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Remarks:

Amended claims in accordance with Rule 137(2) EPC.

(54) **CONNECTOR FOR CONNECTING A POWER CABLE TO A BOARD**

(57) A connector for connecting a power cable to a board has a housing adapted to hold a contact which is crimpable onto the power cable. The housing comprises a first housing part (23) and a second housing part (24) formed as one piece. The first housing part (23) has a retaining portion (28) for retaining a lower area of the contact and a first supporting portion (29) for supporting an upper area of the contact transverse to a longitudinal axis of the contact. The second housing part (24) comprises a second supporting portion adapted to interact with the first supporting portion such that the upper area of the contact is retained therebetween. The second housing part (24) is bendable towards the first housing part (23) to engage therewith in a form locking manner. The first supporting portion comprises a first supporting surface (35) and a second supporting surface (36) which are tilted relative to each other. The second supporting portion comprises a third supporting surface and a fourth supporting surface which form a corresponding counterpart to the first supporting (35) surface and the second supporting surface (36) such that the upper part of the contact is retained between at least the first, second, third and fourth supporting surface (35, 36) when the second housing part (24) engages with the first housing part (23).

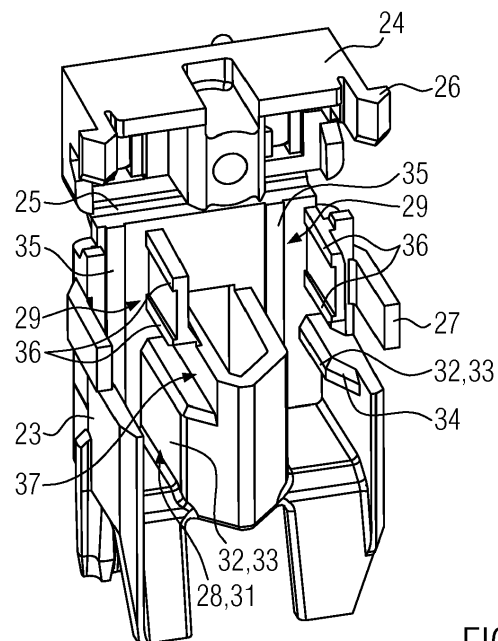


FIG. 6

## Description

**[0001]** The present invention relates to a connector for connecting a power cable to a board with a housing adapted to hold a contact which is crimped onto the power cable. The housing comprises a first housing part and a second housing part formed as one piece. The first housing part has a retaining portion for retaining a lower area of the contact and a first supporting portion for supporting an upper area of the contact transverse to a longitudinal axis of the contact. The second housing part comprises a second supporting portion adapted to interact with the first supporting portion such that the upper area of the contact is retained therebetween. The second housing part is bendable towards the first housing part to engage therewith in a form locking manner. The first supporting portion comprises a first supporting surface and a second supporting surface which are tilted relative to each other.

**[0002]** Such connectors are e.g. used in the automotive industry as can be seen from DE 198 04 599 A1. This document discloses an electrical plug connector for connecting a generator to a control unit of a vehicle. The connector comprises a casing for housing contact springs connected to electrical cables as well as a circuit board. The casing has an upper and a lower part which are clipped onto each other during assembly to fix the contacts there between such that the contact springs are electrically connected to the circuit board.

**[0003]** As electronic systems are very important in today's automotive industry and as the requirements for connectors are very specific in each case of use, the connectors have to be specifically designed for each respective scenario. In the present case the connector shall be adapted for a connection of a power cable to a board in electronic vehicles as will be described hereinafter.

**[0004]** Due to constructive specifications the connector as well as the board shall be mounted inside a casing. The casing has an opening in a side wall through which the power cable extends towards the connector. The cable comprises an electric contact which is crimped onto a cable head. The connector is fixed to the casing and its assembly, namely the fixation of the contact in the connector housing, has to take place inside the casing with only little space being available.

**[0005]** Moreover, due to its use in a vehicle the connector has to withstand vibrations and a disconnection of the power cable from the board has to be prevented.

**[0006]** It is therefore an object of the present invention to provide a connector for connecting a power cable to a board which only requires a small installation space. Moreover, it is another object of the invention to provide a connector assembly which allows a durable and safe connection of a board to the connector.

**[0007]** This object is achieved by a connector comprising the features of claim 1 and by a connector assembly according to claim 15. Preferred embodiments are set out in the dependent claims.

**[0008]** According to the present invention, the second

supporting portion comprises a third supporting surface and a fourth supporting surface which form a corresponding counterpart to the first supporting surface and a second supporting surface such that the upper part of the contact is retained between at least the first, second, third and fourth supporting surfaces when the second housing part engages with the first housing part.

**[0009]** In connection with the present invention the term "counter-part" defines that the third supporting surface and the fourth supporting surface each face the first supporting surface or the second supporting surface, respectively. The first, second, third and fourth supporting surfaces form a second retaining portion for retaining an upper area of the contact.

**[0010]** Prior to assembly of the connector, the contact is received within the connector. By subsequently bending the second housing part towards the first housing part to engage therewith in a form locking manner, the contact is fixedly secured within the connector. Preferably, the housing is longer along the longitudinal axis of the contact than transverse to said axis such that bending the second housing part towards the first housing part can be achieved with only little space being available. Preferably, the housing is adapted to hold two or more contacts.

**[0011]** In a preferred embodiment the first supporting surface and the second supporting surface as well as the third supporting surface and the fourth supporting surface enclose an angle of 60° to 120°, preferably of 80° to 100°, more preferably of 90°. The first, second, third and fourth supporting surfaces are adapted to fix the upper area of the contact transverse to the longitudinal axis of the contact. As the first and second supporting surfaces as well as the third and fourth supporting surfaces enclose the angles mentioned above, they at least partially enclose the upper area of the contact.

**[0012]** In an alternative arrangement the third supporting surface and the fourth supporting surface are positioned adjacent to each other. Preferably, the third and fourth supporting surfaces enclose an angle of 90° and form an edge there between.

**[0013]** In particular preferred is an embodiment according to which the first, second, third and fourth supporting surfaces are adapted to abut the upper area of the contact. Preferably, when bending the second housing part towards the first housing part, all four supporting surfaces abut the upper area of the contact and, thus, prevent movement of the upper area of the contact transverse to its longitudinal axis.

**[0014]** Optionally, the retaining portion is a recess, which is formed by inner walls of the first housing part wherein at least two of the inner walls form opposing retaining surfaces adapted to retain the lower area of the contact therebetween. Prior to engaging the second housing part with the first housing part, the contact is positioned within the first housing part of the connector, whereas the lower area of the contact is retained between the opposing retaining surfaces. Thus, the contact stays in its position during assembly of the connector.

**[0015]** It is further preferred that the recess is open towards a receiving side of the first housing part for receiving the lower area of the contact and is open in a vertical direction towards the second housing part. The recess is adapted to receive the connector such that the connector vertically extends beyond the recess towards the second housing part whereas the power cable onto which the contact is crimped enters the housing from the receiving side of the first housing part.

**[0016]** In a preferred embodiment the retaining surfaces of the retaining portion are positioned perpendicular to the first supporting surface. Optionally, the contact has two side surfaces and a front as well as a back surface. While the retaining surfaces abut the side surfaces of the contact, the first supporting surface of the first housing part may abut the rear surface of the contact.

**[0017]** Preferably, the first supporting surface is a rear inner surface adapted to form a stop for the contact when being inserted in the retaining portion. Thus, the positioning of the contact when being inserted into the first housing part is simplified. Moreover, as the contact is abutted by three surfaces the contact remains in its position during the bending of the second housing part towards the first housing part.

**[0018]** In a preferred embodiment, the first housing part has a slot positioned vertically adjacent to the recess and being adapted to engage with the contact such that vertical movement of the contact is restricted. Preferably, the contact has a side arm which is formed as a loop and extends into the slot. Further preferably, the slot is formed in between the recess and the second supporting surface of the first housing part and extends horizontally towards the receiving side of the first housing part. Thus, when being inserted into the first housing part, the contact is not only fixed horizontally transverse to the longitudinal direction of the contact, but also vertically.

**[0019]** Further preferred is an embodiment according to which the housing comprises guiding posts which extend in a vertical direction from the lower side of the housing. Preferably the casing comprises holes corresponding to the guiding posts. Thus, the guiding posts enable the connector to vertically move within the casing.

**[0020]** Preferably, the housing comprises leg supports which extend from the lower side of the housing and form a stop at their lower end. These leg supports define a lowermost position of the housing within the casing during assembly.

**[0021]** Also preferred is an embodiment according to which the first housing part comprises a protrusion and the second housing part comprises a snap in tongue, wherein during an engagement of the first and second housing parts in a form locking manner the snap in tongue engages with the protrusion. Such a form locking connection can easily be manufactured and guarantees a safe and durable connection between the first and second housing part.

**[0022]** Further preferred is an embodiment according to which the first housing part and the second housing

part are connected by one single integral hinge. An integral hinge is a simple constructive measure to allow bending of the second housing part relative to the first housing part. Preferably, the housing is produced by injection molding using one single mould. Consequently, the manufacturing costs are reduced.

**[0023]** Preferably, the second housing part comprises a connecting opening through which the contacts are electrically connectable. The first, second, third and fourth supporting surfaces are adapted to align the upper area of the contact with this connecting opening when the second housing engages the first housing part.

**[0024]** The present invention also relates to a connector assembly comprising a board mounted in a casing, the board being electrically connected with at least a power cable via a connector as defined above. The assembly allows simple installation of the board within the casing and a secure mount to the connector.

**[0025]** The invention will be described in the following in connection with various examples of preferred arrangements in the drawings, in which

Fig. 1 shows a perspective partial view of a pre-mounted connector assembly,

Fig. 2 shows a rear partial view of the pre-mounted connector assembly,

Fig. 3 shows a perspective view of the fully mounted connector assembly,

Fig. 4 shows a perspective view of the connector in an engaged position retaining two contacts crimped on power cables,

Fig. 5 shows a perspective view of the connector in an unengaged position retaining the lower part of the contacts,

Fig. 6 shows a first perspective view of the connector in an unengaged state, and

Fig. 7 shows a second perspective view of the connector in an unengaged state.

**[0026]** Fig. 1 shows a partial perspective view of a pre-mounted connector assembly 1 comprising a board 2 which is mounted in a casing 3. The board 2 is electrically connected to power cables 4 via a connector 5. The power cables 4 extend into the casing 3 through an opening 6 and are connected to a power source (not shown).

**[0027]** Fig. 2 shows the connector assembly 1 from a rear perspective in the pre-mounted state. The connector 5 is positioned within the casing 3 such that a lower side 7 of the connector 5 abuts the bottom wall 8 of the casing 3. The board 2 comprises pins 9 which are partially inserted into the connector 5 and thus establish an electrical connection. The pins 9 serve as guiding means when

mounting the board 2 onto the connector 5. A screw 10 protrudes through the board 2 and partly engages with the connector 5.

**[0028]** Fig. 3 shows the connector assembly 1 in a fully mounted state. In order to transfer the connector assembly 1 from the pre-mounted state into the mounted state the screw 10 is tightened, thereby vertically lifting the connector 5 until it abuts the board 2 on its lower side 11. Vertically extending knobs 13 which are positioned on an upper side 12 of the connector 5 protrude through corresponding holes 14 (see Fig. 1) of the board 2 in order to properly align the connector with the board 2. Thus, a durable connection between the board 2 and the connector 5 is established.

**[0029]** The connector 5 comprises guiding posts 15 which extend in a vertical direction from the lower side 7 of the connector 5 and which engage in corresponding holes (not shown) positioned in the bottom wall 8 of the casing 3. When tightening the screw 10 and thereby lifting the connector 5 towards the board 2 the connector 5 is vertically guided by the guiding posts 15. Each guiding post 15 has lips 16 which extend in a radial outward direction.

**[0030]** The connector 5 shall be explained in more detail in the following with reference to the Figs. 4 to 7:

The connector 5 comprises a housing 17 which is adapted to hold contacts 18 that are crimpable onto the power cable 4.

**[0031]** As mentioned above with regard to the connector 5, the housing 17 comprises an upper side 12 and a lower side 7. On its upper side 12 the housing 17 has connecting openings 19 through which the pins 9 (see Fig. 2) contact the contacts 18 positioned in the housing 17. Additionally, the housing 17 comprises a thread 20 on its upper side 12 to receive the screw 10 (see Fig. 2).

**[0032]** On its lower side 7 the housing 17 comprises leg supports 21 which extend from the lower side 7 of the housing 17 and form a stop at their lower ends 22. These lower ends 22 of the leg supports 21 abut the bottom wall 8 of the casing 3 (Fig. 2) and, thus, define, in addition to the lower side 7 of the housing 17, the lowermost position of the connector 5 within the casing 3.

**[0033]** The housing 17 further comprises a first housing part 23 and a second housing part 24 formed as one piece. The first housing part 23 and the second housing part 24 are connected by one single integral hinge 25.

**[0034]** The second housing part 24 is bendable towards the first housing part 23 to engage therewith in a form locking manner. For this purpose, the second housing part 24 comprises a snap in tongue 26 which engages with a protrusion 27 of the first housing part 23 forming a form locking connection.

**[0035]** Moreover, the first housing part 23 has two retaining portions 28 for retaining lower areas of the contacts 18 and first supporting portions 29 for supporting upper areas of the contacts 18 transverse to longitudinal

axes 30 of the contacts 18.

**[0036]** The retaining portions 28 are recesses 31 which are formed by inner walls 32 of the first housing part 23. At least two of the inner walls 32 of each recess 31 form opposing retaining surfaces 33 adapted to retain the lower area of the contact 18 therebetween.

**[0037]** One of the retaining surfaces 33 may be formed by a rib 34 extending inwards from an inner wall 32 of the first housing part 23 as shown in Fig. 6 regarding the recess 31 on the right side of the first housing part 23.

**[0038]** The recesses 31 are open towards a receiving side of the first housing part 23 for receiving the lower area of the contacts 18 and are open in a vertical direction towards the second housing part 24. The receiving side is defined as the side of the housing 17 from which the contacts 18 are received in the retaining portions 28. In case the connector 5 is mounted in the casing 3 the receiving side of the first housing part 23 is facing the opening 6 of the casing 3 (Fig. 1).

**[0039]** The retaining surfaces 33 of the retaining portions 28 are positioned perpendicular to first supporting surfaces 35 which are part of the first supporting portions 29 for supporting upper areas of the contacts 18. The first supporting surface 35 are rear inner surfaces of the first housing part 23 adapted to form a stop for the contacts 18 when being inserted in the retaining portions 28.

**[0040]** Each first supporting portion 29 further comprises a second supporting surface 36 which extends from the area of the first supporting surface 35 horizontally towards the receiving side of the housing 17. The first supporting surface 35 and the second supporting surface 36 are tilted relative to each other and enclose an angle of 90°.

**[0041]** Moreover, the first housing part 23 has two slots 37 positioned vertically adjacent to each recess 31 and being adapted to engage with the contacts 18 such that vertical movement of the contacts 18 is restricted. The slots 37 are further positioned vertically adjacent to the first supporting portions 29 which are in a vertical direction located above the slot 37. The second housing part 24 comprises second supporting portions 38 adapted to interact with the first supporting portions 29 such that upper areas of the contacts 18 are retained there between. Each second supporting portion 38 comprises a third supporting surface 39 and a fourth supporting surface 40 which are positioned adjacent to each other and enclose an angle of 90°. The third supporting surfaces 39 and the fourth supporting surfaces 40 form corresponding counterparts to the first supporting surfaces 35 and the second supporting surfaces 36 such that the upper parts of the contacts 18 are retained between at least the first, second, third and fourth supporting surfaces 35, 36, 39, 40 when the second housing part 24 engages with the first housing part 23.

**[0042]** The first, second, third and fourth supporting surfaces 35, 36, 39, 40 are adapted to abut the upper area of the contact 18. Moreover, all four surfaces 35, 36, 39, 40 enclose the upper area of the contact 18 trans-

verse to its longitudinal axis 30 when the second housing part 24 engages with the first housing part 23.

[0043] In the following the assembly of the connector assembly 1 and the connector 5 shall be explained with reference to Figs. 1 to 7.

[0044] The connector 5 is positioned in the casing 3 such that the guiding posts 15 at the lower side of the housing 17 extend into corresponding holes (not shown) of the casing 3. Moreover, the connector 5 is vertically positioned such that the lower ends 22 of the leg supports 21 abut the bottom wall 8 of the casing 3.

[0045] Subsequently, the contacts 18 which are crimped onto the power cables 4 are inserted through the opening 6 of the casing 3 into the housing 17 of the connector 5 and are received in the recesses 31 of the first housing part 23. The contacts 18 each comprise two loops 41 one of which is inserted into the slot 37 of the first housing part 23. The second loop 41 is positioned on top of each of the contacts 18.

[0046] When being inserted in the housing 17, the contacts 18 are not only retained between the retaining surfaces 33 of the recesses 31, but also abut the first and second supporting surfaces 35, 36 of the first supporting portions 29 at their upper areas. Moreover, as the loops 41 engage with the slots 37, the contacts 18 are prevented from vertical movement within the first housing part 23. Thus, the contacts 18 are prevented from falling out of the first housing part 23.

[0047] Subsequently, the second housing part 24 is bent towards the first housing part such that the snap in tongue 26 of the second housing part 24 engages with the protrusion 27 of the first housing part 23. As the second housing part 24 engages the first housing part 23, the third supporting surface 39 and the fourth supporting surface 40 also abut the upper areas of the contacts 18 such that the contacts 18 are not only retained there between, but also aligned towards the connecting openings 19 on the upper side 12 of the housing 17, in particular of the second housing part 23.

[0048] Moreover, the loops 41 positioned on top of each of the contacts 18 touches an upper inner wall 32 of the second housing part 24 such that the second housing part 24 presses the contacts 18 towards the first housing part 23 and restricts any vertical movement.

[0049] Subsequently, the board 2 is inserted into the casing 3, whereas the pins 9 are aligned with the connecting openings 19 and thus, also with the contacts 18. The connection openings 19 may comprise chamfers in order to simplify an insertion of the pins 9 into the connection openings 9.

[0050] As the board 2 is installed in the casing 3, the pins 9 are electrically connected with the contacts 5 in a pre-mounted state. To ensure a durable connection between the board 2 and the contacts 18, a screw 10 is screwed through the board 2 into the thread 20 of the housing 17, thus lifting the housing 17 together with the contacts 18 towards the lower side 11 of the board 2. During this vertical lifting of the housing 17 the guiding

posts 15 vertically guide the housing 17 towards the board 2. When the knobs 13 positioned on the upper side of the second housing part 24 protrude through corresponding holes 14 in the board 2, the upper side 12 of the housing 17 abuts the lower side 11 of the board 2, and a durable electrical connection between the board 2 and the contacts 18 is ensured.

## 10 Claims

1. Connector (5) for connecting a power cable (4) to a board (2) with:

a housing (17) adapted to hold a contact (18) which is crimpable onto the power cable (4),

wherein the housing (17) comprises a first housing part (23) and a second housing part (24) formed as one piece, wherein the first housing part (23) has a retaining portion (28) for retaining a lower area of the contact (18) and a first supporting portion (29) for supporting an upper area of the contact (18) transverse to a longitudinal axis (30) of the contact (18), wherein the second housing part (24) comprises a second supporting portion (38) adapted to interact with the first supporting portion (29) such that the upper area of the contact (18) is retained therebetween, wherein the second housing part (24) is bendable towards the first housing part (23) to engage therewith in a form locking manner and, wherein the first supporting portion (29) comprises a first supporting surface (35) and a second supporting surface (36) which are tilted relative to each other,

## characterized in

that the second supporting portion (36) comprises a third supporting surface (39) and a fourth supporting surface (40), which form a corresponding counterpart to the first supporting surface (35) and the second supporting surface (36) such that the upper part of the contact (18) is retained between at least the first, second, third and fourth supporting surfaces (36, 36, 39, 40) when the second housing part (24) engages with the first housing part (23).

2. Connector (5) according to claim 1, **characterized in that** the first supporting surface (35) and the second supporting surface (36) as well as the third supporting surface (39) and the fourth supporting surface (40) enclose an angle of 60° to 120°, preferably

of 80° to 100°, more preferably of 90°.

3. Connector (5) according to any of the preceding claims, **characterized in that** the third supporting surface (39) and the fourth supporting surface (40) are positioned adjacent to each other. 5
4. Connector (5) according to any of the preceding claims, **characterized in that** the first, second, third and fourth supporting surfaces (36, 36, 39, 40) are adapted to abut the upper area of the contact (18). 10
5. Connector (5) according to any of the preceding claims, **characterized in that** the retaining portion (28) is a recess (31), which is formed by inner walls of the first housing part (23) wherein at least two of the inner walls form opposing retaining surfaces (33) adapted to retain the lower area of the contact (18) therebetween. 15
6. Connector (5) according to claim 6, **characterized in that** the recess (31) is open towards a receiving side of the first housing part (23) for receiving the lower area of the contact (18) and is open in a vertical direction towards the second housing part (24). 20
7. Connector (5) according to claim 6, **characterized in that** the retaining surfaces (33) of the retaining portion (28) are positioned perpendicular to the first supporting surface (35). 25
8. Connector (5) according to any of the preceding claims, **characterized in that** the first supporting surface (35) is a rear inner surface adapted to form a stop for the contact (18) when being inserted in the retaining portion (28). 30
9. Connector (5) according to claim 6, **characterized in that** the first housing part (23) has a slot (37) positioned vertically adjacent to the recess (31) and being adapted to engage with the contact (18) such that vertical movement of the contact (18) is restricted. 35
10. Connector (5) according to any of the preceding claims, **characterized in that** the housing (17) comprises guiding posts (15) which extend in a vertical direction from a lower side of the housing (17). 40
11. Connector (5) according to any of the preceding claims, **characterized in that** the housing (17) comprises leg supports (21) which extend from a lower side of the housing (17) and form a stop at their lower end. 45
12. Connector (5) according to any of the preceding claims, **characterized in that** the first housing part (23) comprises a protrusion (27) and the second 50

housing part comprises (24) a snap in tongue (26), wherein during an engagement of the first and second housing part (23, 24) in a form locking manner the snap in tongue (26) engages with the protrusion (27).

13. Connector (5) according to any of the preceding claims, **characterized in that** the first housing part (23) and the second housing part (24) are connected by one single integral hinge (25). 55
14. Connector (5) according to any of the preceding claims, **characterized in that** the second housing part (24) comprises a connecting opening (19) through which the contacts (18) are electrically connectable.
15. Connector assembly (1) comprising a board (2) mounted in a casing (3), the board (2) being electrically connected with at least a power cable (4) via a connector (5) according to any of the preceding claims.

#### **Amended claims in accordance with Rule 137(2) EPC.**

1. Connector (5) for connecting a power cable (4) to a board (2) with:

a housing (17) adapted to hold a contact (18) which is crimpable onto the power cable (4),

wherein the housing (17) comprises a first housing part (23) and a second housing part (24) formed as one piece, wherein the first housing part (23) has a retaining portion (28) for retaining a lower area of the contact (18) and a first supporting portion (29) for supporting an upper area of the contact (18) transverse to a longitudinal axis (30) of the contact (18), wherein the second housing part (24) comprises a second supporting portion (38) adapted to interact with the first supporting portion (29) such that the upper area of the contact (18) is retained therebetween, wherein the second housing part (24) is bendable towards the first housing part (23) to engage therewith in a form locking manner and, wherein the first supporting portion (29) comprises a first supporting surface (35) and a second supporting surface (36) which are tilted relative to each other,

**characterized in**

- that** the second supporting portion (38) comprises a third supporting surface (39) and a fourth supporting surface (40), which form a corresponding counterpart to the first supporting surface (35) and the second supporting surface (36) such that the upper part of the contact (18) is retained between at least the first, second, third and fourth supporting surfaces (35, 36, 39, 40) when the second housing part (24) engages with the first housing part (23) and **that** the third supporting surface (39) and the fourth supporting surface (40) each face the first supporting surface (35) and the second supporting surface (36), respectively.
2. Connector (5) according to claim 1, **characterized in that** the first supporting surface (35) and the second supporting surface (36) as well as the third supporting surface (39) and the fourth supporting surface (40) enclose an angle of 60° to 120°, preferably of 80° to 100°, more preferably of 90°.
  3. Connector (5) according to any of the preceding claims, **characterized in that** the third supporting surface (39) and the fourth supporting surface (40) are positioned adjacent to each other.
  4. Connector (5) according to any of the preceding claims, **characterized in that** the first, second, third and fourth supporting surfaces (35, 36, 39, 40) are adapted to abut the upper area of the contact (18).
  5. Connector (5) according to any of the preceding claims, **characterized in that** the retaining portion (28) is a recess (31), which is formed by inner walls of the first housing part (23) wherein at least two of the inner walls form opposing retaining surfaces (33) adapted to retain the lower area of the contact (18) therebetween.
  6. Connector (5) according to claim 5, **characterized in that** the recess (31) is open towards a receiving side of the first housing part (23) for receiving the lower area of the contact (18) and is open in a vertical direction towards the second housing part (24).
  7. Connector (5) according to claim 6, **characterized in that** the retaining surfaces (33) of the retaining portion (28) are positioned perpendicular to the first supporting surface (35).
  8. Connector (5) according to any of the preceding claims, **characterized in that** the first supporting surface (35) is a rear inner surface adapted to form a stop for the contact (18) when being inserted in the retaining portion (28).
  9. Connector (5) according to claim 6, **characterized in that** the first housing part (23) has a slot (37) positioned vertically adjacent to the recess (31) and being adapted to engage with the contact (18) such that vertical movement of the contact (18) is restricted.
  10. Connector (5) according to any of the preceding claims, **characterized in that** the housing (17) comprises guiding posts (15) which extend in a vertical direction from a lower side of the housing (17).
  11. Connector (5) according to any of the preceding claims, **characterized in that** the housing (17) comprises leg supports (21) which extend from a lower side of the housing (17) and form a stop at their lower end.
  12. Connector (5) according to any of the preceding claims, **characterized in that** the first housing part (23) comprises a protrusion (27) and the second housing part comprises (24) a snap in tongue (26), wherein during an engagement of the first and second housing part (23, 24) in a form locking manner the snap in tongue (26) engages with the protrusion (27).
  13. Connector (5) according to any of the preceding claims, **characterized in that** the first housing part (23) and the second housing part (24) are connected by one single integral hinge (25).
  14. Connector (5) according to any of the preceding claims, **characterized in that** the second housing part (24) comprises a connecting opening (19) through which the contacts (18) are electrically connectable.
  15. Connector assembly (1) comprising a board (2) mounted in a casing (3), the board (2) being electrically connected with at least a power cable (4) via a connector (5) according to any of the preceding claims.

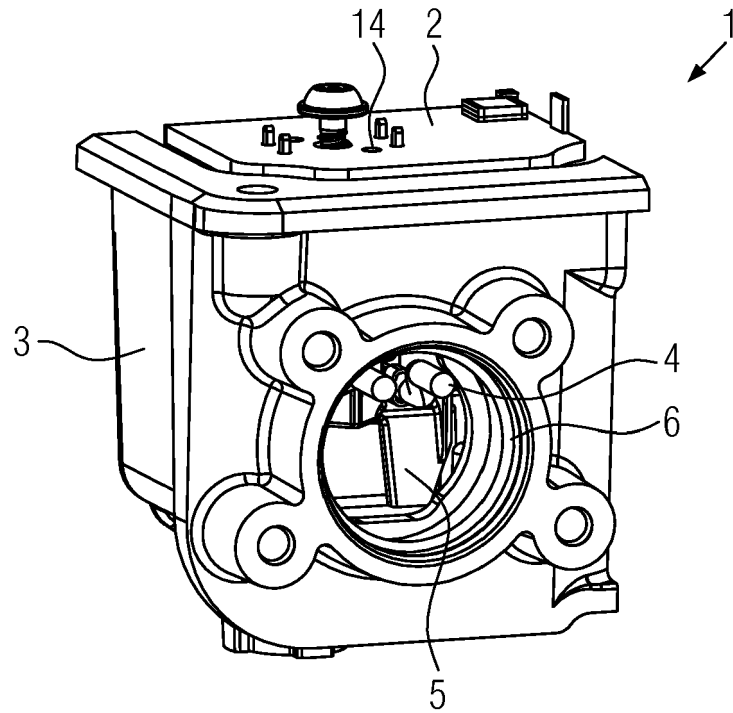


FIG. 1

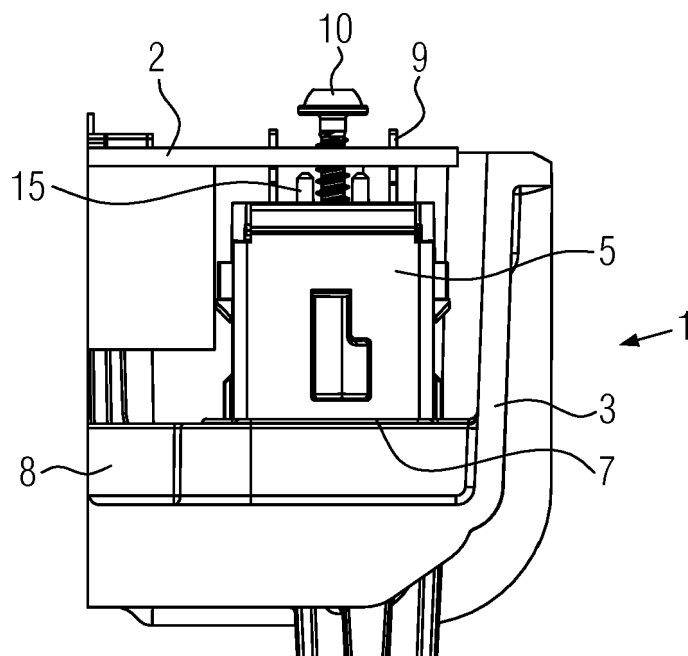


FIG. 2



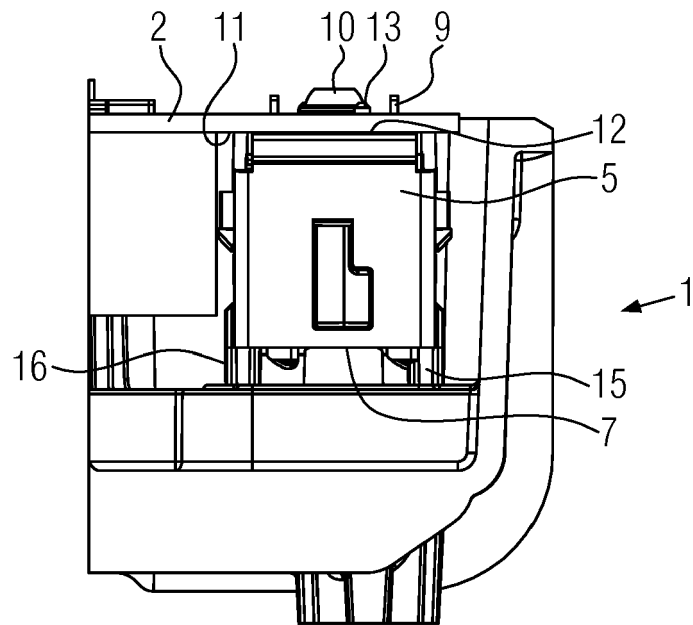


FIG. 3

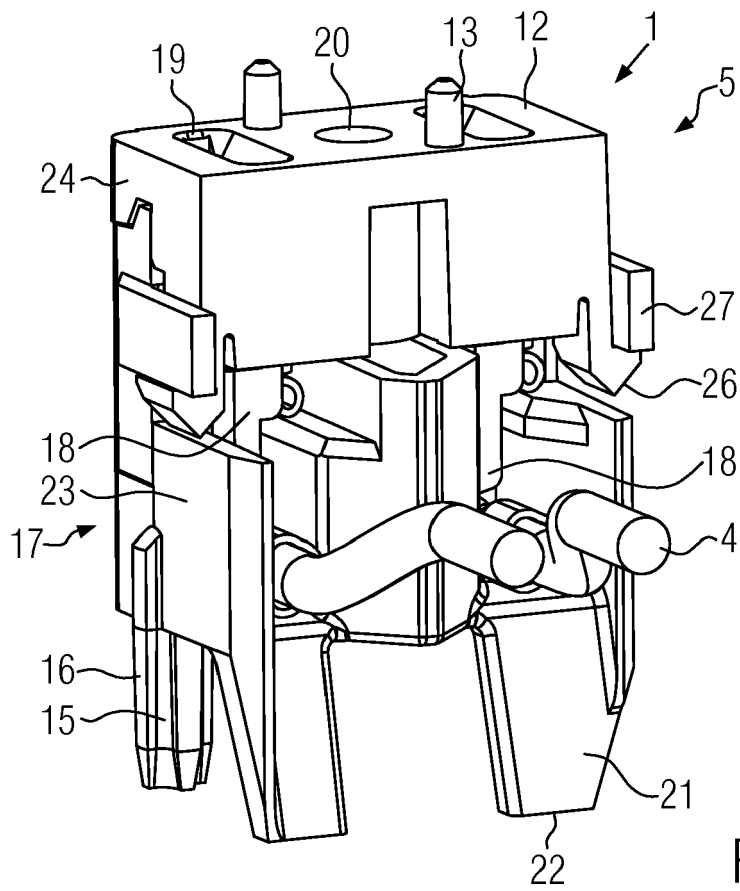


FIG. 4

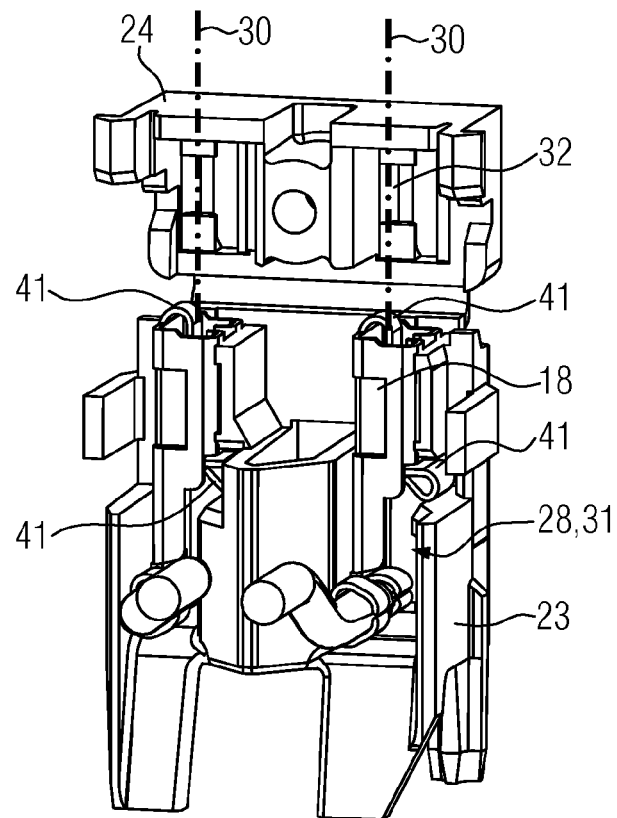


FIG. 5

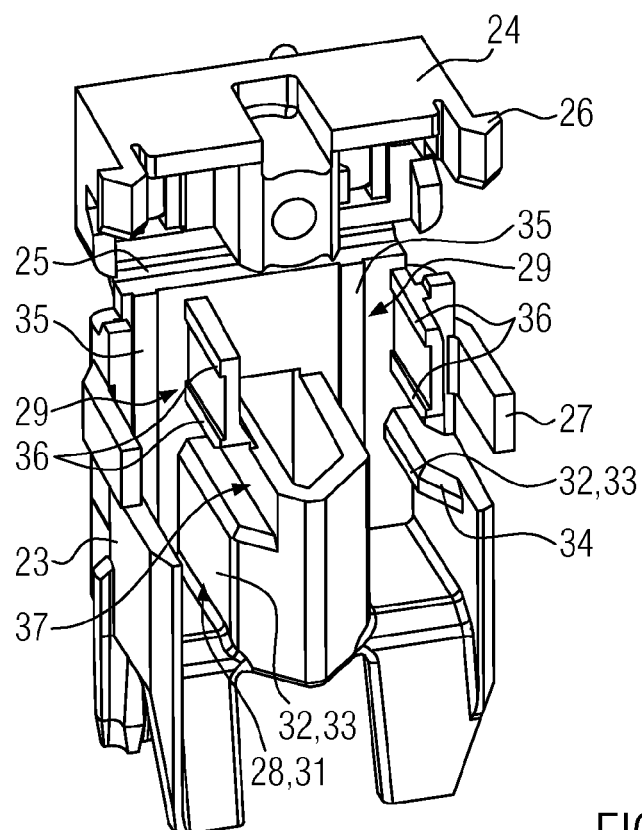


FIG. 6

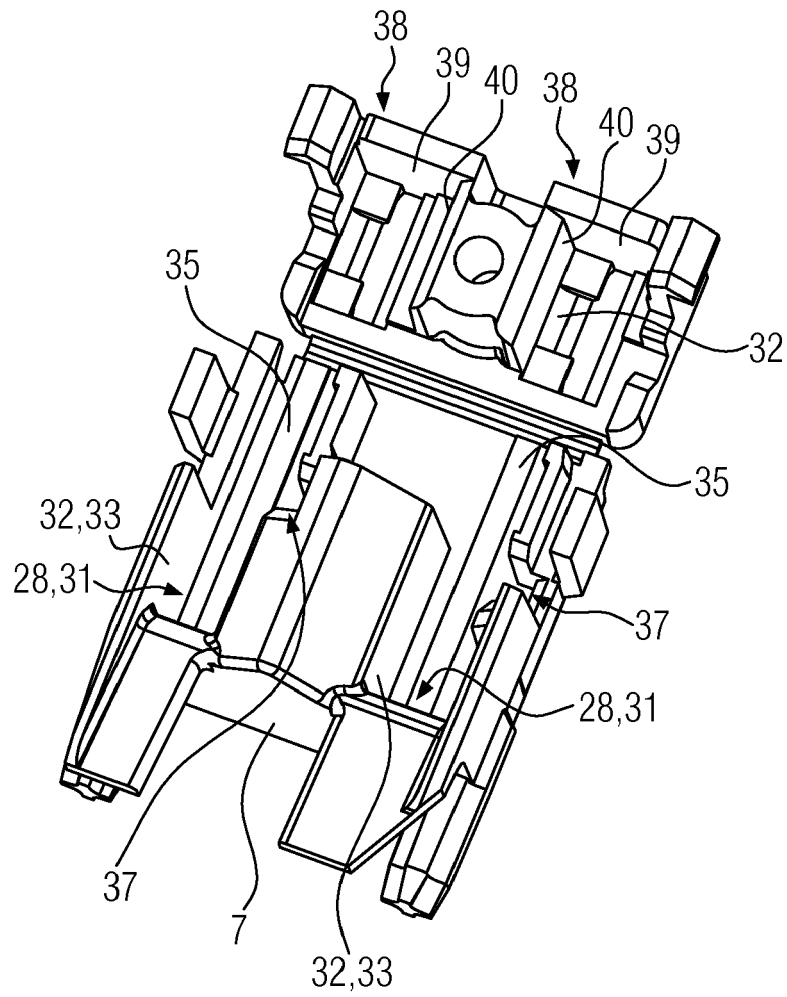


FIG. 7



## EUROPEAN SEARCH REPORT

 Application Number  
 EP 16 19 5632

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