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(54) AIR CONDITIONER BASE

(57) Disclosed is an air conditioner base (1), comprising a base body (11), wherein the base body (11) is provided with a fitting part (1121) detachably fitted with an air conditioner body, a body air inlet (1141) and a body air outlet (1151) are formed on the base body (11), a cavity is formed in the base body (11), and a fan (122) and an air handling module (13) are formed in the cavity. The base can be detachably fitted with the air conditioner body, and can implement an additional air handling function independent from the air conditioner body.

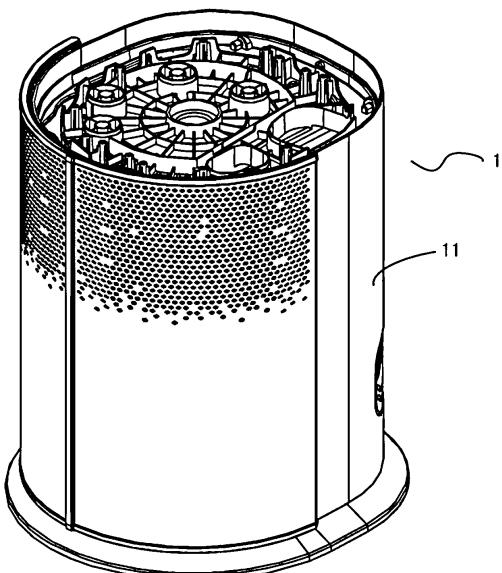


Fig. 1

Description**Technical Field**

[0001] The present invention relates to the field of air conditioning technology and, more particularly, to an air conditioner base.

Background of the Invention

[0002] With the advancement of technology and the improvement of living environment quality requirements, the function of air conditioners which are commonly used in home and office environment is increasing. The air conditioners are no longer simply to provide refrigeration and heating of indoor air, humidification, purification and other functions on the indoor air are added.

[0003] At present, the handling methods commonly used by the air conditioners to achieve the humidification, purification, etc. of the indoor air lie in not changing the original structure of the air conditioners, but providing additional air handling modules such as a humidification module and a purification module in the original air duct of the air conditioners. When the air conditioner is powered on to run the refrigeration or heating, these additional air handling modules also work to achieve the humidification, purification and other handling of the indoor air.

[0004] The aforementioned handling method has the following disadvantages: firstly, the realization of the additional air handling functions is dependent on the original structure and operation of the air conditioners and can not be controlled separately. Secondly, once the air conditioner is shipped, the additional air handling functions have been determined, which cannot be changed by the user, so that it is difficult to achieve personalized needs. Thirdly, due to the increase of the additional air handling modules, they occupy the original space and air duct of the air conditioner, and affects the original air conditioning performance of the air conditioner; in order to achieve the coordination and matching of the normal air conditioning and additional air conditioning, there is a need to pay a lot of research and development costs on the design of the structure of the air conditioner and electronic control.

Summary of the Invention

[0005] An object of the present invention is to provide an air conditioner base which is detachably fitted with an air conditioner and in which a separate air supply system and an air handling module are provided to effect air handling, such that at least one of the above disadvantages existed in the existing air conditioners with additional air handling functions is solved.

[0006] In order to realize the above object of the present invention, the present invention uses the technical solution as follows:

[0007] an air conditioner base, comprising a base body, wherein the base body is provided with an fitting part detachably fitted with an air conditioner body, a body air inlet and a body air outlet are formed on the base body, a cavity is formed in the base body, and a fan and an air handling module are formed in the cavity.

[0008] The fitting part is provided on the base body, so that the base can be detachably fitted with the air conditioner body. The air inlet and the air outlet are formed on the base body, and the fan and the air handling module are formed inside the base body, so that the base itself forms a separate air supply system, and the air handling module is used to handle air based on the air supply system. Therefore, after the air conditioner base and the air conditioner body are fitted together, the additional air handling function achieved by the base is independent from the air conditioner body, which does not affect the original structure of the air conditioner body, and can run independently rather than relying on the operation of the original air conditioner body.

[0009] In the air conditioner base as described above, in order to achieve a modular structure, an air outflow assembly is formed in the cavity, and the air outflow assembly comprises an air outflow frame in which the fan is formed; and the air outflow frame is formed with an air outflow frame air inlet and a first air outflow frame air outlet, the first air outflow frame air outlet being located between the air outflow frame air inlet and the fitting part, the air outflow frame air inlet is in communication with the body air inlet, and the first air outflow frame air outlet is in communication with the body air outlet.

[0010] In the air conditioner base as described above, the first air outflow frame air outlet is formed on a side surface of the air outflow frame with a structure in which an air outflow angle is greater than 180°, so as to increase the air outflow range of the base.

[0011] In the air conditioner base as described above, in order to further increase the air outflow range and ways of the base, a fitting part air outlet is formed on the fitting part, and the air outflow frame is formed with a second air outflow frame air outlet which is located between the first air outflow frame air outlet and the fitting part air outlet, the second air outflow frame air outlet being in communication with the fitting part air outlet.

[0012] In the air conditioner base as described above, the air handling module is formed on the air outflow frame between the air outflow frame air inlet and the first air outflow frame air outlet.

[0013] In the air conditioner base as described above, the air handling module is formed on the air outflow frame with a pullable structure, so as to facilitate the replacement of the air handling module to meet the personalized needs of users.

[0014] In the air conditioner base as described above, an electrical cabinet is further formed in the cavity, a wire opening through which a wire passes is formed on the fitting part, and the wire connected to the electrical cabinet extends out of the base body through the wire open-

ing.

[0015] In the air conditioner base as described above, in order to ensure the smooth air inlet and outlet of the base, the electrical cabinet is remote from the body air inlet, and the electrical cabinet, the body air inlet and the air handling module enclose an air inlet chamber.

[0016] In the air conditioner base as described above, the fitting part is further provided with a connecting pipe opening through which an air conditioner connecting pipe passes.

[0017] In the air conditioner base as described above, the base body comprises a bottom seat and a base main body which are detachably connected, the fitting part is formed on the base main body at the end opposite to the bottom seat, a base support is formed between the bottom seat and the fitting part, an outer periphery of the base main body is formed with a housing surrounding the base main body, and the body air inlet and the body air outlet are both formed on the housing.

[0018] Compared with the prior art, the present invention has the following advantages and positive effects: in the present invention, the fitting part is provided on the base body, so that the base can be detachably fitted with the air conditioner body; and the air inlet and the air outlet are formed on the base body, and the fan and the air handling module are formed inside the base body, so that the base itself forms a separate air supply system, and the air handling module is used to handle air based on the air supply system. Therefore, after the air conditioner base and the air conditioner body are fitted together, the additional air handling function achieved by the base is independent from the air conditioner body, which does not affect the original structure of the air conditioner body, and can run independently rather than relying on the operation of the original air conditioner body.

[0019] Other features and advantages of the present invention will become clearer after reading the embodiments of the present invention, with reference to the appended drawings.

Brief Description of the Drawings

[0020]

Fig. 1 is a perspective view of an embodiment of an air conditioner base of the present invention; and Fig. 2 is a structural exploded view of Fig. 1.

Detailed Description of the Invention

[0021] In order to make the purposes, technical solutions and advantages of the present invention clearer and more comprehensible, the present invention is further illustrated in detail below in conjunction with the accompanying drawings and embodiments.

[0022] Reference is made to an embodiment of the air conditioner base of the present invention shown in Figs. 1 and 2. Fig. 1 is a perspective view of the embodiment,

and Fig. 2 is a structural exploded view of the embodiment.

[0023] As shown in Figs. 1 and 2, the air conditioner base 1 of this embodiment is generally cylindrical. However, it is not limited to the cylindrical structure, and may be selected according to the structure of the air conditioner body to be fitted. For example, the air conditioner body to be fitted is rectangular, and then the overall air conditioner base is also rectangular, or cube, and so on.

5 The air conditioner base 1 comprises a base body 11, which has a fitting part 1121 on the base body 11, and the fitting part 1121 is used to enable the base 1 to be detachably fitted with the air conditioner body. Thus, the base 1 becomes a structure substantially independent from the air conditioner body. A body air inlet 1141 and a body air outlet 1151 are formed on the base body 11, a cavity is formed in the base body 11, and a fan 122 and an air handling module 13 are formed in the cavity.

10 The air conditioner base 1 comprises a base body 11, which has a fitting part 1121 on the base body 11, and the fitting part 1121 is used to enable the base 1 to be detachably fitted with the air conditioner body. Thus, the base 1 becomes a structure substantially independent from the air conditioner body. A body air inlet 1141 and a body air outlet 1151 are formed on the base body 11, a cavity is formed in the base body 11, and a fan 122 and an air handling module 13 are formed in the cavity.

15 **[0024]** Since the body air inlet 1141 and the body air outlet 1151 are formed on the base body 11, and the fan 122 and the air handling module 13 are formed in the base body 11, the base 1 itself forms a separate air supply system. By means of the rational design of the structure, when the fan 122 works, the external air is sucked into

20 base body 11 through the body air inlet 1141, passes through the air handling module 13 and is handled thereby, and then is blown out from the body air outlet 1151, such that the handling of air is achieved by using the air handling module 13. For example, if the air handling module 13 is a humidification module, the air will be humidified in the environment; if air handling module 13 is a purification module, the air will be cleaned in the environment; and if the air handling module 13 is an aromatherapy deodorization module, the air will be subjected to aromatherapy deodorization in the environment, and so on. In addition, since the base 1 is substantially independent from the air conditioner body, it can be individually controlled to realize the independent operation of the additional air handling function and the original function of

25 30 35 40 45 the air conditioner. Since the base 1 does not rely on the original space and air duct structure of the air conditioner body, the original air conditioning performance of the air conditioner will not be affected, and there is no need to specially design the structure of the air duct of the air conditioner, thereby simplifying the structure and design for realizing multiple air conditioning functions.

[0025] Specifically, as shown in Fig. 1, the base body 11 comprises a bottom seat 111, a base main body 112, a base support 113, a rear shell 114, and a front shell 115. The bottom seat 111 is detachably connected to the base main body 112 as a chassis structure for the entire base 1. For example, the detachable connection is made by screws, fasteners, and the like. The fitting part 1121 of the entire base 1 is formed on the base main body 112

50 55 at the top end opposite to the bottom seat 111, so that the fitting part 1121 is located at the top of the entire base 1. The base main body 112 is internally formed with a cavity for accommodating the fan 122, the air handling

module 13, and other structures to be fitted. In this way, it is bound to make the supporting strength of the base main body 112 become worse. In order to increase the supporting strength and supporting stability of the entire base 1, a base support 113 is formed between the bottom seat 111 and the base main body 112, and specifically between the bottom seat 111 and the fitting part 1121. An outer periphery of the base main body 112 is formed with a shell surrounding the base main body 112. Specifically, the housing surrounding the base main body 112 comprises a rear shell 114 and a front shell 115, and the front shell 115 is divided into left and right portions. The rear shell 114 and the front shell 115 are respectively fixedly connected to the bottom seat 111, the base main body 112 and the base support 113 via fasteners, screws or the like. The body air inlet 1141 is formed on the rear shell 114 for introducing external air; and the body air outlet 1151 is formed on the front shell 115 for delivering the air handled by the air handling module 13.

[0026] An air outflow assembly 12 is formed in the cavity formed by the base main body 112, which air outflow assembly 12 comprises an air outflow frame 121, and the fan 122 is formed in the air outflow frame 121. Specifically, the air outflow assembly 12 and the base main body 112 are fixed via a fastener, a screw or the like; and the fan 122 is a centrifugal fan and is fixed in the air outflow frame 121. Opening are provided at two ends of the air outflow frame 121, with one end facing the bottom seat 111 and the other end facing the fitting part 1121. The air outflow frame 121 forms an air outflow frame air inlet 1211 at the end of the bottom seat 111 and is in communication with the body air inlet 1141 on the base body 11; and the air outflow frame 121 forms a second air outflow frame air outlet 1213 at the end facing the fitting part 1121. A first air outflow frame air outlet 1212 is formed on the air outflow frame 121 between the air outflow frame air inlet 1211 and the second air outflow frame air outlet 1213. The first air outflow frame air outlet body air 1212 is in communication with the body air outlet 1131 on the base body 11. Preferably, the first air outflow frame air outlet body air 1212 is formed on a side surface of the air outflow frame 121 with a structure in which an air outflow angle is greater than 180°, thereby increasing the air outflow range. In this embodiment, the first air outflow frame air outlet body air 1212 comprises three outlet ports distributed on the side surface of the air outflow frame 121 at intervals, and an air supply angle of about 270° can be formed. The air handling module 13 is also formed on the air outflow frame 121, in particular, the air handling module 13 is formed between the air outflow frame air inlet 1211 and the first air outflow frame air outlet 1212. Preferably, the air handling module 13 is formed on the air outflow frame 121 with a pullable structure to facilitate the after-sales service and the replacement of the air handling module of the same type by the user, and the air handling modules having different air handling functions can be mounted as required, so as to facilitate use of the air handling modules to meet the per-

sonalized needs of users.

[0027] In the cavity formed by the base main body 112, an electrical cabinet 14 is formed below the air outflow assembly 12. Specifically, the electrical cabinet 14 is inserted into the cavity and fixed to the base main body 112 via a screw. A control panel of the base 1 can be placed in the electrical cabinet 14, and a control panel of the air conditioner body fitted with the base 1 can also be placed. Preferably, the control panels of the base 1 and the air conditioner body are both placed in the electrical cabinet 14. Moreover, the electrical cabinet 14 is remote from the body air inlet 1141 on the base body 11 and may form an air inlet chamber 15 between the electrical cabinet 14, the body air inlet 1141 and the air handling module 13 to ensure that the smooth air inlet and outlet of the base 1.

[0028] On the fitting part 1121, a fitting part air outlet (not marked in the figures), a wire opening 11211 and a connecting pipe opening 11212 are formed. The fitting part air outlet is in communication with the second air outflow frame air outlet 1213 on the air outflow assembly 12. The air handled by the air handling module 13, in addition to being blown out from the first air outflow frame air outlet 1212 and the body air outlet 1151, is blown out from the top of the base 1 through the second air outflow frame air outlet 1213 and the fitting part, to achieve multi-angle, multi-height all-round air supply, so that the air outflow range and ways of the base 1 are increased. The wire opening 11211 provides a channel for the wires electrically connected to the electrical cabinet 14, which allows the wires connected to the electrical cabinet 14 to extend out of the base body 11 through the wire opening 11211. The connecting pipe opening 11212 provides a channel for a connecting pipe which connects an indoor unit and an outdoor unit of the air conditioner.

[0029] The base 1 using the aforementioned structure has a reasonable structure, a wider air outflow range and more air outflow ways, can achieve modular production and fitting, and facilitates personalized selection.

[0030] The above embodiment is merely used to illustrate the technical solution of the present invention, rather than limiting thereto; although the present invention is explained in detail with reference to the aforementioned embodiment, a person skilled in the art still could modify the technical solution disclosed in the aforementioned embodiment or perform equivalent replacements for some of the technical features therein; and such modifications or replacements do not make the essence of the corresponding technical solutions depart from the spirit and scope of the claimed technical solution of the present invention.

Claims

1. An air conditioner base, **characterized by** comprising a base body, wherein the base body is provided with an fitting part detachably fitted with an air con-

ditioner body, a body air inlet and a body air outlet are formed on the base body, a cavity is formed in the base body, and a fan and an air handling module are formed in the cavity.

2. The air conditioner base according to claim 1, **characterized in that** an air outflow assembly is formed in the cavity, and the air outflow assembly comprises an air outflow frame in which the fan is formed; and the air outflow frame is formed with an air outflow frame air inlet and a first air outflow frame air outlet, the first air outflow frame air outlet being located between the air outflow frame air inlet and the fitting part, the air outflow frame air inlet is in communication with the body air inlet, and the first air outflow frame air outlet is in communication with the body air outlet. 5 10 15

3. The air conditioner base according to claim 2, **characterized in that** the first air outflow frame air outlet is formed on a side surface of the air outflow frame with a structure in which an air outflow angle is greater than 180°. 20

4. The air conditioner base according to claim 2, **characterized in that** a fitting part air outlet is formed on the fitting part, and the air outflow frame is formed with a second air outflow frame air outlet which is located between the first air outflow frame air outlet and the fitting part air outlet, the second air outflow frame air outlet being in communication with the fitting part air outlet. 25 30 35

5. The air conditioner base according to claim 2, **characterized in that** the air handling module is formed on the air outflow frame between the air outflow frame air inlet and the first air outflow frame air outlet. 40

6. The air conditioner base according to claim 5, **characterized in that** the air handling module is formed on the air outflow frame with a pullable structure. 45

7. The air conditioner base according to claim 1, **characterized in that** an electrical cabinet is further formed in the cavity, a wire opening through which a wire passes is formed on the fitting part, and the wire connected to the electrical cabinet extends out of the base body through the wire opening. 50

8. The air conditioner base according to claim 7, **characterized in that** the electrical cabinet is remote from the body air inlet, and the electrical cabinet, the body air inlet and the air handling module enclose an air inlet chamber. 55

9. The air conditioner base according to claim 7, **characterized in that** the fitting part is further provided with a connecting pipe opening through which an air

conditioner connecting pipe passes.

10. The air conditioner base according to any one of claims 1 to 9, **characterized in that** the base body comprises a bottom seat and a base main body which are detachably connected, the fitting part is formed on the base main body at the end opposite to the bottom seat, a base support is formed between the bottom seat and the fitting part, an outer periphery of the base main body is formed with a housing surrounding the base main body, and the body air inlet and the body air outlet are both formed on the housing.

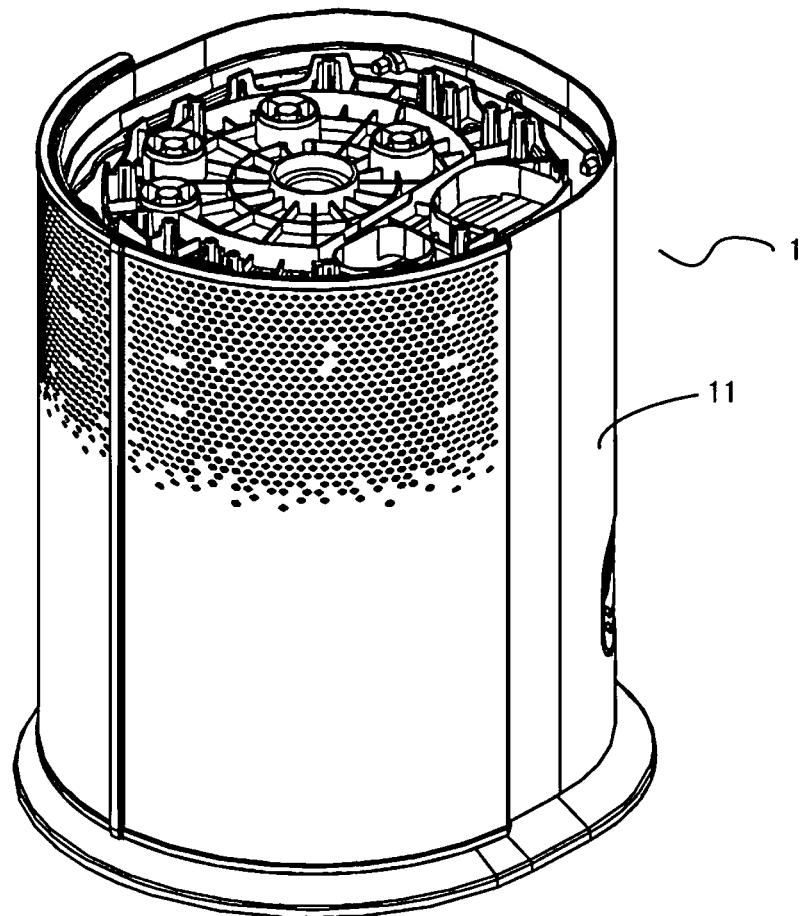


Fig. 1

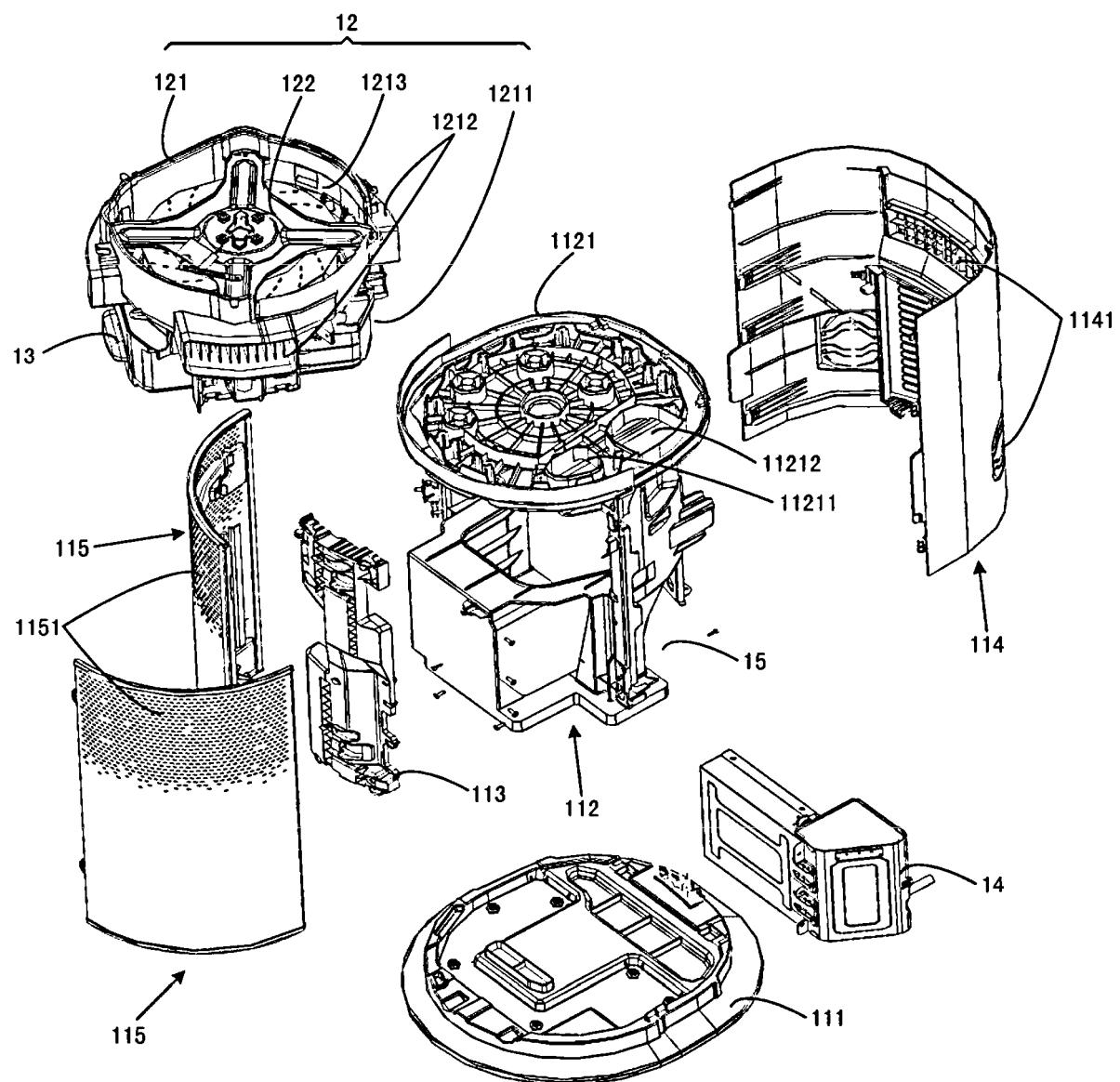


Fig. 2

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| INTERNATIONAL SEARCH REPORT | | International application No. PCT/CN2016/086664 | |
| 5 | A. CLASSIFICATION OF SUBJECT MATTER | | |
| | F24F 13/32 (2006.01) i; F24F 13/06 (2006.01) i; F24F 3/16 (2006.01) i According to International Patent Classification (IPC) or to both national classification and IPC | | |
| 10 | B. FIELDS SEARCHED | | |
| | Minimum documentation searched (classification system followed by classification symbols) F24F | | |
| 15 | 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) CNPAT, CNKI, WPI, EPODOC: air condition, base, assembled, mount, clean, purge, purify | | |
| 20 | C. DOCUMENTS CONSIDERED TO BE RELEVANT | | |
| 25 | Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| | PX | CN 105091307 A (QINGDAO HAIER AIR CONDITIONER CO., LTD.), 25 November 2015 (25.11.2015), claims 1-10 | 1-10 |
| | PX | CN 204943848 U (QINGDAO HAIER AIR CONDITIONER CO., LTD.), 06 January 2016 (06.01.2016), claims 1-10 | 1-10 |
| 30 | X | CN 102444938 A (LG ELECTRONICS INC.), 09 May 2012 (09.05.2012), description, paragraphs [0140]-[0189], and figures 1-8 | 1, 7-9 |
| | X | CN 1952496 A (LG ELECTRONICS (TIANJIN) APPLIANCES CO., LTD.), 25 April 2007 (25.04.2007), description, page 4, line 19 to page 8, line 28, and figures 1-5 | 1, 7-9 |
| | A | CN 2630708 Y (LG ELECTRONICS (TIANJIN) APPLIANCES CO., LTD.), 04 August 2004 (04.08.2004), the whole document | 1-10 |
| | A | EP 2587172 A1 (EMERSON NETWORK POWER SRL), 01 May 2013 (01.05.2013), the whole document | 1-10 |
| 35 | <input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex. | | |
| 40 | <p>* Special categories of cited documents:</p> <p>“A” document defining the general state of the art which is not considered to be of particular relevance</p> <p>“E” earlier application or patent but published on or after the international filing date</p> <p>“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)</p> <p>“O” document referring to an oral disclosure, use, exhibition or other means</p> <p>“P” document published prior to the international filing date but later than the priority date claimed</p> <p>“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</p> <p>“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</p> <p>“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</p> <p>“&” document member of the same patent family</p> | | |
| 45 | Date of the actual completion of the international search 18 September 2016 (18.09.2016) | Date of mailing of the international search report 28 September 2016 (28.09.2016) | |
| 50 | Name and mailing address of the ISA/CN: State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No.: (86-10) 62019451 | Authorized officer XU, Wen Telephone No.: (86-10) 62084882 | |

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2016/086664

| 5 | Patent Documents referred in the Report | Publication Date | Patent Family | Publication Date |
|----|--|------------------|------------------------------------|--------------------------------|
| 10 | CN 105091307 A | 25 November 2015 | None | |
| | CN 204943848 U | 06 January 2016 | None | |
| 15 | CN 102444938 A | 09 May 2012 | CN 102444938 B KR 20120034446 A | 16 March 2016 12 April 2012 |
| 20 | CN 1952496 A | 25 April 2007 | None | |
| 25 | CN 2630708 Y | 04 August 2004 | None | |
| 30 | EP 2587172 A1 | 01 May 2013 | IT PD20110343 A1 | 01 May 2013 |
| 35 | | | | |
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Form PCT/ISA/210 (patent family annex) (July 2009)