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(54) **CONNECTOR HOUSING, CONNECTOR AND CONNECTOR ASSEMBLY**

(57) The present invention discloses a connector housing, a connector, and a connector assembly. The connector housing comprises: an outer peripheral wall (10) which has an elastic buckle (11) formed on it; and an unlocking part (14) which is connected to the elastic buckle (11). When the connector housing (1) is not mated with a mating housing (2), the elastic buckle (11) is in a locking position engaged with a mounting panel (3) to lock the connector housing (1) to the mounting panel (3); when the connector housing (1) has been mated with the mating housing (2), the unlocking part (14) engages with a mating unlocking part (24) on the mating housing (2) and the elastic buckle (11) is moved from the locking position to an unlocking position detached from the mounting panel (3) under the driving of the mating unlocking part (24). In the present invention, by mating the connector housing with the mating housing of the mating connector, the elastic buckle on the connector housing can be pushed to the unlocking position away from the mounting panel without the need for a dedicated unlocking tool, making the unlocking operation of the elastic buckle very simple.

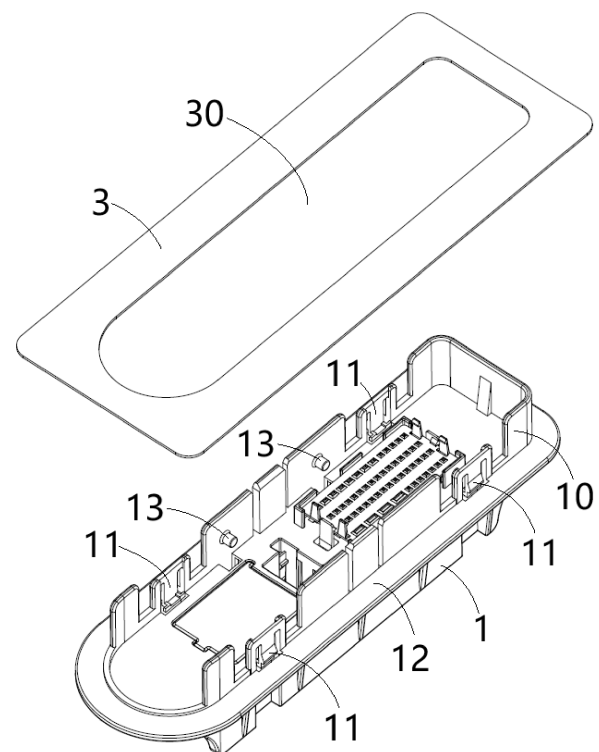


Fig.1

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Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of Chinese Patent Application No. CN202411614219.0 filed on November 12, 2024 in the State Intellectual Property Office of China, the whole disclosure of which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present invention relates to a connector housing, a connector comprising the connector housing, and a connector assembly comprising the connector.

Description of the Related Art

[0003] In the prior art, a door connector is usually installed on the door sheet metal. The door connector includes a housing and terminals arranged in the housing. An elastic buckle is formed on the housing for locking the housing to the door sheet metal. When it is necessary to remove the door connector from the door sheet metal, a specialized unlocking tool must be used to drive the elastic buckle on the door connector to the unlocking position that is detached from the door sheet metal. Due to the formation of multiple elastic buckles on the housing of the door connector, unlocking multiple elastic buckles simultaneously is very difficult and time-consuming.

SUMMARY OF THE INVENTION

[0004] The present invention has been made to overcome or alleviate at least one aspect of the above mentioned disadvantages.

[0005] According to an aspect of the present invention, there is provided a connector housing. The connector housing comprises: an outer peripheral wall which has an elastic buckle formed on it; and an unlocking part which is connected to the elastic buckle. When the connector housing is not mated with a mating housing, the elastic buckle is in a locking position engaged with a mounting panel to lock the connector housing to the mounting panel; when the connector housing has been mated with the mating housing, the unlocking part engages with a mating unlocking part on the mating housing and the elastic buckle is moved from the locking position to an unlocking position detached from the mounting panel under the driving of the mating unlocking part.

[0006] According to an exemplary embodiment of the present invention, the connector housing is adapted to mate with the mating housing along its height direction, and the elastic buckle is adapted to be moved between the locking position and the unlocking position along the transverse direction of the connector housing; a slope

surface inclined with respect to the height direction is formed on the unlocking part, and the slope surface on the unlocking part is used to cooperate with a mating slope surface on the mating unlocking part to convert the movement of the mating unlocking part along the height direction into the movement of the elastic buckle along the transverse direction.

[0007] According to another exemplary embodiment of the present invention, the elastic buckle comprises: a frame which is in the shape of a door frame with an opening; a cantilever connected to the frame and suspended in the frame; and a protrusion formed on the cantilever. The connector housing is adapted to be installed into an installation opening of the mounting panel, and the protrusion is adapted to rest against the edge of the installation opening of the mounting panel along the height direction to lock the connector housing to the mounting panel.

[0008] According to another exemplary embodiment of the present invention, the frame comprises: a pair of side pillars, whose lower ends are connected to the outer peripheral wall; and a top beam connected between the upper ends of the pair of side pillars. The cantilever extends along the height direction and its upper end is connected to the top beam, the protrusion is formed on the outer side of the lower end of the cantilever, and the unlocking part is connected to the inner side of the lower end of the cantilever.

[0009] According to another exemplary embodiment of the present invention, the unlocking part has two ears respectively located on both sides of the width direction of the cantilever, which are used to engage with two tongues on the mating housing respectively; the slope surfaces are respectively formed on the two ears, and the slope surfaces on the two ears are used to respectively cooperate with the mating slope surfaces on the two tongues.

[0010] According to another exemplary embodiment of the present invention, the connector housing further comprises a flange portion formed outside the outer peripheral wall. When the connector housing is installed into the installation opening of the mounting panel, the edge of the installation opening of the mounting panel is clamped between the flange portion and the protrusion of the elastic buckle, so that the connector housing is locked to the mounting panel.

[0011] According to another exemplary embodiment of the present invention, when the connector housing installed on the mounting panel is mated with the mating housing, the protrusion of the elastic buckle is moved to the unlocking position that is detached from the edge of the installation opening of the mounting panel, allowing the connector housing to be pulled out from the installation opening of the mounting panel.

[0012] According to another exemplary embodiment of the present invention, multiple elastic buckles and multiple unlocking parts respectively connected to the multiple elastic buckles are formed on the outer peripheral wall of

the connector housing, and the multiple elastic buckles are distributed at intervals in the circumferential direction of the connector housing.

[0013] According to another exemplary embodiment of the present invention, the outer peripheral wall of the connector housing comprises a pair of opposite side walls in the transverse direction of the connector housing, and the elastic buckle is formed on the side wall of the connector housing; a protruding post is formed on the inner side of the side wall of the connector housing along the transverse direction, and the protruding post is used to slidably mate with a sliding slot on a driving component inserted into the mating housing, so that the mating housing can be moved from a pre installation position to a final installation position under the driving of the driving component.

[0014] According to another aspect of the present invention, there is provided a connector. The connector comprises: the above connector housing; and a terminal set in the connector housing. The terminal is used to mate with a mating terminal set in a mating housing of a mating connector.

[0015] According to another aspect of the present invention, there is provided a connector assembly. The connector assembly comprises: the above connector and a mating connector. The mating connector includes: a mating housing inserted into the connector housing along the height direction of the connector housing; and a mating terminal set in the mating housing and mated with the terminal in the connector housing. A mating unlocking part is formed on the peripheral wall of the mating housing, which engages with the unlocking part of the connector housing to push the elastic buckle of the connector housing from the locking position to the unlocking position.

[0016] According to an exemplary embodiment of the present invention, a mating slope surface is formed on the mating unlocking part, which cooperates with the slope surface on the unlocking part to convert the movement of the mating unlocking part in the height direction into the movement of the elastic buckle in the transverse direction of the connector housing.

[0017] According to another exemplary embodiment of the present invention, a receiving slot corresponding to the elastic buckle is formed on the peripheral wall of the mating housing, and the elastic buckle is accommodated in the receiving slot on the peripheral wall of the mating housing.

[0018] According to another exemplary embodiment of the present invention, the mating unlocking part comprises two tongues respectively located on both sides of the width direction of the receiving slot, and the two tongues are respectively engaged with the two ears on the unlocking part; the two tongues are respectively formed with the mating slope surfaces, and the mating slope surfaces on the two tongues are respectively mated with the slope surfaces on the two ears.

[0019] According to another exemplary embodiment of

the present invention, multiple receiving slots and multiple mating unlocking parts are formed on the peripheral wall of the mating housing, multiple elastic buckles on the connector housing are respectively received in the multiple receiving slots, and the multiple mating unlocking parts are respectively engaged with the multiple unlocking parts on the connector housing.

[0020] According to another exemplary embodiment of the present invention, the peripheral wall of the mating housing comprises a pair of side walls opposite to each other in the transverse direction of the mating housing, and the receiving slot and the mating unlocking part are formed on the side walls of the mating housing.

[0021] According to another exemplary embodiment of the present invention, the connector assembly further comprises a driving component. The driving component includes: a pair of push rod parts which are respectively formed with sliding slots; and an end plate portion connected between the outer ends of the pair of push rod parts. A pair of slots extending along the longitudinal direction of the mating housing are respectively formed in a pair of side walls of the mating housing, and a pair of push rod parts of the driving component are respectively inserted into the slots on the pair of side walls of the mating housing, a slot hole connected to the slot is formed in the side wall of the mating housing, and the protruding post is inserted into the sliding slot through the slot hole and slidably mated with the sliding slot, so that the mating connector can be move from a pre installation position to a final installation position along the height direction under the drive of the driving component.

[0022] According to another exemplary embodiment of the present invention, the driving component is inserted into the slot of the mating housing in a movable manner, and can be moved relative to the mating housing along the longitudinal direction between a pre locking position and a final locking position; when the driving component is moved from the pre locking position to the final locking position, the mating connector is moved from the pre installation position to the final installation position under the driving of the driving component.

[0023] According to another exemplary embodiment of the present invention, when the mating connector is in the pre installation position, the mating terminal is not in contact with the terminal in the connector and the mating unlocking part is separated from the unlocking part; when the mating connector is in the final installation position, the mating terminal is mated with the terminal in the connector and the mating unlocking part is engaged with the unlocking part.

[0024] According to another exemplary embodiment of the present invention, the sliding slot extends a predetermined length in a direction inclined to the height direction and longitudinal direction of the mating housing, so as to be able to convert the movement of the driving component along the longitudinal direction into the movement of the mating connector along the height direction.

[0025] According to another exemplary embodiment of

the present invention, an elastic locking buckle is formed on the push rod part of the driving component, and a pre locking slot and a final locking slot are formed on the mating housing, with the pre locking slot and the final locking slot spaced apart in the longitudinal direction of the mating housing; when the driving component is in the pre locking position, the elastic locking buckle engages with the pre locking slot to keep the driving component in the pre locking position; when the driving component is in the final locking position, the elastic locking buckle engages with the final locking slot to hold the driving component in the final locking position.

[0026] According to another exemplary embodiment of the present invention, the sliding slot on the push rod part has an inlet located at one end to allow the protruding post on the connector housing to enter into the sliding slot through the inlet; when the driving component is in the pre locking position and the mating housing is in the pre installation position, the protruding post on the connector housing is located in the inlet of the sliding slot on the push rod part; when the driving component is in the final locking position and the mating housing is in the final installation position, the protruding post on the connector housing is located in the other end of the sliding slot on the push rod part.

[0027] In the aforementioned exemplary embodiments according to the present invention, by mating the connector housing with the mating housing of the mating connector, the elastic buckle on the connector housing can be pushed to the unlocking position detached from the mounting panel without the need for a dedicated unlocking tool, making the unlocking operation of the elastic buckle very simple.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] The above and other features of the present invention will become more apparent by describing in detail exemplary embodiments thereof with reference to the accompanying drawings, in which:

Figure 1 shows an illustrative exploded view of a connector and mounting panel according to an exemplary embodiment of the present invention;
 Figure 2 shows an illustrative assembly view of a connector and mounting panel according to an exemplary embodiment of the present invention;
 Figure 3 shows a transverse sectional view of a connector and mounting panel according to an exemplary embodiment of the present invention;
 Figure 4 shows an illustrative perspective view of the mating housing and driving component of a mating connector according to an exemplary embodiment of the present invention, with the driving component in a pre locking position;
 Figure 5 shows an illustrative perspective view of the driving component of a mating connector according to an exemplary embodiment of the present inven-

tion;

Figure 6 shows an illustrative perspective view of the mating housing of a mating connector according to an exemplary embodiment of the present invention;
 Figure 7 shows a transverse sectional view of the mating housing of a mating connector according to an exemplary embodiment of the present invention when viewed from the top;

Figure 8 shows a transverse sectional view of the mating housing of a mating connector according to an exemplary embodiment of the present invention when viewed from the bottom;

Figure 9 shows an illustrative perspective view of a connector and a mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in a pre installation position, and the driving component is in a pre locking position;

Figure 10 shows a longitudinal sectional view of a connector and a mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in a pre installation position, and the driver is in a pre locking position;

Figure 11 shows a transverse sectional view of a connector and a mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in a pre installation position and the driver is in a pre locking position;

Figure 11A shows an illustrative partially enlarged view of the connector and mating connector shown in Figure 11;

Figure 12 shows an illustrative perspective view of a connector and a mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in the final installation position, and the driving component is in the final locking position;

Figure 13 shows a longitudinal sectional view of a connector and mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in the final installation position, and the driving component is in the final locking position;

Figure 14 shows a transverse sectional view of a connector and mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in the final installation position, and the driving component is in the final locking position; and

Figure 14A shows an illustrative partially enlarged view of the connector and mating connector shown in Figure 14.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

[0029] Exemplary embodiments of the present disclosure will be described hereinafter in detail with reference to the attached drawings, wherein the like reference numerals refer to the like elements. The present disclosure may, however, be embodied in many different forms and should not be construed as being limited to the embodiment set forth herein; rather, these embodiments are provided so that the present disclosure will be thorough and complete, and will fully convey the concept of the disclosure to those skilled in the art.

[0030] In the following detailed description, for purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the disclosed embodiments. It will be apparent, however, that one or more embodiments may be practiced without these specific details. In other instances, well-known structures and devices are schematically shown in order to simplify the drawing.

[0031] According to a general concept of the present invention, there is provided a connector housing. The connector housing comprises: an outer peripheral wall which has an elastic buckle formed on it; and an unlocking part which is connected to the elastic buckle. When the connector housing is not mated with a mating housing, the elastic buckle is in a locking position engaged with a mounting panel to lock the connector housing to the mounting panel; when the connector housing has been mated with the mating housing, the unlocking part engages with a mating unlocking part on the mating housing and the elastic buckle is moved from the locking position to an unlocking position detached from the mounting panel under the driving of the mating unlocking part.

[0032] According to another general concept of the present invention, there is provided a connector. The connector comprises: the above connector housing; and a terminal set in the connector housing. The terminal is used to mate with a mating terminal set in a mating housing of a mating connector.

[0033] According to another general concept of the present invention, there is provided a connector assembly. The connector assembly comprises: the above connector and a mating connector. The mating connector includes: a mating housing inserted into the connector housing along the height direction of the connector housing; and a mating terminal set in the mating housing and mated with the terminal in the connector housing. A mating unlocking part is formed on the peripheral wall of the mating housing, which engages with the unlocking part of the connector housing to push the elastic buckle of the connector housing from the locking position to the unlocking position.

[0034] Figure 1 shows an illustrative exploded view of a connector and mounting panel 3 according to an exemplary embodiment of the present invention; Figure 2 shows

an illustrative assembly view of a connector and mounting panel 3 according to an exemplary embodiment of the present invention; Figure 3 shows a transverse sectional view of a connector and mounting panel according to an exemplary embodiment of the present invention; Figure 4 shows an illustrative perspective view of the mating housing 2 and the driving component 4 of the mating connector according to an exemplary embodiment of the present invention, where the driving component 4 is in a pre locking position; Figure 5 shows an illustrative perspective view of the driving component 4 of the mating connector according to an exemplary embodiment of the present invention; Figure 6 shows an illustrative perspective view of the mating housing 2 of a mating connector according to an exemplary embodiment of the present invention; Figure 7 shows a transverse sectional view of the mating housing 2 of a mating connector according to an exemplary embodiment of the present invention when viewed from the top; Figure 8 shows a transverse sectional view of the mating housing 2 of a mating connector according to an exemplary embodiment of the present invention when viewed from the bottom; Figure 9 shows an illustrative perspective view of a connector and a mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in a pre installation position, and the driving component 4 is in a pre locking position; Figure 10 shows a longitudinal sectional view of a connector and a mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in a pre installation position, and the driving component 4 is in a pre locking position; Figure 11 shows a transverse sectional view of a connector and a mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in a pre installation position, and the driving component 4 is in a pre locking position; Figure 11A shows an illustrative partially enlarged view of the connector and mating connector shown in Figure 11; Figure 12 shows an illustrative perspective view of a connector and a mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in the final installation position, and the driving component 4 is in the final locking position; Figure 13 shows a longitudinal sectional view of a connector and mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in the final installation position, and the driving component 4 is in the final locking position; Figure 14 shows a transverse sectional view of a connector and mating connector according to an exemplary embodiment of the present invention, wherein the connector and mating connector are in the final installation position, and the driving component 4 is in the final locking position; Figure 14A shows an illustrative partially enlarged view of the connector and mating connector shown in Figure 14.

[0035] As shown in Figures 1 to 14, in an exemplary

embodiment of the present invention, a connector housing 1 is disclosed. The connector housing 1 includes an outer peripheral wall 10 and an unlocking part 14. An elastic buckle 11 is formed on the outer peripheral wall 10. The unlocking part 14 is connected to the elastic buckle 11. When the connector housing 1 is not mated with the mating housing 2, the elastic buckle 11 is in the locking position engaged with the mounting panel 3 to lock the connector housing 1 to the mounting panel 3. When the connector housing 1 has been mated with the mating housing 2, the unlocking part 14 engages with the mating unlocking part 24 on the mating housing 2, and the elastic buckle 11 is moved from the locking position to the unlocking position detached from the mounting panel 3 under the driving of the mating unlocking part 24.

[0036] As shown in Figures 1 to 14, in the illustrated embodiment, the connector housing 1 is adapted to mate with the mating housing 2 along its height direction Z, and the elastic buckle 11 is adapted to move between the locking position and the unlocking position along the transverse direction X of the connector housing 1. A slope surface 14a inclined with respect to the height direction Z is formed on the unlocking part 14. The slope surface 14a on the unlocking part 14 is used to cooperate with the mating slope surface 24a on the mating unlocking part 24, in order to convert the movement of the mating unlocking part 24 in the height direction Z into the movement of the elastic buckle 11 in the transverse direction X.

[0037] As shown in Figures 1 to 14, in the illustrated embodiment, the elastic buckle 11 includes a frame 111, a cantilever 112, and a protrusion 113. The frame 111 is shaped like a door frame with an opening. The cantilever 112 is connected to the frame 111 and suspended in the frame 111. The protrusion 113 is formed on the cantilever 112. The connector housing 1 is adapted to be installed into the installation opening 30 of the mounting panel 3, and the protrusion 113 is adapted to be pressed against the edge of the installation opening 30 of the mounting panel 3 along the height direction Z to lock the connector housing 1 to the mounting panel 3.

[0038] As shown in Figures 1 to 14, in the illustrated embodiment, the frame 111 includes a pair of side pillars 11a and a top beam 11b. The lower ends of the pair of side pillars 11a are connected to the outer peripheral wall 10. The top beam 11b is connected between the upper ends of the pair of side pillars 11a. The cantilever 112 extends along the height direction Z and its upper end is connected to the top beam 11b. The protrusion 113 is formed on the outer side of the lower end of the cantilever 112, and the unlocking part 14 is connected to the inner side of the lower end of the cantilever 112.

[0039] As shown in Figures 1 to 14, in the illustrated embodiment, the unlocking part 14 has two ears 140 located on both sides of the cantilever arm 112 in the width direction, respectively. The two ears 140 are used to respectively engage with two tongues 240 on the mating housing 2. Slope surfaces 14a are formed on each of the two ears 140, and the slope surfaces 14a

on the two ears 140 are used to respectively cooperate with the mating slope surfaces 24a on the two tongues 240.

[0040] As shown in Figures 1 to 14, in the illustrated embodiment, the connector housing 1 further includes a flange portion 12, which is formed outside the outer peripheral wall 10. When the connector housing 1 is installed into the installation opening 30 of the mounting panel 3, the edge of the installation opening 30 of the mounting panel 3 is clamped between the flange portion 12 and the protrusion 113 of the elastic buckle 11, so that the connector housing 1 is locked to the mounting panel 3.

[0041] As shown in Figures 1 to 14, in the illustrated embodiment, when the connector housing 1 installed on the mounting panel 3 is mated with the mating housing 2, the protrusion 113 of the elastic buckle 11 is moved to an unlocking position that is detached from the edge of the installation opening 30 of the mounting panel 3, allowing the connector housing 1 to be pulled out from the installation opening 30 of the mounting panel 3.

[0042] As shown in Figures 1 to 14, in the illustrated embodiment, multiple elastic buckles 11 and multiple unlocking parts 14 connected to the multiple elastic buckles 11 are formed on the outer peripheral wall 10 of the connector housing 1, and the multiple elastic buckles 11 are distributed at intervals in the circumferential direction of the connector housing 1.

[0043] As shown in Figures 1 to 14, in the illustrated embodiment, the outer peripheral wall 10 of the connector housing 1 includes a pair of opposite side walls 10a in the transverse direction X of the connector housing 1, and the elastic buckles 11 are formed on the side walls 10a of the connector housing 1. A protruding post 13 is formed on the inner side of the side wall 10a of the connector housing 1 along the transverse direction X. The protruding post 13 is used to slidably mate with the sliding slot 40 on the driving component 4 inserted into the mating housing 2, so that the mating housing 2 can be moved from a pre installation position to a final installation position under the driving of the driving component 4.

[0044] As shown in Figures 1 to 14, in another exemplary embodiment of the present invention, a connector is also disclosed. The connector includes a connector housing 1 and a terminal (not shown). The terminal is set in the connector housing 1. The terminal is used to mate with the mating terminal (not shown) set in the mating housing 2 of the mating connector.

[0045] As shown in Figures 1 to 14, in another exemplary embodiment of the present invention, a connector assembly is also disclosed. The connector assembly includes the aforementioned connector and a mating connector. The mating connector includes: a mating housing 2 and a mating terminal. The mating housing 2 is inserted into the connector housing 1 along the height direction Z of the connector housing 1. The mating terminal is set in the mating housing 2 and mated with the terminal in the connector housing 1. A mating unlocking

part 24 is formed on the peripheral wall 20 of the mating housing 2, which engages with the unlocking part 14 of the connector housing 1 to push the elastic buckle 11 of the connector housing 1 from the locking position to the unlocking position.

[0046] As shown in Figures 1 to 14, in the illustrated embodiment, a mating slope surface 24a is formed on the mating unlocking part 24, which cooperates with the slope surface 14a on the unlocking part 14 to convert the movement of the mating unlocking part 24 in the height direction Z into the movement of the elastic buckle 11 in the transverse direction X of the connector housing 1.

[0047] As shown in Figures 1 to 14, in the illustrated embodiment, a receiving slot 21 corresponding to the elastic buckle 11 is formed on the peripheral wall 20 of the mating housing 2, and the elastic buckle 11 is accommodated in the receiving slot 21 on the peripheral wall 20 of the mating housing 2.

[0048] As shown in Figures 1 to 14, in the illustrated embodiment, the mating unlocking part 24 includes two tongues 240 located on both sides of the width direction of the receiving slot 21, and the two tongues 240 are respectively engaged with the two ears 140 on the unlocking part 14. On the two tongues 240, there are mating slope surfaces 24a formed, which are respectively mated with the slope surfaces 14a on the two ears 140.

[0049] As shown in Figures 1 to 14, in the illustrated embodiment, multiple receiving slots 21 and multiple mating unlocking parts 24 are formed on the peripheral wall 20 of the mating housing 2. Multiple elastic buckles 11 on the connector housing 1 are respectively accommodated in the multiple receiving slots 21, and the multiple mating unlocking parts 24 are respectively engaged with the multiple unlocking parts 14 on the connector housing 1.

[0050] As shown in Figures 1 to 14, in the illustrated embodiment, the peripheral wall 20 of the mating housing 2 includes a pair of side walls 20 that are opposite in the transverse direction X of the mating housing 2, and the receiving slots 21 and the mating unlocking parts 24 are formed on the side walls 20 of the mating housing 2.

[0051] As shown in Figures 1 to 14, in the illustrated embodiment, the connector assembly further includes a driving component 4. The driving component 4 includes a pair of push rod parts 41 and an end plate portion 42. Sliding slots 40 are respectively formed on the pair of push rod parts 41. The end plate portion 42 is connected between the outer ends of the pair of push rod parts 41. A pair of slots 201 extending along the longitudinal direction Y of the mating housing 2 are respectively formed in the pair of side walls 20a of the mating housing 2, and the pair of push rod parts 41 of the driving component 4 are respectively inserted into the slots 201 on the pair of side walls 20a of the mating housing 2. A slot hole 202 is formed in the side wall 20a of the mating housing 2, which is connected to the slot 201. The protruding post 13 is inserted into the sliding slot 40 through the slot hole 202

and slides along the sliding slot 40, so that the mating connector can be moved from a pre installation position to a final installation position along the height direction Z under the drive of the driving component 4.

[0052] As shown in Figures 1 to 14, in the illustrated embodiment, the driving component 4 is inserted into the slot 201 of the mating housing 2 in a movable manner, and can be moved relative to the mating housing 2 along the longitudinal direction Y between the pre locking position and the final locking position. When the driving component 4 is moved from the pre locking position to the final locking position, the mating connector is moved from the pre installation position to the final installation position under the driving of the driving component 4.

[0053] As shown in Figures 1 to 14, in the illustrated embodiment, when the mating connector is in the pre installation position, the mating terminals are not in contact with the terminals in the connector and the mating unlocking part 24 is separated from the unlocking part 14. When the mating connector is in the final installation position, the mating terminals are mated with the terminals in the connector and the mating unlocking part 24 is engaged with the unlocking part 14.

[0054] As shown in Figures 1 to 14, in the illustrated embodiment, the sliding slot 40 extends a predetermined length in a direction inclined to the height direction Z and longitudinal direction Y of the mating housing 2, so as to be able to convert the movement of the driving component 4 along the longitudinal direction Y into the movement of the mating connector along the height direction Z.

[0055] As shown in Figures 1 to 14, in the illustrated embodiment, an elastic locking buckle 43 is formed on the push rod part 41 of the driving component 4, and a pre locking slot 23a and a final locking slot 23b are formed on the mating housing 2, with the pre locking slot 23a and the final locking slot 23b spaced apart in the longitudinal direction Y of the mating housing 2. When the driving component 4 is in the pre locking position, the elastic locking buckle 43 engages with the pre locking slot 23a to keep the driving component 4 in the pre locking position. When the driving component 4 is in the final locking position, the elastic locking buckle 43 engages with the final locking slot 3b to hold the driving component 4 in the final locking position.

[0056] As shown in Figures 1 to 14, in the illustrated embodiment, the sliding slot 40 on the push rod part 41 has an inlet 401 located at one end to allow the protruding post 13 on the connector housing 1 to enter the sliding slot 40 through the inlet 401. When the driving component 4 is in the pre locking position and the mating housing 2 is in the pre installation position, the protruding post 13 on the connector housing 1 is located in the inlet 401 of the sliding slot 40 on the push rod part 41. When the driving component 4 is in the final locking position and the mating housing 2 is in the final installation position, the protruding post 13 on the connector housing 1 is located in the other end of the sliding slot 40 on the push rod part 41.

[0057] It should be appreciated for those skilled in this

art that the above embodiments are intended to be illustrated, and not restrictive. For example, many modifications may be made to the above embodiments by those skilled in this art, and various features described in different embodiments may be freely combined with each other without conflicting in configuration or principle.

[0058] Although several exemplary embodiments have been shown and described, it would be appreciated by those skilled in the art that various changes or modifications may be made in these embodiments without departing from the principles and spirit of the disclosure, the scope of which is defined in the claims and their equivalents.

[0059] As used herein, an element recited in the singular and proceeded with the word "a" or "an" should be understood as not excluding plural of said elements or steps, unless such exclusion is explicitly stated. Furthermore, references to "one embodiment" of the present invention are not intended to be interpreted as excluding the existence of additional embodiments that also incorporate the recited features. Moreover, unless explicitly stated to the contrary, embodiments "comprising" or "having" an element or a plurality of elements having a particular property may include additional such elements not having that property.

Claims

1. A connector housing, comprising:

an outer peripheral wall (10) which has an elastic buckle (11) formed on it; and
 an unlocking part (14) which is connected to the elastic buckle (11),
 wherein when the connector housing (1) is not mated with a mating housing (2), the elastic buckle (11) is in a locking position engaged with a mounting panel (3) to lock the connector housing (1) to the mounting panel (3),
 wherein when the connector housing (1) has been mated with the mating housing (2), the unlocking part (14) engages with a mating unlocking part (24) on the mating housing (2) and the elastic buckle (11) is moved from the locking position to an unlocking position detached from the mounting panel (3) under the driving of the mating unlocking part (24).

2. The connector housing according to claim 1,

wherein the connector housing (1) is adapted to mate with the mating housing (2) along its height direction (Z), and the elastic buckle (11) is adapted to be moved between the locking position and the unlocking position along the transverse direction (X) of the connector housing (1); wherein a slope surface (14a) inclined with re-

spect to the height direction (Z) is formed on the unlocking part (14), and the slope surface (14a) on the unlocking part (14) is used to cooperate with a mating slope surface (24a) on the mating unlocking part (24) to convert the movement of the mating unlocking part (24) along the height direction (Z) into the movement of the elastic buckle (11) along the transverse direction (X).

3. The connector housing according to claim 2,

wherein the elastic buckle (11) comprises:

a frame (111) which is in the shape of a door frame with an opening;
 a cantilever (112) connected to the frame (111) and suspended in the frame (111); and
 a protrusion (113) formed on the cantilever (112),

wherein the connector housing (1) is adapted to be installed into an installation opening (30) of the mounting panel (3), and the protrusion (113) is adapted to rest against the edge of the installation opening (30) of the mounting panel (3) along the height direction (Z) to lock the connector housing (1) to the mounting panel (3).

4. The connector housing according to claim 3,

wherein the frame (111) comprises:

a pair of side pillars (11a), whose lower ends are connected to the outer peripheral wall (10); and
 a top beam (11b) connected between the upper ends of the pair of side pillars (11a),

wherein the cantilever (112) extends along the height direction (Z) and its upper end is connected to the top beam (11b), the protrusion (113) is formed on the outer side of the lower end of the cantilever (112), and the unlocking part (14) is connected to the inner side of the lower end of the cantilever (112),

wherein optionally the unlocking part (14) has two ears (140) respectively located on both sides of the width direction of the cantilever (112), which are used to engage with two tongues (240) on the mating housing (2) respectively;

wherein optionally the slope surfaces (14a) are respectively formed on the two ears (140), and the slope surfaces (14a) on the two ears (140) are used to respectively cooperate with the mating slope surfaces (24a) on the two tongues (240).

5. The connector housing according to claim 3, further comprising:

a flange portion (12) formed outside the outer peripheral wall (10),
 wherein when the connector housing (1) is installed into the installation opening (30) of the mounting panel (3), the edge of the installation opening (30) of the mounting panel (3) is clamped between the flange portion (12) and the protrusion (113) of the elastic buckle (11), so that the connector housing (1) is locked to the mounting panel (3),
 wherein optionally when the connector housing (1) installed on the mounting panel (3) is mated with the mating housing (2), the protrusion (113) of the elastic buckle (11) is moved to the unlocking position that is detached from the edge of the installation opening (30) of the mounting panel (3), allowing the connector housing (1) to be pulled out from the installation opening (30) of the mounting panel (3).

6. The connector housing according to claim 1, wherein multiple elastic buckles (11) and multiple unlocking parts (14) respectively connected to the multiple elastic buckles (11) are formed on the outer peripheral wall (10) of the connector housing (1), and the multiple elastic buckles (11) are distributed at intervals in the circumferential direction of the connector housing (1).

7. The connector housing according to any one of claims 1-6,

wherein the outer peripheral wall (10) of the connector housing (1) comprises a pair of opposite side walls (10a) in the transverse direction (X) of the connector housing (1), and the elastic buckle (11) is formed on the side wall (10a) of the connector housing (1);

wherein a protruding post (13) is formed on the inner side of the side wall (10a) of the connector housing (1) along the transverse direction (X), and the protruding post (13) is used to slidably mate with a sliding slot (40) on a driving component (4) inserted into the mating housing (2), so that the mating housing (2) can be moved from a pre installation position to a final installation position under the driving of the driving component (4).

8. A connector, comprising:

the connector housing (1) according to any one of claims 1-7; and
 a terminal set in the connector housing (1), wherein the terminal is used to mate with a

mating terminal set in a mating housing (2) of a mating connector.

9. A connector assembly, comprising:

the connector as claimed in claim 8; and
 a mating connector, including:

a mating housing (2) inserted into the connector housing (1) along the height direction (Z) of the connector housing (1); and
 a mating terminal set in the mating housing (2) and mated with the terminal in the connector housing (1),

wherein a mating unlocking part (24) is formed on the peripheral wall of the mating housing (2), which engages with the unlocking part (14) of the connector housing (1) to push the elastic buckle (11) of the connector housing (1) from the locking position to the unlocking position.

10. The connector assembly according to claim 9, wherein a mating slope surface (24a) is formed on the mating unlocking part (24), which cooperates with the slope surface (14a) on the unlocking part (14) to convert the movement of the mating unlocking part (24) in the height direction (Z) into the movement of the elastic buckle (11) in the transverse direction (X) of the connector housing (1).

11. The connector assembly according to claim 10, wherein a receiving slot (21) corresponding to the elastic buckle (11) is formed on the peripheral wall (20) of the mating housing (2), and the elastic buckle (11) is accommodated in the receiving slot (21) on the peripheral wall (20) of the mating housing (2).

12. The connector assembly according to claim 11,

wherein the mating unlocking part (24) comprises two tongues (240) respectively located on both sides of the width direction of the receiving slot (21), and the two tongues (240) are respectively engaged with the two ears (140) on the unlocking part (14);

wherein the two tongues (240) are respectively formed with the mating slope surfaces (24a), and the mating slope surfaces (24a) on the two tongues (240) are respectively mated with the slope surfaces (14a) on the two ears (140); and/or

wherein multiple receiving slots (21) and multiple mating unlocking parts (24) are formed on the peripheral wall (20) of the mating housing (2), multiple elastic buckles (11) on the connector housing (1) are respectively received in the multiple receiving slots (21), and the multiple

mating unlocking parts (24) are respectively engaged with the multiple unlocking parts (14) on the connector housing (1).

13. The connector assembly according to claim 11, wherein the peripheral wall (20) of the mating housing (2) comprises a pair of side walls (20a) opposite to each other in the transverse direction (X) of the mating housing (2), and the receiving slot (21) and the mating unlocking part (24) are formed on the side walls (20a) of the mating housing (2).

14. The connector assembly according to claim 13, further comprising:

a driving component (4), including:

a pair of push rod parts (41) which are respectively formed with sliding slots (40); and
an end plate portion (42) connected between the outer ends of the pair of push rod parts (41),

wherein a pair of slots (201) extending along the longitudinal direction (Y) of the mating housing (2) are respectively formed in a pair of side walls (20a) of the mating housing (2), and a pair of push rod parts (41) of the driving component (4) are respectively inserted into the slots (201) on the pair of side walls (20a) of the mating housing (2),

wherein a slot hole (202) connected to the slot (201) is formed in the side wall (20a) of the mating housing (2), and the protruding post (13) is inserted into the sliding slot (40) through the slot hole (202) and slidably mated with the sliding slot (40), so that the mating connector can be move from a pre installation position to a final installation position along the height direction (Z) under the drive of the driving component (4).

15. The connector assembly according to claim 14,

wherein the driving component (4) is inserted into the slot (201) of the mating housing (2) in a movable manner, and can be moved relative to the mating housing (2) along the longitudinal direction (Y) between a pre locking position and a final locking position;

wherein when the driving component (4) is moved from the pre locking position to the final locking position, the mating connector is moved from the pre installation position to the final installation position under the driving of the driving component (4),

wherein optionally when the mating connector is

in the pre installation position, the mating terminal is not in contact with the terminal in the connector and the mating unlocking part (24) is separated from the unlocking part (14);

wherein optionally when the mating connector is in the final installation position, the mating terminal is mated with the terminal in the connector and the mating unlocking part (24) is engaged with the unlocking part (14);

and/or

wherein optionally the sliding slot (40) extends a predetermined length in a direction inclined to the height direction (Z) and longitudinal direction (Y) of the mating housing (2), so as to be able to convert the movement of the driving component (4) along the longitudinal direction (Y) into the movement of the mating connector along the height direction (Z);

and/or

wherein optionally an elastic locking buckle (43) is formed on the push rod part (41) of the driving component (4), and a pre locking slot (3a) and a final locking slot (3b) are formed on the mating housing (2), with the pre locking slot (3a) and the final locking slot (3b) spaced apart in the longitudinal direction (Y) of the mating housing (2); wherein optionally when the driving component (4) is in the pre locking position, the elastic locking buckle (43) engages with the pre locking slot (3a) to keep the driving component (4) in the pre locking position;

wherein optionally when the driving component (4) is in the final locking position, the elastic locking buckle (43) engages with the final locking slot (3b) to hold the driving component (4) in the final locking position;

and/or

wherein optionally the sliding slot (40) on the push rod part (41) has an inlet (401) located at one end to allow the protruding post (13) on the connector housing (1) to enter into the sliding slot (40) through the inlet (401);

wherein optionally when the driving component (4) is in the pre locking position and the mating housing (2) is in the pre installation position, the protruding post (13) on the connector housing (1) is located in the inlet (401) of the sliding slot (40) on the push rod part (41);

wherein optionally when the driving component (4) is in the final locking position and the mating housing (2) is in the final installation position, the protruding post (13) on the connector housing (1) is located in the other end of the sliding slot (40) on the push rod part (41).

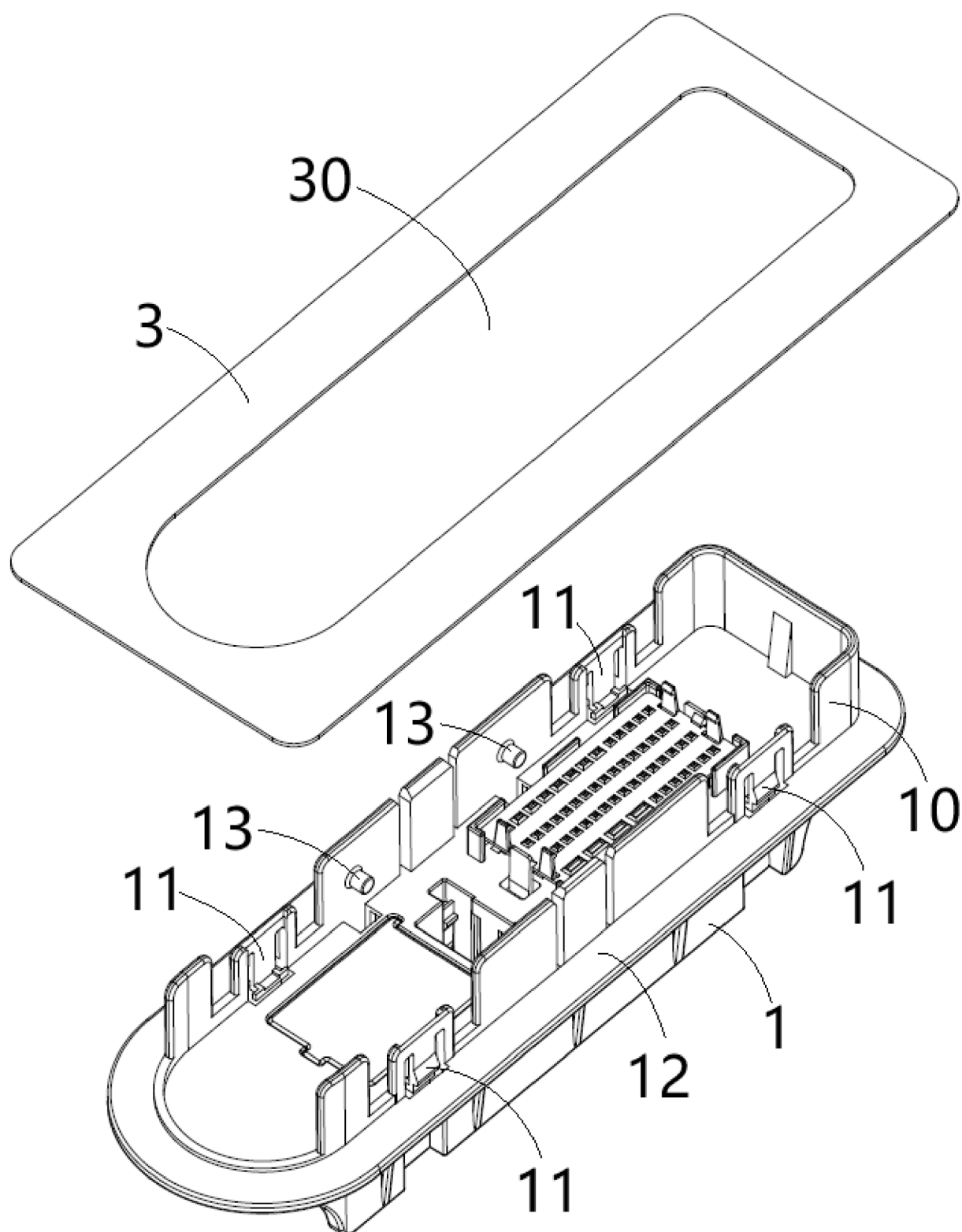


Fig.1

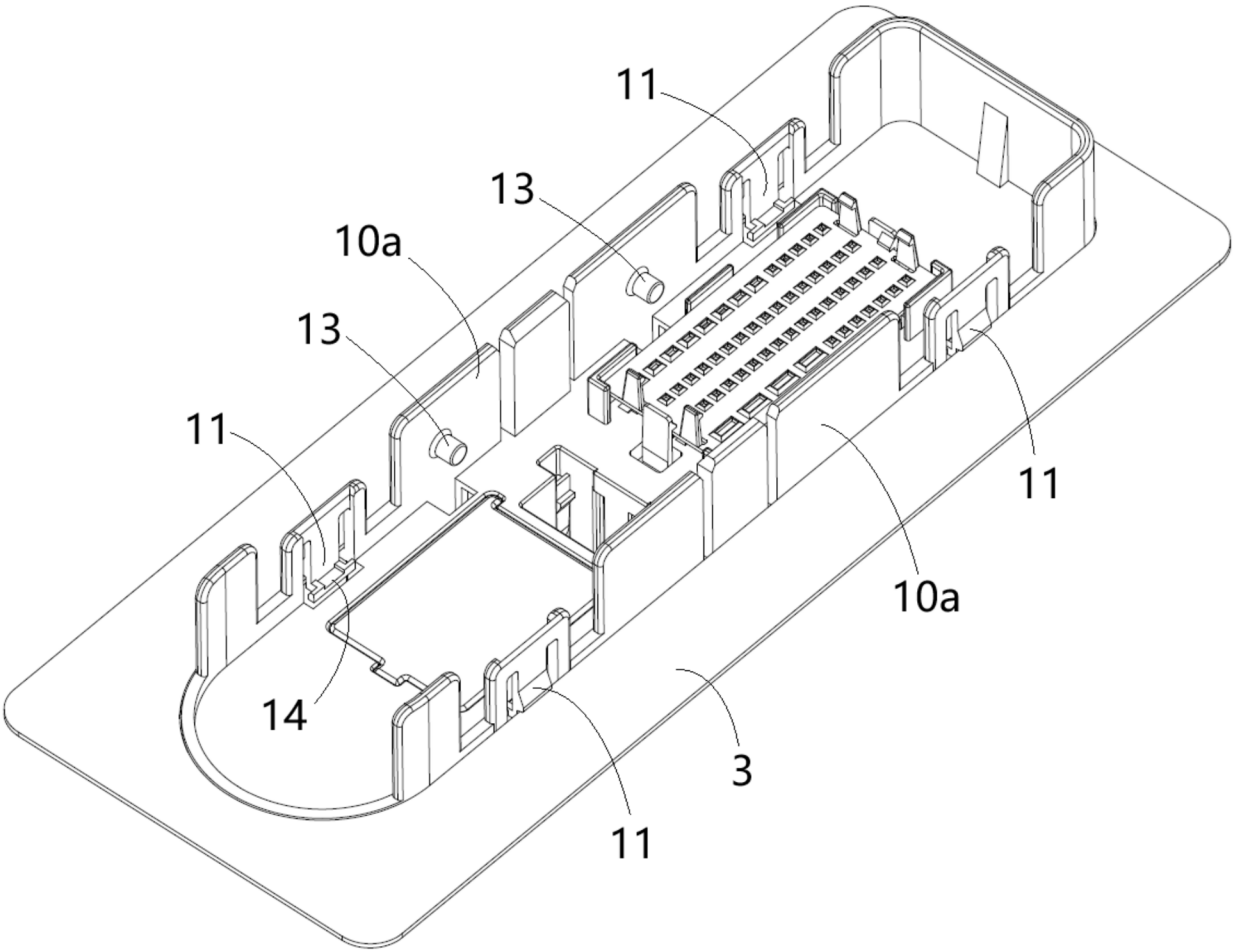


Fig.2

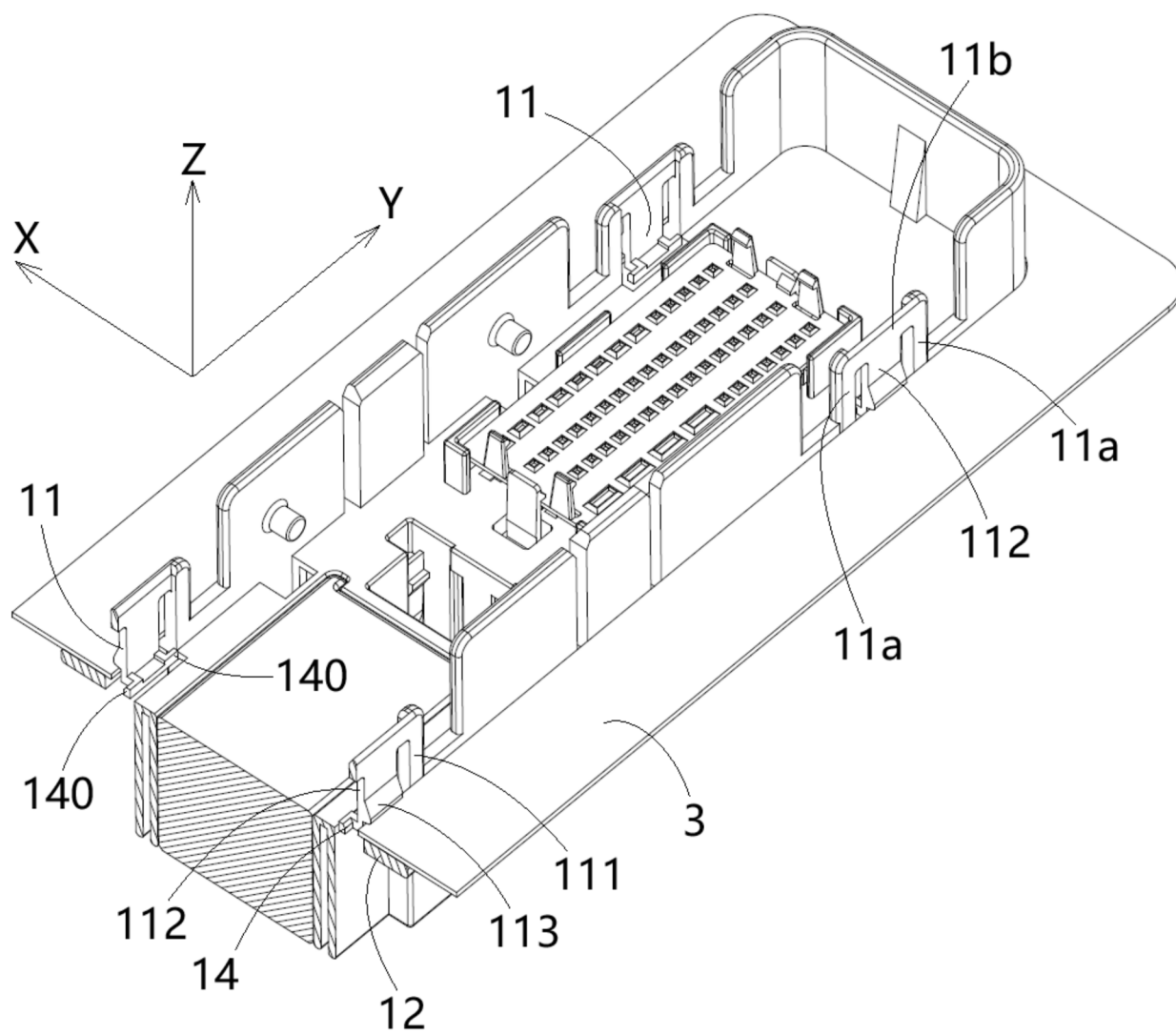


Fig.3

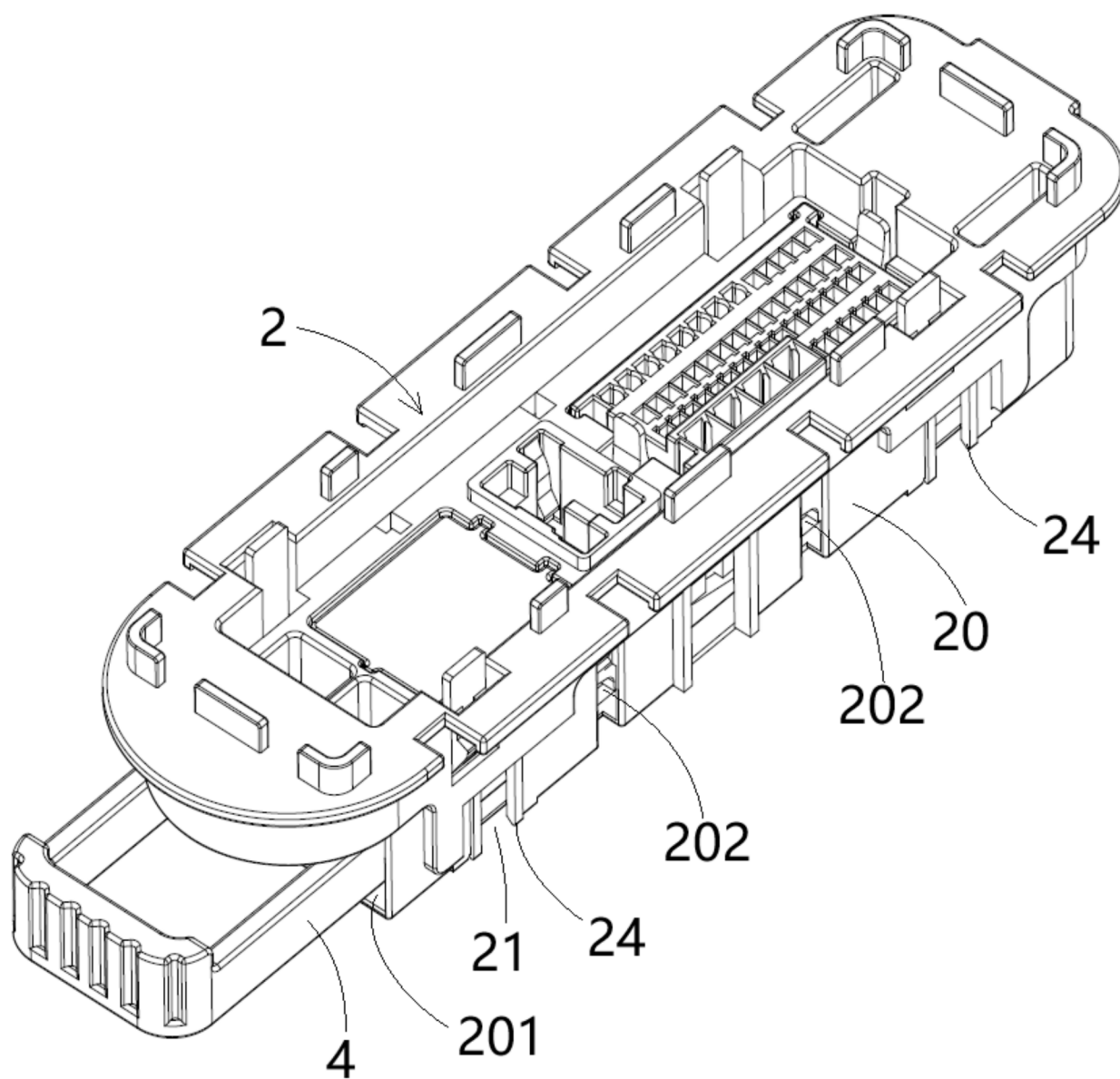


Fig.4

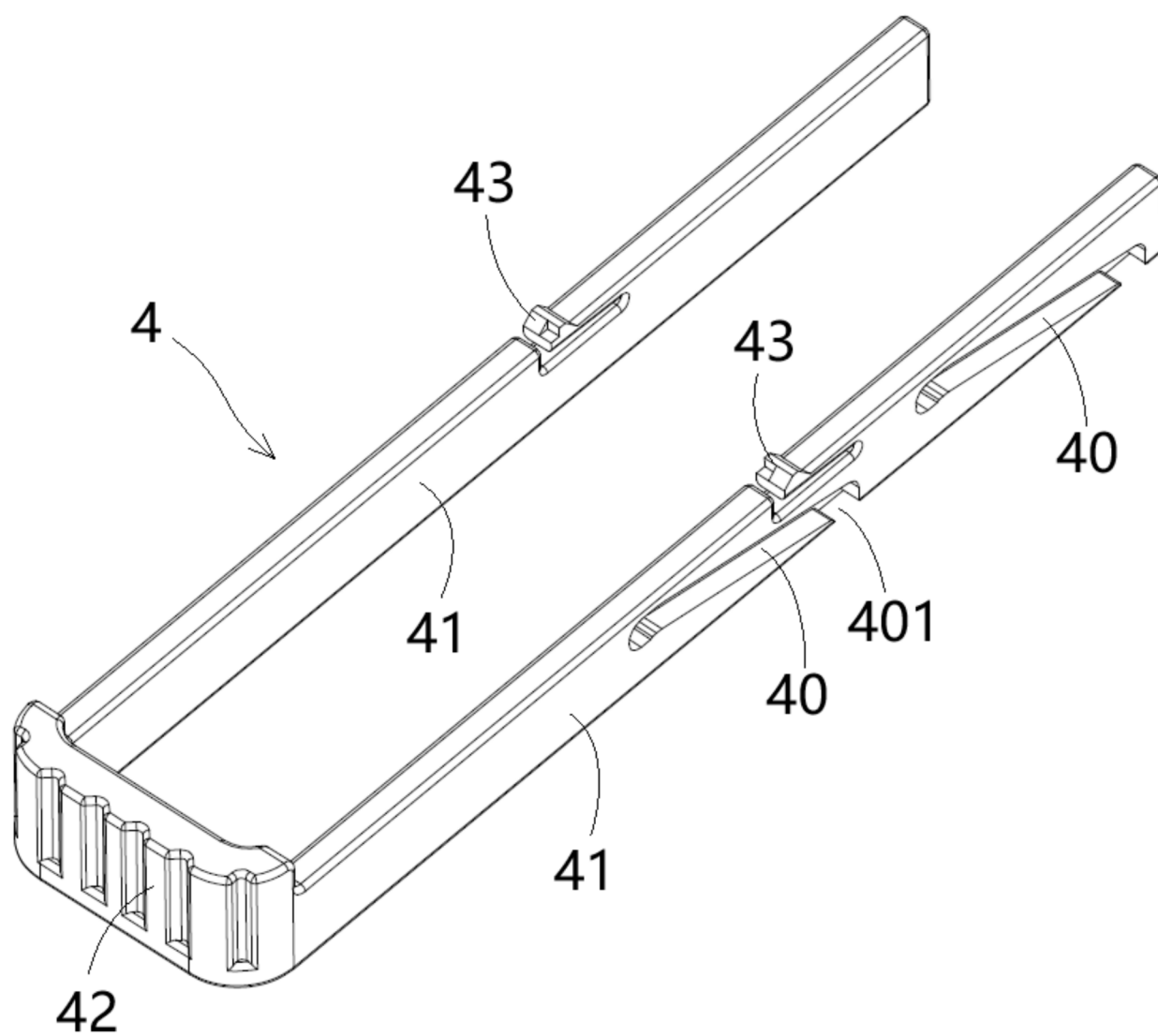


Fig.5

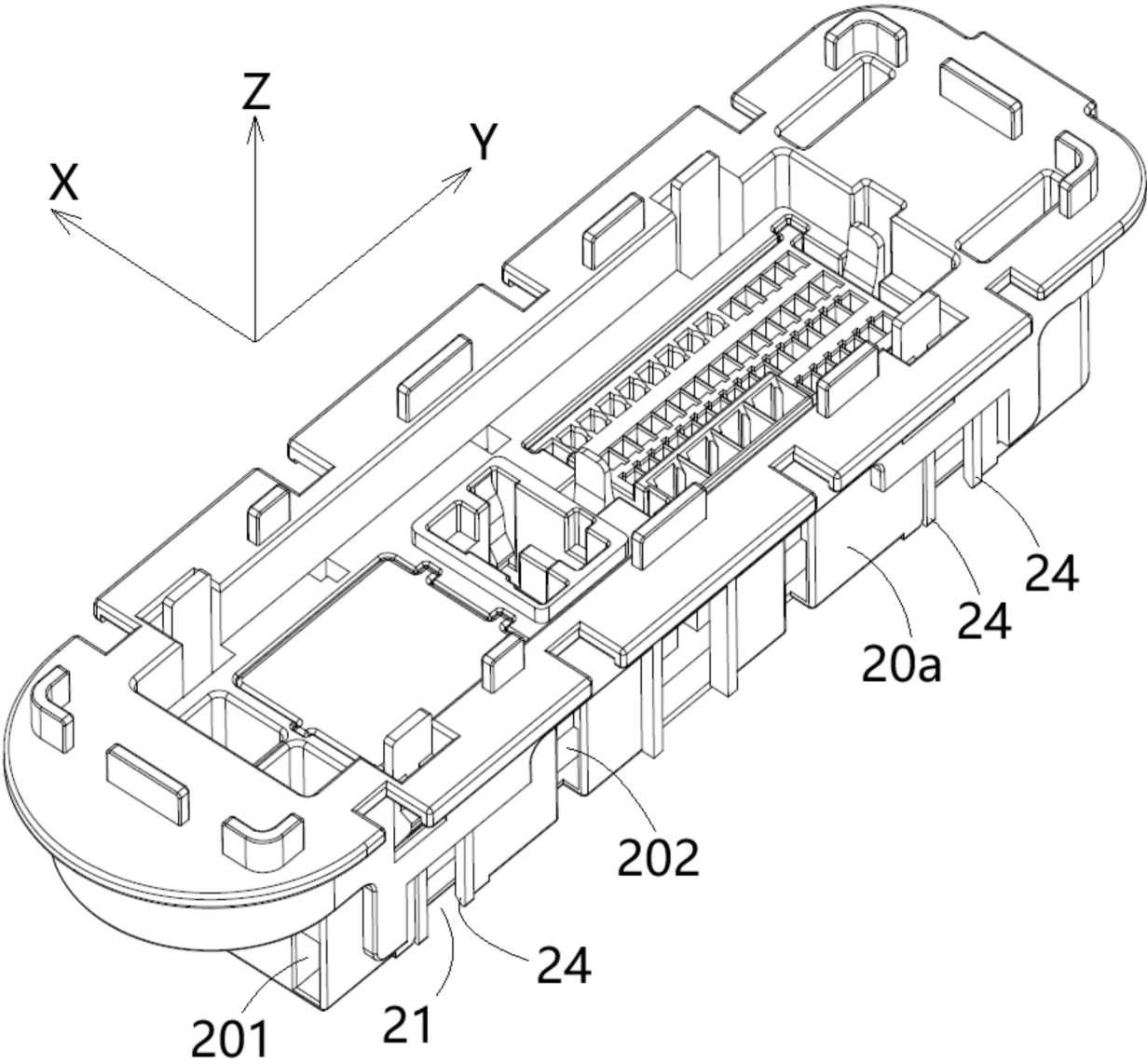


Fig.6

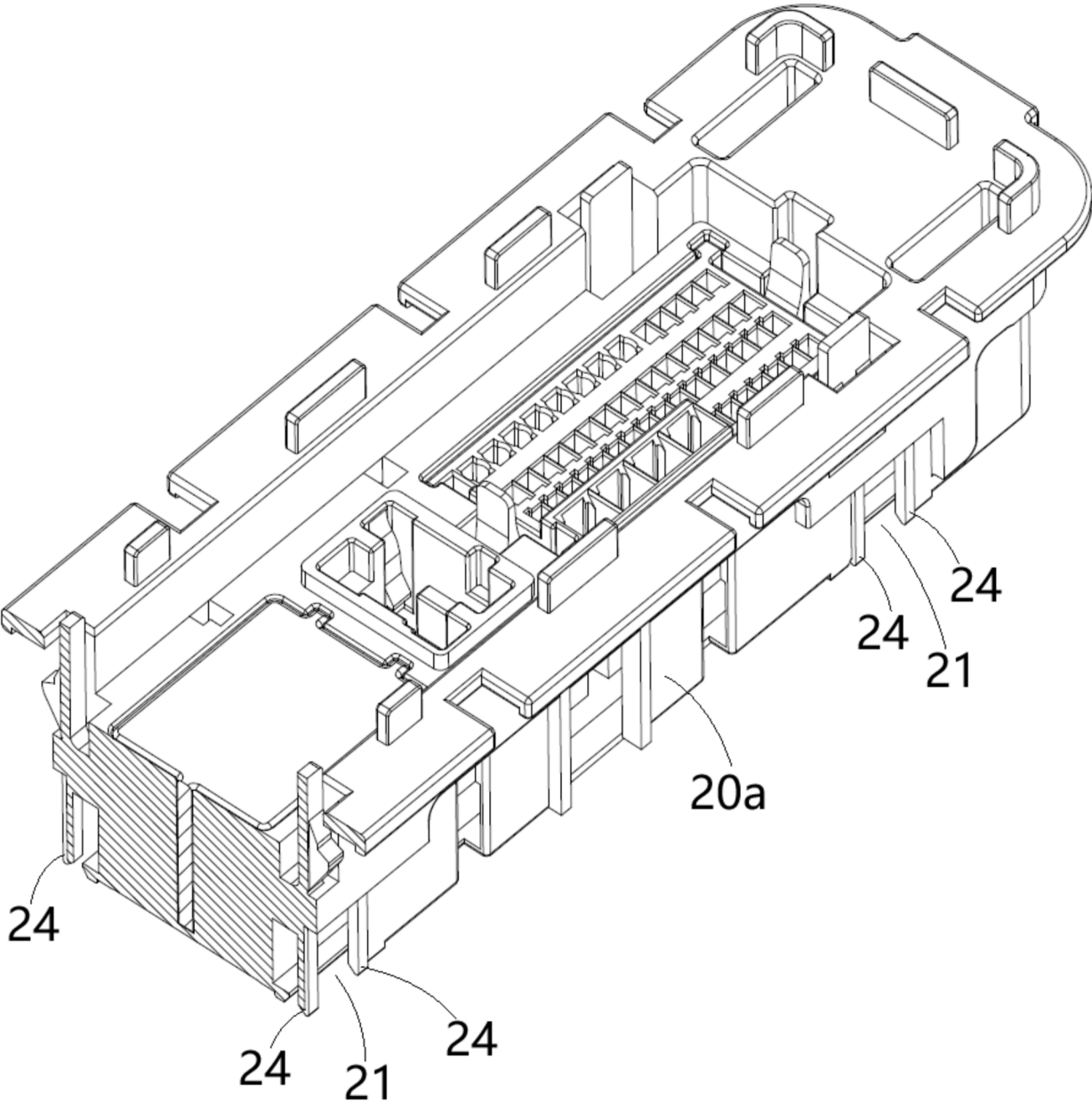


Fig.7

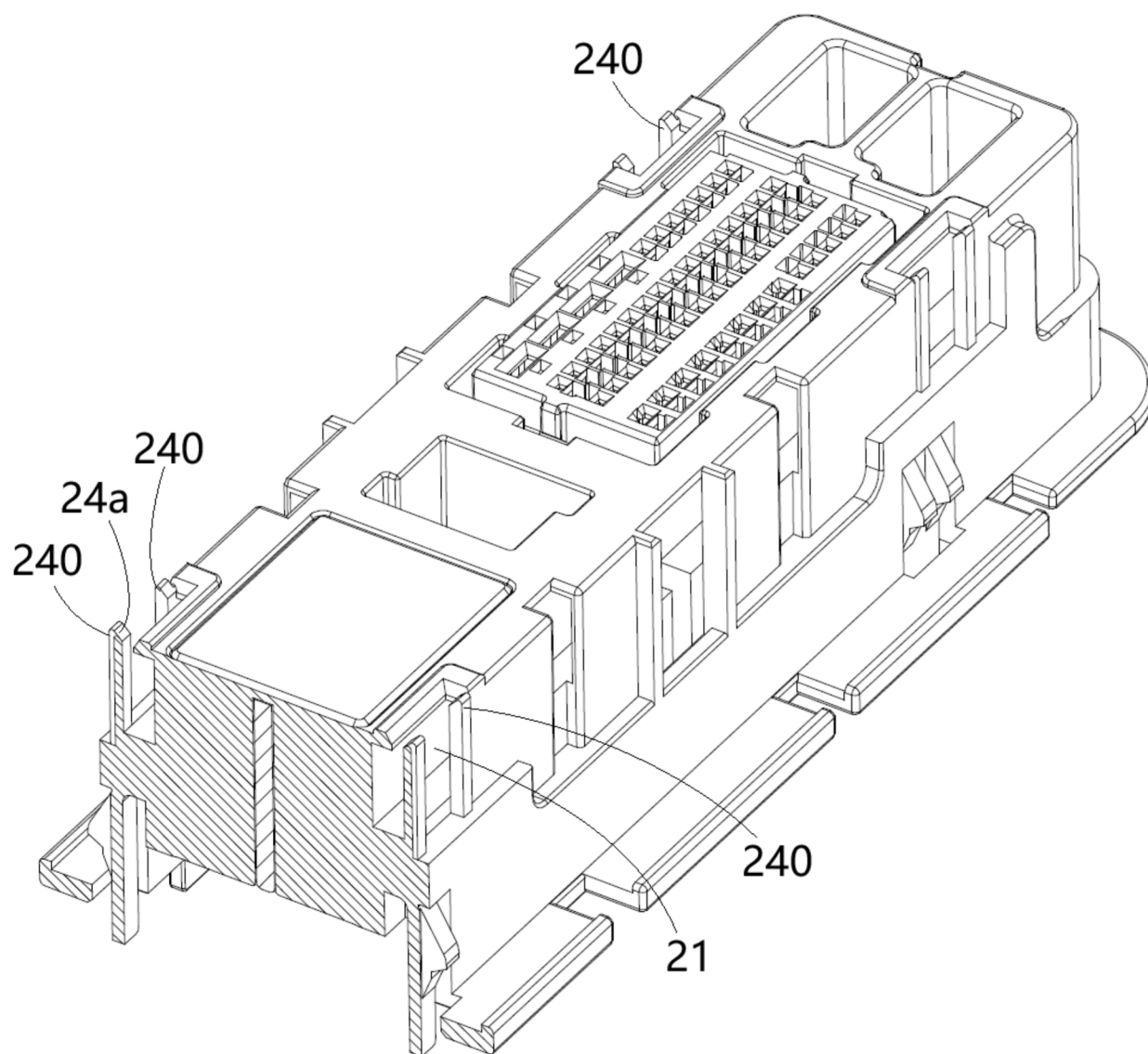


Fig.8

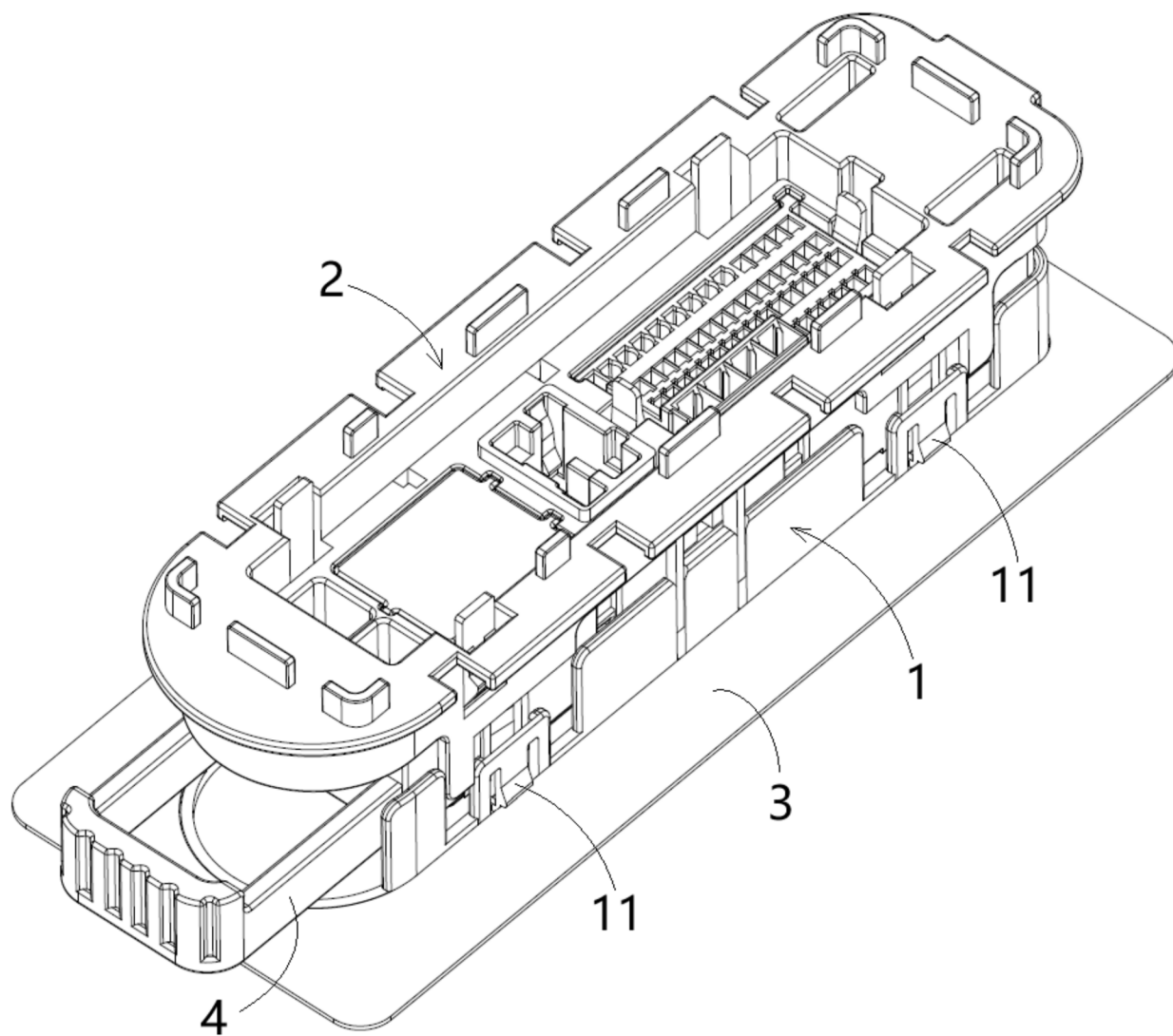


Fig.9

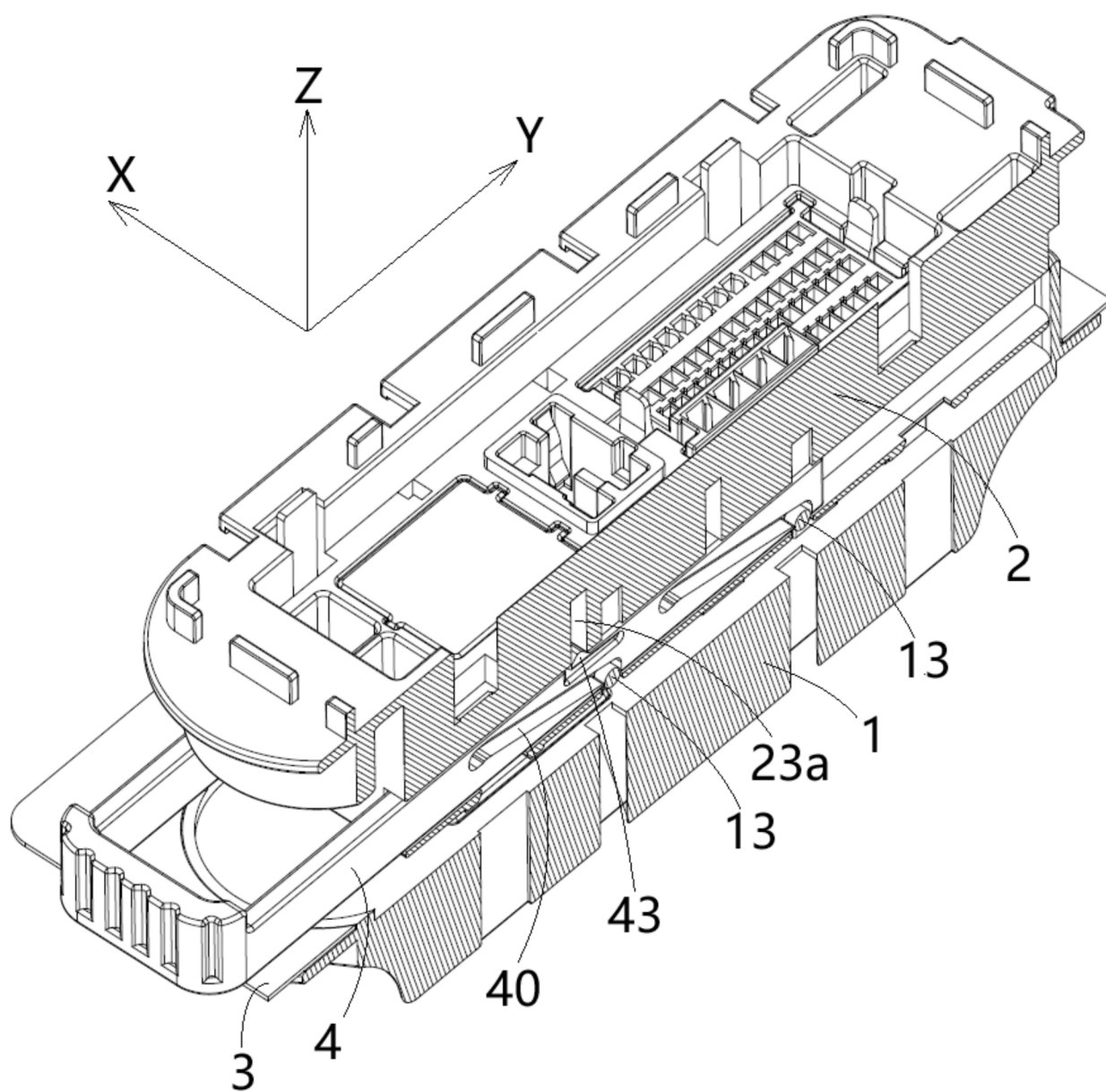


Fig.10

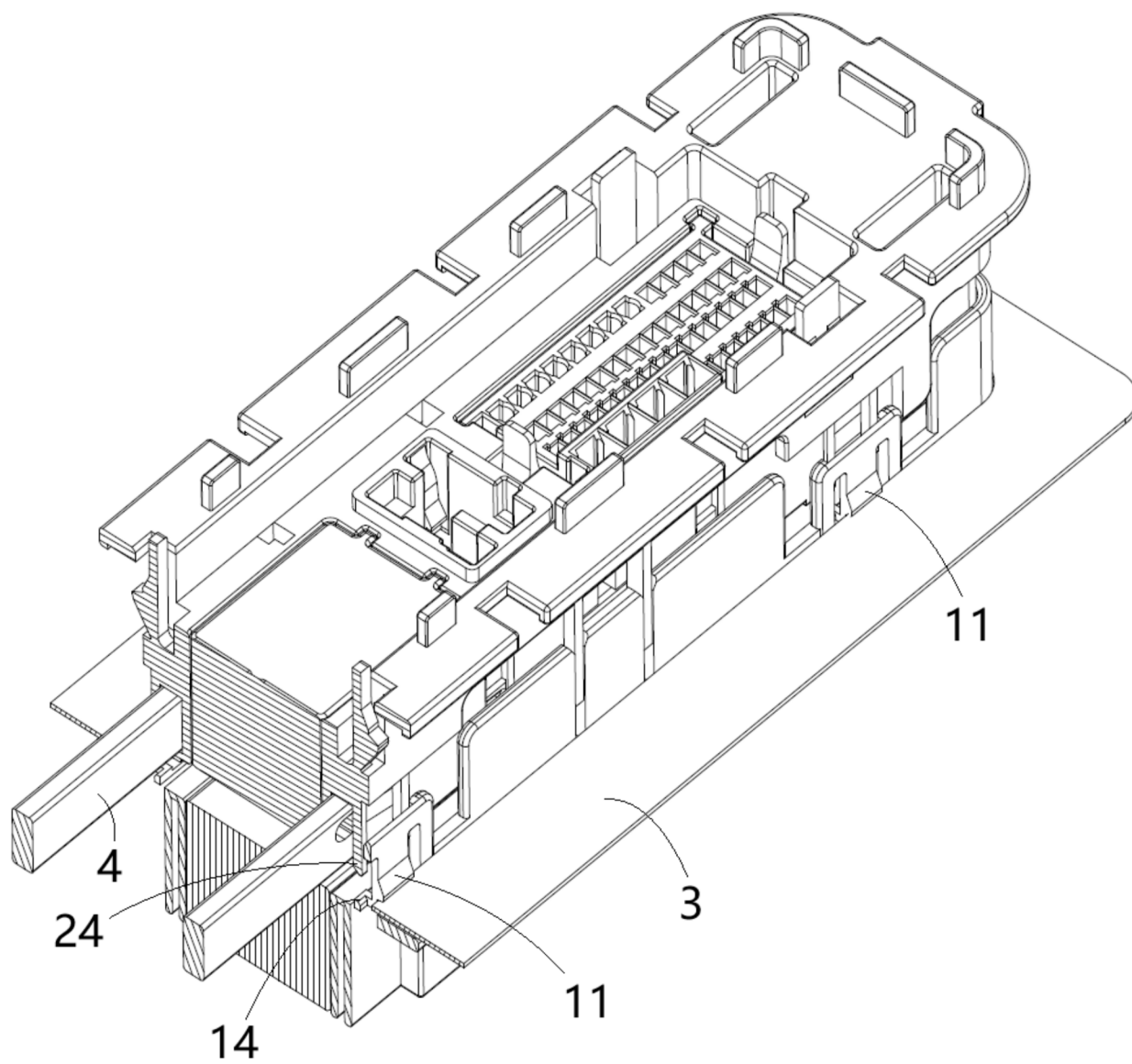


Fig.11

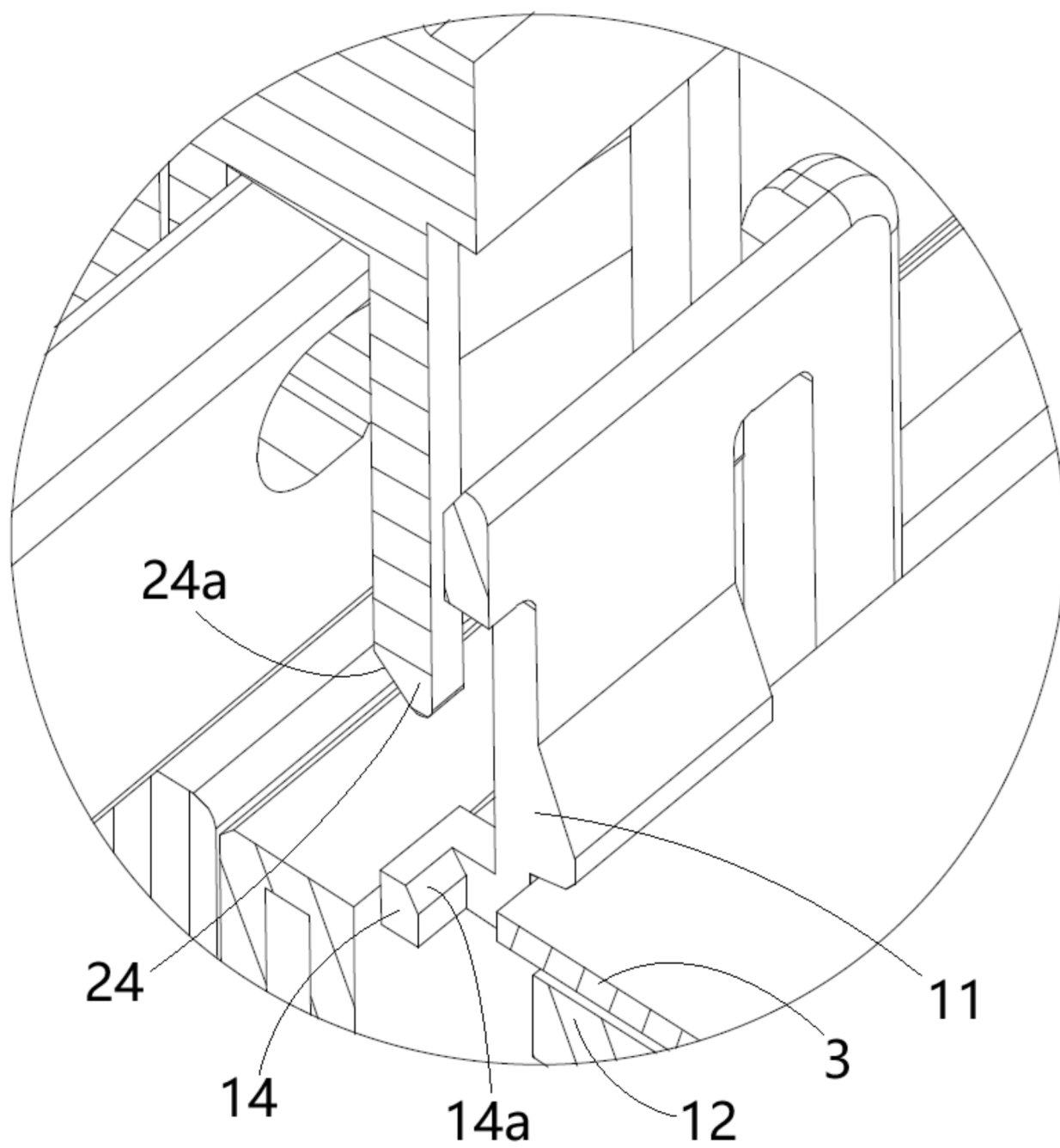


Fig.11A

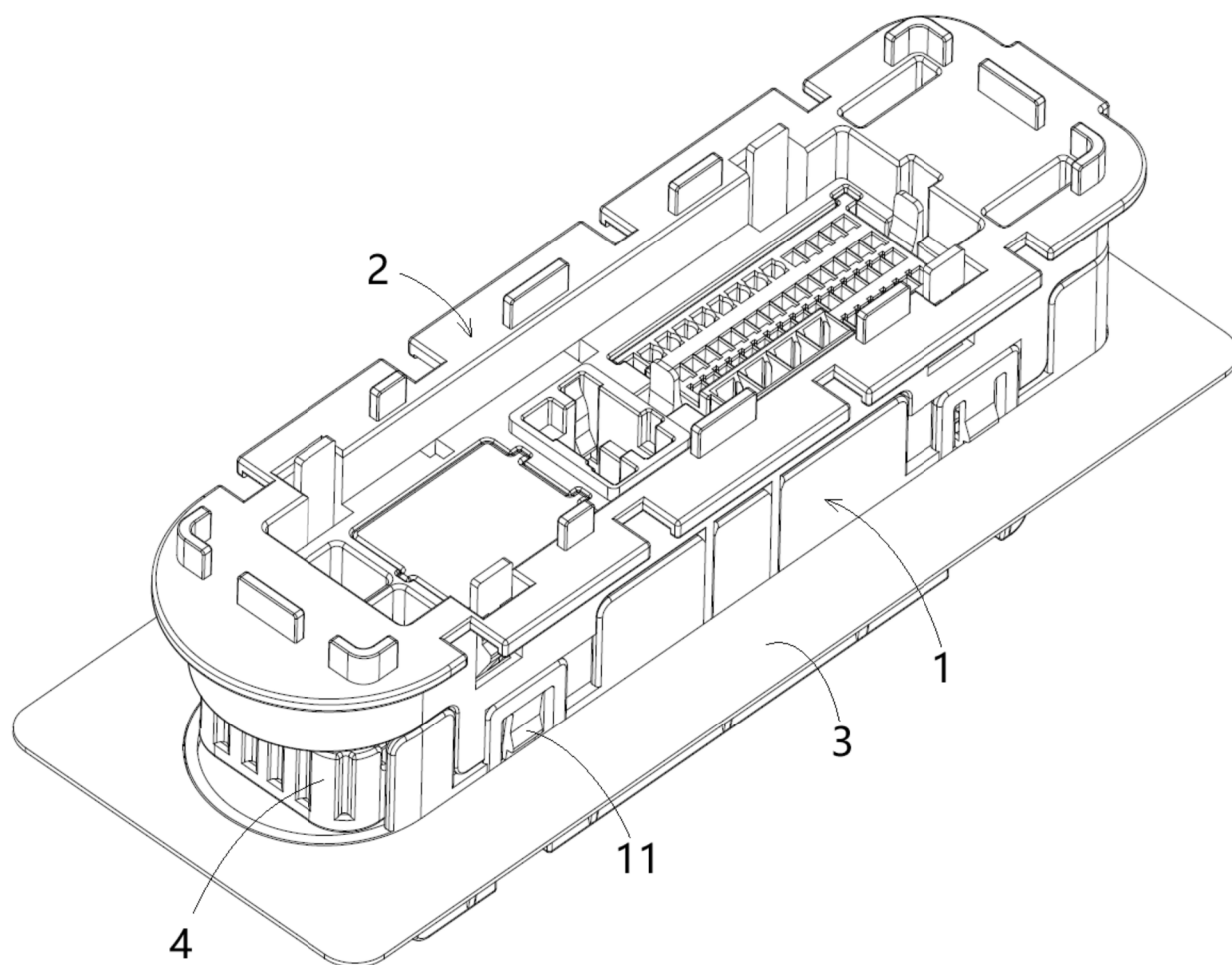


Fig.12

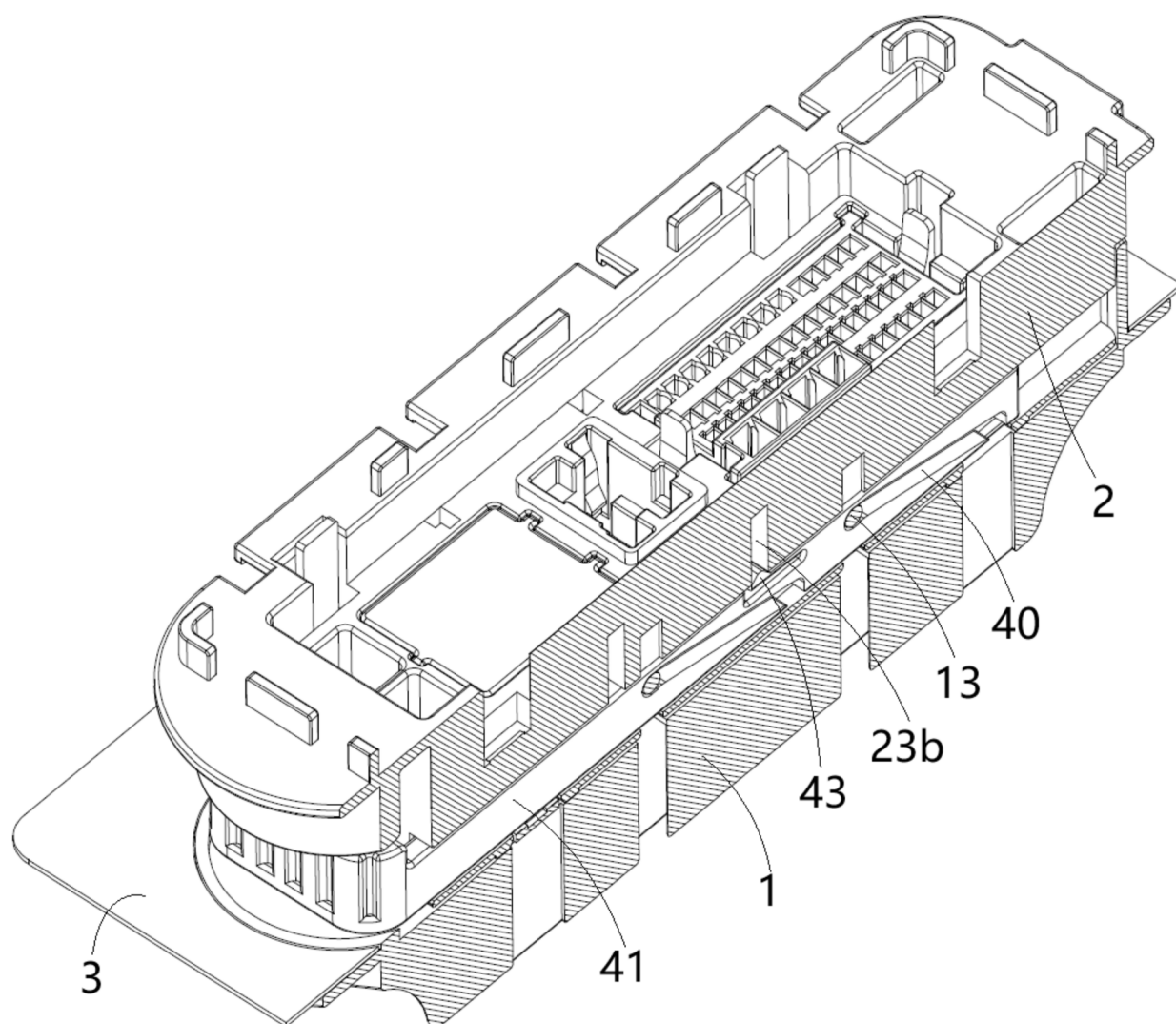


Fig.13

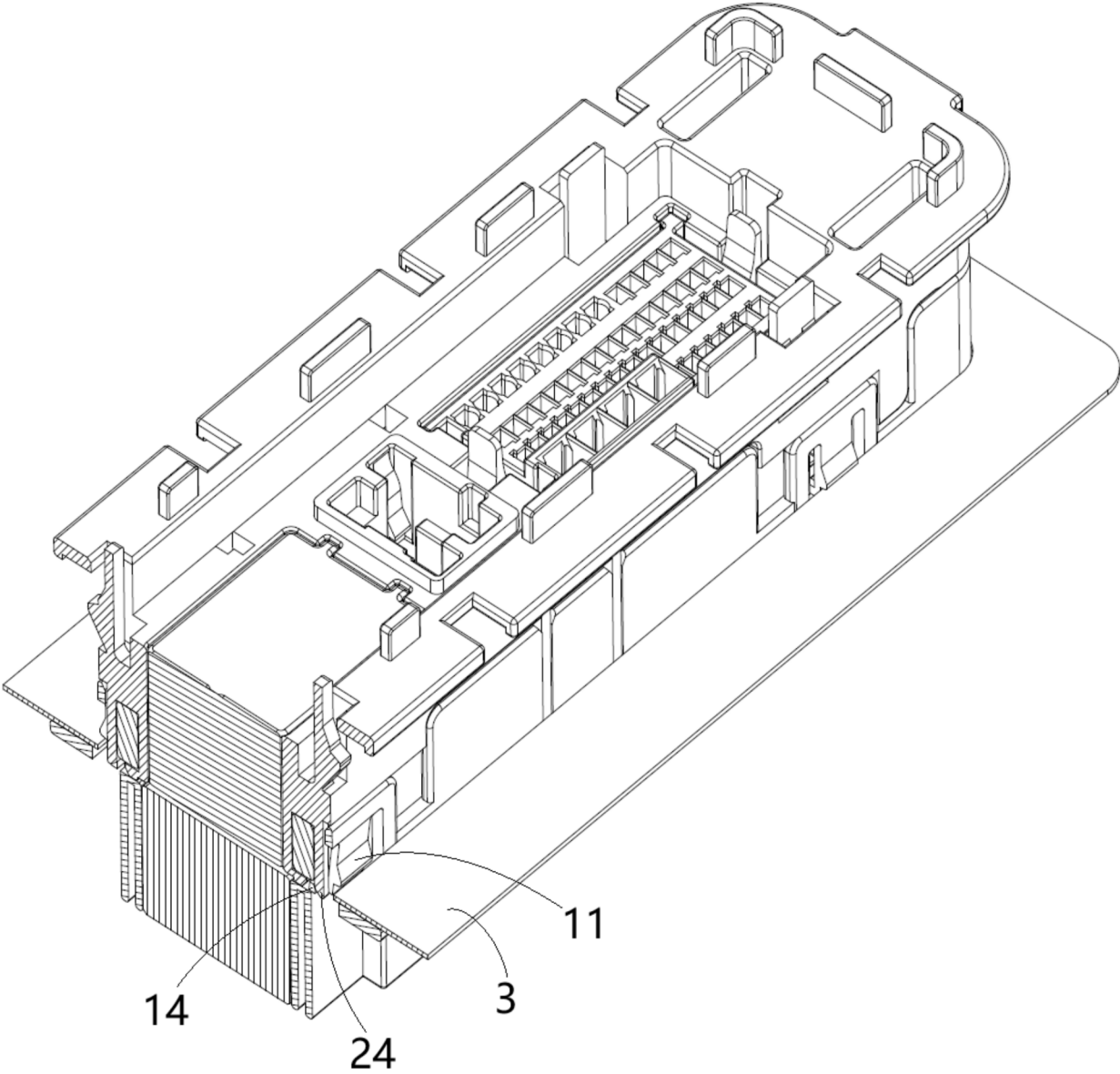


Fig.14

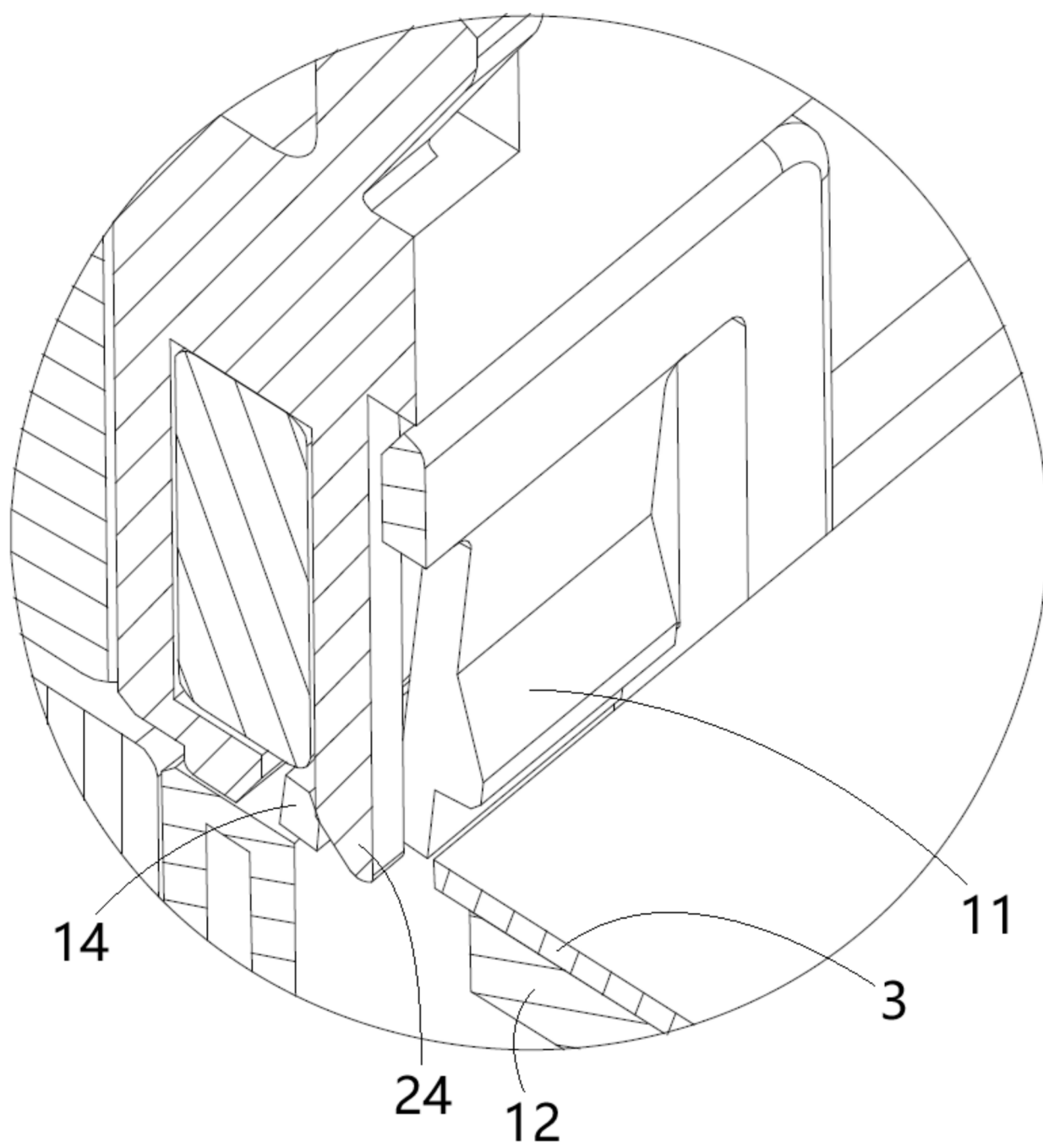


Fig.14A



EUROPEAN SEARCH REPORT

Application Number

EP 25 21 4490

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			H01R
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The Hague		20 March 2026	Georgiadis, Ioannis
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X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
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