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(54) **Relaxation apparatus**

Entspannungseinrichtung

Appareil de relaxation

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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] There is disclosed in, e.g., Japanese Patent Laid-open Publication No. 2000-42112 a conventional relaxation apparatus for providing 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 using a rocking unit. In this relaxation apparatus, the user can operate an operation switch of a manipulator to change at will the frequency of a rocking motion of the body-supporting member that supports his/her body.

[0003] US 2007/063558 A1 discloses a relaxation apparatus according to the preamble of claim 1.

Summary of the Invention

[0004] While the invention is defined in the independent claim 1, further aspects of the invention are set forth in the dependent claims, the drawings and the following description.

[0005] In the above-mentioned relaxation apparatus, in addition to the change in the frequency of a rocking motion, various other settings can be performed by a manipulator during the rocking motion, for example, the amplitude of the rocking motion can be changed and the reclining angle of the body-supporting member can be properly modified.

[0006] If the user gazes at minute details such as an operation switch of the manipulator when he/she operates the manipulator during a rocking motion, however, he/she has been prone to feel nausea.

Summary of the Invention

[0007] In view of the above, the present invention provides a relaxation apparatus capable of restraining a user from feeling nausea when he/she operates a manipulator during a rocking motion.

[0008] 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 in at least one direction and a controller for controlling the rocking unit to rock the body-supporting unit, characterized in that: a manipulator operated by the user is provided to give instructions to the controller based on manipulations performed by the user; and the controller controls the rocking unit to reduce the rocking speed of the body-supporting unit when it is determined that the user operates the manipulator during the rocking motion.

[0009] The manipulator may be provided with an indi-

cator that is switched on and off, and the controller may control the indicator to be turned off when it is determined that the manipulator is not operated during the rocking motion.

[0010] The manipulator may include an indicator that has multiple light-emitting diodes and an operation switch that gives instructions to the controller.

[0011] The manipulator may be provided to a rocking member including the body-supporting unit, and may be configured to move together with the rocking member during the rocking motion.

[0012] The operation switch may include an electrostatic sensor, and the electrostatic sensor is used at least for a judgment as to whether the manipulator is operated.

[0013] In other words, the electrostatic sensor carries out a judgment as to whether the operation switch and the manipulator are operated.

[0014] The relaxation apparatus in accordance with the present invention is capable of restraining a user from feeling nausea when he/she operates a manipulator during a rocking motion.

Brief Description of the Drawings

[0015]

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

Fig. 2 illustrates a perspective view of the relaxation apparatus.

Fig. 3 shows a schematic diagram of a manipulator of the relaxation apparatus.

Fig. 4 shows a block diagram of a configuration of the relaxation apparatus.

Fig. 5 shows a graph that explains the relation between of the evolution of the state of a manipulator and the rocking speed of a body-supporting member.

Detailed Description of the Embodiments

[0016] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0017] 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 mechanism 12 as a rocking unit provided to the base 11 and a body-supporting member 13 as a body-supporting unit and a rocking member driven by the rocking mechanism 12.

[0018] 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.

[0019] 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.

[0020] 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.

[0021] 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 on the rear side thereof, which supports the head of the user M, to a waist support portion 31b that supports the waist portion including the arms of the user M, so that the width Y at the waist support 31b is larger than the width X at the head support 31a. On the other hand, 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, forming a curved shape as a whole.

[0022] As shown in Figs. 1 and 2, a manipulator 41 is installed on the side of the body-supporting member 13 (the back portion 31), which can be attached and detached by a manipulator holder 40 and a main power switch 42 is installed on the side surface 30a of the seat portion 30, which can turn on and off the power supply.

[0023] As shown in Fig. 3, the manipulator 41 includes various switches 43 to 49, such as course selection switches 43, a swing regulator switch 44, a reclining-angle regulator switch 45, a volume regulator switch 46, a vibration regulator switch 47, an air-bag regulator switch 48 and a start-up switch 49, each of which having an electrostatic sensor 50 (see Fig. 4); and indicators 51 that can respectively show on and off positions of the

various switches 43 to 49.

[0024] The course selection switches 43 include multiple switches 43a, 43b, 43c and 43d to select multiple courses (four courses A to D in the present embodiment) and, as shown in Fig. 4, according to the selections of the respective switches 43a to 43d, corresponding control signals are output to the controller 24 from the control selector 41a where multiple rocking patterns are set up.

[0025] The swing regulator switch 44 is electrically connected to a speed regulator 41b and an amplitude regulator 41c for regulating respectively the speed and amplitude of a rocking motion, as shown in Fig. 4. By the user operating the swing regulator switch 44, the speed and amplitude of the rocking motion of the body-supporting member 13 can be changed in three steps.

[0026] By the user operating the reclining-angle regulator switch 45, a reclining control signal is outputted to the controller 24 through the reclining regulator 41d, as shown in Fig. 4, and the controller 24 that receives the signal controls the reclining driver 13a properly to regulate the reclining angle of the body-supporting member 13.

[0027] The volume regulator switch 46 is to regulate the volume of a speaker (not shown) and in the present embodiment the volume can be regulated in five levels. The vibration regulator switch 47 is to regulate the degree of vibration of vibrating parts (not shown) and in the present embodiment the vibration can be regulated in five levels. The air-bag regulator switch 48 is to change the amount of expansion of air bags (not shown) and in the present embodiment the expansion can be regulated in five levels. The start-up switch 49 is to turn the relaxation apparatus 10 on and off and the controller 24 can control the respective parts by operating the start-up switch 49 to turn it on.

[0028] The indicators 51 include light-emitting diodes within a transparent cell of a casing of the manipulator 41 and are installed in the interior of the respective switches 43 to 49, and level displays 44a, 46a, 47a and 48a provided to show the current status of the motion by the respective switches 44, 46, 47 and 48.

[0029] In the relaxation apparatus 10 configured as described above, the controller 24 controls the motor 20 to rock the body-supporting member 13 back and forth in a relaxation motion that provides a user with an effective relaxation effect.

[0030] During a relaxation rocking, the indicators 51 for the respective switches 43 to 49 are turned off so that they are restrained from being recognized by the user. During the relaxation rocking, the sensors 50 output signals to the controller 24 if the respective switches 43 to 49 are operated by the user. The controller 24 that receives signals from the sensors 50 controls the corresponding indicators 51 to be turned on. At the same time, that is, if the respective switches 43 to 49 including the sensors 50 are operated by the user, the controller 24 controls the rocking mechanism 12 to reduce the speed of the rocking motion of the body-supporting member 13

to a predetermined level α as shown in Fig. 5.

[0031] If a user operates the minute switches 43 to 49 of the manipulator 41 while gazing at them during the rocking motion, he/she could have felt nausea. In the present embodiment of the relaxation apparatus 10, however, the speed of the rocking motion of the body-supporting member 13 gets reduced to the predetermined value α so that unpleasant stimulations to the semicircular canal of the user may be restrained and, therefore, it becomes possible to restrain him/her from feeling nausea.

[0032] Next, the characteristic effects of the present embodiments will be described.

(1) The relaxation apparatus 10 includes the manipulator 41 that gives instructions to a controller 24 based on an operation performed by a user. In addition, when it is determined that the user operates the manipulator 41 during a rocking motion, the controller 24 controls the rocking mechanism 12 to reduce the speed of the rocking motion of the body-supporting member 13. That is, when the manipulator 41 is operated during a rocking motion, because the speed of the rocking motion of the body-supporting member 13 gets reduced, unpleasant stimulations to the semicircular canal of the user may be restrained and, therefore, it becomes possible to restrain him/her from feeling nausea.

(2) The manipulator 41 includes the indicators 51 that can indicate operation states of respective switches 43 to 49. In addition, if it is determined that the manipulator 41 is not operated during a rocking motion, the indicators are turned off. In other words, by turning off the indicators 51 while the user does not operate the manipulator 41, it is possible to make the user hard to perceive the indicators 51 even though he/she recognizes the presence of the manipulator. Hence, the user being restrained from gazing at the indicators, unpleasant stimulations to the semicircular canal of the user may be restrained and, therefore, it becomes possible to restrain him/her from feeling nausea.

(3) The manipulator 41 includes the indicators 51 with the light-emitting diodes and the operation switches 43 to 49 which give instructions to the controller 24. Hence, even though the user recognizes the manipulator 41 during a rocking motion, because the manipulator 41 has a plain and simple configuration, the user can be restrained from gazing at the indicators, and, therefore, it becomes possible to restrain him/her from feeling nausea.

(4) Because the manipulator 41 is installed on the side of the body-supporting member 13, the manipulator 41 moves together with the body-supporting member 13 during a rocking motion. Accordingly, the relative position of the head of a user with the manipulator can be kept unchanged during the rocking motion. As a result, even though the user recog-

nized the manipulator 41, unpleasant stimulations to the semicircular canal of the user may be restrained and, therefore, it becomes possible to restrain him/her from feeling nausea.

[0033] The embodiments of the present invention may be modified as described below.

[0034] Although, in the embodiment described above, the switches having an electrostatic sensor are employed to determine whether a user would operate the manipulator 41 or not, other types of switches such as tactile switches, rubber switches or membrane switches may be employed instead. In addition, whether a user would operate the manipulator 41 or not may be determined by installing a switch mechanism on a manipulator holder 40 and using it to detect the attachment or detachment of the manipulator 41. Besides, whether a user would operate the manipulator 41 or not may be determined by, e.g., a proximity sensor detecting the user's body (e.g., a hand) at a distance from the manipulator 41 when the user's hand approaches the manipulator 41.

[0035] Although, in the embodiment described above, the speed of a rocking motion is set to be the predetermined value α while the user operates manipulator 41 (see Fig. 5), it may be reduced at a constant rate in proportion to the initial speed before the operation.

[0036] Although, in the embodiment described above, the indicators 51 are turned off when the manipulator 41 is not in operation during a relaxation rocking, they may be turned on at all times.

[0037] Although, in the embodiment described above, the manipulator 41 includes the indicators 51 with the light-emitting diodes and the various switches 43 to 49, the present invention is not limited thereto. For example, the manipulator may include a liquid crystal display.

[0038] Although, in the embodiment described above, the indicators 51 have the light-emitting diodes, other lighting parts may be employed.

[0039] Although, in the embodiment described above, the body-supporting member 13 is rocked back and forth, the present invention is not limited thereto and, for example, it may be rocked from side to side.

[0040] Even though it is not mentioned explicitly in the embodiment described above, air bags may be installed on the various parts of the body-supporting member 13 in order to provide with a relaxation effect such as massaging by carrying out suitable expansion and contraction thereof.

[0041] Even though it is not mentioned explicitly in the embodiment described above, the controller 24 may control the motor 20 to carry out a refresh rocking that awakes a user in a relaxation (sleeping) state, for example, by having the amplitude or frequency of a rocking motion higher after the relaxation motion than during the relaxation motion.

[0042] Even though it is not mentioned explicitly in the embodiment described above, there may be provided a mechanism for generating music or vibration corre-

sponding to the relaxation rocking or refresh rocking.

[0043] 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 (10) comprising a body-supporting unit (13) for supporting a user's body, a rocking unit (12) for rocking the body-supporting unit (13) in at least one direction and a controller (24) for controlling the rocking unit (12) to rock the body-supporting unit (13), **characterized in that** the apparatus further comprises:

a manipulator (41) operated by the user and provided with a plurality of operation switches that give instructions to the controller (24) based on manipulation performed by the user; and the controller (24) controls the rocking unit (12) to reduce the rocking speed of the body-supporting unit (13) when it is determined that the user operates at least one of the operation switches during the rocking motion.

2. The relaxation apparatus (10) of claim 1, wherein the manipulator (41) is provided with an indicator that is switched on and off, and the controller (24) controls the indicator to be turned off when it is determined that the manipulator (41) is not operated during the rocking motion.
3. The relaxation apparatus (10) of claim 1 or 2, wherein the manipulator (41) is provided with an indicator that has multiple light-emitting diodes.
4. The relaxation apparatus (10) of any one claims 1 to 3, wherein the manipulator (41) is provided to the body-supporting unit (13), and is configured to move together with the body-supporting unit (13) during the rocking motion.
5. The relaxation apparatus (10) of claim 1 or 2, wherein an operation switch including an electrostatic sensor is provided to the manipulator (41) to give instructions to the controller (24), and the electrostatic sensor is used at least for a judgment as to whether the manipulator (41) is operated.
6. The relaxation apparatus (10) of claim 3, wherein the operation switch includes an electrostatic sensor, and the electrostatic sensor is used at least for a judgment as to whether the manipulator (41) is operated.

Patentansprüche

1. Entspannungsvorrichtung (10) umfassend eine Körperlagerungseinheit (13) zum Lagern eines Körpers eines Nutzers, eine Schaukeleinheit (12) zum Schaukeln der Körperlagerungseinheit (13) in wenigstens eine Richtung und eine Steuereinheit (24) zum Steuern der Schaukeleinheit (12) um die Körperlagerungseinheit (13) zu schaukeln, **dadurch gekennzeichnet, dass** die Vorrichtung weiter umfasst:

ein Handhabungsmittel (41), das von dem Nutzer betätigt wird und mit mehreren Bedienschaltern vorgesehen ist, die Instruktionen an die Steuereinheit (24) basierend auf der durch den Nutzer durchgeführten Handhabung geben; und die Steuereinheit (24) die Schaukeleinheit (12) steuert, um die Schaukelgeschwindigkeit der Körperlagerungseinheit (13) zu verringern, wenn erfasst wird, dass der Nutzer wenigstens einen der Bedienschalter während der Schaukelbewegung betätigt.

2. Entspannungsvorrichtung (10) gemäß Anspruch 1, bei der das Handhabungsmittel (41) mit einem Anzeigemittel vorgesehen ist, das an und ausgeschaltet wird, und die Steuereinheit (24) das Anzeigemittel derart steuert, um abgeschaltet zu werden, wenn erfasst wird, dass das Handhabungsmittel (41) während der Schaukelbewegung nicht betätigt wird.
3. Entspannungsvorrichtung (10) gemäß Anspruch 1 oder 2, bei der das Handhabungsmittel (41) mit einem Anzeigemittel vorgesehen ist, dass mehrere lichtemittierende Dioden aufweist.
4. Entspannungsvorrichtung (10) gemäß einem der Ansprüche 1 bis 3, bei der das Handhabungsmittel (41) an der Körperlagerungseinheit (13) vorgesehen ist, und ausgelegt ist, um sich zusammen mit der Körperlagerungseinheit (13) während der Schaukelbewegung zu bewegen.
5. Entspannungsvorrichtung (10) gemäß Anspruch 1 oder 2, bei der ein Bedienschalter einschließlich eines elektrostatischen Sensors an dem Handhabungsmittel (41) vorgesehen ist, um Instruktionen an die Steuereinheit (24) zu geben, und der elektrostatische Sensor wenigstens für eine Beurteilung verwendet wird, ob das Handhabungsmittel (41) betätigt wird.
6. Entspannungsvorrichtung (10) gemäß Anspruch 3, bei der der Bedienschalter einen elektrostatischen Sensor umfasst, und der elektrostatische Sensor wenigstens für eine Be-

urteilung verwendet wird, ob das Handhabungsmittel (41) betätigt wird.

le capteur électrostatique est utilisé au moins pour apprécier si le moyen de manipulation (41) est actionné.

Revendications

1. Appareil de relaxation (10) comprenant une unité de support de corps (13) pour supporter le corps d'un utilisateur, une unité de basculement (12) pour basculer l'unité de support de corps (13) dans au moins une direction et un contrôleur (24) pour commander l'unité de basculement (12) afin de basculer l'unité de support de corps (13), **caractérisé en ce que** l'appareil comprend en outre :

un moyen de manipulation (41) actionné par l'utilisateur et muni d'une pluralité de commutateurs d'actionnement qui donnent des instructions au contrôleur (24) sur la base d'une manipulation réalisée par l'utilisateur ; et
le contrôleur (24) commande l'unité de basculement (12) afin de réduire la vitesse de basculement de l'unité de support de corps (13) lorsqu'il est déterminé que l'utilisateur actionne au moins l'un des commutateurs d'actionnement pendant le mouvement de basculement.

2. Appareil de relaxation (10) selon la revendication 1, dans lequel :

le moyen de manipulation (41) est muni d'un indicateur qui est commuté en marche et en arrêt ; et
le contrôleur (24) commande l'indicateur de sorte qu'il soit commuté en arrêt lorsqu'il est déterminé que le moyen de manipulation (41) n'est pas actionné pendant le mouvement de basculement.

3. Appareil de relaxation (10) selon la revendication 1 ou 2, dans lequel le moyen de manipulation (41) est muni d'un indicateur qui comporte de multiples diodes émettrices de lumière.

4. Appareil de relaxation (10) selon l'une quelconque des revendications 1 à 3, dans lequel le moyen de manipulation (41) est prévu sur l'unité de support de corps (13) et est configuré de manière à se déplacer en association avec l'unité de support de corps (13) pendant le mouvement de basculement.

5. Appareil de relaxation (10) selon la revendication 1 ou 2, dans lequel :

un commutateur d'actionnement incluant un capteur électrostatique est prévu sur le moyen de manipulation (41) pour donner des instructions au contrôleur (24) ; et

6. Appareil de relaxation (10) selon la revendication 3, dans lequel :

le commutateur d'actionnement inclut un capteur électrostatique ; et
le capteur électrostatique est utilisé au moins pour apprécier si le moyen de manipulation (41) est actionné.

FIG. 1

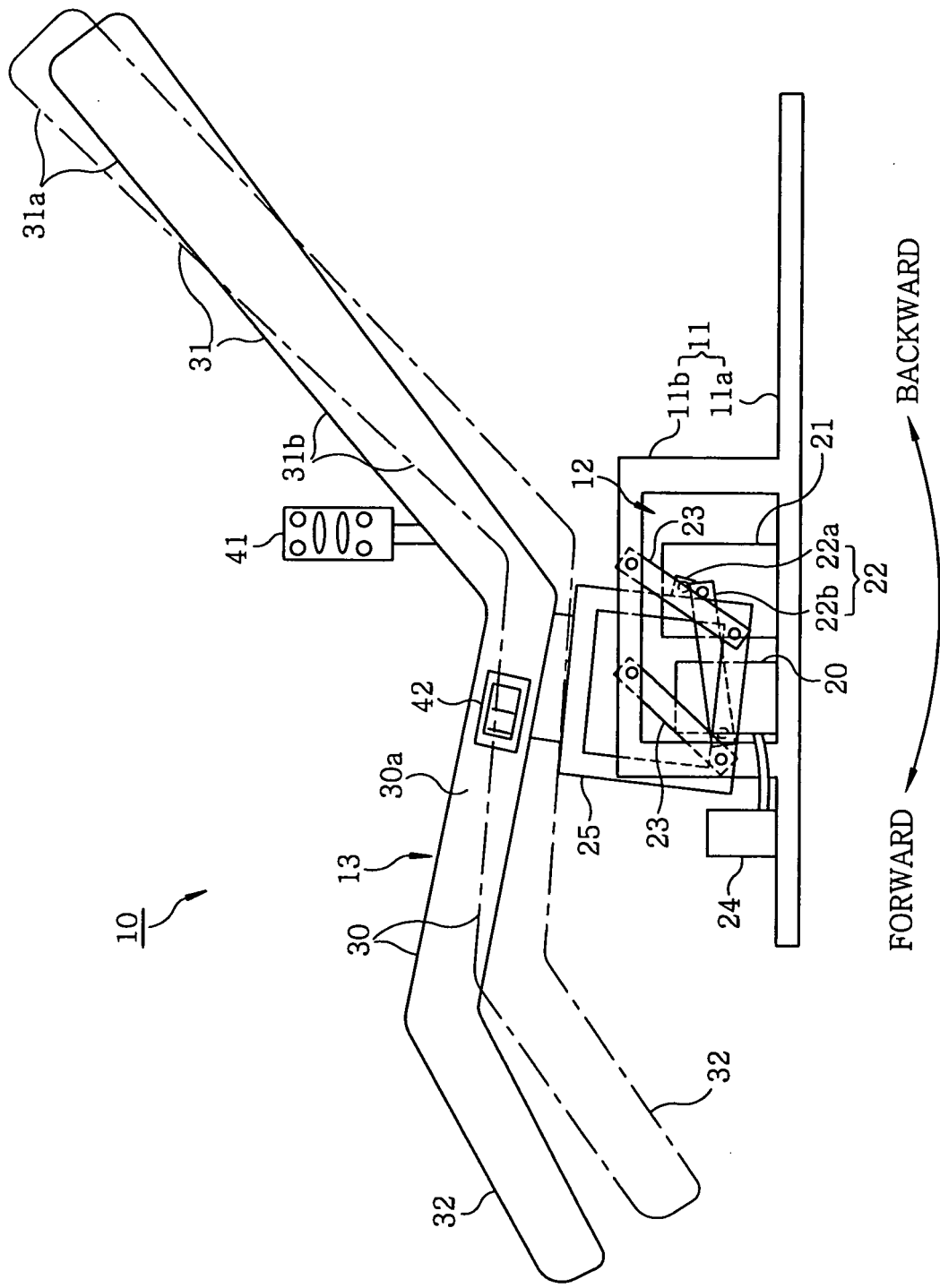


FIG. 2

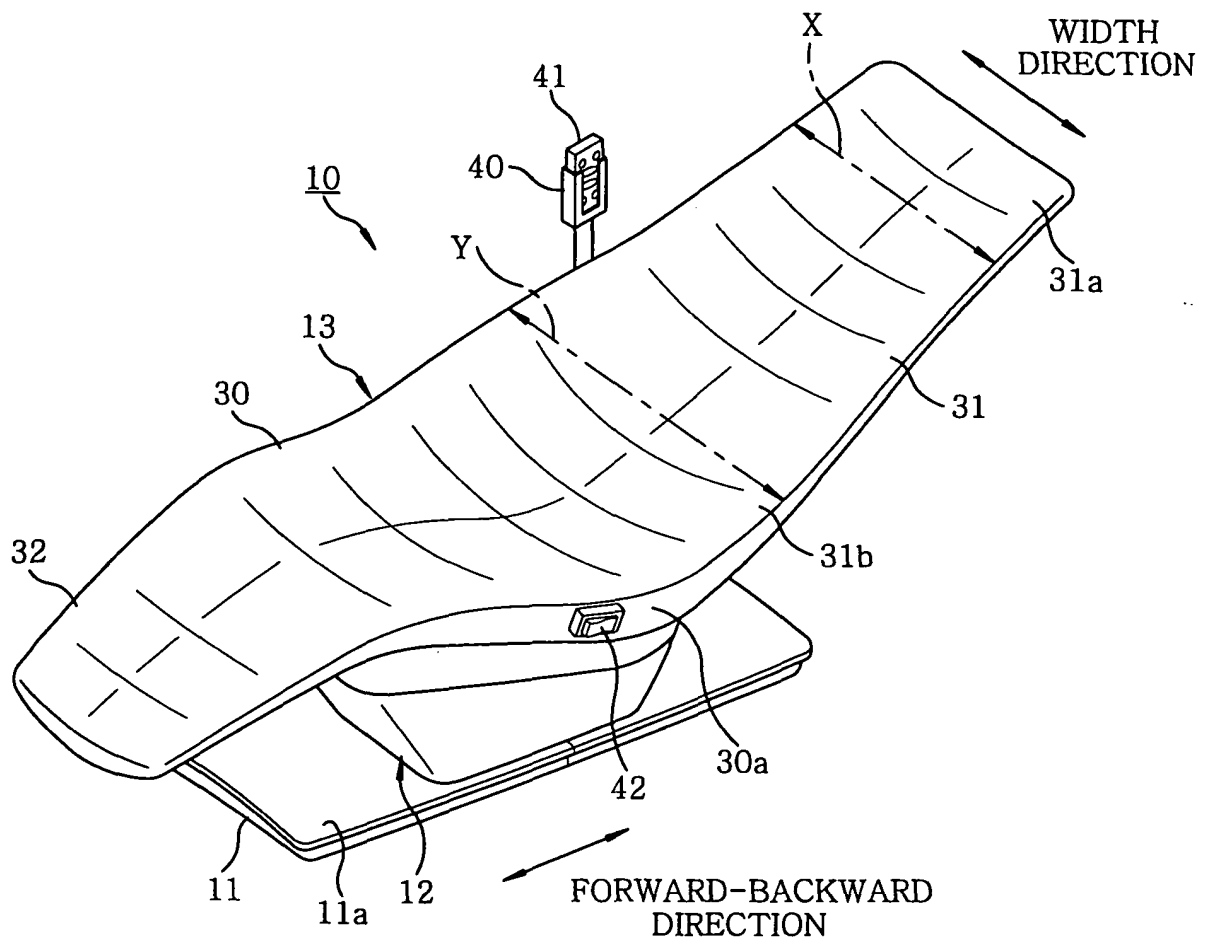


FIG. 3

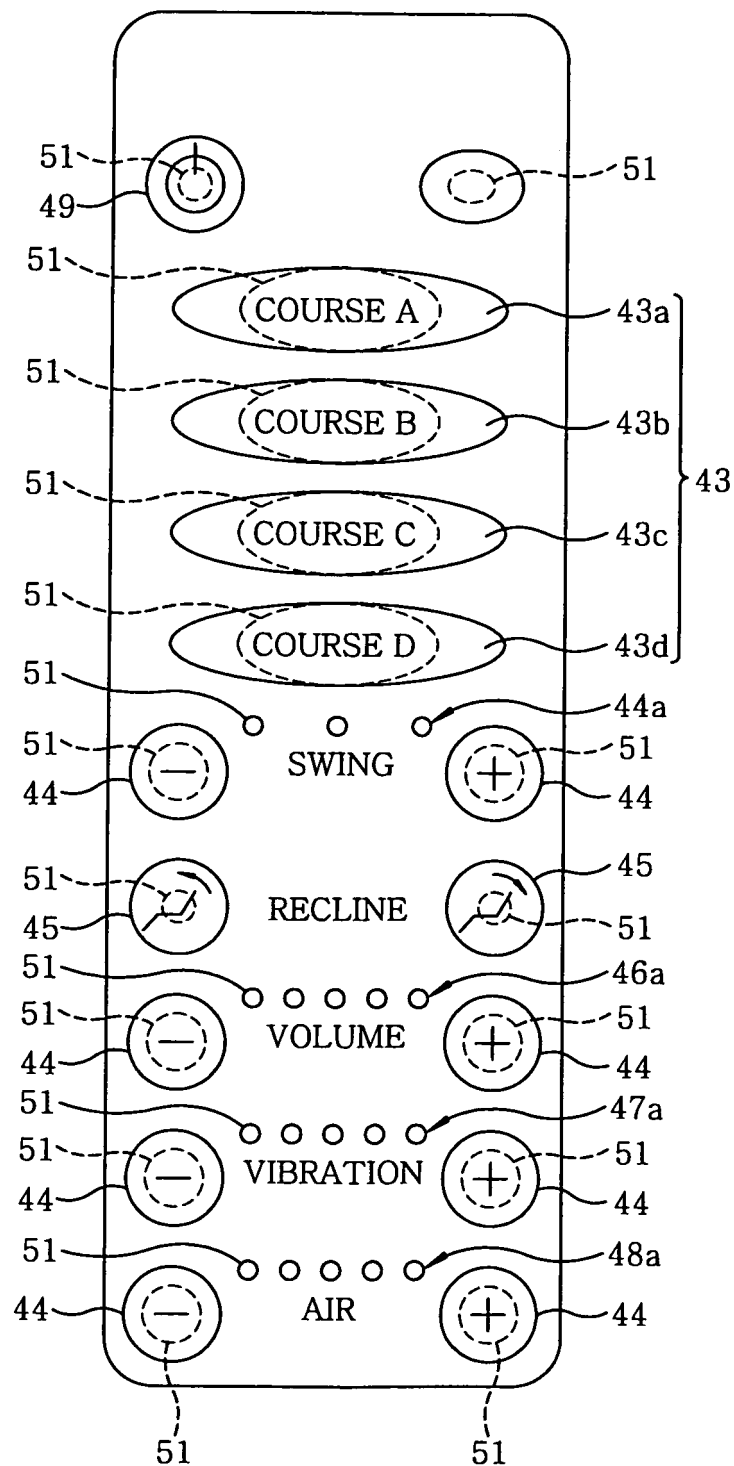


FIG. 4

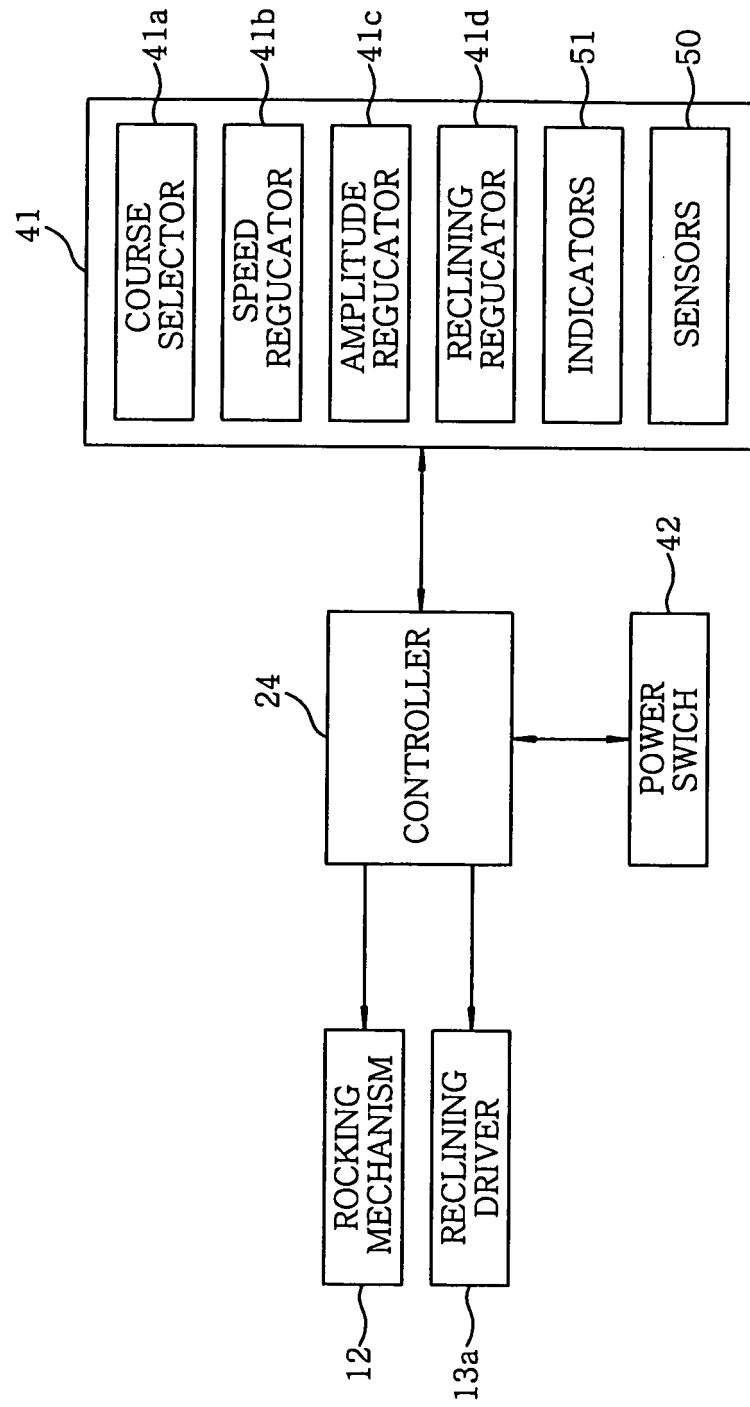


FIG. 5A

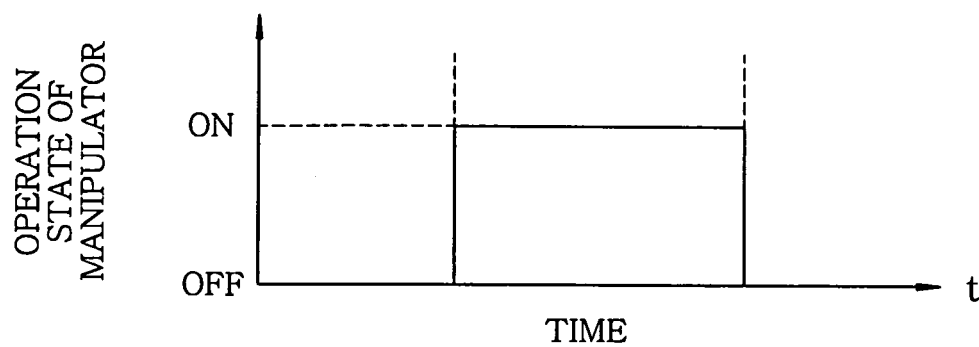
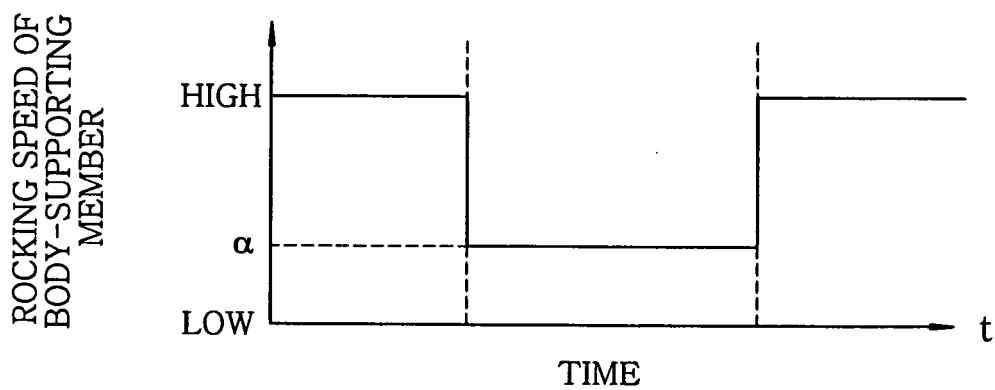


FIG. 5B



REFERENCES CITED IN THE DESCRIPTION

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