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ABSTRACT

The present invention discloses an anti-smog heating mask, comprising the mask body, the two sides of the mask body are provided with fixing belts (2), the mask body includes an outer layer of bamboo fiber (3), an insulation layer (4) and an inner layer of cotton cloth (5), an air filter is arranged between the outer layer of bamboo fiber (3) and the insulation layer (4) in the middle area of the mask body, in the device, there is a heating layer (6) between the insulation layer (4) and the inner layer of the cotton cloth (5), a controller and power supply are installed on one side of the fixing belt, the controller is equipped with a charging interface, the controller is connected with a fixing straps, the end of the fixing straps is from the side of the mask body extends into and is electrically connected with the heating element of the heating layer (6), the heating mask of the utility model can filter pollutants in the air and has the effect of preventing haze, it can be widely used in the prevention of chronic lung disease recurrence, colds, and cold air allergic rhinitis in winter or cold areas, at the same time, it can be used for the prevention of allergic rhinitis in cold air, heating can protect the face of outdoor workers, in addition, it can be charged and used simultaneously to ensure that the mask can be heated for a long time.

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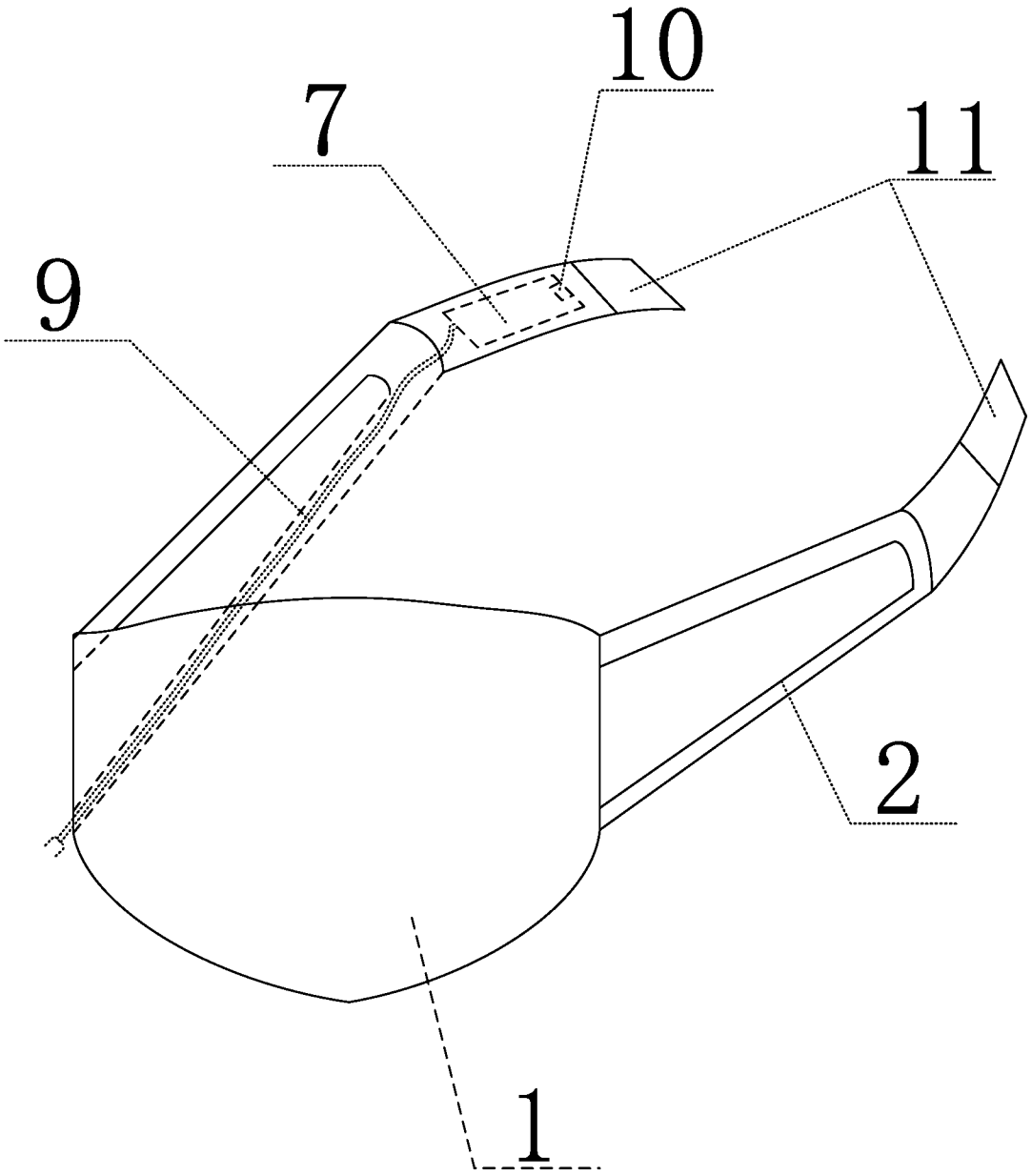


FIG. 1

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ANTI-SMOG HEATING MASK

FIELD OF THE INVENTION

[0001] The present invention relates to the field of mask, and more particularly to an anti-smog heating mask.

BACKGROUND OF THE INVENTION

[0002] Cold weather in winter is the most common cause of chronic bronchitis, emphysema, and pulmonary heart disease, at the same time, with the pollution of haze, 10% of people have cold air allergic rhinitis, and ordinary masks can hardly resist pollutants, in addition, working or riding outdoors in cold areas can easily cause frostbite on the face, and ordinary masks cannot meet the needs of facial warmth. Although there are heating masks on the market, they are either bulky, lacking of comfort, or limited in time and space for use.

BRIEF SUMMARY OF THE INVENTION

[0003] The technical problems to be solved by the present invention is that: existing heating masks are either bulky, lacking of comfort, or limited in time and space in use, the purpose of the invention is to provide an anti-smog heating mask that can filter pollutants in the air, has an anti-smog effect, it is widely used for the prevention of chronic lung disease recurrence, colds, and cold air allergic rhinitis in winter or cold areas, at the same time, the mask can be heated to protect the face of outdoor workers, in addition, it can be charged and used simultaneously, so that the mask can be heated for a long time.

[0004] The present invention is realized by the following technical schemes:

[0005] An anti-smog heating mask comprises a mask body, the two sides of the mask body are provided with fixing belts, the mask body comprises an outer layer of bamboo

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fiber, an insulation layer and an inner layer of cotton cloth arranged in sequence from the outside to the inside, there is an air filter device between the layers, a heating layer is provided between the insulation layer and the inner layer of the cotton cloth, a controller and a power supply are installed on one side of the fixing belt, and there is a charging interface on the controller, the power supply can be charged by the charging interface, the controller is connected with a connecting wire, and the end of the connecting wire extends from the side of the mask body to be electrically connected with the heating element of the heating layer.

[0006] The heating mask of the present can filter pollutants in the air and has the effect of preventing haze, it can be widely used in the prevention of chronic lung disease recurrence, colds, and cold air allergic rhinitis in winter or cold areas, at the same time, it can be used for the prevention of allergic rhinitis in cold air, can be heating, can protect the face of outdoor workers, in addition, it can be charged and used simultaneously to ensure that the mask can be heated for a long time. The mask of the invention comprises outer layer of bamboo fiber, air filter device, heat preservation layer, heating layer and cotton cloth inner layer in order from the outside to the inside, the air filter device can filter the inhaled air and avoid the inhalation of pollutant particles, the heating layer can be heated to protect the face, and the insulation layer has a good insulation effect on the heat generated by the heating layer, avoiding heat dissipation and ensuring the insulation effect on the face, the inner layer of the cotton cloth is in contact with the facial skin, which can improve facial comfort, and isolate the heating layer directly in contact with the skin; the heating layer is connected with a controller and a power supply, and the controller is equipped with a charging interface, so that the power supply can supply power to the heating layer, and at the same time, the power supply can be charged by the power bank, one-time charging can usually be used for 2-3 hours, or it can also be charged and used simultaneously, so as to ensure that the mask can be heated for a long time, and can protect the face of outdoor workers for a

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long time; and the structure of the mask in the invention is simple, easy to carry and wear.

[0007] The air filter device in the present invention only needs to adopt the filter elements of the existing common anti-smog masks, and the heat preservation layer can use the fabrics with heat preservation function in the existing masks, among them, the principle of circuit connection of the controller, the power supply, the charging interface and the heating layer is also the existing art, and this application does not involve improvements to the control circuit, etc., so it is not elaborated here.

[0008] There is an opening between the insulation layer on one side of the mask body and the inner layer of the cotton cloth, the opening is sealed by velcro, the heating element of the heating layer can be taken out or put in from the opening, so that the heating element together with the controller and power supply can be removed from the mask, the upper and lower parts are convenient for washing, disinfecting and reusing the mask, ensuring the safety and quality of the mask's hygiene and heating parts, and having a high cost performance.

[0009] The heating layer comprises a heating element compartment with a cavity inside and a heating element arranged in the cavity, one side of the heating element compartment extends to the side end of the mask body and has an opening, the heating element is accommodated in the heating element, in the interlayer, it not only protects the heating element, but also avoids direct contacting between the heating element and the insulation layer and the inner layer of cotton cloth.

[0010] The heating element of the heating layer is a polyimide electric heating film, which is lightweight and has a large coverage area, so that the heating range on the face is large, and the protection area for the face is increased.

[0011] The polyimide electric heating film has a wiring female end, and the end of the connecting wire is provided with a wiring male end, the wiring male end is inserted into the wiring female end to realize the electrical connection between the polyimide electric

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heating film and the controller, which can realize the disassembly between the heating components and the controller, when one of the components fails, it only needs to be replaced separately without replacing all of them.

[0012] The two fixing straps are Y-shaped structure, the two branches at the upper end of the Y-shaped shape are short arms, and the vertical main part below is the long arm, the free ends of the two ends are connected to the mask body, and the long arms are free, the end is connected with a fixed velcro, the mask can be fixed behind the head by the velcro when wearing, the Y-shaped structure ensures that the ears will not be compressed when wearing, and the fixing straps extends into the body of the mask along the inside of the fixing belt.

[0013] The area corresponding to the air filter device on the insulation layer, heating layer, and cotton cloth inner layer is provided with micropores, which is conducive to inhalation and ventilation.

[0014] The controller is attached to the fixed belt by installing velcro, which is also convenient for the removal of the controller, so that when the weather is warmer and does not need to be heated, the heating element, controller, power supply, etc. can be removed and used as a normal haze mask.

[0015] The size of the controller board is 2cm*2cm.

[0016] Compared with the prior art, the present invention has the following beneficial effects:

[0017] 1. the present invention is an anti-smog heating mask, which can filter pollutants in the air and has an anti-smog effect, it can be widely used in winter or cold areas for the prevention of chronic lung disease recurrence, colds, and cold air allergic rhinitis;

[0018] 2. the present invention is an anti-smog heating mask that can heat the mask and protect the face of outdoor workers, in addition, it can be charged and used simultaneously to ensure that the mask can be heated for a long time;

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[0019] 3. the present invention is an anti-smog heating mask, there is an opening between the insulation layer on one side of the mask body and the inner layer of the cotton cloth, the opening is sealed by a velcro, and the heating element of the heating layer can be taken out or put in the opening, in this way, the heating element together with the controller, power supply, etc. can be removed from the mask, which facilitates the washing and disinfection of the mask and ensures the safety and quality of the mask and the heating element, it has a high cost performance.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The drawings described here are intended to provide a further understanding of the embodiments of the present invention and form a part of this application and does not constitute a limitation of the embodiments of the present invention. In the drawings:

[0021] FIG. 1 is a structural diagram of the present invention;

[0022] FIG. 2 shows the layered structure of the mask body;

[0023] FIG. 3 is a schematic diagram of the circuit for realizing the heating layer function.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0024] In order to make the purpose, technical scheme and advantages of the present invention more clarity and understanding, a further detailed description of the present invention is provided in conjunction with embodiments and drawings. The schematic embodiment of the present invention and its description are only used to explain the present invention, but not served as a qualification for the present invention.

[0025] Embodiment 1

[0026] As shown in Fig.1 and Fig.2, an anti-smog heating mask comprises a mask body 1, the two sides of the mask body 1 are provided with fixing belts 2, the mask body 1 comprises an outer layer of bamboo fiber 3, an insulation layer 4 and an inner

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layer of cotton cloth 5 arranged in sequence from the outside to the inside, there is an air filter device 8 between the layers, a heating layer 6 is provided between the insulation layer 4 and the inner layer of the cotton cloth 5, a controller 7 and a power supply are installed on one side of the fixing belt, and there is a charging interface on the controller, the power supply can be charged by the charging interface 10, the controller is connected with a connecting wire, and the end of the connecting wire extends from the side of the mask body 1 to be electrically connected with the heating element of the heating layer 6.

[0027] The heating mask of the present can filter pollutants in the air and has the effect of preventing haze, it can be widely used in the prevention of chronic lung disease recurrence, colds, and cold air allergic rhinitis in winter or cold areas, at the same time, it can be used for the prevention of allergic rhinitis in cold air, can be heating, can protect the face of outdoor workers, in addition, it can be charged and used simultaneously to ensure that the mask can be heated for a long time. The mask of the invention comprises outer layer of bamboo fiber, air filter device, heat preservation layer, heating layer and cotton cloth inner layer in order from the outside to the inside, the air filter device can filter the inhaled air and avoid the inhalation of pollutant particles, the heating layer can be heated to protect the face, and the insulation layer has a good insulation effect on the heat generated by the heating layer, avoiding heat dissipation and ensuring the insulation effect on the face, the inner layer of the cotton cloth is in contact with the facial skin, for improving facial comfort, while isolating the heating layer directly in contact with the skin, the heating layer is connected with a controller and a power supply, and the controller is equipped with a charging interface, so that the power supply can supply power to the heating layer, and at the same time, the power bank can be used to charge the power supply , One-time charging can usually be used for 2-3 hours, or it can be charged and used simultaneously, so as to ensure that the mask can be heated for a long time, and can protect the face of outdoor workers for a

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long time; and the structure of the mask in the invention is simple, easy to carry and wear.

[0028] The air filter device in the present invention only needs to adopt the filter elements of the existing common anti-smog masks, and the heat preservation layer can use the fabrics with heat preservation function in the existing masks, among them, the controller, the power supply, the charging interface and the heating layer can be used as the same, the principle of circuit connection between the two is also in the prior art, and this application does not involve improvements to the control circuit, etc., so it is not elaborated here.

[0029] As shown in Fig.3, the user inserts the male terminal of the controller (controller board size: 2cm*2cm) into the female terminal of the heating layer (P1 is the female terminal), and then inserts the USB cable of the rechargeable battery or the power bank into the control, after completing the above steps, the indicator light D1 on the control board is lit, the switch tube M1 is turned on, and the +5V power supply starts to heat the polyimide electric heating film (PI), if the user notices the temperature of the heating plate is too high or too low, you can adjust the size of the resistance of R5 on the controller by yourself (R5 can also be used for different purposes, and the resistance value is fixed at the factory).

[0030] Preferably, there is an opening between the insulation layer on one side of the mask body and the inner layer of the cotton cloth, the opening is sealed by velcro, the heating element of the heating layer can be taken out or put in from the opening, so that the heating element together with the controller and power supply can be removed from the mask, the upper and lower parts are convenient for washing, disinfecting and reusing the mask, ensuring the safety and quality of the mask's hygiene and heating parts, and having a high cost performance.

[0031] Preferably, the heating layer comprises a heating element compartment with a cavity inside and a heating element arranged in the cavity, one side of the heating

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element compartment extends to the side end of the mask body and has an opening, the heating element is accommodated in the heating element, in the interlayer, it not only protects the heating element, but also avoids direct contacting between the heating element and the insulation layer and the inner layer of cotton cloth.

[0032] Preferably, the heating element of the heating layer is a polyimide electric heating film, which is lightweight and has a large coverage area, so that the heating range on the face is large, and the protection area for the face is increased.

[0033] Preferably, the polyimide electric heating film has a wiring female end, and the end of the connecting wire is provided with a wiring male end, the wiring male end is inserted into the wiring female end to realize the electrical connection between the polyimide electric heating film and the controller, which can realize the disassembly between the heating components and the controller, when one of the components fails, it only needs to be replaced separately without replacing all of them.

[0034] Preferably, the two fixing straps are Y-shaped structure, the two branches at the upper end of the Y-shaped shape are short arms, and the vertical main part below is the long arm, the free ends of the two ends are connected to the mask body, and the long arms are free, the end is connected with a fixed velcro 11, the mask can be fixed behind the head by the velcro when wearing, the Y-shaped structure ensures that the ears will not be compressed when wearing, and the fixing straps extends into the body of the mask along the inside of the fixing belt, the long arm and short arm here do not represent the length, but only to distinguish the structure of the fixing belt.

[0035] Preferably, the area corresponding to the air filter device on the insulation layer, heating layer, and cotton cloth inner layer is provided with micropores, which is conducive to inhalation and ventilation.

[0036] Preferably, the controller is attached to the fixed belt by installing velcro, which is also convenient for the removal of the controller, so that when the weather is warmer and does not need to be heated, the heating element, controller, power supply, etc. can

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be removed and used as a normal haze mask.

[0037] The above is a further detailed description of the invention in combination with the specific preferred embodiment, it is to be understood that the invention needs not be limited to the disclosed embodiments. On the contrary, it is intended to cover various modifications and similar arrangements included within the spirit and scope of the appended claims which are to be accorded with the broadest interpretation so as to encompass all such modifications and similar structures.

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WHAT IS CLAIMED IS:

1. An anti-smog heating mask, comprising a mask body (1), wherein the two sides of the mask body (1) are provided with fixing belts (2), the mask body (1) comprises an outer layer of bamboo fiber (3), an insulation layer (4) and an inner layer of cotton cloth arranged in sequence from the outside to the inside; an air filter device (8) is provided between the outer layer of bamboo fiber (3) and the insulation layer , a heating layer is provided between the insulation layer (4) and the inner layer of the cotton cloth (5), a controller (7) and a power supply are installed on one side of the fixing belt, and there is a charging interface (10) on the controller (7), the power supply can be charged by the charging interface (10), the controller (7) is connected with a connecting wire (9), and the end of the connecting wire (9) extends from the side of the mask body (1) to be electrically connected with the heating element of the heating layer (6).

2. The anti-smog heating mask according to claim 1, wherein an opening is provided between the insulation layer (4) and the inner layer of the cotton cloth (5) on one side of the mask body (1), the opening is sealed by velcro (11), the heating element of the heating layer (6) can be taken out or put in from the opening.

3. The anti-smog heating mask according to claim 2, wherein the heating layer (6) comprises a heating element compartment with a cavity inside and a heating element arranged in the cavity, one side of the heating element compartment extends to the side end of the mask body (1) and has an opening.

4. The anti-smog heating mask according to claim 2, wherein the heating element of the heating layer (6) is a polyimide electric heating film.

5. The anti-smog heating mask according to claim 4, wherein the polyimide electric heating film has a wiring female end, and the end of the connecting wire (9) is provided with a wiring male end, the wiring male end is inserted into the wiring female end to realize the electrical connection between the polyimide electric heating film and the controller (7).

6. The anti-smog heating mask according to claim 1, wherein the two fixing straps are Y-shaped structure, the two branches at the upper end of the Y-shaped structure are short arms, and the vertical main part below is the long arm, the free ends of the two short arms are connected to the mask body (1), and the free end of the long arm is connected with a fixed velcro (11), and the fixing straps extends into the mask body along the

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inside of the fixing belt.

7. The anti-smog heating mask according to claim 1, wherein the area corresponding to the air filter device (8) on the insulation layer (4), heating layer (6), and cotton cloth (5) inner layer is provided with micropores.

8. The anti-smog heating mask according to claim 3, wherein the controller (7) is attached to the fixed belt by installing velcro (11).

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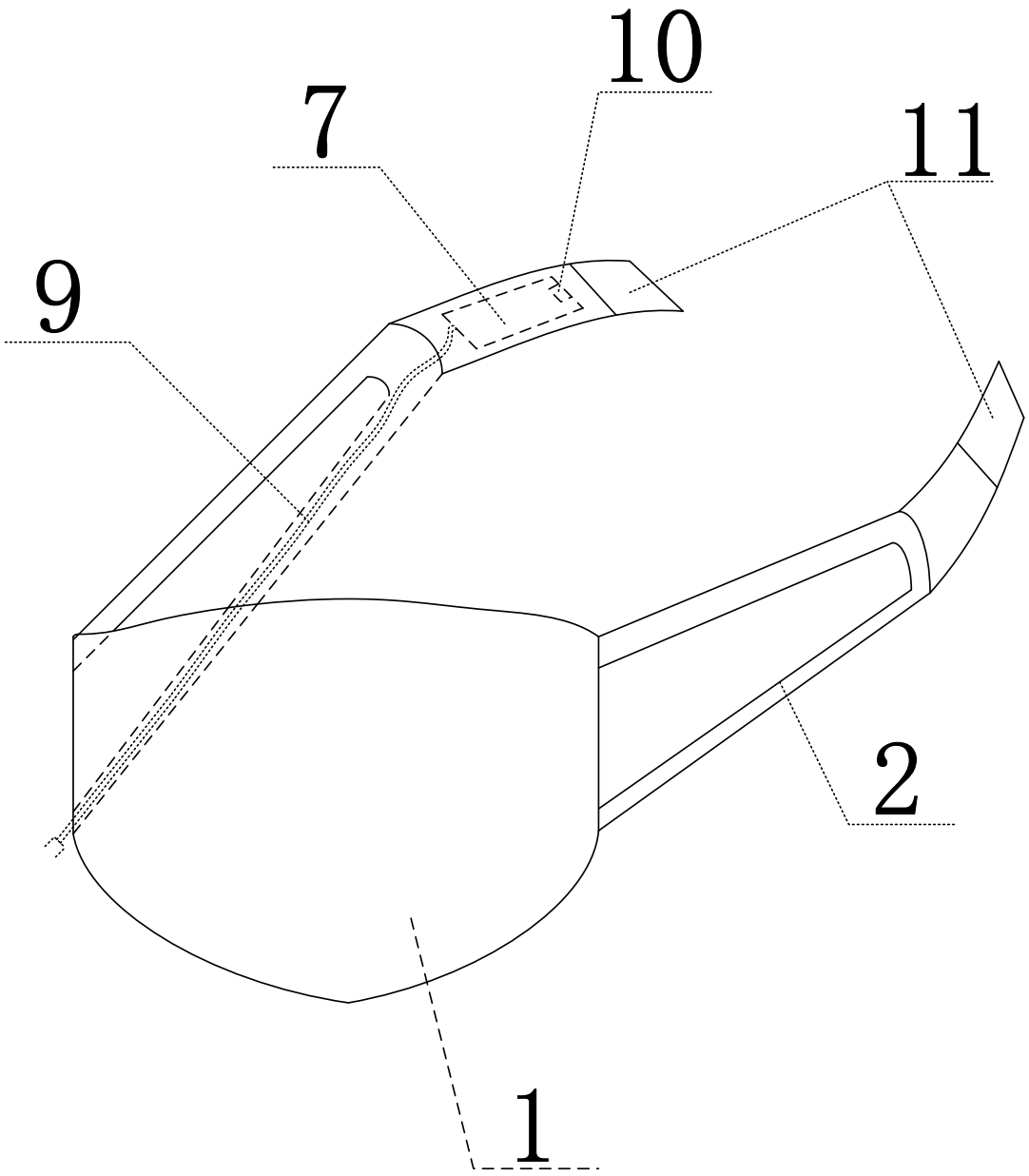


FIG. 1

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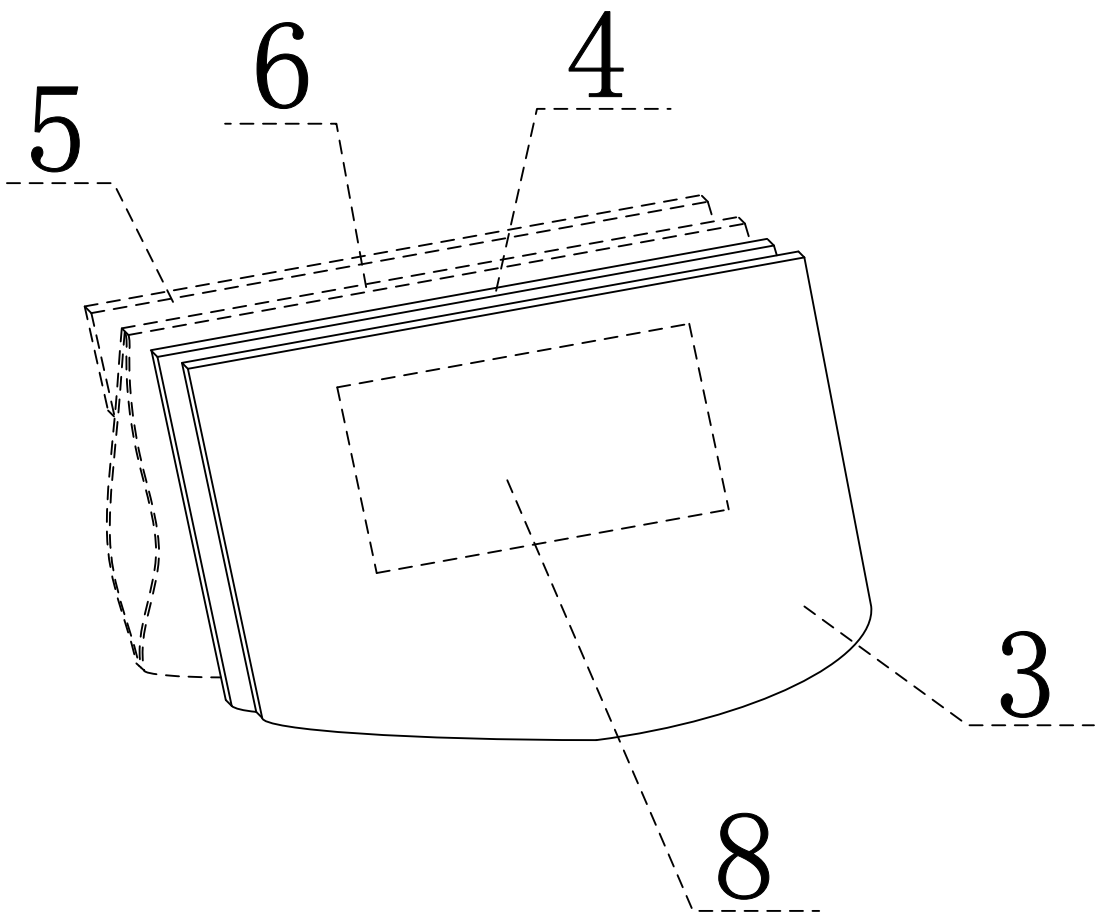


FIG. 2

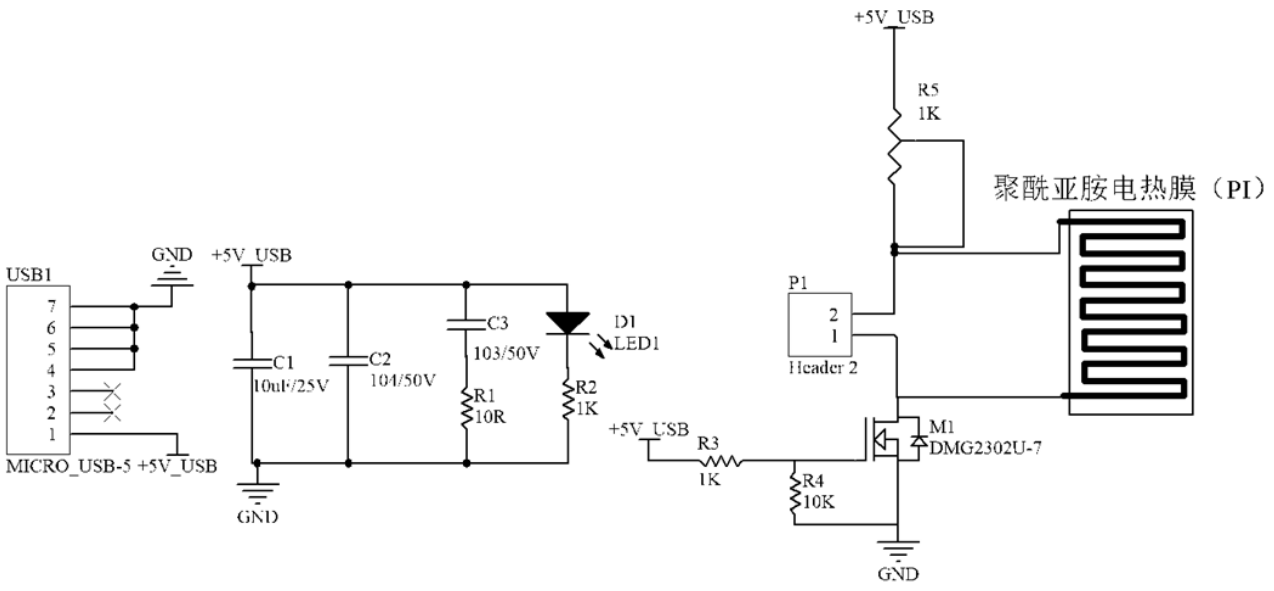


FIG. 3