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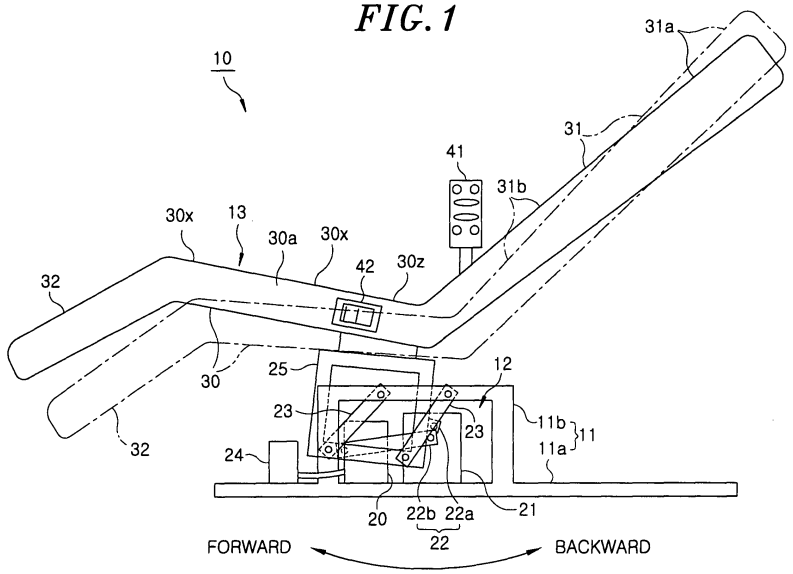
(54) Relaxation apparatus

(57) A relaxation apparatus (10) includes a body-supporting unit (13) for supporting a user's body, a rocking unit (12) for rocking the body-supporting unit back and forth and a controller (24) for controlling the rocking unit to rock the body-supporting unit. The body-supporting unit is provided with a seat (30) portion for supporting the hip and thigh of the user. The controller controls the rocking unit to perform a rocking motion within a range that a level of a front part of an upper surface of the seat portion is kept always equal to or higher than that of a rear part of the upper surface during the rocking motion.

FIG. 1



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Description

Field of the Invention

[0001] The present invention relates to a relaxation apparatus for providing a user with a relaxing effect.

Background of the Invention

[0002] A conventional relaxation apparatus, disclosed in, e.g., Japanese Patent No. 3780792, provides a user with a relaxing effect by slowly rocking a body-supporting member that supports the user's body in a seated or sleeping state by a rocking unit.

[0003] In the above-mentioned relaxation apparatus, during the rocking motion, the front part of a seat portion of the body-supporting member often gets lowered below the rear part thereof as the amplitude of the rocking motion becomes larger. Then, the user gets dislocated toward the front part of the seat portion due to the weight of the user and the like, giving rise to discomfort to the user and in turn hindering from providing him/her with a relaxing effect.

Summary of the Invention

[0004] In view of the above, the present invention provides a relaxation apparatus capable of supporting a user more stably and giving a more effective relaxing effect to the user.

[0005] In accordance with an aspect of the present invention, there is provided a relaxation apparatus including a body-supporting unit for supporting a user's body, a rocking unit for rocking the body-supporting unit back and forth and a controller for controlling the rocking unit to rock the body-supporting unit, **characterized in that**: the body-supporting unit is provided with a seat portion for supporting the hip and thigh of the user, and the controller controls the rocking unit to perform a rocking motion within a range that a level of a front part of an upper surface of the seat portion is kept always equal to or higher than that of a rear part of the upper surface during the rocking motion.

[0006] The controller may control the rocking unit so that a seat-portion angle the upper surface of the seat portion makes with a horizontal plane gets larger during the rocking motion than at a stop position of the body-supporting unit.

[0007] In the body-supporting unit, there may be provided a sunken area that has a depth becoming deeper as it goes from an outer side to an inner side in a width direction of the body-supporting unit.

[0008] When the moving direction of the body-supporting unit is reversed at a forward or backward turnover position, the controller may control the rocking unit to let the speed of the rocking motion slower as nearing the turnover positions.

[0009] The body-supporting unit may be provided with a back portion for supporting the back and head of the user and the user seats on the body-supporting unit with the knees bent. In this case, the controller may control the rocking unit so that a knee portion of the user is always not higher than a head portion of the user during the rocking motion.

[0010] In accordance with the present invention, the relaxation apparatus can support a user more stably and give a more effective relaxing effect to the user.

Brief Description of the Drawings

[0011]

Fig. 1 shows a schematic diagram of a relaxation apparatus in accordance with an embodiment of the present invention.

Figs. 2A and 2B are schematic views illustrating a sunken area of a body-supporting member.

Figs. 3A to 3C are schematic views for explaining a rocking motion of the relaxation apparatus.

Detailed Description of the Embodiments

[0012] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0013] Fig. 1 shows a schematic diagram of a relaxation apparatus in accordance with an embodiment of the present invention. As depicted in Fig. 1, the relaxation apparatus 10 includes a base 11 having a bottom portion 11a placed on the floor (not shown), a rocking machinism 12 as a rocking unit provided to the base 11 and a body-supporting member 13 as a body-supporting unit driven by the rocking mechanism 12.

[0014] The rocking mechanism 12 has a motor 20, a reduction gear 21, a crank mechanism 22 and link members 23. The motor 20 is provided on the bottom portion 11a of the base 11 and the operation thereof is controlled by a controller 24 provided on the bottom portion 11a. The reduction gear 21 is also provided on the bottom portion 11a of the base 11. The reduction gear 21 is operationally coupled with the motor 20 and serves to reduce the power of the motor 20. Further, the motor 20 has a position sensor (not shown) such as an encoder that detects the number of revolutions and revolutionary position.

[0015] The crank mechanism 22 has two connecting rods 22a and 22b, and converts the rotating motion of the reduction gear 21 into a large circular motion. The base end of the connecting rod 22a is connected to and rotates with the axis of the reduction gear 21, while its leading end is rotatably connected to the base end of the other connecting rod 22b. The leading end of the connecting rod 22b is connected to the lower portion of a rectangular frame 25 to which the body-supporting member 13 is fixed.

[0016] The aforementioned base 11 also has a support

frame 11b protruded upward from the bottom part 11a. The base ends of the linkages 23 are rotatably connected to the upper portion of the support frame 11b at an interval, while their leading ends 22b are rotatably connected to the lower portion of the rectangular frame 25. The two linkages 23 rotate around their base ends and, therefore, the body-supporting member 13, fixed to the base part 25, can be rocked back and forth by the power delivered from the crank mechanism 22, like a rocking chair.

[0017] The body-supporting member 13 of a chair shape includes a seat portion 30 which is fixed to an upper portion of the rectangular frame 25 so that they can move together, a back portion 31 attached to the rear side of the seat portion 30, and an ottoman 32 fixed at the front side of the seat portion 30, which are integrally formed. As viewed from above, the back portion 31 has a width gradually increased from a head support portion 31a, which supports the head of the user M on the rear side thereof (on the side of head M1 of the user M shown in Figs. 3A to 3C), to a waist support portion 31b that supports the waist portion including the arms of the user M, and the width of the body-supporting member 13 is gradually decreased from the front side of the waist support portion 31b, i.e., the rear side of the seat portion 30 to the front edge of the ottoman 32, therby forming a curved shape as a whole. Here, the width Y at the waist support 31b is larger than the width X at the head support 31a.

[0018] As depicted in Figs. 2A and 2B, a sunken area 40 is provided in the seat portion 30, the back portion 31 and the ottoman 32 of the body-supporting member 13, the sunken area 40 having a depth becoming deeper as it goes from the outer side to the inner side (the center) in the width direction. This sunken area 40 is of a gradually depressed, smooth, curved surface extending from the outer side to the inner side in the width direction as well as extending over the entire region from the back portion 31 to the ottoman 32 in the longitudinal direction.

[0019] As shown in Figs. 1 and 2A, at a side of the body-supporting member 13 (the back portion 31), there is provided a manipulator 41 electrically connected with the controller 24 (see Fig. 1) which can be operated by the user M, while at a side surface 30a of the seat portion 30, a main power switch 42 is installed which can turns on and off the power supply. In the manipulator 41, various switches are installed such as a course-selection switch with multiple rocking patterns and a start-up switch that turns on and off start-up of the relaxation apparatus 10 (the controller 24). And signals are appropriately generated as the user M selects the respective switches of the manipulator 41 so that the respective parts are controlled by the controller 24.

[0020] The relaxation apparatus 10 configured as described above becomes in a state in which the motor 20 can be controlled by the controller 24 if the start-up switch of the manipulator 41 is switched from a no start-up state to a start-up state. Furthermore, by the motor 20 controlled by the controller 24, the body-supporting member 13 is rocked and a relaxation rocking is carried out. Fig. 3A shows the stop position (the initial position) of the rocking motion of a relaxation rocking and the backward turnover position of the rocking motion, Fig. 3A shows a halfway position of the rocking motion and Fig. 3C shows the forward turnover position of the rocking motion. As depicted in Fig. 3A, at the beginning (stop position) of the rocking motion, the seat portion 30 is configured such that the seat-portion angle θ_1 an upper surface 30x of the seat portion 30 makes with a horizontal plane H is equal to slightly greater than 0° to make the level of a front part 30y of the upper surface 30x higher than or equal to the level of a rear part 30z thereof. Therefore, the seat portion 30 gets leveled close to the horizontal plane H and the user M can sit on the seat portion 30 relatively easily.

[0021] When the rocking motion is started, as depicted in Figs. 3B and 3C, the controller 24 controls the rocking mechanism 12 (the motor 20) to perform a rocking motion within the range that the front part 30y of the upper surface 30x of the seat portion 30 is kept always higher than the rear part 30z and the seat-portion angles θ_2 and θ_3, respectively shown in Figs. 3B and 3C, are greater than the seat-portion angle θ_1. At that time, the controller 24 controls the rocking mechanism 12 to have the knee portion M2 of the user M lower than the head portion M1 of the user M during the rocking motion. The controller 24 controls the rocking mechanism 12 (the motor 20) to perform a rocking motion such that the seat-portion angles, θ_1, θ_2 and θ_3, fall within a range between approximately 0° and 23° and the angle the back portion 31 makes with the horizontal plane H during the rocking motion fall in a range between approximately 135° and 165°.

[0022] At either of the forward turnover position where the body-supporting member 13 changes its moving direction from backward to forward as in Fig. 3C or the backward turnover position where the body-supporting member 13 changes its moving direction from forward to backward as in Fig. 3A, the controller 24 controls the rocking gear 12 (the motor 20) such that the speed of the rocking motion gets slower as nearing the turnover positions.

[0023] Because the level of the front part 30y of the seat portion 30 is always equal to or higher than the level of the rear part 30z during the rocking motion as described above, the relaxation apparatus 10 in rocking motion can stably support the user M by preventing the body of the user M from dislocating forward by his/her own weight. Because the speed of the rocking motion gets slowed down near the turnover positions of the body-supporting member 13 as shown in Figs. 3A and 3C, the inertial force acting on the user M gets diminished and the body of the user M is prevented from being moved or dislocated, providing with the user M a more effective relaxing effect without giving a feeling of discomfort.

[0024] Next, the characteristic effects of the present embodiments will be described.

(1) The body-supporting member 13 is provided with the seat portion 30 that supports the hip and thigh of a user M. And the controller 24 controls the rocking mechanism 12 (the motor 20) to perform a rocking motion within the range that the front part 30y of the upper surface 30x of the seat portion 30 is kept always equal to or higher than the rear part 30z during the rocking motion. Therefore, the body-supporting member 13 can stably support the user M by preventing the body from dislocating forward due to his/her own weight during the rocking motion, providing with the user M a more effective relaxing effect without giving a feeling of discomfort.

(2) The controller 24 controls the rocking mechanism 12 such that the seat-portion angles θ_2 and θ_3, during the rocking motion respectively shown in Figs. 3B and 3C, are greater than the seat-portion angle θ_1 the upper surface 30x of the seat portion 30 makes with the horizontal plane H at the stop position of the rocking motion shown in Fig. 3_A. In other words, by making the seat-portion angle θ_1 at the stop position of the rocking motion smaller than the seat-portion angles θ_1 and θ_3 during the rocking motion, the seat portion 30 gets leveled close to the horizontal plane H and the user M can sit on the seat portion 30 relatively easily.

(3) In the body-supporting member 13, the sunken area 40 is provided such that it has a depth becoming deeper as it goes from the outer side to the inner side in the width direction. Because the user M can be stably supported in the sunken area 40 of the body-supporting member 13, the user M is prevented from moving forward or dislocating, providing with the user M a more effective relaxing effect without giving a feeling of discomfort. In addition, the user M in a relaxing state (especially in a sleep state) can be prevented from falling from the body-supporting member 13.

(4) When the body-supporting member 13 changes its moving direction to forward and backward as in Figs. 3C and 3A, the controller 24 controls the rocking mechanism 12 such that the speed of the rocking motion gets slower as nearing the turnover positions. Hence, the inertial force acting on the user M gets diminished at the turnover positions and the body of the user M is prevented from being moved or dislocated, providing the user M with a more effective relaxing effect without giving a feeling of discomfort.

(5) The body-supporting member 13 includes the back portion 31 for supporting the back and head parts of a user and the user can sit on the body-supporting member 13 with the knees bent. In addition, the controller 24 controls the rocking mechanism 12 not to allow the knee portion M2 higher than the head portion M1 (the head position P) of the user during the entire course of the rocking motion. Therefore, it is possible to prevent the user M from feeling the the head part M1 falls backward, providing with the user M a more effective relaxing effect without giving a feeling of nausea.

[0025] The embodiments of the present invention may be modified as described below.

[0026] Although, in the embodiment described above, the controller 24 is configured to control the rocking mechanism 12 such that the seat-portion angles θ_2 and θ_3 during the rocking motion get greater than the seat-portion angle θ_1 of the seat portion 30 at the stop position of the rocking motion, the present invention is not limited thereto and the angles may be appropriately varied. The point is to configure such that the seat-portion angle is equal to or greater than 0° during the rocking motion.

[0027] Although, in the embodiment described above, the sunken area 40 is provided to the body-supporting member 13, it may be configured to provide the sunken area 40 to at least one of the seat portion 30, the back portion 31 and the ottoman 32.

[0028] Although, in the embodiment described above, it is configured that the speed of the rocking motion gets slower as nearing the turnover positions, the present invention is not limited thereto and the speed of the rocking motion may be kept constant at all times.

[0029] Even though it is not mentioned explicitly in the embodiment described above, it may be configured to employ angle-regulation mechanisms as a reclining mechanism (not shown) that regulates the angle of the back portion 31 and a seat-portion angle regulation mechanism (not shown) that regulates the angle of the seat portion 30 and to have the controller 24 control them such that the knee portion M2 of the user M is always not higher than the head portion M1 of the user during the rocking motion as depicted in Figs. 3B and 3C. Therefore, it is possible to prevent the user M from feeling that the head part M1 falls backward so that the user can be stably supported, providing the user M with a more effective relaxing effect without giving a feeling of discomfort.

[0030] Even though it is not mentioned explicitly in the embodiment described above, for example, the angle the seat portion 30 makes with at least one of the back portion 31 and the ottoman 32 may be configured to be variable, that is, at least one of the back portion 31 and the ottoman 32 may be configured to be reclined toward the seat portion 30.

[0031] Although, in the embodiment described above, the manipulator 41 is installed at the side of the back portion 31, the present invention is not limited thereto; and, for example, the manipulator 41 may be installed at the side of the seat portion 30 or other places.

[0032] Even though it is not mentioned explicitly in the embodiment described above, it may be configured that air bags, provided to respective parts of the body-supporting member 13, perform appropriate expansion and contraction motions to give a relaxing effect like massaging or a refresh effect by stimulation of the expansion motion.

[0033] Although, in the embodiment described above, it is configured that a refresh rocking follows a relaxation rocking, only a relaxation rocking may be carried out.

[0034] Even though it is not mentioned explicitly in the embodiment described above, there may be provided a mechanism for generating music or vibration corresponding to the relaxation rocking or refresh rocking.

[0035] While the invention has been shown and described with respect to the embodiments, it will be understood by those skilled in the art that various changes and modifications may be made without departing from the scope of the invention as defined in the following claims.

Claims

1. A relaxation apparatus comprising a body-supporting unit for supporting a user's body, a rocking unit for rocking the body-supporting unit back and forth and a controller for controlling the rocking unit to rock the body-supporting unit, **characterized in that:**

   the body-supporting unit is provided with a seat portion for supporting the hip and thigh of the user, and
   the controller controls the rocking unit to perform a rocking motion within a range that a level of a front part of an upper surface of the seat portion is kept always equal to or higher than that of a rear part of the upper surface during the rocking motion.

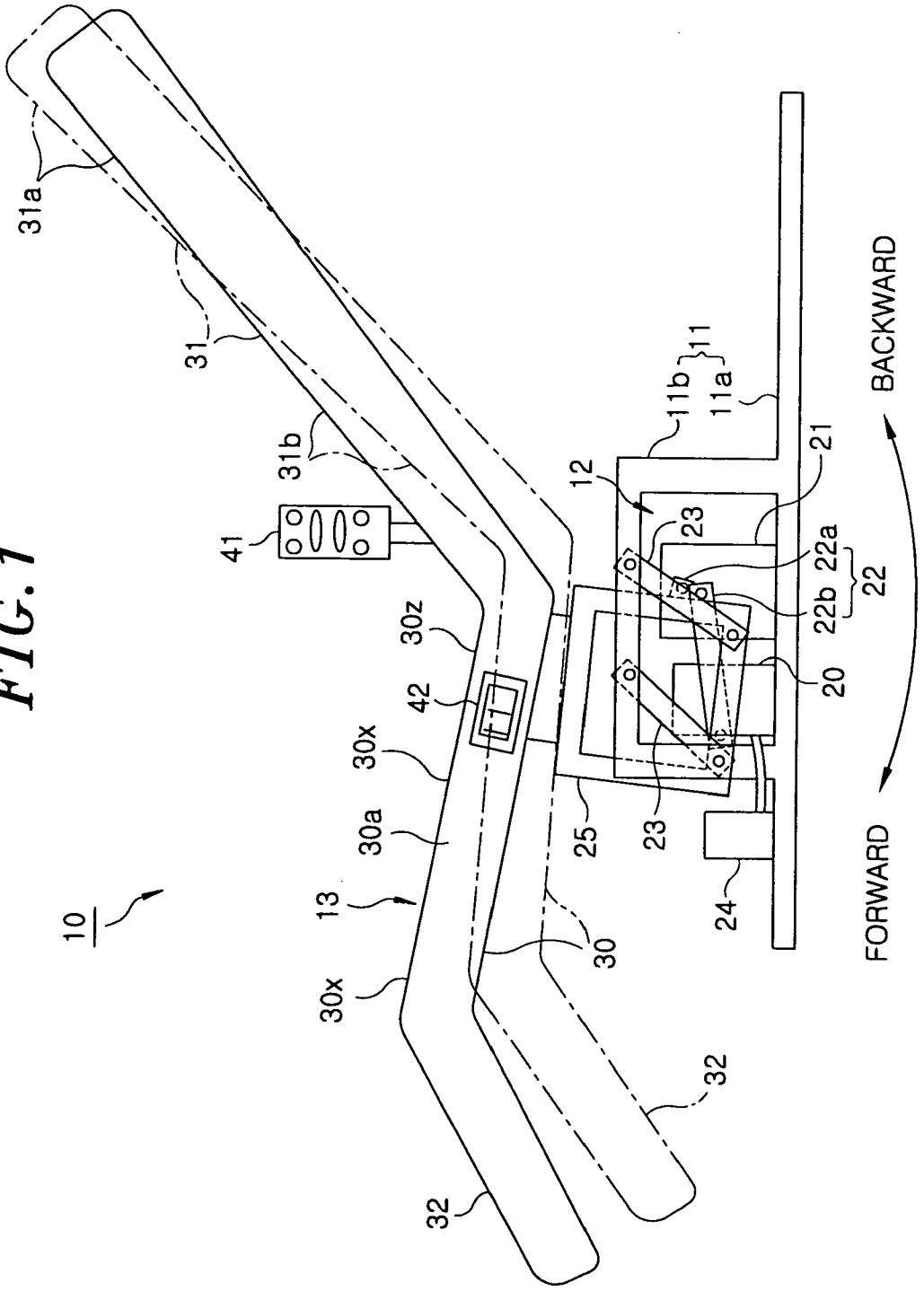
2. The relaxation apparatus of claim 1, wherein the controller controls the rocking unit so that a seat-portion angle the upper surface of the seat portion makes with a horizontal plane gets larger during the rocking motion than at a stop position of the body-supporting unit.

3. The relaxation apparatus of claim 1 or 2, wherein, in the body-supporting unit, a sunken area is provided that has a depth becoming deeper as it goes from an outer side to an inner side in a width direction of the body-supporting unit.

4. The relaxation apparatus of any one of claims 1 to 3, wherein when the moving direction of the body-supporting unit is reversed at a forward or backward turnover position, the controller controls the rocking unit to let the speed of the rocking motion slower as nearing the turnover positions.

5. The relaxation apparatus of any one of claims 1 to 4, wherein the body-supporting unit is provided with a back portion for supporting the back and head of the user and the user seats on the body-supporting unit with the knees bent; and the controller controls the rocking unit so that a knee portion of the user is always not higher than a head portion of the user during the rocking motion.

FIG. 1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11a
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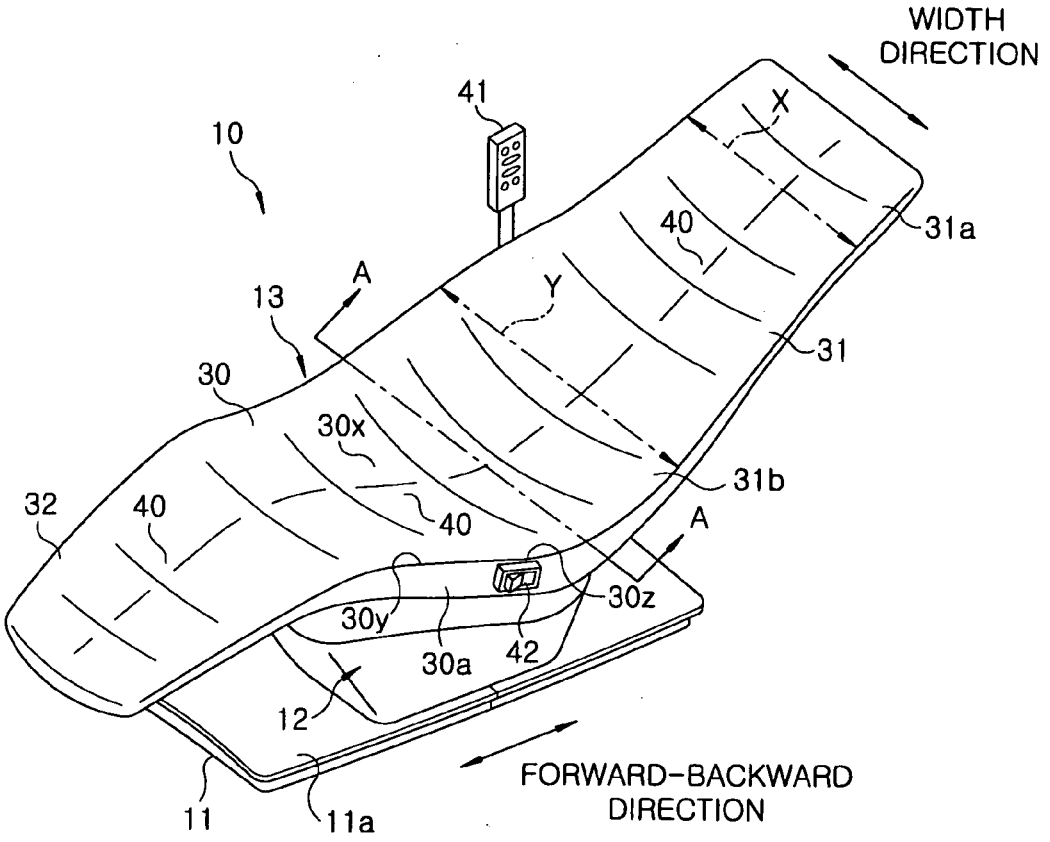
21
23
22a
22b
22
20
BACKWARD
FORWARD

FIG. 2A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FORWARD-BACKWARD
DIRECTION
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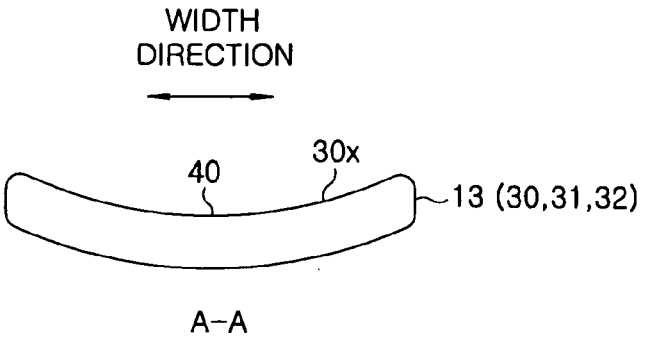
11a

FIG. 2B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A-A

FIG. 3A

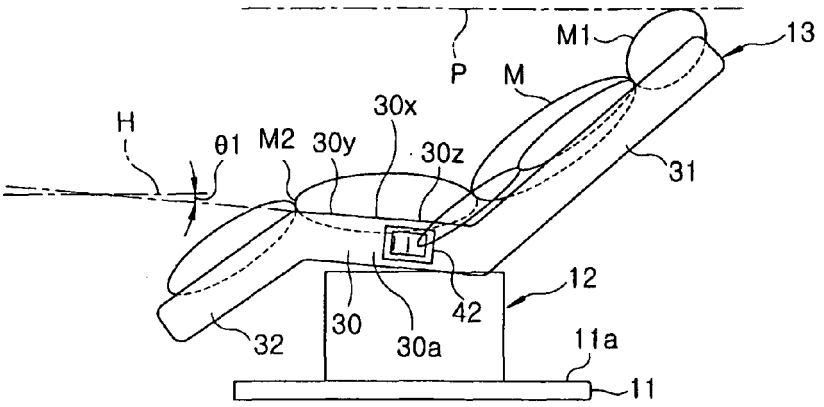


FIG. 3B

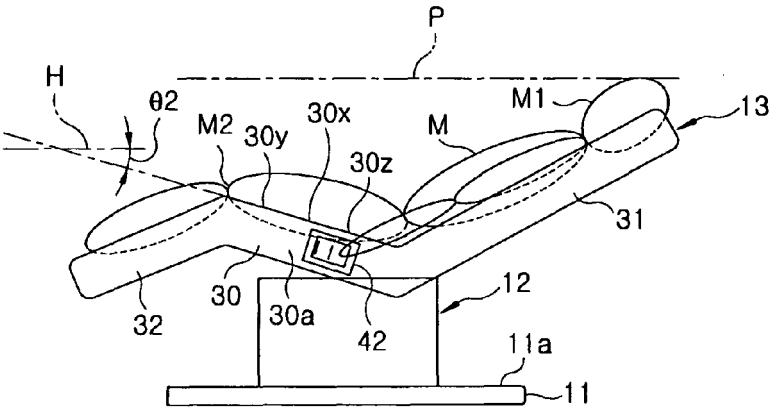
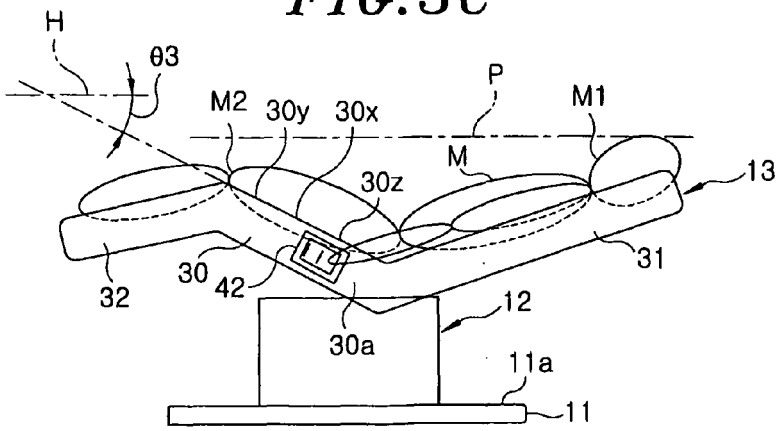


FIG. 3C



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EUROPEAN SEARCH REPORT

Application Number
EP 09 01 4412

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 2001 178576 A (MATSUSHITA ELECTRIC WORKS LTD) 3 July 2001 (2001-07-03) * abstract; figures 1-13 *	1-5	INV. A47C3/02
X	JP 2001 149164 A (MATSUSHITA ELECTRIC WORKS LTD) 5 June 2001 (2001-06-05) * abstract; figures 1-35 *	1-5	
X	JP 2000 300374 A (MATSUSHITA ELECTRIC WORKS LTD) 31 October 2000 (2000-10-31) * abstract; figures 1-17 *	1-5	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	14 April 2010	Klintebäck, Daniel

CATEGORY OF CITED DOCUMENTS

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14-04-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2001178576 A	03-07-2001	NONE	
JP 2001149164 A	05-06-2001	NONE	
JP 2000300374 A	31-10-2000	NONE	

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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