



**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**04.05.2022 Bulletin 2022/18**

(51) International Patent Classification (IPC):  
**A47K 10/48** <sup>(2006.01)</sup> **A47K 13/30** <sup>(2006.01)</sup>  
**E03D 9/052** <sup>(2006.01)</sup>

(21) Application number: **21204790.6**

(52) Cooperative Patent Classification (CPC):  
**A47K 13/305; A47K 10/48; E03D 9/052**

(22) Date of filing: **26.10.2021**

(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**

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(30) Priority: **27.10.2020 CN 202022412531 U**

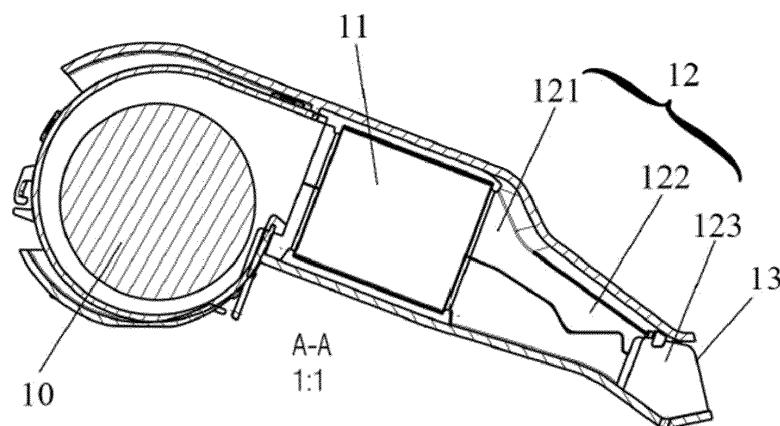
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(54) **TOILET TOP MOUNT DRYING DEVICE**

(57) The invention discloses a top mount drying device, and relates to the field of smart top mounts for toilets. The top mount drying device includes a fan, a heating unit, an air duct and an air outlet; the heating unit is located between the fan and the air duct, the air duct includes a first air segment, a second air segment and a third air segment which are sequentially ordered in an air-out direction, a sectional area of the second air segment is smaller than a sectional area of the first air segment,

the sectional area of the first air segment is continuously decreased towards the sectional area of the second air segment, a sectional area of the third air segment is the same as the sectional area of the second air segment, and the third air segment is connected with the air outlet. The invention has the technical effect that the air-out speed is further increased on the basis of the same power consumption, thereby improving usage experience of users.



**Fig. 3**

## Description

### Field of the Invention

[0001] The invention relates to the field of smart top mounts for toilets, in particular to a top mount drying device.

### Background of the Invention

[0002] With the improvement of people's living standards and hygiene awareness, the popularizing rate of smart toilets is getting higher and higher. Many families have already chosen smart toilets when renovating, and moreover, some families have replaced ordinary toilet covers with smart toilet top mounts. In addition, some hotels and guest houses are also equipped with the smart toilets, making the application of the smart toilets wider.

[0003] With the increasement of user demands, a variety of functions have been simultaneously integrated into a single smart top mount for a toilet, such as heating, warm water cleaning, warm air drying, deodorization and sterilization, and other functions. However, as for a drying device for a current smart top mount, due to its unreasonable air duct design, air-out cannot reach the expectation, thereby leading to a poor drying effect.

### Summary of the Invention

[0004] In view of the above defects of the prior art, the technical problem to be solved by the invention is to provide a top mount drying device with large air volume and without increasing the power consumption of a top mount at the same time.

[0005] In order to achieve the above purposes, the invention provides a top mount drying device, including a fan, a heating unit, an air duct and an air outlet; the heating unit is located between the fan and the air duct, the air duct includes a first air segment, a second air segment and a third air segment that are sequentially ordered in an air-out direction, a sectional area of the second air segment is smaller than a sectional area of the first air segment, the sectional area of the first air segment is continuously decreased towards the sectional area of the second air segment, and a sectional area of the third air segment is the same as the sectional area of the second air segment, and the third air segment is connected with the air outlet.

[0006] Further, the third air segment is arranged to extend towards a center of a top mount seat ring.

[0007] Further, the air outlet is provided with an air guide grating, and the air guide grating divides the air duct into a plurality of air-out channels.

[0008] Further, a tail end of the second air segment is bent towards a water surface of a toilet by 10 degrees to 20 degrees.

[0009] Further, an included angle between transitional ends of the second air segment and the third air segment

is 120 degrees to 140 degrees.

[0010] Further, the air guide grating is arranged to face the center of the top mount seat ring, and an included angle between an extending line of the air guide grating towards the top mount seat ring and the air outlet is 100 degrees to 120 degrees.

[0011] Further, the heating unit is an electric heating wire.

[0012] The invention has the technical effect that the air-out speed is further increased on the basis of the same power consumption, thereby improving usage experience of users.

[0013] The conception, specific structure and produced technical effect of the invention will be further explained below in combination with the drawings to fully understand the purposes, features and effects of the invention.

### Brief Description of the Drawings

[0014] By reading the detailed description of the non-restrictive embodiment with reference to the drawings below, other features, purposes and advantages of the invention will be more apparent:

Fig. 1 shows a schematic structural diagram of an embodiment of the invention;

Fig. 2 shows a structural top view of the embodiment of the invention;

Fig. 3 shows a structural sectional view of the embodiment of the invention; and

Fig. 4 shows a top view of parts of structures of the embodiment of the invention.

[0015] The description on signs of the drawings: 1-top mount drying device; 2-top mount seat ring; 10-fan; 11-heating unit; 12-air duct; 121-first air segment; 122-second air segment; 123-third air segment; 13-air outlet; 14-air guide grating.

### Detailed Description of the Embodiment

[0016] A preferred embodiment of the invention is introduced below with reference to the drawings of the description to make its technical contents clearer and convenient to understand.

[0017] As shown in Fig. 1 to Fig. 4, the invention provides a top mount drying device 1, including a fan 10, a heating unit 11, an air duct 12 and an air outlet 13; the heating unit 11 is located between the fan 10 and the air duct 12, the air duct 12 includes a first air segment 121, a second air segment 122 and a third air segment 123 that are sequentially ordered in an air-out direction, a sectional area of the second air segment 122 is smaller than a sectional area of the first air segment 121, the

sectional area of the first air segment 121 is continuously decreased towards the sectional area of the second air segment 122, a sectional area of the third air segment 123 is the same as the sectional area of the second air segment 122, and the third air segment 123 is connected with the air outlet 13.

[0018] The fan 10, the heating unit 11 and the air duct 12 are all located in a housing of the top mount drying device 1 to make air produced by the fan 10 blown out only through the air duct 12 and from the air outlet 13. Since the sectional area of the second air segment 122 is smaller than the sectional area of the first air segment 121, the air speed passing through the second air segment 122 and the third air segment 123 will be further increased and the drying effect is enhanced due to the reduction of the sectional area after the air is blown out. Preferably, a tail end of the second air segment 122 is bent towards a water surface of a toilet by 10 degrees to 20 degrees, preferably 19 degrees. Potential energy of the air in the second air segment 122 may be further increased, thereby increasing the air speed.

[0019] Further, the third air segment 123 is arranged to extend towards a center of a top mount seat ring 2. Thus, the third air segment 123 can guide the direction where the air is blown out, so that it blows out the sufficient amount of air towards buttocks of a user. Preferably, an included angle between transitional ends of the second air segment 122 and the third air segment 123 is 120 degrees to 140 degrees, most preferably 132 degrees.

[0020] Further, the air outlet 13 is provided with an air guide grating 14, and the air guide grating 14 divides the air duct 12 into a plurality of air-out channels, which can further increase the air-out speed.

[0021] Preferably, the air guide grating 14 is arranged to face a center of the top mount seat ring 2, and an included angle between an extending line of the air guide grating 14 towards the top mount seat ring 2 and the air outlet 13 is 100 degrees to 120 degrees, most preferably, 108 degrees.

[0022] Further, the heating unit is an electric heating wire.

the third air segment is connected with the air outlet.

2. The drying device according to claim 1, **characterized in that** the third air segment is arranged to extend towards a center of a top mount seat ring.
3. The drying device according to claim 1 or 2, **characterized in that** the air outlet is provided with an air guide grating, and the air guide grating divides the air duct into a plurality of air-out channels.
4. The drying device according to one of the preceding claims, **characterized in that** a tail end of the second air segment is bent towards a water surface of a toilet by 10 degrees to 20 degrees.
5. The drying device according to claim 2, optionally in combination with claim 3 or 4, **characterized in that** an included angle between transitional ends of the second air segment and the third air segment is 120 degrees to 140 degrees.
6. The drying device according to claim 3, optionally in combination with claim 4 or 5 **characterized in that** the air guide grating is arranged to face a center of a top mount seat ring, and an included angle between an extending line of the air guide grating towards the top mount seat ring and the air outlet is 100 degrees to 120 degrees.
7. The drying device according to one of the preceding claims, **characterized in that** the heating unit is an electric heating wire.
8. A toilet top mount including a drying device according to one of the preceding claims.

## Claims

1. A drying device for a toilet top mount, **characterized in that** the top mount drying device comprises a fan, a heating unit, an air duct and an air outlet; the heating unit is located between the fan and the air duct, the air duct comprises a first air segment, a second air segment and a third air segment that are sequentially ordered in an air-out direction, a sectional area of the second air segment is smaller than a sectional area of the first air segment, the sectional area of the first air segment is continuously decreased towards the sectional area of the second air segment, a sectional area of the third air segment is the same as the sectional area of the second air segment, and

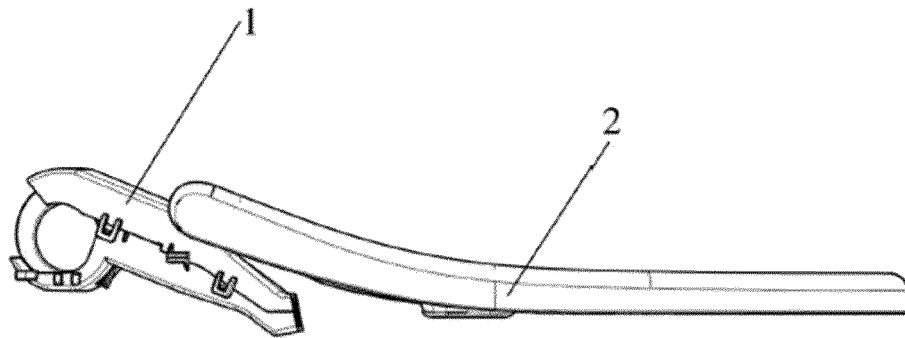


Fig. 1

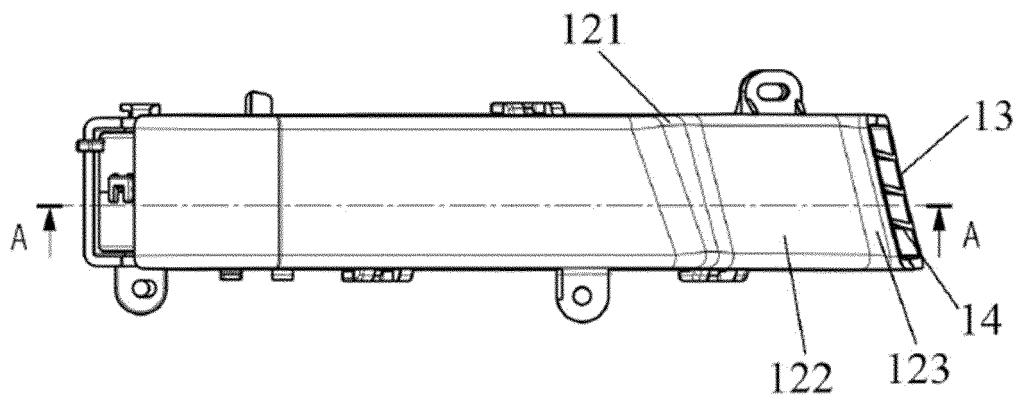


Fig. 2

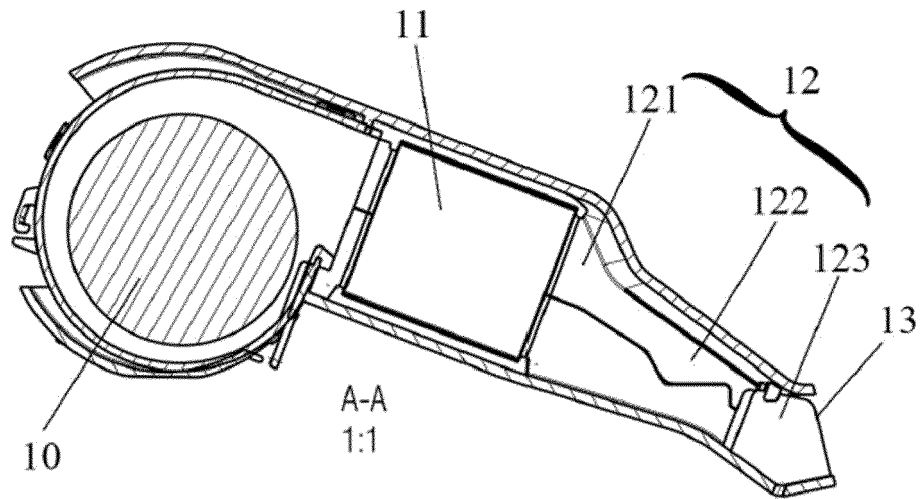


Fig. 3

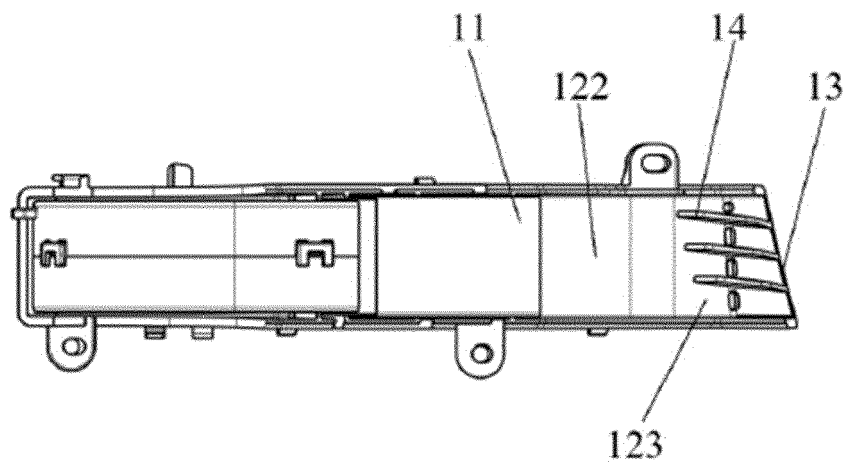


Fig. 4



## EUROPEAN SEARCH REPORT

Application Number

EP 21 20 4790

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	<b>KR 2009 0132189 A (WOONGJIN COWAY CO LTD [KR]) 30 December 2009 (2009-12-30)</b> <b>* figures 1-3 *</b> -----	1-8	<b>INV.</b> <b>A47K10/48</b> <b>A47K13/30</b> <b>E03D9/052</b>
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			<b>TECHNICAL FIELDS SEARCHED (IPC)</b> <b>A47K</b> <b>E03D</b> <b>F26B</b>
<b>2</b> The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>9 March 2022</b>	Examiner <b>Boyer, Olivier</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			

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ON EUROPEAN PATENT APPLICATION NO.

EP 21 20 4790

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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