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(54) **SMALL-SIZE PIN COMBINATION STRUCTURE FOR POWER CONVERTER**

(57) The invention discloses a pin combination structure for a power converter with smaller volume, which comprises a European standard pin assembly arranged in the power converter and a British standard pin assembly arranged in the power converter. The British standard pin assembly comprises a British standard ground pin arranged in the power converter, and the European standard pin assembly comprises a European standard insert sleeve arranged in the power converter, wherein the middle part of the European standard insert sleeve is formed with a British standard ground wire abdicating groove which is concave inwards and matched with the British standard ground wire pin, and the British standard ground wire pin moves up and down in the British standard ground wire abdicating groove. The invention saves the space in the power converter, makes the power converter smaller, is more convenient to travel and carry, and improves the use experience of the power converter.

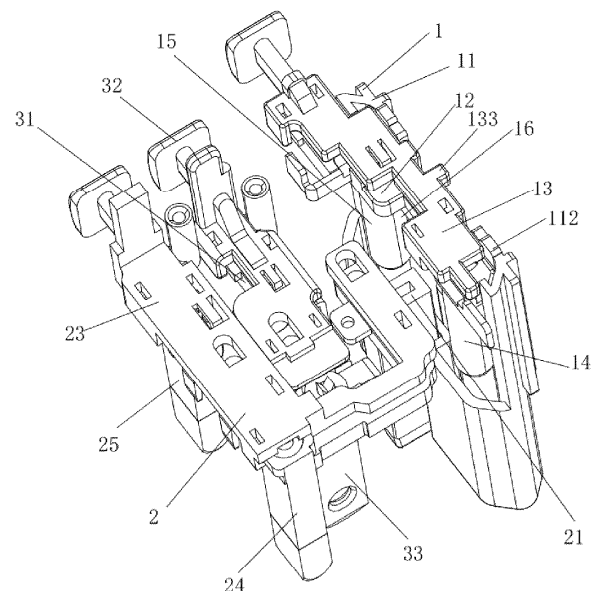


Fig. 2

Description

Technical Field

[0001] The invention relates to the technical field of power converters, in particular to a pin combination structure which is used on a power converter and has smaller volume.

Technical Background

[0002] Because the specifications of plugs and sockets in different countries are different, they can't be used universally. If you need to insert the plugs into sockets with mismatched specifications, you need to go through a power converter. The power converter is a switching tool. When in use, the power converter is inserted into the target socket, and then the target plug is inserted into the matching socket hole on the power converter to realize the conversion. The appearance of power converter improves the convenience of people's life outside, especially when they travel internationally, so there is no need to worry about the trouble caused by the mismatch between the plug of the electronic equipment they carry and the local power socket.

[0003] In the traditional power converter, the pins are generally fixed and extended. For the power converter with multiple pins, it is necessary to set multiple pins and set them separately to avoid the mutual influence between the pins. However, this way of separate setting leads to the large overall volume of the power converter, which is not convenient to travel and carry, and affects the sense of experience.

Summary of the Invention

[0004] In view of the above shortcomings, the purpose of the present invention is to provide a pin combination structure for a power converter with a smaller volume. The European standard socket is provided with the British standard ground wire yielding groove for yielding the British standard ground wire pin, so that the British standard ground wire pin can move in the European standard socket, which saves the space in the power converter, makes the power converter smaller, is more convenient to travel and carry, and improves the use experience of the power converter.

[0005] The technical scheme adopted by the invention for achieving the above purpose is as follows:

[0006] The invention relates to a pin combination structure which is used on a power converter and has a smaller volume, and comprises the European standard pin assembly arranged in the power converter and a British standard pin assembly arranged in the power converter. The British standard pin assembly comprises a British standard ground pin arranged in the power converter, and the European standard pin assembly comprises the European standard insert sleeve arranged in the power

converter, wherein the middle part of the European standard insert sleeve is formed with a British standard ground wire abdicating groove which is concave inwards and matched with the British standard ground wire pin, and the British standard ground wire pin moves up and down in the British standard ground wire abdicating groove.

[0007] As a further improvement of the invention, the European standard pin assembly further comprises the European standard connector slidably arranged in the European standard insert sleeve, the European standard key piece arranged on the European standard connector, the European standard live pin arranged on the European standard connector and the European standard zero pin arranged on the European standard connector.

[0008] As a further improvement of the invention, the European standard connector is formed with the European standard push-out yielding channel for inserting the British standard plug ground pin.

[0009] As a further improvement of the invention, at least one European standard limit convex column is formed on one side of the European standard connector far away from the British standard pin assembly, a limit backboard is formed on one side of the European standard insert sleeve far away from the British standard pin, and at least one European standard limit sliding groove for the European standard limit convex column to move is formed in the middle of the limit backboard.

[0010] As a further improvement of the invention, the power converter comprises a shell, wherein the European standard push-out limiting column matched with the European standard pin assembly is formed on the inner wall of the shell, and the European standard push-out limiting groove matched with the European standard push-out limiting column is formed at one end of the European standard insert sleeve facing the inner wall of the shell; The European standard push-out limit block movably pressed against the European standard push-out limit post is formed on the European standard key piece.

[0011] As a further improvement of the invention, the European standard press limit step extending towards the European standard key piece is formed on the European standard connector, the European standard press slide groove for the European standard press limit step to slide is formed on the European standard key piece, and the European standard press hook which can be hooked on the European standard press limit step is formed in the middle of the European standard press slide groove.

[0012] As a further improvement of the invention, the British standard pin assembly comprises the British standard connector arranged in the power converter, the British standard key piece arranged on the British standard connector, the British standard live pin arranged on the British standard connector and the British standard zero pin arranged on the British standard connector, and the British standard ground pin is arranged on the British standard connector.

[0013] As a further improvement of the invention, the British standard connector is formed with the British standard press limit step extending towards the direction of the British standard key piece, the British standard press slide groove for the British standard press limit step to slide is formed on the British standard key piece, and the British standard press hook which can be hooked on the British standard press limit step is formed in the middle of the British standard press slide groove.

[0014] As a further improvement of the present invention, it also includes the American standard pin assembly arranged between the British standard pin assembly and the European standard pin assembly. The American standard pin assembly comprises the American standard connector arranged in the power converter and between the American standard pin assembly and the European standard pin assembly, the American standard key piece arranged on the American standard connector, the American standard live pin arranged on the American standard connector and the American standard zero pin arranged on the American standard connector.

[0015] As a further improvement of the invention, the American standard connector is provided with the American standard pressing limit step extending towards the American standard key piece, and the American standard key piece is provided with the American standard pressing slide groove for the American standard pressing limit step to slide, and the middle part of the American standard pressing slide groove is provided with the American standard pressing hook which can be hooked on the American standard pressing limit step.

[0016] The invention has the beneficial effects that: By setting the pin combination structure to include the European standard pin assembly arranged in the power converter and a British standard pin assembly arranged in the power converter. The British standard pin assembly comprises a British standard ground pin arranged in the power converter, and the European standard pin assembly comprises the European standard insert sleeve arranged in the power converter, and the middle part of the European standard insert sleeve is formed with a British standard ground yielding groove which is recessed inward and matched with the British standard ground pin. The British standard plug ground pin moves up and down in the British standard plug ground wire abdication groove, so that the British standard plug ground pin can be pushed out of the European standard insert sleeve when needed, which saves the space in the power converter, makes the power converter smaller, is more convenient to travel and carry, and improves the use experience of the power converter.

[0017] The above is an overview of the technical scheme of the invention, and the invention will be further explained with the attached drawings and specific embodiments.

Brief Description of Drawings

[0018]

- Fig. 1 is an overall schematic diagram of the present invention;
 Fig. 2 is a schematic structural diagram of the present invention;
 Fig. 3 is a schematic structural view of the European standard pin assembly and the British standard pin assembly;
 Fig. 4 is a structural schematic diagram of the European standard pin assembly;
 Fig. 5 is a schematic structural view of the other side of the European standard pin assembly;
 Fig. 6 is an exploded view of the European standard pin assembly;
 Fig. 7 is a schematic bottom view of the European standard key;
 Fig. 8 is a structural schematic diagram of the housing;
 Fig. 9 is a schematic structural view of the European standard pin assembly in the housing;
 Fig. 10 is a cross-sectional view of the European standard pin assembly;
 Fig. 11 is a schematic structural view of the European standard pin assembly when it is pushed out;
 Fig. 12 is a schematic structural diagram of the British standard pin assembly;
 Fig. 13 is an exploded view of the British standard pin assembly;
 Fig. 14 is a sectional view of the British standard pin assembly;
 Fig. 15 is a schematic bottom view of the British standard key piece;
 Fig. 16 is a schematic structural diagram of the American standard pin assembly;
 Fig. 17 is an exploded view of the American standard pin assembly;
 Fig. 18 is a cross-sectional view of the American standard pin assembly;
 Fig. 19 is a schematic bottom view of the American standard key piece;

- [0019]** In the picture: 1. European standard pin assembly; 11. European standard sleeve; 111. British standard ground wire yield slot; 112. Limit backboard; 113. European standard limit sliding groove; 114. European standard fire line protruding mouth; 115. European standard zero line protruding mouth; 116. European standard pushes out the limit groove; 12. European standard connector; 121. European standard limit convex column; 122. European standard presses the limit step; 13. European standard key pieces; 131. European standard presses the sliding groove; 132. European standard press hook; 133. European standard push-out limit block; 14. European standard fire pin; 15. European standard zero pin; 16. European standard regulations launch a

concession channel; 2. British standard pin assembly; 21. British standard ground pin; 22. British standard connector; 221. British standard presses the limit step; 23. British standard key piece; 231. British standard presses the sliding groove; 232. British standard press hook; 24. British standard fire pin; 25. British standard zero pin; 3. American standard pin assembly; 31. American standard connector; 311. American standard presses the limit step; 32. American standard key pieces; 321. American standard presses the sliding groove; 322. American standard press hook; 33. American standard fire pin; 34. American standard zero pin; 4. Shell; 41. European standard push-out limit column.

Embodiments

[0020] In order to further illustrate the technical means and effects adopted by the present invention to achieve the predetermined purpose, the specific embodiments of the present invention will be described in detail with the attached drawings and preferred embodiments.

[0021] In the description of the present invention, it should be understood that the azimuth or positional relationship indicated by the terms "length", "width", "up", "down", "front", "back", "left", "right", "vertical", "horizontal", "top", "bottom", "inside" and "outside" is based on the azimuth or positional relationship shown in the attached drawings, only for the convenience of describing the present invention and simplifying the description, and does not indicate or imply that the referred devices or elements must have a specific orientation, be constructed and operated in a specific orientation, so it cannot be understood as a limitation of the present invention.

[0022] In addition, the terms "first" and "second" are only used for descriptive purposes, and cannot be understood as indicating or implying relative importance or implicitly indicating the number of indicated technical features. Therefore, the features defined as "first" and "second" may include one or more of these features explicitly or implicitly. In the description of the present invention, "plural" means two or more, unless otherwise specifically defined.

[0023] In the present invention, unless otherwise specified and limited, the terms "installation", "connection", "connection" and "fixation" should be broadly understood, for example, they can be fixed connection, detachable connection or integrated; It can be a mechanical connection or an electrical connection; Can be directly connected, can also be indirectly connected through an intermediary, can be the internal connection of two elements or the interaction between two elements. For those skilled in the art, the specific meanings of the above terms in the present invention can be understood according to specific situations.

[0024] Please refer to fig. 1 to fig. 19. An embodiment of the present invention provides a pin assembly structure for a power converter with a smaller volume, including the

European standard pin assembly 1 and a British standard pin assembly 2 arranged in the power converter, wherein the British standard pin assembly 2 includes a British standard ground pin 21 arranged in the power converter, and the European standard pin assembly 1 includes the European standard pin sleeve 11 arranged in the power converter. The middle part of the European standard insert sleeve 11 is formed with a British standard ground wire yielding groove 111 which is concave inward and matched with the British standard ground wire pin 21, and the British standard ground wire pin 21 moves up and down in the British standard ground wire yielding groove 111, so that the British standard ground wire pin 21 can be pushed out of the European standard insert sleeve 11 when needed, which saves the space in the power converter, makes the power converter smaller, is more convenient to travel and carry, and improves the power converter's performance.

[0025] As for the specific structural arrangement of the British standard plug ground wire abdication groove 111, as shown in Figures 2 to 4 and 6, the whole British standard plug ground wire abdication groove 111 has a zigzag shape, two sides of which are connected with the European standard insert sleeve 11, and a square movable space is formed on the outer side of the groove, and the square movable space matches the shape of the British standard plug ground wire pin 21, so that the British standard plug ground wire pin 21 can only move radially, and the accuracy of protruding of the British standard plug ground wire pin 21 is improved. Prevent poor contact caused by displacement.

[0026] As for the specific structural arrangement of the European standard pin assembly 1, as shown in figs. 2 to 9, the European standard pin assembly 1 also includes the European standard connector 12 slidably arranged in the European standard sleeve 11, the European standard key 13 slidably connected to the European standard connector 12, the European standard live pin 14 arranged on the European standard connector 12, and the European standard zero pin 15 arranged on the European standard connector 12. When the European standard pin assembly 1 needs to be used, the European standard insert 11 can be driven to protrude outward from the power converter by pressing the European standard key 13, and the European standard connector 12, the European standard live pin 14 and the European standard zero pin 15 connected to the European standard key 13 can be pushed out of the power converter along the European standard insert 11 for power conversion. When the European standard pin assembly 1 is not needed, press the European standard key piece 13, and push the European standard live pin 14, European standard neutral pin 15 and European standard insert sleeve 11 connected to the European standard key piece 13 back into the power converter, thus completing the storage. The whole process is simple and convenient, and the use experience is good.

[0027] In order to prevent the European standard

ground pin 21 from resisting the situation that the European standard ground pin assembly 1 can not protrude when the European standard ground pin assembly 1 is pushed out, as shown in Figures 2 to 6 and 11, the European standard push-out passage 16 is formed between the European standard connector 12 and the European standard key piece 13 for the insertion of the European standard ground pin 21. When the European standard ground pin assembly 1 is to be pushed out of the power converter for use, The European standard connector 12 and the European standard key 13 move towards the outside of the power converter, the top end of the British standard ground pin 21 enters the European standard push-out passage 16, and the tail end of the British standard ground pin 21 enters the British standard ground pin recess 111. So as to give way, and prevent the situation that the European standard pin assembly 1 cannot be used in a protruding way because the British standard ground pin 21 resists the European standard pin assembly 1 when the European standard pin assembly 1 is pushed out.

[0028] In order to further improve the push-in and push-out accuracy of the European standard pin assembly 1, as shown in fig. 5, at least one European standard limit stud 121 is formed on the side of the European standard connector 12 far away from the British standard pin assembly 2, and a limit backboard 112 is formed on the side of the European standard insert sleeve 11 far away from the British standard pin, and at least one European standard limit sliding groove 113 is formed in the middle of the limit backboard 112 for the movement of the European standard limit stud 121. When the European standard key 13 drives the European standard connector 12 to push and push, the European standard limiting lug 121 slides in the European standard limiting sliding groove 113 and can only move radially under the limiting action of the European standard limiting sliding groove 113, so that the European standard connector 12 drives the European standard key 13, the European standard neutral pin 15 and the European standard live pin 14 to move in the European standard insert 11 more accurately. The problem of displacement of Euro pin assembly 1 during pushing and pushing is prevented.

[0029] As for the specific ways in which the European standard neutral pin 15 and the European standard live pin 14 protrude from the European standard insert sleeve 11, as shown in Figure 1, the bottom of the European standard sleeve 11 is correspondingly formed with the European standard hot wire protruding opening 114 for the European standard hot wire pin 14 to protrude out of the power converter and the European standard zero wire protruding opening 115 for the European standard zero wire pin 15 to protrude out of the power converter. When the European standard pin assembly 1 is pushed out of the power converter, the European standard live pin 14 protrudes from the European standard live pin protrusion 114, and the European standard zero pin 15 protrudes from the European standard zero pin protrusion

115. Through the corresponding limiting protrusions of the European standard live wire protrusion 114 and the European standard zero wire protrusion 115, the European standard limit protrusion 121 moves in the European standard limit sliding groove 113, so that the European standard pin assembly 1 can be pushed in and out of the power converter more accurately, and the activity efficiency of the European standard pin assembly 1 can be improved.

[0030] In order to make the European standard pin assembly 1 slide better in the power converter, as shown in Figures 8 and 9, the power converter includes a housing 4, the European standard push-out limit post 41 matched with the European standard pin assembly 1 is formed on the inner wall of the housing 4, and the European standard push-out limit slot 116 matched with the European standard push-out limit post 41 is formed on one end of the European standard insert sleeve 11 facing the inner wall of the housing 4; The European standard push-out limit block 133 movably pressed against the European standard push-out limit post 41 is formed on the European standard key piece 13. A spring is arranged between the European standard connector 12 and the European standard key piece 13. When the European standard pin assembly 1 needs to be used, the European standard key piece 13 is pressed and deformed on the European standard connector 12, and the European standard key piece 13 extends into the housing 4, so that the European standard push-out limit block 133 is staggered from the European standard push-out limit post 41, and the European standard pin assembly 1 can be pushed out of the power converter at this time. When the European standard pin assembly 1 is not required to be used, the European standard pin assembly 1 retreats back into the housing 4 along the European standard push-out limit post 41, releasing the pressing action on the European standard key piece 13, and the European standard key piece 13 extends out of the housing 4 under the elastic restoring force of the spring, driving the European standard push-out limit block 133 arranged on the European standard key piece 13 to resist against the upper end face of the European standard push-out limit post 41. At this time, under the action of no external pressure, the European standard pin assembly 1 cannot extend out of the housing 4, thus effectively improving the safety of the power converter. By arranging the European standard push-out limit groove 116 to be matched with the European standard push-out limit post 41, the European standard push-out limit groove 116 slides on the European standard push-out limit post 41, and is guided by the European standard push-out limit post 41, so that a straight sliding trajectory is made, so that the precision of push-out and retraction of the European standard pin assembly 1 is higher, and the push-out and recovery efficiency is improved.

[0031] As for the interaction between the European standard key 13 and the European standard connector 12, as shown in Figures 6 to 7 and 10, the European

standard connector 12 is formed with the European standard pressing limit step 122 extending towards the European standard key 13, and the European standard key 13 is formed with the European standard pressing sliding groove 131 for the European standard pressing limit step 122 to slide. The European standard press hook 132 that can be hooked on the European standard press limit step 122 is formed in the middle of the European standard press sliding groove 131. When the European standard key 13 is released, the European standard key 13 protrudes outward toward the housing 4 under the driving of the elastic restoring force of the spring. At this time, the European standard press sliding groove 131 and the European standard press hook 132 move towards the outside of the housing 4, and the European standard press limit step 122 moves relatively to the European standard press sliding groove 131. After the European standard press sliding groove 131 and the European standard press hook 132 move towards the outside of the housing 4 for a certain distance, the European standard press hook 132 is hooked on the inner side of the European standard press limit step 122. So as to limit the moving stroke of the European standard key piece 13, prevent the European standard key piece 13 from protruding outwards excessively, facilitate the cooperation among components, and prevent the European standard key piece 13 from being scattered with the European standard connector 12. When the European standard pin assembly 1 needs to be used, the European standard key 13 is pressed to push the European standard pressing sliding groove 131 and the European standard pressing hook 132 toward the inside of the housing 4, and the European standard pressing limit step 122 moves relative to the European standard pressing sliding groove 131. At this time, the European standard pressing limit step 122 and the European standard pressing hook 132 are not pressed, and the European standard pin assembly 1 can be normally pushed out of the housing 4.

[0032] As for the specific structural arrangement of the British standard pin assembly 2, as shown in figs. 2 to 3 and 11 to 15, the British standard pin assembly 2 includes a British standard connector 22 arranged in the power converter, a British standard key piece 23 slidably connected to the British standard connector 22, a British standard live pin 24 arranged on the British standard connector 22, and a British standard zero pin 25 arranged on the British standard connector 22. The British standard ground pin 21 is arranged on the British standard connector 22. When the British standard pin assembly 2 needs to be used, the British standard connector 22, the British standard live pin 24, the British standard neutral pin 25 and the British standard ground pin 21 connected to the British standard key 23 can be pushed out of the power converter for power conversion by pressing the British standard key 23. When the British standard pin assembly 2 is not needed, the British standard connector 22, the British standard live pin 24, the British standard

neutral pin 25 and the British standard ground pin 21 connected to the British standard button 23 can be pushed back into the power converter by pressing the British standard button 23, and the storage is completed. The whole process is simple and convenient, and the use experience is good.

[0033] As for the interaction mode between the British standard key piece 23 and the British standard connector 22, as shown in figs. 13 to 15, the British standard press limit step 221 extending in the direction of the British standard key piece 23 is formed on the British standard connector 22, and the British standard press sliding groove 231 for the British standard press limit step 221 to slide is formed on the British standard key piece 23. The British standard press hook 232 that can be hooked on the British standard press limit step 221 is formed in the middle of the British standard press sliding groove 231. A spring is arranged between the British standard connector 22 and the British standard key piece 23. When the British standard pin assembly 2 needs to be used, the British standard key piece 23 is pressed, and the spring is extruded and deformed on the British standard connector 22, and the British standard key piece 23 extends into the housing 4. The British standard pressing limit step 221 moves relatively to the British standard pressing sliding groove 231. At this time, there is no contact between the British standard pressing limit step 221 and the British standard pressing hook 232, and the British standard pin assembly 2 can be normally pushed out of the housing 4. When the British standard key piece 23 is released, the British standard key piece 23 protrudes outward toward the housing 4 under the elastic restoring force of the spring. At this time, the British standard key piece 231 and the British standard key hook 232 move outward toward the housing 4, and the British standard key stop step 221 moves relatively to the British standard key stop groove 231, and the British standard key hook 232 is hooked on the inner side of the British standard key stop step 221. So as to limit the moving stroke of the British standard key piece 23, prevent the British standard key piece 23 from protruding outwards excessively, facilitate the cooperation among components, and prevent the British standard key piece 23 from being scattered with the British standard connector 22.

[0034] In order to further reduce the volume of the power converter, as shown in Figure 2, Figure 16 to Figure 19, the structure further includes a US standard pin assembly 3 arranged between the British standard pin assembly 2 and the European standard pin assembly 1. The American standard pin assembly 3 includes the American standard connector 31 arranged in the power converter and between the American standard pin assembly 2 and the European standard pin assembly 1, the American standard key piece 32 slidably connected to the American standard connector 31, the American standard live pin 33 arranged on the American standard connector 31, and the American standard zero pin 34 arranged on the American standard connector 31. When

the American standard pin assembly 3 needs to be used, the American standard connector 31, American standard live pin 33 and American standard zero pin 34 connected to the American standard button 32 can be pushed out of the power converter for power conversion by pressing the American standard button 32. When the American standard pin assembly 3 is not needed, the American standard connector 31, the American standard live pin 33 and the American standard neutral pin 34 connected to the American standard button 32 can be pushed back into the power converter by pressing the American standard button 32, and the storage is completed. The whole process is simple and convenient, and the use experience is good. Moreover, the American standard pin assembly 3 is arranged between the British standard pin assembly 2 and the European standard pin assembly 1, so that the space between the British standard pin assembly 2 and the European standard pin assembly 1 is fully utilized, the space in the power converter is further saved, the volume of the power converter can be further reduced, it is more convenient to travel and carry, and the use experience is improved.

[0035] As for the interaction between the American standard key piece 32 and the American standard connector 31, as shown in figs. 17 to 19, the American standard pressing limit step 311 extending toward the American standard key piece 32 is formed on the American standard connector 31, and the American standard pressing sliding groove 321 is formed on the American standard key piece 32 for sliding the American standard pressing limit step 311. American standard pressing hook 322 which can be hooked on the American standard pressing limit step 311 is formed in the middle of the American standard pressing sliding groove 321. A spring is arranged between the American standard connector 31 and the American standard key piece 32. When the American standard pin assembly 3 needs to be used, the American standard key piece 32 is pressed, and the spring is extruded and deformed on the American standard connector 31. The American standard key piece 32 extends into the housing 4, and the American standard pressing limit step 311 moves relative to the American standard pressing sliding groove 321. At this time, there is no contact between the American standard pressing limit step 311 and the American standard pressing hook 322, and the American standard pin assembly 3 can be normally pushed out of the housing 4. When the American standard key piece 32 is released, the American standard key piece 32 is driven by the elastic restoring force of the spring to protrude outward toward the housing 4. At this time, the American standard pressing sliding groove 321 and the American standard pressing hook 322 move towards the outside of the housing 4, the American standard pressing limit step 311 moves relatively to the American standard pressing sliding groove 321, and the American standard pressing hook 322 is hooked on the inner side of the American standard pressing limit step 311. So as to limit the moving stroke of the

American standard key piece 32, prevent the American standard key piece 32 from protruding outwards excessively, facilitate the cooperation among components, and prevent the American standard key piece 32 from being scattered with the American standard connector 31.

[0036] What needs to be explained here is that the pin combination structure with smaller volume, which is used in the power converter, is an improvement on the specific structure, but it is not an innovation of the invention for the specific control mode. The movable baffle, European standard fire pin, European standard zero pin, British standard fire pin, British standard ground pin, British standard zero pin, American standard fire pin, American standard zero pin and other parts involved in the invention can be common standard parts or parts known to those skilled in the art, and their structures, principles and control methods are known to those skilled in the art through technical manuals or conventional experimental methods.

[0037] The above is only a preferred embodiment of the present invention, and does not limit the technical scope of the present invention, so other structures obtained by adopting the same or similar technical features as the above embodiment of the present invention are within the protection scope of the present invention.

Claims

1. The invention relates to a pin combination structure which is used on a power converter and has a smaller volume, and is **characterized in that**: Comprises the European standard pin assembly arranged in a power converter and a British standard pin assembly arranged in the power converter. The British standard pin assembly comprises a British standard ground pin arranged in the power converter, and the European standard pin assembly comprises the European standard insert sleeve arranged in the power converter, wherein the middle part of the European standard insert sleeve is formed with a British standard ground wire abdicating groove which is concave inwards and matched with the British standard ground wire pin, and the British standard ground wire pin moves up and down in the British standard ground wire abdicating groove.
2. According to claim 1, the pin combination structure used in power converter with smaller volume is **characterized in that**: the European standard pin assembly also comprises the European standard connector slidably arranged in the European standard insert sleeve, the European standard key piece arranged on the European standard connector, the European standard live pin arranged on the European standard connector and the European standard zero pin arranged on the European standard connector.

3. According to claim 2, the pin combination structure used in power converter with smaller volume is **characterized in that:** The European standard connector is provided with the European standard push-out yielding channel for inserting the British standard plug ground pin. 5
4. According to claim 2, the pin combination structure used in power converter with smaller volume is **characterized in that:** At least one European standard limit convex column is formed on one side of the European standard connector far away from the British standard pin assembly, a limit backboard is formed on one side of the European standard insert sleeve far away from the British standard pin, and at least one European standard limit sliding groove for the European standard limit convex column to move is formed in the middle of the limit backboard. 10 15
5. According to claim 2, the pin combination structure used in power converter with smaller volume is **characterized in that:** The power converter comprises a shell, wherein the European standard push-out limiting column matched with the European standard pin assembly is formed on the inner wall of the shell, and the European standard push-out limiting slot matched with the European standard push-out limiting column is formed at one end of the European standard insert sleeve facing the inner wall of the shell; The European standard push-out limit block movably pressed against the European standard push-out limit post is formed on the European standard key piece. 20 25 30
6. According to claim 2, the pin combination structure used in power converter with smaller volume is **characterized in that:** The European standard connector is formed with the European standard press limit step extending towards the European standard key piece, and the European standard key piece is formed with the European standard press slide groove for the European standard press limit step to slide, and the middle part of the European standard press slide groove is formed with the European standard press hook that can be hooked on the European standard press limit step. 35 40 45
7. According to claim 1, the pin combination structure used in power converter with smaller volume is **characterized in that:** The British standard pin assembly comprises the British standard connector arranged in the power converter, the British standard key piece arranged on the British standard connector, the British standard live pin arranged on the British standard connector and the British standard zero pin arranged on the British standard connector, and the British standard ground pin is arranged on the British standard connector. 50 55
8. According to claim 7, the pin combination structure used in power converter with smaller volume is **characterized in that:** The British standard plug connector is formed with the British standard plug pressing limit step extending towards the direction of the British standard plug key piece, the British standard plug pressing slide groove for the British standard plug pressing limit step to slide is formed on the British standard plug key piece, and the British standard plug pressing hook which can be hooked on the British standard plug pressing limit step is formed in the middle of the British standard plug pressing slide groove.
9. According to claim 1, the pin combination structure used in power converter with smaller volume is **characterized in that:** The utility model also comprises the American standard pin assembly arranged between the British standard pin assembly and the European standard pin assembly, wherein the American standard pin assembly comprises the American standard connector arranged in the power converter and between the British standard pin assembly and the European standard pin assembly, the American standard key piece arranged on the American standard connector, the American standard live pin arranged on the American standard connector and the American standard zero pin arranged on the American standard connector.
10. According to claim 9, the pin combination structure used in power converter with smaller volume is **characterized in that:** The American standard connector is provided with the American standard pressing limit step extending towards the American standard key piece, the American standard key piece is provided with the American standard pressing slide groove for the American standard pressing limit step to slide, and the middle part of the American standard pressing slide groove is provided with the American standard pressing hook which can be hooked on the American standard pressing limit step.

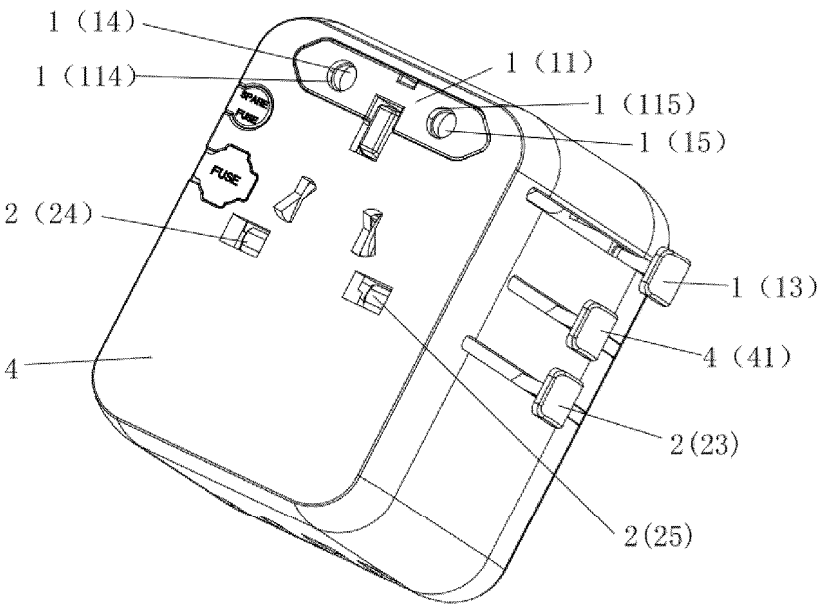


Fig. 1

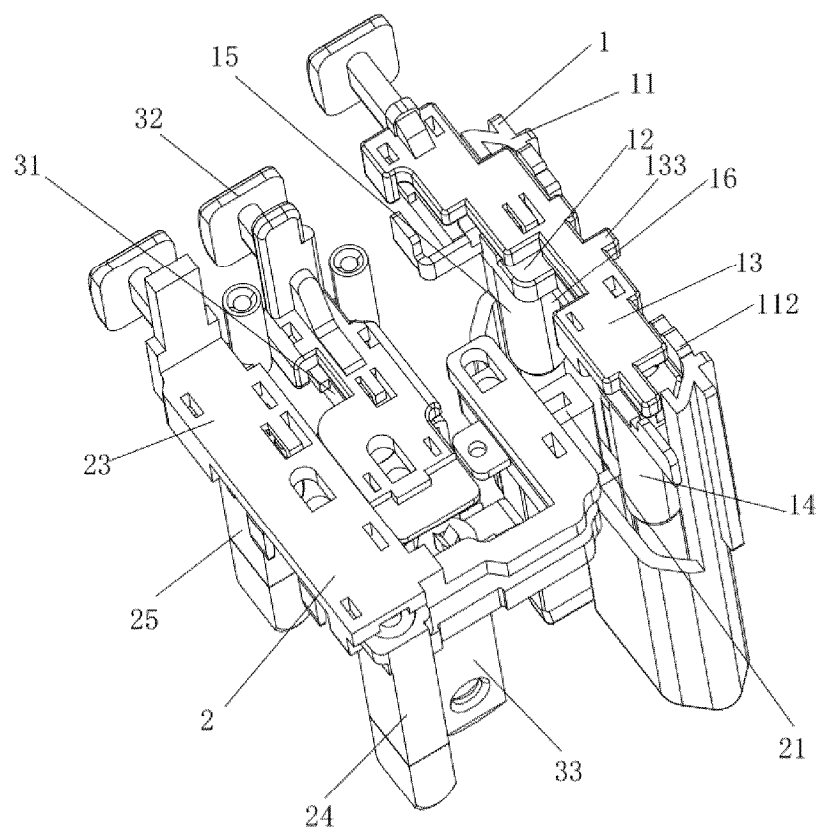


Fig. 2

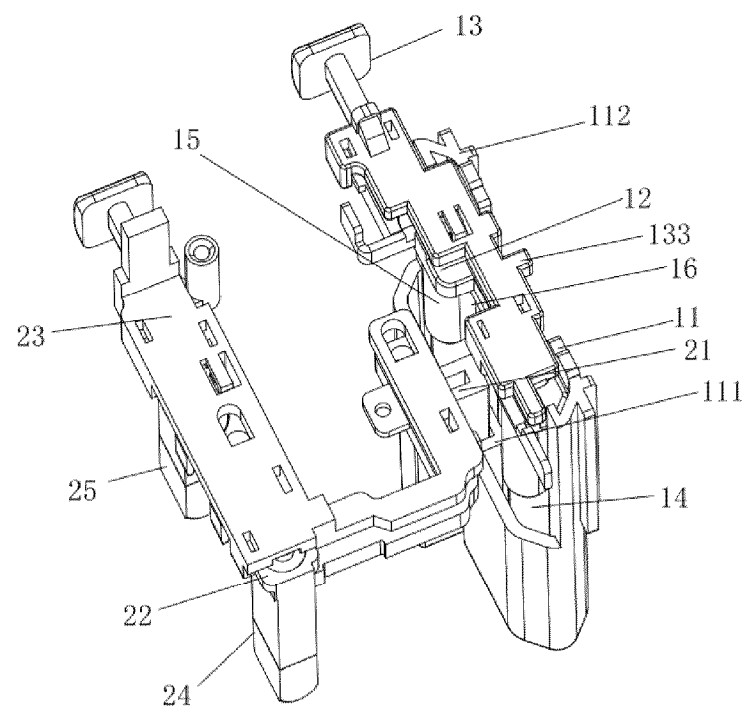


Fig. 3

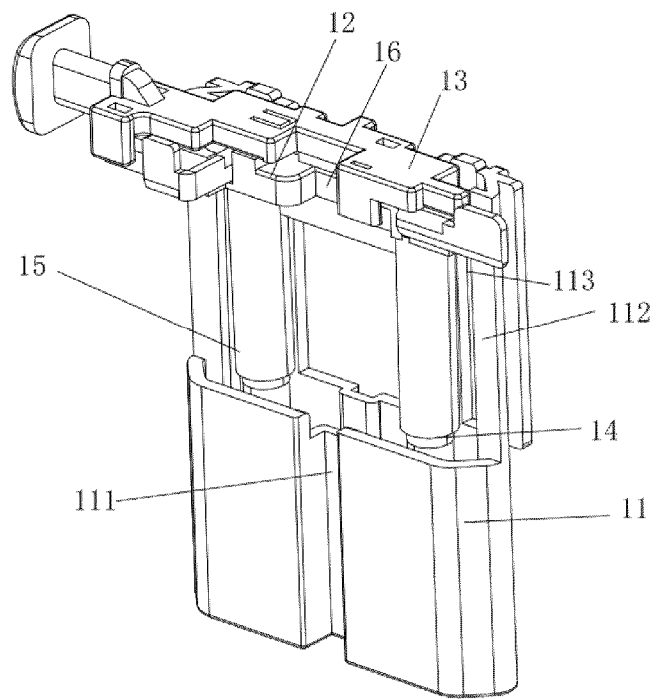


Fig. 4

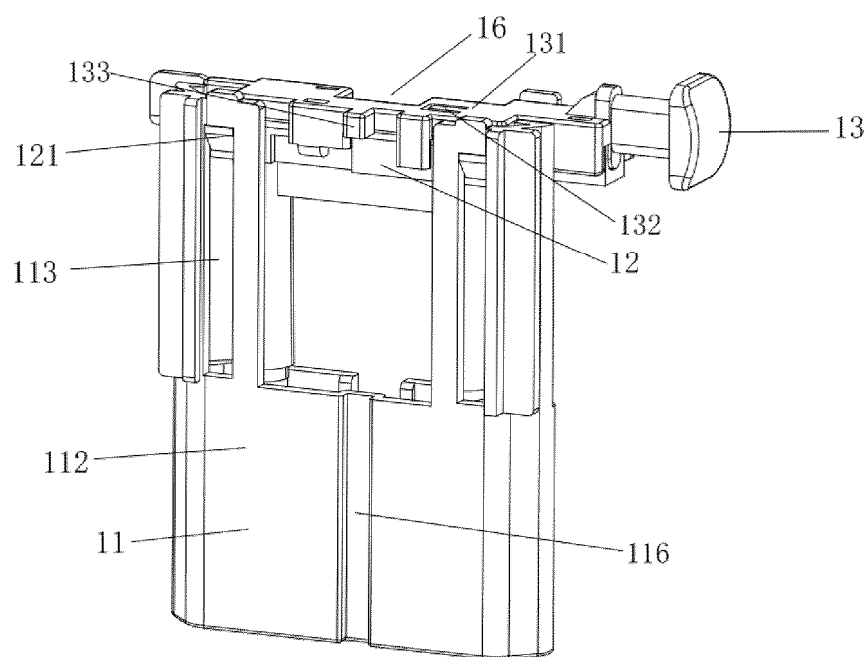


Fig. 5

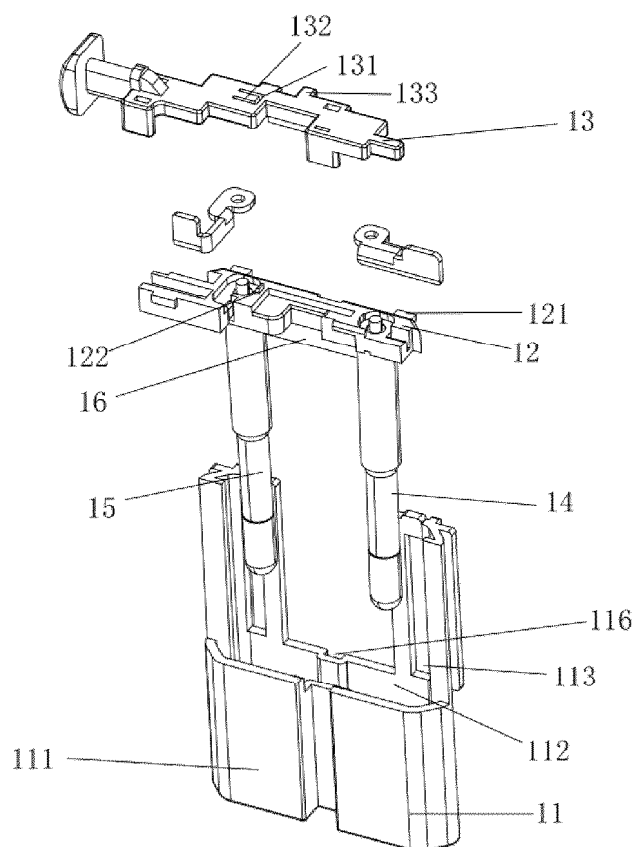


Fig. 6

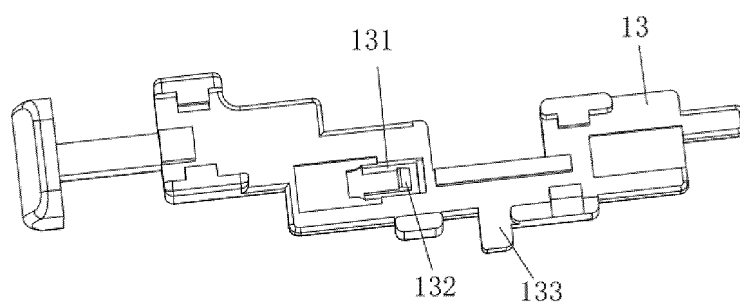


Fig. 7

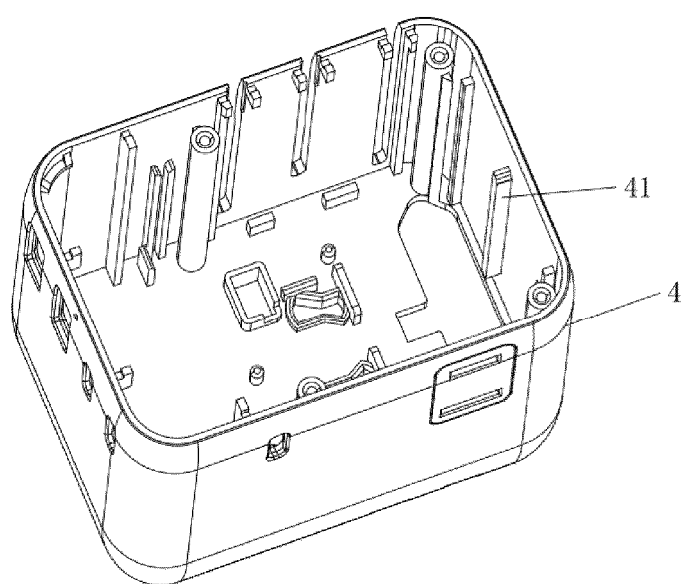


Fig. 8

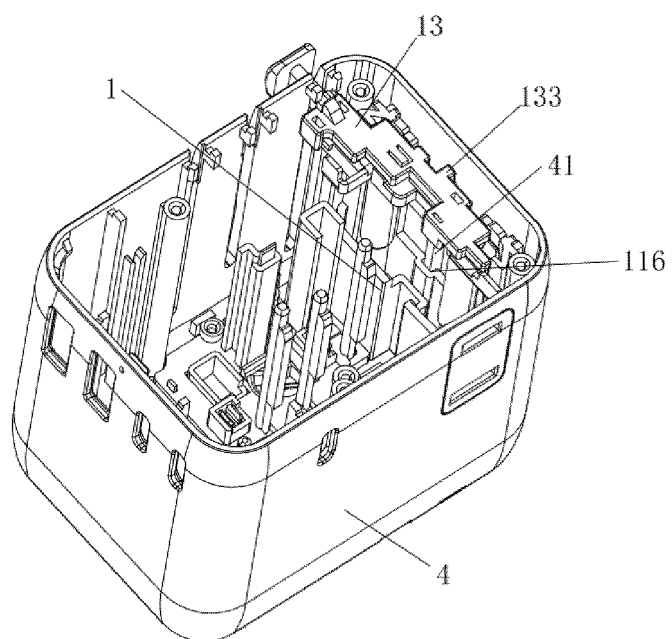


Fig. 9

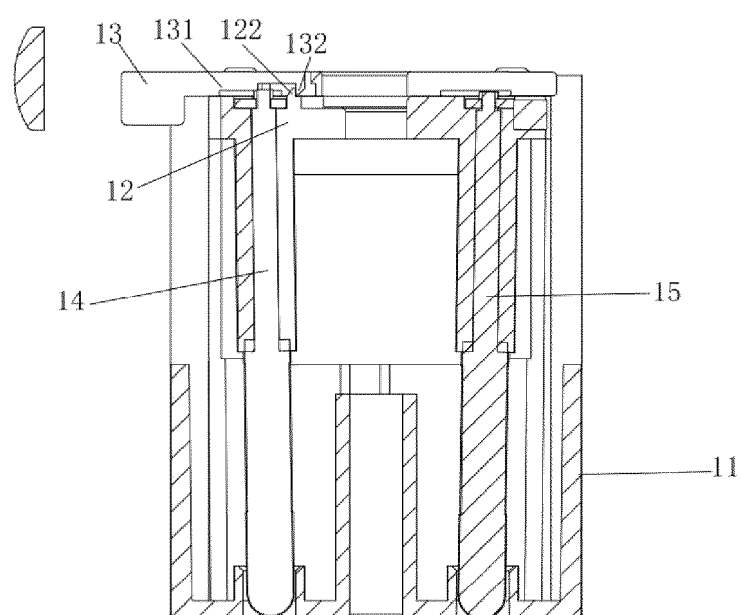


Fig. 10

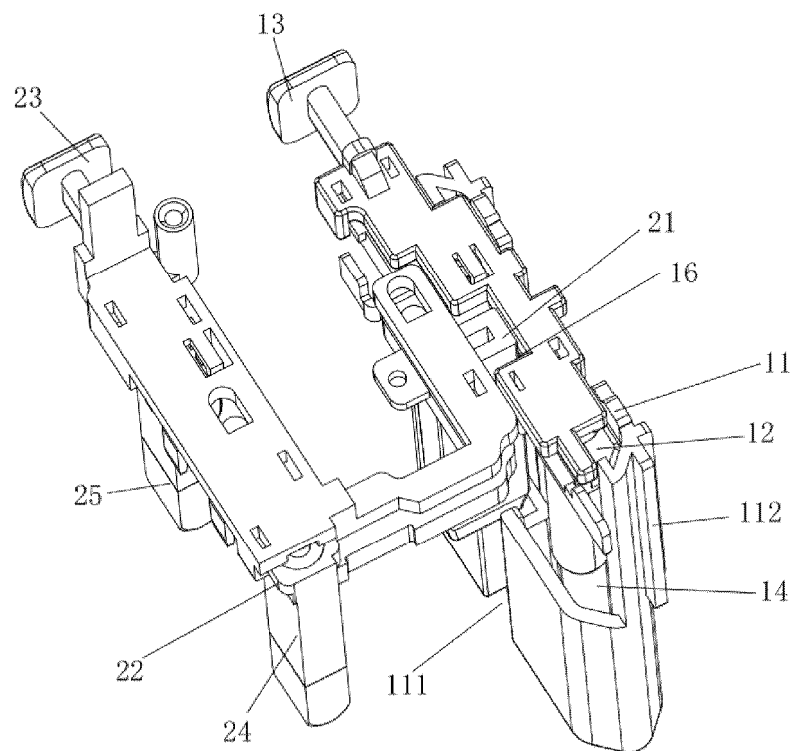


Fig. 11

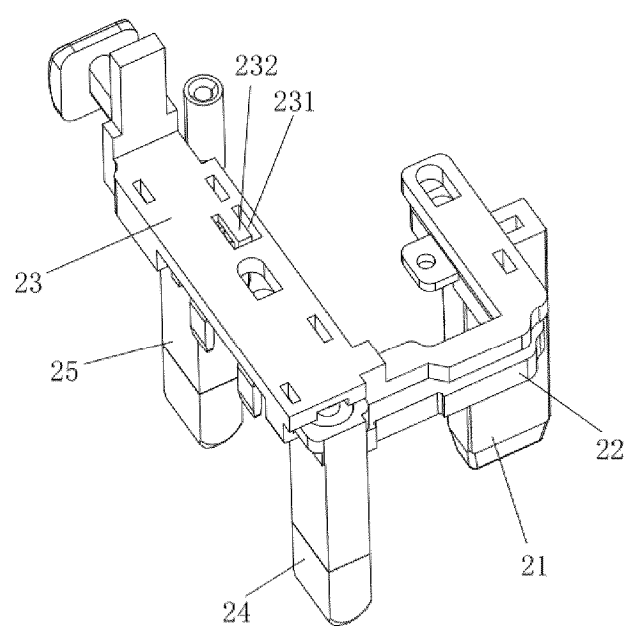


Fig. 12

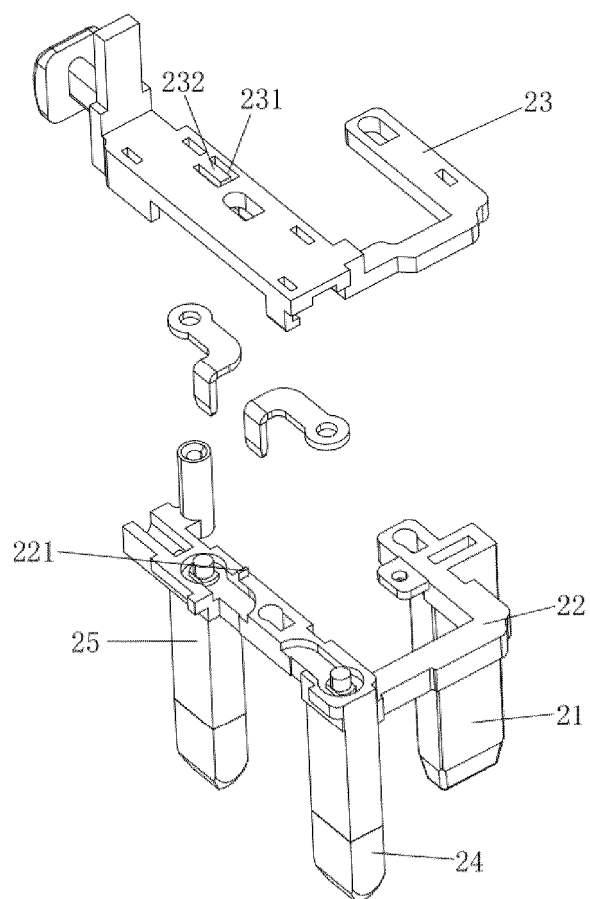


Fig. 13

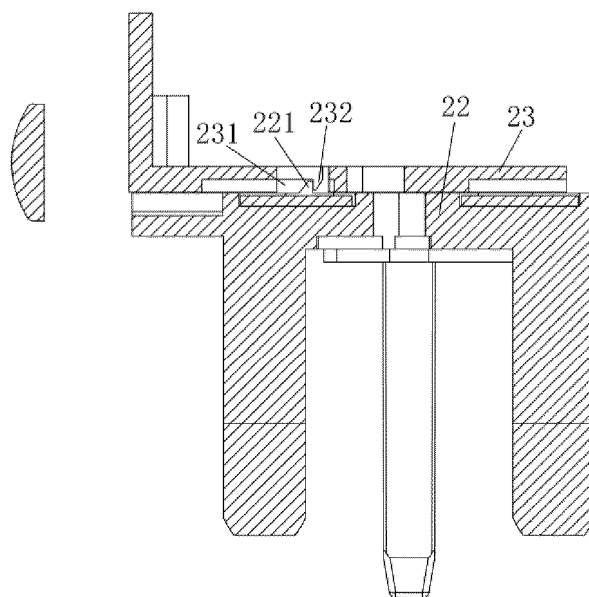


Fig. 14

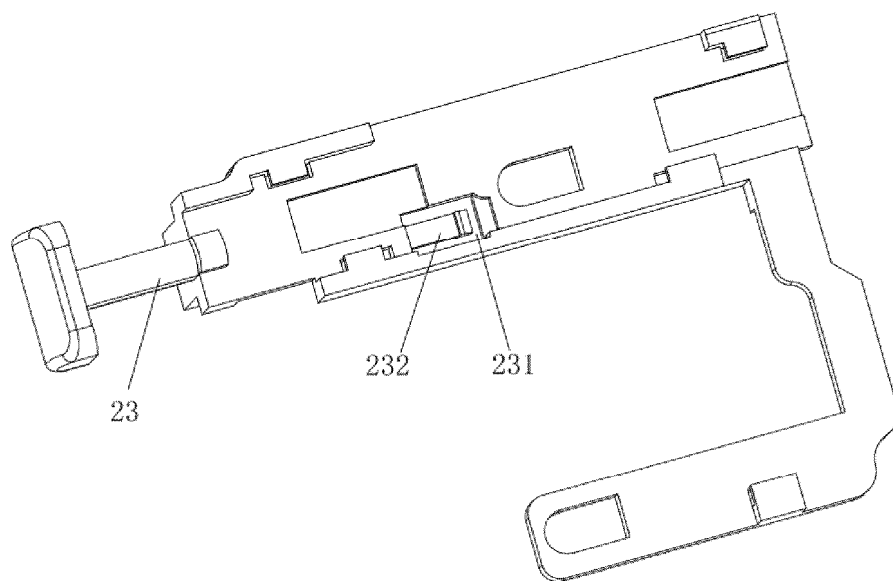


Fig. 15

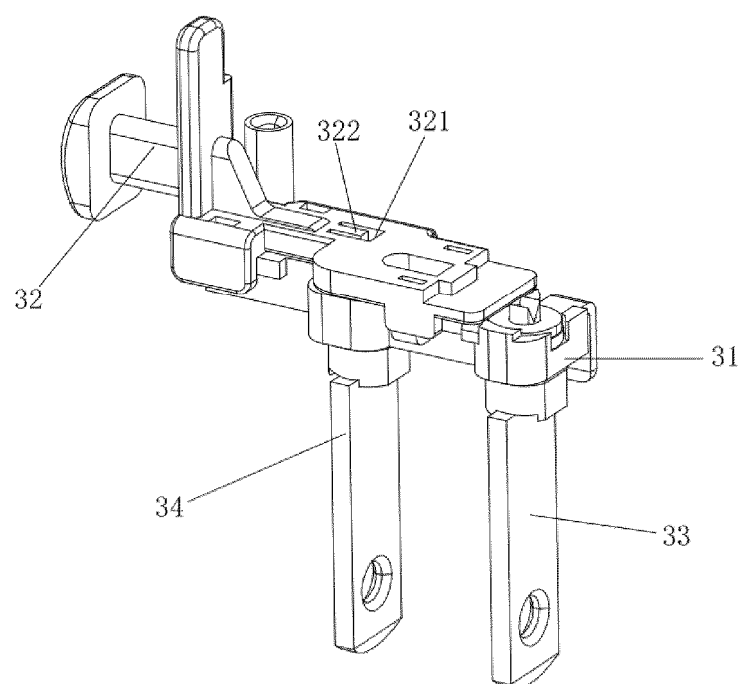


Fig. 16

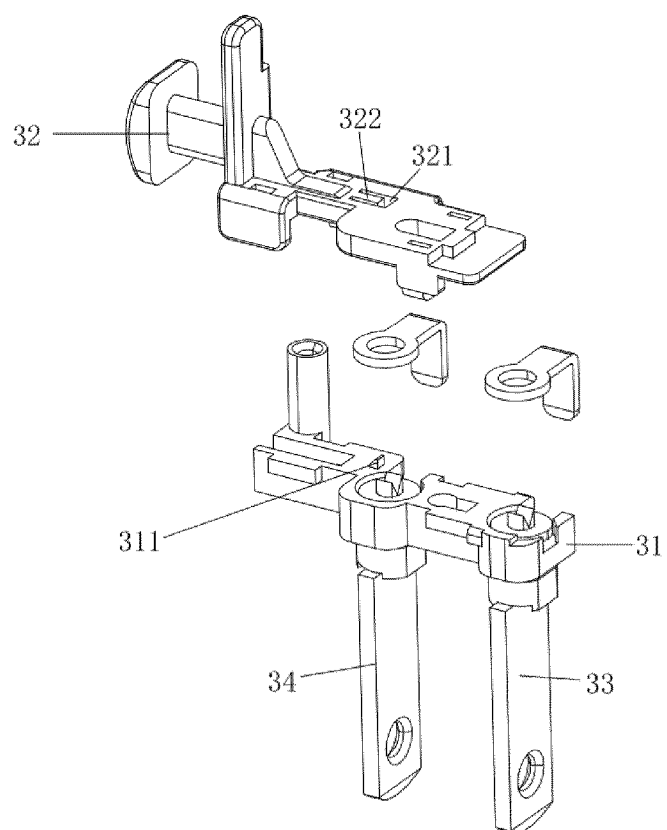


Fig. 17

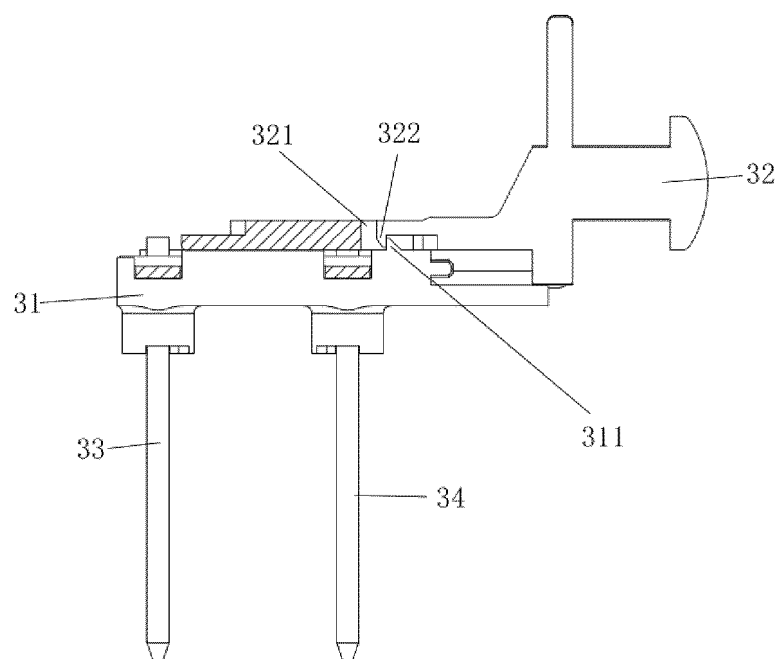


Fig. 18

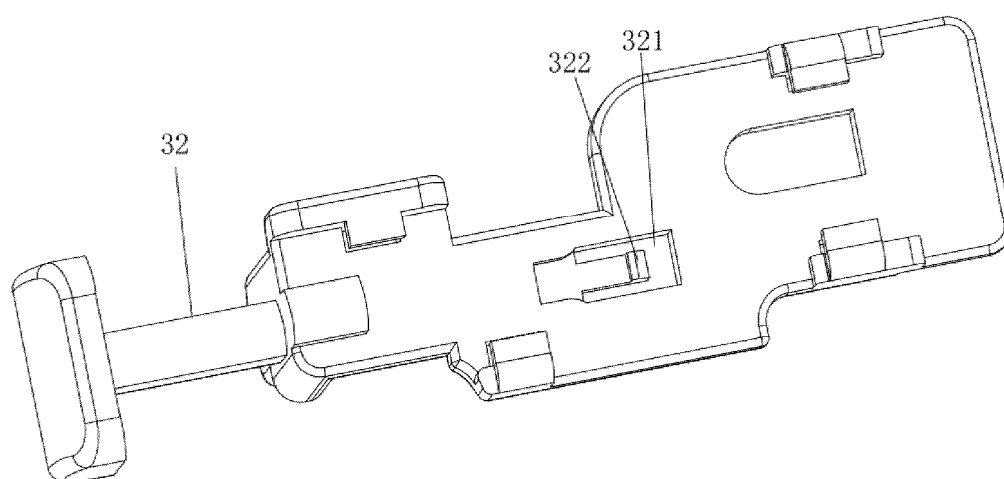


Fig. 19

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2025/086178

A. CLASSIFICATION OF SUBJECT MATTER

H01R31/06(2006.01)i; H01R13/04(2006.01)i

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)

IPC: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)

CNTXT, CIFD, ENTXTC, VEN: 电源, 插座, 插头, 插脚, 转换, 转接, 槽, 限位, 钩, 欧, 英, power, pin, converter, groove, slot, set, European, British

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	JP 3249297 U (WANG FENG) 28 November 2024 (2024-11-28) description, paragraphs 6-15, and figures 1-19	1-10
X	CN 117913610 A (WANG SITIAN) 19 April 2024 (2024-04-19) description, paragraphs 6-16, and figures 1-8	1-4, 7, 9
Y	CN 117913610 A (WANG SITIAN) 19 April 2024 (2024-04-19) description, paragraphs 6-16, and figures 1-8	5, 6, 8, 10
Y	CN 219811718 U (DONGGUAN BEST TRAVEL ELECTRONICS CO., LTD.) 10 October 2023 (2023-10-10) description, paragraphs 48-62 and 68-71, and figures 1 and 11-12	5, 6, 8, 10
A	CN 117895287 A (DONGGUAN BEST TRAVEL ELECTRONICS CO., LTD.) 16 April 2024 (2024-04-16) entire document	1-10
A	CN 207664341 U (SHENZHEN OULI TECHNOLOGY CO., LTD.) 27 July 2018 (2018-07-27) entire document	1-10

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"D" document cited by the applicant in the international application	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"E" earlier application or patent but published on or after the international filing date	"&" document member of the same patent family
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 17 June 2025	Date of mailing of the international search report 23 June 2025
Name and mailing address of the ISA/CN China National Intellectual Property Administration (ISA/CN) China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 2022)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2025/086178

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2004038572 A1 (AHOKU ELECTRONIC COMPANY) 26 February 2004 (2004-02-26) entire document	1-10

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/CN2025/086178

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
JP	3249297	U	28 November 2024	TWM	666243	U	11 February 2025
CN	117913610	A	19 April 2024	None			
CN	219811718	U	10 October 2023	None			
CN	117895287	A	16 April 2024	None			
CN	207664341	U	27 July 2018	None			
US	2004038572	A1	26 February 2004	US	6780033	B2	24 August 2004