DESCRIPTION

Title of Invention: CHAIR MASSAGER

Technical Field

[0001] The present invention relates to a chair massager that achieves massage for different, at least two, massage target areas separately.

Background Art

[0002] Patent Literature 1 discloses an example of known chair massagers of the type having a back-kneading device that performs massage on a target area of user's body, e.g., the back of a user sitting in a seat, by the operation of a mechanical massaging system.

In the chair massager disclosed in Patent Literature 1, the back-kneading device is configured for free up-and-down motions in the interior of a backrest to perform massage on user's back resting on the backrest, for example.

Prior Art Reference

Citation List

[0003] Patent Literature 1: Japanese Unexamined Patent Publication JP-A 2012-165852

Summary of Invention

Technical Problem

[0004] The chair massager disclosed in Patent Literature 1 performs massage on user's back resting on the backrest in

the shoulder-to-waist range (massage target area) by operating the back-kneading device in a manner to move vertically within the backrest.

There have recently been growing user demands for versatile chair massagers, for example, one that allows users to enjoy massage in a relaxed state of mind, just like a massage produced by two therapists working together in a treatment facility, e.g., a body aesthetic salon or spa, or one that performs massage on different target areas, such as the upper half of user's body including the shoulder, the back, and the waist, and the lower half of the body including the buttocks and the thigh, simultaneously.

[0005] The present invention has been devised in view of the circumstances as discussed supra, and accordingly its object is to provide a chair massager that allows users to enjoy massage in a relaxed state of mind, just like a massage produced by two therapists (with four hands) working together in a treatment facility, e.g., a body aesthetic salon or spa.

Solution to Problem

[0006] In order to accomplish the described object, the following technical means is adopted for the implementation of the present invention.

The present invention provides a chair massager comprising: a massaging mechanism that performs massage on a first target area of a user; and a massaging mechanism that

performs massage on a second target area of a user, the chair massager having a control section that achieves massage for the user by operating the two massaging mechanisms in conjunction with each other.

[0007] In the present invention, it is preferable that the control section effects control of one of the two massaging mechanisms and the other one of the two massaging mechanisms in a manner to start to operate in unison, and that the control section effects control of the one massaging mechanism and the other massaging mechanism in a manner to finish operation in unison.

In the present invention, it is preferable that the massaging mechanism that performs massage on the first target area is defined as a seat's built-in massaging mechanism, and the massaging mechanism that performs massage on the second target area is defined as a backrest's built-in massaging mechanism, and that there is provided a control section that achieves massage for the user by operating the seat's built-in massaging mechanism and the backrest's built-in massaging mechanism in conjunction with each other.

[0008] In the present invention, it is preferable that the seat's built-in massaging mechanism is movable along the seat portion in a front-rear direction, that the backrest's built-in massaging mechanism is movable along the backrest portion in a vertical direction, and that the control section effects control

of the seat’s built-in massaging mechanism and the backrest’s built-in massaging mechanism in a manner to move cooperatively with respect to a point of pivotal connection between the seat portion and the backrest portion.

[0009] In the present invention, it is preferable that the control section drives the seat’s built-in massaging mechanism to move in a front to rear direction, and cooperatively drives the backrest’s built-in massaging mechanism to move in a bottom to top direction, and also drives the seat’s built-in massaging mechanism to move in a rear to front direction, and cooperatively drives the backrest’s built-in massaging mechanism to move in a top to bottom direction to achieve mutually following travel of the massaging mechanisms.

In the present invention, it is preferable that the control section drives the seat’s built-in massaging mechanism to move in a front to rear direction, and cooperatively drives the backrest’s built-in massaging mechanism to move in a top to bottom direction, and also drives the seat’s built-in massaging mechanism to move in a rear to front direction, and cooperatively drives the backrest’s built-in massaging mechanism to move in a bottom to top direction to achieve approaching and separating movements of the massaging mechanisms.

[0010] In the present invention, it is preferable that a spacing between paired seat’s built-in massaging members constituting the seat’s built-in massaging mechanism is

adjustable, and also a spacing between paired back massaging members constituting the backrest’s built-in massaging mechanism is adjustable, and that the spacing between the paired seat’s built-in massaging members and the spacing between the paired back massaging members are varied cooperatively under the control of the control section.

In the present invention, it is preferable that a speed of drive to the paired seat’s built-in massaging members constituting the seat’s built-in massaging mechanism and a speed of drive to the paired back massaging members constituting the backrest’s built-in massaging mechanism are varied cooperatively under the control of the control section.

[0011] In the present invention, it is preferable that a speed of travel of the paired seat’s built-in massaging members constituting the seat’s built-in massaging mechanism and a speed of travel of the paired back massaging members constituting the backrest’s built-in massaging mechanism are varied cooperatively under the control of the control section.

The present invention provides a chair massager in another form comprising: a seat’s built-in massaging mechanism provided in a seat portion; a backrest’s built-in massaging mechanism provided in a backrest portion; and a control section that achieves massage for a user by actuating the seat’s built-in massaging mechanism and the backrest’s built-in massaging mechanism. The seat’s built-in massaging mechanism is movable

along the seat portion in a front-rear direction. The control section drives a massaging piece provided in the backrest's built-in massaging mechanism to protrude forwardly in a location corresponding to a predetermined area of user's back, and drives the seat's built-in massaging mechanism to move either in a front to rear direction or in a rear to front direction.

[0012] The present invention provides a chair massager in still another form comprising: a seat's built-in massaging mechanism provided in a seat portion; an air-bag mechanism provided at each side of the seat portion; and a control section that achieves massage for a user by actuating the seat's built-in massaging mechanism and the air-bag mechanism. The seat's built-in massaging mechanism is movable along the seat portion in a front-rear direction. The control section acts to inflate the air-bag mechanisms, and to move the seat's built-in massaging mechanism either in a front to rear direction or in a rear to front direction.

[0013] The present invention provides a chair massager in yet another form comprising: a seat's built-in massaging mechanism provided in a seat portion; a leg massaging mechanism mounted within a footrest portion situated at a front of the seat portion; and a control section that achieves massage for a user by actuating the seat's built-in massaging mechanism and the leg massaging mechanism. The seat's built-in massaging mechanism is movable along the seat portion in a front-rear

direction. The footrest portion is rockable in a vertical direction. The control section drives the footrest portion, in which user's leg is retained by the leg massaging mechanism, to rock in a top to bottom direction, and drives the seat's built-in massaging mechanism to move either in a front to rear direction or in a rear to front direction.

Advantageous Effects of Invention

[0014] The chair massager pursuant to the present invention allows users to enjoy massage in a relaxed state of mind, just like a massage produced by two therapists (with four hands) working together in a treatment facility, e.g., a body aesthetic salon or spa. For example, while being pressed by one component corresponding to one of the therapists, a massage target area is massaged by another component corresponding to the other therapist. This helps enhance the sensory massage effect.

Brief Description of Drawings

[0015] [FIG. 1] FIG. 1 is a view schematically showing the general form of a chair massager pursuant to the present invention.

[FIG. 2] FIG. 2 is a view schematically showing a series of cooperative movements (approaching movements) of a seat's built-in massaging mechanism and a backrest's built-in massaging mechanism under the control of a control section.

[FIG. 3] FIG. 3 is a view schematically showing a series of cooperative movements (separating movements) of the seat's

built-in massaging mechanism and the backrest’s built-in massaging mechanism under the control of the control section.

[FIG. 4] FIG. 4 is a view showing an example of mutually following travel of the seat’s built-in massaging mechanism and the backrest’s built-in massaging mechanism.

[FIG. 5] FIG. 5 is a view showing an example of cooperative control by the control section (Modification 1).

[FIG. 6] FIG. 6 is a view showing an example of cooperative control by the control section (Modification 2).

[FIG. 7] FIG. 7 is a view showing an example of cooperative control by the control section (Modification 3).

Description of Embodiments

[0016] The following describes embodiments of a chair massager 1 pursuant to the present invention with reference to the drawings.

The following description is for purposes of illustration of embodiments of the present invention, and these embodiments are not intended to be limiting of the present invention. Part of constituent components is omitted from the drawings for clarity of illustration. Moreover, the definitions of directions in the illustration of the chair massager 1, such as a front-rear direction, a right-left, or horizontal direction, etc. are based on the indications shown in the drawings such as FIGs. 1 to 3, and, these directions conform to those as seen from a user sitting in a seat portion 2 of the chair massager 1. That is, in what

follows, the directions indicated in the drawings such as FIGs. 1 to 3 will be employed for the description of the chair massager 1 of the present invention.

[0017] As shown in FIG. 1, the chair massager 1 according to an embodiment of the present invention comprises: a seat portion 2 having an area wide enough for the sitting of a user; a backrest portion 3, situated at the rear of the seat portion 2, on which user's back is rested; an armrest portion 4 mounted at each side of the seat portion 2 in the horizontal direction; and a footrest portion 6 situated at the front of the seat portion 2.

The seat portion 2 has a leg body 9, constructed of a combination of rectangular bar-shaped members, for supporting the seat portion 2 at a predetermined height from below. The seat portion 2 (leg body 9) has a seat's built-in massaging mechanism 10 for performing massage such as kneading massage, tapping massage, grabbing massage, etc., on user's leg in the buttocks-to-thigh range defined as a first target area.

[0018] The seat's built-in massaging mechanism 10 comprises: horizontally spaced apart paired seat's built-in massaging members 11 capable of rocking motion; and first massaging pieces 12, each attached to corresponding one of the seat's built-in massaging members 11, for performing massage on the first target area. Moreover, the seat portion 2 is internally provided with a moving mechanism, not shown, for moving

the seat’s built-in massaging mechanism 10 in the front-rear direction, and also has a seat guide rail 13 for guiding the seat’s built-in massaging mechanism 10.

[0019] The seat guide rail 13 is a rail member, oriented parallel to the front-rear direction, for guiding the seat’s built-in massaging mechanism 10 in movement in the rail-laying direction. There is provided a pair of left-hand and right-hand seat guide rails 13 oriented in the front-rear direction, each mounted inside the leg body 9.

Although the seat guide rail 13 in this embodiment is constructed of a rail member having a downwardly-curved widened rear end, this form is given as an example. For example, the seat guide rail 13 may be constructed of a linear rail member.

[0020] That is, the seat’s built-in massaging mechanism 10 can be moved in the front-rear direction within the seat portion 2 by the moving mechanism and the seat guide rail 13 mounted within the seat portion 2 (leg body 9). The structural design of the seat’s built-in massaging mechanism 10 and the seat guide rail 13 will be described later. The upper surface of the seat portion 2 is provided with a cushion member. Moreover, the seat portion 2 is entirely covered with a casing or a sheet, for example.

[0021] Each side of the seat portion 2 in the horizontal direction is provided with an air-bag mechanism 20 for pressing and massaging the corresponding side of the buttocks or thigh of the user sitting in the seat portion 2.

The backrest portion 3 situated at the rear of the seat portion 2 is a flat-shaped member having a certain thickness on which user's back is rested. The backrest portion 3 comprises a support frame 14 constructed of a combination of rectangular bar-shaped members. The support frame 14 is supported for rocking motion in the front-rear direction on the rear of the seat portion 2. The backrest portion 3 is brought into a reclined position with respect to the seat portion 2 by a position-changing mechanism, not shown, mounted within the seat portion 2. Moreover, the backrest portion 3 (support frame 14) is internally provided with a backrest's built-in massaging mechanism 15 for performing massage such as kneading massage, tapping massage, grabbing massage, etc., on user's back resting on the backrest portion 3 in the shoulder-to-waist range defined as a second target area.

[0022] The backrest's built-in massaging mechanism 15 comprises: horizontally spaced apart paired back massaging members 16 capable of rocking motion; and second massaging pieces 17, attached to corresponding one of the back massaging members 16, for performing massage on the second target area. The backrest portion 3 is internally provided with: a moving mechanism, not shown, for moving the backrest's built-in massaging mechanism 15 along the backrest portion 3 in the vertical direction, which corresponds to the direction in which the backrest portion 3 is inclined, or equivalently moving the backrest's built-in

massaging mechanism 15 obliquely upwardly toward the rear of the backrest portion 3, as well as obliquely downwardly toward the front of the backrest portion 3; and a backrest guide rail 18 for guiding the backrest's built-in massaging mechanism 15.

[0023] The backrest guide rail 18 is a rail member, oriented parallel to the vertical direction (inclination direction), for guiding the backrest's built-in massaging mechanism 15 in movement in the rail-laying direction. There is provided a pair of left-hand and right-hand backrest guide rails 18 oriented in the vertical direction (inclination direction), each mounted inside the support frame 14.

Although the backrest guide rail 18 in this embodiment is constructed of a rail member having a forwardly-curved bend lying between its lower end and intermediate point in the vertical direction, this form is given as an example. For example, the backrest guide rail 18 may be constructed of a linear rail member.

[0024] That is, the backrest's built-in massaging mechanism 15 can be moved in the vertical direction (inclination direction) within the backrest portion 3 by the moving mechanism and the backrest guide rail 18 mounted within the backrest portion 3 (support frame 14). The structural design of the backrest's built-in massaging mechanism 15 and the backrest guide rail 18 will be described later. Moreover, the front side of the backrest portion 3 is formed with a forwardly-facing opening, from which the back massaging member 16 constituting the backrest's built-in

massaging mechanism 15 protrudes forwardly. Each side of the backrest portion 3 in the horizontal direction is provided with a side massaging mechanism 21 for pressing and massaging the corresponding side of the upper limb, such as the arm or the shoulder, of the user sitting with his/her back resting on the backrest portion 3.

[0025] The armrest portion 4 is mounted at each side of the seat portion 2 in the horizontal direction. The armrest portion 4 has its upper surface made flat for the resting of user's arm. The armrest portion 4 has an arm massaging mechanism 5 for pressing and massaging user's forearm.

Meanwhile, the footrest portion 6 is formed with a pair of forwardly-facing left-hand and right-hand holding recesses 7 for receiving user's legs (in the calf-to-foot range). Inside the footrest portion 6, there are provided leg massaging mechanisms 8 for pressing and massaging the corresponding sides of user's legs received in the left-hand and right-hand holding recesses 7, respectively, in the horizontal direction. The footrest portion may be stored under the seat portion 2.

[0026] As thus far described, the chair massager 1 comprises the seat's built-in massaging mechanism 10, the backrest's built-in massaging mechanism 15, the side massaging mechanism 21, the arm massaging mechanism 5, the leg massaging mechanism 8, the air-bag mechanism 20, etc.

The chair massager according to this embodiment features

a novel massage, just like a massage produced by two therapists (with four hands) working together, that is achieved by the cooperative movements of two out of the described mechanisms.

[0027] The following description deals with a case where, of a plurality of the mechanisms, the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 act in conjunction with each other.

The chair massager 1 according to this embodiment achieves such a massage as may be produced by two therapists (with four hands) working together by simultaneously operating the seat's built-in massaging mechanism 10, which performs massage such as kneading massage, tapping massage, grabbing massage, etc., on the leg of a user sitting in the seat portion 2 in the buttocks-to-thigh range defined as the first target area, and the backrest's built-in massaging mechanism 15, which performs massage such as kneading massage, tapping massage, grabbing massage, etc., on user's back resting on the backrest portion 3 in the shoulder-to-waist range defined as the second target area, in conjunction with each other under cooperative control.

[0028] The chair massager 1 according to this embodiment has a control section, not shown, for operating the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 in conjunction with each other to achieve massage for users.

The control section effects control of the seat's built-in

massaging mechanism 10 in a manner to perform such a massage as may be produced by one of two therapists (two hands) on the first target area of user’s body, and simultaneously effects control of the backrest’s built-in massaging mechanism 15 in a manner to perform such a massage as may be produced by the other therapist (two hands) on the second target area of user’s body.

[0029] FIG. 2 is a schematic representation of a series of cooperative movements (approaching movements) of the seat’s built-in massaging mechanism 10 and the backrest’s built-in massaging mechanism 15 under the control of the control section.

FIG. 3 is a schematic representation of a series of cooperative movements (separating movements) of the seat’s built-in massaging mechanism 10 and the backrest’s built-in massaging mechanism 15 under the control of the control section.

In FIG. 4, there is shown an example of mutually following travel of the seat’s built-in massaging mechanism 10 and the backrest’s built-in massaging mechanism 15, expressed differently, an example of how one of the mechanisms moves while following after the other.

[0030] The reclined position of the backrest portion 3 is not limited to that shown in FIGs. 2 to 4. For example, the seat portion 2 and the backrest portion 3 may lie substantially flat. Moreover, although the seat guide rail 13 is inclined downwardly from front to rear, the seat guide rail 13 may be

set in a horizontal position without limitation to the illustrated position.

In this embodiment, the control section effects cooperative control of two mechanisms, namely the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15, in a manner to move close to and away from each other, as well as to move together in one direction, or substantially the same direction, in spaced relation.

[0031] Cooperative control for approaching and separating movements of the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 will be described first.

The seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 move close to and away from each other cooperatively with respect to a point of pivotal connection between the seat portion 2 and the backrest portion 3 under the control of the control section.

More specifically, as shown in FIG. 2, the control section drives the seat's built-in massaging mechanism 10 to move in a front to rear direction, and cooperatively drives the backrest's built-in massaging mechanism 15 to move in a top to bottom direction with respect to the point of pivotal connection between the seat portion 2 and the backrest portion 3 for approaching and separating movements.

[0032] With the seat's built-in massaging mechanism 10

positioned at the forward end of the seat portion 2, and with the backrest's built-in massaging mechanism 15 positioned at the upper end of the backrest portion 3 as indicated by Position (A) shown in FIG. 2, the control section drives the moving mechanism of the seat portion 2 in a manner to move the seat's built-in massaging mechanism 10 rearwardly along the seat guide rail 13. In coincidentally timed relation to this movement, the control section drives the moving mechanism of the backrest portion 3 in a manner to move the backrest's built-in massaging mechanism 15 downwardly (obliquely downwardly toward the front of the backrest) along the backrest guide rail 18.

[0033] As the seat's built-in massaging mechanism 10, now moving along the seat guide rail 13, reaches the central area of the seat portion 2 in the front-rear direction, the backrest's built-in massaging mechanism 15, now moving along the backrest guide rail 18, reaches the central area of the backrest portion 3 in the vertical direction correspondingly as indicated by Position (B) shown in FIG. 2.

Then, the seat's built-in massaging mechanism 10 moves along the seat guide rail 13 toward the rear of the seat portion 2, and arrives at the rear end of the seat portion 2 defined as a housed position. In coincidentally timed relation to this movement, the backrest's built-in massaging mechanism 15 moves toward the bottom of the backrest portion 3, or equivalently moves obliquely downwardly toward the front of the backrest

portion 3, along the backrest guide rail 18, and then arrives at the lower end of the backrest portion 3 as indicated by Position (C) shown in FIG. 2. After the arrival of one of the two massaging mechanisms 7 and 12 at its terminal end, the control section brings the operation of the moving mechanism of the seat portion 2 and the moving mechanism of the backrest portion 3 to an end.

[0034] Thus, with the seat's built-in massaging mechanism 10 positioned at the forward end of the seat portion 2, and with the backrest's built-in massaging mechanism 15 positioned at the upper end of the backrest portion 3, the control section effects cooperative control of the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 in a manner to move toward the point of pivotal connection between the seat portion 2 and the backrest portion 3 for approaching movements.

On the other hand, as shown in FIG. 3, the control section drives the seat's built-in massaging mechanism 10 to move in a rear to front direction, and cooperatively drives the backrest's built-in massaging mechanism 15 to move in a bottom to top direction with respect to the point of pivotal connection between the seat portion 2 and the backrest portion 3 for approaching and separating movements.

[0035] With the seat's built-in massaging mechanism 10 positioned at the rear end of the seat portion 2 defined as the housed position, and with the backrest's built-in massaging

mechanism 15 positioned at the lower end of the backrest portion 3 as indicated by Position (D) shown in FIG. 3, the control section drives the moving mechanism of the seat portion 2 in a manner to move the seat's built-in massaging mechanism 10 forwardly along the seat guide rail 13. In coincidentally timed relation to this movement, the control section drives the moving mechanism of the backrest portion 3 in a manner to move the backrest's built-in massaging mechanism 15 upwardly (obliquely upwardly toward the rear of the backrest) along the backrest guide rail 18.

[0036] As the seat's built-in massaging mechanism 10, now moving along the seat guide rail 13, reaches the central area of the seat portion 2 in the front-rear direction, the backrest's built-in massaging mechanism 15, now moving along the backrest guide rail 18, reaches the central area of the backrest portion 3 in the vertical direction correspondingly as indicated by Position (E) shown in FIG. 3.

Then, the seat's built-in massaging mechanism 10 moves along the seat guide rail 13 toward the front of the seat portion 2, and arrives at the forward end of the seat portion 2. In coincidentally timed relation to this movement, the backrest's built-in massaging mechanism 15 moves toward the top of the backrest portion 3, or equivalently moves obliquely upwardly toward the rear of the backrest portion 3, along the backrest guide rail 18, and then arrives at the upper end of the backrest

portion 3 as indicated by Position (F) shown in FIG. 3. After the arrival of one of the two massaging mechanisms 7 and 12 at its terminal end, the control section brings the operation of the moving mechanism of the seat portion 2 and the moving mechanism of the backrest portion 3 to an end.

[0037] Thus, with the seat's built-in massaging mechanism 10 positioned at the rear end of the seat portion 2, and with the backrest's built-in massaging mechanism 15 positioned at the lower end of the backrest portion 3, the control section effects cooperative control of the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 in a manner to move away from the point of pivotal connection between the seat portion 2 and the backrest portion 3 for separating movements.

As described earlier, the control section may be designed to effect cooperative control of the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 in a manner to move together in one direction, or substantially the same direction, in spaced relation for mutually following travel.

[0038] More specifically, as the cooperative control, the control section drives the seat's built-in massaging mechanism 10 to move rearwardly, and simultaneously drives the backrest's built-in massaging mechanism 15 to move upwardly (obliquely upwardly toward the rear of the backrest). Moreover, as the

cooperative control, the control section drives the seat's built-in massaging mechanism 10 to move forwardly, and simultaneously drives the backrest's built-in massaging mechanism 15 to move downwardly (obliquely downwardly toward the front of the backrest).

As shown in FIG. 4, with the seat's built-in massaging mechanism 10 positioned at the forward end of the seat portion 2, and with the backrest's built-in massaging mechanism 15 positioned at the lower end of the backrest portion 3 as indicated by Position (G) shown in FIG. 4, the control section drives the moving mechanism of the seat portion 2 in a manner to move the seat's built-in massaging mechanism 10 rearwardly along the seat guide rail 13. In coincidentally timed relation to this movement, the control section drives the moving mechanism of the backrest portion 3 in a manner to move the backrest's built-in massaging mechanism 15 upwardly (obliquely upwardly toward the rear of the backrest) along the backrest guide rail 18.

[0039] As the seat's built-in massaging mechanism 10, now moving along the seat guide rail 13, reaches the central area of the seat portion 2 in the front-rear direction, the backrest's built-in massaging mechanism 15, now moving along the backrest guide rail 18, reaches the central area of the backrest portion 3 in the vertical direction correspondingly as indicated by Position (H) shown in FIG. 4.

Then, the seat's built-in massaging mechanism 10 moves

along the seat guide rail 13 toward the rear of the seat portion 2, and arrives at the rear end of the seat portion 2 defined as the housed position. In coincidentally timed relation to this movement, the backrest's built-in massaging mechanism 15 moves toward the top of the backrest portion 3, or equivalently moves obliquely upwardly toward the rear of the backrest portion 3, along the backrest guide rail 18, and then arrives at the upper end of the backrest portion 3 as indicated by Position (I) shown in FIG. 4. After the arrival of one of the two massaging mechanisms 7 and 12 at its terminal end, the control section brings the operation of the moving mechanism of the seat portion 2 and the moving mechanism of the backrest portion 3 to an end.

[0040] Moreover, the speed of travel of the seat's built-in massaging mechanism 10 and the speed of travel of the backrest's built-in massaging mechanism 15 may be varied cooperatively under the control of the control section.

More specifically, the control section effects control of the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 in a manner to start to travel in unison. In addition, the control section effects control of the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 in a manner to stop traveling in the direction of travel along the seat guide rail 13 and in the direction of travel along the backrest guide rail 18, respectively, in unison.

[0041] Unfortunately the chair massager 1 may be typically provided with the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 of differing structural design, or the guide rails 10 and 15 of differing length. In this case, for example, when halting the operation in timed relation to the arrival of the seat's built-in massaging mechanism 10 at its terminal end, then the backrest's built-in massaging mechanism 15 stops its travel before arriving at its terminal end.

[0042] Although such a design is sufficient for the purpose of providing adequate massage effects for users, it is preferable that the control section exercises travel speed control to allow the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 to start to travel and arrive at their respective guide rail (10 and 15)'s terminal ends in unison.

For example, where the backrest guide rail 18 is longer than the seat guide rail 13, the backrest's built-in massaging mechanism 15 is driven to travel at a speed faster than the speed of travel of the seat's built-in massaging mechanism 10. On the other hand, where the backrest guide rail 18 and the seat guide rail 13 have the same length, the backrest's built-in massaging mechanism 15 and the seat's built-in massaging mechanism 10 are driven to travel at the same speed.

[0043] In this embodiment, the horizontal spacing between

the paired seat’s built-in massaging members 11 constituting the seat’s built-in massaging mechanism 10 is adjustable. Likewise, the horizontal spacing between the paired back massaging members 16 constituting the backrest’s built-in massaging mechanism 15 is adjustable.

In this case, the horizontal spacing between the paired seat’s built-in massaging members 11 and the horizontal spacing between the paired back massaging members 16 may be varied cooperatively under the control of the control section.

[0044] That is, the pitch distance (spacing) between the first massaging piece 12 attached to the left-hand seat’s built-in massaging member 11 and the first massaging piece 12 attached to the right-hand seat’s built-in massaging member 11, and the pitch distance between the second massaging piece 17 attached to the left-hand back massaging member 16 and the second massaging piece 17 attached to the right-hand back massaging member 16 are adjusted to the same value under the cooperative control of the control section.

More specifically, to adjust the horizontal spacing to a normal pitch, the horizontal pitch of (the spacing between) the paired seat’s built-in massaging members 11 and the horizontal pitch of (the spacing between) the paired back massaging members 16 are adjusted to the same normal pitch under the cooperative control of the control section.

[0045] Likewise, to adjust the horizontal spacing to a wide

pitch, the horizontal pitch of the massaging members 8 and the horizontal pitch of the massaging members 13 are adjusted to the same wide pitch under the control of the control section. On the other hand, to adjust the horizontal spacing to a narrow pitch, the horizontal pitch of the massaging members 8 and the horizontal pitch of the massaging members 13 are adjusted to the same narrow pitch under the control of the control section.

That is, the control section exercises, in addition to the described approaching-separating motion control, cooperative control to adjust the spacing between the paired seat's built-in massaging members 11 and the spacing between the paired back massaging members 16 to the same value.

[0046] Moreover, the speed of drive to the paired seat's built-in massaging members 11 constituting the seat's built-in massaging mechanism 10 and the speed of drive to the paired back massaging members 16 constituting the backrest's built-in massaging mechanism 15 may be varied cooperatively under the control of the control section.

Now, cooperative control of the speed of rocking motion of each massaging member (8, 13) will be described by way of example.

For example, the speed of rocking motion of the paired seat's built-in massaging members 11 and the speed of rocking motion of the paired back massaging members 16 may be adjusted cooperatively to the same value under the control of the control

section.

[0047] That is, the control section varies the speed of rocking motion of the first massaging piece 12 attached to the seat’s built-in massaging member 11 and the speed of rocking motion of the second massaging piece 17 attached to the back massaging member 16 cooperatively so that these speeds coincide with each other.

More specifically, to adjust the speed of rocking motion to a normal speed, the speed of rocking motion of the paired seat’s built-in massaging members 11 and the speed of rocking motion of the paired back massaging members 16 are cooperatively adjusted to the same normal speed under the control of the control section.

[0048] Likewise, to adjust the speed of rocking motion to a higher speed, the speed of rocking motion of the massaging members 8 and the speed of rocking motion of the massaging members 13 are adjusted to the same higher speed under the control of the control section. On the other hand, to adjust the speed of rocking motion to a lower speed, the speed of rocking motion of the massaging members 8 and the speed of rocking motion of the massaging members 13 are adjusted to the same lower speed under the control of the control section.

That is, the control section exercises, in addition to the described approaching-separating motion control, cooperative control to adjust the driving speed (such as the

speed of kneading, tapping, and grabbing movements) in the seat's built-in massaging member 11 and the driving speed (such as the speed of kneading, tapping, and grabbing movements) in the back massaging member 16 to the same value in order for these massaging members to move in a uniform rhythm.

[0049] The seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 are so controlled as to produce massages of the same type.

As thus far described, under the cooperative control of the control section, the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 are driven to move close to and away from each other, or driven for mutually following travel, and also kneading movements, tapping movements, grabbing movements, oscillation, etc. are produced in a uniform rhythm. This allows users to have the feeling of enjoyment of massage, just like a stretching and relaxing massage produced by two therapists (four hands) working together.

[0050] The present invention allows users to enjoy massage in a relaxed state of mind, just like a massage produced by two therapists (four hands) working together in a treatment facility, e.g., a body aesthetic salon or spa, and also allows users to have different body areas, such as the back in the shoulder-to-waist range and the lower half of the body including the buttocks and the thigh, massaged simultaneously.

[0051] The control section serves also to achieve such

operations as exemplified by the following modifications 1 to 3.

[Modification 1]

Modification 1 will be described with reference to FIG. 5. In this construction, the seat's built-in massaging mechanism 10 is free to move in the front-rear direction, and the backrest's built-in massaging mechanism 15 is free to move in the vertical direction. Moreover, the second massaging piece 17 of the back massaging member 16 is free to advance and retract in the front-rear direction.

[0052] As shown in FIG. 5, in this case, for example, the control section drives the backrest's built-in massaging mechanism 15 to move to a predetermined area of user's back (e.g., user's shoulder), drives the second massaging piece 17 to protrude forwardly beyond the backrest portion 3, and drives the seat's built-in massaging mechanism 10 to move toward user's buttocks.

Under such a control of the control section, user's buttocks are lifted up by the seat's built-in massaging mechanism 10 moving toward the buttocks, and, the predetermined target area is pressed against the second massaging piece 17. Consequently, user's body is supported to some extent by the two massaging mechanisms 7 and 12, and may thus be subjected to a heavier pressure (finger-pressure) massage.

[0053] At this time, keeping the backrest's built-in massaging mechanism 15 from traveling is effective at enhancing

the massage effect obtained during finger-pressure massage, kneading massage, tapping massage, etc. Moreover, as the seat's built-in massaging mechanism 10, now located in the housed position corresponding to the curved rear end of the seat guide rail 13, moves from the housed position so as to expose itself on the seat portion 2, more effective massage can be produced for the sitting user.

[Modification 2]

Modification 2 will be described with reference to FIG. 6. In this construction, the air-bag mechanism 20 is mounted on each side of the seat portion 2 in the horizontal direction, and the seat's built-in massaging mechanism 10 is free to move in the front-rear direction.

[0054] As shown in FIG. 6, in this case, for example, the control section acts to inflate either one or both of the air-bag mechanisms 20 mounted respectively on the opposite sides of the seat portion 2, and move the seat's built-in massaging mechanism 10, now located in an other-than-buttocks area (e.g., the back of user's thigh), toward user's buttocks.

Under such a control of the control section, the buttocks are pressed by the air-bag mechanism 20 mounted on each side of the seat portion 2. This helps enhance the sensory massage effect imparted to the buttocks by the seat's built-in massaging mechanism 10. The sensory massage effect provided by the seat's built-in massaging mechanism 10 may be further enhanced by

pressing user’s leg against the seat’s built-in massaging mechanism 10 while operating the air-bag mechanism 20 mounted on each side of the seat portion 2.

[Modification 3]

Modification 3 will be described with reference to FIG. 7. In this construction, the seat’s built-in massaging mechanism 10 is free to move in the front-rear direction, the footrest portion 6 is free to move in the vertical direction, and the leg massaging mechanism 8 is capable of retaining user’s leg (e.g., user’s calf).

[0055] As shown in FIG. 7, in this case, for example, the control section acts to raise the footrest portion 6 to a predetermined level, and move the seat’s built-in massaging mechanism 10 to a predetermined position in the front-rear direction. User’s leg received in the footrest portion 6 is grippingly retained under the force of inflation of the air-bag mechanism 20 of the leg massaging mechanism 8. With the leg retained, the footrest portion 6 is lowered.

[0056] Under such a cooperative control of the control section, the footrest portion 6 is lowered, and the leg retained by the footrest portion 6 is pressed against the seat portion 2 accordingly. This helps greatly enhance the sensory massage effect provided by the seat’s built-in massaging mechanism 10.

The sequence of operation of the seat’s built-in massaging mechanism 10 and the footrest portion 6 is not limited to the

described sequence. Moreover, the working of the seat's built-in massaging mechanism 10 in this operation is not limited to making a stop, travel, and kneading movement.

[0057] Various ideas may be incorporated in specific structural design of the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 that operate in the described manner.

The following describes an example of the structural design of the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15.

In the chair massager 1 shown in FIG. 1, the seat's built-in massaging mechanism 10 and the backrest's built-in massaging mechanism 15 are substantially identical in structure and yet have different moving directions. That is, although the seat's built-in massaging mechanism 10 in itself and the backrest's built-in massaging mechanism 15 in itself have substantially the same device configuration, as a major point of difference, the guide rail of the backrest's built-in massaging mechanism 15 (the backrest guide rail 18) is oriented in the vertical direction, whereas the guide rail of the seat's built-in massaging mechanism 10 (the seat guide rail 13) is oriented in the front-rear direction.

[0058] In this specification, the following backrest's built-in massaging mechanism 15 exemplifies the massaging mechanism installed in the chair massager 1.

Note that the technology underlying the present invention may be carried into effect in other differently configured backrest's built-in massaging mechanisms 15.

This holds true for the seat's built-in massaging mechanism 10. While various ideas may be incorporated in specific structural design of the seat's built-in massaging mechanism 10, in this embodiment, the seat's built-in massaging mechanism 10 is substantially identical in structure with the backrest's built-in massaging mechanism 15.

[0059] The backrest's built-in massaging mechanism 15 comprises: a pair of left-hand and right-hand back massaging members 16 for performing massage on user's back in the shoulder-to-waist range defined as the second target area; a rotation shaft having a horizontally-directed axis mounted so as to pass through the base end of the back massaging member 16; a driving section for rotatably driving the rotation shaft; and a conversion section, mounted at the base end of the back massaging member, for converting the rotational force of the rotation shaft into massaging action. The rotation shaft, the driving section, the conversion section, etc. are housed in a base body 19.

[0060] The back massaging member 16 is an arm-shaped member having the second massaging piece 17 at each end (tip). The lengthwise central part (base end) of the back massaging member 16 is provided with the conversion section as will hereafter

be described. Moreover, the rotation shaft passes horizontally through the conversion section situated at the base end of the back massaging member 16. The rotation shaft, which is mounted with its axis pointing in the horizontal direction, is rotatably supported by a pair of support members.

[0061] The driving section drives the rotation shaft to rotate, and the conversion section converts the rotational force of the rotation shaft into massaging action for actuation of the back massaging member 16. Thus, the backrest's built-in massaging mechanism 15 is brought into operation. The driving section comprises: a driving motor for producing a rotatably driving force; and a gear box for transmitting the rotatably driving force with predetermined reduced rpm to the rotation shaft.

The conversion section converts the rotational force of the rotation shaft into the massaging action (rocking motion) of the back massaging member 16. The conversion section, which is mounted at the base end of each of the paired back massaging members 16, is rotatably attached to the rotation shaft passing through the base end.

[0062] The conversion section comprises: an inclined boss portion that rotates unitarily with the rotation shaft; an annular fit portion mounted at the base end of the back massaging member 16 so as to fit over the inclined boss portion; and a restraint portion for restraining the back massaging member 16 from rotating

concurrently with the rotation of the rotation shaft.

The inclined boss portion, in which the rotation shaft pierces, has formed at its outer periphery a cam face inclined with respect to the rotation shaft. Thus, the inclined boss portion rotates in inclined relation to the axis of the rotation shaft. Moreover, for example, the inclined boss portion (cam face) of one of the paired back massaging members 16 and the inclined boss portion (cam face) of the other are inclined in opposite directions.

[0063] The annular fit portion, which is formed at the base end of the back massaging member 16, fits over the inclined boss portion for free relative rotation. The back massaging member 16 rocks in response to the inclined rotation of the inclined boss portion over which the annular fit portion fits.

The restraint portion is provided in the annular fit portion to restrain the annular fit portion from rotating concurrently with the rotation of the inclined boss portion. The restraint portion comprises: a restraint pin provided in the annular fit portion; and a restraint slot, formed in the base body 19, for slidably receiving the restraint pin. The restraint pin is installed so as to protrude from the annular fit portion in the opposite direction to the back massaging member 16. The base body 19 arranged vis-à-vis the restraint pin is formed with the horizontally elongated restraint slot. The restraint pin is slidably inserted in the restraint slot for side-to-side rocking

motion in substantially the horizontal direction.

[0064] The described fundamental device configuration of the backrest's built-in massaging mechanism 15 is substantially the same as that of the construction disclosed in Japanese Unexamined Patent Publication JP-A 2017-153733, for example. Moreover, various mechanisms may be adopted for the moving mechanism of the backrest's built-in massaging mechanism 15, and thus a detailed description of the moving mechanism is omitted.

The described backrest's built-in massaging mechanism 15 moves in the vertical direction (inclination direction) along a pair of left-hand and right-hand backrest guide rails 18 mounted within the backrest portion 3 (support frame 14).

[0065] The backrest guide rail 18 is constructed of a rail member having a forwardly-curved bend lying between its lower end and intermediate point in the vertical direction. The rail member is formed with a rack gear and a rail groove extending alongside of each other. The rack gear and the rail groove are oriented in the same direction. The rack gear is arranged to mesh with a travel gear (pinion gear) mounted in that part of the backrest's built-in massaging mechanism 15 located toward the base body 19. The travel gear is rotatably driven by the moving mechanism provided in the backrest's built-in massaging mechanism 15. The rail groove is configured to receive a travel roller mounted in that part of the backrest's built-in massaging

mechanism 15 located toward the base body 19.

[0066] That is, with the travel roller fitted for free travel in the rail groove, the travel gear in meshing engagement with the rack gear of the backrest guide rail 18 is rotatably driven, thus causing the backrest's built-in massaging mechanism 15 to move along the backrest guide rail 18 in the vertical direction (inclination direction).

Although the backrest guide rail 18 is, as exemplified, designed so that the travel gear meshes with the rack gear, and the travel roller is fitted for free travel in the rail groove, this form is given as an example. Another design may be adopted for the backrest guide rail 18.

[0067] The fundamental structural design of the seat's built-in massaging mechanism 10 and the seat guide rail 13 is substantially the same as the structural design of the backrest's built-in massaging mechanism 15 and the backrest guide rail 18 described above. That is, the seat portion 2 serves the same purpose even when equipped with the backrest's built-in massaging mechanism 15 and the backrest guide rail 18 instead of the seat's built-in massaging mechanism 10 and the seat guide rail 13. Thus, a detailed description of the seat's built-in massaging mechanism 10 and the seat guide rail 13 is omitted.

It should be understood that the embodiments as disclosed herein are considered in all respects as illustrative only and not restrictive. In particular, as such design requirements

as not explicitly specified in the disclosure of each embodiment, for example, working and operating conditions, the dimensions and weights of constituent components, etc., use has been made of general requirements adopted in the light of the common knowledge of those skilled in the art without a departure from practical ranges.

[0068] For example, in the seat’s built-in massaging mechanism 10 and the backrest’s built-in massaging mechanism 15, each of their massaging members (two massaging members in each massaging mechanism) may be provided with either a single massaging piece (a total of four massaging pieces in all) or two massaging pieces (a total of eight massaging pieces in all) (refer to FIG. 1).

Moreover, for the detailed control section’s control to operate the seat’s built-in massaging mechanism 10 and the backrest’s built-in massaging mechanism 15 in conjunction with each other, for example, a plurality of massaging actions may be programmed to establish an automatic massage mode that allows free choice and issuance of commands in massage courses via an operation terminal, such as a remote controller, set in the chair massager 1.

[0069] Moreover, for example, the chair massager 1 of the present invention may be designed so that the control section can be operated via user’s personal digital assistant (e.g., smartphone typified by iPhone (trademark)).

Reference Signs List

[0070]

1	chair massager
2	seat portion
3	backrest portion
4	armrest portion
5	arm massaging mechanism
6	footrest portion
7	holding recess
8	leg massaging mechanism
9	leg body
10	seat’s built-in massaging mechanism
11	seat’s built-in massaging member
12	first massaging piece
13	seat guide rail
14	support frame
15	backrest’s built-in massaging mechanism
16	back massaging member
17	second massaging piece
18	backrest guide rail
19	base body
20	air-bag mechanism
21	side massaging mechanism

CLAIMS

1. A chair massager comprising:

a massaging mechanism that performs massage on a first target area of a user; and

a massaging mechanism that performs massage on a second target area of a user;

the chair massager having a control section that achieves massage for the user by operating the two massaging mechanisms in conjunction with each other.

2. The chair massager according to claim 1,

wherein the control section effects control of one of the two massaging mechanisms and the other one of the two massaging mechanisms in a manner to start to operate in unison,

and wherein the control section effects control of the one massaging mechanism and the other massaging mechanism in a manner to finish operation in unison.

3. The chair massager according to claim 1 or claim 2,

wherein the massaging mechanism that performs massage on the first target area is defined as a seat’s built-in massaging mechanism, and the massaging mechanism that performs massage on the second target area is defined as a backrest’s built-in massaging mechanism,

and wherein there is provided a control section that achieves massage for the user by operating the seat’s built-in massaging mechanism and the backrest’s built-in massaging mechanism in conjunction with each other.

4. The chair massager according to claim 3,

wherein the seat’s built-in massaging mechanism is movable along the seat portion in a front-rear direction,

wherein the backrest’s built-in massaging mechanism is movable along the backrest portion in a vertical direction,

and wherein the control section effects control of the seat’s built-in massaging mechanism and the backrest’s built-in massaging mechanism in a manner to move cooperatively with respect to a point of pivotal connection between the seat portion and the backrest portion.

5. The chair massager according to claim 4,

wherein the control section drives the seat’s built-in massaging mechanism to move in a front to rear direction, and cooperatively drives the backrest’s built-in massaging mechanism to move in a bottom to top direction, and also drives the seat’s built-in massaging mechanism to move in a rear to front direction, and cooperatively drives the backrest’s built-in massaging mechanism to move in a top to bottom direction to achieve mutually following travel of the massaging mechanisms.

6. The chair massager according to claim 4,

wherein the control section drives the seat’s built-in massaging mechanism to move in a front to rear direction, and cooperatively drives the backrest’s built-in massaging mechanism to move in a top to bottom direction, and also drives the seat’s built-in massaging mechanism to move in a rear to front direction, and cooperatively drives the backrest’s built-in massaging mechanism to move in a bottom to top direction to achieve approaching and separating movements of the massaging mechanisms.

7. The chair massager according to claim 3,

wherein a spacing between paired seat’s built-in massaging members constituting the seat’s built-in massaging mechanism is adjustable, and also a spacing between paired back massaging members constituting the backrest’s built-in massaging mechanism is adjustable,

and wherein the spacing between the paired seat’s built-in massaging members and the spacing between the paired back massaging members are varied cooperatively under the control of the control section.

8. The chair massager according to claim 3,

wherein a speed of drive to the paired seat’s built-in

massaging members constituting the seat’s built-in massaging mechanism and a speed of drive to the paired back massaging members constituting the backrest’s built-in massaging mechanism are varied cooperatively under the control of the control section.

9. The chair massager according to claim 3,

wherein a speed of travel of the paired seat’s built-in massaging members constituting the seat’s built-in massaging mechanism and a speed of travel of the paired back massaging members constituting the backrest’s built-in massaging mechanism are varied cooperatively under the control of the control section.

10. A chair massager comprising:

a seat’s built-in massaging mechanism provided in a seat portion;

a backrest’s built-in massaging mechanism provided in a backrest portion; and

a control section that achieves massage for a user by actuating the seat’s built-in massaging mechanism and the backrest’s built-in massaging mechanism,

the seat’s built-in massaging mechanism being movable along the seat portion in a front-rear direction,

the control section acting to drive a massaging piece provided in the backrest’s built-in massaging mechanism to

protrude forwardly in a location corresponding to a predetermined area of user’s back, and to move the seat’s built-in massaging mechanism either in a front to rear direction or in a rear to front direction.

11. A chair massager comprising:

a seat’s built-in massaging mechanism provided in a seat portion;

an air-bag mechanism provided at each side of the seat portion; and

a control section that achieves massage for a user by actuating the seat’s built-in massaging mechanism and the air-bag mechanism,

the seat’s built-in massaging mechanism being movable along the seat portion in a front-rear direction,

the control section acting to inflate the air-bag mechanisms, and to move the seat’s built-in massaging mechanism either in a front to rear direction or in a rear to front direction.

12. A chair massager comprising:

a seat’s built-in massaging mechanism provided in a seat portion;

a leg massaging mechanism mounted within a footrest portion situated at a front of the seat portion; and

a control section that achieves massage for a user by

actuating the seat’s built-in massaging mechanism and the leg massaging mechanism,

the seat’s built-in massaging mechanism being movable along the seat portion in a front-rear direction,

the footrest portion being rockable in a vertical direction,

the control section acting to drive the footrest portion, in which user’s leg is retained by the leg massaging mechanism, to rock in a top to bottom direction, and to drive the seat’s built-in massaging mechanism to move either in a front to rear direction or in a rear to front direction.