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(54) COMPRESSOR WITH IMPROVED ELECTRICAL CONNECTOR, IN PARTICULAR FOR HEAT PUMP

(57) An electrical connector (1) for a compressor (2) comprising:
a connector body (3) made of a synthetic material having a front side (4) and a rear side (7) opposite to the front side (4), an electrical connection seat (8) with first contact terminals (9) in cavities open only on the front side (4) and hermetically delimited on the rear lateral side (7) of the connector body (3), a thermal protector seat (12) with a plurality of second contact terminals (13) in a cavity open only on the front side (4) of the connector body (3) and hermetically delimited on the rear lateral side (7) of the connector body (3), a mounting seat (16) for mounting and clamping the connector body (3) to the compressor (2), a first sealing edge (17) extending in a closed loop on the front side (4) of the connector body (3) all around the electrical connection seat (8) and/or the thermal protector seat (12), at least a first electric cable (18) connected to the first contact terminals (9) and extending through a wall of the connector body (3) at a distance from the front side (4), at least a second electric cable (19) connected to the second contact terminals (13) and extending through a wall of the connector body (3) at a distance from the front side (4).

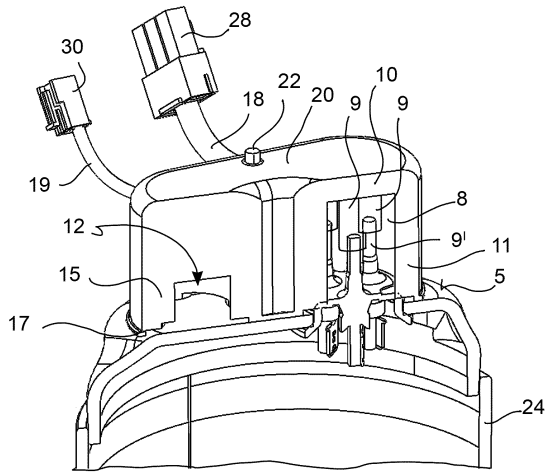

FIG. 3

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Description

[0001] The invention relates to an improved electrical connector for the electrical supply of a compressor for compressing fluid, e.g., a refrigerant in a heat pump, a compressor provided with the improved electrical connector, and a heat pump.

[0002] Known electric compressors comprise a metal housing, a compression path formed in the housing between an inlet opening and an outlet opening, an electric motor arranged in the housing, a mechanical compression mechanism arranged in the housing along the compression path and operable by means of the electric motor to draw a fluid through the inlet opening, compress the drawn fluid, and push the compressed fluid out of the outlet opening.

[0003] As a compression mechanism it is known to use, for example, a so-called "rotary" mechanism with a cylindrical compartment, a suction opening, a discharge opening and a rotor positioned eccentrically with respect to the cylindrical compartment, where the compression of the refrigerant fluid occurs by means of a reduction in volume due to the eccentric rotation of the rotor. Unlike the "rotary" mechanism, a so-called "twin rotary" compression mechanism comprises two rotors capable of rotating in two opposite directions, so as to reduce the noise and vibrations of the compressor.

[0004] As a compression mechanism it is also known to use a so-called "scroll" mechanism with two spirals one inside the other, one of which is fixed and the other with a planetary movement without rotation, in order to compress the fluid. Following their mutual movement and due to the small amount of clearance between the two spirals, they trap and compress pockets of fluid between the spirals.

[0005] The use of a three-phase electric motor controlled by an inverter, for example, is known. To this end, it is known to provide the compressor housing with a group of three pin-shaped metal terminals protruding from a base plate towards the outside of the compressor and connected to the windings of the electric motor inside the housing.

[0006] For the electrical power connection of the electric motor it is known to weld a male Faston connector (in the shape of an elongated plate) to each pin-shaped metal terminal, onto which a respective female Faston cable lug coupled (crimped, welded or the like) to an electric power cable is inserted. Implementing the electrical connection of the electric motor is currently complex and time-consuming and not sufficiently reliable. A weak or intermitt$_{\text{ent electrical contact}}$ can lead to the occurrence of sparks and to the electric cable being melted or catching fire.

[0007] For reliable and safe operation of the compressor, particularly in a heat pump, but also in other fluid compression applications, it is known to place a thermal protector device (e.g., a thermostatic switch or a temperature sensor) at the hottest point of the compressor. In compressors made with "high-side" technology, the hottest point is the compressor head. It is the task of the thermal protector device to interrupt an electrical supply circuit or provide a warning signal or trigger an emergency shutdown of the compressor in case of excessive heating of the compressor itself.

[0008] It is known to mount the thermal protector device outside the compressor housing, but the fixing thereof is complex and time-consuming. Moreover, it is necessary that the thermal protector device is installed in the correct position with respect to the compressor housing, so as to detect the maximum temperature condition of the compressor itself. The thermal protector device must in turn be connected to two electric cables which carry the signal thereof to a protection circuit.

[0009] It is also known to cover the electrical connection area and the thermal protector device with a cover which is fixed to the compressor by insertion on a threaded pin welded to the compressor housing and locked by a nut screwed onto the threaded pin.

[0010] Since the cover does not adhere to the compressor housing, and the electric power cables of the motor and the electric cables of the thermal protector device pass between the cover and the housing, the electrical connections for the motor power supply and the electrical connections of the thermal protector device are not completely isolated from the surrounding environment. In case of a leak of flammable or explosive refrigerant gas, e.g., R290 refrigerant gas (propane), the occurrence of sparks in the electrical connection can cause a fire or explosion.

[0011] Therefore, it is the object of the present invention to provide an improved electrical connector for a compressor, and a compressor, having features such as to overcome at least some of the drawbacks of the prior art.

[0012] It is a particular object of the invention to provide an improved electrical connector for a compressor, and a compressor, having features such as to facilitate the positioning and mounting of a thermal protector device (e.g., a thermal sensor, a thermal protector, thermostat, thermal switch, a so-called "Klixon") to the compressor housing.

[0013] It is a further particular object of the invention to provide an improved electrical connector for a compressor, and a compressor, having features such as to improve the accessibility (for maintenance purposes) of the electrical connection of the thermal protector device, after being first mounted on the compressor, as well as to protect the mounted thermal protector device from the external environment (impact, moisture, dust).

[0014] It is a further particular object of the invention to provide an improved electrical connector for a compressor, and a compressor, having features such as to simplify and accelerate the electrical connection of the compressor motor, as well as to protect and isolate an electrical connection region from the external environment (impact, moisture, dust).

[0015] It is a further particular object of the invention to provide an improved electrical connector for a compressor, and a compressor, having features such as to isolate an electrical connection region from an environment with possible concentration of flammable or explosive gas.

[0016] These and other objects are achieved by an electrical connector for a compressor according to claim 1. The dependent claims relate to advantageous and preferred embodiments.

[0017] According to an aspect of the invention, an electrical connector (1) for a compressor (2), comprising:

- a connector body (3) made of a synthetic material having a front side (4) intended to face and press in contact against an outer surface (5) of a compressor (6), and a rear side (7) opposite to the front side (4),
- an electrical connection seat (8) formed by the connector body (3) and which accommodates a plurality of first metal contact terminals (9) separated from one another by the connector body (3),

  wherein the electrical connection seat (8) forms one or more cavities open only on the front side (4) and hermetically delimited by a rear wall (10) of the connector body (3) on the rear side (7) and by a first side wall (11) of the connector body (3),

  wherein the first contact terminals (9) are intended to contact corresponding first electrical terminals (9') of the compressor (2),

- a thermal protector seat (12) formed by the connector body (3) at a distance from the electrical connection seat (8) and which accommodates a plurality of second metal contact terminals (13) separated from one another by the connector body (3),

  wherein the thermal protector seat (12) is intended to accommodate a thermal protector device (14) and forms a cavity open only on the front side (4) of the connector body (3) and hermetically delimited by a rear wall (10) of the connector body (3) on the rear side (7) and by a second side wall (15) of the connector body (3),

  wherein the second contact terminals (13) are intended to contact corresponding second electrical terminals (13') of the thermal protector device (14) accommodated in the thermal protector seat (12),

- a mounting seat (16) formed by the connector body (3) and spaced apart from the electrical connection seat (8) and spaced apart from the thermal protector seat (12), for mounting and clamping the connector body (3) to the compressor (2),
- a first sealing edge (17) extending in a closed loop on the front side (4) of the connector body (3) all around the electrical connection seat (8),
  wherein the first sealing edge (17) itself or a second sealing edge extended in a closed loop on the front side (4) of the connector body (3) all around the thermal protector seat (12),
- at least a first electric cable (18) connected to the first contact terminals (9) and extending through a wall of the connector body (3) at a distance from the front side (4),
- at least a second electric cable (19) connected to the second contact terminals (13) and extending through a wall of the connector body (3) at a distance from the front side (4).

[0018] In use, the electrical connector can be placed with the front side against the outer surface of the compressor and fixed in place by means of the mounting seat, in a position where the first contact terminals of the electrical connector contact the first electrical terminals (for the electrical power supply of the motor) of the compressor and where the thermal protector device accommodated in the thermal protector seat faces or is in direct contact against the outer surface of the compressor, and where the first sealing edge or the first and second sealing edges ensure a hermetic closure of the electrical connection seat and the thermal protector seat.

[0019] In addition to hermetically isolating the electrical contact areas and protecting the thermal protector device from the external environment, the electrical connector allows creating the electrical connections and mounting the thermal protector device with a single and quick plug & play gesture, and ensures the planned positions of the individual components.

[0020] Moreover, due to the integration of the first contact terminals and the second contact terminals in the connector body, the clamping of the connector body against the compressor also ensures a reliable locking of the electrical contact with the first electrical terminals of the compressor.

Brief description of the Figures

[0021] In order to better understand the invention and appreciate the advantages thereof, some non-limiting embodiments will be described below with reference to the accompanying drawings, in which:

Figure 1 is an exploded perspective view of a compressor and electrical connector assembly according to an embodiment,

Figure 2 is a perspective view of the compressor and electrical connector assembly in a connected configuration,

Figure 3 is a partial section view of a part of the compressor and the electrical connector in the connected configuration, in which a thermal protector device is not inserted into the electrical connector,

Figure 4 is a further partial section view of a part of the compressor and the electrical connector in the connected configuration, in which a thermal protector device is not inserted into the electrical connector,
Figure 5 is a rear side view of a connector body of the electrical connector according to an embodiment,
Figure 6 is a front side view of the connector body of the electrical connector according to an embodiment,
Figure 7 is a phantom perspective view of the electrical connector according to an embodiment,
Figure 8 is a perspective view of a thermal protector device,
Figure 9 shows a first electrical quick connector of an electric cable of the electrical connector according to an embodiment.

Description of embodiments

[0022] With reference to the figures, an electrical connector 1 for a compressor 2 comprises a connector body 3 made of a synthetic material having a front side 4 intended to face and press in contact against an outer surface 5 of a compressor 2, and a rear side 7 opposite to the front side 4.

[0023] The connector body 3 forms an electrical connection seat 8, e.g., three-phase connection, which accommodates a plurality of, e.g., three, first metal contact terminals 9 spaced apart and separated from one another (at least locally) by the synthetic material of the connector body 3.

[0024] The electrical connection seat 8 forms one or more cavities open only on the front side 4 of the connector body 3 and hermetically delimited by a rear wall 10 of the connector body 3 on the rear side 7 and by a first side wall 11, e.g., tubular, of the connector body 3.

[0025] The first contact terminals 9 are (accessible only on the front side 4 and) intended to contact corresponding first electrical terminals 9' of the compressor 2.

[0026] The connector body 3 further forms a thermal protector seat 12 at a distance from the electrical connection seat 8 and which accommodates at least two metal contact terminals 13 spaced apart and separated from one another (at least locally) by the synthetic material of the connector body 3.

[0027] The thermal protector seat 12 is intended to accommodate a thermal protector device 14 and forms a cavity open only on the front side 4 of the connector body 3 and hermetically delimited by a rear wall 10 of the connector body 3 on the rear side 7 and by a second side wall 15, e.g., tubular, of the connector body 3.

[0028] The second contact terminals 13 are (only accessible from the front side 4 and) intended to contact corresponding second electrical terminals 13' of the thermal protector device 14.

[0029] The connector body 3 further forms a mounting seat 16 spaced apart from (and preferably outside) the electrical connection seat 8 and spaced apart from (and preferably outside) the thermal protector seat 12, for mounting and clamping the connector body 3 to the compressor 2.

[0030] The electrical connector 1 further comprises a first sealing edge 17 (or gasket, preferably elastomeric) extending in a closed loop on the front side 4 of the connector body 3 all around the electrical connection seat 8.

[0031] The same first sealing edge 17 or a second sealing edge (or gasket, preferably elastomeric, not shown in the figures) extends in a closed loop on the front side 4 of the connector body 3 all around the thermal protector seat 12.

[0032] The electrical connector 1 further comprises at least one electric cable 18 connected to the first contact terminals 9 and extending through a wall of the connector body 3 at a distance from the front side 4, and at least a second electric cable 19 connected to the second contact terminals 13 and extending through a wall of the connector body 3 at a distance from the front side 4.

Mounting seat 16

[0033] According to an embodiment, the mounting seat 16 comprises a through hole from the front side 4 to the rear side 7 of the connector body 3, through which the connector body 3 is fittable onto a threaded pin 22 protruding from the compressor 2 in a predefined connection position, and fixable in place by a nut 23 screwed onto the threaded pin 22 against the rear side 7 of the connector body 3.

[0034] The mounting seat 16 is preferably formed in an intermediate position or halfway between the electrical connection seat 8 and the thermal protector seat 12.

[0035] According to an embodiment, the mounting seat 16 is formed in a position inside, preferably in a central region with respect to, the single first sealing edge 17.

[0036] Alternatively, the mounting seat 16 is formed in an intermediate position or halfway between the first sealing edge 17 and the second sealing edge, possibly outside both the first and second sealing edges.

[0037] The described positioning of the mounting seat 16 ensures a central and balanced clamping and a more even sealing pressure along the first and/or second sealing edges.

Connector body 3

[0038] According to an embodiment, the connector body 3 is formed by injection overmolding on the first electric cable 18 and the second electric cable 19. This further ensures the watertightness of the connector body 3 even at the cable passage regions.

[0039] Advantageously, the first 18 and second 19 electric cables exit from the connector body 3 on the rear side 7 thereof or through the first side wall 11 and/or the second side wall 15.

[0040] The connector body 3 can also be made of a

rigid plastic material, e.g., polyamide (PA66). The connector body 3 is advantageously made in a single piece.

[0041] According to an embodiment, the connector body 3 forms an intermediate wall 20 which connects the first side wall 11 and the second side wall 15 to each other and forms the mounting seat 16. The intermediate wall 20 can also form a narrowing with respect to the first side wall 11 and the second side wall 15 to create a space for a fluid inlet or outlet pipe 21 of the compressor 2, which protrudes outwards from the outer surface 5.

First sealing edge 17 and second sealing edge

[0042] According to an embodiment, the first sealing edge 17, and/or the second sealing edge, forms a lip-shaped crest protruding from the connector body 3.

[0043] The first sealing edge 17, and/or the second sealing edge, can be formed by a gasket made of an elastomeric material other than the synthetic material of the connector body 3 and connected to the connector body 3 by co-molding or gluing or interlocking or insertion or fitting, or by simple interposition between the connector body and the compressor 2 when mounting the electrical connector 1 on the compressor 2.

[0044] According to an embodiment, on the front side 4, the connector body 3 and/or the first sealing edge 17 and/or the second sealing edge has (in the non-deformed configuration thereof) a shape or curvature complementary to the shape or curvature of the outer surface 5 of the compressor 2.

[0045] According to an alternative embodiment, on the front side 4, the connector body 3 and/or the first sealing edge 17 and/or the second sealing edge has (in the non-deformed configuration thereof) a planar shape and adapts to the curvature of the outer surface 5 of the compressor 2 by elastic deformation while clamping the electrical connector 1 against the compressor 2.

First contact terminals 9

[0046] According to an embodiment, the first contact terminals 9 are positioned fixed or rigidly in the connector body 3 and the first electrical terminals 9' are positioned rigidly or fixed to the compressor 2 and engageable to one another by translational insertion, so as to obtain, together with the threaded pin 22 and the mounting seat 16, a shape reference for a predetermined connection positioning which is easy to carry out.

[0047] According to an embodiment, the first contact terminals 9 comprise cable lugs connected or crimped to electric wires of the first electric cable 18 and forming a female coupling seat facing the front side 4, adapted to receive with interference a corresponding pin of the first electrical terminals 9'.

Second contact terminals 13

[0048] According to an embodiment, the second contact terminals 13 are positioned fixed or rigidly in the connector body 3 and the second electrical terminals 13' are positioned rigidly or fixed to the thermal protector device 14 and engageable to one another by translational insertion parallel to a direction of insertion of the thermal protector device 14 into the thermal protector seat 12 from the front side 4 toward the rear side 7, so as to obtain a shape reference for a quick and planned positioning of the thermal protector device 14.

[0049] According to an embodiment, the second contact terminals 13 comprise cable lugs connected or crimped to electric wires of the second electric cable 19 and forming a female coupling seat facing the front side 4, adapted to receive with interference a corresponding rod of the second electrical terminals 13'.

Thermal protector device 14

[0050] The thermal protector device 14 can comprise one of a thermal sensor, a thermal protector, thermostat, thermal switch, a so-called "Klixon", connected to an electrical safety circuit configured to perform a shutdown under abnormal temperature conditions.

First electric cable 18

[0051] The first electric cable 18 can comprise a plurality of electric wires isolated from one another, possibly joined by a single insulation sheath and outer protection. On a remote side from the connector body 3, the first electric cable 18 advantageously has a first quick connector 28, e.g., of the HXT VC-04P type with 62002-81 PT-1T2 terminals, or of the Zuch HP6204J-4Y type with TR6204J-1301 terminals, e.g., with four poles.

[0052] A ground cable 29 connectable to the metal housing 24 of the compressor 2 can be connected to an electric wire of the first electric cable 18 or to a pole of the first quick connector 28.

Second electric cable 19

[0053] The second electric cable 19 can comprise a plurality of electric wires isolated from one another, possibly joined by a single insulation sheath and outer protection. On a remote side from the connector cable 3, the second electric cable 19 advantageously has a second quick connector 30, e.g., of the Minifit type with 5558TL terminals, e.g., with two poles.

Compressor 2

[0054] The electric compressor 2 comprises a metal housing 24, a compression path 25 formed in the housing 24 between an inlet opening and an outlet opening, an electric motor 26 arranged in the housing 24, a mechanical compression mechanism 27 arranged in the housing 24 along the compression path 25 and operable by means of the electric motor 26 to draw a fluid through

the inlet opening, compress the drawn fluid, and push the compressed fluid out of the outlet opening.

[0055] The electric motor 26 is advantageously a three-phase motor controllable by an inverter, for example.

[0056] In the housing 24 of the compressor 2 there is provided a group of, for example three, first pin-shaped electrical terminals 9' protruding from a base plate towards the outside of the compressor 2.

[0057] Also connected (e.g., welded) to the housing 24 is a threaded pin 22 adapted to be inserted into the mounting seat 16 of the electrical connector 1 and to receive a nut 23 for locking the electrical connector 1 to the compressor.

[0058] The compressor 2 provided with the electrical connector 1 has technical advantages similar to those described with reference to the electrical connector 1.

[0059] In use, the electrical connector 1 can be placed with the front side 4 against the outer surface 5 of the compressor 2 and fixed in place by means of the mounting seat 16, in a position where the first contact terminals 9 of the electrical connector 1 contact the first electrical terminals 9' (for the electrical power supply of the motor) of the compressor 2 and where the thermal protector device 14 accommodated in the thermal protector seat 12 faces or is in direct contact against the outer surface 5 of the compressor 2, and where the first sealing edge 17 or the first and second sealing edges ensure a hermetic closure of the electrical connection seat 8 and the thermal protector seat 12.

[0060] In addition to hermetically isolating the electrical contact areas and protecting the thermal protector device 14 from the external environment, the electrical connector allows creating the electrical connections for the motor and mounting the thermal protector device 14 with a single and quick plug & play gesture, and ensures the planned positions of the individual components.

[0061] Moreover, due to the integration of the first contact terminals 9 and the second contact terminals 13 in the connector body 3, the clamping of the connector body 3 against the compressor 2 also ensures a reliable locking of the electrical contact with the first electrical terminals 9' of the compressor 2.

[0062] The electrical connector 1 and the compressor 2 with the electrical connector 1 facilitate the positioning and assembly of the thermal protector device to the compressor housing, improve the accessibility (for maintenance purposes) of the connection of the thermal protector device after being first mounted to the compressor, protect the mounted thermal protector device from the external environment (impact, moisture, dust), simplify and accelerate the electrical connection of the compressor motor, protect and isolate the electrical connection region from the external environment (impact, moisture, dust, concentration of flammable or explosive gas).

List of reference numerals in the figures

[0063]

electrical connector 1
compressor 2
connector body 3
front side 4
outer surface 5
fluid inlet or outlet pipe 6
rear side 7
electrical connection seat 8
first contact terminals 9
first electrical terminals 9'
rear wall 10
first side wall 11
thermal protector seat 12
second contact terminals 13
second electrical terminals 13'
thermal protector device 14
second side wall 15
mounting seat 16
first sealing edge 17
first electric cable 18
second electric cable 19
intermediate wall 20
fluid inlet or outlet pipe 21
threaded pin 22
nut 23
housing 24
compression path 25
electric motor 26
compression mechanism 27
first quick connector 28
ground cable 29
second quick connector 30

Claims

1. An electrical connector (1) for a compressor (2) comprising:

- a connector body (3) made of a synthetic material having a front side (4) intended to face and press in contact against an outer surface (5) of a compressor (6), and a rear side (7) opposite to the front side (4),
- an electrical connection seat (8) formed by the connector body (3) and which accommodates a plurality of first metal contact terminals (9) separated from one another by the connector body (3),

wherein the electrical connection seat (8) forms one or more cavities open only on the front side (4) and hermetically delimited by a rear wall (10) of the connector body (3) on the rear side (7) and by a first side wall (11) of the connector body (3),

wherein the first contact terminals (9) are intended to contact corresponding first electrical terminals (9') of the compressor (2),
- a thermal protector seat (12) formed by the connector body (3) at a distance from the electrical connection seat (8) and which accommodates a plurality of second metal contact terminals (13) separated from one another by the connector body (3),
wherein the thermal protector seat (12) is intended to accommodate a thermal protector device (14) and forms a cavity open only on the front side (4) of the connector body (3) and hermetically delimited by a rear wall (10) of the connector body (3) on the rear side (7) and by a second side wall (15) of the connector body (3),
wherein the second contact terminals (13) are intended to contact corresponding second electrical terminals (13') of the thermal protector device (14) accommodated in the thermal protector seat (12),
- a mounting seat (16) formed by the connector body (3) and spaced apart from the electrical connection seat (8) and spaced apart from the thermal protector seat (12), for mounting and clamping the connector body (3) to the compressor (2),
- a first sealing edge (17) extending in a closed loop on the front side (4) of the connector body (3) all around the electrical connection seat (8),

wherein the first sealing edge (17) itself or a second sealing edge extended in a closed loop on the front side (4) of the connector body (3) all around the thermal protector seat (12),

- at least a first electric cable (18) connected to the first contact terminals (9) and extending through a wall of the connector body (3) at a distance from the front side (4),
- at least a second electric cable (19) connected to the second contact terminals (13) and extending through a wall of the connector body (3) at a distance from the front side (4).

2. An electrical connector (1) according to one of the preceding claims, wherein the mounting seat (16) comprises a through hole from the front side (4) to the rear side (7) of the connector body (3), through which the connector body (3) is fittable onto a threaded pin (22) protruding from the compressor (2) and fixable in place by a nut (23) screwed onto the threaded pin (22) against the rear side (7) of the connector body (3).

3. An electrical connector (1) according to one of the preceding claims, wherein the mounting seat (16) is formed in an intermediate position or halfway between the electrical connection seat (8) and the thermal protector seat (12).

4. An electrical connector (1) according to one of the preceding claims, wherein the mounting seat (16) is formed in an internal position with respect to the first sealing edge (17).

5. An electrical connector (1) according to one of claims 1 to 3, wherein the mounting seat (16) is formed in an intermediate position or halfway between the first sealing edge (17) and the second sealing edge, outside both the first and second sealing edges.

6. An electrical connector (1) according to one of the preceding claims, wherein the connector body (3) is formed by injection overmolding on the first electric cable (18) and the second electric cable (19).

7. An electrical connector (1) according to one of the preceding claims, wherein the first (18) and second (19) electric cables exit from the connector body (3) on the rear side (7) thereof or through the first side wall (11) and/or the second side wall (15).

8. An electrical connector (1) according to one of the preceding claims, wherein the connector body (3) is made of a rigid plastic material in a single piece.

9. An electrical connector (1) according to one of the preceding claims, wherein the connector body (3) forms an intermediate wall (20) which connects the first side wall (11) and the second side wall (15) to each other and forms the mounting seat (16),
wherein the intermediate wall (20) forms a narrowing with respect to the first side wall (11) and the second side wall (15) to create a space for a fluid inlet or outlet pipe (21) of the compressor (2).

10. An electrical connector (1) according to one of the preceding claims, wherein the first sealing edge (17), and/or the second sealing edge, forms a lip-shaped crest protruding from the connector body (3) towards the front side (4).

11. An electrical connector (1) according to one of the preceding claims, wherein the first sealing edge (17), and/or the second sealing edge, is formed by a gasket made of an elastomeric material different from the material of the connector body (3) and connected to the connector body (3) by:

- co-molding,
- gluing,
- interlocking or insertion or fitting,
- interposition between the connector body (3) and the compressor (2).

12. An electrical connector (1) according to one of the preceding claims, wherein on the front side (4), the connector body (3) or the first sealing edge (17) has, in a non-deformed configuration, a curvature complementary to the curvature of the outer surface (5) of the compressor (2), and/or,
wherein on the front side (4), the connector body (3) or the first sealing edge (17) has, in a non-deformed configuration, a planar shape and adapts to the curvature of the outer surface (5) of the compressor (2) by elastic deformation during clamping the electrical connector (1) against the compressor (2).

13. An electrical connector (1) according to one of the preceding claims, wherein the first contact terminals (9) are positioned fixed in the connector body (3) and the first electrical terminals (9') are positioned fixed to the compressor (2) and engageable with one another by translational insertion, and/or

wherein the first contact terminals (9) comprise cable lugs connected to electric wires of the first electric cable (18) and which form a female coupling seat facing the front side (4) and adapted to receive with interference a corresponding pin of the first electrical terminals (9'), and/or
wherein the second contact terminals (13) are positioned fixed in the connector body (3) and the second electrical terminals (13') are positioned fixed to the thermal protector device (14) and engageable to one another by translational insertion parallel to a direction of insertion of the thermal protector device (14) into the thermal protector seat (12) from the front side (4) toward the rear side (7), so as to obtain a shape reference for positioning the thermal protector device (14), and/or
wherein the second contact terminals (13) comprise cable lugs connected to electric wires of the second electric cable (19) and which form a female coupling seat facing the front side (4), adapted to receive with interference a corresponding rod of the second electrical terminals (13').

14. An electrical connector (1) according to one of the preceding claims, wherein an electric wire or a quick connector (28) of the first electric cable (18) is connected to a ground cable (29) with a cable lug connectable to the metal housing (24) of the compressor (2).

15. A compressor-electrical connector combination comprising:

- a compressor (2) having a metal housing (24), a compression path (25) formed in the housing (24) between an inlet opening and an outlet opening, a three-phase electric motor (26) arranged in the housing (24), a group of first electrical terminals (9') shaped like pins protruding from a base plate towards the outside of the compressor (2), a threaded pin (22) protruding from the housing (24), a compression mechanism (27) arranged in the housing (24) along the compression path (25) and operable by means of the electric motor (26) to draw a fluid through the inlet opening, compress the drawn fluid, and push the compressed fluid out of the outlet opening,
- the electrical connector (1) according to any one of the preceding claims.

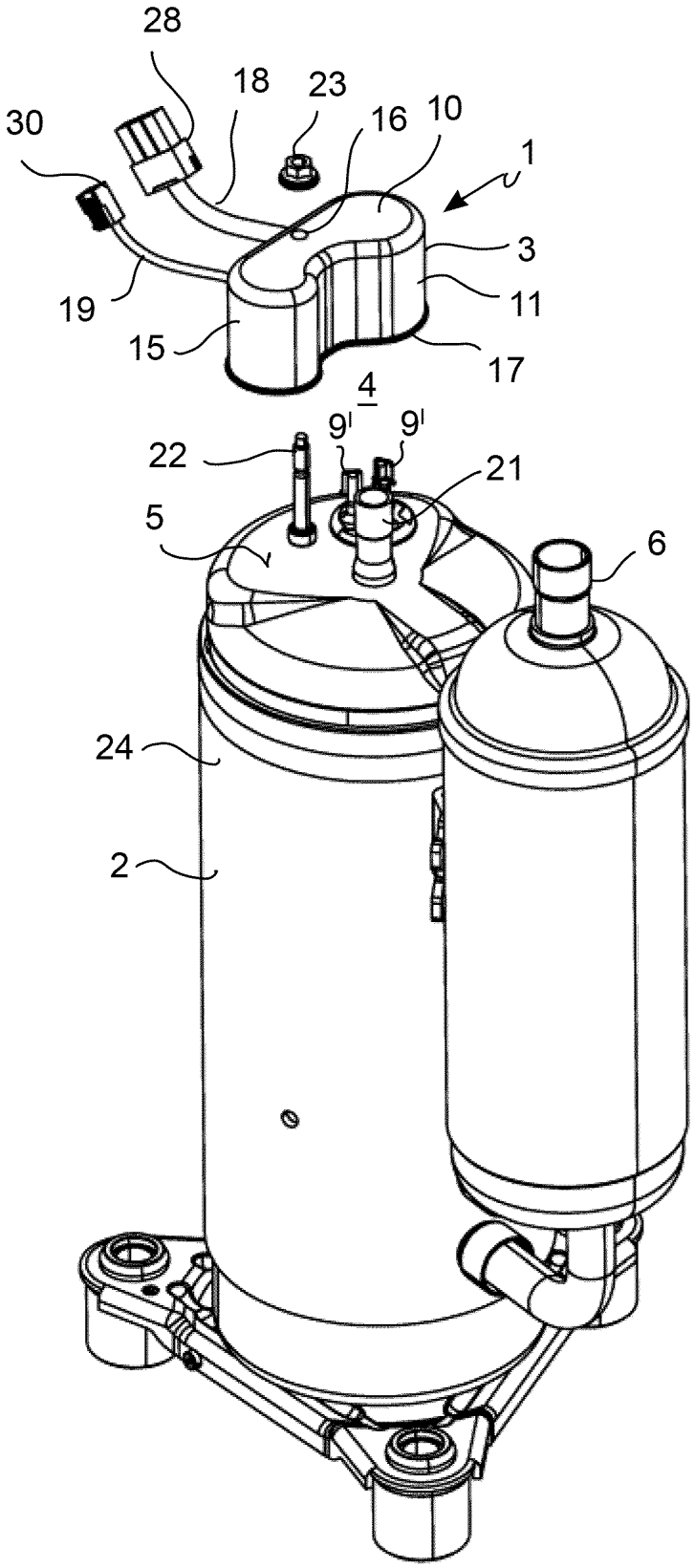

FIG. 1

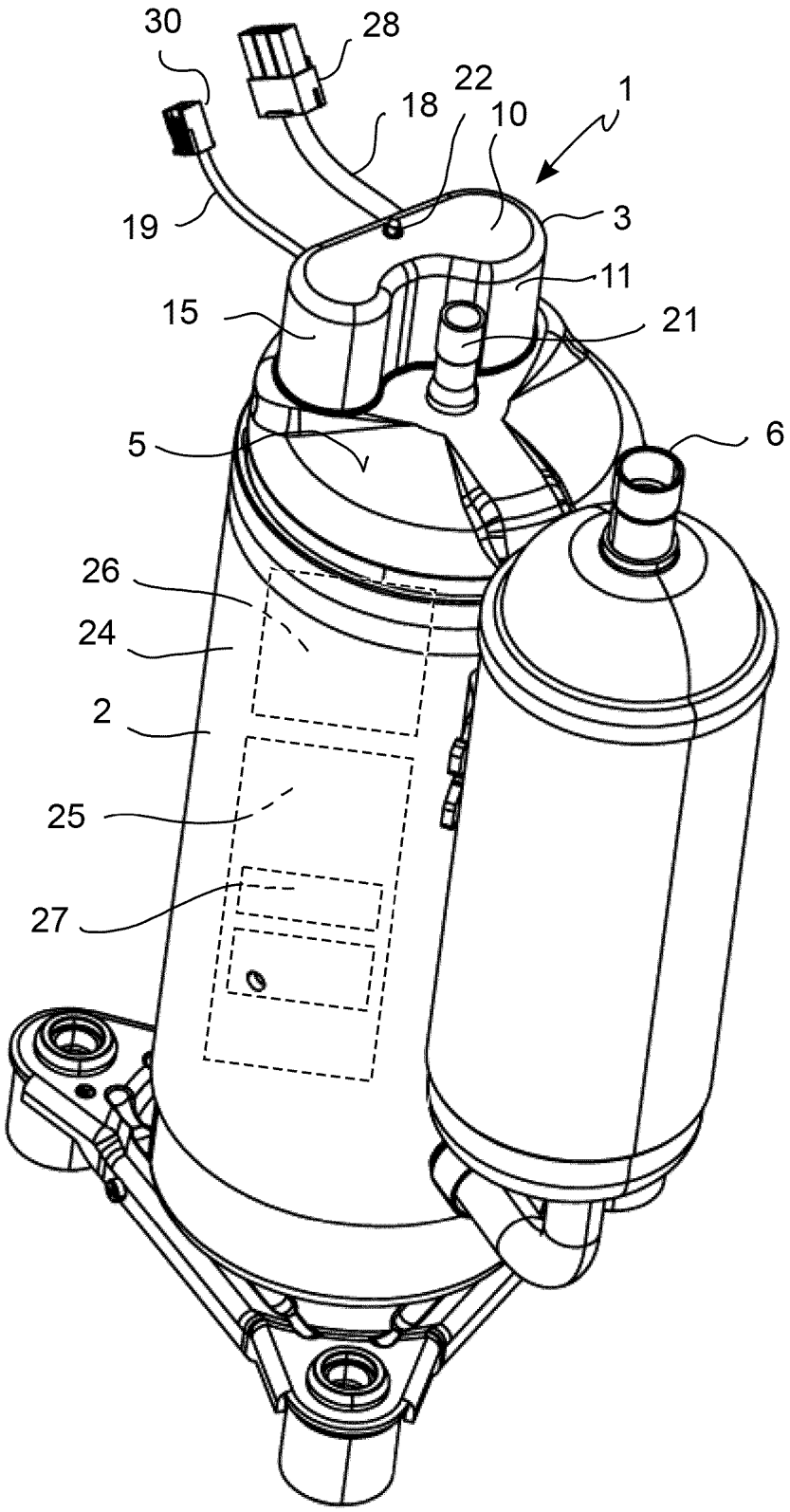

FIG. 2

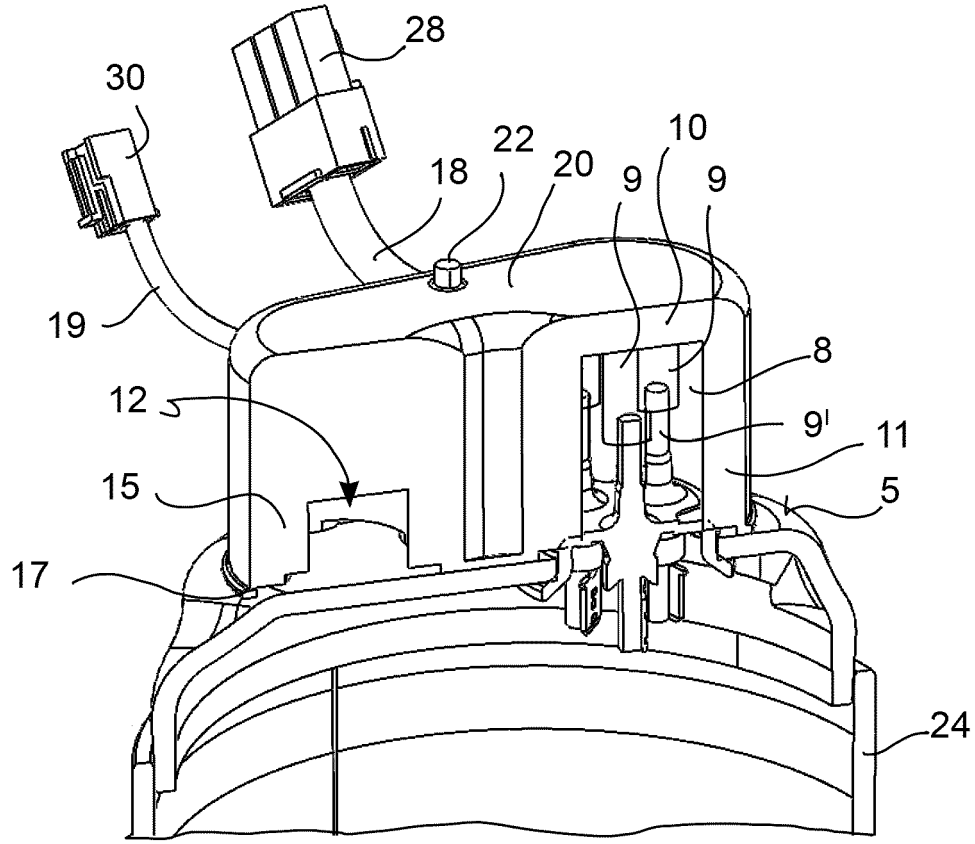

FIG. 3

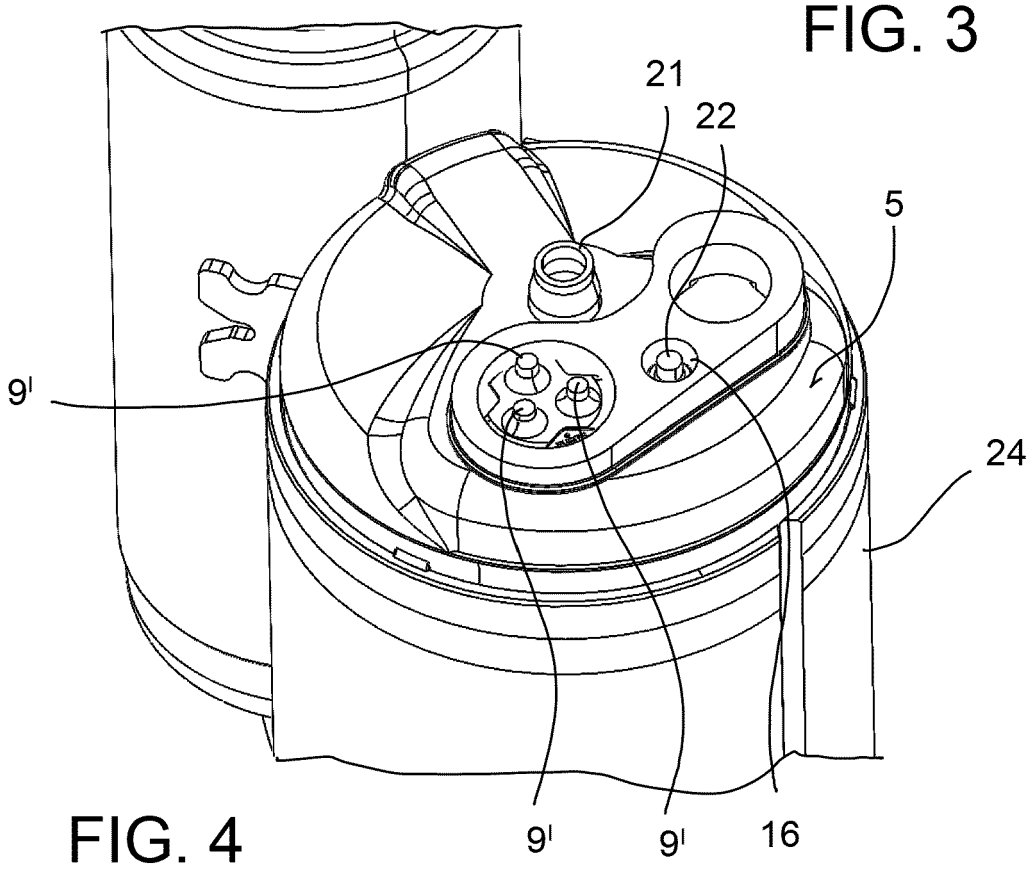

FIG. 4

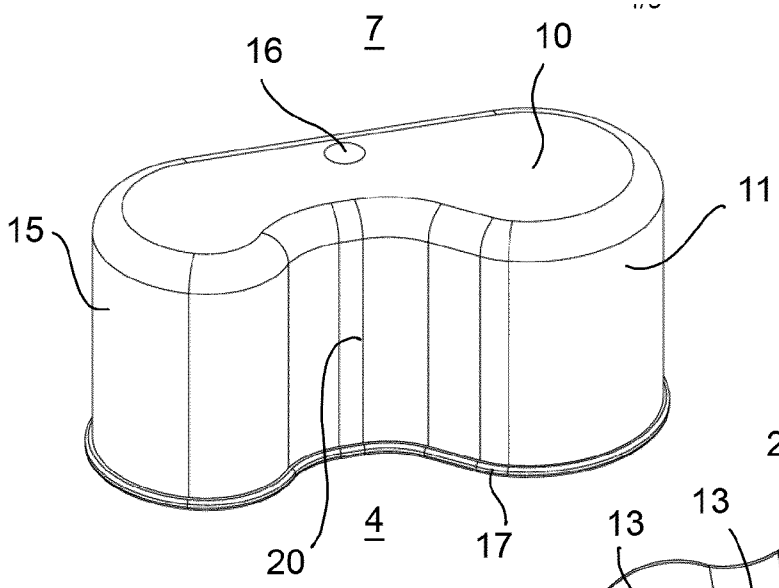

FIG. 5

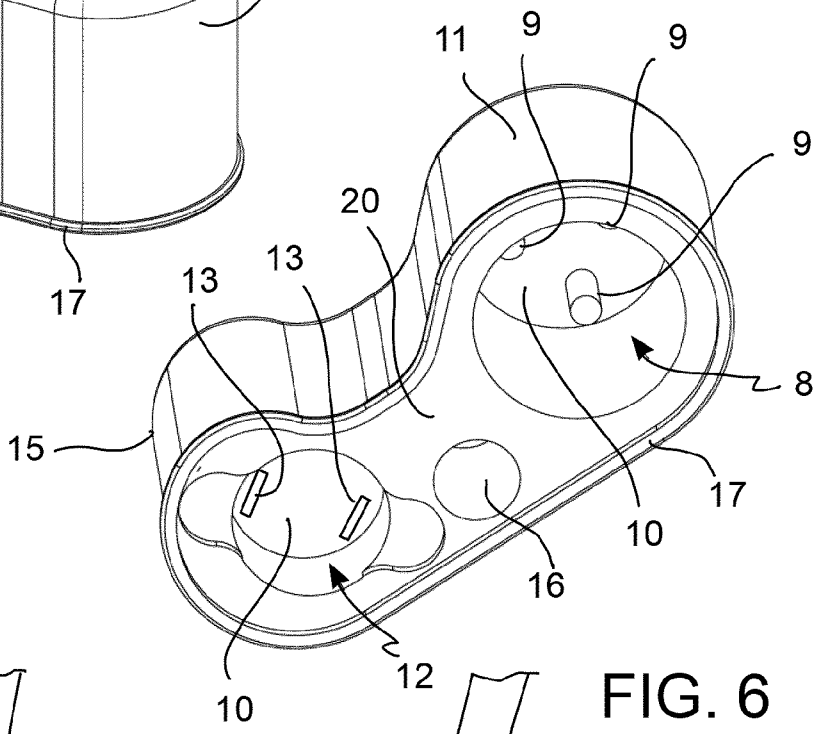

FIG. 6

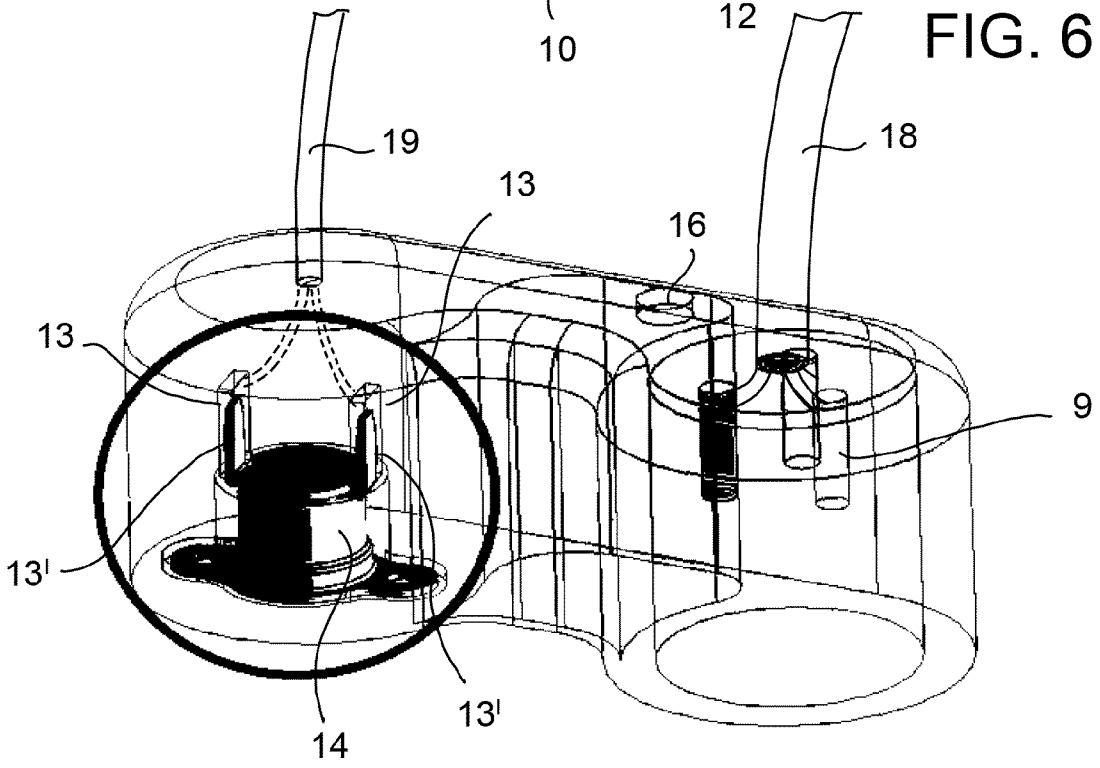

FIG. 7

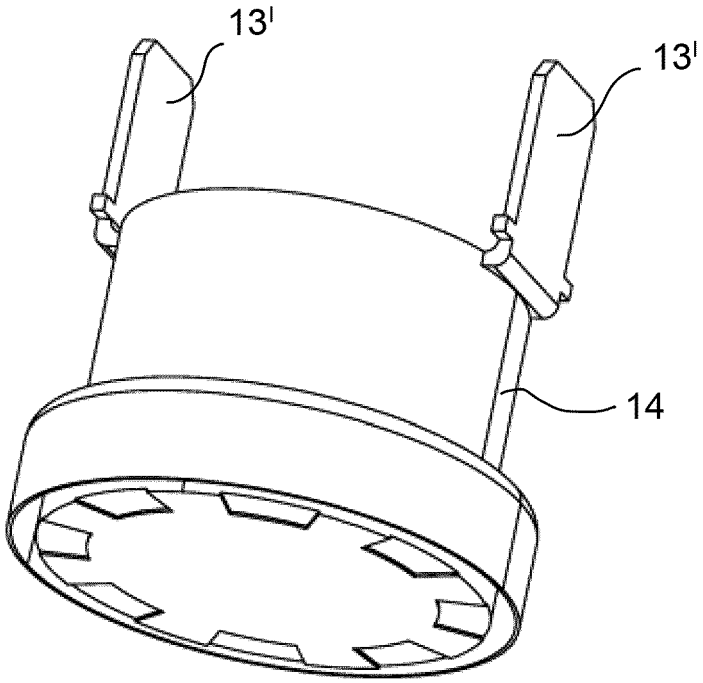

FIG. 8

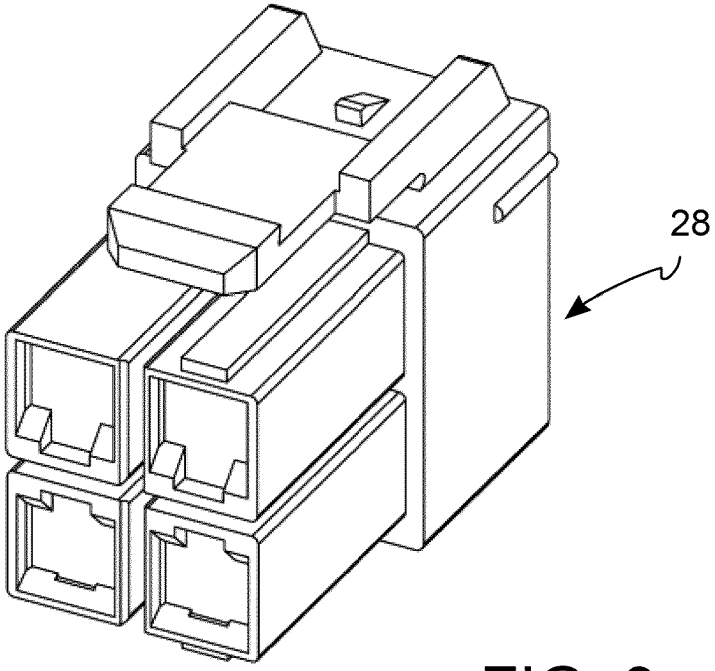

FIG. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 24 21 7746

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 6 102 666 A (ALBRECHT ERIC H [US]) 15 August 2000 (2000-08-15) * abstract * * column 2, line 54 - line 55 * * column 3, line 59 - line 60 * * column 4, line 11 - line 29 * * figures 1-3 * -----	1-15	INV. H01R13/533 H01R13/66
A	EP 0 793 068 A1 (EMBRACO EUROP SRL [IT]) 3 September 1997 (1997-09-03) * abstract * * column 5, line 39 - line 54 * * figures 1-7 * -----	14	

TECHNICAL FIELDS SEARCHED (IPC)

H01R

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 April 2025	Pugliese, Sandro

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01-04-2025

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