



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
29.08.2012 Bulletin 2012/35

(51) Int Cl.:
A47C 7/64 (2006.01) A47C 7/38 (2006.01)
A47C 7/40 (2006.01) A47C 7/54 (2006.01)

(21) Application number: **10824922.8**

(86) International application number:
PCT/JP2010/068342

(22) Date of filing: **19.10.2010**

(87) International publication number:
WO 2011/049073 (28.04.2011 Gazette 2011/17)

(84) Designated Contracting States:
AL 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 RS SE SI SK SM TR

(72) Inventors:
• **OKUDA, Naoyuki**
Yokohama-shi
Kanagawa 220-0004 (JP)
• **IZAWA, Syouichi**
Yokohama-shi
Kanagawa 220-0004 (JP)

(30) Priority: **19.10.2009 JP 2009240264**

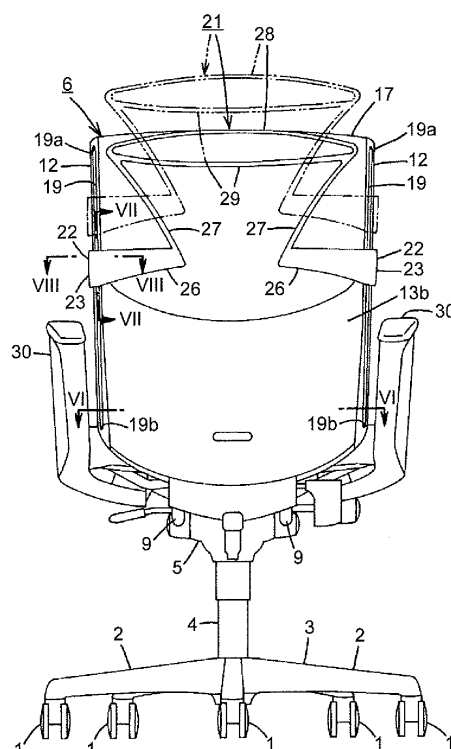
(71) Applicant: **Okamura Corporation**
Kanagawa 220-0004 (JP)

(74) Representative: **Zech, Stefan Markus et al**
Meissner, Bolte & Partner GbR
Postfach 86 06 24
81633 München (DE)

(54) **CHAIR**

(57) Provided is a chair capable of stably and securely mounting an optional member on a backrest with a simple structure, easily adjusting a mounting position of the optional member in an upward/downward direction, and maintaining a good appearance of the backrest even after the optional member is dismounted. The chair is such that concave grooves (19) recessed rearward and forward and oriented in an upward/downward direction are formed in front and rear surfaces of left and right side portions of a backrest (6), and portions of mounting members (22) installed at both sides of a hanger (21), which is an optional member, are engaged with the concave grooves (19) to mount the optional member on the backrest (6).

FIG.2



Description

Field

5 **[0001]** The present invention relates to a chair, and particularly to a chair having a backrest to which an optional member is attached.

Background

10 **[0002]** A conventional chair has a backrest to which an optional member such as a hanger for hanging clothes, a headrest, or the like, is attached (for example, see Patent Literatures 1 to 5).

Citation List

15 Patent Literature

[0003]

20 Patent Literature 1: Japanese Patent Application Laid-open No. 2005-245866
 Patent Literature 2: Japanese Patent Application Laid-open No. 2006-110013
 Patent Literature 3: Japanese Patent No. 3801769
 Patent Literature 4: Japanese Patent No. 4146890
 Patent Literature 5: Japanese Patent No. 4097186 Summary

25 Technical Problem

[0004] However, in the above-described conventional chair, since a mounting structure configured to mount the optional member on the backrest is complicated, a mounting operation is troublesome, and after the optional member is dis-
 30 mounted from the backrest, a portion of the mounting structure such as a screw hole is left and exposed externally, spoiling the appearance of the chair.

[0005] The present invention has been made in consideration of the above-described problems, and an object of the present invention is to provide a chair capable of stably and securely mounting an optional member on a backrest with a simple structure, easily adjusting a mounting position of the optional member in an upward/downward direction, and
 35 maintaining a good appearance of the backrest after the optional member is dismantled.

Solution to Problem

[0006] According to the present invention, the above object is accomplished by the following aspects.

40 (1) Concave grooves recessed rearward and forward and oriented in an upward/downward direction are formed in front and rear surfaces of left and right side portions of a backrest, and portions of mounting members installed at both sides of an optional member are engaged with the concave grooves to mount the optional member on the backrest.

45 **[0007]** According to the above-described configuration, since the portions of the mounting members of the optional member are engaged with the grooves formed in the left and right sides of the backrest, the optional member can be stably and securely mounted with a simple structure. Even when the optional member is disposed at any position (height) along the grooves, the optional member can be mounted with the same structure. Thus, a mounting position of the optional member in an upward/downward direction can be easily adjusted.

50 In addition, after the optional member is dismantled, since no element of the mounting structure such as a screw hole, etc., remains, a good appearance of the backrest is maintained.

[0008] (2) In the above-described aspect (1), the concave grooves formed in the front and the rear of both sides of the backrest are in alignment with each other in a forward/rearward direction so that horizontal cross-sections of both sides of the backrest have a substantially "H" shape.

55 **[0009]** According to the above-described configuration, since front and rear surfaces of both sides of the backrest are symmetrical in the forward/rearward direction, the mounting members of the optional member can be inverted in a forward/rearward direction to be mounted, and mounting aspects of the optional member can be diversified.

[0010] (3) Concave grooves recessed rearward and oriented in an upward/downward direction are formed in a front

surface of a backrest, and portions of mounting members installed at both sides of an optional member are engaged with the concave grooves to mount the optional member on the backrest.

[0011] According to the above-described configuration, the concave grooves with which the portions of the mounting members of the optional member are engaged are specified to be in the front surface of the backrest, the same operations and effects as the invention of the aspect (1) can be accomplished.

[0012] (4) Concave grooves recessed forward and oriented in an upward/downward direction are formed in a rear surface of a backrest, and portions of mounting members installed at both sides of an optional member are engaged with the concave grooves to mount the optional member on the backrest.

[0013] According to the above-described configuration, the concave grooves with which the portions of the mounting members of the optional member are engaged are specified to be in the rear surface of the backrest, the same operations and effects as the invention of the aspect (1) can be accomplished.

[0014] (5) In any of the above-described aspects (1) to (4), any one of upper and lower ends of the concave grooves in the backrest is blocked by a blocking piece.

[0015] According to the above-described configuration, the blocking piece can prevent the mounting members of the optional member from being separated upward or downward from the backrest.

[0016] (6) In any of the above-described aspects (1) to (5), the backrest comprises a pair of left and right side rods and a back plate connecting the side rods and having a forward/rearward directional thickness smaller than that of both of the side rods, and the concave grooves are formed on both of the side rods.

[0017] According to the above-described configuration, with no decrease in strength of both sides of the backrest at which the mounting members of the optional member are installed, the left and right side rods and the back plate can be integrally formed using the same material and the back plate can have flexibility.

[0018] (7) In any of the above-described aspects (1) to (6), convex portions or concave portions are formed in inner surfaces of the concave grooves, and the portions of the mounting members are engaged with the convex portions or the concave portions.

[0019] According to the above-described configuration, since the convex portions or the concave portions formed in the inner surfaces of the concave grooves are engaged with the portions of the mounting members, movement of the mounting members of the optional member along the concave grooves can be prevented.

[0020] (8) In any of the above-described aspects (1) to (7), a plurality of convex portions or concave portions are formed in the inner surfaces of the concave grooves at predetermined intervals in the upward/downward direction, and the portions of the mounting members are selectively engaged with the convex portions or the concave portions, so that the optional member is installed at the backrest in the upward/downward direction in a manner capable of adjusting a mounting position.

[0021] According to the above-described configuration, as the portions of the mounting members are selectively engaged with the plurality of convex portions or concave portions, mounting positions of the optional members can be adjusted to a plurality of heights.

[0022] (9) In the above-described aspect (8), the mounting members of the optional member comprise surrounding pieces extending outward from side ends of the optional member and surrounding side ends of the backrest, elastic members installed at the surrounding pieces, and engaging claws installed at ends of any one of upper and lower front ends of the surrounding pieces and fitted to the concave grooves of the backrest to be selectively engaged with the plurality of convex portions or concave portions formed in the concave grooves, so that the optional member can be locked to the backrest at the plurality of heights, and wherein the engaging claws are biased by the elastic members in a direction of engaging the mounting members with the convex portions or the concave portions with respect to the backrest, so that the engaging claws can be separated from the convex portions or the concave portions by moving the optional member against the biasing force.

[0023] According to the above-described configuration, in addition to adjusting the mounting position of the optional member to the plurality of heights, since the optional member is moved to resist the biasing forces of the elastic members, the engaging claws are separated from the convex portions or the concave portions. In this state, after moving the mounting members along the concave grooves upward and downward, as the engaging claws are engaged with another of the convex portions or concave portions, the mounting position of the optional member can be simply changed.

[0024] (10) In any of the above-described aspects (1) to (8), the mounting members of the optional member comprise surrounding pieces extending outward from side ends of the optional member and surrounding side ends of the backrest and elastic members installed at the surrounding pieces, at least one of the front ends of the surrounding pieces and the elastic members is engaged with the concave grooves of the backrest, and the side ends of the backrest are sandwiched by the front ends of the surrounding pieces and the elastic members.

[0025] According to the above-described configuration, since at least one side of the front ends of the surrounding pieces and the elastic members is engaged with the concave grooves of the backrest, movement of the mounting members in the leftward/rightward direction is restricted, and in this state, the side ends of the backrest can be compressively gripped by the front ends of the surrounding pieces and the elastic members from front and rear sides thereof.

[0026] (11) In any of the above-described aspects (1) to (10), the optional member is any one or a plurality of a hanger for hanging clothes, a headrest, an armrest, and a lumbar support.

[0027] According to the above-described configuration, one or more of the optional members having different functions can be simply installed at the backrest as a single or a combined assembly, diversifying the chair.

Advantageous Effects of Invention

[0028] According to the present invention, it is possible to provide the chair in which the optional member can be stably and securely mounted with a simple structure, and the mounting position of the optional member in the upward/downward direction can be easily adjusted, and further, after the optional member is dismounted, a good appearance of the backrest can be maintained.

Brief Description of Drawings

[0029]

FIG. 1 is a side view of an embodiment of a chair of the present invention.

FIG. 2 is a rear view of the chair shown in FIG. 1.

FIG. 3 is a plan view of the chair shown in FIG. 1.

FIG. 4 is an exploded perspective view of a backrest when viewed from a diagonally forward side.

FIG. 5 is an exploded perspective view of a hanger when viewed from a diagonally forward side.

FIG. 6 is an enlarged transverse cross-sectional plan view taken along line VI-VI of FIG. 2.

FIG. 7 is an enlarged longitudinal cross-sectional side view taken along line VII-VII of FIG. 2.

FIG. 8 is an enlarged transverse cross-sectional plan view taken along line VIII-VIII of FIG. 2.

FIG. 9 is an exploded perspective view of a mounting portion of a hanger when viewed from a diagonally rearward side.

Description of Embodiments

[0030] Hereinafter, an embodiment of the present invention will be described with reference to the accompanying drawings.

As shown in FIGS. 1 to 3, a chair includes a leg body 3 having radial five leg rods 2, each of which is provided with a caster 1 at a leading end thereof. An expandable leg column 4 that includes a gas spring (not shown) is vertically installed at the center of the leg body 3, and a rear portion of a support base 5 is fixed to an upper end of the leg column 4.

[0031] The support base 5 has a substantially hollow box shape with an upper surface open, and an opening of the upper surface is covered by a detachable cover 5a.

[0032] While a biasing means configured to bias a backrest 6 in an erection direction, i.e., a forward direction, and a biasing means configured to bias a seat 7 supported by the support base 5 in the forward direction (neither shown) are installed in the support base 5, these are not directly related to the present invention, and thus, illustration and detailed description thereof will be omitted.

[0033] The backrest 6 is, as shown in FIG. 4, supported by a pair of left and right backrest support rods 9 and 9 having an L-shape when viewed from the side and intermediate curved portions thereof being connected by a connecting plate 8 that is oriented in the leftward/rightward direction.

Front ends of the backrest support rods 9 and 9 are pivotally coupled to the support base 5 using a leftward/rightward directional shaft 10. The backrest support rods 9 and 9 and the backrest 6 can be pivoted about the shaft 10 in the forward/rearward direction or can be stopped at a predetermined rearward-inclined angle by an operation of a gas spring 11 (see FIG. 1), front and rear ends of which are connected to a rear end of the support base 5 and the connecting plate 8.

[0034] As shown in FIG. 4, the backrest 6 includes a pair of left and right side rods 12 and 12, and a back plate 13 that connects the side rods 12 and 12 and has a smaller forward/rearward directional thickness than that of the side rods 12 and 12.

An upper half 13a of the back plate 13 is joined to the vicinity of front edges of the side rods 12 and 12, and similarly, a lower half 13b is joined to the vicinity of rear edges of the side rods 12 and 12, so that a horizontal step portion (not shown) is formed therebetween.

Preferably, the side rods 12 and 12 and the back plate 13 are formed of a hard synthetic resin material and are integrally formed.

[0035] As described above, since the backrest 6 includes the pair of left and right side rods 12 and 12 and the back plate 13 connecting the side rods 12 and 12 and having a smaller forward/rearward directional thickness than that of the side rods 12 and 12, both sides of the backrest 6 on which mounting members 22 and 22 of a hanger 21 described below are installed are not reduced in strength, the left and right side rods 12 and 12 and the back plate 13 can be

integrally formed of the same material, and the back plate 13 can be given flexibility.

[0036] The upper half 13a of the back plate 13 is provided with a plurality of holes 14 elongated in the upward/downward direction so as to increase flexibility.

In addition, a plurality of ribs 15 are formed on front lateral portions of the lower half 13b of the back plate 13 to increase rigidity.

[0037] The backrest 6 is supported by the backrest support rods 9 and 9 such that upper ends of the left and right backrest support rods 9 and 9 are inserted between the left and right ribs 15 and 15 on the front surface of the lower half 13b of the back plate 13, the connecting plate 8 is fixed to the lower half 13b of the back plate 13 using mounting members (not shown), and front surfaces thereof are covered by a front cover plate 16 having substantially the same shape as the lower half 13b of the back plate 13 in a state in which the front surface of the front cover plate is aligned with a front surface of the upper half 13a of the back plate 13.

Further, a front surface of the front cover plate 16, a front surface of the upper half 13a of the back plate 13, and a rear surface of the upper half 13a of the back plate 13 are covered by a cushion material 17, which is folded in half.

[0038] A pair of front and rear concave grooves 18 and 19, which are recessed rearward and forward and oriented in the upward/downward direction, are formed in front and rear surfaces of the left and right side rods 12 and 12 of the backrest 6 in alignment with each other in the forward/rearward direction, so that a horizontal cross-section of each side rod 12 in which the concave grooves 18 and 19 are formed has a substantially "H" shape, as shown in FIG. 6.

[0039] Upper and lower ends of the concave grooves 18 and 19 in the front and the rear of each side rod 12 are closed by blocking pieces 18a, 18b, 19a and 19b. Thereby, the mounting members 22 and 22 described below are prevented from being separated upward or downward from the backrest 6.

In addition, any one of the upper blocking pieces 18a and 19a and the lower blocking pieces 18b and 19b may be omitted, and thereby any one of the upper and lower ends of the concave grooves 18 and 19 may be open in an upward or downward direction.

[0040] As shown in FIG. 7, a plurality of convex portions 20, each of which has a triangle shape when viewed from the side with an upper end surface being horizontal, are formed on a groove bottom surface of the front concave groove 18 in the upward/downward direction at predetermined intervals.

Incidentally, instead of the convex portions 20, a plurality of concave portions (not shown), each of which has a triangle shape when viewed from the side with a lower end surface being horizontal, may be provided.

[0041] Engaged with the concave grooves 18 and 19 formed in the front and the rear of the left and right side rods 12 and 12 are portions of the mounting members 22 and 22 installed at both sides of the hanger 21 shown in FIG. 5, which is the optional member for hanging clothes, and thus the hanger 21 is mounted on the backrest 6 and disposed on a rear surface side of the backrest 6.

[0042] Each mounting member 22 of the hanger 21 includes a surrounding piece 23 extending outward from a side end of the hanger 21 and surrounding the side end of the backrest 6 from a rear surface side to a front surface side, and an elastic member 25 detachably fixed to an inner corner of a rear side of the surrounding piece 23 using a bolt/nut 25d.

[0043] An engaging claw 24, which faces rearward and has a triangle shape when viewed from the side with a lower end being horizontal, is formed at an upper portion of a front end of the surrounding piece 23 rolling around the front surface of each side rod 12, and the engaging claw 24 is fitted into the concave groove 18 in the front surface of the side rod 12 to be selectively engaged with the plurality of convex portions 20 formed in the concave groove 18, locking the hanger 21 to the backrest 6 at a plurality of heights.

[0044] As shown in FIGS. 7 to 9, the elastic member 25 includes a mounting portion 25a fixed to the surrounding piece 23 using the bolt/nut 25d, an elastic tongue piece 25b extending forward and upward from the mounting portion 25a and fitted into the concave groove 19 in the front surface of each side rod 12 to be in pressure-contact with a groove bottom surface, and a contact piece 25c extending forward and downward from the mounting portion 25a and having a front end in contact with a side edge of the concave groove 19 in the rear surface of each side rod 12.

[0045] Because the front edge of the contact piece 25c of the elastic member 25 is in contact with the side edge of the concave groove 19 in the rear surface of each side rod 12 and the elastic tongue piece 25b is fitted into the concave groove 19 in the front surface of the side rod 12 to be in pressure-contact with the groove bottom surface, the engaging claw 24 is biased to the groove bottom surface of the concave groove 18 in the front surface of the side rod 12 to be in pressure-contact therewith, and each side rod 12 is sandwiched by the engaging claw 24 and the elastic tongue piece 25b and the contact piece 25c of the elastic member 25 from front and rear sides thereof. Further, because a lower edge of the engaging claw 24 is in contact with any one of the plurality of convex portions 20 in the concave groove 18 to be engaged therewith, the left and right mounting members 22 and 22 are firmly engaged therewith without being easily lowered in order to stably and strongly support the hanger 21.

[0046] When a mounting position of the hanger 21 is to be adjusted in the upward/downward direction, the hanger 21 is pivoted forward or pushed forward against the biasing force using a lower end thereof as a pivot point, as shown in a two-dot chain line of FIG. 7, while the elastic tongue piece 25b is elastically deformed.

Then, the engaging claw 24 is pivoted forward using a front lower end of the contact piece 25c or an inner edge of a

lower end of a front portion of the surrounding piece 23 as a pivot point, and separated forward from the convex portions 20. In this state, the entire hanger 21 may be moved upward or downward to engage the engaging claw 24 with any of the upper and lower convex portions 20.

[0047] Incidentally, in moving the hanger 21 downward, the hanger 21 is returned to its original backward inclined posture and then lowered, so that the engaging claw 24 is naturally engaged with the lower convex portion 20.

In moving the hanger 21 upward, even when the hanger 21 is returned to its original backward inclined posture and then raised, the engaging claw 24 can ride over the lower edge, which is inclined forward and upward, of the upper convex portion 20, to be pushed forward, and then is engaged with the upper surface of the convex portion 20.

[0048] In this example, the hanger 21 includes the pair of mounting members 22 and 22 installed at both left and right sides of the backrest 6, a pair of support frames 26 and 26 extending from the mounting members 22 and 22 and facing inward each other in a rear surface of the backrest 6, a pair of tilted erection frames 27 and 27 extending toward higher than inner ends of the support frames 26 and 26 and enlarging outward from each other, and an upper frame 28 having ends connected to both upper ends of the tilted erection frames 27 and 27 and facing in the leftward/rightward direction, wherein at least the tilted erection frames 27 and 27 and the upper frame 28 are formed of an elastically deformable material.

[0049] In addition, both ends of an auxiliary frame 29 disposed under the upper frame 28 and oriented in the leftward/rightward direction are connected to the left and right tilted erection frames 27 and 27.

In this example, the upper frame 28 is curved upward in an arc shape when viewed from a rear side, the auxiliary frame 29 is curved downward in an arc shape when viewed from a rear side, and the left and right ends of the upper frame 28 and the auxiliary frame 29 are connected to the upper ends of the left and right tilted erection frames 27 and 27 to be coupled to each other.

[0050] Furthermore, a middle portion of the auxiliary frame 29 is positioned forward compared to a middle portion of the upper frame 28.

[0051] The hanger 21 may be configured such that the surrounding pieces 23 and 23 of the mounting members 22 and 22, the support frames 26 and 26, the tilted erection frames 27 and 27, the upper frame 28 and the auxiliary frame 29 are integrally formed of a hard synthetic resin material, and that only the elastic members 25 and 25 are formed of a separate material and are mounted on the surrounding pieces 23 and 23 using the bolt/nut 25d.

[0052] Since the mounting members 22 and 22 of the hanger 21 are installed at the left and right sides of the backrest 6, stress is not concentrated to a center of the backrest 6 but distributed to left and right sides, and thus, the hanger 21 can stably support clothes, etc., with no lateral shaking, and the left and right mounting members 22 and 22 can be reduced in size.

[0053] In addition, a rear surface shape of the hanger 21 when the hanger 21 is installed at the backrest 6 is a unique shape in which two Z-shapes face each other to provide a good style, and further, there is no remaining in the backrest 6 such as a screw hole, etc., even when the hanger 21 is mounted or even after the hanger 21 is dismounted, maintaining a good appearance.

[0054] Moreover, as at least the tilted erection frames 27 and 27 and the upper frame 28 are formed of an elastically deformable material, when a load such as clothes, etc., is applied to the upper frame 28, the tilted erection frames 27 and 27 and the upper frame 28 are elastically deformed, the left and right support frames 26 and 26 cause moment to be pivoted downward using the mounting members 22 and 22 as a pivot point, specifically, using a portion at which a front end of the contact piece 25c of the elastic member 25 is in contact with the rear surface of the side rod 12 as a pivot point, the mounting members 22 and 22 are strongly engaged with both sides of the backrest 6 by the moment, and coupling strength between the mounting members 22 and 22 and the backrest 6 can be increased.

[0055] Since the upper frame 28 is curved upward in an arc shape when viewed from a rear side, the upper frame 28 can be easily bent by a load from above to distribute the stress.

[0056] In addition, since the auxiliary frame 29 is curved downward in an arc shape when viewed from a rear side, accessories of clothes such as a necktie, a muffler, a stole, and so on, can be hung on the auxiliary frame 29 to improve convenience, and since the accessories of the clothes hung on the auxiliary frame 29 are gathered in a middle portion of the auxiliary frame 29, they can be easily pulled out even when a jacket is hung on the upper frame 28.

[0057] Furthermore, since the middle portion of the auxiliary frame 29 is positioned forward compared to the middle portion of the upper frame 28, the accessories of the clothes can be easily hung on and pulled out from the auxiliary frame 29 even when the jacket is hung on the upper frame 28.

[0058] Since the left and right mounting members 22 are installed at both sides of the backrest 6 to enable adjustment of the mounting position, when the hanger 21 is not in use, the upper frame 28 is disposed at a lowered position equal to or lower than the upper end of the backrest 6, and thus, the hanger 21 is not encumbered. In addition, when the hanger 21 is in use, as the upper frame 28 is disposed at a raised position higher than the upper end of the backrest 6, the clothes, etc., can be easily hung on the hanger 21 and lower ends of the clothes, etc., are not dragged on a floor.

[0059] In the illustrated example, a pair of left and right armrests 30 and 30 are mounted on both side surfaces of the support base 5. A member having the same shape as the mounting member 22 inverted in a forward/rearward direction

may be mounted on a rear end of the armrest 30, and the member may be mounted on each side rod 12 in a relation reversed with respect to the above case, so that the armrests 30 can be mounted on both sides of the backrest 6 in a height-adjustable manner.

[0060] As described above, the optional member may be a headrest, a lumbar support, and so on, in addition to the hanger 21 and the armrest. The portions of the mounting members 22 and 22 provided at both sides of any one or a plurality of members are engaged with the concave grooves 18 and 19 formed at any one surface of the front and rear surfaces of the left and right sides of the backrest 6 to be mounted on the backrest 6. Thus, these optional members can be stably and securely mounted on the backrest 6 with a simple structure, and at the same time, the optional member can be mounted with the same structure at any position (height) along the concave grooves 18 and 19. Accordingly, the mounting position of the optional member in the upward/downward direction can be easily adjusted.

In addition, after the optional member is dismounted, since no element of the mounting structure such as a screw hole, etc., remains, the good appearance of the backrest can be maintained.

Furthermore, various optional members having different functions can be installed at the backrest as a single or a combined assembly, diversifying the chair.

[0061] The present invention is not limited to the above-described embodiment but may be modified in the following various configurations.

(1) The engaging claw 24 of the mounting member 22 is fitted into the concave groove 18 or 19 of each side rod 12, in which only one of the front and rear concave grooves 18 and 19 is provided and the other is omitted, the elastic tongue piece 25b and the contact piece 25c of the elastic member 25 are in pressure-contact with any one of the front and rear surfaces of the side rod 12 with no concave groove, and each side rod 12 is sandwiched by the engaging claw 24 and the elastic tongue piece 25b and the contact piece 25c of the elastic member 25 from front and rear side thereof, supporting the hanger 21.

[0062] (2) The convex portions 20 are omitted, the engaging claw 24 is fitted into the concave groove 18 to be in contact with the groove bottom surface of the concave groove 18, and each side rod 12 is sandwiched by the engaging claw 24 and the elastic tongue piece 25b and the contact piece 25c of the elastic member 25 from front and rear side thereof, supporting the hanger 21.

[0063] (3) The engaging claw 24 is formed at the lower portion of the front end of the surrounding piece 23 rolled around the front surface of each side rod 12, relating thereto, the elastic tongue piece 25b of the elastic member 25 is formed to extend forward and downward from the mounting portion 25a, the contact piece 25c is formed to extend forward and upward from the mounting portion 25a, and thus, the engaging claw 24 is separated forward from the convex portions 20 by pivoting the optional members including the hanger 21, rearward and downward. Reference Signs List

[0064]

1	CASTER
2	LEG ROD
3	LEG BODY
4	LEG COLUMN
5	SUPPORT BASE
5a	COVER
6	BACKREST
7	SEAT
8	CONNECTING PLATE
9	BACKREST SUPPORT ROD
10	SHAFT
11	GAS SPRING

	12	SIDE ROD
	13	BACK PLATE
5	13a	UPPER HALF
	13b	LOWER HALF
	14	ELONGATED HOLE
10	15	RIB
	16	FRONT COVER PLATE
15	17	CUSHION MATERIAL
	18,	19 CONCAVE GROOVE
20	18a, 18b, 19a, 19b	BLOCKING PIECE
	20	CONVEX PORTION
	21	HANGER (OPTICAL MEMBER)
25	22	MOUNTING MEMBER
	23	SURROUNDING PIECE
	24	ENGAGING CLAW
30	25	ELASTIC MEMBER
	25a	MOUNTING PORTION
35	25b	ELASTIC TONGUE PIECE
	25c	CONTACT PIECE
	26	SUPPORT FRAME
40	27	TILTED ERECTION FRAME
	28	UPPER FRAME
45	29	AUXILIARY FRAME
	30	ARMREST

50 **Claims**

1. A chair, wherein concave grooves recessed rearward and forward and oriented in an upward/downward direction are formed in front and rear surfaces of left and right side portions of a backrest, and portions of mounting members installed at both sides of an optional member are engaged with the concave grooves to mount the optional member on the backrest.
55
2. The chair according to claim 1, wherein the concave grooves formed in the front and the rear of both sides of the backrest are in alignment with each other in a forward/rearward direction so that horizontal cross-sections of both

sides of the backrest have a substantially "H" shape.

3. A chair, wherein concave grooves recessed rearward and oriented in an upward/downward direction are formed in a front surface of a backrest, and portions of mounting members installed at both sides of an optional member are engaged with the concave grooves to mount the optional member on the backrest.
4. A chair, wherein concave grooves recessed forward and oriented in an upward/downward direction are formed in a rear surface of a backrest, and portions of mounting members installed at both sides of an optional member are engaged with the concave grooves to mount the optional member on the backrest.
5. The chair according to any one of claims 1 to 4, wherein any one of upper and lower ends of the concave grooves in the backrest is blocked by a blocking piece.
6. The chair according to any one of claims 1 to 5, wherein the backrest comprises a pair of left and right side rods and a back plate connecting the side rods and having a forward/rearward directional thickness smaller than that of both of the side rods, and the concave grooves are formed on both of the side rods.
7. The chair according to any one of claims 1 to 6, wherein convex portions or concave portions are formed in inner surfaces of the concave grooves, and the portions of the mounting members are engaged with the convex portions or the concave portions.
8. The chair according to any one of claims 1 to 7, wherein a plurality of convex portions or concave portions are formed in the inner surfaces of the concave grooves at predetermined intervals in the upward/downward direction, and the portions of the mounting members are selectively engaged with the convex portions or the concave portions, so that the optional member is installed at the backrest in the upward/downward direction in a manner capable of adjusting a mounting position.
9. The chair according to claim 8, wherein the mounting members of the optional member comprise surrounding pieces extending outward from side ends of the optional member and surrounding side ends of the backrest, elastic members installed at the surrounding pieces, and engaging claws installed at ends of any one of upper and lower front ends of the surrounding pieces and fitted to the concave grooves of the backrest to be selectively engaged with the plurality of convex portions or concave portions formed in the concave grooves, so that the optional member can be locked to the backrest at the plurality of heights, and wherein the engaging claws are biased by the elastic members in a direction of engaging the mounting members with the convex portions or the concave portions with respect to the backrest, so that the engaging claws can be separated from the convex portions or the concave portions by moving the optional member against the biasing force.
10. The chair according to any one of claims 1 to 8, wherein the mounting members of the optional member comprise surrounding pieces extending outward from side ends of the optional member and surrounding side ends of the backrest and elastic members installed at the surrounding pieces, at least one of the front ends of the surrounding pieces and the elastic members is engaged with the concave grooves of the backrest, and the side ends of the backrest are sandwiched by the front ends of the surrounding pieces and the elastic members.
11. The chair according to any one of claims 1 to 10, wherein the optional member is any one or a plurality of a hanger for hanging clothes, a headrest, an armrest, and a lumbar support.

FIG.1

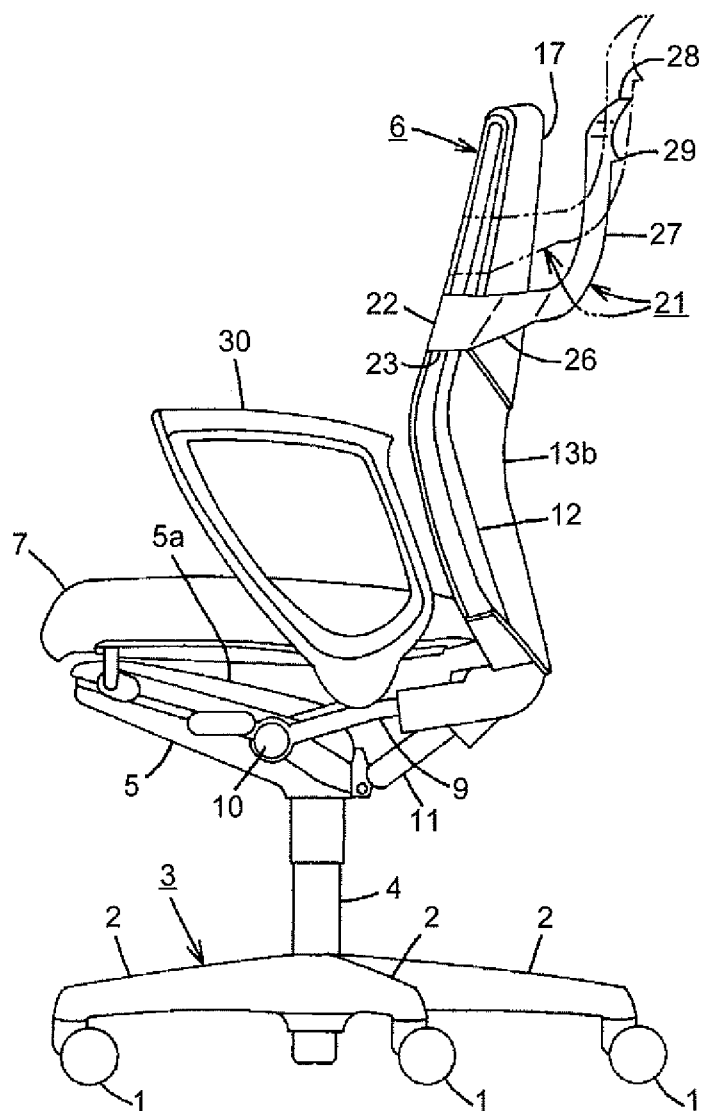


FIG.2

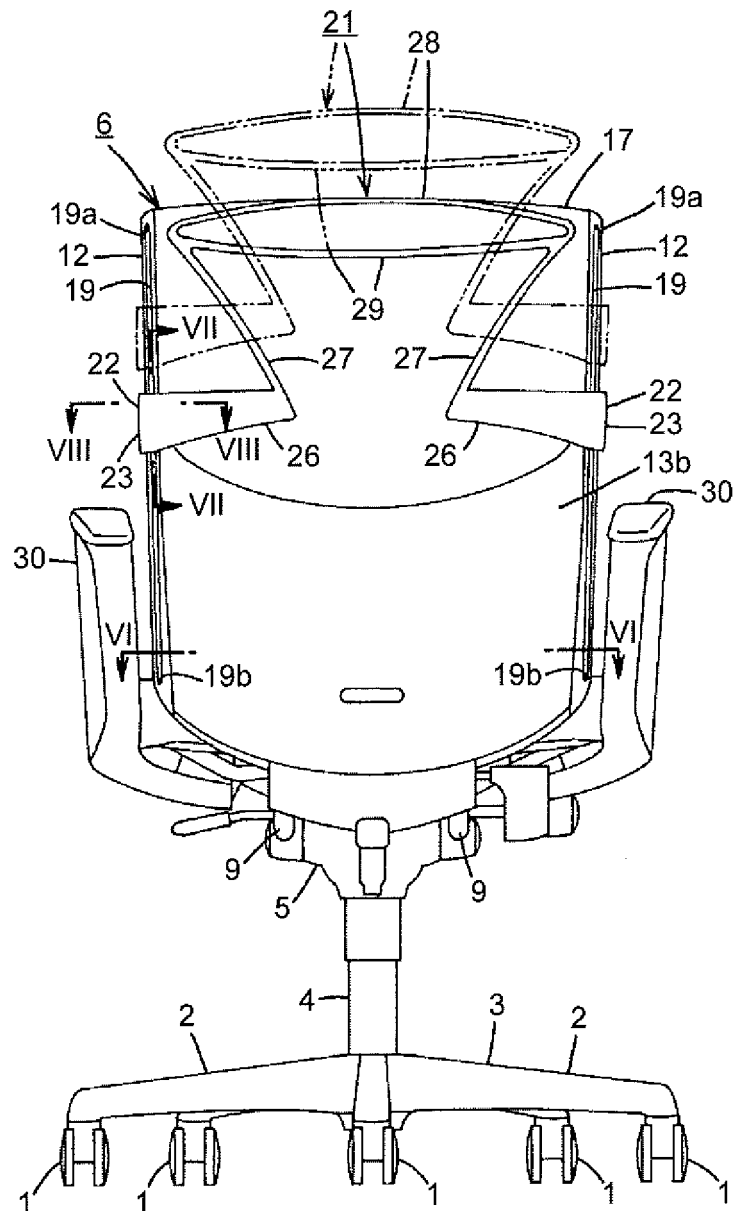


FIG.3

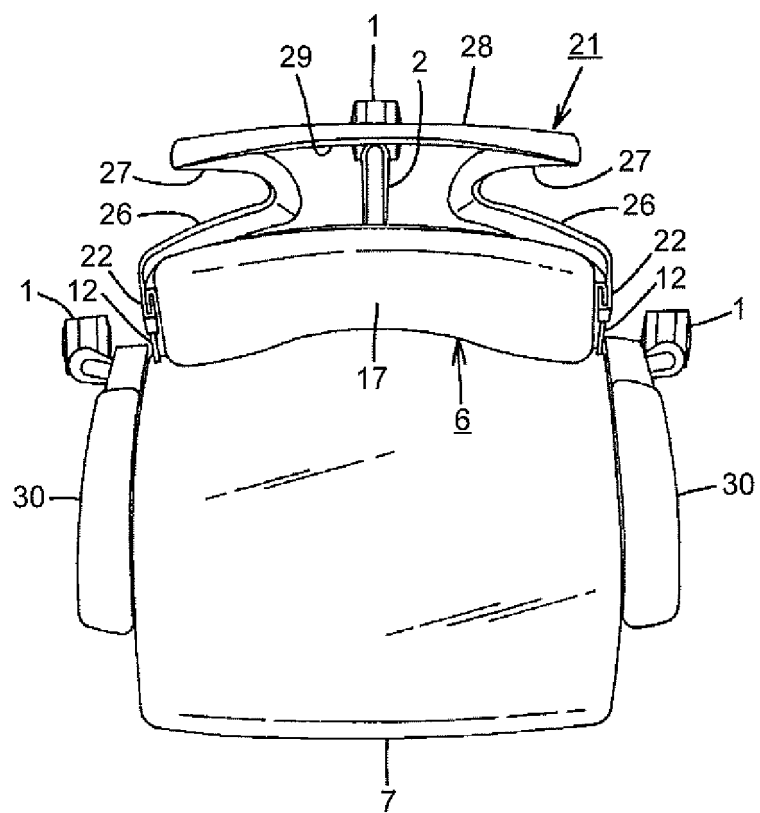


FIG.4

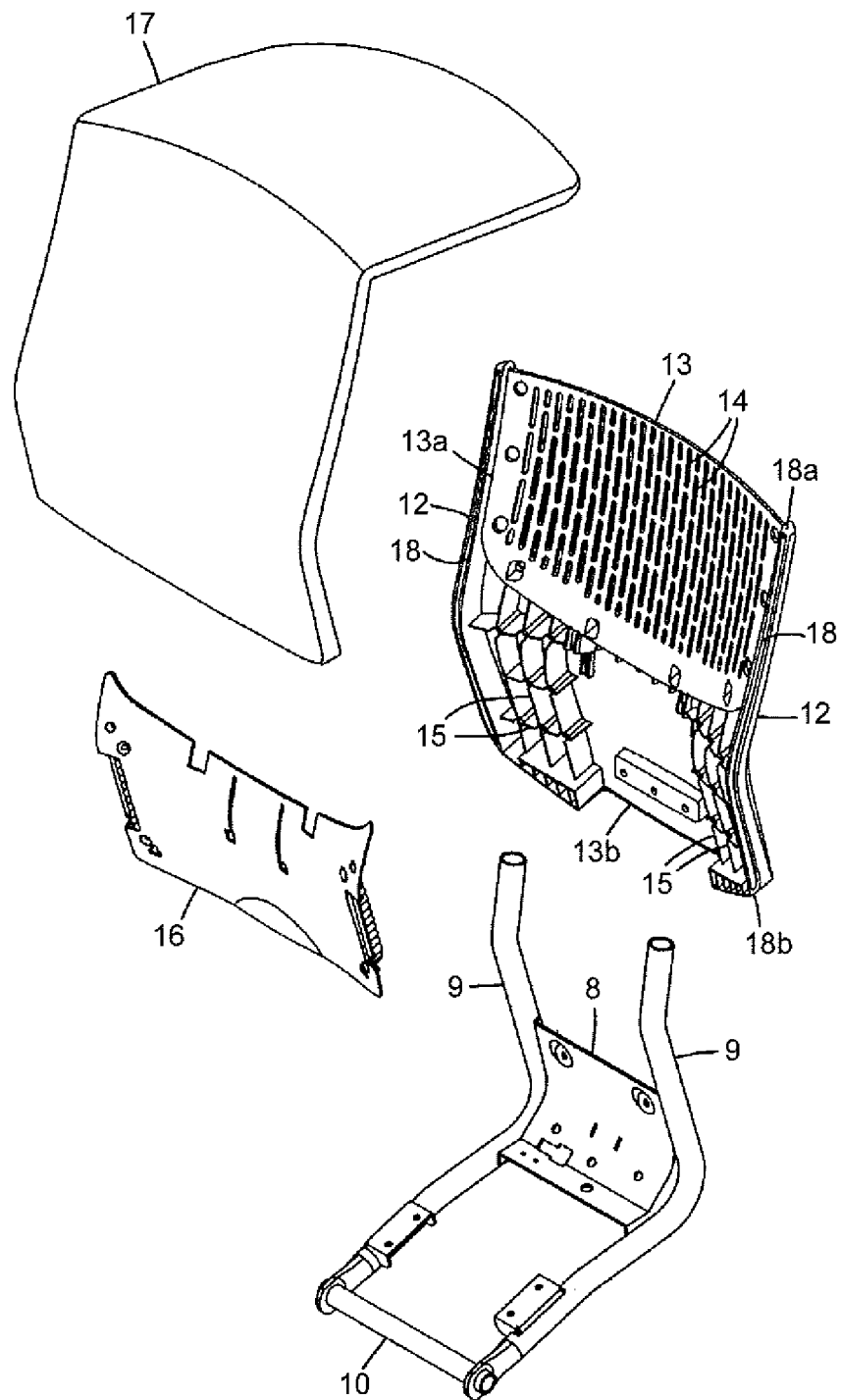


FIG.5

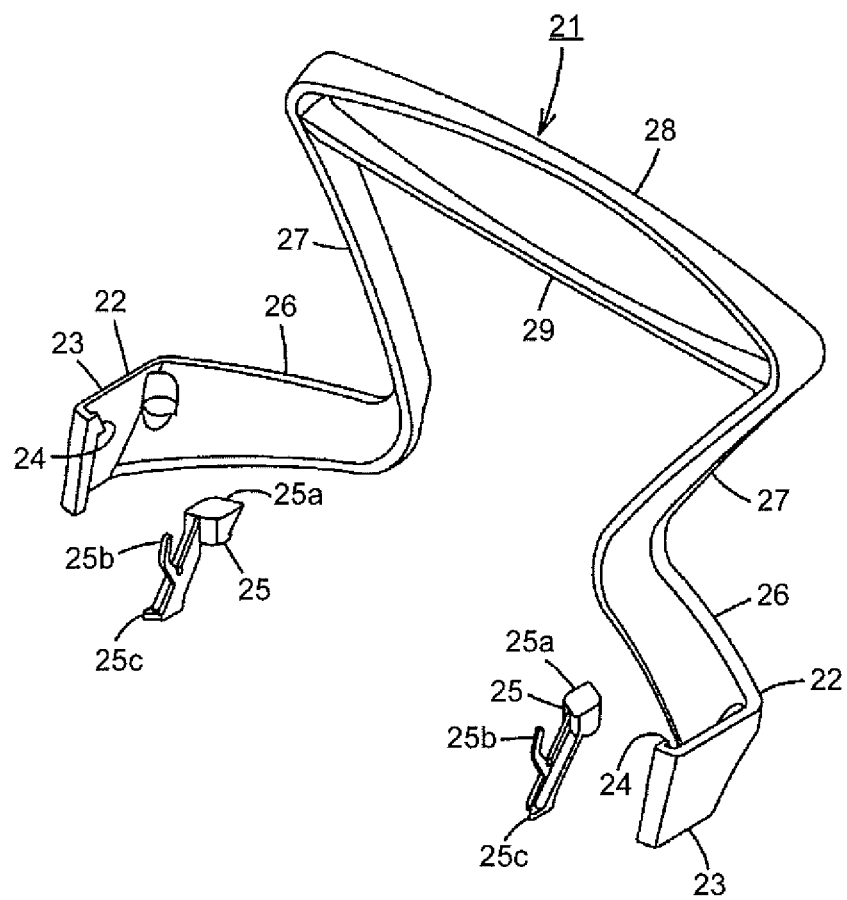


FIG.6

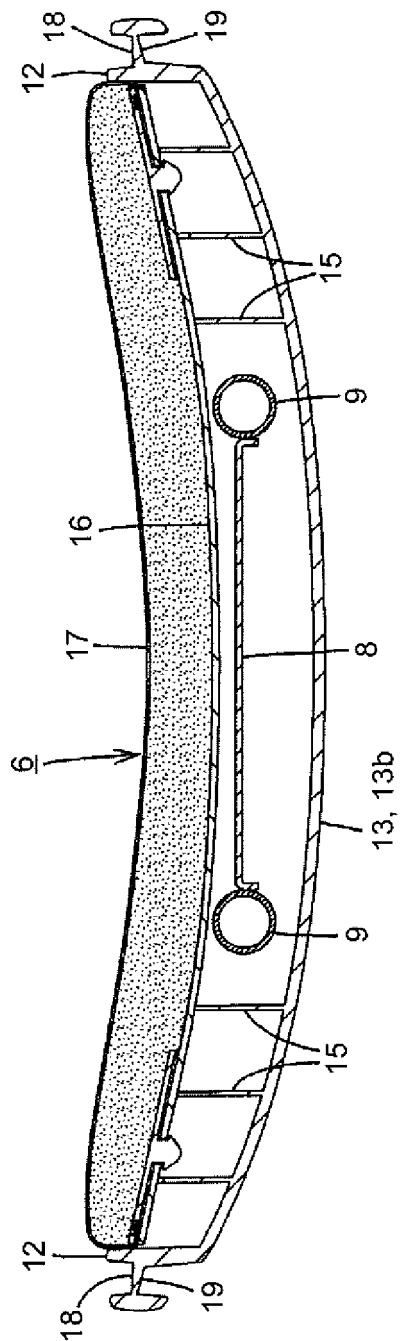


FIG.7

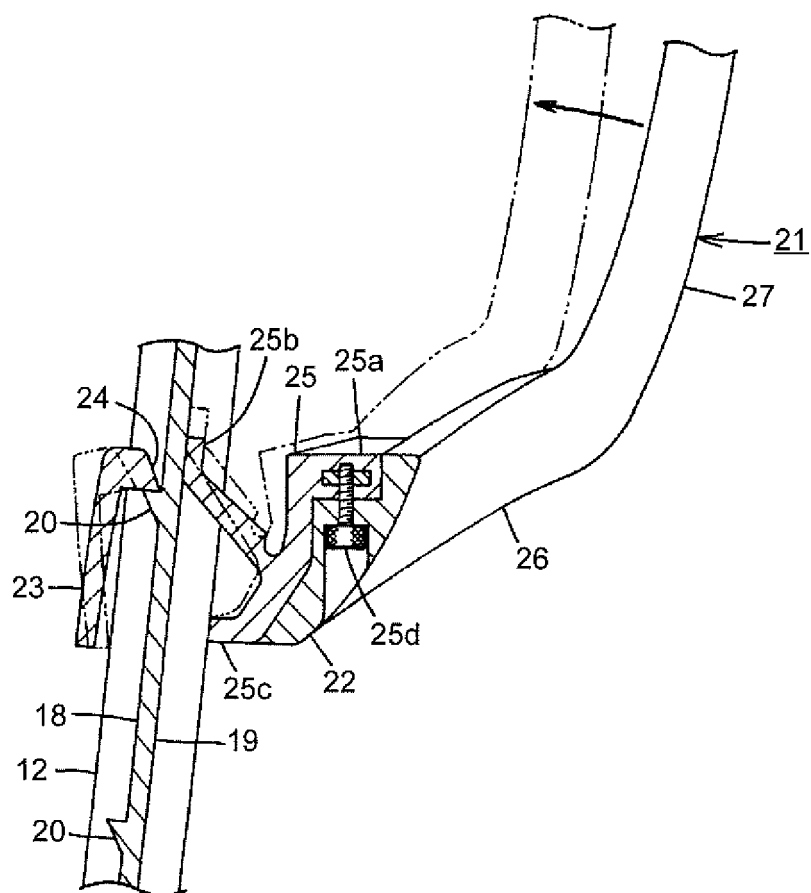


FIG.8

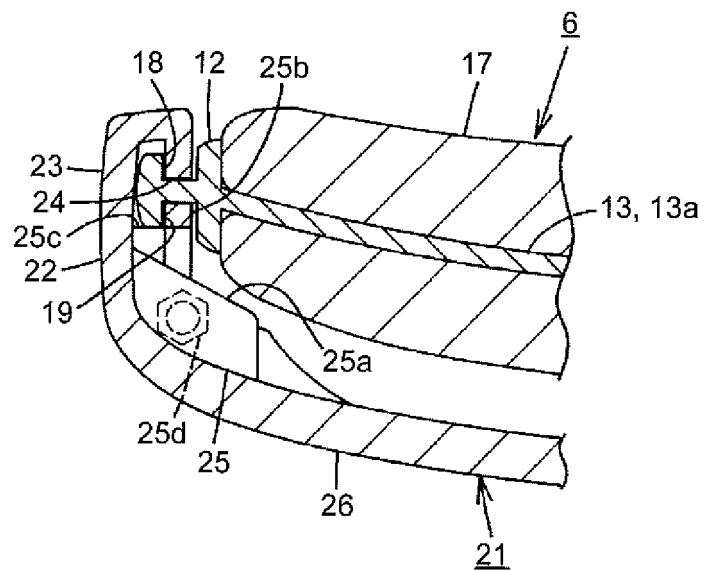
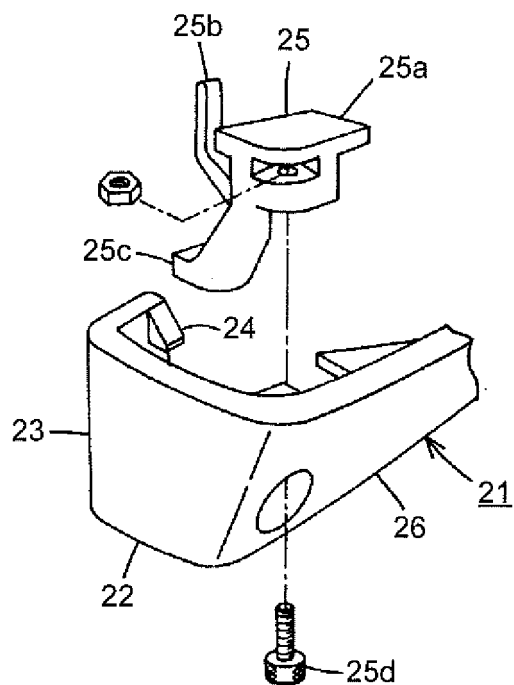


FIG.9



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2010/068342

A. CLASSIFICATION OF SUBJECT MATTER

A47C7/64(2006.01)i, A47C7/38(2006.01)i, A47C7/40(2006.01)i, A47C7/54(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47C7/64, A47C7/38, A47C7/40, A47C7/54

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho	1922-1996	Jitsuyo Shinan Toroku Koho	1996-2010
Kokai Jitsuyo Shinan Koho	1971-2010	Toroku Jitsuyo Shinan Koho	1994-2010

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	US 6575530 B1 (Harry Fischer), 10 June 2003 (10.06.2003), entire text; all drawings (Family: none)	3, 5-6, 11 1-8, 10-11 9
X	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 168979/1983 (Laid-open No. 76549/1985) (Tachikawa Spring Co., Ltd.), 29 May 1985 (29.05.1985), entire text; all drawings (Family: none)	4-5

☒ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
05 November, 2010 (05.11.10)Date of mailing of the international search report
16 November, 2010 (16.11.10)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2010/068342

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 2008-237333 A (Okamura Corp.), 09 October 2008 (09.10.2008), entire text; all drawings (Family: none)	1-8,10-11 9
Y A	JP 49-56767 A (Speedrack Inc.), 01 June 1974 (01.06.1974), page 2, upper right column, line 4 to page 6, upper left column, line 14; fig. 1 to 5 & US 3854686 A & CA 974197 A	1-8,10-11 9
Y A	US 3369789 A (Ronald John Harris), 20 February 1968 (20.02.1968), entire text; all drawings & GB 1084863 A & DE 1529750 A & FR 1462838 A	1-8,10-11 9
Y	US 6808093 B1 (Liang-An Lin), 26 October 2004 (26.10.2004), entire text; all drawings (Family: none)	11
A	JP 2001-128787 A (Okamura Corp.), 15 May 2001 (15.05.2001), entire text; all drawings (Family: none)	1-11

Form PCT/ISA/210 (continuation of second sheet) (July 2009)

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 2005245866 A [0003]
- JP 2006110013 A [0003]
- JP 3801769 B [0003]
- JP 4146890 B [0003]
- JP 4097186 B [0003]