MASSAGE MODULE AND MASSAGING WAIST BELT

TECHNICAL FIELD

[0001] This disclosure relates to the technical field of physiotherapy, and more particularly to a massage module and a massage waist belt.

BACKGROUND

[0002] In the related art, a host of an electrical stimulation massage instrument includes an electrode sheet, and the host of the electrical stimulation massage instrument needs to be electrically connected to a power supply device to obtain electric energy. Some massage instruments are connected to a power socket via a cable, which restricts a usage range of the massage instrument due to the length of the cable.

SUMMARY

[0003] Implementations of the present disclosure provide a massage module and a massage waist belt.

[0004] A massage module in the present disclosure includes a flexible substrate, a first massage head disposed on the flexible substrate, and a battery disposed on the flexible substrate.

[0005] In an implementation, the massage module further includes a rigid protective structure fixed to the flexible substrate. The flexible substrate has a working side. The first massage head includes a first electrode sheet, and the first electrode sheet is exposed on the working side of the flexible substrate and is spaced apart from the rigid protective structure in a first direction of the flexible substrate. The battery is installed in the rigid protective structure, a projection of the battery on the working side of the flexible substrate is in a range of a projection of the rigid protective structure on the working side of the flexible substrate, and a side of the rigid protective structure adjacent to the first massage head serves as a rigid edge. When the massage module is bent in the first direction, the massage module is supported by the rigid edge with a part of the massage module between the first electrode sheet and the rigid edge of the rigid protective structure being deformed and bent.

[0006] In an implementation, the rigid edge includes a straight side, a minimum included angle between the straight side and the first direction of the flexible substrate is in a range of [75°, 90°], and in a second direction perpendicular to the first direction, a width of the straight side is greater than 1/2 of a width of the first electrode sheet.

[0007] In an implementation, the battery is implemented as multiple batteries, the rigid protective structure is implemented as multiple rigid protective structures, and each battery is installed in one rigid protective structure.

[0008] In an implementation, the massage module further includes a circuit board disposed in the rigid protective structure, the battery is configured to supply power to the circuit board, and the circuit board is electrically connected to the first electrode sheet.

[0009] In an implementation, the first electrode sheet is installed on the flexible substrate in a floating manner, the massage module further includes a rigid support structure disposed on the flexible substrate, a floating gap is defined between the rigid support structure and the first electrode sheet, and the rigid support structure is configured to support the first electrode sheet to prevent the first electrode sheet from being bent.

[0010] In an implementation, the massage module further includes a second massage head disposed on the flexible substrate, the second massage head includes a second electrode sheet, the second electrode sheet is exposed on the working side of the flexible substrate, and a projection of the second electrode sheet on the working side and a projection of the rigid protective structure on the working side at least partially overlap.

[0011] In an implementation, the massage module further includes a second massage head, the second massage head includes a second electrode sheet, the second electrode sheet and the rigid protective structure define a battery compartment, and the battery is received in the battery compartment.

[0012] In an implementation, the first electrode sheet and/or the second electrode sheet are metal electrode sheets.

[0013] In an implementation, the massage module further includes a second massage head, the second massage head includes a second electrode sheet and a second connecting portion, and the second electrode sheet is connected to the flexible substrate in a floating manner via the second connecting portion, the second electrode sheet, the second connecting portion, and the rigid protective structure cooperatively define a battery compartment, and the battery is received

in the battery compartment.

[0014] In an implementation, a projection of the second electrode sheet on the working side of the flexible substrate is in a range of a projection of the rigid protective structure on the working side of the flexible substrate.

[0015] In an implementation, the massage module further includes a circuit board disposed in the rigid protective structure, the battery is configured to supply power to the circuit board, and the circuit board is electrically connected to the first electrode sheet and the second electrode sheet.

[0016] In an implementation, the second massage head further includes a second connecting portion, the second connecting portion is disposed on a periphery of the second electrode sheet, and the second electrode sheet is connected to the flexible substrate in a floating manner via the second connecting portion, the second electrode sheet is a metal electrode, the second connecting portion is a flexible connecting portion, and the second connecting portion is configured to provide a degree of freedom of floating for the second electrode sheet; and the rigid protective structure includes a first rigid protective member disposed on the flexible substrate, at least a part of the first rigid protective member is disposed between the battery and the second electrode sheet, and the first rigid protective member is configured to support the second electrode sheet.

[0017] In an implementation, the second massage head exceeds the flexible substrate towards the working side, the battery compartment is configured to provide a floating space for the second electrode sheet, and a height of the second massage head exceeding the flexible substrate is in a range of [3mm, 20mm].

[0018] In an implementation, the massage module includes at least two first massage heads, the at least two first massage heads are distributed at two opposite sides of the rigid protective structure in the first direction of the flexible substrate, and two sides of the rigid protective structure each serve as a rigid edge.

[0019] In an implementation, an interval between the rigid protective structure and a closest first massage head is in a range of [3.0mm, 25.0mm].

[0020] In an implementation, at least two first massage heads spaced apart from one another are distributed on one side of the rigid protective structure, each of the at least two first massage heads includes a first electrode sheet and a rigid support structure, a projection of the first electrode sheet on the working side of the flexible substrate is in a range of a projection of the

rigid support structure on the working side of the flexible substrate, a sides of the rigid support structure facing an adjacent first massage head serves as a support edge, and when the massage module is bent in the first direction, the massage module is supported by support edges with a part of the massage module between the two adjacent first massage heads being deformed and bent.

[0021] In an implementation, an interval between two adjacent first massage heads is in a range of [3.0mm, 25.0mm].

[0022] In an implementation, the first massage head includes a first connecting portion, the first connecting portion is disposed on a periphery of the first electrode sheet, and the first electrode sheet is connected to the flexible substrate via the first connecting portion, the first electrode sheet is a metal electrode, the first connecting portion is a flexible connecting portion, and the first connecting portion is configured to provide an elastic support force for the first electrode sheet.

[0023] In an implementation, the massage module further includes a magic tape disposed on the rigid protective structure.

[0024] In an implementation, a thickness of the flexible substrate is in a range of [1 mm, 10 mm].

[0025] A massage waist belt is further provided in implementations of the present disclosure. The massage waist belt includes a flexible waist belt body and a massage module, the massage module is installed on the flexible waist belt body. The massage module includes a flexible substrate, a first massage head disposed on the flexible substrate, and a battery disposed on the flexible substrate.

[0026] In an implementation, where the massage module is detachably connected to the flexible waist belt body.

[0027] In an implementation, a gap is defined between the massage module and the flexible waist belt body when the massage module is connected to the flexible waist belt body, and when the massage module is bent, the gap is configured to provide a clearance for bending deformation of the massage module.

[0028] The massage module of the present disclosure includes a battery, a first massage head, and a flexible substrate, and the battery and the first massage head are both disposed on the flexible substrate, so that the massage module not only has good portability, but also does not

need to be connected to a power supply socket via a cable, thereby having an unrestricted usage range. Moreover, the battery is installed on the flexible substrate, the flexible substrate can be bent with a curve of a human body during usage, and can be well attached to the human body.

[0029] Additional aspects and advantages of implementations of the present disclosure will be given in part in the following descriptions, and become apparent in part from the following descriptions, or be learned from the practice of the implementations of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0030] The above and/or additional aspects and advantages of the present disclosure will become apparent and easily understandable from the following descriptions of implementations with reference to accompanying drawings.

[0031] FIG. 1 is a perspective schematic structural view of a massage module according to some implementations of the present disclosure.

[0032] FIG. 2 is a perspective exploded view of a massage module according to some implementations of the present disclosure.

[0033] FIG. 3 is a schematic diagram of a bending scene of a massage module according to some implementations of the present disclosure.

[0034] FIG. 4 is a perspective schematic structural view of a rigid support structure according to some implementations of the present disclosure.

[0035] FIG. 5 is a perspective schematic structural view of a massage module according to some implementations of the present disclosure.

[0036] FIG. 6 is a perspective exploded schematic view of a massage module according to some implementations of the present disclosure;

[0037] FIG. 7 is a schematic cross-sectional view of a massage module according to some implementations of the present disclosure;

[0038] FIG. 8 is a perspective schematic structural view of a first rigid member according to some implementations of the present disclosure;

[0039] FIG. 9 is a perspective schematic structural view of a massage waist belt according to some implementations of the present disclosure.

DETAILED DESCRIPTION

[0040] The following will describe implementations in detail, and examples of implementations herein will be illustrated in the accompanying drawings, in which the same or similar reference numerals denote the same or similar components or components having the same or similar functions throughout the context. Implementations described below with reference to accompanying drawings are illustrative and intended for explaining, rather than limiting, the present disclosure.

[0041] In description of the disclosure, it should be understood that locations or positional relationships indicated by terms such as “thickness”, “on”, “under”, “front”, “back”, “in”, “out”, and the like are locations or positional relationship based on accompanying drawings and are only for the convenience of description and simplicity, rather than explicitly or implicitly indicate that apparatuses or components referred to herein must have a certain direction or be configured or operated in a certain direction and therefore cannot be understood as limitations to the disclosure. In addition, terms “first”, “second”, and the like are only used for description and cannot be understood as explicitly or implicitly indicating relative importance or implicitly indicating the number of technical features referred to herein. Therefore, features limited by terms “first”, “second”, and the like can explicitly or implicitly include at least one of the features. In the context of the present disclosure, unless stated otherwise, “multiple” or “a plurality of” refers to “at least two”.

[0042] In description of the present disclosure, it should be noted that, unless specified or limited otherwise, terms “install”, “coupling”, and “connecting” referred to herein should be understood in broader sense. For example, they may include a fixed coupling, a removable coupling, or an integrated coupling; they may include a mechanical coupling, an electrical coupling, or communication connection; they may include a direct coupling, an indirect coupling through a medium, or an interconnection between two components, or an interaction coupling between two components.

[0043] Please refer to FIGS. 1 and 2, the present disclosure provides a massage module 100. The massage module 100 includes a flexible substrate 10, a first massage head 50, and a battery 70. The massage module 100 can be bent to a certain degree, so that the massage module 100 presents a curve which is more conducive to fitting a human body, thereby facilitating wearing.

[0044] In the massage module 100 provided in the present disclosure, both the battery 70 and

the first massage head 50 are disposed on the flexible substrate 10, there is no need to additionally arrange a power device to be connected to the massage module 100, such that the massage module 100 not only has good portability, but also has an unrestricted usage range without having to be connected to a power socket via a cable. Moreover, the battery is installed on the flexible substrate, the flexible substrate can be bent with a curve of a human body during usage, and can be well attached to the human body.

[0045] The flexible substrate 10 has a working side 12. The working side 12 is a side where the first massage head 50 works. For example, a user may attach the working side 12 to a part that needs massage, and massage by using the first massage head 50. The flexible substrate 10 is a flexible rubber and is made of a flexible material, and the flexible material includes, but is not limited to, insulating rubber or silica gel. The flexible substrate 10 can be bent and deformed, so as to adapt to different body-type human curves, and enable the first massage head 50 to be attached to a human body.

[0046] The massage module 100 may be configured to achieve a physiotherapy massage effect on skin, muscles or the like of a human body part by means of the first massage head 50, such as electrical stimulation, phototherapy, film heating, vibration, and pressing. Correspondingly, the massage head 50 may be provided with a massage unit for performing one or more of electrical stimulation, phototherapy, film heating, vibration, pressing, or the like. In implementations of the present disclosure, for example, the massage unit is an electrode sheet and can be used for electrical stimulation and massage.

[0047] The massage module 100 further includes a rigid protective structure 30, and the rigid protective structure 30 is fixed to the flexible substrate 10. The term “fixed” herein means that a consumer is unable to use a nondestructive means to detach the rigid protective structure 30 from the flexible substrate 10 during normal use. The battery 70 is installed in the rigid protective structure 30. A projection of the battery 70 on the working side 12 of the flexible substrate 10 is in a range of a projection of the rigid protective structure 30 on the working side 12 of the flexible substrate 10, so as to ensure that the rigid protective structure 30 can protect the battery 70 when the flexible substrate 10 is bent, thereby preventing the battery 70 from being damaged due to excessive bending.

[0048] The first massage head 50 includes a first electrode sheet 51 exposed on the working side 12 of the flexible substrate 10. The first electrode sheet 51 is spaced apart from the rigid

protective structure 30 in a first direction Y1/Y2 of the flexible substrate 10. That is, the first electrode sheet 51 and the rigid protective structure 30 are distributed along the first direction Y1/Y2 of the flexible substrate 10, and the first electrode sheet 51 is spaced from the rigid protective structure 30. In implementation of the present disclosure, the first direction Y1/Y2 of the flexible substrate 10 is a length direction of the flexible substrate 10. In addition, the flexible substrate 10 further has a second direction X1/X2, the second direction X1/X2 of the flexible substrate 10 is a width direction of the flexible substrate 10, and the first direction Y1/Y2 is perpendicular to the second direction X1/X2.

[0049] In the related art, the massage waist belt, as a whole, is of a rigid structure, is unable to deform to fit a waist curve, and has poor fit with the human body. The difficulty in designing the massaging waist belt as a flexible waist belt lies in that when the massaging waist belt is bent when being worn, the electrode sheets on the waist belt are also bent, which easily causes the electrode sheets to bend at a relatively large angle, and may cause the electrode sheets to be damaged.

[0050] Referring to FIG. 1 to FIG. 3, in the massage module 100 provided in the present disclosure, a side of the rigid protective structure 30 adjacent to the first massage head 50 serves as a rigid edge 311. When the massage module 100 is bent in the first direction Y1/Y2 (as illustrated in FIG. 3), the massage module 100 is supported by a rigid edge 311 of a side of the rigid protective structure 30 adjacent to the first massage head 50 with a part of the massage module 100 between the first electrode sheet 51 and the rigid edge 311 of the rigid protective structure 30 being deformed and bent. In this way, on one hand, the rigid protective structure 30 can protect the battery 70; on the other hand, the massage module 100 can use the rigid protective structure 30 to guide the massage module 100 to bend, so that the bending mainly occurs between the first electrode sheet 51 and the rigid edge 311 of the rigid protective structure 30, and occurs at the first massage head 50 as less as possible, so as to reduce bending damage to the first electrode sheet 51. Moreover, in the massage module 100, there is no need to additionally arrange a protective member to separately protect the battery 70 or the first electrode sheet 51, and the battery 70 and the first electrode sheet 51 can be protected at the same time by the rigid protective structure 30, thereby saving the number of components, facilitating the massage module 100 being light, thin, and small, and being able to save costs.

[0051] Referring to FIGS. 1 and 2, in an implementation, the rigid protective structure 30 is

disposed inside the flexible substrate 10, and the rigid edge 311 indicated in FIG. 1 indicates a position of the massage module 100 where the rigid edge 311 is located when the rigid protective structure 30 and the flexible substrate 10 are assembled.

[0052] Please refer to FIG. 1, in some implementations, the thickness t of the flexible substrate 10 is in a range of [1 mm, 10 mm]. For example, the thickness t of the flexible substrate 10 is 1 mm, 2 mm, 3 mm, 4 mm, 5 mm, 6 mm, 7 mm, 8 mm, 9 mm, or 0 mm, etc., which will not be limited here. In this way, the range of the thickness t of the flexible substrate 10 is appropriate, so that bending will not be affected due to the flexible substrate 10 being too thick, and the flexible substrate 10 will not be broken due to the flexible substrate 10 being too thin.

[0053] Please refer to FIGS. 1 and 3, in some implementations, the rigid side 311 includes a straight side 3113, and a minimum included angle α1/α2 between the straight side 3113 and the first direction Y1/Y2 of the flexible substrate 10 is in a range of [75°, 90°]. As illustrated in FIG. 1, an extending direction of the straight edge 3113 is relatively close to the second direction X1/X2 of the flexible substrate 10, the included angle between the straight edge 3113 and the first direction Y1/Y2 of the flexible substrate 10 includes an included angle α1 and an included angle α2, and the smallest one of the included angle α1 and the included angle α2 is in range of [75°, 90°]. For example, if α1＜α2, the included angle α1 is in a range of [75°, 90°]; and if α1＜α2, the included angle α2 is in an range of [75°, 90°].

[0054] The smallest one of the included angle α1 and the included angle α2 between the straight edge 3113 and the first direction of the flexible substrate Y1/Y2 may be 75°, 76°, 77°, 78°, 79°, 80°, 81°, 82°, 83°, 84°, 85°, 86°, 87°, 88°, 89°, or 90°, etc., which is not limited herein. In this way, the extending direction of the straight edge 3113 is relatively close to the second direction X1/X2, and when the massage module 100 is bent by using the straight edge 3113 as a support, the straight edge 3113 can guide bending deformation (for example, a bent crease) to extend along the second direction X1/X2 as much as possible. In this way, bending can be limited to an interval between the first electrode sheet 51 and the straight edge 3113 of the rigid protective structure 30 as much as possible, so as to prevent as much as possible the first electrode sheet 51 from being bent at a relatively large angle due to the bend being guided to the first electrode sheet 51.

[0055] Please refer to FIG. 1, in some implementations, in the second direction perpendicular to the first direction Y1/Y2, that is, in the second direction X1/X2, a width of the straight edge

3113 is greater than 1/2 of a width of the first electrode sheet 51. For example, as illustrated in FIG. 1, the width of the straight edge 3113 is b1, the width of the first electrode sheet 51 is b2, and b1>b2/2. In this way, the straight edge 3113 in a direction close to a vertical direction is longer, which is more beneficial to guide a bent crease of bending deformation to extend along the vertical direction as much as possible, so as to prevent the first electrode sheet 51 from being bent at a relatively large angle.

[0056] Please refer to FIGS. 1 to 3, in some implementations, the massage module 100 includes at least two first massage heads 50. For example, the massage module 100 includes two, three, four, or more first massage heads 50, which is not limited herein. More first massage heads 50 will enable more parts to be massaged.

[0057] In some implementations, the at least two first massage heads 50 are distributed at two opposite sides of the rigid protective structure 30 in the first direction Y1/Y2 of the flexible substrate 10, and two sides of the rigid protective structure 30 each serve as the rigid edge 311. In this way, the rigid edges 311 on the two sides of the rigid protective structure 30 can respectively support bending of the massage module 100, so as to limit bending to an interval between the rigid protective structure 30 and each of the first electrode sheets 51 at the two sides of the rigid protective structure 30 as much as possible, and protect the first electrode sheets 51 at the two sides of the rigid protective structure 30 from being bent at a relatively large angle. In this way, the at least two first massage heads 50 may share one rigid protective structure 30 for protection, thereby saving the number of components.

[0058] Please refer to FIG. 1, in some implementations, an interval d2 between the rigid protective structure 30 and the closest first massage head 50 is in a range of [3.0 mm, 25.0 mm]. For example, the interval d2 between the rigid protective structure 30 and the closest first massage head 50 may be 3.0 mm, 4.0 mm, 5.0 mm, 6.0 mm, 7.0 mm, 8.0 mm, 9.0 mm, 10.0 mm, 11.0 mm, 12.0 mm, 13.0 mm, 14.0 mm, 15.0 mm, 16.0 mm, 17.0 mm, 18.0 mm, 19.0 mm, 20.0 mm, 21.0 mm, 22.0 mm, 23.0 mm, 24.0 mm, 25.0 mm, or the like, which will not be enumerated herein. In this way, the interval between the rigid protective structure 30 and the closest first massage head 50 is appropriate, which avoids that the first electrode sheet 51 of the first massage head 50 is easily bent due to bending caused by the interval being too small and there being not an enough interval, and avoids that the first electrode sheet 51 is not protected well due to the interval being too large and the rigid edge being unable to provide support.

[0059] Further, in some implementations, the rigid protective structure 30 is in a relatively central position of flexible substrate 10. Thus, when the massage module 100 is bent, a deformation degree at a position of the rigid protective structure 30 in the middle of the flexible substrate 10 is relatively small, and the flexible substrate 10 on the left and right sides of the rigid protective structure 30 is bent towards the position of the rigid protective structure 30, such that a bent massage module 100 presents a bent shape in which a middle part is relatively flat and two sides are inclined relative to each other, so as to better conform to a waist/abdominal curve of a human body.

[0060] Please refer to FIGS. 1 and 2, furthermore, in some implementations, the massage module 100 further includes a circuit board 90, and the circuit board 90 is disposed in the rigid protective structure 30. The battery 70 is configured to supply power to the circuit board 90, and the circuit board 90 is electrically connected to the first electrode sheet 51. In this way, more space can be made to arrange the first massage head 50.

[0061] In some implementations, the circuit board 90 is a rigid plate. In this way, the rigid circuit board 90 is disposed in the rigid protective structure 30, which can prevent influence on an appearance pattern of positions with a large degree of bending due to placement of rigid devices at too many positions. Moreover, because the rigid protective structure 30 has good deformation resistance, the circuit board 90 may be a thin board member, which can prevent the thin circuit board 90 from being bent and broken due to excessive bending.

[0062] In some implementations, a projection of the circuit board 90 on the working side 12 of the flexible substrate 10 is in a range of a projection of the rigid protective structure 30 on the working side 12 of the flexible substrate 10, so as to ensure that the rigid protective structure 30 can surround the circuit board 90 and protect the circuit board 90.

[0063] Please refer to FIG. 2, in some implementations, the rigid protective structure 30 defines a battery compartment 301, and the battery 70 and the circuit board 90 are received in the battery compartment 301.

[0064] In some implementations, the flexible substrate 10 further has an installing side 13 facing away from the working side 12, the rigid protective structure 30 includes a first rigid protective member 31 and a second rigid protective member 35, the first rigid protective member 31 is disposed on the working side 12 of the flexible substrate 10, the second rigid protective member 12 is disposed on the installing side 13 of the flexible substrate 10, and the first rigid

protective member 31 and the second rigid protective member 35 cooperatively define the battery compartment 301.

[0065] In some implementations, there are multiple batteries 70 and multiple rigid protective structures 30, and each battery 70 is installed in one rigid protective structure 30. That is, the multiple batteries 70 are distributed in different rigid protective structures 30, so that the massage module 100 can be prevented from being locally too thick or too large.

[0066] Please refer to FIGS. 1 and 2, in some implementations, at least two first massage heads 50 spaced apart from each other are distributed on the same side of the rigid protective structure 30, which can avoid that the rigid protective structure 30 provides less massage-enabling parts for the human body at the same side of the rigid protective structure 30, thereby affecting a massaging effect.

[0067] Please refer to FIG. 1, in some implementations, an interval d1 between two adjacent first massage heads 50 is in a range of [3.0mm, 25.0mm]. For example, the interval d1 between two adjacent first massage heads 50 may be 3.0 mm, 4.0 mm, 5.0 mm, 6.0 mm, 7.0 mm, 8.0 mm, 9.0 mm, 10.0 mm, 11.0 mm, 12.0 mm, 13.0 mm, 14.0 mm, 15.0 mm, 16.0 mm, 17.0 mm, 18.0 mm, 19.0 mm, 20.0 mm, 21.0 mm, 22.0 mm, 23.0 mm, 24.0 mm, 25.0 mm, or the like, which will not be enumerated herein. In this way, the interval between two adjacent first massage heads 50 is appropriate, which will not hinder deformation of the flexible substrate 10 due to a too small interval, and avoid dispersion of massage positions caused by a too large interval between two adjacent first massage heads 50.

[0068] Please refer to FIGS. 2 and 4, in some implementations, the first electrode sheet 51 may be installed on the flexible substrate 10 in a floating manner, the massage module 100 further includes a rigid support structure 20 disposed on the flexible substrate 10, a floating gap is defined between the rigid support structure 20 and the first electrode sheet 51, and the rigid support structure 20 is configured to support the first electrode sheet 51 to prevent the first electrode sheet 51 from being bent. The rigid support structure 20 solves the problem of excessive floating of the first electrode sheet 51 on the flexible substrate 10.

[0069] The first electrode sheet 51 can float up and down to a certain degree with respect to the flexible substrate 10, to enable the first electrode sheet 51 to be better attached to a human body when the massage module 100 is worn. A floating range of the first electrode sheet 51 is limited by the rigid support structure 20, so as to prevent the first electrode sheet 51 from being

bent due to excessive floating on the flexible substrate 10.

[0070] Please refer to FIG. 4, in some implementations, the rigid support structure 20 includes a support portion 22, and the support portion 22 is configured to provide a support force for the first electrode sheet 51, so as to prevent the first electrode sheet 51 from being bent due to excessive pressing when floating with respect to the flexible substrate 10.

[0071] Please refer to FIGS. 1 and 2, in some implementations, the first massage head 50 further includes a first connecting portion 53, the first connecting portion 53 is disposed on a periphery of the first electrode sheet 51, and the first electrode sheet 51 is connected to the flexible substrate 10 via the first connecting portion 53. In this way, when the flexible substrate 10 is bent, the first connecting portion 53 may serve as a buffer between the flexible substrate 10 and the first electrode sheet 51, so as to prevent the first electrode sheet 51 from being excessively bent.

[0072] In some implementations, the first massage head 50 exceeds the flexible substrate 10 towards the working side 12, and a height c1 of the first massage head 50 exceeding the flexible substrate 10 is in a range of [3mm, 20mm]. For example, the height c1 of the first massage head 50 exceeds the flexible substrate 10 is 3 mm, 4 mm, 5 mm, 6 mm, 7 mm, 8 mm, 9 mm, 10 mm, 11 mm, 12 mm, 13 mm, 14 mm, 15 mm, 16 mm, 17 mm, 18 mm, 19 mm, 20 mm, etc., which will not be enumerated here. In this way, the range of the height of the first massage head 50 exceeding the flexible substrate 10 is appropriate, so that the first electrode sheet 51 can be attached to a human body more easily, and the first massage head 50 is not easily deformed by force due to the first massage head 50 exceeding the flexible substrate 10 too much, which may cause poor attachment of the electrode sheets.

[0073] In some implementations, the first electrode sheet 51 is a metal electrode, and the first connecting portion 53 is a flexible connecting portion. The flexible connecting portion can deform to a certain degree. When the flexible substrate 10 is bent, a connection position of the first connecting portion 53 and the flexible substrate 10 is bent in preference to a position where the first electrode sheet 51 is located, so as to prevent the electrode sheet 53 from being bent at a large angle.

[0074] In addition, the flexible first connecting portion 53 is configured to provide the first electrode sheet 51 with a degree of freedom of floating, so that the first electrode sheets 51 can be better attached to the human body.

[0075] In some implementations, the first electrode sheet 51 is a rigid electrode, and a weight of the massage module 100 is in a range of [100g, 300g]. For example, the weight of the massage module 100 is 100g, 120g, 140g, 160g, 180g, 200g, 220g, 240g, 260g, 280g, 300g, etc., which will not be enumerated here. In this way, for example, when the massage module 100 is worn on a human body by using a waist belt, or is tightly attached to the skin by being pressed or in other manners, the first electrode sheet 51 can sink into the flesh, and the weight of the massage module 100 will cause the first electrode plate 51 embedded in the flesh to sink, causing the first electrode plate 51 to clamp with the skin, which may increase friction between the first electrode plate 51 and the skin, prevent the first electrode plate 51 from shifting, and enhance an adhesion ability of the first electrode plate 51 to the skin. Besides, the massage module 100 will not be too heavy to increase the user's burden

[0076] Please refer to FIGS. 2 and 4, in some implementations, the rigid support structure 20 further includes a protective plate 23 disposed at the installing side 13 of the flexible substrate 10. The protective plate 23 has certain deformation resistance, and can strengthen deformation resistance at a position where the rigid support structure 20 is disposed.

[0077] In some implementations, a magic tape can be disposed on the protective plate 23, and the magic tape is supported by the rigid protective plate 23, so that the magic tape is not easy to be bent. For example, the flexible substrate 10 includes a first annular connecting portion 15, the first annular connecting portion 15 is fixed to one side of the protective plate 23 facing away from the first electrode sheet 51, and the first annular connecting portion 15 and the protective plate 23 define an installation space 151. The term “fixed” herein means that a consumer is unable to use a nondestructive means to detach the first annular connecting portion 15 during normal use. The massage module 100 further includes the magic tape (not illustrated), and the magic tape is disposed in the installation space 151. The massage module 100 may be detachably installed on a wearable device by using the magic tape, so that the massage module 100 can be worn on a human body by using the wearable device. For example, referring to FIG. 9, the wearable device may be a waist belt 200, and the massage module 100 may be detachably installed on the waist belt 200 by using the magic tape. In this way, it is convenient for a user to easily assemble and disassemble the massage module 100, and the user can also separately clean the wearable device, so as to provide convenience for the user.

[0078] Please refer to FIG. 2, in some implementations, the magic tape can be disposed on

the rigid protective structure 30, and the magic tape is supported by the rigid protective structure 30, so that the magic tape is not easily bent. For example, the magic tape can be disposed on one side of the second rigid protective member 35 of the rigid protective structure 30 facing towards the installing side 13.

[0079] Please refer to FIGS. 5 to 7, in some implementations, the massage module 100 further includes a second massage head 60, the second massage head 60 is disposed on the flexible substrate 10. The second massage head 60 includes a second electrode sheet 61, the second electrode sheet 61 is exposed on the working side 12 of the flexible substrate 10, and a projection of the second electrode sheet 61 on the working side 12 and a projection of the rigid protective structure 30 on the working side 12 at least partially overlap, so that the rigid protective structure 30 can at least partially support the second electrode sheet 61, to prevent the second electrode sheet 61 from being bent.

[0080] In some implementations, the second massage head 60 defines a receiving space 62 therein, and the rigid protective structure 30 is at least partially received in the receiving space 62. In this way, the rigid protective structure 30 not only can protect the battery 70, but also can prevent the second electrode sheet 61 from being bent.

[0081] Moreover, the first massage head 50 is spaced apart from the rigid protective structure 30, and the rigid protective structure 30 is received in the receiving space 62 of the second massage head 60, such that the first massage head 50 is spaced apart from the second massage head 60. The rigid protective structure 30 is configured to guide a bending direction of the massage module 100, so that bending occurs at an interval between the second massage head 60 and the first massage head 50 as much as possible and occurs at a position of the first electrode sheet 51 or the second electrode sheet 61 as little as possible, so as to protect the first electrode sheet 51 and the second electrode sheet 61 from being excessively bent.

[0082] Referring to FIGS. 6 and 7, in some implementations, a projection of the second electrode sheet 61 on the working side 12 of the flexible substrate 10 is in a range of a projection of the rigid protective structure 30 on the working side 12 of the flexible substrate 10. In this way, the rigid protective structure 30 surrounds the second electrode sheet 61, such that the second electrode sheet 61 is disposed inside the rigid protective structure 30, and can be protected by the rigid protective structure 30.

[0083] Please refer to FIGS. 5 and 6, in some implementations, the number of the second

massage heads 60 may be one or more. For example, the number of second massage heads 60 may be one, two, three, four, or more, which will not be enumerated here. The massage module 100 is provided with multiple second massage heads 60 for massaging multiple positions at the same time, thereby improving the massaging effect.

[0084] In some implementations, a projection of at least one of the multiple second massage heads 60 on the working side 12 at least partially overlaps a projection of the rigid protective structure 30 on the working side 12, so as to be protected by the rigid protective structure 30.

[0085] In an implementation, there are multiple rigid protective structures 30, a projection of each second massage head 60 on the working side 12 at least partially overlaps with a projection of one rigid protective structure 30 on the working side 12, such that the second electrode sheet 61 of each second massage head 60 can be protected by one rigid protective structure 30. For example, each second massage head 60 defines the receiving space 62, the receiving space 62 of each second massage head 60 corresponds to one rigid protective structure 30, and at least a part of the corresponding rigid protective structure 30 is received in the receiving space 62.

[0086] In some implementations, in the case that there are multiple batteries 70 and multiple rigid protective structures 30, the rigid protective structure 30 may also be arranged corresponding to the first massage head 50, and the batteries 70 and the rigid protective structures 30 are installed in an inner space of the first massage head.

[0087] In some implementations, the second electrode sheet 61 can float up and down to a certain degree with respect to the flexible substrate 10, so that the second electrode sheet 61 can more closely be attached to the human body when the massage module 100 is worn. For example, the second massage head 60 further includes a second connecting portion 63, the second connecting portion 63 is disposed on a periphery of the second electrode sheet 61, and the second electrode sheet 61 is connected to the flexible substrate 10 in a floating manner via the second connecting portion 63, so as to provide the second electrode sheet 61 with a degree of freedom of floating, so that the second electrode sheet 61 can be better attached to a human body. In some implementations, the second electrode sheet 61 is a metal electrode, and the second connecting portion 63 is a flexible connecting portion, such as a silica gel connecting portion.

[0088] In some implementations, the rigid protective structure 30 includes a first rigid protective member 31 disposed on the flexible substrate 10, at least a part of the first rigid protective member 31 is disposed between the battery 70 and the second electrode sheet 61, and

the first rigid protective member 31 is configured to support the second electrode sheet 61. In this way, when the second electrode sheet 61 floats up and down with respect to the flexible substrate 10, the support provided by the first rigid protective member 31 for the second electrode sheet 61 can prevent the second electrode sheet 61 from being damaged due to excessive pressing down.

[0089] Referring to FIG. 8, in some implementations, the first rigid protective member 31 includes an annular portion 312, the annular portion 312 is disposed between the battery 70 and the second electrode sheet 61, and the annular portion 312 is configured to support the second electrode sheet 61.

[0090] In some implementations, the annular portion 312 defines a through hole 313 to facilitate heat dissipation of the battery 70.

[0091] In some implementations, the first rigid protective member 31 further includes a side wall portion 314, the annular portion 312 is connected to the side wall portion 314, and the side wall portion 314 is disposed around the battery, so that the battery 70 can be installed into the first rigid protective member 31.

[0092] Please refer to FIG. 6, in some implementations, the rigid protective structure 30 includes an installing member 33, the installing member 33 is fixedly connected with the flexible substrate 10, and the first rigid protective member 31 is installed on the installing member 33.

[0093] In some implementations, the installing member 33 is a rigid plastic member, so as to be connected to the flexible substrate 10 by way of bonding, injection molding, or the like. The first rigid protective member 31 is a metal member and has good thermal conductivity, thereby facilitating heat dissipation of the battery 70. Moreover, the metal member has higher strength, such that the thickness can be appropriately reduced, thereby reducing an overall thickness of the second massage head 60 and being beneficial to the miniaturization of the product.

[0094] Please refer to FIGS. 6 and 8, in some implementations, the first rigid protective member 31 defines an opening 316 at one side of the first rigid protective member 31 facing away from the second electrode sheet 61 for installing the battery 70. The rigid protective structure 30 includes a second rigid protective member 35 disposed on the flexible substrate 10, and the second rigid protective member 35 is disposed at one side of the battery 70 facing away from the second electrode sheet 61. The second rigid protective member 35 is connected to the first rigid protective member 31 and covers the opening 316. In this way, the first rigid protective

member 31 and the second rigid protective member 35 define a closed space to accommodate the battery 70, so that the battery 70 is received in the rigid protective structure 30, and the battery 70 can be protected from being excessively bent.

[0095] Please refer to FIGS. 5 to 8, in some implementations, one of the first rigid protective member 31, the second rigid protective member 35, and the installing member 33 may be used as the rigid protective structure 30 separately. Accordingly, the rigid edge 311 of the rigid protective structure 30 is a side edge of one of the first rigid protective member 31, the second rigid protective member 35, and the installing member 33. For example, the second rigid protective member 35 alone serves as the rigid protective structure 30, and the rigid edge 311 of the rigid protective structure 30 is a side edge of the second rigid protective member 35.

[0096] In some implementations, a combination of any two of the first rigid protective member 31, the second rigid protective member 35, and the installing member 33 is used as the rigid protective structure 30, and a side edge of any member in the combination is used as the rigid edge 311. For example, the rigid protective structure is a combination of the first rigid protective member 31 and the second rigid protective member 35, and the side edge of the second rigid protective member 35 in the combination serves as the rigid edge 311.

[0097] In some implementations, the rigid protective structure 30 includes the first rigid protective member 31, the second rigid protective member 35, and the installing member 33, so that the rigid protective structure 30 has functions of the first rigid protective member 31, the second rigid protective member 35, and the installing member 33 described above.

[0098] Referring to FIGS. 6 and 7, in an implementation, the second electrode sheet 61 and the rigid protective structure 30 define a battery compartment 301, and the battery 70 is received in the battery compartment 301. In this way, the second massage head can be used to accommodate the battery 70 without using other spaces, and the second electrode sheet 61 and the rigid protective structure 30 can be used to cooperatively protect the battery 70. In an implementation, the second electrode sheet 61 is rigid, such as a metal electrode sheet, so as to better protect the battery 70.

[0099] For example, the rigid protective structure 30 includes a second rigid protective member 35 disposed on the installing side 13 of the flexible substrate 10, the second electrode sheet 61 and the second rigid protective member 35 define a battery compartment 301, and the battery 70 is disposed between the second electrode sheet 61 and the second rigid protective

member 35.

[0100] In yet another implementation, the second electrode sheet 61, the second connecting portion 63, and the rigid protective structure 30 cooperatively define a battery compartment 301, and the battery 70 is received in the battery compartment 301. For example, the second electrode sheet 61 is rigid, such as a metal electrode sheet, so as to better protect the battery 70, and the second connecting portion 63 may be flexible, such as a silica gel connecting portion, so as to provide the second electrode sheet 61 with a certain degree of freedom of floating.

[0101] For example, the rigid protective structure 30 includes a second rigid protective member 35 disposed on the installing side 13 of the flexible substrate 10, the second electrode sheet 61, the second connecting portion 63, and the second rigid protective member 35 cooperatively define a battery compartment 301, and the battery 70 is disposed between the second electrode sheet 61 and the second rigid protective member 35.

[0102] Please refer to FIG. 5, in some implementations, the massage module 100 further includes a rigid installing structure 40, and the rigid installing structure 40 is located at a relatively central position of the flexible substrate 10. At least one second massage head 60 is disposed on each side of the rigid installing structure 40. Thus, when the massage assembly 100 is bent, a deformation degree at a position of the rigid installing structure 40 in the middle of the flexible substrate 10 is relatively small, and the flexible substrate 10 on the left and right sides of the rigid installing structure 40 is bent towards the rigid installing structure 40, such that a bent massage module 100 has a bending shape in which a middle part is relatively flat and the two sides are inclined relative to each other, so as to better conform to a waist/abdominal curve of a human body.

[0103] Please refer to FIG. 6, in some implementations, the massage module 100 further includes a magic tape. The flexible substrate 10 includes a second annular connecting portion 16; the second annular connecting portion 16 is fixed to one side of the second rigid protective member 35 facing away from the battery 70. The second annular connecting portion 16 and the second rigid protective member 35 define an installation space 161. The magic tape is disposed in the installation space 161. The term “fixed” herein means that a consumer is unable to use a nondestructive means to detach the second annular connecting portion 16 during normal use. The magic tape is attached to the installation space 161, so that when the massage module 100 is installed on a wearable device, a position where the second massage head 60 is disposed cannot

easily shake relative to the wearable device, thereby preventing the second electrode sheet 61 from sliding at a position of a human body where the second electrode sheet 61 is attached due to shaking and preventing affecting the massage effect.

[0104] In some implementations, the magic tape is connected to the second annular connecting portion 16 to form a flat plate. In this way, a fitting surface of the massage module 100 that is attached to the wearable device can be flat.

[0105] Please refer to FIG. 5, in some implementations, an interval d3 between the second massage head 60 and the closet first massage head 50 is in a range of [3.0 mm, 25.0 mm]. For example, the interval between the second massage head 60 and the closest first massage head 50 may be 3.0 mm, 4.0 mm, 5.0 mm, 6.0 mm, 7.0 mm, 8.0 mm, 9.0 mm, 10.0 mm, 11.0 mm, 12.0 mm, 13.0 mm, 14.0 mm, 15.0 mm, 16.0 mm, 17.0 mm, 18.0 mm, 19.0 mm, 20.0 mm, 21.0 mm, 22.0 mm, 23.0 mm, 24.0 mm, or 25.0 mm, etc., which will not be enumerated herein. In this way, the interval between the second massage head 60 and the closest first massage head 50 is appropriate, the first electrode sheets 51 and the second electrode sheets 61 are not easily bent due to a too small interval, and the massage effect is not affected due to a too large interval between the second massage head 60 and the closest first massage head 50.

[0106] In some implementations, the second massage head 60 exceeds the flexible substrate 10 towards the working side 12, and the height c2 of the second massage head 60 exceeding the flexible substrate 10 is in a range of [3mm, 20mm]. For example, the height c2 of the second massage head 60 exceeding the flexible substrate 10 is 3 mm, 4 mm, 5 mm, 6 mm, 7 mm, 8 mm, 9 mm, 10 mm, 11 mm, 12 mm, 13 mm, 14 mm, 15 mm, 16 mm, 17 mm, 18 mm, 19 mm, 20 mm, etc., which will not be enumerated here. In this way, a range of the height of the first massage head 60 exceeding the flexible substrate 10 is appropriate, so that the second electrode sheet 61 is more easily embedded into the skin and attached to the human body, and the second massage head 60 may not exceed the flexible substrate 10 too much to cause great pressure resistance to the human body and cause discomfort.

[0107] Please refer to FIG. 6, in some implementations, the massage module 100 further includes a circuit board 90, the circuit board 90 is disposed in the rigid protective structure 30, the battery 70 is configured to supply power to the circuit board 90, and the circuit board 90 is electrically connected to the first electrode sheet 51 and the second electrode sheet 61. In this way, the rigid protective structure 30 can protect the battery 70, the circuit board 90, and the

second electrode sheet 61 without an additional protective structure, thereby saving materials and reducing costs.

[0108] Please refer to FIG. 9, the present disclosure provides a massage waist belt 1000. The massage waist belt 1000 includes a flexible waist belt body 200 and the massage module 100 in any one of the above implementations, and the massage module 100 is installed on the flexible waist belt body 200.

[0109] In one implementation, the massage module 100 is detachably connected to the flexible waist belt body 200, for example, by assembling a magnetic member for adsorption, assembling a magic tape for adhesion, or defining an accommodating portion (for accommodating the massage module 100) or arranging a hanging portion (for hanging and installing the massage module 100) on the flexible waist belt body 200 etc., and may also by various combinations of the above methods, which is not limited here. In this way, the flexible waist belt body 200 can be disassembled and cleaned separately.

[0110] Further, in some implementations, the flexible waist belt body 200 defines an installation space 210, the massage module 100 is installed in the installation space 210 when the massage module 100 is connected to the flexible waist belt body 200, and a gap is defined between the massage module 100 and a bottom wall of the installation space 210 of the flexible waist belt body 200. In this way, when the massage module 100 is bent, the gap provides a clearance for bending deformation of the massage module 100.

[0111] In still another implementation, the massage module 100 and the flexible waist belt body 200 are integrally formed. In this way, the connection between the massage module 100 and the flexible waist belt body 200 is relatively reliable, and the massage module 100 can be prevented from falling off the flexible waist belt body 200.

[0112] Reference throughout this description to “some implementations”, “an example”, “exemplary”, or the like means that a particular feature, structure, material, or characteristic described in conjunction with the implementation may be contained in at least one implementation of the present disclosure. The phrase appearing in various places in the specification does not necessarily refer to the same implementation. The particular feature, structure, material, or characteristic described may be properly combined in any one or more implementations. In addition, when the implementation is not mutually exclusive with other implementations, it is expressly and implicitly understood by those skilled in the art that an

implementation described herein may be combined with other implementations.

[0113] Although implementations of the present disclosure have been illustrated and described, it would be appreciated that the above implementations are illustrative and cannot constitute any limitation to the present disclosure. Those skilled in the art may make changes, modifications, substitutions, and alterations to the above implementations within the scope of the present disclosure.

What is claimed is:

1. A massage module, comprising:
a flexible substrate;
a first massage head disposed on the flexible substrate; and
a battery disposed on the flexible substrate.

2. The massage module according to claim 1, further comprising:
a rigid protective structure fixed to the flexible substrate; wherein
the flexible substrate has a working side;
the first massage head comprises a first electrode sheet, and the first electrode sheet is exposed on the working side of the flexible substrate and is spaced apart from the rigid protective structure in a first direction of the flexible substrate;
the battery is installed in the rigid protective structure, a projection of the battery on the working side of the flexible substrate is in a range of a projection of the rigid protective structure on the working side of the flexible substrate, and a side of the rigid protective structure adjacent to the first massage head serves as a rigid edge; and
when the massage module is bent in the first direction, the massage module is supported by the rigid edge with a part of the massage module between the first electrode sheet and the rigid edge of the rigid protective structure being deformed and bent.

3. The massage module according to claim 2, wherein the rigid edge comprises a straight side, a minimum included angle between the straight side and the first direction of the flexible substrate is in a range of [75°, 90°], and in a second direction perpendicular to the first direction, a width of the straight side is greater than 1/2 of a width of the first electrode sheet.

4. The massage module according to claim 2, wherein the battery is implemented as a plurality of batteries, the rigid protective structure is implemented as a plurality of rigid protective structures, and each battery is installed in one rigid protective structure.

5. The massage module according to claim 2, further comprising:
a circuit board disposed in the rigid protective structure, wherein the battery is configured

to supply power to the circuit board, and the circuit board is electrically connected to the first electrode sheet.

6. The massage module according to claim 2, wherein the first electrode sheet is installed on the flexible substrate in a floating manner, the massage module further comprises a rigid support structure disposed on the flexible substrate, a floating gap is defined between the rigid support structure and the first electrode sheet, and the rigid support structure is configured to support the first electrode sheet to prevent the first electrode sheet from being bent.

7. The massage module according to claim 2, further comprising:

a second massage head disposed on the flexible substrate, wherein the second massage head comprises a second electrode sheet, the second electrode sheet is exposed on the working side of the flexible substrate, and a projection of the second electrode sheet on the working side and a projection of the rigid protective structure on the working side at least partially overlap.

8. The massage module according to claim 2, further comprising:

a second massage head, wherein the second massage head comprises a second electrode sheet, the second electrode sheet and the rigid protective structure define a battery compartment, and the battery is received in the battery compartment.

9. The massage module according to claim 8, wherein the first electrode sheet and/or the second electrode sheet are metal electrode sheets.

10. The massage module according to claim 2, further comprising:

a second massage head, wherein the second massage head comprises a second electrode sheet and a second connecting portion, and the second electrode sheet is connected to the flexible substrate in a floating manner via the second connecting portion, the second electrode sheet, the second connecting portion, and the rigid protective structure cooperatively define a battery compartment, and the battery is received in the battery compartment.

11. The massage module according to claim 7 or 8, wherein a projection of the second

electrode sheet on the working side of the flexible substrate is in a range of a projection of the rigid protective structure on the working side of the flexible substrate.

12. The massage module according to claim 7 or 8, further comprising:

a circuit board disposed in the rigid protective structure, wherein the battery is configured to supply power to the circuit board, and the circuit board is electrically connected to the first electrode sheet and the second electrode sheet.

13. The massage module according to claim 7 or 8, wherein the second massage head further comprises a second connecting portion, the second connecting portion is disposed on a periphery of the second electrode sheet, and the second electrode sheet is connected to the flexible substrate in a floating manner via the second connecting portion, the second electrode sheet is a metal electrode, the second connecting portion is a flexible connecting portion, and the second connecting portion is configured to provide a degree of freedom of floating for the second electrode sheet; and the rigid protective structure comprises a first rigid protective member disposed on the flexible substrate, at least a part of the first rigid protective member is disposed between the battery and the second electrode sheet, and the first rigid protective member is configured to support the second electrode sheet.

14. The massage module according to claim 8 or 10, wherein the second massage head exceeds the flexible substrate towards the working side, the battery compartment is configured to provide a floating space for the second electrode sheet, and a height of the second massage head exceeding the flexible substrate is in a range of [3mm, 20mm].

15. The massage module according to claim 2, wherein the massage module comprises at least two first massage heads, the at least two first massage heads are distributed at two opposite sides of the rigid protective structure in the first direction of the flexible substrate, and two sides of the rigid protective structure each serve as a rigid edge.

16. The massage module according to claim 2, wherein an interval between the rigid protective structure and a closest first massage head is in a range of [3.0mm, 25.0mm].

17. The massage module according to claim 2, wherein at least two first massage heads spaced apart from one another are distributed on one side of the rigid protective structure, each of the at least two first massage heads comprises a first electrode sheet and a rigid support structure, a projection of the first electrode sheet on the working side of the flexible substrate is in a range of a projection of the rigid support structure on the working side of the flexible substrate, a sides of the rigid support structure facing an adjacent first massage head serves as a support edge, and when the massage module is bent in the first direction, the massage module is supported by support edges with a part of the massage module between the two adjacent first massage heads being deformed and bent.

18. The massage module according to claim 17, wherein an interval between two adjacent first massage heads is in a range of [3.0mm, 25.0mm].

19. The massage module according to claim 2, wherein the first massage head comprises a first connecting portion, the first connecting portion is disposed on a periphery of the first electrode sheet, and the first electrode sheet is connected to the flexible substrate via the first connecting portion, the first electrode sheet is a metal electrode, the first connecting portion is a flexible connecting portion, and the first connecting portion is configured to provide an elastic support force for the first electrode sheet.

20. The massage module according to claim 2, further comprising:
a magic tape disposed on the rigid protective structure.

21. The massage module according to claim 1, wherein a thickness of the flexible substrate is in a range of [1 mm, 10 mm].

22. The massage module according to claim 7, wherein the second massage head is implemented as a plurality of second massage heads, the battery is implemented as a plurality of batteries, the rigid protective structure is implemented as a plurality of rigid protective structures, a projection of each second massage head on the working side at least partially overlaps with a

projection of one rigid protective structure on the working side, and each battery is installed in one rigid protective structure.

23. A massage waist belt comprising a flexible waist belt body and the massage module according to any one of claims 1to 22, wherein the massage module is installed on the flexible waist belt body.

24. The massage waist belt according to claim 23, wherein the massage module is detachably connected to the flexible waist belt body, a gap is defined between the massage module and the flexible waist belt body, and when the massage module is bent, the gap is configured to provide a clearance for bending deformation of the massage module.