

SPECIFICATION

TITLE OF THE INVENTION

MESSAGE MACHINE

Technical Field

[0001]

The present invention relates to a message machine in which a message mechanism is housed. In particular, the present invention relates to a chair-type message machine used in a state where a user sits on a seat part.

Background Art

[0002]

In the past, a message mechanism of a chair-type message machine has been housed inside a backrest part, and has produced at least one or more message actions among kneading, tapping, finger pressure, and vibration. As such a message machine housing a message mechanism (back massaging device), for example, there is one disclosed in Patent Literature 1.

Citation List

Patent Literatures

[0003]

Patent Literature 1: Japanese Unexamined Patent

Publication JP-A2014-210005

Summary of Invention

Technical Problem

[0004]

Meanwhile, users have demanded to give various massages to treatment regions such as shoulder regions.

As a massage machine responding to the demand, for example, as disclosed in Patent Literature 1, there is one including an advancing/retreating mechanism that makes the forward protrusion amount of treatment tips (massage members) variable. The advancing/retreating mechanism protrudes the treatment tips forward by inflating an airbag (air cell) (see FIG. 27 and the like).

[0005]

However, the advancing/retreating mechanism is based on the airbag, and therefore compressed and deformed by the load or the like of a user, and it is though that in an actual massage action, the treatment tips do not protrude as expected. That is, a press against a treatment region may be weak.

Meanwhile, in the past, as a guide rail for moving a massage mechanism in a chair-type massage machine in an up-down direction, there have been many single continuous and fixed ones (see FIGS. 13 to 19 and the

like of Patent Literature 1). In the case of such a massage machine including a single fixed guiderail, the forward protrusion amount of treatment tips is limited.

[0006]

That is, even when employing the advancing/rereating mechanism as disclosed in Patent Literature 1 to the conventional massage machine including the single fixed guiderail, the protrusion amount of treatment tips is different from an expected one, thus resulting in a low massage effect.

In the case of the massage machine as disclosed in Patent Literature 1, it is unclear whether the users' demand to give various massages to treatment regions can be surely realized.

[0007]

Therefore, in consideration of the above problem, an object of the present invention is to provide a massage machine making it possible to make the whole of the machine simple and compact and easily switch massage positions, as well as to give various massage effects to users.

Solution to Problem

[0008]

In order to accomplish the above object, the present

invention takes the following technical means.

The massage machine according to the present invention includes: a massage mechanism that gives a massage action to a treatment region; a movement drive part that moves the massage mechanism along a predetermined track from one side to the other side of the track; and a switching mechanism that switches a moving direction of the massage mechanism to multiple directions by changing the bending level of the track.

[0009]

Preferably, it is only necessary that the switching mechanism includes a connection part that, when changing the bending level of the track, enables the massage mechanism to continuously move through a bending site present on the track.

Preferably, it is only necessary that the track is formed by making a first track and a second track butt on each other in a longer direction, the connection part is formed in a site of the butting, and the bending level of the track is configured to be changeable by swinging the first track or the second track around a shaft center orthogonal to the longer direction in the connection part.

[0010]

Preferably, it is only necessary that the track is

formed by making a first rail member and a second rail member butt on each other in the longer direction, the massage mechanism includes a guide member that rolls or slides on the first rail member and the second rail member, and the guide member continuously moves through the connection part and thereby the massage mechanism continuously moves from the first rail member to the second rail member.

[0011]

Preferably, it is only necessary that the massage mechanism includes: a rotary shaft that is disposed in a direction intersecting with the track and transmits rotary drive force of the movement drive part; and a drive member provided to the rotary shaft, the massage mechanism is configured to be moved from the one side to the other side or the other side to the one side of the track by the rotary drive force transmitted by the drive member, and the massage mechanism is configured to, when the guide member continuously moves through the connection part and the massage mechanism moves from the first rail member to the second rail member, tilt around a shaft center of the rotary shaft that transmits the rotary drive force of the movement drive part.

[0012]

Preferably, it is only necessary that a drive rail

member of the drive member is disposed along the first rail member, and an end part of the drive rail member is disposed at a position separated from the connection part to a side opposite to the second rail member.

Preferably, it is only necessary that in the connection part, the first rail member includes a first connection piece protruding in the longer direction, and the second rail member includes a second connection piece protruding in the longer direction; the first connection piece and the second connection piece are disposed overlapping in a side view; a side surface of the first connection piece and a side surface of the second connection piece keep a contact state even when a bending angle of the track has any value; and a guide surface of the first connection piece and a guide surface of the second connection piece are in a state of being continuously connected, and at least one of the guide surface of the first connection piece and the guide surface of the second connection piece is in a state of constantly contacting with the guide member.

[0013]

Preferably, it is only necessary that the massage machine includes: a main body part provided with the massage mechanism; a swing part that is made swingable with respect to the main body part; and a posture changing

part that swings and changes the posture of the swing part in a predetermined direction with respect to the main body part, in which: the main body part is provided with the first rail member; the swing part is provided with the second rail member; and when the posture of the swing part is changed by the posture changing part, the bending level of the second rail member is changed by the switching mechanism and the massage mechanism continuously moves from the main body part to the swing part.

[0014]

Preferably, it is only necessary that the posture changing part is adapted to be a ratchet mechanism that can change the tilting level of the swing part in multiple directions.

Advantageous Effects of Invention

[0015]

According to the present invention, the whole of the machine can be made simple and compact, massage positions can be easily switched, and also various massage effects can be given to users.

Brief Description of Drawings

[0016]

FIG. 1 is a perspective view illustrating the whole of the massage machine according to the present invention (left drawing: a state where a main body part of a backrest part and a headrest part have the same tilt (first posture), right drawing: a state where the headrest part tilts forward, and a massage mechanism protrudes forward of the main body part (second posture)).

FIG. 2 is a front view illustrating the massage machine according to the present invention (left drawing: first posture, right drawing: second posture).

FIG. 3 is a cross-sectional view of the massage machine according to the present invention (left drawing: A-A cross section, right drawing: B-B cross section).

FIG. 4 is a perspective view of the massage machine in the first posture (A-A cross section).

FIG. 5 is an enlarged view of a connection part (C part) of a switching mechanism (first posture).

FIG. 6 is a perspective view of the massage machine in the second posture (B-B cross section).

FIG. 7 is an enlarged view of the connection part (D part) of the switching mechanism (second posture).

FIG. 8 is a view illustrating a continuous movement situation of a guide member in the second posture (first rail to connection part to second rail).

Description of Embodiments

[0017]

In the following, embodiments of the massage machine 1 according to the present invention will be described with reference to the drawings.

In addition, in the present embodiment, description will be given while taking a chair-type massage machine 1 as an example. However, this is an example of embodying the present invention, and such an embodied example does not limit the configuration of the present invention.

Also, for ease of viewing, the drawings are illustrated with parts of components omitted.

[0018]

In the following description, directions indicated in the drawings are defined as directions used when describing the massage machine 1. These coincide with directions as viewed from a user sitting on the massage machine 1.

FIGS. 1 to 8 illustrate the embodiment of the massage machine 1 according to the present invention.

A state illustrated in the left drawings of FIGS. 1 to 3, and in FIGS. 4 and 5 is defined as a "first posture" of the massage machine 1.

[0019]

A state illustrated in the right drawings of FIGS. 1 to 3, and in FIGS. 6 to 8 is defined as a "second posture" of the massage machine 1.

Note that the first posture and the second posture are exemplifications for describing the present embodiment, and not limited to such postures (tilt angles). That is, in addition to these postures, the massage machine may be adapted to have multiple postures.
[0020]

As illustrated in FIG. 1 and the like, the massage machine 1 of the present embodiment has a seat part 2 on which a user can sit and a backrest part 3 provided extending upward from the back end side of the seat part 2, and is one that gives a massage from the back of the neck and shoulder regions to waist region of a user sitting on the seat part 2 and reclining on the backrest part 3.

That is, when using the massage machine 1, a user sits down on the seat part 2, seats his/herself with the back region contacting with the backrest part 3, and using a massage mechanism 30 housed inside the backrest part 3, gives treatment from the back of the neck and shoulder regions to waist region of the user, that is, has a massage on the back region (treatment region).

[0021]

In addition, for example, when the massage machine 1 is reclinable, the back region of a user can be massaged in various postures (such as a tilted posture and an upright posture) of the backrest part 3.

The seat part 2 has an area enough to enable a user to sit, and is provided with a cushioning material on the seat surface (upper surface) side.

[0022]

The backrest part 3 is disposed on the back end side of the seat part 2 in such a manner as to rise facing in a front-back direction, and a member that supports the back region (the waist region to the shoulder regions) in such a manner as to cover the entire surface of the back region. The backrest part 3 is a housing of which the width is slightly wider than the shoulder length of a user, which is of a plate shape elongated in the up-down direction, and of which the inside is hollow. Also, the backrest part 3 is one of which the thickness in the front-back direction is thin as compared with that in a width direction.

[0023]

That is, the backrest part 3 is disposed in such a manner as to lie along the back region of a user. The backrest part 3 has a plate-shaped base body 6 (back side cover) elongated in the up-down direction and a cover

body 7 (front side cover) covering the front surface of the base body 6.

The base body 6 is formed in a plate shape of which the thickness in the front-back direction is thin and which is elongated in the up-down direction. In other words, it can also be said that the base body 6 is formed in a shallow concave shape opening forward.

[0024]

On the front surface of the base body 6, the massage mechanism 30 (details will be described below) is attached movably in the up-down direction. That is, the massage mechanism 30 disposed on the front surface of the base body 6 is moved by a movement drive part 13 (details will be described below) along predetermined tracks 23 from one side to the other side of the tracks 23 (in the up-down direction).

The cover body 7 is formed in a plate shape of which the thickness in the front-back direction is thin and which is elongated in the up-down direction as with the base body 6. In other words, it can also be said that the cover body 7 is formed in a shallow concave shape opening backward.

[0025]

That is, the cover body 7 covers the entire front surface of the base body 6, and thereby closes the

forward-facing opening of the base body 6.

Also, on the central side of the cover body 7 in the width direction, an opening part 8 opening forward is formed along the up-down direction.

The opening part 8 is adapted to be one of which the width is narrower in a left-right direction than the width of the cover body 7 and the length is the same as that of the cover body 7 in the up-down direction. That is, when viewing the opening part 8 from the front, the opening part 8 is opened in a belt shape elongated in the up-down direction.

[0026]

Along the opening part 8, the massage mechanism is moved on the front surface of the base body 6 (inside the backrest part 3) freely in the up-down direction (longer direction). That is, the opening part 8 serves as a movement area where the massage mechanism 30 is moved up/down.

Also, the opening part 8 is covered with a cloth-like front cover body (not illustrated) or the like without any gap so as to prevent the massage mechanism 30 from directly contacting with the back region (treatment region) of a user.

[0027]

That is, the backrest part 3 is such that the base

body 6 and the cover body 7 are mutually superposed in the front-back direction and a space is formed inside the resulting superposed part. The backrest part 3 houses the massage mechanism 30 movably along the opening part 8 elongated up and down. Also, the opening part 8 of the cover body 7 is disposed so that treatment tips 33 of the massage mechanism 30 protrude forward, and closed with the front cover body or the like.

As illustrated in FIGS. 1 to 6 and the like, in the present embodiment, the backrest part 3 is divided into two parts in the up-down direction, i.e., the lower part is a main body part 4 that gives support from the shoulder regions to waist region of a user, and the upper part is a headrest part 5 (swing part) that gives support from the back of the neck to the head region. The headrest part 5 is adapted to be swingable with respect to the main body part 4.

[0028]

Between the main body part 4 and the headrest part 5, paired left and right posture changing parts 9 that swing the headrest part 5 in a predetermined direction with respect to the main body part 4 and engage the headrest part 5 in a predetermined posture are provided.

In addition, regarding the base body 6, the main body part 4 side is defined as a first base body 6a,

whereas the headrest part 5 side is defined as a second base body 6b. Also in the same manner, in the cover body 7, the main body part 4 side of the cover body 7 is defined as a first cover body 7a, whereas the headrest part 5 side is defined as a second cover body 7b. The same applies to the opening part 8, and the main body part 4 side is defined as a first opening part 8a, whereas the headrest part 5 side is defined as a second opening part 8b.

[0029]

As illustrated in FIG. 1, the posture changing parts 9 are ones that swingably support the headrest part 5 (swing part) with respect to the main body part 4 and engage the headrest part 5 in a predetermined posture. The posture changing parts 9 change a tilting level to thereby keep the posture of the swing part 5 in multiple directions.

The posture changing parts 9 are disposed between the main body part 4 and the headrest part 5 and at least on one of left and right sides of the headrest part 5.

[0030]

The posture changing parts 9 is provided to the headrest part 5, and respectively have: engaging members 10 that are engaged when the posture of the headrest part 5 is changed to a predetermined posture; support shafts

11 that support the engaging members 10 swingably around shaft centers facing in the left-right direction; and support members 12 that are provided to the main body part 4 and support the support shafts 11.

The posture changing parts 9 are configured to be able to stop the swing of the headrest part 5 in a predetermined posture (massage position) in the front-back direction and keep the posture by engaging the support members 12 of the main body part 4 and the engaging members 10 of the headrest part 5.

[0031]

The posture changing parts 9 change the posture of the headrest part 5 to multiple postures such as a posture (first posture) in which the tilt of the headrest part 5 is made the same as the tilt of the main body part 4 by swinging the headrest part 5 backward and a posture (second posture) in which the headrest part 5 is bent by swinging the headrest part 5 forward. Note that the postures of the headrest part 5 are not limited to the exemplified ones.

In addition, the configuration of the posture changing parts 9 is not particularly limited as long as the posture changing parts 9 are configured to be able to fix the headrest part 5 in a position corresponding to a predetermined posture in the front-back direction,

and when switching to another posture, release the fixation of the headrest part 5.

[0032]

For example, for the posture changing parts 9, a ratchet mechanism or the like capable of changing the tilting level of the headrest part 5 in multiple directions may be employed.

Meanwhile, the massage mechanism 30 in the present embodiment is provided with the movement drive part 13 that moves the massage mechanism 30 in the up-down direction.

As illustrated in FIGS. 1 to 6 and the like, the movement drive part 13 is provided on the lower side of a drive part of the massage mechanism 30, and has a lifting/lowering part 14 that lifts and lowers the massage mechanism 30 and guide parts 21 that guide the massage mechanism 30 along lifting/lowering members 18.

[0033]

The lifting/lowering part 14 has: a lifting/lowering motor 15 that generates rotary drive force; a gearbox 16 that decelerates the rotary drive force to a predetermined speed; a rotary shaft 17 that is rotated by the rotary drive force; and the lifting/lowering members 18 that convert the rotary drive force into a lifting/lowering action.

The lifting/lowering motor 15 is such that the output shaft 15a thereof faces leftward and the output shaft 15a is inserted into the gearbox 16 lateral thereto. The gearbox 16 is such that the rotary shaft 17 thereof (lifting/lowering shaft) is on the lower side of the output shaft 15a and penetrates in the left-right direction. The gearbox 16 decelerates the outputted rotary drive force to the predetermined speed and transmits the predetermined speed to the lifting/lowering shaft.

[0034]

The shaft center of the lifting/lowering shaft is disposed in a direction (left-right direction) orthogonal to the direction of the tracks 23 (details will be described below), and in the center of its longer direction, the gearbox 16 is disposed. That is, the lifting/lowering shaft is connected to the lifting/lowering motor 15 via the gearbox 16. On the end part sides of the lifting/lowering shaft, the lifting/lowering members 18 are provided.

The lifting/lowering members 18 respectively have: drive members 19 provided to the lifting/lowering shaft; and drive rail members 20 along which the drive members 19 move. In addition, in the present embodiment, the drive members 19 are pinion gears, and the drive rail

members 20 are rack gears.

[0035]

The pinion gears 19 are respectively attached to both the end part sides of the lifting/lowering shaft, and rotate along with the rotation of the lifting/lowering shaft. On the front surface of the first base body 6a facing the pinion gears 19, the rack gears 20 are disposed.

The rack gears 20 are ones such that rack teeth are disposed linearly arrayed along the up-down direction, and respectively meshed with the pinion gears 19. The pinion gears 19 move on the rack gears 20, and thereby the rotary drive force of the lifting/lowering shaft is converted into a linear movement action in the up-down direction. As a result, the massage mechanism 30 is lifted/lowered in the backrest part 3.

[0036]

On the outer sides of the lifting/lowering members 18 in the left-right direction, the guide parts 21 that guide the massage mechanism 30 in the up-down direction are disposed.

The guide parts 21 respectively have: guide members 22 attached to the sides of the massage mechanism 30 (both the end parts of the lifting/lowering shaft, or the like); and the tracks 23 that guide the guide members 22 from

one sides to the other sides.

[0037]

As illustrated in FIGS. 3 to 8 and the like, the guide members 22 are roller members 22 of which the shaft centers face in the left-right direction and which are rollably or slidably fitted into the tracks 23. The roller members 22 is ones of which the diameter is substantially the same as the inner height (groove height) of the tracks 23 and the height in an axial direction is larger than the inner depth (groove depth) of the tracks 23. This makes it possible for the roller members 22 to move inside the tracks 23.

[0038]

The roller members 22 are provided on both left and right sides of the upper part of the massage mechanism 30 (casing 41) as a pair (upper roller members 22a), and provided on both left and right sides of the lower part (at both left and right end parts of the lifting/lowering shaft) as a pair (lower roller members 22b). That is, the roller members 22 are ones respectively provided at substantially four corners of the massage mechanism 30.

The tracks 23 are rail members 23 into which the roller members 22 are rollably or slidably fitted. Note that in the following, the tracks 23 will be described as the rail members 23.

[0039]

The rail members 23 are configured to, when the position of the headrest part 5 is changed by the posture changing parts 9 from the first posture to the second posture, bend and switch in the direction of the change.

The rail members 23 in the present embodiment are ones respectively consisting of first rail members 24 and second rail members 25, and formed by making the first rail members 24 and the second rail members 25 abut on each other.

[0040]

Also, in the present embodiment, the second rail members 25 of the two types of rail members 24 and 25 are configured to be bendable in the front-back direction with respect to the first rail members 24.

That is, when the position of the headrest part 5 is changed to the first posture, abutting sites of the first rail members 24 and abutting sites of the second rail members 25 approach to each other. On the other hand, when the position of the headrest part 5 is changed to the second position, the abutting sites of the first rail members 24 and the abutting sites of the second rail members 25 separate from each other.

[0041]

The first rail members 24 are respectively provided

on both left and right sides of the first opening part 8a (main body part 4) as a pair, and disposed in parallel with the rack gears 20. The length of the first rail members 24 is almost the same as the length of the first opening part 8a in the longer direction (up-down direction).

The first rail members 24 respectively have two types of side walls, i.e., front side walls 24a and back side walls 24b, and the front side walls 24a are formed to the first cover body 7a, whereas the back side walls 24b are formed to the first base body 6a. The front side walls 24a and back side walls 24b of the first rail members 24 are disposed in such a manner as to face each other in the front-back direction. Also, the gaps (groove widths) between the front side walls 24a and the back side walls 24b are made substantially the same as the diameter of the roller members 22.

[0042]

The second rail members 25 are respectively provided on both left and right sides of the second opening part 8b (headrest part 5) as a pair. The length of the second rail members 25 is almost the same as the length of the second opening part 8b in the longer direction (up-down direction).

The second rail members 25 respectively have two

types of side walls, i.e., front side walls 25a and back side walls 25b, and the front side walls 25a are formed to the second cover body 7b, whereas the back side walls 25b are formed to the second base body 6b. The front side walls 25a and back side walls 25b of the second rail members 25 are disposed in such a manner as to face each other in the front-back direction. Also, the gaps (groove widths) between the front side walls 25a and the back side walls 25b are made substantially the same as the diameter of the roller members 22.

[0043]

The width (groove depth) of the first and second rail members 24 and 25 are adapted to be one with which the outer circumferential surfaces of the roller members 22 can sufficiently contact. Between the upper parts of the first rail members 24 and the lower parts of the second rail members 25, switching mechanisms 26 for switching the moving direction of the massage mechanism 30 are provided.

As illustrated in FIGS. 3 to 8 and the like, the switching mechanisms 26 are ones that change the bending level between the first rail members 24 and the second rail members 25 and thereby switch the moving direction of the massage mechanism 30 to multiple directions.

[0044]

The switching mechanisms 26 respectively have "connection parts 27" that, when changing the bending level between the first rail members 24 and the second rail members 25, enable the massage mechanism 30 to continuously move through bending sites present on the first rail members 24 and the second rail members 25.

The connection parts 27 respectively refer to sites serving as joints that, at sites where the upper end parts of the first rail members 24 and the lower end parts of the second rail members 25 abut on each other, even in the case of bending, enable the roller members 22 to continuously travel.

[0045]

That is, the switching mechanisms 26 are ones that, in the connection parts 27, swing the second rail members 25 (or the first rail members 24) around the shaft center orthogonal to the longer direction (around the shaft center of the support shafts 11 of the posture changing parts 9), and thereby change the bending level between the first rail members 24 and the second rail members 25.

The roller members 22 continuously move while contacting with the connection parts 27, and thereby the roller members 22 are guided without separating from the first rail members 24 or the second rail members 25. As

a result, the massage mechanism 30 continuously moves from the first rail members 24 to the second rail members 25 via the connection parts 27.

[0046]

For example, when the headrest part 5 is changed from the "first posture" illustrated in FIGS. 4 and 5 and the like to the "second posture" illustrated in FIGS. 6 and 7 and the like by the posture changing parts 9, the switching mechanisms 26 tilt the second rail members 25 in the same direction (forward direction) as the headrest part 5 among the multiple moving directions, and bring the connection parts 27 into a bending state. The switching mechanisms 26 are ones making the connecting parts 27 formed with the bending sites serve as "transfer sites" that make it possible to guide the massage mechanism 30 between the first rail members 24 and the second rail members 25 seamlessly.

[0047]

That is, the switching mechanisms 26 are ones that prevent "noncontact zones" where the roller members 22 contact with neither the first rail members 24 nor the second rail members 25 from being provided.

In other words, after the end of traveling along the first rail members 24, the roller members 22 pass through the connection parts 27 of the bending sites made

transferable by the switching mechanisms 26, and thereby can immediately travel along the second rail members 25.

[0048]

In addition, at positions separated from the connection parts 27 to the side opposite to the second rail members 25, the upper end parts of the rack gears (drive rail members 20) are disposed.

As illustrated in FIGS. 4 to 8 and the like, the connection parts 27 respectively have: first connection pieces 28 protruding from the first rail members 24 in the longer direction; and second connection pieces 29 protruding from the second rail members 25 in the longer direction that is opposite to the protruding direction of the first connection pieces 28.

[0049]

In detail, the first connection pieces 28 and the second connection pieces 29 are disposed mutually alternately in a front view. For example, in the case where the first connection pieces 28 are extended upward from the right sides of the first rail members 24, the second connection pieces 29 are extended downward from the left sides of the second rail members 25. In addition, the first connection pieces 28 and the second connection pieces 29 may be reversely disposed and positioned (arranged reversed left and right).

[0050]

Also, the first connection pieces 28 and the second connection pieces 29 are disposed overlapping each other in a side view (see FIGS. 5 and 7 and the like). That is, the upper ends of guide surfaces 28b of the first connection pieces 28 and the lower ends of guide surfaces 29b of the second connection pieces 29 are adapted to overlap each other even in a state where the first rail members 24 and the second rail members 25 are bent with respect to each other. The resulting overlap parts correspond to the connection parts 27 and serve as the "transfer zones" for the roller members 22 to transfer from the first rail members 24 to the second rail members 25.

[0051]

The outward-facing side surfaces 28a of the first connection pieces 28 and the inward-facing side surfaces 29a of the second connection pieces 29 are disposed mutually opposite to each other. Also, the forward-facing guide surfaces 28b of the first connection pieces 28 and the forward-facing guide surfaces 29b of the second connection pieces 29 are in a state of being continuously connected, and at least ones of the guide surfaces 28b of the first connection pieces 28 and the guide surfaces 29b of the second

connection pieces 29 are in a state of constantly connecting with the roller members 22.

[0052]

That is, the first connection pieces 28 and the second connection pieces 29 are provided in such a manner as to abut on each other in the left-right direction, and even when the bending angle between the first rail members 24 and the second rail members 25 has any value, keep a contact state.

For example, in the case where the first rail member 24 and the second rail member 25 are in the bending state, and the roller members 22 traveling in the first rail members 24 move to the second rail members 25, in the connection parts 27, when the roller members 22 are about to finish contacting with the guide surfaces 28b of the first connection pieces 28, the roller members 22 start contacting with the guide surfaces 29b of the second connection pieces 29.

[0053]

This allows the massage mechanism 30 to move from one side (upper side) to the other side (lower side) or from the other side to the one side on the first rail members 24 and the second rail members 25.

That is, in the connection parts 27, there are zones where the roller members 22 contact with both the guide

surfaces 28b of the first connection pieces 28 and the guide surfaces 29 of the second connection pieces 29.

Also, when the roller members 22 continuously move through the connection parts 27, and the massage mechanism 30 moves from the first rail members 24 to the second rail members 25 via the connection parts 27, the massage mechanism 30 is adapted to tilt around the shaft center of the rotary shaft 17 (lifting/lowering shaft) for transmitting the rotary drive force of the movement drive part 13.

[0054]

That is, the massage mechanism 30 is swingably supported around the shaft center of the rotary shaft 17 (lifting/lowering shaft) of the movement drive part 13.

As described, the massage mechanism 30 is adapted to swing around the shaft center of the rotary shaft 17 (lifting/lowering shaft) by switching of the moving direction by the switching mechanisms 26 and rise by the movement drive part 13, and can therefore protrude forward of the backrest part 3.

[0055]

Next, the outline of the configuration of the massage mechanism 30 will be described.

Note that the basic machine configuration of the

massage machine 30 described below is almost the same as configurations such as a configuration described in Japanese Unexamined Patent Publication JP-A2011-131039.

As illustrated in FIGS. 2, 4, and 6, and the like, the massage mechanism 30 has: massage members 31 that give a massage action to the treatment region (back region); a massage rotary shaft 34 that penetrates through the base end sides of the massage members 31; a drive part 35 that rotationally drives the massage rotary shaft 34; conversion parts 38 that convert the rotary force of the massage rotary shaft 34 into a massage action; and the movement drive part 13 that moves the massage members 31 in the up-down direction.

[0056]

The massage members 31 are disposed as a pair at a predetermined interval in the left-right direction. The massage members 31 respectively have arm members 32 protruding from the drive part 35 toward a user side (forward).

The arm members 32 protrude such that the fore ends thereof are separated in two directions, i.e., obliquely forward and upward and obliquely forward and downward, and the separated upper and lower fore ends are respectively disposed with the treatment tips 33. The middle parts of the arm members 32 in the longer direction

are the base ends of the massage members 31.

[0057]

The treatment tips 33 are ones that give a massage to the back region (treatment region) of a user, such as the shoulders, and members formed in a spherical shape.

When the paired left and right massage members 31 approach to and separate from each other, the left side treatment tips 33 and the right side treatment tips 33 repeatedly approach to and separate from each other in the left-right direction to thereby give a massage to the treatment region.

[0058]

The massage rotary shaft 34 is disposed so that the shaft center thereof faces in the horizontal direction, and rotatably supported by support parts 42 provided to the casing 41. The massage rotary shaft 34 penetrates in the left-right direction through the conversion parts 38 provide at the base ends of the massage members 31.

The drive part 35 is disposed in the casing 41 and between the paired left and right massage members 31. The drive part 35 has: a drive motor 36 that generates rotary drive force; and a gearbox 37 that decelerates the rotary drive force to a predetermined speed and transmits the predetermined speed to the massage rotary shaft 34.

[0059]

The drive motor 36 is such that the output shaft 36a thereof faces leftward and the output shaft 36a is inserted into the gearbox 37 lateral thereto. The gearbox 37 is such that the massage rotary shaft 34 is on the lower side of the output shaft 36a and penetrates in the left-right direction. The gearbox 37 decelerates the outputted rotary drive force to the predetermined speed and transmits the predetermined speed to the massage rotary shaft 34.

The conversion parts 38 are ones that convert the rotary force of the massage rotary shaft 34 into the massage action (approaching/separating action) of the massage members 31. The conversion parts 38 are respectively provided at the base end sides of the paired massage members 31, and the massage rotary shaft 34 rotatably penetrates therethrough.

[0060]

The conversion parts 38 respectively have: tilted boss parts 39 that rotate integrally with the massage rotary shaft 34; annular fitting parts 40 that fit the tilted boss parts 39 from outside; and restriction parts (not illustrated) that restrict the massage members 31 from rotating together with the massage rotary shaft 34.

The tilted boss parts 39 fit the massage rotary

shaft 34 from outside, and rotate together with the massage rotary shaft 34. The outer circumferential surfaces of the tilted boss parts 39 are respectively provided with cam surfaces tilted with respect to the massage rotary shaft 34. The tilted boss parts 39 rotate tilted with respect to the shaft center of the massage rotary shaft 34. In addition, the tilts of the tilted boss parts 39 (cam surfaces) are in directions relatively opposite to each other between the paired left and right massage members 31.

[0061]

The annular fitting parts 40 are respectively formed at the base ends of the massage members 31, and relatively rotatably fit the tilted boss parts 39 from outside. The annular fitting parts 40 rotatably fit the tilted boss parts 39, which rotate tilted, from outside, and thereby the massage members 31 perform swing movement.

The restriction parts are ones that restrict the annular fitting parts 40 from corotation with the tilted boss parts 39, and disposed on the back sides (casing 41 sides) of the annular fitting parts 40. The restriction parts respectively have: restriction pins provided to the annular fitting parts 40; and restriction grooves slidably fitted with the restriction pins.

[0062]

The restriction pins are respectively provided protruding in the direction (back direction) opposite to the massage members 31 protruding forward from the annular fitting parts 40. The restriction grooves are ones elongated in the left-right direction, and provided to the casing 41 facing the restriction pins. The restriction grooves are slidably inserted with the restriction pins, and the restriction pins swing in the left-right direction.

In addition, the movement drive part 13 is as described above.

[0063]

In the following, operation modes of the massage machine 1 of the present embodiment will be described.

First, with reference to the left drawing of FIG. 3, and FIGS. 4 and 5, a situation at the time of the "first posture" will be described.

The headrest part 5 is brought to the state of the "first posture" having the same tilt as the tilt of the main body part 4 by the posture changing parts 9.

[0064]

The switching mechanisms 26 tilt the second rail members 25 backward in accordance with the posture of the headrest part 5 so that the second rail members 25

are disposed on the same straight lines (same tracks) as the first rail members 24.

As illustrated in FIGS. 4 and 5, at this time, the first rail members 24 and the second rail members 25 abut on each other, and the guide surfaces 28b of the first connection pieces 28 and the guide surfaces 29b of the second connection pieces are flush with each other. Sites where the two types of guide surfaces 28b and 29b are flush with each other are the connection parts 27.
[0065]

Also, in a side view, the side surfaces 28a of the first connection pieces 28 and the side surfaces 29a of the second connection pieces 29 have large overlap parts. The first rail members 24 to the connection parts 27 to the second rail members 25 are in a state where the tracks 23 are single straight lines.

In this state, when actuating the movement drive part 13 to lift the massage mechanism 30 along the first rail members 24, the upper roller members 22a of the massage mechanism 30 travel in the first rail members 24. Subsequently, when the upper roller members 22a are about to reach the upper parts of the first rail members 24, the upper roller members 22a travel in the connection parts 27 where the first connection pieces 28 and the second connection pieces 29 greatly overlap each other.

After the end of traveling through the connection parts 27, the upper roller members 22a travel in the second rail members 25.

[0066]

As described, the roller members 22a continuously smoothly travel from the first rail members 24 to the connection parts 27 to the second rail members 25.

Next, with reference to the right drawing of FIG. 3, and FIGS. 6 to 8, a situation at the time of the "second posture" will be described.

The headrest part 5 is brought to the state of the forward bending "second posture" by the posture changing parts 9.

[0067]

The switching mechanisms 26 tilt the second rail members 25 forward in accordance with the forward bending posture of the headrest part 5.

That is, when the posture of the headrest part 5 is changed by the posture changing parts 9, the switching mechanisms 26 change the bending level of the second rail members 25.

As illustrated in FIGS. 6 and 7, at this time, the tracks 23 respectively consisting of the first rail members 24 and the second rail members 25 are of a backward-bending L-shape. The bending sites at this

time are the connection parts 27.

[0068]

In the connection parts 27, the upper ends of the guide surfaces 28b of the first connection pieces 28 and the lower ends of the guide surfaces 29b of the second connection pieces 29 overlap each other in a side view. The overlap parts in the "second posture" are smaller than in the "first posture", but enable the roller members 22 to continuously travel.

That is, even in the bending state, the tracks 23 respectively consisting of the first rail members 24 to the connection parts 27 to the second rail members 25 are in a state where the first connection pieces 28 and the second connection pieces 29 overlap each other in the traveling direction of the roller members 22 and connected as single continuous lines (see FIGS. 7 and 8, and the like).

[0069]

In this state, when actuating the movement drive part 13 to lift the massage mechanism 30 along the first rail members 24, the upper roller members 22a of the massage mechanism 30 travel in the first rail members 24. Subsequently, when the upper roller members 22a are about to reach the upper parts of the first rail members 24, the upper roller members 22a travel on the first

connection pieces 28.

Further, when the upper roller members 22a are about to reach the upper ends of the first connection pieces 28, the upper roller members 22a travel while contacting with the "connection parts 27" that overlap the lower ends of the second connection pieces 29 and are the bending sites.

[0070]

That is, the upper roller members 22a continuously travel through "the "connection parts 27" while contacting with both the first connection pieces 28 and the second connection pieces 29.

When the upper roller members 22a separate from the first connection pieces 28 (connection parts 27), the upper roller members 22a travel on the second connection pieces 29 already in contact therewith, and after that, travel in the second rail members 25.

The massage mechanism 30 is continuously moved up by the movement drive part 13 from the main body part 4 to the headrest part 5, as well as swing forward around the shaft center of the lifting/lowering shaft (lower roller members 22b).

[0071]

At this time, the treatment tips 33 of the massage members 31 protrude forward of the main body part 4 and

the headrest part 5, and are switched to predetermined massage positions.

As described above, the massage machine 1 of the present embodiment is characterized by having the switching mechanisms 26 that, when moving the massage mechanism 30 by the movement drive part 13 from one side to the other side along the predetermined tracks 23 (rail members), can switch the moving direction of the massage mechanism 30 by changing the bending level of the tracks 23.

[0072]

That is, the massage machine 1 of the present embodiment has a function capable of moving the massage mechanism 30 in the direction in which the headrest part 5 is tilted.

Further, the massage machine 1 is also characterized by having the switching sites (connection parts 27) that, when moving the massage mechanism 30 from one side to the other side, make it possible to smoothly shift the moving direction.

[0073]

By including such tracks 23 and switching mechanisms 26, massage positions can be easily switched, and also various massage effects can be given to users. Also, the whole of the machine can be made simple and

compact.

Note that the configuration of the tracks 23 and the switching mechanisms 26 described in the present embodiment is an example, and is not limited thereto.
[0074]

In addition, it should be considered that the embodiment disclosed this time is an exemplification in all respects and not a limited one.

For example, the present invention may have the rotary shaft 17 (lifting/lowering shaft) provided with the drive members 19, and the massage rotary shaft 34 provided to the massage mechanism 30 to give a massage action to the treatment part, in which the rotary shaft 17 (lifting/lowering shaft) and the massage rotary shaft 34 are integrally or coaxially provided.

[0075]

In the present embodiment, the rail members 23 (tracks) are ones respectively divided into the first rail members 24 and the second rail members 25, but may be adapted to be bendable single rail members.

In particular, in the embodiment disclosed this time, matters not explicitly described, such as actuating conditions, operating conditions, and dimensions and weights of components, are not departing from the range of general implementation by a person

skilled in the art, and matters that a person skilled in the art can easily conceive are employed.

Reference Signs List

[0076]

- 1: Massage machine
- 2: Seat part
- 3: Backrest part
- 4: Main body part
- 5: Headrest part
- 6: Base body
- 6a: First base body
- 6b: Second base body
- 7: Cover body
- 7a: First cover body
- 7b: Second cover body
- 8: Opening part
- 8a: First opening part
- 8b: Second opening part
- 9: Posture changing part
- 10: Engaging member
- 11: Support shaft
- 12: Support member
- 13: Movement drive part
- 14: Lifting/lowering part

15: Lifting/lowering motor
15a: Output shaft
16: Gearbox
17: Rotary shaft (lifting/lowering shaft)
18: Lifting/lowering member
19: Drive member (pinion gear)
20: Drive rail member (rack gear)
21: Guide part
22: Guide member (roller member)
22a: Upper roller member
22b: Lower roller member
23: Track (rail member)
24: First rail member
24a: Front side wall
24b: Back side wall
25: Second rail member
25a: Front side wall
25b: Back side wall
26: Switching mechanism
27: Connection part
28: First connection piece
28a: Side surface
28b: Guide surface
29: Second connection piece
29a: Side surface

- 29b: Guide surface
- 30: Massage mechanism
- 31: Massage member
- 32: Arm member
- 33: Treatment tip
- 34: Massage rotary shaft
- 35: Drive part
- 36: Drive motor
- 36a: Output shaft
- 37: Gearbox
- 38: Conversion part
- 39: Tilted boss part
- 40: Annular fitting part
- 41: Casing
- 42: Support part

CLAIMS

1. A massage machine comprising:

a massage mechanism that gives a massage action to a treatment region;

a movement drive part that moves the massage mechanism along a predetermined track from one side to the other side of the track; and

a switching mechanism that switches a moving direction of the massage mechanism to multiple directions by changing a bending level of the track.

2. The massage machine according to claim 1, wherein

the switching mechanism comprises a connection part that, when changing the bending level of the track, enables the massage mechanism to continuously move through a bending site present on the track.

3. The massage machine according to claim 2, wherein

the track is formed by making a first track and a second track butt on each other in a longer direction,

the connection part is formed in a site of the butting, and

the bending level of the track is configured to be changeable by swinging the first track or the second track

around a shaft center orthogonal to the longer direction in the connection part.

4. The massage machine according to claim 3, wherein the track is formed by making a first rail member and a second rail member butt on each other in the longer direction,

the massage mechanism comprises a guide member that rolls or slides on the first rail member and the second rail member, and

the guide member continuously moves through the connection part and thereby the massage mechanism continuously moves from the first rail member to the second rail member.

5. The massage machine according to claim 4, wherein the massage mechanism comprises: a rotary shaft that is disposed in a direction intersecting with the track and transmits rotary drive force of the movement drive part; and a drive member provided to the rotary shaft,

the massage mechanism is configured to be moved from the one side to the other side or the other side to the one side of the track by the rotary drive force transmitted by the drive member, and

the massage mechanism is configured to, when the guide member continuously moves through the connection part and the massage mechanism moves from the first rail member to the second rail member, tilt around a shaft center of the rotary shaft that transmits the rotary drive force of the movement drive part.

6. The massage machine according to claim 5, wherein a drive rail member of the drive member is disposed along the first rail member, and an end part of the drive rail member is disposed at a position separated from the connection part to a side opposite to the second rail member.

7. The massage machine according to claim 5, wherein in the connection part, the first rail member comprises a first connection piece protruding in the longer direction, and the second rail member comprises a second connection piece protruding in the longer direction,

the first connection piece and the second connection piece are disposed overlapping in a side view,

a side surface of the first connection piece and a side surface of the second connection piece keep a contact state even when a bending angle of the track has

any value, and

a guide surface of the first connection piece and a guide surface of the second connection piece are in a state of being continuously connected, and at least one of the guide surface of the first connection piece and the guide surface of the second connection piece is in a state of constantly contacting with the guide member.

8. The massage machine according to claim 4, comprising:

a main body part provided with the massage mechanism; a swing part that is made swingable with respect to the main body part; and a posture changing part that swings and changes a posture of the swing part in a predetermined direction with respect to the main body part, wherein:

the main body part is provided with the first rail member;

the swing part is provided with the second rail member; and

when the posture of the swing part is changed by the posture changing part, a bending level of the second rail member is changed by the switching mechanism and the massage mechanism continuously moves from the main body part to the swing part.

9. The massage machine according to claim 8, wherein the posture changing part is adapted to be a ratchet mechanism that can change a tilting level of the swing part in multiple directions.