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(54) **RECEPTOR CONNECTOR**

(57) The present invention provides a receptor connector which comprises a housing (11) and a pin assembly including a plurality of terminal pins (12) each of which is partially provided inside the housing (11) and partially extended to the outside of the housing (11). The receptor connector further includes at least two positioning fixation posts (13) which are provided on the housing (11) and spaced apart from each other, the positioning fixation

posts (13) comprise a connecting portion with one end connected to the housing (11), a positioning portion, and a fixing portion, the positioning portion and the fixing portion are connected to the other end of the connecting portion and are provided with a gap therebetween, a groove is formed between the positioning portion and fixing portion, and a locking protrusion is provided on the fixing portion at a side corresponding to the groove.

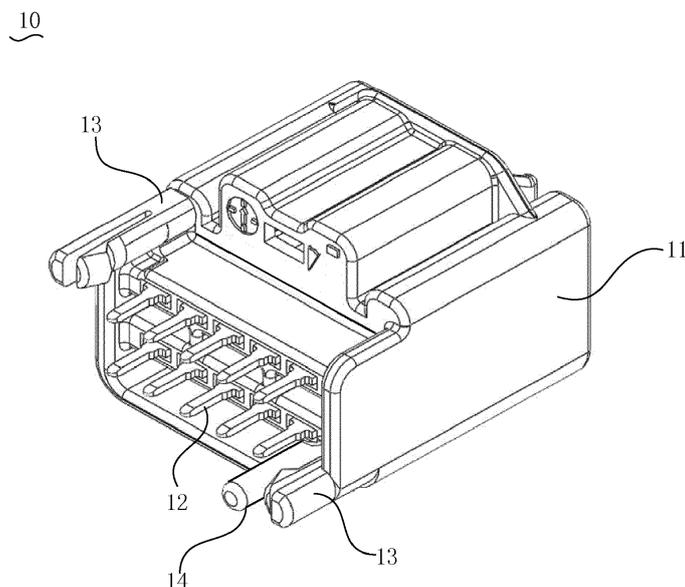


FIG. 1

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present application relates to the field of electrical connection, in particular, to a receptor connector.

Description of Prior Art

[0002] The receptor connector is widely applicable to various electric apparatus. Terminal pins of the receptor connector are connected to a substrate (for example, a printed circuit board) by soldering to achieve signal transmission. Generally, when the receptor connector is soldered to the substrate, it requires inserting the terminal pins into the soldering holes in the substrate and then performing the soldering operation. In the process of inserting the terminal pins, it is necessary to ensure that the pins are accurately aligned with the soldering holes on the substrate to prevent the pins from bending. In addition, in order to prevent the receptor connector from moving during the soldering process which may influence the soldering accuracy, it is necessary to apply a self-weight fixation to the receptor connector to allow a firm connection of the receptor connector with the substrate. However, the conventional receptor connector achieves the alignment of its mounting position either by providing a positioning portion on the housing of the receptor connector or by providing ear clips on the housing to perform the self-weight fixation after insertion, which only achieves one of the positioning function and the fixing function. Thus, during the soldering process of the receptor connector and the substrate, the terminal pins are prone to bending or the soldering is performed with a low accuracy, which impact the product quality and cause a complicated soldering operation and a low soldering efficiency. Besides, such receptor connector and substrate have a high rejection rate of product, thereby significantly impacting the cost of the production.

SUMMARY OF THE INVENTION

[0003] The object of the present application is to provide a receptor connector to solve the technical problems of conventional receptor connector with a low soldering efficiency, a low quality of the product, and a high cost of the production.

[0004] In order to achieve the object, the present application implements the following technical solutions: A receptor connector comprises a housing and a pin assembly including a plurality of terminal pins each of which is partially provided inside the housing and partially extended to the outside of the housing, the receptor connector further includes at least two positioning fixation posts which are provided on the housing and spaced

apart from each other, the positioning fixation post comprising a connecting portion with one end thereof connected to the housing, a positioning portion, and a fixing portion on which a locking protrusion is provided, the positioning portion and the fixing portion being connected to the other end of the connecting portion and being provided with a gap therebetween.

[0005] In one embodiment, the positioning fixation posts are formed by being extended outwardly from the housing along the extending direction of the terminal pins.

[0006] In one embodiment, the end of the positioning portion is provided with a first chamfer.

[0007] In one embodiment, the end of the fixing portion is provided with a second chamfer.

[0008] In one embodiment, the length of the positioning portion is greater than that of the fixing portion.

[0009] In one embodiment, the cross sectional area of the positioning portion is larger than that of the fixing portion.

[0010] In one embodiment, the positioning portion is provided on the edge of the housing, and the fixing portion is provided at the inner side of the positioning portion.

[0011] In one embodiment, the receptor connector described above further includes a calibration post which is connected to the housing.

[0012] In one embodiment, the end of the calibration post is provided with a third chamfer.

[0013] In one embodiment, the calibration post is integrally molded with the housing.

[0014] In one embodiment, the positioning fixation posts are integrally molded with the housing.

[0015] The receptor connector described above are provided with positioning fixation posts on the housing, the positioning fixation posts comprise a connecting portion with one end thereof connected to the housing, a positioning portion, and a fixing portion on which a locking protrusion is provided, the positioning portion and the fixing portion are connected to the other end of the connecting portion and are provided with a gap therebetween. When the receptor connector described above are connected to a substrate, the positioning portions are firstly aligned with the positioning holes in the substrate, thereafter, the receptor connector is pushed to allow the positioning portions to be inserted into the positioning holes along with the fixing portions pressed into the positioning holes. The locking protrusions come into contact with the substrate in the positioning holes, and the receptor connector is further pushed so that the substrate presses against the locking protrusions to make the fixing portions elastically deformed. After the locking protrusions are completely inserted into the positioning portions through the substrate, the locking protrusions are restored and stuck on the substrate to make the receptor connector firmly connected with the substrate. The receptor connector described above can achieve the positioning and alignment of the soldering installation and the self-weight fixation at the same time. Thus, it is possible

to ensure the terminal pins to be accurately inserted into the soldering holes to avoid the bending of the terminal pins, while ensure the stability of the connection between the receptor connector and the substrate during the soldering process. Hence, it is possible to effectively guarantee the quality of the soldering, improve the quality of the products, decrease the rejection rate of the products, and save the cost of the products. Also, the positioning and alignment and the self-weight fixation of the receptor connector can be completed simultaneously by aligning and pushing once, such that the soldering operation is easy and convenient, the efficiency of the soldering is effectively improved, and it contributes to an automatic soldering. Therefore, the receptor connector described above has advantages of a high efficiency of assembling and soldering, an enhanced quality of the products, and a saved cost of the products.

BRIEF DESCRIPTION OF DRAWINGS

[0016]

Fig. 1 is a perspective view of the receptor connector according to an embodiment of the present application;

Fig. 2 is a front view of the receptor connector according to an embodiment of the present application;

Fig. 3 is a section view along A-A in Fig.2;

Fig. 4 is a side view of the receptor connector according to an embodiment of the present application;

Fig. 5 is a section view along B- B in Fig. 4.

DETAILED DESCRIPTION OF THE INVENTION

[0017] In the following, the technical solutions of the present application will be further explained by embodiments with reference to the drawings.

[0018] In the explanation of the present application, it should be appreciated that directions and position relationships indicated by the terms of "up", "down", "front", "back", "left", "right", "vertical", "horizontal", "top", "bottom", "inner", "outer", etc. are those based on the drawings, it does not indicate or suggest that the indicated devices or elements must have specific directions or be constructed and operated in specific directions, but only for the convenience for describing the present application and simplifying description, therefore, it should not be understood as limitations to the present application.

[0019] With reference to Figs.1 to 5, a receptor connector 10 in an embodiment includes a housing 11, a pin assembly, and two positioning fixation posts 13. The pin assembly includes a plurality of terminal pins 12, each of which is partially disposed inside the housing 11 and partially extended to the outside of the housing 11. Two positioning fixation posts 13 are provided on the housing 11 and spaced apart from each other. The positioning fixation post 13 includes a connecting portion 131, a po-

sitioning portion 132, and a fixing portion 133 on which a locking protrusion 1331 is provided. One end of the connecting portion 131 is connected to the housing 11, and the other end of the connecting portion 131 is connected with the positioning portion 132 and fixing portion 133. The positioning portion 132 and the fixing portion 133 are provided with a gap therebetween.

[0020] When the receptor connector 10 described above is connected to a substrate, the positioning portions 132 are firstly aligned with the positioning holes on the substrate to allow the terminal pins 12 to be aligned with the soldering holes on the substrate. After the alignment of the positioning portions 132 with the positioning holes, the receptor connector 10 is pushed so that the positioning portions 132 are inserted into the positioning holes and in the meantime the terminal pins 12 are inserted into the soldering holes. The receptor connector 10 described above achieves the positioning and alignment by the positioning portions 132, which ensures that the terminal pins 12 are accurately inserted into the soldering holes and effectively avoids bending deformation of the terminal pins 12.

[0021] In addition, during the process of inserting the positioning portions 132 into the positioning holes, the fixing portions 133 are also pressed into the positioning holes, and the locking protrusions 1331 are brought into contact with the substrate in the positioning holes. As the receptor connector 10 is further pushed, the locking protrusions 1331 are pressed by the substrate such that the fixing portions 133 are elastically deformed and approach toward the positioning portions 132. When the locking protrusions 1331 are completely inserted into the positioning holes through the substrate, the fixing portions 133 are restored and the locking protrusions 1331 are stuck on the substrate so that the receptor connector 10 is firmly connected with the substrate and thus the self-weight fixation of the receptor connector 10 with the substrate is realized. Thereafter, the soldering operation can be performed to make the final fixation of the receptor connector 10 and the substrate. Specifically, the receptor connector 10 enables the self-weight fixation by providing the locking protrusions 1331 on the fixing portions 133 to engage with the substrate, thereby ensuring that the receptor connector 10 cannot be shifted during the soldering so as to guarantee the quality of the soldering.

[0022] In the present embodiment, the positioning portions 132 and fixing portions 133 are spaced apart with a groove 134 formed therebetween. The groove 134 is able to provide a deformation space for the fixing portions 133 to prevent the fixing portions 133 from contacting the positioning portions 132 and causing the positioning portions 132 to block the fixing portions 133, so that the fixing portions 133 are ensured to be smoothly inserted into the positioning holes.

[0023] In one embodiment, the positioning fixation posts 13 are formed by being extended outwardly from housing 11 along the extending direction of the terminal pins 12. Specifically, the edge of the housing 11 is ex-

tended outwardly along the extending direction of the terminal pins 12 to form the positioning fixation posts 13 which are provided in a direction same as the extending direction of the terminal pins 12 and the lengths of which are greater than the lengths of the terminal pins 12. When the receptor connector 10 is connected with the substrate, the positioning fixation posts 13 firstly come in contact with the substrate and then align with the positioning holes in order to make sure that the terminal pins 12 are inserted into the soldering holes correctly. Further, the positioning fixation posts 13 are provided on the edge of the housing 11 and the outer side of the terminal pins 12. Therefore, the positioning fixation posts 13 can effectively protect the terminal pins from collision during the transportation of the receptor connector 10, and prevent the terminal pins 12 from being bent or damaged during transportation.

[0024] In the present embodiment, the positioning fixation posts 13 are provided on the housing 11 and spaced apart from each other, thereby effectively preventing the receptor connector 10 from shifting in the aligning process, which is beneficial to improve the efficiency and accuracy of the alignment. Further, the positioning fixation posts 13 may be diagonally provided on the housing 11, which can further facilitate the aligning operation and ensure the accuracy of the alignment. However, it should be pointed out that the number of the positioning fixation posts 13 could be more than two in other embodiments as long as the number of the positioning fixation posts 13 is not less than two. In practice, the number and the set location of the positioning fixation posts 13 can be provided specifically as practical needs, which are not limited specifically in the present embodiment.

[0025] In one embodiment, the end of the positioning portion 132 is provided with a first chamfer 1321 which is capable to serve as a guidance in the alignment of the positioning portion 132 with the substrate so that even if the position of the positioning portion 132 slightly shifts during the alignment, the positioning portion 132 is able to slip into the positioning hole. Thus, the positioning portions 132 can be aligned with the positioning holes rapidly and the aligning operation of the positioning portions 132 can be facilitated, which is benefit for enhancing the mounting efficiency of the receptor connector 10 and improving the soldering efficiency. In the present embodiment, the first chamfers 1321 are circle-arc chamfers, but the first chamfers 1321 can also be flat-straight chamfers, that is not limited specifically in the present embodiment.

[0026] Further, in one embodiment, the end of the fixing portion 133 is provided with a second chamfer 1332 which is able to allow the fixing portion 133 to slip into the positioning hole rapidly thereby further improving the mounting efficiency and soldering efficiency of the receptor connector 10. In the present embodiment, the second chamfers 1332 are circle-arc chamfers, but the second chamfers 1332 can also be flat-straight chamfers that is not limited specifically in the present embodiment.

[0027] In one embodiment, the length of the positioning portion 132 is greater than the length of the fixing portion 133 so that when the receptor connector 10 is mounted, the positioning portions 132 are firstly contacted with the substrate for positioning and aligning so as to ensure the accuracy of the positioning.

[0028] In one embodiment, the cross sectional area of the positioning portion 132 is larger than the cross sectional area of the fixing portion 133. Specifically, the positioning portion 132 and the fixing portion 133 are different in thickness, and the positioning portion 132 is thicker than the fixing portion 133. In the present embodiment, the positioning portions 132 are provided to be thicker and the fixing portions 133 are provided to be thinner, which can ensure the amount of the elastic deformation of the fixing portions 133 in the process of inserting into the positioning holes and ensure the positioning portions 132 to be non-deformed in the process of aligning with the positioning holes in the substrate, thereby ensuring that the positioning is accurate.

[0029] Further, in one embodiment, the positioning portions 132 are provided on the edge of the housing 11, while the fixing portions 133 are provided at the inner side the positioning portions 132. Generally, during the process of producing and transporting the housing 11, the housing 11 is often cast and thrown so that the housing 11 is usually subjected to an external impact force. However, the fixing portions 133 are relatively thin and have a relatively low structural strength, and thus if the fixing portions 133 is subjected to an external impact, the fixing portions 133 are easily broken, thereby causing the breakage of the entire housing 11. In the present embodiment, the positioning portions 132 are provided close to the edge of the housing 11 and the fixing portions 133 are provided close to the terminal pins 12 so that the fixing portions 133 are protected by the positioning portions in a manner that the thick positioning portions 132 are provided at the outer side while the thin fixing portions 133 are provided at the inner side. Therefore, it is possible to avoid the fixing portions 133 from breaking due to the external impact in the process of producing and transporting, decrease the rejection rate of the housing 11, and save the cost of production.

[0030] In one embodiment, in order to improve the stability of the connection between the positioning fixation posts 13 and the housing 11, the positioning fixation posts 13 is integrally molded with the housing 11.

[0031] In one embodiment, the receptor connector 10 described above further includes a calibration post 14 that is connected with the housing 11. Specifically, the length of the calibration post 14 is smaller than that of the positioning portion 132, and a calibration hole is opened at a position in the substrate corresponding to the calibration post 14. After the positioning portions 132 are aligned with the positioning holes, the calibration post 14 is aligned with and inserted into the calibration hole in the process of pushing the receptor connector 10, thereby enhancing the stability of the connection be-

tween the housing 11 and the substrate. Also, the calibration post 14 is able to apply a calibration of the mounting and positioning to the receptor connector 10, and even if there is position offset in the mounting process after the alignment of the positioning portions 132 with the positioning holes, the calibration post 14 is able to perform a secondary alignment to correct the position of the receptor connector 10. Accordingly, it is possible to ensure the terminal pins 12 to be accurately inserted into the soldering holes, to prevent the terminal pins 12 from bending caused by colliding with the substrate due to the position offset of the receptor connector 10, and to further improve the accuracy of the mounting and the aligning of the receptor connector 10.

[0032] In one embodiment, the end of the calibration post 14 is provided with a third chamfer 141 that is capable of allowing the calibration post 14 to slip into the calibration hole rapidly and thus improving the efficiency of the alignment of the calibration post 14 with the calibration hole. In one embodiment, the third chamfer 141 is a circle-arc chamfer.

[0033] In one embodiment, in order to ensure the stability of the connection between the calibration post 14 and housing 11, the calibration post 14 is integrally molded with the housing 11.

[0034] The receptor connector 10 described above can achieve the positioning and alignment of the soldering installation and the self-weight fixation at the same time. Thus, it is possible to ensure the terminal pins 12 to be accurately inserted into the soldering holes to avoid the bending of the terminal pins, while ensure the stability of the connection between the receptor connector 10 and the substrate during the soldering process. Hence, it is possible to effectively guarantee the quality of the soldering, improve the quality of the products, decrease the rejection rate of the products, and save the cost of the products. Also, the positioning and alignment and the self-weight fixation of the receptor connector 10 can be completed simultaneously by aligning and pushing once, such that the soldering operation is easy and convenient, the efficiency of the soldering is effectively improved, and it contributes to an automatic soldering. Therefore, the receptor connector 10 described above has advantages of a high efficiency of assembling and soldering, an enhanced quality of the products, and a saved cost of the products.

[0035] The technical features of the above embodiments can be combined arbitrarily, and to simplify the description, the present specification does not describe all the possible combinations of the technical features in the above embodiments; however, it should be considered within the scope of the present specification as long as the combinations of these technical features do not have any contradiction.

[0036] The above embodiments merely express several modes of the present invention, and their description is concrete and detailed. However, it should not be appreciated as any limitation to the scope of the invention.

It should point out that some modification and improvement to the invention can be made without departing from the spirit of present invention for the ordinary skilled in the art, which are all belonged to the protection scope of the present invention. Therefore, the protection scope of the present invention should be subject to the appended claims.

DESCRIPTION OF REFERENCE NUMERALS

[0037] In the drawings:

10	receptor connector
11	housing
12	terminal pin
13	positioning fixation post
14	calibration post
131	connecting portion
132	positioning portion
133	fixing portion
134	groove
141	third chamfer
1321	first chamfer
1331	locking protrusion
1332	second chamfer

Claims

1. A receptor connector, comprising a housing (11) and a pin assembly including a plurality of terminal pins (12) each of which is partially provided inside the housing (11) and partially extended to the outside of the housing (11), the receptor connector being **characterized in that** the receptor connector further includes at least two positioning fixation posts (13) which are provided on the housing (11) and spaced apart from each other, the positioning fixation post (13) comprising a connecting portion (131) with one end thereof connected to the housing (11), a positioning portion (132), and a fixing portion (133) on which a locking protrusion (1331) is provided, the positioning portion (132) and the fixing portion (133) being connected to the other end of the connecting portion (131) and provided with a gap therebetween.
2. The receptor connector according to claim 1, being **characterized in that** the positioning fixation posts (13) are formed by being extended outwardly from the housing (11) along the extending direction of the terminal pins (12).
3. The receptor connector according to claim 1, being **characterized in that** the end of the positioning portion (132) is provided with a first chamfer (1321).
4. The receptor connector according to claim 1, being

characterized in that the length of the positioning portion (132) is greater than that of the fixing portion (133).

- 5. The receptor connector according to claim 1, being **characterized in that** the cross sectional area of the positioning portion (132) is larger than that of the fixing portion (133). 5

- 6. The receptor connector according to claim 1, being **characterized in that** the positioning portion (132) is provided on the edge of the housing (11), and the fixing portion (133) is provided at the inner side of the positioning portion (132). 10

- 7. The receptor connector according to claim 1, being **characterized in that** the receptor connector further includes a calibration post (14) which is connected to the housing (11). 15

- 8. The receptor connector according to claim 7, being **characterized in that** the end of the calibration post (14) is provided with a third chamfer (141). 20

- 9. The receptor connector according to claim 7, being **characterized in that** the calibration post (14) is integrally molded with the housing (11). 25

- 10. The receptor connector according to claim 1, being **characterized in that** the positioning fixation posts (13) are integrally molded with the housing (11). 30

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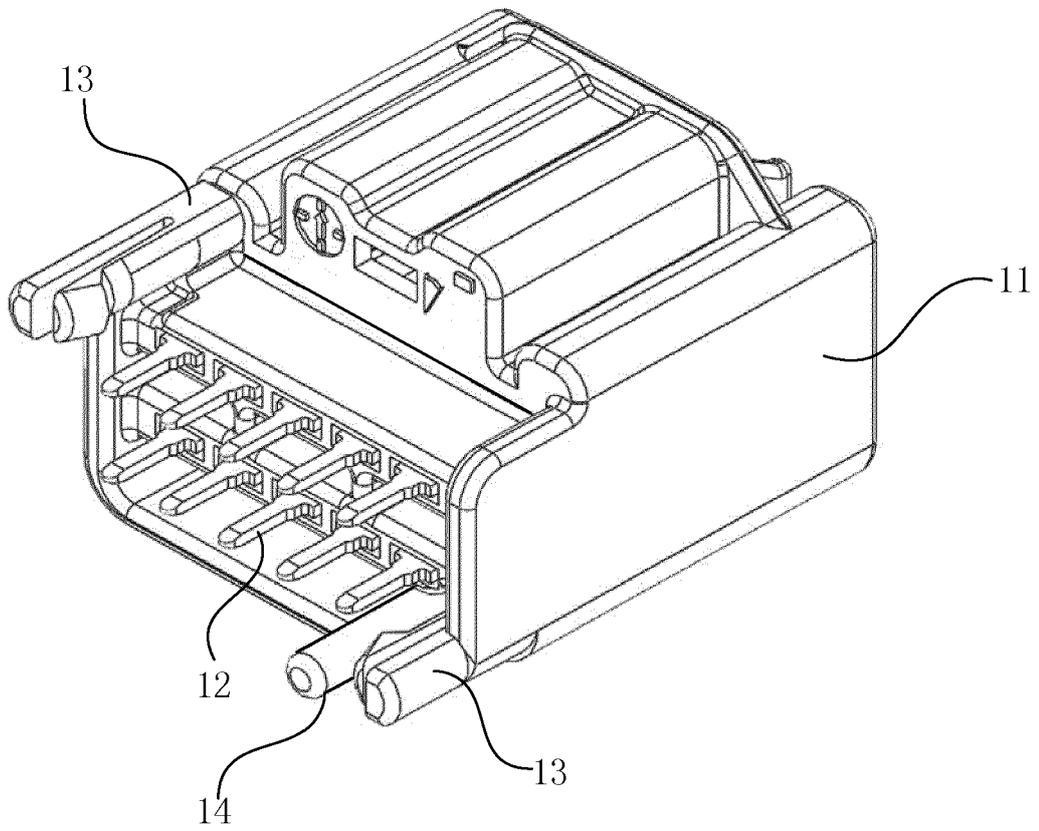


FIG. 1

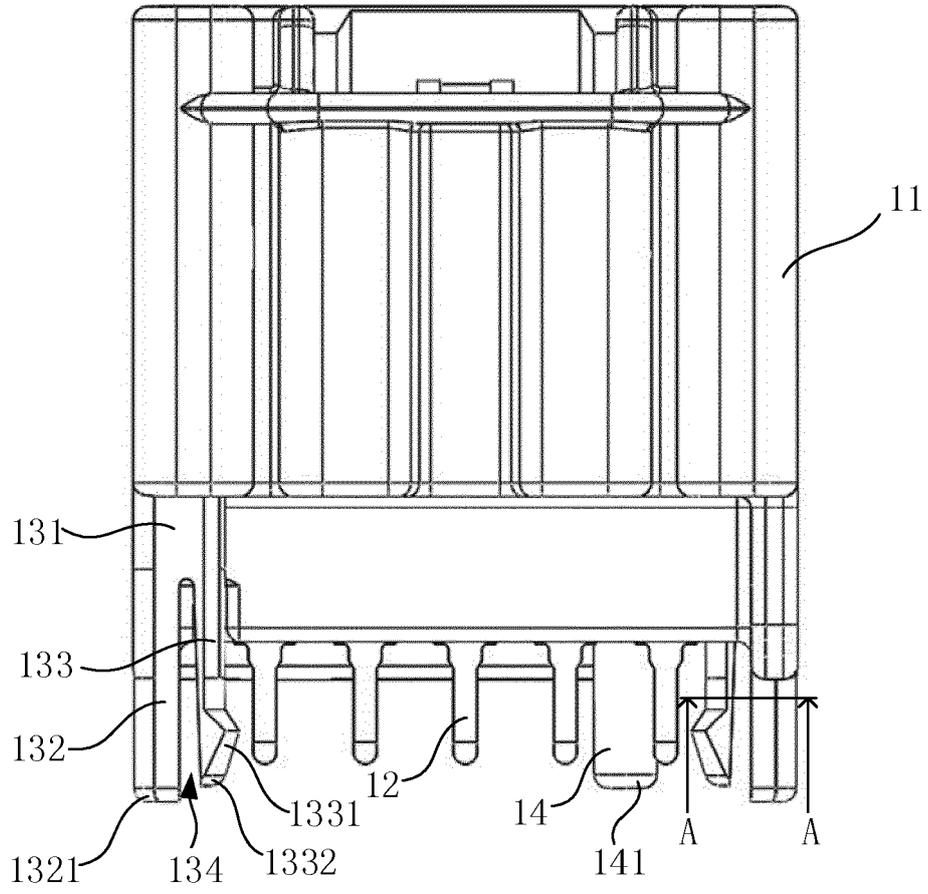


FIG. 2

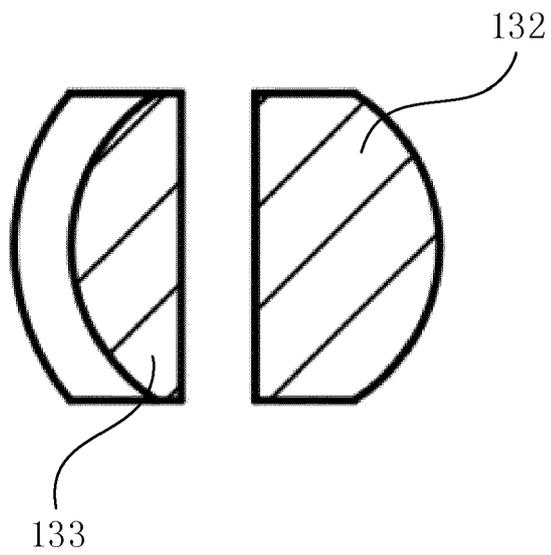


FIG. 3

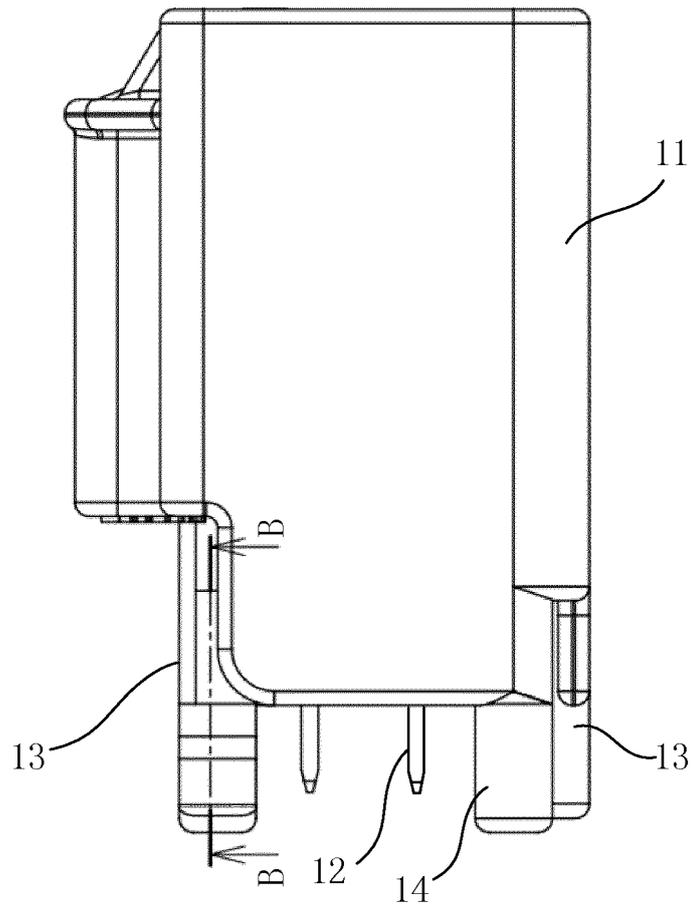


FIG. 4

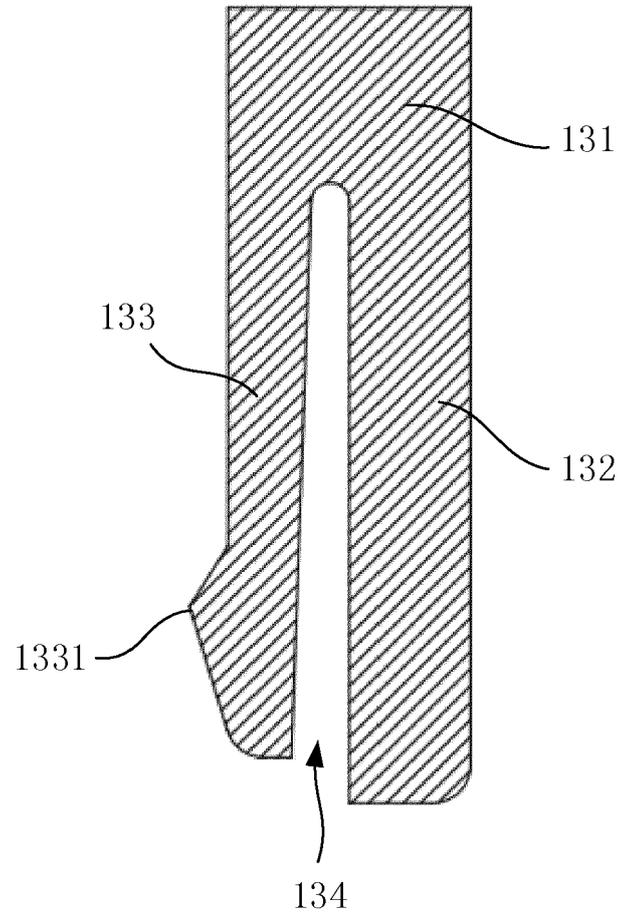


FIG. 5



EUROPEAN SEARCH REPORT

Application Number
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ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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