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(54) Title: TERMINAL BLOCK FOR PLUG OR SOCKET COMPRISING WIRE SPRING CONTACTS ACTIVATED BY LEVERS

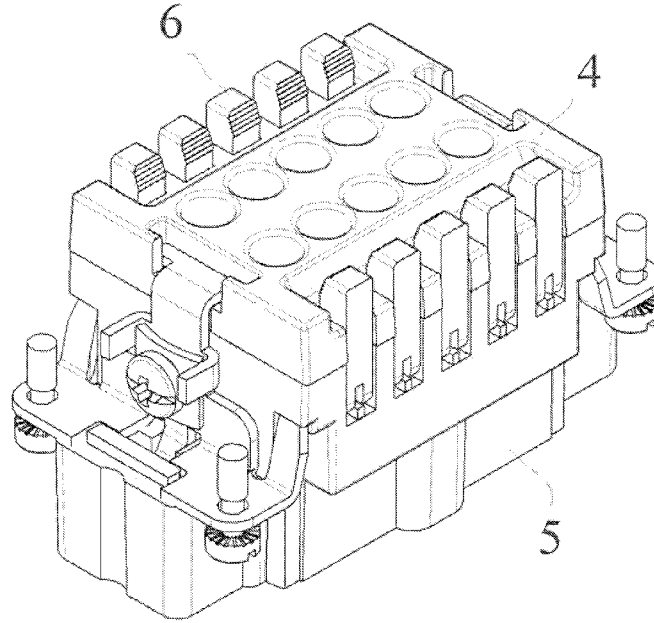


Figure - 1

(57) Abstract: The invention defines a connector suitable for being used in industrial applications. It comprises on one end a terminal block receiving stripped wires and connecting each of them by a lever-actuated spring contact to a respective pin or receptacle contact. Those pin/receptacle contacts are part of a plug or socket type connector forming the other end of the connector. The connector further comprises a housing made of a base and a cover. The base comprises the pin/socket contacts and receives the spring contacts. The levers are hold in place between the base and the cover of the connector.

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DESCRIPTION**TERMINAL BLOCK FOR PLUG OR SOCKET COMPRISING WIRE SPRING
CONTACTS ACTIVATED BY LEVERS**

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TECHNICAL FIELD

Invention is especially related to the connect system in multi-contact plug and sockets that contain a lever that applies a pressure on the spring on the contact, used for setting up the spring, and has lever bumps on it or a contact-carrying body that has contact carrying body indents and touches the lever or contains contact body carrying bumps suitable to the contact carrying indents on the lower side.

PREVIOUS TECHNIQUE

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Today, multi-contact plugs and sockets are used for power contacts and signals. We know that, in the existing technique, the cable connection is established with the spring installed in the contact in multi-contact plugs and sockets. However, the movement is given to the intermediary pieces, used to set up the spring, by a screwdriver. Sometimes an intermediary is used but sometimes the spring is directly pushed by a screwdriver. This requires a both screwdriver and extra labor. In spring contact products, the contact spring is set with a screwdriver and therefore a force to overcome the force of spring is required. At the same time, the other hand is hanging at the cable contact housing. In this kind of systems, ergonomic usage is not possible because both hands are needed.

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Since multi-contact plugs and sockets in the existing technique are structurally small, they cannot be stabilized and there might be inconveniences in cable connections. A screwdriver is needed in products that use an intermediary piece.

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Another multi-contact plug and socket type in the existing technique requires that the contact cable housing is not diagonally drilled but carved on the contact with machining. This increases costs. However, diagonal drilling is not performed on contact engravings of

existing products. Therefore, as the cable contact housing is completely emptied in machining, the product loses contact stability and it occasionally breaks down.

As a result, the need for a new multi-contact plug and socket for the solution of the
5 aforementioned problems and the need thereof and the inadequacy of the existing problems call for a development in the related technical field.

AIM OF THE INVENTION

10 Invention solves all the aforementioned problems. The invention is simply the lever being fitted between the contact carrying body and contact carrying body cover.

The most important aim of the invention is that it does not require a screwdriver in the connection system. Thus, both the labor force is reduced and the contact speed is increased.

15

Another aim of the invention is that it is ergonomic in the cable connection and it enables performance with a single hand.

Another aim of the invention is, due to the position of the spring on the contact, when the
20 lever is extended to 90 degrees, it can stand balanced. Thus both hands of the user remains free and it is easier to install cables.

With these purposes in mind, the invention removes the impracticalities of the existing structures and is a system of multi-contact plug and socket used in the connections of
25 circuits of energy, signaling in industrial areas and contains a lever that applies a pressure on the spring on the contact, used for setting up the spring, and has lever bumps on it or a contact-carrying body that has contact carrying body indents and touches the lever or contains contact body carrying bumps suitable to the contact carrying indents on the lower side. The connection method is based on fitting the lever between contact carrying body and
30 contact carrying body cover. This fitting provides the lever bumps on the lever to remain between the contact carrying body indents on the contact carrying body and contact carrying body cover bumps on the contact carrying body. The lever in the invention is

applying pressure on the spring on horizontal level and its limit of movement is 90 degrees. Another quality of the lever is that when it is extended, it remains balanced and lets the user use his both hands freely.

- 5 The product, as is, will become a preferred product in the sector with its simple structure. Therefore a commercial success will be obtained.

The structural and characteristic specifications of the invention and all its advantages will be understood more clearly with the figures below and the reference to these figures and
10 detailed explanations thereof. Therefore the evaluation must be made, considering the detailed explanation.

FIGURES TO HELP THE UNDERSTANDING OF THE INVENTION

- 15 **Figure-1** : Shows the invented multi-contact plug or socket system installed without the spring set.

Figure -2 : Shows the invented multi-contact plug or socket system installed with the spring set.

- Figure -3** : Shows a cut view of the invented multi-contact plug or socket system installed
20 without the spring set.

Figure -4 : Shows the invented multi-contact plug or socket system installed with the spring set and cable attached.

Figure -5 : Shows the invented multi-contact plug or socket system installed without the spring set and cable attached.

- 25 **Figure -6** : Shows the lever of the invented multi-contact plug or socket system.

Figure -7 : Shows the contact of the invented multi-contact plug or socket system.

Figure -8 : Shows the functioning of the lever, contact and spring of the invented multi-contact plug or socket system.

- Figure -9** : Shows a cut view of the contact spring of the invented multi-contact plug or
30 socket system.

Figure -10 : Shows the contact carrying body and contact carrying body cover of the invented multi-contact plug or socket system.

REFERENCE NUMBERS

- 1- Spring
- 2- Contact
- 5 3- Contact Cable Housing
- 4- Contact Carrying Body Cover
- 5- Contact Carrying Body
- 6- Lever
- 7- Cable
- 10 8- On-Spring Cable Tightening Housing
- 9- Lever Bump
- 10- Contact Carrying Body Indent
- 11- Contact Carrying Body Cover Bump
- 12- Contact Carrying Body Cover Locking Bumps
- 15 13- Contact Carrying Body Contact Housing
- 14- Stabilizing Area

The invention will be understood better if the explanations are followed regarding the reference numbers and figures mentioned above.

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DETAILED EXPLANATION OF THE INVENTION

Here, the invention contains the elements spring (1), contact (2), contact carrying body cover (4), contact carrying body (5) and lever (6).

25

In the method applied in the multi plug and socket system of the invention, the lever (6) is tightened between contact carrying body (5) and contact carrying body cover (4). While performing the tightening, the lever bump (9) on the lever (6) is left between the contact carrying body indents (10) on the contact carrying body (5) and contact carrying body cover bumps (11) on the contact carrying body cover (4).

30

If the invention is explained more clearly and systematically, as it is seen on Figure-7, spring (1) is installed on the contact (2) as shown in Figure-8. Contacts (2) with springs (1) installed are mounted on the contact housing (13) on the contact carrying body (5).

5 For the lever (6) mounting shown in Figure-6, the lever bumps (9) on the lever (6) are mounted on the contact body carrying indents (10) on the contact carrying body (5). The contact carrying body cover (4) must be attached after the lever (6) is contacted to the contact carrying body (5). Thus the lever (6) will be supported by the contact carrying body cover bumps (11) on the contact carrying body cover (4) and contact carrying body indents
10 (10) on the contact carrying body (5). Lastly, the contact carrying body (5) and contact carrying body cover (4) are connected thanks to the locking bumps (12) on contact carrying body (5), shown in Figure-10.

To make the system function, a lever (6) is used to set the spring (1) on the contact (2). On
15 figures 1 and 2, the position of the lever (6) is shown with the spring set and not. When the lever (6) is pushed down with a finger, the spring (1) is set as seen in figures 3, 8 and 9. On the balance point, that is to say, when the lever (6) is leaning towards the contact carrying body (5), the spring (1) is set and the cable (7) is ready for installment. As seen in Figure-2, all the levers (6) are set one by one with a finger. In this position, the on-spring cable tightening
20 housing (8) is brought to the suitable position for attaching the cable (7) as shown on Figure-4. After the cable (7) is attached, the lever (6) is pushed upwards with a finger as shown on Figure-5, tightening the lever, and then the lever is closed. With the force of the spring (1), the cable (7) is fixed between contact (2) and the spring (1).

25 If the contact (2) is structured, the contact cable housing (3) is drilled to allow a cable (7) to enter so the contact (2) does not lose stability.

In the invention, as the position of the spring (1) on the contact (2) requires, the lever remains balanced and set when it is extended to 90 degrees. The area that helps it remain
30 balanced is the balancing area (14) on the lever (6). This balancing area (14) enables the user to free both hands and facilitate installment of cables (7).

CLAIMS

1. The invention is a connection system to be used in the energy, signal etc. circuit connections in industrial areas and its specifications are;
5
 - That it contains a lever (6) that has lever bumps and used to set the spring (1) by pressuring the spring (1) on the contact,
 - That it contains a contact carrying body (5) that touches the aforementioned lever (6) that has contact carrying body indents (10),
 - 10• That it contains a contact carrying body cover (4) that has the appropriate contact carrying body cover bumps (11) to the aforementioned contact carrying body indents (10) on the lower side.
2. The invention is a connection system to be used in the energy, signal etc. circuit connections in industrial areas and its specification is that it is characterized with the
15lever (6) being fixed between contact carrying body (5) and contact carrying body cover (4).
3. It is conforms to the claim 2 and its specification is that the on-lever bumps (9) on the lever (6) are between the contact carrying body indents (10) on the aforementioned
20contact carrying body and contact carrying body cover bumps (11) on the contact carrying body covers.
4. The lever (6) conforms to claim 1 and 2, and its specification is that this lever (6) applies a pressure on the spring (1) on the horizontal axis.
5. The lever (6) conforms to claim 1 and 2, and its specification is that this lever (6) is
25confined to a movement of 90 degrees.
6. The lever (6) conforms to claim 1 and 2, and its specification is that it is characterized by containing a stabilization area (14) on the lever, intended for enabling the user to have his both hands free by balancing the aforementioned lever (6) when it is
30opened.

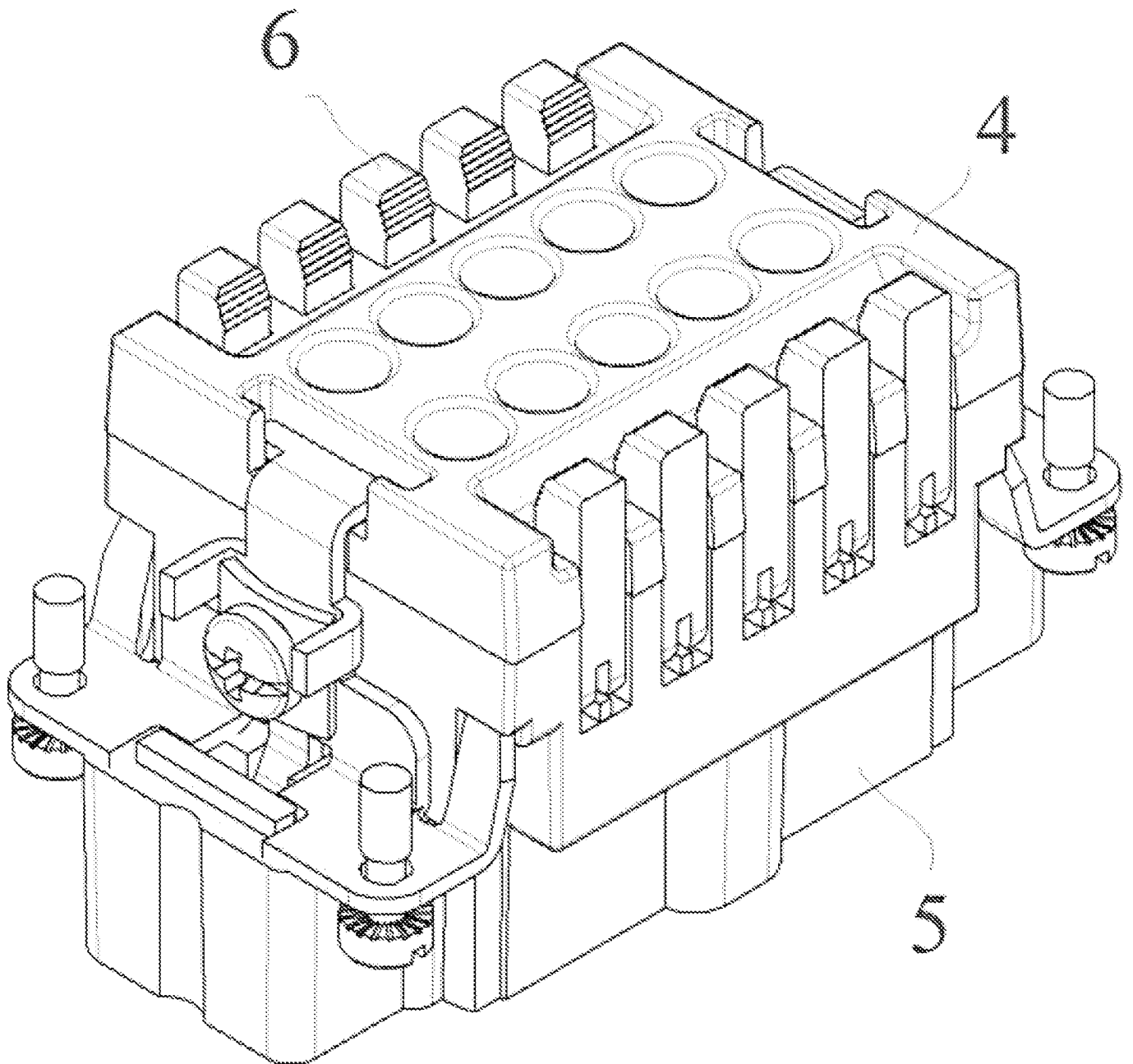


Figure – 1

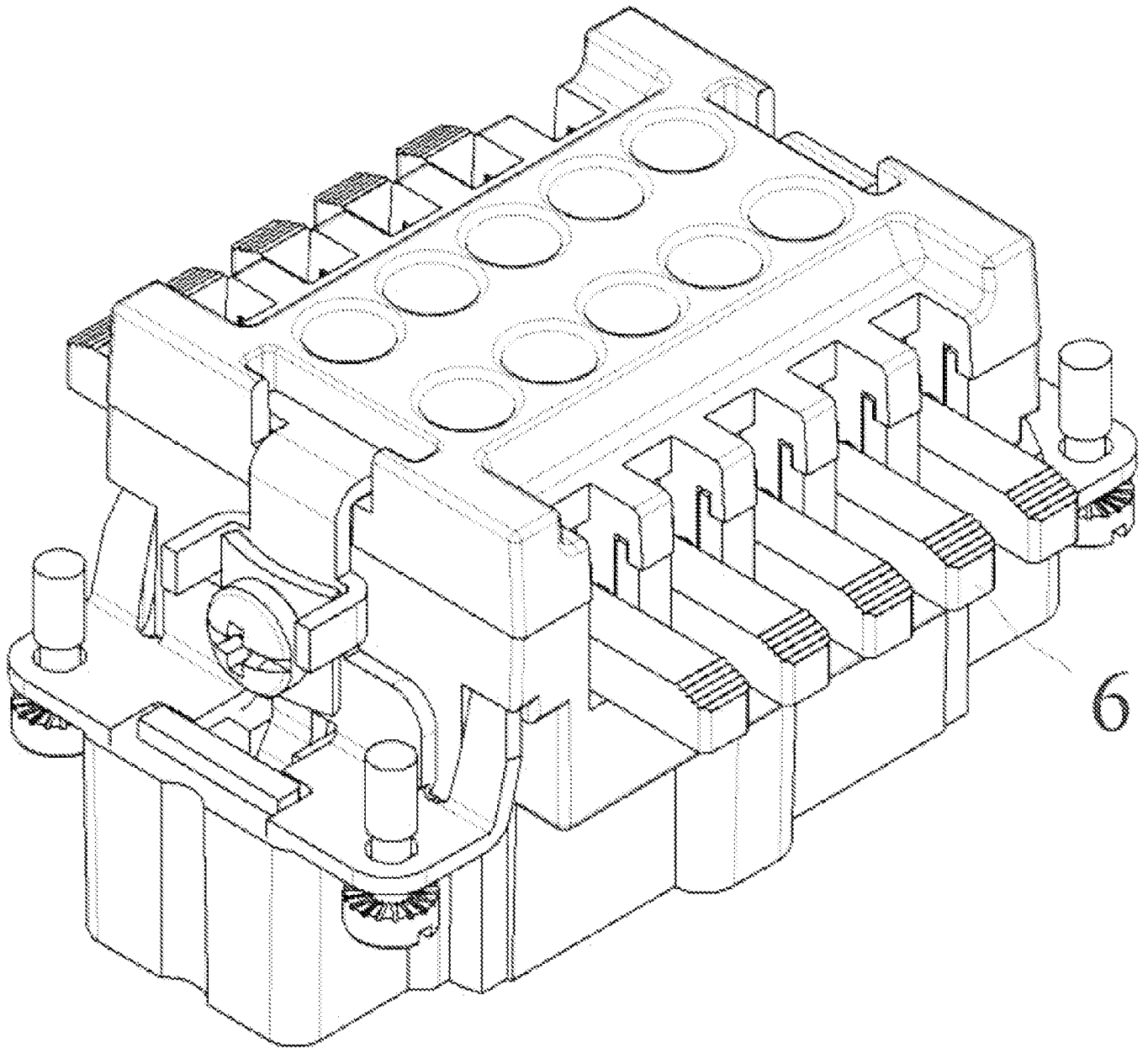


Figure – 2

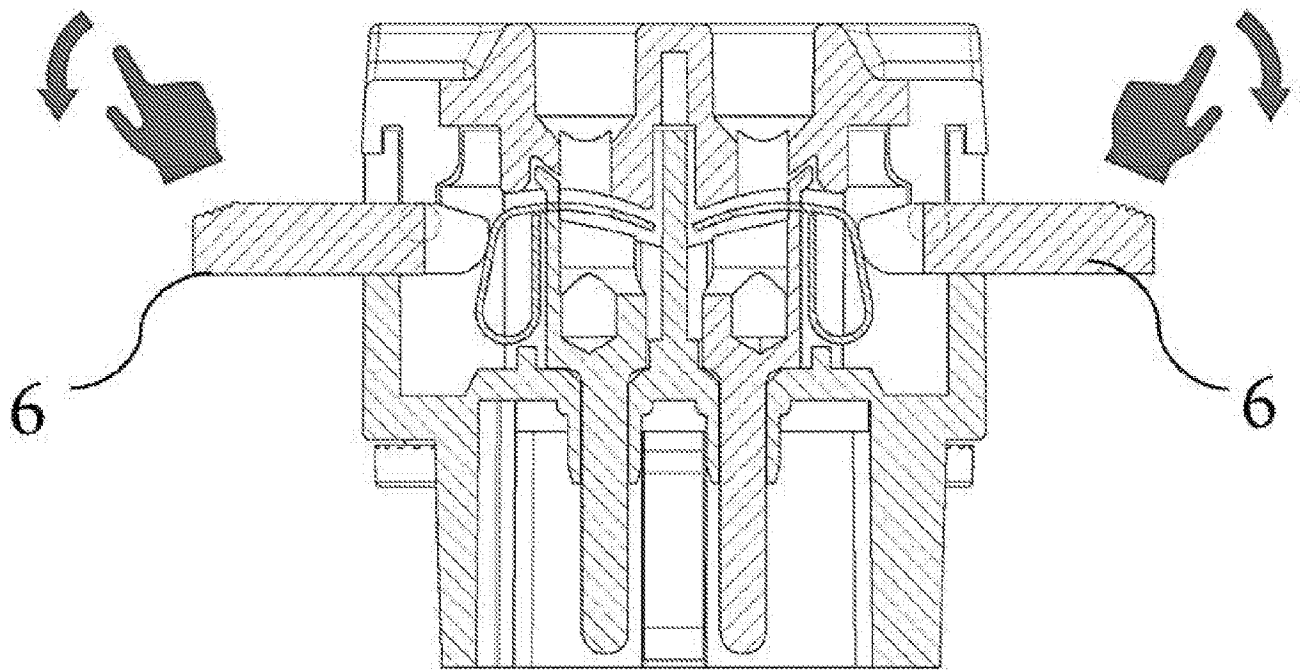


Figure - 3

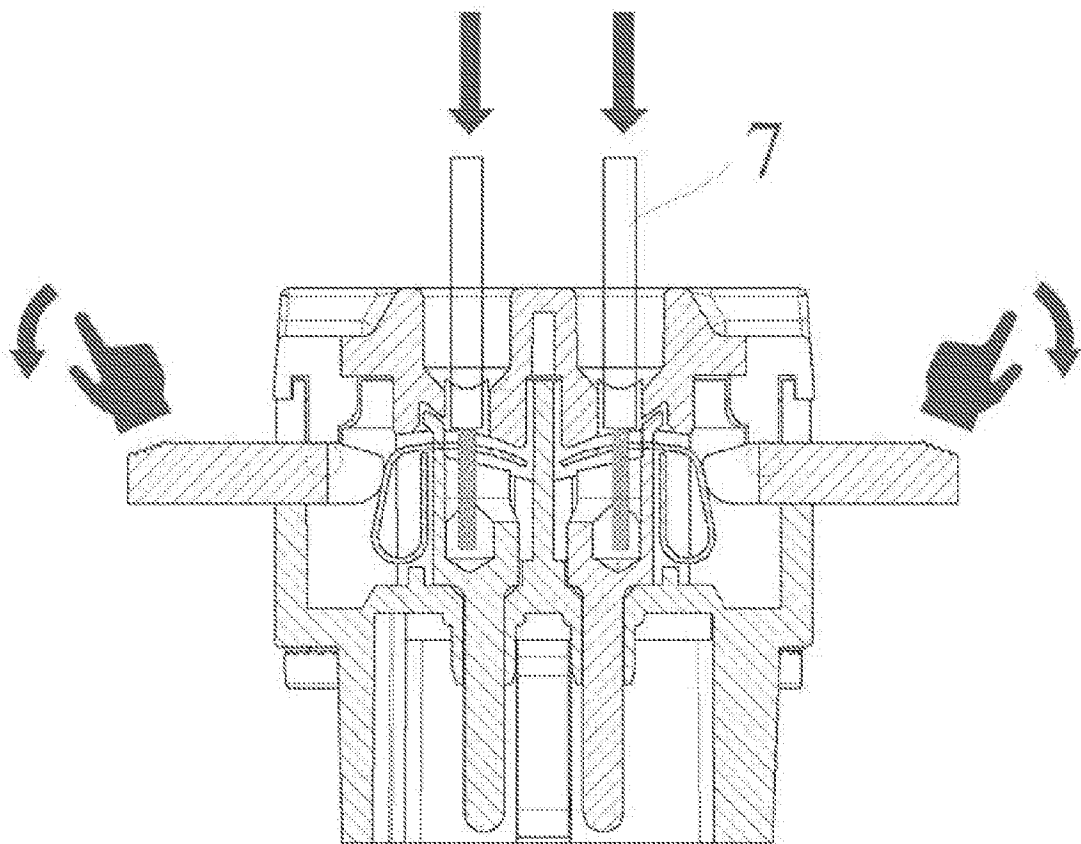


Figure - 4

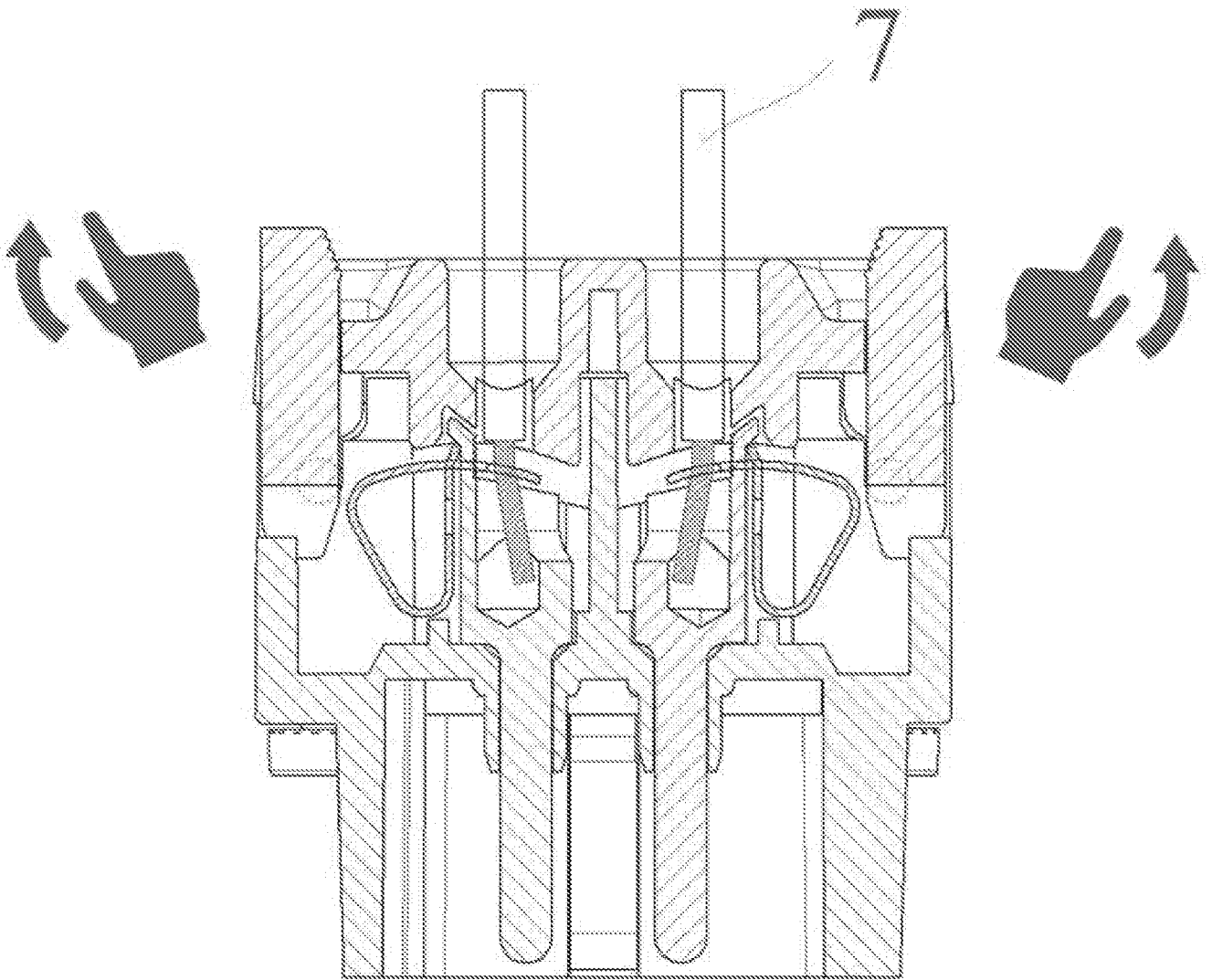


Figure - 5

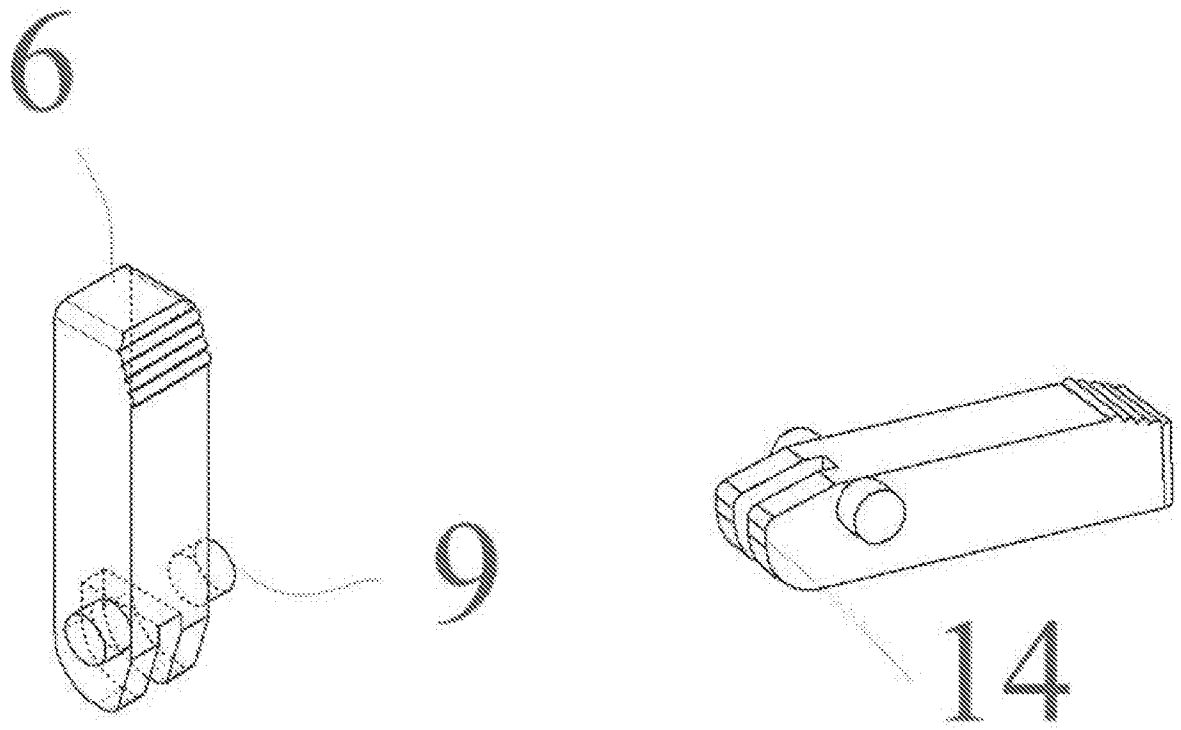


Figure – 6

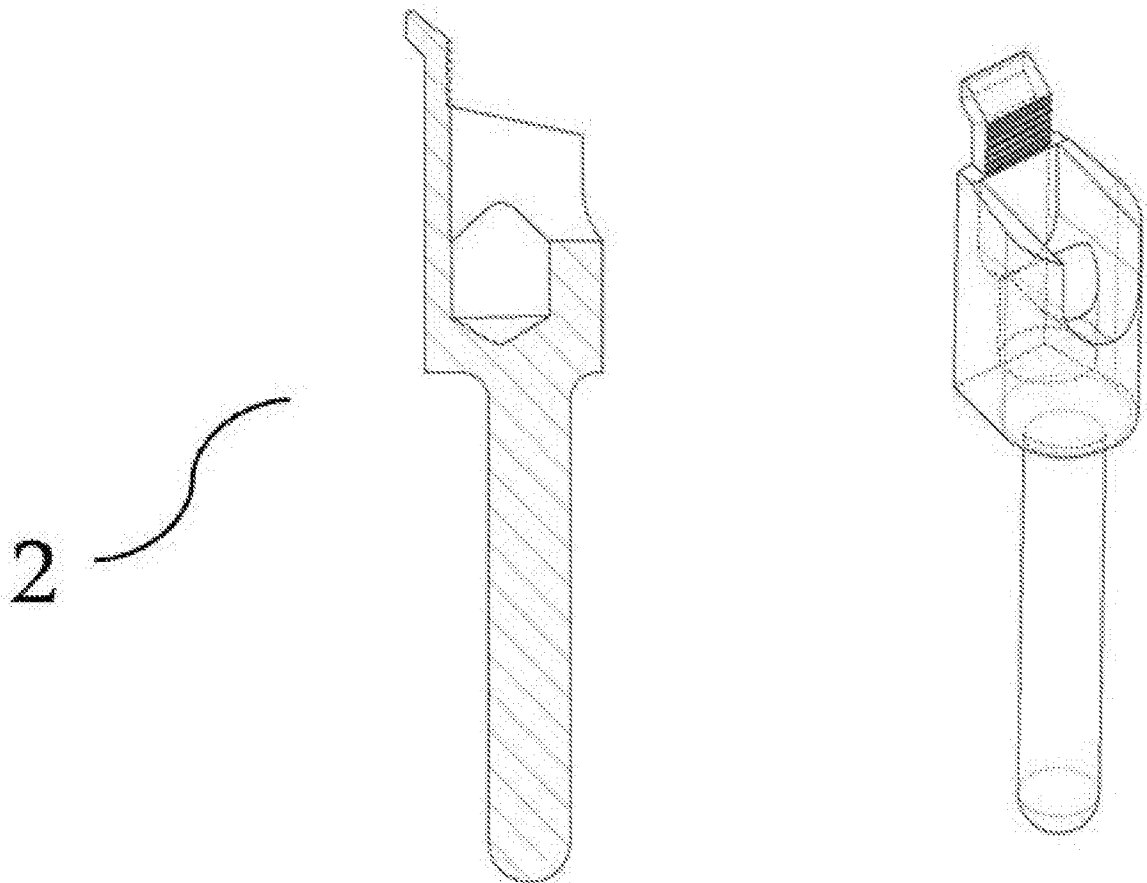


Figure – 7

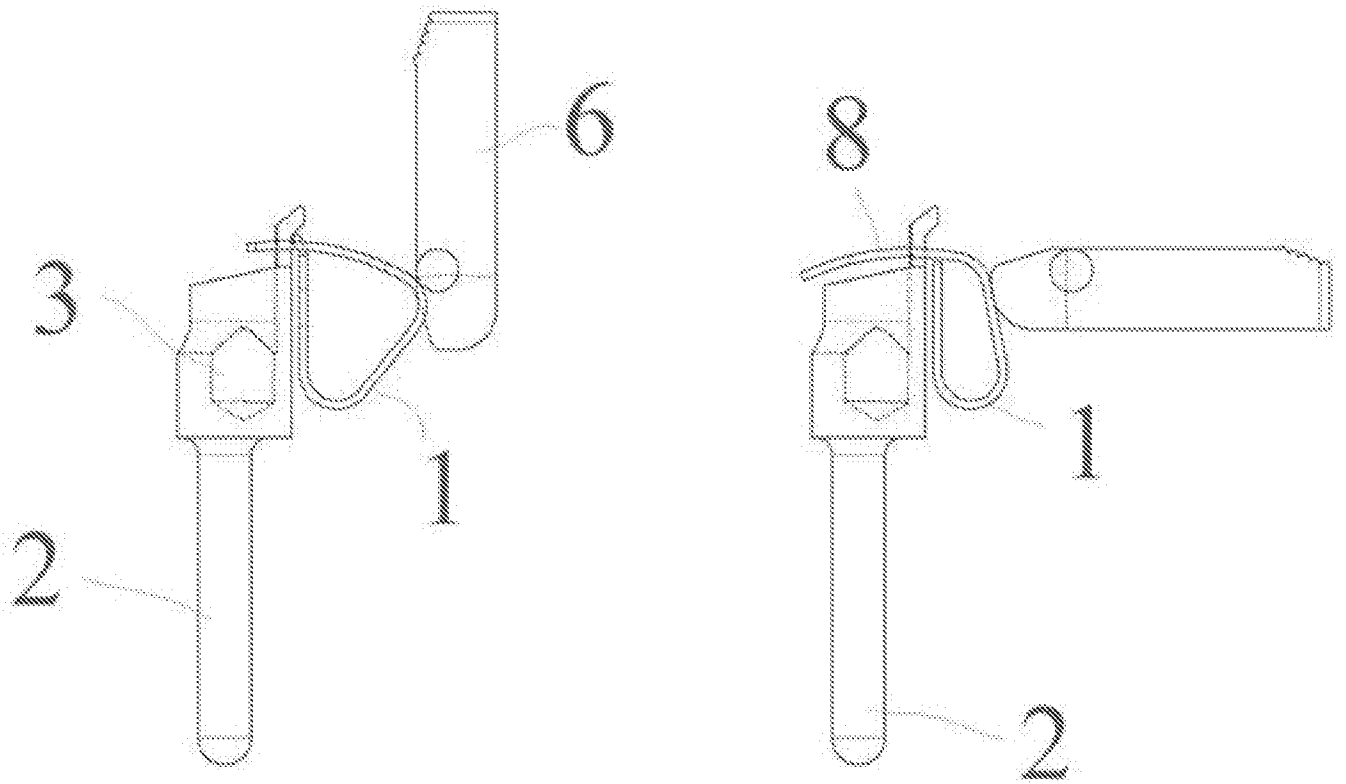


Figure – 8

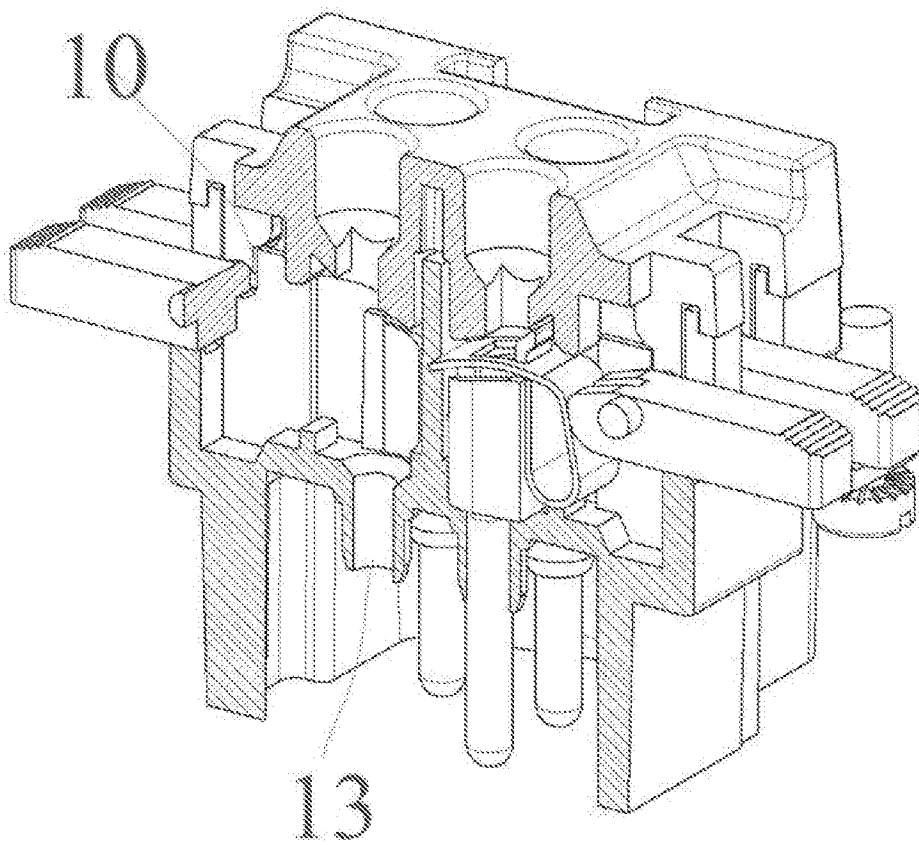


Figure – 9

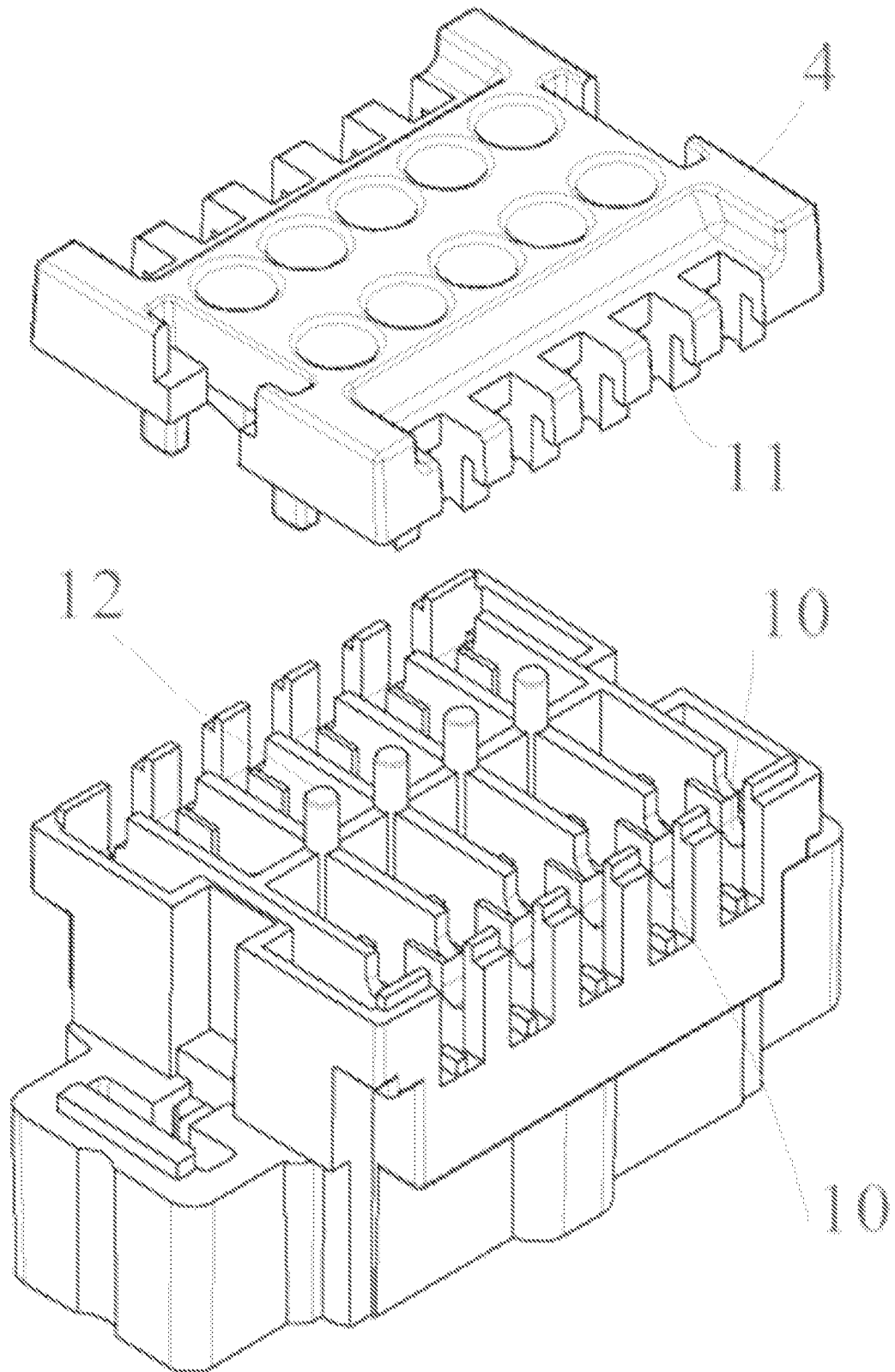


Figure – 10

INTERNATIONAL SEARCH REPORT

International application No
PCT/TR2016/050207

A. CLASSIFICATION OF SUBJECT MATTER INV. H01R4/48 ADD. H01R9/24 H01R13/508 H01R107/00 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) H01R Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EP0-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	EP 2 605 335 A2 (WAGO VERWALTUNGS GMBH [DE]) 19 June 2013 (2013-06-19) figure 1 -----	1-6
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☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
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Date of the actual completion of the international search 7 March 2017		Date of mailing of the international search report 17/03/2017
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer Hugueny, Bertrand

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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