[Title of Document] SPECIFICATION

[Title of the Invention] CHAIR-TYPE MASSAGE APPARATUS

[Technical field]

[0001] The present invention relates to a chair-type massage apparatus.

[Background Art]

[0002] As a chair-type massage apparatus, there is a well-known construction comprising a seat, a backrest mounted at the rear of the seat, and a massage mechanism for massaging user's back installed in the backrest. As an example of this type of chair-type massage apparatuses, there is proposed a chair-type massage apparatus having side massage sections (for example, air bags) disposed on the right and left sides, respectively, of a backrest in a face-to-face arrangement, for massaging the shoulders and arms of a user sitting on a seat from outside (refer to Japanese Unexamined Patent Publication JP-A 2006-255156).

[Summary of the Invention]

[Problems to be solved by the Invention]

[0003] In the chair-type massage apparatus disclosed in JP-A 2006-255156, the side massage section is fixed to the backrest. Therefore, when a user sits on the seat or stands up from the seat, inconveniently, part of user's body such as his/her shoulders could be caught in the side massage section. Furthermore, when it is desired to use this chair-type massage apparatus simply as an ordinary chair (reclining chair), a user may find the side massage section obtrusive, and also, the side massage section could impair the appearance of the chair-type massage apparatus.

[0004] The present invention has been devised in view of the problems as mentioned supra, and accordingly its object is to provide a chair-type massage apparatus which is, while including a side massage section for massaging the side of the body of a user sitting on a seat, capable of setting the side massage section in an operating position without fail when it is used, and allowing smooth retraction of the side massage section toward a

backrest when it is not used, thereby achieving a simple and elegant appearance, smooth sitting action of a user, and so forth.

[Means for solving the problem]

[0005] In order to accomplish the above object, the following technical means is adopted for the implementation of the present invention.

[0006] A chair-type massage apparatus pursuant to present invention comprises: a seat; a backrest mounted at the rear of the seat; side massage sections disposed on the right and left sides, respectively, of the backrest in a face-to-face arrangement, for massaging the side of the body of a user; and a position switching mechanism for switching the side massage section back and forth between an operating-state position where the side massage section protrudes forward of the backrest and a storage-state position where the side massage section stays behind the operating-state position. In this construction, the side massage section includes: a long rocking member disposed at each side of the backrest, which has a massaging portion at its front end, and is, at its base end, rockably pivoted on the lateral side of the backrest; and a pressing mechanism for pressing the rocking member forward. The position switching mechanism is located between the rocking member and a back frame member incorporated in the backrest.

[0007] In the present invention, it is preferable that the rocking member is disposed in hanging fashion at each lateral side of the back frame member, that the base end of one of the rocking members and the base end of the other one of the rocking members are coupled to each other by a long coupling member pointing in the direction of the width of the backrest, the coupling member being pivoted on the back frame member for rotation about a widthwise axis, and that the pressing mechanism is designed to push the rocking member forward via the coupling member.

[0008] In the present invention, it is preferable that the coupling member is rotatably pivoted on an upper edge of the back frame member.

In the present invention, it is preferable that the position switching mechanism is a ratchet mechanism, and, the coupling member is rotatably pivoted on the upper edge of the back frame member via the ratchet mechanism.

[0009] In the present invention, it is preferable that the position switching mechanism is disposed between the coupling member and the back frame member, that the position switching mechanism comprises: a projection piece formed so as to extend in a direction perpendicular to the axis of rotation of the coupling member from a side surface of the coupling member; a long upper link member which is disposed along a vertical direction with its one end pivoted on the projection piece for rotation about a widthwise axis, and has a guide groove formed therein so as to extend vertically and an engagement piece placed inside the upper part of the guide groove; and a long lower link member which has, at its one end, an engagement pin slidably fitted in the guide groove of the upper link member, and has its other end coupled to the back frame member for rotation about a widthwise axis, and that, when the upper link member and the lower link member separate from each other in a longitudinal direction with the consequence that the engagement pin of the lower link member is positioned below the engagement piece of the upper link member, then the side massage section is set in an operating position, whereas, when the upper link member and the lower link member move close to each other in the longitudinal direction with the consequence that the engagement pin engages with the engagement piece, then the side massage section is set in a storage position.

[0010] In the present invention, it is preferable that a protuberance is formed on the upper side surface at one edge of the engagement piece, and, when the engagement pin situated in a position below the engagement piece is moved upward along the other edge of the engagement piece and engages with the protuberance, then the side massage section is set in the storage position, whereas, when the engagement pin goes over the protuberance for disengagement, moves downward along one edge of the engagement piece, and reaches the

position below the engagement piece, then the side massage section is set in the operating position.

[0011] In the present invention, it is preferable that a switching piece is formed at the bottom part of the engagement piece, and, the switching piece restrains the engagement pin positioned below the engagement piece from moving toward one edge of the engagement piece during its upward motion, and also guides the engagement pin moving down along one edge of the engagement piece toward the position below the engagement piece.

In the present invention, it is preferable that the position switching mechanism is a projection piece formed so as to protrude in a direction perpendicular to the axis of rotation of the coupling member from a side surface of the coupling member, that the pressing mechanism is a linear actuator which has its one end pivoted on the projection piece for rotation about a widthwise axis, and has its base end rotatably coupled to the back frame member, and that, with the projection piece and the linear actuator arranged in a substantially straight line, when the linear actuator is telescopically extended with the consequence that the projection piece and the linear actuator are moved in a manner such that an intermediate position of the line, namely a boundary between them forms a bend pointing in one direction, then the side massage section is set in the operating position, whereas, when the linear actuator is extended with the consequence that the projection piece and the linear actuator are moved in a manner such that the boundary forms a bend pointing in the other direction, then the side massage section is set in the storage position.

[0012] In the present invention, it is preferable that the massaging portion is constructed of an air bag which is inflated inwardly along the direction of the width of the backrest.

In the present invention, it is preferable that, in a case where, in the air bag in an inflated state, when the amount of inflation at one side of the air bag is smaller than the amount of inflation at the other side, the air bag is attached to the front end of the rocking member in a manner such that the one side of the air bag is located closer to the backrest

along a front-rear direction.

[Effects of the Invention]

[0013] According to the present invention, the chair-type massage apparatus, while including the side massage sections for massaging the side of the body of a user sitting on the seat, is capable of setting the side massage section in the operating position without fail when it is used, and allowing smooth retraction of the side massage section toward the backrest when it is not used. Accordingly, the apparatus is given a simple and elegant appearance, and thus allows smooth sitting action of a user and so forth.

[Brief Description of Drawings]

[0014][Fig. 1] Figure 1(a) is a perspective view of a chair-type massage apparatus pursuant to the present invention in a storage-state position where a side kneading device is in storage, and Fig. 1(b) is a perspective view of the chair-type massage apparatus pursuant to the present invention in an operating-state position where the side kneading device protrudes forward.

[Fig. 2] Figure 2(a) is a side view showing the side kneading device in the storage-state position, and Fig. 2(b) is a side view showing the side kneading device in the operating-state position.

[Fig. 3] Figure 3 is a front perspective view of the internal structure of the chair-type massage apparatus equipped with the side kneading device pursuant to the present invention, illustrating the details of a position switching mechanism provided in the side kneading device.

[Fig. 4] Figure 4 is a rear perspective view of the internal structure of the chair-type massage apparatus equipped with a side massage section pursuant to the present invention, illustrating the details of the position switching mechanism.

[Fig. 5] Figure 5 is an enlarged rear perspective view showing the details of the position switching mechanism.

[Fig. 6] Figure 6 is a front perspective view showing the details of the position switching mechanism of the second embodiment in an operating position.

[Fig. 7] Figure 7 is a front perspective view showing the details of the position switching mechanism of the second embodiment in a storage position.

[Fig. 8] Figure 8 is an enlarged front perspective view showing the details of the position switching mechanism of the second embodiment.

[Fig. 9] Figure 9 is a sectional view showing the section of the position switching mechanism of the second embodiment in the operating position.

[Fig. 10]Figure 10 is a sectional view showing the section of the position switching mechanism of the second embodiment in the storage position.

[Fig. 11]Figure 11 is a rear perspective view showing the details of the position switching mechanism of the third embodiment in the operating position.

[Fig. 12]Figure 12 is a sectional view showing the section of the position switching mechanism of the third embodiment in the operating position.

[Fig. 13]Figure 13 is a sectional view showing the section of the position switching mechanism of the third embodiment in an intermediate position.

[Fig. 14]Figure 14 is a sectional view showing the section of the position switching mechanism of the third embodiment in the storage position.

[Fig. 15]Figure 15 is a side view of a backrest of the fourth embodiment, and more specifically Fig. 15(a) is a side view showing a condition where a pillow is situated in a lower position, and Fig. 15(b) is a side view showing a condition where the pillow is situated in an upper position.

[Modes for Carrying out the Invention]

[0015] Hereinafter, embodiments of the present invention will be described with reference to drawings.

Figures 1 to 5 show a chair-type massage apparatus 1 having a side kneading

device 2 in accordance with the first embodiment of the present invention.

[First Embodiment]

As shown in Fig. 1, the chair-type massage apparatus 1 of the first embodiment comprises: a seat 3 having an area wide enough to support the hip of a user from below; and a backrest 4 mounted at the rear of the seat 3. On both sides of the backrest 4, there is installed a side kneading device 2 for effecting a pressure massage, and more specifically for applying pressure to user's arms and shoulders laterally from the right and the left. The provision of this side kneading device 2 is a striking feature of the chair-type massage apparatus 1 pursuant to the present invention.

[0016] Prior to the explanation of the side kneading device 2, the general structure of the chair-type massage apparatus 1 will be described hereinbelow.

As shown in Fig. 1, the seat 3 is a member having a flat upper surface for the seating of a user. In the interest of protection of the hip of a seated user, the seat 3 is made of a cushion, for example. Under the seat 3 is disposed a leg frame (not represented graphically) for the placement of the chair-type massage apparatus 1 on a floor. The seat 3 can be supported at a predetermined level by the leg frame.

[0017] In the following description, the chair-type massage apparatus 1 will be explained on the basis of directions indicated by arrows in Fig. 1. These directions conform to the definitions of directions based on the sight of a user sitting in the chair-type massage apparatus 1.

In the backrest 4, its lower end is pivoted on the rear of the seat 3 or the rear of the leg frame, and its upper end is made rockable about the pivoted lower end in a front-rear direction. The backrest 4 is internally provided with a back massage mechanism (not represented graphically) for performing a massage, such as a kneading massage, tapping massage, or vibration massage, on the back of a user leaning at his/her back on the backrest 4. The back massage mechanism is free to move along the direction of inclination of the

backrest 4, for massaging a wide range of user's back in a top-bottom direction, or equivalently vertical direction from a part near the neck to a part near the hip.

[0018] Moreover, the backrest 4 is internally provided with a back frame member 11 (refer to Figs. 3 and 4) for supporting the above-described back massage mechanism. The back frame member 11 can be shifted to a reclining position relative to the seat 3 or the leg frame by a reclining mechanism such as a linear actuator disposed inside the leg frame.

Moreover, under the above-described seat 3 is disposed a leg massage device for performing a kneading massage on the leg of a user sitting on the seat 3.

[0019] The chair-type massage apparatus 1 pursuant to the present invention is designed to have the side kneading device 2 for massaging a target part of user's body to be massaged by applying pressure to the to-be-massaged part, namely the side of the body of a user such as shoulders and arms laterally from the right and the left.

The side kneading device 2 is attached to the upper part of the backrest 4 so as to span the region between the right-hand part and the left-hand part of the backrest 4. Specifically, the side kneading device 2 includes a casing 5 in the form of a strip plate elongated in a right-left direction, or equivalently horizontal direction (the casing 5 of the side kneading device 2). The casing 5 is installed so as to span the region between the left side surface and the right side surface of the backrest 4 for massaging both of the left side and the right side of the body of a user. The casing 5 incorporates: a left-hand side massage section 6L and a right-hand side massage section 6R for massaging a to-be-massaged part of the left side of the body and a to-be-massaged part of the right side of the body, respectively; a support frame 7 for supporting the left-hand side massage section 6L and the right-hand side massage section 6R in a mutually-coupled state on the back frame member 11; and a position switching mechanism 21 for changing the position of the side massage section 6L, 6R in the front-rear direction by rocking the support frame 7 in the front-rear direction.

[0020] Specifically, the position switching mechanism 21 provided in the side kneading device 2 of the first embodiment is designed to switch the position of the side massage section 6 back and forth between an "operating-state position" situated ahead of the backrest 4 and a "storage-state position" where the side massage section 6 is retracted in place at the lateral side of the backrest 4 (behind the operating-state position). When in the "operating-state position", the side kneading device 2 protrudes forward of the backrest 4, thereby enabling the side massage section 6 disposed inside the side kneading device 2 to perform a pressure massage on a to-be-massaged part such as user's shoulder or arm. On the other hand, when in the "storage-state position", the side kneading device 2 is retracted in place at the lateral side of the backrest 4, and, at this time, the side kneading device 2 stays in overlapping relation to the backrest 4 as seen in side view, wherefore the side massage section 6 can be housed unobtrusively at the lateral side of the backrest 4 (in a state of not protruding from the backrest 4).

[0021] Next, the side massage section 6, the position switching mechanism 21, the support frame 7, and the casing 5 for covering the aforementioned components that constitute the side kneading device 2 will be described.

As shown in Figs. 2 to 4, the casing 5 is a long, strip-like plate member bent in the form of an inverted U as viewed from the front of the backrest 4. In order to prevent the casing 5 from making contact with the backrest 4 during its advancing and retracting motion in the front-rear direction, a surface of the casing 5 which points inward in a width direction so as to face the backrest 4 is made flat. On the other hand, a surface of the casing 5 opposite to the backrest 4-facing surface (widthwise outer surface) is curved so as to expand outward, whereby a space for housing the side massage section 6 can be secured in the width direction.

[0022] As shown in Figs. 3 and 4, the side massage section 6 is disposed on each of the right side and the left side of the backrest 4 in a manner such that the backrest 4 is

sandwiched between them in the horizontal direction. Of the left-hand and right-hand side massage sections 6L and 6R taken as a pair, the right-hand side massage section 6R is designed to perform a pressure massage on user's right shoulder and right arm, whereas the left-hand side massage section 6L is designed to perform a pressure massage on user's left shoulder and left arm. The paired left-hand and right-hand side massage sections 6L and 6R have long rocking members 13L and 13R that will hereafter be described, respectively. A massaging portion 9 is disposed on the front-end side of the rocking member 13L, 13R.

[0023] The massaging portion 9 is based on an air-bag system, namely a system for massaging a to-be-massaged part with use of an inflatable/deflatable air bag. In the air bag 9 provided in the side massage section 6L, 6R, the supply of air is effected by means of a pump or otherwise. By repeated cycles of inflation and deflation of the air bag 9 with supplied air, it is possible to press a to-be-massaged part held between the paired left-hand and right-hand side massage sections 6 repeatedly, and thereby afford massage effects.

[0024] The air bag 9, which is a bag within which air can be stored, is formed in a bag shape from a synthetic resin sheet or the like. According to the first embodiment, the air bag 9 is disposed, in the form of two thicknesses stacked together in the horizontal direction, inside each of the side massage sections 6. Although not shown in the drawings, the air bags 9 are each connected with an air supply tube which passes through the interior of the casing 5 so as to be coupled to the pump. Each of the air bags 9 can be inflated and deflated arbitrarily with air supplied thereto through the air supply tube.

[0025] Moreover, a mounting plate 10 for regulating outward inflation of the air bag 9 is attached to the widthwise outer side of the double thickness of the air bag 9, and also, the above-described support frame 7 (rocking member 13L, 13R) is attached to the widthwise outer side of the mounting plate 10.

Moreover, as shown in Fig. 4, the above-described air bag 9 is so designed that a side thereof close to the backrest 4, namely the rear end is thinner than the forward end (the

air bag 9 has seams at the rear end). Therefore, in the air bag 9, the amount of inflation at the rear-end side (one side) is smaller than the amount of inflation at the forward-end side (the other side). The air bag 9 is attached to the mounting plate 10 (at the side of the tip of the rocking member 13) in a manner such that the less-inflated rear end of the air bag is located near the backrest 4.

[0026] In this way, where the air bag 9 is so installed that the less-inflated side faces the backrest 4, by virtue of the position switching mechanism 21 (which will hereafter be described in detail), even if the side massage section 6 is advanced or retracted in the front-rear direction, it never occurs that the inflated air bag 9 gets caught on the edge of the backrest 4. Consequently, the side massage section 6 can be advanced and retracted smoothly.

The support frame 7, which is a member for supporting the air bag 9 and the mounting plate 10 fitted with the air bag 9 for rocking motion relative to the backrest 4, is formed in a long rod shape from metal or synthetic resin. Specifically, the support frame 7 comprises: a pair of left and right rocking members 13L and 13R extending in the vertical direction or the front-rear direction; and a coupling member 14 for coupling the paired left and right rocking members 13L and 13R horizontally. These three rodlike constituent components combine to impart a U-shaped appearance to the support frame 7.

[0027] The rocking member 13, which is a rodlike member for supporting the air bag 9 at the widthwise outer side thereof, is, at its upper end, secured to each end of the above-described coupling member 14. The left rocking member 13L passes through the interior of the left end-side casing 5 disposed in hanging fashion along the left side surface of the backrest 4, and the right rocking member 13R passes through the interior of the right end-side casing 5 disposed in hanging fashion along the right side surface of the backrest 4.

[0028] The left and right rocking members 13L and 13R are oriented similarly with respect to the coupling member 14, and are each designed so that the lower end (front end)

can be rocked about the upper end (base end) in the front-rear direction. Moreover, the left and right rocking members 13L and 13R are equal in length dimension. Accordingly, the left and right rocking members 13L and 13R can be maintained in parallel relation even when their rocking angles are displaced with respect to each other about the upper ends as a pivot.

[0029] The mounting plate 10 having an area larger than the area of the air bag 9 is attached to the lower end of the rocking member 13. On the widthwise inner surface (backrest 4-sided surface) of the mounting plate 10, the air bag 9 for pressing to a to-be-massaged part of user's body is disposed in stack-together form. The mounting plate 10 regulates the widthwise outward inflation of the air bag 9. By virtue of such a mounting plate 10, a pressure (pressing force) exerted by the air bag 9 during inflation can be centered on the to-be-massaged part located inward in the width direction.

[0030] The coupling member 14, which is a member for coupling the above-described left and right rocking members 13L and 13R (a prism-shaped member as exemplified), is placed so as to stay horizontal, for establishing connection between the upper end of the left rocking member 13L and the upper end of the right rocking member 13R. The coupling member 14 is pivoted, via a coupling unit 12 which will hereafter be described, on the upper end (upper edge) of the above-described back frame member 11 of the backrest 4 for rotation about an axis pointing in the width direction, or equivalently a widthwise axis.

[0031] Specifically, the coupling member 14 and the above-described rocking member 13L, 13R can be rocked with the angle of coupling (substantially right angle) maintained constant. That is, even when the support frame 7 is rocked, the coupling member 14 and the rocking member 13L, 13R operate at a uniform coupling angle. By adopting such a structure in which the rocking members 13L and 13R are coupled together by the coupling member 14, it is possible for the coupling member 14 to receive the moment (bending

force) applied to the pivotal point of the rocking member 13L, 13R without fail.

[0032] That is, when the air bag 9 is inflated, moment (bending force) is generated in a direction to move the rocking member 13 outward in the width direction, and the resultant moment (bending force) is added to the pivotal-point side of the rocking member 13. In this case, if the upper end of the rocking member is pivoted directly to the back frame member 11, the moment will be transmitted directly to the back frame member 11, which leads to the necessity for the back frame member 11 to have a sturdy pivotal structure in itself.

[0033] However, as has already been described, so long as the rocking members 13L and 13R are coupled together by the coupling member 14, and the coupling member 14 is fitted with the coupling unit 12 (a unit for coupling the coupling member 14 for rocking motion relative to the back frame member 11), the moment generated during inflation of the air bag 9 is received by the coupling member 14 rather than the back frame member 11. This makes it possible to eliminate the need to provide a sturdy pivotal structure for pivotally mounting the rocking member 13L, 13R on the back frame member 11, and thus render the backrest 4 lower in profile. Moreover, the support frame 7 can be installed in the existing backrest 4 construction with ease without the necessity to make changes to the design of the backrest 4.

[0034] Next, the position switching mechanism 21 of the first embodiment will be described in detail.

A ratchet mechanism is adopted for use as the position switching mechanism 21 of the first embodiment. The ratchet mechanism 21 is disposed inside the coupling unit 12.

As shown in Fig. 4, the coupling unit 12 is a member for rotatably coupling the coupling member 14 to the upper end of the back frame member 11. There are provided two coupling units 12 taken as a pair, of which one is located toward the right edge of the coupling member 14, and the other is located toward the left edge of the coupling member

14. Each of the coupling units 12 comprises: a holding portion 18 disposed at the upper side of the back frame member 11; a projection piece 19 attached to the coupling member 14 of the support frame 7 as above described while being held by the holding portion 18 in sandwich style; a pivot shaft 20 disposed so as to provide communication between the holding portion 18 and the projection piece 19 while pivotally supporting the holding portion and the projection piece for rotation about an axis pointing in the right-left direction, or equivalently a right-left axis; and the ratchet mechanism 21 for keeping the angle of rotation of the projection piece 19 relative to the holding portion 18 at a predetermined angle.

[0035] The holding portion 18 comprises a pair of upwardly-protruding right and left upstanding plates disposed at the upper side of the back frame member 11. The projection piece 19, which is a member disposed so as to protrude rearward from the back side of the coupling member 14, is interposed between the above-described upstanding plates of the holding portion 18. The pivot shaft 20 is disposed so as to point in the horizontal direction, for rotatably supporting the rear end of the projection piece 19 and the upper end of the holding portion 18.

[0036] Moreover, the ratchet mechanism (position switching mechanism) 21 comprises: a V-shaped notch 16 obtained by cutting the outer edge (lower edge) of the projection piece 19; a pawl member 17 which engages in the notch 16 of the projection piece 19 for restraining the rotation of the projection piece 19; an urging member 22 for urging the pawl member 17 in an engagement direction; and a release member 23 for disengaging the pawl member 17 from the projection piece 19.

In order to keep the angle of rotation of the projection piece 19 at a predetermined angle by the ratchet mechanism 21, the support frame 7 is rocked to move forward relative to the back frame member 11. Then, the projection piece 19 of the coupling unit 12 is rotated about the pivot shaft 20 relative to the holding portion 18, and the pawl member 17

is urged into engagement in the notch 16 of the projection piece 19 in a rotating state by the urging member 22, thereby restraining the projection piece 19 from rotation in a reverse direction. Thus, the side massage section 6 can be set in the "operating-state position". On the other hand, when the support frame 7 is further rotated forward beyond the range of the "operating-state position", the release member 23 abuts on the pawl member 17, thereby disengaging the pawl member 17 from the notch 16. Thus, the side massage section 6 can be returned to the "storage-state position".

[0037] Next, the workings of the position switching mechanism (ratchet mechanism) 21 of the first embodiment thus far described, in other words, the advancing and retracting actions of the side kneading device 2, will be explained.

In order to shift the side massage section 6 from the "storage-state position" to the "operating-state position" by means of the position switching mechanism 21, an operating procedure as set forth hereunder is followed.

That is, in the chair-type massage apparatus 1 with the side massage section 6 set in the "storage-state position", the casing 5 is rocked at a certain rocking angle along the left side surface, as well as the right side surface, of the backrest 4. Correspondingly, the side massage section 6 disposed inside the casing 5 stays in contact with each side surface of the backrest 4. Therefore, the side kneading device 2 in the "storage-state position" is not capable of massaging a to-be-massaged body part by means of the side massage section 6.

[0038] Under this condition, first thing a user will do is to hold the lower end of the casing 5 of the side kneading device 2 with his/her hands or otherwise, and allows it to rock about the upper end so as to move forward of the backrest 4. Then, in response to the forward rocking motion of the casing 5, the support frame 7 disposed inside the casing 5 is rocked to move forward relative to the back frame member 11 disposed inside the backrest 4. Moreover, in the coupling unit 12, the projection piece 19 coupled to the support frame

7 is rocked about the pivot shaft 20 relative to the holding portion 18 disposed on the back frame member 11.

[0039] After a while, when the extent of rotation of the projection piece 19 relative to the holding portion 18 is increased to a certain level, then the ratchet mechanism 21 is actuated to switch the side kneading device 2 to the "operating-state position" where the side massage section 6 is situated forward. When in the "operating-state position", the front-located side massage section 6 becomes capable of massaging a to-be-massaged part such as user's shoulder or arm.

When in the "operating-state position", upon a further forward rocking motion of the casing 5 about a right-left axis, the release member 23 abuts on the pawl member 17, thus causing disengagement of the pawl member 17 from the notch 16. Consequently, since the pawl member 17 can be moved away from the notch 16, it is possible to rotate the projection piece 19 in a reverse direction, and thereby allow the side kneading device 2 in the "operating-state position" to return to the "storage-state position".

[0040] Thus, the base end of the left rocking member 13L and the base end of the right rocking member 13R are coupled to each other by the long coupling member 14 pointing in the direction of the width of the backrest 4, and this coupling member 14 is pivoted on the backrest 4 for rotation about an axis pointing in the width direction (horizontal direction). Therefore, simply by moving one of the left-hand and right-hand side massage sections 6 forward to shift it from the "storage-state position" to the "operating-state position", since the other one of the side massage sections 6 coupled thereto via the coupling member 14 can also be moved forward at this time, it is possible to switch both of the left-hand and right-hand side massage sections 6 to the "operating-state position" simultaneously. The workings and advantageous effects as described just above hold true for the case of switching the side massage sections 6 to the "storage-state position".

[0041] Moreover, some side kneading devices of conventional design adopt a structure in

which switching from a “storage position” in a retracted state to an “operating position” in an advanced state is effected by causing a casing to rotate about an axis pointing in a vertical direction, or equivalently a vertical axis, while being rocked to move around a backrest from outside the backrest to the inner front side thereof in a horizontal direction. In a case where the ratchet mechanism is adopted in such a conventional side kneading device in order to ensure the advancing and retracting actions of the side kneading device, if the force with which a massage is performed by the side kneading device is too strong, the side kneading device cannot be returned to the “storage position” without the necessity of pressing the casing forward even further, which results in temporary user discomfort.

[0042] By contrast, in the above-described chair-type massage apparatus 1, the side kneading device 2 is shifted from the “storage-state position” to the “operating-state position” by rocking the casing 5, now advanced to the “operating-state position”, about a right-left axis so as to move further forward. In this chair-type massage apparatus 1, even if the casing 5 is rocked to move forward beyond the “operating-state position”, since user’s body is not located on the path of the rocking casing 5, it is possible to accomplish the switching from the “operating-state position” to the “storage-state position” with ease.

[0043] Such a problem does not exist with the chair-type massage apparatus 1 pursuant to the present invention in which user’s body will not be located on the path of the rocking casing 5, wherefore the chair-type massage apparatus 1 pursuant to the present invention is capable of avoiding the above-described inconvenient situation instantaneously.

In the above-described chair-type massage apparatus 1, when in the “storage-state position”, the side massage section 6 is retracted in place at the lateral side of the backrest 4 so as to be stored in overlapping relation to the backrest 4 as seen in side view. Therefore, in contrast to the conventional side kneading device 2 in which the side massage section 6 is left protruded even in the “storage position”, it is possible to impart a simple and elegant appearance to the chair-type massage apparatus 1.

[0044] Moreover, in the side kneading device 2 in the "storage-state position", since the casing 5 is stored in a position along the lateral side of the backrest 4, it never occurs that the arms and shoulders of a user who wants to sit in the chair-type massage apparatus 1 will be brought into contact with the side kneading device 2. Therefore, in contrast to the conventional side kneading device 2 designed to be situated in a location accessible to user's arms and shoulders, it is possible to allow smooth sitting action of a user, and thereby improve the convenience of the chair-type massage apparatus 1.

[Second Embodiment]

Next, the chair-type massage apparatus 1 in accordance with the second embodiment of the present invention will be described with reference to drawings.

[0045] As shown in Figs. 6 and 7, the chair-type massage apparatus 1 of the second embodiment is substantially identical in structure with the apparatus of the first embodiment (refer to Fig. 1).

That is, the chair-type massage apparatus 1 of the second embodiment is similar to the apparatus of the first embodiment in that it comprises: a seat 3 having an area wide enough for a user to sit thereon; a backrest 4 mounted at the rear of the seat 3; and a side kneading device 2 installed on both sides of the backrest 4, for performing a pressure massage by applying pressure to user's arms and shoulders (parts to be massaged) laterally from the right and the left, and that the side kneading device 2 incorporates: a strip plate-like casing 5; left-hand and right-hand side massage sections 6L and 6R; and a support frame 7 for supporting the left-hand and right-hand side massage sections 6L and 6R in a mutually-coupled state on a back frame member 11 disposed inside the backrest 4.

[0046] Another similarity is that the side massage section 6L, 6R has a long rocking member 13L, 13R having a massaging portion 9 (air bag) disposed at its front end, and the support frame 7 comprises: a pair of left and right rocking members 13L and 13R; and a coupling member 14 for coupling the paired left and right rocking members 13L and 13R

horizontally.

Still another similarity is that the side kneading device 2 is internally provided with a position switching mechanism 30 for changing the position of the side massage section 6L, 6R in the front-rear direction.

[0047] However, the second embodiment differs widely from the first embodiment in the following points: additional installation of a pressing mechanism 41 for pressing the rocking member 13L, 13R forward; and the structure of the position switching mechanism 30.

Another dissimilarity is that the coupling member 14 has a pair of right and left pivotal members 43 formed so as to extend downwardly from the lower side surface thereof, and the upper edge of the back frame member 11 is fitted with a pair of right and left pivotal pieces 42 for pivotally supporting the coupling member 14 for rotation about a rotational axis pointing in the width direction, or equivalently a widthwise rotational axis.

[0048] The paired pivotal pieces 42 in the form of plate pieces are disposed on the outer surfaces of the right and left sides, respectively, of the upper edge of the back frame member 11. The front end of the pivotal piece 42 is formed with a hole for pivotally supporting the coupling member 14 for rotation about the widthwise rotational axis.

The paired (right and left) pivotal members 43 are disposed at the opposite ends, respectively, of the coupling member 14. The pivotal member 43 is a plate piece which has its front end bent outwardly in the width direction to define an L-shaped form, and has its base end fitted to the lower side surface of the coupling member 14. The bend at the front end of the plate piece serves as a restraint portion for restraining the coupling member 14 from forming an angle greater than a predetermined angle. Moreover, a flat part at the midportion of the pivotal member 43 is formed with a hole for pivotally supporting the coupling member 14 for rotation about the widthwise rotational axis.

[0049] With the hole of the pivotal member 43 and the hole of the pivotal piece 42 kept in

alignment with each other, the pivotal member 43 is rotatably coupled to the pivotal piece 42, so that the coupling member 14 can be pivoted on the back frame member 11 for rotation about the widthwise rotational axis. Then, upon contact of the bend (restraint portion) of the pivotal member 43 with the rear side of the pivotal piece 42, the coupling member 14 is restrained from rotating about the widthwise rotational axis at an angle greater than the predetermined angle.

[0050] The position switching mechanism 30 of the second embodiment is disposed between the rocking member 13L, 13R and the back frame member 11, for switching the position of the rocking member 13L, 13R back and forth between an operating-state position and a storage-state position in accordance with the operation of the pressing mechanism 41 placed near the position switching mechanism 30.

As shown in Fig. 8, the position switching mechanism 30 comprises: a projection piece 31 formed so as to extend in a direction perpendicular to the axis of rotation of the coupling member 14 from the side surface of the coupling member 14; a long upper link member 32 which is disposed along the vertical direction with its one end pivoted on the projection piece 31 for rotation about a widthwise axis, and has a guide groove 33 formed therein so as to extend vertically and an engagement piece 34 placed inside the upper part of the guide groove 33; and a long lower link member 37 which has, at its one end, an engagement pin 38 slidably fitted in the guide groove 33 of the upper link member 32, and has its other end coupled to the back frame member 11 for rotation about a widthwise axis.

[0051] A single projection piece 31, which is formed so as to extend downwardly from the lower side surface of the coupling member 14, is disposed on the left side surface of the upper edge of the back frame member 11. The projection piece 31 is a plate piece bent in the shape of the letter U, and, the bottom part of this U-shaped form is fixedly attached to the lower side surface of the coupling member 14, and the other parts thereof, namely two branched pieces are arranged so as to point in the front-rear direction.

The two branched pieces are each formed with a hole for insertion of a shaft aligned parallel to the axis of rotation of the coupling member 14, or equivalently the widthwise axis. In the hole opened in one of the pieces, one end of the upper link member 32 is pivoted on the projection piece 31 for rotation about a widthwise axis. In the hole opened in the other one of the pieces, one end of the pressing mechanism 41 (rod shaft) is pivoted on the projection piece 31 for rotation about a widthwise axis.

[0052] As shown in Figs. 8 to 10, a single lower link member 37, which is formed of a long plate material having a predetermined thickness, is disposed on the left side surface of the upper part of the back frame member 11. The lower end of the lower link member 37 is pivoted on the back frame member 11 for rotation about a widthwise axis.

On the other hand, the two surfaces pointing in the width direction at the upper end of the lower link member 37 are each provided with a single cylindrical engagement pin 38. More specifically, one of the two engagement pins 38 is formed in an upstanding fashion on the left side surface at the upper end so as to face outward to the left, whereas the other one is formed in an upstanding fashion on the right side surface at the upper end so as to face outward to the right. The engagement pin 38 is slidably fitted in the guide groove 33 formed in the upper link member 32 which will hereafter be described.

[0053] Moreover, a vertically-elongated slot 39 is located centrally of the lower link member 37 in the width direction, and, a lower-part securing pin formed in the upper link member 32 is slidably fitted in the slot 39.

The upper link member 32, which is formed of a long plate piece, has the vertically-elongated guide groove 33 located centrally thereof in the width direction. There is provided a pair of right and left upper link members 32, and, the paired members are arranged in combination with their guide groove 33-bearing surfaces opposed to each other. A predetermined space is secured between the left upper link member 32L and the right upper link member 32R, and, the lower link member 37 is inserted in this space.

That is, the left upper link member 32L and the right upper link member 32R are arranged so as to have the lower link member 37 sandwiched therebetween.

[0054] A Fixing hole for combining the paired left and right upper link members is opened at each of the upper-and side and the lower-end side of the guide groove 33. The openings formed at the lower-end sides of the guide grooves 33 receive a cylindrical member formed so as to protrude inwardly from the surfaces of the guide grooves 33 of the combined left and right upper link member pair (lower-part securing pin), and this lower-part securing pin is fitted in the slot 39 formed in the lower link member 37.

[0055] Since the engagement pin 38 is fitted in the guide groove 33 and the lower-part securing pin is fitted in the slot 39, it is possible to restrain the upper link member 32 from rocking greatly in the front-rear direction. Meanwhile, a spiral spring 44 is placed around the lower-part securing pin. The spring 44 has its one end 44a bent in the width direction, and this bend 44a of the spring 44 makes contact with the inner peripheral surface of the slot 39. The spring 44 kept in contact with the inner peripheral surface of the slot 39 exerts an urging force on the lower link member 37 to press it forward. As the lower link member 37 is pressed forward under the urging force exerted by the spring 44, the engagement pin 38 is allowed to slide in only one direction. That is, the engagement pin 38 is not allowed to slide in a counterclockwise direction in an upper groove 33a. Moreover, the engagement pin 38, which engages with a protuberance 35 which will hereafter be described, can be brought into engagement with the protuberance 35 securely under a downward pressing force exerted in forward and downward directions.

[0056] The guide groove 33 comprises the upper groove 33a and a lower groove 33b, and the upper groove 33a is larger in width but smaller in vertical length than the lower groove 33b; that is, in contrast to the upper groove 33a, the lower groove 33b is made as a groove in a narrow strip form (a groove which is slightly larger in width than the engagement pin 38). Moreover, a connecting part between the upper groove 33a and the lower groove 33b

forms a transitional part in the form of a gentle slope where the engagement pin 38 formed in the lower link member 37 is able to move smoothly.

[0057] A projection piece is formed in hanging fashion at the upper end face of the upper groove 33a, and an engagement piece 34 is located substantially centrally of the upper groove 33a so as to protrude in the horizontal direction.

As shown in Figs. 8 to 10, the engagement piece 34 has a rectangular shape as seen in side view, and its height is substantially equal to or slightly lower than the height of the guide groove 33. Moreover, a space surrounded with the outer edge of the engagement piece 34 and the inner peripheral surface of the upper groove 33a, namely the upper groove 33a has a width large enough for the passage of the engagement pin 38. That is, the upper groove 33a has the form of a loop-like guide path as seen in side view.

[0058] One side of the outer edge of the engagement piece 34, namely the upper side surface of one of the edges (frontward edge as viewed in Fig. 9) thereof is formed with the protuberance 35 with which the engagement pin 38 engages after passage of the upper side surface of the other edge (rearward edge as viewed in Fig. 9).

More specifically, the engagement pin 38, now situated in a position below the engagement piece 34, is moved upward along the other edge of the engagement piece 34, and engages with the protuberance 35, whereupon the side massage section 6L, 6R assumes a storage position. Then, the engagement pin 38 goes over the protuberance 35 for disengagement, and is whereafter moved downward along one edge of the engagement piece 34 and reaches the position below the engagement piece 34, whereupon the side massage section 6L, 6R assumes an operating position.

[0059] The following is a description as to the operating position and the storage position of the side massage section 6L, 6R in the position switching mechanism 30 of the second embodiment.

As the upper link member 32 and the lower link member 37 are moved away from

each other along a longitudinal direction, the engagement pin 38 of the lower link member 37 comes to the position below the engagement piece 34 of the upper link member 32, whereupon the side massage section 6L, 6R is set in the operating position. On the other hand, as the upper link member 32 and the lower link member 37 are moved close to each other along the longitudinal direction, the engagement pin 38 engages with the protuberance 35 of the engagement piece 34, whereupon the side massage section 6L, 6R is set in the storage position.

[0060] At the bottom side of the engagement piece 34, there is disposed a switching piece 40 for guiding the engagement pin 38 moving down along one edge of the engagement piece 34 toward the lower groove 33b, in other words, for effecting switching from the storage position to the operating position.

The switching piece 40 has an L-shaped form (crescent form) in side view, and is disposed directly below the engagement piece 34 for free rotation in the horizontal direction.

[0061] The switching piece 40 is maintained in a state of being rotatable in one direction under an urging force exerted by a spiral spring 45. At this time, the tip of one side of the switching piece 40 abuts on the transitional part of the guide groove 33, and also the upper side surface of the other side of the switching piece 40 abuts on the surface of the bottom side of the engagement piece 34, whereupon the guide path is blocked at one side. In this way, the engagement pin 38 positioned below the engagement piece 34 is restrained from moving toward one edge of the engagement piece 34 during its upward motion.

[0062] On the other hand, when the switching piece 40 is shifted to a state of rotating in the other direction against the urging force exerted by the spring 45, the blocked one side of the guide path is opened into a through state, whereupon the engagement pin 38 moving down along one edge of the engagement piece 34 can be guided to reach the position below the engagement piece 34.

That is, the function of the switching piece 40 is to restrain the engagement pin 38 positioned below the engagement piece 34 from moving toward one edge of the engagement piece 34 during its upward motion, as well as to guide the engagement pin 38 moving down along one edge of the engagement piece 34 to reach the position below the engagement piece 34. Following the completion of the operation to direct the engagement pin 38 to the position below the engagement piece 34, the switching piece 40 is rotated in one direction to return to the original position (position to block one side of the guide path) under the urging force exerted by the spring 45. That is, the switching piece 40 renders the upper groove 33a as a clockwise guide path.

[0063] Meanwhile, the pressing mechanism 41 is installed along the vertical direction so as to be adjacent to the upper link member 32 and the lower link member 37 (position switching mechanism 30), for moving the upper link member 32 in the vertical direction. Although a gas cylinder is adopted for use as the pressing mechanism 41 of the second embodiment, there is no particular limitation so long as the pressing mechanism 41 can be built as a mechanism capable of reciprocating (telescopic) motion in the vertical direction. For example, a hydraulic cylinder or a linear actuator may be adopted instead.

[0064] The pressing mechanism 41 has its lower part rotatably pivoted on the back frame member 11, and has its upper part rotatably pivoted on the projection piece 31. As the pressing mechanism 41 is telescopically extended, the upper link member 32 is pressed upward, thus causing the coupling member 14 to rotate backward about a widthwise axis. Then, the rocking member 13L, 13R is set in the operating-state position.

On the other hand, as the pressing mechanism 41 is telescopically contracted, the upper link member 32 is moved downward, thus causing the coupling member 14 to rotate forward about the widthwise axis. Then, the rocking member 13L, 13R, in other words, the side massage section 6L, 6R, is set in the storage-state position. The telescopic contraction of the pressing mechanism 41 is effected by user's operation to press the side

massage section 6L, 6R into the operating position (downward).

[0065] Next, the workings of the position switching mechanism 30 of the second embodiment thus far described, in other words, the advancing and retracting actions of the side massage section 6L, 6R, will be explained.

Figure 9 is a lateral sectional view taken along the line A-A shown in Fig. 6, illustrating the position switching mechanism 30 and the pressing mechanism 41 (gas cylinder) under a condition where the side massage section 6L, 6R is retained in the operating position.

[0066] Figure 10 is a lateral sectional view taken along the line B-B shown in Fig. 7, illustrating the position switching mechanism 30 and the pressing mechanism 41 under a condition where the side massage section 6L, 6R is retained in the storage position.

To begin with, the position switching mechanism 30 and the pressing mechanism 41 under a condition where the side massage section 6L, 6R is set in the operating-state position will be explained with reference to Fig. 9.

When the side massage section 6L, 6R is in a forwardly protruding state (operating position), the position switching mechanism 30 is lengthened in the longitudinal direction as the pressing mechanism 41 is extended. That is, as the pressing mechanism 41 is extended, the upper link member 32 is pressed upward correspondingly so as to separate slidingly from the lower link member 37. At this time, the engagement pin 38 is fitted in the guide groove 33 while being positioned below the engagement piece 34.

[0067] In the position switching mechanism 30 in the state shown in Fig. 9, while the side massage section 6L, 6R is free of restraint on its movement, the pivotal member 43 and the rear side of the pivotal piece 42 are kept in contact with each other, thereby restraining the coupling member 14 from further backward rotation. That is, the side massage sections 6L and 6R (a pair of left and right rocking members 13L and 13R) can be securely held in the operating-state position.

[0068] After that, the side massage section 6L, 6R is pushed by user's hand, so that it changes from the forwardly protruding state (operating position) to a state of being placed at the lateral side of the backrest 4 while facing downward (storage position). At this time, the pressing mechanism 41 is contracted as the side massage section 6L, 6R is rocked backward while being pushed by user's hand.

Then, the position switching mechanism 30 is shortened in the longitudinal direction as the pressing mechanism 41 is contracted. That is, in response to the contraction of the pressing mechanism 41, the upper link member 32 is moved downward so as to come slidingly near the lower link member 37.

[0069] Concurrently, the coupling member 14 is rotated forward about the widthwise axis. In response to the forward rotation of the coupling member 14, the side massage section is rocked so as to change from the forward-facing state (operating position) to the downward-facing state (storage position).

At this time, as indicated by the thick arrow in Fig. 9, the engagement pin 38 is moved slidingly in the guide groove 33.

[0070] That is, in response to the contraction of the pressing mechanism 41, the engagement pin 38 positioned below the engagement piece 34 is moved upward from the lower groove 33b to the transitional part (the rear side surface of the switching piece 40), and from there to the upper groove 33a. Upon reaching the upper groove 33a, the engagement pin 38 is further moved along the other edge (from the rear side edge to the rear of the upper edge) of the engagement piece 34. It is noted that, since one side of the guide path is blocked by the switching piece 40, it never occurs that the engagement pin 38 positioned below the engagement piece 34 moves toward one edge of the engagement piece 34 during its upward motion.

[0071] After that, the engagement pin 38 engages with the protuberance 35 formed at the upper edge of the engagement piece 34. The engagement pin 38 in engagement with the

protuberance 35 is constantly subjected to a force to cause it to move down due to the telescopic extension of the pressing mechanism 41, wherefore a pressing force is exerted on the protuberance 35. Under this pressing force, the engagement pin 38 engages with the protuberance 35 securely so as to enter a state as shown in Fig. 10.

That is, under a condition as shown in Fig. 10, the position switching mechanism 30 is shortened in the longitudinal direction as the pressing mechanism 41 is contracted. That is, in response to the contraction of the pressing mechanism 41, the upper link member 32 is moved downward so as to come slidingly near the lower link member 37. In response to such a movement of the position switching mechanism 30, the coupling member 14 is rotated forward about the widthwise axis.

[0072] Moreover, in the storage position, since the engagement pin 38 and the protuberance 35 of the engagement piece 34 engage with each other, it follows that the side massage sections 6L and 6R (a pair of left and right rocking members 13L and 13R) can be securely held in the operating-state position.

Next, the position switching mechanism 30 and the pressing mechanism 41 under a condition where the side massage section 6L, 6R changes from the storage position to the operating position will be explained.

[0073] The side massage section 6L, 6R in the storage position, when it is further pushed backward by user's hand, changes from the downwardly protruding state (storage position) to the forward-facing state (operating position). At this time, the pressing mechanism 41 is contracted once as the side massage section 6L, 6R is pushed by user's hand, but, after a while, it is extended.

[0074] Correspondingly, the position switching mechanism 30 is shortened once, and is whereafter lengthened in the longitudinal direction. That is, the upper link member 32 is moved downward once relative to the pressing mechanism 41, and is whereafter moved upward so as to separate slidingly from the lower link member 37. In response to such a

movement of the position switching mechanism 30, the coupling member 14 is rotated forward about the widthwise axis once, and is whereafter rotated backward.

Accordingly, in response to the backward rotation of the coupling member 14, the paired left and right rocking members 13L and 13R coupled to the coupling member 14 (the side massage sections 6L and 6R) are rocked so as to change from the downward-facing state (storage position) to the forward-facing state (operating position).

[0075] At this time, as indicated by the thick arrow in Fig. 10, the engagement pin 38 is moved slidingly in the guide groove 33.

That is, when the side massage section 6L, 6R is further pushed by user's hand, the engagement pin 38 positioned above the engagement piece 34 is moved upwardly between the protuberance 35 and the edge of the hanging projection piece; that is, the engagement pin 38 goes over the protuberance 35 for disengagement. After that, the engagement pin 38 is moved downward along one edge (from the front side edge to the front of the upper edge) of the engagement piece. After the downward motion, the engagement pin 38 abuts on the front side surface of the switching piece 40.

[0076] Then, as the pressing mechanism 41 is extended, the engagement pin 38 causes the switching piece 40 to rotate in one direction (clockwise direction). As the result of the rotation, the blocked one side of the guide path is opened into a through state, whereupon the engagement pin 38 is allowed to pass through one side of the guide path for movement toward a position below the engagement piece 34.

When the engagement pin 38 is positioned below the engagement piece 34, the switching piece 40 acts to block one side of the guide path once again under the urging force exerted by the spiral spring 45.

[0077] In this way, the side massage section 6L, 6R is rocked forward from below so as to be shifted to the operating-state position shown in Fig. 9.

As described heretofore, by virtue of the position switching mechanism 30 of the

second embodiment, in a service condition, the side massage section 6L, 6R can be set in the operating-state position without fail, whereas, in a non-service condition, the side massage section 6 can be smoothly retracted in place at the lateral side of the backrest 4.

[Third Embodiment]

Next, the chair-type massage apparatus 1 in accordance with the third embodiment of the present invention will be described with reference to drawings.

[0078] As shown in Fig. 11, the chair-type massage apparatus 1 of the third embodiment is substantially identical in structure with the apparatus of the second embodiment (refer to Fig. 6).

That is, the chair-type massage apparatus 1 of the third embodiment is similar to the apparatus of the second embodiment in that it comprises: a seat 3; a backrest 4 having a built-in back frame member 11; and a side kneading device 2 incorporating a pair of left-hand and right-hand side massage sections 6L and 6R and a support frame 7, and that the side massage section 6L, 6R has a rocking member 13L, 13R, and the support frame 7 comprises a pair of left and right rocking members 13L and 13R, and a coupling member 14 for coupling the rocking members 13L and 13R.

[0079] Another similarity is that the side kneading device 2 is internally provided with a position switching mechanism for changing the position of the side massage section 6L, 6R in the front-rear direction, and a pressing mechanism 41 for pressing the rocking member 13L, 13R forward. Although a gas cylinder is adopted for use as the pressing mechanism 41 of the third embodiment, there is no particular limitation so long as the pressing mechanism 41 can be built as a mechanism capable of reciprocating (telescopic) motion in the vertical direction. For example, a linear actuator or a hydraulic cylinder may be adopted instead. Still another similarity is that a pair of right and left restraint members are arranged on the lower side surface of the coupling member 14, and a pair of right and left pivotal pieces 42 are attached to the upper edge of the back frame member 11.

[0080] However, the third embodiment differs widely from the second embodiment in respect of the structure of the position switching mechanism 50.

The position switching mechanism 50 of the third embodiment is a projection piece 51 formed so as to protrude in a direction perpendicular to the axis of rotation of the coupling member 14 from the side surface (lower side surface) of the coupling member 14.

A single projection piece 51, namely a single position switching mechanism 50 which is formed so as to extend downwardly from the lower side surface of the coupling member 14, is disposed on the left side surface of the upper edge of the back frame member 11. The projection piece 51 is a plate piece bent in the shape of the letter U, and, the bottom part of this U-shaped form is fixedly attached to the lower side surface of the coupling member 14, and the other parts thereof, namely two branched pieces are arranged so as to point in the front-rear direction.

[0081] The two branched pieces are each formed with a hole for insertion of a shaft aligned parallel to the axis of rotation of the coupling member 14, or equivalently the widthwise rotational axis. In the opening hole, one end of the pressing mechanism 41 (rod shaft) is pivoted on the projection piece 51 for rotation about a widthwise axis.

It is noted that the base end of the pressing mechanism 41 is coupled to the back frame member 11 for rotation about a widthwise axis.

[0082] The following is a description as to the operating position and the storage position of the side massage section 6L, 6R in the position switching mechanism 50 of the third embodiment.

With the projection piece 51 and the pressing mechanism 41 arranged in a substantially straight line, when the pressing mechanism 41 is telescopically extended with the consequence that the projection piece 51 and the pressing mechanism 41 are moved in a manner such that an intermediate position of the line, namely the boundary between them forms a bend pointing in one direction, the side massage section 6L, 6R assumes the

operating position. On the other hand, when the pressing mechanism 41 is extended with the consequence that the projection piece 51 and the pressing mechanism 41 are moved in a manner such that the boundary forms a bend pointing in the other direction, the side massage section 6L, 6R assumes the storage position.

[0083] Next, the workings of the position switching mechanism 50 of the third embodiment thus far described, in other words, the advancing and retracting actions of the side massage section 6L, 6R, will be explained.

To begin with, the position switching mechanism 50 and the pressing mechanism 41 under a condition where the side massage section 6L, 6R is set in the operating-state position will be explained with reference to Figs. 11 and 12.

When the side massage section 6L, 6R is in a forwardly protruding state (operating position), the position switching mechanism 50 is inclined forwardly and downwardly, and the pressing mechanism 41 is inclined forwardly and upwardly. That is, as the pressing mechanism 41 is extended, the position switching mechanism 50 and the pressing mechanism 41 are moved so as to form a forward-facing bend about a hole formed in the projection piece 51. In response to such a movement of the position switching mechanism 50, the coupling member 14 is rotated backward about the widthwise axis.

[0084] Accordingly, in response to the backward rotation of the coupling member 14, the paired left and right rocking members 13L and 13R coupled to the coupling member 14 are rocked so as to change from the downward-facing state (storage position) to the forward-facing state (operating position).

Moreover, in the operating position, the pivotal member 43 and the rear side of the pivotal piece 42 are kept in contact with each other, thereby restraining the coupling member 14 from further backward rotation. That is, the side massage sections 6L and 6R (the paired left and right rocking members 13L and 13R) can be securely held in the operating-state position.

[0085] Next, the position switching mechanism 50 and the pressing mechanism 41 under a condition where the side massage section 6L, 6R changes from the operating position to the storage position will be explained with reference to Fig. 13.

When being pushed by user's hand, the side massage section 6L, 6R changes from the forwardly protruding state (operating position) to a state of facing slightly downward (intermediate position). At this time, the pressing mechanism 41 is contracted as the side massage section 6L, 6R is rocked backward while being pushed by user's hand. Then, in response to the contraction of the pressing mechanism 41, the position switching mechanism 50 is pulled downward into a substantially hanging state.

[0086] That is, the position switching mechanism 50 (projection piece 51) and the pressing mechanism 41 are arranged in a substantially straight line extending in the vertical direction. In response to such a movement of the position switching mechanism 50, the coupling member 14 is rotated slightly forward about the widthwise axis.

Accordingly, in response to the forward rotation of the coupling member 14, the paired left and right rocking members 13L and 13R coupled to the coupling member 14 (the side massage sections 6L and 6R) are rocked so as to change from the forward-facing state (operating position) to the slightly downward-facing state (intermediate position).

[0087] The position switching mechanism 50 and the pressing mechanism 41 under a condition where the side massage section 6L, 6R is set in the storage-state position will be explained with reference to Fig. 14.

During the interval when the side massage section 6L, 6R is changing from the intermediate position to the storage position, as the pressing mechanism 41 is extended, the side massage section 6L, 6R is automatically rocked backward.

In consequence of the extension of the pressing mechanism 41, the position switching mechanism 50 (projection piece 51) pivoted on the hole is pressed upward. In consequence of this upward motion of the position switching mechanism 50, the coupling

member 14 is rotated forward about the widthwise axis.

[0088] That is, as the pressing mechanism 41 is extended, the position switching mechanism 50 and the pressing mechanism 41 are moved so as to form a rearward-facing bend about the hole of the projection piece 51. In response to such a movement of the position switching mechanism 50, the coupling member 14 is rotated forward about the widthwise axis.

Accordingly, in response to the further forward rotation of the coupling member 14, the paired left and right rocking members 13L and 13R coupled to the coupling member 14 (the side massage sections 6L and 6R) are rocked so as to change from the slightly downward-facing state (intermediate position) to a state of facing downward in substantially the vertical direction (storage position).

[0089] When it is desired to move the side massage section 6L, 6R from the storage position to the operating position, a user pulls the side massage section 6L, 6R forwardly and upwardly. At this time, the position switching mechanism 50 changes from the state shown in Fig. 14 to the state shown in Fig. 12, and from there to the state shown in Fig. 11, whereupon the side massage section 6L, 6R is set in the operating position.

Even if the side massage section 6L, 6R in the storage position is pulled out a little, without going through the situation as shown in Fig. 12, the side massage section 6L, 6R will be returned to the storage position. Likewise, even if the side massage section 6L, 6R in the operating position is pushed back a little, without going through the situation as shown in Fig. 12, the side massage section 6L, 6R will be returned to the operating position.

[0090] As described heretofore, the chair-type massage apparatus 1 pursuant to the present invention, while including the side massage sections 6L and 6R for massaging the side of the body of a user sitting on the seat 3, is capable of setting the side massage section 6L, 6R in the operating position without fail when it is used, and allowing smooth

retraction of the side massage section 6L, 6R toward the backrest 4 when it is not used. Accordingly, the apparatus is given a simple and elegant appearance, and thus allows smooth sitting action of a user and so forth.

[Fourth Embodiment]

Next, the chair-type massage apparatus 1 in accordance with the fourth embodiment of the present invention will be described with reference to drawings.

[0091] As shown in Fig. 15, the chair-type massage apparatus 1 of the fourth embodiment is substantially identical in structure with the apparatuses of the first to third embodiments.

However, the fourth embodiment differs from the first to third embodiments in that a pillow body 60 (headrest) is mounted at the upper part of the backrest 4.

In this embodiment, as shown in Fig. 15(a), a slim, belt-like retainer 63 for retaining the pillow body 60 is disposed at the upper part of the backrest 4 so as to extend along the width direction, and, the retainer 63 is sewn to the backrest 4 at both ends. For example, the retainer 63 is made of the same material as that used for the backrest 4 (cloth or the like), and has predetermined length dimensions in the width direction and in the front-rear direction, respectively.

[0092] Meanwhile, the pillow body 60 comprises: a pillow main body 61 on which user's head rests; and a fastening strip portion 62 disposed on the upper side or the back side (the backrest 4-facing side) of the pillow main body 61, which can be retained by being wrapped around the retainer 63. The pillow main body 61 and the fastening strip portion 62 are each a member which is foldable at some place, and is made for example of the same material as that used for the backrest 4 (cloth or the like). The fastening strip portion 62 is shorter in widthwise length than the retainer 63, yet is longer in length in front-rear direction than the retainer 63. Moreover, the fastening strip portion 62 has an engagement member such for example as hook-and-loop fasteners (not represented graphically) at both ends.

[0093] The pillow body 60 can be retained at the upper part of the backrest 4 by folding the front end of the fastening strip portion 62 provided in the pillow body 60 back so as to be wound around the belt-like retainer 63 from above and pass through a region under the retainer 63 (a region between the retainer 63 and the surface of the backrest 4), and fastening the pillow main body to the base end of the fastening strip portion 62 via hook-and-loop fasteners.

Following the completion of winding the fastening strip portion 62 around the belt-like retainer 63, a long space extending along the front-rear direction exists between the upper fastening strip portion 62 and the lower fastening strip portion 62. Within the range of this space, the wound fastening strip portion 62 and the pillow main body 61 coupled thereto are free to slide without being restricted by the belt-like retainer 63. Therefore, the pillow main body 61 is movable between a position where the front end of the wound fastening strip portion 62 is kept in contact with the belt-like retainer 63 as shown in Fig. 15(a) and a position where the base end of the wound fastening strip portion 62 is kept in contact with the belt-like retainer 63 as shown in Fig. 15(b).

[0094] That is, in a condition as shown in Fig. 15(a), the pillow body 60 is in a state of hanging from the upper part of the backrest 4 for receiving the head of a user who is relatively short in body height. On the other hand, in a condition as shown in Fig. 15(b), the pillow body 60 is situated at the upper part of the backrest 4 for receiving the head of a tall user.

Thus, according to the chair-type massage apparatus 1 of the fourth embodiment, it is possible to move the pillow body 60 with ease, and thereby rest user's head thereon regardless of user's body height.

[0095] It should be understood that the embodiments as disclosed hereinabove are considered in all respects as illustrative only and not restrictive. The scope of the present invention is indicated by the appended claims and is not to be restricted by the foregoing

description, and all changes and modifications that come within the meaning and the range of equivalency of the claims are intended to be embraced therein.

CLAIMS

1. A chair-type massage apparatus comprising:

a seat;

a backrest mounted at a rear of the seat;

side massage sections disposed on right and left sides, respectively, of said backrest in a face-to-face arrangement, for massaging the side of the body of a user; and

a position switching mechanism for switching said side massage section back and forth between an operating-state position where the side massage section protrudes forward of the backrest and a storage-state position where the side massage section stays behind the operating-state position,

said side massage section including:

a long rocking member disposed at each side of said backrest, said rocking member having a massaging portion at its front end, and being, at its base end, rockably pivoted on a lateral side of said backrest; and

a pressing mechanism for pressing said rocking member forward,

said position switching mechanism being located between said rocking member and a back frame member incorporated in said backrest.

2. The chair-type massage apparatus according to claim 1,

wherein said rocking member is disposed in hanging fashion at each lateral side of said back frame member,

wherein a base end of one of the rocking members and a base end of the other one of the rocking members are coupled to each other by a long coupling member pointing in a direction of a width of said backrest, said coupling member being pivoted on said back frame member for rotation about a widthwise axis,

and wherein said pressing mechanism is designed to push said rocking member forward via said coupling member.

3. The chair-type massage apparatus according to claim 2,

wherein said coupling member is rotatably pivoted on an upper edge of said back frame member.

4. The chair-type massage apparatus according to claim 3,

wherein said position switching mechanism is a ratchet mechanism, and, said coupling member is rotatably pivoted on the upper edge of the back frame member via the ratchet mechanism.

5. The chair-type massage apparatus according to claim 3,

wherein said position switching mechanism is disposed between said coupling member and said back frame member,

wherein said position switching mechanism comprises:

a projection piece formed so as to extend in a direction perpendicular to an axis of rotation of said coupling member from a side surface of the coupling member;

a long upper link member which is disposed along a vertical direction with its one end pivoted on said projection piece for rotation about a widthwise axis, and has a guide groove formed therein so as to extend vertically and an engagement piece placed inside an upper part of the guide groove; and

a long lower link member which has, at its one end, an engagement pin slidably fitted in the guide groove of said upper link member, and has its other end coupled to the back frame member for rotation about a widthwise axis,

and wherein, when said upper link member and said lower link member separate

from each other in a longitudinal direction with the consequence that the engagement pin of said lower link member is positioned below the engagement piece of said upper link member, then the side massage section is set in an operating position, whereas, when said upper link member and said lower link member move close to each other in the longitudinal direction with the consequence that said engagement pin engages with said engagement piece, then the side massage section is set in a storage position.

6. The chair-type massage apparatus according to claim 5,

wherein a protuberance is formed on an upper side surface at one edge of said engagement piece,

wherein, when the engagement pin situated in a position below said engagement piece is moved upward along the other edge of said engagement piece and engages with said protuberance, then the side massage section is set in the storage position,

and wherein, when said engagement pin goes over said protuberance for disengagement, moves downward along one edge of said engagement piece, and reaches the position below said engagement piece, then the side massage section is set in the operating position.

7. The chair-type massage apparatus according to claim 5 or 6,

wherein a switching piece is formed at a bottom part of said engagement piece,

and wherein said switching piece restrains the engagement pin positioned below said engagement piece from moving toward one edge of said engagement piece during its upward motion, and also guides the engagement pin moving down along one edge of said engagement piece toward the position below the engagement piece.

8. The chair-type massage apparatus according to claim 3,

wherein said position switching mechanism is a projection piece formed so as to protrude in a direction perpendicular to the axis of rotation of said coupling member from a side surface of the coupling member,

wherein said pressing mechanism is a linear actuator which has its one end pivoted on said projection piece for rotation about a widthwise axis, and has its base end rotatably coupled to the back frame member,

and wherein, with said projection piece and said linear actuator arranged in a substantially straight line, when said linear actuator is telescopically extended with the consequence that said projection piece and said linear actuator are moved in a manner such that an intermediate position of the line, namely a boundary between them forms a bend pointing in one direction, then the side massage section is set in the operating position, whereas, when said linear actuator is extended with the consequence that said projection piece and said linear actuator are moved in a manner such that the boundary forms a bend pointing in the other direction, then the side massage section is set in the storage position.

9. The chair-type massage apparatus according to any one of claims 1 to 8,

wherein said massaging portion is constructed of an air bag which is inflated inwardly along the direction of the width of the backrest.

10. The chair-type massage apparatus according to claim 9,

wherein in a case where, in said air bag in an inflated state, when an amount of inflation at one side of the air bag is smaller than an amount of inflation at the other side, the air bag is attached to a front end of said rocking member in a manner such that said one side of the air bag is located closer to the backrest along a front-rear direction.