

(19)



(11)

EP 3 952 034 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

21.08.2024 Bulletin 2024/34

(51) International Patent Classification (IPC):

H01R 31/06 ^(2006.01) **H01R 13/516** ^(2006.01)
H01R 24/64 ^(2011.01)

(21) Application number: **21185301.5**

(52) Cooperative Patent Classification (CPC):

H01R 13/516; H01R 31/06; H01R 24/64;
H01R 2107/00; H01R 2201/04

(22) Date of filing: **13.07.2021**

(54) **ADAPTER FOR RJ 45 CONNECTOR**

ADAPTER FÜR RJ-45-VERBINDER

ADAPTATEUR POUR CONNECTEUR RJ 45

(84) Designated Contracting States:

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR

(30) Priority: **06.08.2020 IN 202031033722**

(43) Date of publication of application:

09.02.2022 Bulletin 2022/06

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Description

Field of invention:

[0001] The present invention relates to adapter for releasably engaging electrical connector jacks. Specifically, this invention relates to a connector adapter for Registered Jack (RJ) type connector jacks, and more specifically for a RJ45 type connector jack.

Background of the invention:

[0002] Electrical connectors that are commonly used in telecommunication systems provide an interface between successive runs of cables and/or between cables and electronic devices of the system. An accessory may communicate with a portable electronic device using a connector system. This connector system may include a jack connector that is associated with the accessory and a receptacle connector that is associated with the portable electronic device. RJ modular connectors have been widely used in telecommunication systems ever since they were first created and adopted by the industry. An RJ45 modular connector, which includes a total of eight terminals has been widely used in the network systems.

[0003] A user may connect the jack connector of the accessory to the receptacle connector of the portable electronic device thereby forming physical and electrical connections between the contacts of each of the connectors. The host device and the accessory may then exchange data and/or send/receive power using the connectors. Often, the adapter defines the interface between an outside box connector and an inside box connector.

[0004] The adapters for anchoring the RJ type connector jacks known in the art fail to provide the adequate play to the connectors. One outstanding drawback of the existing connector adapter is illustrated in figure 1 of the accompanying drawings. As seen in the figure, a single flat is provided in the adapter at the protrusion for receiving the connection jack. The single flat constitute both the snap and bearing area. Due to this the connector anchored in the adapter will be having excessive play/loose causing inconvenience to the user.

[0005] Further, some of the problems in existing adapter include:

- No dedicated support features for the connector jack;
- Connector are pushed inside the wall-box while inserting jack;
- Loose/play in connector leads to the tilting of connector and resulting to shutter stuck-up.

[0006] With a view therefore to the problem associated with the conventional anchoring/fixing techniques of connector adapter system the inventors felt to need to develop a novel connector adapter for releasably attach a

connector jack, particularly for a RJ45 type of connector jack anchored in said connector adapter and providing a connector bearing surface in conjunction with extended cantilever portion to anchor said connector jack into said adapter which restricts any loose movement of the connector jack. With the top wall of the adapter provided with stopper ribs to locate the insertion of said connector jack and bottom wall is provided with extended cantilever which at insertion of connector jack resiliently bend and receive said connector jack. Thus the invented adapter provides a safe and convenient modular solution to the problem addressed.

[0007] US6394844 discloses an adapter 22 for releasably engaging with a connector jack 40. The adapter comprises connector bearing surfaces defining walls and an opening for engaging said connector jack, wherein a top wall is provided with a pair of guiding protrusions to receive the connector jack in a guided manner.

Summary of the invention:

[0008] Present invention focuses of robust fixation of connector while ensuring annular clearance between the connector jack and centre plate opening. Accordingly the present invention provides an adapter for releasably engaging a connector jack as defined in claim 1. Said adapter comprising:

connector bearing surfaces, a extended cantilever portion, a first surface defining a top wall, a second surface defining a bottom wall and two opposing side walls, said walls defining an opening for said connector jack,

According to a most preferred embodiment of the invention said top wall is provided with

- stopper ribs extending from said top wall to locate the insertion of said connector jack; and
- pair of guiding protrusions to receive the connector jack in a guided manner;

and the bottom wall is provided with extended cantilever portion which upon insertion of said connector jack is configured to resiliently bend and receive said connector jack;

According to the most preferred embodiment said connector bearing surfaces are disposed in both side of said extended cantilever portion to anchor said connector jack into said adapter.

[0009] According to one embodiment of the invention, said extended cantilever portion has a wedged top surface which upon applying positive pressure resiliently bends to increase the size of the opening to assemble said connector jack.

[0010] According to one object of the invention, said

stopper ribs have a planer surface attached to the ribs to locate and support the connector jack.

[0011] According to one embodiment of the invented adapter said stopper ribs are positioned about the middle of the top wall.

[0012] According to another object of the invention, said connector bearing surface supports said connector jack and restricts the movement of said connector jack.

[0013] According to one embodiment of the invented adapter for releasably engaging a connector jack said pair of guiding protrusions extends perpendicular to said side walls defining a passage in both sides of said stopper ribs to guide the ribs of said connector jack.

[0014] According to one embodiment of the invention said housing comprises a pair of fixing protrusion at the top and bottom portion of said adapter to removable fix with a fixing frame.

[0015] According to one embodiment of the invention, said connector jack is a RJ45 type connector jack.

[0016] According to yet another object of the invention said adapter providing a housing for said connector jack.

Brief description of drawings:

[0017] For better understanding, an illustrative embodiment of the invention will now be described with reference to the accompanying drawings. It will however be appreciated that the embodiment exemplified in the drawings are merely illustrative and not limitative to the scope of the invention, because it is quite possible, indeed often desirable, to introduce a number of variations in the embodiment that have been shown in the drawings, as long as the resulting embodiment falls within the scope of the appended claims.

[0018] In the accompanying drawings:

Figure 1 depict the existing adapter assembly showing the drawbacks of the embodiments;

Figure 2 depicts the connector bearing surface and the snapping feature of the invented connector adapter according to one embodiment of the invention;

Figure 3 depicts the extended cantilever portion at the bottom wall of the adapter according to one embodiment of the invention;

Figure 4 depicts the feature of stopper ribs at the top wall of the adapter according to one embodiment of the invention;

Figure 5 depicts the perspective view of the invented adapter and the connector jack aligned with each other according to one embodiment of the invention; Figure 6 depicts a modular solution for attaching more than one connector jack with the invented adapter according to one embodiment of the invention;

Figure 7 is a view inside the adapter showing the interconnection of the features of the adapter.

Figure 8 illustrates the insertion of the connector jack

inside the adapter;

Figure 9 depicts a first side the assembly of the connector jack and the adapter when the connector jack is anchored according to one embodiment of the invention;

Figure 10 depicts a second side the assembly of the connector jack and the adapter when the connector jack is anchored according to one embodiment of the invention;

Figure 11 depicts the assembly of the invented adapter on a fixing frame according to one embodiment of the invention.

Detailed description of the invention:

[0019] With reference to figures 2-11 of the accompanying drawings, an adapter (100) for releasably engaging a connector jack (200) is disclosed herein. The adapter, in general is engaged to a fixing frame (30) on a wall box, or may be installed in power racks. Said adapter (100) is used to anchor the connector jack, here a Registered Jack (RJ)-type connector jack (200), more specifically a RJ45 connector jack. As discussed, said adapter provides a housing for said connector jack (200).

[0020] The adapter (100) as illustrated in figures 2-5 comprises a first surface a second surface and two opposing side walls (108). In a particular arrangement of the adapter (100) as depicted in figure 5, the first surface can be considered to be a top wall (105) and the second surface can be considered as bottom wall (106). The side surfaces, as seen in the figure have matching planner profile with the connector jack (200) to be housed in said adapter (100). The top wall (105) and the bottom wall (106) are provided with fixing structures to anchor said connector jack (200). The fixing structures of the top wall (105) and the bottom wall (106) functions in conjunction with each other providing a robust fixation to the connector jack (200).

[0021] The fixing structures of top wall (105) of the adapter (100) is depicted in figure 4 of the accompanying drawings. The top wall (105) is provided with feature of stopper ribs and the feature of guiding protrusions (107). The stopper rib(s) (104) could be a single extension from the top wall (105). Alternatively, two extensions can be provided that protrude from the top wall (105) (Fig. 5). The extended ends of the ribs forms a planner surface which enables the stopper feature. The planner surface is of matching profile with the clearance available at the top surface of RJ45 connector jack (200) as illustrated in figure 5 of the accompanying drawings.

[0022] The fixing structure of the bottom wall (106) of the adapter (100) is shown in figure 3 of the accompanying drawings. The bottom wall (106) with feature of extended cantilever portion (102). The extension of the cantilever is parallel to the plane surface of the stopper ribs (104) of said top wall (105). The fixed end is attached to said bottom wall (106) such that upon action of any positive force the extended end bends resiliently. As seen

figures 3 and 5, the extended end (103) has a slope for the ease of anchoring the connector jack (200).

[0023] In the figures 2, 8 and 9 the feature of connector bearing surface (101) and extended cantilever portion (102) feature are depicted. These two feature diligently solves the problems in the existing adapters (100') for connector jack (200) shown in figure 1 (a&b). The single flat constitute both the snap (105') and bearing area (106'). In the invented adapter (100), the single flat wall for anchoring the connector jack (200) has been removed and instead an adapter bearing surface (101) and extended cantilever portion (102) feature is introduced.

[0024] The anchoring of the connector jack within the adapter (100) is illustrated in figure 8 with the arrow signs directing the direction of insertion of the connector jack (200). Upon applying positive pressure with the connector jack, the extended cantilever portion (102) of the bottom wall (106) the stopper ribs (104) feature of the top wall (105) receives the connector jack (200). The connector bearing surface (101) as seen in figure 8 makes sure that the connector rests on the surface and bears the load of the connector.

[0025] Figures 1, 2, 9 and 10 depicts the connector jack (200) engaged with the invented adapter (100). In general the RJ45 type of connector jacks are provided with bearing surface (211). As seen in figure 10 of the accompanying drawings the connector bearing surface (101) is of matching profile to that of the bearing surface (212) of the of connector jack (200). While attaching wire and the conduits with the connector, the bearing surface of the adapter (100) controls the movement of the RJ45 adapter jack along the +Z axis. The adapter (100) is provided with a extended cantilever portion (102) functioning congruently with said connector bearing surface (101) as depicted in fugue 1. These two features prevents any pushing force or twists applied on the connector at the time of assembly as illustrated in figure 9 of the accompanying drawings.

[0026] With reference to figure 5 of the corresponding drawings, the top wall (105), the bottom wall (106) and the side walls (108) defines a rectangular opening for the insertion of said connector jack (200). As seen in the figure, a pair of guiding protrusions (107) are provided at the top wall (105) of the adapter (100). The guiding protrusions (107), in this particular embodiment of the invention of provide at both side of the stopper ribs (104) feature. Predetermined gaps are introduced between the plane surface of the stopper ribs (104) and the guiding protrusions. The gap kept at both sides of the stopper ribs are identical. Figure 7 of the accompanying drawings depicts how the features of stopper ribs (104), the guiding projections (107) of the top wall (105) works in conjunction with the guiding protrusions (107) of the adapter (100) to anchor said connector jack (200).

[0027] In the orientation of said connector jack (200), the top and/or bottom housing portion of said adapter (100) is provided with a fixing protrusion (109) for attaching with wall box. First the connector jack (200) is engaged

with the adapter (Fig 9) and then the adapter assembly is assembled with a fixing frame (30) of a wall-box (not show explicitly) as seen in the figure 11. As seen in the figure 5, for anchoring the connector jack with the adapter (100), the guiding protrusions (107) of the RJ45 connector jack (200) are aligned with respect to the guiding protrusions (107) of said adapter (100). The predetermined gap kept between the guiding protrusions (107) and the stopper ribs (104) matched with the guiding protrusions (29) of the RJ45 connector jack (200). Thus the guiding protrusions (107) provided at the top wall of the adapter receives the RJ45 connector jack (200) and a robust fixation is achieved.

[0028] According to the embodiment shown in the figure 6 of the accompanying drawings the invented connector adapter (100) have a modular solution for engaging more than one connector jack in parallel succession. In general this modular design depends on the type of wall box or racks used for engaging the adapter (100) onto them. The length of the adapter by the slot provided at the rack or wall box. Figure 6 in specific depicts a constitution of the adapter (100) for housing two connector jacks (200). The top walls (105) and the bottom walls (106) of the adapter (100) are constructed in a continuous manner. A shared side wall (108) is provided for segregating two slots for anchoring two connector jack (2) as illustrated in the figure. The shared side wall (108) of the adapter (100) is provided with plurality of lips for receiving the connector jacks (200). The adapter bearing surface the snap feature is also depicted in the figure which is provided at both section of the adapter providing robust support to the connector jacks (200).

Claims

1. An adapter (100) for releasably engaging with a connector jack (200), said adapter (100) comprising:

connector bearing surfaces (101), a first surface defining a top wall (105), a second surface defining a bottom wall (106) and two opposing side walls (108), said walls (105,106,108) defining an opening for engaging said connector jack (200), wherein said top wall (105) is provided with

- a pair of guiding protrusions (107) to receive the connector jack (200) in a guided manner; **characterized in that**
- the adapter further comprises stopper ribs (104) extending from said top wall (105) to locate the insertion of said connector jack (200);

said bottom wall (106) is provided with extended cantilever portion (102) which upon insertion of said connector jack (200) is configured to resil-

- iently bend and receive said connector jack;
wherein said connector bearing surfaces (101)
are disposed in both side of said extended can-
tilever portion (102) to anchor said connector
jack (200) into said adapter (100). 5
2. The adapter (100) for releasably engaging a connec-
tor jack (200) as claimed in claim 1, wherein said
extended cantilever portion (102) has a wedged top
surface which upon applying positive pressure resil- 10
iently bends to increase the size of the opening to
assemble said connector jack (200).
3. The adapter (100) for releasably engaging a connec-
tor jack (200) as claimed in claim 1, wherein said 15
stopper ribs (104) have a planer surface attached to
the ribs to locate and support the connector jack
(200).
4. The adapter (100) for releasably engaging a connec- 20
tor jack (200) as claimed in claim 3, wherein said
stopper ribs (104) are positioned about the middle
of the top wall (105).
5. The adapter (100) for releasably engaging a connec- 25
tor jack (200) as claimed in claim 1, wherein said
connector bearing surface (101) supports said con-
nector jack (200) and restricts the movement of said
connector jack (200).
6. The adapter (100) for releasably engaging a connec- 30
tor jack (200) as claimed in claim 1, wherein said pair
of guiding protrusions (107) extends perpendicular
to said side walls (108) defining a passage in both
sides of said stopper ribs (104) to guide the ribs of 35
said connector jack (200).
7. The adapter (100) for releasably engaging a connec- 40
tor jack (200) as claimed in claim 1, wherein said
connector jack is a RJ45 type connector jack (200).
8. The adapter (100) for releasably engaging a connec- 45
tor jack (200) as claimed in claim 1, wherein said
adapter (100) comprises a pair of fixing protrusion
(109) at the top and/or bottom portion of said adapter
(100) to removable fix with a fixing frame (30).
9. The adapter (100) for releasably engaging a connec- 50
tor jack (200) as claimed in claim 1, wherein said
adapter provides a housing for said connector jack
(200).

Patentansprüche

1. Adapter (100) zum lösbaren Eingreifen in eine Ver-
binderbuchse (200), der Adapter (100) umfassend:

Verbinderlageroberflächen (101), eine erste
Oberfläche, die eine obere Wand (105) definiert,
eine zweite Oberfläche, die eine untere Wand
(106) definiert, und zwei gegenüberliegende
Seitenwände (108), wobei die Wände (105, 106,
108) eine Öffnung zum Ineingriffnehmen der
Verbinderbuchse (200) definieren, wobei die
obere Wand (105) versehen ist mit

- einem Paar Führungsvorsprünge (107)
um die Verbinderbuchse (200) auf eine ge-
führte Weise aufzunehmen; **dadurch ge-
kennzeichnet, dass**
- der Adapter ferner umfasst Anschlagrip-
pen (104), die sich von der oberen Wand
(105) erstrecken, um das Einsatzstück der
Verbinderbuchse (200) zu lokalisieren;

die untere Wand (106) mit einem verlängerten
Auslegerabschnitt (102) versehen ist, der bei ei-
nem Einsetzen der Verbinderbuchse (200) kon-
figuriert ist, um sich elastisch zu biegen und die
Verbinderbuchse aufzunehmen;
wobei die Verbinderlageroberflächen (101) auf
beiden Seiten des verlängerten Auslegerab-
schnitts (102) angeordnet sind, um die Verbin-
derbuchse (200) in dem Adapter (100) zu ver-
ankern.

2. Adapter (100) zum lösbaren Ineingriffnehmen einer
Verbinderbuchse (200) nach Anspruch 1, wobei der
verlängerte Auslegerabschnitt (102) eine keilförmige
obere Oberfläche aufweist, die sich bei Anwen-
dung von positivem Druck elastisch biegt, um die
Größe der Öffnung zu erhöhen, um die Verbinder-
buchse (200) zu montieren. 35
3. Adapter (100) zum lösbaren Ineingriffnehmen einer
Verbinderbuchse (200) nach Anspruch 1, wobei die
Anschlagrippen (104) eine planare Oberfläche auf-
weisen, die an den Rippen angebracht ist, um die
Verbinderbuchse (200) zu lokalisieren und zu tra-
gen. 40
4. Adapter (100) zum lösbaren Ineingriffnehmen einer
Verbinderbuchse (200) nach Anspruch 3, wobei die
Anschlagrippen (104) etwa in der Mitte der oberen
Wand (105) positioniert sind. 45
5. Adapter (100) zum lösbaren Ineingriffnehmen einer
Verbinderbuchse (200) nach Anspruch 1, wobei die
Verbinderlageroberfläche (101) die Verbinderbuch-
se (200) trägt und die Bewegung der Verbinderbuch-
se (200) einschränkt. 50
6. Adapter (100) zum lösbaren Ineingriffnehmen einer
Verbinderbuchse (200) nach Anspruch 1, wobei sich
das Paar Führungsvorsprünge (107) senkrecht zu 55

den Seitenwänden (108) erstreckt und auf beiden Seiten der Anschlagrippen (104) einen Durchgang definiert, um die Rippen der Verbinderbuchse (200) zu führen.

7. Adapter (100) zum lösbaren Ineingriffnehmen einer Verbinderbuchse (200) nach Anspruch 1, wobei die Verbinderbuchse eine Verbinderbuchse (200) von Typ RJ45 ist.
8. Adapter (100) zum lösbaren Ineingriffnehmen einer Verbinderbuchse (200) nach Anspruch 1, wobei der Adapter (100) ein Paar Befestigungsvorsprünge (109) an dem oberen und/oder unteren Abschnitt des Adapters (100) umfasst, um mit einem Befestigungsrahmen (30) lösbar befestigt zu werden.
9. Adapter (100) zum lösbaren Ineingriffnehmen einer Verbinderbuchse (200) nach Anspruch 1, wobei der Adapter ein Gehäuse für die Verbinderbuchse (200) bereitstellt.

Revendications

1. Adaptateur (100) destiné à la mise en prise de manière amovible d'une prise de connecteur (200), ledit adaptateur (100) comprenant :

des surfaces d'appui de connecteurs (101), une première surface définissant une paroi supérieure (105), une seconde surface définissant une paroi inférieure (106) et deux parois latérales opposées (108), lesdites parois (105, 106, 108) définissant une ouverture pour venir en prise avec ladite prise de connecteur (200), dans lequel ladite paroi supérieure (105) est pourvue de

- une

paire de protubérances de guidage (107) pour recevoir la prise de connecteur (200) d'une manière guidée ; **caractérisé en ce que**

- l'adaptateur comprend en outre

des nervures d'arrêt (104) s'étendant à partir de ladite paroi supérieure (105) pour localiser l'insertion de ladite prise de connecteur (200) ; ladite paroi inférieure (106) est pourvue d'une partie en porte-à-faux étendue (102) qui, lors de l'insertion de ladite prise de connecteur (200), est conçue pour se plier de manière élastique et recevoir ladite prise de connecteur ; dans lequel lesdites surfaces d'appui de connecteur (101) sont disposées de part et d'autre de ladite partie en porte-à-faux étendue (102)

pour ancrer ladite prise de connecteur (200) dans ledit adaptateur (100).

2. Adaptateur (100) destiné à la mise en prise de manière amovible d'une prise de connecteur (200) selon la revendication 1, dans lequel ladite partie en porte-à-faux étendue (102) a une surface supérieure calée qui, lors de l'application d'une pression positive, se plie de manière élastique pour augmenter la taille de l'ouverture afin d'assembler ladite prise de connecteur (200).
3. Adaptateur (100) destiné à la mise en prise de manière amovible d'une prise de connecteur (200) selon la revendication 1, dans lequel lesdites nervures d'arrêt (104) ont une surface plane attachée aux nervures pour localiser et soutenir la prise de connecteur (200).
4. Adaptateur (100) destiné à la mise en prise de manière amovible d'une prise de connecteur (200) selon la revendication 3, dans lequel lesdites nervures d'arrêt (104) sont positionnées à peu près au milieu de la paroi supérieure (105).
5. Adaptateur (100) destiné à la mise en prise de manière amovible d'une prise de connecteur (200) selon la revendication 1, dans lequel ladite surface d'appui du connecteur (101) supporte ladite prise de connecteur (200) et limite le mouvement de ladite prise de connecteur (200).
6. Adaptateur (100) destiné à la mise en prise de manière amovible d'une prise de connecteur (200) selon la revendication 1, dans lequel ladite paire de protubérances de guidage (107) s'étend perpendiculairement auxdites parois latérales (108) définissant un passage dans les deux côtés desdites nervures d'arrêt (104) pour guider les nervures de ladite prise de connecteur (200).
7. Adaptateur (100) destiné à la mise en prise de manière amovible d'une prise de connecteur (200) selon la revendication 1, dans lequel ladite prise de connecteur est une prise de connecteur de type RJ45 (200).
8. Adaptateur (100) destiné à la mise en prise de manière amovible d'une prise de connecteur (200) selon la revendication 1, dans lequel ledit adaptateur (100) comprend une paire de protubérances de fixation (109) dans la partie supérieure et/ou inférieure dudit adaptateur (100) pour le fixer de manière amovible à un cadre de fixation (30).
9. Adaptateur (100) destiné à la mise en prise de manière amovible d'une prise de connecteur (200) selon la revendication 1, dans lequel ledit adaptateur

fournit un boîtier pour ladite prise de connecteur (200).

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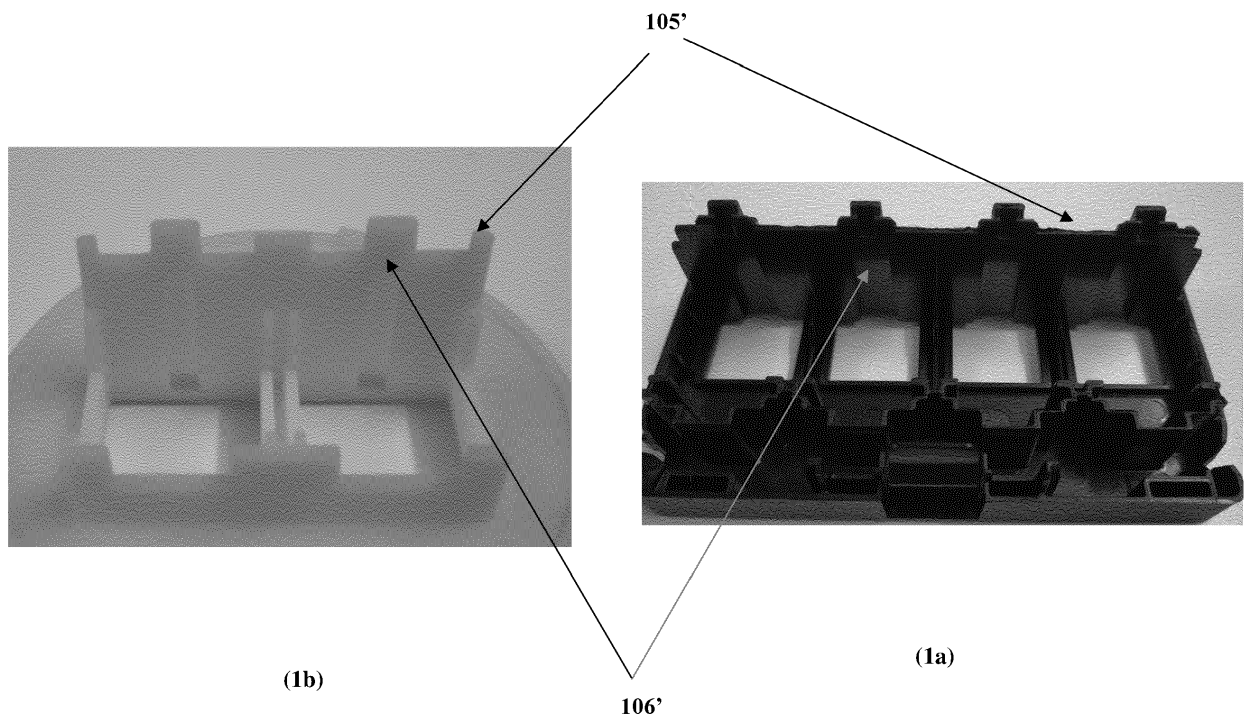


Fig. 1
(PRIOR ART)

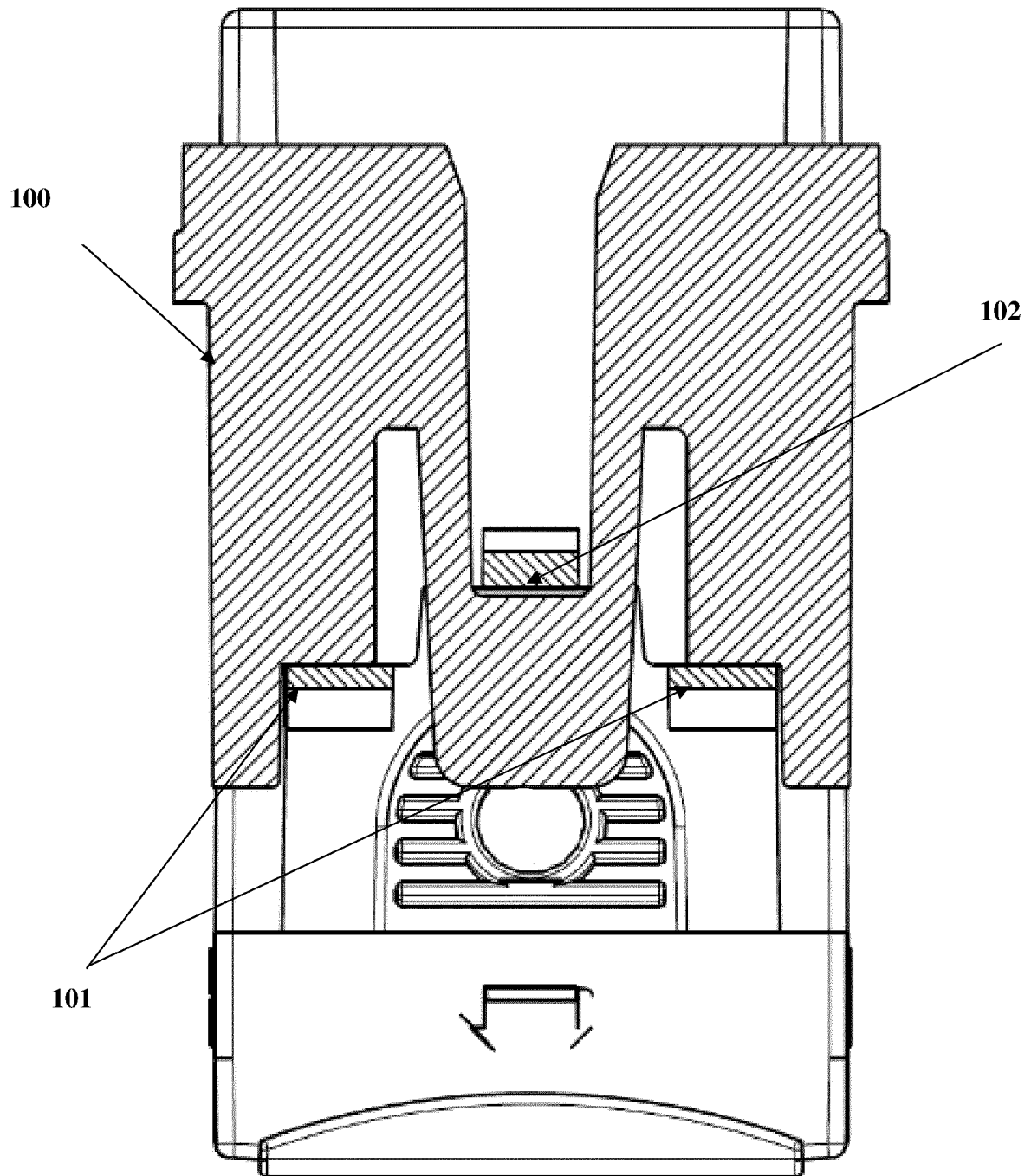


Fig. 2

103

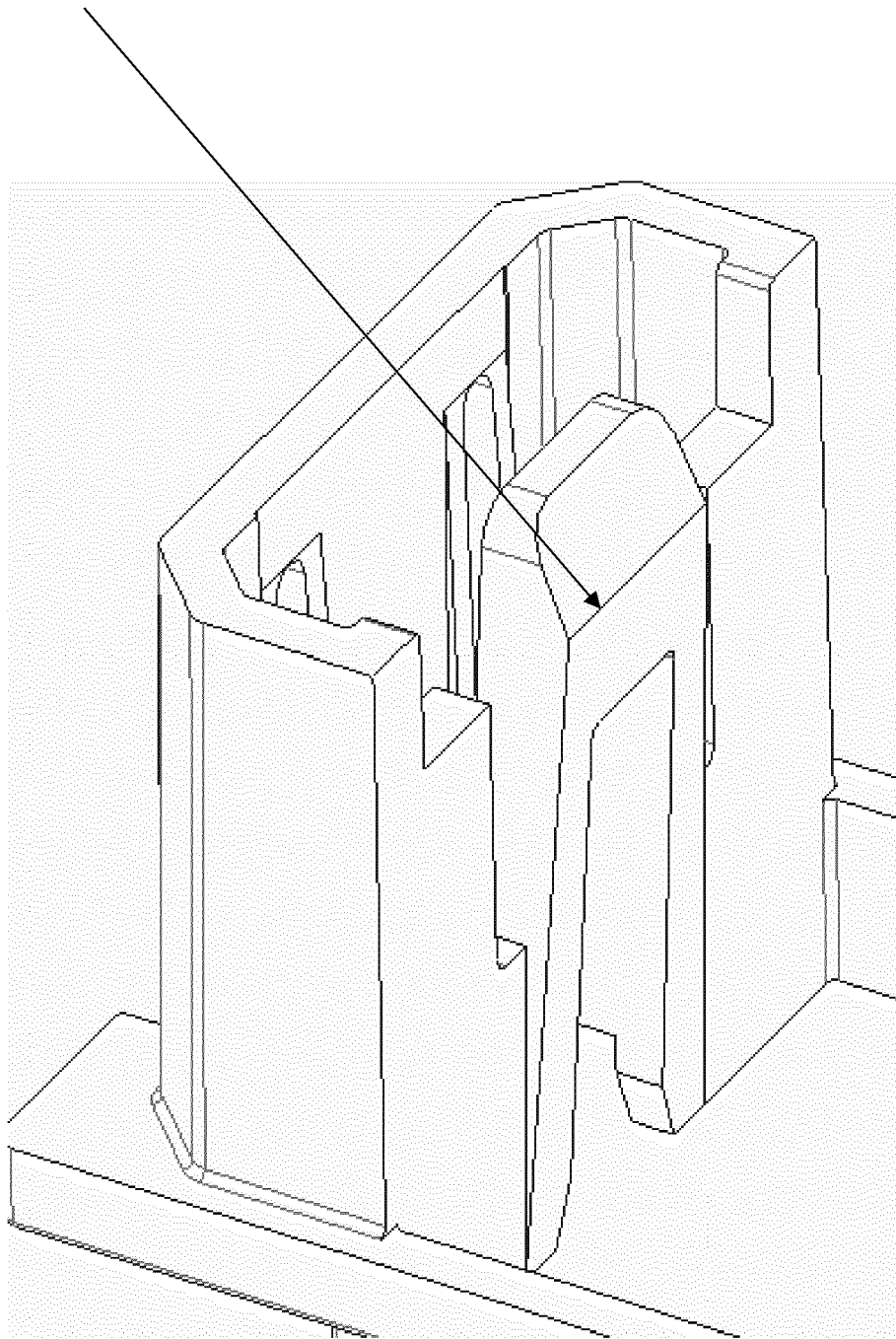


Fig. 3

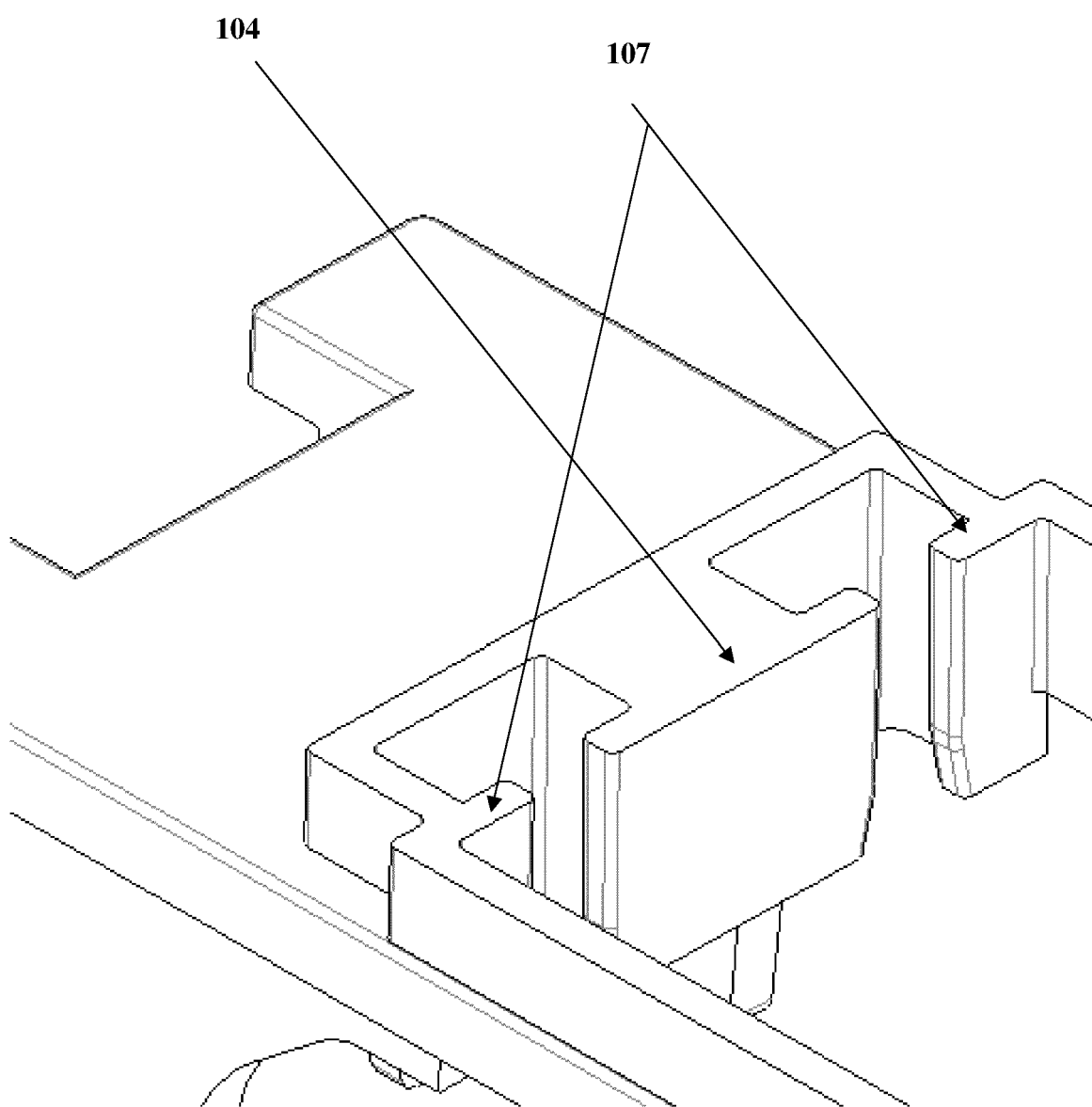


Fig. 4

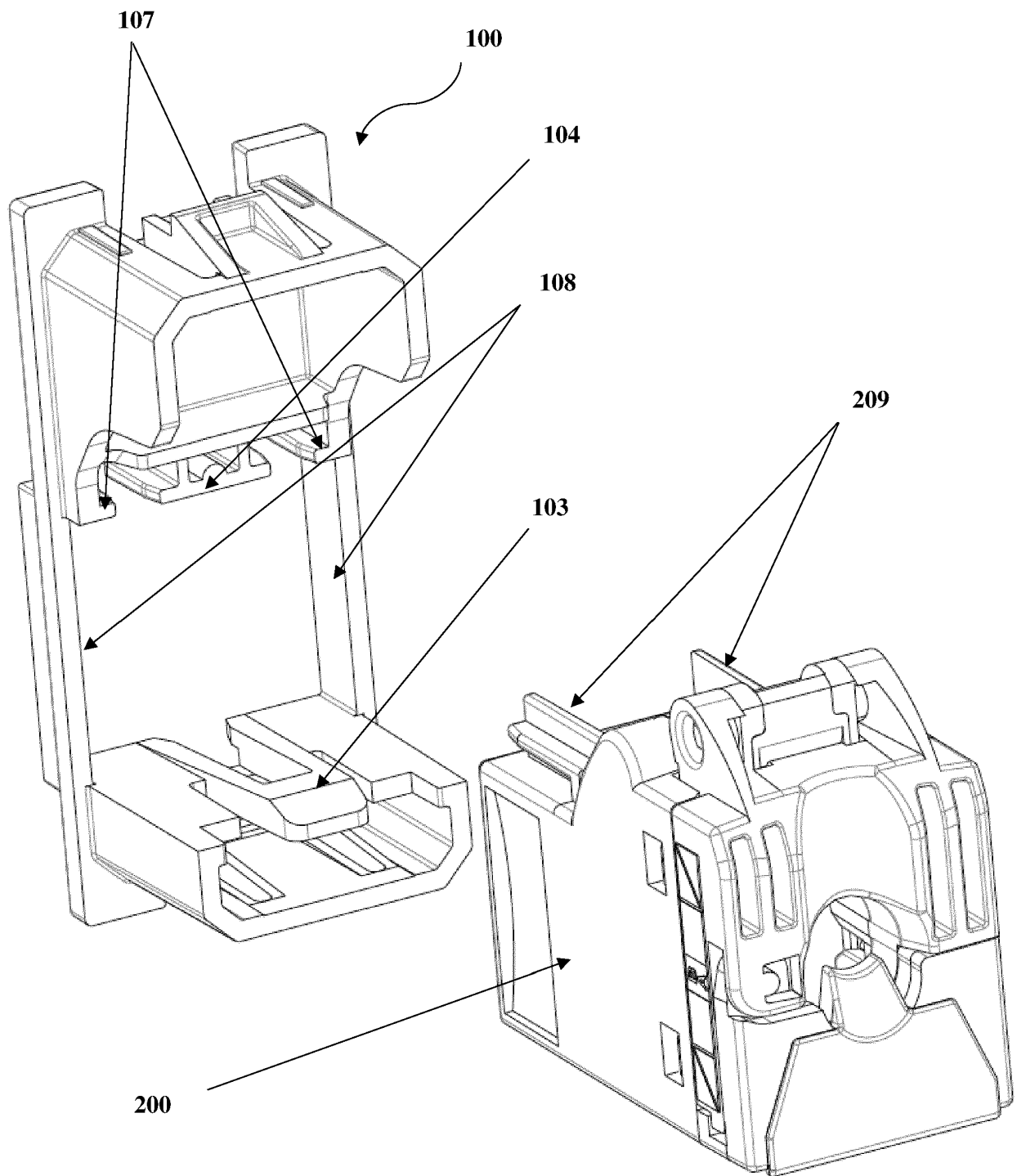


Fig. 5

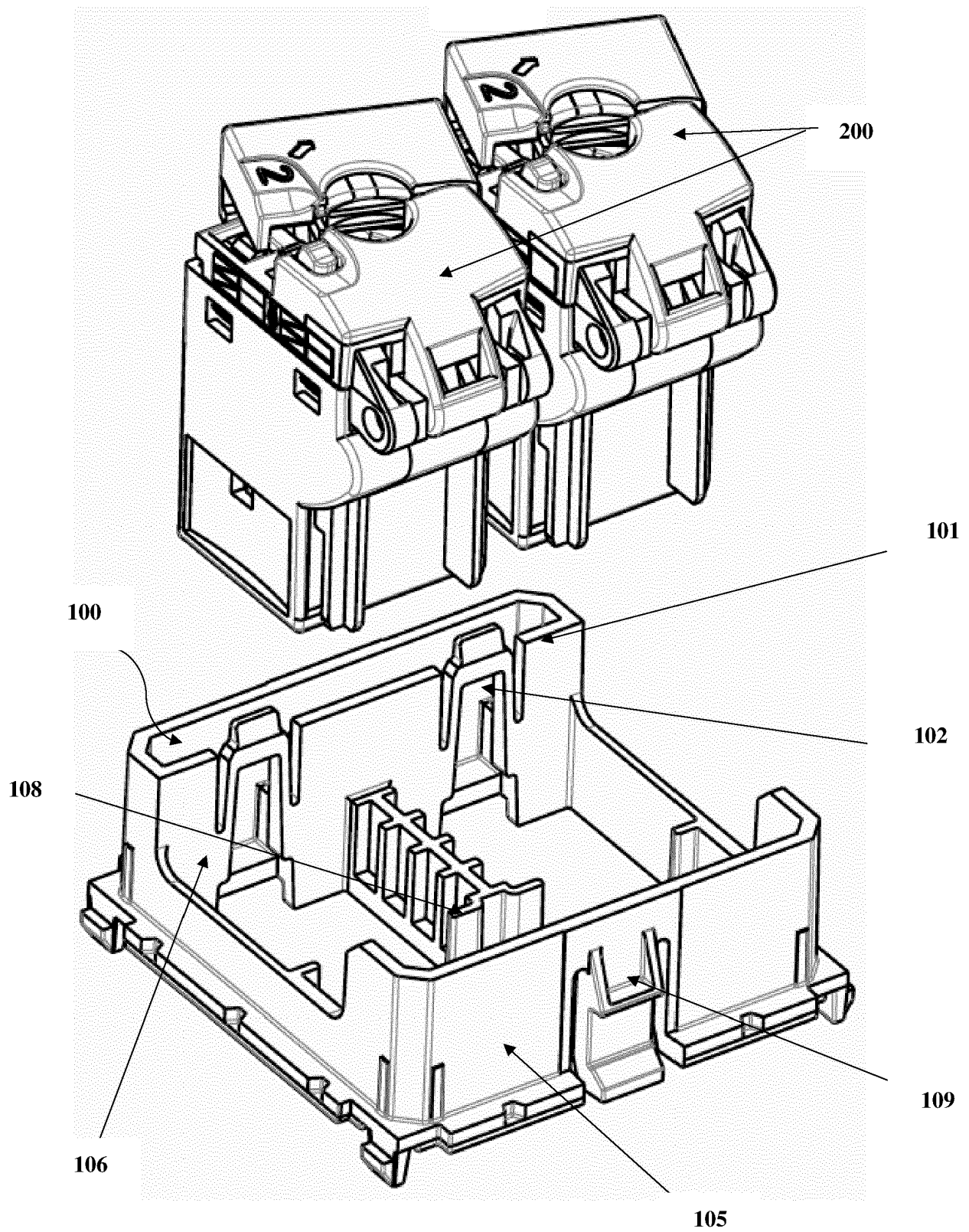


Fig. 6

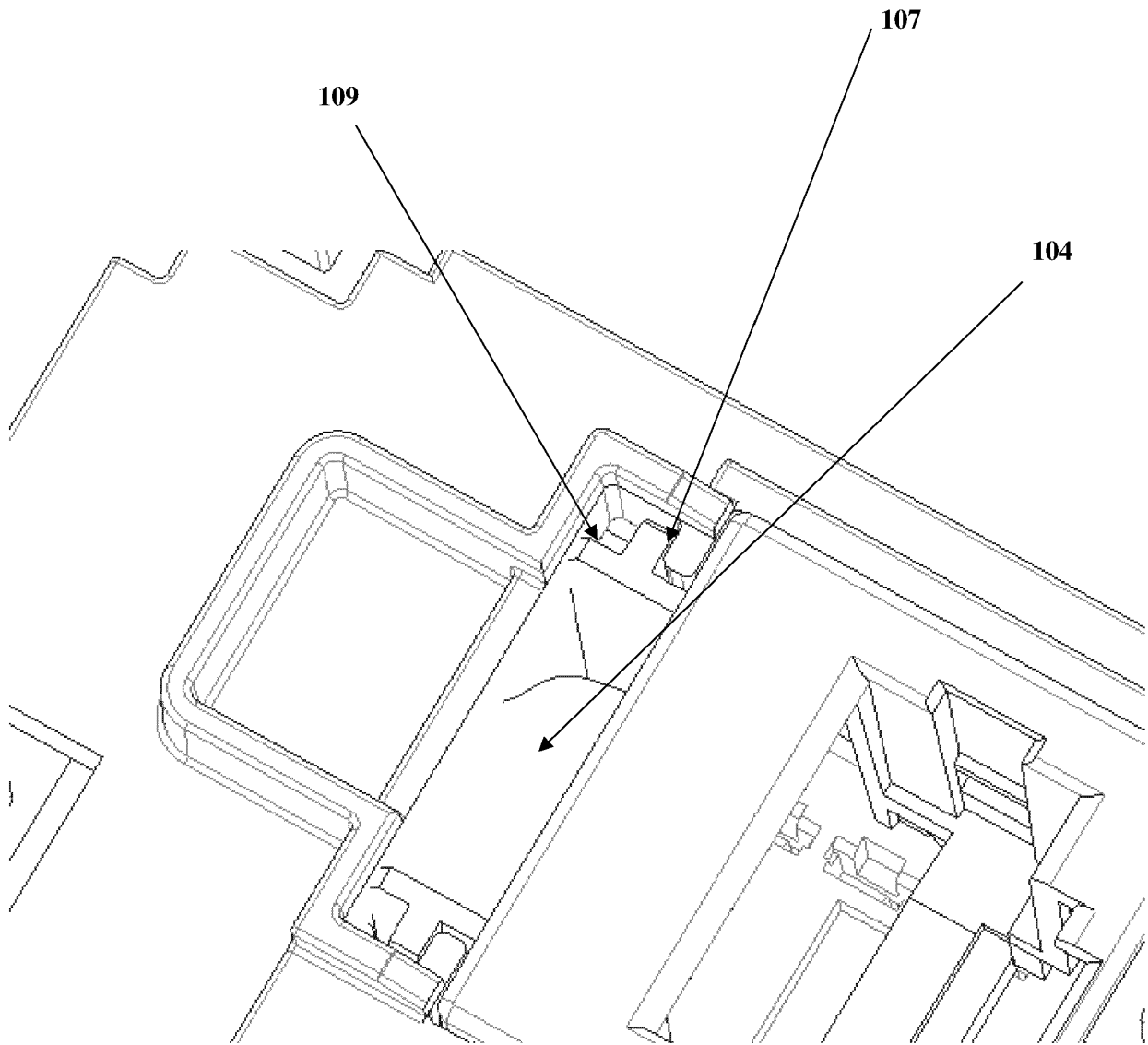


Fig. 7

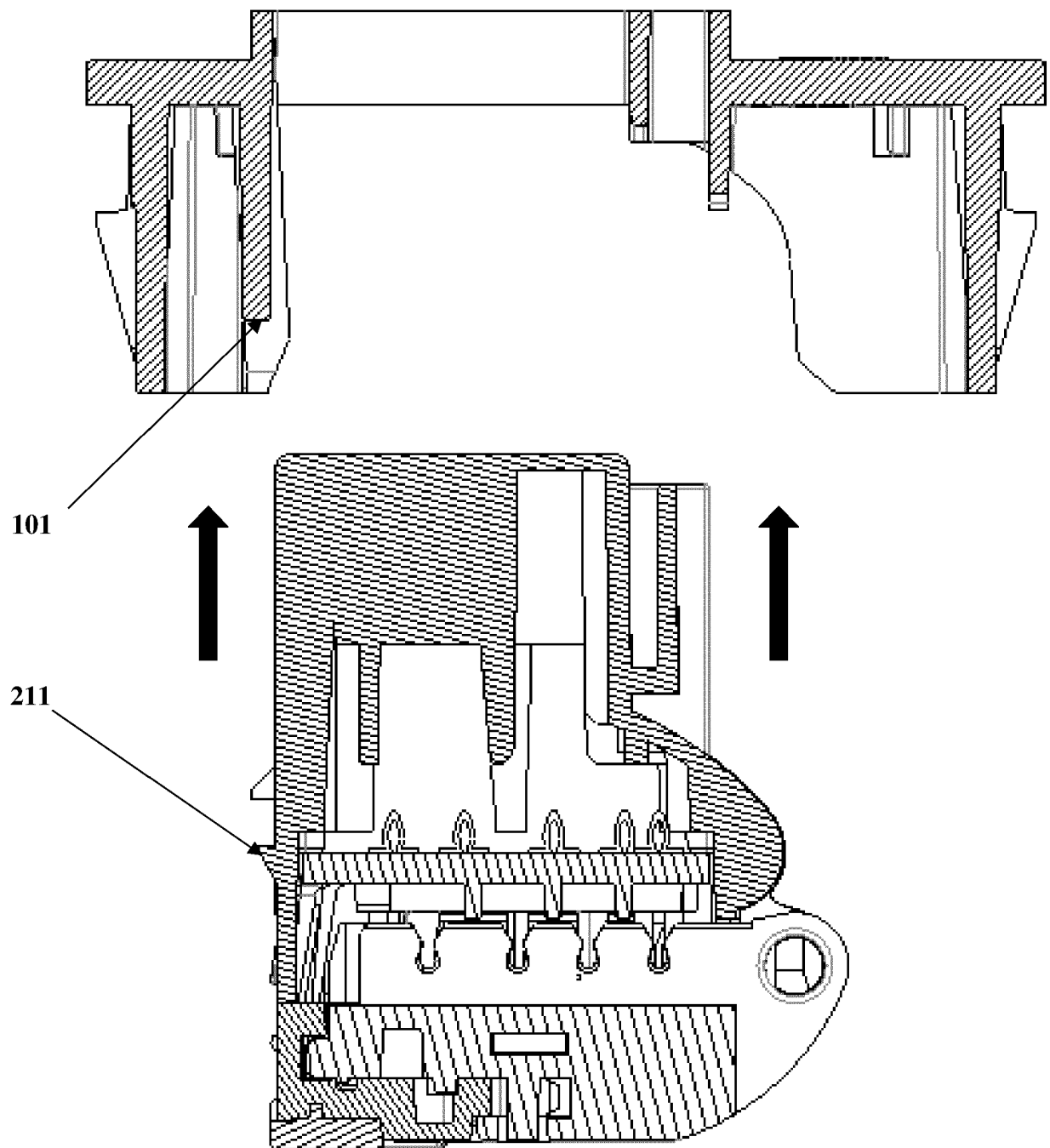


Fig. 8

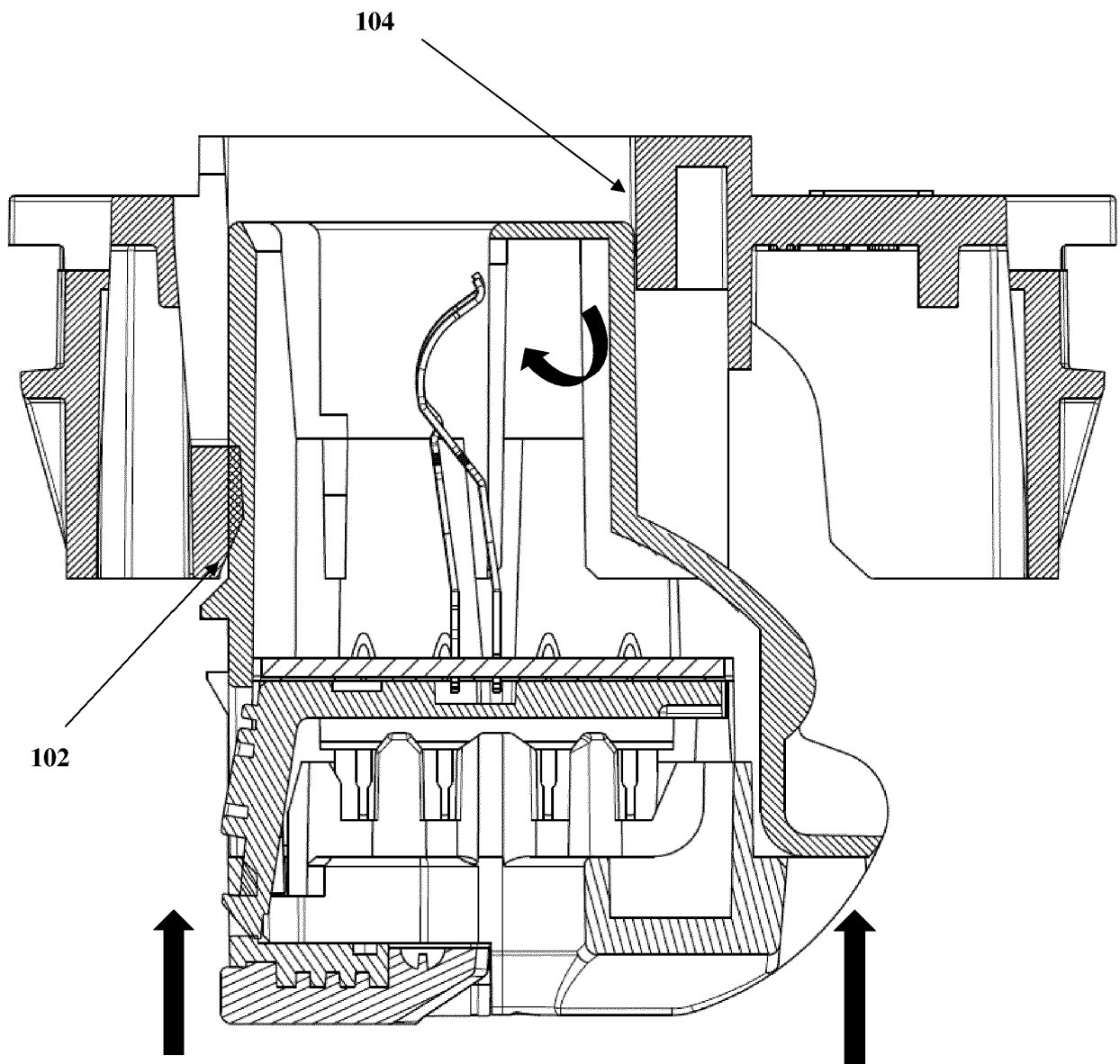


Fig. 9

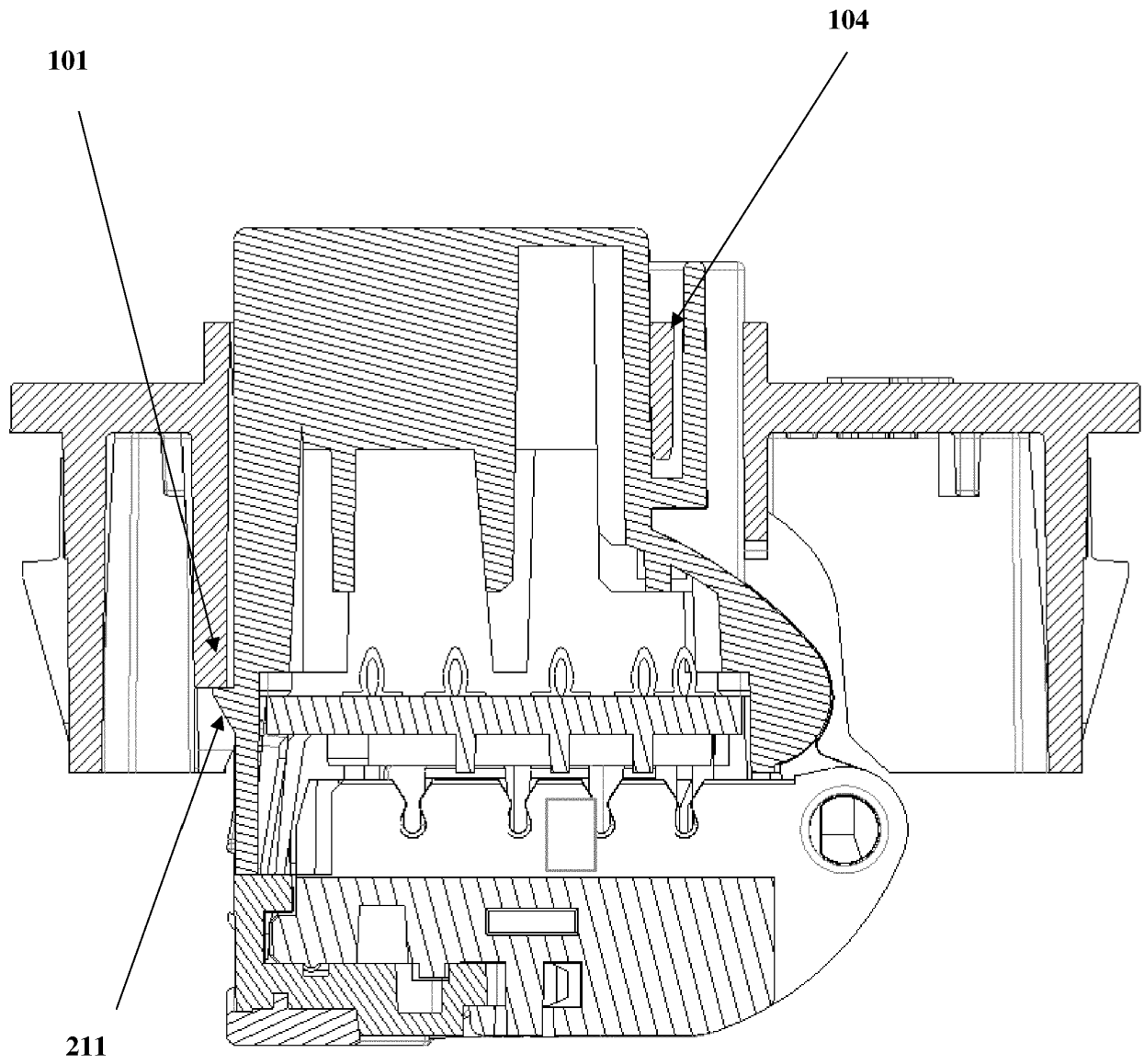


Fig. 10

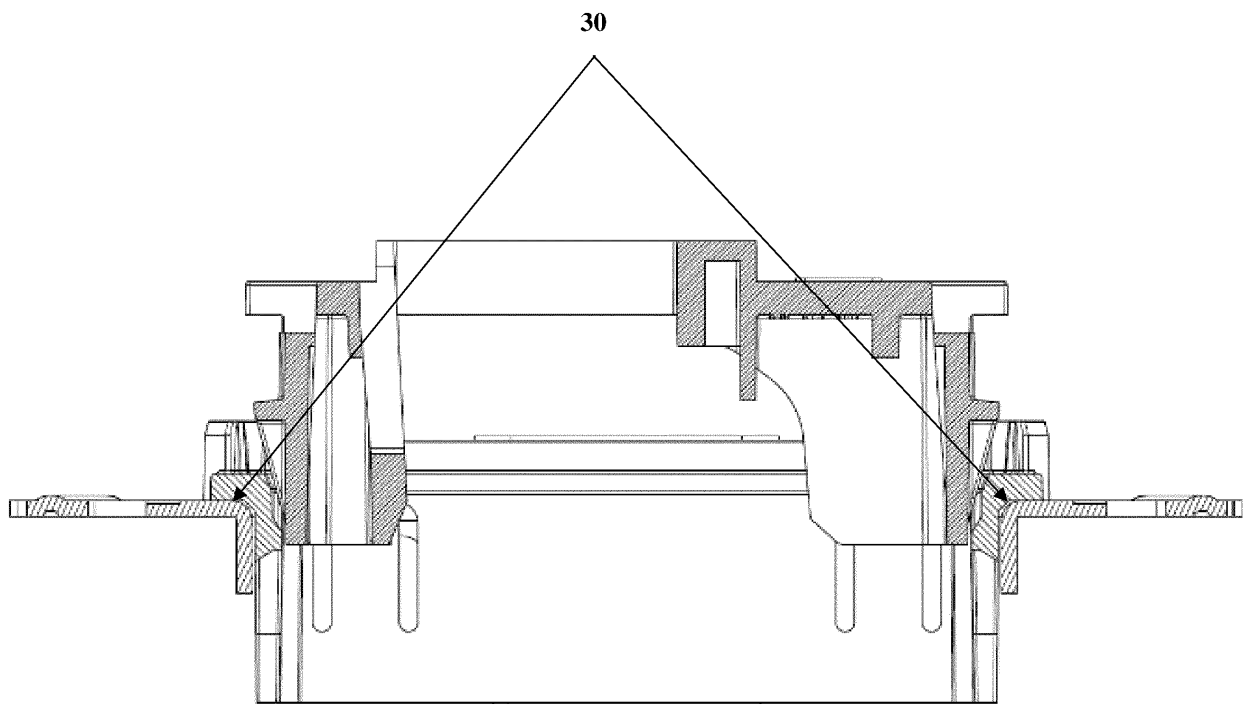


Fig. 11

REFERENCES CITED IN THE DESCRIPTION

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