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(54) DRAIN PAN AND AIR CONDITIONER

(57) The application provides a drain pan and an air conditioner. The drain pan includes a plastic member (10) and a foaming member (20), wherein an air inlet (11) is provided in the middle part of the plastic member (10); an air outlet (12) is provided near the edge of the plastic member (10); a water receiving sink (17) is arranged between the air inlet (1l) and the air outlet (12); the water receiving sink (17) surrounds the air inlet (11); the air outlet (12) continuously surrounds at least part of the outer edge of the water receiving sink (17); a plurality of supporting grilles (14) are arranged inside the air outlet (12); the plurality of supporting grilles (14) are distributed at intervals in an extension direction of the air outlet (12); the foaming member (20) and the plastic member (10) at least partially overlap with each other; and the foaming member (20) avoids the air inlet (11) and the air outlet

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(12). The drain pan of the air conditioner is convenient and fast to mount, has high production efficiency and good air output effect, and thus improving the user experience.

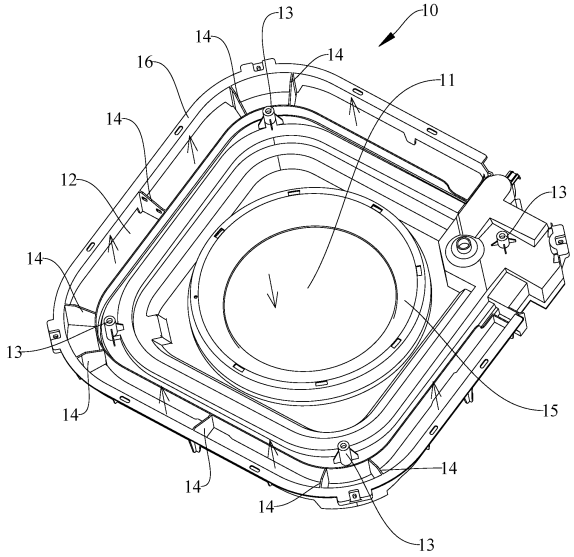

FIG. 1

Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application claims priority to the following Chinese Patent Applications:

Chinese Patent Application Serial No. 202111165079.X, filed on September 30, 2021;
Chinese Patent Application Serial No. 202122406360.X, filed on September 30, 2021;
Chinese Patent Application Serial No. 202122406427.X, filed on September 30, 2021;
Chinese Patent Application Serial No. 202122410353.7, filed on September 30, 2021;
Chinese Patent Application Serial No. 202122406399.1, filed on September 30, 2021; and
Chinese Patent Application Serial No. 202122409109.9, filed on September 30, 2021,

the entire contents of the above six Chinese Patent Applications are incorporated herein by reference.

FIELD

[0002] The present application relates to the field of air conditioner manufacturing, and more particularly to a water pan and an air conditioner.

BACKGROUND

[0003] Air conditioner products are developing in the direction of compact structure and efficient performance. A size of an air outlet of the air conditioners affects the overall air volume and heat exchange efficiency of the air conditioners. In related art, a plurality of small air outlets is usually provided, and the circulation area of each air outlet is small, so the overall air volume is difficult to be improved.

[0004] The air outlet problem of the air conditioners has become a barrier to be solved urgently under the trend of efficient-performance development. Moreover, in related art, it is the difficult to increase the air outlet area of a water pan due to the limitations of its structure and the production process.

SUMMARY

[0005] The present application is intended to solve at least one of the problems existing in the related art to at least some extent. Therefore, embodiments of the present application provide a water pan, including:

a plastic member, an air inlet being defined in a middle of the plastic member, an air outlet being defined near an edge of the plastic member, a water receiving sink being defined between the air inlet and the air outlet, the water receiving sink surrounding the air inlet, the air outlet continuously surrounding at least part of an outer edge of the water receiving sink, a plurality of supporting grilles being arranged in the air outlet, the plurality of supporting grilles being distributed at intervals along an extension direction of the air outlet; and

a foaming member, the foaming member and the plastic member at least partially overlapping with each other, and the foaming member avoiding the air inlet and the air outlet.

[0006] The water pan of embodiments of the present application has the following technical effect: the air outlet is arranged into a continuously extended structure, a circulation area of the air outlet is increased, thus improving air outlet efficiency, and facilitating the improvement of the performance of the air conditioner.

[0007] In some embodiments, the foaming member and the plastic member are integrally formed.

[0008] In some embodiments, the supporting grille is arranged along a direction from the air inlet to the air outlet.

[0009] In some embodiments, an air inlet avoidance hole is defined in a middle of the foaming member, an air outlet avoidance hole is defined between a second frame and the water receiving sink, the air inlet avoidance hole corresponds in position to the air inlet, and the air outlet avoidance hole corresponds in position to the air outlet.

[0010] In some embodiments, the plastic member has a first frame, end of the supporting grille has a first end connected to the first frame, and a second end connected to the middle of the plastic member; and the first frame is connected with the second frame.

[0011] In some embodiments, a cross-section of the supporting grille gradually decreases along an air outlet direction.

[0012] In some embodiments, a width of the supporting grille ranges from 1.5 mm to 3.2 mm.

[0013] In some embodiments, the foaming member are integrally formed with the plastic member by injection molding the plastic member, and directly casting a foam material on the plastic member with a mold after the formed plastic member is solidified, so that the foam material and the plastic member are at least partially melted together, and the foam material is connected with the plastic member after the foam material is solidified.

[0014] In some embodiments, the water receiving sink is a square ring structure; the air outlet surrounds four outer sides of the water receiving sink, and each outer side is connected to at least one supporting grille.

[0015] In some embodiments, the plastic member has a plurality of connecting parts, and the connecting part penetrates the foaming member.

[0016] In some embodiments, an air guiding ring is formed in the middle of the plastic member, the air inlet is defined in a center of the air guiding ring, and the air guiding ring and the foaming member do not overlap.

[0017] In some embodiments, the air inlet is covered with a protective net, and the protective net is detachably connected to the foaming member or the plastic member.

[0018] In some embodiments, the foaming member is provided with a negative ion generator mounting part configured to mount a negative ion generator and a temperature sensor mounting part configured to mount a temperature sensor, and the negative ion generator mounting part is located on a side of the temperature sensor mounting part.

[0019] In some embodiments, the foaming member is provided with a wire slot, the wire slot is close to the air outlet and configured for pass through of connecting wires of the negative ion generator and the temperature sensor.

[0020] In some embodiments, the protective net is a grille, the grille includes a body, the body is adapted to be connected with the water pan, the body is provided with a plurality of first buttons, and the first button is adapted to be snap-fitted with the water pan to connect the body and the water pan.

[0021] In some embodiments, the grille further includes a mounting part, the mounting part is located on an outer peripheral side of the body, and the mounting part is adapted to mount the temperature sensor and/or the negative ion generator.

[0022] In some embodiments, the body and the mounting part are integrally injection molded.

[0023] In some embodiments, a protrusion is provided on the mounting part, the protrusion includes a first segment and a second segment, the first segment has a convex surface and a concave surface arranged opposite each other, the convex surface is adapted to abut against the negative ion generator to limit the negative ion generator, the second segment is arranged on a side of the concave surface of the first segment, and the second segment is connected with the concave surface.

[0024] In some embodiments, the mounting part and/or the body are provided with a first wire clip and a second wire clip, the first wire clip is adapted to clamp a wire of the temperature sensor, and the second wire clip is adapted to clamp a wire of the negative ion generator.

[0025] Embodiments of the present application also provide an air conditioner, including a water pan according to any one of embodiments of the present application. The installation of the water pan of the air conditioner is convenient, so that the production efficiency of the air conditioner is improved. The width of the support grating is small, the air output effect is good, and the user experience is improved.

[0026] Additional aspects and advantages of embodiments of present application will be given in part in the following descriptions, become apparent in part from the following descriptions, or be learned from the practice of the embodiments of the present application.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027]

FIG. 1 is a schematic view of a three-dimensional structure of a plastic member according to an embodiment of the present application.

FIG. 2 is a schematic view of a three-dimensional structure of a foaming member according to an embodiment of the present application.

FIG. 3 is a front view of a water pan according to an embodiment of the present application.

FIG. 4 is a rear view of a water pan according to an embodiment of the present application.

FIG. 5 is a sectional view taken along A-A in FIG. 4.

FIG. 6 is a perspective view of a water pan according to an embodiment of the present application.

FIG. 7 is a perspective view of a water pan according to another embodiment of the present application.

FIG. 8 is a schematic view of an overall structure of a protective grille according to an embodiment of the present application.

FIG. 9 is a schematic view of a protrusion of the protective grille shown in FIG. 8.

FIG. 10 is a schematic view of an overall structure of a screen assembly according to embodiments of the present application.

FIG. 11 is a sectional view taken along A-A in FIG. 10.

References signs:

[0028]

1 negative ion generator; 2 temperature sensor;
10 plastic member; 11 air inlet; 12 air outlet; 13 connecting part; 14 supporting grille; 15 air guiding ring; 16 first frame; 17 water receiving sink;
20 foaming member; 22 wire slot; 23 air inlet avoidance hole; 24 air outlet avoidance hole; 25 second frame;
30 protective net;
31 body; 311 first button; 312 first hole; 313 connecting member; 3131 connecting member stiffener; 314 stiffener;
32 mounting part; 321 second button; 3211 first sub-button; 3212 second sub-button; 322 protrusion; 3221 first segment; 3222 second segment; 3223 curved surface; 323 second hole; 324 first wire clip; 325 second wire clip;
40 water pan.

DETAILED DESCRIPTION

[0029] Embodiments of the present application are described in detail below, examples of which are shown in the accompanying drawing. The following embodiments described with reference to the accompanying drawing are illustrative. It should be understood that the embod-

iments described are intended to explain the present application, but not to limit the present application.

[0030] Embodiments of the present application provide a water pan, the water pan is used for an air conditioner, which may improve the efficiency of air inlet and air outlet, has high overall structural stability, and may improve the convenience and accuracy of installation on an air conditioner. The air conditioner may be a central air conditioner, and the water pan may be installed on an indoor air inlet and outlet device of the central air conditioner.

[0031] Referring to FIG. 1 to FIG. 6, the water pan of embodiments of the present application mainly includes two parts of a plastic member 10 and a foaming member 20, and the two parts are connected as a whole and do not need to be connected by a screw and other connectors. Although the materials of the plastic member 10 and the foaming member 20 are different, they have an integrally formed structure, and there is no need to assemble separately when in use, thus improving the convenience of installation, improving production efficiency, and further facilitating improvement of the accuracy of the relative position between the air inlet 11 and a related component of the air conditioner.

[0032] Referring to FIG. 1 and FIG. 3, an air inlet 11 is defined in a middle of the plastic member 10, an air outlet 12 is defined near an edge of the plastic member 10, and a water receiving sink 17 is defined between the air inlet 11 and the air outlet 12. The water receiving sink 17 surrounds the air inlet 11, and the air outlet 12 continuously surrounds at least part of an outer edge of the water receiving sink 17. A plurality of supporting grilles 14 is arranged in the air outlet 12, and the plurality of supporting grilles 14 is distributed at intervals along an extension direction of the air outlet 12. In embodiments of the present application, only one air outlet 12 is provided, and continuously surrounds the water receiving sink 17, to form an annular air outlet, thus increasing the circulation area of the air outlet 12. Although the supporting grille 14 is arranged in the air outlet 12, the circulation area of the air outlet 12 occupied by the supporting grille 14 is very small, and the total circulation area of the air outlet 12 is far greater than the total circulation area of a plurality of air outlets provided in the related art. The water receiving sink 17 is arranged as a long strip shape and extends along a predetermined direction to contain the condensate water and transfer the collected condensate water to a preset pipe. In some embodiments, the water receiving sink 17 is a continuous recess, and the condensate water may flow within the water receiving sink 17. The supporting grille 14 is a plate-like body, and a thickness of the supporting grille 14 gradually decreases along an air outlet direction. That is, a width of a cross-section of the supporting grille 14 at different locations may be different. The setting may not only reduce wind resistance, but also has the effect of reducing noise.

[0033] In the related art, the water pan is made of foam, and the strength of foam is low, so at the air outlet, a long connection structure needs to be provided to connect a frame, which will cause a larger area of blocking to the air outlet.

[0034] In some embodiments, the foaming member 20 is integrally formed with the plastic member 10.

[0035] In the present application, the water pan is made by foaming a foam material on the plastic member, the strength of the plastic member is high, the strength of the water pan formed by the process is high, and the section of the supporting grille 14 for connecting a first frame 16 at the air outlet may be made very small. As shown in FIG. 3, the proportion of the wind shield area of the supporting grille 14 in the air outlet to the total area of the air outlet is very small, which may even be ignored, so that the annular air outlet may be achieved.

[0036] For example, the air outlet 12 is a bent long-strip hole with a certain length, and the width of the air outlet 12 may be set according to the actual design requirements.

[0037] The supporting grille 14 plays the role of supporting and connection, which may be made as thin as possible under the premise of meeting the structural strength requirements, to reduce wind resistance.

[0038] Referring to FIG. 2, the foaming member 20 and the plastic member 10 at least partially overlap with each other, which play a role of heat preservation, so that the water pan achieves the effect of anti-condensation. The foaming member 20 avoids the air inlet 11 and the air outlet 12. The foaming member 20 is connected with the plastic member 10 and is relatively fixed. In some embodiments, the foaming member 20 is integrally formed with the plastic member 10, the foaming member 20 defines the water receiving sink 17, the water receiving sink 17 surrounds the air inlet 11, and the air outlet 12 surrounds the water receiving sink 17. Since the foaming member 20 and the plastic members 10 are integrally formed, the foaming member 20 and the plastic members 10 also do not need to be assembled separately. Although the materials of the foaming member 20 and the plastic members 10 are different, they may be formed by injection molding. Therefore, the foaming member 20 and the plastic members 10 may be casted respectively by controlling the casting sequence of different materials, and the foaming member 20 and the plastic member 10 are connected as a whole.

[0039] In some embodiments, in order to avoid the air inlet 11 and the air outlet 12, an air inlet avoidance hole 23 is defined in a middle of the foaming member 20, and an air outlet avoidance hole 24 is defined between a second frame 25 and the water receiving sink 17. The air inlet avoidance hole 23 corresponds in position to the air inlet 11, and the air outlet avoidance hole 24 corresponds in position to the air outlet 12. The air inlet avoidance hole 23 is a circular shape matching the air inlet 11, and the air outlet avoidance hole 24 is a bent long strip-shaped hole matching the shape of the air outlet 12.

[0040] In some embodiments, the supporting grille 14 is arranged along a direction from the air inlet 11 to the air outlet 12, and a width of the supporting grille 14 ranges

from 1.5 mm to 3.2 mm. Since the plastic member 10 is made entirely of plastic material, the width of the supporting grille 14 that is available for mold-opening may be controlled above 1.5 mm. According to the test and the needs of the structural strength of the water pan, in embodiments of the present application, the width of the supporting grille 14 is limited to 3.2 mm. Thus, the width of the supporting grille 14 may be 1.6 mm, 1.8 mm, 2.0 mm, 2.2 mm, 2.4 mm, 2.6 mm, 2.8 mm, 3.0 mm, etc. The supporting grille 14 of the size not only has sufficient structural strength, but also causes very small wind resistance to the air outlet 12, which realizes a larger air outlet area and improves air outlet efficiency.

[0041] The width of the supporting grille 14 mentioned here refers to the thickness of the cross-section of the supporting grille 14 occupying the air outlet 12, that is, a distance between the two sides of the supporting grille 14 in FIG. 3. The supporting grille 14 is a plate-like body, where the width of the supporting grille 14 is the maximum thickness of the plate-like body.

[0042] The plastic member 10 mainly plays the role of structural support for the whole water pan, and the foaming member 20 mainly plays the role of heat preservation for the whole water pan. If the foaming member 20 is provided with the supporting grille, because of the nature of the material itself, it is difficult to control the width of the supporting grille between 1.5 mm and 3.2 mm, and in the related art, in the solution of the foaming member 20 provided with the supporting grille, the width of the provided supporting grille is usually about 10 mm, thus the wind resistance to the air outlet 12 is larger.

[0043] In some embodiments, the foaming member 20 and the plastic member 10 are integrally formed, and the integral forming of the plastic member 10 and the foaming member 20 may eliminate the assembly error and improve the fit clearance between an air guiding ring and a fan wheel of the air conditioner. The integral forming here means that the two are casted together during injection molding, so that the assembly step may be saved, the fit accuracy of the foaming member 20 and the plastic member 10 is good, and the individual difference of the water pan is small.

[0044] In some embodiments, the process method of the integral forming of the foaming member 20 and the plastic member 10 includes injection molding the plastic member 10, and directly casting a foam material on the plastic member 10 with a mold after the formed plastic member 10 is solidified, so that the foam material and the plastic member 10 are at least partially melted together, and the foam material is connected with the plastic member 10 after the foam material is solidified.

[0045] The structural strength of the plastic member 10 is greater than that of the foaming member 20. Therefore, the plastic member 10 is first injected molded, and the foam material is injected after the plastic member 10 is solidified to form the foaming member 20 on the plastic member 10. The plastic member 10 and the foaming member 20 are at least partially melted together, so that the plastic member 10 and the foaming member 20 form an integrally formed structure. Therefore, the plastic member 10 and the foaming member 20 are inseparable two parts, and they do not have to be installed separately during the production of the air conditioner, thus the relative position of the plastic member 10 and the foaming member 20 is very accurate, and no assembly errors will be generated.

[0046] When the foam material is casted, the surface of the plastic member 10 in contact with it may be partially melted, to fuse with the foam material into a whole. The part of the plastic member 10 in contact with the foaming member 20 may also not melt with each other.

[0047] In some embodiments, the width of the supporting grille 14 ranges from 2 mm to 3 mm, for example from 2 mm to 2.5 mm. The size of the supporting grille 14 not only has sufficient structural strength, but also causes very small wind resistance to the air outlet 12, which realizes a larger air outlet area and improves air outlet efficiency.

[0048] The plastic member 10 has a first frame 16, the supporting grille 14 has a first end connected to the first frame 16, and a second end connected to the middle of the plastic member 10. The first frame 16 is connected with the second frame 25, the first frame 16 plays a supporting role, and the second frame 25 plays a heat preservation role.

[0049] In some embodiments, a cross-section of the supporting grille 14 gradually decreases along the air outlet direction, that is, the width of the cross-section of the supporting grille 14 at different locations may not be equal. The setting further reduces wind resistance and has the effect of reducing noise. The directions of the arrows in FIG. 1 and FIG. 5 are the directions of air outlet and air inlet.

[0050] The supporting grille 14 is a plate-like body, and the maximum width of the cross-section of the supporting grille 14 ranges from 1.5 mm to 3.2 mm.

[0051] In some embodiments, the shape of the air inlet 11 is circular and the shape of the water receiving sink 17 is square shaped. The four corners of the water receiving sink 17 are filleted, and the size of the air inlet 11 is matched with the size of the fan wheel of the air conditioner. In some embodiments, referring to FIG. 5, the shape of the air inlet 11 is circular, and the inner diameter of the air inlet 11 gradually decreases along the direction of air inlet (from bottom to top). The structure is beneficial to improving the effect of air inlet and reducing the noise of air inlet. The directions of the arrows in the FIG. 5 are the directions of air inlet and air outlet.

[0052] In some embodiments, the air outlet 12 surrounds the four outer sides of the water receiving sink 17, and each outer side is connected to at least one supporting grille 14. The setting ensures the stability of the overall structure of the water pan.

[0053] As an example, the air outlet 12 has three bent positions, and two supporting grilles 14 are provided at each bent position. A plane where the supporting grille

14 is located coincides with a center of the air inlet 11.

[0054] In some embodiments, the plastic member 10 has a plurality of connecting parts 13, and the connecting part 13 penetrates the foaming member 20. The connecting part 13 may be used to connect the water pan to other components of the air conditioner, and the structural stability of the integral forming of the plastic member 10 and the foaming member 20 may be improved by arranging the connecting part 13 to penetrate the foaming member 20.

[0055] For example, the connecting part 13 may be a cylindrical structure, and a center of the connecting part 13 may be provided with a threaded hole, thus the other components of the air conditioning unit may be installed with a water pan through the threaded hole.

[0056] In some embodiments, an air guiding ring 15 is formed in the middle of the plastic member 10, the air inlet 11 is defined in a center of the air guiding ring 15, and the air guiding ring 15 and the foaming member 20 do not overlap. The plastic member 10 is an integral structure, and the air guiding ring 15 is a part of the plastic member 10. Therefore, the water pan of embodiments of the present application does not have to install an independent air guiding ring component when in use. In other words, the water pan of embodiments of the present application has the structure of the air guiding ring, and such arrangement makes the fit between the air guiding ring 15 and the fan wheel of the air conditioner more accurate. Since it is not necessary to install the air guiding ring component separately, the production efficiency of the air conditioner is also improved.

[0057] For example, an inner surface of the air guiding ring 15 is a circular arc surface or a conical surface. The structure is beneficial to improving air inlet effect of the air inlet 11 and further reducing air inlet noise.

[0058] For example, referring to FIG. 5, the shape of the cross-section of the air guiding ring 15 may be a structure of 1/4 circular arc.

[0059] In some embodiments, referring to FIG. 7, the air inlet 11 is covered with a protective net 30, and the protective net 30 is detachably connected to the foaming member 20 or the plastic member 10. The protective net 30 may play a protective role, and the protective net 30 may be made of stainless steel. Specifically, the protective net 30 may be connected with the plastic member 10 by a screw or by a snap.

[0060] In some embodiments, the protective net 30 may be a grille 30.

[0061] In some embodiments, the foaming member 20 is provided with a negative ion generator mounting part configured to mount a negative ion generator 1 and a temperature sensor mounting part configured to mount a temperature sensor 2, and the negative ion generator mounting part is located on a side of the temperature sensor mounting part.

[0062] Afloat may also be arranged on the foaming member 20. Since the water pan takes into account the fixed assembly of the float, the negative ion generator 1 and the temperature sensor 2, and has a corresponding structure to take into account the wire routing and fixation, without too much irrelevant structure, the overall volume is small and the material utilization is high in the premise of ensuring the structural strength. The negative ion generator 1 and the temperature sensor 2 are arranged at an edge of the air inlet 11, so that the temperature sensor 2 may detect the temperature, and the negative ion generator 1 may purify the air, conveniently.

[0063] The foaming member 20 defines a wire slot 22, and the connecting wire of electronic devices such as the negative ion generator 1, the temperature sensor 2 and the like may pass through the wire slot 22.

[0064] In some embodiments, the number of wire slot 22 is two, and the two wire slots 22 are respectively close to two extension ends of the air outlet 12, so that the air outlet 12 is a non-closed annular structure.

[0065] Embodiments of the present application further provide an air conditioner, and the air conditioner includes a water pan of any one of the embodiments. The installation of the water pan of the air conditioner is convenient, so that the production efficiency of the air conditioner is improved, and the width of the supporting grille 14 is small, thus air outlet effect is good, and the user experience is improved.

[0066] As shown in FIG. 8, the grille 30 according to embodiments of the present application includes a body 31, and the body 31 is adapted to be connected with the water pan. The body 31 of the grille 30 may play the role of filtration and ventilation.

[0067] In some embodiments, the body 31 may be fixed to the water pan by a plurality of screws.

[0068] In some embodiments, as shown in FIG. 8 and FIG. 10, the body 31 is provided with a plurality of first buttons 311, and the first button 311 is adapted to be snap-fitted with the water pan to connect the body 31 and the water pan 40. Since the grille 30 and the water pan 40 are snap-fitted, the installation and disassembly of the grille 30 and the water pan 40 are convenient, and then the overhaul and maintenance are convenient. The situation that in the related art a panel may be installed and fixed with the help of manpower to lift the panel is avoided, which reduces the labor load and labor cost of workers, facilitates the alignment of the panel, and improves the installation efficiency. In addition, the situation that in the related art pre-embedded sheet metal parts on the water pan are easy to cause too many parts below the water pan and the production efficiency of the water pan is low is also avoided.

[0069] As shown in FIG. 8, the body 31 may be circular, and it is understood that the body 31 may also be square, star, oval, and other shapes.

[0070] In some embodiments, the first button 311 may be a snap. A plurality of first buttons 311 may be arranged at intervals along a circumferential direction of the body 31, and when the grille 30 is installed, the plurality of first buttons 311 and the water pan may be clamped and fixed.

[0071] In some embodiments, the plurality of first but-

tons 311 is arranged at intervals along the circumferential direction of the body 1, and the plurality of first buttons 311 is adapted to be snapped with or separated from the water pan when the body 31 rotates with respect to the water pan.

[0072] In some embodiments, as shown in FIG. 8, the first button 311 may also be a rotary button, and the plurality of first buttons 311 are located at an edge of the body 31 and are arranged at equal intervals along the circumferential direction of the body 31. When installing the grille 30, the grille 30 may be rotated, and during rotation, the plurality of first buttons 311 on the body 31 may be clamped with the water pan 40, so that the installation and fixing of the grille 30 and the water pan 40 may be realized. When the grille 30 needs to be disassembled, the grille 30 may be reversely rotated. Thus, the installation and disassembly of the grille 30 are further facilitated.

[0073] In some embodiments, the body 31 is provided with a first hole 312, the first hole 312 is adapted for insertion of a first fastener, and the body 31 is detachably connected to the water pan 40 by the first fastener.

[0074] Referring to FIG. 8, the first hole 312 may be located at the edge of the body 31, the first fastener may be a bolt or a screw, and when the grille 30 and the water pan 40 are rotationally clamped or snap-fitted, the grille 30 and the water pan 40 may be connected and fixed by the first fastener, thus limiting the rotation of the grille 30, and avoiding the situation that the grille 30 is loosened and drops out due to rotate.

[0075] Only one first fastener may be provided, and the disassembly of the grille 30 may be achieved by disassembling the first fastener and then unlocking each first button 311, thus avoiding the situation that a plurality of screws needs to be disassembled in the related art, improving the installation and disassembly efficiency of the grille 30, and facilitating the overhaul and maintenance.

[0076] In some embodiments, the body 31 is provided with a stiffener 314 which is arranged between adjacent two first buttons 311 and extends along the circumferential direction of the body 31. As shown in FIG. 8, the stiffener 314 may be located at an outer peripheral edge of the body 31, the stiffener 314 may bend and extend in the circumferential direction of the body 31, one end of the stiffener 314 may be connected with one of the adjacent two first buttons 311, and the other end of the stiffener 314 may be connected with the other of the adjacent two first buttons 311, thus enhancing the structural strength of the body 31, and ensuring the structural stability of the shape of the body 31.

[0077] In some embodiments, the stiffener 314 and the body 31is integrally injection molded.

[0078] In some embodiments, the material of the body 31 is plastic. The plastic material facilitates the injection molding of the grille 30, and since the body 31 is provided with stiffener, the grille 30 still has high structural strength, avoiding the situation that the shape of the body 31 is easy to deform when the plastic is adopted.

[0079] In some embodiments, the stiffener 314 is plural, and the plurality of stiffeners 314 and the plurality of first buttons 311 are alternately arranged along the circumferential direction of the body 31.

[0080] As shown in FIG. 8, an outer peripheral side of the body 31 is provided with the plurality of stiffeners 314, the number of the stiffener 314 may be the same as the number of the first button 311, and the plurality of stiffeners 314 and the plurality of first buttons 311 may be alternately arranged one by one along the circumferential direction of the body 31. That is, any adjacent two first buttons 311 are provided with one stiffener 314 therebetween and are connected by the stiffener 314. Therefore, the structure strength of the outer peripheral edge of the body 31 is higher, and the stability of the shape of the body 31 is further ensured.

[0081] In some embodiments, the stiffener 314 may be provided only in part between the adjacent two first buttons 311.

[0082] In some embodiments, the first hole 312 is located in the stiffener 314. Specifically, the first hole 312 may be defined in the stiffener 314 and run through the body 31 along a thickness direction of the body 31. Thus, the situation that the local structural strength of the body 31 is weak due to the arrangement of the first hole 312 is avoided.

[0083] In some embodiments, the grille 30 also includes a mounting part 32 located on the outer peripheral side of the body 31, and the mounting part 32 is adapted to mount the temperature sensor 2 and/or the negative ion generator 1. The mounting part 32 may play the role of fixing the temperature sensor 2 and the negative ion generator 1.

[0084] As shown in FIG. 8, the mounting part 32 may be integrally arranged with the body 31. In some embodiments, the mounting part 32 may also be detachably fixed with the body 31. For example, the mounting part 32 may be fixed to the body 31 by a screw. The mounting part 32 is fixed on the outer peripheral side of the body 31, and the mounting part 32 may be configured to fix the temperature sensor 2, or to fix the negative ion generator 1. It is understood that the mounting part 32 may also fix the temperature sensor 2 and the negative ion generator 1 simultaneously.

[0085] On the one hand, the arrangement of the mounting part 32 plays the role of fixing the temperature sensor 2 and the negative ion generator 1, facilitating the installation of the temperature sensor 2 and the negative ion generator 1. On the other hand, the temperature sensor 2 and the negative ion generator 1 on the mounting part 32 will not block the position of the body 31, avoiding the impact of the temperature sensor 2 and the negative ion generator 1 on a return air area of the air outlet, and further facilitating the improvement of the cooling efficiency of the air conditioner.

[0086] In some embodiments, the mounting part 32 is provided with a second button 321, and the temperature

sensor 2 is clamped and fixed on the mounting part 32 by the second button 321. Specifically, as shown in FIG. 8, the second button 321 is a snap, and the second button 321 may be integrally arranged on the mounting part 32. When the temperature sensor 2 is installed, the temperature sensor 2 may be directly clamped and fixed by the second button 321, thus facilitating the installation and disassembly of the temperature sensor 2.

[0087] In some embodiments, the second button 321 includes a first sub-button 3211 and a second sub-button 3212, the first sub-button 3211 and the second sub-button 3212 are arranged at intervals, and the temperature sensor 2 is clamped and fixed between the first sub-button 3211 and the second sub-button 3212. Specifically, as shown in FIG. 8, the mounting part 32 may be located below the rear of the body 31, the first sub-button 3211 and the second sub-button 3212 may be arranged at intervals along the front and rear direction, and when the temperature sensor 2 is installed, a front side of the temperature sensor 2 is clamped and fixed to the first sub-button 3211, and a rear side of the temperature sensor 2 is clamped and fixed to the second sub-button 3212, so that the fixation strength of the temperature sensor 2 is ensured.

[0088] In some embodiments, a protrusion 322 is provided on the mounting part 32, and the protrusion 322 is adapted to abut against the negative ion generator 1 to limit the negative ion generator 1. The protrusion 322 includes a first segment 3221 and a second segment 3222. The first segment 3221 has a convex surface and a concave surface arranged opposite each other, the convex surface is adapted to abut against the negative ion generator 1 to limit the negative ion generator 1, the second segment 3222 is arranged on a side of the concave surface of the first segment 3221, and the second segment 3222 is connected with the concave surface.

[0089] As shown in FIG. 8, the protrusion 322 may be integrally arranged on the mounting part 32, and the protrusion 322 may be a bulge or a projection on the mounting part 32. After the negative ion generator 1 is installed on the mounting part 32, the protrusion 322 may stop a side wall of the negative ion generator 1, thus playing the effect of limiting the position, enhancing the fixing compactness of the negative ion generator 1, and avoiding the situation that the negative ion generator 1 shakes freely. When the negative ion generator 1 is fixed by a screw, the number of screws used may also be reduced, thus facilitating the installation and disassembly of the negative ion generator 1, and further facilitating maintenance.

[0090] In some embodiments, a plurality of protrusions 322 may be provided, thus the restriction of multiple positions of the negative ion generator 1 may be realized.

[0091] In some embodiments, the protrusion 322 has an arc-shaped surface 3223 which is adapted to fit with an outer peripheral wall of the negative ion generator 1. Specifically, the outer peripheral surface of the protrusion 322 may include the arc-shaped surface 3223 which is a circular arc surface, and the outer surface of the negative ion generator 1 may define a groove part. When the negative ion generator 1 is installed on the mounting part 32, the arc-shaped surface 3223 may be fitted with the groove part snugly, further enhancing the fixing effect of the negative ion generator 1, and avoiding the loosening of the negative ion generator 1.

[0092] In some embodiments, the protrusion 322 includes the first segment 3221 and the second segment 3222, the first segment 3221 is arc-shaped, the first segment 3221 has a convex surface and a concave surface, which are arranged opposite each other, the convex surface is adapted to fit with the outer peripheral wall of the negative ion generator 1, the second segment 3222 is arranged on a side of the concave surface of the first segment 3221, and the second segment 3222 is connected with the concave surface.

[0093] In some embodiments, the protrusion 322 includes the first segment 3221 and the second segment 3222, the first segment 3221 is arc-shaped, the first segment 3221 has a convex surface and a concave surface which are arranged opposite each other, at least part of the convex surface forms the arc-shaped surface 3223, the second segment 3222 is located on a side of the concave surface of the first segment 322, and the second segment 3222 is connected with the concave surface.

[0094] As shown in FIG. 9, the protrusion 322 may be composed of the first segment 3221 and the second segment 3222, the first segment 3221 is circular arc-shaped, the second segment 3222 is linear, the second segment 3222 is located on the side of the concave surface of the first segment 3221, the second segment 3222 extends roughly along a diameter of a circle corresponding to the first segment 3221, and one end of the second segment 3222 is connected with a middle of the first segment 3221. The convex surface is used to fit and contact with the outer peripheral wall of the negative ion generator 1.

[0095] The arc-shaped surface 3223 is located on the convex surface of the first segment 3221. Thus, on the one hand, the structure of the protrusion 322 is simplified, which is conducive to reducing the consumables of the protrusion 322, and plays a role in reducing the cost. On the other hand, it ensures that the protrusion 322 has high structural strength, to meet the requirements of the fitting limit.

[0096] In some embodiments, a second hole 323 is defined in the mounting part 32, the negative ion generator 1 is detachably mounted on the mounting part 32 by a second fastener, and the second hole 323 is adapted to inserting the second fastener. As shown in FIG. 8, the mounting part 32 may be provided with two second holes 323, and the two second hole 323 may be respectively located at the positions near the respective projections 322. When installing the negative ion generator 1, the negative ion generator 1 may be positioned through the projection 322, and then the corresponding second fastener may be fixed in the corresponding first hole 312, and the second fastener may be a bolt or a screw.

[0097] In some embodiments, the body 31 and the mounting part 32 are integrally injection molded. For example, the body 31 and the mounting part 32 may be casted by plastic injection molding, thus facilitating the processing of the grille 30 and improving production efficiency.

[0098] In some embodiments, the body 31 is provided with a plurality of connecting members 313, the plurality of connecting members 313 are arranged at intervals along the circumferential direction of the body 31, and the connecting member 313 is adapted to pre-hang with a panel.

[0099] In some embodiments, the body 31, the connecting member 313, and the mounting part 32 are all integrally injection molded. Specifically, the body 31, the connecting member 313 and the mounting part 32 may be casted by plastic injection molding, thus facilitating the processing of the grille 30 and improving production efficiency.

[0100] In some embodiments, a plurality of connecting members 313 may be provided, the plurality of connecting members 313 is fixed on the body 31 and arranged at equal intervals along the circumferential direction of the body 31, and the connecting member 313 may achieve temporary pre-connection of the panel of the air conditioner.

[0101] In some embodiments, the plurality of connecting members 313 may also be located on an outer peripheral surface of the body 31 and arranged at intervals along the circumferential direction of the body 31. As shown in FIG. 8, four connecting members 313 may be provided, the four connecting members 313 are located on the outer peripheral surface of the body 131, and the four connecting members 313 are arranged at equal intervals along the circumferential direction of the body 31, that is, the center angle of the arc between any adjacent two connecting members 313 is 90 degrees.

[0102] When installing the panel of the air conditioner, the panel may be first connected and fixed by the connecting member 313, and the connecting member 313 may realize the pre-positioning of the panel, thus facilitating the alignment of the panel, and further facilitating the operator to fix the panel by a screw. Secondly, during the maintenance process, the hanging of a disassembled panel may also be realized, thus providing convenience for maintenance.

[0103] As shown in FIG. 11, the connecting member 313 may be a hook, and the hook is adapted to pre-hang with the panel, so that the connection may be connected to the panel by hooking. The hook may realize the hanging of the panel of the air conditioner, to achieve the pre-positioning of the panel.

[0104] In some embodiments, the hook may also be provided with a plurality of connecting member stiffeners 3131 extending along a bending direction of the hook, and the plurality of connecting member stiffeners 3131 is arranged at intervals along a width direction of the hook.

[0105] As shown in FIG. 8 and FIG. 11, the body 31 may be provided with a plurality of hooks, the hook may be located on the outer peripheral side of the body 31, and the hook may be bent towards an outer side of the body 31. The outer surface of the hook may be provided with three connecting member stiffeners 3131, the three connecting member stiffeners 3131 are arranged at equal intervals along the width direction of the hook, and the three connecting member stiffeners 3131 extend along the bending extension direction of the hook. The connecting member stiffener 3131 may play a role in strengthening the structural strength of the connecting member 313.

[0106] In some embodiments, the connecting member 313 may also be a magnet adapted for magnetic connection with the panel. In some embodiments, the connecting member 313 may also be a button, a snap fastener, a touch fastener, etc., thus, facilitating the connection and disassembly of the panel of the air conditioner and the connecting member 1213.

[0107] In some embodiments, the mounting part 32 and/or the body 31 are provided with a first wire clip 324 and a second wire clip 325, the first wire clip 324 is adapted to clamp a wire of the temperature sensor 2, and the second wire clip 325 is adapted to clamp a wire of the negative ion generator 1.

[0108] As shown in FIG. 8, the first wire clip 324 and the second wire clip 325 may both be snapping slots. When the temperature sensor 2 is fixed on the mounting part 32, the wire of the temperature sensor 2 may be stuck in the first wire clip 324; when the negative ion generator 1 is fixed on the mounting part 32, the wire of the negative ion generator 1 may be stuck in the second wire clip 325. On the one hand, the arrangement of the first wire clip 324 and the second wire clip 325 facilitates the routing of the wire, and on the other hand, the arrangement and planning of the wire may be realized, to avoid the situation of the disordered distribution of the wire.

[0109] In some embodiments, the outer peripheral side of the body 31 is integrally formed with a mounting seat, and the first wire clip 324 may be arranged on the mounting seat.

[0110] An air conditioner indoor unit according to embodiments of the present application is described below with reference to the accompanying drawings.

[0111] As shown in FIG. 10 and FIG. 11, the air conditioner indoor unit according to embodiments of the present application includes a grille, the grille may be the grille 30 described in the above embodiments. Specifically, the air conditioner indoor unit may also include a temperature sensor 2, a negative ion generator 1, and a water pan. The water pan may be a water pan described in embodiments of the present application.

[0112] In some embodiments, as shown in FIG. 10, the water pan 40 is roughly annular shaped, and the grille 30 may be detachably installed in the water pan 40 by a screw and a rotary button. The temperature sensor 2 and

the negative ion generator 1may both be installed on the mounting part 32 of the grille 30.

[0113] In some embodiments, the temperature sensor 2 and the negative ion generator 1 may both be mounted on the mounting part 32 of the grille 30. The temperature sensing pack 200 is clamped and fixed by the first button 321, and the negative ion generator 1 is fixed by the first hole 323 and the protrusion 322. The temperature sensor 2 and the negative ion generator 1 are located on the outer peripheral side of the body 1 of the grille 30.

[0114] According to the air conditioner indoor unit in embodiments of the present application, the protective grille of the air conditioner indoor unit is convenient to install and disassemble, which facilitates overhaul and maintenance, reduces labor load and labor cost of workers, and improves the installation efficiency.

[0115] In the description of the present application, it should be understood that the orientation or position relationship indicated by the terms "center", "longitudinal", "transverse", "length", "width", "thickness", "up", "down", "front", "rear", "left", "right" , "vertical", "horizontal", "top", "bottom", "inner", "outer", "clockwise", "counterclockwise", "axial", "radial" and "circumferential" and the like, is based on the orientation or position relationship shown in the accompanying drawings, which is only for the convenience of describing the present application and simplifying the description, and does not indicate or imply that the referred device or element must have a specific orientation, and be constructed and operated in a specific orientation, so it cannot be understood as a limitation of the present application.

[0116] In addition, the terms "first" and "second" are only used for purpose of description, and cannot be understood as indicating or implying relative importance or implicitly indicating the number of indicated technical features. Therefore, the feature defined as "first" or "second" may explicitly or implicitly include at least one such feature. In the description of the present application, "a plurality of' means at least two, such as two, three, etc., unless otherwise specifically defined.

[0117] In the present application, unless otherwise expressly defined, terms such as "install/mount", "interconnect", "connect", "fix" shall be understood broadly, and may be, for example, fixed connections, detachable connections, or integral connections; may also be mechanical or electrical connections or intercommunication; may also be direct connections or indirect connections via intervening media; may also be inner communications or interactions of two elements, unless otherwise specifically defined. For those skilled in the art, the specific meaning of the above terms in the present application can be understood according to the specific situations.

[0118] In the present application, unless otherwise expressly defined and specified, a structure in which a first feature is "on" or "below" a second feature may include an embodiment in which the first feature is in direct contact with the second feature, or may further include an embodiment in which the first feature and the second feature are in indirect contact through intermediate media. Furthermore, a first feature "on", "above", or "on top of' a second feature may include an embodiment in which the first feature is right or obliquely "on", "above", or "on top of" the second feature, or just means that the first feature is at a height higher than that of the second feature, while a first feature "below", "under", or "on bottom of' a second feature may include an embodiment in which the first feature is right or obliquely "below", "under", or "on bottom of' the second feature, or just means that the first feature is at a height lower than that of the second feature.

[0119] In the description of the present application, terms such as "an embodiment", "some embodiments", "an example", "a specific example" or "some examples" means that a particular feature, structure, material, or characteristic described in connection with the embodiment or example is included in at least one embodiment or example of the present application. Thus, the appearances of these terms in various places throughout this specification are not necessarily referring to the same embodiment or example of the present application. Furthermore, the particular features, structures, materials, or characteristics may be combined in any suitable manner in one or more embodiments or examples. In addition, without contradiction, those skilled in the art may combine and unite different embodiments or examples or features of the different embodiments or examples described in this specification.

[0120] Although the embodiments of the present application have been shown and described above, it can be understood that the above embodiments are illustrative and shall not be understood as limitation to the present application, and changes, modifications, alternatives and variations can be made in the above embodiments within the scope of the present application by those skilled in the art.

Claims

1. A water pan, comprising:

a plastic member (10), an air inlet (11) being defined in a middle of the plastic member (10), an air outlet (12) being defined near an edge of the plastic member (10), a water receiving sink (17) being defined between the air inlet (11) and the air outlet (12), the water receiving sink (17) surrounding the air inlet (11), the air outlet (12) continuously surrounding at least part of an outer edge of the water receiving sink (17), a plurality of supporting grilles (14) being arranged in the air outlet (12), the plurality of supporting grilles (14) being distributed at intervals along an extension direction of the air outlet (12); and

a foaming member (20), the foaming member (20) and the plastic member (10) at least partially

overlapping with each other, the foaming member (20) avoiding the air inlet (11) and the air outlet (12).

2. The water pan according to claim 1, wherein the foaming member (20) and the plastic member (10) are integrally formed.

3. The water pan according to claim 1, wherein the supporting grille (14) is arranged along a direction from the air inlet (11) to the air outlet (12).

4. The water pan according to claim 1, wherein an air inlet avoidance hole (23) is defined in a middle of the foaming member (20), an air outlet avoidance hole (24) is defined between a second frame (25) and the water receiving sink (17), the air inlet avoidance hole (23) corresponds in position to the air inlet (11), and the air outlet avoidance hole (24) corresponds in position to the air outlet (12).

5. The water pan according to claim 4, wherein the plastic member (10) has a first frame (16), the supporting grille (14) has a first end connected to the first frame (16), and a second end connected to the middle of the plastic member (10); and
the first frame (16) is connected with the second frame (25).

6. The water pan according to claim 1 or 2, wherein a cross-section of the supporting grille (14) gradually decreases along an air outlet direction.

7. The water pan according to claim 1, wherein a width of the supporting grille (14) ranges from 1.5 mm to 3.2 mm.

8. The water pan according to claim 2, wherein the foaming member (20) are integrally formed with the plastic member (10) by injection molding the plastic member (10), and directly casting a foam material on the plastic member (10) with a mold after the formed plastic member (10) is solidified, so that the foam material and the plastic member (10) are at least partially melted together, and the foam material is connected with the plastic member (10) after the foam material is solidified.

9. The water pan according to claim 6, wherein the water receiving sink (17) is a square ring structure; the air outlet (12) surrounds four outer sides of the water receiving sink (17), and each outer side is connected to at least one supporting grille (14).

10. The water pan according to claim 1, wherein the plastic member (10) has a plurality of connecting parts (13), and the connecting part (13) penetrates the foaming member (20).

11. The water pan according to claim 1, wherein an air guiding ring (15) is formed in the middle of the plastic member (10), the air inlet (11) is defined in a center of the air guiding ring (15), and the air guiding ring (15) and the foaming member (20) do not overlap.

12. The water pan according to claim 1, wherein the air inlet (11) is covered with a protective net (30), and the protective net (30) is detachably connected to the foaming member (20) or the plastic member (10).

13. The water pan according to claim 1, wherein the foaming member (20) is provided with a negative ion generator mounting part configured to mount a negative ion generator (1) and a temperature sensor mounting part configured to mount a temperature sensor (2), and the negative ion generator (1) mounting part is located on a side of the temperature sensor mounting part.

14. The water pan according to claim 13, wherein the foaming member (20) defines a wire slot (22), the wire slot (22) is close to the air outlet (12) and configured for pass through of connecting wires of the negative ion generator (1) and the temperature sensor (2).

15. The water pan according to claim 12, wherein the protective net (30) is a grille, the grille comprises a body (31), the body (31) is adapted to be connected with the water pan, the body (31) is provided with a plurality of first buttons (311), and the first button (311) is adapted to be snap-fitted with the water pan to connect the body (31) and the water pan.

16. The water pan according to claim 15, wherein the grille further comprises a mounting part (32), the mounting part (32) is located on an outer peripheral side of the body (31), and the mounting part (32) is adapted to mount the temperature sensor (2) and/or the negative ion generator (1).

17. The water pan according to claim 16, wherein the body (31) and the mounting part (32) are integrally injection molded.

18. The water pan according to claim 16 or 17, wherein a protrusion (322) is provided on the mounting part (32), the protrusion (322) comprises a first segment (3221) and a second segment (3222), the first segment (3221) has a convex surface and a concave surface arranged opposite each other, the convex surface is adapted to abut against the negative ion generator (1) to limit the negative ion generator (1), the second segment (3222) is arranged on a side of the concave surface of the first segment (3221), and the second segment (3222) is connected with the concave surface.

19. The water pan according to claim 16 or 17, wherein the mounting part (32) and/or the body (31) are provided with a first wire clip (324) and a second wire clip (325), the first wire clip (324) is adapted to clamp a wire of the temperature sensor (2), and the second wire clip (325) is adapted to clamp a wire of the negative ion generator (1).

20. An air conditioner, comprising a water pan according to any one of claim 1 to 19.

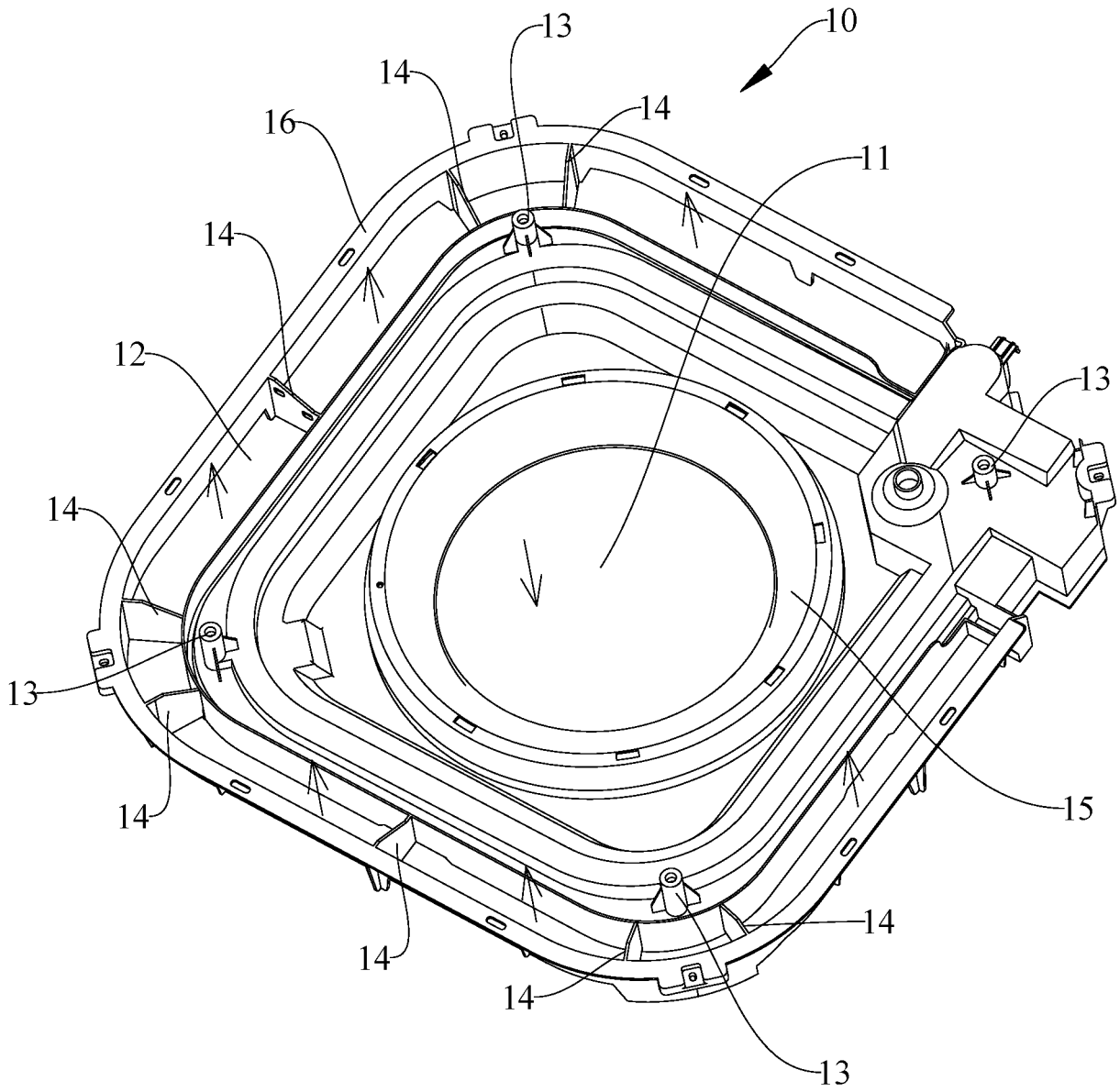

FIG. 1

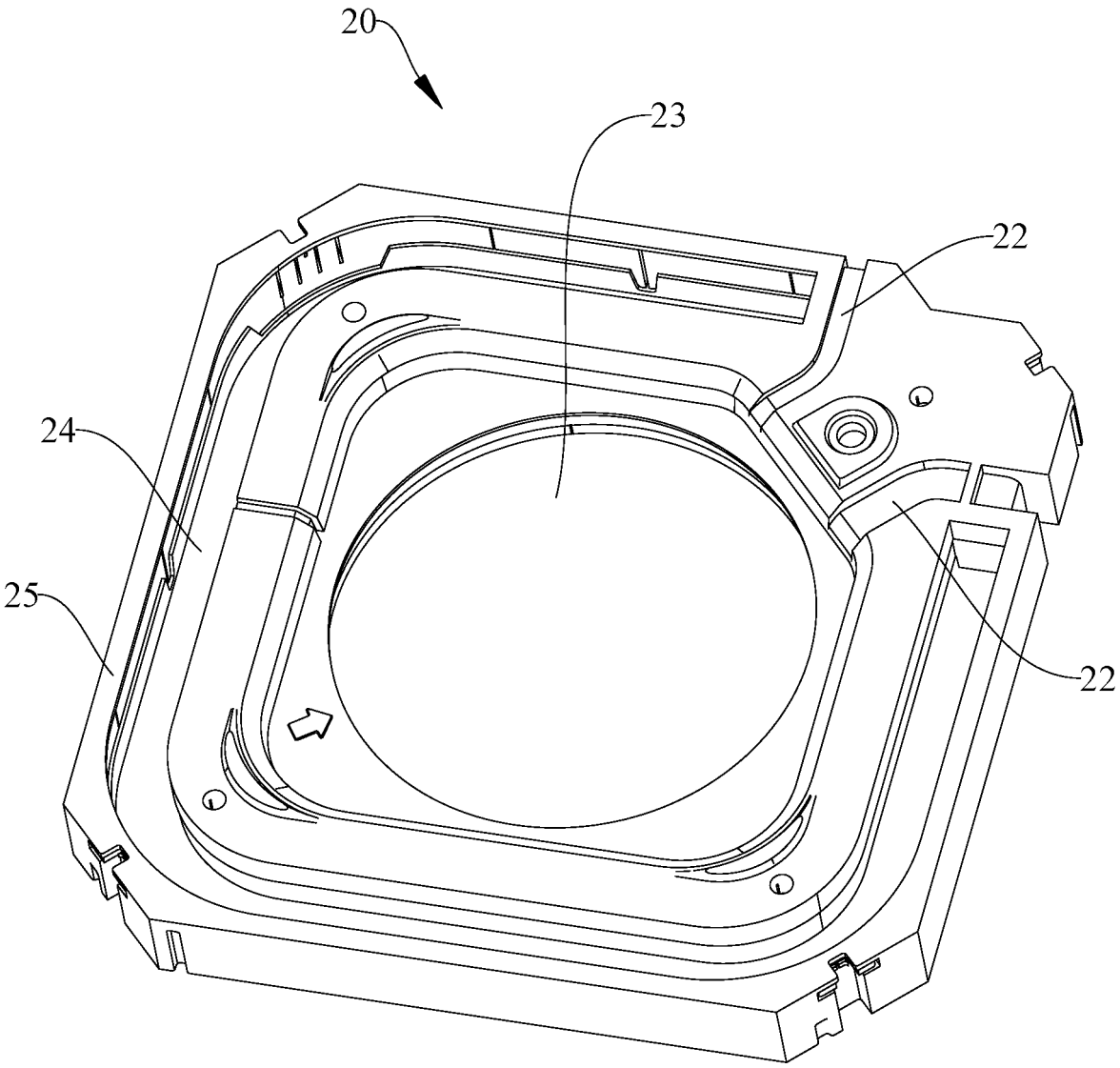

FIG. 2

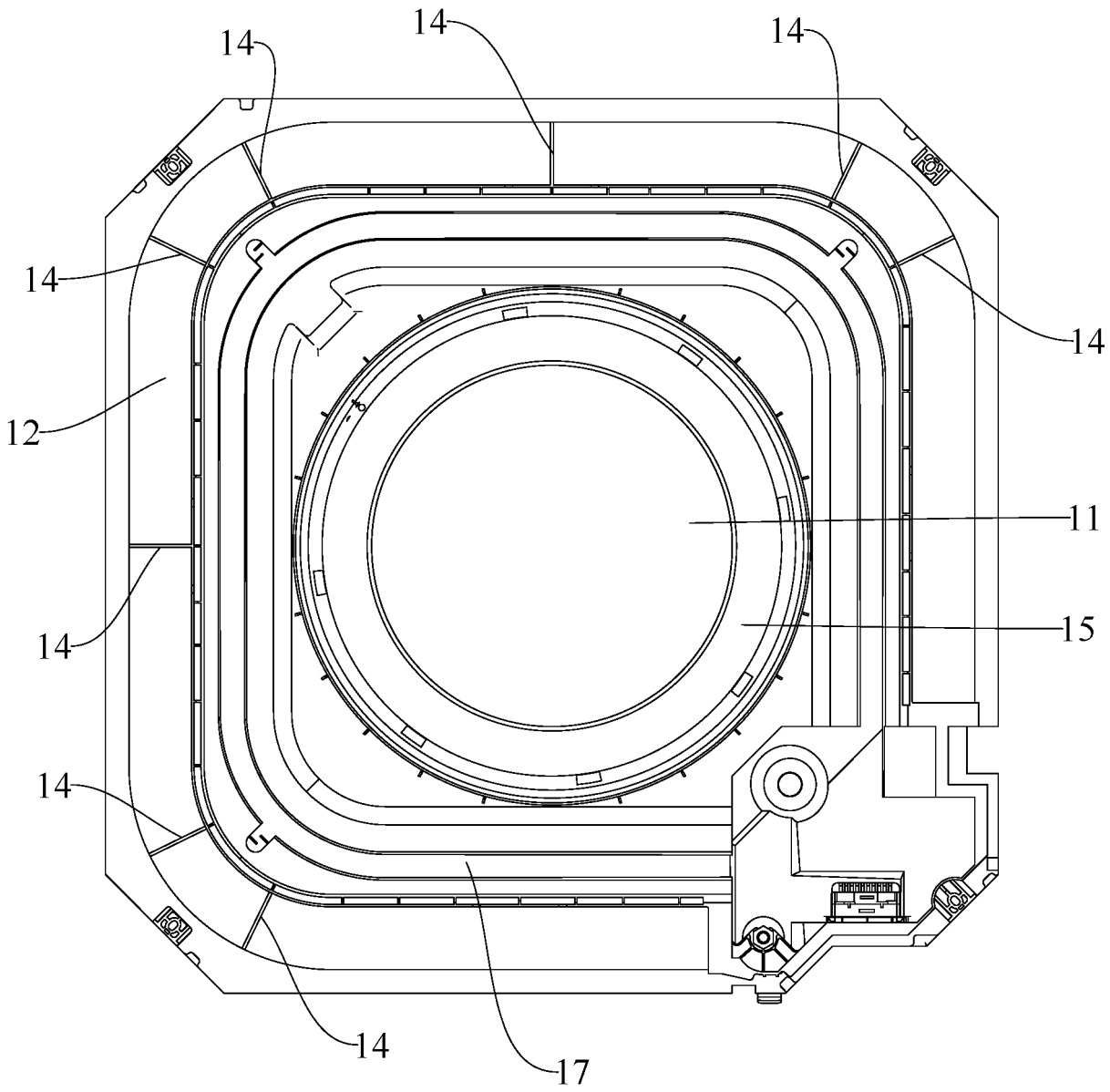

FIG. 3

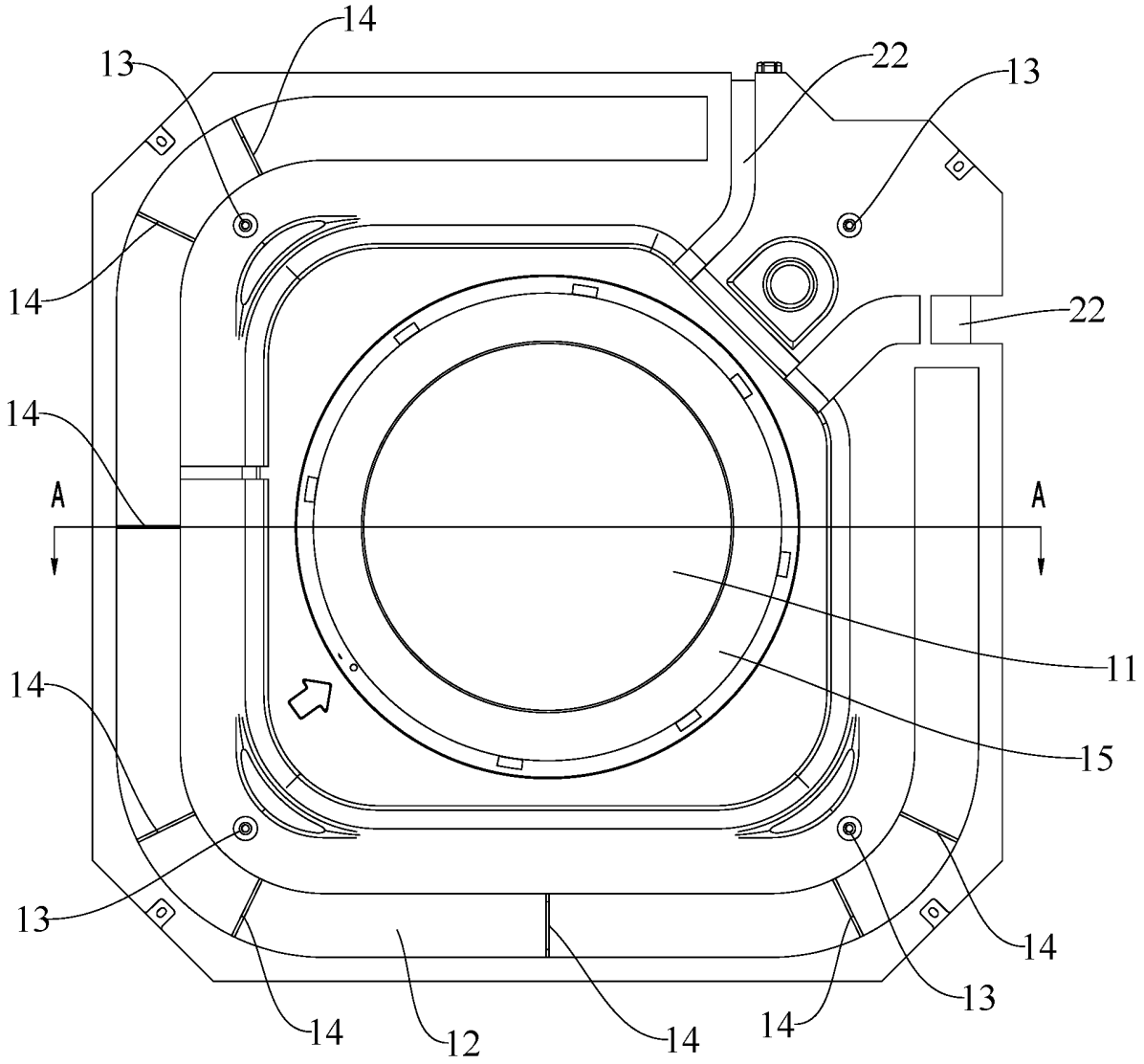
14
13
22
13
14
22
14
A
A
11
14
15
13
14
14
12
14
14
13

FIG. 4

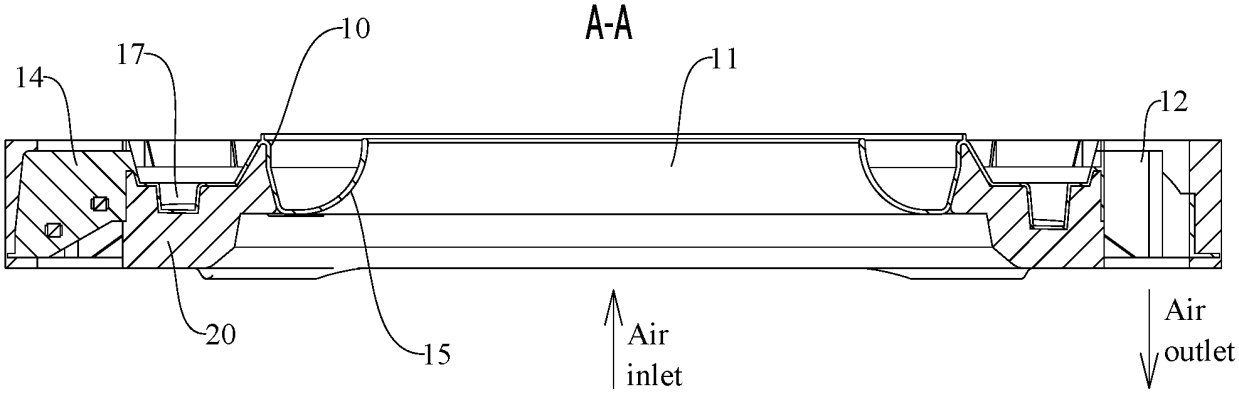
A-A
10
17
14
11
12
20
15
Air
inlet
Air
outlet

FIG. 5

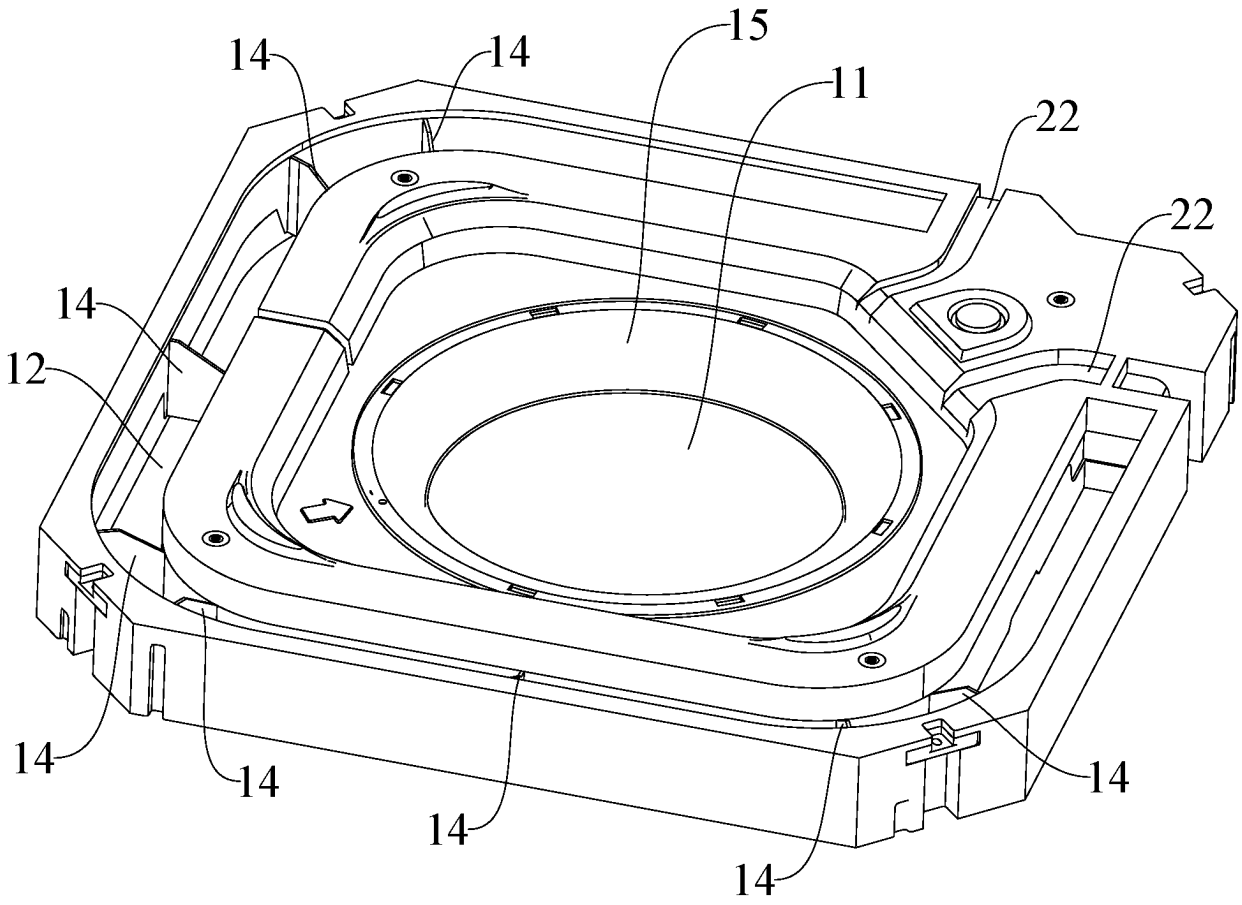

FIG. 6

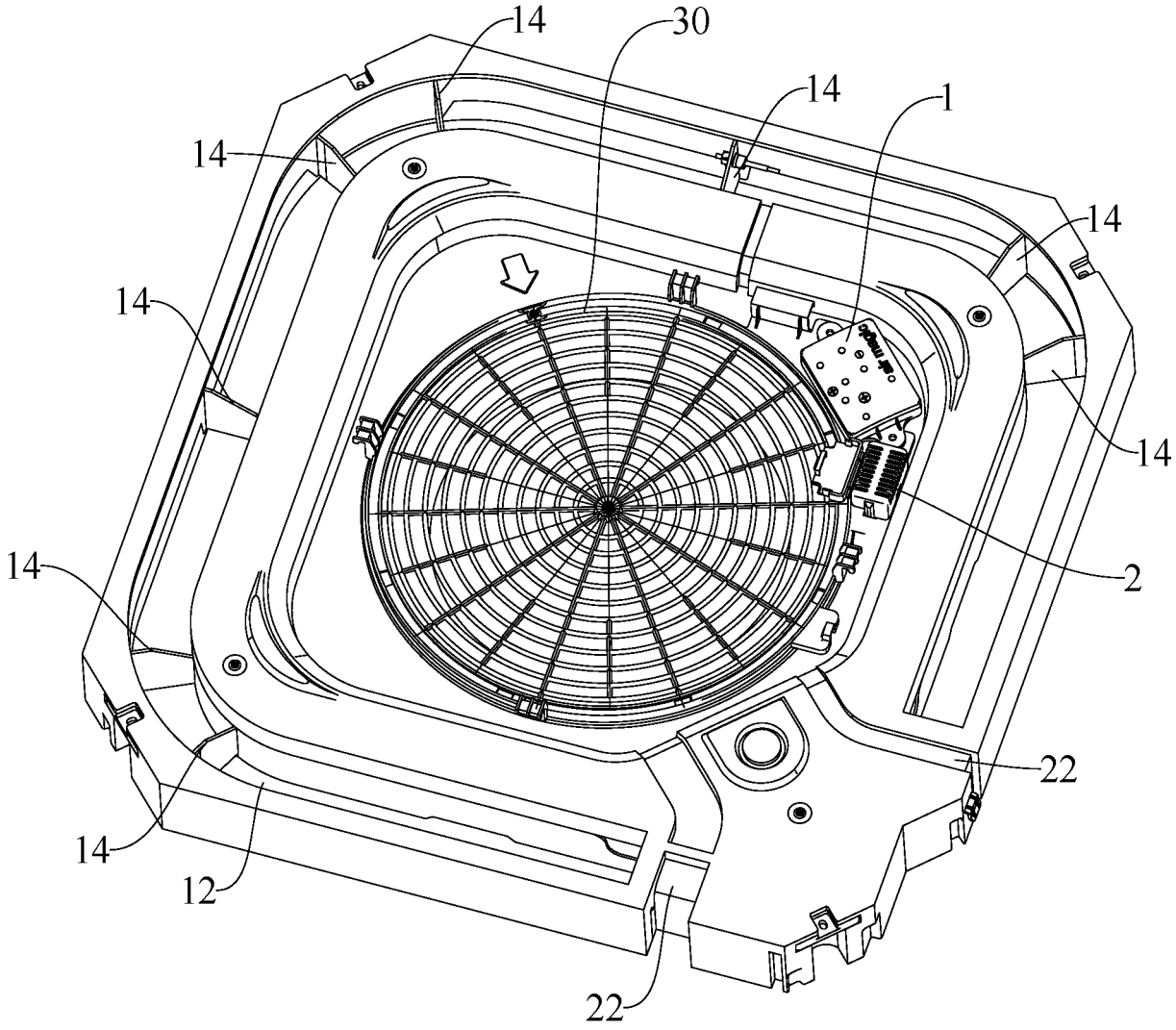

FIG. 7

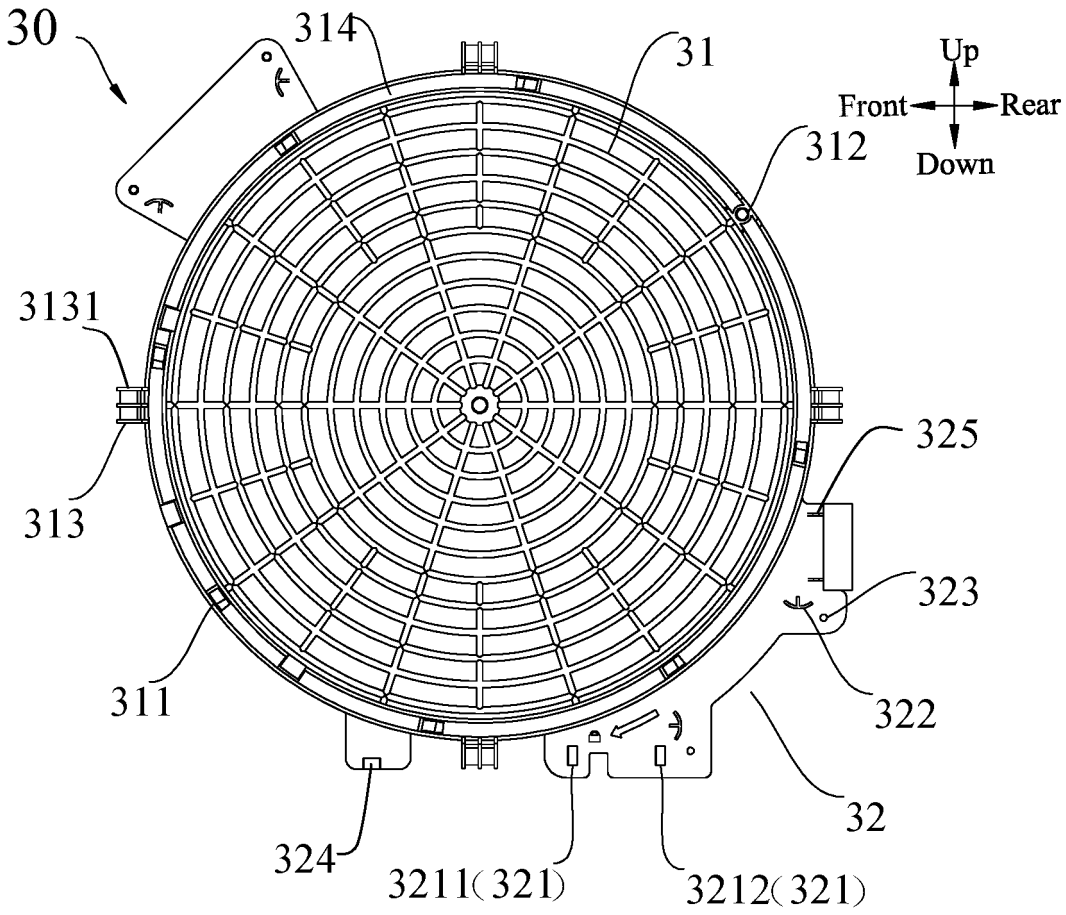
30
314
31
Up
Front
Rear
Down
312
3131
313
325
323
311
322
32
324
3211(321)
3212(321)

FIG. 8

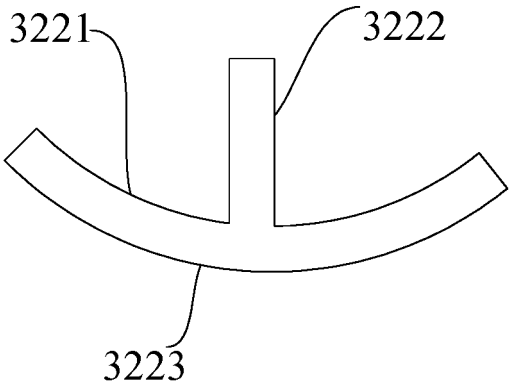
3221
3222
3223

FIG. 9

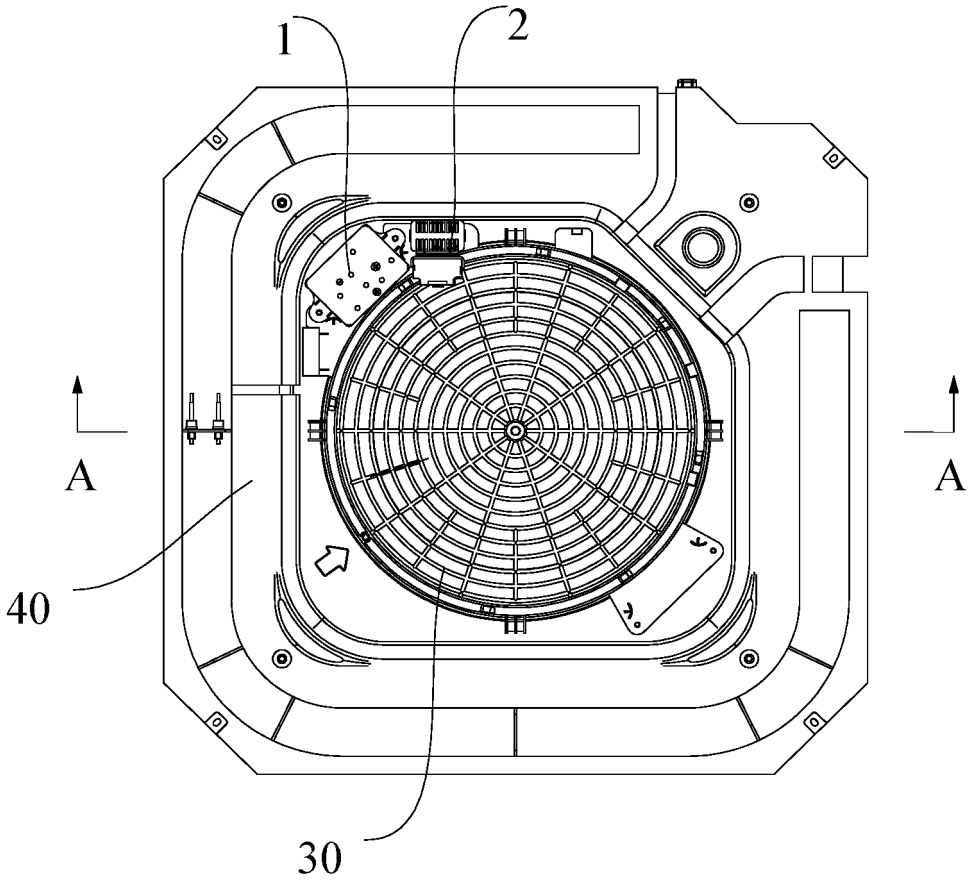

FIG. 10

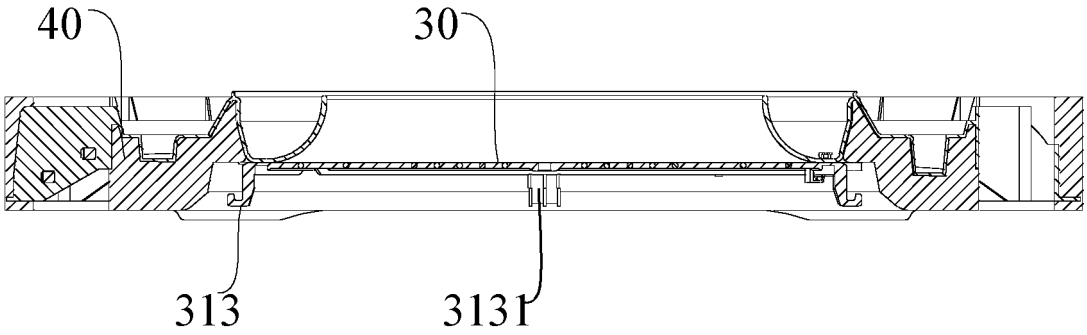

FIG. 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/097737

A. CLASSIFICATION OF SUBJECT MATTER

F24F 13/22(2006.01)i; F24F 13/08(2006.01)i; F24F 1/0007(2019.01)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)

F24F13/-,F24F1/-

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)

CNABS, CNTXT, CNKI, DWPI, SIPOABS, EPTXT, USTXT, WOTXT: 接水盘, 排水盘, 塑料, 发泡, 泡沫, 支撑件, 支撑部, 水槽, 防护网, 网罩, 格栅, 负离子, 温度传感器, 温度感温包, 天花板, 屋顶, drain+, water, pan?, plastic+, foam+, flume?, trough?, sink?, strut+, support+, net+, mesh+, grat+, grill+, negative ion+, anion+, temperature sensor, ceiling+, roof+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 216204250 U (GUANDONG MIDEA HVAC EQUIPMENT CO., LTD. et al.) 05 April 2022 (2022-04-05) description, paragraphs 0031-0063, and figures 1-7	1-14
PX	CN 216204251 U (GUANDONG MIDEA HVAC EQUIPMENT CO., LTD. et al.) 05 April 2022 (2022-04-05) description, paragraphs 0031-0063, and figures 1-7	1-14
PY	CN 216203737 U (GUANGDONG MIDEA HVAC EQUIPMENT CO., LTD.) 05 April 2022 (2022-04-05) description, paragraphs 0035-0060, and figures 1-4	15-19
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☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
19 August 2022	**07 September 2022**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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REFERENCES CITED IN THE DESCRIPTION

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