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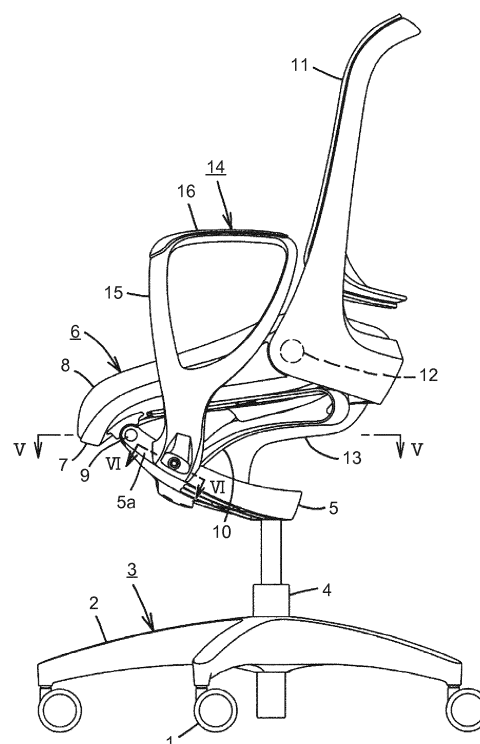
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(54) **CHAIR WITH ARMREST**

(57) The present invention relates to a chair with an armrest. In an embodiment, the chair with an armrest includes a support base (5) supported by a leg, a seat (6) that is pivotally fixed to the support base (5) using an axle (9) extending in a left and right direction, the rear part of the seat being rotatable upward and downward, an impelling unit (10) that is provided at the support base (5) and impels the seat (6) at the rear of the axle (9) upward, and an armrest (14) provided to the support base (5). When the rear part of the seat (6) rotates upward or downward, the height of the armrest (14) does not change, and therefore arms or the like are not squeezed between the top plate of a desk and the armrest (14).

FIG.2



Description

Field

[0001] The present invention relates to a chair with an armrest, and particularly relates to a chair with an armrest in which a rear part of a seat is lifted in an unused state, the seat guides a sitting by coming into contact with buttocks of a person seated and rotating to a nearly horizontal position with the buttocks when the person seated is sitting, and the rear part of the seat is lifted to assist in standing up when the person seated is standing up.

Background

[0002] As this type of chair, there is a chair which rotatably supports a seat between an unused position which is inclined in a rear upward direction with respect to a lower part member of the chair, and a usage position which is horizontal or inclined in a rear downward direction, includes an impelling unit that impels the seat toward the unused position, and includes a backrest at a rear part of the seat (for example, see Patent Literature 1). On the other hand, there is a chair in which an armrest is connected to a seat (for example, see Patent Literature 2).

Citation List

Patent Literature

[0003]

Patent Literature 1: Japanese Laid-open Patent Publication No. 2010-104463

Patent Literature 2: Japanese Patent No. 3156115 Summary

Technical Problem

[0004] It is desirable to provide an armrest to the chair in which a rear part of a seat rotates between an unused state and a usage state disclosed in Patent Literature 1. However, in a case where an armrest is attached to a seat as Patent Literature 2 in the chair of Patent Literature 1, when a person seated stands up from a state in which the person is seated and the armrest is put under a desk, the armrest moves upward due to an upward rotation of the rear part of the seat, and the armrest may come into contact with a top plate of the desk.

[0005] The present invention is conceived in view of the above problem, and an object of the invention is to provide a chair with an armrest capable of safely using the armrest when a rear part of a seat rotates.

Solution to Problem

[0006] According to the invention, the above problem

is solved as below.

(1) It includes: a support base supported by a leg; a seat that is pivotally fixed to the support base using an axle extending in a left and right direction, a rear part of the seat being rotatable upward and downward; an impelling unit that is provided at the support base and impels the seat at the rear of the axle upward; and an armrest in which a lower part is connected to the support base, and an upper part stands upward from an exterior side of the seat.

[0007] In this configuration, a height of the armrest connected to the support base does not change even when the rear part of the seat rotates upward or downward. Accordingly, the armrest does not come into contact with a top plate of a desk and the like when a person seated stands up from the seat and thus, a chair may be safely used.

[0008] In the above (1), the support base has a shape that is spread forward in planar view and is inclined in a front upward in side view, and the armrest is connected to a lateral side in a front part of the support base.

[0009] In this configuration, a horizontal distance between a portion where a person seated puts his elbow in the armrest and a connection portion with respect to the support base of the armrest may be relatively shortened and thus, a bending moment applied to the connection portion with the support base of the armrest may be reduced when a load is applied to the armrest by the person seated. As such, it is possible to prevent the armrest from deviating from the support base. In addition, since the armrest is connected to the front part which is above a rear part of the support base, a vertical length of the armrest may be shortened when compared to a case where the armrest is connected to the rear part of the support base.

[0010] (3) In the above (2), the seat is pivotally fixed to a front part positioned above a rear part of the support base, and the armrest is connected to a portion behind the axle in the support base.

[0011] In this configuration, since the armrest may be connected to a portion separated from the axle of the support base, it is possible to enhance the strength by forming the connection portion using a thick member. In this way, it is possible to prevent the armrest from deviating from the support base.

[0012] In any one of the above (1) to (3), the armrest includes an armrest fulcrum that has an inward L shape in planar view, and an elbow pad member fixed to an upper end surface of the armrest fulcrum, and the armrest fulcrum passes from the support base to a lower part of the seat and stands upward from an exterior side of the seat.

[0013] In this configuration, since the armrest connected to the support base may be separated from a lower surface and a side surface of the seat, it is possible to prevent the armrest from disturbing a rotation of the seat.

[0014] (5) Fitting convex portions divided into two-pronged ends are provided to one of an attachment target

portion of the chair that attaches the armrest positioned at a side of the seat and an attachment portion attached to the attachment target portion of the armrest, fitting concave portions divided into two-pronged ends are provided to the other one, a width between external surfaces in the fitting convex portions gradually decreases toward a tip of the fitting convex portions, a width between internal surfaces in the fitting concave portions gradually decreases toward the inside of the fitting convex portions, the pair of the fitting convex portions and a reentrant portion positioned between the pair of the fitting convex portions are fitted to the pair of the fitting concave portions and a protrusion positioned between the pair of the fitting concave portions, and the attachment portion and the attachment target portion are fastened by a fastening unit from a fitting direction of the fitting convex portions and the fitting concave portions.

[0015] In this configuration, since external surfaces of a pair of the fitting convex portions divided into two-pronged ends in one of the attachment target portion of the chair and the attachment portion of the armrest, and internal surfaces of a pair of the fitting concave portions divided into two-pronged ends in the other one are formed in tapered shapes inclined in the same direction, the fitting convex portions come into contact with the fitting concave portions on a large area. Accordingly, a backlash is not generated between the attachment portion of the armrest and the attachment target portion of the chair, and it is possible to reduce a shear stress generated in the attachment portion of the armrest when a load is applied to the armrest by a person seated.

[0016] (6) In the above (5), the attachment target portion of the chair is provided at a portion where a width of a component, whose width increases toward a front or a rear in planar view, is increased.

[0017] In this configuration, since a horizontal distance between the attachment portion and a portion where a load is applied by a person seated of an armrest positioned at a side of the seat may be shortened, it is possible to reduce a bending moment applied to the attachment portion of the armrest when a load is applied to the armrest by the person seated.

[0018] (7) In the above (5) or (6), a screw hole is provided from an apical surface of the protrusion positioned between the pair of the fitting concave portions toward a basal portion of the protrusion, a screw through hole is provided on a bottom surface of the reentrant portion positioned between the pair of the fitting convex portions, and a screw passing through the screw through hole is screwed to the screw hole, thereby fastening the attachment portion of the armrest to the attachment target portion of the chair.

[0019] In this configuration, it is possible to increase a length of the screw that fastens the attachment portion of the armrest and the attachment target portion of the chair, and it is possible to strengthen a fastening power by the screw.

[0020] (8) In the above (5), a guard portion that comes

into contact with a neighboring portion of the attachment target portion in the chair is provided around the attachment portion in the armrest.

[0021] In this configuration, it is possible to prevent an interlocking force between the attachment portion of the armrest and the attachment target portion of the chair from being excessively large.

Advantageous Effects of Invention

[0022] According to the present invention, since a height of an armrest connected to a support base does not change when a rear part of a seat rotates upward or downward, it is possible to safely use the armrest.

Brief Description of Drawings

[0023]

FIG. 1 is a front view of a chair with an armrest in an unused state according to an embodiment of the present invention.

FIG. 2 is a side view of the chair with an armrest illustrated in FIG. 1.

FIG. 3 is a side view of the chair with an armrest illustrated in FIG. 1 in a usage state.

FIG. 4 is a side view when a backrest is tilted backward in the usage state of the chair with an armrest illustrated in FIG. 1.

FIG. 5 is an enlarged plan view illustrating a coupled structure of a support base and the armrest when seen from V-V line of FIG. 2.

FIG. 6 is a VI-VI line enlarged cross-sectional view of FIG. 2.

FIG. 7 is an enlarged perspective view of an attachment portion of the armrest and an attachment target portion of the support base of FIG. 2 when seen from a slant rear.

FIG. 8 is an enlarged exploded perspective view of an elbow pad attachment portion and an elbow pad of the armrest when seen from a slant front.

FIG. 9 is an enlarged perspective view of the elbow pad attachment portion when seen from a slant lower part at a rear.

FIG. 10 is an enlarged longitudinal cross-sectional side view illustrating the armrest and the elbow pad being disassembled.

FIG. 11 is an enlarged longitudinal cross-sectional side view illustrating a state in which the elbow pad is placed a little ahead of the elbow pad attachment portion.

FIG. 12 is an enlarged longitudinal cross-sectional side view illustrating a state in which the elbow pad is attached to the elbow pad attachment portion.

FIG. 13 is a XIII-XIII line enlarged cross-sectional view of FIG. 12.

FIG. 14 is a XIV-XIV line enlarged cross-sectional view of FIG. 12.

Description of Embodiments

[0024] Hereinafter, an embodiment of the present invention will be described with reference to the accompanying drawings.

As illustrated in FIGS. 1 and 2, a chair with an armrest includes a leg body 3 that includes five leg rods 2 which are provided in a radial form and are provided with casters 1 at tips. An extendable post 4 provided with a gas spring (not illustrated) is stood at a center of the leg body 3, and a rear part of a support base 5 which faces forward is fixed to a top of the post 4.

[0025] The support base 5 forms a shallow dish of a triangular shape in planar view that is spread forward (see FIG. 5), and is inclined in a front upward in side view as illustrated in FIG. 2. In addition, as illustrated in FIG. 1, the support base 5 has an upward U-shape when viewed from the front, and opens forward and thus, it is easy to insert a member, a tool, and the like from the front as well as a side or a rear during an operation of attaching a member to the support base 5.

[0026] As illustrated in FIG. 2, a seat 6 includes a seat board 7 made of synthetic resins, and a cushion material 8 attached to a top face thereof, and is rotatable about an axle 9 to an unused position which is inclined in a rear upward and a usage position which is horizontal or inclined in a rear downward direction as illustrated in FIG. 3 by pivotally fixing both sides of a front end of the seat board 7 to both sides a front end of the support base 5, respectively, using the axle 9 extending in a left and right direction. It is preferable that the rotation range be about 15 degrees.

The seat 6 is normally impelled upward toward the unused position by an impelling unit 10.

[0027] As illustrated in FIG. 2, front parts of portions formed by bending forward both sides of a lower part of a backrest 11 are pivotally fixed to both sides of a rear part of the seat board 7, respectively, using a spindle 12 extending in the left and right direction. The backrest 11 is rotatable about the spindle 12 to a standing position that is directed nearly upward as illustrated in FIGS. 2 and 3, and to a backward tilting position illustrated in FIG. 4. A specific structure of the backrest 11 and a pivotally fixed portion thereof are not directly related to the present invention and thus, detailed illustration and description thereof will not be presented.

[0028] As illustrated in FIG. 2, the rear part of the support base 5 is connected to a portion lower than the spindle 12 of the backrest 11 through a pushing lever 13 that extends in a front and back direction and may elastically extend and contract.

During a downward rotation of the seat 6 from the unused position to the usage position (see FIG. 3), a lower end portion of the backrest 11 is pushed backward by the pushing lever 13, and the backrest 11 maintains a standing state. In addition, when the pushing lever 13 elastically contracts, the backrest 11 may be tilted backward as illustrated in FIG. 4 by resisting an elastic restoring

force of the pushing lever 13.

[0029] As illustrated in FIGS. 2 and 5, an armrest 14 is connected to a portion, which is at a rear of the axle 9, of both lateral sides 5a in a front part of the spread support base 5. As illustrated in FIG. 1, the armrest 14 includes an armrest fulcrum 15 that has an inward L shape in front view by passing from the support base 5 to a lower part of the seat 6 and standing upward from an exterior side of the seat 6, and a soft elbow pad (elbow pad member) 16 fixed to a top of the armrest fulcrum 15.

[0030] As illustrated in FIG. 2, a portion of the armrest fulcrum 15 standing from a side of the seat 6 forms a closed loop of a substantially triangular shape in which a width in the front and back direction gradually increases upward in side view. A rear face of an upper portion of the armrest fulcrum 15 inclines in a rear upward on a substantially similar curved surface to that of a front face of a lateral portion of the backrest 11 in side view. An upper portion of the armrest 14 may have an arbitrary shape such as a downward L shape in side view, not being limited to a closed loop shape in side view.

[0031] Herein, an example of an attachment structure of the armrest 14 (armrest fulcrum 15) in the chair with an armrest will be described with reference to FIGS. 6 and 7. As illustrated in FIGS. 6 and 7, an attachment portion 17 used to attach the armrest 14 to the support base 5 is provided at a tip of a lower part facing inward of the armrest fulcrum 15 in the armrest 14, and an attachment target portion 18 that attaches the attachment portion 17 of the armrest 14 is provided on the lateral side 5a of the front part of the spread support base 5.

[0032] A pair of fitting convex portions 17a and 17b divided into two-pronged ends in the front and back direction are provided at the attachment portion 17 of the armrest 14, and a reentrant portion 17c is provided between the pair of fitting convex portions 17a and 17b. The fitting convex portions 17a and 17b form a quadrangular prism in which a tip narrows. A width between external surfaces of an upper and lower part, and a width between external surfaces of a front and rear part of the fitting convex portions 17a and 17b gradually decrease toward a tip of the fitting convex portions 17a and 17b, and the external surfaces of the upper and lower part and the external surfaces of the front and rear part are in tapered shapes.

[0033] A width between internal surfaces of a front and rear of the reentrant portion 17c positioned between the fitting convex portions 17a and 17b gradually decreases toward the inside, and the internal surfaces of the front and rear are in inverse tapered shapes opposite to the external surfaces of the fitting convex portions 17a and 17b. A reentrant of the reentrant portion 17c is shallower than a maximum protrusion size of the fitting convex portions 17a and 17b.

[0034] Widths between internal surfaces of a upper and lower part, and a front and rear of fitting concave portions 18a and 18b gradually decrease toward the inside of fitting concave portions 18a and 18b, and a width

between external surfaces of a front and rear of a protrusion 22 positioned between the fitting concave portions 18a and 18b gradually decreases toward a tip of the protrusion 22. An external surface of the protrusion 22 is in an inverse tapered shape opposite to the internal surfaces of the fitting concave portions 18a and 18b.

[0035] As illustrated in FIG. 6, a protrusion size of the protrusion 22 is less than a maximum reentrant size of the concave portions 18a and 18b. An apical surface of the protrusion 22 is provided with a screw hole 23 that passes through the support base 5 to reach an internal surface thereof toward a basal portion of the protrusion 22.

[0036] A lower surface in the attachment portion 17 of the armrest fulcrum 15 is provided with a concave portion 19, and a bottom surface of the concave portion 19 is provided with a screw through hole 20 that passes through the armrest fulcrum 15 to reach a bottom surface of the reentrant portion 17c. In addition, around the attachment portion 17, a guard portion 24 that comes into contact with a neighboring portion in the attachment target portion 18 of the support base 5 is provided.

[0037] When the attachment portion 17 of the armrest 14 is attached to the attachment target portion 18 of the support base 5, the pair of the fitting convex portions 17a and 17b, and the reentrant portion 17c of the armrest fulcrum 15 are fitted to the pair of the fitting concave portions 18a and 18b, and the protrusion 22 of the support base 5, and then a screw 21 passing through the screw through hole 20 from the concave portion 19 for spot facing of the armrest 14 is screwed to the screw hole 23 in the protrusion 22 of the support base 5, thereby fastening the attachment portion 17 and the attachment target portion 18 from a fitting direction of the fitting portions 17a and 17b and the fitting concave portions 18a and 18b.

[0038] In the chair with an armrest having the above configuration, the rear part of the seat 6 is raised upward by an added force of the impelling unit 10 in the unused state illustrated in FIG. 2, the seat 6 is positioned at the unused position which is inclined in a rear upward, and the backrest 11 is maintained at the standing position that is directed nearly upward by an extension of the pushing lever 13.

[0039] In addition, in the unused state of FIG. 2, a void where a hand is not squeezed when a person who is seated moves the hand backward is provided between the rear face of the upper portion of the armrest fulcrum 15 in the armrest 14 and the front face of the lateral portion of the backrest 11 in planar view. As illustrated in FIG. 1, voids are provided between the armrest fulcrums 15 and 15 in the right and left armrests 14 and 14, and a lower surface and side surface of the seat 6. Thus, the armrest 14 does not inhibit the seat 6 from rotating.

[0040] In this state, when the person is seated, the seat 6 rotates to the usage position illustrated in FIG. 3 by resisting an added force of the impelling unit 10 due to a load of the person, and the person may promptly take an appropriate posture of having a seat. In this instance, the

backrest 11 attached to the seat 6 moves downward and backward by resisting an added force of the pushing lever 13. The rear face of the armrest 14 is inclined in a rear upward and thus, a gap between the rear face and the backrest 11 increases toward the lower part of the armrest 14 where a hand or clothes of the person seated frequently comes close when the backrest 11 moves downward and backward. Thus, it is possible to reduce a risk that a hand or an object is squeezed in the gap.

[0041] When the person seated pushes his back backward by leaning against the backrest 11 from a seated state illustrated in FIG. 3, the backrest 10 is rotated about the spindle 12 to the backward tilting position illustrated in FIG. 4 while elastically contracting the pushing lever 13.

[0042] When the person seated pulls his back forward, the backrest 11 is rotated forward about the spindle 12 and returns to the original standing position by an extension due to an elastic restoring force of the pushing lever 13.

[0043] When the person seated is about to stand up from the seated state illustrated in FIG. 3, the seat 6 is impelled to rotate upward toward the unused position by the impelling unit 10, and may assist the person seated in standing up.

[0044] In this instance, the seat 6 and the backrest 11 moves to the unused position as illustrated in FIG. 2, but the armrest 14 is connected to the support base 5 and thus, a height thereof does not change.

As such, for example, even when the person seated sits on the seat 6, and stands up from a state in which the armrest 14 is put under a top plate of a desk, a gap between the armrest 14 and the top plate of the desk does not change, and the armrest 14 does not come into contact with the top plate and thus, the armrest 14 may be used safely.

[0045] A fitting convex portion may be provided at the attachment target portion 18 of the chair 5, and a fitting concave portion may be provided at the attachment portion 17 of the armrest 14. In addition, the armrest 14 may be attached to any component such as a seat, a backrest, and a backrest supporting lever of a chair, not being limited to the support base 5. In this case, when the armrest 14 is attached to a member whose width increases toward a front or a rear in planar view, it is preferable that the armrest 14 be attached to a portion where the width is increased.

[0046] Next, an example of an attachment structure of the elbow pad 16 in the chair with an armrest will be described with reference to FIGS. 8 through 14. As illustrated in FIG. 8, flexures 15a and 15b are provided between an upper side portion and a front side portion, and between the upper side portion and a rear side portion in an upper portion of the closed loop of the armrest fulcrum 15, respectively.

[0047] A top of the armrest fulcrum 15 is provided with a concave portion 25 in which an opening area has nearly the same size as that of the elbow pad 16, and a front

end reaches half way of the flexure 15a, and the concave portion 25 forms an elbow pad attachment portion 26.

[0048] The elbow pad 16 has a thin plate shape which is slim in the front and back direction, and a front part thereof is provided with a flexure 16a that is curved obliquely downward. In addition, as illustrated in FIG. 10, the elbow pad 16 is formed as an integral unit of a soft member 16b and a hard member 16c.

[0049] As illustrated in FIGS. 8 and 10, a rear end and left and right internal surfaces of a rear part of the concave portion 25 in the armrest fulcrum 15 are provided with hook type engaged pieces 26a to 26c (see FIG. 13), opening forward and inward, in which an upper side and a rear side are blocked. Left and right internal surfaces in a front part of the concave portion 25 are provided with concave portions (engaging holes) 26d and 26e (see FIG. 14) which are blocked forward and in the front and back direction and are opened inward. Further, a front end portion of the concave portion 25 is provided with a concave portion 26f that opens upward. The concave portion 26f is provided at the flexure 15a in the front part of the armrest fulcrum 15 and thus, is positioned below the engaged pieces 26a to 26c.

[0050] As illustrated in FIGS. 9 and 10, a rear end and both sides of a rear part of an outer periphery 27 of the elbow pad 16 are provided with hook type engaging pieces 27a to 27c (see FIG. 13) that protrudes backward. Similarly, both left and right sides of a front part are provided with elastic engaging pieces 27d and 27e (see FIG. 14) which protrudes toward external sides in a horizontal direction and may be elastically deformed. Further, a front end portion is provided with a convex portion 27f which protrudes downward. The convex portion 27f is provided at the flexure 16a of the elbow pad 16 and thus, is positioned below the engaging pieces 27a to 27c.

[0051] As illustrated in FIG. 11, when the elbow pad 16 is attached to the armrest fulcrum 15, the elbow pad 16 is positioned slightly in front of a position confronted with the elbow pad attachment portion 26, and is placed on top of the armrest fulcrum 15. Then, as illustrated in FIGS. 12 and 13, when the elbow pad 16 is slid backward, the engaging pieces 27a to 27c of the elbow pad 16 are engaged with the engaged pieces 26a to 26c of the armrest fulcrum 15 from the front side.

[0052] Next, as illustrated in FIGS. 12 and 14, when a front part of the elbow pad 16 is pressed downward, the convex portion 27f of the elbow pad 16 is fitted to the concave portion 26f of the armrest fulcrum 15 from an upper portion. In addition, the elastic engaging pieces 27d and 27e of the elbow pad 16 moves downward while being elastically deformed inward, and are engaged with the concave portions 26d and 26e of the armrest fulcrum 15 by an elastic restoring force. In this way, the elbow pad 16 is reliably attached to the armrest fulcrum 15 while blocking the concave portion 25 of the armrest fulcrum 15.

[0053] In this state, even when a force is applied to the front part of the elbow pad 16 in the upward and down-

ward direction and in the front and back direction, the upward, forward, and backward directions of the concave portions 26d and 26e are blocked, and a shape opening inward is formed and thus, it is possible to effectively inhibit a position of the front part of the elbow pad 16 from being deviated in the upward and downward direction and the front and back direction.

[0054] In the attachment structure of the elbow pad, merely by engaging the engaging pieces 27a to 27c of the rear part and the convex portion 27f of the front part in the elbow pad 16 with the engaged pieces 26a to 26c and the concave portion 26f in the elbow pad attachment portion 26 of the armrest fulcrum 15, it is possible to easily attach the elbow pad 16 to the armrest fulcrum 15. In this case, the attachment structure may be embodied by reversing the front and rear directions of the armrest fulcrum 15 and the elbow pad 16. In addition, a lower surface of the elbow pad 16 may be provided with elements, similar to the concave portion 25, the engaged pieces 26a to 26c, the concave portions 26d to 26f, and the like in the armrest fulcrum 15, which are flipped from top to bottom, and the elbow pad attachment portion 26 of the armrest fulcrum 15 may be provided with elements, similar to the engaging pieces 27a to 27c, the elastic engaging pieces 27d and 27e, the convex portion 27f, and the like in the lower surface of the elbow pad 16, which are flipped from top to bottom.

[0055] That is, in the attachment structure of the elbow pad, a rear part or a front part of one of the elbow pad attachment portion 26 on a top of the armrest 14 and the elbow pad 16 is provided with the hook type engaged piece 26a opening forward or backward; the front part or the rear part is provided with the concave portion 26f opening in the upward and downward direction; the hook type engaging piece 27a opening backward or forward is provided at a position facing the engaged piece 26a of the other one of the elbow pad attachment portion 26 and the elbow pad 16; a position facing the concave portion 26f is provided with the convex portion 27f which protrudes in the upward and downward direction; the engaging piece 27a is engaged with the engaged piece 26a; and the convex portion 27f is fitted to the concave portion 26f, thereby attaching the elbow pad 16 to the top of the armrest 14.

[0056] In this way, merely by engaging the hook type engaging piece 27a provided at one of the elbow pad attachment portion 26 of the armrest 14 and the elbow pad 16 to the hook type engaged piece 26a provided at the other one, and by fitting the convex portion 27f provided at one of the elbow pad attachment portion 26 and the elbow pad 16 to the concave portion 26f provided at the other one from an upper side, it is possible to reliably attach the elbow pad 16 to an attachment target portion of the armrest 14 without greatly elastically deforming the elbow pad 16, and it is possible to enhance a flexibility of the design of the armrest 14 without a limitation on a material and a shape of the elbow pad 16 since the elbow pad 16 does not need to be formed from a soft and thick

member.

[0057] Further, by providing the concave portion 26f and the convex portion 27f below the engaged piece 26a and the engaging piece 27a, it is possible to fit the convex portion 27f to the concave portion 26f after engaging the engaging piece 27a with the engaged piece 26a and thus, it is possible to further facilitate an attachment operation of the elbow pad 16. In this instance, by providing the flexure 15a that is curved downward at the front part in the elbow pad attachment portion 26 of the armrest 14, and providing the concave portion 26f or the convex portion 27f in the flexure 15a, it is possible to provide the concave portion 26f and the convex portion 27f below the engaged piece 26a and the engaging piece 27a with a simple configuration.

[0058] In addition, since the flexures 15a and 16a that are curved downward are provided at the elbow pad attachment portion 26 of the armrest fulcrum 15 and the elbow pad 16, respectively, the front part of the elbow pad 16 may not be greatly lifted when the elbow pad 16 is slid backward to engage the rear part of the elbow pad 16 with the elbow pad attachment portion 26 of the armrest fulcrum 15. That is, merely by sliding the elbow pad 16 backward while the elbow pad 16 is placed above the elbow pad attachment portion 26 so as to be deviated, and engaging the rear part of the elbow pad 16 with the elbow pad attachment portion 26, and then pressing the front part of the elbow pad 16 downward, it is possible to easily engage the front part of the elbow pad 16 with the elbow pad attachment portion 26. Accordingly, an attachment operation of the elbow pad 16 is facilitated.

[0059] Further, the elastic engaging pieces 27d and 27e of the elbow pad 16 are engaged with the concave portions 26d and 26e of the armrest fulcrum 15 by an elastic restoring force and thus, a width thereof in the upward and downward direction may be decreased. As such, the elbow pad 16 may be made thin as a whole. Further, it is possible to reliably attach the elbow pad 16 to the armrest 14.

Reference Signs List

[0060]

1	CASTER	45	22	PROTRUSION
2	LEG ROD		23	SCREW HOLE
3	LEG BODY		24	GUARD PORTION
4	POST	50	25	CONCAVE PORTION
5	SUPPORT BASE		26	ELBOW PAD ATTACHMENT PORTION
5a	LATERAL SIDE	55	26a to 26c	ENGAGED PIECE
6	SEAT		26d to 26f	CONCAVE PORTION

7

SEAT BOARD

8

CUSHION MATERIAL

5

9

AXLE

10

IMPELLING UNIT

11

BACKREST

10

12

SPINDLE

13

PUSHING LEVER

15

14

ARMREST

15

ARMREST FULCRUM

15a, 15b

FLEXURE

20

16

ELBOW PAD

16a

FLEXURE

25

16b

SOFT MEMBER

16c

HARD MEMBER

17

FITTING PORTION

30

17a, 17b

FITTING CONVEX PORTION

17c

REENTRANT PORTION

35

18

FITTING TARGET PORTION

18a, 18b

FITTING CONCAVE PORTION

19

CONCAVE PORTION

40

20

SCREW THROUGH HOLE

21

SCREW

45

22

PROTRUSION

23

SCREW HOLE

24

GUARD PORTION

50

25

CONCAVE PORTION

26

ELBOW PAD ATTACHMENT PORTION

55

26a to 26c

ENGAGED PIECE

26d to 26f

CONCAVE PORTION

27 ATTACHMENT PORTION

27a to 27c ENGAGING PIECE

27d, 27e ELASTIC ENGAGING PIECE

27f CONVEX PORTION

Claims

1. A chair with an armrest, comprising:

a support base supported by a leg;
a seat that is pivotally fixed to the support base using an axle extending in a left and right direction, a rear part of the seat being rotatable upward and downward;
an impelling unit that is provided at the support base and impels the seat at the rear of the axle upward; and
an armrest in which a lower part is connected to the support base, and an upper part stands upward from an exterior side of the seat.

2. The chair with an armrest according to claim 1, wherein
the support base has a shape that is spread forward in planar view and is inclined in a front upward in side view, and
the armrest is connected to a lateral side in a front part of the support base.

3. The chair with an armrest according to claim 2, wherein
the seat is pivotally fixed to a front part positioned above a rear part of the support base, and
the armrest is connected to a portion behind the axle in the support base.

4. The chair with an armrest according to any one of claims 1 to 3, wherein
the armrest includes an armrest fulcrum that has an inward L shape in planar view, and an elbow pad member fixed to an upper end surface of the armrest fulcrum, and
the armrest fulcrum passes from the support base to a lower part of the seat and stands upward from an exterior side of the seat.

5. The chair with an armrest according to claim 1, wherein
fitting convex portions divided into two-pronged ends are provided to one of an attachment target portion of the chair that attaches the armrest positioned at a side of the seat and an attachment portion attached to the attachment target portion of the armrest, fitting concave portions divided into two-pronged

ends are provided to another one,
a width between external surfaces in the fitting convex portions gradually decreases toward a tip of the fitting convex portions,
a width between internal surfaces in the fitting concave portions gradually decreases toward the inside of the fitting convex portions,
the pair of the fitting convex portions and a reentrant portion positioned between the pair of the fitting convex portions are fitted to the pair of the fitting concave portions and a protrusion positioned between the pair of the fitting concave portions, and
the attachment portion and the attachment target portion are fastened by a fastening unit from a fitting direction of the fitting convex portions and the fitting concave portions.

6. The chair with an armrest according to claim 5, wherein the attachment target portion of the chair is provided at a portion where a width of a component, whose width increases toward a front or a rear in planar view, is increased.

7. The chair with an armrest according to claim 5 or 6, wherein
a screw hole is provided from an apical surface of the protrusion positioned between the pair of the fitting concave portions toward a basal portion of the protrusion,
a screw through hole is provided on a bottom surface of the reentrant portion positioned between the pair of the fitting convex portions, and
a screw passing through the screw through hole is screwed to the screw hole, thereby fastening the attachment portion of the armrest to the attachment target portion of the chair.

8. The chair with an armrest according to claim 5, wherein, a guard portion that comes into contact with a neighboring portion of the attachment target portion in the chair is provided around the attachment portion in the armrest.

FIG.1

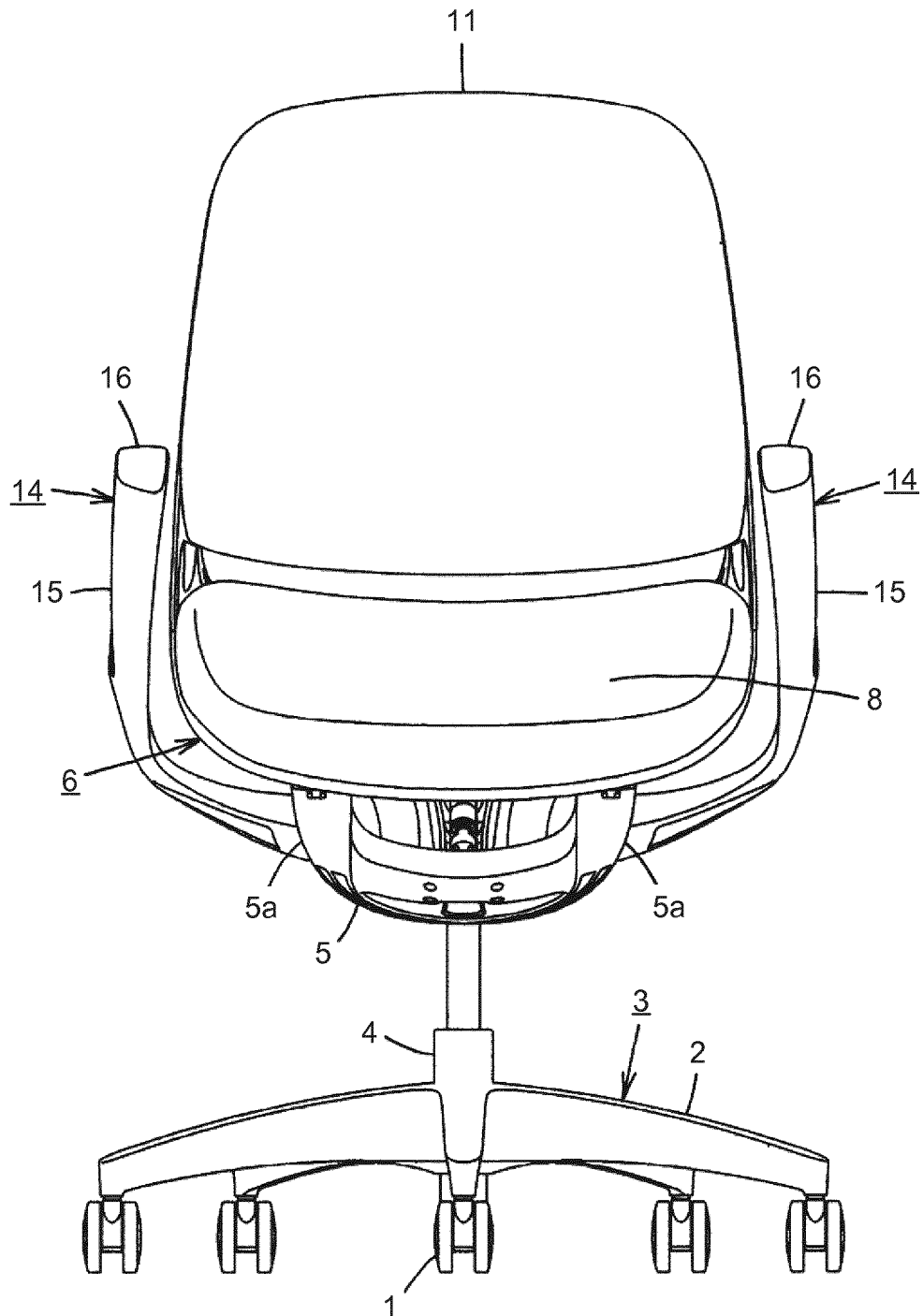


FIG.2

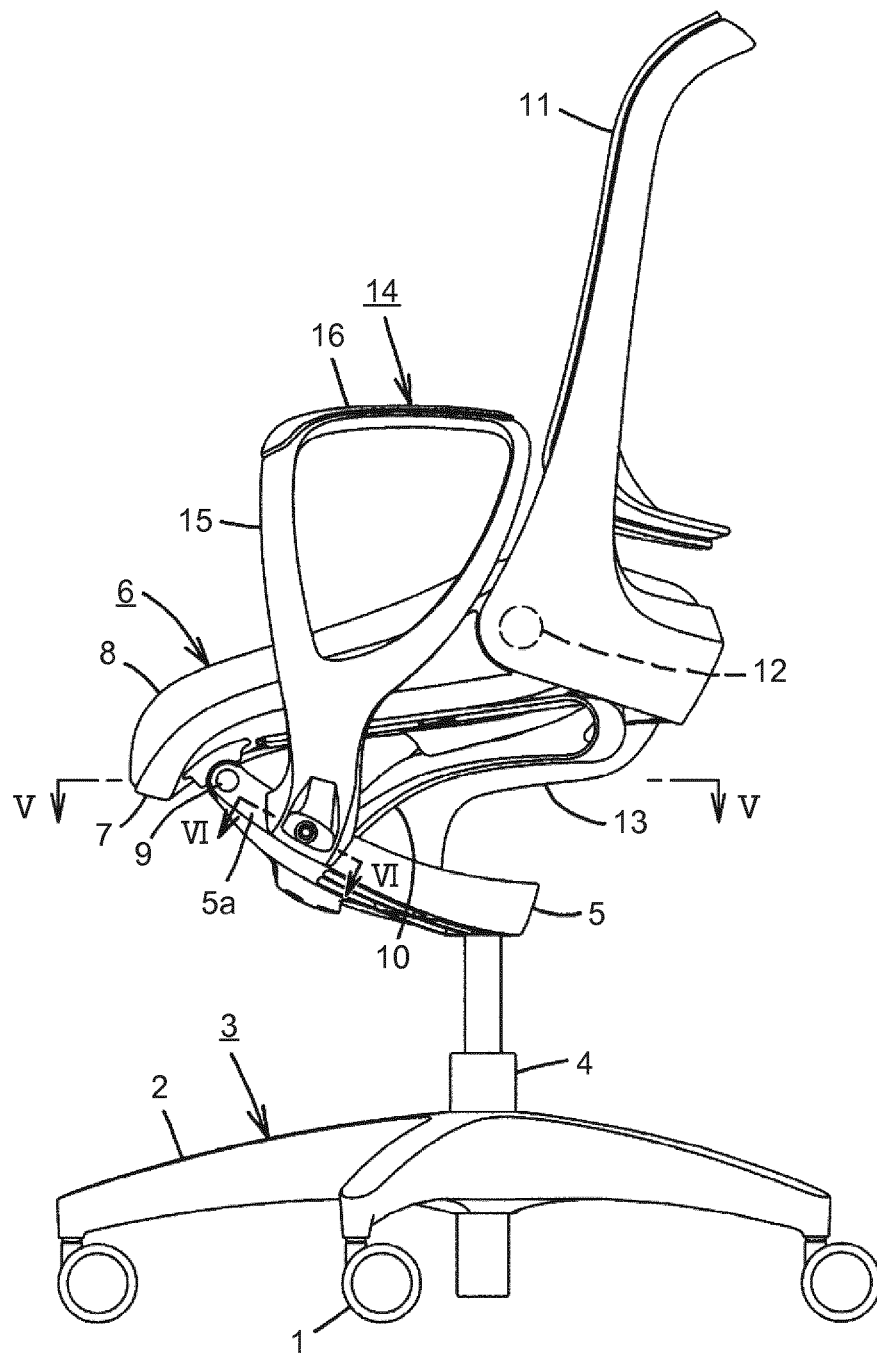


FIG.3

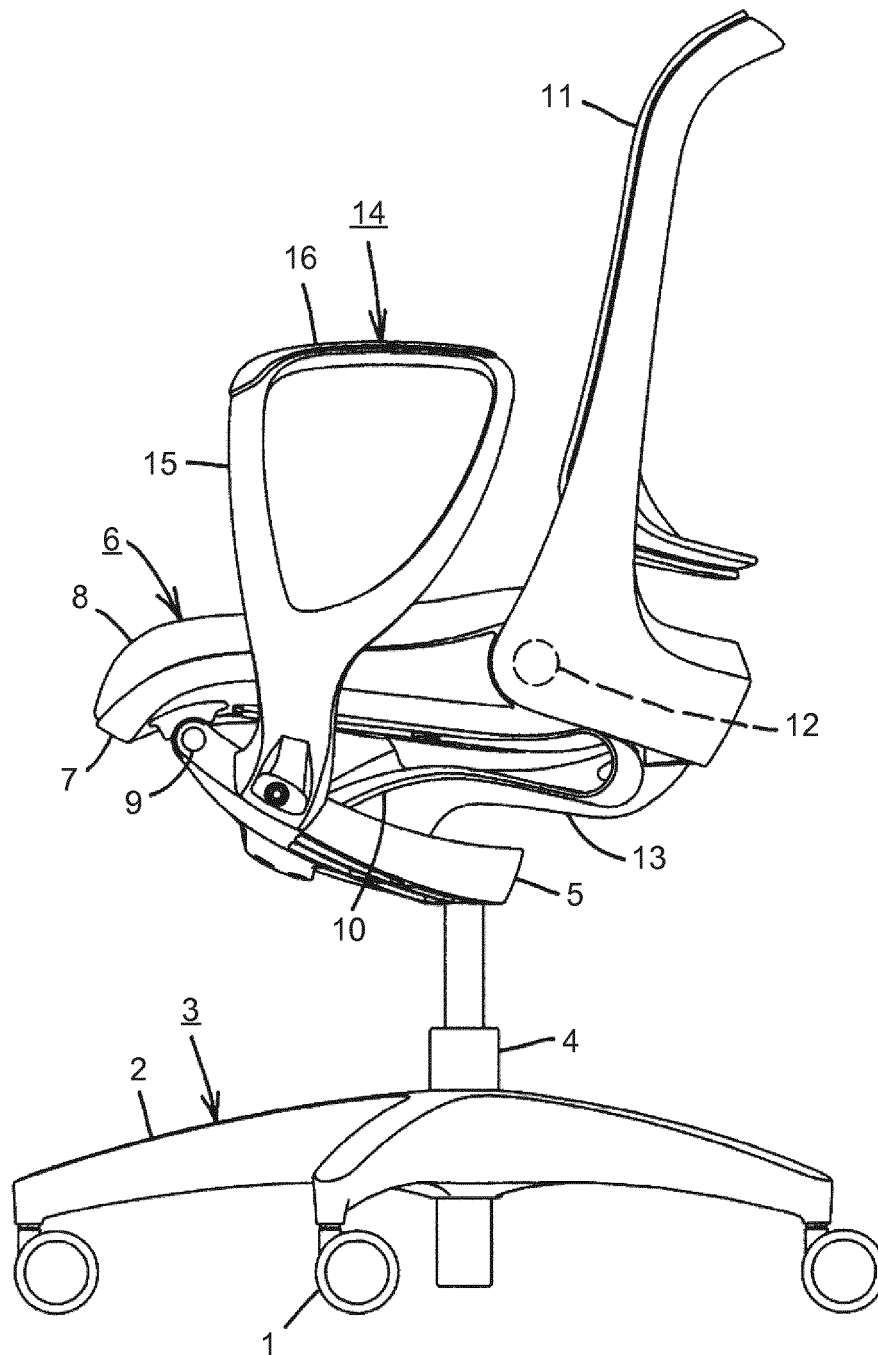


FIG.4

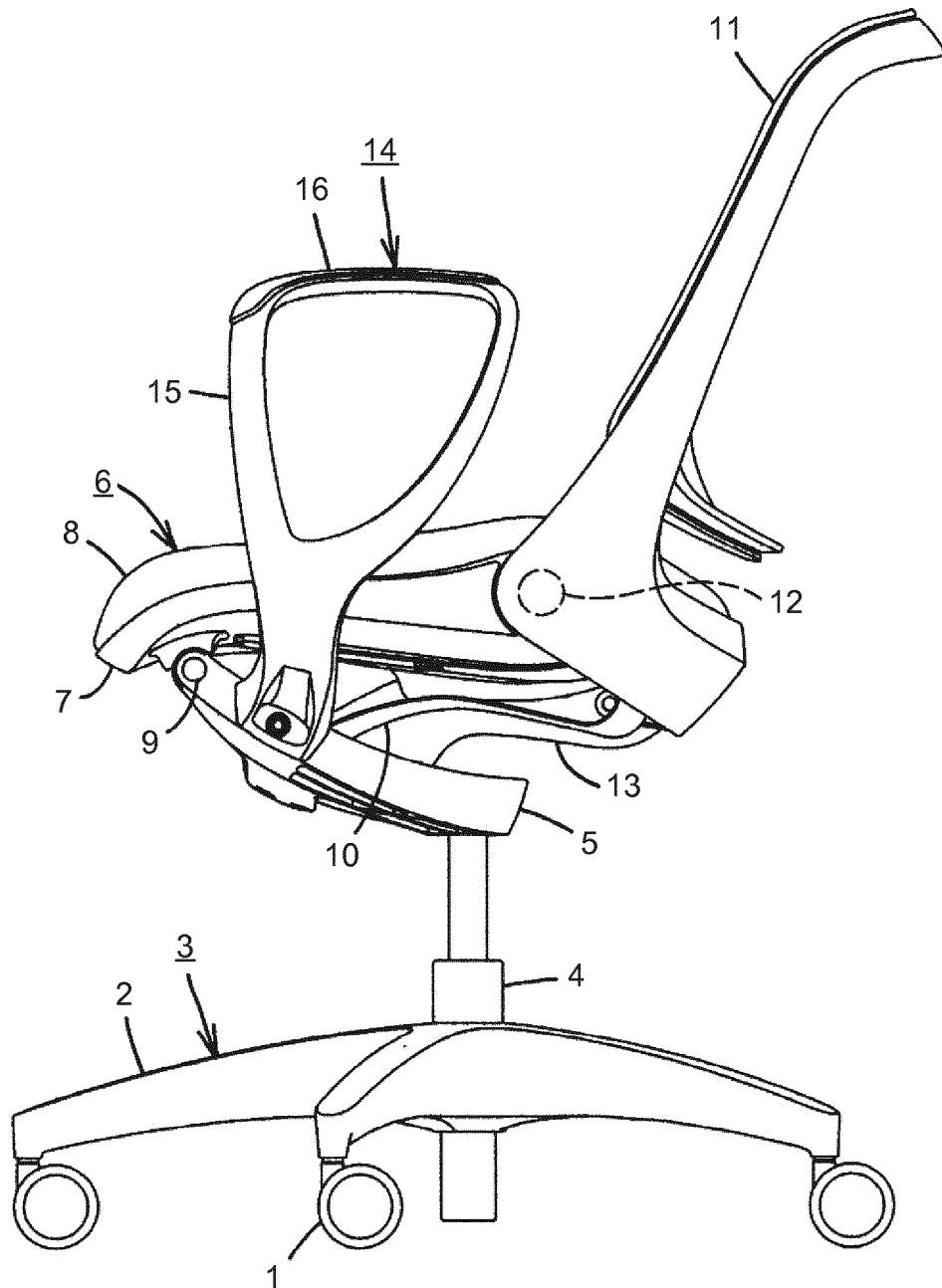


FIG.5

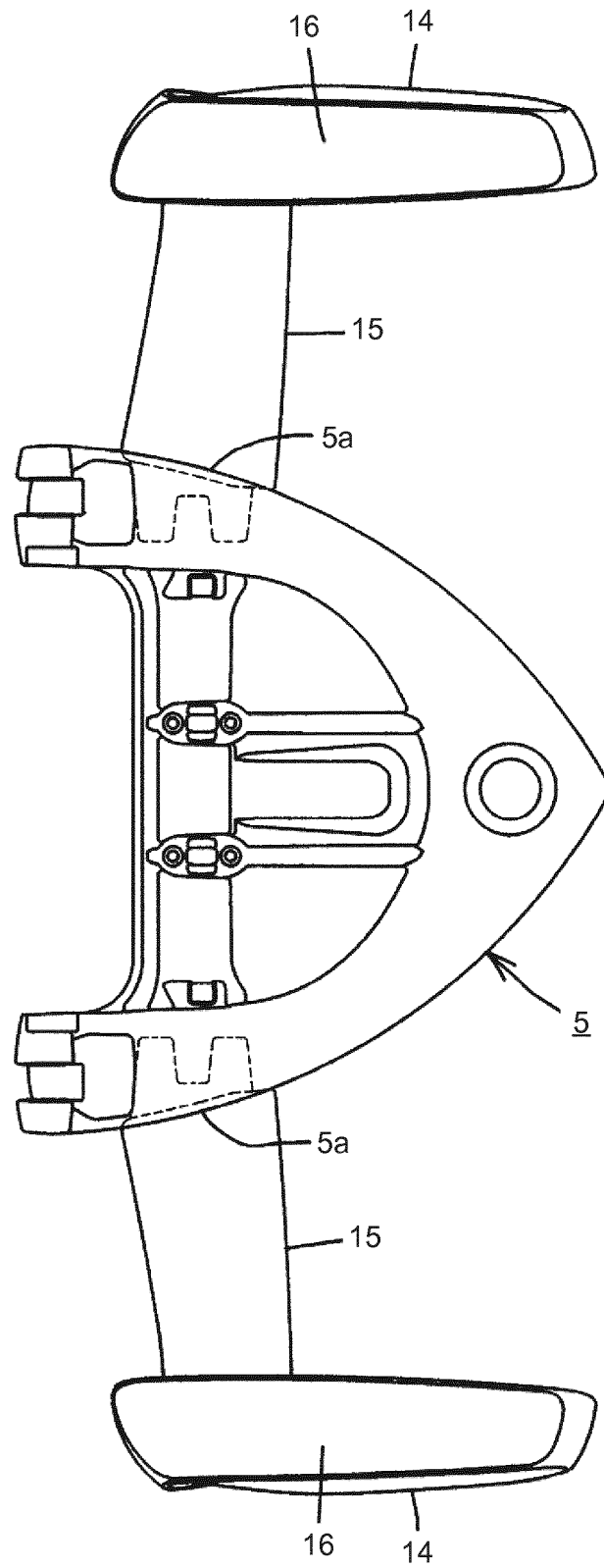


FIG.6

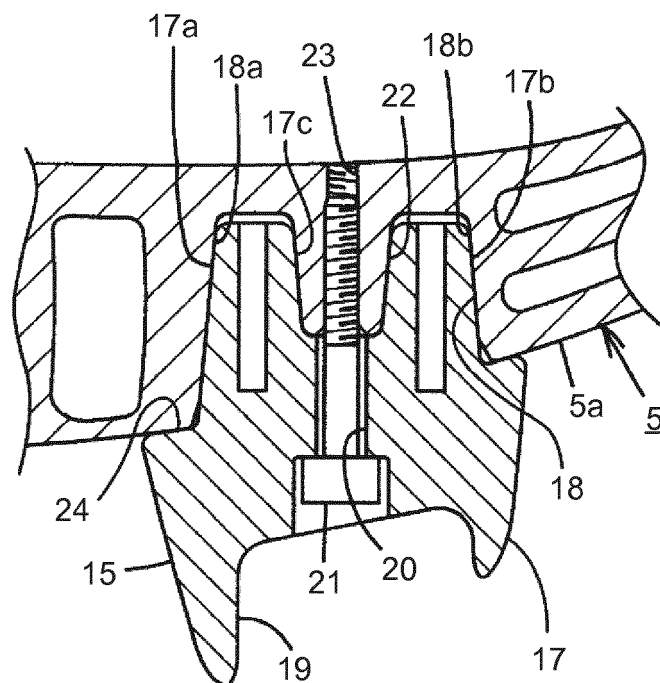


FIG.7

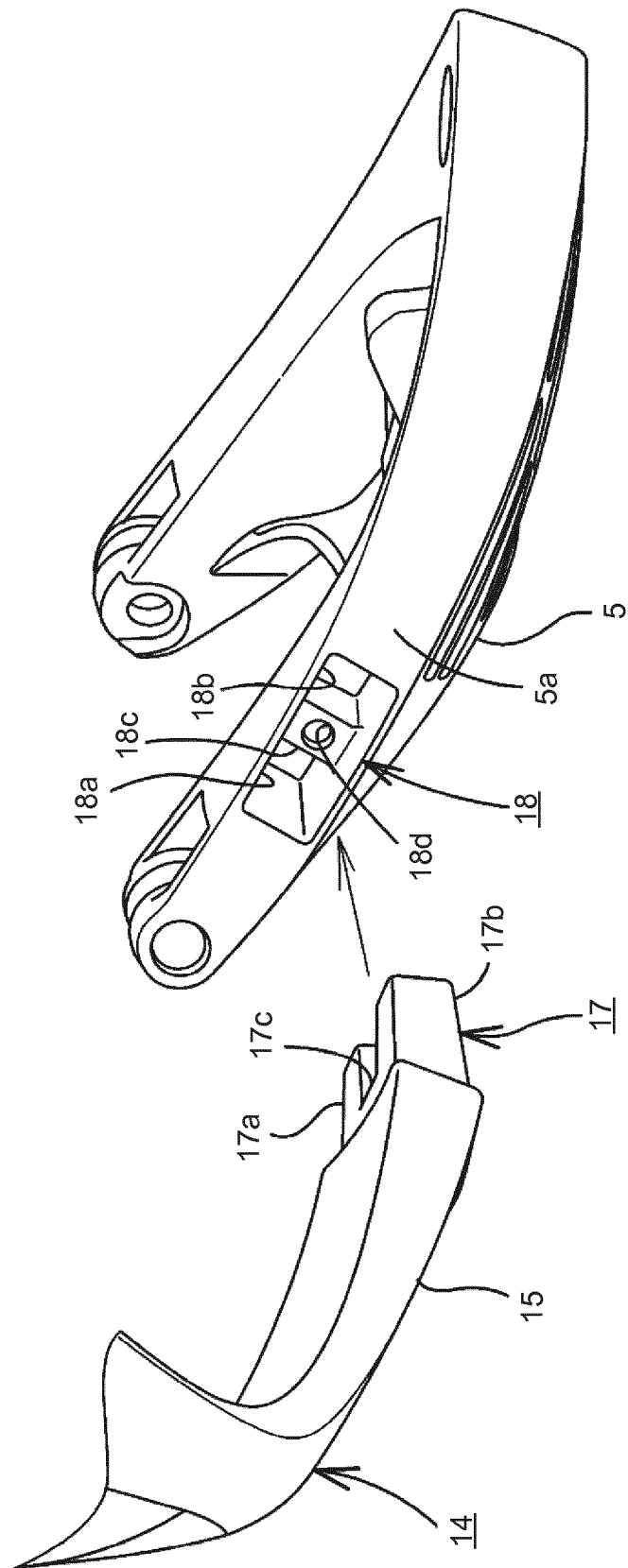


FIG.8

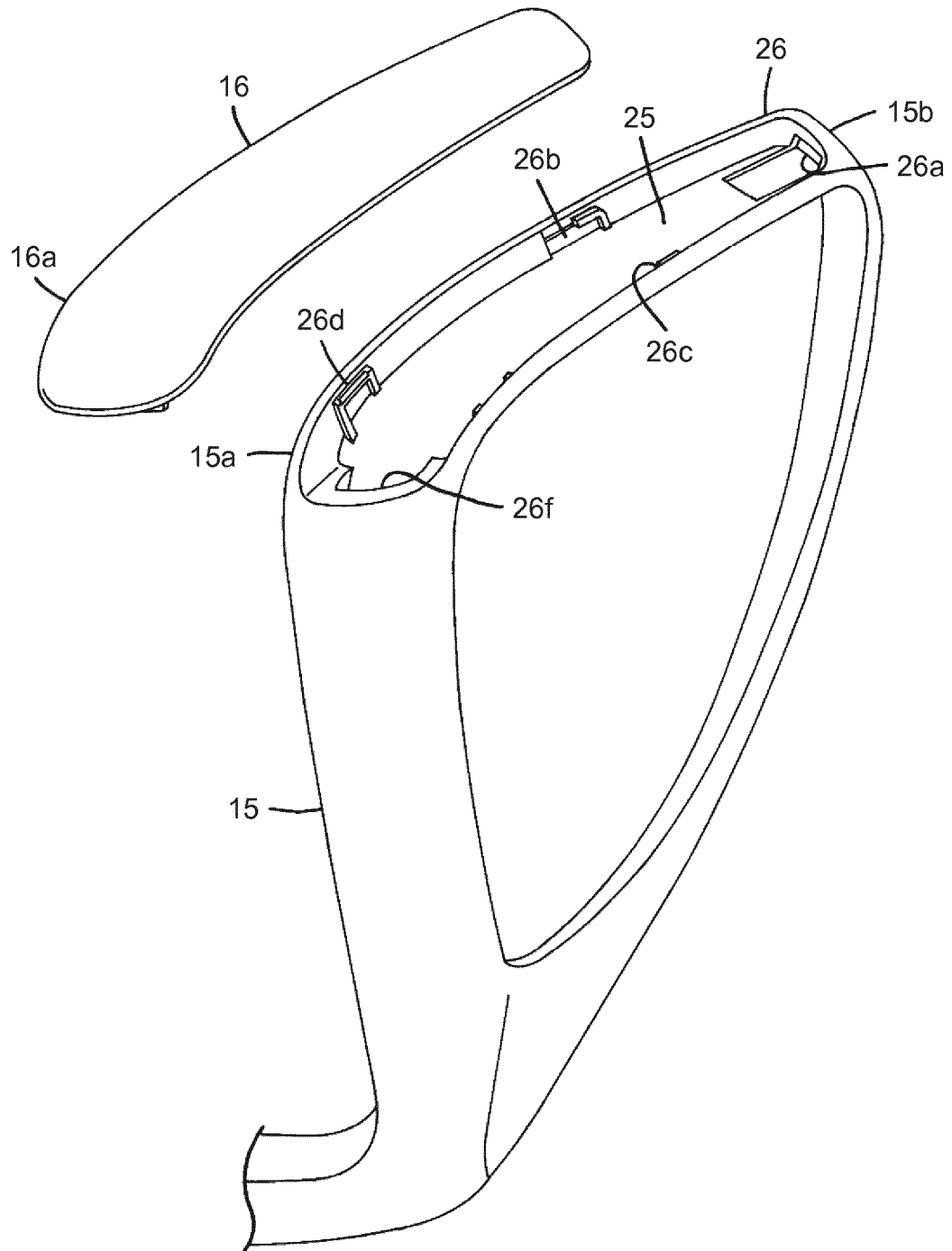


FIG.9

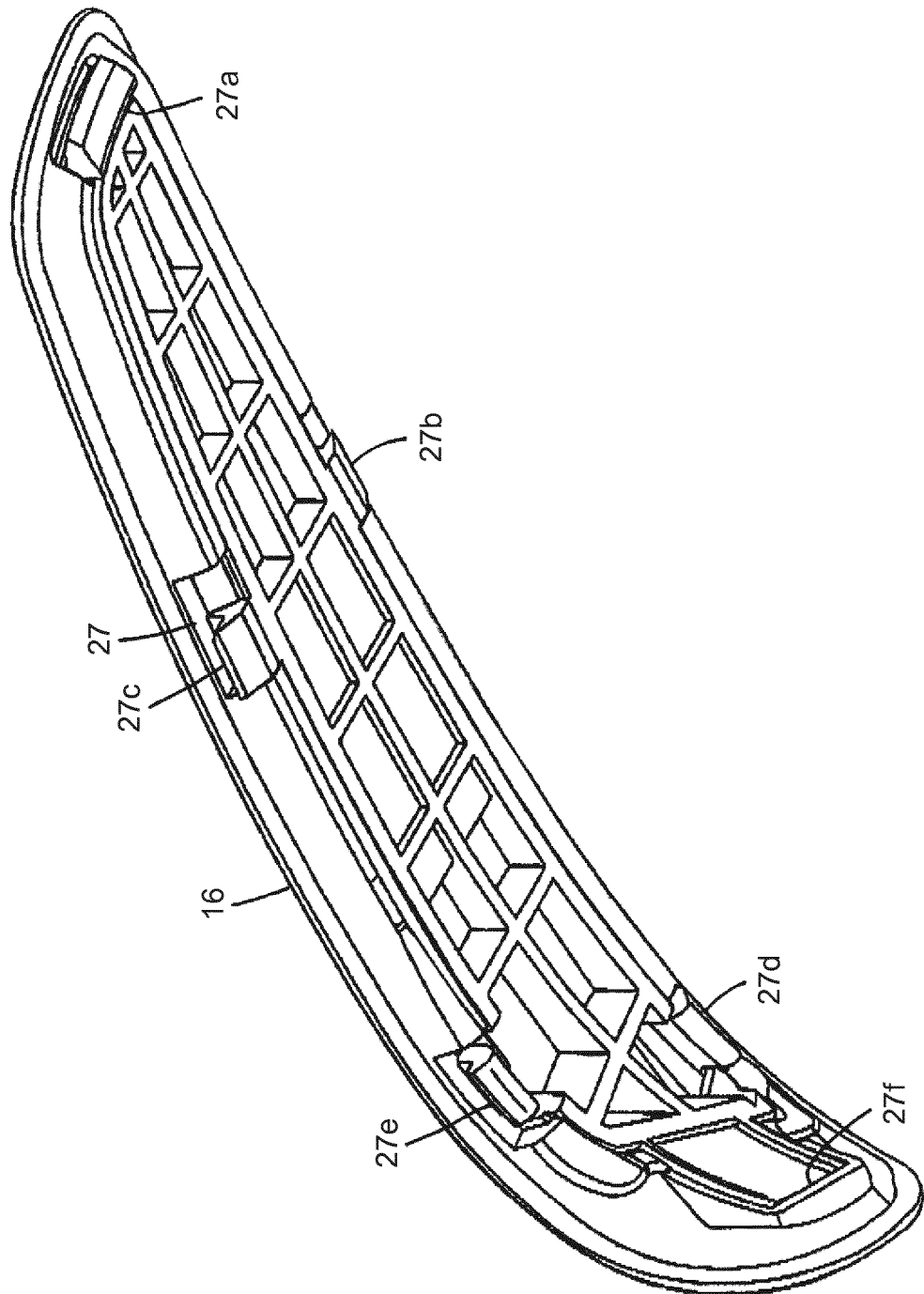


FIG. 10

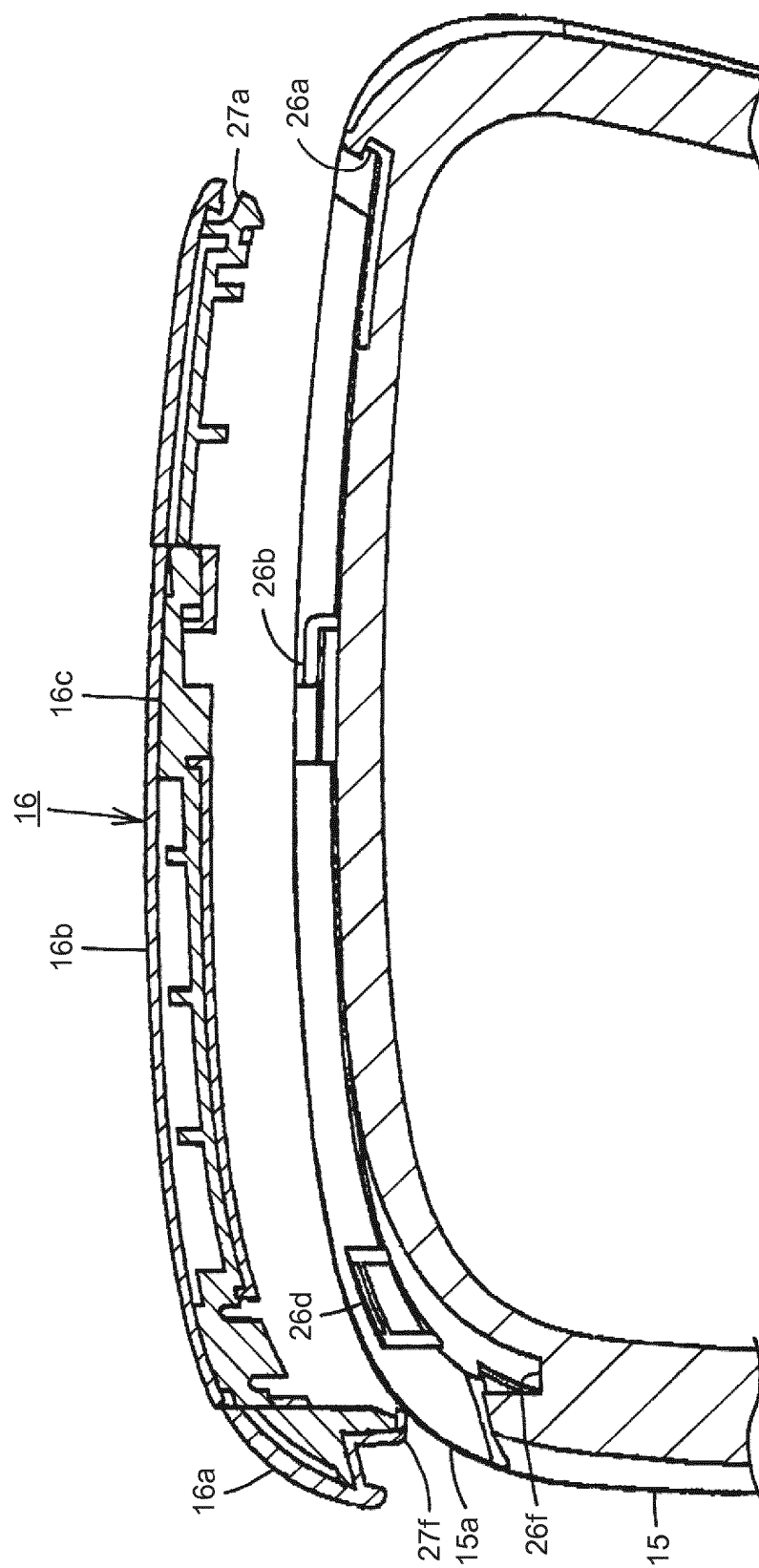


FIG.11

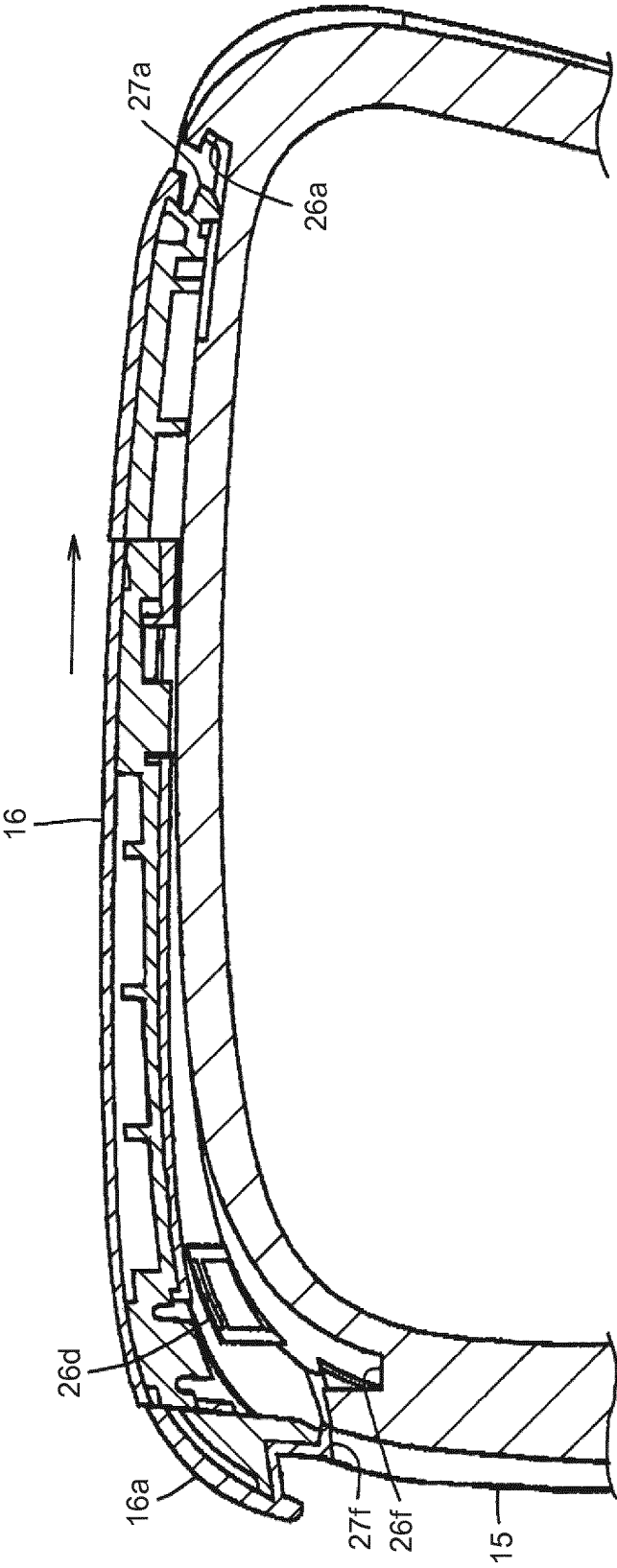


FIG.12

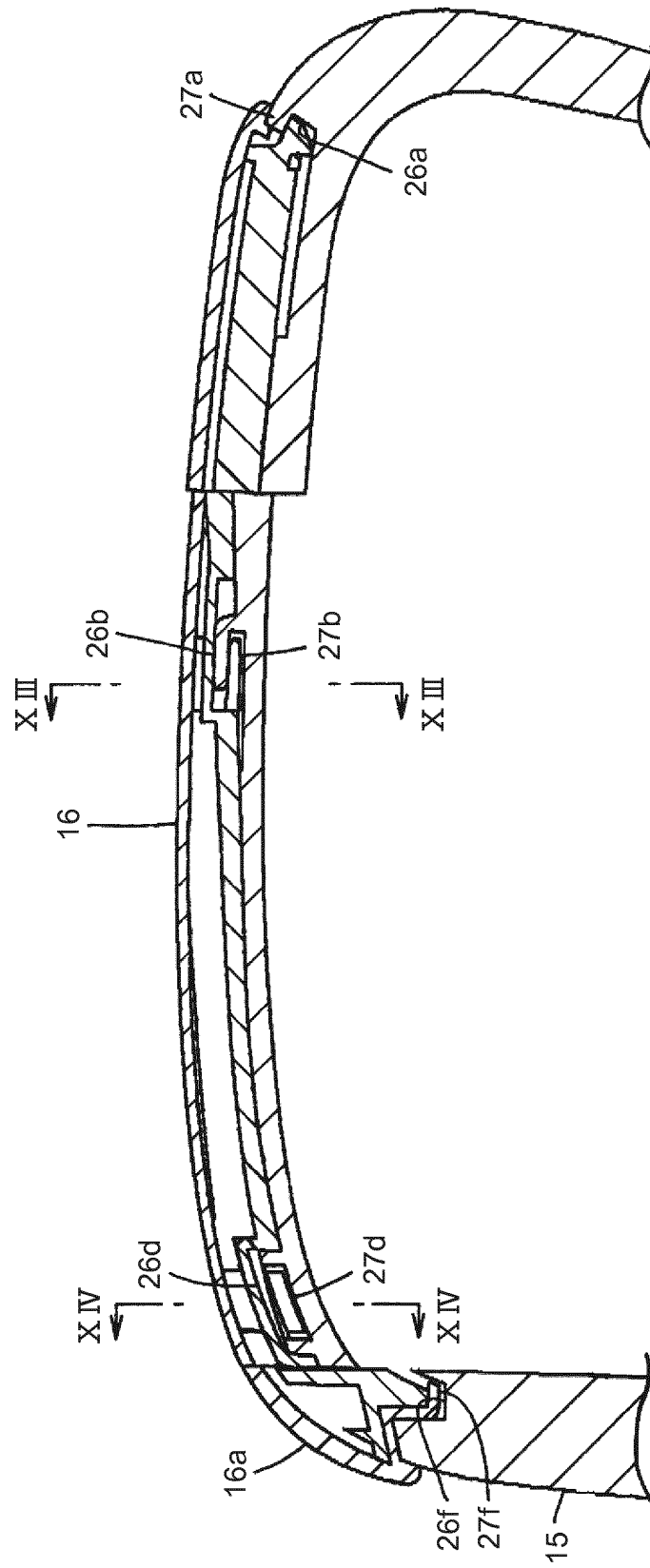


FIG.13

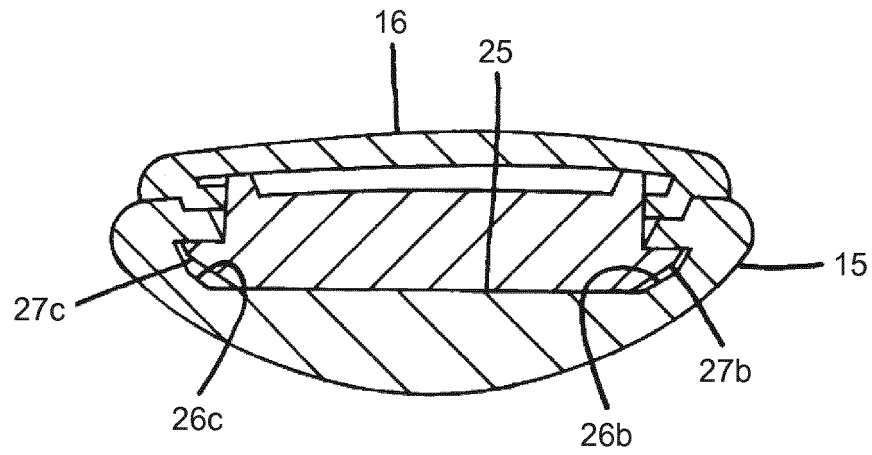
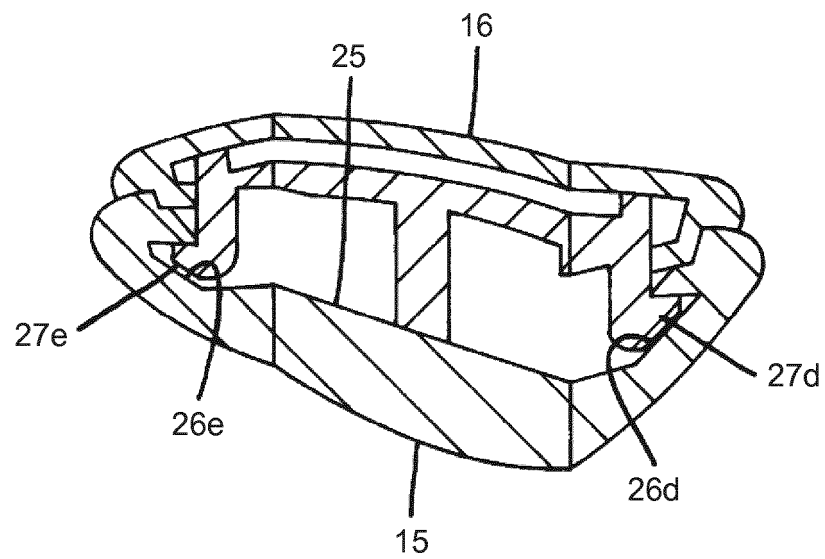


FIG.14



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2011/073227

A. CLASSIFICATION OF SUBJECT MATTER

A47C7/54(2006.01) i, A47C7/02(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)

A47C7/54, A47C7/02, F16B12/00-12/60

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 1996-2011

Kokai Jitsuyo Shinan Koho 1971-2011 Toroku Jitsuyo Shinan Koho 1994-2011

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	JP 9-56749 A (Takano Co., Ltd.), 04 March 1997 (04.03.1997), paragraphs [0015] to [0019]; fig. 1 to 2 (Family: none)	1-4 5-8
X Y	JP 2004-113454 A (Tomoji KOBAYASHI), 15 April 2004 (15.04.2004), entire text; all drawings (Family: none)	1-4 5-8
Y	JP 2003-166510 A (Takano Co., Ltd.), 13 June 2003 (13.06.2003), paragraphs [0019] to [0023]; fig. 1 to 5 (Family: none)	5-8

☒ 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
06 December, 2011 (06.12.11)Date of mailing of the international search report
13 December, 2011 (13.12.11)Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2011/073227

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 8-214993 A (Mark Anthony Dennis), 27 August 1996 (27.08.1996), entire text; all drawings & US 5613793 A & GB 2281368 A	5-8
A	JP 2010-104463 A (Okamura Corp.), 13 May 2010 (13.05.2010), entire text; all drawings & WO 2010/050175 A1	1-8

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

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2011/073227

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

The inventions in claims 1-4 and claims 5-8 have no same or corresponding special technical feature, and involve the following two inventions.

(Invention 1) The inventions of claims 1-4

The specific configuration of each component (support base, seat and armrests), which pertains to a chair with armrests, which is provided with a seat that is attached pivotally to a support base so as to pivot, and the armrests that are connected to the support base.

(continued to extra sheet)

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2011/073227

Continuation of Box No.III of continuation of first sheet (2)

(Invention 2) The inventions of claims 5-8
A mounting structure for the support base of the armrests.

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 2010104463 A [0003]
- JP 3156115 B [0003]