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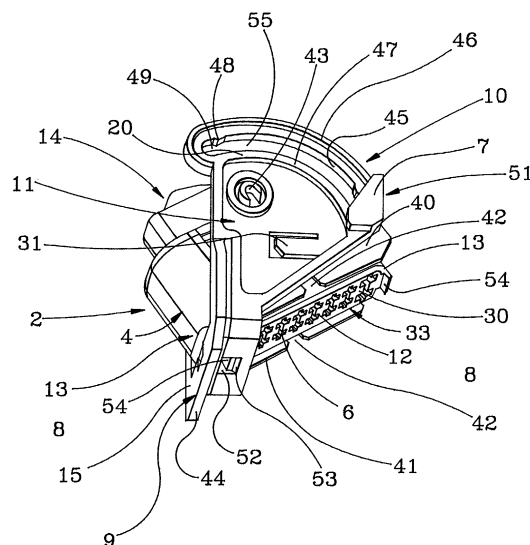
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(54) **Electrical connector with a coupling member in the shape of a rotatable lever arm**

(57) The invention describes an electrical connector comprising a secondary locking member mountable to the housing of the connector and a coupling assisting member for pulling a second connector to the first connector. The coupling member is shaped as a lever arm and rotatable connected at a rotation axis with the housing. One end of the lever arm is used as a pushing element for rotating the lever arm and the other end is shaped as a guiding plane which leads a leading element of the second connector. The guiding plane is arranged in that way that the distance between the guiding plane and the rotation axis is diminishing from the beginning of the guiding plane in the direction of the end of guiding plane. During the rotation of the coupling member the second leading element of the second connector is sliding along the guiding plane in the direction to the end of the guiding plane. The proposed shape of the coupling member has the advantage that connecting of two connectors can be done with reduced force.



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## Description

**[0001]** The invention relates to an electrical connector having a secondary locking mechanism for locking terminals within cavities of the connector, further comprising a coupling member for assisting coupling of the connector to a complementary connector.

**[0002]** Such a connector is described in the International Patent Application WO 98/47204. The connector disclosed therein has an insulative housing with a plurality of electrical terminals mounted therein and locked with first retention means such as resilient locking lances of the housing engaging in cavities of the terminals, the housing further provided with a secondary locking member that allows assembly of the terminals within the housing when the secondary locking member is in a pre-assembly position. The secondary locking member is movable to a locked position to secure the terminals in the housing with secondary locking means. The connector is further provided with a camming slide that engages with complementary members of a mating connector for coupling the connectors. The coupling members reduces the forces required for mating. The coupling member further cooperates with the secondary locking member such that it is not movable until the secondary locking member is in the fully locked position. This ensures that connectors cannot be coupled unless the terminals are correctly mounted within their respective cavities and securely locked with primary and secondary locking means. A particularly reliable connection assembly is thus provided. A further advantage is that the camming slide cannot be moved to the wrong position during handling and transport, as it is blocked by the secondary locking member prior to complete assembly of terminals within the connector.

**[0003]** One of the problems of the above described connector system which is also a problem of many other connectors with secondary locking members with camming slides is, that especially by connecting a lot of terminals with corresponding pins one has to push with a relatively great force the camming slide into the connector. Furthermore it is a disadvantage that the second connector is pressed by only a small plane of the camming slide into the coupling position. Therefore there is a high pressure produced at the pushing plane of the camming slide.

**[0004]** It is an object of this invention to provide an improved electrical connector with secondary locking means, whereby especially the function of the coupling member is improved.

**[0005]** The object of this invention have been achieved by providing a connector according to claim 1. Disclosed herein is an electrical connector comprising a housing and electrical terminals mounted therein, a secondary locking member mountable to the housing in a first preassembly position where the terminals can be inserted and locked into their corresponding cavities, the secondary locking member movable to a fully locked

position to securely lock the terminals in their cavities with secondary locking means, the connector further comprising a coupling assist mechanism for assisting coupling with a mating second connector, a coupling assist member and the secondary locking member inter-engaging when the secondary locking member is in a preassembly position to prevent movement of the coupling assist member, wherein the coupling assist member is rotatable connected to the housing of the connector, wherein the coupling assist member shows the functioning of a lever arm, wherein one part of the lever arm comprises a leading element for coupling the connectors by turning the coupling assist member in the coupling position.

**[0006]** The main advantage of this embodiment is that the coupling assist member functions as a lever arm and reduces therefore the force which is necessary to put two connectors together. The fixing of the coupling assist member rotatable around an axis is advantageous because the lever arm is connected to the housing of the connector and the axis provides a precise rotation point which is responsible for a correct function of the coupling assist member.

**[0007]** Further advantageous embodiments of the invention are disclosed in the depending claims.

**[0008]** In a preferred embodiment of the invention the lever arm comprises a pushing element which is usable for a user to push and turn the coupling assist member around the axis to the coupling position. The pushing element has the advantage that the coupling assist member can be rotated by an easy handling.

**[0009]** A preferred embodiment of the invention comprises a leading element in the shape a bow. The bow has the advantage that the second connector can be pushed to the connector using the curvature of the bow, so there is only a little force necessary to push the second connector to the first one. During the coupling the leading element slides along a leading element of the second connector.

**[0010]** A further advantage of the bow is that the bow comprises a border line which is used for leading the second connector. Because of the form of a bow the border line is relatively long so that at the border line only a little pressure is produced by pushing the second connector to the first one.

**[0011]** Another advantageous embodiment of the invention shows a border line which is designed in that way that the distance between the border line and the rotating axis is reducing along the length of the border line. This causes the second connector being pushed by the border line to the first connector by turning the coupling assist member in the coupling position.

**[0012]** In a further advantageous embodiment of the invention the border line shows a shape which is changing its curvature along the length of the bow from a smaller to a greater curvature in the direction to the end of the border line. Changing the curvature gives the advantage that the second connector is slowly pushed to

the first connector at the beginning of the turning of the coupling assist member and at the end of the turning of the coupling assist member before reaching the coupling position the velocity is increased. This has the advantage that at the beginning of the connecting movement the second connector is slowly pushed to the first connector. After aligning the first and the second connector to each other the second connector is pushed with a greater distance per angle unit of the turning of the coupling assist member. Therefore the velocity of the coupling is advantageous fit to the coupling situation.

**[0013]** In a simple embodiment the border line of the bow is a part of a circle and the rotating axis is arranged out of the center of the circle. In this embodiment the placement of the rotating axis fixes the way in which the second connector is pushed to the first connector.

**[0014]** A further improvement is attained by shaping the leading element as a slot of a plate which shows a U-form with a defined curvature. An open ending of the slot is provided for introducing a second leading element which is part of the second connector. Using a slot gives the advantage that the second leading element is precisely guided, whereby the second connector is also held in a described distance from the connector.

**[0015]** A further improvement is attained with a coupling assist member comprising two leading elements which are arranged in a parallel position beside two sides of the connector. In a preferred embodiment the two endings of the leading elements are bent together over a bow element which is arranged over a side wall of the connector. This shows the advantage that a second connector is guided on two sides during the coupling movement. This gives the advantage that the second connector is pushed to the first connector in a predefined straight direction. In this way a jamming of the two connectors is avoided.

**[0016]** In a preferred embodiment of the invention the pushing element is shaped as a rim and arranged on the outer side of the pushing element. Using a rim as a pushing element is a cheap and useful solution for an easy handling.

**[0017]** In a preferred embodiment of the invention the secondary locking means comprise a stopping arm which is arranged at the side wall of the connector. Furthermore the pushing bow comprises in a region which is arranged beside the side wall and oriented to the side wall, a recess which is shaped to get in contact with the stopping arm when the connector is in the preassembly position, for hindering the coupling assist member to rotate in the coupling position. The arrangement of the recess and the corresponding stopping arm at the side wall has the advantage that the coupling assist member is stopped in a central region which lies in the rotation curve and does therefore not produce asymmetric forces in the coupling assist member.

**[0018]** A further improvement of the function of the connector is attained by providing at least one slot in a

side wall of the connector. The slot is placed parallel to the direction of the cavities of the terminals. Furthermore the slot is used for guiding a leading element of the second connector. This embodiment has the advantage that the second connector is more precisely guided.

**[0019]** An embodiment of this invention will now be described by an example with reference to the drawings in which,

Fig. 1 is an isometric view of an embodiment of this invention with a secondary locking and a rotatable coupling member,

Fig. 2 is a cross-sectional view through the connector with the secondary locking mean in a preassembly position and the coupling assist member in a start position,

Fig. 3 shows a schematic view of the side wall of the connector, whereby the secondary locking mean is in the preassembly position,

Fig. 4 is a cross-sectional view through the connector whereby a terminal is not in the correct position and the secondary locking member is in the preassembly position,

Fig. 5 shows a cross-sectional view through the connector with the terminal in the correct position and the secondary locking member in the fully locked position,

Fig. 6 shows a schematic view of the side wall of the connector with the secondary locking member in the fully locked position,

Fig. 7 shows a cross-sectional view through the connector with the secondary locking member in the fully locked position which facilitates the rotating of the coupling assist member,

Fig. 8 shows an isometric view of an embodiment of this invention with the secondary locking member in the fully locked position and the coupling assist member in the start position,

Fig. 9 shows an isometric view of an embodiment of this invention with the secondary locking member in the fully locked position, the coupling assist member in a waiting position, in which a second connector can be introduced in the opening end of the slots of the leading elements,

Fig. 10 shows a schematic drawing of the situation in which the second connector is introduced with a second leading element in the leading element of the coupling assist member and

Fig. 11 shows the situation that the second connector is coupled to the first connector whereby the coupling assisting member stays in the fixed coupling position.

**[0020]** Referring to Fig. 1, an electrical connector 2 comprises an insulative housing 4 having cavities 16 for receiving electrical terminals 1 therein, a secondary locking member 8 and a coupling member 10. The coupling member 10 is connected to the housing 4 by a rotating connection 43 which defines a rotation axis of the coupling member 10. The coupling member 10 shows a U-form whereby the housing 4 is between the two legs of the U-form. One leg of the coupling member 10 has the form of a triangular plate 11, whereby one border of the plate shows a rounded shape and the corner of the plate, which is opposite to the rounded border, is connected to a bow element 9 which connects the two legs. The bow element 9 is arranged at a side wall of the housing and in the preassembly position before the secondary locking member 8. The bow element 9 comprises a rim 15 at the outer side of the bow element 9. On a front side of the bow element 9 there is a pushing plane 44 arranged, which is used for an easy handling of the bow element 9. The rotation axis 43 is positioned in the middle of the housing 4 in an end region of the housing which is arranged in an opposite direction in compare to the secondary locking member 8. At an end wall 30 there are openings of the pin opening 6, in which pins 27 of the second connector 35 have to be introduced by electrically connecting the terminals 1 of the first connector 2 with the pins 27 of the second connector 35.

**[0021]** The plate 11 comprises in the region of the rounded border a slot 55 which is shaped in a predefined curvature, which is in a preferred embodiment a part of a circle. The slot 55 is at one end which is nearby the axis 43 closed and at the other end 51 opened. At the opening end 51 of the slot 55 there is a bridge element 7 arranged which is connecting the two parts of the plate 11 which border to the opening end 51. The plate comprises at the slot 55 a guiding plane 45 which shows a predefined curvature. The guiding plane 45 shows near the closed end of the slot 55 a first protrusion 48 which protrudes in the slot 55.

**[0022]** At an end region of the housing 4 there is a terminal receiving face 14, which is used for introducing terminals 1. The secondary locking member 8 is separated by a space area 33 from the housing 4. The housing 4 comprises an upper wall 40 and a lower wall 41 which are aligned in a parallel plane to each other. In the middle of the upper and the lower wall 40, 41 there is a second slot 42 arranged which is opened in the direction to the secondary locking member 8. The second slots 42 show a given width and a given length and are arranged in a straight direction to the axis 43. The orientation of the slots 42 is in the same direction as the orientation of the cavities 16. The second slots 42 run parallel to each other.

**[0023]** At two side walls 13 of the secondary locking member 8 there are two stopping arms 54 arranged which project above the end wall 30 when the secondary locking member 8 is in a preassembly position as shown in Fig. 1.

**[0024]** The bow element 9, which connects the two plates 11 of the coupling assist member 10, comprises a recess 52 which is positioned at an inner side of the bow element 9, whereby the inner side is directed to the housing 4. In the preassembly position is the corresponding stopping arm 54 positioned in the recess 52 and lies against a stopping plane 53 of the bow element 9, so that the coupling assist member 10 cannot be rotated around the axis 43.

**[0025]** In the middle of the plane 11 there is an elastic stripe 31 arranged.

**[0026]** In a simple embodiment of the invention the coupling assist member could be shaped as one angled lever arm with a first and a second portion, whereby the first portion is nearby a cranking region connected to the axis 43. The second portion is positioned in a predetermined angle to the first portion. The angle is smaller than 90°. The second portion would have the shape of the slot 55 and have the same function as the embodiment which is shown in Fig. 1.

**[0027]** Fig. 2 shows a cross-sectional view of the connector 2, whereby the secondary locking member 8 is in a preassembly position. The housing 4 shows at side walls a second and a third protrusion 56 and 57 which protrude away from the side wall defining a recess between them. The secondary locking member 8 comprises a latching element 58 which is positioned between the first and the second protrusion 56, 57. In Fig. 2 the position of the stopping arm 54 is clearly seen, which is arranged in the recess 52. The latching element 58 is connected to a cantilever arm 59 which is arranged at a side wall 13 of the secondary locking member 8.

**[0028]** Fig. 3 shows a schematic view of the side wall of the housing 4 with the second and the third protrusions 56, 57. The latching element 58 is in this embodiment connected with two parallel cantilever arms 59 which are extended in the direction to the stopping arm 54. The two cantilever arms 59 are fixed to a side wall 13 of the secondary locking member 8. The side wall 39 of the housing 4 shows a third slot 60 which is extended from a border line 36 down to a region lower than the fixing region of the cantilever arms 59 to the side wall 13. The position shown in Fig. 3 is the same as the position shown in Fig. 2, in which the secondary locking member 8 is in a preassembly position.

**[0029]** Fig. 4 shows a cross-sectional view of the housing and the secondary locking member 8.

**[0030]** Fig. 4 shows the housing 4 which intends between a mating face 12 and the terminal receiving face 14, the housing having a terminal receiving section 17 which is surrounded by a first shroud 18 and separated therefrom by the space area 33. The housing terminal section 17 comprises resilient locking lances 24 inte-

grally molded therewith, the locking lances 24 in the shape of cantilever beams and having locking protrusions 26 proximate there free ends that project into terminal receiving cavities 16. Electrical terminals 1 can be inserted into the cavities 16 whereby passage of the terminals passed the locking lance protrusions 26 causes resilient outward biasing of the locking lances until engagement of the protrusions 26 behind shoulders of the terminals 1 to prevent removal of the terminals from their corresponding cavities 16 towards the terminal receiving face 14. Adjacent locking lances 24 of adjacent cavities 16 are separated by a slot 28 to allow outward biasing of the lances 24 during mounting of the electrical terminals within their corresponding cavities 16.

**[0031]** The secondary locking member 8 comprises a mating end wall 30 and extending therefrom a second shroud 32 that fits over the mating end of the housing terminal receiving section 16. Also extending from the mating end wall 30 are short wall portions 34, 36 that are positioned adjacent to outer surfaces 38 of the locking lances 24 when the secondary locking housing 8 is in the fully locked position with respect to the housing 4 as shown in Fig. 5. The wall portions 34, 36 thus prevent outward biasing of the locking lances 24 in order to securely lock the terminals 1 that have been inserted into the cavity 16 and that have engaged with the locking protrusions 26 of the locking lances 24.

**[0032]** In Fig. 4 the secondary locking housing 8 is shown in the preassembly position whereby the wall portions 34, 36 are disengaged from the locking lances outer surfaces 38 such that the locking lances 24 are free to bias outwardly for reception of terminals within the cavity 16. The secondary locking housing is held in the preassembly position by the latching element 58 shown in Fig. 3. The secondary locking member 8 in the preassembly position is however being depressable under application of a certain force for snapping into the fully locked position as shown in Fig. 5 where the latching element 58 securely hold the secondary locking member 8 in this fully locked position.

**[0033]** Fig. 5 shows the secondary locking member 8 in the fully locked position. In the fully locked position the latching element 58 is put over the second protrusion 57 and is hold by the second protrusion 57 in the fully locked position.

**[0034]** Fig. 6 shows the position of the stopping arm 54 when the secondary locking member 8 is in the fully locked position. The stopping arm 54 is in a position nearby the mating face 12 and gives the way free for rotating the coupling assist member 10.

**[0035]** Fig. 7 shows a cross-sectional view of the connector 2 with the secondary locking member 8 in the fully locked position. It can clearly be seen that the stopping arm 54 is drawn away from the recess 52 and the coupling assist member 10 can now be rotated around the rotation axis without being hindered by the stopping arm 54. In Fig. 7 also the position of the latching element 58 in a region above the third protrusion 57 is seen.

**[0036]** Fig. 8 shows an isometric view of the connector 2 in the situation that the secondary locking member 8 is in the fully locked position. In this situation the two stopping arms 54 are drawn back to the end wall 30 and the coupling assist member 10 is free to rotate around the rotation axis 43. In Fig. 8 the opening end 51 of the slot 55 is clearly shown, whereby the opening end 51 is overbridged by the bridge element 7. In Fig. 8 also a support plane 20 of the plate 11 is shown, which is arranged at a given distance to the bridge element 7. The distance between the two ending regions of the opening 51 is determined in this way that a second leading element 34 of the second connector 35 can be introduced in the slot 55 and guided by the slot 55.

**[0037]** Fig. 9 shows the first and the second connector 2, 35, whereby the secondary locking member 8 is in a fully locked position and the coupling assist member 10 is in a introducing position, in which the openings 51 are positioned over the second slots 42. In this position the second connector 35 can be introduced with a leading element 34 into the second slots 42 and the openings 51. The housing 29 of the second connector is shaped in this way that the housing 29 fits in the space area 33 which surrounds the secondary locking member 8. The second leading element 34 consists of a second pin 3 and a circular plate 5. The diameter of the second pin 3 is a little bit smaller than the diameter of the opening ending 51 and the slot 55. Furthermore the plate 5 shows a diameter which is greater than the width of the slot 55. The thickness of the plate 5 is smaller than the distance between the support plane 20 and the bridge element 7. The plate 5 can be put between the support plane 20 and the bridge element 7, and the second pin 3 can be inserted in the slot 55. Furthermore the diameter of the plate 5 is in this dimension that the plate 5 lays upon the support plane 20 of the coupling assist member 10 by turning the coupling assist member 10 in the coupling position.

**[0038]** As shown in Fig. 9 the arrangement of the pushing plane 44 and the opening 51 is designed in this way that the holding area is oriented in a right angle corresponding to the connector 2 when the opening 51 is in the connecting position as shown in Fig. 9. In the lower part of Fig. 9 there is shown the front of the second connector 35 with the housing 29 which is a circular wall and the pins 27 which has to be introduced in the pin opening 6 to get in contact with the terminals 1.

**[0039]** In Fig. 9 one can clearly see that the distance between the guiding plane 45 and the axis 43 is greater in the region of the opening 51 and is getting smaller along the guiding plane 45 in the direction to the holding area 49. This leads to the effect that the second leading element 34 is pushed in the direction of the axis 43 by rotating the coupling assist member 10 into the coupling position.

**[0040]** Furthermore Fig. 9 shows clearly that the distance D1 between the pushing plane 44 and the axis 43 is greater than the distance between the axis 43 and the

guiding plane 45 in the region of the opening 41. This shows that one has a lever effect and needs less force to pull the second connector 35 in the coupling position with the first connector 2.

[0041] Fig. 10 shows the situation that the second connector 35 is introduced with the second leading element 34 in the opening 51. In this situation the coupling assist member 10 can be turned around the axis 43 whereby the coupling assist member 10 is rotated in the right direction which is shown with an arrow. During the rotation of the coupling assist member 10 into the coupling position the second connector is held by the second slot 42 in the X-direction and is pressed by the guiding plane 45 into the direction of the axis 43. In this way the second connector 35 is pulled in the direction of the first connector 2. The pulling of the second connector into the direction of the first connector 2 is attained because the distance between the guiding plane 45 and the axis 43 is diminishing from the opening 51 to an holding area 49 which is in the area of the closed end of the slot 55.

[0042] In a preferred embodiment the bow element 9 between the first and the second leg comprises a rim 15 which shows a holding area 49 which is oriented perpendicular to the side wall of the connector 2.

[0043] Fig. 11 shows the situation that the first and the second connector 2, 35 are totally coupled together and the second leading element 34 is within the holding area 49. Before reaching the holding area 49 the second leading element 34 has to slip over a first protrusion 48 which is extended into the slot 55.

[0044] The situation which is shown in the Figs. 10 and 11 is only shown for the upper side of the connectors 2, 35 but is also the same on the under side of the first and second connector 2, 35.

[0045] The width of the slot 55 shows such a dimension that the pin 3 can be moved and the plate 5 has a greater diameter, so that the plate 5 extends over the two bordering parts of the plate 11 to the supporting plane 20.

- 1 Terminal
- 2 Connector
- 3 Second pin
- 4 Housing
- 5 Circular plate
- 6 Pin opening
- 7 Bridge element
- 8 Secondary locking member
- 9 Bow element
- 10 Coupling member
- 11 Plate
- 12 Mating face
- 13 Side wall
- 14 Terminal receiving face
- 15 Rim
- 16 Terminal receiving cavity
- 17 Terminal receiving section

- 18 First shroud
- 20 Support plane
- 24 Resilient locking lance
- 26 Locking protrusion
- 5 27 Pin
- 28 Housing of second connector
- 29 Shroud
- 30 End wall
- 31 Elastic stripe
- 10 32 Second shroud
- 33 Space area
- 34 Second leading element
- 35 Second connector
- 36 Border line
- 15 37
- 38 Outer surface
- 39 Side wall of the housing
- 40 Upper wall
- 41 Lower wall
- 20 42 Second slot
- 43 Rotation connection
- 44 Pushing plane
- 45 Guiding plane
- 48 First protrusion
- 25 49 Holding area
- 51 Opening end
- 52 Recess
- 53 Stopping plane
- 54 Stopping arm
- 30 55 Slot
- 56 Second protrusion
- 57 Third protrusion
- 58 Latching element
- 59 Cantilever arm
- 35 60 Third slot

## Claims

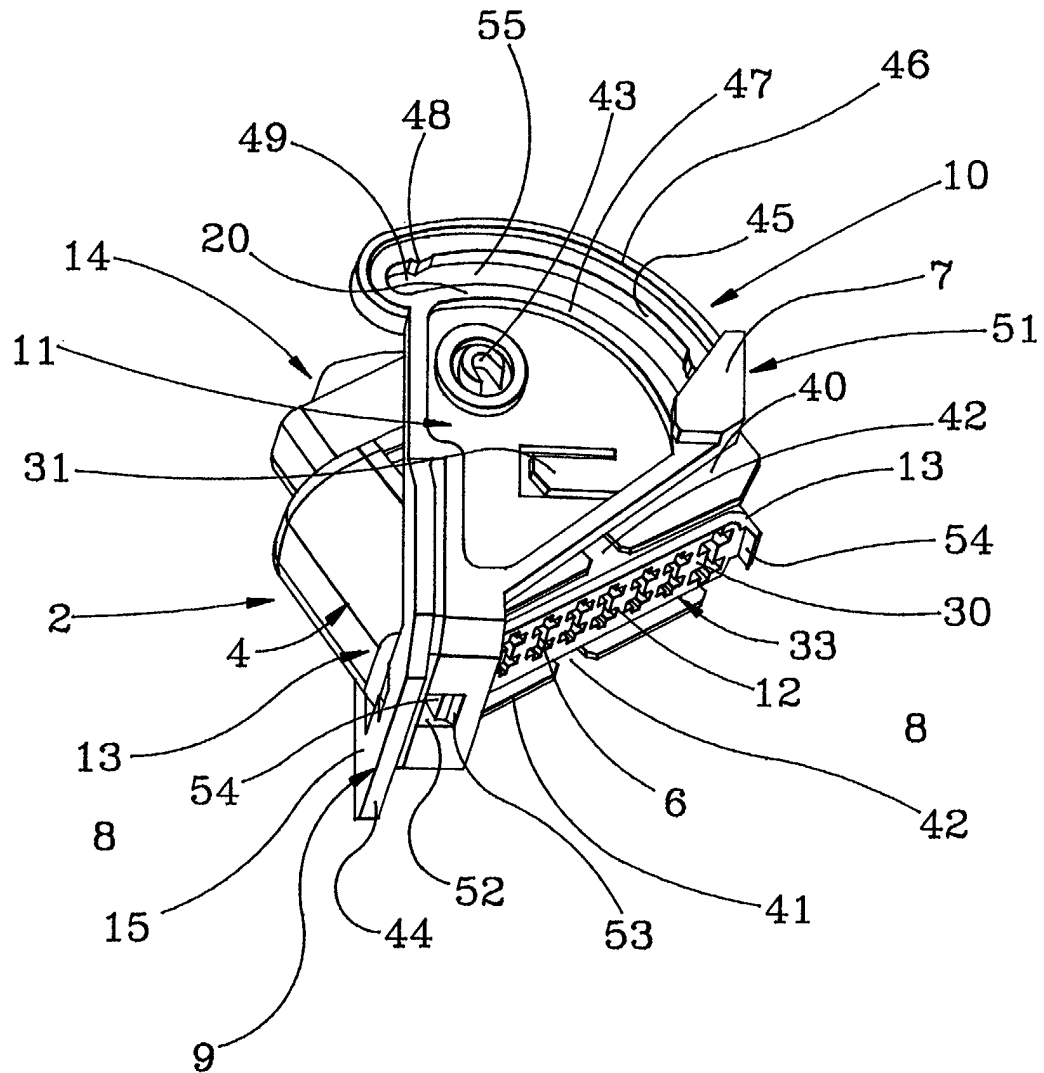
- 40 1. An electrical connector (2) comprising a housing (4) and electrical terminals (1) mounted therein, a secondary locking member (8) mountable to the housing (4) in a first preassembly position where the terminals (1) can be inserted and locked into corresponding cavities (16), the secondary locking member (8) movable to a locked position to securely lock the terminals (1) in the cavities (16) with the secondary locking means (34, 36), the connector further comprising a coupling assist member (10) for assisting coupling with a mating second connector (35),
- 45 the coupling assist member (10) and the secondary locking member (8) interengaging when the secondary locking member is in the preassembly position to prevent movement of the coupling assist member in a coupling position,
- 50 **characterised in,**
- 55 **that the coupling assist member (10) is rotatable**

around an axis (43) connected to the housing (4),  
**that** the coupling assist member (10) comprises a  
 leading element (11, 45) for pulling the second con-  
 nector (35) in the direction of the connector by turn-  
 ing the coupling assist member in the coupling po-  
 sition.

2. Connector according to claim 1, **characterised in,**  
**that** the coupling assist member (10) shows the  
 function of a lever arm,  
**that** the lever arm comprises a pushing element  
 (15), which is usable for a user to push and turn the  
 coupling assist member around the axis to the cou-  
 pling position.
3. Connector according claim 1 or 2, **characterised**  
**in that** the leading element comprises a guiding  
 plane (45) for leading the second connector,  
 that the guiding plane (45) is shaped **in that** way  
 corresponding to the axis (43), that the guiding  
 plane (45) changes its distance to the axis (43) dur-  
 ing turning the assist coupling member (10) to the  
 coupling position.
4. Connector according to claim 3, **characterised in**  
**that** the guiding plane shows a curvature, which is  
 changing along the length of the guiding plane from  
 a smaller to a greater curvature.
5. Connector according to the claim 3, **characterised**  
**in that** the curvature of the guiding plane is a part  
 of a circle and the axis is arranged out of the center  
 of the circle.
6. Connector according to one of the claims 1 to 5,  
**characterised in that** the coupling assist member  
 (10) comprises a plate (11), that the plate (11) is ro-  
 tatable fixed, that the plate comprises a slot (55)  
 with a border line (45) with a predetermined curva-  
 ture,  
 whereby an open end (51) of the slot (55) is used  
 for introducing a second leading element (3,5),  
 which is part of the second connector (35).
7. Connector according to one of the claims 1 to 6,  
**characterised in that** the coupling assist member  
 (10) comprises two leading elements (11), that the  
 two leading elements (11) are arranged in a parallel  
 position beside two sides of the connector (2),  
 that the two leading elements (11) are bent together  
 over a bow element (9), which is arranged over a  
 side wall of the connector.
8. Connector according to claim 7, **characterised in**  
**that** the assist coupling member (10) comprises a  
 pushing plane (44), which is arranged on the bow  
 element (9), whereby the pushing plane is used  
 from a user for rotating the leading elements in a

coupling position.

9. Connector according to claim 8, **characterised in**  
**that** the bow element (9) comprises in a inner side,  
 which is directed to the connector a recess (52),  
 which is shaped to get in contact with a stopping  
 arm (54) of the connector, when the connector is in  
 the preassembly position, for hindering the coupling  
 assist member (10) to rotate in the coupling posi-  
 tion.
10. Connector according to one of the claims 1 to 9,  
**characterised in, that** the housing (4) comprises a  
 third leading element (42), which is used for prede-  
 termining a direction of the movement of the second  
 connector by coupling with the first one.
11. Connector according to claim 10, **characterised in**  
**that** the housing (4) of the connector (2) comprises  
 a wall (40,41), which is separated by a space area  
 (33) from the connecting element, which comprises  
 the terminals,  
 that at least one of the walls (40,41) comprise a sec-  
 ond slot (42), which is oriented parallel to the orien-  
 tation of the cavities (16) of the terminals,  
 that the second slot (42) is arranged for leading the  
 second connector (35) in a given direction using a  
 second leading element (3,5), which is part of the  
 second connector (35), by coupling the second con-  
 nector with the connector.
12. Connector according to one of the claims 1 to 11,  
**characterised in that** the connector comprises a  
 stopping arm (54) which is in contact with the sec-  
 ond locking member (8) whereby the position of the  
 stopping arm (54) depends on the position of the  
 second locking member (8), that the stopping arm  
 (54) is arranged in the rotating area of the coupling  
 assist member when the second locking member  
 (8) is in preassembly position, that the stopping arm  
 (54) is pulled out of the rotating area of the coupling  
 assistant member (10) when the secondary locking  
 member is put in the fully locked position.



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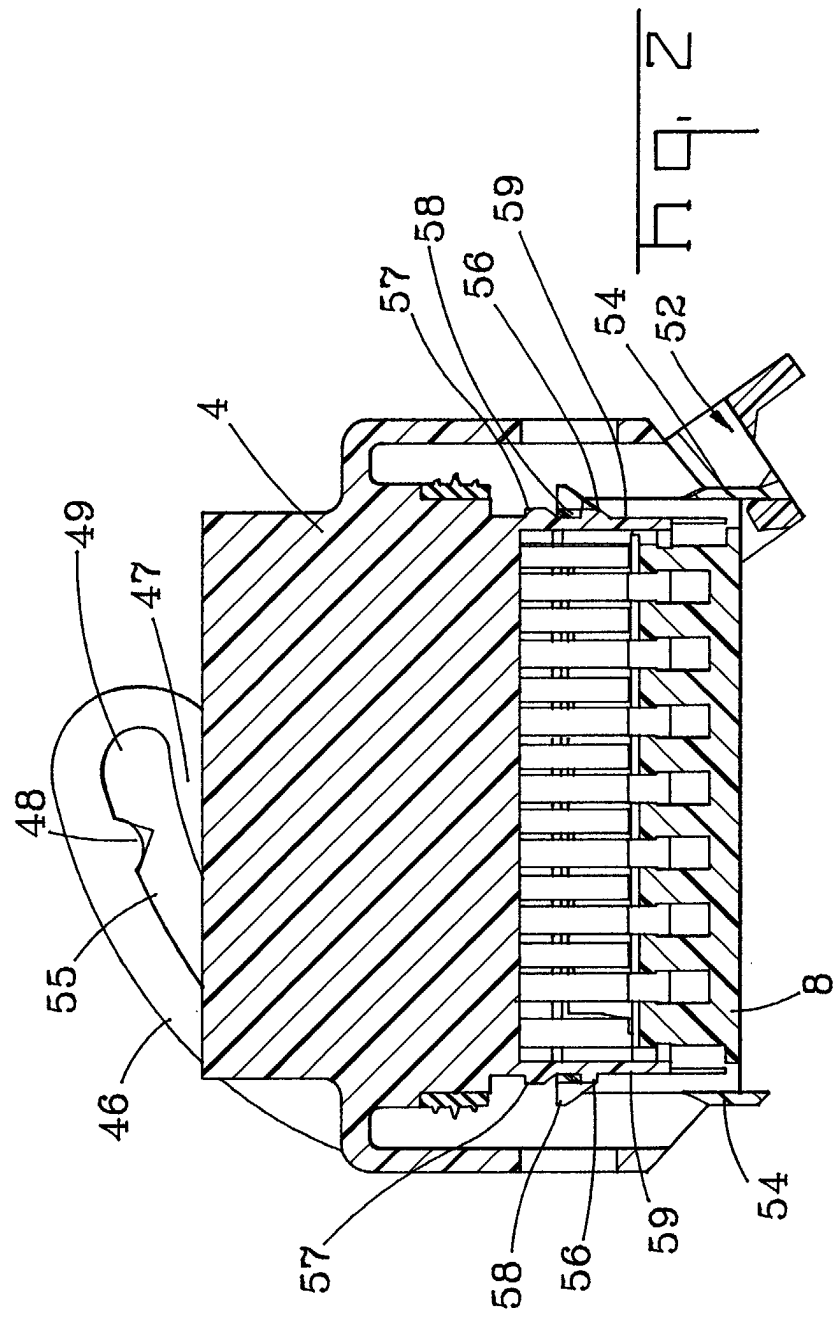
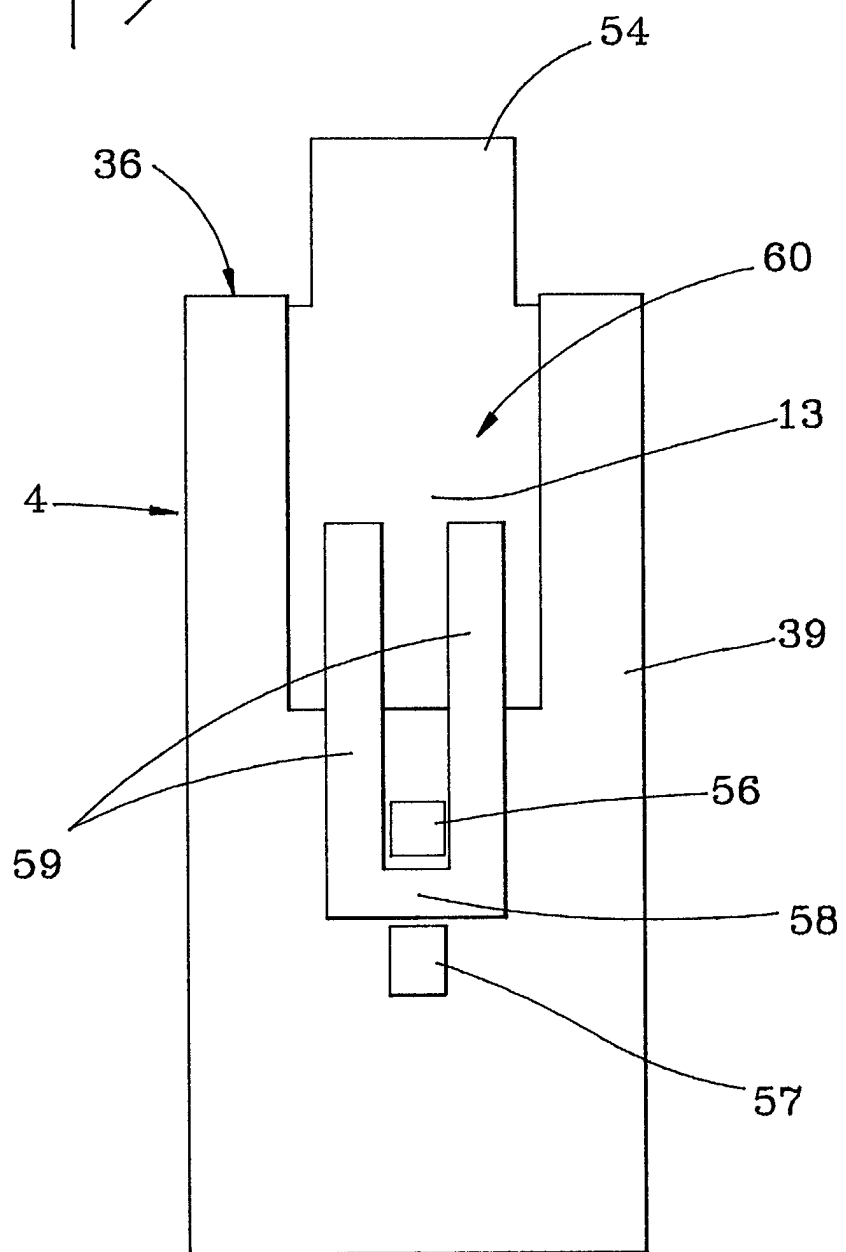
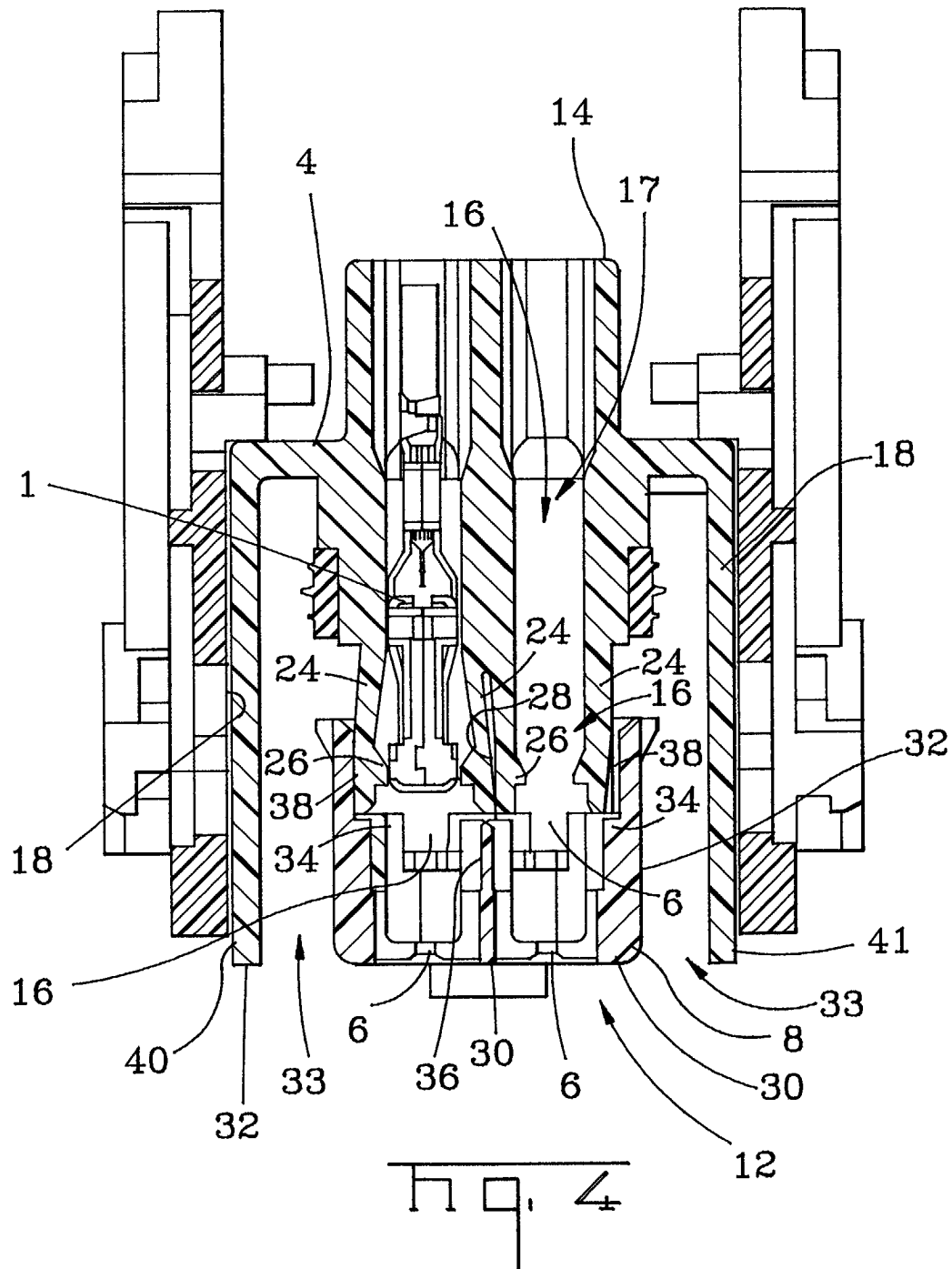


Fig. 3





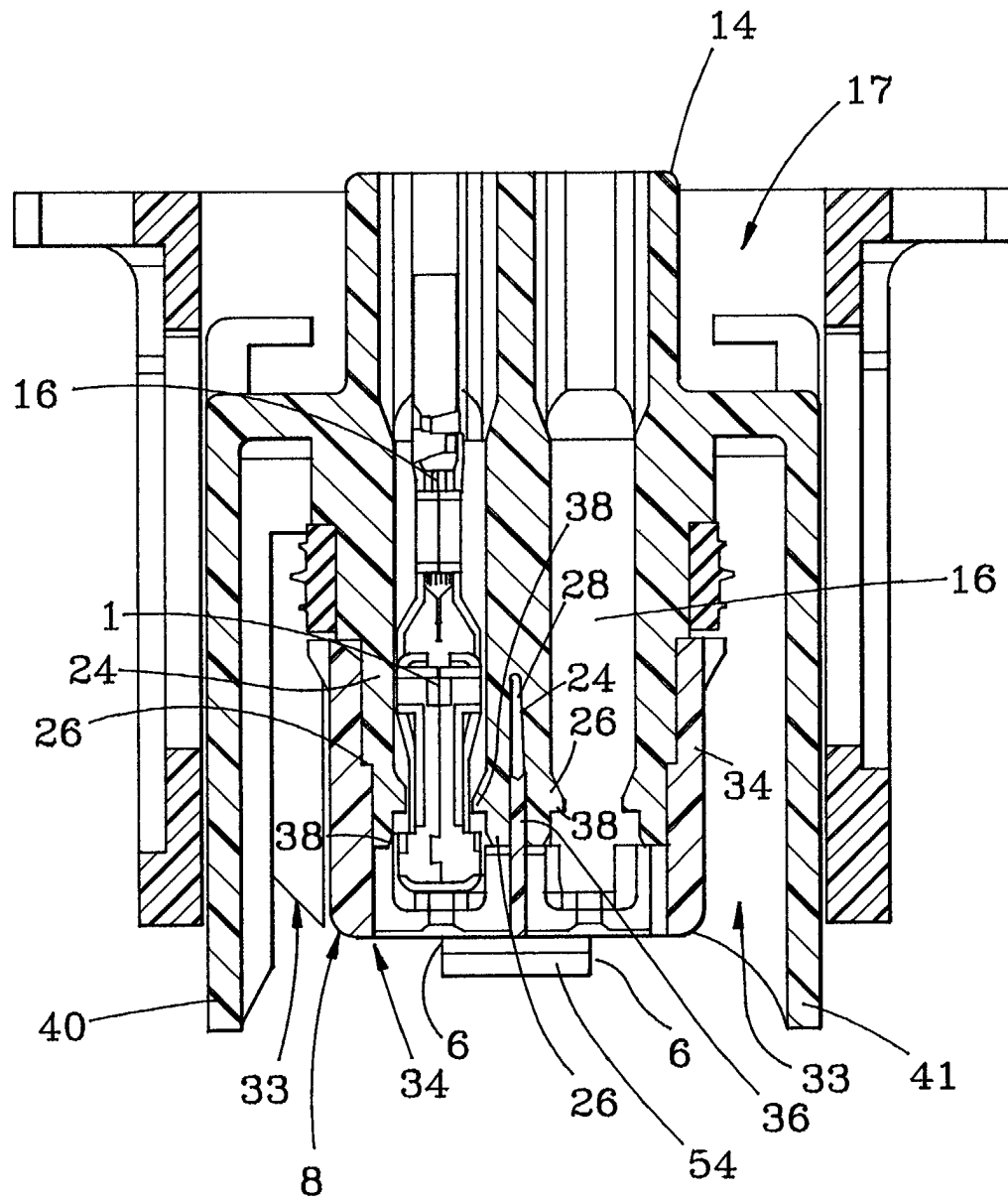
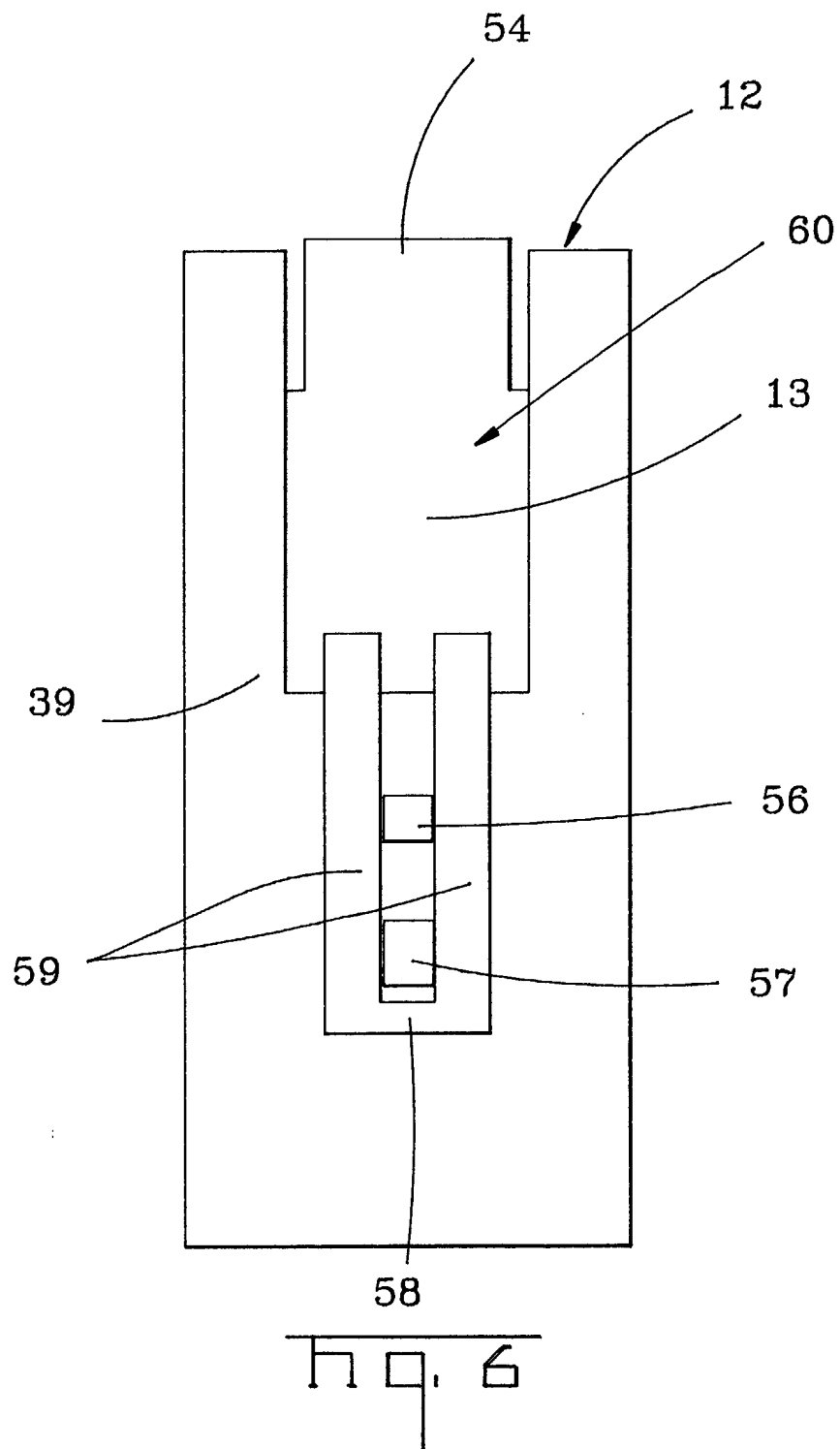


Fig. 5



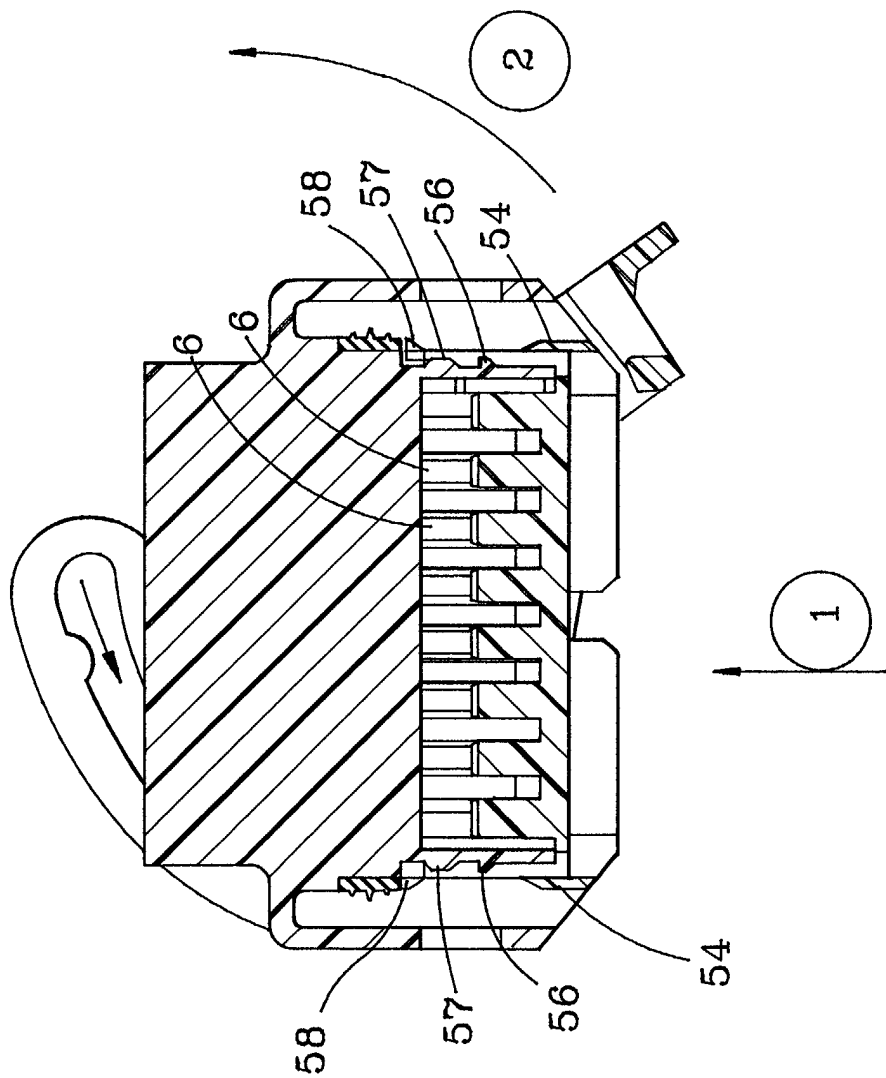
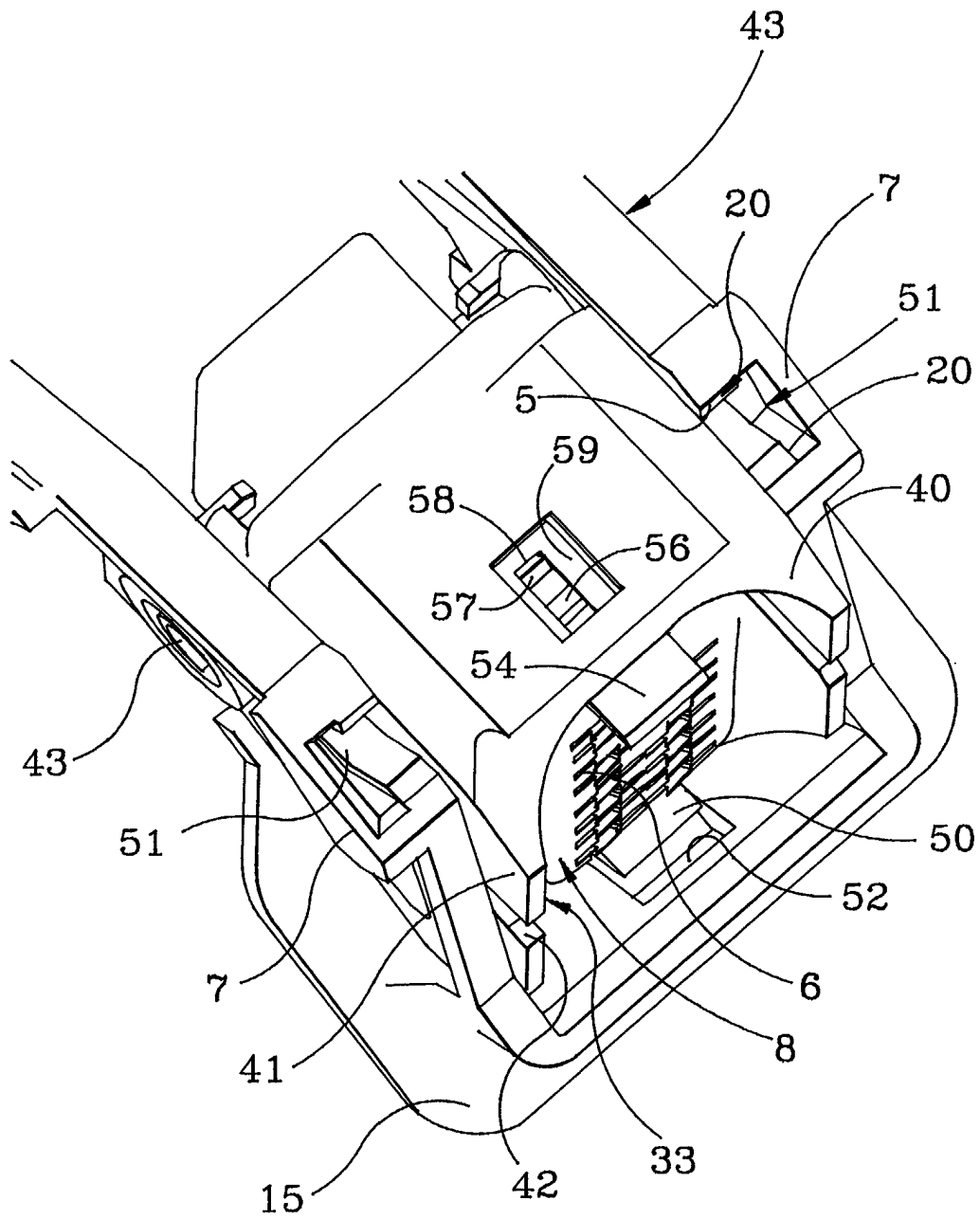


Fig. 7



Hq. 8

