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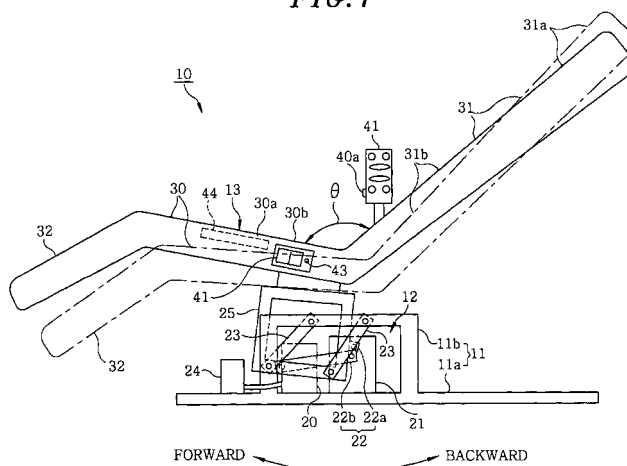
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(54) **Relaxation apparatus**

(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 at least in one direction and a control unit (24) for controlling the rocking unit to rock the body-supporting unit. The relaxation apparatus further includes a manipulator (40) by which a user selects any one of a plurality of courses in which amplitude and frequency of the rocking motion of

the body-supporting unit are differently set, respectively, a memory unit (45) that stores a plurality of music information data, a selection unit (50-56) for selecting music information, among the music information data, in accordance with the course selected by the user, and a generating unit (44) for generating at least one of sound and vibration in accordance with the music information selected by the selection unit.

FIG. 1



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.

[0003] Although the above-mentioned relaxation apparatus provides a user with a relaxing effect by rocking the body-supporting unit, the relaxing effect due to the rocking motion alone has a limited effect and, hence, development of a relaxation apparatus capable of providing a user with a more effective relaxation is in demand.

Summary of the Invention

[0004] In view of the above, the present invention provides a relaxation apparatus capable of giving a user a more effective relaxation by a combination of a rocking motion with a separate function.

[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 at least in one direction and a control unit for controlling the rocking unit to rock the body-supporting unit. The relaxation apparatus further includes: a manipulator by which a user selects any one of a plurality of courses in which amplitude and frequency of the rocking motion of the body-supporting unit are differently set, respectively; a memory unit that stores a plurality of music information data; a selection unit for selecting music information, among the music information data, in accordance with the course selected by the user; and a generating unit for generating at least one of sound and vibration in accordance with the music information selected by the selection unit.

[0006] With such configuration, the selection unit determines music information, among the plurality of music information data stored in advance in the memory unit, in accordance with the course selected by the user and at least one of the sound and the vibration is generated through the generating unit in accordance to the music information selected by the selection unit, so that the user can be provided with a sound suitable to the course. Therefore, for example, in addition to a relaxing effect by the conventional rocking motion, it becomes possible to provide the user with an effective relaxation by sound and/or vibration tuned to the corresponding rocking motion.

[0007] The generating unit may include at least one of a speaker that generates sound and a low-frequency vibrator that generates low-frequency vibrations on at least a portion of the body-supporting unit.

[0008] With such configuration, the user can be provided with at least one of sound and vibration depending on a course. Therefore, in addition to the relaxing effect due to the conventional rocking motion, a more effective relaxation can be provided to the user by the sound and/or the vibration tuned to the rocking motion.

[0009] The relaxation apparatus may further include an external input unit through which external music information is input and the generating unit is configured to generate at least one of the sound and the vibration in accordance with the external music information input through the external input unit.

[0010] With such configuration, the external input unit is provided to generate sound and/or vibration in accordance with the external music information input there-through so that it becomes possible, in addition to a relaxing effect by the conventional rocking motion, for example, to provide the user with a relaxing effect by listening to the music he/she likes. Further, when a vibration is generated in accordance with the external music information, a low-frequency vibration that the user likes can be provided.

[0011] The relaxation apparatus may further include a switching unit by which the user is able to select the external music information or the music information data stored in the memory unit.

[0012] With such configuration, by using the switching unit, the user can select either of the external music information and the music information data (internal music information) stored in advance. Accordingly, the switching can be easily made at the user's disposal when he/she uses the relaxation apparatus.

[0013] When the external music information is input through the external input unit, the control unit may control the generating unit to generate at least one of the sound and the vibration in accordance with the external music information.

[0014] With such configuration, the external music information can be utilized easily without switching between the external music information and the music information data (the internal music information) stored in the memory unit.

[0015] The relaxation apparatus in accordance with the present invention is capable of giving a user a more effective relaxation by a combination of a rocking motion with a separate function.

Brief Description of the Drawings

[0016]

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 configuration of a manipulator of the relaxation apparatus.

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

Figs. 5A, 5B and 5C show graphs that explain a relationship between music and a pattern of rocking motions in respective courses.

Detailed Description of the Embodiments

[0017] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0018] 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 driven by the rocking mechanism 12.

[0019] 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, as a control unit and a selection unit, 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.

[0020] 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.

[0021] The aforementioned base 11 also has a support frame 11b protruded upward from the bottom portion 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 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 rectangular frame 25, can be rocked back and forth by the power delivered from the crank mechanism 22, like a rocking chair.

[0022] 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 body-supporting member 13 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.

[0023] As shown in Figs. 1 and 2, a manipulator 40 that is detachably held by a manipulator holder (not shown) is provided on a side of the back portion 31 of the body-supporting member 13. In addition, on a side 30a of the seat portion 30 of the body-supporting member 13, there are provided a main power supply switch 41 for turning on and off the power supply route and an external sound source input terminal 43 as an external input unit to which external music information can be input from an external sound source 42 (see Fig. 4). Further, on an upper side 30b of the seat portion 30, a vibrator 44 is installed as a low-frequency vibrator configured to be able to vibrate by a control signal from the controller 24.

[0024] The manipulator 40 is provided with a sound source switch 40a as a switching unit as shown in Fig. 3. By the sound source switch 40a, it is possible to switch between a plurality of music information data (internal music information) stored in advance in a memory 45 as a memory unit (see Fig. 4) and the external music information from the external sound source 42 through the external sound source input terminal 43 placed adjacent to the main power supply switch 41. In Fig. 3, the state in which the music information data stored in the memory unit 45 is selected is represented by the solid line, while the state in which external music information from the external sound source 42 is selected is represented by the dashed line.

[0025] As shown in Fig. 3, the manipulator 40 includes various switches 50 to 56 including course selection switches 50, a swing regulator switch 51, a reclining-angle regulator switch 52, a volume regulator switch 53, a vibration regulator switch 54, an air-bag regulator switch 55 and a start-up switch 56, each of which having a sensor unit 57 formed of, e.g., an electrostatic sensor (see Fig. 4), and indicators 58 for respectively showing on and off states of the various switches 50 to 56.

[0026] The course selection switches 50 include multiple switches 50a to 50d so that a course can be selected among multiple courses (four courses A to D in the present embodiment) determined by a course table (not shown) in which amplitude and frequency of a rocking motion are set in advance. Further, as shown in Fig. 4,

by the selection of the respective switches 50a to 50d, a prescribed control signal is output to the controller 24 from a course selector 60 in which multiple rocking patterns (courses) are set.

[0027] The swing regulator switch 51 is electrically connected to a speed regulator 61 for regulating the speed (frequency) of a rocking motion of the body-supporting member 13 and an amplitude regulator 62 for regulating the amplitude of the rocking motion as shown in Fig. 4, so that the speed (frequency) and amplitude of a rocking motion of the body-supporting member 13 can be varied in three steps by an operation of the swing regulator switch 51 by a user.

[0028] When the reclining-angle regulator switch 52 is operated by a user, as shown in Fig. 4, a control signal of reclining regulation is outputted through a reclining regulator 63 to the controller 24 and the controller 24 receiving the signal suitably controls a reclining driver 13a to regulate the reclining angle of the body-supporting member 13.

[0029] The volume regulator switch 53 is to regulate the volume of speakers 33 and, in the present embodiment, is configured to regulate the volume in five levels. Further, the vibration regulator switch 54 is to regulate the degree of vibration of the vibrator 44 as shown in Figs. 1 and 2, and, in the present embodiments, is configured to regulate the vibration in five levels. In addition, the air-bag regulator switch 55 is to vary the amount of expansion of air bags (not shown) and in the present embodiments the expansion amount of the air bags can be regulated in five levels. The start-up switch 56 is to turn the relaxation apparatus 10 on and off. When the start-up switch 56 is turned on, the respective parts can be controlled by the controller 24.

[0030] The indicators 58 include light-emitting diodes within a transparent cell of a casing of the manipulator 40 and are installed in the interior of the respective switches 50 to 56, and level displays 51a, 53a, 54a and 55a provided to show the current status of the motion by the respective switches 51, 53, 54 and 55.

[0031] Next, descriptions are given to the movement of the relaxation apparatus configured as in the above with reference to Figs. 1 to 5C.

[0032] In the relaxation apparatus 10 of the present embodiment, multiple courses (four in the present embodiment) having different frequencies of a rocking motion are set up for the course selector switches 50 of the manipulator 40 and, by the operation of the course selector switches 50, various courses are set up such as a single course in which the controller 24 controls the rocking mechanism 12 to carry out a relax-rocking of the body-supporting member 13 and a combination course in which the relax-rocking is carried out while music being outputted from the speakers 33. Among these, there is a relax-rocking course having a refresh function. In this working course, a relax-rocking that provides a user with a relaxing effect is carried out at first, and then it is switched to a refresh rocking which is carried out until

the end of the course.

[0033] In the present embodiment, two courses, course A and course B, of the relax-rocking course are explained with reference to Figs. 5A to 5C. Fig. 5A shows variations in frequencies of the rocking motions in the courses A and B, Fig. 5B shows variations in tempo of music in the courses A and B, and Fig. 5C shows variations in tone of music in the courses A and B. In Figs. 5A to 5C, solid and chain-dotted lines are used respectively for the course A and course B. (Course A)

[0034] When receiving a signal showing that the course A is selected from the manipulator 40, in order to lead a user to be from an awakened state to a relaxed state, the controller 24 controls the motor 20 to perform a relax-rocking by decreasing the cycle (frequency) of rocking motion of the body-supporting member 13 gradually, for example, from its initial value 0.25 Hz to 0.2 Hz and finally 0.1 Hz in a stepwise manner until a specified time T1 as shown in Fig. 5A.

[0035] At this time, the controller 24, receiving a signal according to the state of the sound source switch 40a of the manipulator 40, selects either of the music information data stored in the memory 45 and the external music information from the external sound source 42, for example, music information I among the music information data, and then outputs it through the speakers 33 until the specified time T1.

[0036] Until a specified time T2 after the lapse of the specified time T1 and, the controller 24 controls the motor 20 to continuously rock the body-supporting member 13 at the minimum frequency 0.1 Hz of the course A, thereby allowing the user to fall in a state of hypnosis from a state of relaxation. Besides, between the times T1 and T2, the controller 24 outputs through the speakers 33 music information J slower in tempo compared to the music information I.

[0037] After the lapse of the specified time T2, the controller 24 controls the motor 20 to perform a refresh rocking by increasing the frequency of the rocking motion gradually, for example, from 0.1 Hz to 0.2 Hz and finally 0.3 Hz in a stepwise manner, so that the user can be lead to a state of being awakened from the state of sleeping (relaxation state). At this time, the controller 24 outputs through the speakers 33 music information K faster in tempo compared to the music information J and higher in tone compared to the music information I.

(Course B)

[0038] When receiving a signal showing that the course B is selected from the manipulator 40, in order to lead a user to be from an awakened state to a relaxed state, the controller 24 controls the motor 20 to perform a relax-rocking by decreasing the cycle (frequency) of rocking motion of the body-supporting member 13 gradually, for example, from its initial value 0.35 Hz to the final 0.2 Hz by a decrement of 0.05 Hz in a stepwise manner until the specified time T1 as shown in Fig. 5A.

[0039] At this time, the controller 24 outputs music information L faster in tempo compared to the music information I through the speakers 33 until the specified time T1.

[0040] Until the specified time T2 after the lapse of the specified time T1, the controller 24 controls the motor 20 to continuously rock the body-supporting member 13 at the minimum frequency 0.2 Hz of the course B, thereby allowing the user to fall in a state of hypnosis from a state of relaxation. Besides, between the times T1 and T2, the controller 24 outputs through the speakers 33 music information M slower in tempo compared to the music information L and higher in tone compared to the music information J.

[0041] After the lapse of the specified time T2, the controller 24 controls the motor 20 to perform a refresh rocking by increasing the frequency of the rocking motion gradually, for example, from 0.2 Hz to 0.3 Hz, from 0.3 Hz to 0.4 Hz, and from 0.4 Hz to 0.6 Hz in a stepwise manner, so that the user can be lead to a state of being awakened from the state of sleeping (relaxation state).

[0042] At this time, the controller 24, receiving a signal according to the state of the sound source switch 40a of the manipulator 40, selects either of the music information data stored in the memory 45 and the external music information from the external sound source 42, for example, music information N faster in tempo and higher in tone compared to the music information M and K among the internal music information, and then outputs it through the speakers 33.

[0043] As described above, because the relaxation apparatus 10 of the present embodiment is configured such that internal music information in accordance with the respective rocking courses A and B is selected by the controller 24 as a selection unit and music is generated through speakers 33 as a generating unit, the user can be provided with sound (or music) depending on the course. Therefore, for example, in addition to a relaxing effect by the conventional rocking motion, it becomes possible to provide the user with a more effective relaxation by sound (music) tuned to that rocking motion. Besides, for example, because it is configured to be able to use external music information from the external sound source 42 in each course, it becomes possible to perform a relax-rocking while listening to the music that the user likes and provide the user with an effective relaxation suitable individual one.

[0044] Next, the characteristic effects of the present embodiment will be described.

(1) The relaxation apparatus of the present embodiment has the manipulator 45 that can select any one of the multiple courses A to D in which the frequency and amplitude of a rocking motion are set up in advance, the memory 45 where a plurality of music information data is stored, the speakers 33 that generate sound in accordance with the music information and the controller 24 as the selection unit that

determines music information in accordance with the course selected by the user. That is, the controller 24 as the selection unit determines music information, among a plurality of music information data that is stored in advance in the memory 45, in accordance with the course selected by the user and the sound is generated through the speakers 33 in accordance to the music information selected by the controller 24 as the selection unit, so that the user can be provided with a sound suitable to the course. Therefore, for example, in addition to a relaxing effect by the conventional rocking motion, it becomes possible to provide the user with an effective relaxation by sound tuned to the corresponding rocking motion.

(2) In the present embodiment, the external sound source input terminal 43 as an external input unit is provided to input external music information and the speakers 33 can generate sound in accordance with the external music information input through the external sound source input terminal 43. That is to say, the external sound source input terminal 43 is provided to generate sound in accordance with the external music information input therethrough so that it becomes possible, in addition to a relaxing effect by the conventional rocking motion, for example, to provide the user with a relaxing effect by listening to the music he/she likes.

(3) The sound source switch 40a is provided to switch between the external music information and the music information data stored in the memory 45 by the operation of the user. In other words, by providing the sound source switch 40a that can switch between the external music information and the music information data stored in the memory 45 by the operation of the user, the user can select either of the external music information and the music information data (internal music information) stored in advance. Accordingly, the switching can be easily made at the user's disposal when he/she uses the present apparatus 10.

[0045] The embodiment of the present invention may be modified as described below.

[0046] Although, in the embodiment described above, it is configured that music information is varied in accordance with the respective courses A and B and sound is generated (output) through the speakers 33, another configuration may be employed in which, in addition to the present configuration, music information is varied in accordance with the course A and B and low-frequency vibrations (for example, at 10 Hz to 100 Hz) are generated (output) by the vibrator 44 in accordance with the corresponding music information. Besides, the configuration may also be altered such that only the vibrations are generated without generating the sound.

[0047] Although, in the embodiment described above, the speakers 33 are provided to the both sides of the top of the head-support portion 31a, they may be placed else-

where. Besides, though there are two speakers 33 in the present embodiment, the number of speakers is not limited thereto.

[0048] Although, in the embodiment described above, the vibrator 44 is provided to the upper side 30b of the seat portion 30, it may be placed elsewhere. In addition, though there is one vibrator 44 in the present embodiment, the number of the vibrator is not limited thereto.

[0049] Even though, in the embodiment described above, the sound source switch 40a that can switch between the external music information from the external sound source 42 and the music information data stored in advance in the memory 45 is provided in the manipulator 40, it is not limited to the above but the sound source switch 40a may be placed elsewhere.

[0050] Even though, in the embodiment described in the above, the external music information from the external sound source 42 and the music information data stored in advance in the memory 45 can be switched, a configuration may be employed in which they are not switchable. In addition, in this case, if a detection sensor (not shown) is provided to detect whether the external sound source 42 is connected to the external sound source input terminal 43 and it is determined by the controller 24 through the detection sensor that the external sound source 42 is connected, a configuration may be employed in which the external sound source 42 (the external music information) is used with priority. With this configuration, it becomes possible to use the external sound source 42 (the external music information) easily.

[0051] Although, in the embodiment described above, the sound source input terminal 43 is provided and the external sound source 42 can be used, a configuration may be employed in which the sound source input terminal 43 is omitted and, hence, it is impossible to use the external sound source 42.

[0052] Although, in the embodiment described above, music information is switched depending on the frequency of the rocking motion of the respective courses A and B, it may be configured that music information is switched depending on the amplitude of the rocking motion. Besides, it may be configured that music information is switched depending on both the frequency and amplitude of the rocking motion.

[0053] Although, in the embodiment described above, the body-supporting member 13 is rocked back and forth, the present invention is not limited to the above. For example, it may be configured that the body-supporting member 13 is rocked in the left-right direction.

[0054] Even though, it is not mentioned explicitly in the embodiment described above, air bags may be installed in the respective portions of the body-supporting member 13 so that a relaxing effect such as massaging can be provided to a user by suitably performing expansions and contractions of the air bags.

[0055] Although, in the embodiment described above, after a relax-rocking, the controller 24 controls the motor 20 to perform a refresh rocking in which the frequency

of the rocking motion is gradually increased, the refresh rocking may be eliminated.

[0056] 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 at least in one direction and a control unit for controlling the rocking unit to rock the body-supporting unit, **characterized in that** the apparatus further comprising:

a manipulator by which a user selects any one of a plurality of courses in which amplitude and frequency of the rocking motion of the body-supporting unit are differently set, respectively;
a memory unit that stores a plurality of music information data;
a selection unit for selecting music information, among the music information data, in accordance with the course selected by the user; and
a generating unit for generating at least one of sound and vibration in accordance with the music information selected by the selection unit.

2. The relaxation apparatus of claim 1, wherein the generating unit includes at least one of a speaker that generates sound and a low-frequency vibrator that generates low-frequency vibrations on at least a portion of the body-supporting unit.

3. The relaxation apparatus of claim 1 or 2, further comprising: an external input unit through which external music information is input and the generating unit is configured to generate at least one of the sound and the vibration in accordance with the external music information input through the external input unit.

4. The relaxation apparatus of claim 3, further comprising: a switching unit by which the user is able to select the external music information or the music information data stored in the memory unit.

5. The relaxation apparatus of claim 3, wherein when the external music information is input through the external input unit, the control unit controls the generating unit to generate at least one of the sound and the vibration in accordance with the external music information.

FIG. 2

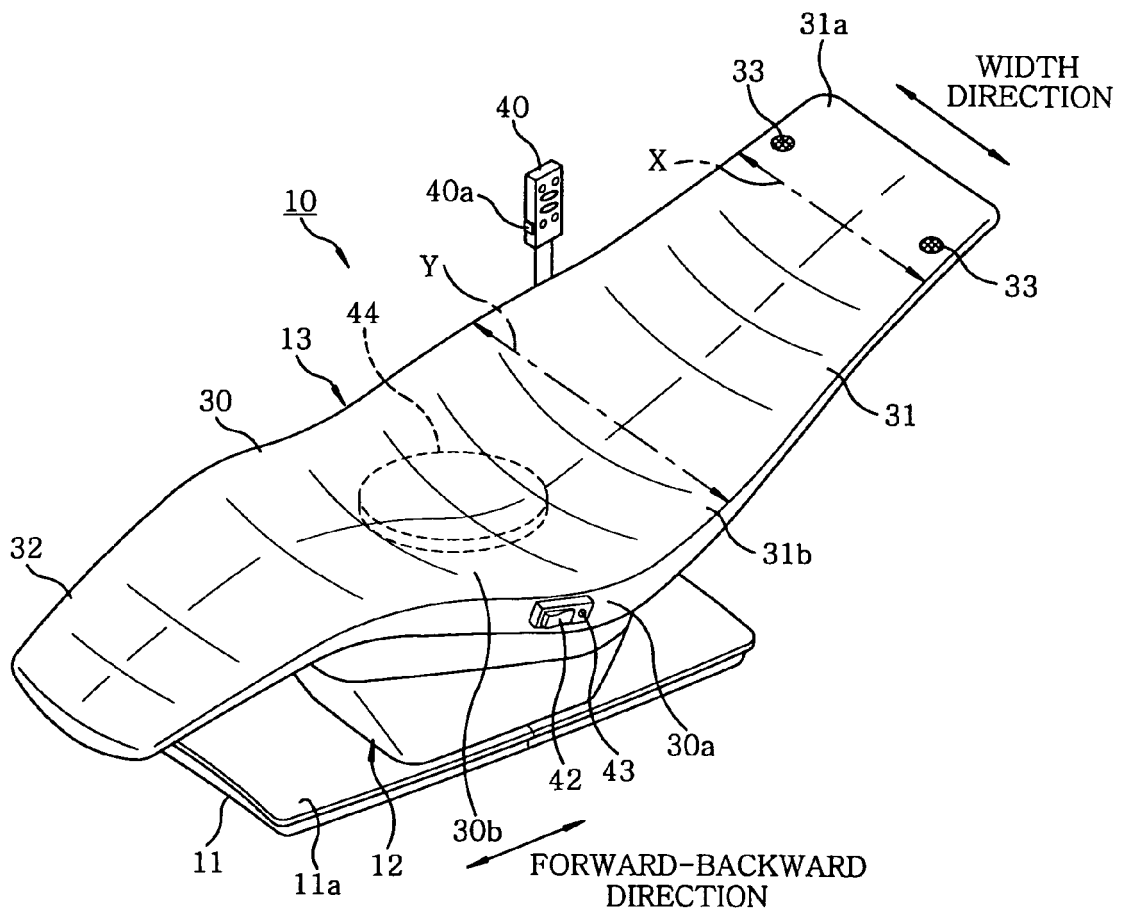


FIG. 3

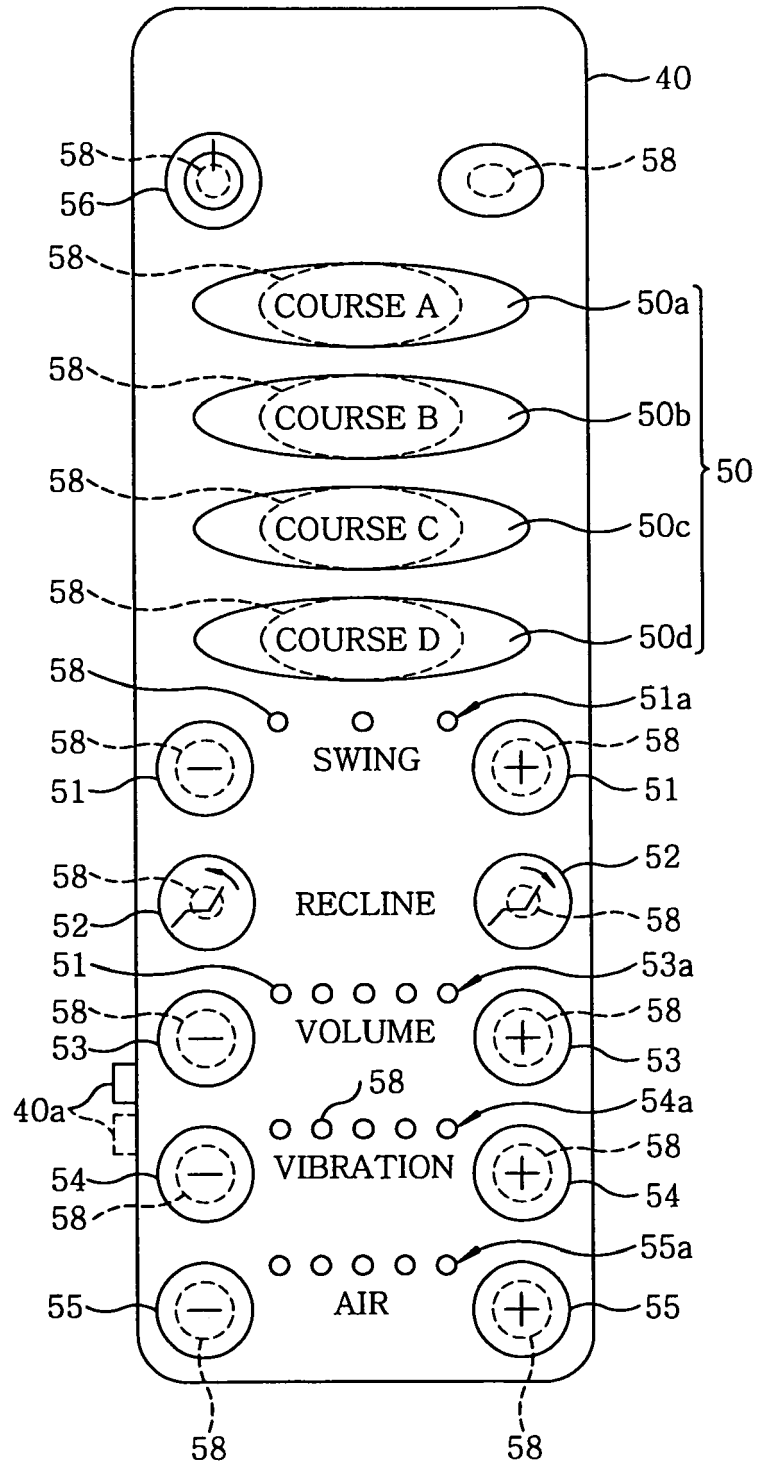


FIG. 4

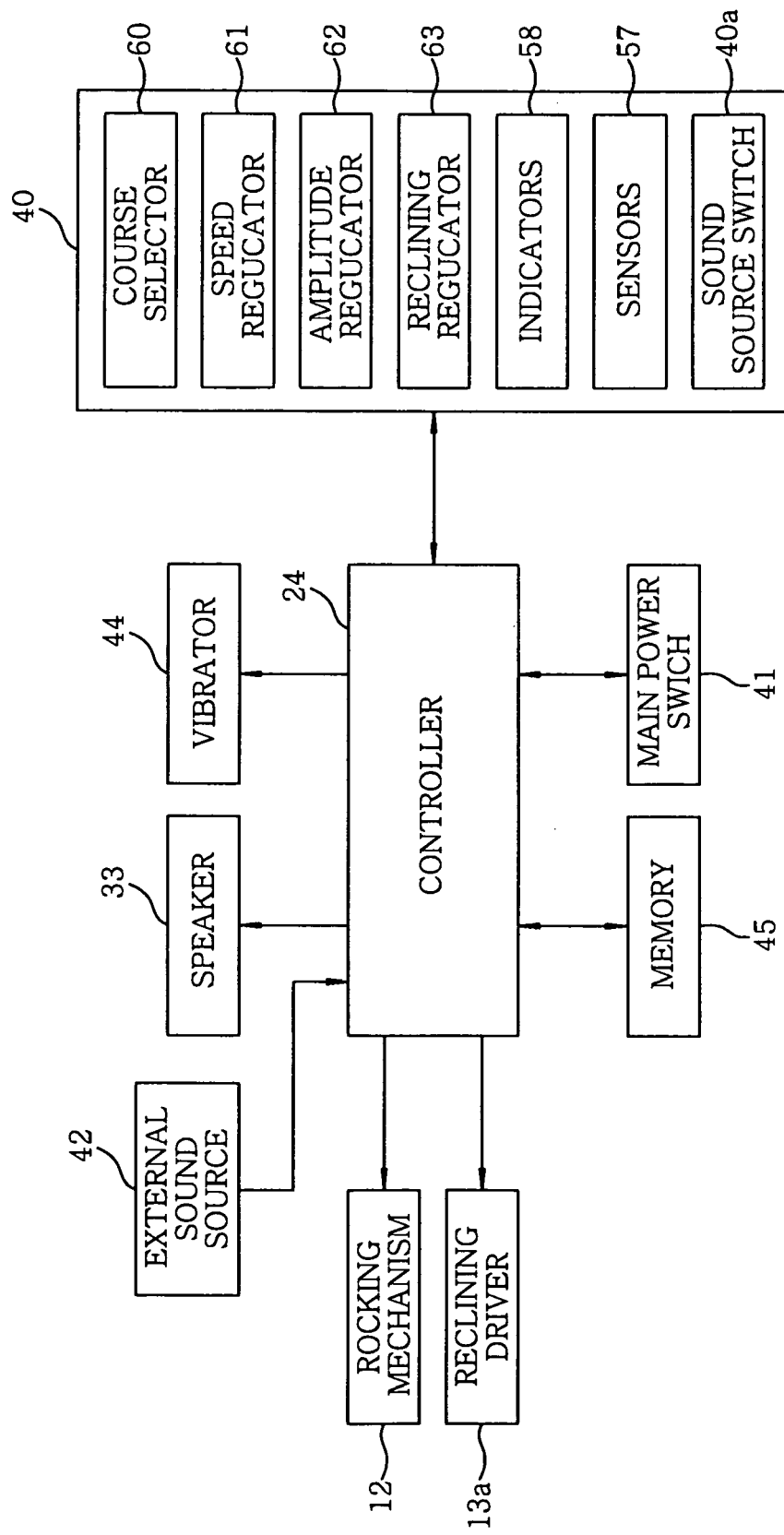


FIG.5A

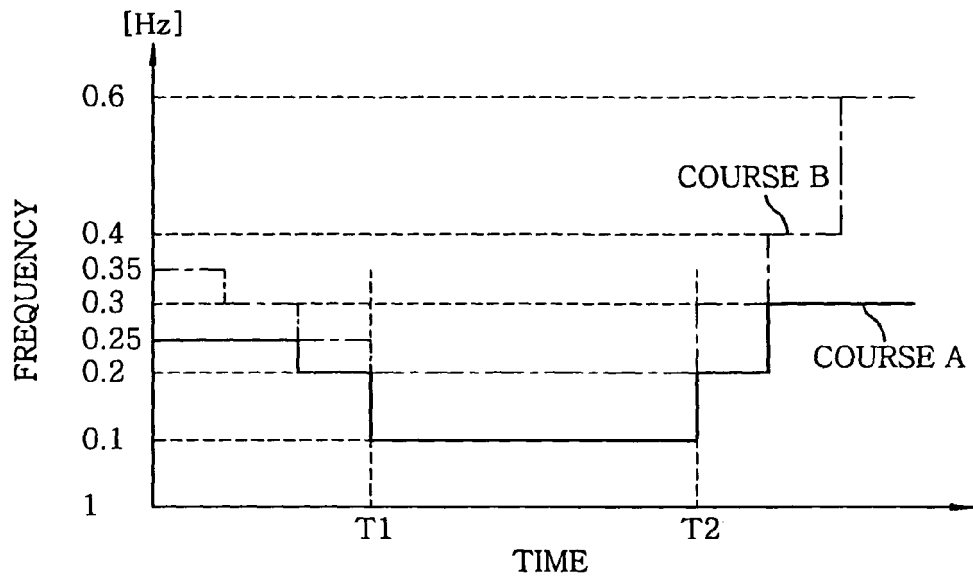


FIG.5B

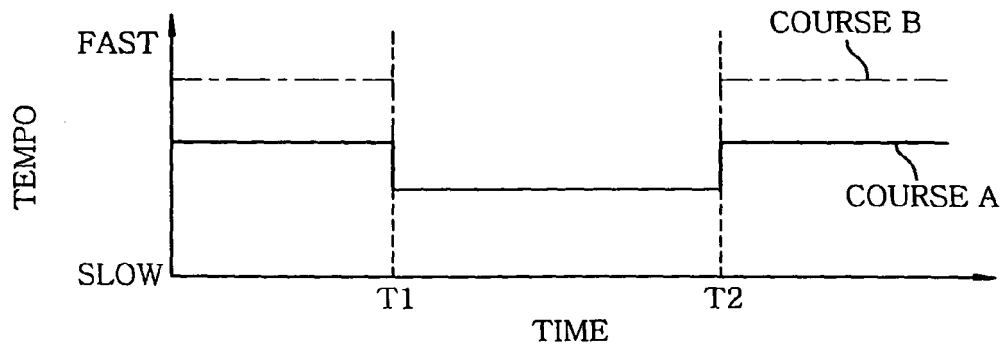
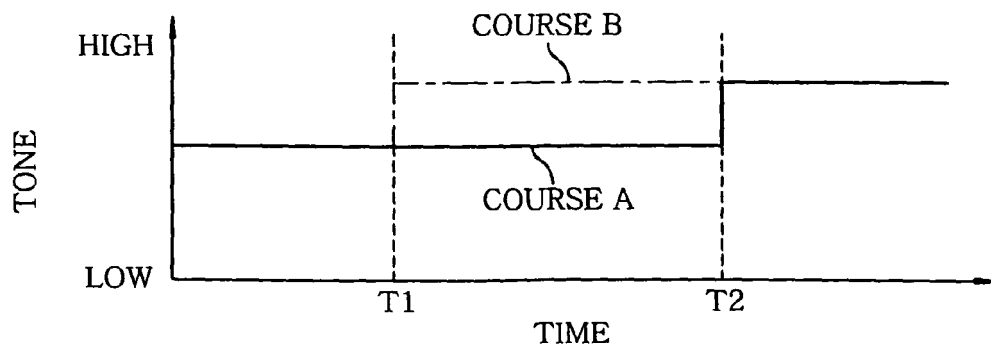


FIG.5C





EUROPEAN SEARCH REPORT

Application Number
EP 09 01 5500

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,P	WO 2009/128362 A1 (PANASONIC ELEC WORKS CO LTD [JP]; MORIKAWA DAISUKE [JP]; MICHIMORI AKI) 22 October 2009 (2009-10-22)	1,2	INV. A47C3/02
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 April 2010	Examiner Klintebäck, Daniel
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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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19-04-2010

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