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(54) **PANEL LIGHT**

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• **ZHANG, Jiansheng**
Xiamen, Fujian (CN)

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(74) Representative: **dompatent von Kreisler Selting
Werner -**

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**Partnerschaft von Patent- und Rechtsanwälten
mbB
Deichmannhaus am Dom
Bahnhofsvorplatz 1
50667 Köln (DE)**

(73) Proprietor: **Xiamen Leedarson Lighting Co., Ltd.
Xiamen, Fujian 361010 (CN)**

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(72) Inventors:

- **LIN, Huiju**
Xiamen, Fujian (CN)
- **LIU, Zhengkun**
Xiamen, Fujian (CN)

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Description

TECHNICAL FIELD

[0001] The present invention relates to the technical field of illumination devices, and more particularly to a panel light.

BACKGROUND

[0002] Nowadays, the panel lights have changed from the traditional grid lamp panel with lamp tube to the light-emitting mode combining LED light source and diffuser plate. The height of the existed panel lights is usually between 50 and 100 mm, and there is a phenomenon of sagging due to the insufficient strength of the flat diffuser plate. The panel light when being in a normal use state, the diffuser plate is disposed downward, and the middle portion of the diffuser plate will be convex outward. The panel light when being laid flat for display, the diffuser plate is disposed upward, the middle portion of the diffuser plate will be concave inward, the diffuser plate will be close to the light source assembly, creating a light pattern in a Tic-Tac shape, and thus the quality of the optical cannot meet requirements. In this way, the light pattern output from the panel light may differ greatly when being in a normal use state or being laid flat for display.

[0003] For example, prior art document CN205807313U discloses a non-rigid locking structure of a flat panel lamp, which comprises a non-rigid convex body arranged on the edge of the back panel of the flat panel lamp and an inverted buckle arranged on the face frame. The non-rigid convex body is buckled with the inverted buckle to fix the back panel and the frame. The lock catch structure adopts the combination of curling and reverse buckle, and the installation is fast and efficient, so as to reduce the labor cost, and there is no screw on the surface of the lamp, so that the flat panel lamp has a simpler appearance.

[0004] Prior art document US2012/105770A1 discloses a backlight module, the backlight module comprises a back plate, a frame, a light source, and a diffusion plate, wherein the diffusion plate is connected with and fixed to the frame or the back plate by hold structures that impose a tension effect on the diffusion plate. US2012/105770A1 also discloses a liquid crystal display device comprising the backlight module.

[0005] Prior art document CN205316166U discloses a flat lamp, the flat lamp includes a bottom shell, a surface shell, a light source and a diffusion plate; the bottom shell is provided with a plurality of elastic buckles; the surface shell is provided with a number of card bodies corresponding to the elastic buckle, and the card body is provided with a number of clamping teeth arranged side by side along a clamping direction; the elastic snap fits with the snap teeth; the elastic snap of the bottom shell is buckled on the snap teeth of the surface shell, so that the bottom shell is connected with the surface shell,

and the bottom shell is connected with the surface shell and clamps the diffusion plate; the light source is arranged on the inner side of the bottom shell. The production efficiency is improved and it is convenient to use the flat lamp.

[0006] Prior art document CN206958632U discloses a direct light-emitting flat lamp which comprises an aluminum frame and a lampshade bottom shell. The aluminum frame is a rectangular frame with a straight front and oblique edges on the inner four sides. The aluminum frame is fixedly connected with the lampshade bottom shell. The lampshade bottom shell is an inverted trapezoidal platform structure shell, and a PS diffusion plate is clamped between the aluminum frame and the lampshade bottom shell; the two symmetrical edges of the aluminum frame and the lampshade bottom shell are connected through the first self tapping screw, and the other two edges of the aluminum frame and the lampshade bottom shell are connected through the second self tapping screw; A plurality of grooves are arranged at the bottom of the bottom shell of the lampshade, and a light source light strip is arranged between the grooves. The light source light strip includes an aluminum substrate, led patches and lenses. The aluminum substrate is connected through nylon rivets, led patches are installed on the aluminum substrate at intervals, and the LED patches are covered with lenses; the direct light-emitting flat lamp has the advantages of long service life, low loss, low energy consumption, low cost, stable performance, high reliability and maintenance free.

[0007] Prior art document EP2631536A2 discloses an illumination unit and a display apparatus. The illumination unit includes a first reflector, a second reflector arranged at either side of the first reflector, at least one light source module arranged between the first reflector and the second reflector, a cover member for covering the second reflector, an optical member arranged between the cover member and the second reflector while facing the first reflector, a first projection member interposed between the optical member and the cover member, and a second projection member interposed between the optical member and the second reflector. The distance from the cover member to one side surface of the first projection member is longer than the distance from the cover member to one side surface of the second projection member.

[0008] Prior art document CN210398468U discloses a screw free direct light-emitting panel lamp, the panel lamp comprises a frame, a diffusion plate, a back plate and a light strip fixed on the back plate. The upper and lower parts of the inner side of the frame are respectively provided with a limiting edge and a support edge, the support edge is provided with a groove, the diffusion plate is placed in the frame and supported by the support edge, the edge of the back plate is provided with a bent fastener, the lower end of the fastener conflicts with the diffusion plate, and the upper end is clamped on the limiting edge, the height of the clamping piece is slightly greater than the spacing between the diffuser and the limiting edge.

By setting a support edge with a groove at the lower part of the inner side of the frame, a downward deformation space is provided for the diffusion plate during extrusion. When the backplane is assembled, the lower end of the backplane fastener squeezes the diffuser plate to deform downward under the action of external force, so that the upper end is clamped into the limiting edge. After the assembly of the panel lamp is completed, the fastener on the backplane is stably clamped between the diffuser plate and the limiting edge under the elastic force for restoring the diffuser plate to its original state.

SUMMARY OF INVENTION

[0009] A purpose according to embodiments of the present application is to provide a panel light to solve the technical problem that the light pattern output from the existing panel light differs greatly when being in a normal use state or being laid flat for display.

[0010] According to an embodiment of the application, a panel light is provided, which includes a frame, a diffuser plate, a base plate and a light source assembly; the frame has an annular retaining rim, and ribs are arranged on the annular retaining rim; the diffuser plate has an outer surface and an inner surface opposite to each other, and an edge portion of the outer surface of the diffuser plate is configured to abut against the ribs; the base plate has an annular flange, an edge portion of the base plate is fixed to the frame, and the annular flange is configured to abut on an edge portion of the inner surface of the diffuser plate, wherein the distance between a position where the annular flange abuts on the diffuser plate and a center of the diffuser plate is smaller than the distance between a position where the ribs abuts on the diffuser plate and the center of the diffuser plate, so that the diffuser plate bulges outwards; the light source assembly is installed on the base plate, and a light-emitting side of the light source assembly face towards the diffuser plate; the ribs are arranged in multiple sections, and the multiple sections of the ribs are distributed on the frame in an annular manner; the edge portion of the base plate and the frame are connected through fasteners, the fasteners are screws that pass through the edge portion of the base plate and are threaded to the frame.

[0011] Optionally, the frame includes a plurality of profiles which are arranged arranged in an annular manner; or the frame is configured to be an integrally formed structure.

[0012] Optionally, an outer edge of the frame has an annular boss, and an annular limiting groove is formed between an inner wall of the annular boss and the annular retaining rim, the annular flange is accommodated in the annular limiting groove; the edge portion of the base plate is fixed to the annular boss.

[0013] Optionally, a cross-section of the ribs is square, triangular, trapezoidal or semicircular.

[0014] Optionally, the ribs are arranged in a circle around the inner edge of the frame.

[0015] Optionally, the base plate has a plurality of positioning grooves, the number of the light source assembly is multiple, and the light source assembly are respectively arranged in different positioning grooves.

[0016] Optionally, the light source assembly includes a substrate and LED lamp beads arranged on the substrate, the substrate is arranged on the base plate, and the LED lamp beads are arranged toward the diffuser plate.

[0017] Optionally, the panel light further includes a driving assembly, and the driving assembly is electrically connected with the light source assembly.

[0018] Optionally, the frame is square, circular, oval or triangular.

[0019] The above-mentioned one or more technical solutions provided by the embodiments of the present application have at least one of the following technical effects: in the panel light, ribs are provided on the annular retaining rim of the frame which increases the strength of the frame. During assembling, the edge portion of the outer surface of the diffuser plate abuts against the ribs, and the annular flange of the base plate abuts against the edge of the inner surface of the diffuser plate to fix the edge of the base plate to the frame. Since the pressure of the annular flange of the base plate on the diffuser plate and the pressure of the ribs on the diffuser plate are in opposite directions, the distance between a position where the annular flange abuts on the diffuser plate and a center of the diffuser plate is smaller than the distance between a position where the rib abuts on the diffuser plate and the center of the diffuser plate. In this way, the diffuser plate will bulge outwards, thereby increasing the strength of the diffuser plate, the deformation of the diffuser plate when the panel light being in a normal use state or being laid flat for display is relatively small, and the sag phenomenon of the diffuser plate by gravity is reduced, such that the distance between the light source assembly and the diffuser plate is within a predetermined range, thereby the output light pattern is relatively uniform when being in the normal use state or being laid flat for display, the difference is small, and the optical quality is improved.

BRIEF DESCRIPTION OF DRAWINGS

[0020] In order to illustrate the technical solutions in the embodiments of the present application more clearly, the drawings needed in the description of the embodiments or the prior art will be briefly described hereinbelow. Obviously, the drawings in the following description are only some embodiments of the present application, and for those of ordinary skill in the art, other drawings may be obtained based on these drawings without paying any creative work.

Fig.1 is an assembled perspective view of a panel light provided by an embodiment of the application when being laid flat for display;

Fig.2 is an assembled perspective view of the panel light of Fig.1 when being in a normal use state;

Fig.3 is an exploded perspective view of the panel light of Fig.2;

Fig.4 is an enlarged view of part B in Fig.3;

Fig.5 is a perspective structural view of the base plate in the panel light of Fig.3;

Fig.6 is a partial cross-sectional view along line A-A in Fig.1; and

Fig.7 is a schematic view showing the deformation of the diffuser plate in the panel light of Fig.1.

DETAILED DESCRIPTION

[0021] In order to make the technical problems to be solved, technical solutions and beneficial effects of this application more comprehensible, the present disclosure is further described in detail below with reference to the accompanying drawings and embodiments. It is understood that the specific embodiments described herein are merely illustrative of the present application and are not intended to limit the present application.

[0022] In the description of the embodiments of the present application, it should be understood that the terms "length", "width", "upper", "lower", "front", "rear", "left", "right", "vertical", "horizontal", "top", "bottom", "inner", "outer" and other directions or positional relationships are based on the directions or positional relationships shown in the drawings, which are merely used for facilitating description of embodiments and simplifying the description, without indicating or implying that the referred device or element must have a specific orientation, be constructed and operated in a specific orientation, and therefore cannot be understood as a limitation to the embodiments of the present application. In the description of the present application, "a plurality of" means two or more than two, unless specifically defined otherwise.

[0023] In the embodiments of the present application, unless clearly specified and defined otherwise, the terms "install", "connection", "connect", "fix" and so on should be understood in a broad sense. For example, it may be a fixed connection, a detachable connection, or an integrated connection; it may be mechanical connection or electrical connection; it may be directly connected or indirectly connected through an intermediate medium, and it may be an internal communication of two components or an interaction relationship between two components. For those of ordinary skill in the art, the specific meanings of the above-mentioned terms in the embodiments of the present application can be understood according to specific circumstances.

[0024] In a conventional panel light, a frame is used to fix a diffuser plate and a base plate, and the diffuser plate

is clamped between the frame and the base plate. The conventional panel light when being laid flat for display, the diffuser plate is disposed upward, and the diffuser plate has a sag phenomenon by gravity. The closer the diffuser plate sags to the light source, the closer it gets to the light source assembly, then the panel light may create a light pattern in Tic-Tac-shaped, and thus the optical quality cannot meet the requirements.

[0025] Please refer to FIGS. 1 to 3, an embodiment of the present application provides a panel light, which includes a frame 10, a diffuser plate 20, a base plate 30 and a light source assembly 40. With reference to Fig.4, the frame 10 has an annular retaining rim 11, and ribs 12 are provided on the annular retaining rim 11. With reference to Fig.6, the diffuser plate 20 has an outer surface 20a and an inner surface 20b opposite to each other, and an edge portion of the outer surface 20a of the diffuser plate 20 abuts against the rib 12. The base plate 30 has an annular flange 31, an edge portion of the base plate 30 is fixed to the frame 10, and the annular flange 31 abuts on an edge portion of the inner surface 20b of the diffuser plate 20, and the distance between a position where the annular flange 31 abuts on the diffuser plate 20 and a center of the diffuser plate 20 is smaller than the distance between a position where the rib 12 abuts on the diffuser plate 20 and the center of the diffuser plate 20, so that the diffuser plate 20 bulges outwards. The center of the diffuser plate 20 can be understood as a center line passing through the outer surface 20a and the inner surface 20b of the diffuser plate 20. With reference to Fig.3, the light source assembly 40 is installed on the base plate 30, and a light-emitting side of the light source assembly 40 face towards the diffuser plate 20.

[0026] Compared with the related arts, in the panel light provided by the present application, the ribs 12 are provided on the annular retaining rim 11 of the frame 10 that can increase the strength of the frame 10. As shown in Figs. 6 and 7, during assembling, the edge portion of the outer surface 20a of the diffuser plate 20 abuts against the rib 12, the annular flange 31 of the base plate 30 abuts against the edge portion of the inner surface 20b of the diffuser plate 20, and the edge portion of the base plate 30 is fixed to the frame 10. Since the pressure F1 of the annular flange 31 of the base plate 30 on the diffuser plate 20 and the pressure F2 of the rib 12 on the diffuser plate 20 are in opposite directions, the distance between a position where the annular flange 31 abuts on the diffuser plate 20 and a center of the diffuser plate 20 is smaller than the distance between a position where the rib 12 abuts on the diffuser plate 20 and the center of the diffuser plate 20, so that the diffuser plate 20 may bulge outwards. In Figs. 6 and 7, shown as bulge upwards, thereby increasing the strength of the diffuser plate 20, the deformation of the diffuser plate 20 when the panel light being in a normal use state or being laid flat for display is relatively small, and the sag phenomenon of the diffuser plate 20 by gravity is reduced, such that the distance between the light source assembly 40

and the diffuser plate 20 is within a predetermined range, thereby the output light pattern can be relatively uniform when being in the normal use state or being laid flat for display, the difference is small, and the optical quality is improved

[0027] Among them, the diffuser plate 20 may be made of PC (polycarbonate), PS (polystyrene) or PP (polypropylene). The base plate 30 may be formed by a process of sheet metal stamping and spraying, which is easy to manufacture and is beneficial to increase the strength of the base plate 30. The base plate 30 has an inner cavity 33, and the light source assembly 40 may be disposed on an inner bottom surface of the base plate 30.

[0028] Exemplarily, with the ribs 12 being provided on the annular retaining rim 11 of the frame 10, the edge portion of the outer surface 20a of the diffuser plate 20 abuts against the ribs 12 during assembly, and the annular flange 31 of the base plate 30 abuts against the edge portion of the inner surface 20b of the diffuser plate 20, such that the middle portion of the diffuser plate 20 bulges outwards, and the sag of the diffuser plate 20 can be reduced by about 5mm, this improves light emitting angles of the light source, reduces the overall height of the lamp, and the output light pattern of the panel light is relatively uniform.

[0029] In conventional panel lights, for diffuser plates of different thicknesses, the thinner diffuser plates have lower strength and there may be more obvious sagging. For diffuser plates of different materials, the diffuser plates made of PP and PC will sag more obviously than the diffuser plates made of PS. For diffuser plates of different sizes, the larger the length to width ratio of the diffuser plate, the more obvious the sagging.

[0030] The panel light of this embodiment can adapt to diffuser plates 20 of different sizes, thicknesses, materials and length-to-width ratios, so that the middle portion of the diffuser plate 20 assembled between the frame 10 and the base plate 30 will bulge outward, thereby realizing an adjustment to the shape of the diffuser plate 20. In this way, the material and thickness of the diffuser plate 20 can be changed, there may be more choices and thus the material cost can be reduced.

[0031] Please refer to Fig.2 and Fig.3, in another embodiment of the present application, the frame 10 has a square, circular, elliptical or triangular shape or other shapes, which can be specifically set as required. The annular retaining rim 11 of the frame 10 and the annular flange 31 of the base plate 30 may be a circular, elliptical, square, rounded square structure or other annular structures, which can be specifically set as required. Exemplarily, the frame 10 is square, and the annular retaining rim 11 is also square, correspondingly, the outer edges of the diffuser plate 20 and the base plate 30 are also square.

[0032] Referring to Fig.3, in another embodiment of the present application, the frame 10 includes a plurality of profiles 13, which are arranged in a ring shape, which facilitates the production of a plurality of profiles 13, and

then form one profile 13 by an assembly. The frame 10 can be made of aluminum profiles or other metal profiles. Exemplarily, the frame 10 has a square shape, four profiles 13 are provided, and the four profiles 13 enclose together to form a square frame 10. It is understandable that the frame 10 may also be an integrally formed structure.

[0033] Please refer to Figures 4 and 6, in another embodiment of the present application, the outer edge of the frame 10 has an annular boss 14, and an annular limiting groove 15 may be formed between an inner wall of the annular boss 14 and the annular retaining rim 11, The annular flange 31 may be accommodated in the annular limiting groove 15; the edge portion of the base plate 30 may be fixed to the annular boss 14. The annular boss 14 is provided to facilitate the assembly of the base plate 30. During assembling, the annular flange 31 of the base plate 30 is disposed in the annular limiting groove 15, and the edge portion of the base plate 30 will be aligned with the annular boss 14 of the frame 10, such that the assembly efficiency can be improved.

[0034] Please refer to Fig.6. According to the invention, the edge portion of the base plate 30 and the frame 10 are connected through a fastener 50. The base plate 30 can be securely attached to the frame 10 with the fastener 50. The fastener 50 is a screw, the screw passes through the edge portion of the base plate 30 and is threaded to the frame 10, thereby achieving the assembly.

[0035] Please refer to Fig.4 and Fig.6. In another embodiment of the present application, the cross section of the ribs 12 may be square, triangular, trapezoidal, semicircular or other shapes, which can be specifically set as required. When the rib 12 is provided with a triangular cross-sectional structure, a triangular slope of the ribs 12 is close to the inner edge of the frame 10. When the diffuser plate 20 is assembled to the frame 10, the slope surface of the ribs 12 abuts against the edge portion of the outer surface 20a of the diffuser plate 20, such that the stress can be evenly distributed on the diffuser plate 20, the diffuser plate 20 has better strength, and the amount of deformation of the diffuser plate 20 is smaller when it is displayed flat or in a normal use state.

[0036] Please refer to Figs.4 and 6, in another embodiment of the present application, the ribs 12 are arranged in a circle around the inner edge of the frame 10. When the ribs 12 abut against the edge portion of the outer surface 20a of the diffuser plate 20, with the annular flange 31 of the base plate 30 abuts against the inner surface 20b of the diffuser plate 20, the diffuser plate 20 can be deformed, and the middle portion of the diffuser plate 20 protrudes outward.

[0037] According to the invention, the ribs 12 are also arranged in multiple sections, and the ribs 12 with multiple sections are distributed on the frame 10 in an annular manner. When the ribs 12 abut on the edge portion of the outer surface 20a of the diffuser plate 20, with the annular flange 31 of the base plate 30 abuts against the inner surface 20b of the diffuser plate 20, the diffuser plate

20 can also be deformed to a certain extent, and the middle portion of the diffuser plate 20 protrudes outward.

[0038] Please refer to Figs.3 and 5, in another embodiment of the present application, the base plate 30 has a plurality of positioning grooves 32, the number of light source assembly 40 is multiple, and the light source assembly 40 are respectively arranged in different positioning grooves 32, this facilitates the positioning and installation of the light source assembly 40. Exemplarily, the positioning grooves 32 are strip-shaped and arranged at intervals, and the light source assemblies 40 are strip-shaped that facilitates the installation of the light source assembly 40 at different positions, so as to dissipate heat from the multiple light source assemblies 40 and improve the heat dissipation effect.

[0039] Please refer to Fig.3, in another embodiment of the present application, the light source assembly 40 includes a substrate 41 and LED lamp beads 42 disposed on the substrate 41. The substrate 41 is disposed on the base plate 30, and the LED lamp beads 42 are disposed toward the diffuser plate 20. In this way, it is easy to manufacture the light source assembly 40, thereby facilitating the heat generated by the light source assembly 40 to diffuse from the base plate 30 to the external environment.

[0040] Please refer to Fig.3, in another embodiment of the present application, the panel light further includes a driving assembly (not shown) being electrically connected with the light source assembly 40. The driving assembly is used to convert the external power source into the power required by the light source assembly 40 and drive the light source assembly 40 to work. The driving assembly is arranged outside the base plate 30 to reduce the possibility of the heat generated by the light source assembly 40 being diffused to the driving assembly, and to improve the reliability of the lamp. The above are merely preferred embodiments of this application and are not intended to limit this application.

Claims

1. A panel light, comprising:

a frame (10),
a diffuser plate (20) having an outer surface (20a) and an inner surface (20b) opposite to each other,
a base plate (30), and
a light source assembly (40) configured to be installed on the base plate (30), and a light-emitting side of the light source assembly (40) face towards the diffuser plate (20);
wherein
the frame (10) has an annular retaining rim (11), and ribs (12) are provided on the annular retaining rim (11); and an edge portion of the outer surface (20a) of the diffuser plate (20) is config-

ured to abut against the ribs (12);

the base plate (30) has an annular flange (31), an edge portion of the base plate (30) is fixed to the frame (10), and the annular flange (31) is configured to abut on an edge portion of the inner surface (20b) of the diffuser plate (20), the ribs (10) are arranged in multiple sections, and the ribs (10) with multiple sections are distributed on the frame (10) in an annular manner; the edge portion of the base plate (30) and the frame (10) are connected through fasteners (50);

the fasteners (50) are screws that pass through the edge portion of the base plate (30) and are threaded to the frame (10);

characterized in that the distance between a position where the annular flange (31) abuts on the diffuser plate (20) and a center of the diffuser plate (20) is smaller than the distance between a position where the ribs (12) abut on the diffuser plate (20) and the center of the diffuser plate (20), so that the diffuser plate (20) bulges outwards.

2. The panel light according to claim 1, **characterized in that**, the frame (10) comprises a plurality of profiles (13), and the profiles (13) are arranged in an annular manner; or the frame (10) is configured to be an integrally formed structure.

3. The panel light according to claim 1 or claim 2, **characterized in that**, an outer edge of the frame (10) has an annular boss (14), and an annular limiting groove (15) is formed between an inner wall of the annular boss (14) and the annular retaining rim (11), the annular flange (31) is accommodated in the annular limiting groove (15); the edge portion of the base plate (30) is fixed to the annular boss (14).

4. The panel light according to any one of claim 1 to 3, **characterized in that**, a cross-section of the ribs (12) is square, triangular, trapezoidal or semicircular.

5. The panel light according to any one of claims 1 to 4, **characterized in that**, the ribs (12) are arranged in a circle around an inner edge of the frame (10); or the ribs (12) are arranged in multiple sections, and the multiple sections of the ribs (12) are distributed on the frame (10) in an annular manner.

6. The panel light according to any one of claims 1 to 4, **characterized in that**, the base plate (30) has a plurality of positioning grooves (32), the number of the light source assembly (40) is multiple, and the light source assembly (40) are respectively arranged in different positioning grooves (32).

7. The panel light according to any one of claims 1 to

4, **characterized in that**, the light source assembly (40) comprises a substrate (41) and LED lamp beads (42) arranged on the substrate (41), the substrate (41) is arranged on the base plate (30), and the LED lamp beads (42) are arranged toward the diffuser plate (20). 5

8. The panel light according to any one of claims 1 to 4, **characterized in that**, the panel light further comprises a driving assembly, and the driving assembly is electrically connected with the light source assembly (40). 10
9. The panel light according to any one of claims 1 to 4, **characterized in that**, the frame (10) is square, circular, oval or triangular. 15

Patentansprüche

1. Flächenleuchte, die aufweist: 20

einen Rahmen (10),
eine Diffusorplatte (20) mit einer Außenfläche (20a) und einer Innenfläche (20b), die entgegengesetzt zueinander sind, 25
eine Basisplatte (30), und
eine Lichtquellenanordnung (40), die dazu ausgebildet ist, auf der Basisplatte (30) installiert zu werden, und wobei eine lichtemittierende Seite der Lichtquellenanordnung (40) der Diffusorplatte (20) zugewandt ist; 30
wobei der Rahmen (10) eine ringförmige Rückhaltefassung (11) aufweist, und wobei Rippen (12) auf der ringförmigen Rückhaltefassung (11) vorgesehen ist, und wobei ein Randabschnitt der Außenfläche (20a) der Diffusorplatte (20) dazu ausgebildet ist, an den Rippen (12) anzuliegen; 35
wobei die Basisplatte (30) einen ringförmigen Flansch (31) aufweist, ein Randabschnitt der Basisplatte (30) an dem Rahmen (10) befestigt ist, und der ringförmige Flansch (31) dazu ausgebildet ist, an einem Randabschnitt der Innenfläche (20b) der Diffusorplatte (20) anzuliegen; 40
wobei die Rippen (10) in mehreren Abschnitten angeordnet ist, und wobei die Rippen (10) mit mehreren Abschnitten ringförmig auf dem Rahmen (10) verteilt sind; 45
wobei der Randabschnitt der Basisplatte (30) und der Rahmen (10) durch Befestigungselemente (50) verbunden sind; 50
wobei die Befestigungselemente (50) Schrauben sind, die durch den Randabschnitt der Basisplatte (30) verlaufen und mit dem Rahmen (10) verschraubt sind; 55
dadurch gekennzeichnet, dass der Abstand zwischen einer Position, in welcher der ringförmige

Flansch (31) an der Diffusorplatte (20) anliegt, und einer Mitte der Diffusorplatte (20) kleiner ist als der Abstand zwischen einer Position, in der die Rippen (12) an der Diffusorplatte (20) anliegen, und der Mitte der Diffusorplatte, so dass sich die Diffusorplatte (20) nach außen wölbt.

2. Flächenleuchte nach Anspruch 1, **dadurch gekennzeichnet, dass** der Rahmen (10) eine Vielzahl von Profilen (13) aufweist und die Profile (13) ringförmig angeordnet sind; oder der Rahmen (10) dazu ausgebildet ist, eine einstückig ausgebildete Struktur zu sein.
3. Flächenleuchte nach Anspruch 1 oder Anspruch 2, **dadurch gekennzeichnet, dass** ein Außenrand des Rahmens (10) einen ringförmigen Vorsprung (14) aufweist und eine ringförmige Begrenzungsnut (15) zwischen einer Innenwand des ringförmigen Vorsprungs (14) und der ringförmigen Rückhaltefassung (11) ausgebildet ist, wobei der ringförmige Flansch (31) in der ringförmigen Begrenzungsnut (15) aufgenommen ist; wobei der Randabschnitt der Basisplatte (30) an dem ringförmigen Vorsprung (14) befestigt ist.
4. Flächenleuchte nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** ein Querschnitt der Rippen (12) quadratisch, dreieckig, trapezförmig oder halbkreisförmig ist.
5. Flächenleuchte nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** die Rippen (12) in einem Kreis um einen Innenrand des Rahmens (10) angeordnet sind; oder die Rippen (12) in mehreren Abschnitten angeordnet sind, und die mehreren Abschnitte der Rippen (12) ringförmig auf dem Rahmen (10) verteilt sind.
6. Flächenleuchte nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** die Basisplatte (30) eine Vielzahl von Positionierungsnuten (32) aufweist, die Anzahl der Lichtquellenanordnung (40) ein Vielfaches ist, und die Lichtquellenanordnungen (40) jeweils in verschiedenen Positionierungsnuten (32) angeordnet sind.
7. Flächenleuchte nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** die Lichtquellenanordnung (40) ein Substrat (41) und LED-Lampenperlen (42) aufweist, die auf dem Substrat (41) angeordnet sind, wobei das Substrat (41) auf der Basisplatte (30) angeordnet ist, und wobei die LED-Lampenperlen (42) in Richtung der Diffusorplatte (20) angeordnet sind.
8. Flächenleuchte nach einem der Ansprüche 1 bis 4,

dadurch gekennzeichnet, dass die Flächenleuchte ferner eine Antriebsanordnung aufweist und die Antriebsanordnung elektrisch mit der Lichtquellenanordnung (40) verbunden ist.

9. Flächenleuchte nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** der Rahmen (10) quadratisch, kreisförmig, oval oder dreieckig ist.

Revendications

1. Éclairage de panneau, comprenant :

un cadre (10),
une plaque de diffuseur (20) ayant une surface extérieure (20a) et une surface intérieure (20b) opposées l'une à l'autre,
une plaque de base (30), et
un ensemble de source de lumière (40) configuré pour être installé sur la plaque de base (30), et un côté d'émission de lumière de l'ensemble de source de lumière (40) est orienté vers la plaque de diffuseur (20) ;

le cadre (10) comprenant un rebord de retenue annulaire (11), et des nervures (12) étant prévues sur le rebord de retenue annulaire (11) ; et une partie de bord de la surface extérieure (20a) de la plaque de diffuseur (20) étant configurée pour venir en butée contre les nervures (12) ; la plaque de base (30) comprenant une bride annulaire (31), une partie de bord de la plaque de base (30) étant fixée au cadre (10), et la bride annulaire (31) étant configurée pour venir en butée sur une partie de bord de la surface interne (20b) de la plaque de diffuseur (20).

les nervures (10) étant agencées en de multiples sections, et les nervures (10) avec de multiples sections étant distribuées sur le cadre (10) d'une manière annulaire ;

la partie de bord de la plaque de base (30) et le cadre (10) étant reliés par des fixations (50) ; les fixations (50) étant des vis qui traversent la partie de bord de la plaque de base (30) et étant vissées sur le cadre (10) ;

caractérisé en ce que la distance entre une position où la bride annulaire (31) vient en butée sur la plaque de diffuseur (20) et un centre de la plaque de diffuseur (20) est inférieure à la distance entre une position où les nervures (12) viennent en butée sur la plaque de diffuseur (20) et le centre de la plaque de diffuseur (20), de sorte que la plaque de diffuseur (20) soit renflée vers l'extérieur.

2. Éclairage de panneau selon la revendication 1, **caractérisé en ce que** le cadre (10) comprend une pluralité de profils (13), et les profils (13) sont agen-

cés d'une manière annulaire ; ou le cadre (10) est configuré pour être une structure formée d'un seul tenant.

3. Éclairage de panneau selon la revendication 1 ou la revendication 2, **caractérisé en ce qu'un** bord extérieur du cadre (10) a un bossage annulaire (14), et une rainure de limitation annulaire (15) est formée entre une paroi intérieure du bossage annulaire (14) et le rebord de retenue annulaire (11), la bride annulaire (31) est logée dans la rainure de limitation annulaire (15) ; la partie de bord de la plaque de base (30) est fixée au bossage annulaire (14).

4. Éclairage de panneau selon l'une quelconque des revendications 1 à 3, **caractérisé en ce qu'une** section transversale des nervures (12) est carrée, triangulaire, trapézoïdale ou semi-circulaire.

5. Éclairage de panneau selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** les nervures (12) sont agencées en cercle autour d'un bord intérieur du cadre (10) ; ou les nervures (12) sont agencées en de multiples sections, et les multiples sections des nervures (12) sont réparties sur le cadre (10) d'une manière annulaire.

6. Éclairage de panneau selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** la plaque de base (30) a une pluralité de rainures de positionnement (32), le nombre de l'ensemble de source de lumière (40) est multiple, et les ensembles de source de lumière (40) sont respectivement agencés dans des rainures de positionnement différentes (32).

7. Éclairage de panneau selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** l'ensemble de source de lumière (40) comprend un substrat (41) et des billes de lampe à LED (42) agencées sur le substrat (41), le substrat (41) est agencé sur la plaque de base (30), et les billes de lampe à LED (42) sont agencées vers la plaque de diffuseur (20).

8. Éclairage de panneau selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** l'éclairage de panneau comprend en outre un ensemble d'entraînement, et l'ensemble d'entraînement est connecté électriquement à l'ensemble de source de lumière (40).

9. Éclairage de panneau selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** le cadre (10) est carré, circulaire, ovale ou triangulaire.

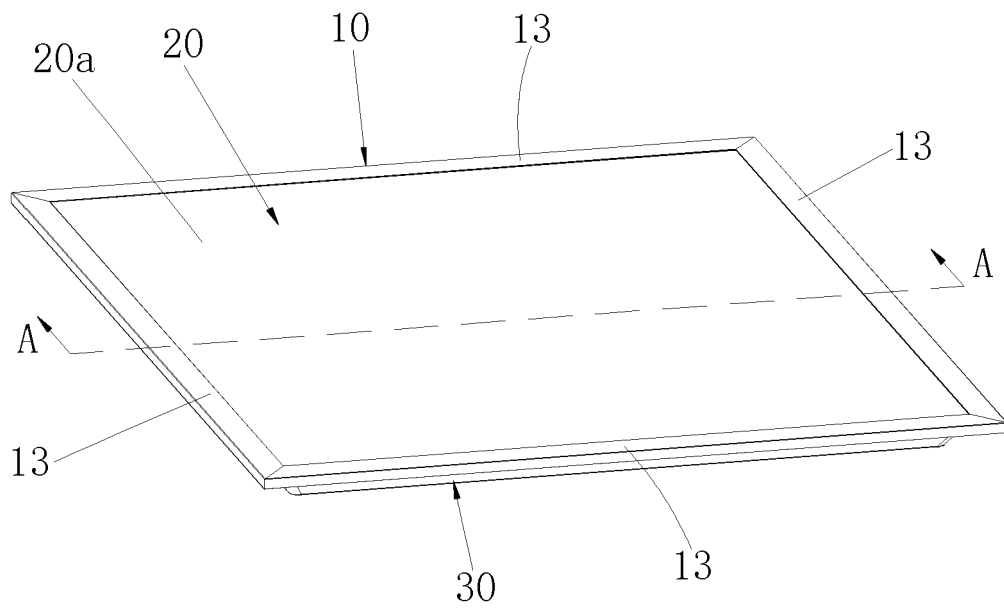


Fig.1

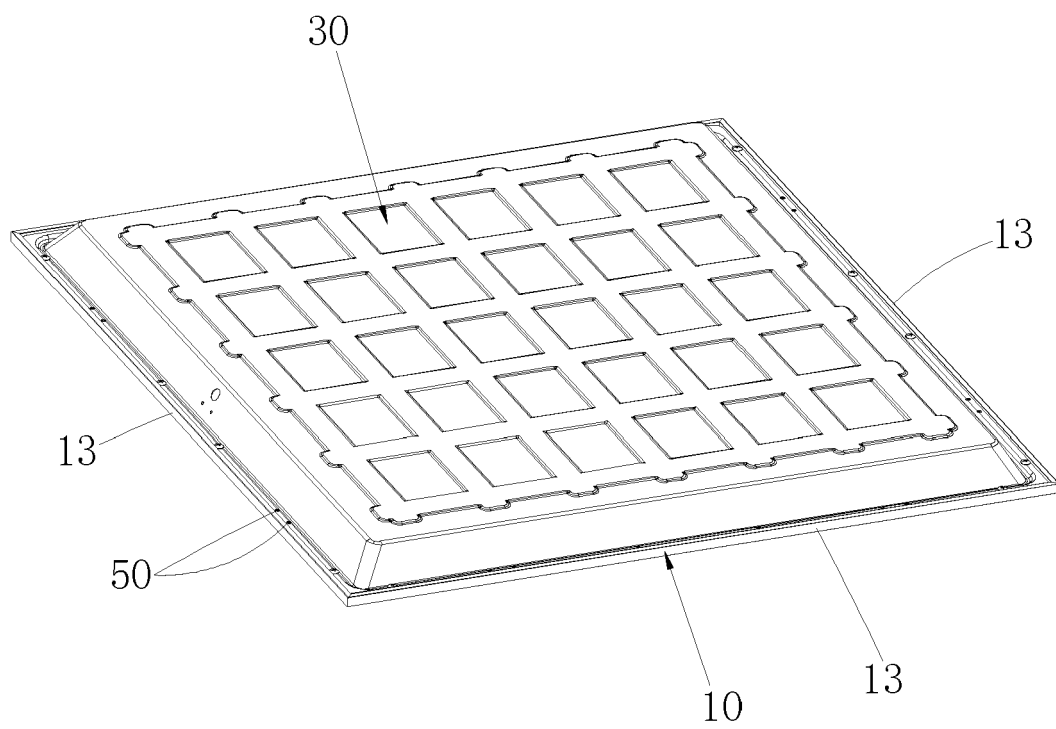


Fig.2

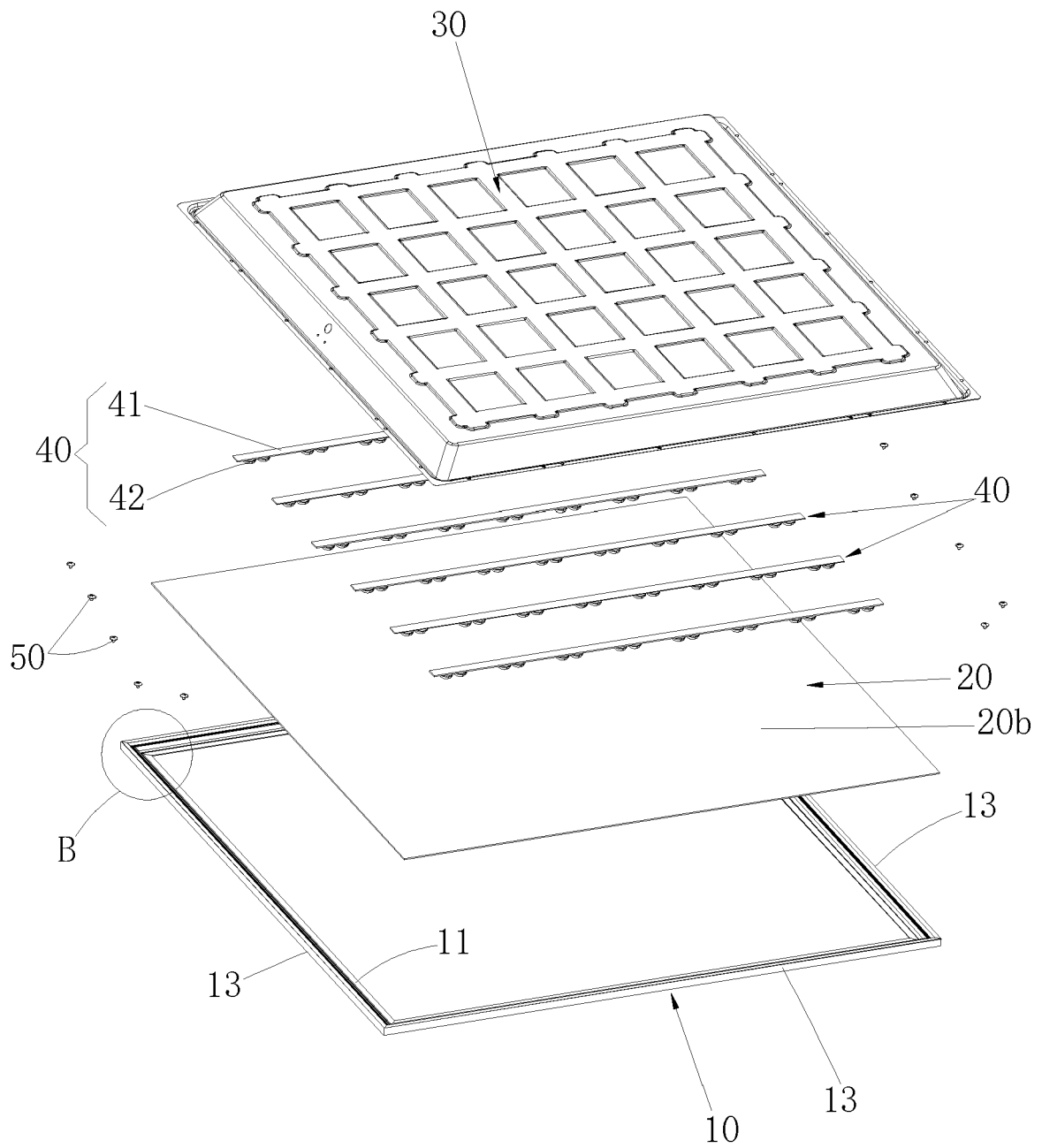


Fig.3

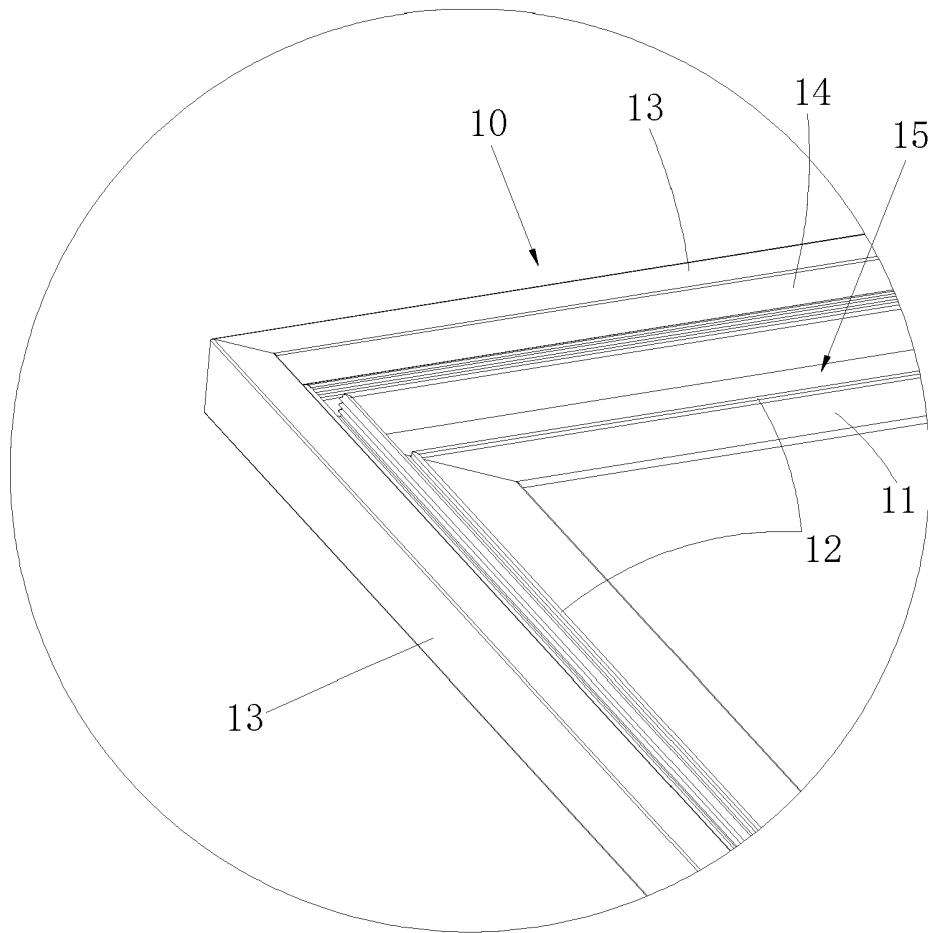


Fig.4

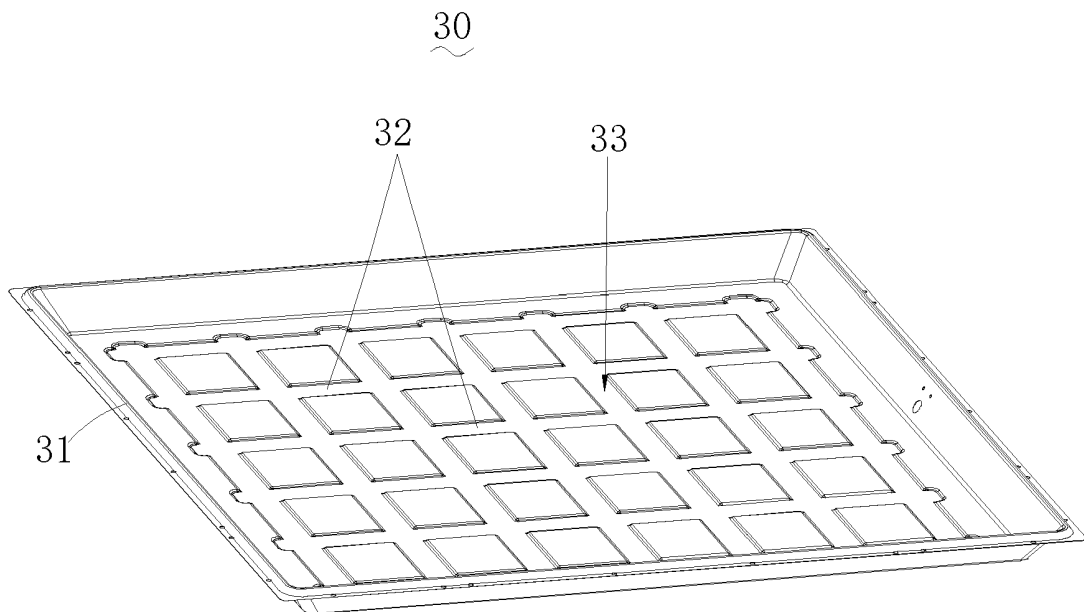


Fig.5

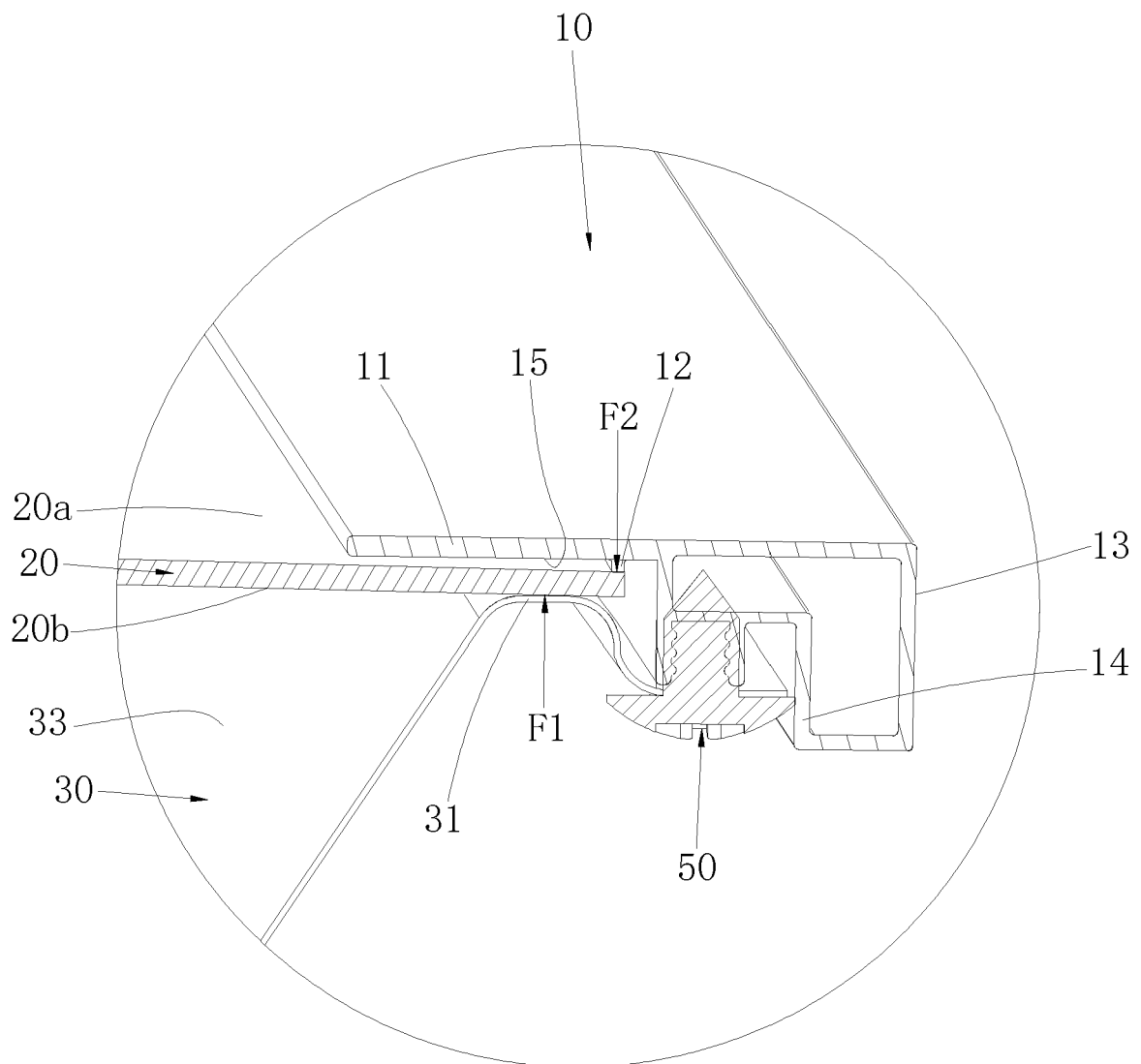


Fig.6

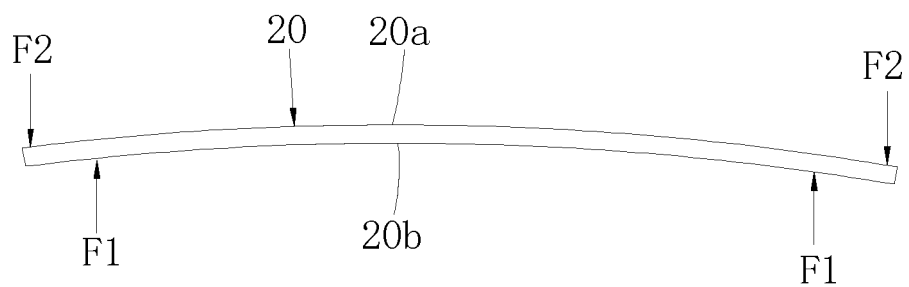


Fig.7

REFERENCES CITED IN THE DESCRIPTION

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