(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 501 612 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
26.06.2019 Bulletin 2019/26

(51) Int Cl.:
A63B 21/00 *(2006.01)* ***A63B 22/18*** *(2006.01)*
A63B 26/00 *(2006.01)*

(21) Application number: **18212142.6**

(22) Date of filing: **13.12.2018**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **22.12.2017 DK PA201771012**

(71) Applicant: **Gonge Creative Learning ApS**
8653 Them (DK)

(72) Inventor: **GONGE, Henrik**
8200 Aarhus N (DK)

(74) Representative: **Tellefsen, Jens J. et al**
Patrade A/S
Ceresbyen 75
8000 Aarhus C (DK)

(54) **BALANCING BOARD**

(57) The object of the invention is to provide a robust and reliable balance board for stimulation of proprioception, and provide a method for manufacturing such a balancing board. The balancing board for exercising the sense of balance comprising a top part, where said top part is substantially rigid, and a bottom part, where said bottom part is resilient, where said bottom part has a perimeter defining an bottom part perimeter edge, where said top part has a perimeter defining a top part perimeter edge where, when said top part perimeter edge and said bottom part perimeter edge is arranged adjacent to each other, a further sealing part is provided, said sealing part engaging said top part perimeter edge and said bottom part perimeter edge in a sealing manner such that an encapsulated volume is provided between said top part and said bottom part.

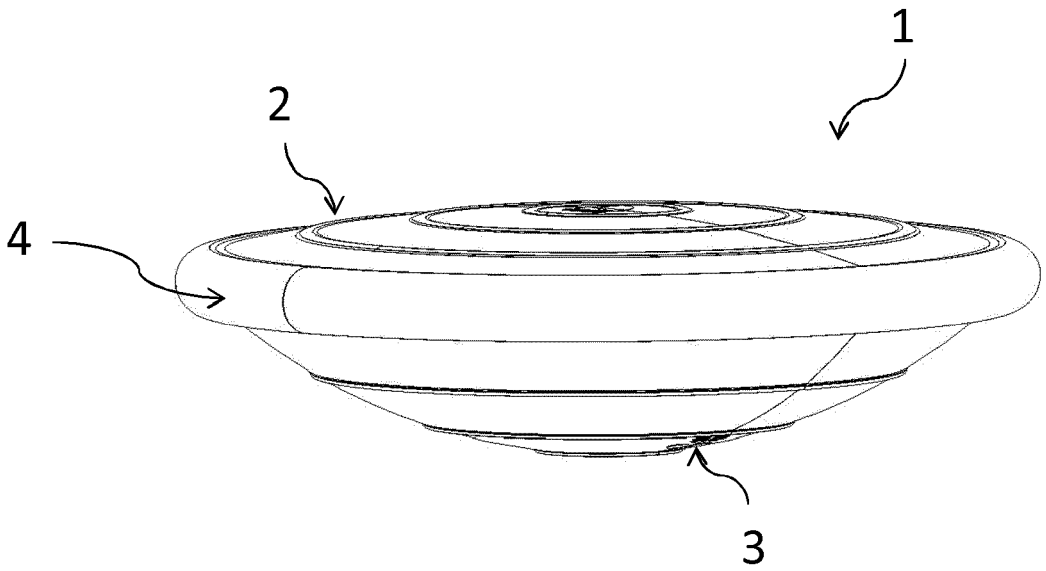

Fig. 1

EP 3 501 612 A1

Description

Field of the Invention

[0001] The present invention relates to a balance board for stimulation of proprioception.

Background of the Invention

[0002] A balancing board may relate to physical fitness and muscular training, and particularly to devices used to enhance muscular training and exercising, which devices are provided as part of a system and used in a method to obtain better results from such muscular training and exercising.

[0003] Proprioception is a distinct sensory feedback mechanism that provides information to the brain about the body. The proprioceptive stimulation is a process in which the brain is stimulated to automatically adjust the body posture. This may be done when a tactile stimulation is applied to the bottom of the feet through standing or walking. Through this stimulation, a message is sent to the cerebellum, the balance centre of the brain. Acting on this signal, the cerebellum initiates a postural adjustment, either towards an upright position or towards a slouched posture.

[0004] To stimulate the proprioception and balancing, an exercising board for training the balance is a solution that is often chosen. A known construction of a balancing device includes a relatively rigid platform supported by a compressible base, where the user may stand on the platform keeping the balance. The base may be similar to an airtight balloon, where part of the balloon has a flat surface. The platform is attached to the flat surface part by bindings.

[0005] The construction of balancing boards has some issues. Especially in the production process, the production is time consuming due to the assembling of the balancing board items, and also in the testing procedures where the test ensures that the product is reliable in use. The lack of resistance to tear and wear and robustness of the balancing board during use over time is a further problem. The bindings will loosen, and the platform will be more or less released from the base, making the balancing board unstable and in worst case causing harm to the user.

[0006] Examples in the art of such balance boards are for example disclosed in WO 01/24887. In this example the balance board is inflatable, and comprises a resilient/soft bladder part, mechanically fastened to a relatively stiff upper (flat) part. In some embodiments an edge profile is used as sealing/closing between the two parts, where the sealing/closing incorporates screws, mechanically fastening the two parts. The screws or even the edge profile will have different material parameters and as such move and flex differently than the resilient part, whereby stresses and the like will concentrate around the screws, thereby causing tearing in these sections. Another similar example is known from US 5048823.

Object of the Invention

[0007] The object of the invention is to provide a robust and reliable balance board for stimulation of proprioception and balancing, and provide an improved method for manufacturing such a balancing board.

Description of the Invention

[0008] The invention provides a construction of a balancing board that is easy to assemble, and thereby reduces the production time, due to a faster and more reliable assembling and testing procedure, and at the same time increases the robustness of the balancing board. Furthermore, this will also increase the lifespan of the balancing board, without any risk for the user when using the balancing board.

[0009] The balancing board according to the invention for exercising the sense of balance comprises a top part, where said top part is substantially rigid, and a bottom part where said bottom part is resilient, where said bottom part has a perimeter defining a bottom part perimeter edge, where said top part has a perimeter defining a top part perimeter edge where, when said top part perimeter edge and said bottom part perimeter edge is arranged adjacent to each other, a further sealing part is provided, said sealing part engaging said top part perimeter edge and said bottom part perimeter edge in a sealing manner such that an encapsulated volume is provided between said top part and said bottom part.

[0010] A balancing board comprises three basic parts:

- a compressible bottom part, which is in contact with a surface, e.g. a floor. The bottom part may be moulded in a predetermined shape and with a predetermined elasticity.
- a relatively rigid top part, which may support a single user exercising the proprioception during use. The top part may be moulded in a predetermined shape and with a predetermined surface for example with pattern and/or skid resistant surface providing improved grip.
- a sealing part, which assembles and connects the bottom part and the top part in a sealing manner by using a moulding process. The sealing part is moulded onto the edges of the top and the bottom part. The sealing part provides an airtight connection, so that a volume is encapsulated between the bottom part and the top part, where the bottom part forms a resilient air bag effect, when a user is standing on the top part.

[0011] The three basic parts: the top part, the bottom part and stealing part, when combined, provides a solution where the balancing board has an improved solidness and robustness, due to the moulding process when

assembling the parts. The moulding process is easily adapted into new designs of the balancing board. When choosing another preferred material for one or more parts of the balancing board, the task of manufacturing the balancing board is adjusted accordingly for example by providing another mould and/or adding other materials. The sealing part provides an improved and reliable connection between the top part and the bottom part. The balancing board may support the weight and movement of the user.

[0012] In an advantageous embodiment of the invention, the top part perimeter edge is in the shape of a top edge flange extending a first distance away from said top part. The bottom part perimeter edge is in the shape of a bottom edge flange extending a first distance away from said bottom part. The top edge flange is parallel and in contact with the bottom edge flange. The sealing part engages at least a part of said top edge flange and at least a part of said bottom edge flange in a sealing manner such that an encapsulated volume is provided between said top part and said bottom part.

[0013] Flanges are provided on both the top part and the bottom part, so that the flanges extend respectively from the top part perimeter edge and the bottom part perimeter edge. The flanges may be equally extended along the top part perimeter edge and the bottom part perimeter edge. Alternatively, the flanges may be provided with varying extended width along the top part perimeter edge and the bottom part perimeter edge fitted for the chosen design of the balancing board. By "along" is meant, that the flange is parallel and following the top part perimeter edge and/or bottom part perimeter edge.

[0014] By proving flanges on both the top part and the bottom part, the contact area between the top part and the bottom part is increased. The sealing part encapsulates the flanges or part of the flanges thereby providing an enhanced airtight connection.

[0015] The thickness of the flange material may be different from the thickness of the edge of the top part and/or the edge of the bottom part. If the flange, extending from the top part, is thinner than the edge of the top part then it will be possible for the sealing part to be flush with the top part, and also if the flange, extending from the bottom part, is thinner than the edge of the bottom part, it will be possible for the sealing part to be flush with the bottom part, leaving no sharp or uneven edges in the transition between the sealing part and the top part and the sealing part and the bottom part.

[0016] In a further advantageous embodiment of the invention, the top edge flange has a first concentric protrusion ridge extending in a direction away from the bottom part. The bottom edge flange has a second protrusion ridge extending in a direction away from the top part. The first and second protrusion ridges follow the perimeters of the top and bottom parts' perimeter edges, where said sealing part engages the first protrusion ridge and the second protrusion ridge and at least parts of the flanges.

[0017] To reinforce the sealing parts' grip in the top part and the bottom part, the top edge flange and the bottom edge flange is provided with said concentric protrusion ridges. The protrusion ridge arranged on the top part flange is extending in a more or less opposite direction than the protrusion ridge arranged on the bottom part flange. The protrusion ridges are arranged in such a manner that the sealing part, when encapsulating the flanges, has a firm grip. The protrusion ridge may have varied shapes, width and height along the edges of the flanges, which enhances strength and maintains the grip between the sealing part and the top and bottom part during use.

[0018] In a still further advantageous embodiment of the invention, a first concentric sealing means is provided inside and adjacent to the top part perimeter edge. The first concentric sealing means comprises at least one set of alternating grooves and ridges. And the bottom part perimeter edge is provided with a second concentric sealing means. The second concentric sealing means comprises at least one set of alternating grooves and ridges arranged off-set to the grooves and ridges of the first concentric sealing means, such that when the top part perimeter edges and bottom part perimeter edges are in contact. A ridge on one part will be accommodated by a groove on the other part, thereby creating a seal.

[0019] Between the top part and the bottom part, or the top part flange and the bottom part flange, the contact area is increased by providing concentric sealing means. The set of groves and ridges of the first concentric sealing means is squeezed together in a cross-joint with the set of groves and ridges of the second concentric sealing means. The surface area of the groves and ridges arranged on the top part which is in contact with the surface area of the groves and ridges arranged on the bottom part, forms an airtight contact between the top and bottom part. Thereby the concentric sealing means further provides enhanced airtight connection by increasing the contact area and enhancing strength in the contact area connection between the top part and the bottom part. Furthermore by squeezing the concentric sealing means together, the top part and the bottom part maintain a firm grip during use.

[0020] In a further advantageous embodiment of the invention, the top edge flange comprises one or more apertures, and the bottom edge flange comprises one or more apertures. When the top part is assembled with the bottom part, the apertures are arranged to overlap to form a through-going aperture. The sealing part engages the top edge flange and the bottom edge flange filling out the apertures, and thereby providing a reinforced sealing.

[0021] The apertures may have varied shapes and width, which enhances strength by locking the grip of the sealing part, so that the sealing part is integrated into the top and bottom part. The sealing part is thereby forming an integral unit (bottom, top and connecting parts) which is the balancing board. When the sealing part interacts with the top and the bottom part sealed through the apertures, the sealing part provides an ability to prevent the

resilient bottom part to stretch inappropriately in relation to the top part. The sealing part easily maintains a firm grip and preserves the connection between the top and bottom part during use.

[0022] In a still further advantageous embodiment of the invention, a valve aperture is provided in said bottom part. The valve aperture provides an air passage from the outer environment to said volume inside said balancing board. A valve provides a one way closed air passage, when the valve is inserted into said valve aperture. The valve has one or more valve flanges extending radially from an outer surface of the valve. The valve aperture is provided with a valve sealing wall extending into said volume between the said bottom part and the top part. The valve sealing wall is provided with one or more recesses radially on one side of the valve sealing wall towards said air passage. The valve flanges provided on said valve are arranged in the recesses of the valve sealing wall.

[0023] The valve aperture is provided so that the air pressure inside the balancing board may be varied. The resilient bottom part may be more or less resilient, due to the air pressure inside the encapsulated volume between the top part and the bottom part. This allows the severity of the training session to be adjusted.

[0024] The invention, in a further advantageous embodiment, provides a method for manufacturing a balancing board for exercising the sense of balance, by the following steps:

- providing a top part, where the top part is substantially rigid and comprises a top part perimeter edge.
- providing a bottom part, where the bottom part is resilient and comprises a bottom part perimeter edge.
- where said top part perimeter edge is substantially equal to the bottom part perimeter edge.
- arranging said top part and said bottom part in a mould, so said top part perimeter edge is superposed said bottom part perimeter edge.
- injecting a sealing part material into said mould, so that the sealing part material encapsulates said top part perimeter edge and said bottom part perimeter edge, whereby the sealing part is moulded together with said top part and said bottom part, thereby providing an airtight connection between the top part and the bottom part, enclosing a volume, thereby forming said balancing board.

[0025] The top part and the bottom part may be moulded or 3D printed according to the product requirement. Different moulding processes may be used in the process of manufacturing the balancing board. E.g. a rapid injection moulding process may be used to seal the sealing part onto the top part and the bottom part. One example of using the rapid injection moulding process is to arrange a top part and a bottom part in a mould adjacent to each other. The mould may cover parts of or the entire top part perimeter edge and bottom part perimeter edge. The sealing part material may be a resin in granular form, e. g. as pellets. The requirement for the sealing part material is based on whether the sealing part sealed onto the balancing board must be hard or resilient. Also the colour must be taken into consideration, when choosing the sealing part material and the moulding process. The pellets flow into a heated barrel, where the sealing part material is heated to a predetermined temperature, so the pellets are melted. The sealing part material is then injected into the mould containing the entire top and the bottom part or parts of the top and the bottom part. Once the mould is filled, the mould remains in place to apply appropriate pressure for the duration of a predetermined cooling time. When the sealing part materials are cooled and solidified, the mould may be opened and the balancing board is manufactured.

[0026] The invention provides, in a still further advantageous embodiment of the invention, a method for manufacturing a balancing board according to claim 7, further comprising the steps of

- providing said top part, where a top edge flange extends radially a first distance away from said top part perimeter edge, said top edge flange comprises one or more apertures distributed along the top part perimeter edge, ,
- providing said bottom part, where a bottom edge flange extends radially a first distance away from said bottom part perimeter edge, said bottom edge flange comprises one or more apertures distributed along the bottom part perimeter edge,
- arranging the apertures in said top edge flange so the apertures overlap the apertures in the bottom edge flange, providing sealing passages,
- placing the assembled top part and bottom part in a mould, and
- injecting a sealing part material into said mould, so the sealing part material encapsulates at least part of said top edge flange and at least a part of said bottom edge flange, and the sealing part material is filling the sealing passages, so that the sealing part is integrated with said top part and said bottom part, providing an reinforced sealing,
- after the moulding process, said sealing part provides an airtight connection between the top part and the bottom part and enclosing a volume, thereby forming said balancing board.

[0027] In an alternative variation of the method, the invention provides a method for manufacturing a balancing board comprising the steps of

- providing said top part, where a top edge flange extends radially a first distance away from said top part perimeter edge, and said top part perimeter edge is provided with first concentric sealing means, where said first concentric sealing means comprising at

least one set of alternating grooves and ridges;

- providing said bottom part, where a bottom edge flange extends radially a first distance away from said bottom part perimeter edge, and said bottom part perimeter edge is provided with second concentric sealing means, said second concentric sealing means comprising at least one set of alternating grooves and ridges,
- placing the assembled top part and bottom part in a mould, and arranging the groves and ridges of said first concentric sealing means off-set to the groves and ridges of said second concentric sealing means, providing a seal when the top edge flange is arranged parallel and in contact with the bottom edge flange;
- injecting a sealing part material into said mould, so the sealing part material encapsulates at least part of said top edge flange and at least a part of said bottom edge flange, and the sealing part material is filling the sealing passages, so that the sealing part is integrated with said top part and said bottom part, providing a reinforced sealing;
- after the moulding process, said sealing part provides an airtight connection between the top part and the bottom part and enclosing a volume, thereby forming said balancing board.

[0028] The process of manufacturing the balancing board by moulding is an easily controlled process, which provides uniformed items which is assembled in few easily controlled production steps. By controlling the process, the result may easily be predicted and ensures the quality of the product. Also by moulding the sealing part onto the top part and the bottom part, ensures a high quality and reduces production time. Furthermore, the requirement for stocks of spare parts may be greatly reduced, due to rapid change in stockholding of different variation of balancing boards caused by change/improvement over time. This lead to an agile process of manufacturing the balancing board, which reduces time and costs, and at the same time provides a solid, robust and stabile balancing board easy to use and to maintain.

Description of the Drawing

[0029] The embodiments of the invention are described in the following with reference to:

Fig. 1: Illustration of a balancing board.
Fig. 2: Illustration of a balancing board in an exploded view.
Fig. 3a and 3b: Illustration of a top part of a balancing board.
Fig. 4a and 4b: Illustration of a bottom part of a balancing board.
Fig. 5: Illustration of a top part and a bottom part, when assembled.
Fig. 6a and 6b: Illustration of a sealing part.
Fig. 7: Illustration of a top part, a bottom part and a sealing part, when assembled.
Fig. 8a and 8b: Illustration of a valve arranged in a balancing board.

Detailed Description of the Invention

[0030] Fig. 1 illustrates a balancing board 1 for the exercising of the sense of balance. The balancing board 1 comprises a top part 2 and a bottom part 3, which are connected through a sealing part 4. The top part 2 is rigid and the bottom part 3 is resilient. The balancing board 1 may be placed on a plane surface where the bottom part 3 is facing the surface, and where a user may stand on the top part exercising the balance.

[0031] The top part 2 and the bottom part 3 may be provided by a moulding process. The sealing part 4 is provided, when the top part 2 and the bottom part 3 are placed adjacent to each other in a mould. The sealing part material is injected into the mould and combines the top part 2 and the bottom part 3 in a sealing manner, such that an encapsulated volume is provided between the top part 2 and the bottom part 3. The sealing part 4 provides air tight sealing.

[0032] In fig. 1 the balancing board 1 is illustrated as a circular balancing board. The balancing board might as well have another shape, e.g. oval or square, providing the same features for exercising the sense of balance.

[0033] Fig. 2 illustrates the balancing board 1 in an exploded view, where the top part 2, the bottom part 3 and the sealing part 4 are separated from each other. A valve aperture 5 is provided in the bottom part 3. The bottom part 3 has a perimeter defining a bottom part perimeter edge 12, where said top part 2 has a perimeter defining a top part perimeter edge 8. The top part perimeter edge 8 and the bottom part perimeter edge 12 are arranged adjacent to each other. Furthermore, a sealing part 4 is provided so that the sealing part 4 may engage said top part perimeter edge 8 and said bottom part perimeter edge 12 in a sealing manner, such that an encapsulated volume is provided between the top part 2 and the bottom part 3. The perimeter edge of the balancing board is substantially equal to the top part perimeter edge and bottom part perimeter edge and the extension of the sealing part 4.

[0034] Fig. 3a and 3b illustrate a top part 2 of the balancing board 1 in a cross section view. The top part 2 is rigid, so it is possible for a user to stand on the top part 2. Fig. 3a shows the inside of the top part 1, where stabilizing ridges 6 are provided and arranged in order to support and reinforce the top part 2, especially when the balancing board is in use.

[0035] Fig. 3b shows part of the top part 2. The top edge flange 11 extends from the top part perimeter edge 8, and furthermore, a protrusion ridge is extending in a direction towards 90°, in relation to the direction from the top edge flange 11. Between the top part perimeter edge 8 and the top edge flange 11, a plurality of top part apertures 10 are arranged in a row parallel to the top edge

flange 11. Adjacent to the top part perimeter edge 8, concentric sealing means 13 are provided. The concentric sealing means 13 comprises grooves and ridges provided substantially perpendicular to the top edge flange 11.

[0036] The top part 2 has a perimeter, defined by the top part perimeter edge 8. When the top edge flange 11 is added to the top part 2, the perimeter of the top part 2 will then be defined by the edge of the top edge flange 11. Similarly the bottom part 3 has a perimeter, defined by the bottom part perimeter edge 12. When the bottom edge flange 15 is added to the bottom part 3, the perimeter of the bottom part 3 will then be defined by the edge of the bottom edge flange 15.

[0037] Fig. 4a and 4b illustrate a cross section of the bottom part 3 of the balancing board 1. In fig. 4a the bottom part 3 comprises a bottom edge flange 15 extending in a direction away from the bottom part perimeter edge 12. The bottom part also comprises concentric sealing means 16, and a resilient part 7 where a valve aperture 5 is arranged in the mid.

[0038] In fig. 4b shows a part of the bottom part 3. The bottom edge flange 15 is provided with a protrusion ridge extending in a direction towards - 90°, in relation to the direction of the bottom edge flange 15. The bottom edge flange 15 is also provided with a plurality of bottom part apertures 14. The bottom part apertures 14 are placed in a row parallel to the bottom edge flange 15. At the bottom part perimeter edge 12, a concentric sealing means 16 is provided. The concentric sealing means 16 comprise at least one set of alternating grooves and ridges. In the grooves of the concentric sealing means 16, a sealing protrusion 17 is provided along the groove.

[0039] Fig. 5 illustrates the top part 2 and the bottom part 3, when assembled. The top part 2 and the bottom part 3 are arranged, so that the top edge flange 11 is parallel and in contact with the bottom edge flange 15. The ridge on the top edge flange 11 is extending in a direction away from the bottom edge flange 15, and the ridge on the bottom edge flange 15 is extending in a direction away from the top edge flange 11. The ridges on both the top edge flange 11 and the bottom edge flange 15 are provided so the ridges is arranged along the edge of the top part 2 and the bottom part 3. The top part apertures 10 and the bottom part apertures 14 are arranged, so that the apertures overlap each other to form a through-going aperture. The apertures provide a sealing passage extending from one side of the top edge flange 11 to the opposite side of the bottom edge flange 15. The top part perimeter edge 8 is provided with concentric sealing means 13, where the concentric sealing means 13 comprises at least one set of alternating grooves and ridges. Also the bottom part perimeter edge 12 is provided with a concentric sealing means 16, where the concentric sealing means 16 comprises at least one set of alternating grooves and ridges. The alternating grooves and ridges provided on the top part perimeter edge 8 are arranged in an offset position to the grooves and ridges provided on the bottom part perimeter edge 12. When the top part perimeter edge 8 and the bottom part edge 12 are in contact, a ridge on one part will be accommodated by a groove on the other part, and thereby creating a seal. Furthermore, the air pressure inside the encapsulated volume will provide a pressure to the concentric sealing means 13, 16 illustrated by the arrows in figure 5. The connected walls of the grooves and the ridges are pressed together and thereby provide a reinforced seal. Also the sealing protrusion 17 provides an air tight connection, when the sealing protrusion 17 is in close contact with the outer ridges in the concentric sealing means 13.

[0040] Fig. 6a and 6b illustrate the sealing part 4. The sealing part 4 engaging the top edge flange 11 and the bottom edge flange 15, shown in fig. 5. The sealing part 4 engages in a sealing manner, so that an airtight connection is provided between said top part and said bottom part. A reinforced sealing is also provided, when the sealing extensions 18 pass through the sealing passage provided by the apertures 10, 14 in the top edge flange 11 and the bottom edge flange 15, shown in fig. 5, where the sealing extensions 18 provide a firm grip, when the sealing part 4 is engaging the top part and the bottom part. The apertures may have different shapes, so the sealing parts 4 ability to stretch is decreased.

[0041] Fig. 7 illustrates a top part 2, a bottom part 3 and a sealing part 4, when assembled. The top part perimeter edge 8 provides concentric sealing means 13, and the bottom part perimeter edge 12 provides concentric sealing means 16, which is arranged in an airtight connection, when the top edge flange 11 is in contact with the bottom edge flange 15. Furthermore, the apertures in the top edge flange 11 are arranged so that they overlap the apertures in the bottom edge flange 15, thereby providing a sealing passage 19. The top part 2 and the bottom part 3 are assembled and placed in a mould. Sealing part material is injected into the mould. The sealing part material encapsulates the top edge flange 11 and the bottom edge flange 15. The ridge provided on the top edge flange 11 is extending in the opposite direction than the ridge provided on the bottom edge flange 15. When the sealing part material encapsulates the flanges, the ridge provided on the flanges has the effect of a lock providing the sealing part 4 a firm grip in the top part 2 and the bottom part 3. Furthermore in the moulding process, the sealing part material is filling out the sealing passage, so that the sealing part 4 is integrated with the top part 2 and the bottom part 3, providing a reinforced sealing. After the moulding process, the sealing part 4 provides an airtight connection between the top part 2 and the bottom part 3 and encloses a volume, and thereby produces a balancing board 1.

[0042] Fig. 8a and 8b illustrates a valve arranged in the balancing board 1. In fig. 8a a top part 2, a bottom part and a sealing part 4 is assembled into a balancing board 1, which encapsulates a volume of air 19. A valve aperture 5 is provided in the mid of bottom part 3. In fig. 8b the valve aperture 5 provides an air passage from the outer environment to the encapsulated volume inside the

balancing board 1. The valve aperture 5 is provided with a valve sealing wall 20, which is extending into the volume of the balancing board 1. The valve sealing wall 20 is provided with one recess 22 provided radially on one side of the valve sealing wall 20 towards the air passage. A valve 21 is inserted into the valve aperture 5. The valve 21 is provided with a valve flange 23 fitted for the recess 22, which provides an airtight connection. The arrows illustrated in fig. 8b show the pressure from the air inside the volume 19 of the balancing board 1 reinforcing the contact between the valve sealing wall 20 and the valve 21. The pressure in the balancing board 1 may vary, due to the pressure exposed to use, and/or by adding more air into the volume.

Claims

1. Balancing board for exercising the sense of balance comprising a top part, where said top part is substantially rigid, and a bottom part, where said bottom part is resilient, where said bottom part has a perimeter defining a bottom part perimeter edge, where said top part has a perimeter defining a top part perimeter edge where, when said top part perimeter edge and said bottom part perimeter edge is arranged adjacent to each other, a further sealing part is provided, said sealing part engaging said top part perimeter edge and said bottom part perimeter edge in a sealing manner such that an encapsulated volume is provided between said top part and said bottom part.

2. Balancing board according to claim 1, where said top part perimeter edge is in the shape of a top edge flange extending a first distance away from said top part, and said bottom part perimeter edge is in the shape of a bottom edge flange extending a first distance away from said bottom part, where the top edge flange is parallel and in contact with the bottom edge flange, where said sealing part engages at least a part of said top edge flange and at least a part of said bottom edge flange, in a sealing manner such that an encapsulated volume is provided between said top part and said bottom part.

3. Balancing board according to claim 2, wherein said top edge flange has a first concentric protrusion ridge extending in one direction away from the bottom part, and said bottom edge flange has a second protrusion ridge extending in the direction away from the top part said bottom part perimeter edge, said first and second protrusion ridges following the perimeters of the top and bottom parts perimeter edges, where said sealing part engages the first protrusion ridge and the second protrusion ridge.

4. Balancing board according to claim 1, where adjacent and inside the top part perimeter edge, a first concentric sealing means is provided, said first concentric sealing means comprising at least one set of alternating concentric grooves and ridges, and where said bottom part perimeter edge is provided with a second concentric sealing means, said second concentric sealing means comprising at least one set of alternating concentric grooves and ridges arranged off-set to the grooves and ridges of the first concentric sealing means, such that when the top part perimeter edges and bottom part perimeter edges are in contact, a ridge on one part will be accommodated by a groove on the other part, creating a seal.

5. Balancing board according to claim 2, wherein said top part edge flange comprises one or more apertures and said bottom part edge flange comprises one or more apertures, and when the top part is assembled with the bottom part, the apertures overlap to form one or more through-going aperture(s) and where said sealing part engages the top edge flange and the bottom edge flange filling out said one or more aperture(s), providing a reinforced sealing.

6. Balancing board according to claim 1, wherein a valve aperture is provided in said bottom part, and said valve aperture provides an air passage from the outer environment to said volume inside said balancing board, where a valve provides a one way closed air passage, when said valve is inserted into said valve aperture, where said valve has one or more valve flanges extending radially from an outer surface of the valve, where said valve aperture is provided with an valve sealing wall extending into said volume between the bottom part and the top part, where said valve sealing wall is provided with one or more recesses radially on one side of the valve sealing wall towards said air passage, where the valve flanges provided on said valve are arranged in the recesses of the valve sealing wall.

7. Method for manufacturing a balancing board as set out in any of claims 1 to 6 for exercising the sense of balance, by the following steps:

- providing a top part, where the top part is substantially rigid and comprising a top part perimeter edge, and
- providing a bottom part, where the bottom part is resilient and comprising a bottom part perimeter edge,
- where said top part perimeter edge is substantially equal to the bottom part perimeter edge,
- arranging said top part and said bottom part in a mould, so that said top part perimeter edge is superposed and urged against said bottom part perimeter edge,

- injecting a sealing part material into said mould, so the sealing part material encapsulates said top part perimeter edge and said bottom part perimeter edge, so that the sealing part is moulded together with said top part and said bottom part, thereby providing an airtight connection between the top part and the bottom part, enclosing a volume, thereby forming said balancing board.

8. Method for manufacturing a balancing board according to claim 7, further comprising the steps of

- providing said top part, where a top edge flange extends radially a first distance away from said top part perimeter edge, said top edge flange comprises one or more apertures distributed along the top part perimeter edge, ,
- providing said bottom part, where a bottom edge flange extends radially a first distance away from said bottom part perimeter edge, said bottom edge flange comprises one or more apertures distributed along the bottom part perimeter edge,
- arranging the apertures in said top edge flange so the apertures overlap the apertures in the bottom edge flange, providing sealing passages,
- placing the assembled top part and bottom part in a mould, and
- injecting a sealing part material into said mould, so the sealing part material encapsulates at least part of said top edge flange and at least a part of said bottom edge flange, and the sealing part material is filling the sealing passages, so that the sealing part is integrated with said top part and said bottom part, providing an reinforced sealing,
- after the moulding process, said sealing part provides an airtight connection between the top part and the bottom part and enclosing a volume, thereby forming said balancing board.

9. Method for manufacturing a balancing board according to claim 7, further comprising the steps of

- providing said top part, where a top edge flange extends radially a first distance away from said top part perimeter edge, and said top part perimeter edge is provided with first concentric sealing means, where said first concentric sealing means comprising at least one set of alternating grooves and ridges;
- providing said bottom part, where a bottom edge flange extends radially a first distance away from said bottom part perimeter edge, and said bottom part perimeter edge is provided with second concentric sealing means, said second concentric sealing means comprising at least one set of alternating grooves and ridges,
- placing the assembled top part and bottom part in a mould, and arranging the groves and ridges of said first concentric sealing means off-set to the groves and ridges of said second concentric sealing means, providing a seal when the top edge flange is arranged parallel and in contact with the bottom edge flange;
- injecting a sealing part material into said mould, so the sealing part material encapsulates at least part of said top edge flange and at least a part of said bottom edge flange, and the sealing part material is filling the sealing passages, so that the sealing part is integrated with said top part and said bottom part, providing a reinforced sealing;
- after the moulding process, said sealing part provides an airtight connection between the top part and the bottom part and enclosing a volume, thereby forming said balancing board.

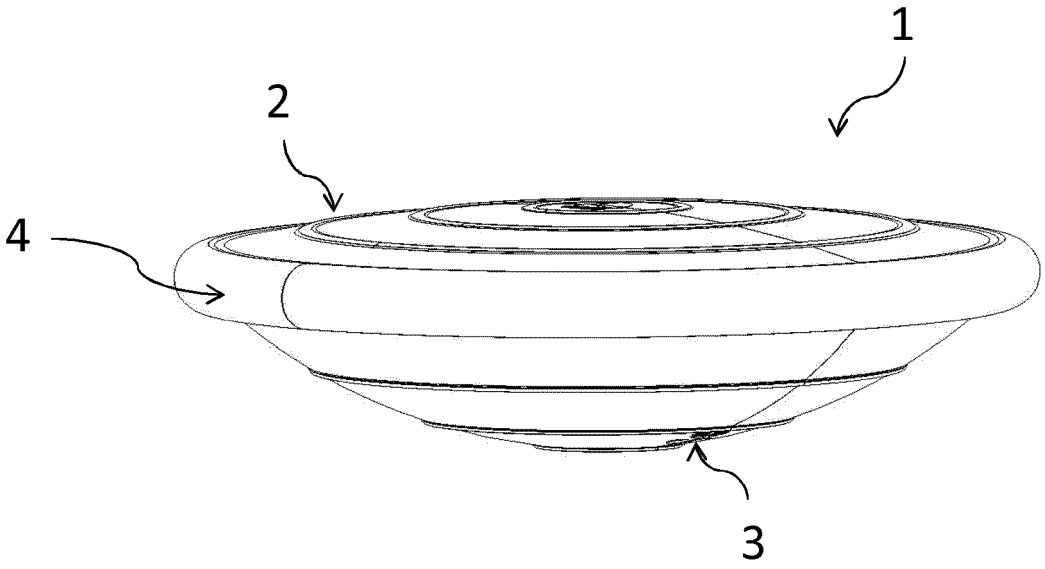

Fig. 1

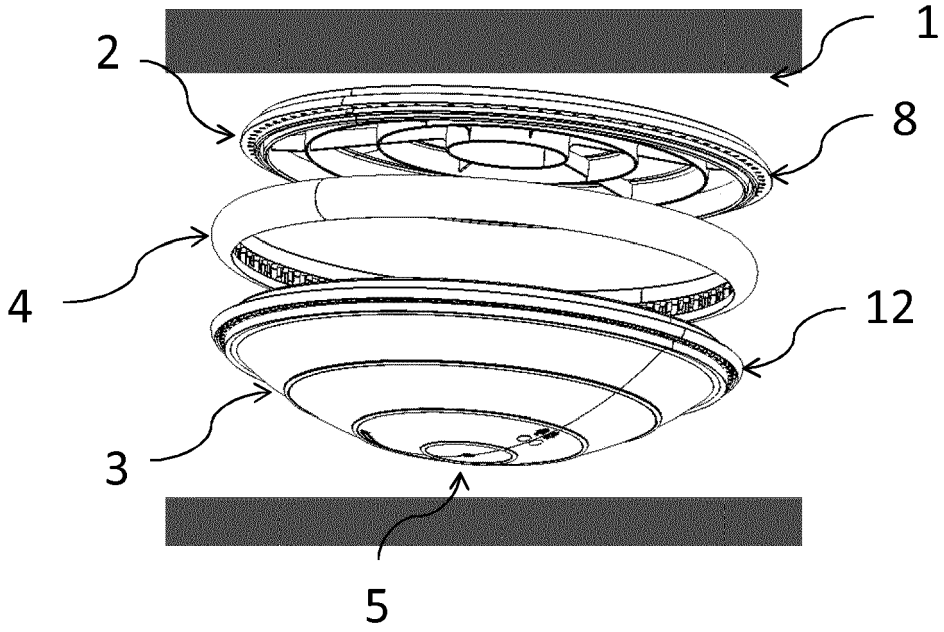

Fig. 2

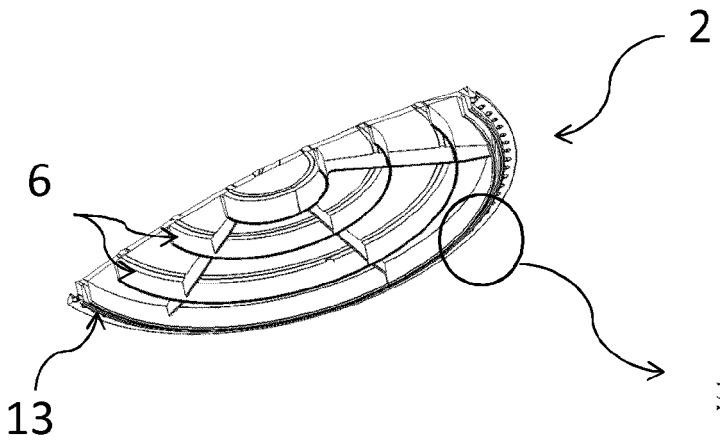

Fig. 3.a

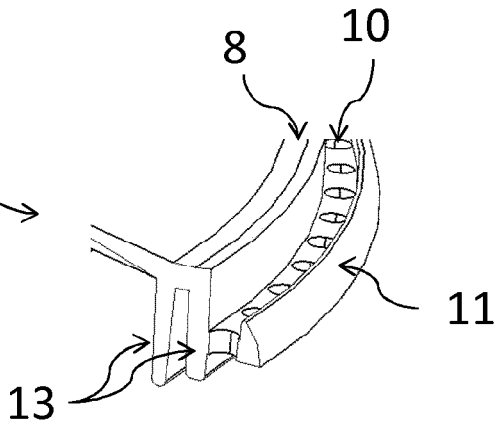

Fig. 3.b

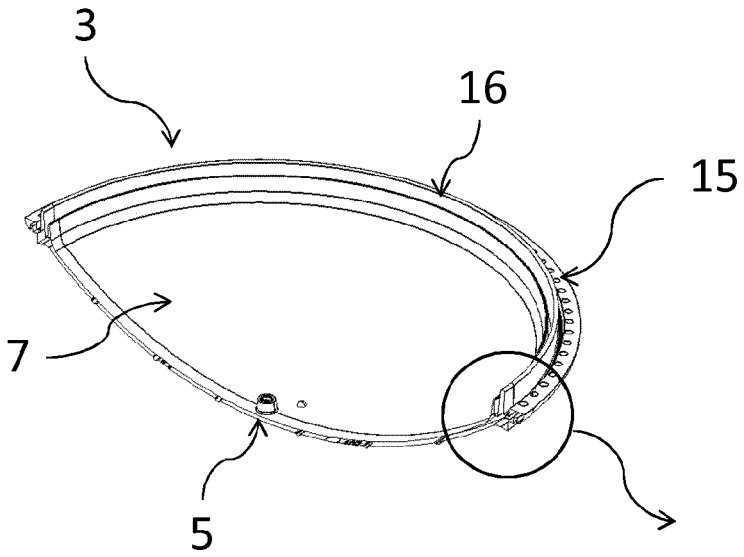

Fig. 4.a

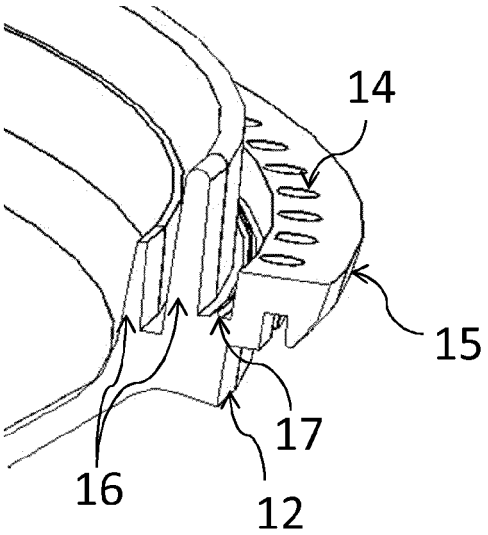

Fig. 4.b

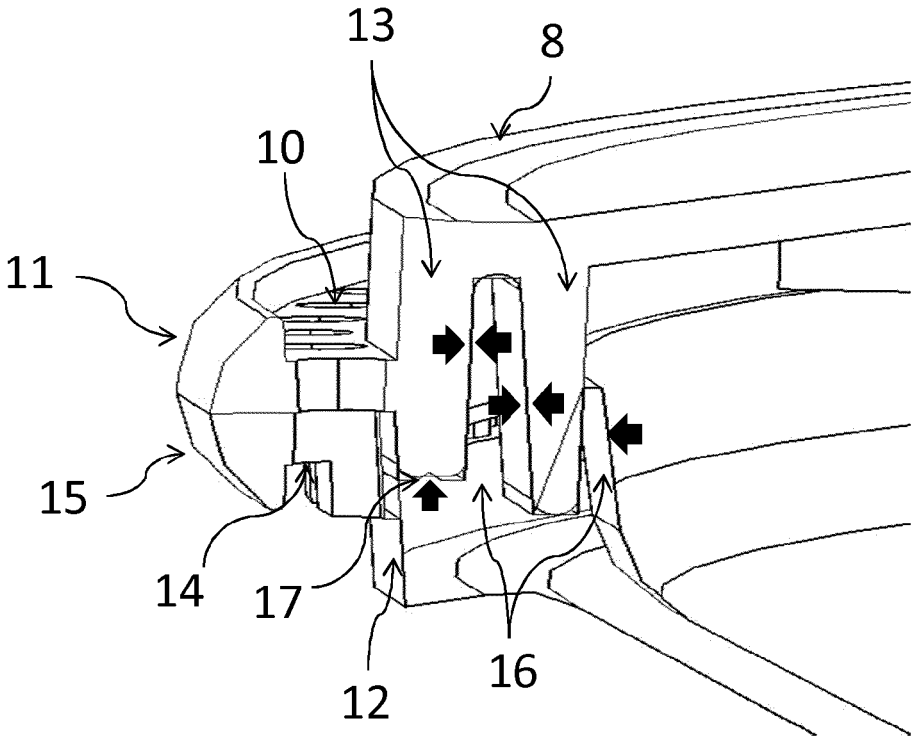

Fig. 5

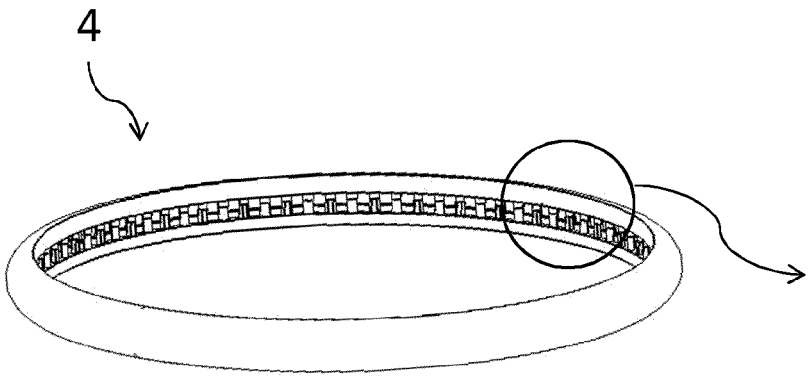

Fig. 6.a

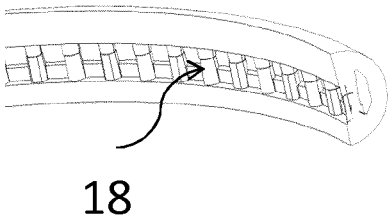

Fig. 6.b

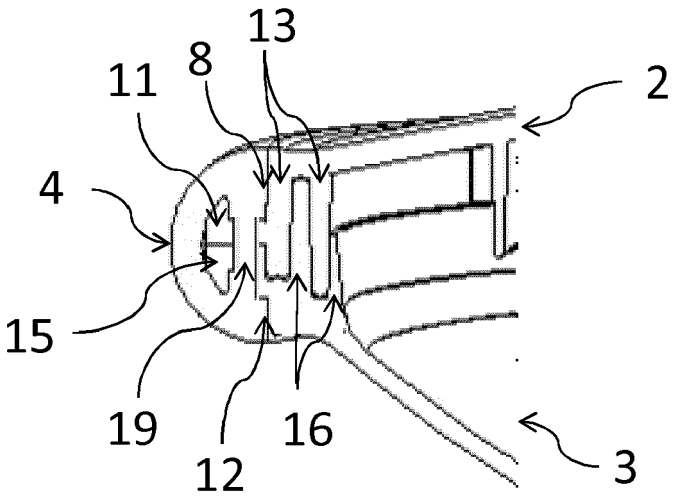

Fig. 7

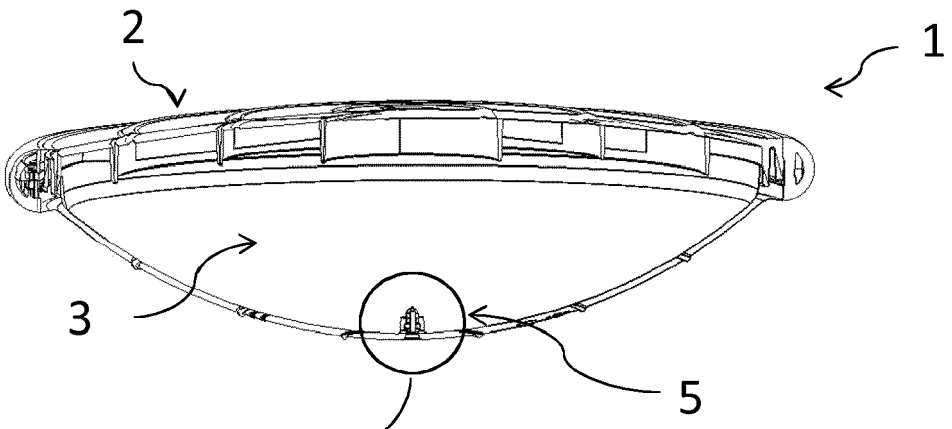

Fig. 8.a

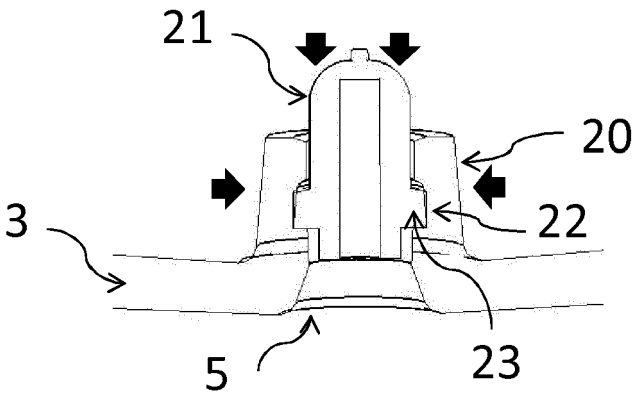

Fig. 8.b

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 18 21 2142

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 02/30519 A1 (D W FITNESS LLC [US]) 18 April 2002 (2002-04-18) * page 9 - page 20; figures *	1-9	INV. A63B21/00 A63B22/18 A63B26/00
X	US 2008/220944 A1 (PRATSON DAVID C [US] ET AL) 11 September 2008 (2008-09-11) * column 6 - column 8; figure 7 *	1,7	
X	US 6 575 885 B1 (WECK DAVID S [US] ET AL) 10 June 2003 (2003-06-10) * column 5 - column 10; figures *	1,7	
A	EP 0 134 047 A1 (STEHOUWER PHILIPPUS) 13 March 1985 (1985-03-13) * abstract; figures *	1,7	
A	US 7 575 540 B1 (DOBROW LISA [US] ET AL) 18 August 2009 (2009-08-18) * abstract; figures *	1,7	
			TECHNICAL FIELDS SEARCHED (IPC) A63B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	26 April 2019	Borrás González, E

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 18 21 2142

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

26-04-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 0230519 A1	18-04-2002	AU 9681001 A	22-04-2002
		US 6554753 B1	29-04-2003
		US 2003054927 A1	20-03-2003
		US 2008064579 A1	13-03-2008
		WO 0230519 A1	18-04-2002
US 2008220944 A1	11-09-2008	AU 2008226901 A1	18-09-2008
		CA 2680271 A1	18-09-2008
		CN 101668568 A	10-03-2010
		EP 2121145 A1	25-11-2009
		JP 5591542 B2	17-09-2014
		JP 2010520800 A	17-06-2010
		NZ 579563 A	31-08-2012
		US 2008220944 A1	11-09-2008
		WO 2008112188 A1	18-09-2008
US 6575885 B1	10-06-2003	NONE	
EP 0134047 A1	13-03-1985	EP 0134047 A1	13-03-1985
		NL 8302771 A	01-03-1985
US 7575540 B1	18-08-2009	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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

Patent documents cited in the description

- WO 0124887 A **[0006]**
- US 5048823 A **[0006]**