DESCRIPTION

TITLE OF THE INVENTION: LEG MASSAGE DEVICE AND METHOD FOR CONTROLLING LEG MASSAGE DEVICE

Technical field

[0001] The present invention relates to a leg massage device and a method for controlling the leg massage device.

Background Art

[0002] Leg massage devices have heretofore been developed for the purpose of massaging user's legs, and, such a leg massage device is generally mounted on the front side of a seat of a chair-type massage apparatus, for example.

In Patent Literature 1, there is disclosed a chair-type massage apparatus which comprises: a leg rest disposed at the front of a seat for free vertical turning motion to hold the legs of a person sitting on the seat; and a foot rest disposed at the front end of the leg rest for free vertical turning motion to hold the feet of the seated person. The leg rest and the foot rest are equipped with massage means for massaging sitter's legs and massage means for massaging sitter's feet, respectively.

[0003] Moreover, in Patent Literature 2, there is disclosed a chair-type massage apparatus which comprises: a seat on which a person to be massaged sits; and a foot rest disposed at the front of the seat. The foot rest includes: a sole support surface for supporting the sole of the to-be-massaged person; a heel support surface disposed in an upstanding condition on the back

side of the sole support surface to support the rear part of the heel of the to-be-massaged person; and a heel massaging portion disposed on the heel support surface to impart pressing stimuli to the rear part of the heel of the to-be-massaged person.

Prior art Reference

Patent literature

[0004] Patent literature 1: Japanese Unexamined Patent Publication JP-A 2002-238963

Patent literature 2: Japanese Unexamined Patent Publication JP-A 2006-87945

Summary of the Invention

Problems to be solved by the Invention

[0005] The massage apparatus for legs such as disclosed in Patent literatures 1 and 2 is equipped with a plurality of air bags, and is designed to perform a pressure massage on legs by inflating and deflating these air bags.

However, there are still user's demands for such a leg massage apparatus, for example, there is a request asking, in addition to a simple leg-pressing massage, different massages such as a leg kneading massage and a leg rubbing massage. That is, technologies to fulfill user's desire to have a variety of kneading massage feelings have not been developed to date.

[0006] The present invention has been devised in view of the circumstances as mentioned supra, and accordingly its object is to provide a leg massage device capable of performing a comfortable pressure massage on legs, and a method for controlling

the leg massage device.

Means for solving the problem

[0007] In order to accomplish the above object, the following technical means is adopted for the implementation of the present invention.

A leg massage device pursuant to the present invention comprises: right and left insertion recesses taken as a pair capable of insertion of user's legs; and a leg massage mechanism disposed inside each of the insertion recesses to massage an inserted leg, and, in this construction, the leg massage mechanism has a pair of right and left first air bags arranged on an inner wall of the insertion recess, and a pair of right and left second air bags arranged on the inner wall of the insertion recess so as to be located between the paired right and left first air bags.

[0008] It is preferable that the paired right and left first air bags are arranged along lateral sides of user's leg inserted in the insertion recess, and the paired right and left second air bags are arranged along a back side of user's leg inserted in the insertion recess.

It is preferable that the inner wall of the insertion recess comprises a pair of right and left sidewall parts opposed to each other in a right-left direction, and a bottom-wall part which provides connection between rear edges of the paired right and left sidewall parts in the right-left direction, that the paired right and left first air bags are arranged on the sidewall

parts, respectively, of the insertion recess along a vertical direction, and that the paired right and left second air bags are arranged on the bottom-wall part of the insertion recess along the vertical direction.

[0009] It is preferable that a vertically-extending projected strip portion is disposed between the paired right and left second air bags.

It is preferable that the second air bag is attached, at its one side, to the bottom-wall part of the insertion recess in a hinge structure, and the paired right and left second air bags are so arranged that hinge portions of the hinge structures thereof face each other in the right-left direction.

[0010] It is preferable that the inner wall of the insertion recess has a protruding wall portion formed so as to protrude forward from a lower part of the insertion recess, and that the protruding wall portion is provided with a pair of right and left third air bags arranged along a front-rear direction in positions corresponding to user's foot inserted in the insertion recess.

It is preferable that a fourth air bag is disposed between the paired right and left third air bags in a position corresponding to a bottom of user's foot inserted in the insertion recess.

[0011] A method for controlling a leg massage device pursuant to the present invention is a method for controlling the above-described leg massage device, which is intended to

effect inflation and deflation of air bags in accordance with Step A and Step B as set forth hereunder: (Step A) wherein, while keeping the first air bag inflated, air in the second air bag is released for deflation; and (Step B) wherein, while keeping the second air bag inflated, air in the first air bag is released for deflation.

[0012] Moreover, a method for controlling a leg massage device pursuant to the present invention is a method for controlling the above-described leg massage device, which is intended to effect inflation and deflation of air bags in accordance with Step 1 to Step 4 as set forth hereunder: (Step 1) wherein air is admitted into the first air bag and the second air bag to inflate the first air bag and the second air bag; (Step 2) wherein air is admitted into the first air bag for inflation, and air in the second air bag is released for deflation; (Step 3) wherein air in the first air bag is released for deflation, and air is admitted into the second air bag for inflation; and (Step 4) wherein air in the first air bag is released for deflation, and air in the second air bag is released for deflation.

[0013] It is preferable that inflation and deflation of the air bags are effected by following (Step 1), (Step 2), (Step 3), (Step 2), and (Step 4) in the order presented, and then returning to (Step 1). According to one most preferred embodiment of the present invention, there is provided a leg massage device comprising: a right insertion recess and a left insertion recess, taken as a pair, capable of insertion of user's legs; and a leg

massage mechanism disposed inside the insertion recess to massage an inserted leg, said leg massage mechanism having a pair of right and left first air bags arranged on an inner wall of the insertion recess, and a pair of right and left second air bags arranged on the inner wall of the insertion recess so as to be located between said paired right and left first air bags, said paired right and left first air bags being arranged along lateral sides of user's leg inserted in the insertion recess, said paired right and left second air bags being arranged along a back side of user's leg inserted in the insertion recess, said second air bags being arranged in a truncated "V" shape so that their forward edges are spaced apart more widely than their rear edges. Moreover, according to one most preferred embodiment of the present invention, there is provided a method for controlling the "leg massage device in accordance with the most preferred embodiment of the present invention", which is intended to effect inflation and deflation of air bags by following Step A and Step B as set forth hereunder:

(Step A) wherein, while keeping the first air bag inflated, air in the second air bag is released for deflation; and

(Step B) wherein, while keeping the second air bag inflated, air in the first air bag is released for deflation.

Moreover, according to another most preferred embodiment of the present invention, there is provided a method for controlling the "leg massage device in accordance with the most preferred embodiment of the present invention", which is intended

to effect inflation and deflation of air bags by following Step 1 to Step 4 as set forth hereunder:

(Step 1) wherein air is admitted into the first air bag and the second air bag to inflate the first air bag and the second air bag;

(Step 2) wherein air is admitted into the first air bag for inflation, and air in the second air bag is released for deflation;

(Step 3) wherein air in the first air bag is released for deflation, and air is admitted into the second air bag for inflation; and

(Step 4) wherein air in the first air bag is released for deflation, and air in the second air bag is released for deflation.

Advantageous effects of the Invention

[0014] According to the leg massage technique pursuant to the present invention, a comfortable pressure massage can be performed on legs.

Brief Description of Drawings

[0015] [Fig. 1] Figure 1 is a perspective view of the appearance of a chair-type massage apparatus equipped with a leg massage device pursuant to the present invention.

[Fig. 2] Figure 2 is a left side perspective view showing the internal structure of the leg massage device.

[Fig. 3] Figure 3 is a right side perspective view showing the appearance of the leg massage device.

[Fig. 4] Figure 4 is a left side perspective view showing the internal structure of the leg massage device, with first and third air bags disposed in a left insertion recess omitted.

[Fig. 5A] Figure 5A is a view showing the horizontal section of the leg massage device.

[Fig. 5B] Figure 5B is a schematic view showing the horizontal section of the leg massage device in a state of receiving a leg.

[Fig. 6A] Figure 6A is an explanatory view of a method for controlling the leg massage device.

[Fig. 6B] Figure 6B is an explanatory view of a method for controlling the leg massage device.

[Fig. 6C] Figure 6C is an explanatory view of a method for controlling the leg massage device.

[Fig. 6D] Figure 6D is an explanatory view of a method for controlling the leg massage device.

[Fig. 6E] Figure 6E is an explanatory view of a method for controlling the leg massage device.

[Fig. 7A] Figure 7A is a view showing a side kneading section in a working position.

[Fig. 7B] Figure 7B is a view showing the side kneading section in a bent position.

[Fig. 8] Figure 8 is a perspective view of the side kneading section in the bent position as seen from behind.

Modes for Carrying out the Invention

[0016] Hereinafter, embodiments of the present invention

will be described with reference to drawings.

Figure 1 shows a chair-type massage apparatus 2 equipped with a leg massage device 1 pursuant to the present invention.

The chair-type massage apparatus 2 comprises: a seat 3 on which a user sits; a backrest 4 disposed at the rear of the seat 3; and a footrest 5 disposed at the front of the seat 3. In the present embodiment, the footrest 5 serves as the leg massage device 1.

[0017] Hereinafter, in explaining the chair-type massage apparatus 2, directions based on the sight of a user sitting on the chair-type massage apparatus 2 will be used as the reference. That is, the apparatus will be explained with reference to the directions described in Figs. 1, 5A, and 5B.

The seat 3 of the chair-type massage apparatus 2 is disposed substantially horizontally for allowing a user to sit down on its top surface. The seat 3 comprises: a frame body; a cushion disposed on the framer body; and a cover for covering the frame body and the cushion at their outer sides. Under the seat 3 is disposed a leg body (base frame) for the placement of the chair-type massage apparatus 2 on a floor. The seat 3 can be supported at a predetermined level by the leg body.

[0018] An armrest 6 is disposed on each of the right and left sides of the seat 2. The armrest 6 is a platy member disposed in a stand-up position, with its bottom grounded on the floor. The armrest 6 is curved at its upper side so that a user is able to rest his/her elbow thereon comfortably.

The backrest 4 is a member disposed at the rear of the seat 3, and a user is able to lean at his/her back on it. The backrest 4, which is pivotally mounted for free rocking motion about a shaft disposed at the rear of the seat 3 so as to point in a right-left direction, has a reclining feature implemented by a reclining mechanism constructed of a linear actuator installed in the leg body; that is, the backrest 4 can be moved between a vertically-standing position and a horizontally-lying position. Moreover, a back massage mechanism (not shown in the drawings) for effecting massaging movement such as a kneading massage and a tapping massage is disposed inside the backrest 4.

[0019] The footrest 5, or equivalently the leg massage device 1 mounted in the chair-type massage apparatus 2 can be housed under the seat 3. The leg massage device 1 becomes capable of massaging user's legs (that part of the leg located above the ankle is defined as a leg part C, and that part of the leg located below the ankle is defined as a foot part F) after it is moved forward of the seat 3 from its housed position under the seat 3. A leg massage mechanism 10 for performing a pressure massage on user's legs by means of an air bag is installed inside the leg massage device 1.

[0020] As shown in Figs. 1 and 3, the leg massage device 1 has a pair of right and left insertion recesses 7 and 7 formed on its front side for insertion of user's legs. That is, the front side of the leg massage device 1 is formed with two

vertically-pointing insertion recesses 7 and 7 arranged at a predetermined spacing in the right-left direction. The insertion recess 7,7 is composed of a pair of right and left sidewall parts 8 and 8 opposed to each other in the right-left direction, and a bottom-wall part 9 which provides connection between the rear edges of the paired right and left sidewall parts 8 and 8 in the right-left direction.

[0021] Upon insertion of user's leg in the insertion recess 7,7, the leg (above-ankle leg part C and below-ankle foot part F) is massaged while being sandwiched under pressure. Note that the insertion recess 7,7 is covered with, for example, a cloth cover.

In Figs. 2 and 4, there is shown the leg massage mechanism 10 installed inside the leg massage device 1.

[0022] The leg massage mechanism 10 includes a plurality of air bags capable of performing a pressure massage on user's legs. The air bag is inflated through the supply of air from an air supply section (not shown) having an air compressor, a valve, etc., and is deflated through the release of air.

Specifically, the leg massage mechanism 10 comprises: a pair of right and left first air bags 20 arranged vertically along the lateral sides of the leg part C (calf) inserted in the insertion recess 7,7; and a pair of right and left second air bags 21 arranged vertically along the back side of the leg part C inserted in the insertion recess 7,7.

[0023] Specifically, the first and second air bags 20 and

21 are each of a "rectangular bag body" or "elliptical bag body" capable of storage of pressurized air, which has a bellows configuration so as to be inflated greatly.

The first air bag 20 is attached to each of the paired right and left sidewall parts 8 and 8, with its lengthwise direction aligned with the vertical direction. With the admission of air into the first air bag 20, the first air bag 20 is inflated, thereby performing a pressure massage on the right and left sides of the leg part C of user's leg inserted in the insertion recess 7. Meanwhile, as shown in Figs. 3, 5A, and 5B, the bottom-wall part 9 of the insertion recess 7,7 is provided with a forwardly-projected strip portion 22 elongated in the vertical direction. Moreover, the paired right and left second air bags 21 are arranged in a forwardly-protruding fashion so as to have sandwiched therebetween the projected strip portion 22. That is, the vertically-extending projected strip portion 22 is formed on the bottom-wall part 9 of the insertion recess 7 so as to lie between the paired right and left second air bags 21.

[0024] More specifically, as shown in Figs. 5A and 5B, the vertically-extending second air bags 21 are installed so that their rear edges are attached to locations adjacent to the right and left sides, respectively, of the projected strip portion 22 via two protrusion pieces 23, respectively, and so that the interval between them becomes wider gradually toward the sidewall part 8 of the insertion recess 7 to open up the space between

their forward edges. That is, the second air bags 21 are arranged in a truncated "V" shape so that the forward edges are spaced apart more widely than the rear edges.

[0025] The protrusion piece 23 used for the placement of the second air bag 21 has pliability, wherefore the second air bag 21 can be freely rocked, albeit only slightly, in the right-left direction. That is, the second air bag 21 is attached, via the protrusion piece 23, to the inner-wall part (bottom-wall part 9) of the insertion recess 7,7 in a hinge structure. Since the paired right and left second air bags 21 and 21 are so arranged that their protrusion pieces 23 (hinge portions) face each other in the right-left direction, it follows that, as the second air bags 21 are inflated, the opposed second air bags 21 are moved away from each other, with a consequent further opening up of the space between their forward parts.

[0026] Moreover, the rear part of the first air bag 20 and the forward part of the second air bag 21 are arranged in overlapping relation as seen in side view.

On the other hand, as is apparent from Figs. 2 and 3, the lower ends of the paired right and left insertion recesses 7 and 7 protrude forward; that is, the insertion recess 7,7 is substantially boot-shaped as seen in side view. That part of the insertion recess 7,7 which protrudes forward (forwardly-protruding portion 24) is internally provided with a pair of right and left third air bags 25 pointing in a front-rear direction arranged along the lateral sides of the foot part F

inserted in the insertion recess 7,7. The third air bag 25 is a rectangular bag body capable of air storage, which has a bellows configuration so as to be inflated greatly. The third air bag 25 is inflated through the supply of air from a non-illustrated air supply section (including an air compressor, a valve, etc.), and is deflated through the release of air. The third air bag 25 is disposed on each of inner-wall parts 30 and 30 opposed to each other in the right-left direction in the forwardly-protruding portion 24 of the insertion recess 7.

[0027] Moreover, as shown in Figs. 2 to 4 for example, a fourth air bag 27 for pressing the bottom of the foot part F inserted in the insertion recess 7 is disposed on a lower wall 31 of the forwardly-protruding portion 24 of the insertion recess 7. The fourth air bag 27 is a rectangular bag body capable of air storage, which has a bellows configuration so as to be inflated greatly. The fourth air bag 27 is situated between the paired right and left third air bags 25 and 25. A pressing plate 28 is disposed above the fourth air bag 27 in contact with the fourth air bag 27. A plurality of projections 29 are formed on the upper surface of the pressing plate 28.

[0028] As is apparent from Fig. 4, the forward part of the pressing plate 28 is hinge-coupled to the lower wall of the forwardly-protruding portion 24 of the insertion recess 7. Therefore, when the fourth air bag 27 is inflated greatly under the supply of air, the rear part of the pressing plate 28 is raised, whereby user's sole can be massaged while being pressed

from below by the projections 29 formed on the upper surface of the pressing plate 28.

According to the leg massage device 1 having the above-described structure, an effective massage can be performed on the leg part C by inflating and deflating the first and second air bags 20 and 21. Especially, when user's leg is fitted in the insertion recess 7,7, the rear side of the leg part C abuts on the projected strip portion 22, and consequently the leg is restrained against further backward motion. Under this condition, the second air bags 21 press the rear side of the leg part C from the right and left so as to squeeze the leg, thereby allowing a user to have a comfortable massage.

[0029] Moreover, the paired right and left third air bags 25 and 25 act, when inflated and deflated, to hold the foot part F from both sides in sandwich style, thereby providing a comfortable foot massage. By inflating the fourth air bag 27 in conjunction with the inflation of the third air bag 25, it is possible to perform a pressure massage on the bottom of the foot part F.

In the present embodiment, each insertion recess 7,7 is divided into two portions in the vertical direction, namely upper and lower portions, and the lower portion 33 of the insertion recess 7 is free to slide in the vertical direction relative to the upper portion 32. In addition, the lower portion 33 is urged in a direction close to the upper portion 32 by non-illustrated urging means (spring means). With such a

structure, when a user moves the foot part F forward like a kicking motion, the lower portion 33 can be separated from the upper portion 32 against the urging force exerted by the urging means (the insertion recess 7 can be extended). Accordingly, the device is adaptable to the legs of users of different body shapes.

[0030] In the present embodiment, the first air bag 20 and the second air bag 21 are disposed in the upper portion 32 of the insertion recess 7, and the third air bag 25 and the fourth air bag 27 are disposed in the lower portion 33 of the insertion recess 7.

In the leg massage device 1 thus far described, an effective massage can be performed on the leg part C and the foot part F by inflating and deflating the first to fourth air bags 20 to 27.

[0031] Now, a description will be given below as to a method for controlling the leg massage mechanism 10 to achieve an effective massage in the leg massage device 1 of the present invention.

The control system is incorporated in a program form in a control section (not shown) for controlling the leg massage device 1. A control command is issued to the air supply section via the control section for the control of inflation and deflation of each air bag (the first air bag 20 and the second air bag 21, in particular).

[0032] In Figs. 6A to 6E, there are schematically shown ways to inflate and deflate the first air bag 20 and the second

air bag 21, in other words, a method for controlling the leg massage device 1.

Firstly, in order to massage the leg part C, as shown in Fig. 6A, air is admitted into each of the paired right and left first air bags 20 and the paired right and left second air bags 21 to inflate each of the air bags 20 and 21 (Step 1).

[0033] After that, as shown in Fig. 6B, while continuing the supply of air to the paired right and left first air bags 20, the air in each of the paired right and left second air bags 21 is released for deflation (Step 2). In this way, the leg part C is massaged while being pressed from the front to back (as indicated by black arrow in Fig. 6B). Since the air bags are inflated so as to cover the lateral sides of the leg part C, under the condition shown in Fig. 6B, a user is able to have a comfortable massage feeling such that the leg part C is rubbed while being pressed from the front to back by hands. Step 2 can be deemed to be an embodiment of the process of deflating the second air bag by the release of air while keeping the first air bag inflated (Step A).

[0034] Next, as shown in Fig. 6C, while releasing the air in each of the paired right and left first air bags 20 for deflation, air is admitted into each of the paired right and left second air bags 21 for inflation (Step 3). In this way, the leg part C is massaged while being pressed from the back to front (as indicated by black arrow in Fig. 6C). Since the air bags are inflated so as to cover the lateral sides of the leg part C,

under the condition shown in Fig. 6C, a user is able to have a comfortable massage feeling such that the leg part C is rubbed while being pressed from the back to front by hands. Step 3 can be deemed to be an embodiment of the process of deflating the first air bag by the release of air while keeping the second air bag inflated (Step B).

[0035] Then, as a repeat, as shown in Fig. 6D, while continuing the supply of air to the paired right and left first air bags 20, the air in each of the paired right and left second air bags 21 is released for deflation. Since this step is the same as Step 2 shown in Fig. 6B, it is possible to obtain substantially the same effects as achieved in the condition shown in 6B.

After that, the air in the first air bag 20 is released for deflation, and also the air in the second air bag 21 is released for deflation (Step 4).

[0036] As described heretofore, the first air bag 20 and the second air bag 21 are inflated and deflated repeatedly by following (Step 1), (Step 2), (Step 3), (Step 2), and (Step 4) in the order presented, and then returning to (Step 1). In this way, a user is able to have a novel, comfortable massage such that the leg part C is rubbed while being pressed from the front to back, or from the back to front, by hands.

[0037] As described heretofore, according to the leg massage technique pursuant to the present invention, a comfortable pressure massage can be performed on legs.

It is noted that, in the inflating/deflating operation of the first air bag 20 and the second air bag 21 that is made in the following steps: (Step 1); (Step 2); (Step 3); (Step 2); and (Step 4), even if another step is added in between Steps 1 to 4, there is no problem.

[0038] For example, in the operation of the air bags 20 and 21, after Step 2 wherein air is admitted into the first air bag for inflation, whereas the air in the second air bag is released for deflation, it is possible to add a different step, which is a short-time step, wherein, while keeping the first air bag inflated under the supply of air, the admission of air into the second air bag is started. In this case, after this step, the procedure proceeds to Step 3 wherein the air in the first air bag is released for deflation, whereas air is admitted into the second air bag for inflation.

[0039] As shown in Fig. 1, the chair-type massage apparatus 2 disclosed by way of the present embodiment is provided with a side kneading section 40 for pressing a body area to be massaged of a user sitting on the seat 3 (the area between the shoulder and the lateral side of the arm). The side kneading section 40 has an air bag 41 which performs a pressure massage on the to-be-massaged area when inflated. That is, in the chair-type massage apparatus 2, a forwardly-protruding airbag case 42 is disposed on each of the right and left sides of the backrest 4, and, the air bag 41 is embedded in each of the opposed inner side surfaces of these airbag cases 42. The air bag 41 and the

airbag case 42 constitute the side kneading section 40.

[0040] The air bags 41 taken as a pair, namely the right air bag 41 and the left air bag 41, are arranged face-to-face with each other so as to have sandwiched therebetween both shoulders and arms of a user. The air bag is inflated through the supply of air from an air supply section (not shown), and is deflated through the release of air. By repeating the inflation and deflation of the air bags in a pulsatile manner in accordance with a predetermined rhythm, for example, user's shoulders resting on the backrest 4 can be massaged while being pressed from the right and left in a face-to-face manner.

[0041] Although a comfortable massage can be given to a user by the side kneading section 40 having the above-described structure, the side kneading section 40 is formed so as to extend forward greatly, and therefore poses some drawbacks, for example, it becomes obtrusive during packing, shipping, and transportation of the chair-type massage apparatus 2, and also becomes bulky after packing.

In this regard, as shown in Fig. 7B, in the chair-type massage apparatus 2 disclosed by way of the present embodiment, the side kneading section 40 is made bendable so that it can be folded inwardly in a widthwise direction for contact with the surface (front side) of the backrest 4 (the side kneading section 40 assumes a bent position). Thus, by folding the side kneading section 40 at the time of packing, shipping, and transportation of the chair-type massage apparatus 2, it is

possible to achieve bulk reduction, and thereby make the size of the packed apparatus as small as possible.

[0042] In order to render the side kneading section 40 fold-down, as shown in Fig. 8, the base-end side of the airbag case 42 is hinge-coupled to the lateral side of the backrest 4. That is, the base-end side of the airbag case 42 is pivotally mounted for free rotation about an axis of a vertical shaft 45 on the lateral side of the backrest 4. Moreover, an engagement protrusion piece 43 is disposed so as to protrude from the base-end side of the airbag case 42. The engagement protrusion piece 43 is formed in a substantially vertically-upstanding condition on an inner side wall 46 of the airbag case 42. On the other hand, the lateral side of the backrest 4 is formed with an engagement hole 44 which receives the engagement protrusion piece 43 in engagement when the airbag case is brought into a forwardly-protruding state (the side kneading section 40 assumes a working position).

[0043] When the airbag case 42 is brought into the forwardly-protruding state, the engagement protrusion piece 43 is fitted in the engagement hole 44, whereby the side kneading section 40 is restrained from being folded readily. Therefore, it never occurs that the side kneading section 40 is folded into the bent position during its use.

It is advisable that the engagement protrusion piece 43 can be disengaged from the engagement hole 44 by, for example, operating the side kneading section 40 so that it is folded

inwardly in the widthwise direction (inwardly in the right-left direction) under a certain degree of force exerted by an adult person. In this case, for example, in getting ready to move, when the chair-type massage apparatus 2 has to be packed once again, since the side kneading section 40 can be folded into the bent position, it is possible to make the backrest 4 lower in profile for convenience of packing.

[0044] It should be understood that the embodiments as disclosed hereinabove are considered in all respects as illustrative only and not restrictive. The scope of the present invention is indicated by the appended claims rather than the foregoing description, and all changes that come within the meaning of and the range of equivalency of the claims are intended to be embraced therein.

For example, although the above description deals with the case where the leg massage device 1 is mounted in the form of the footrest 5 in the chair-type massage apparatus 2, the leg massage device 1 of the present invention can be used as a single product (floorstanding massage equipment).

Explanation of reference symbols

[0045]

1 leg massage device

2 chair-type massage apparatus

3 seat

4 backrest

5 footrest

6 armrest

7 insertion recess

8 sidewall part

9 bottom-wall part

10 leg massage mechanism

20 first air bag

21 second air bag

22 projected strip portion

23 protrusion piece

24 forwardly-protruding portion

25 third air bag

27 fourth air bag

28 pressing plate

29 projection

30 inner wall

31 lower wall

32 upper portion

33 lower portion

40 side kneading section

41 air bag (of side kneading section)

42 airbag case

43 engagement protrusion piece

44 engagement hole

45 vertical shaft

46 inner side wall

C leg part

F foot part

CLAIMS

1. A leg massage device comprising:

a right insertion recess and a left insertion recess, taken as a pair, capable of insertion of user's legs; and

a leg massage mechanism disposed inside the insertion recess to massage an inserted leg,

said leg massage mechanism having a pair of right and left first air bags arranged on an inner wall of the insertion recess, and a pair of right and left second air bags arranged on the inner wall of the insertion recess so as to be located between said paired right and left first air bags,

said paired right and left first air bags being arranged along lateral sides of user's leg inserted in the insertion recess,

said paired right and left second air bags being arranged along a back side of user's leg inserted in the insertion recess,

said paired right and left second air bags being arranged in a truncated "V" shape so that their forward edges are spaced apart more widely than their rear edges.

2. The leg massage device according to claim 1,

wherein the inner wall of said insertion recess comprises a pair of right and left sidewall parts opposed to each other in a right-left direction, and a bottom-wall part which provides connection between rear edges of the paired right and left

sidewall parts in the right-left direction,

wherein the paired right and left first air bags are arranged on the sidewall parts, respectively, of said insertion recess along a vertical direction,

and wherein the paired right and left second air bags are arranged on the bottom-wall part of said insertion recess along the vertical direction.

3. The leg massage device according to claim 2,

wherein a vertically-extending projected strip portion is disposed between said paired right and left second air bags.

4. The leg massage device according to any one of claims 1 to 3, wherein said second air bag is attached, at its one side, to the bottom-wall part of the insertion recess in a hinge structure, and the paired right and left second air bags are so arranged that hinge portions of said hinge structures thereof face each other in the right-left direction.

5. The leg massage device according to any one of claims 1 to 4, wherein the inner wall of said insertion recess has a protruding wall portion formed so as to protrude forward from a lower part of the insertion recess,

and wherein said protruding wall portion is provided with a pair of right and left third air bags arranged along a front-rear direction in positions corresponding to user's foot inserted

in the insertion recess.

6. The leg massage device according to claim 5, wherein a fourth air bag is disposed between said paired right and left third air bags in a position corresponding to a bottom of user's foot inserted in the insertion recess.

7. A method for controlling a leg massage device according to any one of claims 1 to 6, wherein said method for controlling a leg massage device is intended to effect inflation and deflation of air bags in accordance with Step A and Step B as set forth hereunder:

(Step A) while keeping a first air bag inflated, air in a second air bag is released for deflation; and

(Step B) while keeping the second air bag inflated, air in the first air bag is released for deflation.

8. A method for controlling a leg massage device according to any one of claims 1 to 6, wherein said method for controlling a leg massage device is intended to effect inflation and deflation of air bags in accordance with Step 1 to Step 4 as set forth hereunder:

(Step 1) air is admitted into a first air bag and a second air bag to inflate the first air bag and the second air bag;

(Step 2) air is admitted into the first air bag for inflation, and air in the second air bag is released for deflation;

(Step 3) air in the first air bag is released for deflation, and air is admitted into the second air bag for inflation; and

(Step 4) air in the first air bag is released for deflation, and air in the second air bag is released for deflation.

9. The method for controlling a leg massage device according to claim 8, wherein inflation and deflation of the air bags are effected by following (Step 1), (Step 2), (Step 3), (Step 2), and (Step 4) in the order presented, and then returning to (Step 1).