



(11)

**EP 2 774 520 A1**

(12)

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

(43) Date of publication:  
**10.09.2014 Bulletin 2014/37**

(51) Int Cl.:  
**A47K 10/48** <sup>(2006.01)</sup>

(21) Application number: **12726001.6**

(86) International application number:  
**PCT/CN2012/075170**

(22) Date of filing: **08.05.2012**

(87) International publication number:  
**WO 2013/063914 (10.05.2013 Gazette 2013/19)**

(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**

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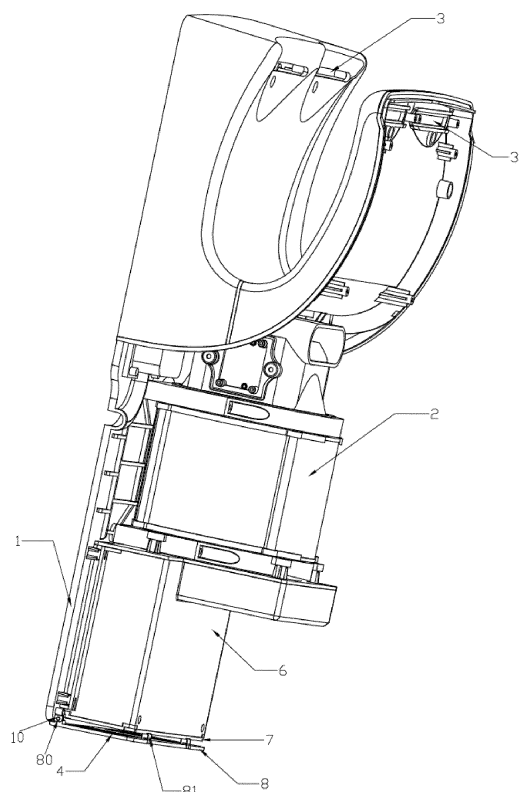
(30) Priority: **05.11.2011 CN 201120435561 U**

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(54) **HIGH-EFFICIENCY AIR INTAKE-VENTILATION APPARATUS OF DUAL-SIDED HAND DRYER**

(57) This invention belongs to a technical field of a hand dryer and, more particularly, relates to a high-efficiency air inlet and outlet device of a double-sided hand dryer. The high-efficiency air inlet and outlet device includes a base, a main frame consisting of a heater and a fan, an air inlet, and two air outlets. A high-efficiency filter is disposed at an air inlet passage inside the air inlet, and a quickly detachable air inlet cover plate is disposed at the air inlet. The structure in the invention is compact, and the filter can be replaced quickly. Further, the invention can filter air in high efficiency, improve the efficiency of flowing in and out of air, and is applicable to different double-sided hand dryers.



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## Description

### BACKGROUND OF THE INVENTION

#### Field of the Invention

**[0001]** This invention belongs to a technical field of a hand dryer and, more particularly, relates to a high-efficiency air inlet and outlet device of a double-sided hand dryer.

#### Description of the Related Art

**[0002]** When a hand dryer is in use, the hand dryer directly sucks air from the outside to the inside of the hand dryer. Since the air inevitably carries impurity, the impurity would flow to the inside of the hand dryer along with the air. Since the impurity has certain volume, partial of air inlet and outlet passages is clogged, such that air circulation is reduced and the efficiency of flowing out of the air is impacted. Some common hand dryers are mounted with a filter, however, the filtering effect of the filter is poor. Further, after a period of time, the filter needs to be replaced. The replacement process is troublesome, the replacement time is long, and these defects are embodied on a double-sided hand dryer too.

### BRIEF SUMMARY OF THE INVENTION

**[0003]** The object of this invention is to provide a high-efficiency air inlet and outlet device of a double-sided hand dryer. The invention has a compact structure, the filter can be quickly replaced, and air can be filtered in high efficiency.

**[0004]** The invention is realized by the following.

**[0005]** A high-efficiency air inlet and outlet device of a double-sided hand dryer includes a base, a main frame consisting of a heater and a fan, an air inlet, and two air outlets. A high-efficiency filter is disposed at an air inlet passage inside the air inlet, and a quickly detachable air inlet cover plate is disposed at the air inlet.

**[0006]** The high-efficiency filter is mounted inside a filter shell body, and the filter shell body is fixedly connected with the base.

**[0007]** The air inlet cover plate is arranged as follows: one end of the air inlet cover plate is hinged on the base, the other end is provided with more than two buckles locked with a shell of the double-sided hand dryer, and a louvred air-inlet grille is disposed at the air inlet cover plate.

**[0008]** The heater is one in quantity and supplies hot air for two air outlet passages respectively, and the two air outlet passages extend to the top of a U-shaped drying part respectively and are interconnected with the air outlets opened on two side walls facing the top.

**[0009]** The heater is two in quantity and is disposed inside two air outlet passages respectively, and the two air outlet passages extend to the top of a U-shaped drying

part respectively and are interconnected with the air outlets opened on two side walls facing the top.

**[0010]** Compared with the prior art, the invention has outstanding advantages as follows.

5 **[0011]** The invention has a high efficiency in air filtering, enabling a high efficiency of flowing in and out of the air. Further, the replacement of the high-efficiency filter is quick and simple.

10 **[0012]** The invention has a compact structure and is applicable to different double-sided hand dryers.

### BRIEF DESCRIPTION OF THE DRAWINGS

#### **[0013]**

15 FIG. 1 is a schematic diagram showing a stereo structure of this invention;

20 FIG. 2 is a schematic diagram showing a connection relationship between a moveable air inlet cover plate and a base of the invention;

25 FIG. 3 is an enlarged schematic diagram showing part A in FIG. 2;

FIG. 4 is an enlarged schematic diagram showing part B in FIG. 2;

30 FIG. 5 is an exploded diagram of a device for fixing a high-efficiency filter of the invention; and

FIG. 6 is a side section schematic diagram of the invention.

### 35 DETAILED DESCRIPTION OF THE INVENTION

**[0014]** This invention is further illustrated below by specific embodiments, referring to FIG. 1 to FIG. 6.

40 **[0015]** A high-efficiency air inlet and outlet device of a double-sided hand dryer includes a base 1, a main frame 2 consisting of a heater and a fan, an air inlet 4, and two air outlets (3, 3'). A high-efficiency filter 5 is disposed at an air inlet passage inside the air inlet 4, and a quickly detachable air inlet cover plate 8 is disposed at the air inlet.

45 **[0016]** The high-efficiency filter 5 is mounted inside a filter shell body, and the filter shell body is formed by the connection of a filter shell 6 and a filter cover plate 7. The filter shell body is fixedly connected with the base 1.

50 **[0017]** One end of the air inlet cover plate 8 is hinged on the base 1, and two sides of one end of the air inlet cover plate 8 are respectively provided with a cylinder shaft 80 connected with a shaft hole 10 on the base 1. The cylinder shaft 80 of the air inlet cover plate 8 is inserted into the shaft hole 10 on the base to form a rotary connection of the air inlet cover plate. The other end of the air inlet cover plate 8 is provided with more than two buckles 81 locked with a shell of the double-sided hand

dryer, and a louvred air-inlet grille 82 is disposed at the air inlet cover plate 8.

**[0018]** The heater is one in quantity and supplies hot air for two air outlet passages (30, 30'), respectively. The two air outlet passages (30, 30') extend to the top of a U-shaped drying part respectively and are interconnected with the air outlets (3, 3') opened on two side walls facing the top.

**[0019]** The heater is two in quantity and is disposed inside two air outlet passages (30, 30'), respectively. The two air outlet passages (30, 30') extend to the top of a U-shaped drying part respectively and are interconnected with the air outlets (3, 3') opened on two side walls facing the top.

**[0020]** When in use according to the invention, the air enters the high-efficiency filter 5 from the air inlet cover plate 8. After being filtered by the high-efficiency filter 5, the clean air enters the fan from the high-efficiency filter 5. After being heated by the heater, the air becomes hot air and then is divided into two air flows to be connected to the two air outlet passages (30, 30') of the double-sided hand dryer, and then the hot air is blown out from the air outlets 3, 3'. In addition, since the invention has an air inlet cover plate 8 hinged on the base 1, once the buckle lock between the air inlet cover plate 8 and the shell is released, the high-efficient filter can be replaced quickly and simply by opening the air inlet cover plate 8.

**[0021]** The above embodiment is only a preferred embodiment of the invention and is not intended to limit the implementation scope of the invention. Therefore, any equivalent changes made according to the shape, structure and principle of the invention are deemed to be included within the protection scope of the invention.

## Claims

1. A high-efficiency air inlet and outlet device of a double-sided hand dryer, comprising: a base, a main frame consisting of a heater and a fan, an air inlet, and two air outlets, wherein a high-efficiency filter is disposed at an air inlet passage inside the air inlet, and a quickly detachable air inlet cover plate is disposed at the air inlet.
2. The high-efficiency air inlet and outlet device of the double-sided hand dryer according to claim 1, wherein the high-efficiency filter is mounted inside a filter shell body, and the filter shell body is fixedly connected with the base.
3. The high-efficiency air inlet and outlet device of the double-sided hand dryer according to claim 1, wherein the air inlet cover plate is arranged as follows: one end of the air inlet cover plate is hinged on the base, the other end is provided with more than two buckles locked with a shell of the double-sided hand dryer, and a louvred air-inlet grille is disposed

at the air inlet cover plate.

4. The high-efficiency air inlet and outlet device of the double-sided hand dryer according to any of claims 1 to 3, wherein the heater is one in quantity and supplies hot air for two air outlet passages respectively, and the two air outlet passages extend to the top of a U-shaped drying part respectively and are interconnected with the air outlets opened on two side walls facing the top.
5. The high-efficiency air inlet and outlet device of the double-sided hand dryer according to any of claims 1 to 3, wherein the heater is two in quantity and is disposed inside two air outlet passages respectively, and the two air outlet passages extend to the top of a U-shaped drying part respectively and are interconnected with the air outlets opened on two side walls facing the top.

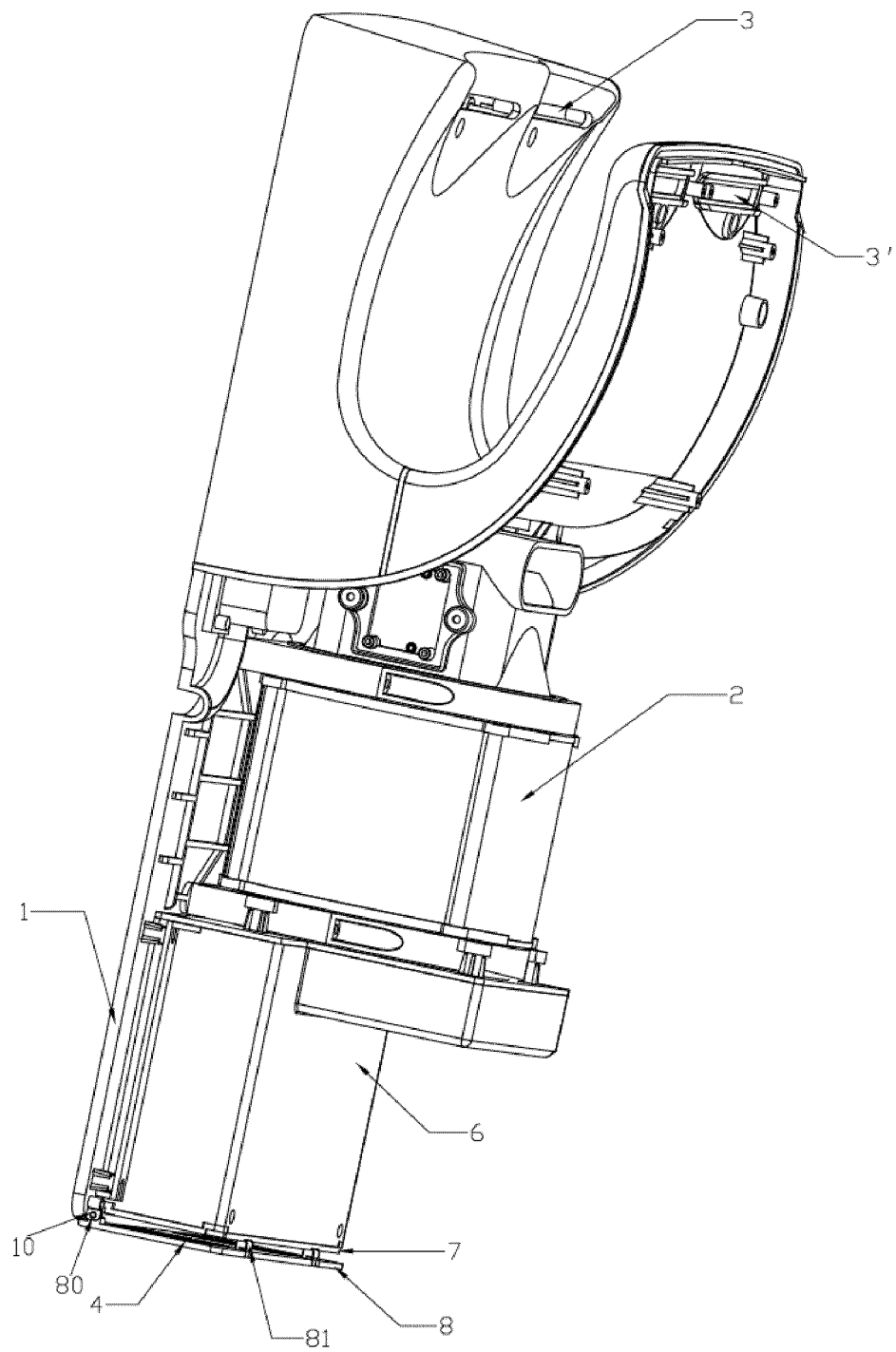
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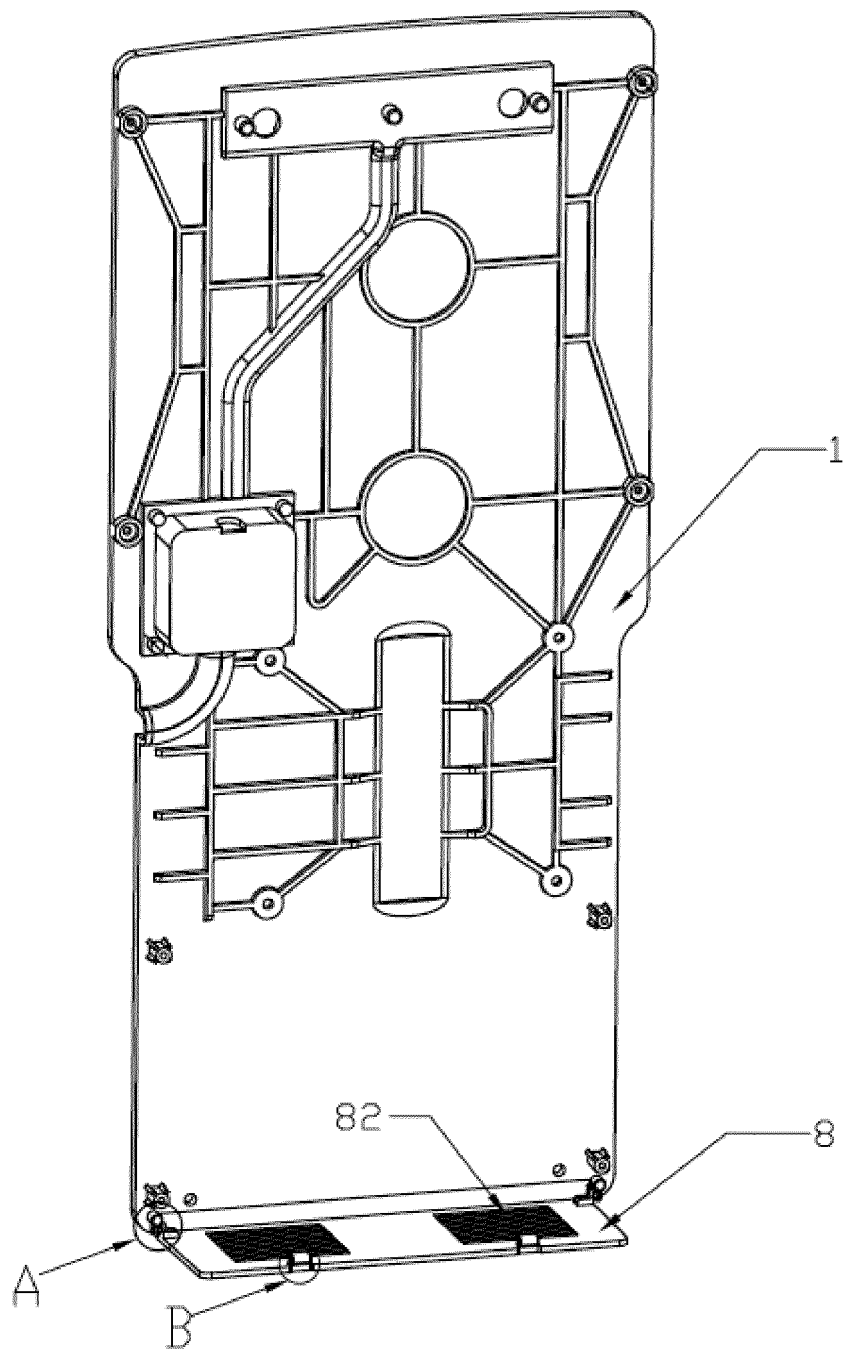
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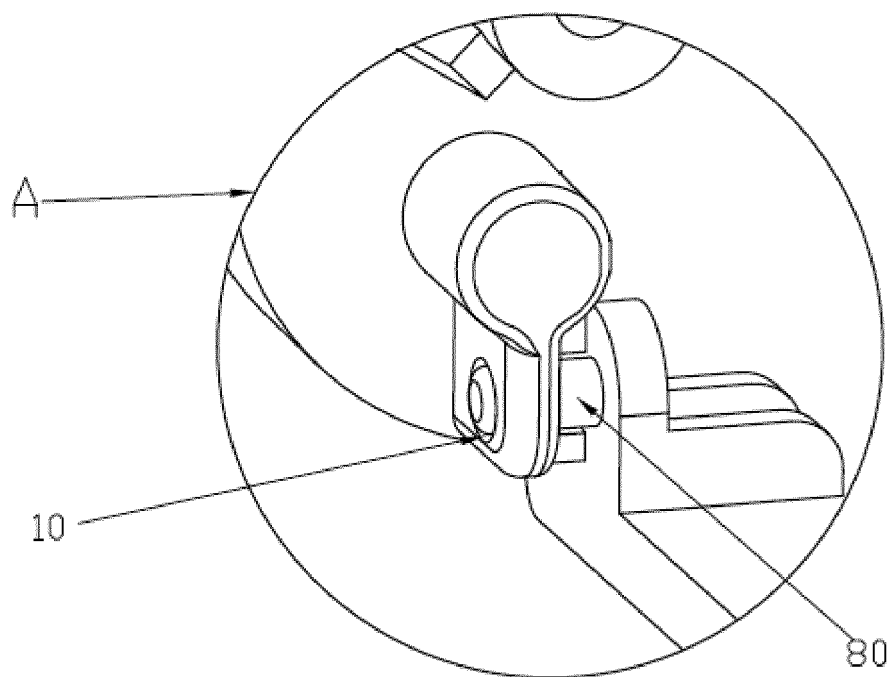
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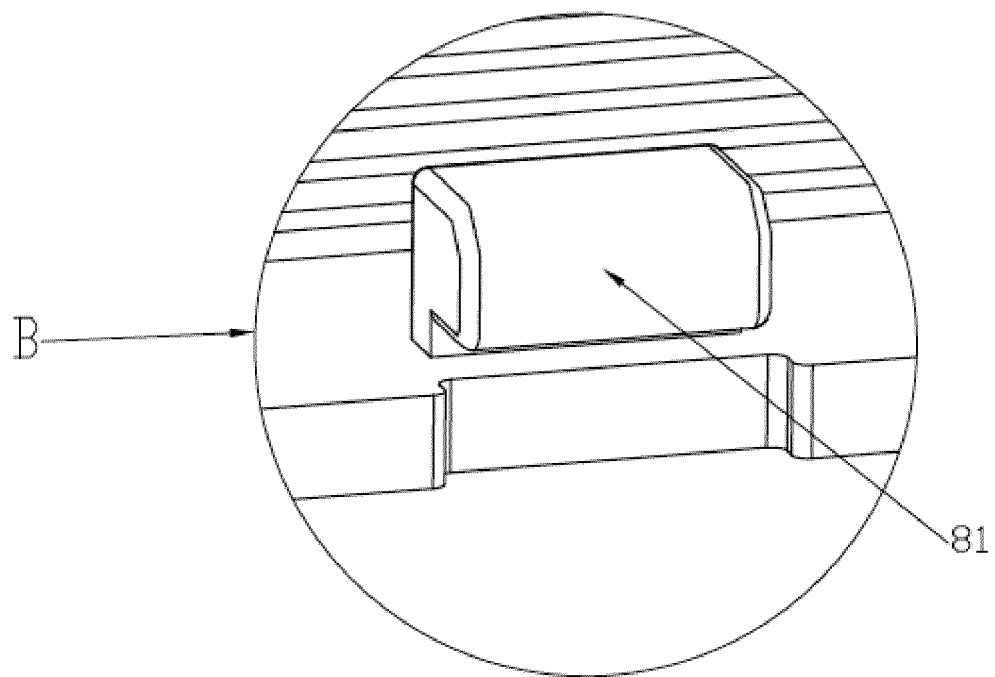
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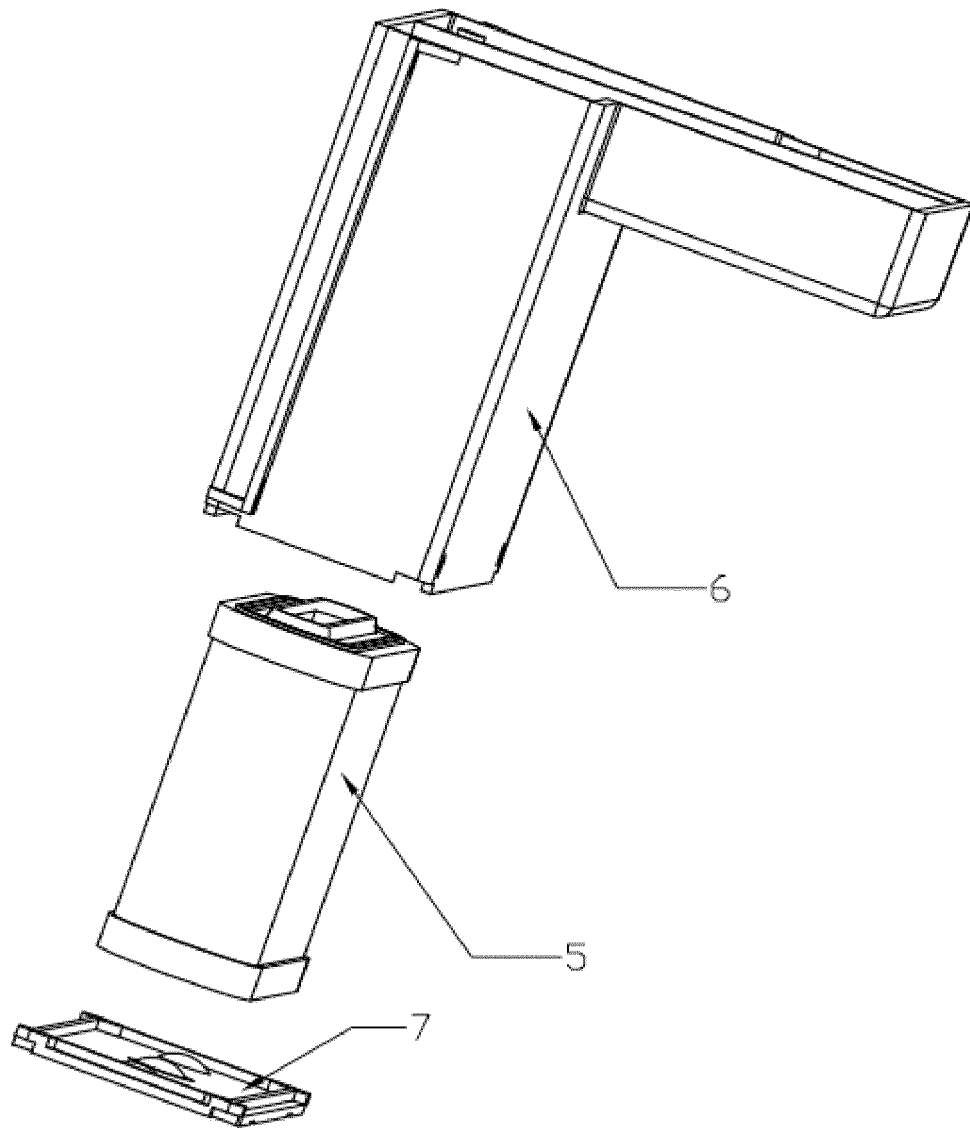
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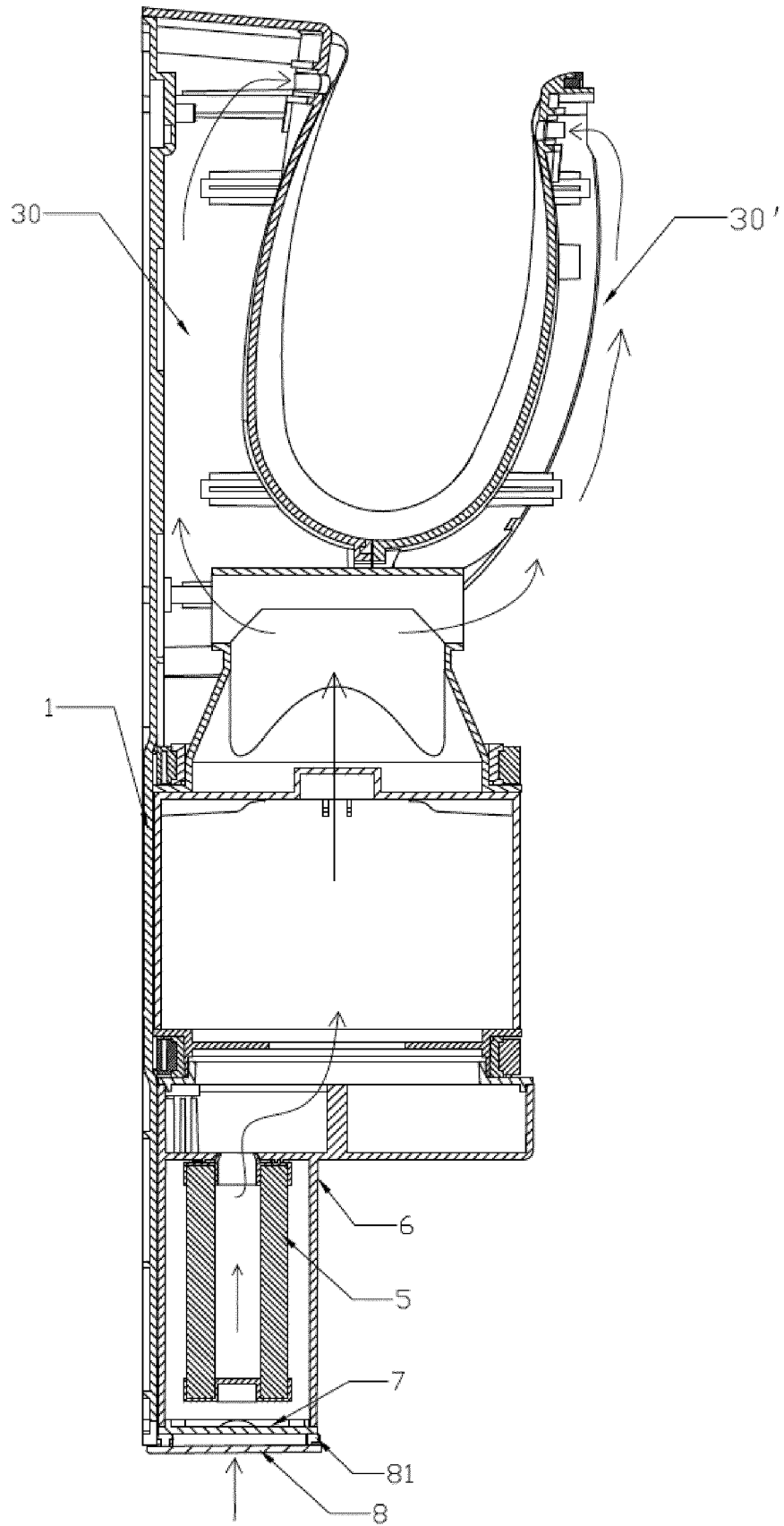












## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2012/075170

## A. CLASSIFICATION OF SUBJECT MATTER

A47K 10/48 (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)

IPC: A47K10/-

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, VEN, WPI, EPODOC: hand, heater, fan, dryer, drier, opening, outlet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                         | Relevant to claim No. |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Y         | CN 202020364 U (JIN,Qixiang) 02 Nov. 2011 (02.11.2011) description, paragraph [0010] and figures 1, 2 and 3                                | 1-5                   |
| Y         | CN 201641837 U (Futai Clean Technology (Kunshan) Co., Ltd.) 24 Nov. 2010 (24.11.2010) description, paragraph [0016] and abstract, figure 1 | 1-5                   |
| Y         | CN 201164424 Y (WANG,Qingwang et al.) 17 Dec. 2008 (17.12.2008) description, page 2 line 13 to page 3 line 17 and figures 1 and 2          | 1-5                   |
| Y         | US 6185838 B1 (MOORE D W) 13 Feb. 2001 (13.02.2001) description, column 2 line 59 to column 3 line 67 and figures 1 to 5                   | 1-5                   |
| Y         | JP 2011-55859 A (MATSUSHITA DENKI SANGYO KK) 24 Mar. 2011 (24.03.2011) description, paragraphs [0046] to 64 and figures 1 to 6             | 1-5                   |
| Y         | JP 2011-189048A (MATSUSHITA DENKI SANGYO KK) 29 Sept. 2011 (29.09.2011) description, paragraphs [0047] to 67 and figures 1 to 9            | 1-5                   |

☐ 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

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“&amp;” document member of the same patent family

Date of the actual completion of the international search

13 Jul. 2012 (13.07.2012)

Date of mailing of the international search report

02 Aug. 2012 (02.08.2012)

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/CN2012/075170**

| Patent Documents referred<br>in the Report | Publication Date | Patent Family | Publication Date |
|--------------------------------------------|------------------|---------------|------------------|
| CN 202020364 U                             | 02.11.2011       | None          |                  |
| CN 201641837 U                             | 24.11.2010       | None          |                  |
| CN 201164424 Y                             | 17.12.2008       | None          |                  |
| US 6185838 B1                              | 13.02.2001       | None          |                  |
| JP 2011-55859 A                            | 24.03.2011       | None          |                  |
| JP 2011-189048 A                           | 29.09.2011       | None          |                  |

Form PCT/ISA/210 (patent family annex) (July 2009)