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(54) Light supporting device and lamp with same

(57) A light supporting device (10) is disclosed. The light supporting device (10) includes a retaining member (11) for connecting with a light source and a connecting member (12) connected to the retaining member (11) and for connecting with a mounting structure. The retaining member (11) includes a retaining board (111) and a number of connecting plates (112) perpendicularly extending from the retaining board (111). The connecting plates (112) are arranged on sides of a square area on the retaining board (111). The connecting member (12) includes a bottom plate (121) and a number of side plates (122) perpendicularly extending from the bottom plate (121). The connecting plates (112) are arranged on sides of a square area on the retaining board (112). The connecting member (12) is connected to the retaining member (11) by different arrangements by connecting the connecting member (12) to the retaining member (11) at different locations.

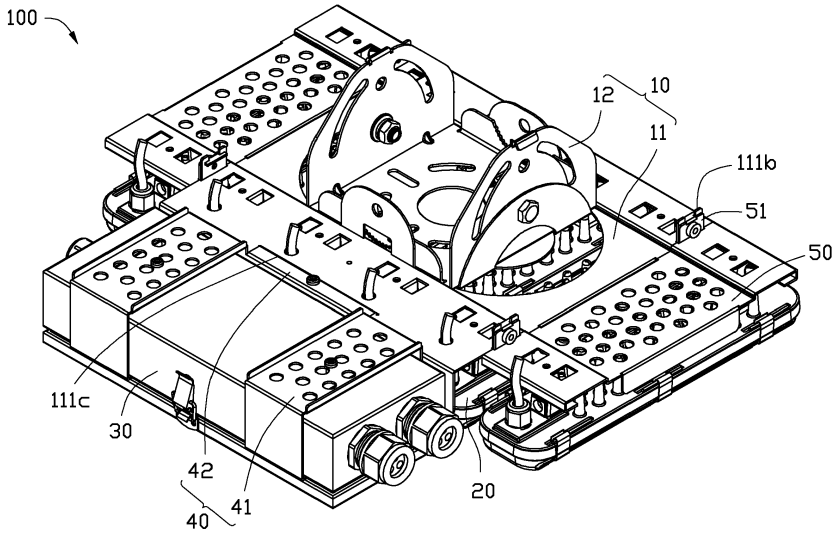

FIG. 6

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Description

BACKGROUND

1. Technical Field

[0001] The present disclosure relates to a light supporting device and a lamp with the same.

2. Description of Related Art

[0002] A lamp typically includes a light source and a light supporting device for supporting the light source and fixing the light source to other objects. Because of different mounting situations, the lamp needs different light supporting devices for fitting the light source to the different mounting situations. Therefore, the cost of the lamp is increased.

[0003] What is needed therefore, is a light supporting device and a lamp with the same which can overcome the above-mentioned problems.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] The components of the drawings are not necessarily drawn to scale, the emphasis instead being placed upon clearly illustrating the principles of the embodiments of the light supporting device and the lamp with the same. Moreover, in the drawings, like reference numerals designate corresponding parts throughout several views.

[0005] FIG. 1A is an isometric view of a retaining member of a light supporting device, according to an exemplary embodiment of the present disclosure.

[0006] FIG. 1B is an isometric view of a connecting member of the light supporting device, according to the exemplary embodiment of the present disclosure.

[0007] FIG. 2 is an isometric, schematic view of the light supporting device according to the exemplary embodiment of the present disclosure in which the retaining member of FIG. 1A and the connecting member of FIG. 1B are connected together according to a first arrangement.

[0008] FIG. 3 is a view similar to FIG. 2, but shows that the retaining member of FIG. 1A and the connecting member of FIG. 1B are connected together according to a second arrangement.

[0009] FIG. 4 is a view similar to FIG. 2, but shows that the retaining member of FIG. 1A and the connecting member of FIG. 1B are connected together according to a third arrangement.

[0010] FIG. 5 is a view similar to FIG. 2, but shows that the retaining member of FIG. 1A and the connecting member of FIG. 1B are connected together according to a fourth arrangement.

[0011] FIG. 6 is an isometric view of a lamp with the light supporting device of FIG. 3.

DETAILED DESCRIPTION

[0012] Referring to FIGs. 1A-5, a light supporting device 10 including a retaining member 11 and a connecting member 12, according to an exemplary embodiment, is shown. The retaining member 11 is configured for retaining light sources 20 (see FIG. 6), and the connecting member 12 is configured for connecting the light supporting device 10 to other objects, such as a mounting bracket (not shown).

[0013] Referring to FIG. 1A, the retaining member 11 includes a substantially rectangular retaining board 111 and a number of connecting plates 112 perpendicularly connected to the retaining board 111. The retaining board 111 defines a number of fixing holes 111a for fixing the light sources 20 on the retaining board 111. The retaining board 111 includes a number of perpendicular expanding plates 111b for connecting with expanded light sources 50 (FIG. 6). The connecting plates 112 are connected to the retaining board 111 and perpendicularly extend from a same side (i.e., a top face as viewed from the drawings) of the retaining board 111 along a same direction, i.e., an upward direction. The connecting plates 112 includes two first connecting plates 1121 parallel to each other and two second connecting plates 1122 parallel to each other. The two first connecting plates 1121 and the two second connecting plates 1122 are arranged on sides of a square area on the retaining board 111. Each first connecting plate 1121 defines a first connecting hole 1121a in a portion thereof away from the retaining board 111 and a vaulted hole 1121b in a portion thereof near the retaining board 111. Each second connecting plate 1122 defines a second connecting hole 1122a in a portion thereof away from the retaining board 111 and a rectangular hole 1122b in a portion thereof near the retaining board 111.

[0014] The connecting member 12 includes a bottom plate 121 and a number of side plates 122 connected to the bottom plate 121. The bottom plate 121 is square, and the side plates 122 are perpendicularly connected to bottom plate 121. The bottom plate 121 defines a through hole 1211 in a center area thereof. The side plates 122 include two first side plate 1221 parallel to each other and two second side plates 1222 parallel to each other. The two first side plates 1221 and the two second side plates 1222 are correspondingly perpendicularly connected to the four sides of the bottom plate 121. Each first side plate 1221 defines two third connecting holes 1221 a and two sliding holes 1221b. The third connecting holes 1221a in each side plate 1221 are at different levels and aligned with each other along a vertically-extended central line of the corresponding first side plate 1221. The sliding holes 1221b are arc-shaped and located at two sides of the central line of the first side plate 1221, respectively. Each first side plate 1221 includes a hook 1221c on the top end thereof. Each second side plate 1222 defines an arc-shaped depressed portion 1222a, and a number of teeth 1222b formed on a top of

the depressed portion 1222a.

[0015] In this embodiment, the length of each side of the bottom plate 121 is less than a distance between the first connecting plates 1121 and a distance between the second connecting plates 1122; thus, the bottom plate 121 can be inserted between the first connecting plates 1121 and the second connecting plate 1122.

[0016] Referring to FIGs. 2-5, the retaining member 11 and the connecting member 12 can be connected to each other by different arrangements for matching different mounting situations of the light sources.

[0017] Referring to FIG. 2, the bottom plate 121 is inserted in the area surrounded by the first connecting plates 1121 and the second connecting plates 1122, and the first side plate 1221 are parallel to the second connecting plates 1122. The third connecting hole 1221 a of each first side plate 1221 which is near the bottom plate 121 is aligned with a second connecting hole 1122a of the second connecting plate 1122. The retaining member 11 and the connecting member 12 are connected to each other through two screw assemblies 13a each extending through a pair of corresponding second connecting hole 1122a and third connecting hole 1221a.

[0018] Referring to FIG. 3, the connecting member is rotated 90 degrees relative to FIG. 2. At this position, the first side plates 1221 are parallel to the first connecting plates 1121. The third connecting hole 1221a of each first side plate 1221 which is near to the bottom plate 121 is aligned with a first connecting hole 1121 a of the first connecting plate 1121. The retaining member 11 and the connecting member 12 are connected to each other through two screw assemblies 13b each extending through a pair of corresponding first connecting hole 1121 a and third connecting hole 1221a.

[0019] Referring to FIG. 4, the connecting member 12 is inverted relative to FIG. 2, and the two first side plates 1221 are inserted between the two second connecting plates 1122. The third connecting hole 1221a of each first side plate 1221 which is away from the bottom plate 121 is aligned with a second connecting hole 1122a of the second connecting plate 1122. The retaining member11 and the connecting member 12 are connected to each other through two screw assemblies 13c each extending through a pair of corresponding second connecting hole 1122a and third connecting hole 1221a. With this configuration, the connecting member 12 can be rotated relative to the retaining member 11. In addition, each of the hooks 1221c is inserted into a corresponding rectangular hole 1122b for enhancing the stabilization of the connection between the retaining member 11 and the connecting member 12.

[0020] Referring to FIG. 5, the connecting member 12 is inverted relative to FIG. 3, and the two first side plates 1221 are inserted between the two first connecting plates 1121. The third connecting hole 1221a of each first side plate 1221 which is away from the bottom plate 121 is aligned with a first connecting hole 1121a of the first connecting plate 1121. The retaining member11 and the connecting member 12 are connected to each other through two screw assemblies 13d each extending through a pair of corresponding first connecting hole 1121a and third connecting hole 1221a. The connecting angle between the retaining member 11 and the connecting member 12 can be adjusted by rotating the retaining member11 relative to the connecting member 12.

[0021] Referring to FIG. 6, a lamp 100 with the light supporting device 10, according to an exemplary embodiment, is shown. The lamp 100 further includes a number of light sources 20 fixed on a bottom of the retaining member 11, and a power supply 30 fixed on a lateral side of the retaining member 11. The light sources 20 are respectively electrically connected to the power supply unit 30. The lamp 100 includes a fixing member 40 for fixedly connecting the power supply unit 30 to the retaining member 11. The fixing member 40 includes a loading potion 41 and a jamming portion 42 integrally connected to the loading portion 41. A distal end of the jamming portion 41 is bended as the shape of a hook; correspondingly, the retaining member 11 defines a slit 111c for the distal end of the jamming portion 42 inserting therein. The loading portion 41 is bended as a hollow frame for allowing the power supply unit 30 to be fixed therein.

[0022] In this embodiment, the lamp 100 further includes two expanded light sources 50 connected to two opposite sides of the retaining member 11. Each expanded light source 50 includes a fixing plate 51 corresponding to an expanding plate 111b, and each expanded light source 50 is fixed on the retaining member11 by connecting the fixing plate 51 to the corresponding expanding plate 111b.

[0023] It is believed that the present embodiments and their advantages will be understood from the foregoing description, and it will be apparent that various changes may be made thereto without departing from the spirit and scope of the disclosure or sacrificing all of its material advantages, the examples hereinbefore described merely being preferred or exemplary embodiments of the disclosure.

Claims

1. A light supporting device, comprising:

a retaining member comprising:

a retaining board configured for connecting with a light source; and

a plurality of connecting plates connected to the retaining board and perpendicularly extending from the retaining board toward a same direction, the plurality of connecting plates being arranged on sides of a square area on the retaining board; and

a connecting member configured for connecting

with a mounting structure, comprising:

a bottom plate; and
a plurality of side plates connected to the bottom plate and perpendicularly extending from the bottom plate toward a same direction, the plurality of connecting plates being arranged on sides of a square area on the retaining board;

wherein the connecting member is capable of being connected to the retaining member by four different arrangements by connecting the side plates to the connecting plates at first, second, third and fourth locations, wherein at the second position the connecting member is rotated 90 degrees relative to the first position, at the third position, the connecting member is inverted relative to the first position and at the fourth position the connecting member is inverted relative to the second position.

2. The light supporting device of claim 1, wherein the connecting plates comprises two first connecting plates parallel to each other and two second connecting plates parallel to each other.

3. The light supporting device of claim 2, wherein each first connecting plate defines a first connecting hole in a portion away from the retaining board and a vaulted hole in a portion near the retaining board, and each second connecting plate defines a second connecting hole in a portion away from the retaining board and a rectangular hole in a portion near the retaining board.

4. The light supporting device of claim 3, wherein the bottom plate is square, a length of each of four sides of the bottom plate is less than a distance between the first connecting plates and a distance between the second connecting plates, the side plates comprise two first side plate parallel to each other and two second side plates parallel to each other, the two first side plates and the two second side plates are correspondingly connected to the four sides of the bottom plate.

5. The light supporting device of claim 4, wherein each first side plate defines two third connecting holes and two sliding holes, the third connecting holes are at different levels and aligned with each other along a vertically-extended line of the first side plate, each first side plate includes a hook at a top end thereof.

6. The light supporting device of claim 5, wherein at the first location, the bottom plate is inserted between the first connecting plates and the second connecting plates, and the first side plates are parallel to the second connecting plates, the third connecting hole of each first side plate which is near to the bottom plate is aligned with a second connecting hole of the second connecting plate.

7. The light supporting device of claim 5 or claim 6, wherein at the second location, the bottom plate is inserted between the first connecting plates and the second connecting plates, and the first side plates are parallel to the first connecting plates, the third connecting hole of each first side plate which is near to the bottom plate is aligned with a first connecting hole of the first connecting plate.

8. The light supporting device of one of claims 5 to 7, wherein at the third location, the two first side plates are inserted between the two second connecting plates, the third connecting hole of each first side plate which is away from the bottom plate is aligned with a second connecting hole of the second connecting plate, each of the hooks is inserted into a corresponding rectangular hole for enhancing the stabilization of the connection between the retaining member and the connecting member.

9. The light supporting device of one of claims 5 to 8, wherein at the fourth location the two first side plates are inserted between the two first connecting plates, the third connecting hole of each first side plate which is away from the bottom plate is aligned with a first connecting hole of the first connecting plate.

10. A lamp, comprising
a light supporting device, comprising:

a retaining member, comprising:

a retaining board; and
a plurality of connecting plates connected to the retaining board and perpendicularly extending from the retaining board toward a same direction, the plurality of connecting plates being arranged on sides of a square area defined on the retaining board; and

a connecting member configured for connecting to a mounting structure, comprising:

a bottom plate; and
a plurality of side plates connected to the bottom plate and perpendicularly extending from the bottom plate toward a same direction, the plurality of connecting plates being arranged on sides of a square area on the retaining board; and

a number of light sources units retained by the retaining board;

wherein the connecting member is capable of being connected to the retaining member by four different arrangements by connecting the side plates to the connecting plates at first, second, third and fourth locations, wherein at the second position the connecting member is rotated 90 degrees relative to the first position, at the third position, the connecting member is inverted relative to the first position and at the fourth position the connecting member is inverted relative to the second position.

11. The lamp of claim 10, wherein the lamp comprises a fixing member for fixedly connecting a power supply unit to the retaining member and a plurality of expanded light sources to sides of the retaining member.

12. The lamp of claim 11, wherein the fixing member comprises a jamming potion and a loading portion integrally connected to the jamming portion, a distal end of the jamming portion is bended as the shape of a hook, the retaining member defines a slit, the bended end of the jamming portion is inserted into the slit, the loading portion is bended as a hollow frame for allowing the power supply unit to be fixed therein.

13. The lamp of claim 12, wherein each expanded light source comprises a fixing plate, and the retaining board comprises a plurality of expanding plates each corresponding to a respective fixing plate, each expanded light source is fixed on the retaining member by connecting the fixing plate to the corresponding expanding plate.

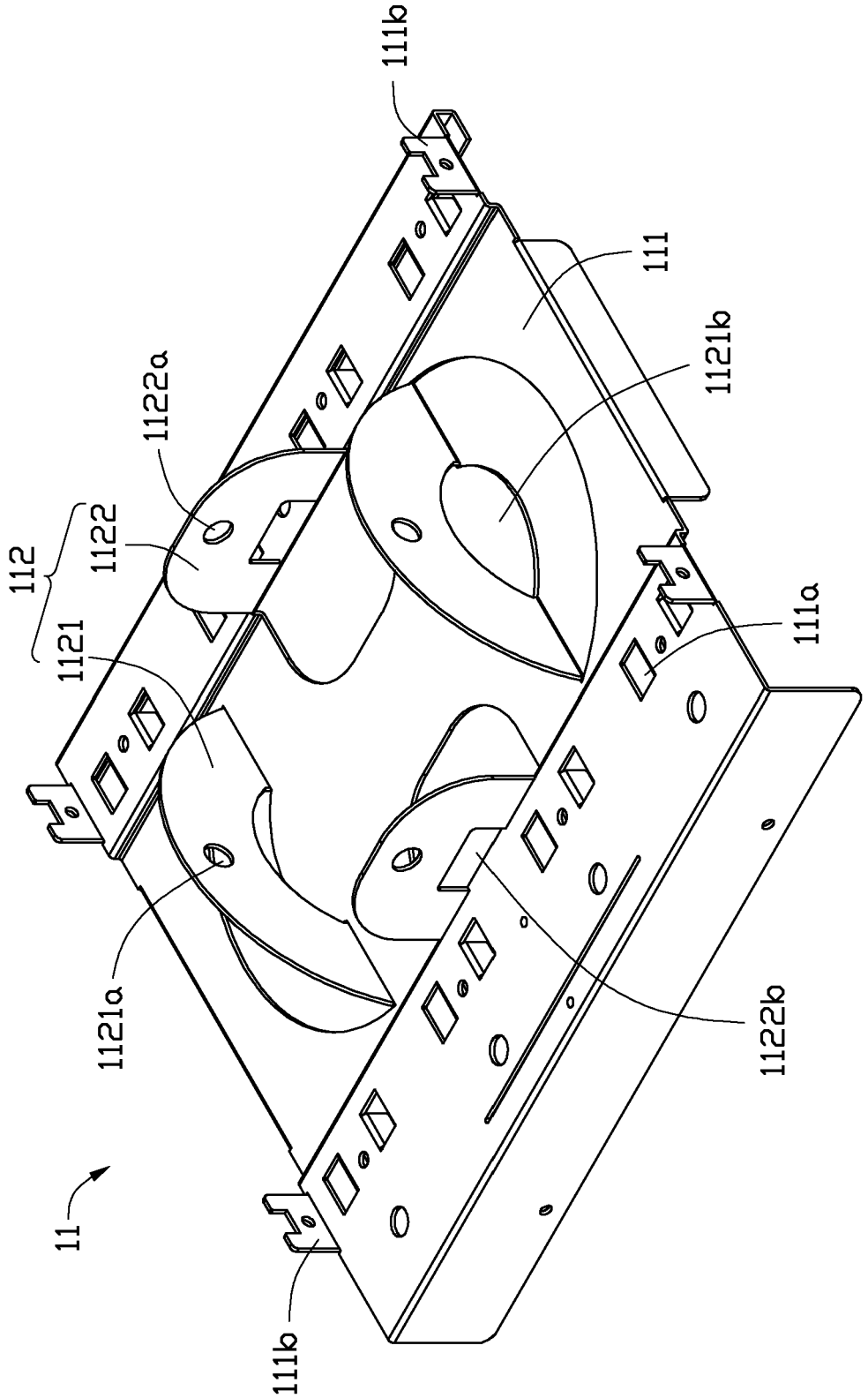

FIG. 1A

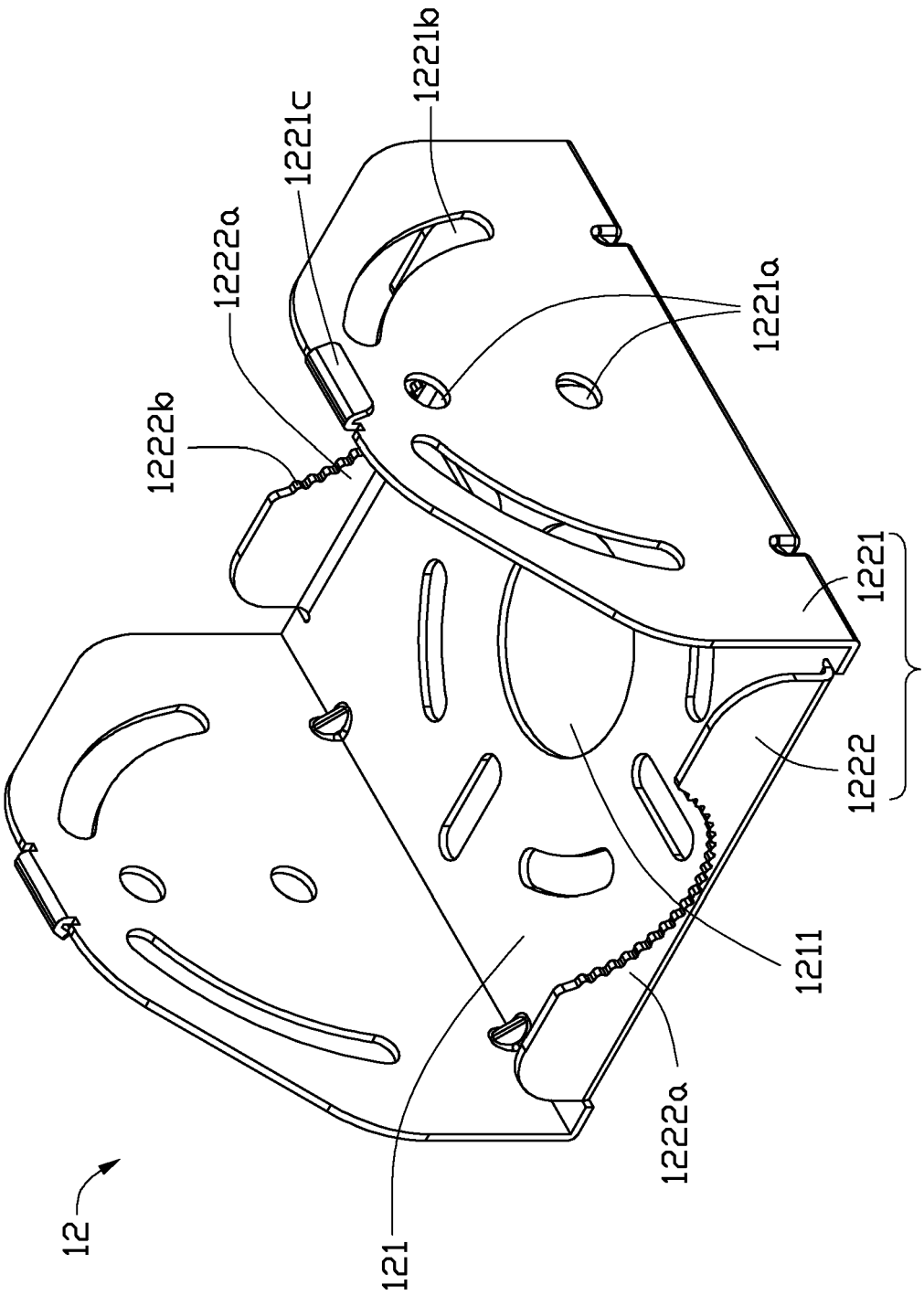
12
121
1222a
1211
1222
1221
122
1221a
1222b
1222a
1221c
1221b

FIG. 1B

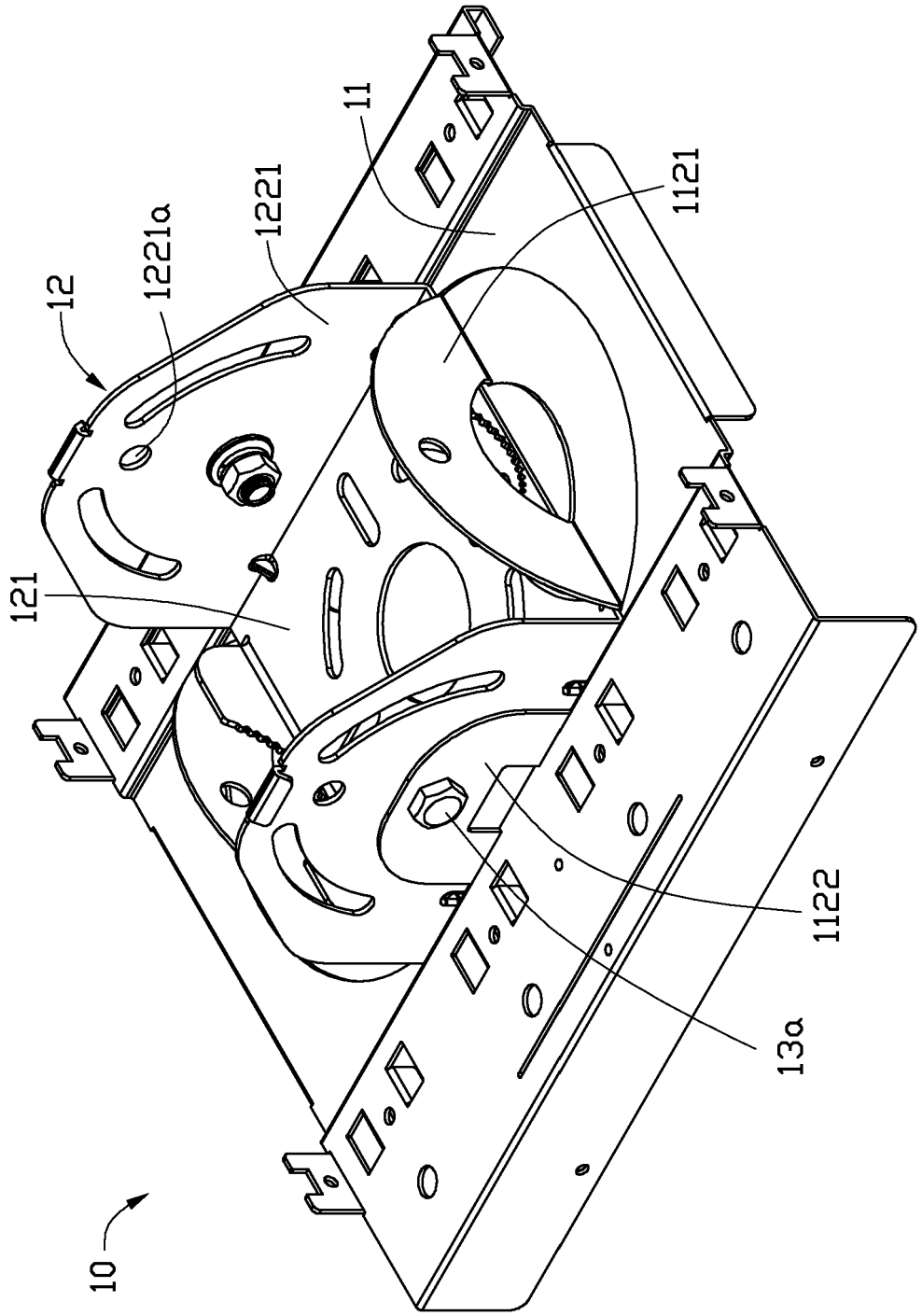

FIG. 2

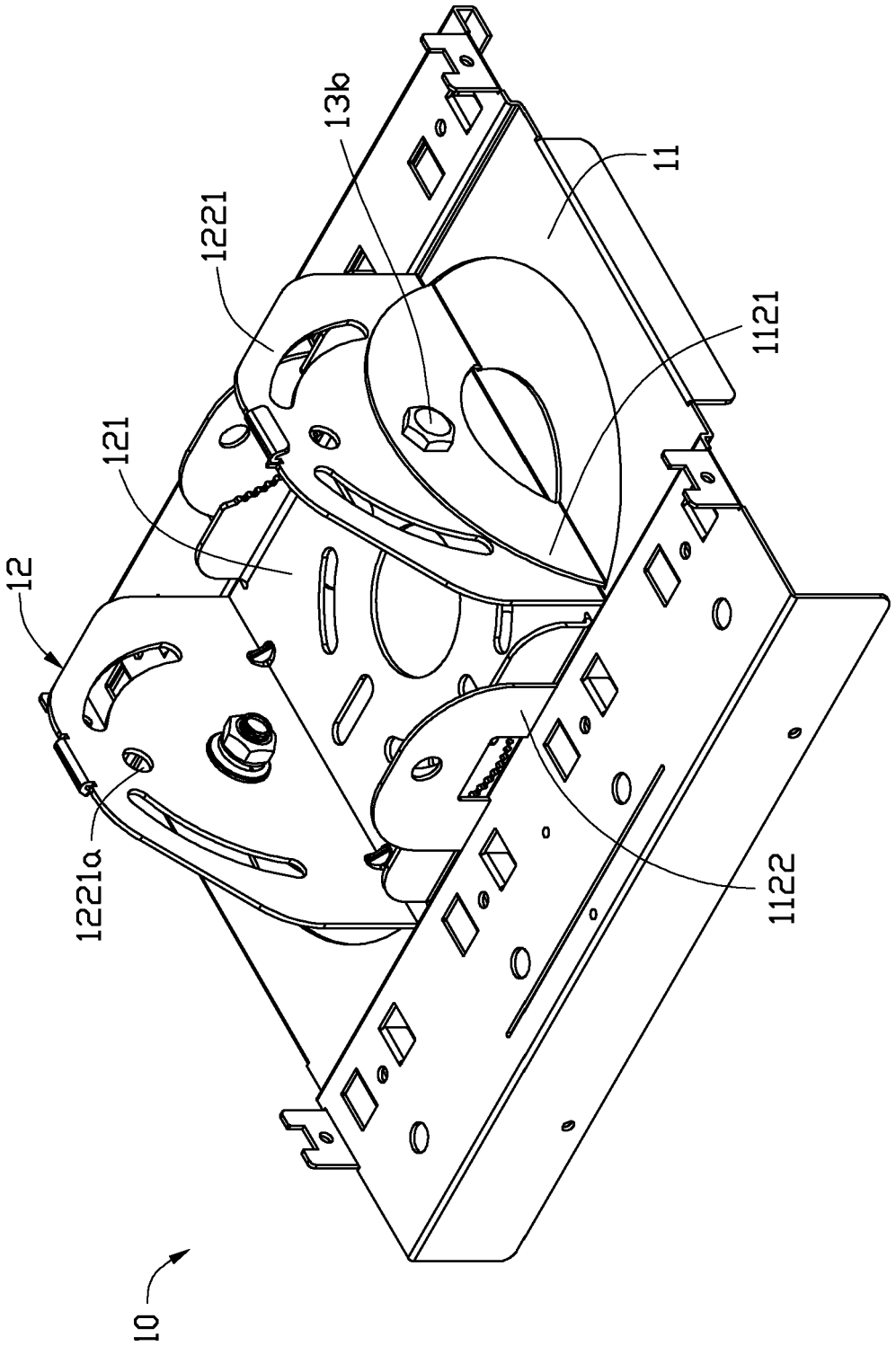

FIG. 3

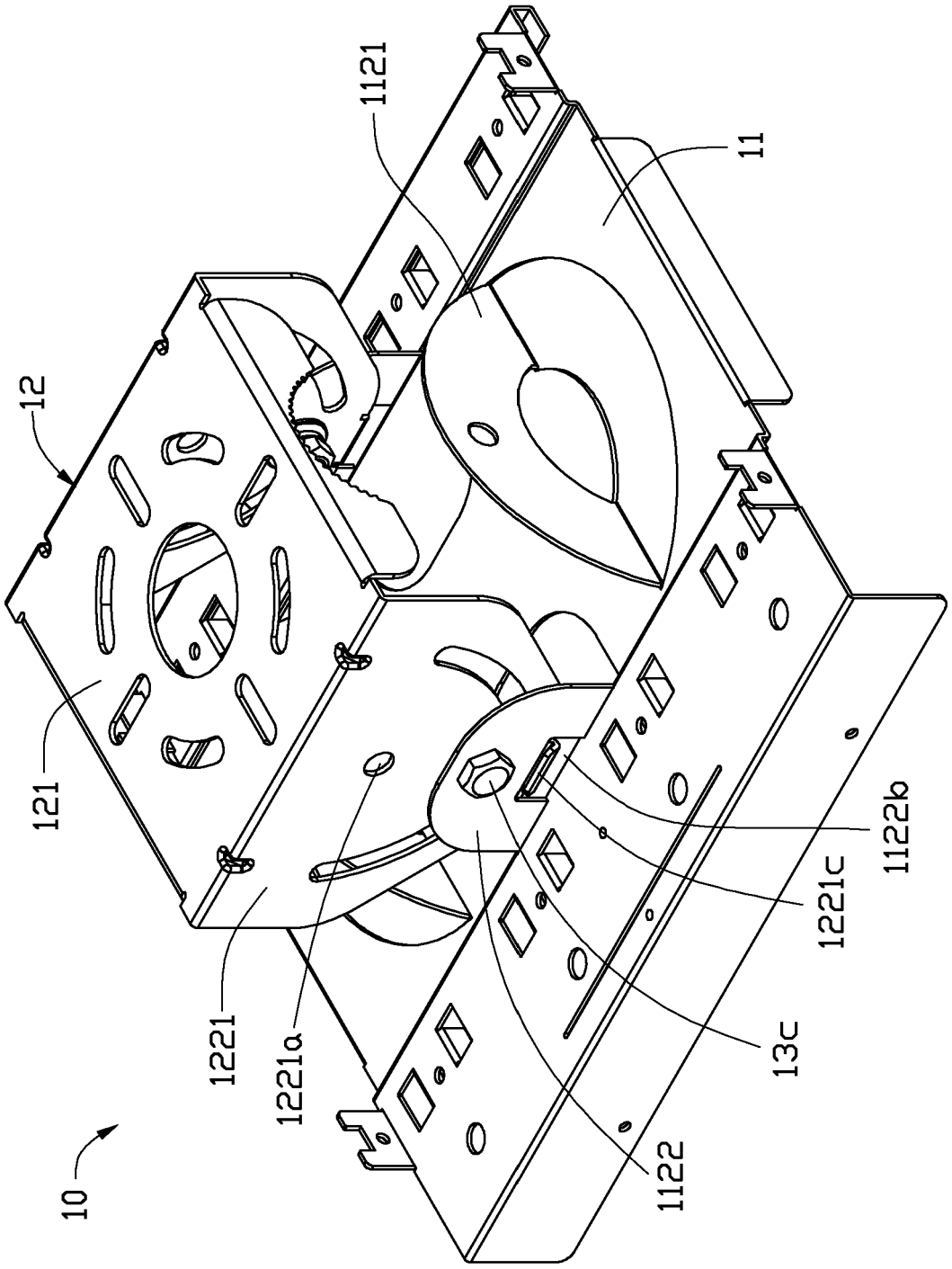

FIG. 4

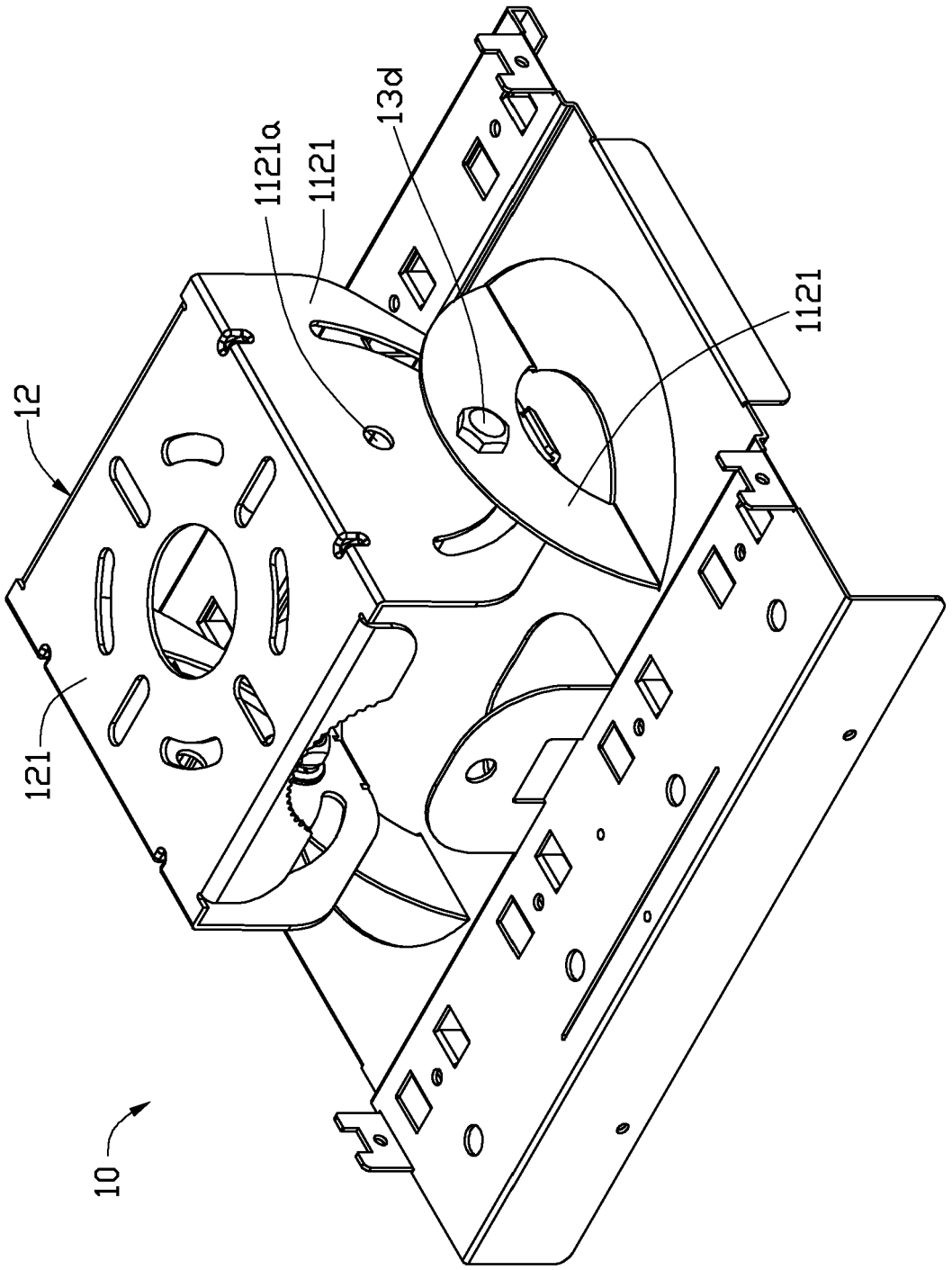

FIG. 5

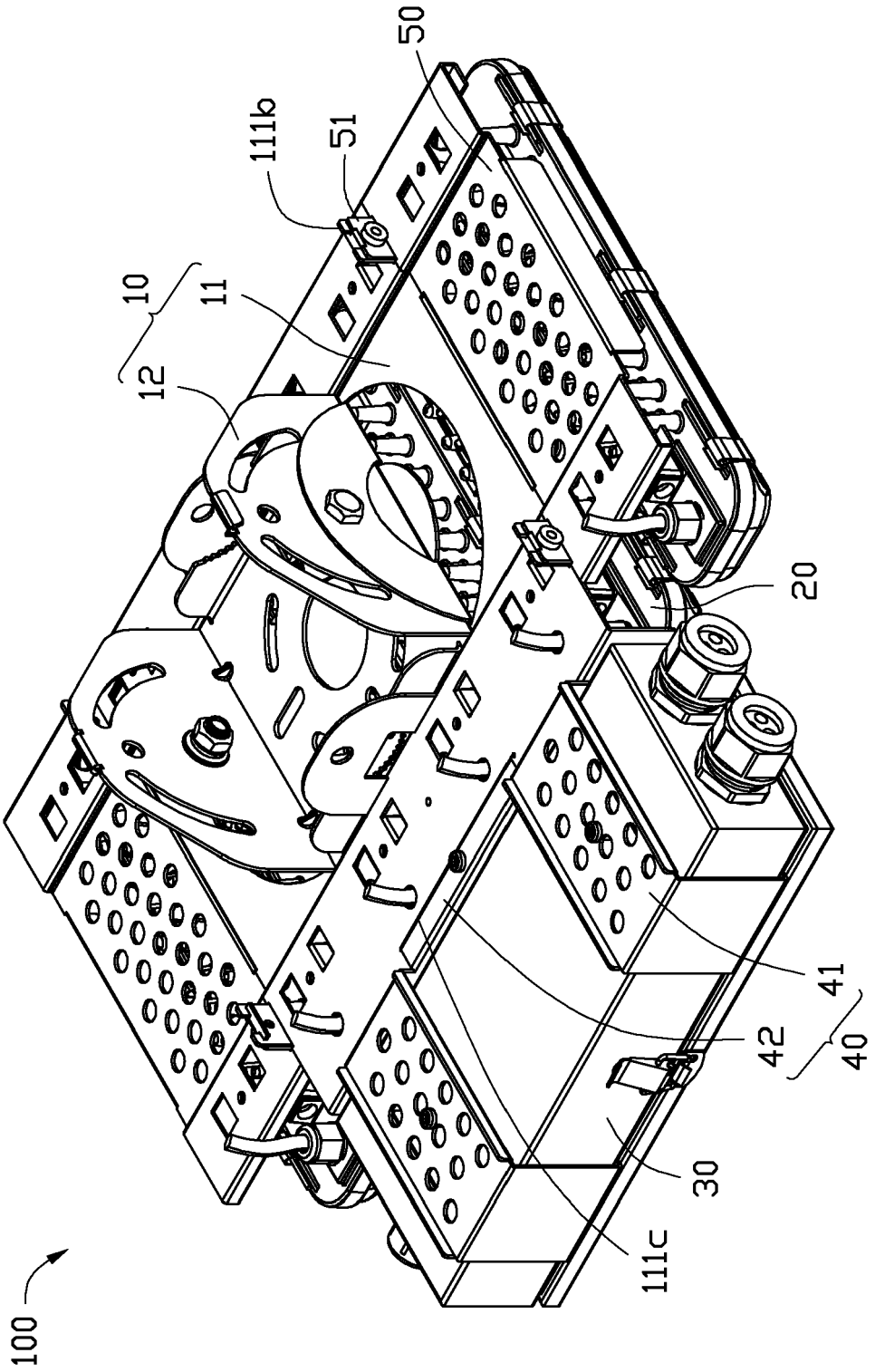

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 10 18 8013

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 5 549 266 A (MITCHELL ALTON D [US] ET AL) 27 August 1996 (1996-08-27) * column 6, line 18 - line 49 * * column 7, line 8 - line 33 * * figures 1-4 * -----	1,2,10	INV. F21V21/02
A	US 3 036 207 A (JACK ENDELSON) 22 May 1962 (1962-05-22) * column 3, line 34 - line 47 * * figures 1, 2 * -----	1,10	
A	US 3 327 984 A (RENNIE ROBERT D) 27 June 1967 (1967-06-27) * column 3, line 52 - line 57 * * figures 4, 6 * -----	1,10	
			TECHNICAL FIELDS SEARCHED (IPC) F21V

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 December 2010	Allen, Katie

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 18 8013

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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15-12-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5549266 A	27-08-1996	NONE	
US 3036207 A	22-05-1962	NONE	
US 3327984 A	27-06-1967	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82