

DESCRIPTION

Title of Invention: MASSAGER

Technical Field

5 **[0001]** The present invention relates to a massager.

Background Art

[0002] As a massager, one provided internally with a massaging mechanism for imparting massaging motion to a pair of right and left massaging members is well known.

10 In recent years, however, there arise demands for a wider variety of massage effects, and more specifically, for example, there is a user's request asking grabbing massage which is performed on his/her shoulders.

A massager which satisfies such a demand is disclosed in Patent Literature 1.

[0003] In Patent Literature 1, there is disclosed a massager which comprises: a pair of
15 vertically arranged upper and lower massaging members each having a massaging element at its front end; and a massaging mechanism which produces kneading motion by driving at least one of the paired massaging members so that the massaging elements provided in the paired massaging members, respectively, move close to and away from each other in a vertical direction.

20 **Prior art Reference**

Citation List

[0004] Patent Literature 1: Japanese Unexamined Patent Publication JP-A 2014-36748

Disclosure of Invention

Technical Problem

25 **[0005]** The massager disclosed in Patent Literature 1 is adapted to perform shoulder massage while giving more satisfactory massage effects to a user in response to his/her

demand as above described.

However, there are user request for increasingly higher massage effects, for example, shoulder grabbing/kneading massage like hand shoulder massage which is performed by a massage professional.

- 5 **[0006]** The present invention has been devised in view of the circumstances as mentioned supra, and accordingly its object is to provide a massager capable of performing shoulder grabbing massage by means of a pair of vertically arranged massaging members, and also chair massaging equipment incorporating this massager.

Solution to Problem

- 10 **[0007]** In order to accomplish the above object, the following technical means is adopted for the implementation of the present invention.

A massager pursuant to the present invention comprises; a first massaging member having a first massaging element at its front end; a second massaging member having a second massaging element at its front end; and a massaging mechanism for
15 producing massage action by rocking the first massaging member and the second massaging member. The massaging mechanism drives the first massaging element so that it moves close to and away from the second massaging element.

[0008] In the present invention, it is preferable that the first massaging member and the second massaging member are disposed so that their base end areas are arranged in
20 overlapping relation, and that the first and second massaging members are arranged in pairs, with the individual massaging members of each pair spaced apart by a predetermined distance in a horizontal direction.

In the present invention, it is preferable that the massaging mechanism comprises a horizontally facing rotation shaft, a driving section for driving the rotation shaft, and a
25 conversion section for converting a rotational force of the rotation shaft into rocking motion, and that the first massaging element is moved close to and away from the

second massaging element under the rocking motion obtained by conversion effected by the conversion section.

[0009] In the present invention, it is preferable that the conversion section comprises: an eccentric boss portion which is eccentrically mounted with respect to the rotation shaft, and has a cam face formed on its outer periphery; a first annular fit portion attached to the base end of the first massaging member so as to engage the cam face of the eccentric boss portion; and a first restraint portion for restraining the first massaging member from rotating in response to a rotation of the rotation shaft.

In the present invention, it is preferable that the first restraint portion is a link member designed so that one end is pivotably mounted on an intermediate part of the first massaging member, and the other end is pivotably mounted on a casing of the massager.

[0010] In the present invention, it is preferable that the first restraint portion comprises a pin member attached to an intermediate part of the first massaging member, and a slide member having a slot positioned vis-à-vis the pin member, in which is slidably fitted the pin member.

In the present invention, it is preferable that the conversion section comprises: an inclined boss portion disposed so as to be inclined with respect to the rotation shaft, and has an inclined cam face formed on its outer periphery; a second annular fit portion attached to the base end of the second massaging member so as to engage the cam face of the inclined boss portion; and a second restraint portion for restraining the second massaging member from rotating in response to a rotation of the rotation shaft, and that the eccentric boss portion and the inclined boss portion are arranged adjacent each other in a direction along the axis of the rotation shaft.

[0011] In the present invention, it is preferable that two second massaging elements are attached to the front end of the second massaging member, and that a spacing between

the right and left second massaging elements arranged as one pair is narrower than a spacing between the right and left second massaging elements arranged as the other pair.

Advantageous Effects of Invention

[0012] According to the present invention, the massager is capable of performing
5 shoulder grabbing massage by means of a pair of vertically arranged massaging members.

Brief Description of Drawings

[0013][FIG. 1] FIG. 1 is a perspective view showing the whole of a massager implemented as the first embodiment.

10 [FIG. 2] FIG. 2 is a perspective view of the massager of the first embodiment, illustrating a condition where a first massaging member and a second massaging member stay away from each other (left-hand first and second massaging members are omitted from the drawing).

[FIG. 3] FIG. 3 is a perspective view of the massager of the first
15 embodiment, illustrating a condition where the first massaging member and the second massaging member stay close to each other (left-hand first and second massaging members are omitted from the drawing).

[FIG. 4] FIG. 4 is a front view showing the massager of the first
20 embodiment (left-hand first and second massaging members are omitted from the drawing).

[FIG. 5] FIG. 5 is a sectional plan view of the massager of the first embodiment.

[FIG. 6] FIG. 6 is a perspective view showing the first massaging member
25 and the second massaging member in their assembled condition in easy-to-understand form.

[FIG. 7] FIG. 7 is a perspective view showing the whole of a massager

implemented as the second embodiment.

[FIG. 8] FIG. 8 is a perspective view of the massager of the second embodiment, illustrating a condition where the first massaging member and the second massaging member stay away from each other (left-hand first and second massaging members are omitted from the drawing).

[FIG. 9] FIG. 9 is a perspective view showing the whole of a massager implemented as the third embodiment (neck massager)

[FIG. 10] FIG. 10 is a perspective view showing a massaging mechanism mounted in the massager of the third embodiment.

10 **Description of Embodiments**

[0014] Hereinafter, embodiments of the present invention will be described with reference to drawings. Note that like reference characters and names indicate like parts throughout several embodiments that will hereafter be described, and overlapping description as to the like parts will be omitted.

15 **[First Embodiment]**

The following describes a massager 1 in accordance with a first embodiment of the present invention with reference to FIGs. 1 to 6.

[0015] In the following description, a second massaging member 13 depicted in the left-hand part of FIG. 4 is defined as a right massaging member which is mounted on the right side of the apparatus, and a second massaging member 13 depicted in the right-hand part of FIG. 4 is defined as a left massaging member which is mounted on the left side of the apparatus. That is, the direction from left to right viewing the drawing conforms to the direction from right to left of the massager 1 in a state of being placed on the neck or shoulders of a user. This holds true for the direction from top to bottom, and the direction from front to rear.

The massager 1 of the present embodiment is an apparatus which is put on user's

shoulders for use (over-the-shoulder massager). The massager 1 comprises massaging bodies 3, taken as a pair, that are spaced apart in the direction from right to left, or horizontal direction by a predetermined distance, and a massaging mechanism 4 for producing massaging action by operating the massaging bodies 3. The massager 1 is stored inside a casing which is dividable into a front part and a rear part, while being located at the front of the rear part of the casing 2, being called the rear casing 2.

[0016] The massaging body 3 is constructed of a combination of a first massaging member 5 (lower massaging member) having a first massaging element 6 at its front end and a second massaging member 13 (upper massaging member) having a second massaging element 14 at its front end. These massaging members are disposed so that their base end areas are arranged in overlapping relation.

The massaging mechanism 4 produces massage action by rocking the first massaging member 5 and the second massaging member 13, and drives the first massaging element 6 so that it moves close to and away from the second massaging element 14.

[0017] In the massager 1 of the present embodiment, the second massaging element 14 attached to the second massaging member 13 shown in the left-hand part of FIG. 1 abuts on user's right shoulder, and the second massaging element 14 attached to the second massaging member 13 shown in the right-hand part of FIG. 1 abuts on user's left shoulder. Moreover, the first massaging element 6 attached to the first massaging member 5 shown in the left-hand part of FIG. 1 abuts on user's right back, and the first massaging element 6 attached to the first massaging member 5 shown in the right-hand part of FIG. 1 abuts on user's left back.

[0018] The structure of the massaging body 3, and more specifically the first massaging member 5 and the second massaging member 13 will be described first.

As shown in FIGs. 1 to 6, the first massaging member 5 (lower massaging

member) is substantially L-shaped as seen in side view, is located below the second massaging member 13 which will hereafter be described, and is disposed so as to be hung upon a rotation shaft 18 of the massaging mechanism 4.

[0019] The base end of the first massaging member 5 is formed with a first annular fit portion 7 which engages a cam face 27 of an eccentric boss portion 26 which will hereafter be described. In addition, a support portion 8 is formed so as to extend downwardly from the first annular fit portion 7, and an arm 9 is formed at the front end of the support portion 8. The first annular fit portion 7 is a thin-walled cylindrical member whose inner diameter is substantially equal to the outer diameter of the cam face 27 of the eccentric boss portion 26.

[0020] The arm 9 is a rodlike member formed so as to protrude obliquely downwardly in a forward direction, and more specifically protrude forwardly beyond a vertical plane including the axis of the first annular fit portion 7 (the axis of the rotation shaft 18).

Moreover, the support portion 8, or equivalently an intermediate part 8 of the first massaging member 5 has a slit 10 notched at its rear side so as to extend in a direction longitudinally of the arm 9. A through hole 11 is formed in the intermediate part 8 so as to pass through the slit 10 in the horizontal direction. A link member 31 constituting a first restraint portion 31, which will hereafter be described, is inserted into the slit 10, and, a pin 12, upon which the link member 31 is universally pivotable, is inserted into the through hole 11.

[0021] The first massaging element 6 is disposed at the tip of the arm 9. The first massaging element 6 may be given various forms, including a thick-walled discotic form and a spherical form, and is made of resin or hard rubber, for example. The first massaging element 6, which is formed so as to extend from the tip of the arm 9, is situated ahead of and below the vertical plane including the axis of the first annular fit portion 7 (the axis of the rotation shaft 18).

The second massaging member 13, which is a long rodlike member, is located above the first massaging member 5, and is disposed so as to extend forwardly from the rotation shaft 18 of the massaging mechanism 4.

5 [0022] The base end of the second massaging member 13 is formed with a second annular fit portion 15 which engages a cam face 34 of an inclined boss portion 33 which will hereafter be described. In addition, a support portion 16 (intermediate portion) is formed so as to extend forwardly from the second annular fit portion 15, and a mounting portion 17 is formed at the front end of the intermediate portion 16. The second annular fit portion 15 is a thin-walled cylindrical member whose inner diameter
10 is substantially equal to the outer diameter of the cam face 34 of the inclined boss portion 33. The mounting portion 17 is a rodlike member formed so as to extend downwardly, to which is mounted the second massaging element 14.

[0023] The second massaging element 14 may be given various forms, including a spherical form, and is made of resin or hard rubber, for example. The second massaging
15 element 14, which is disposed so as to protrude downwardly from the mounting portion 17, is situated ahead of and above the vertical plane including the axis of the second annular fit portion 15 (the axis of the rotation shaft 18). The second massaging element 14 and the first massaging element 6 are opposed to each other.

[0024] The second massaging element 14 of the second massaging member 13 faces
20 downwardly, and a support member 24 is disposed so as to extend forwardly, thus enabling the massager 1 to catch against the shoulders of a user wearing it.

The following describes the specific structure of the massaging mechanism 4.

At the base part of the massaging body 3, or equivalently, at the base end of the first massaging member 5 and the base end of the second massaging member 13, there
25 is provided the massaging mechanism 4 which produces massage action by driving the base end of the first massaging member 5 and the second massaging member 13.

[0025] As shown in FIGs. 2 to 6, the massaging mechanism 4, which is stored inside the casing, comprises the horizontally facing rotation shaft 18, a driving section 19 for driving the rotation shaft 18, and a conversion section 25 for converting a rotational force of the rotation shaft 18 into rocking motion.

5 The rotation shaft 18 is disposed so as to span the space between the right side and the left side of the interior of the casing. Each end of the rotation shaft 18 is formed with the support member 24 for rotatably supporting the rotation shaft 18, and, a gear box 21 of the driving section 19 is located centrally of the rotation shaft 18. The rotation shaft 18 is pivotably mounted, via the support member 24, on the rear casing 2.

10 **[0026]** Moreover, the massaging body 3 (the right and left massaging bodies) is disposed in a position spaced inwardly a slight distance from each end of the rotation shaft 18. That is, the paired right and left massaging bodies 3 are arranged side by side, with the driving section 19 lying between them.

 The driving section 19 comprises a driving motor 20 and the gear box 21, and,
15 the rotation shaft 18 is disposed so as to pass horizontally through the gear box 21. A bearing 22 for rotatably supporting the rotation shaft 18 is disposed at each horizontal end of the gear box 21, and, a worm wheel 23 is located centrally of the gear box 21. Under the gear box 21 is disposed the driving motor 20, and, a worm gear (not shown in the drawings) attached to the output shaft of the driving motor 20 and the worm wheel
20 23 are arranged in meshing engagement with each other.

[0027] In the driving section 19, a driving force produced by the driving motor 20 is subjected to deceleration in the gear box 21 to drive the rotation shaft to rotate.

 The conversion section 25 is designed to convert a rotational force of the rotation shaft 18 into rocking motion to move the first massaging element 6 close to and away
25 from the second massaging element 14.

 The conversion section 25 comprises: the eccentric boss portion 26 which is

eccentrically mounted with respect to the rotation shaft 18, and has the cam face 27 formed on its outer periphery; the first annular fit portion 7 attached to the base end of the first massaging member 5 so as to engage the cam face 27 of the eccentric boss portion 26; and the first restraint portion 31 for restraining the first massaging member 5 from rotating in response to the rotation of the rotation shaft 18.

[0028] The conversion section 25 further comprises: the inclined boss portion 33 which has, on its outer periphery, the cam face 34 inclined with respect to the rotation shaft 18; the second annular fit portion 15 attached to the base end of the second massaging member 13 so as to engage the cam face 34 of the inclined boss portion 33; and a second restraint portion 40 for restraining the second massaging member 13 from rotating in response to the rotation of the rotation shaft 18.

As shown in FIGs. 4 and 6, a pair of the eccentric boss portions 26 is disposed at an axially intermediate part of the rotation shaft 18 so that the driving section 19 lies between the paired eccentric boss portions 26. Each eccentric boss portion 26 in flange form has a substantially cylindrical endless trackway (cam face 27) formed on its outer periphery. Moreover, each eccentric boss portion 26 has a horizontally facing through hole 28 into which is inserted the rotation shaft 18.

[0029] As shown in FIG. 4, the through hole 28 is formed so that the position of its axis differs from the position of the center axis of a circle defining the shape of the eccentric boss portion 26. Thus, the eccentric boss portion 26 and the rotation shaft 18 are rotated to follow different trackways. Moreover, the eccentric boss portion 26 is fixed so that it is restrained against rotation relative to the rotation shaft 18.

The cam face 27, pointing in a radially-outward direction with respect to the rotation shaft 18, is rotated about the rotation shaft 18. The first annular fit portion 7 slidably engages the cam face 27, thus allowing the first massaging member 5 to rotate freely.

[0030] The first annular fit portion 7, which is formed at the base end of the first massaging member 5, is fitted to the outside of the cam face 27 of the eccentric boss portion 26, for converting the rotation of the eccentric boss portion 26 into up-and-down rocking motion. The first annular fit portion 7 is substantially ring-shaped as seen in side view, and has, in its substantially center part, an opening 30 having a diameter which is substantially equal to the outer diameter of the cam face 27 of the eccentric boss portion 26. The opening 30 is formed so as to be fitted to the outside of the cam face 27 of the eccentric boss portion 26. Thus, the eccentric boss portion 26 and the first annular fit portion 7 are free to rotate relative to each other.

[0031] As shown in FIGs. 2 to 6, the first restraint portion 31 of the present embodiment is a link member having the shape of a curved plate (oxbow bend) as seen in side view. Each end of the link member is formed with a hole 32.

The link member 31 is inserted into the slit 10 formed at the rear side of the intermediate part 8 of the first massaging member 5. One end of the link member 31 inserted in the slit 10 is pivotably mounted by the pin 12 in the through hole 11 formed in the intermediate part 8 of the first massaging member 5. On the other hand, the other end of the link member 31 protruding from the slit 10 is pivotably mounted by a pin 44 on the front side of the rear casing 2 of the massager 1.

[0032] That is, the first restraint portion 31 couples the first massaging member 5 to the rear casing 2 for cranking motion, thus restraining the first massaging member 5 from rotating about the rotation shaft 18 yet allowing the first massaging member 5 to rock up and down.

Meanwhile, the inclined boss portion 33 is disposed adjacent the eccentric boss portion 26 in a direction along the axis of the rotation shaft 18.

[0033] As shown in FIGs. 2 to 6, specifically, a pair of inclined boss portions 33 is provided, and, each inclined boss portion 33 is disposed at an axially intermediate part

of the rotation shaft 18 so as to lie outwardly of the eccentric boss portion 26 in the horizontal direction. The inclined boss portion 33 has a substantially circular endless trackway (cam face 34) inclined with respect to the rotation shaft 18.

The inclined boss portion 33 is composed of an end face 36 facing one of the end
5 faces of the eccentric boss portion 26, an inner cam member 35 having an end face 37 inclined with respect to the rotation shaft 18, and a substantially cylindrical outer cam member 38 formed so as to protrude horizontally outwardly from the inclined end face 37 of the inner cam member 35.

[0034] The cam face 34 is formed on the outer periphery adjacent to the inclined end
10 face 37 of the inner cam member 35 so as to be inclined with respect to the rotation shaft 18. A bearing 45 is slidably fitted to the outside of the cam face 34, thus fixing the inclined boss portion 33 so that it is restrained against rotation relative to the rotation shaft 18.

That is, the cam face 34 of the inclined boss portion 33, being disposed so as to
15 protrude horizontally outwardly from the inclined end face 37 of the inner cam member 35, is inclined with respect to the rotation shaft 18.

[0035] The inclined boss portion 33 is constructed by butt-joining the inclined end face
37 of the inner cam member 35 and one of the end faces of the outer cam member 38 to each other in single-piece form.

20 The second annular fit portion 15, which is formed at the base end of the second massaging member 13, is fitted to the outside of the bearing 45 fitted onto the cam face 45 of the inclined boss portion 33, for converting the rotation of the inclined boss portion 33 into right-left rocking motion. The second annular fit portion 15 is substantially ring-shaped as seen in side view, and has, in its substantially center part, an
25 opening 39 having a diameter which is substantially equal to the outer diameter of the cam face 34 of the inclined boss portion 33. The opening 39 is formed so as to be fitted

to the outside of the bearing 45 fitted onto the cam face 34. Thus, the inclined boss portion 33 and the second annular fit portion 15 are free to rotate relative to each other.

[0036] As shown in FIG. 5, the second restraint portion 40 comprises a restraint pin 41 formed on the second annular fit portion 15 and a restraint slot 42 formed in the rear casing 2.

The restraint pin 41 is a short, substantially cylindrical rodlike piece formed on the second annular fit portion 15 disposed on the opposite side of the second massaging member 13 from the support portion 16. The restraint slot 42 is formed in the rear casing 2 so as to be positioned vis-à-vis the restraint pin 41, as well as to be elongated in the horizontal direction.

[0037] In the second restraint portion 40, the restraint pin 41 slidably engages in the restraint slot 42, thus restraining the second massaging member 13 from rotating about the rotation shaft 18.

Moreover, in a position outwardly of each inclined boss portion 33 in the horizontal direction, there is provided a boss portion for preventing accidental detachment of the second massaging member 13, as well as for restraining the inclined boss portion 33 from moving outwardly in the horizontal direction. A pair of these restraint boss portions 43 is also fixed so as not to rotate relative to the rotation shaft 18.

[0038] The following describes the workings of the massager 1 thus far described.

To use the massager 1, the second massaging element 14 is put on, for example, the shoulders of a user.

The first step is to actuate the power switch of the massager 1 to “on” to drive the driving motor 20 of the driving section 19. Then, the output shaft of the driving motor 20 is rotated, thus rotating the worm gear. Under the rotation of the worm gear, the rotation shaft 18 fitted with the worm wheel 23 is driven to rotate.

[0039] In response to the rotation, the paired right and left eccentric boss portions 26

attached to the rotation shaft 18 are rotated, whereupon the paired right and left first annular fit portions 7 are about to be rotated together with the eccentric boss portions 26 in the same direction. That is, the first massaging member 5 is about to be rotated about the rotation shaft 18. However, at this time, the link member constituting the first restraint portion 31, being pivotably mounted on the intermediate part 8 of the first massaging member 5, as well as on the front side of the rear casing, restrains the first annular fit portion 7 and the eccentric boss portions 26 from rotating together.

[0040] Furthermore, the paired right and left inclined boss portions 33 attached to the rotation shaft 18 are rotated, whereupon the paired right and left second annular fit portions 15 are about to be rotated together with the inclined boss portions 33 in the same direction. That is, the second massaging member 13 is about to be rotated about the rotation shaft 18. However, at this time, the second restraint portion 40, in which the restraint pin 41 disposed at the rear of the second annular fit portion 15 slidably engages in the restraint slot 42, restrains the second annular fit portion 15 and the inclined boss portions 33 from rotating together.

[0041] As shown in FIG. 2, upon downward movement of the arm 9 of the first massaging member 5, the second massaging member 13 is rocked outwardly in the horizontal direction. At this time, the eccentric boss portion 26 is in a condition where the spacing between the cam face 27 and the axis of the rotation shaft 18 is maximized. Moreover, the inclined boss portion 33 is in a condition where the cam face 34 is outwardly inclined in the horizontal direction. That is, when the first massaging member 5 and the second massaging member 13 are moved to assume the open position, then the first massaging element 6 is rocked downwardly to move away from the now horizontally outwardly rocking second massaging element 14.

[0042] On the other hand, as shown in FIG. 3, upon upward movement of the arm 9 of the first massaging member 5, the second massaging member 13 is rocked inwardly in

the horizontal direction. At this time, the eccentric boss portion 26 is in a condition where the spacing between the cam face 27 and the axis of the rotation shaft 18 is minimized. Moreover, the inclined boss portion 33 is in a condition where the cam face 34 is inwardly inclined in the horizontal direction. That is, when the first massaging member 5 and the second massaging member 13 are moved to assume the closed position, then the first massaging element 6 is rocked upwardly to move close to the now horizontally inwardly rocking second massaging element 14.

[0043] At this time, the first restraint portion 31 pivotably mounted on the intermediate part 8 of the first massaging member 5 is moved up and down along the slit 10, thus preventing the first annular fit portion 7 and the eccentric boss portions 26 from rotating together. Moreover, the restraint pin 41 disposed at the rear of the second annular fit portion 15 slides along the restraint slot 42 in the horizontal direction, thus preventing the second annular fit portion 15 and the inclined boss portions 33 from rotating together.

[0044] To sum up, the massager 1 of the present embodiment is not intended merely to produce simple rocking motion, but is designed to produce universal rocking movements repeatedly, and more specifically, it is designed so that, upon the second massaging member 13 being moved outwardly in the horizontal direction, the arm 9 of the first massaging member 5 is moved downwardly, whereas, upon the second massaging member 13 being moved inwardly in the horizontal direction, the arm 9 of the first massaging member 5 is moved upwardly, or equivalently assumes a forwardly protruding position. This makes it possible to perform, on user's shoulders, grabbing/kneading massage that satisfy user's demand.

[Second Embodiment]

Referring to FIGs. 7 and 8, a second embodiment of the present invention will be described.

[0045] A massager 1 implemented as the second embodiment differs greatly from the first embodiment in the structure of a first restraint portion 100. The description of such constituent components as are common to the first embodiment and the second embodiment will be omitted to avoid overlapping description.

5 As shown in FIGs. 7 and 8, the first restraint portion 100 of the present embodiment comprises a pin member 101 attached to the intermediate part 8 of the first massaging member 5, and a slide member 102 having a slot 103 positioned vis-à-vis the pin member 101, in which is slidably fitted the pin member 101. The first restraint portions 100, taken as a pair, are disposed inwardly of their respective first massaging
10 members 5 in the horizontal direction.

[0046] The pin member 101, which is a short rodlike member, is fitted in a horizontally facing through hole 104 opening into the intermediate part 8 of the first massaging member 5 so as to point inwardly in the horizontal direction.

 The slide member 102, which is made of a platy piece, is disposed in upstanding
15 condition in a position adjacent to the driving motor 20. Inside the slide member 102 is formed the slot 103 in which is slidably fitted the pin member 101. The slot 103 is formed so as to point in the vertical direction while being gradually curved backwardly from the bottom to the top.

[0047] In the first restraint portion 100 of the present embodiment, when the arm 9 of
20 the first massaging member 5 is moved downwardly so that the first massaging element 6 and the second massaging element 14 stay away from each other, then the pin member 101 is located in the lower part of the slot 103 of the slide member 102. On the other hand, when the arm 9 of the first massaging member 5 is moved upwardly so that the first massaging element 6 and the second massaging element 14 stay close to each other,
25 then the pin member 101 is located in the upper part of the slot 103 of the slide member 102.

[0048] In this way, in the first restraint portion 100 of the present embodiment, the pin member 101 attached to the intermediate part 8 of the first massaging member 5 is slidably moved along the slot 103 of the slide member 102, thus preventing the first annular fit portion 7 and the eccentric boss portions 26 from rotating together.

5 **[Third Embodiment]**

Referring to FIGs. 9 and 10, a third embodiment of the present invention will be described.

[0049] A massager 1 implemented as the third embodiment is of a hand-held type which is worn on user's shoulders. The massager 1, while being intended to mainly perform
10 neck and shoulder massage, is capable of performing massage also on user's waist and thigh, for example.

FIG. 9 represents a perspective view showing the appearance of the massager 1. A fabric cover body for covering a massaging mechanism 4 is omitted from FIG. 9.

[0050] As shown in FIG. 9, the massager 1 has the general shape of the letter "U". The
15 massager 1 comprises: a main body 50 including the massaging mechanism 4 which is abutted on the affected area (neck and shoulders) of a user to perform massage on that area; elongated portions 51, taken as a pair, extending in leg-like form from their respective ends of the main body 50; an operation section 52 having various switches attached to one of the elongated portions 51; and grips 53 that are grasped by user's
20 hands.

[0051] As shown in FIG. 9, the main body 50 of the massager 1 comprises an elliptical front-side housing 54 having a rearward opening, and a back-side housing 55 fitted in the front-side housing 54. For example, the front-side housing 54 and the back-side housing 55 are made of resin. The front-side housing 54 and the back-side housing 55
25 are fitted together, with their openings aligned with each other, in the front-to-rear direction, thus constituting the main body 50.

[0052] The main body 50 in elliptical form has a width substantially conforming to the shoulder breadth of a user having a medium-sized build.

The front side of the main body 50, or equivalently the front-side housing 54 is formed with an opening 56 (cut-away part) for allowing the first massaging element 6
5 and the second massaging element 14 provided in the massaging mechanism 4 to pass therethrough so as to protrude forwardly.

[0053] As shown in FIG. 9, the paired right and left elongated portions 51 extend forwardly from the right end and the left end, respectively, of the main body 50. The elongated portion 51 has a length substantially conforming to a distance from the
10 shoulder region to the chest region of a user wearing the massager 1.

The elongated portion 51 is a long, flat plate-shaped member, and, the direction of its thickness corresponds to the horizontal direction. The tip of the elongated portion 51 is formed with the grip 53. A bellows portion 57 is disposed in an intermediate part of the elongated portion 51 located between the grip 53 and the main body 50, thus
15 enabling the elongated portion 51 to widen in the horizontal direction. By designing the elongated portion 51 to be able to widen horizontally, for example, it is possible to facilitate the wearing of the massager for a user.

[0054] FIG. 10 represents a perspective view of the massaging mechanism 4 provided in the third embodiment.

20 As will be apparent from FIG. 10, the massaging mechanism 4 of the third embodiment is substantially identical in structure with the massaging mechanism 4 of the first and second embodiments. That is, the massaging mechanism 4 of the third embodiment comprises the first massaging member 5 having the first massaging element 6 at its front end and the second massaging member 13 having the second
25 massaging element 14 at its front end, and, the massaging mechanism 4 produces massage action by rocking the first massaging member 5 and the second massaging

member 13, and drives the first massaging element 6 so that it moves close to and away from the second massaging element 14.

[0055] An important contrast between the massaging mechanism 4 of the third embodiment and the massaging mechanism 4 of the first and second embodiments resides in the number and arrangement of the second massaging element 14 attached to the front end of the second massaging member 13. Moreover, in the massaging mechanism 4 of the third embodiment, the base end area of the second massaging member 13 is situated outwardly of the base end area of the first massaging member 5 in a widthwise direction.

As shown in FIG. 10, as to the second massaging element 14 of the massaging mechanism 4 of the third embodiment, two second massaging elements 14, 14 are attached to the front end of the second massaging member 13. More specifically, the front end of the second massaging member 13 is formed with two support shaft bodies, namely an upper support shaft body extending upwardly and a lower support shaft body extending downwardly. The spacing between the upper support shaft bodies of, respectively, the paired right and left second massaging members 13 is narrower than the spacing between the lower support shaft bodies thereof.

[0056] The second massaging element 14 is fitted to each of the upper support shaft body and the lower support shaft body for free rotation about the axis of each support shaft body. Since the widthwise spacing between the upper support shaft bodies is narrower than that between the lower support shaft bodies as above described, it follows that the spacing between the right and left second massaging elements 14 arranged as one pair (upper pair) is narrower than the spacing between the right and left second massaging elements 14 arranged as the other pair (lower pair). In this way, a total of four second massaging elements 14 are placed so as to be arranged along the side of user's neck, thus permitting very efficacious kneading massage.

[0057] That is, two second massaging elements 14, 14 are disposed at the front end of the second massaging member 13, and, one of the second massaging elements 14 faces upward, whereas the other one of them faces downward. The spacing between the right and left second massaging elements 14, 14 arranged as one pair is narrower than the spacing between the right and left second massaging elements 14, 14 arranged as the other pair.

Moreover, the first massaging element 6 has a semicircular shape, and, the direction of its thickness corresponds to the horizontal direction.

This configuration makes it possible to press a pressure point around the shoulders of a user (for example, a point next to the scapula of a user) without fail.

[0058] The action of the first massaging element 6 and the action of the second massaging element 14 are substantially the same as those in the first and second embodiments, wherefore the description of them will be omitted.

It should be understood that the embodiments as disclosed hereinabove are considered in all respects as illustrative only and not restrictive. Specifically, where particulars that are not explicitly specified in the embodiments as set forth hereinabove, for example, working conditions, operating conditions, relevant parameters, and the dimensions, weights, and volumes of constituent components are concerned, values that do not depart from the scope of the invention to be fulfilled by those skilled in the art and are easily conceivable by persons having ordinary skill in the art are adopted for such particulars.

[0059] For example, the massager 1 pursuant to the present invention is applicable not only to a hand-held massager but also to a chair massager and a standing massager.

Explanation of reference symbols

[0060]

1 massager

	2	rear casing
	3	massaging body
	4	massaging mechanism
	5	first massaging member
5	6	first massaging element
	7	first annular fit portion
	8	intermediate part
	9	arm
	10	slit
10	11	through hole
	12	pin
	13	second massaging member
	14	second massaging element
	15	second annular fit portion
15	16	intermediate portion (support portion)
	17	mounting portion
	18	rotation shaft
	19	driving section
	20	driving motor
20	21	gear box
	22	bearing
	23	worm wheel
	24	support member
	25	conversion section
25	26	eccentric boss portion
	27	cam face

	28	through hole
	30	opening
	31	first restraint portion (link member)
	32	hole
5	33	inclined boss portion
	34	cam face
	35	inner cam member
	36	end face
	37	inclined end face
10	38	outer cam member
	39	opening
	40	second restraint portion
	41	restraint pin
	42	restraint slot
15	43	restraint boss portion
	44	pin
	45	bearing
	50	main body
	51	elongated portion
20	52	operation section
	53	grip
	54	front-side housing
	55	back-side housing
	56	opening
25	57	bellows portion
	100	first restraint portion

- 101 pin member
- 102 slide member
- 103 slot
- 104 through hole

5

CLAIMS

1. A massager comprising:

a first massaging member having a first massaging element at its front end;

5 a second massaging member having a second massaging element at its front end;

and

a massaging mechanism for producing massage action by rocking said first massaging member and said second massaging member,

10 said massaging mechanism driving said first massaging element so that said first massaging element moves close to and away from said second massaging element.

2. The massager according to claim 1,

wherein said first massaging member and said second massaging member are disposed so that their base end areas are arranged in overlapping relation, and, said first
15 and second massaging members are arranged in pairs, with the individual massaging members of each pair spaced apart by a predetermined distance in a horizontal direction.

3. The massager according to claim 2,

wherein said massaging mechanism comprises a horizontally facing rotation shaft, a driving section for driving said rotation shaft, and a conversion section for
20 converting a rotational force of said rotation shaft into a rocking motion,

and wherein the first massaging element is moved close to and away from said second massaging element under a rocking motion obtained by conversion effected by said conversion section.

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4. The massager according to claim 3,

wherein said conversion section comprises:

an eccentric boss portion which is eccentrically mounted with respect to said rotation shaft, and has a cam face formed on its outer periphery;

5 a first annular fit portion attached to a base end of said first massaging member so as to engage the cam face of said eccentric boss portion; and

a first restraint portion for restraining said first massaging member from rotating in response to a rotation of said rotation shaft.

5. The massager according to claim 4,

10 wherein said first restraint portion is a link member designed so that one end is pivotably mounted on an intermediate part of said first massaging member, and the other end is pivotably mounted on a casing of said massager.

6. The massager according to claim 4,

15 wherein said first restraint portion comprises a pin member attached to an intermediate part of said first massaging member, and a slide member having a slot positioned vis-à-vis said pin member, in which is slidably fitted said pin member.

7. The massager according to claim 4,

20 wherein said conversion section comprises:

an inclined boss portion disposed so as to be inclined with respect to said rotation shaft, and has an inclined cam face formed on its outer periphery;

a second annular fit portion attached to a base end of said second massaging member so as to engage the cam face of said inclined boss portion; and

25 a second restraint portion for restraining said second massaging member from rotating in response to a rotation of said rotation shaft,

and wherein said eccentric boss portion and said inclined boss portion are arranged adjacent each other in a direction along an axis of said rotation shaft.

8. The massager according to any one of claims 1 to 7,

5 wherein two second massaging elements are attached to a front end of said second massaging member,

and wherein a spacing between the right and left second massaging elements arranged as one pair is narrower than a spacing between the right and left second massaging elements arranged as the other pair.

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