

DESCRIPTION

TITLE OF THE INVENTION: MESSAGE DEVICE

Technical field

[0001] The present invention relates to a message device.

5 Background Art

[0002] Where a backrest of a chair-type massage
apparatus is concerned, there is a heretofore known a
backrest which is internally provided with a message device
for imparting message action to a pair of right and left
10 message members.

As a device of this type, there is proposed a back-
kneading device equipped with an advancing-retracting
system capable of driving a message member to move forward
beyond a normal message position, as well as to return to
15 its original position, to suit the needs or preferences of
a user (for example, refer to Patent literature 1).

[0003] In this advancing-retracting system, a support
frame, which is moved up and down within the backrest by a
vertical movement mechanism, is provided independently of
20 the message device, and, the message device is supported on
the support frame so that the upper end of the message
device can be rocked back and forth about the lower part
thereof acting as a pivotal point. Moreover, the mutually
corresponding upper parts of the support frame and the
25 message device are driven to move close to and away from

each other in a front-rear direction (back-and-forth driving).

Prior art Reference

Patent literature

- 5 [0004] Patent literature 1: Japanese Unexamined Patent Publication JP-A 2003-102798

Summary of the Invention

Problems to be solved by the Invention

[0005] In the chair-type massage apparatus equipped with
10 the back-kneading device as disclosed in Patent literature 1, with the aim of providing more efficacious massage, the advancing-retracting system is used to move the massage member forward beyond a normal massage position, as well as to return to its original position.

15 However, in recent years, there arise demands for a wider variety of massage effects, and more specifically, for example, there is a user's request asking a grabbing massage which is effected by grabbing his/her shoulders. That is, the massage device disclosed in Patent literature
20 1 is not adapted to achieve such a desired massage.

[0006] The present invention has been devised in view of the circumstances as mentioned supra, and accordingly its object is to provide a massage device capable of performing a grabbing massage on a target body area to be massaged by
25 grabbing the area between a kneading massage member and a

grabbing message member.

Means for solving the problem

[0007] In order to solve the above problem, the following technical means is adopted for the implementation
5 of a massage device pursuant to the present invention.

That is, a massage device pursuant to the present invention comprises: a kneading message member having a kneading massager at its front end; and a grabbing message member having a grabbing massager at its front end, which
10 is disposed on the base end side of the kneading message member. Said grabbing message member is designed to perform a grabbing massage by moving the grabbing massager of the grabbing message member close to and away from said kneading massager.

15 [0008] It is preferable that the massage device is further provided with a rotation shaft which is driven to rotate about an axis pointing in a horizontal direction; and a kneading drive section for rocking said kneading message member by taking out a rotative driving force of
20 said rotation shaft to allow the kneading message member to perform a kneading massage.

It is preferable that the massage device is further provided with a rotation shaft which is driven to rotate about an axis pointing in a horizontal direction; and a
25 grabbing drive section for moving said grabbing massager

close to and away from the kneading massager by utilizing a rotative driving force of said rotation shaft.

[0009] It is preferable that said grabbing drive section comprises: a grabbing boss portion having a cam face formed
5 on its outer peripheral surface, which is eccentrically attached to said rotation shaft; an annular engagement portion engaged with the cam face of said grabbing boss portion, for taking out said rotative driving force; and a crank member having its base end connected to said annular
10 engagement portion, and has its front end connected to said grabbing massager member, for transmitting the produced rotative driving force to said grabbing massager member, and that, in said grabbing massager member, its base end is pivotally supported on said kneading massager member for
15 free rotation about a horizontal axis relative to its front end fitted with said grabbing massager, and the front end of said crank member is coupled to an intermediate part of said grabbing massager member for free rotation about an axis pointing in the horizontal direction.

20 [0010] It is preferable that said grabbing drive section comprises: a grabbing boss portion having a cam face formed on its outer peripheral surface, which is eccentrically attached to said rotation shaft; an annular engagement portion engaged with the cam face of said grabbing boss
25 portion, for taking out said rotative driving force; a

guide pin formed in said kneading massager member or said grabbing massager member; a guide groove formed in said grabbing massager member or said kneading massager member, in which said guide pin is slidably moved; and a coupling member having its base end connected relatively to said annular engagement portion, and having its front end connected for free rotation about a horizontal axis relatively to the base end of the grabbing massager member.

[0011] It is preferable that said kneading drive section comprises: a kneading boss portion which is attached to the rotation shaft fitted with said grabbing boss portion, and has, on its outer peripheral surface, an inclined cam face inclined with respect to the axis of said rotation shaft; and a kneading engagement portion engaged with the inclined cam face of said kneading boss portion, for taking out said rotative driving force, that said kneading engagement portion is formed at the base end of said kneading massager member, and that a swing restraining mechanism for restraining said kneading massager member against co-rotation with the kneading boss portion is disposed on a lateral side of the base end of said kneading massager member.

[0012] It is preferable that said kneading boss portion is eccentrically attached to said rotation shaft, and that an eccentric direction of the grabbing boss portion with respect to said rotation shaft and an eccentric direction

of the kneading boss portion with respect to said rotation shaft are circumferentially different from each other.

It is preferable that said kneading massager is located at each side of the front end of the kneading
5 message member in a width direction, and that a grabbing message is performed by moving the grabbing massager close to and away from, out of said kneading massagers, the widthwise inner kneading massager.

[0013] It is preferable that said grabbing drive section
10 comprises: a grabbing boss portion which is attached to said rotation shaft for unitary rotation, and has, on its outer peripheral surface, a cam face which is eccentric with respect to the axis of said rotation shaft; and a crank member which has, at its base end side, an annular
15 engagement portion engaged with the cam face of said grabbing boss portion so as to take out said rotative driving force, and transmits the produced rotative driving force toward a front end side thereof, that said grabbing message member has its base end side pivotally supported on
20 the front end side of said crank member for free rotation about a horizontal axis, and said grabbing massager is disposed at the front end side of said grabbing message member, and that an intermediate part of said grabbing message member is coupled to said kneading message member
25 for free rotation about an axis pointing in the horizontal

direction.

[0014] It is preferable that said kneading drive section comprises: a kneading boss portion which is attached to the rotation shaft fitted with said grabbing boss portion, and
5 has, on its outer peripheral surface, an inclined cam face inclined with respect to the axis of said rotation shaft; and a kneading engagement portion engaged with the inclined cam face of said kneading boss portion, for taking out said rotative driving force, that said kneading engagement
10 portion is formed at the base end of said kneading massage member, and said kneading massager is disposed at the front end of the kneading massage member, and that the base end of said kneading massage member is formed with a protrusion extending in the opposite direction to said kneading
15 massager with reference to said rotation shaft, and said grabbing massage member is coupled to the front end of said protrusion.

[0015] It is preferable that, with said grabbing massager positioned in close proximity to said kneading
20 massager, the direction of rotation of said rotation shaft is switched back and forth between a normal direction of rotation and a reverse direction of rotation for each angle of less-than-one complete rotation.

It is preferable that, with said grabbing massager
25 positioned in close proximity to said kneading massager,

said kneading massager and said grabbing massager are moved backward and forward reciprocally.

Advantageous effects of the Invention

[0016] According to the message device pursuant to the present invention, a grabbing message can be performed on an area to be massaged by grabbing the area between the kneading message member and the grabbing message member.

Brief Description of Drawings

[0017] [FIG. 1] FIG. 1 is a perspective view showing a message device implemented as the first embodiment as a whole.

[FIG. 2A] FIG. 2A is a perspective view of the message device of the first embodiment, with the grabbing message member located away from the kneading message member.

15 [FIG. 2B] FIG. 2B is a perspective view of the message device of the first embodiment, with the grabbing message member located close to the kneading message member.

[FIG. 3A] FIG. 3A is a perspective view showing the arrangement of the grabbing message member in a separated state in the first embodiment.

[FIG. 3B] FIG. 3B is a perspective view showing the arrangement of the grabbing message member in an approaching state in the first embodiment.

[FIG. 4] FIG. 4 is a drawing showing an eccentricity of the kneading boss portion in the message device of the

first embodiment.

[FIG. 5A] FIG. 5A is a drawing showing the grabbing message member under separating movement in the first embodiment as seen in side view.

5 [FIG. 5B] FIG. 5B is a drawing showing the grabbing message member under approaching movement in the first embodiment as seen in side view.

[FIG. 6] FIG. 6 is an upward view of the massage device of the first embodiment when viewed from the bottom
10 on the front side.

[FIG. 7A] FIG. 7A is a perspective view of the massage device of the second embodiment, with the grabbing message member located away from the kneading message member.

[FIG. 7B] FIG. 7B is a perspective view of the massage
15 device of the second embodiment, with the grabbing message member located close to the kneading message member.

[FIG. 8A] FIG. 8A is a perspective view showing the arrangement of the grabbing message member in a separated state in the second embodiment.

20 [FIG. 8B] FIG. 8B is a perspective view showing the arrangement of the grabbing message member in an approaching state in the second embodiment.

[FIG. 9A] FIG. 9A is a drawing showing the grabbing message member under separating movement in the second
25 embodiment as seen in side view.

[FIG. 9B] FIG. 9B is a drawing showing the grabbing message member under approaching movement in the second embodiment as seen in side view.

[FIG. 10A] FIG. 10A is a perspective view of the
5 message device of the third embodiment, with the grabbing message member located away from the kneading message member.

[FIG. 10B] FIG. 10B is a perspective view of the message device of the third embodiment, with the grabbing
10 message member located close to the kneading message member.

[FIG. 11A] FIG. 11A is a perspective view showing the arrangement of the grabbing message member in a separated state in the third embodiment.

[FIG. 11B] FIG. 11B is a perspective view showing the
15 arrangement of the grabbing message member in an approaching state in the third embodiment.

[FIG. 12A] FIG. 12A is a drawing showing the grabbing message member in a separated state in the third embodiment as seen in side view.

20 [FIG. 12B] FIG. 12B is a drawing showing the grabbing message member in an approaching state in the third embodiment as seen in side view.

[FIG. 13A] FIG. 13A is a perspective view showing mutually approaching motion of the grabbing message member
25 and the kneading message member of the third embodiment.

[FIG. 13B] FIG. 13B is a perspective view showing mutually separating motion of the grabbing massage member and the kneading massage member of the third embodiment.

[FIG. 14] FIG. 14 is a view showing continuous
5 grabbing massage action produced by the massage device of the fourth embodiment.

[FIG. 15] FIG. 15 is a view showing grabbing and pushing-pulling massage action produced by the massage device of the fifth embodiment.

10 Modes for Carrying out the Invention

[0018] [First Embodiment]

Hereinafter, an embodiment of a massage device 1 pursuant to the present invention will be described in detail with reference to drawings.

15 FIGS. 1 to 6 show the massage device 1 implemented as the first embodiment.

As shown in FIG. 1, the first embodiment is an example in which the massage device 1 pursuant to the present invention is installed in a back-kneading device 3 of a
20 backrest of a chair-type massage apparatus. Specifically, this chair-type massage apparatus comprises a seat having an area wide enough for supporting the buttocks of a user from below, and a backrest mounted at the rear of the seat. The backrest is internally provided with a back-kneading
25 device 3 for performing a kneading or tapping massage on

user's body over a wide range extending from the shoulder to the back, and from there to the waist, and, in the first embodiment, the massage device 1 pursuant to the present invention is applied to this back-kneading device 3.

5 [0019] In the following description as to the massage device 1, as shown in FIG. 1, the direction of height of the backrest of the chair-type massage apparatus in an upstanding condition will be defined as a vertical direction, and, on the basis of the vertical direction, a
10 right-left, or horizontal direction and a front-rear direction are defined for the sake of explanation. The definitions of the above directions conform to a vertical direction, a horizontal direction, and a front-rear direction, respectively, based on the sight of a user
15 sitting on the chair-type massage apparatus. In order to clarify the relationship between the directions indicated in the drawings and the actual directions associated with the device, the vertical direction (height direction), the horizontal direction (width direction), and the front-rear
20 direction as used in the description of the present embodiment will be specified in representative drawings.

[0020] The backrest is, at its lower end, pivotally mounted on the rear of the seat, so that the upper end of the backrest is capable of reclining movement in the front-
25 rear direction about the lower end. The above-described

back-kneading device 3, or equivalently the massage device 1 of the first embodiment is installed inside the backrest.

Specifically, as shown in FIG. 1, the above-described back-kneading device 3 comprises: the massage device 1; a
5 base member 4 for supporting the massage device 1; and an up-and-down moving mechanism 5 for allowing the base member 4 to move in the vertical direction within the backrest.

In the backrest, by moving the base member 4 and the massage device 1 supported by the base member 4 in the
10 vertical direction by operating the up-and-down moving mechanism 5, it is possible to press the massage device 1 against an area to be massaged at the back of a user, thereby performing a massage.

[0021] As shown in FIGs. 2A, 2B, and 6 for example, the
15 massage device 1 comprises a pair of left and right kneading massage members 2L and 2R, and a kneading drive section 6 for imparting massage action to the left and right kneading massage members 2L and 2R. In addition, the massage device 1 includes a grabbing massage member 8
20 having a grabbing massager 7 at its front end, which is disposed on the base end side (or at an intermediate part) of the kneading massage member 2. The massage device 1 is characterized by performing a grabbing massage by moving the grabbing massager 7 of the grabbing massage member 8
25 close to and away from a kneading massager 9.

[0022] In what follows, out of constituent members of the massage device 1, a system for performing a kneading massage, namely the kneading massage member 2 and the kneading drive section 6 for driving the kneading massage member 2 will be described first.

As shown in FIGs. 3A and 3B for example, the kneading massage member 2 is a long platy member extending forward and upward at a slight outward incline from the lower side of the front of the massage device 1. Specifically, the kneading massage member 2 is so shaped that its width in the front-rear direction becomes narrower gradually from the lower end to the upper end as seen in a side view. Moreover, the kneading massage member 2 is attached to each of the right side and the left side of the massage device 1, thereby constituting a pair of left and right kneading massage members.

[0023] The base end side of the kneading massage member 2, which is coupled to a rotation shaft 10 mounted at the lower side of the front of the massage device 1 so as to point in the horizontal direction, is able to rock under a rotative driving force of the rotation shaft 10 taken out by the kneading drive section 6 as will hereafter be described.

The kneading massager 9, which is attached to the front end of the kneading massage member 2 for abutment

against user's back, is made of, for example, hard rubber or synthetic resin in thick-walled discotic or spherical form. Although this embodiment exemplifies a construction in which a single kneading massager 9 is attached to each
5 of the paired left and right kneading massager members 2L and 2R, in the massager device 1 pursuant to the present invention, the kneading massager 9 number is not limited to one. For example, it is possible to adopt a construction in which two kneading massagers 9 (for example, an upper
10 kneading massager and a lower kneading massager) are attached to each of the paired left and right kneading massager members 2L and 2R.

[0024] Moreover, in this embodiment, the kneading massager 9 is so designed as to be located at each side of
15 the front end of the kneading massager member 2 in the width direction. The widthwise inner kneading massager 9 is smaller in diameter than the widthwise outer kneading massager 9, and, by moving the grabbing massager 7 close to and away from the small-diameter kneading massager 9, the
20 to-be-massaged area can be subjected to a grabbing massage while being held in a grabbed state between the massagers 9 and 7 (the details will be given later).

[0025] The kneading drive section 6 for imparting massage action to the left and right kneading massager
25 members 2L and 2R as above described is intended to rock

each of the kneading massage members 2L and 2R in the horizontal direction, the front-rear direction, and the vertical direction under the produced rotative driving force of the rotation shaft 10 as above described.

5 Specifically, the kneading drive section 6 comprises: a cylindrical kneading boss portion 11 eccentrically attached to the rotation shaft 10 whose axis points in the horizontal direction; and a kneading engagement portion 12 engaged with the outer peripheral surface of the kneading
10 boss portion 11, for taking out a rotative driving force.

[0026] Next, the kneading boss portion 11 and the kneading engagement portion 12 constituting the kneading drive section 6, and also the rotation shaft 10 which transmits (supplies) a rotative driving force to the
15 kneading drive section 6 will be described.

The above-described rotation shaft 10 which supplies a rotative driving force to the kneading drive section 6 is mounted so as to point in the horizontal direction, and both ends of the rotation shaft are each rotatably
20 supported by a bearing tool 13. Moreover, a drive gear 14 for transmitting a rotative driving force to the rotation shaft 10 is attached to an intermediate part of the rotation shaft 10 located toward the right-side bearing tool 13, and, a rotative driving force of a kneading drive
25 motor 15 is transmitted to the drive gear 14.

[0027] The kneading drive section 6 comprises the kneading engagement portion 12 embedded in the base end side of the kneading massage member 2L, 2R, and the kneading boss portion 11 fitted within the kneading engagement portion 12.

The kneading engagement portion 12 is a member in the form of a cylinder fixedly attached to the base end side of the kneading massage member 2. The kneading engagement portion 12 is disposed, with its axis pointing in a direction slightly inclined with respect to the horizontal direction, and, the kneading boss portion 11 which will hereafter be described is rotatably fitted within the kneading engagement portion 12.

[0028] The kneading boss portion 11 is a cylindrical member which can be inserted into the above-described kneading engagement portion 12, and, like the kneading engagement portion 12, the kneading boss portion 11 is disposed so that its axis points in a direction slightly inclined with respect to the horizontal direction. The kneading boss portion 11 is made to have an outer diameter which is substantially equal to the inner diameter of the kneading engagement portion 12, and is made insertable into the kneading engagement portion 12.

Specifically, the outer peripheral surface of the kneading boss portion 11 is formed with an inclined cam

face 16 inclined with respect to the axis of the rotation shaft 10, and, the kneading engagement portion 12 is slidably engaged with the inclined cam face 16. That is, the inclined cam face 16 is so disposed as to go around an axis pointing in a direction inclined with respect to the axis of the rotation shaft 10, for guiding the kneading engagement portion 12 in movement along a go-around trackway which is eccentric with respect to the axis of the rotation shaft 10. Therefore, as the rotation shaft 10 is rotated, the kneading engagement portion 12 is moved around an axis inclined with respect to the axis of the rotation shaft 10.

[0029] The kneading engagement portion 12 is provided with a swing restraining mechanism 17 for restraining the kneading engagement portion 12 from rotating together with the kneading boss portion 11, in other words, for restraining the kneading massage member 2L, 2R from rotating together with the rotation shaft 10. A force in the direction of rotation can be converted into a force in the direction of translation by the swing restraining mechanism 17.

As shown in FIG. 4, the swing restraining mechanism 17 is designed to restrain the kneading engagement portion 12 against co-rotation with the kneading boss portion 11 by means of rockable coupling of the base end side of the

kneading massage member 2L, 2R to the main body of the massage device 1 (to be specific, a tapping drive shaft 21 which will hereafter be described).

[0030] Specifically, the swing restraining mechanism 17
5 comprises: a universal joint portion 18 (ball joint) formed at the base end side of the kneading massage member 2; and a crank arm 20 having, at its forward end, a hole 19 in which is fitted the universal joint portion 18. The rear end side of the crank arm 20 is coupled to the tapping
10 drive shaft 21. As for this structure, it is desirable to adopt the technology that has already been applied by the applicant of the present application (Japanese Unexamined Patent Publication JP-A 2012-280520).

[0031] In such a swing restraining mechanism 17, since
15 the crank arm 20 is externally fitted to a lateral side of the universal joint portion 18 protruding sideward from the kneading massage member 2L, 2R, it is possible to minimize interference between the crank arm 20 and the base end side of the kneading massage member 2L, 2R. This helps widen
20 the range of motion of the kneading massage member 2 (the amount of jutting action thereof in the front-rear direction).

In the above-described kneading massage member 2L, 2R, as the rotation shaft 10 is driven to rotate by the
25 kneading drive motor 15, the kneading boss portion 11

secured to the rotation shaft 10 is rotated correspondingly about an axis pointing in the horizontal direction, viz., horizontally-directed axis. However, the inclined cam face 16 formed on the outer peripheral surface of the kneading boss portion 11 is, due to the trackway such as to go around an axis inclined with respect to the horizontally-directed axis, rotated about the axis of the rotation shaft 10 while swinging in the horizontal direction.

Correspondingly, the kneading engagement portion 12 engaged with the inclined cam face 16 undergoes such a swinging motion in the horizontal direction, with the consequence that the horizontal swinging motion is transmitted to the kneading massage member 2L, 2R fitted with the kneading engagement portion 12.

[0032] By virtue of the action of the swing restraining mechanism 17 as above described, even if the rotation shaft 10 is rotated about a horizontally-directed axis, it never occurs that the kneading massage member 2L, 2R is rotated together with the rotation shaft 10. Thus, the kneading massage member 2L, 2R is rocked while being allowed to move along the front-rear direction, the horizontal direction, and the vertical direction only within a predetermined range of motion.

As thus far described, the paired left and right kneading massage members 2L and 2R are designed so that

their kneading massagers 9 are moved close to and away from each other. It is thus difficult for the above-described massage mechanism in an as-is state to achieve a so-called "shoulder grabbing massage" based on user's request.

5 [0033] In this regard, the massage device 1 pursuant to the present invention is provided with the grabbing massage member 8 which performs a grabbing massage on a to-be-massaged area by moving the grabbing massager 7 close to and away from the kneading massager 9 of the kneading
10 message member 2 so that the to-be-massaged area is held in a grabbed state between the massagers 9 and 7.

Specifically, the massage device 1 of the first embodiment has the grabbing massage member 8 which is disposed on the base end side of the kneading massage
15 member 2, and has the grabbing massager 7 at its front end. The grabbing massage member 8 is designed to move the grabbing massager 7 close to and away from the kneading massager 9 by exploiting the earlier described rotative driving force of the rotation shaft 10, and, a grabbing
20 drive section 22 for imparting approaching and separating motion to the grabbing massage member 8 is disposed in the massage device 1 of the first embodiment.

[0034] Moreover, the grabbing drive section 22 comprises: a grabbing boss portion 23 having a cam face 24
25 formed on its outer peripheral surface, which is

eccentrically attached to the rotation shaft 10; an annular engagement portion 25 engaged with the cam face 24 of the grabbing boss portion 23, for taking out a rotative driving force; and a crank member 26 having its base end connected to the annular engagement portion 25, and has its front end connected to the grabbing massage member 8, for transmitting the produced rotative driving force to the grabbing massage member 8.

[0035] Moreover, in the grabbing massage member 8, the base end is pivotally supported on the kneading massage member 2 for free rotation about a horizontal axis relative to the front end fitted with the grabbing massager 7.

Furthermore, the front end of the crank member 26 is coupled to an intermediate part of the grabbing massage member 8 in the direction of its length for free rotation about a horizontally-directed axis. In this construction, upon movement of the crank member 26 in its extending direction, the grabbing massage member 8 is rocked back and forth.

[0036] Next, the grabbing massage member 8, as well as the grabbing boss portion 23, the annular engagement portion 25, and the crank member 26 constituting the grabbing drive section 22, provided in the massage device 1 pursuant to the present invention will be described.

As shown in FIGs. 3A and 3B, the grabbing massage

member 8 is a long rodlike member having the grabbing
massager 7 at its one end (front end). The grabbing
massager 7 is assigned to each of the left and right
kneading massager members 2L and 2R, and, in this embodiment,
5 a single grabbing massager is mounted on each of the right
and left sides of the device. Like the kneading massager 9,
for example, the grabbing massager 7 is made of hard rubber
or synthetic resin in thick-walled discotic or spherical
form, with consideration given to prevention of injury
10 caused by the action of grabbing user's to-be-massaged area
between the massagers 7 and 9.

[0037] Moreover, the other end (base end) of the
grabbing massager member 8 is fitted with a pivot pin 27 for
supporting the grabbing massager member 8 for free rocking
15 motion relative to the kneading massager member. The pivot
pin 27 is located on the base end (rear end) side of the
kneading massager member in the direction of its length, for
supporting one end of the grabbing massager member 8 for
free rotation about a horizontally-directed axis relative
20 to the other end thereof.

[0038] Moreover, a long hole in slit form, namely a slot
28 is formed in a lengthwise intermediate part of the
grabbing massager member 8. The slot 28 is so formed as to
extend along the direction of the length of the above-
25 described grabbing massager member 8, as to open into each

of the upper surface and lower surface of the grabbing
massage member 8, and as to pass through the interior of
the grabbing massage member 8 in the vertical direction.
Furthermore, the slot 28 is made to have a width which is
5 greater than the outer diameter of the front end side of
the crank member 26 (the details will be given later), so
that the front end side of the crank member 26 can be
freely inserted into and withdrawn from the slot. In
addition, inside the slot 28, a coupling pin 29 for
10 permitting connection with the front end of the crank
member 26 is placed in a position near the above-described
pivot pin 27 (the other end). The coupling pin 29 is
mounted so as to point in the horizontal direction, for
coupling the front end of the crank member 26 to the
15 grabbing massage member 8 for free rotation about a
horizontally-directed axis.

[0039] On the other hand, the grabbing boss portion 23
constituting the grabbing drive section 22 is attached to
the rotation shaft 10 for imparting a rotative driving
20 force to the above-described kneading massage member 2
(identical rotation shaft 10).

The grabbing boss portion 23 is a discotic member
disposed inwardly of the above-described kneading boss
portion 11L, 11R of the rotation shaft 10 in the width
25 direction. The left-side grabbing boss portion 23L is

situated on the right side of the left-side kneading boss portion 11L, whereas the right-side grabbing boss portion 23R is situated on the left side of the right-side kneading boss portion 11R.

5 [0040] Like the kneading boss portion 11, the grabbing boss portion 23 is also eccentrically attached to the rotation shaft 10. Specifically, as shown in FIG. 4, in a case where the kneading boss portion 11 is decentered rearwardly and upwardly from the center of the base end
10 side of the kneading mass member 2L, 2R, as shown in FIG. 3B, the grabbing boss portion 23 is decentered rearwardly and downwardly from the center of the base end side of the kneading mass member 2L, 2R. That is, the kneading boss portion 11 and the grabbing boss portion 23 are decentered
15 in different directions so as to cause an angular difference of about 90 degrees between their eccentric directions.

[0041] Moreover, the outer peripheral surface of the grabbing boss portion 23 is also formed with the cam face
20 24. The cam face 24 is formed along a cylindrical trackway such as to go around an axis pointing in a direction inclined with respect to the axis of the rotation shaft 10, for guiding the annular engagement portion 25 which will hereafter be described in movement along the go-around
25 trackway which is eccentric with respect to the rotation

shaft 10.

The direction of inclination of the cam face 24 with respect to the axis of the rotation shaft 10 is the same as the direction of inclination of the above-described
5 inclined cam face 16 with respect to the axis of the rotation shaft 10. Therefore, the cam face 24 and the inclined cam face 16 are arranged so as to go around the axes that are parallel to each other and point in the same direction, respectively. That is, the crank member 26 of
10 the annular engagement portion 25 to be guided along the cam face 24 and the kneading massage member 2 with the kneading engagement portion 12 to be guided along the inclined cam face 16 are equal in inclination direction at all times, wherefore it never occurs that these members
15 collide with each other during rotatory motion.

[0042] The annular engagement portion 25 is a cylindrical member which can be externally fitted to the outer side of the grabbing boss portion 23. The annular engagement portion 25 has a boss insertion hole 30 for
20 insertion of the aforementioned grabbing boss portion 23 formed so as to pass therethrough in the horizontal direction. The grabbing boss portion 23 is fitted in the boss insertion hole 30 so that the cam face 24 of the grabbing boss portion 23 has face-to-face contact with the
25 inner peripheral surface of the boss insertion hole 30,

whereby the crank member 26 is guided along the go-around trackway which is eccentric with respect to the rotation shaft 10.

[0043] The crank member 26 is a rodlike member extending
5 radially outwardly from the outer peripheral surface of the above-described annular engagement portion 25 (extending in a direction longitudinally of the kneading massage member 2). The base end side of the crank member 26 is secured to the outer peripheral side of the annular engagement portion
10 25, and, the front end side of the crank member 26 is pivotally supported on the coupling pin 29 of the grabbing massage member 8 for free rotation about a horizontally-directed axis.

[0044] Methods for performing a grabbing massage on a
15 body area to be massaged with use of the massage device 1 as described hereinabove, in other words, modes for driving the grabbing massage member 8 pursuant to the present invention will be described.

As has already been described, upon rotation of the
20 rotation shaft 10 effected by the kneading drive motor 15, the kneading massage member 2L, 2R is rocked in the horizontal direction, whereby a grabbing massage is performed on the to-be-massaged area.

[0045] In addition to the resultant kneading action, as
25 the rotation shaft 10 is further rotated, the grabbing boss

portion 23 disposed inwardly of the kneading boss portion 11 of the rotation shaft 10 in the horizontal direction (width direction) is rotated correspondingly. This grabbing boss portion 23 has a discotic shape, and, as has
5 already been described, the rotation shaft 10 passes through an eccentric position of the grabbing boss portion 23 offset from the center of the discotic shape. Therefore, upon rotation of the rotation shaft 10, the grabbing boss portion 23 is rotated eccentrically about the axis of the
10 rotation shaft 10.

[0046] However, the front end side of the crank member 26 externally fitted to the above-described grabbing boss portion 23 is pivotally supported on the coupling pin 29 of the grabbing massage member 8, and, the grabbing massage
15 member 8 is coupled to the kneading massage member 2 via the pivot pin 27. Therefore, the front end side of the crank member 26, while being able to rock about a horizontally-directed axis to a certain extent at a pivotal point defined by the pivot pin 27, is restrained against
20 rotation about the axis of the rotation shaft 10 together with the grabbing boss portion 23. In consequence, in the crank member 26 externally fitted to the grabbing boss portion 23, the distance from the axis of the rotation shaft 10 to the front end of the crank member 26 varies
25 endways, and, in response to the rotation of the rotation

shaft 10, the crank member 26 moves forward and upward as part of advancing and retracting motion.

[0047] For example, as shown in FIG. 5A, when the rotation shaft 10 and the grabbing boss portion 23 in
5 eccentric relation are rotated together with the consequence that the crank member 26 moves backward and downward for retraction, the crank member 26 is pulled down, and the location of the coupling pin 29 is shifted downward correspondingly, whereupon the grabbing massage member 8 is
10 rocked downward about the pivot pin 27. Then, in response to the downward rocking motion of the grabbing massage member 8, the grabbing massager 7 attached to the front end of the grabbing massage member 8 moves away from the kneading massager 9.

15 [0048] In contrast, as shown in FIG. 5B, when the grabbing boss portion 23 is further rotated with the consequence that the crank member 26 moves forward and upward for advancement, the crank member 26 is pushed up, and the location of the coupling pin 29 is shifted upward
20 correspondingly, whereupon the grabbing massage member 8 is rocked upward about the pivot pin 27. Then, in response to the upward rocking motion of the grabbing massage member 8, the grabbing massager 7 attached to the front end of the grabbing massage member 8 moves close to the kneading
25 massager 9.

[0049] That is, in the massage device 1 of the first embodiment, in response to the rotation of the rotation shaft 10, the grabbing massager 7 is moved away from and close to the kneading massager 9 repeatedly. Thus, by positioning the massage device 1 so that a to-be-massaged area is located between the grabbing massager 7 and the kneading massager 9, it is possible to achieve the "to-be-massaged area (shoulder, for example) grabbing massage".

[Second Embodiment]

10 Next, a massage device 1 implemented as the second embodiment will be described.

[0050] As shown in FIGs. 7A to 9B, the massage device 1 of the second embodiment is provided with a grabbing drive section 22 which differs from the grabbing drive section 22 of the first embodiment.

Specifically, as is the case with the first embodiment, the grabbing drive section 22 of the second embodiment comprises a grabbing boss portion 23 and an annular engagement portion 25. The grabbing drive section 22 of the second embodiment differs from the grabbing drive section of the first embodiment in that the grabbing massager 7 is moved close to and away from the kneading massager 9 through insertion of a guide pin 31 disposed in protrusion form in the kneading massage member 2 into a guide groove 32 provided in the grabbing massage member 8.

[0051] Next, the guide pin 31 and the grabbing massage member 8 constituting the massage device 1 of the second embodiment will be described.

The above-described kneading massage member 2 has, at
5 its side surface, the guide pin 31 protruding toward the grabbing massage member 8. The guide pin 31 is, in the left-side kneading massage member 2L, formed so as to protrude rightward from the right side surface of the kneading massage member (protrude inward in the width
10 direction), whereas, in the right-side kneading massage member 2R, the guide pin 31 is formed so as to protrude leftward from the left side surface of the kneading massage member (protrude inward in the width direction).

[0052] Moreover, two guide pins 31 are formed in each of
15 the kneading massage members 2, and, one guide pin 31 lying farther away from the rotation shaft 10 is located slightly frontward beyond the other guide pin 31 lying closer to the rotation shaft 10. In the case of using such two guide pins 31, the kneading massager 9 is located on a line
20 connecting these two guide pins 31, wherefore the grabbing massager 7 can be rectilinearly moved close to and away from the kneading massager 9. These guide pins 31 are each made to have an outer diameter which is smaller than the groove width of the aforementioned guide groove 32 so as to
25 be able to move freely within the guide groove 32 of the

grabbing massage member 8.

[0053] The grabbing massage member 8 comprises: a guide member 33 having the above-described guide groove 32 capable of guiding the guide pin 31; and a grabbing
5 massager 7 formed at the lower edge of the guide member 33. Specifically, the guide member 33 is a slim strip-like platy member, and, the guide groove 32 is formed in a widthwise midportion of the guide member 33 so as to extend along the direction of its length. The guide member 33 is
10 supported for free rotation about a rotary shaft 34 located at a lengthwise intermediate part of the kneading massage member 2L, 2R, so that the lower end side of the guide member 33 can be rotated about a horizontally-directed axis relative to the upper end side thereof fitted with the
15 rotary shaft 34.

[0054] The guide groove 32 is a slit-like groove part in which both of the above-described two guide pins 31 can be inserted, and, the insertion of the two guide pins 31 in it allows the guide member 33 to move rectilinearly relative
20 to the grabbing massage member 8. Moreover, the length of the guide groove 32 is determined on the basis of the length of the spacing between the two guide pins 31 as a reference length, and, the guide groove 32 is formed centrally of the guide member 33 so as to have a length
25 about twice the reference length. In the massage device 1

of the second embodiment, as the guide pin 31 is moved between the upper edge and the lower edge of the guide groove 32, the guide member 33 is moved along the extending direction of the kneading massager member 2, thereby

5 performing a grabbing massage.

[0055] For example, as shown in FIG. 8A, when the upper one of the two guide pins 31 abuts on the upper edge of the guide groove 32, then the distance between the grabbing massager 7 and the kneading massager 9 becomes maximum. On
10 the other hand, as shown in FIG. 8B, when the lower one of the two guide pins 31 abuts on the lower edge of the guide groove 32, then the distance between the grabbing massager 7 and the kneading massager 9 becomes minimum.

It is noted that, in contrast to the above-described
15 structure, alternatively, the guide pin 31 may be formed in the grabbing massager member 8, and the guide groove 32, in which the guide pin 31 is slidably moved, may be formed in the kneading massager member 2.

[0056] A coupling member 35 is disposed between the
20 lower end side of the above-described grabbing massager member 8 and the outer peripheral side of the annular engagement portion 25 in order to provide connection between the grabbing massager member 8 and the annular engagement portion 25. The coupling member 35 is a long
25 platy member, the lengthwise base end of which is connected

for free rotation about a horizontal axis relatively to the annular engagement portion 25. Moreover, the lengthwise front end of the coupling member 35 is connected for free rotation about a horizontal axis relatively to the base end
5 of the grabbing massage member 8. That is, in this construction, the grabbing massage member 8 is coupled relatively to the annular engagement portion 25 so that the distance between these two members can be varied.

[0057] Also in the massage device 1 of the second

10 embodiment thus far described, as shown in FIG. 9A, when the rotation shaft 10 and the grabbing boss portion 23 in eccentric relation are rotated together with the consequence that the part of the grabbing boss portion 23 protruding eccentrically with respect to the rotation shaft
15 10 faces rearward and downward, the guide member 33 is allowed to slide rearward and downward via the coupling member 35 for retraction, whereupon the grabbing massager 7 moves away from the kneading massager 9.

In contrast, as shown in FIG. 9B, when the rotation
20 shaft 10 and the grabbing boss portion 23 in eccentric relation are rotated together with the consequence that the part of the grabbing boss portion 23 protruding eccentrically with respect to the rotation shaft 10 faces forward and upward, the guide member 33 is allowed to slide
25 forward and upward via the coupling member 35 for

advancement, whereupon the grabbing massager 7 moves close to the kneading massager 9.

[0058] That is, also in the message device 1 of the second embodiment, in response to the rotation of the rotation shaft 10, the grabbing massager 7 is moved away from and close to the kneading massager 9 repeatedly. Thus, by positioning the message device 1 so that a to-be-massaged area is located between the grabbing massager 7 and the kneading massager 9, it is possible to achieve the "to-be-massaged area (shoulder, for example) grabbing message".

As described heretofore, according to the message device 1 pursuant to the present invention, a grabbing message can be performed on an area to be massaged by grabbing the area between the kneading message member 2 and the grabbing message member 8.

[Third Embodiment]

Next, a message device 1 implemented as the third embodiment will be described.

[0059] As shown in FIGs. 10A to 13B, like the first embodiment, the message device 1 of the third embodiment comprises a grabbing message member 8 capable of performing a grabbing message on user's to-be-massaged area.

The message device 1 of the third embodiment differs from that of the first embodiment in respect of the

mounting position of the grabbing massage member 8 (a position for mounting the grabbing massage member 8 relative to the kneading massage member 2). That is, as shown in FIGs. 5A and 5B for example, in the massage device 1 of the first embodiment, the base end side of the grabbing massage member 8 is pivotally supported, via the pivot pin 27, on an intermediate part of the kneading massage member 2L, 2R extending radially outwardly from the rotation shaft 10. Expressed differently, in the massage device 1 of the first embodiment, when looking from the rotation shaft 10, the kneading massager 9 and the grabbing massager 7 (grabbing massage member 8) are arranged on the same side.

[0060] On the other hand, in the massage device 1 of the third embodiment, as shown in FIGs. 10A and 10B, the kneading massage member 2 is so formed as to extend both in an upward direction and in a downward direction with reference to the rotation shaft 10, and, the front end of the upwardly-extending part of the kneading massage member 2 (the upper end of the kneading massage member 2) is coupled with the kneading massager 9, whereas the front end of the downwardly-extending part thereof (the lower end of the kneading massage member 2) is coupled with the base end of the grabbing massage member 8. That is, in a construction adopted as the massage device 1 of the third

embodiment, when viewed from the rotation shaft 10, the kneading massager 9 and the grabbing massager 7 are arranged on opposite sides in a circumferential direction, and, the kneading massage member 2 is formed with a downwardly-extending protrusion 44 whose front end is coupled with the grabbing massage member 8.

[0061] In such a massage device 1 of the third embodiment, since the kneading massager 9 and the grabbing massager 7 are vertically spaced apart as upper and lower members, respectively, with the axis of the rotation shaft 10 located between them, in order to move the grabbing massager 7 close to and away from the kneading massager 9, it is inevitable to increase the rocking distance of the grabbing massager 7. That is, in the massage device 1 of the third embodiment, when the grabbing massager 7 is moved close to and away from the kneading massager 9, it is possible to secure a wider range of rocking motion of the grabbing massage member 8 in the vertical direction, and thereby achieve even stronger massage on a target body area to be massaged.

[0062] Next, the kneading massage member 2, the grabbing massage member 8, and the grabbing drive section 22 constituting the massage device 1 of the third embodiment will be described.

As shown in FIGs. 10A and 10B, the kneading massage

member 2 is a long platy member mounted on each of the right and left sides of the massage device 1, which is capable of performing a kneading massage on user's to-be-massaged area with use of the kneading massager 9 disposed
5 at its front end.

[0063] The kneading massage member 2 is disposed adjacent the horizontal outer side of the grabbing massage member 8 having the grabbing massager 7, and more specifically there is provided a pair of left and right
10 kneading massage members 2L and 2R. The left kneading massage member 2L and the right kneading massage member 2R are arranged in bilaterally line-symmetric relation to each other.

Each of the kneading massage members 2L and 2R is
15 shaped like a long and thin strip plate bent into a substantially L-shaped form when viewed from the side in the horizontal direction, and, a kneading boss portion 11L, 11R is disposed in a lengthwise intermediate part of the substantially right-angled bend. Specifically, the
20 kneading massage member 2L, 2R has, in its lengthwise intermediate part, an engagement hole capable of receiving the cylindrical kneading boss portion 11L, 11R, and, the kneading boss portion 11L, 11R is fitted in this engagement hole, with its axis pointing in the horizontal direction.

25 The kneading boss portion 11L, 11R and the kneading massage

member 2L, 2R are designed for free mutual rotation.

[0064] The above-described kneading massager member 2L, 2R has a restraint projection 42 formed so as to extend outward (toward a casing) from the outer peripheral surface of a lengthwise intermediate part thereof. The front end of the restraint projection 42 is inserted in a guide slot 43 formed at the inner peripheral surface of the casing of the massager device 1, and, the guide slot 43 is formed along the horizontal direction. With the adoption of such a system, upon horizontal movement of the restraint projection 42 within the guide slot 43, the kneading massager member 2L, 2R can be rocked in the horizontal direction while being restrained against movement in the front-rear direction. Thus, as compared with the first and second embodiments, the rocking motion of the kneading massager member 2L, 2R can be accomplished in a simpler structure.

[0065] Lengthwise one end (upper end) side of the kneading massager member 2 protrudes forward and upward with respect to the intermediate part formed with the engagement hole, and, the thick-walled kneading massager 9 is disposed at the upper end thereof. Specifically, a forwardly and downwardly extending massager support shaft 36 is disposed at the upper end of the kneading massager member 2, and, the kneading massager 9 is attached to the front end of the

massager support shaft 36 for free rotation relative to the massager support shaft 36.

[0066] Moreover, lengthwise the other end (lower end) side of the kneading massager member 2 protrudes forward and
5 downward with respect to the intermediate part, and, the lower end thereof is formed with a coupling hole for insertion of a rocking pin 39 for permitting connection with the grabbing massager member 8. Specifically, in the kneading massager member 2, this forwardly and downwardly
10 protruding part serves as the protrusion 44 for coupling the grabbing massager member 8 to the kneading massager member 2, and, the coupling hole is formed in the front end (lower end) of the protrusion 44, so that the base end side of the grabbing massager member 8 can be coupled to the
15 kneading massager member via the rocking pin 39 inserted in the coupling hole. The coupling hole is formed in a position adjacent to the lateral side of a through hole formed in the grabbing massager member 8 so as to pass through a lengthwise intermediate part thereof in the
20 horizontal direction, so that the coupling hole and the through hole can communicate with each other to define an opening. Upon insertion of the rocking pin 39 into both of the coupling hole and the through hole in communicating condition, the grabbing massager member 8 is pivotally
25 supported on the other end of the kneading massager member 2

for free rotation about a horizontally-directed axis,
whereby these members can be coupled to each other.

[0067] A rotative driving force is transmitted from a
drive motor 15 to the above-described rotation shaft 10
5 through a drive gear. In the third embodiment, the drive
motor 15 is disposed centrally of the massage device 1 in
the width direction, and, the rotation shaft 10 disposed
adjacent the widthwise outer side of the drive gear is
equipped with a bearing portion for rotatably supporting
10 the rotation shaft 10. That is, the rotation shaft 10 of
the third embodiment is so shaped that each axial end
extends outward from the bearing portion in the horizontal
direction, and, the above-described kneading boss portion
11L, 11R is supported by that part of the bearing portion
15 which is located outward in the width direction.

[0068] As shown in FIGs. 11A and 11B, the grabbing
massage member 8 is a long rodlike member which has a
lengthwise intermediate part bent to form a step in the
horizontal direction. One end side of the grabbing massage
20 member 8 is fitted with the grabbing massager 7 capable of
performing a grabbing massage on user's to-be-massaged area,
whereas the other end side of the grabbing massage member 8
is coupled to the front end side of the crank member 26.
As is the case with the kneading massage member 2, a single
25 grabbing massage member 8 is mounted on each of the right

and left sides of the device, and, the left and right grabbing massage members 8L and 8R are arranged in bilaterally line-symmetric relation to each other.

[0069] The other end side of the grabbing massage member 8 is divided into two branched parts, and, the front end side of the crank member 26 can be inserted in between these right and left branched ends. Moreover, on the other end side of the grabbing massage member 8, a pivot-pin insertion hole capable of insertion of the pivot pin 27 is formed at each of the two branched ends, so that the pivot pin 27 can be inserted into the pivot-pin insertion holes so as to run along the horizontal direction. The pivot pin 27 is also inserted into an insertion hole formed at the front end side of the crank member 26 so as to pivotally support the grabbing massage member 8 and the crank member 26 for free rotation about a horizontally-directed axis.

[0070] Meanwhile, a lengthwise intermediate part of the grabbing massage member 8 (that part of the grabbing massage member 8 which is closer to one end thereof than is the pivot pin 27) is formed with a horizontally extending through hole capable of insertion of the above-described rocking pin 39. The rocking pin 39 for coupling the kneading massage member 2 to the grabbing massage member 8 is inserted in this through hole, so that the kneading massage member 2 and the grabbing massage member 8 can be

pivotally supported by the rocking pin 39 for free rotation about a horizontally-directed axis.

[0071] As shown in FIGs. 10A, 12A, and 12B, the grabbing drive section 22 provided in the massage device 1 of the third embodiment includes a grabbing boss portion 23 attached to the rotation shaft 10 for unitary rotation. The outer peripheral surface of the grabbing boss portion 23 is formed with a cam face 24 with a trackway which is eccentric and inclined with respect to the axis of the rotation shaft 10. The cam face 24 of the grabbing boss portion 23 is engaged with an annular engagement portion 25 for taking out a rotative driving force of the rotation shaft 10 via the grabbing boss portion 23. Moreover, the annular engagement portion 25 is disposed on the base end side of the crank member 26 for unitary rotation with the crank member 26, and, the crank member 26 has the capability of transmitting a rotative driving force taken out by the annular engagement portion 25 at the base end side toward the front end side (toward the grabbing massage member 8 at the front end side).

[0072] The above-described grabbing boss portion 23 is a short cylindrical member having a large diameter, and, the rotation shaft 10 passes through the grabbing boss portion 23 in the horizontal direction at a position offset from the center of the grabbing boss portion 23 toward the outer

circumference thereof. Moreover, like the inclined cam face 16 of the kneading boss portion 11, the cam face 24 with a trackway inclined with respect to the axis of the rotation shaft 10 is formed on the outer peripheral surface of the grabbing boss portion 23. Specifically, the rotation shaft 10 is intersected by the axis of the grabbing boss portion 23 with inclination, and in eccentric relation to the axis. Note that the grabbing boss portion 23 is placed so that the direction of its inclination with respect to the rotation shaft 10 is the same as the direction of inclination of the kneading boss portion 11 with respect to the rotation shaft 10 in any part in the circumferential direction.

[0073] The above-described crank member 26 is substantially a member constructed of a combination of the cylindrically shaped annular engagement portion 25 and a platy member extending radially outwardly from the outer peripheral surface of the annular engagement portion 25, and, the cylindrical annular engagement portion 25, which can be engaged with the cam face 24 of the grabbing boss portion 23, is situated on the base end side of the crank member. The annular engagement portion 25 is a cylindrical member which can be externally fitted loosely to the above-described cam face 24, and is attached for free rotation relatively to the cam face 24.

[0074] Moreover, the earlier described insertion hole for insertion of the pivot pin 27 is formed in the front end of the crank member 26 extending radially outwardly from the annular engagement portion 25 so as to pass

5 through the crank member 26 in the horizontal direction, and, upon insertion of the pivot pin 27 in the insertion hole and the pivot-pin insertion hole in communicating condition, the base end side of the grabbing massage member 8 can be coupled to the front end side of the crank member
10 26 for free rotation about a horizontally-directed axis.

[0075] In order to perform a grabbing massage with use of the massage device 1 of the third embodiment, to begin with, the rotation shaft 10 is driven to rotate about a horizontally-directed axis by means of a drive motor

15 (kneading drive motor 15) or otherwise. In response to the rotation of the rotation shaft 10 about the horizontally-directed axis, the kneading boss portion 11 and the grabbing boss portion 23, being attached to the rotation shaft 10, are rotated unitarily with the rotation shaft 10.

20 At this time, since the inclined cam face 16 of the kneading boss portion 11 has a trackway inclined with respect to the axis of the rotation shaft 10, upon rotation of the rotation shaft 10, the kneading boss portion 11 is rotated, with the inclined cam face 16 following a trackway
25 such as to swing in the horizontal direction. However, the

rotation shaft 10 is mounted so as to pass close to the axis of the kneading boss portion 11, and there is thus no noticeable eccentricity. Therefore, the inclined cam face 16, while meandering in the horizontal direction, undergoes
5 little change in trackway in the radial direction.

[0076] However, in contrast to the above-described kneading boss portion 11, the cam face 24 of the grabbing boss portion 23 is, in addition to being inclined to the axis of the rotation shaft 10, eccentric with respect to
10 the axis, and, the rotation shaft 10 passes through a position of the grabbing boss portion 23 offset from the center toward the outer circumference thereof. Therefore, upon rotation of the rotation shaft 10, the cam face 24 meanders in the horizontal direction as does the inclined
15 cam face 16, and also undergoes a change in trackway in the radial direction, with the consequence that the grabbing boss portion 23 is rotated eccentrically about the axis of the rotation shaft 10.

[0077] However, the front end side of the crank member
20 26 externally fitted to the grabbing boss portion 23 as above described is pivotally supported by the pivot pin 27 located on the base end side of the grabbing massager member 8, and, the grabbing massager member 8 is coupled, via the rocking pin 39 disposed in a lengthwise intermediate part
25 thereof, to the front end side of the protrusion 44 of the

kneading massage member 2. Therefore, the front end side of the crank member 26, while being able to rock about a horizontally-directed axis to a certain extent at a pivotal point defined by the rocking pin 39, is restrained against
5 rotation about the axis of the rotation shaft 10 together with the grabbing boss portion 23. In consequence, in the crank member 26 externally fitted to the grabbing boss portion 23, the distance from the axis of the rotation shaft 10 to the front end of the crank member 26 (pivot pin
10 27) varies endways, and, in response to the rotation of the rotation shaft 10, the crank member 26 moves forward and upward for advancement, and moves backward and downward for retraction.

[0078] For example, as shown in FIG. 12A, when the
15 rotation shaft 10 and the grabbing boss portion 23 in eccentric relation are rotated together with the consequence that the crank member 26 moves forward and upward, the front end side of the crank member 26 is lifted forward. Then, the location of the pivot pin 27 is shifted
20 forward and upward, whereupon the grabbing massage member 8 is rocked in a direction to swing the grabbing massager 7 down about the rocking pin 39 (in a direction indicated by an arrow shown in FIG. 12A). Then, in response to the downward rocking motion of the grabbing massage member 8,
25 the grabbing massager 7 attached to the front end of the

grabbing massage member 8 moves away from the kneading massager 9.

[0079] In contrast, as shown in FIG. 12B, when the grabbing boss portion 23 is further rotated with the consequence that the crank member 26 moves backward and downward, the front end side of the crank member 26 is pushed backward. Then, the location of the pivot pin 27 is shifted backward and downward, whereupon the grabbing massage member 8 is rocked in a direction to swing the grabbing massager 7 up about the rocking pin 39 (in a direction indicated by an arrow shown in FIG. 12B). Then, in response to the upward rocking motion of the grabbing massage member 8, the grabbing massager 7 attached to the front end of the grabbing massage member 8 moves close to the kneading massager 9.

[0080] That is, in the massage device of the third embodiment, in response to the rotation of the rotation shaft 10, the grabbing massage member 8 is switched between a separating-state position and an approaching-state position, thereby allowing the grabbing massager 7 to move close to and away from the kneading massager 9. Thus, a grabbing massage can be performed on user's to-be-massaged area by grabbing the area between the kneading massager 9 and the grabbing massager 7.

In the massage device 1 of the third embodiment thus

far described, the kneading massage member 2 is designed so that the kneading massager 9 is attached to the upper end of its part extending upward with reference to the rotation shaft 10, and the base end of the grabbing massage member 8 is attached to the lower end of its part extending downward with reference to the rotation shaft 10 (the front end of the protrusion 44). Accordingly, as compared with the first and second embodiments in which the kneading massager 9 and the grabbing massage member 8 are arranged on the same side, with the rotation shaft 10 lying between them, in the massage device 1 of the third embodiment, a longer distance can be secured between the grabbing massager 7 and the kneading massager 9 in the vertical direction, as well as in the front-rear direction. That is, the following advantage is gained: when the grabbing massager 7 is moved close to and away from the kneading massager 9, a wider range of rocking motion of the grabbing massager 7 can be ensured in the vertical direction, wherefore the strength of a massage to be performed on a to-be-massaged area can be increased by an amount corresponding to the extent of widening the rocking range.

[Fourth Embodiment]

Next, a massage device 1 implemented as the fourth embodiment will be described.

[0081] The massage device 1 of the fourth embodiment as

shown in FIG. 14 has substantially the same mechanism (massage mechanism) as that adopted in the third embodiment shown in FIG. 10A and so forth, and thus has the grabbing massager member 8 which performs a grabbing massage on a to-be-massaged body area of a user.

However, the massage device 1 of the fourth embodiment differs greatly from the massage device of the third embodiment in that, while the grabbing massager 7 is being substantially maintained in close proximity to the kneading massager 9, the kneading massager 9 and the grabbing massager 7 are moved from one side to the other side reciprocally in the width direction. That is, when a massage target is user's shoulder, the grabbing massager 7 and the kneading massager 9 move close to and away from user's neck in small motions, or in wiggling movement, while being substantially kept in grabbing contact with the shoulder, thus performing continuous grabbing massage on the to-be-massaged area.

[0082] In this way, a cycle of the approach of the grabbing massager 7 for grabbing the to-be-massaged area and the separation of the grabbing massager 7 for releasing the grabbing action from the to-be-massaged area is repeated in a short period of time, and also, the kneading massager 9 and the grabbing massager 7 are moved from one side to the other side in small motions reciprocally in the

width direction so as to perform continuous grabbing
massage on the to-be-massaged area. Such a grabbing
massage provides great blood-circulation improvement effect
especially for a to-be-massaged area with acute stiffness.

5 [0083] The massage device 1 of the fourth embodiment is
designed to switch the direction of rotation of the
rotation shaft 10 back and forth between the normal
direction of rotation and the reverse direction of rotation
for each angle of less-than-one complete rotation. This
10 makes it possible to perform grabbing massage on a to-be-
massaged area held between the kneading massager 9 and the
grabbing massager 7 continuously at a fast pace.

Specifically, the massage device 1 of the fourth
embodiment is provided with a control section for
15 controlling the direction of rotation of the rotation shaft
10 (not shown in the drawing). The control section effects
control of the rotation of a drive motor 21 for rotating
the rotation shaft 10 in a manner so as to accomplish the
above-described continuous grabbing massage.

20 [0084] Moreover, the rotation shaft 10 is provided with
a rotation measuring section capable of determining the
angle of rotation and rpm of the rotation shaft 10 (not
shown). The rotation measuring section determines the
angle of rotation of the rotation shaft 10, and, the
25 control section controls the drive motor 21 on the basis of

the measured rotation angle.

As the rotation measuring section, use can be made of an optical encoder which detects the angle of rotation and rpm of the rotation shaft 10 by detection of transmitted
5 light from a photosensor that has passed through a notch, for example, a cutaway formed at the outer edge of a circular plate disposed on the rotation shaft 10. The above-described control section switches the rotation of the rotation shaft 10 back and forth between normal
10 rotation and reverse rotation on the basis of the angle of rotation of the rotation shaft 10 detected by the rotation measuring section.

[0085] That is, a rotation angle indicative of a condition where the grabbing massager 7 is positioned in
15 closest proximity to the kneading massager 9 is stored in the control section. With the rotation angle corresponding to the condition where the grabbing massager 7 is positioned in closest proximity to the kneading massager 9 (0 degree) defined as a reference, for example, within the
20 range of variation extending from plus 45 degrees to minus 45 degrees from the reference rotation angle corresponding to the closest proximity, the rotation of the rotation shaft 10 is switched back and forth between normal rotation and reverse rotation. This makes it possible to perform
25 grabbing massage on a to-be-massaged area held between the

kneading massager 9 and the grabbing massager 7 continuously at a fast pace.

[0086] The rotation angles for the switching between normal rotation and reverse rotation may be set at other values that fall outside the above-described 45-degree range so long as the values indicate angles of less-than-one complete rotation. Also in this case, the direction of rotation of the rotation shaft 10 can be switched back and forth between the normal direction of rotation and the reverse direction of rotation for each angle of less-than-one complete rotation.

In the case of effecting switching of the direction of rotation of the rotation shaft 10 within such a rotation angle range, while the grabbing massager 7 is being substantially maintained in close proximity to the kneading massager 9, the kneading massager 9 and the grabbing massager 7 are moved from one side to the other side reciprocally in the width direction. That is, when a massage target is user's shoulder, the grabbing massager 7 and the kneading massager 9 are moved close to and away from user's neck in wiggling movement while being substantially kept in grabbing contact with the shoulder, thus performing continuous grabbing massage on the to-be-massaged area.

[0087] The following describes a method for performing

actual continuous grabbing massage in a short period of time with use of the massage device 1 of the fourth embodiment.

For example, when the angle of rotation measured by the rotation measuring section reaches the reference value (0 degree), then the grabbing massager 7 is brought into closest proximity to the kneading massager 9, whereby a to-be-massaged body area of a user (for example, user's shoulder) is grabbed to the fullest extent between the kneading massager 9 and the grabbing massager 7.

[0088] After that, the kneading massager 9 and the grabbing massager 7 are moved to one side (moved toward user's neck, for example) in the width direction, while substantially maintaining the action of grabbing the to-be-massaged area in between, until the angle of rotation measured by the rotation measuring section reaches the upper limit of the pre-inputted range (which corresponds to, for example, 45 degrees plus the reference (0 degree)).

When the angle of rotation measured by the rotation measuring section reaches the upper limit of the pre-inputted range (corresponding to 45 degrees plus the reference, for example), a command is issued to the kneading drive motor 15 from the control section so as to switch the rotation of the rotation shaft 10 from normal rotation to reverse rotation as shown in FIG. 14(B). Then,

the kneading massager 9 and the grabbing massager 7 are moved to the other side (moved away from user's neck) in the width direction, while substantially maintaining the action of grabbing the to-be-massaged area in between,
5 until the angle of rotation measured by the rotation measuring section reaches the lower limit of the pre-inputted range (which corresponds to, for example, 45 degrees minus the reference (0 degree)).

[0089] After that, a command is issued to the kneading
10 drive motor 15 from the control section so as to switch the rotation of the rotation shaft 10 from reverse rotation to normal rotation as shown in FIG. 14(A).

Thus, in response to the switching of the direction of rotation of the rotation shaft 10 under the control of the
15 control section, while the grabbing massager 7 is being substantially maintained in close proximity to the kneading massager 9, the kneading massager 9 and the grabbing massager 7 are moved from one side to the other side reciprocally in the width direction. That is, the grabbing
20 massager 7 and the kneading massager 9 are moved close to and away from user's neck in wiggling movement, thus performing continuous grabbing massage on the to-be-massaged area.

[Fifth Embodiment]

25 Next, a massage device 1 implemented as the fifth

embodiment will be described.

[0090] The massage device 1 of the fifth embodiment has substantially the same mechanism (massage mechanism) as that adopted in the first embodiment shown in FIG. 4 and so
5 forth.

However, the massage device 1 of the fifth embodiment differs from the massage device of the first embodiment in that, as shown in FIG. 15, when the grabbing massager 7 is positioned in closest proximity to the kneading massager 9,
10 in other words, under the condition where the to-be-massaged area is being held between the kneading massager 9 and the grabbing massager 7, the kneading massage member 2 and the grabbing massage member 8 are reciprocated backward and forward (moved reciprocally in the front-rear
15 direction), with the to-be-massaged area held in a grabbed state, thus performing more effective massage on the to-be-massaged area (this massage will hereafter be referred to as "grabbing and pushing-pulling massage").

[0091] Specifically, the massage device 1 of the fifth
20 embodiment is designed to move the kneading massager 9 and the grabbing massager 7 in small motions reciprocally in the front-rear direction by continuously rotating the tapping drive shaft 21 in one direction and reverse direction.

25 For example, as shown in FIG. 15, let it be assumed

that, with the grabbing massager 7 positioned in closest proximity to the kneading massager 9 (with the to-be-massaged area held between the grabbing massager 7 and the kneading massager 9), the rotation shaft 10 remains

5 unrotated, and thus the tapping drive shaft 21 only keeps rotating in one direction.

[0092] Since the rear end side of the crank arm 20 is rotated eccentrically about the axis of the tapping drive shaft 21, when rotating the tapping drive shaft 21

10 continuously in one of the normal direction of rotation and the reverse direction of rotation, the front end of the crank arm 20 is moved reciprocally in the front-rear direction (in the vertical direction as viewed in FIG. 15).

Then, the position of the kneading massager member 2 coupled to the front end side of the crank arm 20 is shifted up and down, thus enabling the kneading massager 9, along with the grabbing massager 7, attached to the kneading massager member 2 to move backward and forward about the rotation shaft 10.

20 [0093] In this construction, the to-be-massaged area, while being held in a grabbed state between the grabbing massager 7 and the kneading massager 9, can be pushed forward and pulled backward (grabbing and pushing-pulling message can be performed on the to-be-massaged area). Such
25 a message is, like the above-described grabbing message,

especially advantageous when it is desired to attain even higher blood-circulation improvement effect for a to-be-massaged area with acute stiffness.

[0094] As an alternative to the above-described

5 structure in which the kneading massager 9 and the grabbing massager 7 are moved reciprocally in the front-rear direction in a short time under the rotation of the tapping drive shaft 21, the entire massage device 1 including the kneading massager 9 and the grabbing massager 7 may be
10 designed to move reciprocally in the front-rear direction relative to the base member 4 in a short time.

Although the massage mechanism of the fifth embodiment (grabbing and pushing-pulling massage mechanism) has been described with respect to the case of imparting continuous
15 rotation to the tapping drive shaft 21 only while leaving the rotation shaft 10 unrotated, as practiced in the fourth embodiment, it is possible to impart continuous rotation to the tapping drive shaft 21 only while, instead of stopping the rotation of the rotation shaft 10, rotating the
20 rotation shaft 10 so that the direction of rotation of the rotation shaft 10 is switched back and forth between the normal direction of rotation and the reverse direction of rotation for each angle of less-than-one complete rotation. This makes it possible to perform grabbing massage on the
25 to-be-massaged area held between the kneading massager 9

and the grabbing massager 7 continuously at a fast pace.

[0095] In this case, both the "grabbing massage" as seen in the description of the fourth embodiment and the "pushing-pulling massage" as seen in the description of the fifth embodiment can be performed on the to-be-massaged area, thus achieving efficacious massage.

It should be understood that the embodiments as set forth hereinabove are considered in all respects as illustrative only and not restrictive. Particularly, as to particulars that are not explicitly specified in the embodiments as disclosed hereinabove, for example, as to working conditions, operating conditions, relevant parameters, and the dimensions, weights, and volumes of constituent components, 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.

Explanation of reference symbols

[0096]

- 20 1 message device
- 2L left-side kneading massage member
- 2R right-side kneading massage member
- 3 back-kneading device
- 4 base member
- 25 5 up-and-down moving mechanism

	6	kneading drive section
	7	grabbing massager
	8	grabbing massage member
	9	kneading massager
5	10	rotation shaft
	11L	left-side kneading boss portion
	11R	right-side kneading boss portion
	12	kneading engagement portion
	13	bearing tool
10	14	drive gear
	15	kneading drive motor
	16	inclined cam face
	17	swing restraining mechanism
	18	universal joint portion
15	19	hole for receiving universal joint portion
	20	crank arm
	21	tapping drive shaft
	22	grabbing drive section
	23L	left-side grabbing boss portion
20	23R	right-side grabbing boss portion
	24	cam face
	25	annular engagement portion
	26	crank member
	27	pivot pin
25	28	slot

29 coupling pin
30 boss insertion hole
31 guide pin
32 guide groove
5 33 guide member
34 rotary shaft
35 coupling member
36 massager support shaft
39 rocking pin
10 42 restraint projection
43 guide slot
44 protrusion
48 tapping drive motor

CLAIMS

1. A message device comprising:

a kneading message member having a kneading massager at its front end; and

5 a grabbing message member having a grabbing massager at its front end, which is disposed on a base end side of the kneading message member,

said grabbing message member being designed to perform a grabbing message by moving the grabbing massager of the
10 grabbing message member close to and away from said kneading massager.

2. The message device according to claim 1, further comprising:

15 a rotation shaft which is driven to rotate about an axis pointing in a horizontal direction; and

a kneading drive section for rocking said kneading message member by taking out a rotative driving force of said rotation shaft to allow the kneading message member to
20 perform a kneading message.

3. The message device according to claim 2, further comprising:

a rotation shaft which is driven to rotate about an
25 axis pointing in a horizontal direction; and

a grabbing drive section for moving said grabbing massager close to and away from the kneading massager by utilizing a rotative driving force of said rotation shaft.

5 4. The massage device according to claim 3,

wherein said grabbing drive section comprises:

a grabbing boss portion having a cam face formed on its outer peripheral surface, which is eccentrically attached to said rotation shaft;

10 an annular engagement portion engaged with the cam face of said grabbing boss portion, for taking out said rotative driving force; and

a crank member having its base end connected to said annular engagement portion, and has its front end connected
15 to said grabbing massage member, for transmitting the produced rotative driving force to said grabbing massage member,

wherein, in said grabbing massage member, its base end is pivotally supported on said kneading massage member for
20 free rotation about a horizontal axis relative to its front end fitted with said grabbing massager,

and wherein the front end of said crank member is coupled to an intermediate part of said grabbing massage member for free rotation about an axis pointing in the
25 horizontal direction.

5. The massage device according to claim 3,

wherein said grabbing drive section comprises:

a grabbing boss portion having a cam face formed on
5 its outer peripheral surface, which is eccentrically
attached to said rotation shaft;

an annular engagement portion engaged with the cam
face of said grabbing boss portion, for taking out said
rotative driving force;

10 a guide pin formed in said kneading massage member or
said grabbing massage member;

a guide groove formed in said grabbing massage member
or said kneading massage member, in which said guide pin is
slidably moved; and

15 a coupling member having its base end connected
relatively to said annular engagement portion, and having
its front end connected for free rotation about a
horizontal axis relatively to the base end of the grabbing
massage member.

20

6. The massage device according to claim 4 or claim 5,
wherein said kneading drive section comprises:

a kneading boss portion which is attached to the
rotation shaft fitted with said grabbing boss portion, and
25 has, on its outer peripheral surface, an inclined cam face

inclined with respect to an axis of said rotation shaft;
and

a kneading engagement portion engaged with the
inclined cam face of said kneading boss portion, for taking
5 out said rotative driving force,

wherein said kneading engagement portion is formed at
a base end of said kneading massage member,

and wherein a swing restraining mechanism for
retraining said kneading massage member against co-rotation
10 with the kneading boss portion is disposed on a lateral
side of the base end of said kneading massage member.

7. The massage device according to claim 6,

wherein said kneading boss portion is eccentrically
15 attached to said rotation shaft,

and wherein an eccentric direction of the grabbing
boss portion with respect to said rotation shaft and an
eccentric direction of the kneading boss portion with
respect to said rotation shaft are circumferentially
20 different from each other.

8. The massage device according to claim 4 or claim 5,

wherein said kneading massager is located at each side
of the front end of the kneading massage member in a width
25 direction,

and wherein a grabbing massage is performed by moving the grabbing massager close to and away from the widthwise inner kneading massager.

- 5 9. The massage device according to claim 3,
wherein said grabbing drive section comprises:
a grabbing boss portion which is attached to said
rotation shaft for unitary rotation, and has, on its outer
peripheral surface, a cam face which is eccentric with
10 respect to the axis of said rotation shaft; and
a crank member which has, at its base end side, an
annular engagement portion engaged with the cam face of
said grabbing boss portion so as to take out said rotative
driving force, and transmits the produced rotative driving
15 force toward a front end side thereof,
wherein said grabbing massage member has its base end
side pivotally supported on the front end side of said
crank member for free rotation about a horizontal axis, and
said grabbing massager is disposed at the front end side of
20 said grabbing massage member,
and wherein an intermediate part of said grabbing
massage member is coupled to said kneading massage member
for free rotation about an axis pointing in the horizontal
direction.

25

10. The massage device according to claim 9,

wherein said kneading drive section comprises:

a kneading boss portion which is attached to the
rotation shaft fitted with said grabbing boss portion, and
5 has, on its outer peripheral surface, an inclined cam face
inclined with respect to the axis of said rotation shaft;
and

a kneading engagement portion engaged with the
inclined cam face of said kneading boss portion, for taking
10 out said rotative driving force,

wherein said kneading engagement portion is formed at
the base end of said kneading massage member, and the
kneading massager is disposed at the front end of the
kneading massage member,

15 and wherein the base end of said kneading massage
member is formed with a protrusion extending in the
opposite direction to said kneading massager with reference
to said rotation shaft, and said grabbing massage member is
coupled to a front end of said protrusion.

20

11. The massage device according to any one of claims 4, 5,
and 9,

wherein, with said grabbing massager positioned in
close proximity to said kneading massager, the direction of
25 rotation of said rotation shaft is switched back and forth

between a normal direction of rotation and a reverse direction of rotation for each angle of less-than-one complete rotation.

5 12. The massage device according to any one of claims 4, 5, and 9,

wherein, with said grabbing massager positioned in close proximity to said kneading massager, said kneading massager and said grabbing massager are moved backward and
10 forward reciprocally.