

SPECIFICATION

Title of Invention

Chair-type massage machine

Technical Field

[0001]

The present invention relates to a chair-type massage machine capable of changing its size in the height direction of a user.

Background Art

[0002]

Chair-type massage machines have conventionally included ones called a "mini-sofa type" that, in a backrest part, incorporates a massage part for massaging the back of a user sitting on a seat part and is capable of lowering the height of the backrest part for storage.

Such chair-type massage machines of a "mini-sofa type" having a low backrest part have high designability and tend to be preferred by consumers, but as compared with typical chair-type massage machines, since the height of a backrest part is suppressed, may not give a user's desired massage because many restrictions are placed on the function of the backrest part.

[0003]

For example, Patent Literature 1 discloses a chair-type massage machine of a "mini-sofa type" that

makes it possible to give a massage to the arms of a user sitting on a seat part, such as the shoulders by vertically protruding a backrest part upward. If a backrest part can be moved upward as described above, even when a user remains sitting on a seat part, a treatment region such as the shoulders can be satisfactorily massaged with the backrest part moved upward.

Citation List

Patent Literature

[0004]

Patent Literature 1

Japanese Unexamined Patent Publication

JP-A2013-208264

Summary of Invention

Technical Problem

[0005]

Meanwhile, although the chair-type massage machine of Patent Literature 1 can protrude the backrest part to adjust the height to some extent, length in a front/back direction can hardly be changed. That is, the chair-type massage machine of Patent Literature 1 does not have enough length in the front/back direction, and therefore a user sitting on the seat part cannot take a posture such as reclining the upper body backward or

stretching the legs. In other words, the chair-type massage machine of Patent Literature 1 was not one configured so that a massage could be received in a relaxed manner with the body laid in the horizontal direction.

[0006]

In addition, when a large user attempts to receive a massage, it is necessary to ensure sufficient length in the height direction of the user. However, since the chair-type massage machine of Patent Literature 1 could hardly change length in the front/back direction, a massage part could not be extended to a treatment region positioned at the end in the height direction, such as the back or the legs, and there was also the possibility that a user of large build was prevented from being given a sufficient massage.

[0007]

The present invention has been made in consideration of the above-described problems, and intends to provide a chair-type massage machine that, while being able to store a backrest part with the height lowered, can give a massage in a relaxed posture in which the body is stretched in the horizontal direction and also give a massage to a user of large build.

Solution to Problem

[0008]

In order to solve the above problems, the chair-type massage machine of the present invention takes the following technical means.

That is, the chair-type massage machine of the present invention is a chair-type massage machine including: a seat part; a backrest part that is disposed at the back of the seat part and provided so as to be able to support the back of a user; and a massage part that is incorporated in the backrest part and provides a massage action to a user sitting on the seat part, and includes backward extension means adapted to extend the backrest part backward with the seat part as a reference.

[0009]

In addition, preferably, it is only necessary that at the front of the seat part, a footrest part adapted to massage the leg of a user is provided, and forward extension means adapted to extend the footrest part forward with the seat part as a reference is provided.

Also, preferably, it is only necessary that the backward extension means and/or the forward extension means make it possible to extend a length from the backrest part to the footrest part both forward and backward with the seat part as a boundary.

[0010]

Further, preferably, it is only necessary that the backward extension means includes: a long groove provided facing in an up/down direction on a seat part side; and a guide body that is provided on the backrest part, fitted into the long groove, and guided along the long groove, and the upper side of the long groove curves backward.

Still further, preferably, it is only necessary that the long groove includes: a lower groove extending along the up/down direction; and an upper groove that is formed connecting to the upper side of the lower groove and falls backward greater than the lower groove, and the backward extension means is configured to come into: when the guide body is positioned in the lower groove, a storage state where the lower side of the backrest part is stored below the seat part; when the guide body is positioned at the boundary between the lower groove and the upper groove, a protrusion state where the lower side of the backrest part protrudes upward; and when the guide body is positioned in the upper groove, a state where the backrest part having moved to the protrusion position reclines backward and extends backward.

[0011]

Yet further, preferably, it is only necessary that the backward extension means includes: a rack part provided inside the long groove or along the long groove;

and a pinion gear that is rotationally driven meshing with the rack part, and thereby along the long groove, moves the guide body provided on the backrest part.

Also, preferably, it is only necessary that the footrest part is capable of being stored on the lower side of the seat part, between the seat part and the footrest part, footrest advancing means adapted to draw out the footrest part forward from the lower side of the seat part is provided, and the footrest advancing means is provided with additional extension means adapted to extend the footrest part having been advanced by the footrest advancing means further forward.

[0012]

In addition, preferably, it is only necessary that the additional extension means includes: a support body that supports the footrest part and is drawn out forward by the footrest advancing means; and a link mechanism adapted to connect the footrest part swingably in a front/back direction with respect to the support body.

Further, preferably, it is only necessary that the footrest part includes, at the front, a leg insertion part capable of being inserted with the leg of the user, as well as includes, at the back, a leg placing part capable of being placed with the leg of the user, and is configured to, by rotating around an axis facing in

a left/right direction, be able to change an attitude to both a massage attitude in which the leg insertion part faces upward and a rest attitude in which the leg placing part faces upward.

Advantageous Effects of Invention

[0013]

The chair-type massage machine of the present invention can surely give a massage in a relaxed posture in which the legs are stretched and also a massage to a user of large build while being able to store a backrest part with the height lowered.

Brief Description of Drawings

[0014]

[Fig. 1]

Fig. 1 is a perspective view illustrating a chair-type massage machine of the present embodiment.

[Fig. 2]

Fig. 2 is a side view illustrating the internal structure of the chair-type massage machine of the present embodiment, in which a backrest part is in a storage state.

[Fig. 3]

Fig. 3 is a side view illustrating the internal structure of the chair-type massage machine of the present embodiment, in which the backrest part is in a

protrusion state.

[Fig. 4]

Fig. 4 is a side view illustrating the internal structure of the chair-type massage machine of the present embodiment, in which the backrest part is in a reclined state.

[Fig. 5]

Fig. 5 is a diagram illustrating backward extension means in the chair-type massage machine of the present embodiment.

[Fig. 6]

Fig. 6 is a diagram enlarging and illustrating the backward extension means in the present embodiment.

[Fig. 7]

Fig. 7 is a diagram illustrating the chair-type massage machine in a state where a footrest part is extended forward by forward extension means (additional extension means is not used).

[Fig. 8]

Fig. 8 is a diagram illustrating the chair-type massage machine in a state where the footrest part is extended forward by the forward extension means and in a state where the footrest part is further extended forward using the additional extension means.

Description of Embodiments

[0015]

In the following, an embodiment of the chair-type massage machine 1 of the present invention will be described on the basis of the drawings.

In addition, Fig. 1 to Fig. 8 are ones illustrating a chair-type massage machine 1 according to the present embodiment.

As illustrated in Fig. 1, the chair-type massage machine 1 of the present invention includes a seat part 2 on which a user can sit, and is one that gives a massage to a user sitting on the seat part 2. Specifically, at the back of the seat part 2, a backrest part 3 is provided, and using a massage part incorporated in the backrest part 3, a massage action is provided to the back of a user reclining on the backrest part 3.

[0016]

Note that the chair-type massage machine 1 of the present embodiment is one referred to as a so-called "mini-sofa type". That is, when not giving a massage to the back, the backrest part 3 can be stored below such that the upper end of the backrest part 3 becomes substantially even with the upper surfaces of armrest parts 5. The appearance of the chair-type massage machine 1 at this time is one similar to, for example, a sofa, a legless chair, or the like, and this is why

the chair-type massage machine 1 of the present embodiment is referred to as a "mini-sofa type".

[0017]

Also, in an attitude illustrated in Fig. 1, at the front of the seat part 2, the chair-type massage machine 1 of the present embodiment has a footrest part 6 for massaging the legs of a user. The chair-type massage machine 1 in Fig. 1 is one when massaging the legs, and the above-described footrest part 6 is capable of being stored on the lower side of the seat part 2 when not massaging the legs.

Note that in the following drawings, for ease of describing the internal structure of the chair-type massage machine 1, the disposed positions and structure of members may be partially omitted or drawn in a partially transparent manner in each drawing.

[0018]

For example, in Fig. 1, the backrest part 3 is illustrated such that a frame structure provided inside the backrest part 3 can be visually recognized; however, usually, the front of the backrest part 3 is provided with a member such as a cover, and the frame structure cannot be visually recognized. That is, Fig. 1 is one that makes it possible to visually recognize the frame structure with the cover omitted.

Also, Fig. 2 to Fig. 5, Fig. 7, and Fig. 8 are adapted to be able to visually recognize backward extension means 7 and forward extension means 8, which are the features of the chair-type massage machine 1 of the present invention, by omitting not only the cover provided on the backrest part 3 but the armrest parts 5 on both left and right sides.

[0019]

Further, in the following description, the left/right direction of Fig. 2 is referred to as the front/back direction of the actual machine, and the up/down direction of Fig. 2 is referred to as the up/down direction of the actual machine. The sheet penetration direction in Fig. 2 is referred to as the left/right direction or width direction of the actual machine. These directions coincide with directions as viewed from a user sitting on the seat part 2, and indicated using arrows in typical drawings.

Next, the seat part 2, backrest part 3, massage part, and footrest part 6 constituting the chair-type massage machine 1 of the present embodiment will be described.

[0020]

The seat part 2 is a part formed at the center in the front/back direction and left/right direction of the chair-type massage machine 1, and a part on which a user

to be massaged is to sit. The upper surface of the seat part 2 is formed in a flat surface shape large enough to support the buttocks of a user from below, and in order to improve user's sitting comfort, formed using a cushioning material or the like. Below the seat part 2, a base frame 9 that supports the seat part 2 with the upper surface facing in substantially the horizontal direction above a floor surface F is provided.

[0021]

As illustrated in Fig. 2 to Fig. 4, the base frame 9 is formed by combining multiple rod-like members such as metallic pipe members and angle members in the up/down direction, in the left/right direction, and in the front/back direction in a crossed manner. The base frame 9 is formed such that the appearance becomes tower-shaped, and can support the seat part 2 so as to position the seat part 2 at a predetermined height from the floor surface F.

The lower side of the above-described base frame 9 is hollow, and between the seat part 2 and the floor surface F, a space capable of storing the above-described footrest part 6 in the up/down direction is formed. That is, when not massaging the legs of a user, the chair-type massage machine 1 of the present embodiment is capable of storing the footrest part 6 with the footrest part

6 drawn into (on the lower side of) the seat part 2.

[0022]

The backrest part 3 is a member that has an area large enough to support the back of a user over a wide range from the waist to the shoulders and is formed in a substantially rectangular shape in a front view, inside which a cushioning material is provided. The backrest part 3 is capable of being extended (elongated) backward with the seat part 2 as a reference, using the below-described backward extension means 7, and adapted to be able to give a massage to a user in an attitude of being extended backward, in other words, in a reclined attitude.

[0023]

Inside the backrest part 3, a backrest frame 10 capable of supporting weight placed from the back of a user, and the massage part adapted to provide a massage action to a treatment region on the back of a user sitting on the seat part 2, such as kneading, tapping, or vibration. The massage part uses, for example, a back massaging device (a device enabling an action on a treatment region, such as kneading, tapping, or vibration, or a lifting/lowering action on the backrest frame 10, using a rotational driving force generated by an electric motor) disclosed in Japanese Unexamined Patent

Publication JP-A2012-165852.

[0024]

The backrest frame 10 is a frame body capable of sufficiently supporting the back of a user, in which multiple rod-like members are combined in a substantially rectangular shape in a plan view, and capable of supporting the above-described cushioning material from below (back). The backrest frame 10 is a structure in which the upper ends and lower ends of a pair of left and right longitudinal frames 10a extending in the up/down direction are mutually connected via a pair of upper and lower lateral frames 10b extending in the left/right direction, and as viewed from the front, formed in a rectangular shape (substantially square shape) long in the up/down direction. In front of the pair of left and right longitudinal frames 10a, sub-frames 10c are provided parallel to the longitudinal frames 10a. Also, on the lower sides of the longitudinal frames 10a and sub-frames 10c, side frames 11 are provided in such a manner as to project outward in the width direction. The side frame 11 for the left longitudinal frame 10a and that for the right longitudinal frame 10a are provided in such a manner as to project in the left direction and in the right direction, respectively, and the outer side of each of the side frames 11 in the width

direction is attached with the below-described backward extension means 7.

[0025]

Meanwhile, the footrest part 6 is a member capable of treating the legs (legs on the lower sides of the knees) of a user, and capable of being stored on the lower side of the above-described seat part 2. The footrest part 6 is a member that is formed in a substantially rectangular shape as viewed from the front and in a triangular shape as viewed from the side. In the state of Fig. 1, at the front of the footrest part 6, leg insertion parts 12 (concave parts) capable of being inserted with the legs on the lower sides of the knees of a user are formed one by one on the left and right in such a manner as to open forward and upward. The leg insertion parts 12 are adapted to be inserted with the legs of a user from the front.

[0026]

Inside the footrest part 6, a foot massage mechanism (illustration is omitted) adapted to give a massage to the legs of a user inserted into the leg insertion parts 12 is provided. Also, on the lower side of the footrest part 6, rolling elements 13 that at the time of extension in the front/back direction by the forward extension means 8, roll on the floor surface F to help the footrest

part 6 smoothly move are provided.

In addition, as illustrated in Fig. 1, on both the left and right sides of the above-described seat part 2, the armrest parts 5 for placing the elbows of a user sitting on the seat part 2 are disposed. The armrest parts 5 are plate-like members disposed in such a manner as to rise in the up/down direction, and the upper surfaces are formed substantially horizontally for ease of placing the elbows. Note that the armrest parts 5 are not members significantly related to the features of the present invention, and therefore in Fig. 2 and following, illustrated omitted.

[0027]

Meanwhile, the chair-type massage machine 1 of the present invention is one characterized by including the backward extension means 7 adapted to extend the above-described backrest part 3 backward and then protrude the backrest part 3 with the seat part 2 as a reference. Also, the chair-type massage machine 1 of the present invention is one including not only the backward extension means 7 but the forward extension means 8 adapted to extend the footrest part 6 forward with the seat part 2 as a reference. Providing the backward extension means 7 and/or the forward extension means 8 makes it possible to extend the length from the backrest

part 3 to the footrest part 6 in the back and front directions with the seat part 2 as a boundary, and therefore a massage can be given to users of various builds in a relaxed posture in which the legs are stretched.

[0028]

In the following, between the backward extension means 7 and the forward extension means 8, which are the features of the chair-type massage machine 1 of the present invention, the backward extension means 7 will be described first.

As illustrated in Fig. 5, the backward extension means 7 is one that with a guide body 15 (detailed structure will be described later) provided on the backrest part 3 side being fitted into a long groove 14 provided on the seat part 2 side, guides the backrest part 3 along the formation direction of the long groove 14. The long groove 14 provided for the backward extension means 7 makes it possible to extend the backrest part 3 backward with respect to the seat part 2.

[0029]

As illustrated in Fig. 6, the long groove 14 is a groove formed along the up/down direction in a guide plate 16 formed on the base frame 9, and has a groove width enough to be fitted with the guide body 16. The long

groove 14 is linearly formed along substantially the up/down direction (vertical direction) from the lower side thereof to the middle side in the up/down direction. Also, the upper side of the long groove 14 curves backward as compared with the lower side of the long groove 14 formed along the up/down direction. That is, the upper long groove 14U is one tilting along the horizontal direction.

[0030]

For this reason, when moving the guide body 15 along the long groove 14 with the guide body 15 positioned in the lower long groove 14D, the guide body 15 is guided only in the up/down direction, but hardly moves in the front/back direction. However, when positioned in the upper long groove 14U, the guide body 15 is guided only in the horizontal direction, and the position of the backrest part 3 moves backward with the seat part 2 as a reference to make it possible to extend the above-described backrest part 3 backward with respect to the seat part 2.

[0031]

Specifically, the above-described long groove 14 is formed in the guide plate 16 provided on a side part on the back end side of the base frame 9. The guide plate 16 is a band plate formed in a rectangular shape, in which

approximately 1/4 of the upper side along the longer direction bends backward and is formed in a substantially chevron shape. That is, the guide plate 16 is attached to the base frame 9, disposed along the up/down direction from the lower end part to the bend position and tilted from the bend position to the upper end part.

[0032]

The guide plate 16 is provided on each of the left part and right side parts of the base frame 9, and the above-described long groove 14 is formed in each of the left and right guide plates 16 in such a manner as to penetrate through the guide plate 16 in the left/right direction and also extend in the up/down direction. The long groove 14 is fitted with the guide body 15 provided on the side part of the backrest part 3.

The guide body 15 is a member formed on the side part of the backrest part 3, i.e., on the side frame 11 of the backrest part 3, and by being guided in the formation direction of the long groove 14 in a state of being fitted into the long groove 14, can guide the backrest part 3 in the up/down direction or in the front/back direction with respect to the seat part 2. The guide body 15 is configured to include: an upper guide body 17 disposed on the upper side of the side frame 11; and a lower guide body 18 disposed at a position separated

on the lower side of the upper guide body 17 on the side frame 11. That is, the guide body 15 is configured to engage with the long groove 14 at the two, upper and lower, positions, and lift/lower or tilt the backrest part 3.

[0033]

Specifically, the upper guide body 17 and the lower guide body 18 are members each in which two cylindrical bodies having almost the same diameter are coaxially combined in the width direction (left/right direction). Both of the two cylindrical bodies have a larger diameter than the groove width (opening width) of the above-described long groove 14, and by being separately disposed on one side and the other side of the opening of the long groove 14, can engage with the long groove 14 in such a manner as to sandwich the long groove from the left and right. Providing such a guide body 15 suppresses the guide body 15 from coming out (dropping out) of the long groove 14 in the left/right direction. In addition, the guide body 15 is capable of moving in the up/down direction with respect to the long groove 14, and can move the backrest part 3 along the formation direction of the long groove 14.

[0034]

As illustrated in Fig. 5 and Fig. 6, the above-described upper guide body 17 is attached to the

fore end of a first shaft 19 that is disposed with a shaft center facing in the left/right direction, and the lower guide body 18 is attached to the fore end of a second shaft 20 that is disposed with a shaft center facing in the left/right direction as with the first shaft 19.

The first shaft 19 is a rod-like member protruding from the side surface of the side frame 11 outward in the width direction, and formed in a rod-like shape having a smaller diameter than the opening width of the above-described long groove 14. Specifically, there are two first shafts 19, i.e., a left shaft protruding from the side surface of the left side frame 11 leftward and a right shaft protruding from the side surface of the right side frame 11 rightward. The fore ends of the left and right first shafts 19 are attached with the above-described upper guide bodies 17, and the upper guide bodies 17 are respectively fitted into the left and right long grooves 14 movably in the up/down direction.

[0035]

Also, the second shaft 20 is a rod-like member penetrating from the left end to right end of the backrest frame 10 in the left/right direction, and disposed through the backrest frame 10 rotatably around an axis facing in the left/right direction. At both of the left

and right ends of the second shaft 20, the guide bodies 15 are disposed as with the first shafts 19, and the lower guide bodies 18 are also respectively fitted into the left and right long grooves 14 movably in the up/down direction.

[0036]

Further, the above-described backward extension means 7 includes a lifting/lowering mechanism 21 adapted to lift/lower the backrest part 3 with respect to the seat part 2. The lifting/lowering mechanism 21 includes: a rack part 22 provided corresponding to the long groove 14 (in the present embodiment, along the long groove 14); and a pinion gear 23 that is rotationally driven meshing with the rack part 22 and thereby moves the guide body 15 provided to the backrest part 3 along the long groove 14. To the pinion gear 23, a rotational driving force is transmitted from a lifting/lowering motor 24 positioned on the lower left side of the backrest frame 10.

[0037]

Specifically, the above-described lifting/lowering motor 24 is disposed such that the shaft center of a drive shaft faces in the up/down direction, and adapted to be able to rotationally drive the second shaft 20 around an axis facing in the left/right direction

by transmitting the rotational driving force generated in the drive shaft to the second shaft 20 via a worm gear.

The pinion gear 23 is a gear (spur gear) provided on the second shaft 20 positioned on the inner side in the width direction than the above-described guide body 15, and can rotate integrally with the second shaft 20.
[0038]

The rack part 22 is adapted to be able to mesh with the pinion gear 23, and attached to the above-described guide plate 16 along the up/down direction with the addendum facing backward. Specifically, the rack part 22 is attached to the guide plate 16 along the opening edge (front side opening edge) of the above-described long groove 14, and meshed with the pinion gear 23 from the front.

[0039]

Therefore, when rotationally driving the second shaft 20 using the above-described lifting/lowering motor 24, the pinion gear 23 integrally attached to the second shaft 20 also rotates. As a result, the pinion gear 23 moves in the up/down direction in a state of meshing with the rack part 22, and the backrest part 3 provided with the pinion gear 23 lifts/lowers with respect to the seat part 2 (base frame 9) provided with the rack part 22.

[0040]

Further, a positioning sensor 25 adapted to sense the position of the guide body 15 in the long groove 14 is disposed on the surface of the guide plate 16 facing outward in the width direction (in the case of the left guide plate 16, the surface facing to the left, and in the case of the right guide plate 16, the surface facing to the right). The positioning sensor 25 is disposed at each of the upper groove end and lower groove end of the long groove 14, and can sense that the guide body 15 reaches a groove end of the long groove 14, in other words, sense that the state of the backrest part 3 is any of the below-described "storage state", "protrusion state", and "reclined state".

[0041]

When extending the backrest part 3 backward using the above-described backward extension means 7, it is only necessary to perform an operation in the following procedure.

As described above, in the chair-type massage machine 1 of the present invention, when not giving a massage to the back, the backrest part 3 is stored with the height lowered such that the upper end of the backrest part 3 become substantially even with the upper surfaces of the armrest parts 5. This state (attitude) of the

backrest part 3 stored with the height lowered is one referred to as the "storage state (storage attitude)", and as illustrated in Fig. 2.

[0042]

That is, as illustrated in Fig. 2, in the chair-type massage machine 1 in the "storage state", the backrest part 3 is lowered such that the lower end of the backrest part 3 is positioned slightly on the upper side of the floor surface F, and the upper end of the backrest part 3 is substantially even with the upper surfaces of the backrest parts 5. In this "storage state", the lower half of the backrest part 3 is positioned below the seat part 2 on which a user is to sit, and therefore the back of a user cannot be satisfactorily treated with the massage part incorporated in the backrest part 3. That is, the "storage state" is one where without giving a massage to the back, the backrest part 3 is stored so as to prevent interference.

[0043]

Therefore, when giving a massage to the back using the chair-type massage machine 1, it is necessary to lift the backrest part 3 in a position corresponding to the "storage state" upward and change the state (attitude) of the backrest part 3 from the "storage state (storage attitude)" to the "protrusion state (protrusion

attitude)".

That is, by rotationally driving the above-described lifting/lowering motor 24, the rotational driving force of the lifting/lowering motor 24 is transmitted to the second shaft 20. In doing so, the pinion gear 23 integrally attached to the second shaft 20 also rotates, and the backrest part 3 starts moving upward with respect to the seat part 2 with the pinion gear 23 meshing with the rack part 22 provided on the guide plate 16 (base frame 9 of the seat part 2).

[0044]

Specifically, the guide body 15 is capable of moving in the up/down direction in a state of being retained in the left/right direction with respect to the above-described long groove 14, and can therefore be moved upward along the formation direction of the long groove 14. The long groove 14 is formed substantially linearly from the lower side to the bend position (position approximately 3/4 from the lower end) along the up/down direction, and therefore the guide body 15 is linearly guided in the up/down direction. For this reason, the backrest part 3 moves in the up/down direction from the "storage state" to the "protrusion state", but hardly moves in the front/back direction.

[0045]

Then, when the guide body 15 reaches the bend position (curved position) of the long groove 14, the attitude of the backrest part 3 becomes the "protrusion state (protrusion attitude)".

As illustrated in Fig. 3, in the chair-type massage machine 1 in the "protrusion state (protrusion attitude)", the lower end of the backrest part 3 is substantially even with the upper surface of the seat part 2, and the entire range of the backrest part 3 along the up/down direction is positioned above the seat part 2 on which a user is to sit. For this reason, the back of a user can be sufficiently treated with the massage part incorporated in the backrest part 3.

[0046]

Note that the "protrusion state" is one for massaging the back of a user who sits on the seat part 2 with the upper body raised, but not one for enabling treatment in a relaxed posture (reclined posture) in which a user reclines the upper body backward.

That is, when receiving treatment in the relaxed state where the upper body is reclined backward, it is necessary to further bring the chair-type massage machine 1 in the "protrusion state (protrusion attitude)" into the "reclined state (reclined attitude)".

[0047]

Therefore, in the chair-type massage machine 1 of the present embodiment, the attitude of the backrest part 3 is further changed from the "protrusion state" to the "reclined state" using the backward extension means 7.

That is, when further continuously rotationally driving the lifting/lowering motor 24, the pinion gear 23 rotates to cause the pinion gear 23 to mesh with the rack part 22 provided on the guide plate 16 (base frame 9 of the seat part 2), and the guide body 15 moves in an upper direction than the bend position.

[0048]

The above-described lower long groove 14D is linearly formed along the up/down direction, but the upper long groove 14U is one tilting backward. For this reason, when moving the upper guide body 17 further in an upper direction (more backward direction) than the bend position along the long groove 14, the lower guide body 18 exists in the lower long groove 14D linearly formed in the up/down direction, whereas the upper guide body 17 moves backward along the upper long groove 14U tilting backward, so that the upper side of the backrest part 3 swings around the lower side and the attitude of the backrest part 3 is changed to a backward reclined one. That is, when changing the attitude of the backrest part 3 from the "protrusion state" to the "reclined state",

the backrest part 3 only moves backward with little change in position in the up/down direction.

[0049]

Then, when the upper guide body 17 reached the upper end (back end) of the long groove 14, the above-described positioning sensor 25 senses that the attitude of the backrest part 3 is the "reclined state (reclined attitude)".

As illustrated in Fig. 4, in the chair-type massage machine 1 in the "reclined state (reclined attitude)", the backrest part 3 is one tilting backward, so that a user can recline the upper body backward to lie on the back and receive treatment in a relaxed state.

[0050]

From the above, in the chair-type massage machine 1 provided with the above-described backward extension means 7, not only by protruding the backrest part 3 upward to change the height but by extending the backrest part 3 backward with respect to the seat part 2, the length of the chair-type massage machine 1 along the front/back direction can be increased. Therefore, in the chair-type massage machine 1 of the present embodiment, a user can be treated in a relaxed state like in a posture of reclining the upper body backward to lie on the back while ensuring sufficient length in the front/back

direction.

[0051]

Also, in the chair-type massage machine 1 of the present embodiment capable of ensuring sufficient length in the front/back direction, even when a particularly large user attempts to receive a massage, it is possible to surely bring the massage part into contact with a treatment region positioned at the end in an extension direction, such as the back, and a sufficient massage can be given to users of various builds.

Meanwhile, as illustrated in Fig. 7 and Fig. 8, the chair-type massage machine 1 of the present invention is provided with the forward extension means 8 adapted to extend the footrest part 6 forward with the seat part 2 as a reference.

[0052]

The forward extension means 8 is one including: footrest advancing means 26 adapted to draw out the footrest part 6 forward from below the seat part 2; and additional extension means 27 adapted to extend further forward the footrest part 6 advanced by the footrest advancing means 26. For example, when a user of large build massages his/her legs using the footrest part 6, a drawn position of the footrest part 6 may be too close to the seat part 2 to prevent receiving a sufficient

massage, or due to a cramped posture, treatment may not be received in a relaxed posture.

[0053]

Even in such a case, in the chair-type massage machine 1 of the present invention, the drawn position of the footrest part 6 can be changed further forward using the forward extension means 8, and it is possible to give a massage to a user of large build in a relaxed state where the legs are stretched.

Specifically, the forward extension means 8 includes the footrest advancing means 26 that is provided between the seat part 2 and the footrest part 6 and adapted to draw out the footrest part 6 forward from below the seat part 2. In addition, the forward extension means 8 includes the additional extension means 27 adapted to extend further forward the footrest part 6 advanced by the footrest advancing means 26.

[0054]

Next, the footrest advancing means 26 and additional extension means 27 constituting the forward extension means 8 in the present invention will be described.

The footrest advancing means 26 includes: a rod-like swing arm member 28 attached to the lower side of the seat part 2 on the base frame 9 swingably around

an axis facing in the left/right direction; and a footrest drive motor 29 for swinging the swing arm member 28 forward with respect to the base frame 9.

[0055]

The above-described swing arm member 28 is a member connecting the base frame 9 and the footrest part 6, and formed by connecting together three rod-like members, i.e., a first arm member 30, a second arm member 31, and a third arm member 32 from the base frame 9 side in the longer direction. The first arm member 30 to the third arm member 32 are provided as one set on each of the left and right sides of the seat part 2, and the two sets in total including both sides constitute the swing arm member 28.

[0056]

The first arm member 30 is a rod-like member as short as approximately $1/4$ to $1/2$ of the second arm member 31 and third arm member 32. One end side (base frame 9 side) of the first arm member 30 is connected to the lower side of the seat part 2 on the base frame 9 swingably around an axis facing in the left/right direction. Also, the other end side (footrest part 6 side) of the first arm member 30 is connected to one end side of the second arm member 31 swingably around an axis facing in the left/right direction.

[0057]

In addition, the other end side of the first arm member 30 provided on the left side of the seat part 2 and the other end side of the first arm member 30 provided on the right side are connected by a connecting shaft 33 facing in the left/right direction. Further, the connecting shaft 33 is attached with the below-described actuator 34.

The second arm member 31 is a rod-like member having almost the same length as the third arm member 32, and connects the first arm member 30 and the third arm member 32. The one end side (base frame 9 side) of the second arm member 31 is connected to the other end side of the first arm member 30 swingably around the axis facing in the left/right direction. Also, the other end side (footrest part 6 side) of the second arm member 31 is connected to one end side of the third arm member 32 swingably around an axis facing in the left/right direction.

[0058]

The third arm member 32 is a rod-like member connecting the second arm member 31 and the footrest part 6. The one end side (base frame 9 side) of the third arm member 32 is connected to the other end side (footrest part 6 side) of the second arm member 31 swingably around

the axis facing in the left/right direction. The other end side of the third arm member 32 is attached with the rolling element 13 capable of rolling on the floor surface F. At the middle side of the third arm member 32 in its longer direction, a support body 35 for the additional extension means 27 is disposed.

[0059]

The footrest drive motor 29 is disposed on the back side of the base frame 9, and transmits a rotational driving force to the above-described actuator 34. The actuator 34 is adapted to be expandable/contractable in its longer direction (front/back direction) using the rotational driving force generated by the footrest drive motor 29, and to be able to, in the front/back direction, expand/contract the fore end side attached to the connecting shaft 33 with respect to the base end side attached to the footrest drive motor 29.

[0060]

That is, when driving the footrest drive motor 29, the actuator 34 expands in the front/back direction, and the position of the connecting shaft 33 moves forward. In doing so, the other end side of the first arm part of the swing arm member 28 attached with the connecting shaft 33 swings forward around the one end side. In addition, the second arm member 31 and the third arm

member 32 move forward interlocking with the forward swing of the first arm member 30, and the footrest part 6 moves forward on the floor surface F while rolling the rolling elements 13 and is drawn out forward from the lower side of the seat part 2.

[0061]

Further, when drawing the footrest part 6, which was drawn out forward, into the lower side of the seat part 2, the footrest drive motor 29 is rotated to the opposite side to a side at the time of drawing out. In doing so, in the procedure opposite to that at the time of drawing out, the footrest part 6 is drawn into the lower side of the seat part 2.

Meanwhile, when a large user draws out the footrest part 6 forward using the above-described footrest advancing means 26 to massage the legs, the length from the buttocks to legs of the user also increases when the build is large, and therefore the advanced position of the footrest part 6 may be too close to the near side as viewed from the user. In such a case, treatment may be difficult because the legs cannot be inserted into the footrest part 6, or even when the insertion can be done, treatment is given with a cramped posture kept, and as a result sufficient relaxation may not be obtainable.

[0062]

Therefore, the forward extension means 8 in the present embodiment is adapted to be capable of changing the advanced position of the footrest part 6 further forward by providing not only the above-described footrest advancing means 26 but the additional extension means 27.

The additional extension means 27 supports the footrest part 6, and also includes: the support body 35 to be drawn out forward by the footrest advancing means 26; and a link mechanism 36 that connects the footrest part 6 swingably in the front/back direction with respect to the support body 35.

[0063]

The support body 35 is a long member disposed at the middle side of the third arm member 32 of the above-described swing arm member 28 in the longer direction. The support body 35 is a member whose length is approximately 1/2 of the third arm member 32, and fixed to the other end side of the third arm member 32.

The fore end side of the support body 35 in its longer direction (front end side in Fig. 8) is provided with a first link member 37 that is adapted to be swingable around an axis facing in the left/right direction with respect to the support body 35. Also, at the middle side

of the support body 35 in the longer direction, as with the first link member 37, a second link member 38 adapted to be swingable around an axis facing in the left/right direction with respect to the support body 35 is provided. Further, the base end side (back end side in Fig. 8) of the support body 35 in the longer direction is provided with biasing means 39 connecting the above-described first link member 37 and the support body 35. The biasing means 39 biases the first link member 37 in a direction to be drawn backward, and is configured to, when pulling out the legs, automatically restore the footrest part 6 to the state before the extension.

[0064]

The link mechanism 36 is configured to include the above-described first link member 37 and second link member 38.

The first link member 37 and the second link member 38 are both long members having a length comparable to the above-described support body 35. As for these link members 37 and 38, as compared with the base end sides swingably connected to the support body 35, the fore end sides are connected to the footrest part 6. Specifically, on the side surface of the footrest part 6, a footrest support part 40 that supports the footrest part 6 rotatably around a rotating shaft 41 facing in the

left/right direction is disposed. The fore end sides of the above-described first link member 37 and second link member 38 are swingably connected to the footrest support part 40.

[0065]

That is, the above-described first link member 37, second link member 38, support body 35, and footrest support part 40 constitute the link mechanism 36 adapted to swing the footrest part 6 forward with respect to the third arm member 32.

Providing the additional extension means 27 including such a link mechanism 36 and pressing the footrest part 6 forward against the biasing force of the biasing means 39 make it possible to swing the link mechanism 36 forward and change the advanced position of the footrest part 6 further forward. As a result, even when a user of large build uses the footrest part 6 to treat the legs, the legs can be inserted into the footrest part 6 without any difficulty, and the legs can be satisfactorily treated. Also, during the treatment of the legs, the posture of the user never becomes a cramped posture, and sufficient relaxation can be provided to the user.

[0066]

Further, with the state of Fig. 1 as a reference,

the footrest part 6 has, at the front, the leg insertion parts 12 (concave parts) insertable with the legs below the knees of a user. On the other hand, at the back (back surface) on the opposite side to the front (front surface) provided with the leg insertion parts 12, the footrest part 6 is provided with a leg placing part 42 capable of being placed with the legs of a user. As described above, on the side surface of the footrest part 6, the footrest support part 40 that supports the footrest part 6 rotatably around the rotating shaft 41 facing in the left/right direction is provided, and the footrest part 6 is configured to be able to change the attitude of the footrest part 6 to both of a massage attitude (attitude illustrated in Fig. 7 and Fig. 8) in which the leg insertion parts 12 face upward (user side) and a rest attitude (attitude indicated by a virtual line in Fig. 8) in which the leg placing part 42 faces upward by being rotated around the rotating shaft 41 using the footrest support part 40.

[0067]

Note that the embodiment disclosed this time is an exemplification in all aspects and should not be construed to be restrictive. In particular, matters not explicitly disclosed in the embodiment disclosed this time, such as operating conditions or process

requirements, various parameters, and the sizes, weights, and volumes of components, are not departing from a range generally implemented by a person skilled in the art, and values easily anticipatable by a person skilled in the art are adopted.

Reference Signs List

[0068]

- 1 Chair-type massage machine
- 2 Seat part
- 3 Backrest part
- 4 Massage part
- 5 Armrest part
- 6 Footrest part
- 7 Backward extension means
- 8 Forward extension means
- 9 Base frame
- 10 Backrest frame
- 10a Longitudinal frame
- 10b Lateral frame
- 10c Sub-frame
- 11 Side frame
- 12 Leg insertion part (concave part)
- 13 Rolling element
- 14 Long groove
- 15 Guide body

16 Guide plate
14U Upper long groove
14D Lower long groove
17 Upper guide body
18 Lower guide body
19 First shaft
20 Second shaft
21 Lifting/lowering mechanism
22 Rack part
23 Pinion gear
24 Lifting/lowering motor
25 Positioning sensor
26 Footrest advancing means
27 Additional extension means
28 Swing arm member
29 Footrest drive motor
30 First arm member
31 Second arm member
32 Third arm member
33 Connecting shaft
34 Actuator
35 Support body
36 Link mechanism
37 First link member
38 Second link member

39 Biasing means
40 Footrest support part
41 Rotating shaft
42 Leg placing part
F Floor surface

CLAIMS

1. A chair-type massage machine comprising: a seat part; a backrest part that is disposed at a back of the seat part and provided so as to be able to support a back of a user; and a massage part that is incorporated in the backrest part and provides a massage action to a user sitting on the seat part, the chair-type massage machine comprising

backward extension means that is adapted to extend the backrest part backward with the seat part as a reference,

the backward extension means comprising: a long groove provided facing in an up/down direction on a seat part side; a guide body that is provided on the backrest part, fitted into the long groove, and guided along the long groove; and

an upper side of the long groove curving backward.

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

at a front of the seat part, a footrest part adapted to massage a leg of a user is provided,

the chair-type massage machine comprising forward extension means adapted to extend the footrest part forward with the seat part as a reference.

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

the backward extension means and/or the forward extension means make it possible to extend a length from the

backrest part to the footrest part both forward and backward with the seat part as a boundary.

4. The chair-type massage machine according to claim 1, wherein

the long groove comprises: a lower groove extending along the up/down direction; and an upper groove that is formed connecting to an upper side of the lower groove and falls backward greater than the lower groove, and

the backward extension means is configured to come into:

when the guide body is positioned in the lower groove, a storage state where a lower side of the backrest part is stored below the seat part;

when the guide body is positioned at a boundary between the lower groove and the upper groove, a protrusion state where the lower side of the backrest part protrudes upward; and

when the guide body is positioned in the upper groove, a state where the backrest part having moved to the protrusion state reclines backward and extends backward.

5. The chair-type massage machine according to claim 1 or 4, wherein

the backward extension means comprises:

a rack part provided inside the long groove or along the long groove; and

a pinion gear that is rotationally driven meshing with the rack part, and thereby along the long groove, moves the guide body provided on the backrest part.

6. The chair-type massage machine according to claim 2 or 3, wherein

the footrest part is capable of being stored on a lower side of the seat part,

between the seat part and the footrest part, footrest advancing means adapted to draw out the footrest part forward from the lower side of the seat part is provided, and

the footrest advancing means is provided with additional extension means adapted to extend the footrest part having been advanced by the footrest advancing means further forward.

7. The chair-type massage machine according to claim 6, wherein

the additional extension means comprises:

a support body that supports the footrest part and is drawn out forward by the footrest advancing means; and

a link mechanism adapted to connect the footrest part swingably in a front/back direction with respect to the support body.

8. The chair-type massage machine according to one of claims 2, 3, 6, and 7, wherein

the footrest part comprises, at a front, a leg insertion part capable of being inserted with the leg of the user, as well as comprises, at a back, a leg placing part capable of being placed with the leg of the user, and

is configured to, by rotating around an axis facing in a left/right direction, be able to change an attitude to both of a massage attitude in which the leg insertion part faces upward and a rest attitude in which the leg placing part faces upward.