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(54) **DIRECT-BLOWING NECK-HANGING FAN**

(57) A direct-blowing neck-hanging fan comprises a device host, wherein the device host comprises a neck-hanging part, and a neck-hanging cavity is formed in the middle to be hanged on the neck; air outlet heads, which are detachably installed at both ends of the neck-hanging part; air outlet components, which are provided inside the air outlet heads. The invention adopts

the direct-blowing method to increase the blowing volume, so that the air output rate is higher, and solves the problem of air volume loss caused by extrusion of the air in the prior art, so that the air can be more concentrated; in addition, the combination of the air outlet head and the neck-hanging part makes the position of the air outlet closer to the human body.

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## Description

### 1. Technical Field

[0001] The invention relates to a neck-hanging fan, in particular to a direct-blowing neck-hanging fan.

### 2. Background Art

[0002] Neck-hanging fan, as the name implies, is a fan that is hung on the neck. It often comprises a bracket and fans arranged on both sides of the bracket. The fan rotates to generate air to be discharged through the air outlet, and the air outlet generally corresponds to the human body.

[0003] At present, the layout structure of the air outlet of the most mainstream neck-hanging fan on the market is arranged along the neck-hanging part of the neck-hanging fan, as shown in FIG. 1; the air outlet 4 is arranged along the length of the neck-hanging part; this method has the advantage of covering a wide range of air outlets; its internal structure is to use the extrusion structure to extrude the airflow along the lengthwise direction when blowing out the airflow; however, this method has a large air volume loss, and the scattered air outlet structure results in a small air volume at the air outlet, and the cooling effect is not good;

[0004] In addition, although some neck-hanging fans are equipped with a fixed-point air outlet method, the overall structure separates the air outlet from the neck-hanging part connected to the air outlet, which causes the length of the neck-hanging part to be very long, and the two air outlets are suspended, causing the air outlet to be far away from the neck of the human body, and it is impossible to achieve close-range direct blowing to cool down.

### 3. Summary of the Invention

[0005] The technical problem to be solved by the invention is to provide a direct-blowing neck-hanging fan, which adopts the direct-blowing method to increase the blowing volume, so that the air output rate is higher, and solves the problem of air volume loss caused by extrusion of the air in the prior art, so that the air can be more concentrated; in addition, the combination of the air outlet head and the neck-hanging part makes the position of the air outlet closer to the human body, which solves the problem in the prior art that the air outlet heads are hung on both sides and away from the human body.

[0006] The invention is realized by the following technical solutions: a direct-blowing neck-hanging fan, comprising a device host, wherein the device host comprises:

a neck-hanging part, and a neck-hanging cavity is formed in the middle to be hung on the neck;  
air outlet heads, which are detachably installed at both ends of the neck-hanging part; taking the side

of the neck-hanging part in contact with the neck of the human body as the reference plane, the air outlet head protrudes outward from the reference plane, and forms an air outlet surface on the protruding surface close to the reference plane side of the neck-hanging part; the air outlet surface towards the neck of the human body;

air outlet components, which are provided inside the air outlet heads; the air outlet end of the air outlet component corresponds to the air outlet surface, and an air outlet is formed on the air outlet surface thereof; the airflow discharged by the air outlet component is directly discharged through the air outlet and blows to the human body at a fixed point.

[0007] Preferably, the blowing angle between the air outlet and the horizontal plane ranges from 15 degrees to 60 degrees.

[0008] Preferably, the air outlet component comprises a motor, blades, and an air outlet box;

the air outlet box is provided with an accommodating cavity inside, and the motor and blades are installed in the accommodating cavity; the position of the air outlet box facing the air outlet forms an air outlet opening, and the airflow generated by the blades is discharged through the air outlet opening; an arc-shaped diversion cavity is formed inside the accommodation cavity;

an air inlet is formed on the side of the air outlet head facing the air outlet box, and the air outlet box is opened at a position corresponding to the air inlet.

[0009] Preferably, one side of the air outlet head extending away from the air outlet head forms a neck-hanging connecting section; a butt joint pipe is installed between the neck-hanging connecting sections formed at both ends to form the neck-hanging part.

[0010] Preferably, the neck-hanging connecting section comprises a first neck-hanging connecting section and a second neck-hanging connecting section; the first neck-hanging connecting section is spliced by a first connecting section bottom shell and a first connecting section surface shell to form a first arc-shaped tubular member, and the second neck-hanging connecting section is spliced by a second connecting section bottom shell and a second connecting section surface shell to form a second arc-shaped tubular member; the butt joint pipe has the same radian as the first arc-shaped tubular member and the second arc-shaped tubular member, and the three form a U-shaped neck-hanging part.

[0011] Preferably, the first neck-hanging connecting section and the second neck-hanging connecting section are both provided with a battery; a main control board is provided in the first neck-hanging connecting section or in the second neck-hanging connecting section, and the main control board is provided with control buttons; the batteries are all connected to the main control board and

charged through the charging interface provided on the main control board.

**[0012]** Preferably, the air outlet surface of the air outlet head is an inclined surface, and the air outlet surface is inclined toward the side away from the air outlet head.

**[0013]** The advantages of the invention are: 1. in the invention, the air outlet is set to a fixed-point air outlet mode, instead of being arranged along the length of the neck-hanging, the air outlet position of the air outlet component is aligned with the air outlet to achieve direct blowing of the air, which can effectively increase the air volume and reduce the loss of air volume;

2. the invention utilizes a section of butt joint pipe to connect the neck-hanging connecting sections on both sides to make it a whole, so that when the neck-hanging fan is used on the neck, the distance between the air outlet head and the human body is closer, which further improves the air volume and reduces the swing;

3. the invention adopts an air outlet angle of 15 degrees to 60 degrees in a reasonable layout, so that a better experience can be obtained when the wind is released.

#### 4. Brief Description of Accompany Drawings

**[0014]**

FIG. 1 is a structural schematic diagram of a neck-hanging fan in the prior art;

FIG. 2 is a front structure schematic diagram according to the invention;

FIG. 3 is a three-dimensional structure schematic diagram according to the invention;

FIG. 4 is a sectional view according to the invention;

FIG. 5 is a schematic diagram according to the invention after the air outlet head and the main body are opened.

#### 5. Specific Embodiment of the Invention

**[0015]** All features disclosed in this specification, or steps in all methods or processes disclosed, can be combined in any way, except for mutually exclusive features.

**[0016]** As shown in FIG. 2-4, the invention provides a direct-blowing neck-hanging fan, comprising a device host, wherein the device host comprises:

a neck-hanging part, and a neck-hanging cavity is formed in the middle to be hanged on the neck, and the optimal shape is U-shaped;

air outlet heads, which are detachably installed at both ends of the neck-hanging part; taking the side of the neck-hanging part in contact with the neck of the human body as the reference plane, the air outlet head protrudes outward from the reference plane, and forms an air outlet surface on the protruding sur-

face close to the reference plane side of the neck-hanging part; the air outlet surface towards the neck of the human body;

air outlet components, which are provided inside the air outlet heads; the air outlet end of the air outlet component corresponds to the air outlet surface, and an air outlet is formed on the air outlet surface thereof; the airflow discharged by the air outlet component is directly discharged through the air outlet and blows to the human body at a fixed point.

**[0017]** Since the air outlet head protrudes outward, the position of the air outlet is set on one side of the protruding air outlet head, and the protruding air outlet head extends toward the neck; this structure allows the air outlet to directly correspond to the neck of the human body, which greatly increases the contact area between the airflow and the human body.

**[0018]** As shown in FIG. 2, the blowing angle between the air outlet 4 and the horizontal plane ranges from 15 degrees to 60 degrees; the air outlet angle is the angle between the air outlet surface and the horizontal plane, and the optimal angle value is 15-60 degrees; within this range, it is more suitable for wearing by the human body, the contact area with the human body can be effectively improved, and the user experience is the best.

**[0019]** The air outlet component comprises a motor 9, blades 13, and an air outlet box 12;

the air outlet box 12 is provided with an accommodating cavity inside, and the motor 9 and blades 13 are installed in the accommodating cavity; the position of the air outlet box 12 facing the air outlet forms an air outlet opening 11, and the airflow generated by the blades is discharged through the air outlet opening 11; an arc-shaped diversion cavity is formed inside the accommodation cavity;

an air inlet 6 is formed on the side of the air outlet head 5 facing the air outlet box, and the air outlet box 12 is opened at a position corresponding to the air inlet 6; the motor drives the blades to rotate, and the blades generate airflow in the accommodation cavity, and the airflow is discharged along the arc-shaped diversion cavity to the air outlet opening; since the air outlet opening is directly facing the air outlet, the airflow can be blown out directly without being extruded along the channel, and the loss of air volume is smaller; at the same time, the airflow volume of the direct blowout method can be greatly improved.

**[0020]** One side of the air outlet head 5 extending away from the air outlet head forms a neck-hanging connecting section; a butt joint pipe 3 is installed between the neck-hanging connecting sections formed at both ends to form the neck-hanging part. The neck-hanging connecting section comprises a first neck-hanging connecting section 2 and a second neck-hanging connecting section 3;

the first neck-hanging connecting section 2 is spliced by a first connecting section bottom shell 22 and a first connecting section surface shell 21 to form a first arc-shaped tubular member, and the second neck-hanging connecting section 3 is spliced by a second connecting section bottom shell 32 and a second connecting section surface shell 31 to form a second arc-shaped tubular member; the butt joint pipe 3 has the same radian as the first arc-shaped tubular member and the second arc-shaped tubular member, and the three form a U-shaped neck-hanging part. The butt joint pipe is used to connect the neck-hanging connecting section with the air outlet as a whole. The integrated U-shaped structure can lift the two air outlet heads to the upper end. When wearing, the two air outlet heads can be closer to the neck, and there will be no hanging at the far end. The integrated structure makes the whole body more comfortable and reduces shaking after wearing.

**[0021]** The connection between the butt joint pipe and the neck-hanging connection section on both sides can be directly sleeved, and the buckle can be used to complete the assembly after the sleeve. Therefore, the disassembly method of the buckle can also realize the separation of the three in the later stage, and the disassembly and assembly are more convenient.

**[0022]** The first neck-hanging connecting section 2 and the second neck-hanging connecting section 3 are both provided with a battery 7; a main control board 15 is provided in the first neck-hanging connecting section 2 or in the second neck-hanging connecting section 3, and the main control board 15 is provided with control buttons; the batteries 7 are all connected to the main control board 15 and charged through the charging interface provided on the main control board 15. The above structure is a conventional technical means in the field, and double-sided batteries are used to increase battery storage capacity, thereby increasing battery life, and at the same time, dispersed batteries can better maintain the balance on both sides.

**[0023]** In the embodiment, the air outlet box is arranged on the top of the battery. After the battery is fixed on the shell, a buckle is provided at the bottom of the air outlet box, and the air outlet box can be fixed on the battery by using the buckle; this method can also be used for installing the air outlet box more reasonably and simplify the structure, and of course, the air outlet box can also be directly fixed inside the shell by screws.

**[0024]** In the embodiment, the air outlet surface of the air outlet head 5 is an inclined surface, and the air outlet surface is inclined toward the side away from the air outlet head. The inclined surface of the air outlet head and the convex structure make the position of the air outlet of the invention more reasonable and more in line with ergonomics.

**[0025]** As shown in FIG. 5, there is a detachable connection structure between the air outlet head and the neck-hanging part, which can be a buckle, screw or positioning post.

## Claims

1. A direct-blowing neck-hanging fan, comprising a device host, wherein the device host comprises:

a neck-hanging part, and a neck-hanging cavity is formed in the middle to be hanged on the neck; air outlet heads (5), which are detachably installed at both ends of the neck-hanging part; taking the side of the neck-hanging part in contact with the neck of the human body as the reference plane, the air outlet head (5) protrudes outward from the reference plane (10), and forms an air outlet surface on the protruding surface close to the reference plane side of the neck-hanging part; the air outlet surface towards the neck of the human body; air outlet components, which are provided inside the air outlet heads (5); the air outlet end of the air outlet component corresponds to the air outlet surface, and an air outlet (4) is formed on the air outlet surface thereof; the airflow discharged by the air outlet component is directly discharged through the air outlet (4) and blows to the human body at a fixed point.

2. The direct-blowing neck-hanging fan of Claim 1, wherein the blowing angle between the air outlet (4) and the horizontal plane ranges from 15 degrees to 60 degrees.
3. The direct-blowing neck-hanging fan of Claim 1, wherein the air outlet component comprises a motor (9), blades (13), and an air outlet box (12);

the air outlet box (12) is provided with an accommodating cavity inside, and the motor (9) and blades (13) are installed in the accommodating cavity; the position of the air outlet box (12) facing the air outlet forms an air outlet opening (11), and the airflow generated by the blades is discharged through the air outlet opening (11); an arc-shaped diversion cavity is formed inside the accommodation cavity; an air inlet (6) is formed on the side of the air outlet head (5) facing the air outlet box, and the air outlet box (12) is opened at a position corresponding to the air inlet (6).

4. The direct-blowing neck-hanging fan of Claim 1, wherein one side of the air outlet head (5) extending away from the air outlet head forms a neck-hanging connecting section; a butt joint pipe (3) is installed between the neck-hanging connecting sections formed at both ends to form the neck-hanging part.
5. The direct-blowing neck-hanging fan of Claim 4, wherein the neck-hanging connecting section com-

prises a first neck-hanging connecting section (2) and a second neck-hanging connecting section (3); the first neck-hanging connecting section (2) is spliced by a first connecting section bottom shell (22) and a first connecting section surface shell (21) to form a first arc-shaped tubular member, and the second neck-hanging connecting section (3) is spliced by a second connecting section bottom shell (32) and a second connecting section surface shell (31) to form a second arc-shaped tubular member; the butt joint pipe (3) has the same radian as the first arc-shaped tubular member and the second arc-shaped tubular member, and the three form a U-shaped neck-hanging part.

6. The direct-blowing neck-hanging fan of Claim 5, wherein the first neck-hanging connecting section (2) and the second neck-hanging connecting section (3) are both provided with a battery (7); a main control board (15) is provided in the first neck-hanging connecting section (2) or in the second neck-hanging connecting section (3), and the main control board (15) is provided with control buttons; the batteries (7) are all connected to the main control board (15) and charged through the charging interface provided on the main control board (15).
7. The direct-blowing neck-hanging fan of Claim 1, wherein the air outlet surface of the air outlet head (5) is an inclined surface, and the air outlet surface is inclined toward the side away from the air outlet head.

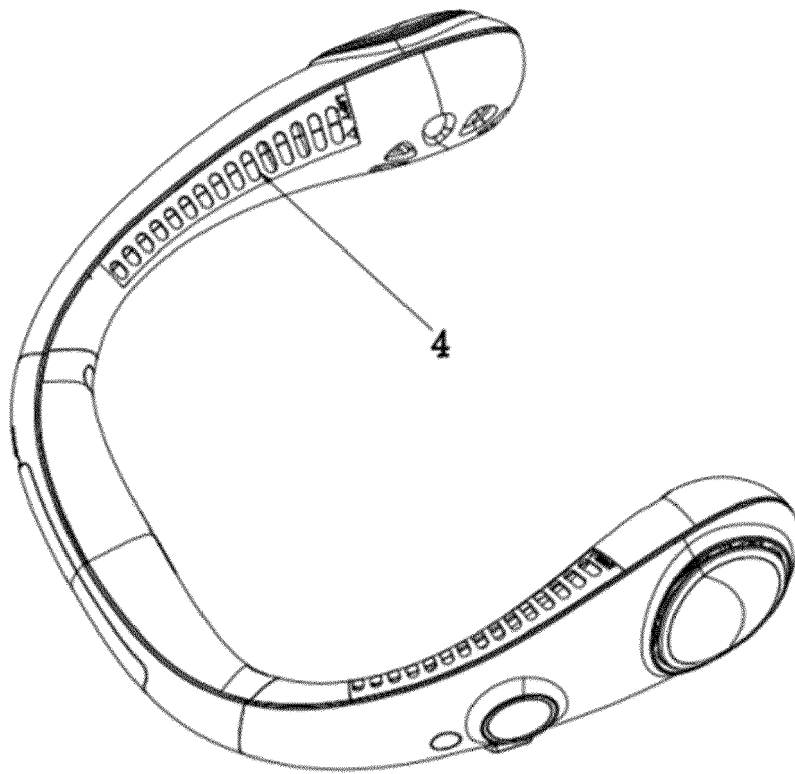


FIG. 1

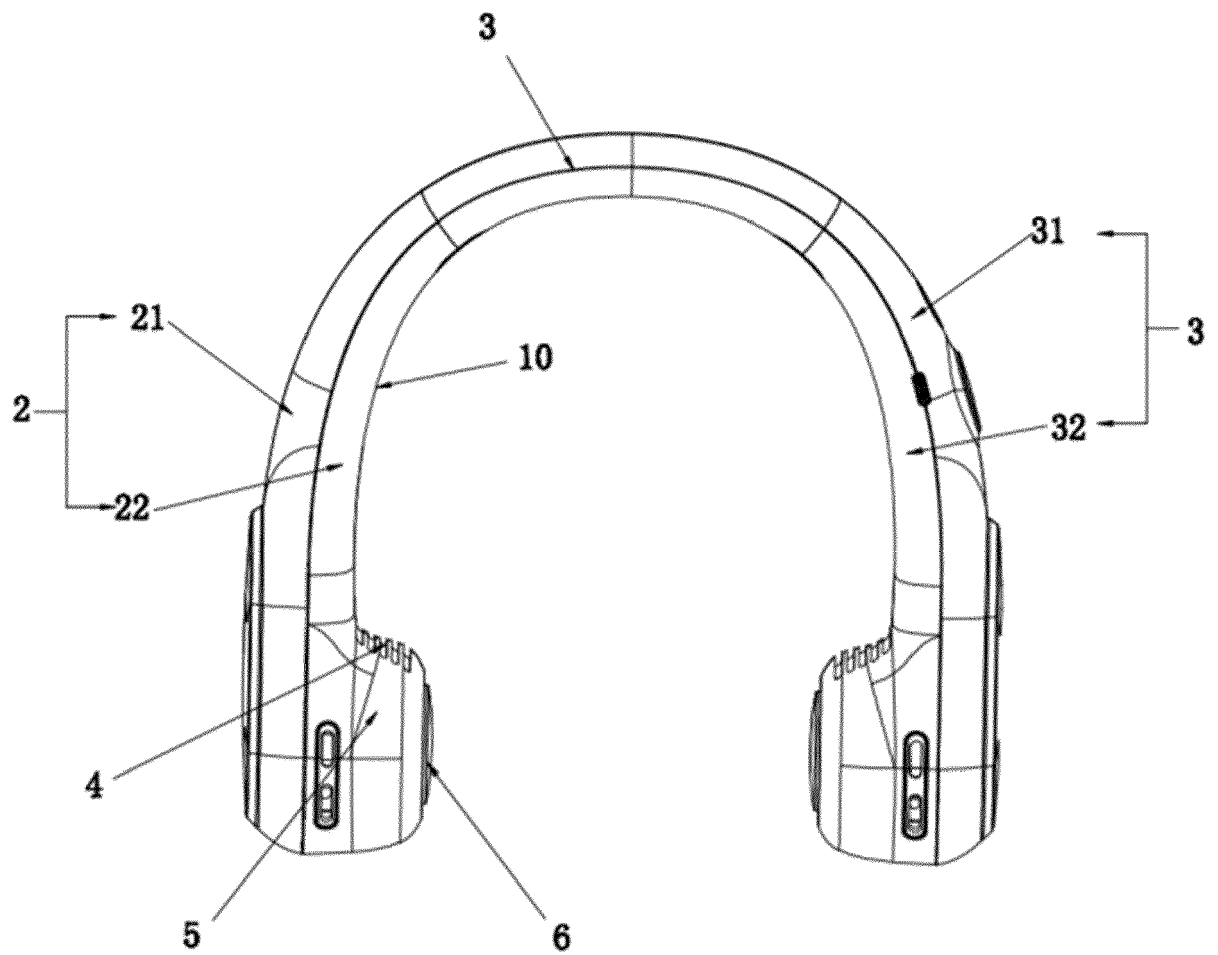


FIG. 2

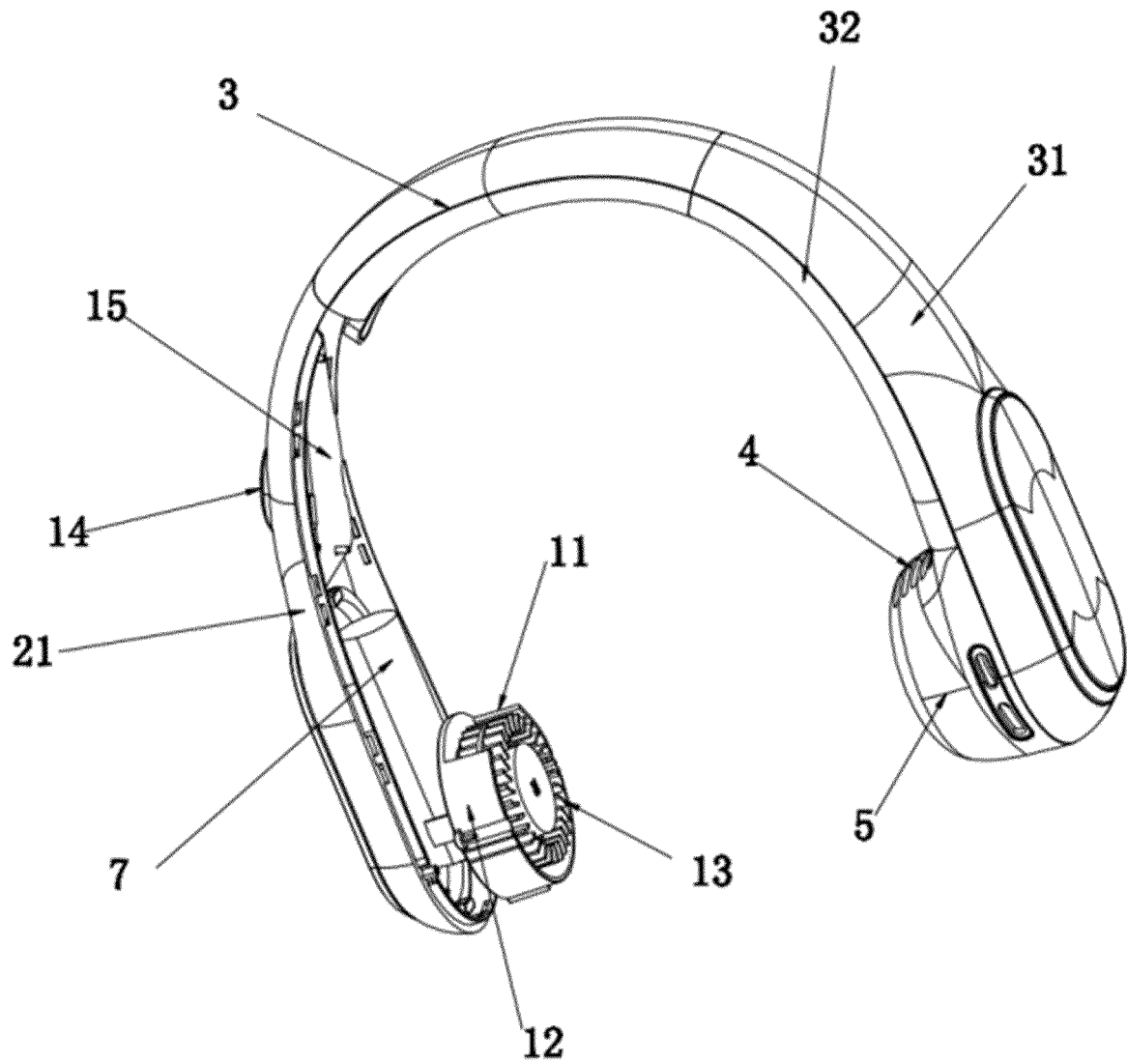


FIG. 3



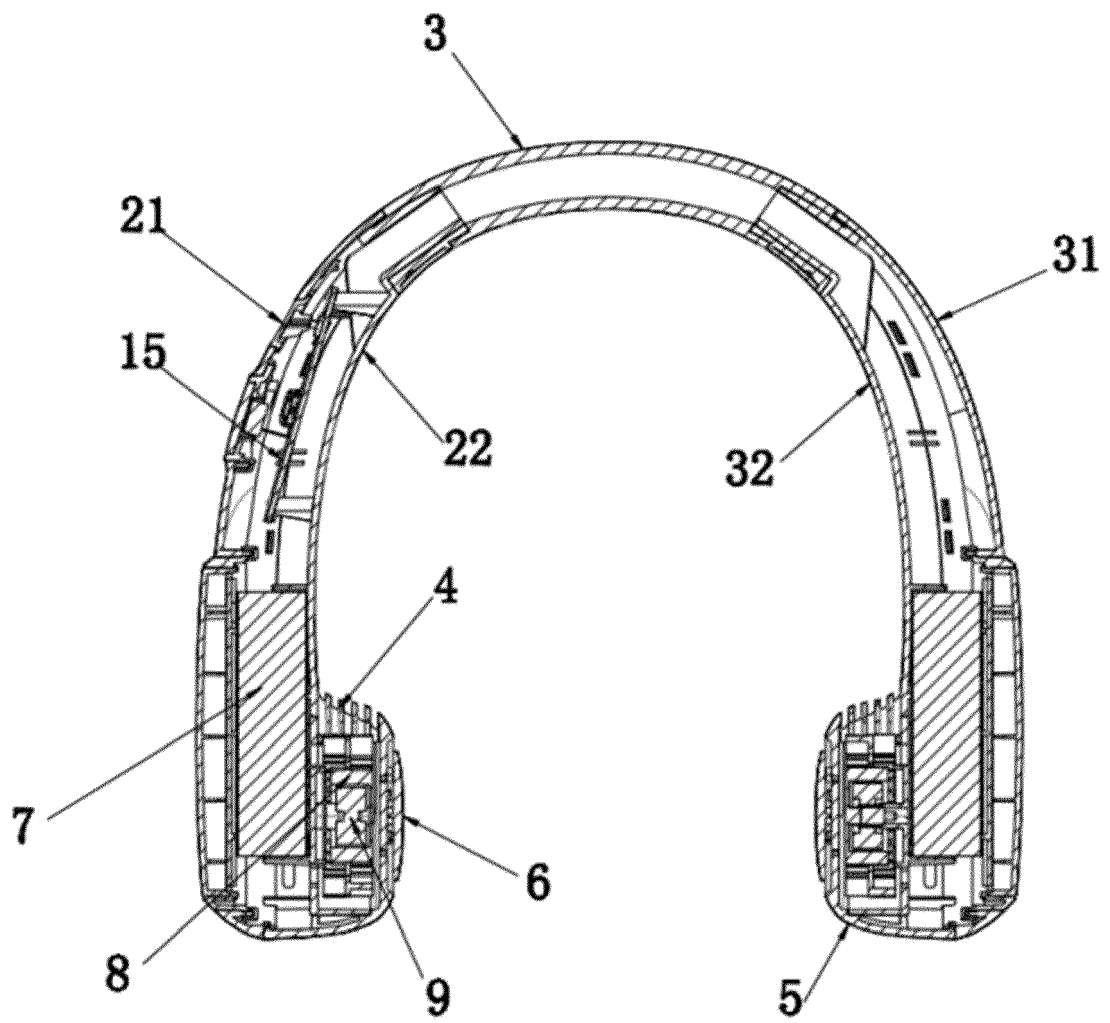


FIG. 4

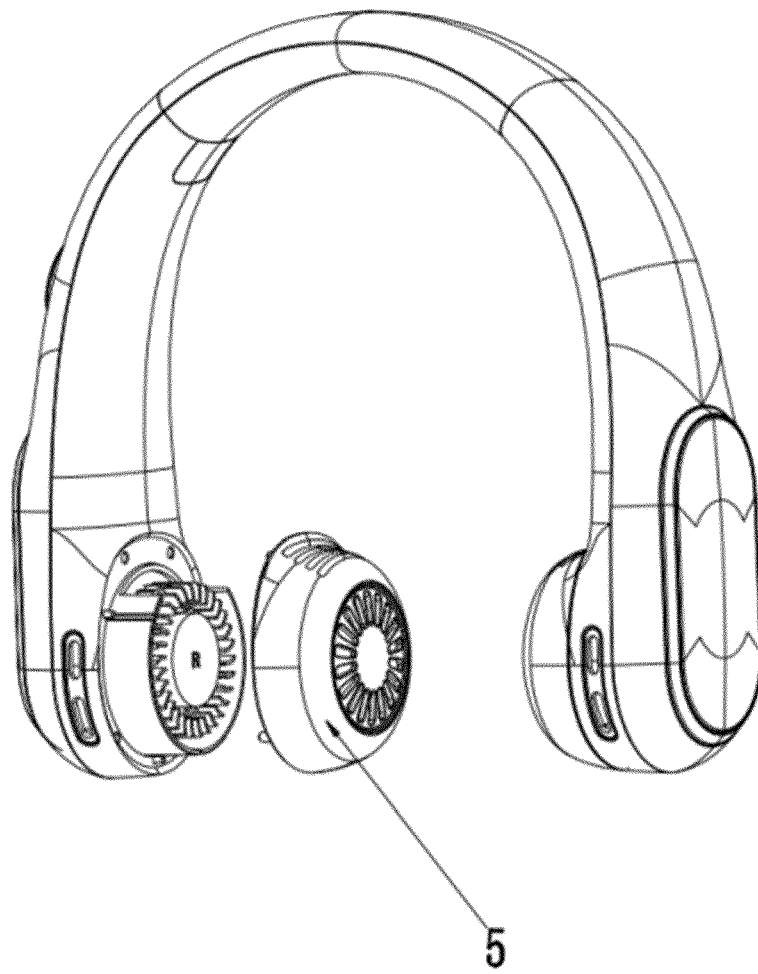


FIG. 5



## EUROPEAN SEARCH REPORT

Application Number

EP 23 15 5746

## 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	CN 214 660 957 U (SHENZHEN JS TECH CO LTD) 9 November 2021 (2021-11-09) * paragraphs [0031] - [0050] * * figures 1-3 * -----	1-7	INV. F04D25/08 F04D25/16 F04D29/60
X	CN 217 029 364 U (SHENZHEN ANBAO MEDICAL SENSING TECH CO LTD) 22 July 2022 (2022-07-22) * paragraphs [0032] - [0042] * * figures 1, 2, 4, 5 * -----	1-7	ADD. F04D29/28 F04D25/06
X	CN 211 692 902 U (BEAR ELECTRIC CO LTD; FOSHAN XIAOXIONG LIFE ELECTRIC APPLIANCE CO LTD) 16 October 2020 (2020-10-16) * paragraphs [0025], [0028] - [0044] * * figures 1-7 * -----	1-4	
			TECHNICAL FIELDS SEARCHED (IPC)
			F04D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		10 August 2023	Gombert, Ralf
CATEGORY OF CITED DOCUMENTS		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	
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			

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 EPO FORM 1503 03.82 (F04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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10-08-2023

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
	CN 214660957 U	09-11-2021	NONE	
15	CN 217029364 U	22-07-2022	NONE	
	CN 211692902 U	16-10-2020	NONE	
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82