A sitting tool includes a seat panel, which includes a first seating face and second seating face extending contiguously from the first seating face toward front of the sitting tool. The second seating face forms a step higher than the first seating face with its end face disposed on the side of the first seating face. When the first seating face supports the hips and the second seating face supports the upper thighs of sitting person, the step suppresses forward displacement of the ischiiums of sitting person. The first seating face extends over the entire length of the seat panel in left-right direction of the sitting tool without interrupted by the step.
FIG. 1
FIG. 4
FIG. 5
FIG. 9
FIG. 12

(a) 

(b)

[Diagram showing various labeled parts and dimensions]
FIG. 17
SITTING TOOL AND CHAIR

TECHNICAL FIELD

[0001] The present invention relates to a sitting tool and a chair.

BACKGROUND ART

[0002] Due to widespread use of personal computers, most workers including those engaged in clerical work are forced into long-time desk work. Under the circumstance, in recent years, many people suffer from back pain and chronic fatigue on the back or the like. In many cases the back pain and the chronic fatigue on the back or the like result from seated posture during work. The above is described below with reference to figures. FIGS. 17(a) and 17(b) are schematic views illustrating a part of the skeleton of a worker when seated in a chair. In FIGS. 17(a) and 17(b), for simplification of explanation, a leg portion of a chair 7 is omitted.

[0003] FIG. 17(a) illustrates ideal posture of the worker. In the posture, the pelvis 91 is supported by a seat panel 71 and a rear panel 73 so as to be in a standing condition. As a result, the spine 92 forms an S-shaped curve similar to the spine’s shape when the human body is standing, thereby reducing stress on the pelvis 91 or the spine 92. Maintaining the S-shaped curve of the spine 92 during continued work considerably reduces the worker’s back pain and chronic fatigue on the back or the like.

[0004] However, it is difficult to maintain the ideal posture for long hours, and in the course of long-time work, the pelvis 91 of the worker spontaneously slides forward and comes into a sitting condition as illustrated in FIG. 17(b). In the above condition, the spine 92 is pressed against the rear panel 73, and the spine 92 is not capable of maintaining the S-shaped curve. When the above posture is kept for long hours, excessive stress is posed to the pelvis 91 or the spine 92, resulting in the back pain and the chronic fatigue on the back or the like. Although the worker would be able to avoid the posture as illustrated in FIG. 17(b) if constantly conscious about holding the seated posture illustrated in FIG. 17(a), in reality, the worker is so absorbed in own work that the worker falls into the posture illustrated in FIG. 17(b) without knowing.

[0005] Patent Literature 1 proposes a chair in which a seat panel and a rear panel may be simultaneously reclined rearward. According to the proposed chair, by reclining the seat panel and the rear panel rearward, the pelvis is pressed against the rear panel under effect of gravity and comes into the standing condition, resulting in a decrease in stress.

CITATION LIST

Patent Literature


SUMMARY OF THE INVENTION

Technical Problems

[0007] However, even when the pelvis is brought into the standing condition by simultaneously reclining the seat panel and the rear panel of the chair rearward for seating, the spine at this time is pressed against the rear panel. Accordingly, it is difficult to maintain the natural S-shaped curve similar to that when the human body is standing. Consequently, the worker is not able to maintain the posture for long and eventually feel fatigued. Using such a chair also produces a side effect that excessive stress is posed to the neck of the worker when looking straight at a display in front of the worker. Meanwhile, in the field of primary education in a kindergarten, an elementary school, or the like, although it is considered preferable to have kindergarten students and children seated with proper posture as the skeleton is still in an immature state of development, in reality, the kindergarten students and children may be forced into the proper posture for long hours only with great difficulty.

[0008] The present invention has been conceived in view of the above circumstances, and an objective of the present invention is to provide a sitting tool and a chair that are capable of automatically improving the seated posture of a sitting person and also capable of offering seating comfort.

Solution to Problems

[0009] Primary features of the present invention for achieving the above objective resides in the following.

[0010] A first aspect of the present invention resides in a sitting tool including a seat panel, the seat panel comprising:

[0011] a first seating face; and

[0012] a second seating face that extends contiguous from the first seating face toward a front of the sitting tool, wherein

[0013] the second seating face forms a step higher than the first seating face by means of an end face of the second seating face disposed on the side of the first seating face,

[0014] when the first seating face supports hips of a sitting person and the second seating face supports upper thighs of the sitting person, the step suppresses forward displacement of ischiums of the sitting person,

[0015] the first seating face extends over an entire length of the seat panel in a left-right direction of the sitting tool without being interrupted by the step.

[0016] According to the sitting tool of the present invention, since the step suppresses the forward displacement of the ischiums of the sitting person, the seated posture of the sitting person is automatically improved.

[0017] Furthermore, since the first seating face extends over the entire length of the seat panel in the left-right direction of the sitting tool without being interrupted by the step, the step does not cause strain to left and right sides of the hips of the sitting person, and the first seating face supports the hips of the sitting person. As a result, the sitting person sits with comfort without feeling the sense of strain on the hips.

[0018] In the sitting tool directed to the first aspect of the present invention, it is preferable that, in a planar view, the end face of the second seating face disposed on the side of the first seating face is curved or bent to be convex toward the front of the sitting tool.

[0019] The above structure makes it possible to absorb subtle individual differences in ischium position of a sitting person and more effectively improve the seated posture of the sitting person. Furthermore, since in the planar view the step further conforms to contour shape of the ischium, the sitting person sits with better comfort.

[0020] In the sitting tool directed to the first aspect of the present invention, it is also preferable that a maximum length of the second seating face, excluding the end face of the second seating face disposed on the side of the first seating face, in an area excluding a middle area in a left-right direction of the sitting tool, in a front-rear direction of the
sitting tool, is smaller than a maximum length of the first seating face in the front-rear direction of the sitting tool.

[0021] With the above structure, the upper thighs of the sitting person are prevented from being widely pressed against the second seating face, and the sitting person may sit with comfort for long hours. Moreover, the sitting tool is configured to be fairly compact.

[0022] In the sitting tool directed to the first aspect of the present invention, it is also preferable that the maximum length of the first seating face in the front-rear direction of the sitting tool is from 70 mm to 250 mm, and the maximum length of the second seating face, excluding the end face of the second seating face disposed on the side of the first seating face, in the area excluding the middle area in the left-right direction of the sitting tool, in the front-rear direction of the sitting tool, is smaller than or equal to 150 mm.

[0024] With the above structure, owing to the preferable dimension of the first seating face, a dimension sufficient to allow placement of the sitting person's hips on the first seating face is ensured, and the seated posture of the sitting person is improved while forward displacement of the sitting tool is prevented. Furthermore, the upper thighs of the sitting person are prevented from being widely pressed against the second seating face, and the sitting person may sit with comfort for long hours. Moreover, the sitting tool is configured to be fairly compact.

[0025] In one preferable example, the sitting tool directed to the first aspect of the present invention further includes a rear panel that extends from an end portion of the seat panel disposed on the side of the first seating face and that, at least partly, extends substantially perpendicularly relative to the seat panel.

[0026] With the above structure, even when there is no wall face which is to be in abutment against the sacrum of the sitting person and which extends substantially perpendicularly relative to a horizontal face on which the sitting tool is to be placed, the seated posture of the sitting person is improved.

[0027] In another preferable example, the sitting tool directed to the first aspect of the present invention further includes a support body that supports the seat panel, the support body including:

[0028] a bottom panel on which the seat panel is placed; and

[0029] a rear panel that extends from an end portion of the bottom panel disposed on the side of the first seating face of the seat panel and that, at least partly, extends substantially perpendicularly relative to the bottom panel.

[0030] With the above structure, even when there is no wall face which is to be in abutment against the sacrum of the sitting person and which extends substantially perpendicularly relative to the horizontal face on which the sitting tool is to be placed, the seated posture of the sitting person is improved. Besides, when the seat panel and the support body are formed as separate components, subtle individual differences in pelvis dimension of a sitting person are absorbed, and the seated posture of the sitting person is more effectively improved.

[0031] A second aspect of the present invention resides in a chair including a seat panel, a rear panel, and a leg portion, the seat panel comprising:

[0032] a first seating face; and

[0033] a second seating face that contiguously extends from the first seating face toward a front of the chair, wherein a front face of the rear panel disposed on the side of the seat panel at least partly extends substantially perpendicularly relative to the first seating face,

[0034] the second seating face forms a step higher than the first seating face by means of an end face of the second seating face disposed on the side of the first seating face,

[0035] when the first seating face supports hips of a sitting person and the second seating face supports upper thighs of the sitting person, the step suppresses forward displacement of ischiums of the sitting person, and the front face of the rear panel suppresses rearward displacement of a sacrum of the sitting person,

[0037] the first seating face extends over an entire length of the seat panel in a left-right direction of the chair without being interrupted by the step, and

[0038] in a planar view, the end face of the second seating face disposed on the side of the first seating face is curved or bent to be convex toward the front of the chair.

[0039] According to the chair directed to the second aspect of the present invention, since the step suppresses the forward displacement of the ischiums of the sitting person, the seated posture of the sitting person is automatically improved.

[0040] Furthermore, since the first seating face extends over the entire length of the seat panel in the left-right direction of the chair without being interrupted by the step, the step does not cause strain to left and right sides of the hips of the sitting person, and the first seating face supports the hips of the sitting person. As a result, the sitting person sits with comfort without feeling the sense of strain on the hip.

[0041] Furthermore, since in a planar view the end face of the second seating face disposed on the side of the first seating face is curved or bent to be convex toward the front of the chair, subtle individual differences in ischium position of a sitting person are absorbed, and the seated posture of the sitting person is effectively improved. Moreover, since in the planar view the step conforms to contour shape of the ischium, the sitting person sits with comfort.

[0042] A third aspect of the present invention resides in a chair including a seat panel, a rear panel, and a leg portion, the seat panel comprising:

[0043] a first seating face; and

[0044] a second seating face that contiguously extends from the first seating face toward a front of the chair, wherein a front face of the rear panel disposed on the side of the seat panel at least partly extends substantially perpendicularly relative to the first seating face,

[0045] the second seating face forms a step higher than the first seating face by means of an end face of the second seating face disposed on the side of the first seating face,

[0046] when the first seating face supports hips of a sitting person and the second seating face supports upper thighs of the sitting person, the step suppresses forward displacement of ischiums of the sitting person, and the front face of the rear panel suppresses rearward displacement of a sacrum of the sitting person,

[0047] the first seating face extends over an entire length of the seat panel in a left-right direction of the chair without being interrupted by the step, and

[0049] a maximum length of the first seating face in a front-rear direction of the chair is from 70 mm and 250 mm, and a maximum length of the second seating face, excluding the end face of the second seating face disposed on the side of the first seating face, is in an area excluding a middle area, in the
left-right direction of the chair in the front-rear direction of the chair, is smaller than or equal to 150 mm.

According to the chair directed to the third aspect of the present invention, owing to the preferable dimension of the first seating face, a dimension sufficient to allow placement of the sitting person’s hips on the first seating face is ensured, and the seated posture of the sitting person is improved. Furthermore, the upper thighs of the sitting person are prevented from being widely pressed against the second seating face, and the sitting person may sit with comfort for long hours. Moreover, the chair is configured to be fairly compact.

Advantageous Effects of Invention

According to the present invention, a sitting tool and a chair that are capable of automatically improving the seated posture of a sitting person and also capable of offering seating comfort are provided.

BRIEF DESCRIPTION OF DRAWINGS

The present invention will be further described below with reference to the accompanying drawings, wherein:

FIG. 1 is a perspective view illustrating Embodiment 1 of a sitting tool according to the present invention;
FIG. 2 is a sectional view taken along a line A-A in FIG. 1, illustrating a mode of use of the sitting tool illustrated in FIG. 1;
FIG. 3 is a perspective view illustrating Embodiment 2 of a sitting tool according to the present invention;
FIG. 4 is a perspective view illustrating Embodiment 3 of a sitting tool according to the present invention;
FIG. 5 is a perspective view illustrating Embodiment 4 of a sitting tool according to the present invention;
FIG. 6 is a perspective view illustrating Embodiment 5 of a sitting tool according to the present invention;
FIG. 7 is a perspective view illustrating Embodiment 6 of a sitting tool according to the present invention;
FIG. 8 is a perspective view illustrating Embodiment 7 of a sitting tool according to the present invention;
FIG. 9 is a perspective view illustrating Embodiment 8 of a sitting tool according to the present invention;
FIG. 10 is a perspective view illustrating Embodiment 9 of a sitting tool according to the present invention;
FIG. 11 is a perspective view illustrating Embodiment 10 of a sitting tool according to the present invention along with a mode of use thereof;
FIG. 12(a) is a perspective view illustrating Embodiment 11 of a sitting tool according to the present invention, and FIG. 12(b) is a sectional view of the sitting tool taken along a line C-C in FIG. 12(a);
FIG. 13 is a perspective view illustrating Embodiment 1 of a chair according to the present invention;
FIG. 14 is a sectional view taken along a line B-B in FIG. 13, illustrating a state where a human body sits in the chair illustrated in FIG. 13;
FIG. 15 is a perspective view illustrating Embodiment 2 of a chair according to the present invention;
FIG. 16 is a perspective view illustrating Embodiment 3 of a chair according to the present invention; and
FIGS. 17(a) and 17(b) are longitudinal sectional view schematically illustrating a state where a human body sits in a conventional chair, and FIG. 17(a) is a longitudinal sectional view illustrating a state where a human body maintains optimal posture, and FIG. 17(b) is a longitudinal sectional view illustrating a state where balance of the posture of the human body is lost.

DESCRIPTION OF EMBODIMENTS

Sitting Tool

In the following, a description is given of Embodiments 1-11 of a sitting tool according to the present invention with reference to FIGS. 1-12. Note that the embodiments described below are merely for example, and the present invention is not limited thereto.

Embodiment 1

To begin with, a description is given of Embodiment 1 of a sitting tool according to the present invention, with reference to FIGS. 1 and 2. FIG. 1 is a perspective view illustrating Embodiment 1 of a sitting tool according to the present invention. FIG. 2 is a sectional view taken along a line A-A in FIG. 1, illustrating a mode of use of the sitting tool illustrated in FIG. 1.

A sitting tool 1 in the present embodiment is used in a chair or the like in which a human body is to be seated with the knees bent, and is constituted by a single seat panel 3. The seat panel 3 includes a seating face 2 on which a user of the sitting tool 1 is to be seated. The seating face 2 includes a first seating face 21 and a second seating face 22. That is to say, the first seating face 21 and the second seating face 22 form the single seating face 2. The second seating face 22 extends contiguously from the first seating face 21 toward a front of the sitting tool 1. The second seating face 22 has an inclined end face 221 disposed on the side of the first seating face 21, and the second seating face 22 adjoins the first seating face 21 on the end face 221. The end face 221 of the second seating face 22 disposed on the side of the first seating face 21 is a part of the second seating face 22 that is formed by an inclination whose height decreases from the second seating face 22 toward the first seating face 21. By means of the end face 221 disposed on the side of the first seating face 21, the second seating face 22 forms a stop that is higher than the first seating face 21. The first seating face 21 and the second seating face 22, except for the stepped portion formed by means of the end face 221, include substantially horizontal faces arranged substantially parallel to each other. In the description herein, the substantially horizontal face included in the second seating face that forms a primary part of the second seating face and that is contiguous to the end face (inclined face) disposed on the side of the first seating face may be referred to as “primary face.”

A width direction of the sitting tool 1 is referred to below as a left-right direction, and a length direction of the sitting tool 1 (a direction that corresponds to depth and that passes the first seating face 21, the end face 221, and a primary face 10 sequentially) is referred to as a front-rear direction. The left-right direction is orthogonal to the front-rear direction. One side of the front-rear direction that is closer to the second seating face 22 is referred to as a front or a front side, and the other side of the front-rear direction that is closer to the first seating face 21 is referred to as a rear or a rear side. As will be clear from the description below, the phrases “left-right direction”, “front (direction)”, and “rear (direction)”
herein correspond to the “left-right direction”, “front (direction)”, and “rear (direction)” as seen by a sitting person.

[0074] The aforementioned expression “substantially horizontal face” includes not only a completely horizontal face but a face having a slight curve conforming to shape of the hips or the upper thighs. In particular when the first seating face 21 includes the slight curve, it is preferable that the first seating face 21 is provided with a difference in height only in the left-right direction (in the width direction of the sitting tool 1), not in the front-rear direction. In the above case, the first seating face 21 has a curve similar to an arc face of a large-diameter cylinder extending in the front-rear direction of the sitting tool 1. In other words, the first seating face 21 has an arc face that is curved in the left-right direction of the sitting tool 1 and that is recessed in a middle portion thereof. One example of the curved face that the first seating face 21 may have is 1800R (curve of an arc face having a curvature radius of 1800 mm). However, the curved face is not particularly limited to the example. The second seating face 22 may also have a curve similar to that of the first seating face 21. Note that the curve provided as above is considerably small, and therefore, even when the curve is provided in one of the first seating face 21 and the second seating face 22, the first seating face 21 and the second seating face 22 are still parallel.

[0075] The “upper thigh” herein refers to a part of the thighs of a human being disposed on the side of the groin.

[0076] The end face (inclined face) 22 of the second seating face 22 disposed on the side of the first seating face 21 extends straight in the left-right direction. The first seating face 21 extends over an entire length of the seat panel 3 in the left-right direction of the sitting tool 1 without being interrupted by the step. That is to say, there is nothing provided to suppress the pelvis 91 of a sitting person on left and right sides of the first seating face 21.

[0077] The seat panel 3 may be formed by combining a plurality of components that are, for example, adheber to each other, formed by cutting a single component having a plate shape, or formed integrally by metal-molding thermoplastic elastomer (TPE), rubber, or the like. When the seat panel 3 is formed by a plurality of components, a part of the first seating face 21 and a part of the second seating face 22 may be formed by different components, for example. The end face 221 is not limited to an inclined face and may be any face as long as a difference in height is produced because the end face 221 is provided only for the purpose of formation of the step.

[0078] Next, a description is given of advantageous effects of the sitting tool 1 according to the present embodiment with reference to FIG. 2. Although in the description with reference to FIG. 2 and below it is described that skeleton abuts against the sitting tool 1 and a wall face 8, they are illustrated only for ease of understanding. In reality, there exist body tissues, such as muscles and skin, between the skeleton and the sitting tool 1 and between the skeleton and the wall face 8, and of course the skeleton cannot be in direct abutment with the sitting tool 1 and the wall face 8.

[0079] As illustrated in FIG. 2, the sitting tool 1 is placed on a horizontal face 9 for use in a state where an rear edge portion 211 of the first seating face 21 that is on one side of the first seating face 21 opposite to the second seating face 22 is in contact or adjaeently facing the wall face 8 extending upward. The wall face 8 herein only has to extend from around the rear edge portion 211 of the first seating face 21 included in the sitting tool 1. The horizontal face 9 herein only has to extend horizontally from the wall face 8 through the sacrum of the sitting person to a position in front of back sides of the knees (popliteal space). Here, the sitting person sits on the sitting tool 1 with the knees being bent substantially at a right angle, and accordingly, the pelvis 91 is not forcibly pressed against the wall face 8 unlike a case of sitting with the knees being extended straight. As a result, the seated posture is automatically improved.

[0080] For example, when the sitting tool 1 is used in a chair built into a wall or the like of a building, the wall face 8 and the horizontal face 9 correspond to a wall face of the wall and a top wall of a flat panel provided in the wall, respectively. Alternatively, when the sitting tool 1 is used in a chair (not illustrated), the wall face 8 and the horizontal face 9 correspond to a front face of a rear panel of the chair (a surface facing the sitting person) and the seating face of the seat panel, respectively. When the sitting tool 1 is used in a care bed with reclining mechanism (that is not illustrated), the wall face 8 and the horizontal face 9 correspond to a front face of a reclining rear panel and the seating face of the seat panel, respectively.

[0081] In the above state, when the sitting person places the hips on the first seating face 21 and places the upper thighs on the second seating face 22, the first seating face 21 supports the hips of the sitting person, and the second seating face 22 supports the upper thighs of the sitting person. At this time, a pair of left and right ischia 911 and 911, which are present below the pelvis 91 of the sitting person, comes into abutment with the step formed by means of the end face 221, and the step suppresses forward displacement (displacement toward the second seating face 22) of the ischia 911 and 911. At the same time, the sacrum 912, which is present at the rear (a back face) of the pelvis 91, comes into abutment with the wall face 8, and a front face of the wall face 8 suppresses rearward displacement of the sacrum 912. Accordingly, the pelvis 91 is stabilized, with the pair of ischia 911 and 911 and the sacrum 912 being supported by the step formed by means of the end face 221 and the wall face 8 (which is referred to below as “three-point fixing state”). As a result, the pelvis 91 is prevented from being displaced to the front of the sitting tool 1 (in the direction toward the second seating face 22), and the sitting person is unlikely to fall into the posture illustrated in FIG. 17(b). Since the resulting posture of the sitting person is automatically improved, the spine 92 maintains the optimal S-shaped curve for long hours, and the back pain and the chronic fatigue on the back or the like are alleviated. Besides, due to an increase in blood flow to the brain, power of concentration is also improved.

[0082] The first seating face 21 extends over the entire length of the seat panel 3 in the left-right direction of the sitting tool 1 without being interrupted by the step. To put it another way, there is nothing provided to suppress the pelvis 91 of the sitting person on left and right sides of the first seating face 21. Accordingly, the step does not cause strain to left and right sides of the hips of the sitting person, and the first seating face 21 supports the hips of the sitting person. As a result, the sitting person sits with comfort without feeling the sense of strain on the hip. Furthermore, according to the above first seating face 21, even when the hips of the sitting person hangs out of the left and right sides of the first seating face 21, the three-point fixing state is achieved without problem as long as the length of the step in the left-right direction is larger than or equal to a distance between the pair of ischia 911 and 911. Accordingly, the length of the step in the left-right direction may be reduced, for example, into substan-
ially the distance between the pair of ischia 911 and 911, and the sitting tool 1 may be configured to be compact.

[0083] As described above, since the first seating face 21 is substantially flat, it is ensured that the step formed by means of the end face 221 locks the pair of ischia 911 and 911, whereby the pelvis 91 is stably fixed. As described earlier, the phrase “substantially flat” includes not only a horizontal plane but an arc plane with a slight curve.

[0084] Since the sitting tool 1 stabilizes the posture of the pelvis 91 by including the step formed by means of the end face 221, it is preferable that shapes of the first seating face 21 and the second seating face 22 do not change under a weight of the sitting person and that shape and shape height of the end face 221 are maintained. From the above viewpoint, the seat panel 3 is of a material that is unlikely to be depressed under the weight of the user. Some examples of such a material include a wood material, high density cloth such as canvas that is not easily shrunk, thermoplastic elastomer (TPE), rubber, a plastic material such as EVA resin, or the like.

[0085] When the thermoplastic elastomer, rubber, or a plastic material is used as the material, hardness of the material is preferably from 5 to 120. The “hardness” herein refers to hardness obtained by a measuring method according to JIS K6253 with use of type A durometer in JIS K6253. By setting hardness within the aforementioned range, comfort of the sitting person is appropriately ensured, while the seat panel 3 is prevented from being unintentionally deformed as a result of the seat panel 3 being used for a long period of time. From the similar viewpoint, the hardness is more preferably from 40 to 90. The hardness of at least a part in the second seating face 22, in particular, the stepped portion formed by means of the end face 221, is preferably in the aforementioned preferable range, in particular, in the aforementioned more preferable range.

[0086] The first seating face 21 has a function of preventing the sitting tool 1 from being displaced forward by being pressed by the weight transferred from the hip. Accordingly, length of the first seating face 21 in the front-rear direction, i.e., length L1, from the rear edge portion 211 of the first seating face 21 to a lower end of the end face 221, should be large enough to accept the weight transferred from the hip. On the other hand, however, when the length L1 of the first seating face 21 in the front-rear direction is too large, the three-point fixing state of the pelvis 91 may not be achieved. From the above viewpoint, the length L1 of the first seating face 21 in the front-rear direction is preferably from 70 mm to 250 mm. More specifically, the length L1 of the first seating face 21 in the front-rear direction is, for example, for adaptability to male and female adults with standard body types, preferably from 100 mm to 200 mm, more preferably from 150 mm to 170 mm. For adaptability to children of elementary school age or younger, for example, the length L1 is preferably from 70 mm to 150 mm. The length L1 is also preferably from 200 mm to 250 mm in order for elderly people or the like whose spine is curved to protrude rearward to improve the seated posture as much as possible.

[0087] The second seating face 22 has a function of regulating forward displacement of the pair of ischia 911 and 911 by supporting, on the primary face 10 thereof, the upper thighs of the sitting person and by forming the step formed by means of the end face 221. In this regard, when the length of the primary face 10 of the second seating face 22 in the front-rear direction, i.e., length L2, from a front edge portion 222 of the second seating face 22 to an upper end of the end face 221 is too large, the upper thighs of the sitting person are widely pressed against the second seating face 22. From the above viewpoint, the length L2 of the primary face 10 of the second seating face 22 in the front-rear direction is preferably smaller than or equal to 150 mm, more preferably smaller than or equal to 90 mm, and even more preferably smaller than or equal to 40 mm. On the other hand, when the length L2 of the primary face 10 of the second seating face 22 in the front-rear direction is too small, in a case using a material of relatively small hardness, the second seating face 22 is easily deformed by the weight transferred from the sitting person, and in a case using a material of relatively large hardness, a part of the second seating face 22 presses into the upper thighs of the sitting person, and comfort of the sitting person is deteriorated. From the above viewpoint, the length L2 of the primary face 10 of the second seating face 22 in the front-rear direction is preferably larger than or equal to 3 mm.

[0088] As described earlier, since the pelvis 91 of the sitting person is stably fixed by the sitting tool 1 locking the pair of ischia 911 and 911 and the wall face 8 locking the sacrum 912, displacement of the sitting tool 1 per se in the front-rear direction would reduce the effect of stably fixing the pelvis 91. Accordingly, it is preferable to provide a reverse face 11 of the sitting tool 1 with a known anti-slipping means (not illustrated). The anti-slipping means may be provided, for example, by forming the reverse face 11 of the sitting tool 1 into an uneven face, by adhering an anti-slipping sheet to the reverse face 11 of the sitting tool 1, or by applying an adhesive to the reverse face 11 of the sitting tool 1.

[0089] When the step formed by means of the end face 221 is too high, the person sitting on the sitting tool 1 feels uncomfortable. On the other hand, when the step formed by means of the end face 221 is too low, the pair of ischia 911 and 911 tends to pass over the step, and forward displacement of the pelvis 91 is not fully suppressed. From the above viewpoint, height H1 of the step formed by means of the end face 221 is preferably from 3 mm to 30 mm, more preferably from 3 mm to 20 mm, and even more preferably from 8 mm to 15 mm.

[0090] Furthermore, as angle θ1 between the end face 221 and the first seating face 21 decreases, the person sitting on the sitting tool 1 feels more uncomfortable. On the other hand, when the angle θ1 is too large, the pair of ischia 911 and 911 tends to pass over the step, and forward displacement of the pelvis 91 is not fully suppressed. From the above viewpoint, the angle θ1 between the end face 221 and the first seating face 21 is preferably from 90° to 165°, more preferably from 90° to 140°, and even more preferably from 90° to 120°.

[0091] Length W1 of the end face 221 in the left-right direction (i.e. length of the first seating face 21 in the left-right direction in the example of FIG. 1) needs to be larger than the distance between the pair of ischia 911 and 911. However, from the viewpoint of making the sitting tool 1 compact, the length W1 is preferably from 100 mm to 500 mm, more preferably from 150 mm to 400 mm, and even more preferably from 250 mm to 300 mm.

[0092] Moreover, in view of the aforementioned respective functions of the first seating face 21 and the end face 221, the length L1 of the first seating face 21 in the front-rear direction is preferably from 0.40 to 0.60 times, more preferably from 0.46 to 0.51 times, the length W1 of the end face 221 in the left-right direction. Similarly, in view of the aforementioned respective functions of the primary face 10 and the end face 221 of the second seating face 22, the length L2 of the primary face 10 of the second seating face 22 in the front-rear direc-
tion is preferably from 0.01 to 0.26 times, more preferably from 0.01 to 0.10 times, the length $W_1$ of the end face 221 in the left-right direction.

[0093] The sitting tool 1 according to Embodiment 1 is configured to have a rectangular shape in horizontal projection, and therefore, the length of the sitting tool 1 in the left-right direction is constant from the front edge portion 222 to the rear edge portion 211 of the sitting tool 1. However, the shape of the sitting tool 1 in horizontal projection is not limited to the rectangular shape, and any shape such as circular, ellipsoidal, trapezoidal, and fan shapes or a combination of a part of these shapes is possible. Accordingly, the length of the sitting tool 1 in the left-right direction may be varied between the front edge portion 222 and the rear edge portion 211 of the sitting tool 1.

[0094] An edge portion extending between the primary face 10 and the end face 221 of the second seating face 22 in the left-right direction of the sitting tool 1 is not curved as a curved face and is formed to be pointed in the section illustrated in FIG. 2. With the above structure, the ischium 911 of the sitting person are prevented from sliding forward over the edge portion and running on the second seating face 22.

[0095] According to Embodiment 1, simply by placing the sitting tool 1 on the horizontal face 9 while the rear edge portion 211 of the sitting tool 1 is in contact with or adjacent to the wall face 8, the sitting person achieves the three-point fixing state while sitting with comfort, and the seated posture of the sitting person is corrected.

[0096] Furthermore, according to the first embodiment, when the user places the sitting tool 1 on the horizontal face 9, the distance between the wall face 8 and the sitting tool 1 may be adjusted. Accordingly, even when there is a variation in size of the pelvis 91 from one user to another, the three-point fixing state is achieved.

[0097] Moreover, the sitting tool 1 is more compact than a chair and is easy to store and carry.

[0098] Owing to the convenience of the sitting tool 1, the sitting tool 1 may be used in various chairs. For example, the sitting tool 1 may be used in a chair built into a building, an office chair, a chair or a bed for caregiving, a table chair, a public bench, a vehicle seat, an airplane seat, a lift chair in a skiing ground, a wheelchair, or the like.

[0099] Additionally, the end face 221 of the second seating face 22 disposed on the side of the first seating face 21 may be formed by a concavely curved face recessed forward or a convexly curved face protruding rearward, instead of the inclined face.

Embodiment 2

[0100] Next, a description is given of Embodiment 2 of a sitting tool according to the present invention, with reference to FIG. 3. FIG. 3 is a perspective view illustrating Embodiment 2 of a sitting tool according to the present invention. In the description of the present embodiment, a description of some of structures and advantageous effects overlapping with those of the above-described embodiment is omitted, and different points are mainly described.

[0101] A sitting tool 1A according to the present embodiment includes a seat panel 3A and a rear panel 31. The seat panel 3A has substantially the same structure as the seat panel 3 constituting the sitting tool 1 according to Embodiment 1. The rear panel 31 extends upward and substantially perpendicularly relative to the seat panel 3A from an end portion (the rear edge portion 211) of the seat panel 3A disposed on the side of the first seating face 21, i.e., from the end portion of the first seating face 21 of the seat panel 3A disposed on the side of one side of the first seating face 21 opposite to the second seating face 22. The seat panel 3A and the rear panel 31 may be integrally formed, or may be formed separately and fixed to each other by adhesion, fastening, or the like. The rear panel 31 may also extend from the end portion of the seat panel 3A disposed on the side of the first seating face 21 and only partly extend upward and substantially perpendicularly relative to the seat panel 3A.

[0102] In replacement of the wall face 8 in Embodiment 1, a front face of the rear panel 31 abuts against and supports the sacrum 912 that is present behind the pelvis 91, thereby suppressing rearward displacement of the pelvis 91. With the above structure, as a result of the step formed by means of the end face 221 suppressing forward displacement of the pair of ischia 911 and 911 and as a result of the front face of the rear panel 31 suppressing rearward displacement of the sacrum 912, the pelvis 91 of a sitting person is stabilized in the three-point fixing state. From a viewpoint of achieving the above function of the rear panel 31 and a compact sitting tool 1A, height $H_2$ of the rear panel 31 with respect to the first seating face 21 is preferably from 30 mm to 350 mm, more preferably from 100 mm to 210 mm. Furthermore, in view of the respective functions of the front face of the rear panel 31 and the end face 221, height $H_1$ of the rear panel 31 with respect to the first seating face 21 is preferably from 0.16 to 1.16 times, more preferably from 0.33 to 0.70 times, the length $W_1$ of the end face 221 in the left-right direction (i.e. length of the first seating face 21 in the left-right direction in the example illustrated in FIG. 3).

[0103] Angle between the rear panel 31 and the seat panel 3A, i.e., angle $\theta_2$ between the front face of the rear panel 31 and the first seating face 21, is preferably substantially a right angle so that the three-point fixing state is achieved. In particular, the angle $\theta_2$ is preferably from 90° to 120°, more preferably from 90° to 95°.

[0104] It is necessary to achieve the three-point fixing state by fitting the entire hips of the sitting person in space between the end face 221 and the front face of the rear panel 31. From the above viewpoint, length $L_3$ of the first seating face 21 in the front-rear direction is preferably from 70 mm to 250 mm. More specifically, the length $L_3$ of the first seating face 21 in the front-rear direction is, for example, for adaptability to male and female adults with standard body types, preferably from 100 mm to 200 mm, more preferably from 150 mm to 170 mm. For adaptability to children of elementary school age or younger, for example, the length $L_3$ is preferably from 70 mm to 150 mm. The length $L_3$ is also preferably from 200 mm to 250 mm in order for elderly people or the like whose spine 92 is curved to protrude rearward to improve the seated posture as much as possible. Moreover, in view of the aforementioned respective functions of the first seating face 21 and the rear panel 31, the length $L_3$ of the first seating face 21 in the front-rear direction is preferably from 0.70 to 0.90 times, more preferably from 0.75 to 0.85 times, the height $H_2$ of the rear panel 31 with respect to the first seating face 21.

[0105] According to Embodiment 2, in addition to the advantageous effects provided by Embodiment 1, even when there is no wall face which extends upward and substantially perpendicularly relative to the horizontal face to be sit on, the rear panel 31 forms a wall face extending upward and substantially perpendicularly relative to the first seating face 21, whereby the three-point fixing state is achieved.
Although not illustrated, it is also possible to configure the seat panel 3A by using a lower seat panel forming the first seating face 21 and an upper seat panel provided above the lower seat panel and forming the second seating face 22 and to provide a adjusting means that is configured to be fixed after the lower seat panel is displaced above the lower seat panel in the front-rear direction so as to adjust the length L, of the first seating face 21 in the front-rear direction. With the above structure, even when the size of the pelvis 91 differs from one user to another, the three-point fixing state is achieved. The adjusting means is achieved, for example, by fixing the lower seat panel and the upper seat panel using a hook and loop fastener.

It is also possible to form the seat panel 3A and the rear panel 3B separately and couple these panels using a hinge (not illustrated) or the like, so that the rear panel 3B may be tilted forward or rearward relative to the seat panel 3A. With the above structure, the sitting tool 1A is configured to be foldable, which makes the sitting tool 1A easier to store.

Embodiment 3

Next, a description is given of Embodiment 3 of a sitting tool according to the present invention with reference to FIG. 4. FIG. 4 is a perspective view illustrating Embodiment 3 of a sitting tool according to the present invention. In the description of the present embodiment, a description of some of the structures and advantageous effects overlapping with those of the above-described embodiments is omitted, and different points are mainly described.

A sitting tool 1B according to the present embodiment includes a first seating face 21B that supports the hips of a sitting person as an upper face of a rear seat panel 12. The sitting tool 1B also includes a second seating face 22B that supports the upper thighs of the sitting person, as an upper face of a concave-convex sheet 13 configured by coupling a plurality of tubular filling bodies 224 in the front-rear direction. The rear seat panel 12 and the concave-convex sheet 13 are coupled by sewing, adhesion, or the like, to form a seat panel 31B.

The rear seat panel 12 including the first seating face 21B is preferably of a material that is unlikely to be depressed under the weight of the user. Some examples of such a material include a wood material, high density cloth such as canvas that is not easily shrunk, thermoplastic elastomer (TPE), rubber, a plastic material such as EVA resin, or the like.

When the thermoplastic elastomer, rubber, or a plastic material is used as the material, hardness of the material is preferably from 5 to 120, more preferably from 40 to 90. By setting hardness within the above preferable range, particularly within the above more preferable range, comfort of the sitting person is appropriately ensured, while the seat panel 31B is prevented from being unwarrantedly deformed as a result of the seat panel 31B being used for a long period of time.

Each of the tubular filling bodies 224 includes a tube 223 and a core 225 inserted into inner space of the tube 223. The tubular filling bodies 224 are coupled, for example by sewing or adhering the tubes 223 together. The tube 223 is made of a material that has lower hardness than the core 225, such as fabric. The core 225 is made of a material that has sufficient strength to endure the weight of the sitting person, such as a hard rubber rod, a rubber tube, and a wooden rod.

The core 225 may have a circular cylindrical shape or a polygonal cylindrical shape, and the concave-convex configuration of the second seating face 22B is determined in accordance with the shape and dimension of the core 225.

A part of the inner space in the tube 223 that is not occupied by the core 225 may be filled with a cushion material. Some examples of the cushion material include cotton, a foaming material such as sponge, thermoplastic elastomer (TPE), rubber, a plastic material such as EVA resin, high density cloth, or the like all of which have a cushion property. With the above structure, comfort of the sitting person is improved.

By means of an end face 221B of the second seating face 22B disposed on the side of the first seating face 21B, a step that is higher than the first seating face 21B is formed. Accordingly, the sitting tool 1B according to the present embodiment also includes the step that suppresses displacement of the pair of ischia 911 and 912 of the sitting person. As similarly to the step height H2 of the end face 221 of the sitting tool 1 according to Embodiment 1, step height H1 of the end face 221B is preferably from 3 mm to 30 mm, more preferably from 3 mm to 20 mm, and even more preferably from 8 mm to 15 mm. Owing to the core 225 present inside the tubular filling body 224, the step is not ruined even when the user of the sitting tool 1B sits thereon.

The sitting tool 1B according to Embodiment 3 is configured to have a trapezoidal shape in horizontal projection, and accordingly, length of the sitting tool 1B in the left-right direction gradually decreases from a front edge portion 222B toward a rear edge portion 221B. However, the shape of the sitting tool 1B in horizontal projection is not limited to the trapezoidal shape, and any shape such as a rectangular and a fan shape is possible.

According to Embodiment 3, since the tube 223 of the tubular filling body 224 is made of a relatively soft material, flexibility is provided to coupling portions between the tubular filling bodies 224. As a result, in addition to the advantageous effects provided by Embodiment 1, it is also possible to roll up the concave-convex sheet 13 in the front-rear direction when the sitting tool 1B is not used and to fold the concave-convex sheet 13 at the coupling portions thereof for storage.

Furthermore, according to Embodiment 3, since the second seating face 22B is formed by faces of the tubes 223 that are made of a relatively soft material, comfort of the sitting person is improved.

Meanwhile, the second seating face 22B may also be formed by a single tubular filling body 224.

The second seating face 22B may also be configured by using a hollow member such as a rubber hose instead of the tubular filling body 224.

The core 225 may also be may be curved or bent to be convex forward or rearward in stead of extending straight in the left-right direction. With the above structure, the tubular filling body 224 would also be curved or bent to be convex forward or rearward in accordance with the shape of the core 225.

The rear panel 31 of the sitting tool 1A according to Embodiment 2 may also be provided in the rear edge portion 221B of the sitting tool 1B.

Embodiment 4

Next, a description is given of Embodiment 4 of a sitting tool according to the present invention with reference to FIG. 5. FIG. 5 is a perspective view illustrating Embodiment 4 of a sitting tool according to the present invention. In
the description of the present embodiment, a description of some of the structures and advantageous effects overlapping with those of the above-described embodiments is omitted, and different points are mainly described.

[0124] A sitting tool 1C according to the present embodiment includes a seat panel 3C and a cushioning face member 4 disposed on an upper face of the seat panel 3C. The seat panel 3C has the same structure as the seat panel 3 constituting the sitting tool seat 1 according to Embodiment 1 described above. That is to say, a first seating face 21C and a second seating face 22C included in the sitting tool 1C are formed by the cushioning face member 4. Accordingly, the sitting tool 1C according to the present embodiment is capable of improving comfort of a sitting person and also capable of relieving the sense of fatigue in the hips during long-hour seating. In the description of the present embodiment, a description of the seat panel 3C is omitted.

[0125] The face member 4 is preferably configured by using, for example, fabric, high density cloth, a foaming material such as sponge, rubber, thermoplastic elastomer (TPE), a plastic material such as EVA resin all of which have a cushion property.

[0126] The face member 4 has a substantially constant thickness entirely, and the seating face 2C formed by the face member 4 is substantially parallel to the upper face of the seat panel 3C. Accordingly, preferable values of step height \( H_1 \) of an end face 221C and angle \( \theta_1 \) between the end face 221C and the first seating face 21C are substantially the same as the step height \( H_2 \) of the end face 221 and the angle \( \theta_2 \) between the end face 221 and the first seating face 21 in the sitting tool 1 according to Embodiment 1, respectively. The same applies to length of the first seating face 21C in the front-rear direction, length of a primary face 10C in the front-rear direction, length of the end face 221C in the left-right direction, and ratios or the like between these lengths.

[0127] It should be noted that, in the sitting tool according to the present invention, the step provided on the seating face needs to be maintained when the user sits on the sitting tool. Therefore, a material and thickness \( T_1 \) of the face member 4 are adjusted such that the step of a desired height is formed after deformation of the end face 221C due to the weight of the sitting person. One example of a preferable value of the thickness \( T_1 \) of the face member 4 is from 1 to 15 mm.

[0128] The sitting tool 1C is formed in a rectangular shape in horizontal projection. However, the shape of the sitting tool 1C in horizontal projection is not limited to the rectangular shape, and any shape such as circular, ellipsoidal, trapezoidal, and fan shapes or a combination of a part of these shapes is possible.

[0129] According to Embodiment 4, in addition to the advantageous effects provided by Embodiment 1, comfort of the sitting person is improved, and the sense of fatigue in the hips is alleviated during long-hour seating.

[0130] In addition, the rear panel 31 of the sitting tool 1A according to Embodiment 2 may also be provided in a rear edge portion 211C of the sitting tool 1C.

Embodiment 5

[0131] Next, a description is given of Embodiment 5 of a sitting tool according to the present invention with reference to FIG. 6. FIG. 6 is a perspective view illustrating Embodiment 5 of a sitting tool according to the present invention. In the description of the present embodiment, a description of some of the structures and advantageous effects overlapping with those of the above-described embodiments is omitted, and different points are mainly described.

[0132] A sitting tool 1D according to the present embodiment is configured by a single seat panel 3D as similarly to the sitting tool 1 according to Embodiment 1. The seat panel 3D differs from the sitting tool 1 according to Embodiment 1 in that the seat panel 3D includes a first seating face 21D that is convex in an arc shape toward a second seating face 22D. In conjunction with the above structure, an end face 221D of the second seating face 22D disposed on the side of the first seating face 21D, as a stepped portion, is curved to be convex toward the front in a planar view. With the above step, the sitting tool 1D according to the present embodiment is capable of fixing the pair of ischia 911 and 911 such that the ischia 911 and 911 are embraced by the step and also capable of absorbing subtle individual differences in ischium position of a sitting person and more effectively improving the seated position of the sitting person. Furthermore, since in the planar view the step further conforms to contour shape of the ischium, the sitting person sits with better comfort. One example of a preferable curvature radius value of the end face 221D in an edge portion on a front side of the end face 221D in the planar view is from 290 to 330 mm.

[0133] Similarly to the sitting tool 1 according to Embodiment 1, the first seating face 21D extends over an entire length of the seat panel 3D in the left-right direction of the sitting tool 1D without being interrupted by the step.

[0134] The sitting tool 1D is formed in a rectangular shape in horizontal projection. However, the shape of the sitting tool 1D in horizontal projection is not limited to the rectangular shape, and any shape such as circular, ellipsoidal, trapezoidal, and fan shapes or a combination of a part of these shapes is possible.

[0135] According to Embodiment 5, in addition to the advantageous effects provided by Embodiment 1, subtle individual differences in ischium position of a sitting person are absorbed, and the seated position of the sitting person is more effectively improved. Furthermore, since in the planar view the step further conforms to contour shape of the ischium, the sitting person sits with better comfort.

[0136] The above advantageous effects are achieved as long as the step, i.e., the end face 221D of the second seating face 22D disposed on the side of the first seating face 21D, is configured to be convex toward the front in the planar view. Accordingly, the shape of the end face 221D that is convex toward the front is not limited to the aforementioned arc shape and may be a "U"-shape or the like. Alternatively, the end face 221D of the second seating face 22D disposed on the side of the first seating face 21D may be curved to be polygonally convex toward the front in the planar view.

[0137] In addition, the rear panel 31 of the sitting tool 1A according to Embodiment 2 may be provided in the rear edge portion 211D of the sitting tool 1D.

Embodiment 6

[0138] Next, a description is given of Embodiment 6 of a sitting tool according to the present invention with reference to FIG. 7. FIG. 7 is a perspective view illustrating Embodiment 6 of a sitting tool according to the present invention. In the description of the present embodiment, a description of some of the structures and advantageous effects overlapping with those of the above-described embodiments is omitted, and different points are mainly described.
A sitting tool 1E according to the present embodiment includes a seat panel 3E formed by folding thick cloth 5 that is not easily shrunk, such as a square floor cushion or a mat. The square floor cushion or the mat may be made of, for example, fabric, high density cloth, a foaming material such as sponge, thermoplastic elastomer (TPE), rubber, a plastic material such as EVA resin, as long as the square floor cushion or the mat is foldable. The seat panel 3E includes a first seating face 21E that supports the hips of a sitting person and a second seating face 22E that supports the upper thighs of the sitting person. In detail, the sitting tool 1E is formed by folding the thick cloth 5 into two and further folding a resulting fold portion toward the rear direction of the sitting tool 1E to a halfway point and then, in the folded state, by adhering or sewing abutting surfaces for fixation. As a result, the second seating face 22E includes a convex curved face 221E that protrudes rearward, as an end face of the second seating face 22E disposed on the side of the first seating face 21E.

The convex curved face 221E forms a step with respect to the first seating face 21E, thus serving to suppress forward displacement of the pair of ischia 911 and 911 of the sitting person. From the above viewpoint, similarly to the step height H1 of the end face 221 of the sitting tool 1 according to Embodiment 1, step height H2 of the convex curved face 221E is preferably from 3 mm to 30 mm, more preferably from 3 mm to 20 mm, and even more preferably from 8 mm to 15 mm.

The sitting tool 1E is formed in a rectangular shape in horizontal projection. However, the shape of the sitting tool 1E in horizontal projection is not limited to the rectangular shape, and any shape such as a trapezoidal shape is possible.

According to Embodiment 6, in addition to the advantageous effects provided by Embodiment 1, since the step is formed by folding the cloth 5, the sitting tool 1E is manufactured without difficulty. Furthermore, since a seating face of the sitting tool 1E is made of a relatively soft material such as the square floor cushion or the mat, comfort of the sitting person is improved.

In addition, the rear panel 31 of the sitting tool 1A according to Embodiment 2 may also be provided in a rear edge portion 211E of the sitting tool 1E.

Embodiment 7

Next, a description is given of Embodiment 7 of a sitting tool according to the present invention with reference to FIG. 8. FIG. 8 is a perspective view illustrating Embodiment 7 of a sitting tool according to the present invention. In the description of the present embodiment, a description of some of the structures and advantageous effects overlapping with those of the above-described embodiments is omitted, and different points are mainly described.

A sitting tool 1F according to the present embodiment includes a seat panel 3F having substantially the same shape as that of the sitting tool 1 according to Embodiment 1. The seat panel 1F includes a seating face 2F, and the seating face 2F includes a first seating face 21F that supports the hips of a sitting person and a second seating face 22F that supports the upper thighs of the sitting person. The second seating face 22F includes an end face 221F and a primary face 10F.

In the sitting tool 1F herein, the end face 221F and portions located forward and rearward of the end face 221F are formed by a hard-material seat panel 230F made of a relatively hard material, and a portion located rearward of the hard-material seat panel 230F is formed by a soft-material seat panel 232F made of a relatively soft material that is softer than the hard-material seat panel 230F. The hard-material seat panel 230F and the soft-material seat panel 232F are fixed by adhering abutting surfaces using an adhesive or sewing the abutting surfaces. The hard-material seat panel 230F and the soft-material seat panel 232F together form the single seat panel 3F.

An upper face of the hard-material seat panel 230F includes, in a middle portion thereof in the front-rear direction, the end face 221F. A portion of the upper face of the hard-material seat panel 230F that is located rearward of the end face 221F forms the first seating face 21F together with an upper face of the soft-material seat panel 232F. The remaining portions (the end face 221F and the primary face 10F) of the upper face of the hard-material seat panel 230F form the second seating face 22F. The hard-material seat panel 230F is preferably made of a material that is unlikely to be depressed under the weight of a human body, similarly to the seat panel 3 of Embodiment 1. Some examples of such a material include a wood material, high density cloth such as canvas that is not easily shrunk, thermoplastic elastomer (TPE), rubber, a plastic material such as EVA resin, or the like.

When the thermoplastic elastomer, rubber, or a plastic material is used as the material, hardness of the material is preferably from 5 to 120, more preferably from 40 to 90. By setting hardness within the above preferable range, particularly within the above more preferable range, comfort of the sitting person is appropriately ensured, while the seat panel 3F, in particular in the end face 221F and in the portions located forward and rearward of the end face 221F, is prevented from being unwantedly deformed as a result of the seat panel 3F being used for a long period of time.

The soft-material seat panel 232F is preferably made of a material that is softer than the hard-material seat panel 230F and that has a cushion property. Some examples of such a material include, for example, fabric, high density cloth, a foaming material such as sponge, rubber, thermoplastic elastomer (TPE), a plastic material such as EVA resin all of which have a cushion property.

When the sitting tool 1F is used, the end face 221F suppresses forward displacement of the pair of ischia 911 and 911 of the sitting person. At this time, in the portions located forward and rearward of the end face 221F, the upper thighs and the ischiua of the sitting person are supported by the hard-material seat panel 230F. As a result, the three-point fixing state of the pelvis 91 is achieved. Additionally, since both the upper thighs and the ischiua of the sitting person are supported by the hard-material seat panel 230F, step height of the end face 221F remains constant before and after the weight of the sitting person is applied.

Then, furthermore, the hips of the sitting person are supported by the soft-material seat panel 232F. As a result, comfort in the hips of the sitting person is improved.

Length L4 of the hard-material seat panel 230F in the front-rear direction that extends rearward from the end face 221F is preferably large enough to support the pair of ischia 991 and 991. In particular, the length L4 is preferably from 10 mm to 100 mm, more preferably from 30 mm to 50 mm.

Preferable values of length L4 of the first seating face 21F in the front-rear direction and length L5 of the primary face 10F of the second seating face 22F in the front-rear direction are the substantially the same as the length L4 of the
first seating face 21 in the front-rear direction and the length L_{12} of the primary face 10 of the second seating face 22 in the front-rear direction in the sitting tool 1 described in Embodiment 1, respectively.

[0154] According to Embodiment 7, in addition to the advantageous effects provided by Embodiment 1, the step height of the end face 221F is maintained constant before and after the width of the sitting person is applied, while comfort in the hips of the sitting person is improved.

[0155] In addition, similarly to the sitting tool 1D (FIG. 6) according to Embodiment 5, the end face 221F of the second seating face 22F disposed on the side of the first seating face 21F may be configured to be convex toward the front.

[0156] Furthermore, the rear panel 31 of the sitting tool 1A according to Embodiment 2 may be provided in a rear edge portion 211F of the sitting tool 1F.

Embodiment 8

[0157] Next, a description is given of Embodiment 8 of a sitting tool according to the present invention with reference to FIG. 9. FIG. 9 is a perspective view illustrating Embodiment 8 of a sitting tool according to the present invention. In the description of the present embodiment, a description of some of the structures and advantageous effects overlapping with those of the above-described embodiments is omitted, and different points are mainly described.

[0158] Similarly to the sitting tool 1D according to Embodiment 5, a sitting tool 1K according to the present embodiment is configured by a single seat panel 3K. The seat panel 3K includes a first seating face 21K that is convex in an arc shape toward a second seating face 22K. In conjunction with the above structure, an end face 221K of the second seating face 22K disposed on the side of the first seating face 21K, as a stepped portion, is curved or bent to be convex toward the front in a planar view. With the above step, the sitting tool 1K according to the present embodiment is capable of fixing the pair of ischias 911 and 911 such that the ischia 911 and 911 are embraced by the step and also capable of absorbing subtle individual differences in ischium position of a sitting person and more effectively improving the seated position of the sitting person. Furthermore, since in the planar view the step further conforms to contour shape of the ischium, the sitting person sits with better comfort. One example of a preferable curvature radius value of the end face 221K is in an edge portion on a front side of the end face 221K in the planar view is from 290 to 330 mm.

[0159] The sitting tool 1K also differs from the sitting tool 1D according to Embodiment 5 in that the sitting tool 1K has, in horizontal projection, an ellipsoidal shape with a long axis in the left-right direction and that lengths of the first seating face 21K and the second seating face 22K in the front-rear direction each increase as the lengths are closer to a center line (a dashed line illustrated in FIG. 9).

[0160] A primary face 10K of the second seating face 22K (the second seating face 22K excluding the end face 221K disposed on the side of the first seating face 21K) supports, in left and right side areas 301 and 301 excluding a middle area 300 in the left-right direction, the pair of upper thighs of a sitting person. When the length of the primary face 10K in the front-rear direction in the left and right side areas 301 and 301 is large, the upper thighs of the sitting person are widely pressed against the primary face 10K accordingly. As a result, comfort of the sitting person is deteriorated. Accordingly, it is preferable that the length of the primary face 10K in the front-rear direction in the left and right side areas 301 and 301 is small. From the above viewpoint, maximum length L_{10} of the primary face 10K of the second seating face 22K in the front-rear direction in the left and right side areas 301 and 301 is configured to be smaller than maximum length L_{11} of the first seating face 21K in the front-rear direction. With the above structure, the upper thighs of the sitting person are prevented from being widely pressed against the second seating face 22K, and the sitting person may sit with comfort for long hours. Moreover, the sitting tool 1K is configured to be fairly compact.

[0161] In the present embodiment, the middle area 300 in the primary face 10K of the second seating face 22K in the left-right direction refers to an area that is located substantially between the pair of upper thighs of the sitting person and that has one-fourth width of length W_{201} of the primary face 10K in the left-right direction about a central line of the primary face 10K in the left-right direction. The middle area 300 of the primary face 10K is not applied with much of the weight transferred from the upper thighs of the sitting person, and therefore, there is no problem with the middle area 300 having a large length in the front-rear direction. However, from the viewpoint of compactness, it is more preferable that the length of the primary face 10K in the front-rear direction is smaller than the maximum length L_{11} of the first seating face 21K in the front-rear direction over the entire areas of the primary face 10K in the left-right direction.

[0162] The first seating face 21K has a function of preventing the sitting tool 1K from being displaced forward by being pressed by the weight transferred from the hip. Accordingly, the length L_{111} of the first seating face 21K in the front-rear direction should be large enough to accept the weight transferred from the hip. On the other hand, however, when the maximum length L_{11} of the first seating face 21K in the front-rear direction is too large, the three-point fixing state of the pelvis 91 may not be achieved. From the above viewpoint, the length L_{111} of the first seating face 21K in the front-rear direction is preferably from 70 mm to 250 mm. More specifically, the maximum length L_{111} of the first seating face 21K in the front-rear direction is, for example for adaptability to male and female adults with standard body types, preferably from 100 mm to 200 mm, more preferably from 150 mm to 170 mm. For adaptability to children of elementary school age or younger, for example, the maximum length L_{111} is preferably from 70 mm to 150 mm. The maximum length L_{111} is also preferably from 200 mm to 250 mm in order for elderly people or the like whose spine 92 is curved to protrude rearward to improve the seated posture as much as possible.

[0163] The second seating face 22K has a function of regulating forward displacement of the pair of ischias 911 and 911 by supporting, in the left and right side areas 301 of the primary face 10K thereof, the upper thighs of the sitting person and by providing the step formed by means of the end face 221K disposed on the side of the first seating face 21K. In this regard, the maximum length L_{10} of the primary face 10K of the second seating face 22K in the front-rear direction in the left and right side areas 301 does not play a role in achievement of the three-point fixing state. When the maximum length L_{10} is large, the upper thighs of the sitting person are widely pressed against the second seating face 22K accordingly, and as a result, comfort of the sitting person is deteriorated. Furthermore, the above structure is not desirable from the viewpoint of compactness. Accordingly, the maximum length L_{10} is preferably small. In particular, the maxi-
mum length $L_{10}$ is preferably smaller than or equal to 150 mm, more preferably smaller than or equal to 90 mm, and even more preferably smaller than or equal to 40 mm. On the other hand, when the maximum length $L_{10}$ is too small, in a case using a material of relatively small hardness, the second seating face $22K$ is easily deformed by the weight transferred from the sitting person, and in a case using a material of relatively large hardness, a part of the second seating face $22K$ presses into the upper thighs of the sitting person, and comfort of the sitting person is deteriorated. From the above viewpoint, the length $L_{11}$ is preferably larger than or equal to 3 mm.

[0164] The length $W_{0}$ of the end face $221K$ of the second seating face $22K$ disposed on the side of the first seating face $21K$ in the left-right direction needs to be larger than a distance between the pair of ischia $911$ and $911$. On the other hand, from the viewpoint of making the sitting tool $1K$ compact, the length $W_{0}$ is preferably from 100 mm to 500 mm, more preferably from 150 mm to 400 mm, and even more preferably from 250 mm to 300 mm.

[0165] The first seating face $21K$ extends over the entire length of the seat panel $3K$ in the left-right direction of the sitting tool $1K$ without being interrupted by the step. To put it another way, there is nothing provided to suppress the pelvic $91$ of the sitting person on left and right sides of the first seating face $21K$. Accordingly, the step does not cause strain to left and right sides of the hips of the sitting person, and the first seating face $21K$ supports the hips of the sitting person. As a result, the sitting person sits with comfort without feeling the sense of strain on the hip. Furthermore, according to the above first seating face $21K$, even when the hips of the sitting person hang out of the left and right sides of the first seating face $21K$, the three-point fixing state is achieved without problem as long as the length of the step in the left-right direction is larger than or equal to the distance between the pair of ischia. Accordingly, the length of the step in the left-right direction may be reduced, for example, into substantially the distance between the pair of ischia, and the sitting tool $1K$ may be configured to be compact.

[0166] The end face $221K$ of the second seating face $22K$ disposed on the side of the first seating face $21K$ forms the step with respect to the first seating face $21K$, thus serving to suppress forward displacement of the pair of ischia $911$ and $911$ of the sitting person. From the above viewpoint, as similarly to the step height $H_{1}$ of the end face $221$ of the sitting tool $1$ according to Embodiment 1, step height $H_{1}$ of the end face $221K$ is preferably from 3 mm to 30 mm, more preferably from 3 mm to 20 mm, and even more preferably from 8 mm to 15 mm.

[0167] Regarding points other than the above, a dimension and a material of the sitting tool $1K$ are similar to those of the sitting tool $1$ according to Embodiment 1, and a description thereof is omitted. A value of angle between the end face $221K$ and the first seating face $21K$ is defined as a value measured on a plane of longitudinal section of the sitting tool $1K$ passing through the central line of the seat panel $3K$ in the left-right direction (the dashed line illustrated in FIG. 9), and a preferable value thereof is the same as the angle $\theta_{1}$ described in Embodiment 1.

[0168] According to Embodiment 8, in addition to the advantageous effects provided by Embodiment 5, the upper thighs of the sitting person are prevented from being widely pressed against the second seating face $22K$, and the sitting person may sit with comfort for long hours. Moreover, the sitting tool $1K$ is configured to be fairly compact.

[0169] In addition, similarly to the sitting tool $1A$ according to Embodiment 2, a rear panel may also be provided in a rear edge portion $211K$ of the sitting tool $1K$.

**Embodiment 9**

[0170] Next, a description is given of Embodiment 9 of a sitting tool according to the present invention with reference to FIG. 10. FIG. 10 is a perspective view illustrating Embodiment 9 of a sitting tool according to the present invention. In the description of the present embodiment, a description of some of the structures and advantageous effects overlapping with those of the above-described embodiments is omitted, and different points are mainly described.

[0171] A sitting tool $1M$ according to the present embodiment includes a seat panel $3M$, and a support body $157$ that is placed on the horizontal face $9$ such as a seating face of a chair (not illustrated) and that supports the seat panel $3M$.

[0172] The seat panel $3M$ has substantially the same structure as that of the seat panel $3K$ constituting the sitting tool $1K$ according to Embodiment 8 illustrated in FIG. 9. A shape, dimension, and material of the seat panel $3M$ are similar to those of the seat panel $3K$, and a description thereof is omitted.

[0173] The support body $157$ is placed on the horizontal face $9$. The support body $157$ includes a bottom panel $157A$ on which the seat panel $3M$ is placed, and the rear panel $157B$ that extends upward and substantially perpendicularly relative to the bottom panel $157A$ from an end portion of the bottom panel $157A$ disposed on the side of the first seating face $21M$ of the seat panel $3M$. The bottom panel $157A$ and the rear panel $157B$ are integrally formed. The rear panel $157B$ may also be configured to extend from the end portion of the bottom panel $157A$ disposed on the side of the first seating face $21M$ of the seat panel $3M$ and to, only partly, extend upward and substantially perpendicularly relative to the bottom panel $157A$.

[0174] The bottom panel $157A$ included in the support body $157$, when placed on the horizontal face $8$, has a function of supporting the seat panel $3M$ on an upper face thereof. The seat panel $3M$ is fixed onto the bottom panel $157A$ included in the support body $157$ by using an adhesive, a fastening device, or the like. As illustrated in FIG. 10, when the bottom panel $157A$ has a shape that is substantially the same as the shape of the seat panel $3M$ in horizontal projection, the sitting tool $1M$ is configured to be compact.

[0175] The rear panel $157B$ included in the support body $157$ has a function of regulating rearward displacement of the sacrum $912$ of a person sitting on the seat panel $3M$. Accordingly, a step formed by means of an end face $221M$ of the second seating face $22M$ disposed on the side of the first seating face $21M$ suppresses forward displacement of the pair of ischia $911$ and $911$, and the rear panel $157B$ of the support body $157$ suppresses rearward displacement of the sacrum $912$, and as a result, the three-point fixing state is achieved. From the above viewpoint, angle between the bottom panel $157A$ and the rear panel $157B$, i.e., angle $\theta$, between an upper face of the seat panel $157A$ and a front face of the rear panel $157B$, is preferably substantially a right angle. In particular, the angle $\theta$ is preferably 90° to 120°, more preferably from 90° to 95°. When the seat panel $3M$ is placed on the support body $157$, height $H_{1,2}$ of the rear panel $157B$ with respect to
the first seating face 21M is preferably from 50 mm to 350 mm, more preferably from 100 mm to 210 mm.

[0176] It is preferable that the support body 157 is of a material which makes the bottom panel 157A less likely to be depressed under the weight of the user and which makes the rear panel 157B less likely to tip rearward. Some examples of such a material include a wood material, a plastic material such as fiber reinforced plastic (FRP), or the like. By configuring the support body 157 as described above, even when the three-point fixing state is not available by placing the seat panel 3M on the seating face of the chair (not illustrated), e.g., when the seat panel of the chair is made of a soft material or when the rear panel of the chair is largely tilted rearward, the three-point fixing state is achieved by placing the support body 157 on the seating face of the chair and placing the seat panel 3M on the support body 157.

[0177] For example, during use of the sitting tool 1M using the chair, the sitting person places the sitting tool 1M on the horizontal face 9, with the rear panel 157B included in the support body 157 facing the wall face 8 such as the front face of the rear panel of the chair (not illustrated). At this time, it is preferable to align a front edge portion 222M of the seat panel 3M with a front edge portion of the horizontal face 9 that is opposite to the wall face 8. With the above structure, when a human body sits on the sitting tool 1M, a part of each thigh at back of the knee is prevented from being placed on the horizontal face 9. As a result, comfort of the sitting person is further improved.

[0178] In order to allow the three-point fixing state, maximum distance L12 between a lower end portion of the rear panel 157B included in the support body 157 and the end face 221M of the second seating face 22M disposed on the side of the first seating face 21M in the front-rear direction of the sitting tool 1M is preferably from 70 mm to 250 mm. More specifically, the length L12 is, for example, for adaptability to male and female adults with standard body types, preferably from 100 mm to 200 mm, more preferably from 150 mm to 170 mm. For adaptability to children of elementary school age or younger, for example, the length L12 is preferably from 70 mm to 150 mm. The length L12 is also preferably from 200 mm to 250 mm in order for elderly people or the like whose spine 92 is curved to protrude rearward to improve the seated posture as much as possible.

[0179] According to Embodiment 9, even when the three-point fixing state is not available by placing the seat panel 3M on the horizontal face such as the seating face of the chair (not illustrated), e.g., when the seat panel of the chair is made of a soft material or when the rear panel of the chair is largely tilted rearward, the three-point fixing state is achieved simply by placing the sitting tool 1M on the horizontal face.

[0180] Furthermore, according to Embodiment 9 also, the sitting tool 1M is configured to be more compact than a chair. Accordingly, the sitting tool 1M is easy to store and carry.

[0181] The seat panel 3M and the support body 157 do not have to be fixed and may be formed separately. In this case, when sitting, a user is able to adjust the maximum distance L12 between the lower end portion of the rear panel 157B included in the support body 157 and the end face 221M of the second seating face 22M disposed on the side of the first seating face 21M in the front-rear direction of the sitting tool 1M, in accordance with pelvis dimension of the user. As a result, subtle individual differences in dimension of the pelvis 91 of a sitting person are addressed. The seat panel 3M may also be provided on a reverse face thereof with an anti-slippering means (not illustrated). The anti-slippering means may be provided, for example, by forming the reverse face into an uneven face or by adhering an anti-slippering sheet to the reverse face. Instead of providing the anti-slippering means, it is also possible to provide a position adjusting means (not illustrated) that adjusts the position of the seat panel 3M with respect to the support body 157 in the front-rear direction. The position adjusting means is provided, for example, by forming a slit extending in the front-rear direction in the bottom panel 157A included in the support body 157 in middle of the support body 157 in the left-right direction and by providing the seat panel 3M with a protrusion extending downward from a bottom face of the seat panel 3M so that the protrusion is displacable in the slit in the front-rear direction. With the position adjusting means, the distance L12 may be adjusted, while the seat panel 3M is prevented from being unwantedly deformed in the left-right direction with respect to the support body 157.

[0182] An anti-slippering means (not illustrated) may also be provided on a reverse face of the bottom panel 157A included in the support body 157. The anti-slippering means may be provided, for example, by forming the reverse face into an uneven face, by adhering an anti-slippering sheet to the reverse face, or by applying an adhesive to the reverse face.

[0183] In addition, any of the seat panel 3 (FIGS. 1 and 2) constituting the sitting tool 1 according to Embodiment 1, the seat panel 3B (FIG. 4) constituting the sitting tool 1B according to Embodiment 3, the seat panel 3C (FIG. 5) constituting the sitting tool 1C according to Embodiment 4, the seat panel 3D (FIG. 6) constituting the sitting tool 1D according to Embodiment 5, the seat panel 3E (FIG. 7) constituting the sitting tool 1E according to Embodiment 6, and the seat panel 3F (FIG. 8) constituting the sitting tool 1F according to Embodiment 7 may be used instead of the seat panel 3M included in the sitting tool 1M according to the present embodiment.

Embodiment 10

[0184] Next, a description is given of Embodiment 10 of a sitting tool according to the present invention with reference to FIG. 11. FIG. 11 is a perspective view illustrating Embodiment 10 of a sitting tool according to the present invention along with a mode of use thereof. In the description of the present embodiment, a description of some of the structures and advantageous effects overlapping with those of the above-described embodiments is omitted, and different points are mainly described.

[0185] A sitting tool 1J according to the present embodiment includes a seat panel 3J, a support body 152 that is placed on a seating face of a chair 156 and that supports the seat panel 3J, and a pair of cushions 153 and 154 that are provided above the other on a front face of a rear panel 152B included in the support body 152.

[0186] The seat panel 3J has substantially the same structure as that of the seat panel 3K constituting the sitting tool 1K according to Embodiment 8 illustrated in FIG. 9. A shape, dimension, and material of the seat panel 3J are similar to those of the seat panel 3K, and a description thereof is omitted.

[0187] The support body 152J is placed on the seating face of the chair 156. The support body 152 includes a bottom panel 152A on which the seat panel 3J is placed, and a rear panel 152B that extends upward and substantially perpendicularly relative to the bottom panel 152A from an end
portion of the bottom panel 152A disposed on the side of the first seating face 21J of the seat panel 3J. The bottom panel 152A and the rear panel 152B are integrally formed. The rear panel 152B may also be configured to extend from the end portion of the bottom panel 152A disposed on the side of the first seating face 21J of the seat panel 3J and to, only partly, extend upward and substantially perpendicularly relative to the bottom panel 152A.

[0188] The bottom panel 152A included in the support body 152, when placed on the seating face of the chair 156, has a function of supporting the seat panel 3J on an upper face thereof. From the above viewpoint, it is preferable that an upper face of the bottom panel 152A has an area that is larger than or substantially equal to that of the seat panel 3J.

[0189] The rear panel 152B included in the support body 152 has a function of regulating rearward displacement of the sacrum 912 of a person sitting on the seat panel 37 via the lower cushion 153. Accordingly, a step formed by means of an end face 221J of the second seating face 22J disposed on the side of the first seating face 21J suppresses forward displacement of the pair of ischia 911 and 911, and the rear panel 152B of the support body 152 suppresses rearward displacement of the seat panel 3J via the lower cushion 153, and as a result, the three-point fixing state is achieved. From the above viewpoint, angle between the bottom panel 152A and the rear panel 152B, i.e., angle 0, between the upper face of the bottom panel 152A and a front face of the rear panel 152B is preferably substantially a right angle, more preferably from 90° to 120°; and even more preferably from 90° to 95°. Height of the rear panel 152B with respect to the first seating face 21J when the seat panel 3J is placed is preferably from 50 mm to 350 mm, more preferably from 100 mm to 210 mm.

[0190] It is preferable that the support body 152 is of a material which makes the bottom panel 152A less likely to be depressed under the weight of a user and which makes the rear panel 152B less likely to tip rearward. Some examples of such a material include a wood material, a plastic material such as fiber reinforced plastic (FRP), or the like. By configuring the support body 152 as described above, even when the three-point fixing state is not available by placing the seat panel 3J on the seating face of the chair 156, e.g., when the seat panel 156 of the chair 156 is made of a soft material or when the rear panel 152B of the chair 156 is largely tilted rearward, the three-point-fixing state is achieved.

[0191] The seat panel 3J is fixed onto the bottom panel 152A included in the support body 152 by using a fixing means 155 such as an adhesive.

[0192] The pair of cushions 153 and 154 is provided one above the other on the front face of the rear panel 152B included in the support body 152, namely, a surface facing a human body. Rear faces of the cushions 153 and 154 are fixed to the rear panel 152B included in the support body 152 by using an adhesive or the like. It is preferable that front faces of the cushions 153 and 154 are parallel to the front face of the rear panel 152B included in the support body 152.

[0193] The lower cushion 153 has a function of fixing the position of the sacrum 912 of the sitting person by abutting against the sacrum 912 and mitigating impact created when the sacrum 912 is pressed against the rear panel 152B. From the above viewpoint, the lower cushion 153 is positioned within a height range of from 50 mm to 350 mm, preferably from 100 mm to 210 mm, from the first seating face 21J of the seat panel 3J being placed, so as to allow the lower cushion 153 to abut against the sacrum 912 of the person sitting on the seat panel 3J.

[0194] The upper cushion 154 has a function of urging the sitting person to maintain the natural S-shaped curve of the spine 92 and mitigating impact created when the spine 92 is pressed against the rear panel 152B.

[0195] The seat panel 3J is formed in an ellipsoidal shape that is long in the left-right direction in horizontal projection. However, the shape of the seat panel 3J in horizontal projection is not limited to the ellipsoidal shape, and any shape such as rectangular, circular, trapezoidal, and fan shapes or a combination of a part of these shapes is possible.

[0196] During use of the sitting tool 1J, the sitting person places the sitting tool 1J on the seating face of the chair 156, with the rear panel 152B included in the support body 152 facing the rear panel 156B of the chair 156. At this time, maximum distance between the lower cushion 153 and the end face 221J of the second seating face 22J disposed on the side of the first seating face 21J in the front-rear direction of the sitting tool 1J is preferably from 70 mm to 250 mm. More specifically, the above distance is, for example, for adaptability to male and female adults with standard body types, preferably from 100 mm to 200 mm, more preferably from 150 mm to 170 mm. For adaptability to children of elementary school age or younger, for example, the above distance is preferably from 70 mm to 150 mm. The above distance is also preferably from 200 mm to 250 mm in order for elderly people or the like whose spine 92 is curved to protrude rearward to improve the seated posture as much as possible.

[0197] According to Embodiment 10, in addition to the advantageous effects provided by Embodiment 9, the lower cushion 153 abuts against the sacrum 912 of the sitting person and fixes the position of the sacrum 912, and also mitigates impact created when the sacrum 912 is pressed against the rear panel 152B. Furthermore, the upper cushion 154 urges the sitting person to maintain the natural S-shaped curve of the spine 92 and mitigates impact created when the spine 92 is pressed against the rear panel 152B.

[0198] In the present embodiment, it is also possible to provide one of the lower cushion 153 and the upper cushion 154. When the lower cushion 153 is provided alone, height of the rear panel 152B included in the support body 152 may be reduced that much more, resulting in a more compact sitting tool 1J.

[0199] The support body 152 and the seat panel 3J do not have to be fixed and may be formed separately. In this case, when sitting, a user is able to adjust the distance between the lower cushion 153 and the end face 221J of the second seating face 22J disposed on the side of the first seating face 21J of the seat panel 3J, in accordance with pelvis dimension of the user. As a result, subtle individual differences in dimension of the pelvis 91 of a sitting person are addressed. The seat panel 3J may also be provided on a reverse face thereof with an anti-slipping means (not illustrated). The anti-slipping means may be provided, for example, by forming the reverse face into an uneven face or by adhering an anti-slipping sheet to the reverse face. Instead of providing the anti-slipping means, it is also possible to provide a position adjusting means (not illustrated) that adjusts the position of the seat panel 3J with respect to the support body 152 in the front-rear direction. The position adjusting means is provided, for example, by forming a slit extending in the front-rear direction in the bottom panel 152A included in the support body 152 in middle of the
support body 152 in the left-right direction and by providing the seat panel 3J with a protrusion extending downward from a bottom face of the seat panel 37 so that the protrusion is displaceable in the slit in the front-rear direction. With the position adjusting means, the distance between the lower cushion 153 and the end face 221 of the seat panel 37 may be adjusted, while the seat panel 37 is prevented from being unintentionally deformed in the left-right direction with respect to the support body 152.

[0200] An anti-slipping means (not illustrated) may also be provided on a reverse face of the bottom panel 152A included in the support body 152. The anti-slipping means may be provided, for example, by forming the reverse face of the bottom panel 152A into an uneven face, by adhering an anti-slipping sheet to the reverse face of the bottom panel 152A, or by applying an adhesive to the reverse face of the bottom panel 152A.

[0201] In addition, any of the seat panel 3 (FIGS. 1 and 2) constituting the sitting tool 1 according to Embodiment 1, the seat panel 3B (FIG. 4) constituting the sitting tool 1B according to Embodiment 3, the seat panel 3C (FIG. 5) constituting the sitting tool 1C according to Embodiment 4, the seat panel 3D (FIG. 6) constituting the sitting tool 1D according to Embodiment 5, the seat panel 3E (FIG. 7) constituting the sitting tool 1E according to Embodiment 6, and the seat panel 3F (FIG. 8) constituting the sitting tool 1F according to Embodiment 7 may be used instead of the seat panel 3J included in the sitting tool 1J according to the present embodiment.

Embodiment 11

[0202] Next, a description is given of Embodiment 11 of a sitting tool according to the present invention with reference to FIGS. 12(a) and 12(b). FIG. 12(a) is a perspective view illustrating Embodiment 11 of a sitting tool according to the present invention. FIG. 12(b) is a sectional view of the sitting tool taken along a line C-C in FIG. 12(a). In the description of the present embodiment, a description of some of the structures and advantageous effects with overlapping with those of the above-described embodiments is omitted, and different points are mainly described.

[0203] A sitting tool 1N according to the present embodiment includes a seat panel 3N, and a support body 158 that is placed on a horizontal face such as a seating face of a chair and that supports the seat panel 3N.

[0204] The seat panel 3N differs from the seat panel 3K constituting the sitting tool 1K according to Embodiment 8 as illustrated in FIG. 9 in that a part of the seat panel 3N on the first seating face 21N is formed in a corrugated shape. Specifically, an upper face (first seating face 21N) and a reverse face of a part of the first seating face 21N in the seat panel 3N has the corrugated shape in which a curved ridge portion and a curved recessed portion extending in the front-rear direction are alternately coupled in the left-right direction. In the seat panel 3N, the part of the first seating face 21N and a part of a second seating face 22N are integrally formed.

[0205] The seat panel 3N is preferably of a material that is unlikely to be depressed under the weight of a human body. Some examples of such a material include a wood material, high density cloth such as canvas that is not easily shrunk, thermoplastic elastomer (TPE), rubber, a plastic material such as EVA resin, or the like.

[0206] When the thermoplastic elastomer, rubber, or a plastic material is used as the material, hardness of the material is preferably from 5 to 120, more preferably from 40 to 90. By setting hardness within the above preferable range, particularly within the above more preferable range, comfort of a sitting person is appropriately ensured, while the seat panel 3N is prevented from being unintentionally deformed as a result of the seat panel 3N being used for a long period of time.

[0207] When the part of the seat panel 3N on the first seating face 21N is formed in the corrugated shape and the material of the seat panel 3N is thermoplastic elastomer, rubber, a plastic material such as EVA resin, or the like that has the aforementioned hardness, when sitting, a user is able to press the ridge portions 140N provided on the upper face of the part of the seat panel 3N on the first seating face 21N somewhat downward by the weight of the user. Then, the high hardness of the seat panel 3N prevents excessive deformation from occurring in a step portion, and since the part of the seat panel 3N on the first seating face 21N is slightly depressed, this part serves like a cushion. Consequently, seating comfort of the sitting person is improved.

[0208] Preferable values of maximum length Lp of a primary face 10N of the second seating face 22N (the second seating face 22N excluding the end face 221N disposed on the side of the first seating face 21N) in the front-rear direction in left and right side areas 305 and 305 excluding a middle area 304, maximum length L14 of the first seating face 21N in the front-end direction, length Wn of the end face 221N of the second seating face 22N in the left-right direction, height h13 of the step formed by means of the end face 221N are the same as those of the length Lp, the length L14, length Wn, and the height h13 of the seat panel 3K illustrated in FIG. 9, respectively. The height h13 of the step formed by means of the end face 221N refers to height of the end face 221N measured from an upper end of a ridge portion 140N on the upper face of the first seating face 21N.

[0209] As for some similarities with the seat panel 3K illustrated in FIG. 9, i.e., that the first seating face 21N extends over an entire length of the seat panel 3N in the left-right direction of the sitting tool 1N without being interrupted by the step formed by means of the end face 221N, and that the end face 221N is curved or bent to be convex toward the front in a planar view, a description thereof is omitted.

[0210] The support body 158 that is placed on the horizontal face includes a bottom panel 158A on which the seat panel 3N is placed, a first rear panel portion 158C, and a second rear panel portion 158B. The first rear panel portion 158C is formed integrally with the bottom panel 158A and extends upward from a rear end portion of the bottom panel 158A. The second rear panel portion 158B is formed separately from the bottom panel 158A and the first rear panel portion 158C and fixed to a front face of the first rear panel portion 158C by an optional fixing means. Accordingly, the first rear panel portion 158C and the second rear panel portion 158B substantially form a rear panel of the support body 158 included in the sitting tool 1N. The rear panel of the sitting tool 1N extends from the end portion of the bottom panel 158A disposed on the side of the first seating face 21N of the seat panel 3N, and also extends, in the second rear panel portion 158B, upward and substantially perpendicularly relative to the bottom panel 158A. However, the bottom panel 158A, the first rear panel portion 158C, and the second rear panel portion 158B may also be integrally formed.

[0211] The support body 158 differs from the support body 157 illustrated in FIG. 10 mainly in that an upper face of the bottom panel 158A is provided with a plurality of grooves
159 extending in the front-rear direction. As can be clearly seen from FIG. 12(b), the grooves 159 are sized to be engaged with the ridge portions 141N provided on the reverse face of the seat panel 3N, so that the seat panel 3N is slidably supported by the support body 157 in the front-rear direction. With the above structure, the user is able to adjust the position of the seat panel 3N in the front-rear direction with respect to the second rear panel portion 158B included in the support body 158 and also be able to prevent the seat panel 3N from being unwantedly displaced in the left-right direction with respect to the support body 158.

[0212] As illustrated in FIGS. 12(a) and 12(b), when the length of the grooves 159 provided in the support body 158 in the front-rear direction is larger than the length of the seat panel 3N in the front-rear direction, the ridge portions 141N provided on the reverse face of the seat panel 3N are more stably guided by the grooves 159 when sliding in the grooves 159.

[0213] A preferable value of angle between the bottom panel 158A included in the support body 158 and the second rear panel portion 158B, i.e., angle $\theta_1$ between an upper face of a part of the bottom panel 158A that extends substantially horizontally and a front face of the rear panel 158B, is substantially the same as the angle $\theta_1$ formed in FIG. 10.

[0214] According to Embodiment 11, in addition to the advantageous effects provided by Embodiment 9, the seat panel 3N is capable of sliding on the support body 158 in the front-rear direction in engagement with the support body 158. As a result, the user is able to adjust the position of the seat panel 3N in the front-rear direction with respect to the second rear panel portion 158B included in the support body 158 and also be able to prevent the seat panel 3N from being unwantedly displaced in the left-right direction with respect to the support body 158.

[0215] An anti-slippering means (not illustrated) may also be provided on a reverse face of the bottom panel 158A included in the support body 158. The anti-slippering means may be provided, for example, by forming the reverse face of the bottom panel 158A into an uneven face, by adhering an anti-slippering sheet to the reverse face of the bottom panel 158A, or by applying an adhesive to the reverse face of the bottom panel 158A.

[0216] Although in the present embodiment the seat panel 3N and the support body 158 are combined to form the sitting tool 1N, the support body 158 may be omitted, and the sitting tool may be formed solely by the seat panel 3N.

[0217] Any of the sitting tools according to Embodiments 1-11 may include a cover (not illustrated) that covers the entire sitting tool. Such a cover may be configured, for example, by a sheet made of stretchy fabric or the like.

[0218] Next, a description is given of Embodiments 1-3 of a chair according to the present invention with reference to FIGS. 13-16. Note that the embodiments described below are merely for example, and the present invention is not limited thereto.

[0219] A chair according to the present invention basically includes substantially the same seating face as the seating face included in the aforementioned sitting tool according to the present invention. Accordingly, the seating face included in the sitting tool according to the aforementioned Embodiments may be applied to a chair according to the present invention.

[0220] In the following, a description is given of Embodiment 1 of a chair according to the present invention with reference to FIGS. 13 and 14. FIG. 13 is a perspective view illustrating Embodiment 1 of a chair according to the present invention. FIG. 14 is a sectional view taken along a line B-B in FIG. 13, illustrating a state where a human body sits in the chair illustrated in FIG. 13. A chair 101 according to the present embodiment includes a first seat panel 108 forming a first seating face 21G, a second seat panel 109 forming a second seating face 22G, a rear panel 103, a leg portion 104, and a connecting panel 105. The first seat panel 108 and the second seat panel 109 form a single seat panel 110. The connecting panel 105 connects the first seat panel 108, the second seat panel 109, and the leg portion 104 each other. A pair of the leg portion 104 and the connecting panel 105 is provided on each of left and right sides of the chair 101, and each leg portion 104 diverges to a front and a rear side of the chair 101. As a result, the chair 101 is supported by four legs to stand.

[0222] The rear panel 103 and the seat panel 110 are combined such that in a longitudinal sectional view in the front-rear direction a front face of the rear panel 103 disposed on the side of the seat panel 110 (a surface facing a human body) extends upward and substantially perpendicularly relative to the first seating face 21G. The rear panel 103 and the seat panel 110 are then sandwiched from the left and right sides by the connecting panels 105 and 105 and coupled with each other. The rear panel 103, the first seat panel 108, the second seat panel 109, and the connecting panel 105, after coupled with each other, are also coupled with the leg portion 104 as a result of the connecting panel 105 and the leg portion 104 being fastened using a bolt 106 or the like. The front face of the rear panel 103 may also partly extend upward and substantially perpendicularly relative to the first seating face 21G.

[0223] The second seating face 22G extends contiguously from the first seating face 21G toward the front of the chair 101. The second seating face 22G forms a step higher than the first seating face 21G by means of an end face 221G of the second seating face 22G disposed on the side of the first seating face 21G. Similarly to the seating face 2D included in the sitting tool 1D according to Embodiment 5 illustrated in FIG. 6, the seating face 2G includes the first seating face 21G that is convex in an arc shape toward the second seating face 22G. In conjunction with the above structure, the end face 211G of the second seating face 22G disposed on the side of the first seating face 21G is curved or bent to be a convex toward the front of the chair 101 in a planar view. The seating face 2G differs from the seating face 2D in that the length of the second seating face 22G in the front-rear direction is configured to be larger in the vicinity of a central line (a dashed line illustrated in FIG. 13) in the left-right direction. The first seat panel 108 and the second seat panel 109 are fastened together by a fastening device 107 such as a pair of left and right bolts, with the second seat panel 109 overlappingly disposed on a front part of a surface of the first seat panel 108.

[0224] The first seating face 21G is formed by a part of the surface of the first seat panel 108 that is not overlapped with the second seat panel 109. The second seating face 22G is an upper face of the second seat panel 109. The second seating face 22G has inclined rear end face, i.e. the end face 221G
disposed on the side of the first seating face 21, and the second seating face 22G adjoins the first seating face 21G on the end face 221G.

[0225] When a human body sits in the chair 101, the sitting person places the hips on the first seating face 21G and places the upper thighs on the second seating face 22G, so that the first seating face 21G supports the hips of the sitting person, and the second seating face 22G supports the upper thighs of the sitting person. At this time, the pair of ischia 911 and 911 of the sitting person comes into abutment with the end face 221G, and a step formed by means of the end face 221G suppresses forward displacement of the ischias 911 and 911. The sacrum 912 of the sitting person also comes into abutment with the front face of the rear panel 103, and the front face of the rear panel 103 suppresses rearward displacement of the sacrum 912. As a result, the three-point fixing state is achieved.

[0226] The first seating face 21G extends over the entire length of the seat panel 110 in the left-right direction of the chair 101 without being interrupted by the step. Accordingly, the step does not cause strain to left and right sides of the hips of the sitting person, and the first seating face 21G supports the hips of the sitting person. As a result, the sitting person sits with comfort without feeling the sense of strain on the hip.

[0227] In the planar view, the end face 221G of the second seating face 22G disposed on the side of the first seating face 21G is curved to be a convex toward the front. With the step formed by means of the end face 221G as described above, the chair 101 according to the present embodiment is capable of fixing the pair of ischias 911 and 911 such that the ischia 911 and 911 are embraced by the step and also capable of absorbing subtle individual differences in ischium position of a sitting person and more effectively improving the seated position of the sitting person. Furthermore, since in the planer view the step further conforms to contour shape of the ischium, the sitting person sits with better comfort. One example of a preferable curvature radius value of the end face 221G in an edge portion on a front side of the end face 221G in the planar view is from 290 to 330 mm.

[0228] A primary face 10G of the second seating face 22G (the second seating face 22G excluding the end face 221G disposed on the side of the first seating face 21G) supports, in left and right side areas 303 and 303 excluding a middle area 302 in the left-right direction, the pair of upper thighs of the sitting person. When the length of the primary face 10G in the front-rear direction in the left and right side areas 303 and 303 is large, the upper thighs of the sitting person are widely pressed against the primary face 10G accordingly. As a result, comfort of the sitting person is deteriorated. Accordingly, it is preferable that the length of the primary face 10G in the front-rear direction in the left and right side areas 303 and 303 is small. From the above viewpoint, maximum length L7 of the primary face 10G of the second seating face 22G in the front-rear direction in the left and right side areas 303 and 303 is configured to be smaller than maximum length L8 of the first seating face 21G in the front-rear direction. With the above structure, the upper thighs of the sitting person are prevented from being widely pressed against the second seating face 22G, and the sitting person may sit with comfort for long hours. Moreover, the chair 101 is configured to be fairly compact.

[0229] In the present embodiment, the middle area 302 in the left-right direction of the primary face 10G of the second seating face 22G refers to an area that is located substantially between the pair of upper thighs of the sitting person and that has one-fourth width of length of the primary face 10G in the left-right direction about a central line of the primary face 10G in the left-right direction.

[0230] It is necessary to achieve the three-point fixing state by fitting the entire hips of the sitting person in space between the end face 221G and the front face of the rear panel 103. From the above viewpoint, maximum length L9 of the first seating face 21G in the front-rear direction of the chair 101 is preferably from 70 mm to 250 mm. More specifically, the maximum length L9 is, for example, for adaptability to male and female adults with standard body types, preferably from 100 mm to 200 mm, more preferably from 150 mm to 170 mm. For adaptability to children of elementary school age or younger, for example, the maximum length L9 is preferably from 70 mm to 150 mm. The maximum length L9 is also preferably from 200 mm to 250 mm in order for elderly people or the like whose spine 92 is curved to protrude rearward to improve the seated posture as much as possible.

[0231] The second seating face 22G has a function of regulating forward displacement of the pair of ischia 911 and 911 by supporting, in the left and right side areas 303 and 303 of the primary face 10G thereof, the upper thighs of the sitting person and by forming the step formed by means of the end face 221 of the second seating face 22G disposed on the side of the first seating face 21G. In this regard, the maximum length L7 of the primary face 10G of the second seating face 22G in the front-rear direction of the chair 101 in the left and right side areas 303 does not play a role in achievement of the three-point fixing state. Furthermore, when the maximum length L7 is large, the upper thighs of the sitting person are widely pressed against the second seating face 22G accordingly, and as a result, comfort of the sitting person is deteriorated. Accordingly, the maximum length L7 is preferably small. In particular, the maximum length L7 is preferably smaller than or equal to 150 mm. The maximum length L7 is more preferably smaller than or equal to 90 mm, and even more preferably smaller than or equal to 40 mm. On the other hand, when the maximum length L7 is too small, in a case using a material of relatively small hardness, the second seating face 22G is easily deformed by the weight transferred from the sitting person, and in a case using a material of relatively large hardness, a part of the second seating face 22G presses into the upper thighs of the sitting person, and comfort of the sitting person is deteriorated. From the above viewpoint, the length L7 is preferably larger than or equal to 5 mm.

[0232] Height H5 of the rear panel 103 with respect to the first seating face 21G is preferably from 50 mm to 350 mm, more preferably from 100 mm to 210 mm. Angle θ5 between the front face of the rear panel 103 and the first seating face 21G is preferably substantially a right angle so that the three-point fixing state is achieved. In particular, the angle θ5 is preferably from 90° to 120°, more preferably from 90° to 95°.

[0233] According to the chair 101 of Embodiment 1, maximum length of the seating face 2G in the front-rear direction may be, for example, from 150 mm to 170 mm, which substantially equals the length from the sacrum 912 to the upper thighs when a human body sits. As a result, compared with a conventional chair in which length of a seating face in the front-rear direction substantially equals length from the sacrum to the lower thighs when a human body sits, the chair 101 according to the present embodiment is more compact and easier to store.
In the chair according to the present embodiment, the first seat panel 108 and the second seat panel 109 may be integrally formed.

It is also possible to provide the fastening device 107 with an adjusting mechanism (not illustrated) that adjusts a clearance between the rear panel 103 and the second seating face 22H. One example of the above case is to provide a slit (through hole) in accordance with a desired size of the clearance that is to be adjusted in the first seat panel 108 and/or the second seat panel 109 so that the fastening device 107 is replaceable in the front-rear direction.

It is also possible to provide a reclining mechanism that reclines the rear panel 103, the seat panel 110, and the connecting panel 105 all together with respect to the leg portion 104 about the bolt 106 as a rotational axis. By providing the reclining mechanism, when feeling strain on the hips resulting from the same posture maintained for long hours, a user of the chair 101 is able to alleviate the strain on the hips by temporarily reclining the rear panel 103, the seat panel 110, and the connecting panel 105.

Although in the present embodiment the leg portion 104 is provided on the rear panel 103, the leg portion may be provided around a middle point (center of gravity) or a reverse side of the seating face. In this case, a known elevating means such as a gas cylinder may also be provided in the leg portion.

It is also possible to configure the chair 101 to be foldable so as to make the chair 101 even easier to store.

The middle area 302 in the primary face 10G is not applied with much of the weight transferred from the upper thighs of the sitting person, and therefore, as illustrated in FIG. 13, there is no problem with the middle area 302 having a large length in the front-rear direction than the length of the left and right side areas 303 and 304 in the primary face 10G. However, from the viewpoint of compactness, it is preferable that the length of the primary face 10G in the front-rear direction is smaller than the maximum length L1 of the first seating face 21H in the front-rear direction over the entire areas of the primary face 10G in the left-right direction.

In addition, the seating face 2G included in any of the seating tool 1F (FIG. 2A) according to Embodiment 1, the seating tool 1B (FIG. 2B) according to Embodiment 3, the seating tool 1C (FIG. 2C) according to Embodiment 4, the seating tool 1E (FIG. 5) according to Embodiment 6, the seating tool 1F (FIG. 6) according to Embodiment 7, the seating tool 1K (FIG. 9) according to Embodiment 8, and the seating tool 1N (FIG. 12) according to Embodiment 11 may be used instead of the seating face 2G included in the chair 101 according to the present embodiment.

Next, a description is given of Embodiment 2 of a chair according to the present invention with reference to FIG. 15. FIG. 15 is a perspective view illustrating Embodiment 2 of a chair according to the present invention. A chair 131 according to the present embodiment includes a seat panel 135 including a seating face 21H, a rear panel 133, a leg portion 134, and a fixing device for fixing the rear panel 133 to the seat panel 135.

The seating face 21H has substantially the same structure as the seating face of the seating tool 1D according to Embodiment 5 illustrated in FIG. 6. Specifically, the seating face 21H includes a first seating face 21H and a second seating face 221H. In a planar view, an end face 221H of the second seating face 221H disposed on the side of the first seating face 21H is curved to be a convex toward the front. By means of the end face 221H disposed on the side of the first seating face 21H, the second seating face 221H forms a step.

The fixing device 138 includes a pair of poles that extends in the upper-lower direction and that are spaced apart in the left-right direction. The fixing device 138 is attached to a rear end face of the seat panel 135. A front face of the rear panel 133 disposed on the side of the seat panel 135 extends upward and substantially perpendicularly relative to the first seating face 21H. That is to say, angle θ4 between the front face of the rear panel 133 and the first seating face 21H in a longitudinal section in the front-rear direction is preferably substantially a right angle so that the three-point fixing state is achieved. In particular, the angle θ4 is preferably from 90° to 120°, more preferably from 90° to 95°.

Although, as illustrated, the rear panel 133 is spaced apart from the seat panel 135 in the upper-lower direction, the rear panel 133 has substantially the same function as the rear panel 103 included in the chair 101 according to Embodiment 1. That is to say, position of the rear panel 133 with respect to the first seating face 21H in the upper-lower direction is set so that the rear panel 133 may abut against the sacrum 912 of a sitting person. From the above viewpoint, distance H4 between a lower edge portion of the rear panel 133 and the first seating face 21H in the upper-lower direction is preferably from 10 mm to 250 mm, more preferably from 30 mm to 70 mm.

Length of a primary face 10H of the second seating face 221H in the front-rear direction is configured to be smaller than maximum length of the first seating face 21H in the front-rear direction over entire areas of the primary face 10H in the left-right direction. With the above structure, the upper thighs of the sitting person are prevented from being widely pressed against the second seating face 221H, and the sitting person may sit with comfort for long hours. Moreover, the chair 131 is configured to be fairly compact.

The first seating face 21H extends over the entire length of the seat panel 135 in the left-right direction of the chair 131 without being interrupted by the step. To put it another way, there is nothing provided to suppress the pelvis 91 of the sitting person on left and right sides of the first seating face 21H. Accordingly, the step does not cause strain to left and right sides of the hips of the sitting person, and the first seating face 21H supports the hips of the sitting person.

As a result, the sitting person sits with comfort without feeling the sense of strain on the hip. Furthermore, even when the hips of the sitting person hang out of the left and right sides of the first seating face 21H, the three-point fixing state is achieved without problem as long as the length of the step in the left-right direction is larger than or equal to a distance between the pair of ischi 911 and 911. Accordingly, the length of the step in the left-right direction may be reduced, for example, into substantially the distance between the pair of ischi 911 and 911. The chair 131 may be configured to be compact.

When a human being sits in the chair 131, the pair of ischi 911 and 911, which is located below the pelvis 91, is held by the step formed by means of the end face 221H, and the sacrum 912 of the human body abuts against the rear panel 133. As a result, the pelvis 91 is in the three-point fixing state. Thus, substantially the same advantageous effects as in Embodiment 1 are provided.

In addition, various dimensions, such as maximum length of the first seating face 21H in the front-rear direction
of the chair 131, maximum length of the second seating face 22H excluding the end face 221H of the second seating face 22H disposed on the side of the first seating face 21H (i.e. of the primary face 10H) in the front-rear direction of the chair 131 in an area excluding a middle area in the left-right direction of the chair 131, and the like, are substantially the same as those described in Embodiment 1 (FIG. 13).

Embodiment 3

[0249] Next, a description is given of Embodiment 3 of a chair according to the present invention with reference to FIG. 16. FIG. 16 is a perspective view illustrating Embodiment 3 of a chair according to the present invention. A chair 165 according to the present embodiment includes a seat panel 156A, a rear panel 156B, a step forming member 161 that is fixed on the seating face, and a wall face forming member 163 that is fixed on a front face of the rear panel 1563. The chair 165 may be configured by attaching the step forming member 161 and the wall face forming member 163 to the known chair 156 including the rear panel 1563. A step forming member 161 is combined with a part of the seat panel 156A that is located rearward of the step forming member 161 (a part located between the step forming member 161 and the rear panel 156B) to form the single seat panel.

[0250] An upper face 170 and a rear end face 171 of the step forming member 161 constitutes the primary face of the second seating face and the end face of the second seating face disposed on the side of the first seating face, respectively, like those in the sitting tools and the chairs according to the above-described embodiments. An upper surface of the part of the seat panel 156A that is located rearward of the step forming member 161 and forward of the wall face forming member 163 also constitutes the first seating face, like that in the sitting tools and the chairs according to the above-described embodiments. The step forming member 161 forms a step with respect to the upper face of the seat panel 156A. When a human body sits in the chair 165, the upper face of the part of the seat panel 156A that is located rearward of the step forming member 161 and forward of the wall face forming member 163, which constitutes the first seating face, supports the hips of the sitting person, and the upper face 170 of the step forming member 161, which constitutes the second seating face, supports the upper thighs of the sitting person. The rear end face 171 of the step forming member 161, which constitutes the step, also suppresses forward displacement of the pair of ischia 911 and 911. A shape and dimension of the upper face 170 of the step forming member 161 are substantially the same as those of the primary face 10K of the second seating face 22K included in the sitting tool 1K according to Embodiment 8 illustrated in FIG. 9, and a description thereof is omitted.

[0251] The step forming member 161 is attached to the upper face of the seat panel 156A by using a fixing means 162 such as an adhesive and a hook-and-loop fastener.

[0252] The wall face forming member 163 is attached to the front face of the rear panel 156B by using a fixing means 162 such as an adhesive and a hook-and-loop fastener. The wall face forming member 163 and the rear panel 156B substantially constitute the rear panel of the chair 165. The front face of the rear of the chair 165 disposed on the side of the seat panel extends, in part thereof corresponding to a front face of the wall face forming member 163, upward and substantially perpendicularly relative to the first seating face. The front face of the wall face forming member 163 suppresses rearward displacement of the sacrum 912 of the person sitting in the chair 156. From the above viewpoint, the wall face forming member 163 is arranged preferably within a height range of from 50 mm to 350 mm, more preferably from 100 mm to 210 mm, from the upper face of the bottom panel 156A so that the wall face forming member 163 is capable of abutting against the sacrum 912 of the person sitting in the chair 156. Furthermore, angle \( \theta \), between the front face of the wall face forming member 163 and the seating face of the chair 156 in a longitudinal section in the front-rear direction is preferably substantially a right angle. In particular, the angle \( \theta \) is preferably from 90° to 120°, more preferably from 90° to 95°.

[0253] The step forming member 161 and the wall face forming member 163 are preferably of a material that is unlikely to be deformed under a weight of a user. Some examples of such a material include a wood material, high density cloth such as canvas that is not easily shrunk, thermoplastic elastomer (TPE), rubber, a plastic material such as EVA resin, or the like.

[0254] When the thermoplastic elastomer, rubber, or a plastic material is used as the material, hardness of the material is preferably from 5 to 120, more preferably from 40 to 90. By setting hardness within the above preferable range, particularly within the above more preferable range, comfort of the sitting person is appropriately ensured, while the step forming member 161 and the wall face forming member 163 are prevented from being unwantedly deformed as a result of the step forming member 161 and the wall face forming member 163 being used for a long period of time.

[0255] Maximum length of the first seating face in the front-rear direction of the chair 165, i.e., maximum distance between the front face of the wall face forming member 163 and a lower end of the rear end face 171 of the step forming member 161 in the front-rear direction of the chair 165, is from 70 mm to 250 mm. The above distance is, for example, for adaptability to male and female adults with standard body types, preferably from 100 mm to 200 mm, more preferably from 150 mm to 170 mm. For adaptability to children of elementary school age or younger, for example, the above distance is preferably from 70 mm to 150 mm. The above distance is also preferably from 200 mm to 250 mm in order for elderly people or the like whose spine 92 is curved to protrude rearward to improve the seated posture as much as possible.

[0256] According to Embodiment 3, the user is able to achieve the chair 165 that is capable of maintaining the three-point fixing state, simply by attaching the step forming member 161 and the wall face forming member 163 to a chair 156 that would otherwise not have maintained the three-point fixing state. Accordingly, when attaching the step forming member 161 and the wall face forming member 163, the user is able to appropriately adjust maximum distance between the wall face forming member 163 and the step forming member 161 in the front-rear direction within the aforementioned value range, in accordance with dimension of the pelvis 91 of the user.

[0257] In addition, when the rear panel 156B included in the chair 165 is substantially perpendicular relative to the seat panel 156A, there is no need of using the wall face forming member 163.

[0258] Various dimensions, such as maximum length of the second seating face excluding the end face of the second
seating face disposed on the side of the first seating face, namely, of the primary face 170, in the front-rear direction of the chair 165 in an area excluding a middle area in the left-right direction of the chair 165, are substantially the same as those described in Embodiment 1 (FIG. 13).

[0259] Although the embodiments of a sitting tool and a chair according to the present invention has been described, the present invention is not limited to the above-described embodiments, and various modifications and changes are also included. For example, a technical element described in one embodiment may be applied to another embodiment.

INDUSTRIAL APPLICABILITY

[0260] A sitting tool and a chair according to the present invention is particularly suited for use as those used for long-time work, driving, studying, theater viewing, sports watching, and the like. Furthermore, because of compactness, a sitting tool and a chair according to the present invention are suited to be placed on or used as a chair built into a building, in particular, a large-scale building such as a lecture hall and a stadium, an office chair, a chair or a bed for caregiving, a table chair, a public bench, a vehicle seat, an airplane seat, a lift chair in a skiing ground, a wheelchair, or the like.

REFERENCE SIGNS

[0261] 1, 1A, 1B, 1C, 1D, 1E, 1F, 1J, 1K, 1M, 1N sitting tool
[0262] 2, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2J, 2K, 2M, 2N seating face
[0263] 3, 3A, 3B, 3C, 3D, 3E, 3F, 3J, 3K, 3M, 3N seat panel
[0264] 4 face member
[0265] 5 cloth
[0266] 7, 101, 131, 156, 165 chair
[0267] 8 wall face
[0268] 9 horizontal face
[0269] 10, 10B, 10C, 10D, 10E, 10F, 10G, 10H, 10I, 10J, 10K, 10M, 10N primary face
[0270] 11, 11F, 11J reverse face
[0271] 12 rear seat panel
[0272] 13 concave-convex sheet
[0275] 31 rear panel of sitting tool
[0276] 71, 110, 135, 156A seat panel of chair
[0277] 72 seating face of chair
[0278] 73, 103, 133, 156B rear panel of chair
[0279] 79 pelvis
[0280] 92 spine
[0281] 104, 134 leg portion
[0282] 105 connecting panel
[0283] 106 bolt
[0284] 107 fastening device
[0285] 108 first seat panel
[0286] 109 second seat panel
[0287] 138 fixing device
[0288] 140N ridge portion on upper face side
[0289] 141N ridge portion on reverse face side
[0290] 152, 157, 158 support body
[0291] 152A, 157A, 158A bottom panel of support body
[0292] 152B, 157B rear panel of support body
[0293] 153 lower cushion
[0294] 154 upper cushion
[0295] 155, 162, 164 fixing means
[0296] 158B second rear panel portion of support body
[0297] 158C first rear panel portion of support body
[0298] 159 groove
[0299] 161 step forming member
[0300] 163 wall face forming member
[0301] 170 upper face of step forming member
[0302] 171 rear end face of step forming member
[0303] 211, 211B, 211C, 211D, 211E, 211F, 211G, 211H, 211J, 211K, 211M, 211N rear edge portion
[0304] 221, 221B, 221C, 221D, 221E, 221F, 221G, 221H, 221J, 221K, 221M, 221N end face of second seating face disposed on the side of first seating face
[0306] 223 tube
[0307] 224 tubular filling body
[0308] 225 core
[0309] 230F hard-material seat panel
[0310] 232F soft-material seat panel
[0311] 300, 302, 304 middle area
[0312] 301, 303, 305 left and right side areas (area excluding middle area)
[0313] 911 ischium
[0314] 912 sacrum

1-8. (canceled)
9. A sitting tool including a seat panel, the seat panel comprising:
a first seating face; and
a second seating face that extends contiguously from the first seating face toward a front of the sitting tool, wherein
the second seating face forms a step higher than the first seating face by means of an end face of the second seating face disposed on the side of the first seating face, the second face, excluding the end face thereof disposed on the side of the first seating face, being disposed higher than the first seating face,
in a planar view, the end face of the second seating face disposed on the side of the first seating face is curved or bent to be convex toward the front of the sitting tool between portions of left and right side edges of the seat panel, the portions of the left and right side edges being located between and excluding front and rear edges of the seat panel,
a maximum length of the first seating face in a front-rear direction of the sitting tool is from 70 mm to 250 mm, and
a maximum length of the second seating face, excluding the end face of the second seating face disposed on the side of the first seating face, in an area excluding a middle area in a left-right direction of the sitting tool, in the front-rear direction of the sitting tool, is from 3 mm to 40 mm.
10. The sitting tool of claim 9, further comprising:
a rear panel that extends from an end portion of the seat panel disposed on the side of the first seating face and that, at least partly, extends substantially perpendicularly relative to the seat panel.
11. The sitting tool of claim 9, further comprising: a support body that supports the seat panel, the support body including:
a bottom panel on which the seat panel is placed; and
a rear panel that extends from an end portion of the bottom panel disposed on the side of the first seating face of the seat panel and that, at least partly, extends substantially perpendicularly relative to the bottom panel.

12. The sitting tool of any one of claim 9, wherein upper and reverse faces of a part of the seat panel disposed on the side of the first seating face are each formed in a corrugated shape such that a curved ridge portion and a curved recessed portion each extending in the front-rear direction of the sitting tool are alternately coupled in the left-right direction of the sitting tool.

13. A chair including a seat panel, a rear panel, and a leg portion, the seat panel comprising:
a first seating face; and
a second seating face that contiguous extends from the first seating face toward a front of the chair, wherein a front face of the rear panel disposed on the side of the seat panel at least partly extends substantially perpendicularly relative to the first seating face,
in a planar view, the end face of the second seating face disposed on the side of the first seating face is curved or bent to be convex toward the front of the chair between portions of left and right side edges of the seat panel, the portions of the left and right side edges being located between and excluding front and rear edges of the seat panel,
a maximum length of the first seating face in a front-rear direction of the chair is from 70 mm to 250 mm, and a maximum length of the second seating face, excluding the end face of the second seating face disposed on the side of the first seating face, in an area excluding a middle area in a left-right direction of the chair, in the front-rear direction of the chair, is from 3 mm to 40 mm.

14. The sitting tool of any one of claim 10, wherein upper and reverse faces of a part of the seat panel disposed on the side of the first seating face are each formed in a corrugated shape such that a curved ridge portion and a curved recessed portion each extending in the front-rear direction of the sitting tool are alternately coupled in the left-right direction of the sitting tool.

15. The sitting tool of any one of claim 11, wherein upper and reverse faces of a part of the seat panel disposed on the side of the first seating face are each formed in a corrugated shape such that a curved ridge portion and a curved recessed portion each extending in the front-rear direction of the sitting tool are alternately coupled in the left-right direction of the sitting tool.

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