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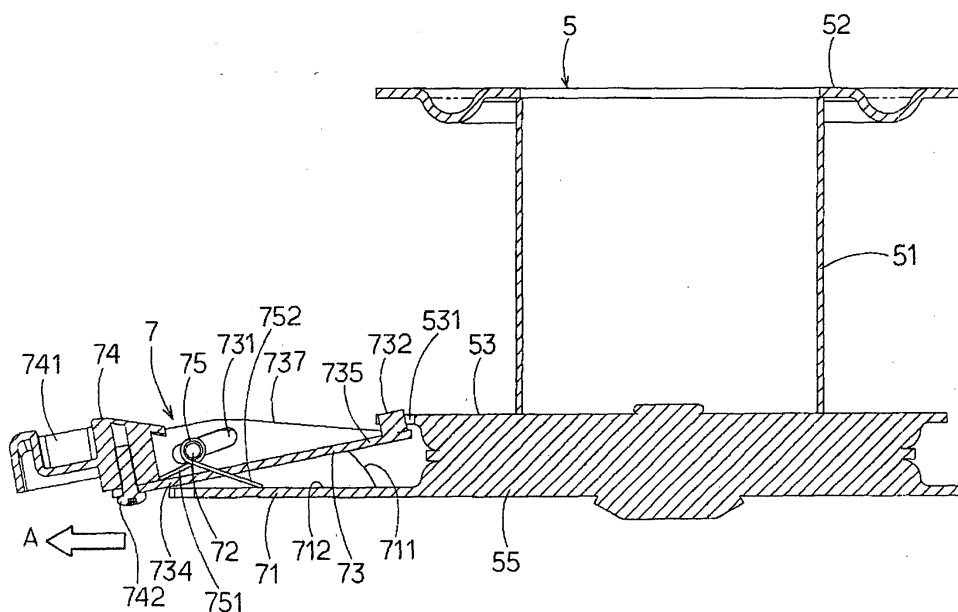
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(54) **Massaging machine**

(57) Provided is a massaging machine equipped with a safety mechanism so as not to rotate when no rotation is necessary. An engaging recess (531) is formed at a predetermined position on the periphery of a flange (53) of a rotating section (54); one end of a base plate (71) is fixedly attached to a flange (55) fixed to a base (6); not only is a boss (732) provided at the rear end but an operating knob (74) is provided at the front end, and a slider (73) supported on a shaft (72) using

long holes (731) and a spring (75) is also rendered slidable in a horizontal direction along a base plate 71; and the boss (732) is engaged into the engaging recess (531) for locking with a driving force of the spring (75) in a state where the slider (73) is pushed in. A recess (741) of the operating knob (74) is caught with a finger to pull up the knob (74), to thereby move the boss (732) downward, to disengage the boss (732) from the engaging recess (531), to then pull out the operating knob (74) and to thereby cancel lock.

Fig. 6



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Description

BACKGROUND OF THE INVENTION

Technical Field

[0001] The invention relates to a massaging machine, and in particular, to a rotation mechanism for a chair structure of a chair-type massaging machine.

Background Art

[0002] In chair-type massaging machines each provided with a backrest portion having a massaging section applying massage to a user installed therein and a seat portion, a proposal has been presented on a massaging machine in which a chair structure constituted of a seat portion and a backrest portion is freely rotated in a horizontal plane in relationship to a base thereof on an installment surface (see, for example, JP-U No. 5-70340 and JP-A No. 2003-325619). Since the chair structure of a chair-type massaging machine in an installed condition is freely rotated in a horizontal plane, a user can sit down thereon or stand up therefrom with ease rotating the chair structure, even if a table, a foot massaging machine or the like is placed in front thereof before the chair-type massaging machine, so as to face a space avoiding such an obstacle, leading to good operability.

[0003] In a massaging machine provided with the conventional rotation mechanism in a chair structure, part of the peripheral edge of the base comes into contact with an installment surface, and the base has a possibility to roll on the installment surface when the massaging machine is installed after a user gives it a lift and carries. In addition, in a case where the massaging machine is moved from an installment place to another for flow sweeping or another reason and replaced back to the original installment place, an inconvenience is encountered that deviation occurs in an angular relationship between the base and a bottom portion of the machine.

DISCLOSURE OF THE INVENTION

[0004] The invention has been made in light of the problems and it is an object of the invention to provide a massaging machine, in which no deviation in position occurs between a seat portion and base thereof when no rotation is necessary, and which has a rotation mechanism improved in safety.

[0005] A massaging machine of a chair-type of the invention is, in order to achieve the object, provided with a backrest portion having a massaging section applying massage to a user installed therein and a seat portion on a base, and equipped with a rotation mechanism freely rotating a chair structure constituted of the backrest portion and the seat portion in a horizontal plane in

relationship to the base thereof, wherein the rotation mechanism has a positioning mechanism terminating a rotational motion at a predetermined rotational position.

[0006] In the construction, the positioning mechanism has preferably an operating section changing-over between a positioning state and a rotation state.

[0007] A construction is preferably adopted that the positioning mechanism includes: at least one first engaging section disposed on the side of rotational motion and a second engaging section, disposed on the base side, and engaging with the at least one first engaging section when the first engaging section rotates to a predetermined position, wherein the operating section changes over a position of the second engaging section between a position engaging with the first engaging section and a position not engaging therewith.

[0008] A construction is preferably adopted that the positioning mechanism includes: a driving section driving the second engaging section in a direction so as to engage with the first engaging section, wherein the second engaging section engages with the first engaging section by the driving force when the first engaging section rotates to a predetermined position.

[0009] A construction is preferably adopted that the first engaging section is a recess formed at the peripheral edge of a rotating section provided to a rotation mechanism, the second engaging section is a boss engaging in or disengaging from the recess moving in two different directions and the driving section drives the boss in at least one direction of the two different directions in which the boss moves so as to engage the boss into the recess.

[0010] A construction is preferably adopted that the positioning mechanism includes: a slider provided with the boss and a shaft supporting the slider freely slidably and freely swayably, wherein the driving section drives the boss in a direction so as to engage into the recess during sway of the slider, and the slider sways in relationship to the recess in a direction perpendicular to a rotation center axis of the rotating section so as to engage or disengage the boss into or from the recess, wherein the slider freely sways around the shaft as a center when the slider sways up to a position where the boss is inserted into the recess, while sway of the slider around the shaft as a center is restricted when the slider sways up to a position where the boss disengages from the recess.

[0011] According to the invention, the chair structure can be positioned so as not to rotate in a case where a massaging machine is required to be carried, thereby enabling it to be used with more of safety.

[0012] Since the operating section is provided that changes over the positioning mechanism between being in the positioning state and being in the rotation state, a rotational function of the chair structure can be in operation or out of operation according to user's necessity.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013]

Fig. 1 shows a perspective view of an appearance of a massaging machine of an embodiment of the invention.

Fig. 2 shows a view of an appearance of a leg portion of the massaging machine of the embodiment.

Fig. 3 shows a schematic side view of the leg portion of the massaging machine of the embodiment.

Fig. 4 shows an exploded perspective view of a schematic mechanism of the leg portion and a base of the massaging machine of the embodiment.

Fig. 5 shows an exploded perspective view for describing a positioning mechanism of the massaging machine of the embodiment.

Fig. 6 shows a sectional view of the positioning mechanism when being locked of the massaging machine of the embodiment.

Fig. 7 shows a sectional view of the positioning mechanism when being unlocked of the massaging machine of the embodiment.

Fig. 8 shows a view of an appearance of a cover of the base and an operating knob of the massaging machine of the embodiment.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0014] More detailed description will be given of the invention showing an embodiment below.

[0015] In Fig. 1, there is shown a perspective view of an appearance of a massaging machine 1, which is an embodiment of the invention. The massaging machine 1 includes: a backrest portion 2, a seat portion 3, a pair of armrest portions 4 and 4, left and right; a leg portion 5 and a base 6. The backrest portion 2 is assembled so that backward reclining thereof and forward folding are possible, and the pair of armrest portions 4 and 4, left and right, are provided at both ends, left and right, respectively, of the seat portion 3. The top end of the leg portion 5 is fixed on the bottom face of the seat portion 3 and the bottom end thereof is mounted to the top face of the base 6 in a freely rotatable manner.

[0016] The backrest portion 2 is constituted of a backrest base 20; a backrest cover 21 attached freely detachably to the front face of the backrest base 20 so as to cover it. The backrest base 20 is made of a hard synthetic resin or the like which has a massaging section 10 for driving a massaging tool applying massage to a user installed therein. The backrest cover 21 is of a construction that a skin portion made from synthetic fibers or the like as a raw material envelops a cushion made of urethane foam. The incorporated cushion is in a shape so that the back face is curved in conformity with a contact surface with the backrest base 20. Covered only by the skin portion is a part exposed to an opening (existing inside the backrest cover 21) formed

in the surface of the backrest base 20 on the side thereof in contact with a user and the other parts are formed with the cushion covered by the skin portion. Plural Velcro fasteners and hooks, not shown, are attached on the front face of the backrest base 20 and back face of the backrest cover 21 in the vicinity of the respective peripheral edges thereof. The pairs of a Velcro fastener and a hook are engaged to each other to thereby attach the backrest cover 21 to the backrest base 20 in close contact therewith.

[0017] The massaging section 10 is installed in the backrest base 20 so as to be freely vertically movable and equipped with a mechanism driving the massaging tool in a predetermined locus. The massaging tool protrudes outward from the opening of the backrest base 20 and is brought into contact with a user with an opening cover fixed at the peripheral edge of the opening with screws so as to cover it and the backrest cover 21 interposed therebetween. A vertical motion of the massaging section 10 and a mechanism for driving the massaging tool have only to be realized using a conventional known technique, detailed description of which is omitted herein, wherein the massaging tool is driven from the shoulder of the user to the waist upward or downward, forward or rearward, and leftward or rightward, to thereby apply a rubbing massage, tapping massage, finger pressure massage and back muscle stretching massage to the user.

[0018] The seat portion 3 is constituted of: a seat base 30; and a seat cover 31 freely detachably attached to the top face of the seat base 30 so as to cover it. The seat base 30 is molded with a hard synthetic resin or the like inside which a control circuit for driving and controlling the massaging section 10 is installed. The seat base 30 is formed so as to be curved upwardly at the both sides, left and right, and the curved parts constitute the armrest bases 40 and 40 of the armrest portions 4 and 4. That is, the massaging machine 1 of this embodiment is manufactured so that the seat base 30 and the armrest bases 40 and 40 are integrally formed in a single piece. The armrest portions 4 and 4 are constituted of: the armrest bases 40 and 40; and armrest covers 41 and 41, respectively. The seat base 30, the seat cover 31, the armrest bases 40 and 40 and the armrest covers 41 and 41 are attached with plural Velcro fasteners and hooks not shown in a similar way to that of the backrest portion 2 and the pairs of a Velcro fastener and a hook are engaged to each other to thereby attach the covers to the bases in close contact therewith.

[0019] In Fig. 2, there is shown an appearance of the leg portion 5. In Fig. 3, there is shown a side view of the leg portion 5. The leg portion 5 is constituted of: a leg 51 in the shape of a cylinder; and flanges 52 and 53 formed on both sides, top and bottom, and the flange 52 at the top end is fixed to the bottom face of the seat portion 3 with screws. The rotating section 54 is freely rotatably constructed coaxially with the central axis of the leg 51 on the outside (on the lower side) of the flange

53 at the bottom. The rotating section 54 is rotatable in a predetermined angular range. A flange 55 is provided on the outside (on the lower side) of the rotating section 54 and fixed to a plate 63 on the top face of a pipe frame 60 of the base 6, which will be described later, with screws. With such a construction adopted, the seat portion 3 is rotatable within a predetermined angular range in relationship to the base 6 in a horizontal direction.

[0020] In the perspective view and the exploded perspective view of Figs. 2 and 4, respectively, there are shown a schematic mechanism of the base 6 together with an appearance of the leg portion 5. The base 6 is constituted of: the pipe frame 60 and a cover 64 (see Figs. 1 and 4). The pipe frame 60 includes: an outer frame 61 in the shape of a near ellipse; plural inner frames 62 spanned longitudinally and laterally inside the outer frame 61; and the plate 63 disposed on the top face of the inner frames 62. A cover 64 is attached to the pipe frame 60 so as to cover the pipe frame 60 and the rotating section 54 of the leg portion 5.

[0021] The flange 55 located at the lowermost part of the leg portion 5 is equipped with a positioning mechanism 7 for fixing rotation of the seat portion 3 by the rotating section 54 of the leg portion 5 at a rotation lock position. Note that the massaging machine 1 in this embodiment has the rotation lock position at a center of an angular range in which the rotating section 54 is rotatable. In Fig. 5, there is shown a construction of the positioning mechanism 7. In Figs. 6 (a positioning state) and 7 (a positioning cancelled state), there are shown sectional views of the positioning mechanism 7. The positioning mechanism 7 is constituted of: a base plate 71, a shaft 72, a slider 73, an operating knob 74; a spring 75; and a cylindrical spacer 76 and disposed in front of the leg portion 5.

[0022] The base plate 71 is a narrow long member in the sectional shape of a Greek letter II open upward and one end 713 thereof is fixed at the flange 55 of the leg portion 5 by welding. The shaft 72 is inserted in the vicinities of the front ends of both side plates 711 of the base plate 71. The slider 73 is in the shape of a Greek letter II open upward and slides in the inside of the base plates 71 along the both side plates 711 of the base plate 71. A pair of long holes 731 are formed in both side plates 737 of the slider 73. The long holes 731 are, as shown in Fig. 5, not parallel to the bottom plate of the slider 73 and inclined so as to be longer in distance from the bottom plate backward (in a direction toward the leg portion 5), and the shaft 72 is inserted into the long holes 731 and the base plate 71.

[0023] With a construction including the base plate 71, the shaft 72 and the slider 73 adopted, a sliding range of the slider 73 in relationship to the base plate 71 is defined between positions, as limits, at which the forward and rearward ends of the long holes 731 formed in both side plates 737 of the slider 73 come into contact with the shaft 72. As shown in Fig. 6, a position at which the shaft 72 is brought into contact with the forward end

of the long hole 731 is the rearmost end of the sliding range of the slider 73 relative to the base plate 71. At this time, since the shaft 72 is located at a position shortest in distance from the bottom plate of the slider 73 in the long holes 731, a distance between the bottom plate of the slider 73 and the bottom plate of the base plate 71 is larger. With increase in the clearance, the slider 73 freely sways around the shaft 72 as a center in the angular range in which the forward or rearward end of the bottom plate of the slider 73 is brought into contact with the top surface of the bottom of the base plate 71. If the slider 73 is slid toward the foremost end in a sway range from a position, the shaft 72 relatively moves in the long holes 731 rearward. Since the long holes 731 in the both plates of the slider 73 is, as described above, not in parallel to the bottom plate thereof and is inclined so that a distance from the bottom plate is longer rearward (toward the leg portion 5), a clearance between the bottom plate of the slider 73 and the bottom plate of the base plate 71 is narrower as the slider moves forward and in company therewith, a range of sway of the slider 73 around the shaft 72 as a center is narrower. If the shaft 72 moved in the long holes 731 to a position at which the shaft 72 is brought into contact with the rear end of the long holes 731, that is the slider 73 moves to the foremost end of the sliding range relative to the base plate 71, the shaft 72 is located at a position at which the shaft 72 is at the longest distance from the bottom plate of the slider 73 in the long holes 731; therefore, almost no clearance arises between the bottom plate of the slider 73 and the bottom plate of the base plate 71, thereby almost disabling sway of the slider 73 around the shaft 72 as a center.

[0024] A boss 732 is protruded upwardly in the vicinity of the rear end 735 of the bottom plate. The boss 732 engages in an engaging recess 531 (see Figs. 4, 6 and 7) formed in the middle of the front side of the flange 53 of the leg portion 5 when the seat portion 3 is at a predetermined rotation lock position, to thereby lock rotation of the seat portion 3.

[0025] An operating knob 74 is attached at the front end 734 of the slider 73 with screws 742. Part of the operating knob 74 is, as shown in Fig. 8, exposed in a hole 64a formed in the cover 64 of the base 6 and a recess 741 for being caught with a finger is formed in the front half part of the top surface.

[0026] The spring 75 is a coil spring with both ends extending straight and provided to the shaft 72. The spring 75 is held almost in the middle between the both side plates 737 of the slider 73 with cylindrical spacers 76. One end 751 of the spring 75 is brought into contact with the front half part 734 of the bottom face of the slider 73, while the other end 752 thereof is brought into contact with the bottom face 712 of the base plate 71 through a long hole 736 formed in the bottom plate of the slider 73 and the both ends act downward with forces. If the slider 73 is located at a sliding position rearward, a clearance between the bottom plate of the slider

73 and the bottom plate 712 of the base plate 71 is large; therefore, the slider 73 is in a state of freely swaying around the shaft 72 as a center and the spring 75 acts on the freely swayable slider 73 so as to push the rear end 735 side of the slider 73 upward. Thereby, the boss 732 is held at a height at which the boss 732 engages in the engaging recess 531 formed in the flange 53 of the leg portion 5 when the seat portion 3 is at rotation lock position shown in Fig. 6, the seat portion 3 is in a state where being positioned at the rotation lock position.

[0027] If the slider 73 is located at the foremost sliding position, almost no clearance arises between the bottom plate of the slider 73 and the bottom plate 712 of the base plate 71 and the slider 73 is in a state where almost no sway of the slider 73 is possible around the shaft 72 as a center and the slider 73 is held in a state where the rear end 735 side is pushed downward against a force of the spring 75. Thereby, in a positioning cancelled state shown in Fig. 7, the boss 732 is held at a position lower than the flange 53 of the leg portion 5 in which the engaging recess 531 is formed, which does not hinder rotation of the seat portion 3.

[0028] The positioning state or the positioning cancelled position can be realized by sliding the slider 73 using the operating knob 74. In order to change from the positioning state shown in Fig. 6 to a cancelled state, the operating knob 74 is pulled forward (in a direction of an arrow mark A of Fig. 6) catching the recess 741 of the operating knob 74 with a finger. Since the slider 73 slides while changing a positional relationship between the inclined long holes 731 and the shaft 72, a clearance between the slider 73 and the base plate 71 is gradually narrower as the slider moves forward; therefore, an angular range of sway around the shaft 72 as a center is gradually smaller. Hence, the rear end 735 of the bottom plate and the boss 732 move downward while moving forward as the slider 73 moves forward. Since the engaging recess 531 is, as shown in Figs. 2 and 4, formed at the middle of the front side of the peripheral edge of the flange 53, the engagement state between both can be cancelled only by moving the engaged boss 732 forward. In this way, an engagement between the boss 732 and the engaging recess 531 formed in the flange 53 of the leg portion 5 can be cancelled in both directions, from forward to rearward, and of the height. By pulling the operating knob 74 forward till the positioning cancelled state shown in Fig. 7 is reached, the boss 732 is held at a position lower than the flange 53, in which the engaging recess 531 is formed, of the leg portion 5 and no obstacle is taken place in rotation of the seat portion 3.

[0029] To the contrary, by pushing the recess 741 of the operating knob 74 rearward (in a direction of an arrow mark B of Fig. 7), the positioning cancelled state shown in Fig. 7 is transitioned to the positioning state. As the slider 73 moves rearward, a clearance between the slider 73 and the base plate 71 gradually increases

and an angular range of sway around the shaft 72 as a center gradually increases. The rear end 735 and the boss 732 of the slider 73, which has been freely swayable, is pushed to the upper limit of the sway range by a force of the spring 75. Hence, as the slider 73 moves rearward, the rear end 735 of the bottom plate and the boss 732 also moves upward while moving rearward. If the seat portion 3 is at a predetermined rotation lock position at this time, the engaging recess 531 is located at an engaging position with the boss 732 and the boss 732 is inserted into the engaging recess 531 from the opening side into engagement between both by the rearward and upward motion of the boss 732. If the seat portion 3 is in a rotational state other than the predetermined rotation lock position, the engaging recess 531 is not at the engaging position with the boss 732; therefore, the boss 732 cannot engage with the engaging recess 531 even by moving the boss 732 rearward. In the positioning mechanism 7, sizes of and positional relationships between members are set so that when the boss 732 moves rearward as far as the position of the flange 53, the top face of the boss 732 is not higher than the lower face of the flange 53. With such settings adopted, even in a case where the engaging recess 531 is not at the engaging position with the boss 732, the slider 73 can move up to a rearmost position without the side face of the boss 732 coming into contact with the peripheral edge of the flange 53. The boss 732 at this time is in a state where the top face of the boss 732 is in contact with the lower face of the flange 53 against an upward force by the spring 75. When the seat portion 3 rotates to the predetermined rotation lock position so that the engaging recess 531 moves right above the boss 732, no obstacle exists in the vertical motion of the boss 732 caused by an upward force of the spring 75 and the slider 73 sways so that the boss 732 is pushed up to a height at which the boss 732 engages with the engaging recess 531, thereby causing the boss 732 to engage with the engaging recess 531.

[0030] Since the massaging machine 1 of the embodiment is of such a construction, an inconvenience can be prevented that part of the peripheral edge of the base is brought into contact with an installment surface to cause the base 6 to roll on the install surface, when the massaging machine is installed after it is given a lift and carried, by locking rotation of the seat portion 3 with the positioning mechanism 7 at a predetermined rotation lock position. Since the operating knob 74 of the positioning mechanism 7 is exposed through the hole 64a formed in the cover 64 of the base 6 in front of the leg portion 5, a user can easily handle it due to its position. In addition, since change-over between rotation and positioning of the seat portion 3 can be done in a simple operation of pulling-out or pushing-in of the operating knob 74 (the arrow mark A of Fig. 6 and the arrow mark B of Fig. 7), the massaging machine 1 is easy to be handled, and even in a case where the operating knob 74 is stepped down by the fore part of a foot by mistake,

there is no operation of pushing down the operating knob 74; therefore, no chance arises for the positioning state of the seat portion 3 to be cancelled unexpectedly.

[0031] Note that while, in the embodiment, the rotation lock position of the seat portion is only at the middle in the rotational range in a horizontal plane, plural holes 531 may be formed in the flange 53 of the leg portion 5. A driving source such as a solenoid or a cylinder is equipped instead of the mechanism operating the operating knob 74 and the driving source is controlled in an interlocking relation with a switch provided with a remote controller or the like not shown, whereby rotation and positioning may be changed over therebetween.

Claims

1. A massaging machine (1) of a chair-type is provided with a backrest portion (2) having a massaging section (10) applying massage to a user installed therein and a seat portion (3) on a base (6), and equipped with a rotation mechanism freely rotating a chair structure constituted of said backrest portion (2) and said seat portion (3) in a horizontal plane in relationship to said base (6) thereof,

wherein said rotation mechanism has a positioning mechanism (7) terminating a rotational motion at a predetermined rotational position.

2. The massaging machine (1) according to claim 1, wherein said positioning mechanism (7) has an operating section changing-over between a positioning state and a rotation state.

3. The massaging machine (1) according to claim 2, wherein said positioning mechanism (7) includes:

at least one first engaging section (531) disposed on the side of rotational motion by said rotation mechanism and

a second engaging section (732), disposed on said base (6) side, and engaging with said at least one first engaging section (531) when said first engaging section (531) rotates to a predetermined position,

wherein said operating section changes over a position of said second engaging section (732) between a position engaging with said first engaging section (531) and a position not engaging therewith.

4. The massaging machine (1) according to claim 3, wherein said positioning mechanism (7) includes: a driving section driving said second engaging section (732) in a direction so as to engage with said first engaging section (531), wherein said second engaging section (732) engages with said first en-

gaging section (531) by said driving force when said first engaging section (531) rotates to a predetermined position.

5. The massaging machine (1) according to claim 4, wherein said first engaging section (531) is a recess formed at the peripheral edge of a rotating section (54) provided to said rotation mechanism,

said second engaging section (732) is a boss engaging in or disengaging from said recess (532) moving in two different directions, and

said driving section drives said boss (732) in at least one direction of said two different directions in which said boss (732) moves so as to engage said boss (732) into said recess (532).

6. The massaging machine (1) according to claim 5, wherein said positioning mechanism (7) includes: a slider (73) provided with said boss (732) and a shaft (72) supporting said slider (73) freely slidably and freely swayably,

wherein said driving section drives said boss (732) in a direction so as to engage into said recess (531) during sway of said slider (73), and

said slider (73) sways in relationship to said recess (531) in a direction perpendicular to a rotation center axis of said rotating section (54) so as to engage or disengage said boss (732) into or from said recess (531),

wherein said slider (73) freely sways around said shaft (72) as a center when said slider (73) sways up to a position where said boss (732) is inserted into said recess (531), while sway of said slider (73) around said shaft (72) as a center is restricted when said slider (73) sways up to a position where said boss (732) disengages from said recess (531).

Fig. 1

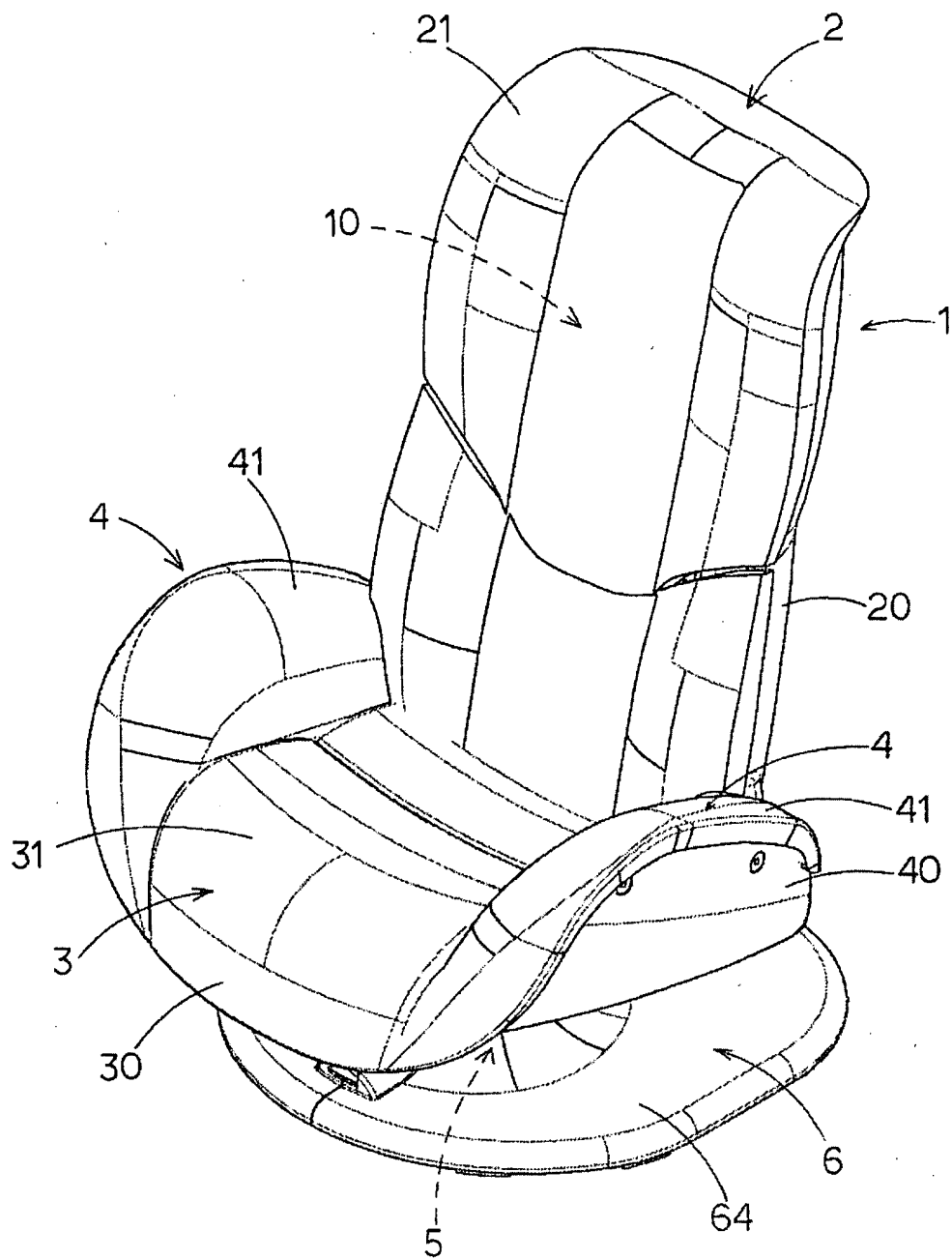


Fig. 2

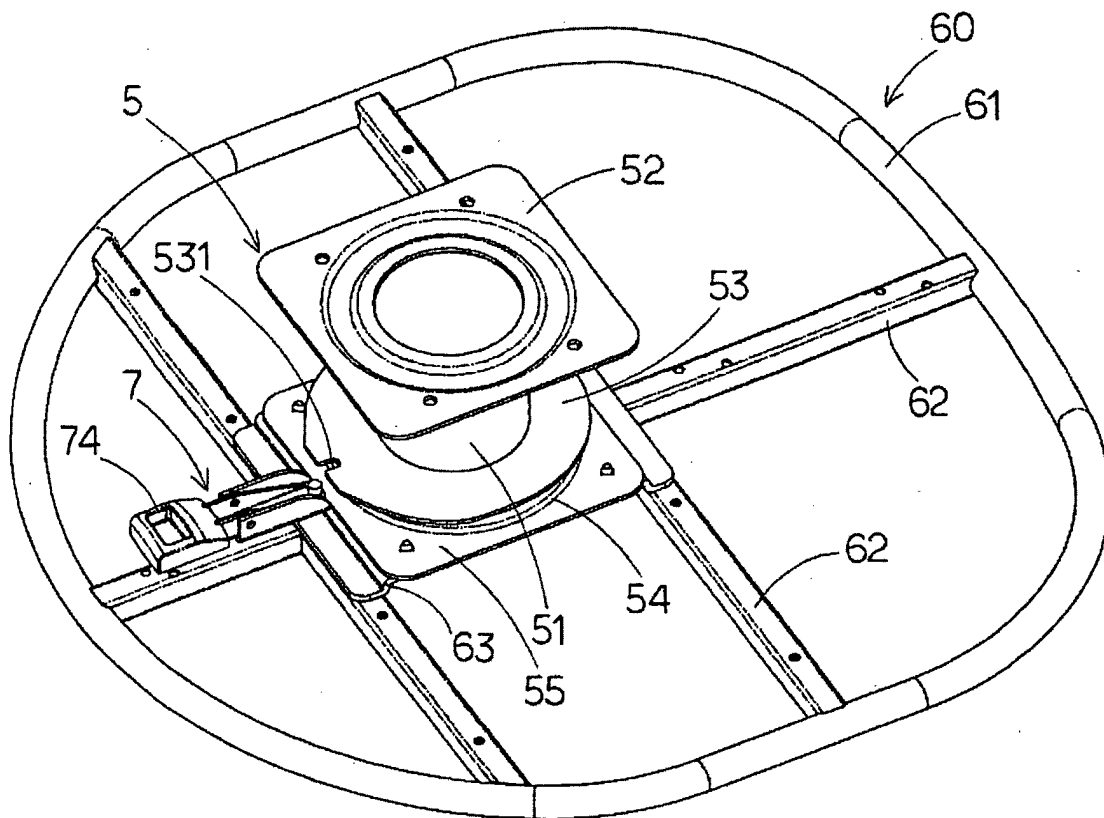


Fig. 3

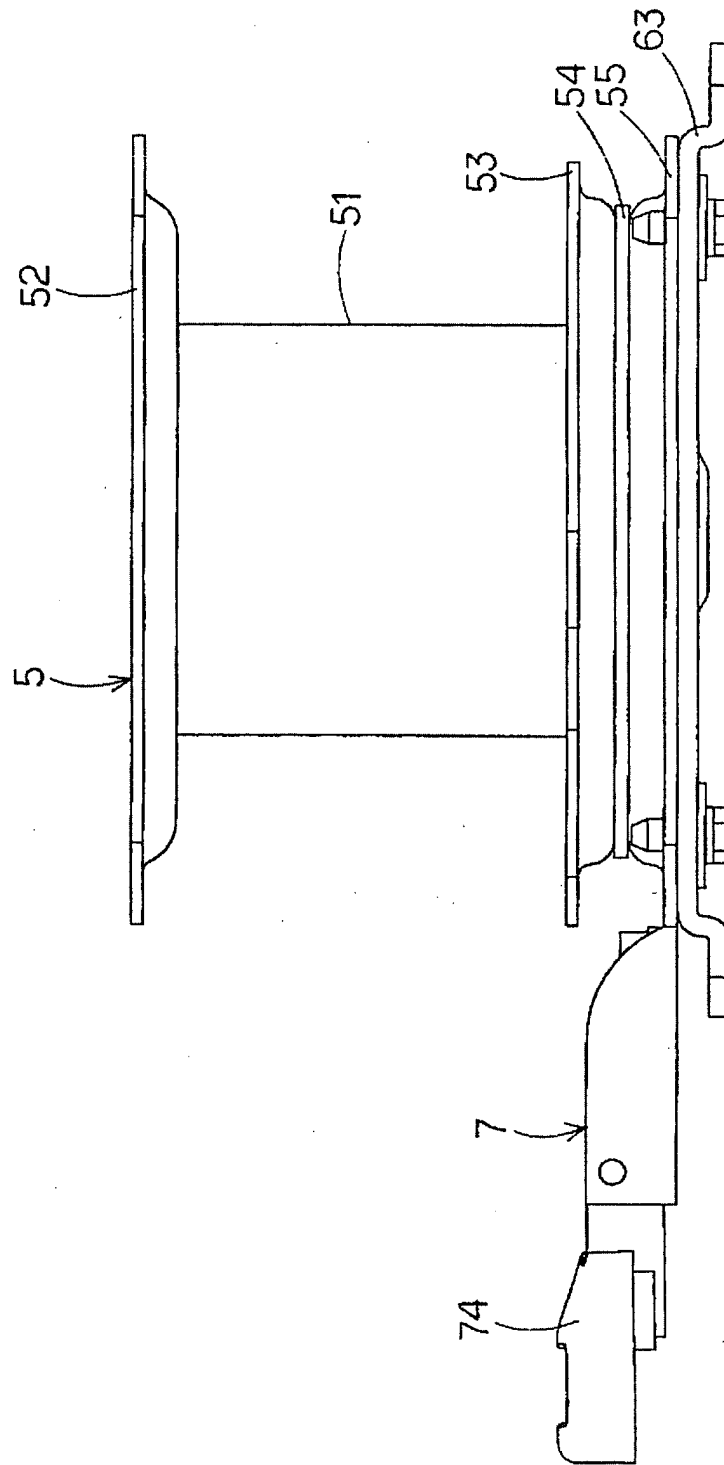


Fig. 4

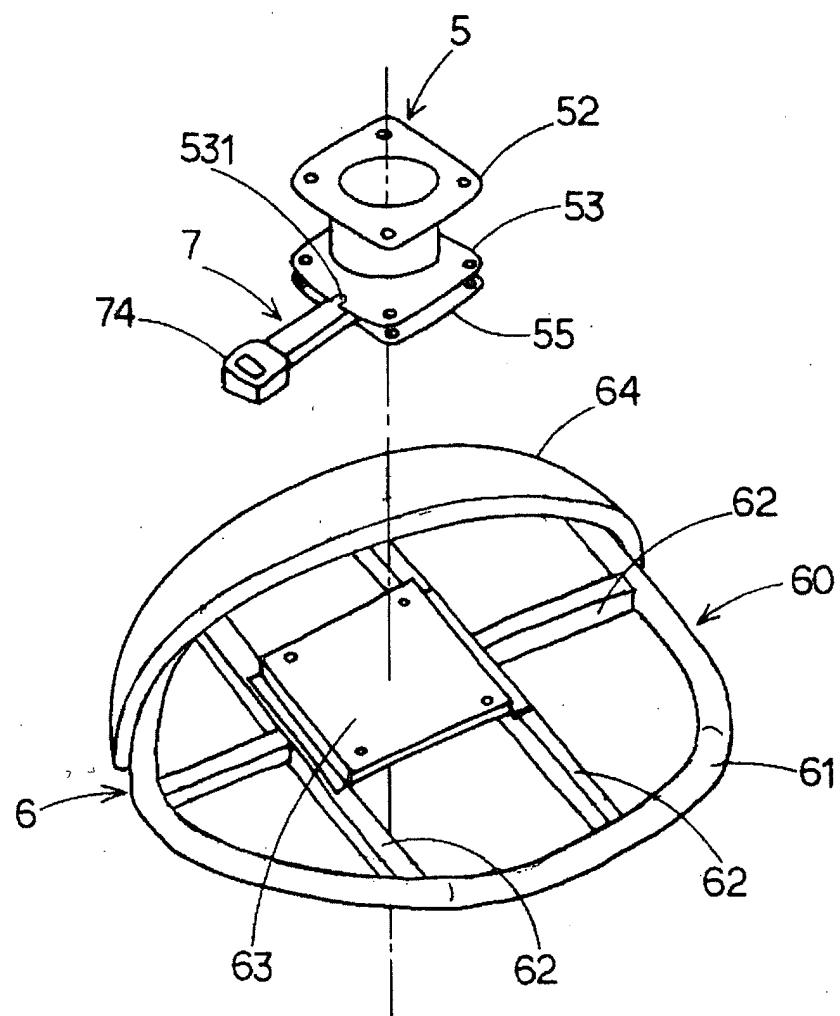


Fig. 5

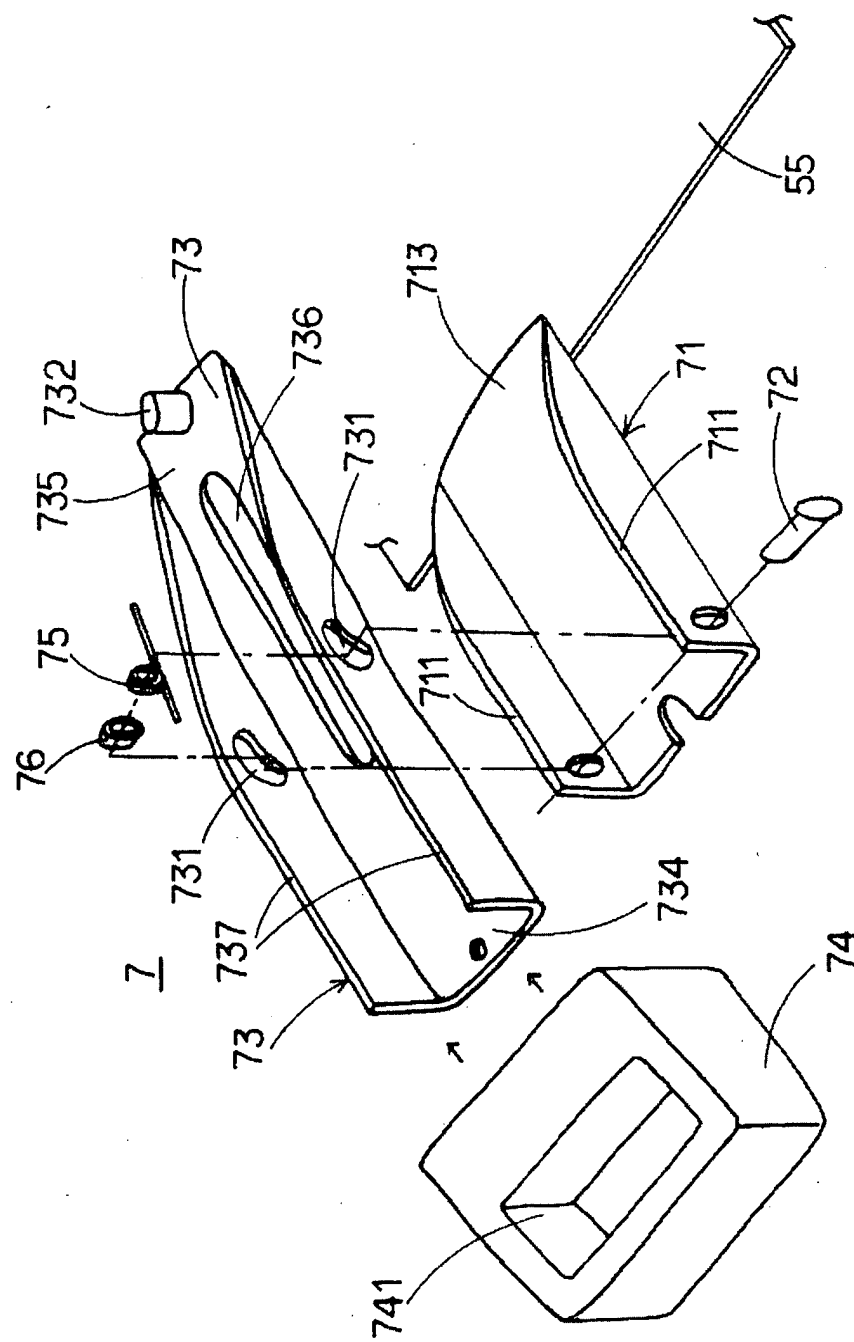


Fig. 6

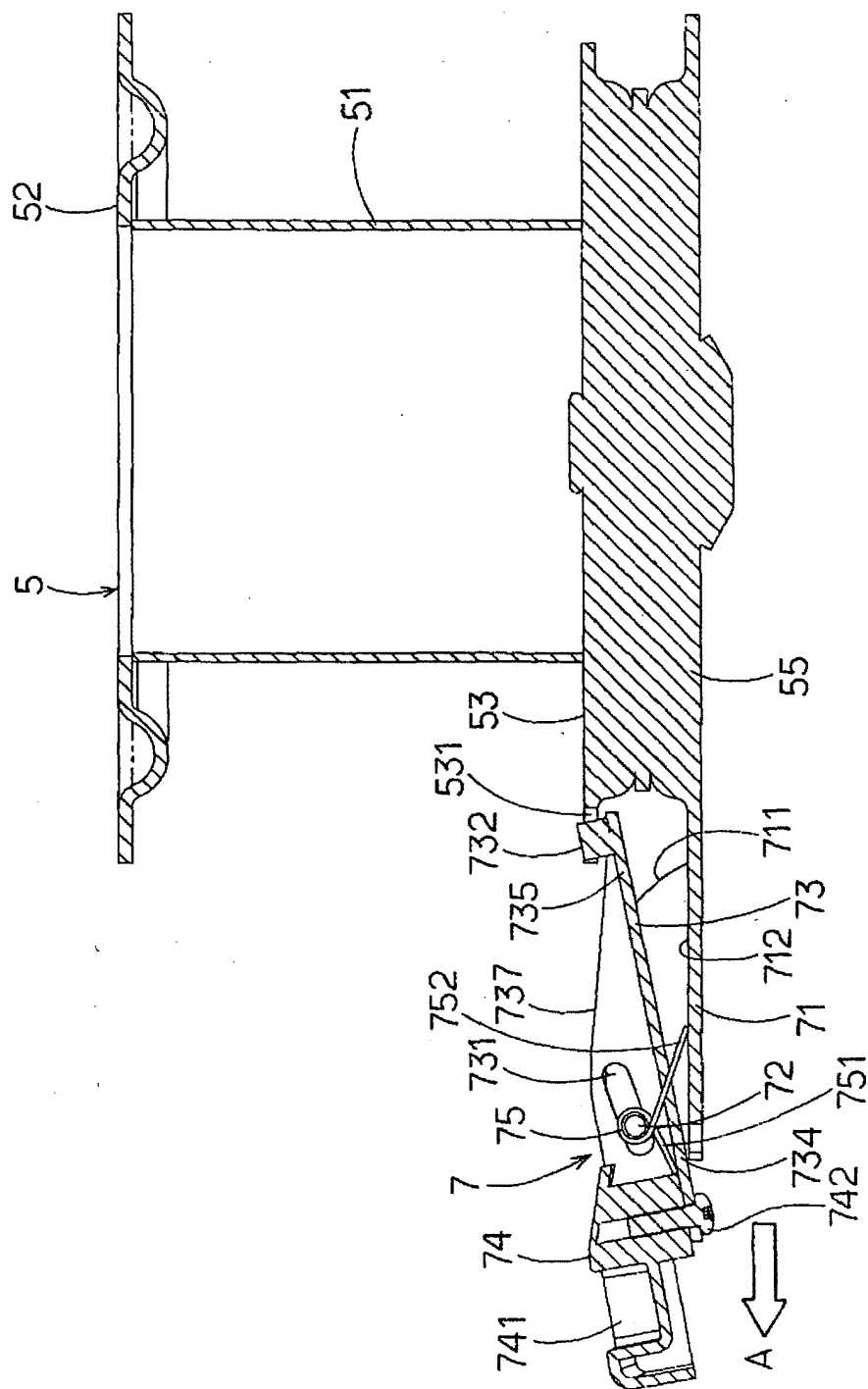


Fig. 7

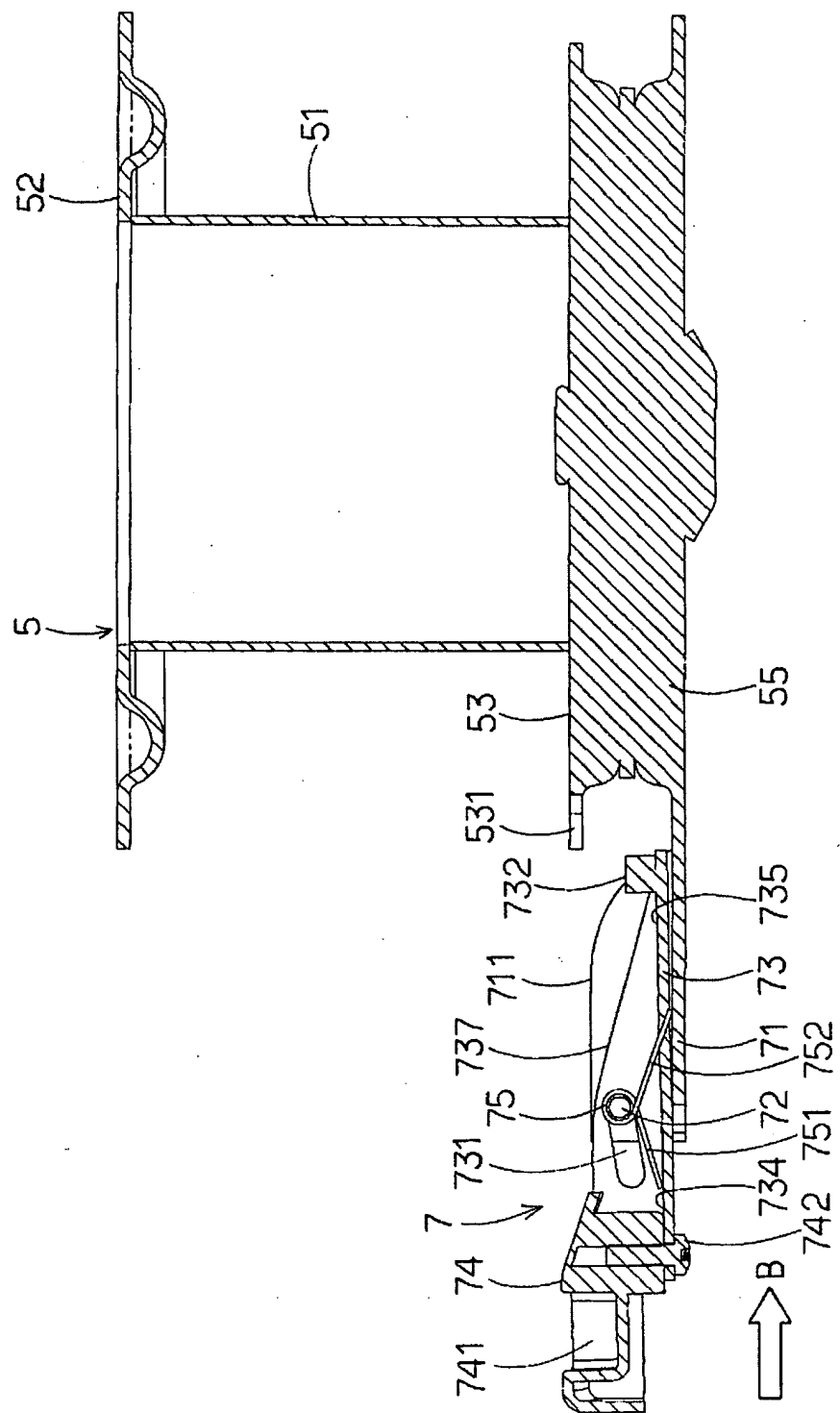
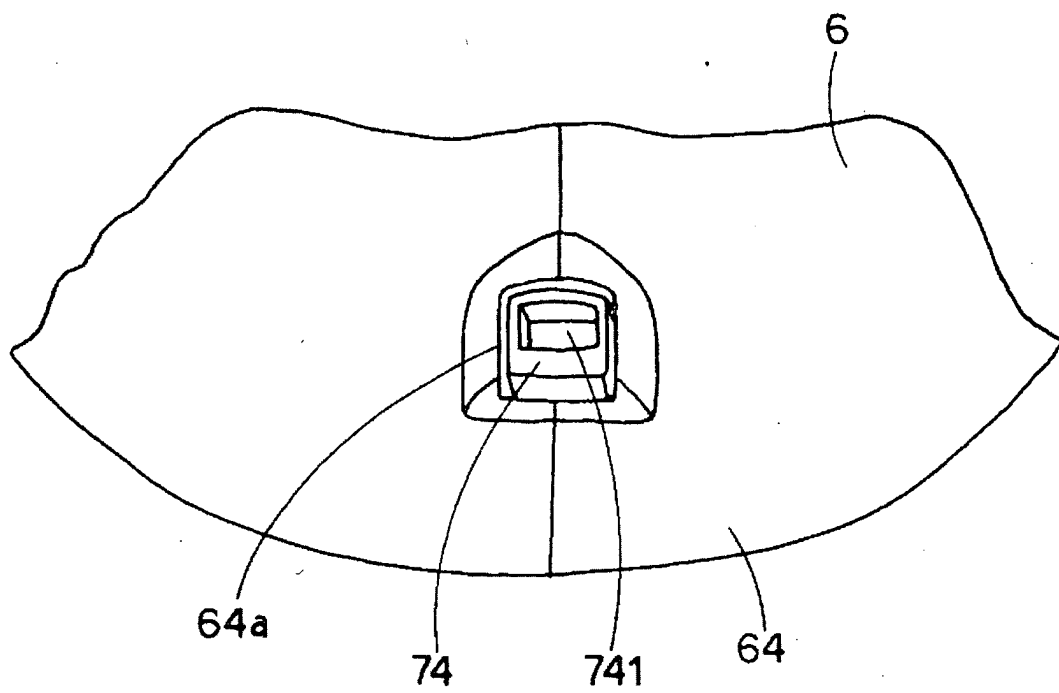


Fig. 8





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 01 1132

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X,D	PATENT ABSTRACTS OF JAPAN vol. 2003, no. 12, 5 December 2003 (2003-12-05) -& JP 2003 325619 A (OMRON CORP), 18 November 2003 (2003-11-18) * the whole document *	1	A61H1/00 A47C3/18
Y,D	JP 05 070340 U (#) 24 September 1993 (1993-09-24) * the whole document *	1-6	
Y	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 12, 3 January 2001 (2001-01-03) -& JP 2000 253944 A (FRANCE BED CO LTD), 19 September 2000 (2000-09-19) * the whole document *	1-6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			A61H A47C B60N
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 August 2005	Examiner Elmar Fischer
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03/02 (P04C01)

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

EP 05 01 1132

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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22-08-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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