(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 459 197 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
06.11.2024 Bulletin 2024/45

(21) Application number: **22913352.5**

(22) Date of filing: **29.07.2022**

(51) International Patent Classification (IPC):
F24F 6/04 *(2006.01)* ***F24F 13/00*** *(2006.01)*

(86) International application number:
PCT/CN2022/109139

(87) International publication number:
WO 2023/124065 (06.07.2023 Gazette 2023/27)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **31.12.2021 CN 202111683444**

(71) Applicant: **Gree Electric Appliances, Inc. of Zhuhai**
Zhuhai, Guangdong 519070 (CN)

(72) Inventors:
- **LIU, Xumei**
  Zhuhai, Guangdong 519070 (CN)
- **LI, Xinyi**
  Zhuhai, Guangdong 519070 (CN)
- **LIN, Zhenhua**
  Zhuhai, Guangdong 519070 (CN)
- **GAO, Fei**
  Zhuhai, Guangdong 519070 (CN)
- **LAI, Daying**
  Zhuhai, Guangdong 519070 (CN)
- **KU, Cancan**
  Zhuhai, Guangdong 519070 (CN)

(74) Representative: **Hoffmann Eitle**
Patent- und Rechtsanwälte PartmbB
Arabellastraße 30
81925 München (DE)

(54) HUMIDIFYING APPARATUS

(57) This application relates to technical field of household appliances, specifically to a humidifying apparatus, including a water tank, a water pump, a wet curtain assembly, and a water passage structure. The water tank has a water storage chamber. A water inlet of the water pump is adapted to communicate with the water storage chamber. The wet curtain assembly is disposed above the water storage chamber and has a water supply port and a drainage port. The water passage structure is an integrated structure and includes a water inlet channel and a return water channel spaced apart from each other. An upper end of the water inlet channel is connected to the water supply port, and an upper end of the return water channel is connected to the drainage port. A lower end of the water inlet channel is connected to a water outlet of the water pump, and a lower end of the return water channel is in communication with an inside of the water storage chamber. By integrating the water inlet channel and the return water channel into the integrated structure, assembly efficiency can be improved and tooling costs may be saved.

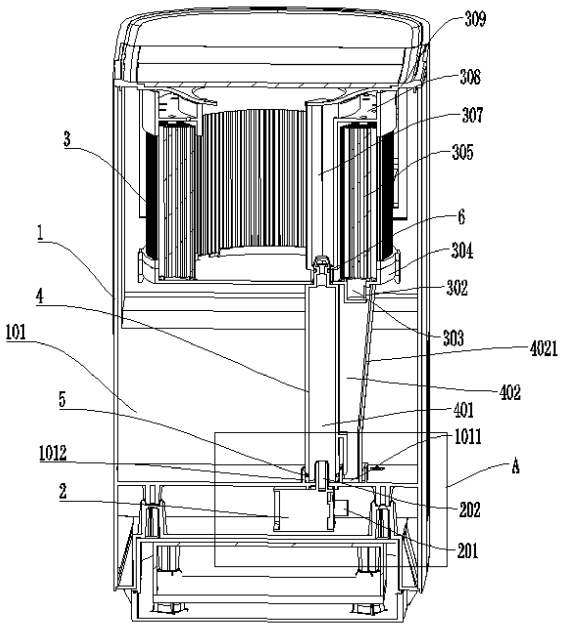

FIG. 1

EP 4 459 197 A1

Description

[0001] The present application claims priority to Chinese patent application No. 202111683444.6, filed on December 31, 2021, and entitled "HUMIDIFYING APPARATUS".

TECHNICAL FIELD

[0002] This application relates to the technical field of household appliances, specifically, to a humidifying apparatus.

BACKGROUND

[0003] As people's demands become higher and higher, evaporative-type humidifying apparatuses without white powder are increasingly accepted by the market. Among the evaporative-type humidifying apparatuses in the market, most have immersive-type wet curtains and water-pump-based spray-type wet curtains. The immersive-type wet curtains tend to become moldy and smelly during use, thus resulting in poor user experience. Considering this problem, designers tend to design water-pump-based spray-type wet curtains. When the water-pump-based spray-type wet curtain is arranged above a water surface, a water passage needs to be constructed between the water and the wet curtain. The existing water passage mostly includes two independent and unconnected water channels: a water supply channel and a drainage channel. During a process of manufacture, the water supply channel and the drainage channel need to be processed separately. On the one hand, the assembly efficiency is low, and on the other hand, the tooling cost is high.

SUMMARY

[0004] Therefore, the technical problem to be solved by this application is to overcome the deficiency of low assembly efficiency of the humidifying apparatus in the prior art, and a humidifying apparatus that can improve the assembly efficiency is provided.

[0005] In order to solve the above technical problems, this application provides a humidifying apparatus, including a water tank, a water pump, a wet curtain assembly, and a water passage structure. The water tank has a water storage chamber. A water inlet of the water pump is adapted to communicate with the water storage chamber. The wet curtain assembly is disposed above the water storage chamber and has a water supply port and a drainage port. The water passage structure is an integrated structure and includes a water inlet channel and a return water channel spaced apart from each other. An upper end of the water inlet channel is connected to the water supply port, and an upper end of the return water channel is connected to the drainage port. A lower end of the water inlet channel is connected to a water outlet of the water pump, and a lower end of the return water channel is in communication with an inside of the water storage chamber.

[0006] Further, the return water channel includes a water directing surface, and from top to bottom, the water directing surface is configured to incline in a direction approaching the water inlet channel.

[0007] Further, a bottom of the wet curtain assembly is provided with a downwardly recessed water collecting tank, the drainage port is arranged in a side wall of the water collecting tank, and a top end of the water directing surface is configured to extend to a side opposite to the drainage port.

[0008] Further, a bottom end of the return water channel is configured to extend to a bottom of the water storage chamber.

[0009] Further, the water pump is disposed below the water tank; the water tank has a drain outlet; and the water inlet of the water pump is in communication with the drain outlet of the water tank.

[0010] Further, the water outlet of the water pump is configured to penetrate a bottom wall of the water storage chamber and to extend over the bottom wall of the water storage chamber; an annular wall is arranged on the bottom wall of the water storage chamber and surrounds the water outlet of the water pump; and the water inlet channel is sealingly connected to the annular wall through a first sealing ring.

[0011] Further, a first assembly annular groove is formed on an outer side of the lower end of the water inlet channel, and the first sealing ring is arranged inside the first assembly annular groove.

[0012] Further, the wet curtain assembly includes a bottom cover, a wet curtain, and a net cover. The water supply port and the drainage port are both arranged in the bottom cover. The wet curtain is arranged on the bottom cover. The net cover is fixedly connected to the bottom cover and surrounds the wet curtain. The net cover is provided with a liquid distributor located on a top of the wet curtain. A water supply channel is arranged inside the net cover, and a top end of the water supply channel is in communication with the liquid distributor. A top end of the water inlet channel is configured to pass through the water supply port and to be sealingly connected to a bottom end of the water supply channel through a second sealing ring.

[0013] Further, a second assembly annular groove is formed on an outer side of the top end of the water inlet channel, and the second sealing ring is arranged inside the second assembly annular groove.

[0014] Further, the wet curtain, the bottom cover, and the net cover are arranged inside the water tank and located above the water storage chamber; the wet curtain assembly further includes a bracket for the wet curtain; and the bracket for the wet curtain is fixedly connected to the net cover and supported on a top of the water tank.

[0015] Further, the bracket for the wet curtain has a through hole corresponding to a center of the wet curtain;

the bracket for the wet curtain is provided with a water guiding surface surrounding the through hole; and the water guiding surface is configured to guide water to flow to the bottom cover.

[0016] In the humidifying apparatus provided by this application, the upper end of the water inlet channel is connected to the water supply port of the wet curtain assembly, and the lower end of the water inlet channel is connected to the water outlet of the water pump, which can pump the water in the water tank to the wet curtain assembly and supply water for the wet curtain assembly. When air passes through the wet curtain assembly, the humidity of the air increases. The water flowing down from the wet curtain assembly can flow back into the water storage chamber through the drainage port and the return water channel, so that the water can be recycled. By integrating the water inlet channel and the return water channel into an integrated structure, the assembly efficiency can be improved and the tooling costs can be saved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The drawings in the description that constitute a part of this application are used to provide a further understanding for this application. The illustrative embodiments and the description thereof in this application are used to explain this application, but do not constitute an improper limitation on this application. In the attached drawings:

FIG. 1 is a sectional view of a humidifying apparatus provided in an embodiment of the present application;

FIG. 2 is an enlarged view of a portion A shown in FIG. 1;

FIG. 3 is an exploded view of a wet curtain assembly shown in FIG. 1;

FIG. 4 is a schematic structural view of a bottom cover in FIG. 3; and

FIG. 5 is a schematic structural view of a water passage structure in FIG. 1.

[0018] The drawings above include following reference numerals:

1. water tank; 101. water storage chamber; 1011. annular groove; 1012. annular wall; 2. water pump; 201. water inlet; 202. water outlet; 3. wet curtain assembly; 301. water supply port; 302. drainage port; 303. water collecting tank; 304. bottom cover; 305. wet curtain; 306. net cover; 307. water supply channel; 308. liquid distributor; 309. bracket for wet curtain; 3091. water guiding surface; 4. water passage structure; 401. water inlet channel; 4011. first assembly annular groove; 4012. second assembly annular groove; 402. return water channel; 4021. water directing surface; 5. first sealing ring; 6. second sealing ring.

DETAILED DESCRIPTION

[0019] It should be noted that, as long as there is no conflict, embodiments and features in the embodiments of this application may be combined with each other. This application will be described in detail hereinafter with reference to the accompanying drawings combining with embodiments.

[0020] As people's demands become higher and higher, evaporative-type humidifying apparatuses without white powder are increasingly accepted by the market. Among the evaporative-type humidifying apparatuses in the market, most have immersive-type wet curtains and water-pump-based spray-type wet curtains. The immersive-type wet curtains tend to become moldy and smelly during use, thus resulting in poor user experience. Considering this problem, designers tend to design water-pump-based spray-type wet curtains. When the water-pump-based spray-type wet curtain is arranged above a water surface, a water passage needs to be constructed between the water and the wet curtain. The existing water passage mostly includes two independent and unconnected water channels: a water supply channel and a drainage channel. During a process of manufacture, the water supply channel and the drainage channel need to be processed separately. On the one hand, the assembly efficiency is low, and on the other hand, the tooling cost is high.

[0021] In view of this, this embodiment provides a humidifying apparatus having a high assembly efficiency.

[0022] In an embodiment, as shown in FIGS. 1 to 5, the humidifying apparatus includes a water tank 1, a water pump 2, a wet curtain assembly 3, and a water passage structure 4. The water tank 1 has a water storage chamber 101. A water inlet 201 of the water pump 2 is adapted to communicate with the water storage chamber 101. The wet curtain assembly 3 is disposed above the water storage chamber 101, and the wet curtain assembly 3 has a water supply port 301 and a drainage port 302. The water passage structure 4 is an integrated structure, including a water inlet channel 401 and a return water channel 402 which are spaced apart from each other. An upper end of the water inlet channel 401 is connected to the water supply port 301, and an upper end of the return water channel 402 is connected to the drainage port 302. A lower end of the water inlet channel 401 is connected to the water outlet 202 of the water pump 2, and a lower end of the return water channel 402 communicates with the inside of the water storage chamber 101.

[0023] In this embodiment, the upper end of the water inlet channel 401 is connected to the water supply port 301 of the wet curtain assembly 3, and the lower end of the water inlet channel 401 is connected to the water outlet 202 of the water pump 2, which may pump water in the water tank 1 to the wet curtain assembly 3 and supply water for the wet curtain assembly 3. When air passes through the wet curtain assembly 3, the humidity of the air increases. After passing through the drainage port 302

and the return water channel 402, the water flowing down from the wet curtain assembly 3 may flow back to the water storage chamber 101, thus making the water to be recycled. Through integrating the water inlet channel 401 and the return water channel 402 to be an integrated structure, the assembly efficiency can be improved, and the tooling costs may be saved.

[0024] It should be noted that the humidifying apparatus also includes a main-body structure and a fan disposed in the main-body structure. The water tank 1 is assembled on the main-body structure, and the fan may guide an air flow.

[0025] Based on the above embodiments, in a preferred embodiment, the return water channel 402 includes a water directing surface 4021, and from top to bottom, the water directing surface 4021 inclines in a direction approaching the water inlet channel 401. In this embodiment, by arranging the water directing surface 4021, the water flowing down from the wet curtain assembly 3 may pass through the drainage port 302, then flow along the water directing surface 4021 and flow into the water storage chamber 101, thereby avoiding dripping sounds caused when the water flows back, and reducing noises.

[0026] As shown in FIG. 1, the water directing surface 4021 is arranged at a side away from the water inlet channel 401.

[0027] Based on the embodiments above, in a preferred embodiment, the bottom of the wet curtain assembly 3 is provided with a downwardly recessed water collecting tank 303, and the drainage port 302 is arranged in a side wall of the water collecting tank 303, and the top end of the water directing surface 4021 extends to a side opposite to the drainage port 302. In this embodiment, by arranging the water collecting tank 303 and arranging the drainage port 302 in the side wall of the water collecting tank 303, the return water first flows into the water collecting tank 303, and the bottom wall of the water collecting tank 303 functions as a buffer for the water, then the water flows out from the side wall of the water collecting tank 303, thereby reducing sounds of the flow of water, and further reducing noises.

[0028] Based on the above embodiments, in a preferred embodiment, the bottom end of the return water channel 402 extends to the bottom of the water storage chamber 101. In this embodiment, by configuring the bottom end of the return water channel 402 to extend to the bottom of the water storage chamber 101, the return water flows along the water directing surface 4021 to the bottom of the water storage chamber 101, thereby further reducing the sounds of the flow of water, and further reducing the noises.

[0029] As shown in FIG. 1, an annular groove 1011 is formed on the bottom wall of the water storage chamber 101, and the bottom end of the return water channel 402 is embedded in the annular groove 1011, thereby stably fixing the water passage structure 4.

[0030] Based on the above embodiments, in a preferred embodiment, the water pump 2 is disposed below the water tank 1. The water tank 1 has a drain outlet, and the water inlet 201 of the water pump 2 is in communication with the drain outlet of the water tank 1. In this embodiment, the water pump 2 is disposed outside the water tank 1, and wires supplying power to the water pump 2 are also disposed outside the water tank 1, which facilitates an arrangement of the wires, makes the wires safer, and facilitates the sealing of the water tank 1.

[0031] As shown in FIG. 1, the main-body structure includes a base, and the water pump 2 is disposed on the base and below the water tank 1.

[0032] Based on the above embodiments, in a preferred embodiment, the water outlet 202 of the water pump 2 penetrates the bottom wall of the water storage chamber 101 and extends over the bottom wall of the water storage chamber 101. An annular wall 1012 is arranged on the bottom wall of the water storage chamber 101 and surrounds the water outlet 202 of the water pump 2. The water inlet channel 401 is sealingly connected to the annular wall 1012 through the first sealing ring 5. In this embodiment, by arranging the annular wall 1012 on the bottom wall of the water storage chamber 101, and by sealingly connecting the lower end of the water inlet channel 401 and the annular wall 1012, it is possible to prevent the water in the water storage chamber 101 from flowing out through a gap between the water outlet 202 of the water pump 2 and the bottom wall of the water tank 1. In an alternative embodiment, the lower end of the water inlet channel 401 may penetrate the bottom wall of the water storage chamber 101, and then is connected to the water outlet 202 of the water pump 2, and the water inlet channel 401 is sealingly connected to the bottom wall of the water storage chamber 101.

[0033] Based on the above embodiments, in a preferred embodiment, a first assembly annular groove 4011 is formed on the outer side of the lower end of the water inlet channel 401, and the first sealing ring 5 is arranged inside the first assembly annular groove 4011. In this embodiment, the arrangement of the first assembly annular groove 4011 facilitates a fixed installation of the first sealing ring 5, and moreover, makes it not easy for the first sealing ring 5 to fall off, thereby ensuring the sealing effect.

[0034] Based on the above embodiments, in a preferred embodiment, the wet curtain assembly 3 includes a bottom cover 304, a wet curtain 305, and a net cover 306. The water supply port 301 and the drainage port 302 are both arranged in the bottom cover 304. The wet curtain 305 is arranged on the bottom cover 304. As shown in FIG. 3, the wet curtain 305 is in an annular shape, and the net cover 306 is fixedly connected to the bottom cover 304 and surrounds the wet curtain 305. The net cover 306 is a hollowed-out supporter, which will not affect the entering of air. The net cover 306 is provided with a liquid distributor 308 located on the top of the wet curtain 305. A water supply channel 307 is arranged inside the net cover 306, and the top end of the water

supply channel 307 and the liquid distributor 308 communicate. The top end of the water inlet channel 401 passes through the water supply port 301 and is sealingly connected to the bottom end of the water supply channel 307 through the second sealing ring 6. In this embodiment, water in the water storage chamber 101 is pumped by the water pump 2 to pass through the water inlet channel 401 and the water supply channel 307 and arrive at the liquid distributor 308. The liquid distributor 308 has a plurality of uniformly distributed liquid distribution holes, which allows water to flow evenly to the wet curtain 305 to humidify the wet curtain 305. When the air passes through the wet curtain 305, the humidity of the air increases. The water flowing down from the wet curtain 305 may flow back to the water storage chamber 101 through the drainage port 302 and the return water channel 402, thus making the water to be recycled.

[0035] Further referring to FIG. 3, the net cover 306 is provided with a buckle and may be connected to the bottom cover 304 by the buckle.

[0036] Based on the above embodiments, in a preferred embodiment, a second assembly annular groove 4012 is formed on the outer side of the top end of the water inlet channel 401, and the second sealing ring 6 is arranged inside the second assembly annular groove 4012. In this embodiment, the arrangement of the second assembly annular groove 4012 facilitates a fixed installation of the second sealing ring 6, and moreover, makes it not easy for the second sealing ring 6 to fall off, thereby ensuring the sealing effect.

[0037] Based on the above embodiments, in a preferred embodiment, the wet curtain 305, the bottom cover 304, and the net cover 306 are arranged inside the water tank 1 and located above the water storage chamber 101. The wet curtain assembly 3 further includes a bracket 309 for the wet curtain, and the bracket 309 for the wet curtain is fixedly connected to the net cover 306 and supported on the top of the water tank 1. In this embodiment, the arrangement of the bracket 309 for the wet curtain facilitates the installation and fixation of the wet curtain assembly 3. Specifically, after the wet curtain assembly 3 is assembled, the bracket 309 for the wet curtain is supported on the top of the water tank 1, thereby hanging the entire wet curtain assembly at an upper location of the water tank 1.

[0038] Based on the above embodiments, in a preferred embodiment, as shown in FIG. 3, the bracket 309 for the wet curtain has a through hole corresponding to the center of the wet curtain 305, and the bracket 309 for the wet curtain is provided with a water guiding surface 3091 surrounding the through hole. The water guiding surface 3091 may guide the water to flow to the bottom cover 304. In this embodiment, the arrangement of the water guiding surface 3091 makes it easy to add water into the water tank. While being added, the water flows along the water guiding surface 3091 and then flows to the bottom cover 304, then flows back to the water storage chamber through the water collecting tank 303 on the bottom cover 304.

[0039] It should be noted that the terms used herein are only for describing specific embodiments, but not intended to limit the exemplary embodiments according to the present application. As used herein, the singular forms are also intended to include the plural forms unless the context clearly indicates. Furthermore, it should be understood that when the terms "comprise" and/or "include" are used in this specification, they indicate that there are features, steps, operations, devices, components and/or combinations thereof.

[0040] The relative arrangement of components and steps, numerical expressions, and numerical values set forth in these embodiments do not limit the scope of the application unless specifically stated otherwise. Moreover, it should be understood that, for convenience of description, the dimensions of various parts shown in the drawings are not drawn according to actual proportional relationships. Techniques, methods and devices known to those of ordinary skill in the related art may not be discussed in detail, but where appropriate, such techniques, methods and devices should be considered as part of the authorized specification. In all embodiments shown and discussed herein, any specific values are to be construed as illustrative only and not as limiting. Accordingly, other examples of the exemplary embodiments may have different values. It should be noted that similar reference numerals and letters refer to similar items in the following figures, therefore, once an item is defined in one figure, it does not need further discussion in subsequent figures.

[0041] In the description of this application, it should be understood that the oriental or positional relationships indicated by oriental words such as "front, back, up, down, left, right", " transverse, longitudinal, vertical, horizontal", and "top, bottom", etc., are usually based on the oriental or positional relationships shown in the figures, which are only for the convenience of describing the present application and simplifying the description. Without explanations to the contrary, these oriental words do not indicate and imply that the referred devices or components must have a specific orientation, or must be constructed and operated in a specific orientation, so they cannot be understood as limiting the scope of the present application. The orientation words "inside and outside" refer to the inside and outside relative to the outline of each component itself.

[0042] For the convenience of description, spatially relative terms, such as "on", "over", "on an upper surface of", "above", etc., may be used herein to describe a spatial relationship between a device or a feature and other devices or features shown in the figures. It should be understood that the spatially relative terms are intended to encompass different orientations of the device in use or in operation in addition to the orientation depicted in the figures. For example, if a device in the figure is turned upside down, then the device described as "above" or "on" other devices or structures would then

be defined as "below" or "under" other devices or structures. Therefore, the exemplary term "above" may include both orientations "above" and "below". The device may be otherwise oriented (rotated 90 degrees or at other orientations), and the relative descriptions for space used herein are interpreted accordingly.

[0043] In addition, it should be noted that the words such as "first" and "second" defining parts are only used to distinguish corresponding parts. Unless otherwise stated, the above words have no special meaning and therefore cannot be understood to limit the scope of protection of this application.

[0044] The above description relates to only preferred embodiments of the present application and is not intended to limit the present application. For those skilled in the art, the present application may have various modifications and changes. Any modifications, equivalent replacements, and improvements, etc., made within the spirits and principles of this application shall be included in the protection scope of this application.

Claims

1. A humidifying apparatus, comprising:

a water tank (1) having a water storage chamber (101);
a water pump (2), a water inlet (201) of the water pump (2) being adapted to communicate with the water storage chamber (101);
a wet curtain assembly (3) disposed above the water storage chamber (101) and having a water supply port (301) and a drainage port (302);
a water passage structure (4) being an integrated structure, and comprising a water inlet channel (401) and a return water channel (402) spaced apart from each other, wherein an upper end of the water inlet channel (401) is connected to the water supply port (301), an upper end of the return water channel (402) is connected to the drainage port (302), a lower end of the water inlet channel (401) is connected to a water outlet (202) of the water pump (2), and a lower end of the return water channel (402) is in communication with an inside of the water storage chamber (101).

2. The humidifying apparatus according to claim 1, wherein the return water channel (402) comprises a water directing surface (4021), and from top to bottom, the water directing surface (4021) is configured to incline in a direction approaching the water inlet channel (401).

3. The humidifying apparatus according to claim 2, wherein a bottom of the wet curtain assembly (3) is provided with a downwardly recessed water collecting tank (303), the drainage port (302) is arranged in a side wall of the water collecting tank (303), and a top end of the water directing surface (4021) is configured to extend to a side opposite to the drainage port (302).

4. The humidifying apparatus according to claim 2, wherein a bottom end of the return water channel (402) is configured to extend to a bottom of the water storage chamber (101).

5. The humidifying apparatus according to any one of claims 1 to 4, wherein the water pump (2) is disposed below the water tank (1); the water tank (1) has a drain outlet; and the water inlet (201) of the water pump (2) is in communication with the drain outlet of the water tank (1).

6. The humidifying apparatus according to claim 5, wherein the water outlet (202) of the water pump (2) is configured to penetrate a bottom wall of the water storage chamber (101) and to extend over the bottom wall of the water storage chamber (101); an annular wall (1012) is arranged on the bottom wall of the water storage chamber (101) and surrounds the water outlet (202) of the water pump (2); and the water inlet channel (401) is sealingly connected to the annular wall (1012) through a first sealing ring (5).

7. The humidifying apparatus according to claim 6, wherein a first assembly annular groove (4011) is formed on an outer side of the lower end of the water inlet channel (401), and the first sealing ring (5) is arranged inside the first assembly annular groove (4011).

8. The humidifying apparatus according to any one of claims 1-4, wherein the wet curtain assembly (3) comprises:

a bottom cover (304), the water supply port (301) and the drainage port (302) being both arranged in the bottom cover (304);
a wet curtain (305) arranged on the bottom cover (304);
a net cover (306) fixedly connected to the bottom cover (304) and surrounding the wet curtain (305), wherein: the net cover (306) is provided with a liquid distributor (308) located on a top of the wet curtain (305); a water supply channel (307) is arranged inside the net cover (306), and a top end of the water supply channel (307) is in communication with the liquid distributor (308); and a top end of the water inlet channel (401) is configured to pass through the water supply port (301) and to be sealingly connected to a bottom end of the water supply channel (307) through a second sealing ring (6).

9. The humidifying apparatus according to claim 8, wherein a second assembly annular groove (4012) is formed on an outer side of the top end of the water inlet channel (401), and the second sealing ring (6) is arranged inside the second assembly annular groove (4012).

10. The humidifying apparatus according to claim 8, wherein the wet curtain (305), the bottom cover (304), and the net cover (306) are arranged inside the water tank (1) and located above the water storage chamber (101); the wet curtain assembly (3) further comprises a bracket (309) for the wet curtain; and the bracket (309) for the wet curtain is fixedly connected to the net cover (306) and supported on a top of the water tank (1).

11. The humidifying apparatus according to claim 10, wherein the bracket (309) for the wet curtain has a through hole corresponding to a center of the wet curtain (305); the bracket (309) for the wet curtain is provided with a water guiding surface (3091) surrounding the through hole; and the water guiding surface (3091) is configured to guide water to flow to the bottom cover (304).

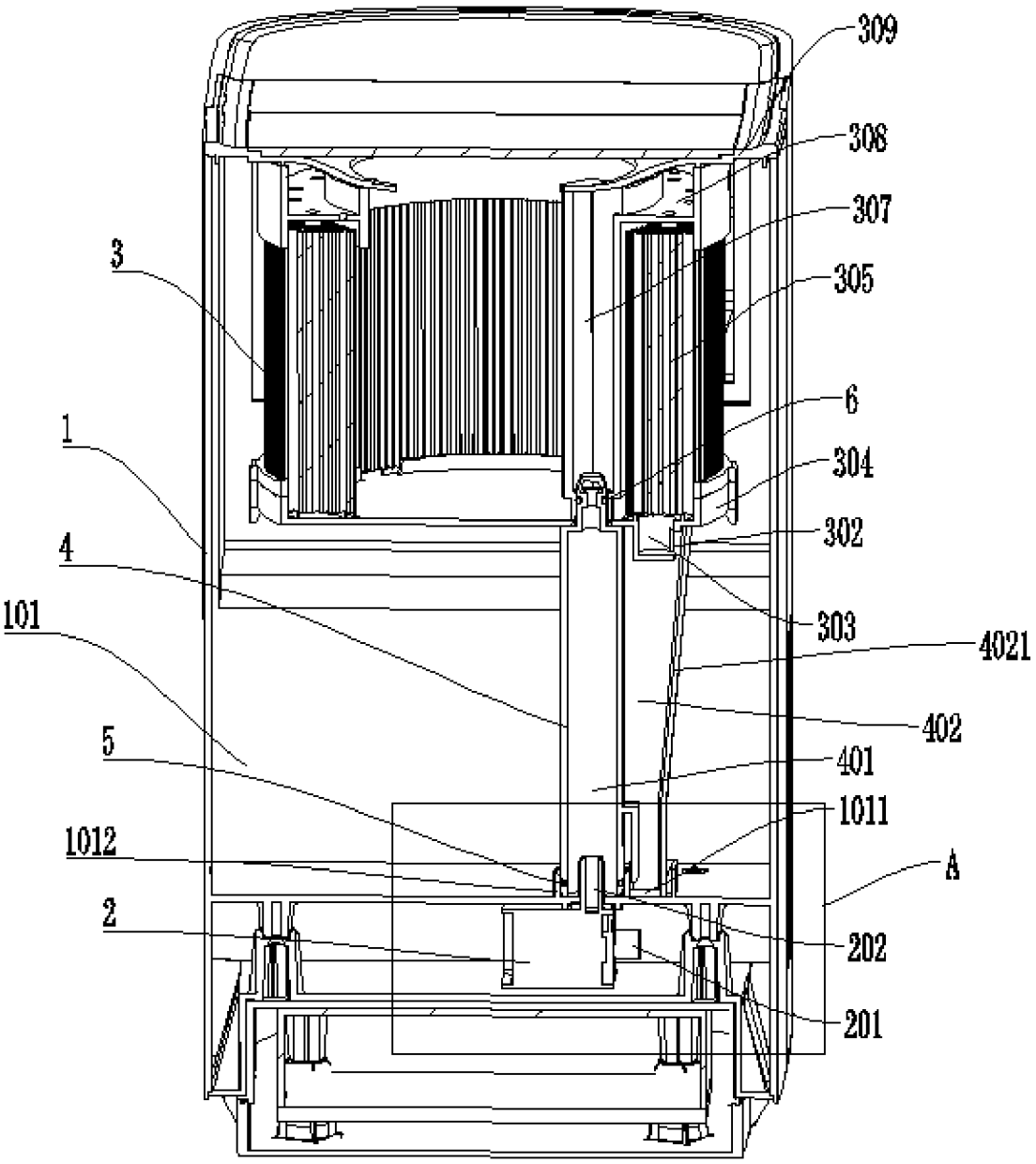
309
308
307
305
3
6
1
304
4
302
303
101
4021
402
5
401
1011
1012
A
2
202
201

FIG. 1

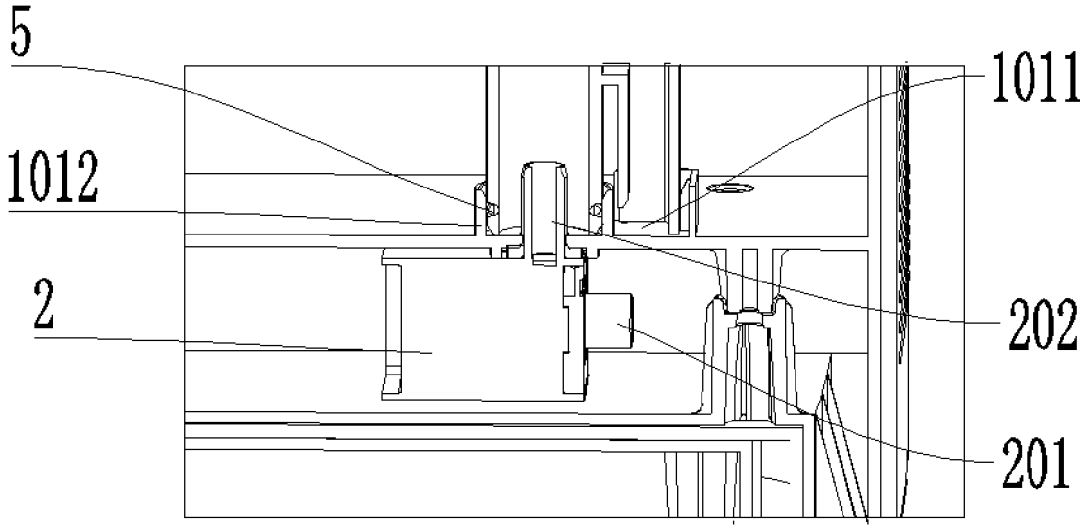

FIG. 2

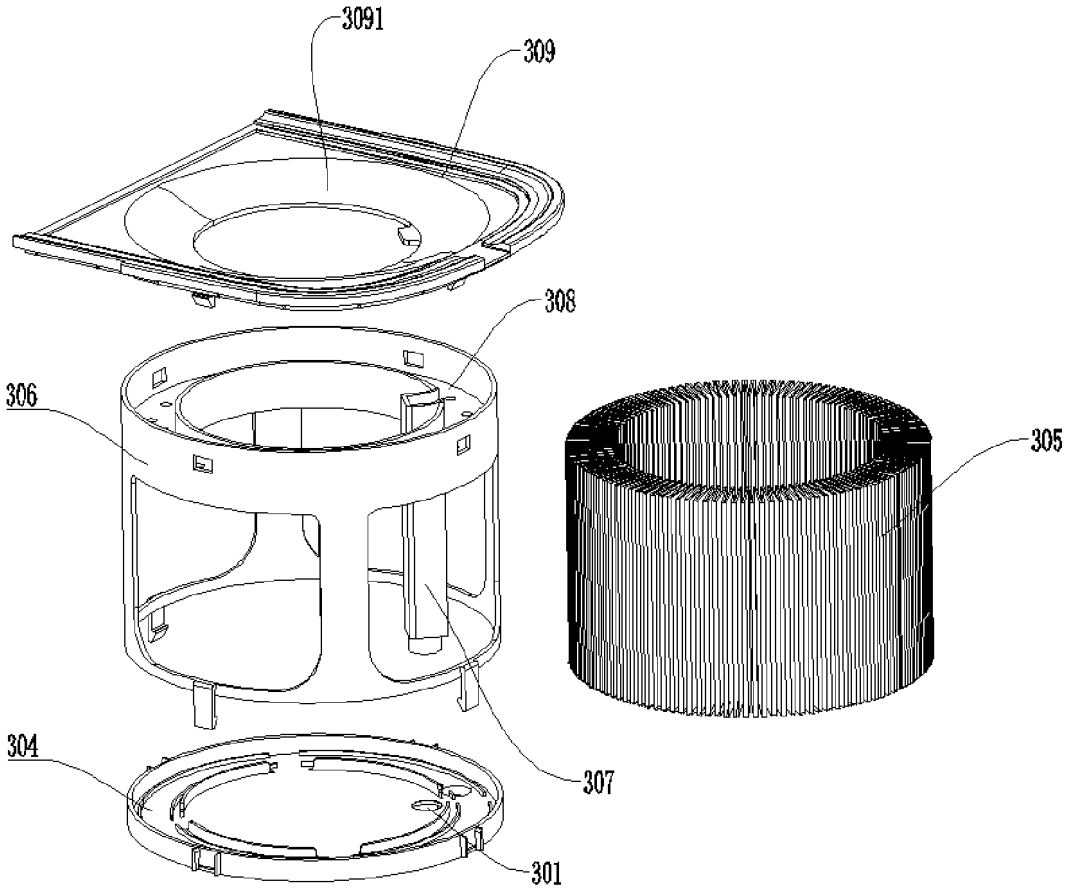

FIG. 3

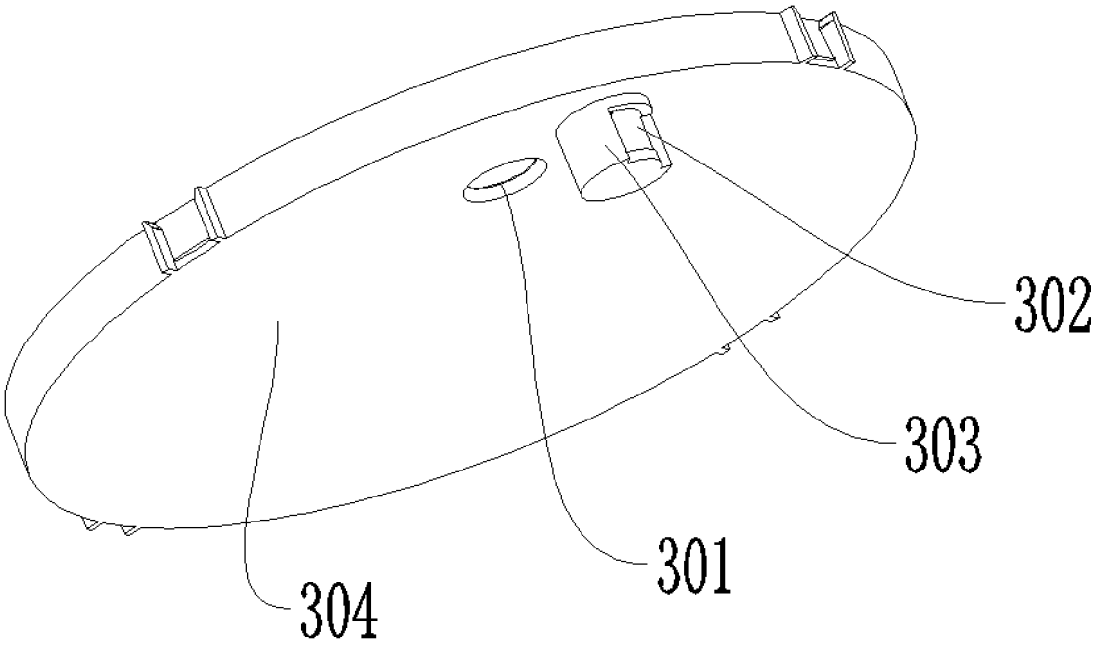

FIG. 4

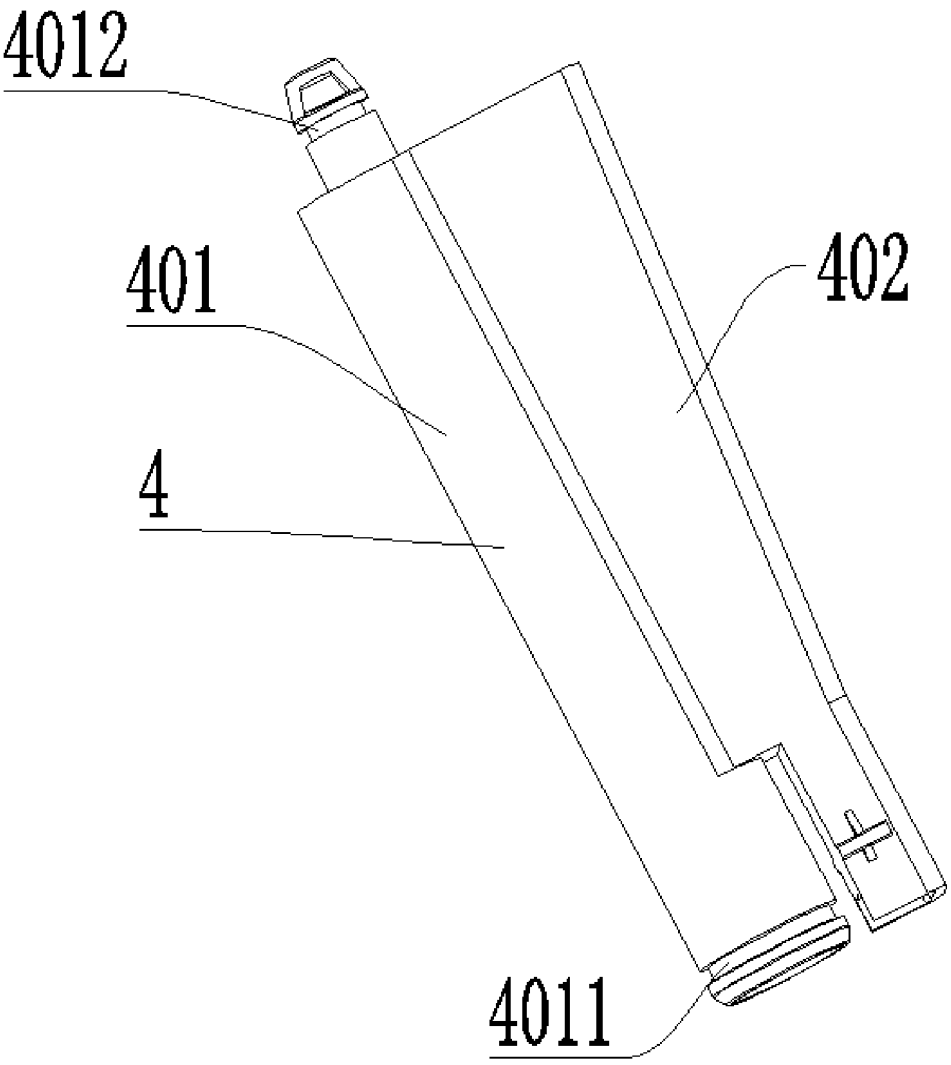

FIG. 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/109139

A. CLASSIFICATION OF SUBJECT MATTER

F24F 6/04(2006.01)i; F24F 13/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

F24F

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; VEN; WPABS; ENTXT; OETXT; DWPI; CNKI; 超星, CHOAXING, 读秀, DUXIU; 格力, 刘旭美, 李芯怡, 林振华, 高飞, 赖达英, 库灿灿, 加湿, 增湿, 湿帘, 湿膜, 分水, 布水, 进水, 供水, 出水, 回水, 一体, 整体, 导流, 倾斜, humidify, wet film, distribute, inlet, supply, outlet, discharge, return, integrate, guidance, slant, incline

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 114151888 A (ZHUHAI GREE ELECTRIC APPLIANCES INC.) 08 March 2022 (2022-03-08) claims 1-11	1-11
Y	CN 204141783 U (QINGDAO HAIER SMART TECHNOLOGY R&D CO., LTD. et al.) 04 February 2015 (2015-02-04) description, paragraphs 36-66, and figures 1-9	1-11
Y	CN 213747121 U (BEIJING SMARTMI TECHNOLOGY CO., LTD.) 20 July 2021 (2021-07-20) description, paragraphs 5-38, and figures 1-6	1-11
Y	CN 201909424 U (HOU QUANDUO) 27 July 2011 (2011-07-27) description, paragraphs 1-15, and figures 1-3	1-11
Y	CN 212673425 U (ZHUHAI GREE ELECTRIC APPLIANCES INC.) 09 March 2021 (2021-03-09) description, paragraphs 21-30, and figures 1-4	2-11
A	US 2021172628 A1 (SAMSUNG ELECTRONICS CO., LTD.) 10 June 2021 (2021-06-10) entire document	1-11

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

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 October 2022	**28 October 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.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2022/109139

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 114151888 A	08 March 2022	CN 216557484 U	17 May 2022
CN 204141783 U	04 February 2015	None	
CN 213747121 U	20 July 2021	None	
CN 201909424 U	27 July 2011	None	
CN 212673425 U	09 March 2021	None	
US 2021172628 A1	10 June 2021	KR 20210073122 A	18 June 2021
		WO 2021118240 A1	17 June 2021

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- CN 202111683444 **[0001]**