Stützstrebe (21) zwischen den ersten Vorsprüngen (70) und zweiten Vorsprüngen (72) angeordnet ist, um die Steckverbinderpositions-Sicherungs Vorrichtung (60) in der dritten Position (P3) zu halten.

Revendications

1. Connecteur électrique (10) comprenant un boîtier de connecteur (12) ayant un axe d'accouplement (X) et un dispositif d'aide à l'accouplement (20) fixé au boîtier de connecteur (12), entourant le boîtier de connecteur (10), le dispositif d'aide à l'accouplement (20) étant mobile, le long de l'axe d'accouplement

(X) dans une direction d'accouplement (M), d'une première position (P1) à une deuxième position (P2), un dispositif d'assurance de position de connecteur (60) fixé au dispositif d'aide à l'accouplement (20), mobile d'une troisième position (P3) à une quatrième position (P4) le long de l'axe d'accouplement (X) dans la direction d'accouplement (M), le dispositif d'aide à l'accouplement (20) ayant la forme d'un manchon et entourant le boîtier de connecteur (12) et l'axe d'accouplement (X), le dispositif d'aide à l'accouplement (20) comprenant une cavité (30) conçue pour maintenir de manière mobile le dispositif d'assurance de position de connecteur (60), le dispositif d'assurance de position de connecteur (60) étant verrouillé par un premier moyen de verrouillage dans la troisième position (P3) lorsque le connecteur électrique (10) n'est pas accouplé à un contre-connecteur électrique (100), **caractérisé en ce que** le dispositif d'assurance de position de connecteur (60) comprend un élément coulisseau (62) comportant un second bras flexible (64) faisant saillie dans la cavité (30) dans la direction d'accouplement (M), le dispositif d'assistance à l'accouplement (20) comprenant un bras flexible (26) faisant saillie dans la cavité (30) contre la direction d'accouplement (M), le premier bras flexible (26) comprenant une première extrémité de bras (28), la première extrémité de bras (28) comprenant une partie arrondie ou cunéiforme, pointant à l'opposé de la direction d'accouplement (M), le second bras (64) comprenant une seconde extrémité de bras (66), la seconde extrémité de bras (66) comprenant une surface bosselée orientée dans la direction d'accouplement (M), la partie arrondie ou cunéiforme de la première extrémité de bras (28) étant conçue pour coopérer avec la surface bosselée de la seconde extrémité de bras (66), afin d'empêcher le glissement perpendiculaire à l'axe d'accouplement (X), lorsque la première extrémité de bras (28) est pressée contre la seconde extrémité de bras (66), alors que le connecteur électrique (10) est en position non accouplée, le dispositif d'assurance de position de connecteur (60) étant libéré par un premier moyen de déverrouillage, fixé au contre-connecteur électrique (100), lorsque le connecteur électrique (10) et le contre-connecteur électrique (100) sont accouplés, le moyen de déverrouillage comprenant une saillie (115) disposée sur une gaine (110) du contre-connecteur électrique (100), la saillie (115) venant en prise avec le premier bras flexible (28) et le second bras flexible (66), déformant ainsi le second bras flexible (64) perpendiculairement à l'axe d'accouplement et séparant le premier bras (28) du second bras (66), déverrouillant ainsi le dispositif d'assurance de position de connecteur (60), le dispositif d'assurance de position de connecteur libéré (60) verrouillant en toute sécurité le connecteur électrique (10) au contre-connecteur électrique (100) par un second moyen de verrouilla-

ge, fixé au dispositif d'assurance de position de connecteur (60) et le second moyen de verrouillage comprenant une barre de verrouillage (68) disposée sur le dispositif d'assurance de position de connecteur (60) s'étendant le long de l'axe d'accouplement (X), empêchant la déformation flexible du premier bras flexible (26) lorsque le dispositif d'assurance de position de connecteur (60) est déplacé vers la quatrième position (P4).

2. Connecteur électrique (10) selon la revendication précédente, la cavité (30) comprenant une ouverture de cavité (34) pour l'insertion et l'utilisation du dispositif d'assurance de position de connecteur (60), l'ouverture de cavité (34) étant située sur une seconde extrémité (24) opposée à une première extrémité (22) du dispositif d'aide à l'accouplement (20), la première extrémité (22) étant orientée vers le contre-connecteur (100).
3. Connecteur électrique (10) selon l'une quelconque des revendications précédentes, la cavité (30) comprenant un moyen de guidage pour guider le dispositif d'assurance de position de connecteur (60) pendant qu'il est déplacé de la troisième position (P3) vers la quatrième position (P4) le long de l'axe d'accouplement (X).
4. Connecteur électrique (10) selon l'une quelconque des revendications précédentes, la première extrémité de bras (28) étant de forme hémisphérique et la bosse dans la seconde extrémité de bras (66) étant de forme hémisphérique.
5. Connecteur électrique (10) selon l'une quelconque des revendications précédentes, la première extrémité de bras (28) comprenant une forme de barre arrondie et la bosse dans la seconde extrémité de bras (66) comprenant une rainure en forme de U correspondant à la forme de barre arrondie.
6. Connecteur électrique (10) selon l'une quelconque des revendications précédentes, la première extrémité de bras (28) étant cunéiforme et la bosse dans la seconde extrémité de bras (66) comprenant une rainure en forme de V correspondant à la barre cunéiforme.
7. Connecteur électrique (10) selon l'une quelconque des revendications précédentes, le premier moyen de verrouillage comprenant des premières saillies (70) et des secondes saillies (72) faisant saillie du dispositif d'assurance de position de connecteur (60) et le dispositif d'aide à l'accouplement (20) comprenant une barre de support (21), la barre de support (21) étant disposée entre les premières saillies (70) et les secondes saillies (72) pour maintenir le dispositif d'assurance de position (60) dans la troisième position (P3).

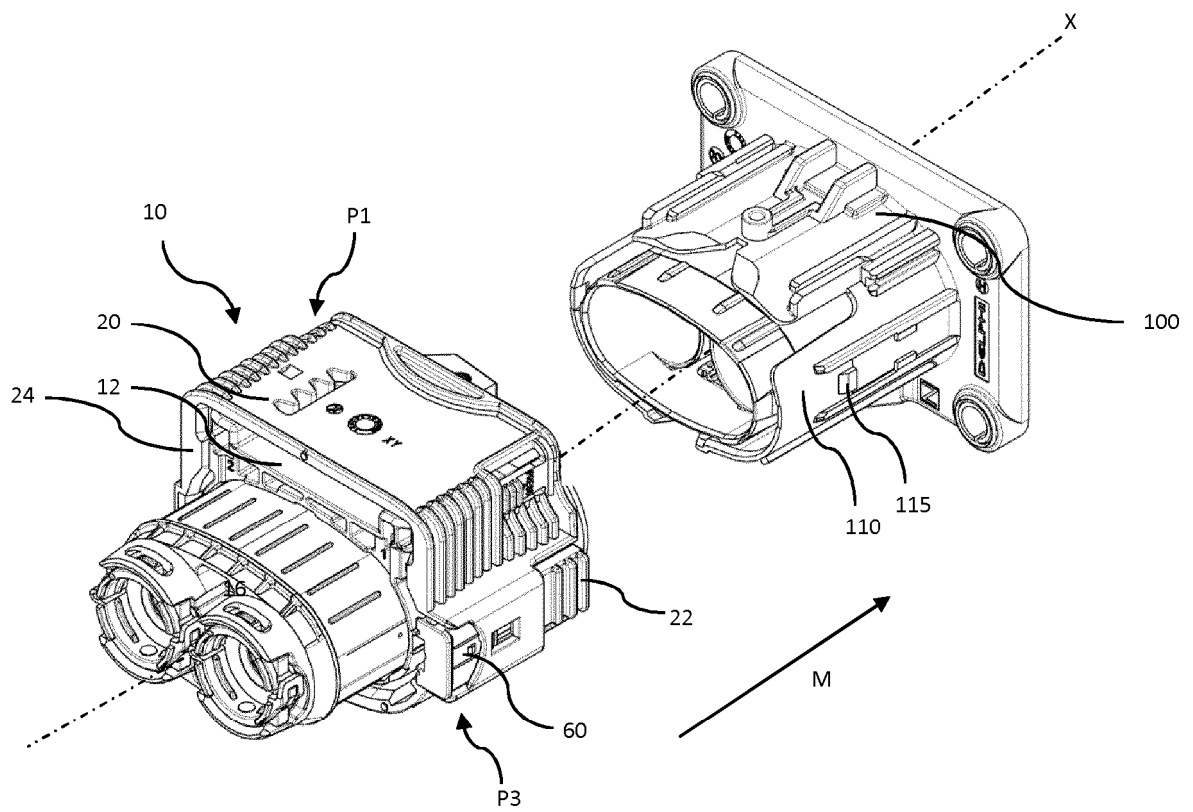
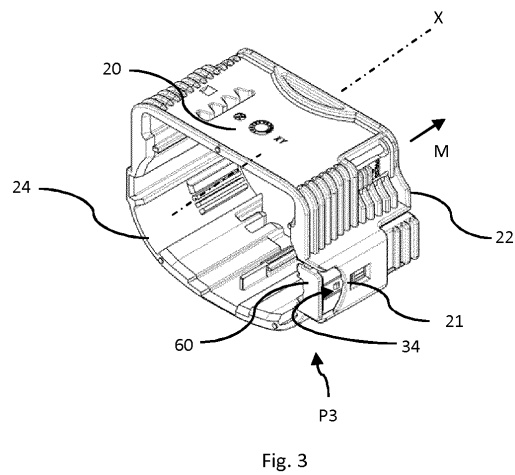
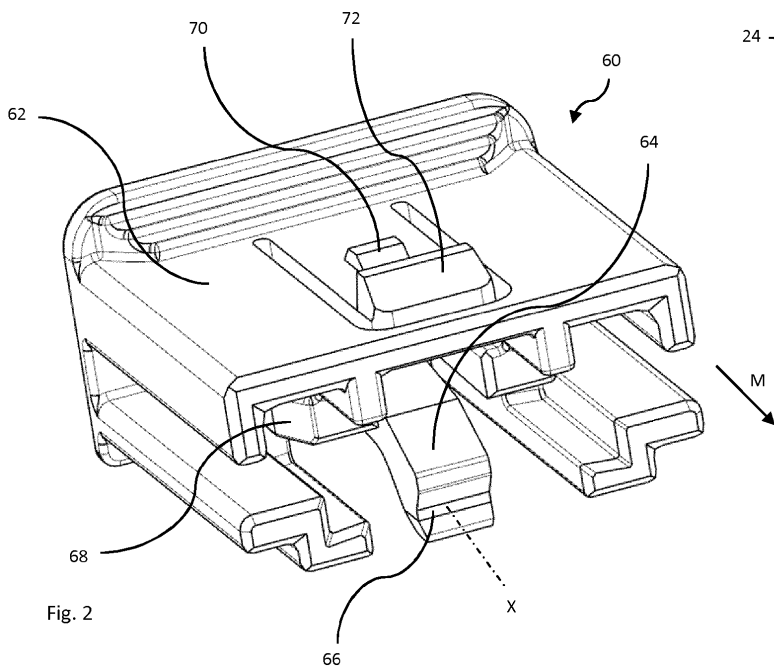
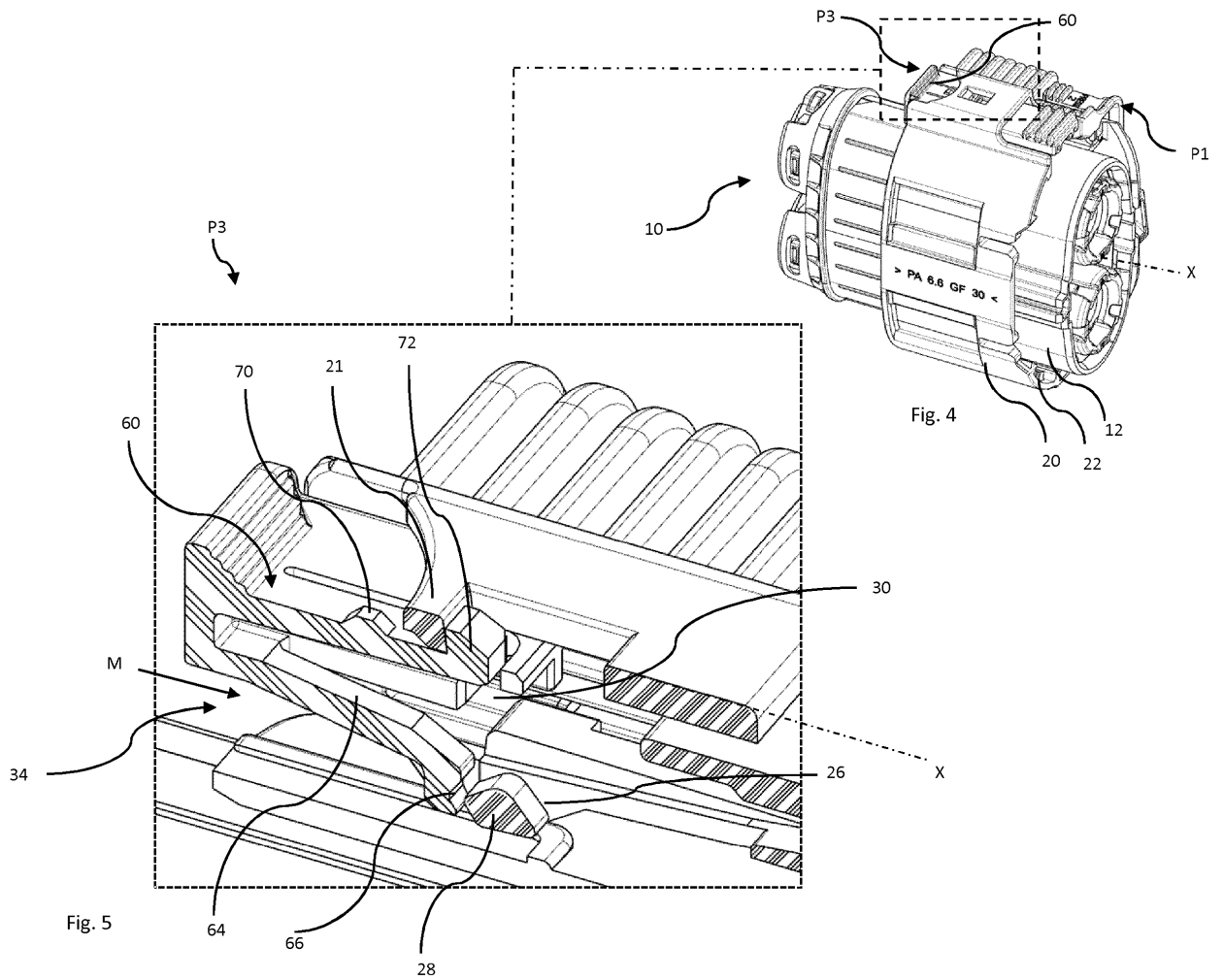
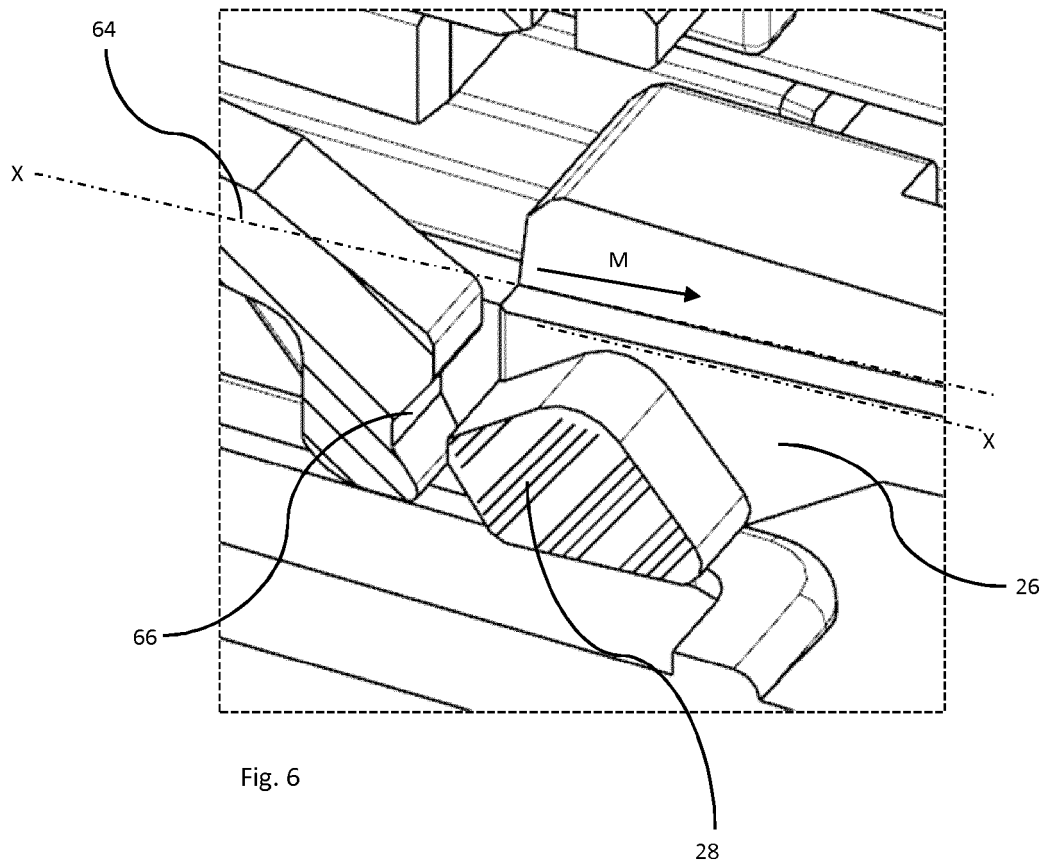


Fig. 1







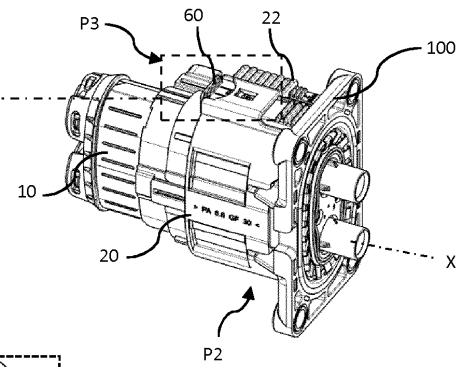


Fig. 7

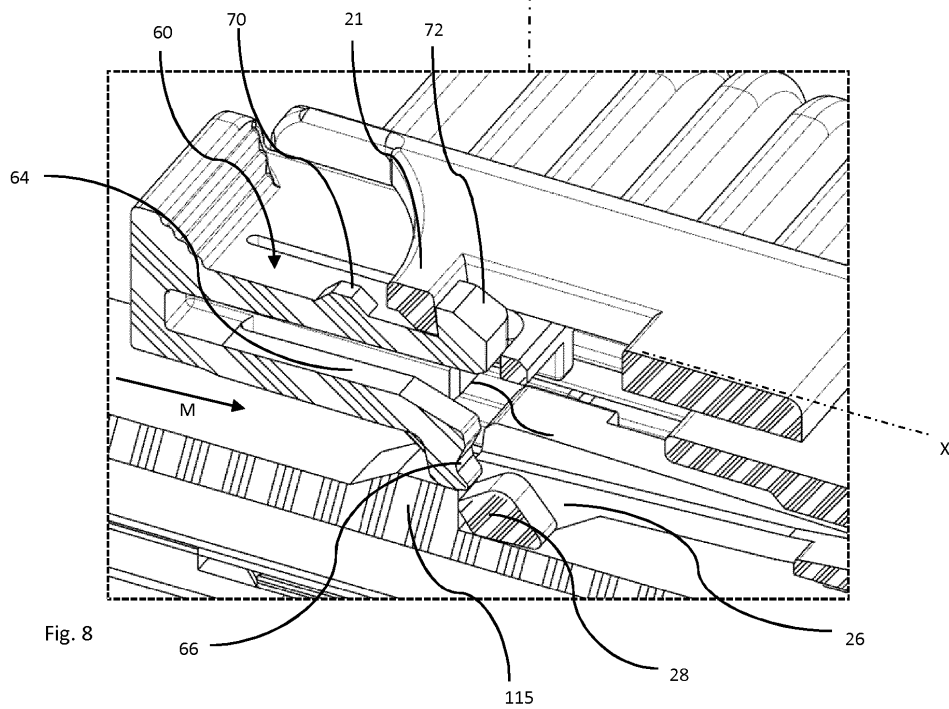


Fig. 8

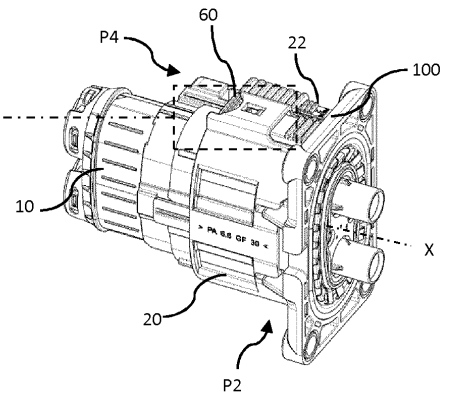


Fig. 9

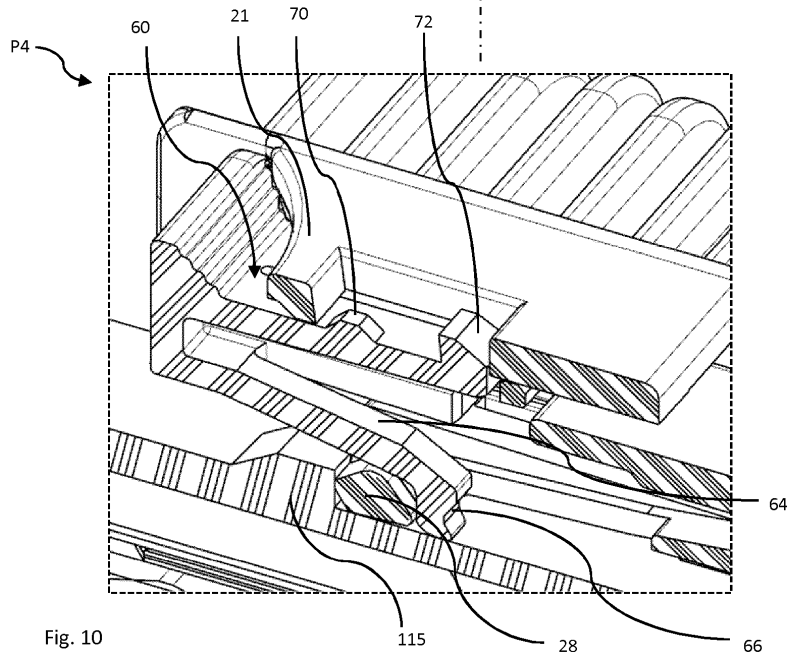


Fig. 10

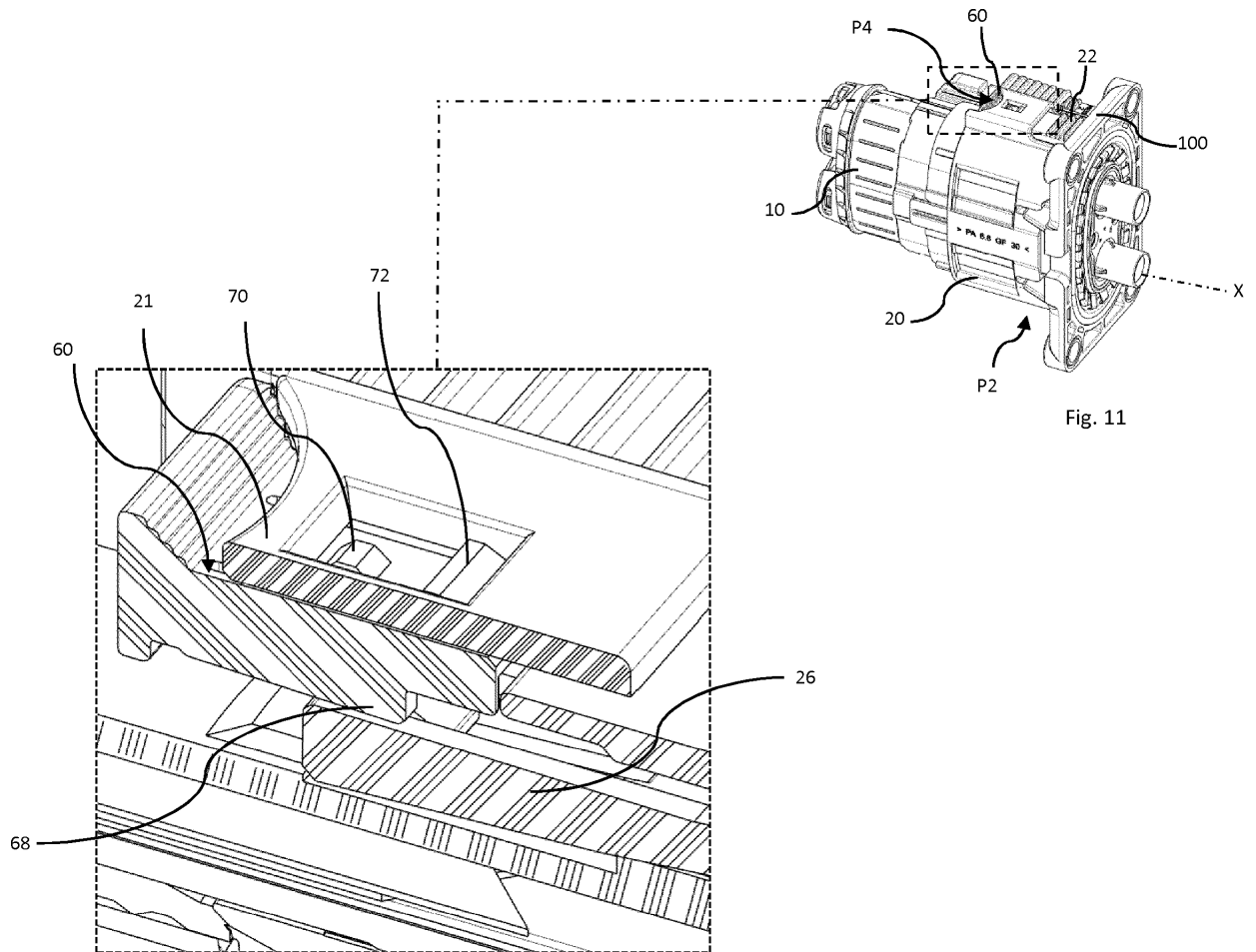


Fig. 12

Fig. 11

REFERENCES CITED IN THE DESCRIPTION

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