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(54) **WORKSTATION STANDING PLATE**

(57) A workstation standing plate (1) comprising a front edge (4), a back edge, a first (6) and second (7) lateral edges extending between the front edge (4) and the back edge, a top surface (2), and a bottom surface. The plate (1) further comprises a ridge (8) on the top surface (2) extending along a center line of the top surface (2) between the front edge (4) and the back edge

(5). The top surface (2) is divided into a first portion (21) and a second portion (22) by the ridge (8). Each of the first portion (21) and the second portion (22) of the top surface (2) comprises an oblique inclination from an intersection between the ridge (8) and the back edge (5) towards an intersection of the front edge (4) and the respective lateral edges (6, 7).

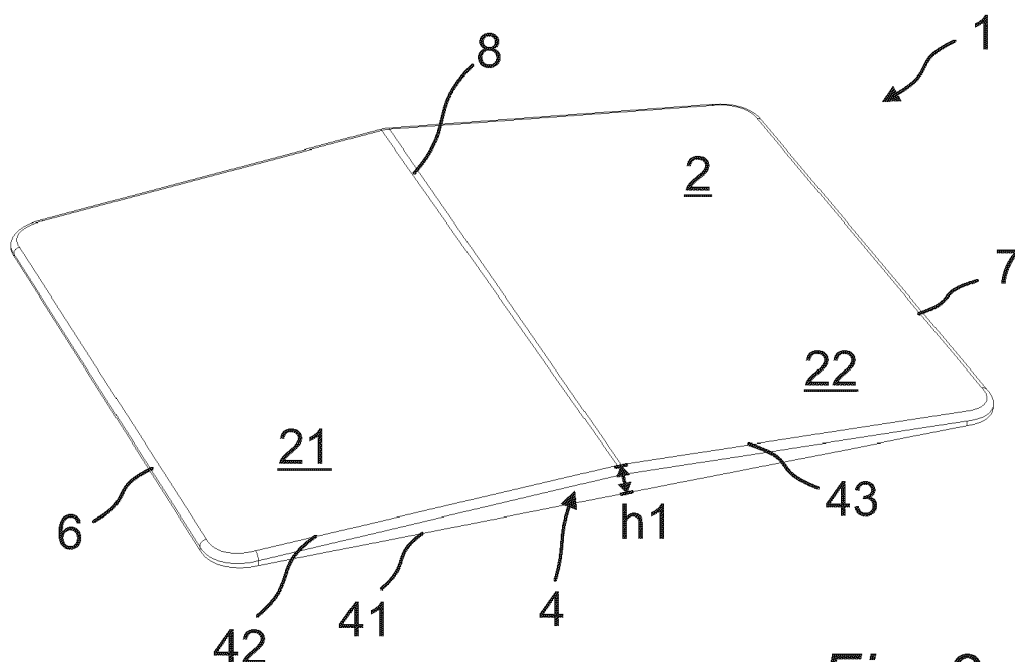


Fig. 2

Description

TECHNICAL FIELD

[0001] The present invention relates to a workstation standing plate.

BACKGROUND

[0002] There are many studies that present health benefits of reduced sitting. Standing while working has become popular and more and more people have standing tables. However, standing in a good way is not easy. Many who stand have misalignments that cause increased strain, discomfort and even health problems. All in all, this may result in that the time standing becomes less than desirable.

[0003] Today, in working life, the worker/staff stands directly on the floor, or on so-called standing desk mats, which are cushioning mats that are softer than the floor and are intended to create relief for the person standing on them. These ways of standing are common in both office environments but also in other workplaces. Both of these two ways of standing have in common that it is difficult to find a comfortable position for a long time. The person easily ends up in positions with e.g. stretched knees, with the weight on one leg or hanging a little (or much) on one hip. These misalignments propagate through the whole body all the way up to the neck.

[0004] There are also so-called standing desk balance boards configured for the worker to stand on, mainly in an office environment. Here, the idea is to achieve health benefits by being forced to activate muscles to keep the balance. However, there is no guarantee that this results in a good standing position, and in a worst-case scenario, the worker even risks forcing bad positions.

[0005] There are also products available which through their design encourage movement. The focus of this type of product is not to find a good standing position but to stimulate movement.

[0006] Drawbacks, or problems which may be caused by an incorrect standing position are e.g. trampled or stiff arches of the foot, unstable ankles, overstretched knees, inactive stability muscles in the lumbar (core) and in the anterior/lower pelvic area, inhibited front of the legs and pelvis, strained back of the legs and pelvis, due to incorrect position.

[0007] These problems are not only structural, but they also affect the central nervous system. The central nervous system emanates from the brain and spine, and it is directly affected by these malpositions.

[0008] New research on sedentary lifestyles shows that the function of the central nervous system is greatly reduced even after about 15 minutes of sitting in a passively stressed position. Hence the expression: "sitting is the new smoking". Similar phenomena also apply to passively loaded standing positions where you "stand and hang".

[0009] The worker thus loses the health benefits that are easily achievable by standing up to a greater extent while working, by standing in an incorrect position.

[0010] From the above it is understood that there is room for improvements and the invention aims to solve or at least mitigate the above and other problems.

SUMMARY

[0011] The invention is defined by the appended independent claims. Additional features and advantages of the concepts disclosed herein are set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the described technologies. The features and advantages of the concepts may be realized and obtained by means of the instruments and combinations particularly pointed out in the appended claims. These and other features of the described technologies will become more fully apparent from the following description and appended claims, or may be learned by the practice of the disclosed concepts as set forth herein.

[0012] In a first aspect, a workstation standing plate is provided. The plate comprises a top surface, a bottom surface, a front edge, a back edge, and a first lateral edge and a second lateral edge extending between the front edge and the back edge. The plate further comprises a ridge on the top surface extending along a center line of the top surface between the front edge and the back edge. The top surface is divided in a first portion and a second portion by the ridge. Each of the first portion and the second portion of the top surface comprises an oblique inclination from the intersection between the ridge and the back edge towards the intersection of the front edge and the respective lateral side portion.

[0013] The design of the plate provides for an improved and more ergonomic posture of a person standing on it. The oblique inclination, or slope, of the top surface in two directions controls and directs the feet of the user towards a position parallel with each other, and with the lateral edges of the plate. By controlling the position of the feet, the rest of the user's body is controlled as well into an ergonomically favourable position.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] In order to best describe the manner in which the above-described embodiments are implemented, as well as define other advantages and features of the disclosure, a more particular description is provided below and is illustrated in the appended drawings. Understanding that these drawings depict only exemplary embodiments of the invention and are not therefore to be considered to be limiting in scope, the examples will be described and explained with additional specificity and detail through the use of the accompanying drawings in which:

Fig. 1a is a schematic view of a person standing in a disadvantageous position, "outward rotation";

Fig. 1b is a schematic view of a person standing in a disadvantageous position, "inward rotation";

Fig. 1c is a schematic view of a person standing in an advantageous position on a standing plate according to one embodiment;

Fig. 2 is a perspective view of the standing plate according to one embodiment;

Fig. 3 is a bottom view of the standing plate in Fig. 2;

Fig. 4 is a top view of the standing plate in Fig. 2;

Fig. 5 is a front view of the standing plate in Fig. 2;

Fig. 6 is a back view of the standing plate in Fig. 2;

Fig. 7 is a top view of the standing plate in Fig. 2 showing three section lines;

Figs 7a-c are section views of the standing plate in Fig. 7, along line A-A';

Figs 7d-f are section views of the standing plate in Fig. 7, along line B-B';

Figs 7g-i are section views of the standing plate in Fig. 7, along line C-C';

Fig. 8 is a top view of the standing plate in Fig. 2 showing three section lines;

Figs 8a-c are section views of the standing plate in Fig. 8, along line D-D';

Figs 8d-f are section views of the standing plate in Fig. 8, along line E-E';

Figs 8g-i are section views of the standing plate in Fig. 8, along line F-F';

Fig. 9 is a front view of the standing plate in Fig. 2 showing five section lines;

Figs 9a-c are section views of the standing plate in Fig. 9, along line I-I';

Figs 9d-f are section views of the standing plate in Fig. 9, along line J-J';

Figs 9g-i are section views of the standing plate in Fig. 9, along line K-K';

Figs 9j-l are section views of the standing plate in Fig. 9, along line L-L'; and

Figs 9m-o are section views of the standing plate in Fig. 9, along line M-M'.

[0015] Further, in the figures like reference characters designate like or corresponding parts throughout the several figures.

DETAILED DESCRIPTION

[0016] Various embodiments of the disclosed methods and arrangements are discussed in detail below. While specific implementations are discussed, it should be un-

derstood that this is done for illustration purposes only. A person skilled in the relevant art will recognize that other components, configurations, and steps may be used without parting from the spirit and scope of the disclosure.

[0017] In the description and claims the word "comprise" and variations of the word, such as "comprising" and "comprises", does not exclude other elements or steps.

[0018] Hereinafter, certain embodiments will be described more fully with reference to the accompanying drawings. It will be apparent to those skilled in the art that various modifications and variations can be made without departing from the inventive concept. Other embodiments will be apparent to those skilled in the art from consideration of the specification and practice disclosed herein. The embodiments herein are provided by way of example so that this disclosure will be thorough and complete and will fully convey the scope of the inventive concept, and that the claims be construed as encompassing all equivalents of the present inventive concept which are apparent to those skilled in the art to which the inventive concept pertains. If nothing else is stated, different embodiments may be combined with each other.

[0019] Common to the different ways of standing, described in the background section, is that the feet can be positioned in any way. Through skillful problem analysis and inventive thinking, the inventors of the below described plate have realized that the above mentioned problems can be at least mitigated by focusing on the feet, which in turn affect the remainder of the body of the standing person.

[0020] The feet are the base of the human body. Their position is crucial for the rest of the body's functions. A minor incorrect position in the foot position can change and impair the entire posture when standing. This in turn can cause a variety of misalignment injuries such as tense muscles, joint dysfunctions and even directly an injury pattern to vertebrae and discs in the spine.

[0021] The feet control the position of the pelvis, and in turn, the position of the pelvis controls the spine. Through a unique and advantageous combination of angles, further described below, the plate described herein is configured to guide the feet and thus the body of the person/user standing on it into active and unloaded postures with each foot as a starting point. By accustoming the body to correct static positions, these will, through body awareness, also lead to improved dynamic movement patterns of the person regularly using the standing plate.

[0022] In Figs 1a-b, a standing person having an outward rotation and inward rotation of the feet and body, respectively, are shown. These are incorrect, or less preferred, standing positions which may lead to the disadvantages and problems described above.

[0023] In Fig. 1c, a person standing on a plate 1 is shown, having a neutral position of the feet, leading to a neutral position of the body. This is a correct or preferred

standing position, which the plate 1, to be further described below, is configured to guide the user into.

[0024] In Figs 2-9, a workstation standing plate/board 1 is shown. Seen in the top/bottom view of Figs 3-4, the plate 1 is essentially rectangularly shaped. However, in other embodiments, it may have other shapes.

[0025] The plate 1 comprises a top surface 2, and a bottom surface 3. The bottom surface 3 is configured to face a floor or ground (not shown) during use. The top surface 2 is configured to allow a user to stand on it. The shape of the top surface 2, which is to be described further below, is configured to direct the feet of the user into a predetermined position having the favourable effects described in this application, on the user's body.

[0026] The plate 1 further comprises a front edge 4, a back edge 5, and a first lateral edge 6 and a second lateral edge 7 extending between the front edge 4 and the back edge 5.

[0027] As best shown in Figs 2 and 5, the front edge 4 is formed as an equilateral triangle, with a base portion 41 adjacent the bottom surface 3 of the plate 1, and two legs 42, 43 of equal lengths adjacent the top surface 2 of the plate 1. The front edge triangle has a height h_1 .

[0028] As best shown in Fig 6, the back edge 5 is also formed as an equilateral triangle, with a base portion 51 adjacent the bottom surface 3 of the plate 1, and two legs 52, 53 of equal lengths adjacent the top surface 2 of the plate 1. The back edge triangle has a height h_2 .

[0029] The height h_1 of the front edge 4 is smaller compared to the height h_2 of the back edge 5. This results in an inclination of the top surface 2, downwards from the back edge 5 towards the front edge 4. As an example, the height h_1 of the front edge 4 is 0.5-3 cm, preferably 1-2 cm, and more preferred 1.5 cm. As an example, the height h_2 of the back edge 5 is 2-4.7 cm, preferably 2.5-3.5 cm, and more preferred 3 cm. The height h_1 of the front edge 4 is preferably approximately 25-75% of the height h_2 of the back edge 5, more preferred 40-60%, and most preferred 50%.

[0030] The top surface 2 of the plate 1 comprises a ridge 8 along a center line of the plate 1 extending between the front edge 4 and the back edge 5. In other words, the ridge 8 extends from the apex of the front edge 4 triangle towards the apex of the back edge 5 triangle. The different heights h_1 , h_2 of the front 4 and back 5 edges respectively form an inclination of the ridge 8, and thus of the top surface 2, between the front edge 4 and the back edge 5. The inclination of the ridge 8 may be a straight inclination, or it may be a curved inclination.

[0031] The inclination of the ridge 8 is approximately 1,5-2° compared to a horizontal plane. The inclination of the ridge is in one embodiment a linear inclination, and in other embodiments, it may be a non-linear inclination, e.g., a convex inclination or a concave inclination.

[0032] In the shown embodiment, the ridge 8 extends all the way from the front edge 4 to the back edge 5, but in other embodiments, the ridge 8 may extend only a part of the distance from the front edge 4 to the back edge 5.

[0033] The top surface 2 comprises two portions, one first portion 21, and one second portion 22. The first portion 21 is delimited by the ridge 8, the first leg 42 of the front edge triangle, the first lateral edge 6 of the plate 1, and the first leg 52 of the back edge triangle. The second portion 22 of the top surface 2 is delimited by the ridge 8, the second leg 43 of front edge triangle, the second lateral edge 7 of the plate 1, and the second leg 53 of the back edge triangle.

[0034] The first portion 21 of the top surface 2 comprises an oblique inclination downwards from the apex of the back edge 5 triangle towards the corner of the plate 1 where the first lateral side portion 6 meet the front edge 4.

[0035] The second portion 22 of the top surface 2 comprises an oblique inclination downwards from the apex of the back edge 5 triangle towards the corner of the plate 1 where the second lateral side portion 7 meet the front edge 4.

[0036] Thus, each portion 21, 22 of the top surface 2 comprises inclinations in two general directions. A first direction is from the ridge 8 towards the respective lateral edge 6, 7. A second direction is from the back edge 5 towards the front edge 4.

[0037] In Figs 7a-i, the different section views taken parallel to the front 4 and back 5 edges show the various triangular shapes achieved by the inclinations. The height of the triangular section, taken along line A-A' closer to the front edge 4, is smaller compared to the height of the triangular sections taken along lines B-B' and C-C' respectively, which are taken closer to the back edge 5.

[0038] The section views in Figs 8a-i are taken parallel to the lateral side edges 6, 7, along lines D-D', E-E' and F-F', respectively. The figures show the inclination of the top surface 2 between the front edge 4 and the back 5 edge at different lateral positions. The inclination of the top surface 2 is largest along the section F-F', which coincides with the ridge 8. This inclination is advantageously up to 6°, preferably up to 4°, and most preferred approximately 2°, compared to the horizontal plane. The inclination is gradually decreasing towards the respective side edges 6, 7.

[0039] Along section E-E' the inclination of the top surface 2 is advantageously up to 5.5°, preferably up to 3°, and most preferred approximately 1.4°, compared to the horizontal plane.

[0040] Along section D-D', the inclination of the top surface 2 is advantageously up to 4.5°, preferably up to 2°, and most preferred approximately 0.6°, compared to the horizontal plane. The inclinations along sections E-E' and D-D' may, like the inclination of the ridge 8, be linear or non-linear, and in that case, being convex or concave non-linear inclinations.

[0041] In the vicinity of the back edge 5, the top surface 2 slopes towards the respective lateral edges with an angle of approximately 5°. In the vicinity of the front edge 4, the top surface 2 slopes towards the respective lateral edges with an angle of approximately 3°.

[0042] The gradually changing inclinations in both the lateral and the longitudinal direction of the plate 1 form the sloping structure in two planes of each of the two portions 21, 22 top surface 2.

[0043] In Fig. 9, the plate 1 is shown in front view with section lines at different heights. In Figs 9a-o, section views taken along the respective section lines are shown. From these figures, the oblique inclinations of each top surface portion 21, 22, from the intersection of the ridge 8 and the back edge 5 towards the intersection of the front edge 4 and each lateral side portion 6, 7, respectively, are apparent. The plate 1 is configured to have a wedge-shape centered around the ridge 8. The broader portion of the wedge being proximal to the back edge portion 5, and the pointy portion of the wedge being distal from the back edge portion 5.

[0044] The plate 1 is preferably made of one of the following materials, or any other material having similar material properties: silicon, elasturan® 6005/178. The material is a medium hard material with a hardness of approximately 65 Shore A.

[0045] By the standing plate described above, the feet of the user are led by the sloping surfaces 21, 22 towards both an outward rotation by a support of the arch of the feet, but also towards a substantially parallel position in relation to each other. The standing plate 1 can be used without shoes or with shoes without heels/low heels. It is preferred to use the standing plate so that the toes can be active, which is best done without shoes or with shoes that allow this.

[0046] By the design of the plate 1, i.e., by the downwards slope from the ridge 8 towards the respective lateral edges 6, 7, a gentle outward rotation of the feet of the user is achieved that lifts the arch of the foot of the user.

[0047] At the same time, the downwards slope of the plate 1 from the back edge 5 towards the front edge 4, corresponding to the direction of the feet of the user, directs the feet in a manner that is approximately parallel to the lateral side edges 6, 7 of the plate 1. The feet should not point inwards but be parallel with each other. However, a rotation of a few degrees outwards would be acceptable. At larger outward angles, the position of the pelvis changes and a preferred standing position is not achieved. Positions with the feet inwards also create problems, as the user end up in an inward rotation that leads to a load on the knees that propagates upwards through the body, causing various problems.

[0048] The combination of the two inclination directions of the respective top surface areas 21, 22 described above cooperate to reinforce the side and forward tilt of the feet of the user. The slopes and inclinations are designed to provide gentle outward rotations of the user's feet diagonally forward and outward when the user has positioned his/her feet on the plate 1 at normal hip width.

[0049] When the user stands correctly, he/she experience a relaxed standing position. He/she will quickly learn this feeling and will strive to return to it. If the user

stands on the plate in an incorrect position, he/she will feel that it is stressful and quickly choose to search for a new standing position. This will eventually lead the user to the correct and preferred standing position provided by the plate 1.

[0050] The standing plate 1 guides the feet into the preferred position, which in turn affect the entire chain of knees, hips, pelvis and spine of the user, to a better and more ergonomic position. When a user is standing on the standing plate 1, muscles that are made to work are activated, and other muscles are relieve/relaxed.

[0051] The slopes of the plate 1, and their degree of inclination, provide that the central nervous system of the user functions by providing a correct foot position and a neutral natural standing position, avoiding otherwise stressed static positions.

[0052] By using the standing plate 1, the user reduces or eliminates the risk of incorrectly loading his/her body and he/she may therefore work more efficiently and feel more active during and after a working day.

[0053] The various embodiments described above are provided by way of illustration only and should not be construed to limit the invention. For example, the principles herein may be applied to any board for standing on.

[0054] Also, by designing shoes, or insoles for shoes, in a corresponding manner as has been described above, the conditions are provided for a better standing position by primarily encouraging an outward rotation by supporting the ankle, but also by giving space to the toes so that they can be active and choosing materials with just enough damping to get a comfortable hardness.

[0055] Those skilled in the art will readily recognize various modifications and changes that may be made to the present invention without following the example embodiments and applications illustrated and described herein, and without departing from the scope of the present disclosure.

Claims

1. A workstation standing plate (1) comprising:

a front edge (4), a back edge (5), first (6) and second (7) lateral edges extending between the front edge (4) and the back edge (5), a top surface (2), and a bottom surface (3),
a ridge (8) on the top surface (2) extending along a center line of the top surface (2) between the front edge (4) and the back edge (5), wherein the top surface (2) is divided into a first portion (21) and a second portion (22) by the ridge (8), wherein each of the first portion (21) and the second portion (22) of the top surface (2) comprises an oblique inclination from an intersection between the ridge (8) and the back edge (5) towards an intersection of the front edge (4) and the respective lateral edges (6, 7),

wherein the oblique inclination comprises a longitudinal inclination in a direction parallel to the ridge (8), wherein the longitudinal inclination between the front edge (4) and back edge (5) gradually decreases towards the respective lateral edge (6,7). 5

2. The plate according to claim 1, wherein the inclination of each of the first portion (21) and the second portion (22) of the top surface (2) is a downwards inclination from the back edge (5) towards the front edge (4). 10
3. The plate according to any of the preceding claims, wherein the ridge (8) comprises a linear inclination. 15
4. The plate according to claim 1 or 2, wherein the ridge (8) comprises a non-linear inclination.
5. The plate according to claim 3 or 4, wherein the inclination of the ridge (8) is up to 6°, preferably up to 4°, and most preferred 2°, compared to a horizontal plane. 20
6. The plate according to claim 5, wherein an inclination of the top surface (2) along a section D-D' located in the vicinity of one of said lateral edges (6, 7) and parallel to the ridge (8) comprises an inclination of up to 4.5°, preferably up to 2°, and most preferred 0.6°, compared to the horizontal plane. 25
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7. The plate according to claim 6, wherein an inclination of the top surface (2) along a section E-E' which is parallel to the ridge (8) and located between the section D-D' and the ridge (8), comprises an inclination of up to 5.5°, preferably up to 3°, and most preferred 1.4°, compared to the horizontal plane. 35
40
8. The plate according to any one of the preceding claims, wherein the oblique inclinations of the top surface (2) form a wedge shape, the wedge being centered around the ridge (8) and having a blunt portion proximal to the back edge (5) of the plate (1), and a pointed portion distal from the back edge (5). 45
9. The plate according to any one of the preceding claims, wherein the top surface (2), along the back edge (5), slopes towards the respective lateral edges (6, 7) at an angle of 5°, and wherein the top surface (2), along the front edge (4), slopes towards the respective lateral edges (6, 7) with an angle of 3°. 50

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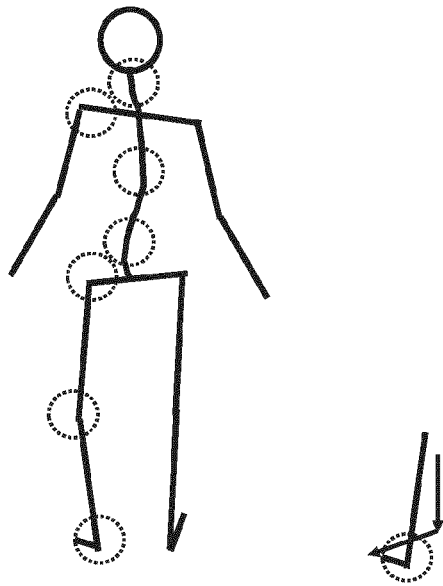


Fig. 1a

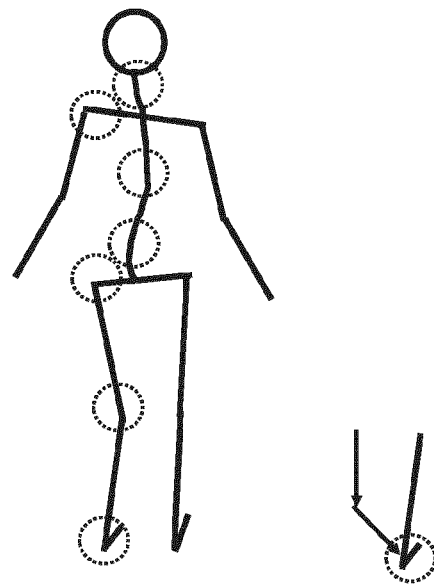


Fig. 1b

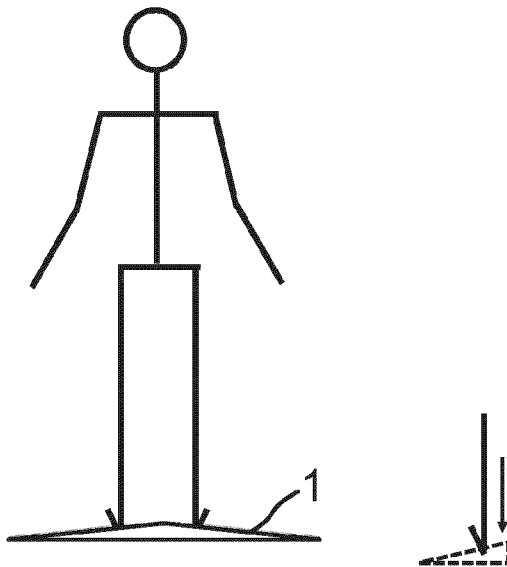


Fig. 1c

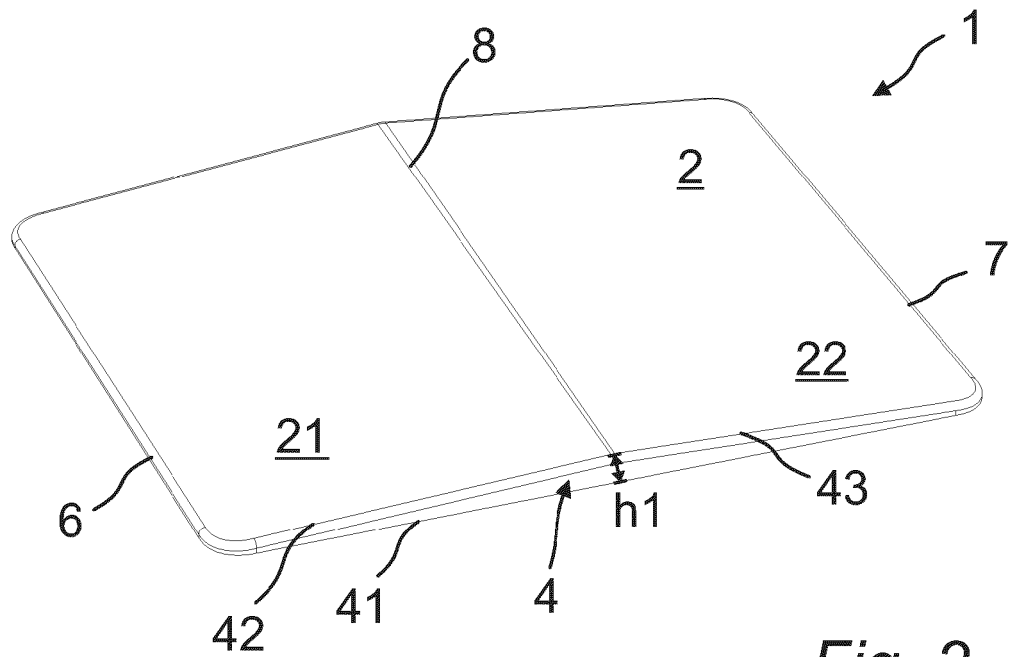


Fig. 2

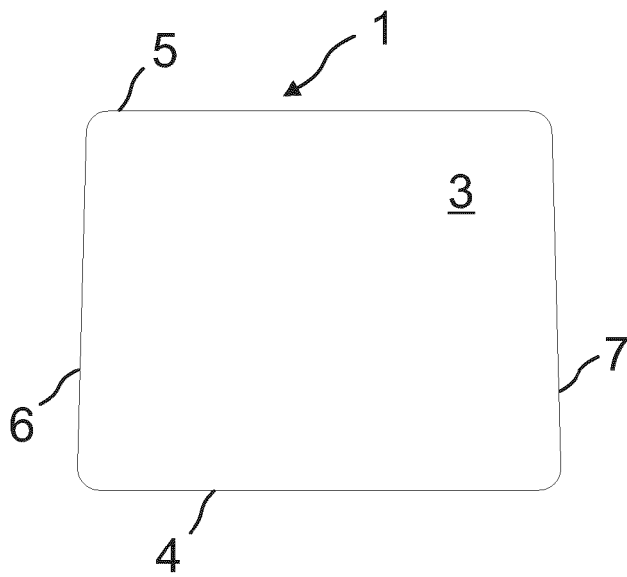


Fig. 3

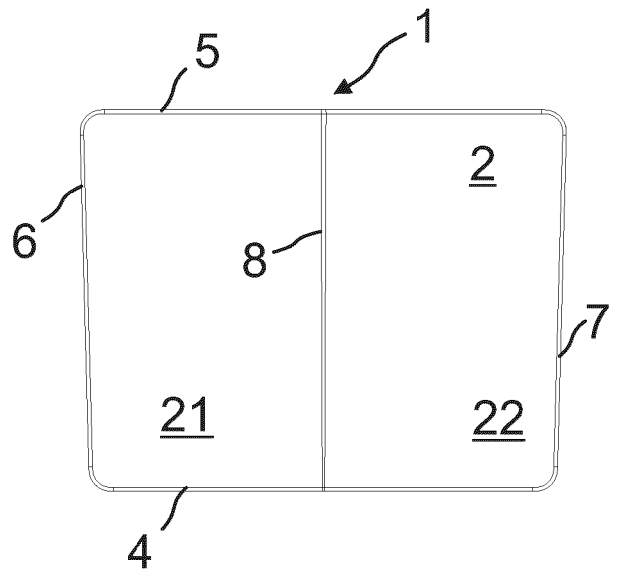


Fig. 4

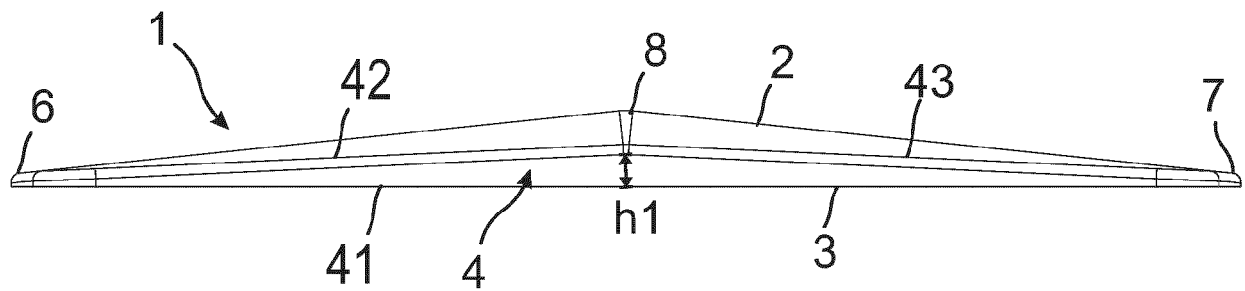


Fig. 5

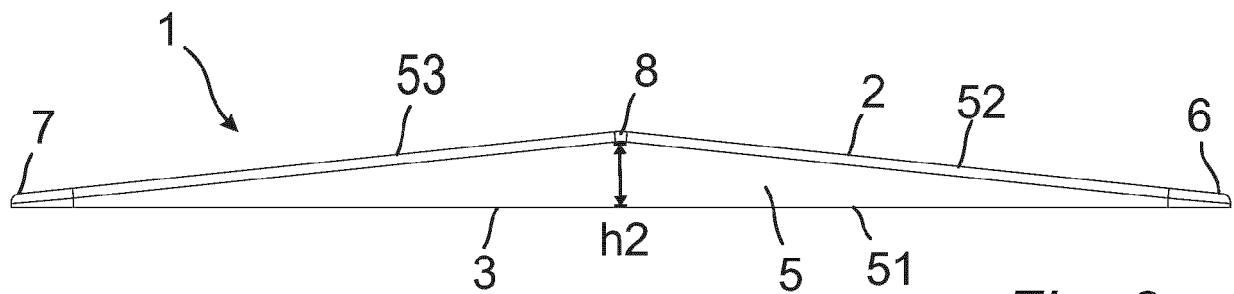


Fig. 6

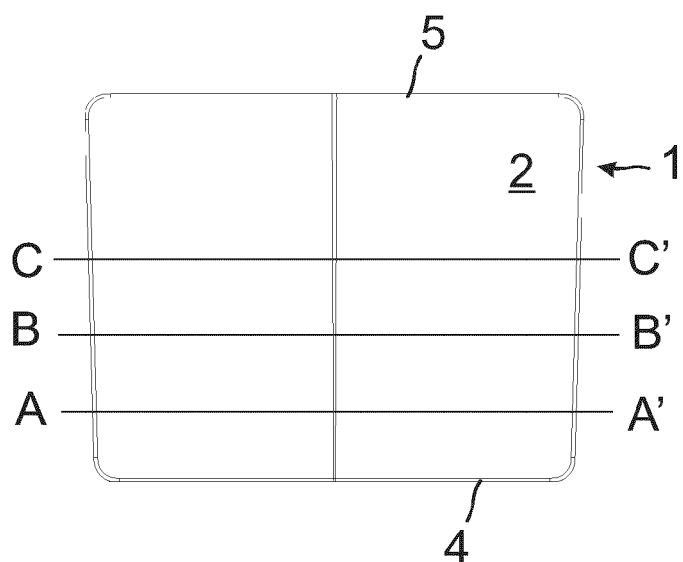


Fig. 7

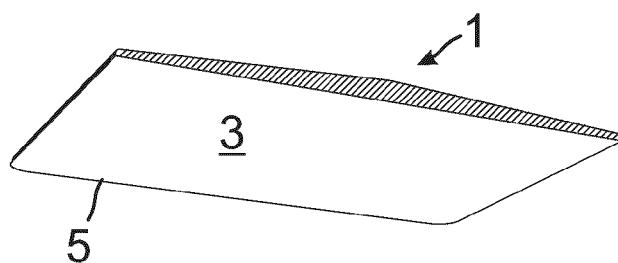


Fig. 7a

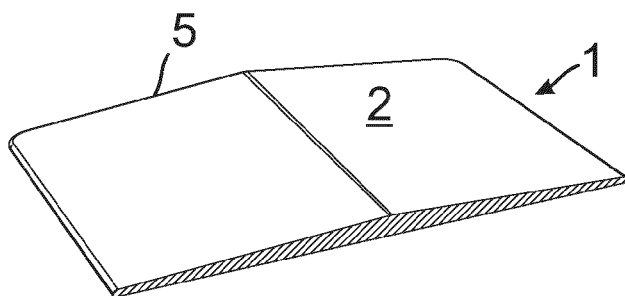


Fig. 7b

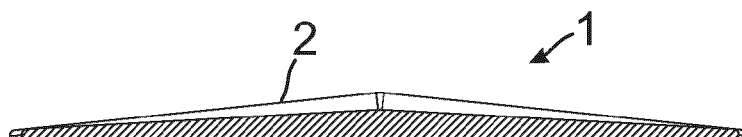
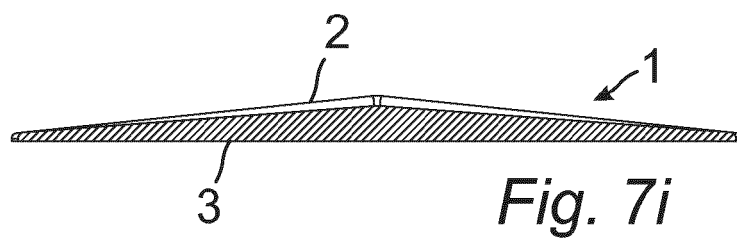
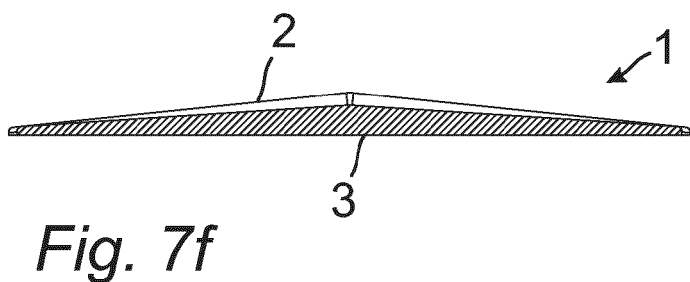
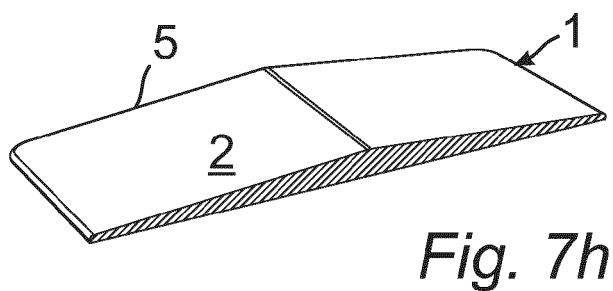
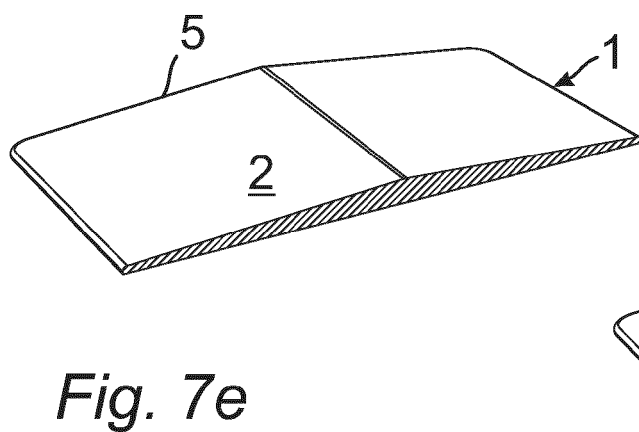
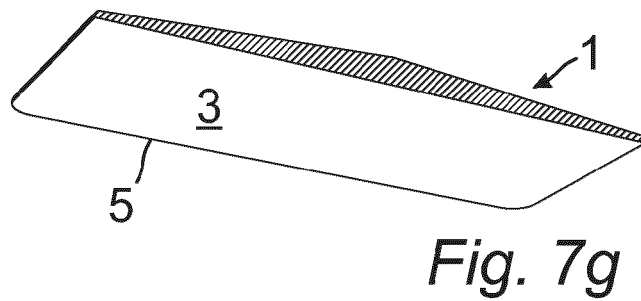
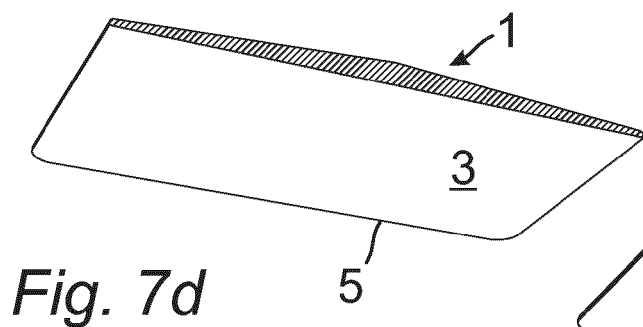


Fig. 7c



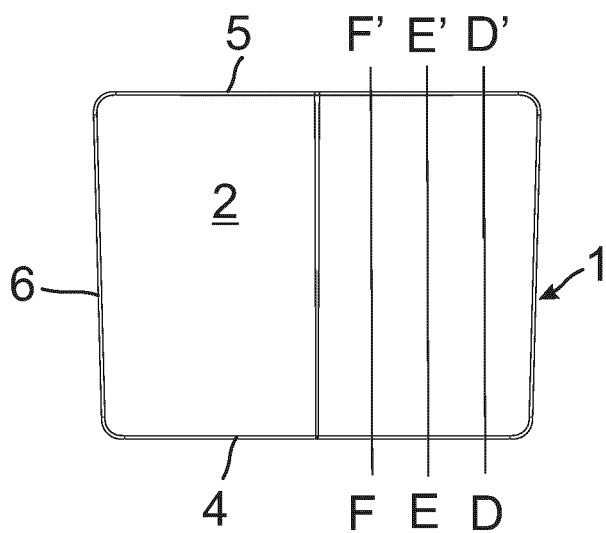


Fig. 8

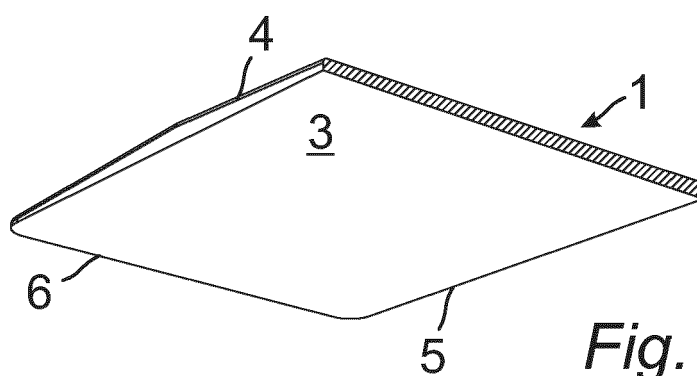


Fig. 8a

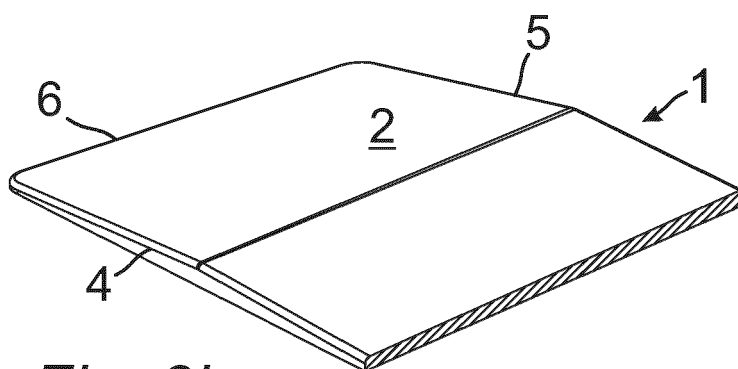


Fig. 8b

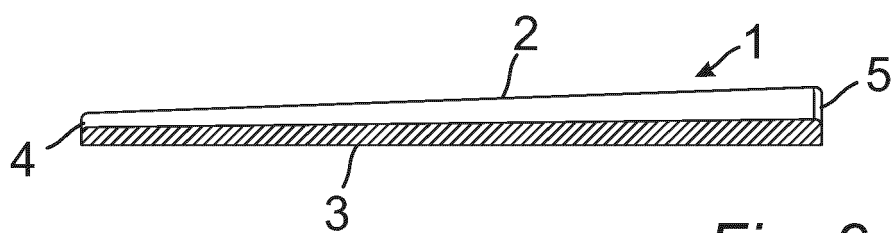


Fig. 8c

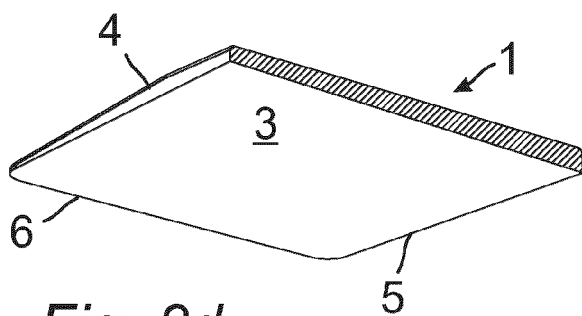


Fig. 8d

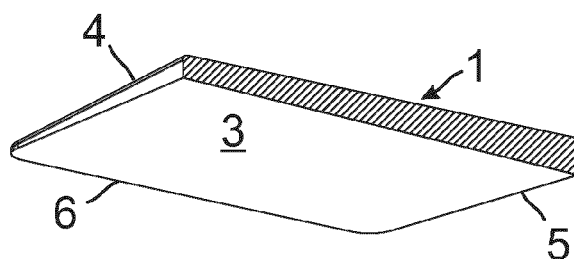


Fig. 8g

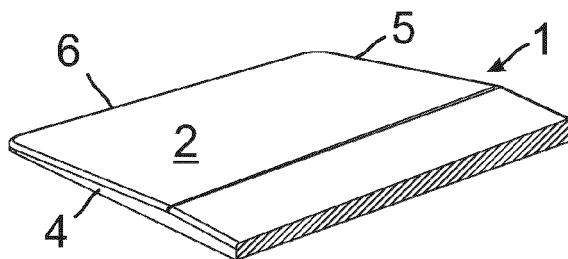


Fig. 8e

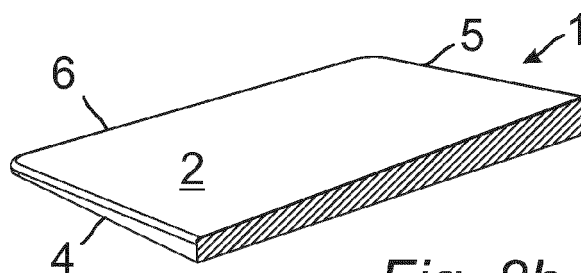


Fig. 8h

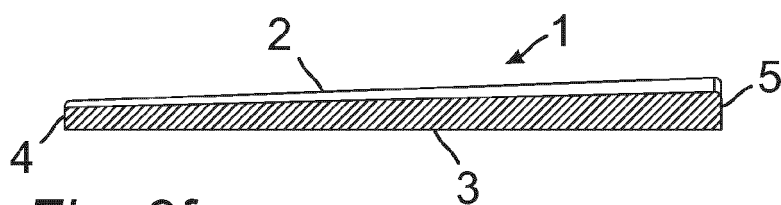


Fig. 8f

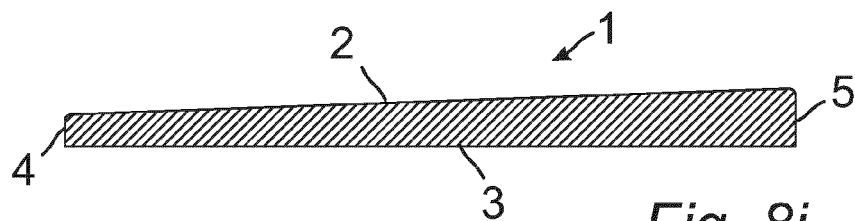


Fig. 8i

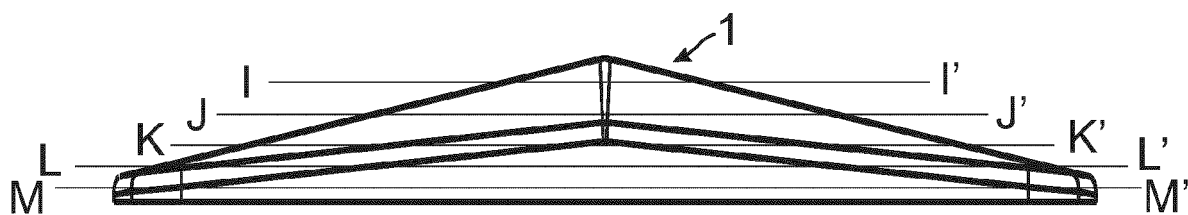


Fig. 9

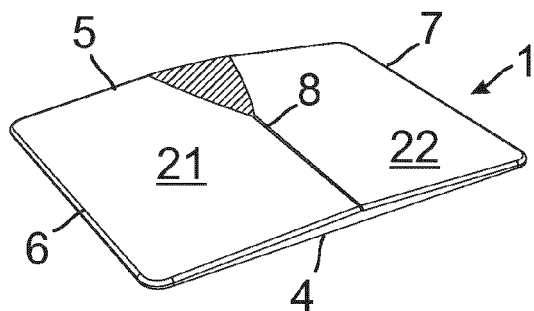


Fig. 9a

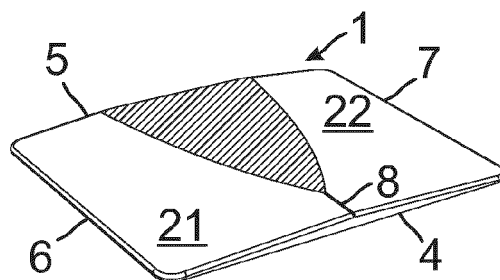


Fig. 9d

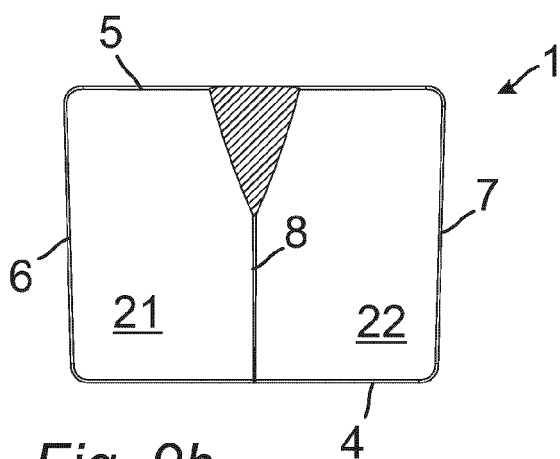


Fig. 9b

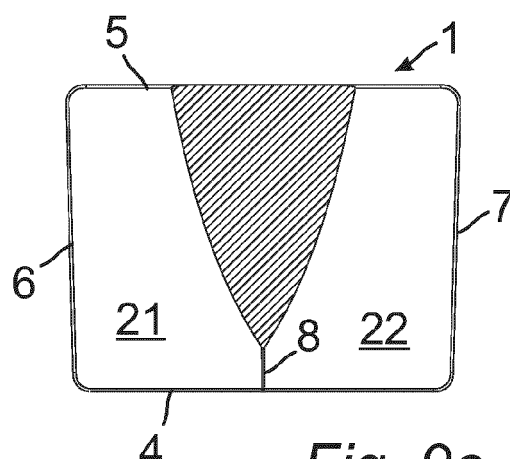


Fig. 9e

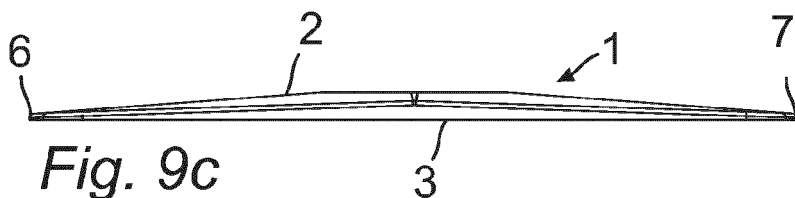


Fig. 9c

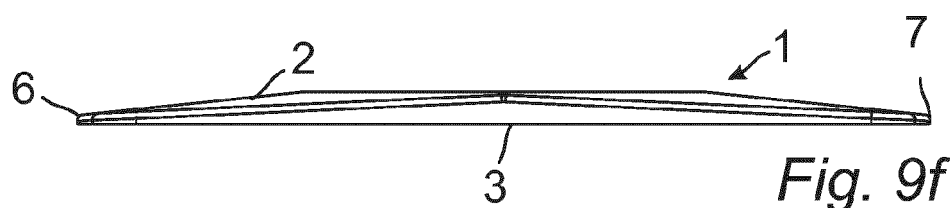


Fig. 9f

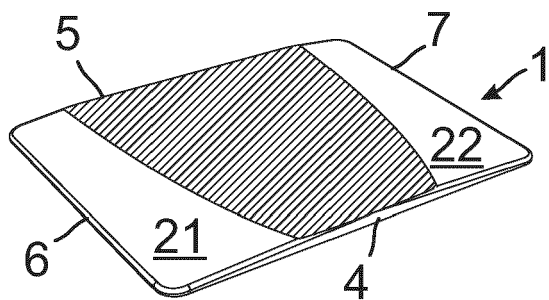


Fig. 9g

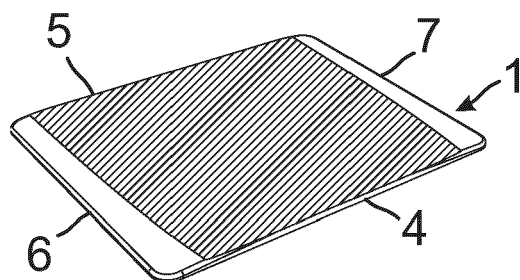


Fig. 9j

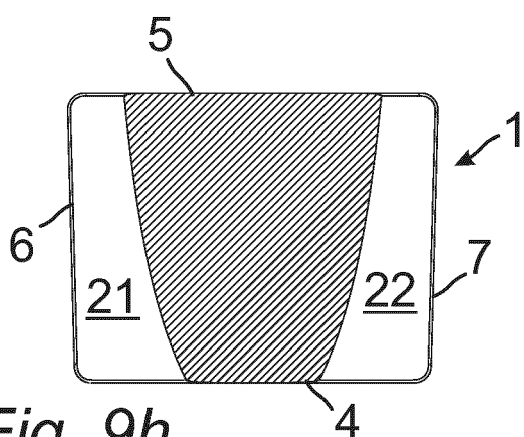


Fig. 9h

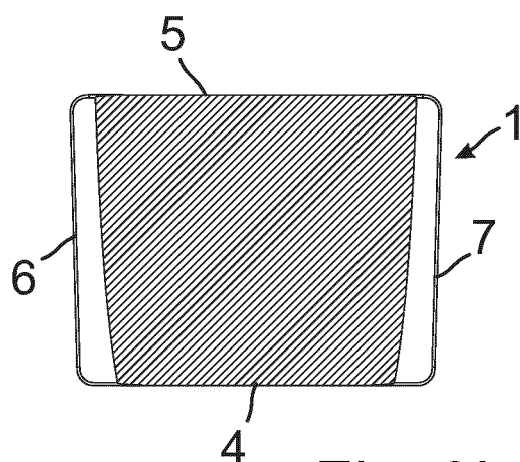


Fig. 9k

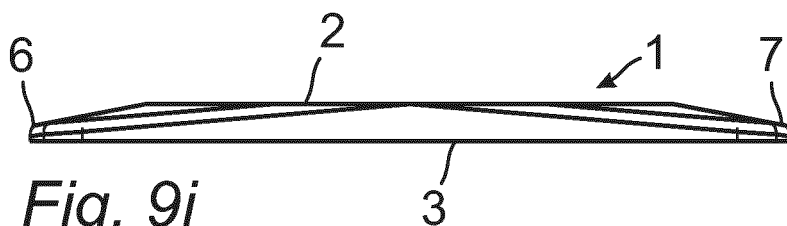


Fig. 9i

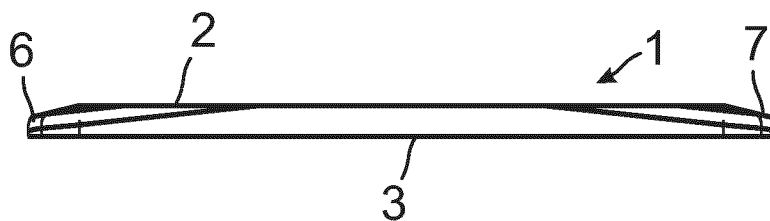


Fig. 9l

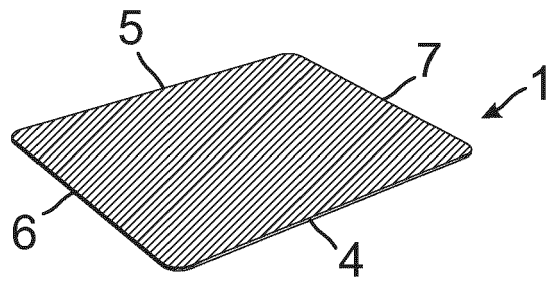


Fig. 9m

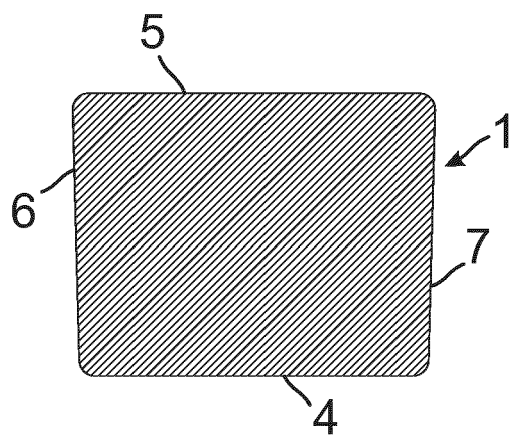


Fig. 9n

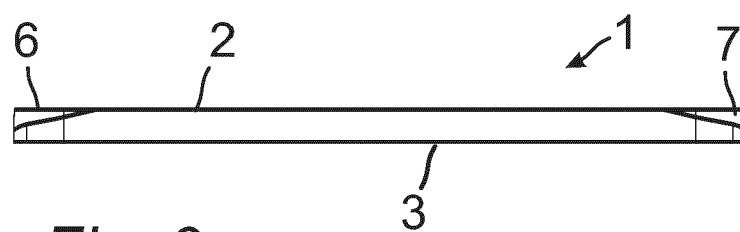


Fig. 9o



EUROPEAN SEARCH REPORT

Application Number

EP 23 15 2465

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2020/264343 A1 (BOSU FITNESS LLC [US]) 30 December 2020 (2020-12-30) * paragraphs [0056] - [0064], [0070], [0073], [0077]; figures 1,6,7,8,9,12-14 * -----	1	INV. A47G27/02
A,P	US 11 291 884 B1 (STEELE ROCKY [US]) 5 April 2022 (2022-04-05) * column 3, lines 45-56 - column 6, lines 5-18; figures 2,6 * -----	1	TECHNICAL FIELDS SEARCHED (IPC) A47G A61F A63B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 1 June 2023	Examiner Longo dit Operti, T
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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