(19) Europäisches Patentamt
European Patent Office
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(11) EP 2 198 750 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
23.06.2010 Bulletin 2010/25

(51) Int Cl.:
A47C 3/02 *(2006.01)*

(21) Application number: **09015499.8**

(22) Date of filing: **15.12.2009**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA RS

(30) Priority: **19.12.2008 JP 2008324597**

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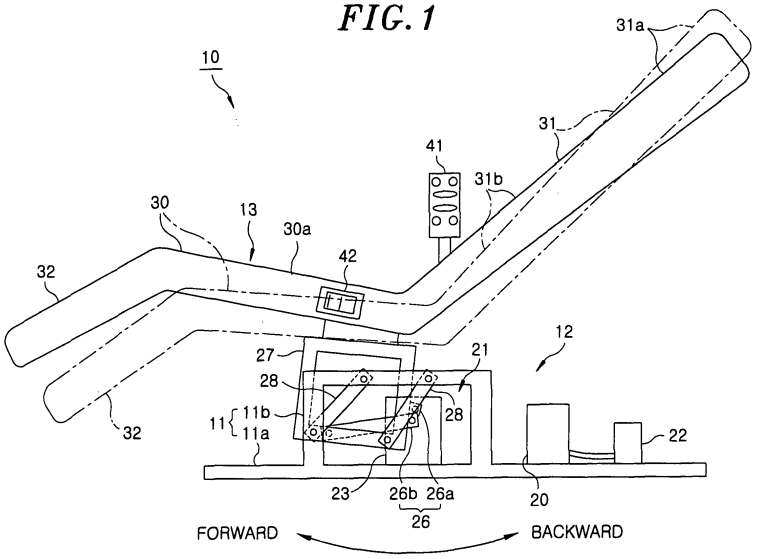
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(54) Relaxation apparatus

(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 back and forth and a controller (24) for controlling the rocking unit to rock the body-supporting unit. The rocking unit includes a driving unit (20) for generating driving force for rocking the body-supporting unit and a transmission mechanism (21) for transmitting the driving force from the driving unit. The rocking unit is provided on a base of the relaxation apparatus. Further, the transmission mechanism is configured such that an acting force from the body-supporting unit to the driving unit is self-locked.

FIG. 1



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Description

Field of the Invention

[0001] The present invention relates to an 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] In the conventional relaxation apparatus, the body-supporting member is configured so as to be rocked. Accordingly, when the relaxation apparatus is carried by, e.g., two carrying persons with the back portion and ottoman of the body-supporting member, the base having the rocking mechanism rocks around the body-supporting member held by the carrying persons, which makes it difficult to carry the relaxation apparatus and, hence, an improvement is in need.

Summary of the Invention

[0004] In view of the above, the present invention provides a relaxation apparatus capable of being carried with ease when needed.

[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 rocking unit includes a driving unit for generating driving force for rocking the body-supporting unit and a transmission mechanism for transmitting the driving force from the driving unit, the rocking unit being provided on a base of the relaxation apparatus, and the transmission mechanism is configured such that an acting force from the body-supporting unit to the driving unit is self-locked.

[0006] The transmission mechanism may include a worm shaft and a worm wheel, and a lead angle of the worm wheel and the worm shaft may be set not to be greater than 4°.

[0007] With such configuration, it is possible to realize a self-lock by the transmission mechanism and prevent the base from rocking relative to the body-supporting unit when the relaxation apparatus is carried by carrying persons with the body-supporting unit, so that the relaxation apparatus can be carried with ease when needed.

[0008] The relaxation apparatus further includes a restriction unit for restricting rocking of the body-supporting unit in a width direction.

[0009] The restriction unit may include the base and a rocking member which rockably support the body-supporting unit and the rocking of the body-supporting unit in the width direction is restricted by a contact between the base and the rocking member.

[0010] An elastic member may be provided on a contact area of at least one of the base and the rocking member with the other.

[0011] With such configuration, it is possible to suppress the generation of a contact sound when the base and the rocking member come in contact with each other.

[0012] The relaxation apparatus in accordance with the present invention is capable of being carried with ease when needed.

Brief Description of the Drawings

[0013]

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

Figs. 2A and 2B show diagrams that illustrate a concave portion of a body-supporting member of the relaxation apparatus.

Fig. 3 illustrates a perspective view of a rocking mechanism.

Fig. 4 shows a diagram that explains a constraint unit of the body-supporting member.

Detailed Description of the Embodiments

[0014] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0015] 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.

[0016] The rocking mechanism 12 includes a motor 20 as a driving unit, a transmission mechanism 21 and a reduction gear 23, a crank mechanism 26 and a plurality of, e.g., two, link members 28. The motor 20 generates driving force for a rocking motion. The motor 20 is installed on the bottom portion 11a of the base 11 and its driving is controlled by a controller 22 installed on the bottom portion 11a. In addition, as shown in Fig. 3, a pulley 21a included in the transmission mechanism 21 is attached on a leading end portion of a rotating shaft 20a of the motor 20 and is rotated together with the rotating shaft 20a. Besides, a drive belt 21c is wound on the pulley 21a and a pulley 21b of the reduction gear 23 so that the torque (the driving force) of the rotating shaft 20a of the motor 20 can be transmitted through the drive belt 21c to the reduction gear 23.

[0017] The pulley 21b is attached on a worm shaft 23a

of the reduction gear 23 rotatably supported by two bearings 24 and is rotatated together with the worm shaft 23a. The worm shaft 23a of the reduction gear 23 is engaged with the worm wheel 23b and the threads of the worm shaft 23a and the worm wheel 23b are configured to have a lead angle not greater than 4°. An output shaft 25 is attached at the center in the radial direction of the worm wheel 23b and is rotated together with the worm wheel 23b.

[0018] The crank mechanism 26 includes a crank member 26a and a connecting rod 26b and serves to convert the rotational motion of the reduction gear 23 into a large circular motion. The base end of the crank member 26a of the crank mechanism 26 is attached on the output shaft 25 to be rotated therewith, and the leading end of the crank member 26a is rotatably connected to the base end of the connecting rod 26b (see Fig. 3). The leading end of the connecting rod 26b is connected to a bottom portion of a rectangular frame 27 to which the body-supporting member 13 is fixed (see Fig. 1).

[0019] The base 11 also has a supporting frame 11b protruded from the bottom portion 11a. The base ends of two link members 28 as rocking members are connected to an upper portion of the suppor frame 11b at an interval, while their leading ends are rotatably connected to the lower portion of the rectangular frame 27. The link members 28 rotate around their base ends by the force delivered from the crank mechanism 26 and, therefore, the body-supporting member 13, fixed to the rectangular frame 27, can be rocked back and forth like a rocking chair. Besides, as shown in Fig. 4, the link member 28 is configured to contact with the supporting frame 11b constituting a restriction unit, for example, if the body-supporting member 13 moves in a width direction relative to the base 11 that contains the rocking mechanism 12 at the stop position of the rocking motion of the relaxation apparatus 10. In addition, an elastic member 29 is installed on a contact area of the supporting frame 11b with the link member 28.

[0020] 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 27 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 a user, 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.

[0021] 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.

[0022] 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 a user, 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.

[0023] In the manipulator 41, various switches are installed such as a course-selection switch with multiple rocking patterns. And signals are appropriately generated as the user selects the respective switches of the manipulator 41 so that the respective parts are controlled by the controller 24.

[0024] In the relaxation apparatus 10 configured as described above, the controller 22 contorls the motor 20 to rock the body-supporting member 13 back and forth so as to perform a relax-rocking that provides the user with an effective relaxation.

[0025] As stated in the above, because the threads of the worm shaft 23a and worm wheel 23b of the reduction gear 23 included in the transmission mechanism 21 are configured to have a lead angle not greater than 4°, an acting force from the body-supporting member 13 is not transmitted to the motor 20 as a driving unit. Hence, so-called self-lock can be realized and it is possible to prevent the base 11 containing the rocking mechanism from being rocked about the body-supporting member 13 when the relaxation apparatus 10 is carried by, e.g, two persons with the body-supporting member 13. Accordingly, the relaxation apparatus 10 can be carried with ease when needed. Besides, the link member 28 is configured to contact with the supporting frame 11b serving as the restriction unit if the body-supporting member 13 moves (or rocks) in the width direction relative to the base 11 containing the rocking gear 12 at the stop position of the rocking motion of the relaxation apparatus. This prevents the base 11 from being rocked in the width direction relative to the body-supporting member 13 while the relaxation apparatus 10 is carried. Therefore, the relaxation apparatus 10 can be carried more easily. In addition, because the elastic member 29 is provided on the contact area of the supporting frame 11b with the link member 28, it is possible to suppress the generation of a contact sound when they come in contact with each other.

[0026] Next, the characteristic effects of the present embodiment will be described.

(1) The rocking mechanism 12 includes the motor 20 as a driving unit that generates driving force and

the transmission mechanism 21 that transmits the driving force from the motor 20, which are provided on the base 11 of the relaxation apparatus 10. And, the transmission mechanism 21 includes the worm shaft 23a and the worm wheel 23b of the reduction gear 23 that are configured to have a lead angle not greater than 4° so that a self-lock can be realized to prevent an acting force from the body-supporting member 13 from being transferred to the motor 20. This makes it possible to prevent the base including the rocking mechanism from rocking relative to the body-supporting unit while carrying the relaxation apparatus 10 by grasping the body-supporting member 13, so that the relaxation apparatus can be carried with ease when needed.

(2) The supporting frame 11b and the link member 28 serve as the restriction unit that restricts the movement of the body-supporting member 13 in the width direction. Accordingly, the base 11 is prevented from rocking in the width direction relative to the body-supporting member 13 while the relaxation apparatus 10 is carried. This makes it easier to carry the relaxation apparatus 10 when needed.

(3) The restriction unit includes the base 11 and the link member 28 as a rocking member that rockably supports the body-supporting member 13. And, the rocking motion of the body-supporting member 13 is restricted by a contact between the base 11 and the link member 28. Accordingly, there is no need to provide a separate restriction unit, preventing the increase in the number of members.

(4) The elastic member 29 is provided on the contact area of the supporting frame 11b of the base 11 with the link member 28, thereby making it possible to suppress the generation of a contact sound when the supporting frame 11b and the link member 28 come in contact with each other.

[0027] The embodiment of the present invention may be modified as described below.

[0028] Although, in the embodiment described above, the lead angle of the threads of the worm shaft 23a and the worm wheel 23b is set to be not greater than 4° in order to self-lock the transmission mechanism 21, the present invention is not limited to the above. For example, the lead angle may be greater than 4° if the sliding loss of the other members is taken into consideration. In brief, the lead angle may be chosen arbitrarily as long as a self-lock is guaranteed.

[0029] Although, in the embodiment described above, the worm shaft 23a and the worm wheel 23b are employed to realize a self-lock of the transmission mechanism 21, the present invention is not limited to the above. For example, there may be emplyed a brake mechanism that applies a self-lock against the acting force from body-supporting member 13 to the motor 20 as a driving unit.

[0030] Although, in the embodiment described above, the support frame 11b and the link member 28 are used as the restriction unit, other members of the relaxation apparatus 10 may be employed. Further, a separate member may be employed for the restriction unit. In other words, any configuration may be emplyed which prevents the base 11 from rocking in the width direction relative to the body-supporting member 13. The restriction unit for restricting the movement of the body-supporting member 13 in the width direction may be omitted.

[0031] Although, in the embodiment described above, then elastic member 29 is provided on the support frame 11b, it may be provided on the link member 28 or it may be installed on the both of them. Besides, the elastic member may be omitted.

[0032] 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 to provide a relaxation effect such as massaging by performing suitable expansion and contraction of the air bags.

[0033] 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.

[0034] 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 rocking unit includes a driving unit for generating driving force for rocking the body-supporting unit and a transmission mechanism for transmitting the driving force from the driving unit, the rocking unit being provided on a base of the relaxation apparatus, and
   the transmission mechanism is configured such that an acting force from the body-supporting unit to the driving unit is self-locked.

2. The relaxation apparatus of claim 1, wherein the transmission mechanism includes a worm shaft and a worm wheel, and a lead angle of the worm wheel and the worm shaft is set not to be greater than 4°.

3. The relaxation apparatus of claim 2, further comprising a restriction unit for restricting rocking of the body-supporting unit in a width direction.

4. The relaxation apparatus of claim 3, wherein the restriction unit includes the base and a rocking member which rockably support the body-supporting unit and the rocking of the body-supporting unit in the width direction is restricted by a contact between the base and the rocking member.

5. The relaxation apparatus of claim 4, wherein an elastic member is provided on a contact area of at least one of the base and the rocking member with the other.

FIG. 1

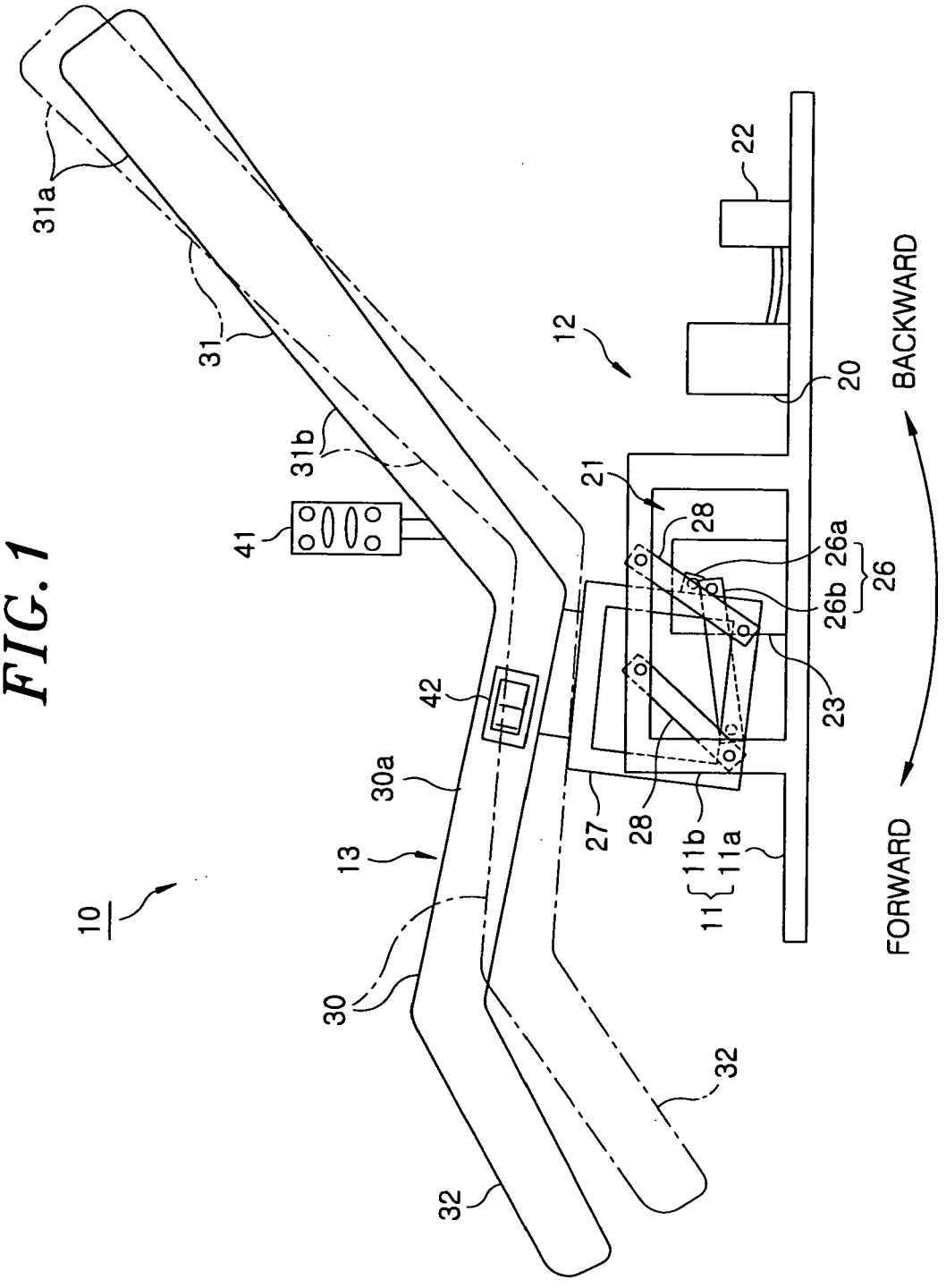

31a
31
31b
41
42
30a
13
10
30
32
32
12
22
20
21
28
26a
26b
26
23
27
28
11b
11a
11
BACKWARD
FORWARD

FIG.2A

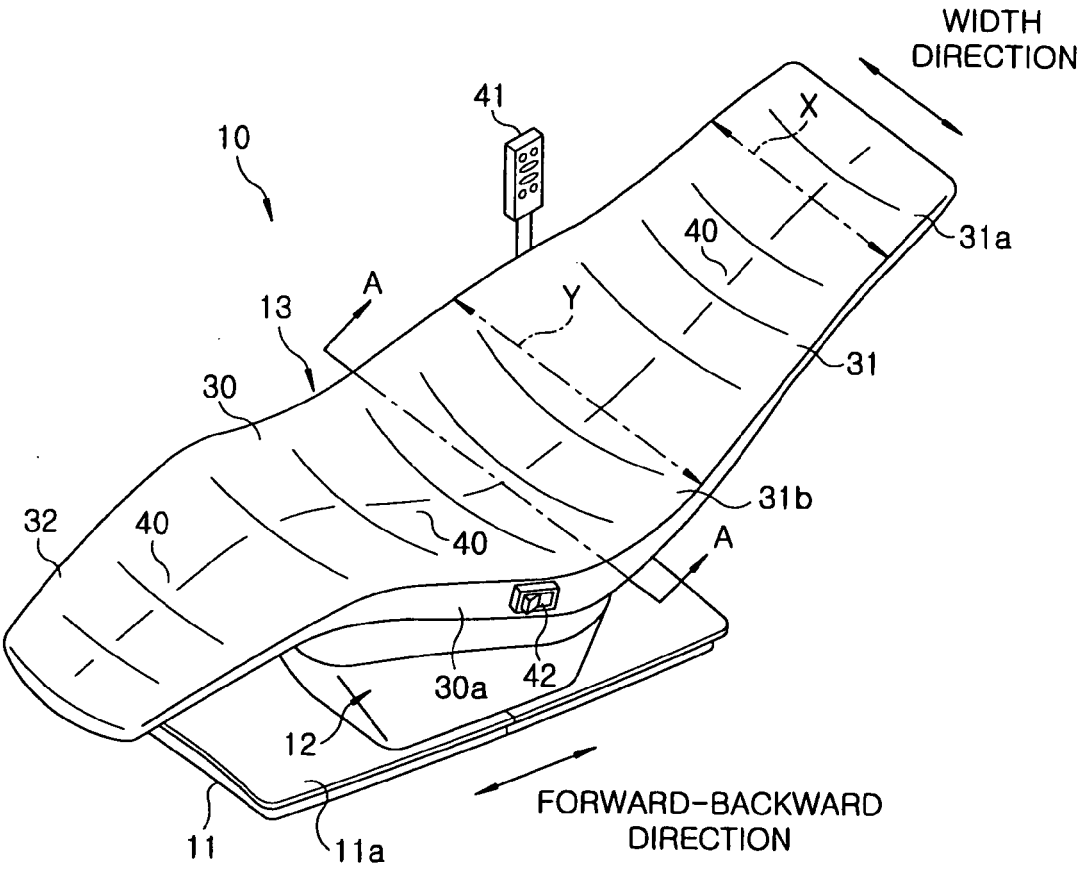

WIDTH
DIRECTION
41
10
X
40
31a
A
13
Y
30
31
31b
32
40
40
A
30a
42
12
FORWARD-BACKWARD
DIRECTION
11
11a

FIG.2B

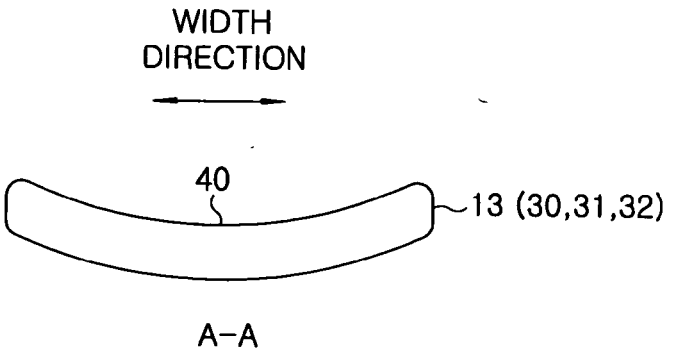

WIDTH
DIRECTION
40
13 (30,31,32)
A-A

FIG. 3

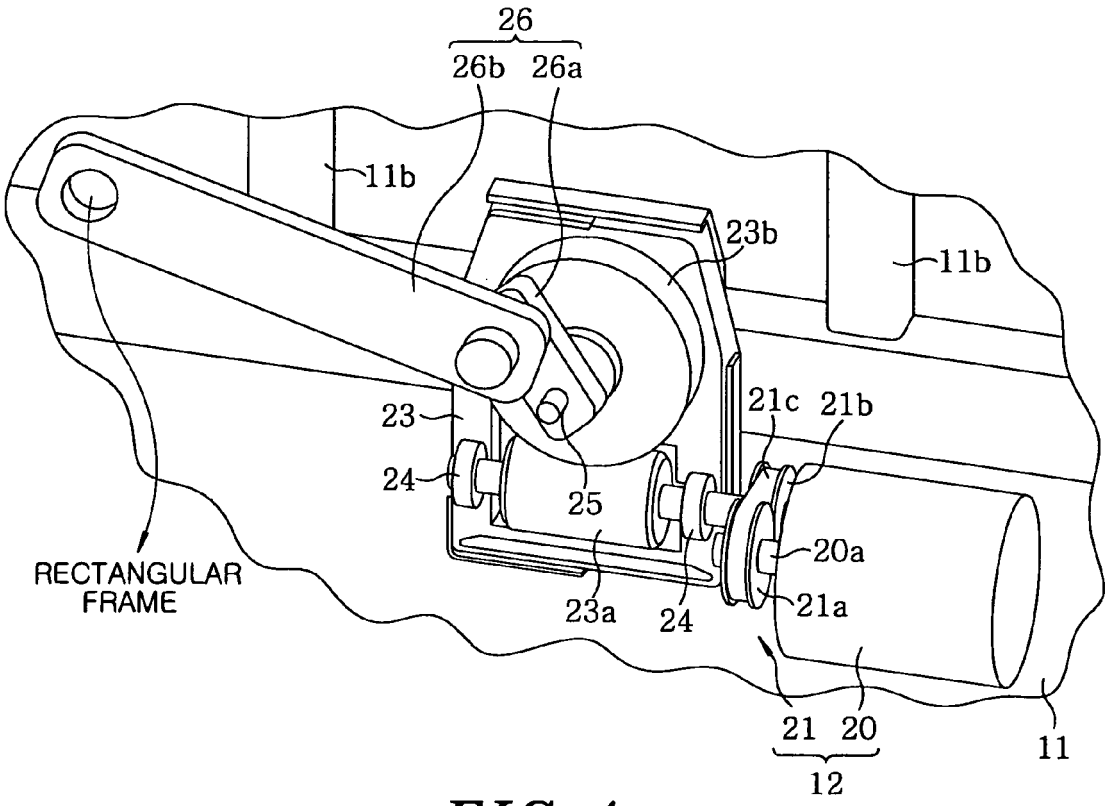
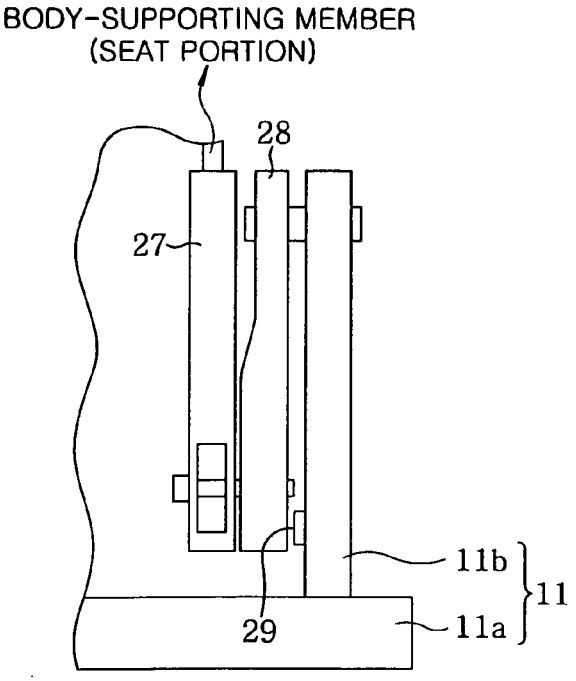

26
26b
26a
11b
23b
11b
23
21c
21b
24
25
20a
RECTANGULAR FRAME
23a
24
21a
21
20
11
12

FIG. 4


BODY-SUPPORTING MEMBER (SEAT PORTION)
28
27
11b
11
29
11a

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EUROPEAN SEARCH REPORT

Application Number
EP 09 01 5499

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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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	20 April 2010	Klintebäck, Daniel

CATEGORY OF CITED DOCUMENTS

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20-04-2010

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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