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# (54) SAFETY NET FOR A TRAMPOLINE AND A TRAMPOLINE HAVING A SAFETY NET

SICHERHEITSNETZ FÜR EIN TRAMPOLIN UND EIN TRAMPOLIN MIT SICHERHEITSNETZ

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## Description

### TECHNICAL FIELD OF THE INVENTION

**[0001]** The present invention relates to a safety net for surrounding a jumping area of a trampoline mat, and to a trampoline having such a safety net.

### BACKGROUND

**[0002]** Modern trampolines have been around since the mid-1930s, and even though trampolines started off being designed for competitive or professional purposes, trampolines for recreational use are nowadays a popular garden play equipment in many homes. These come in many shapes and sizes, however most are circular, octagonal, or rectangular. Generally, trampolines comprise a piece of taut, strong fabric stretched over a support structure (e.g. a steel frame) using coil springs, and a padding layer covering the steel frame and coil springs. The padding layer may also be referred to as an annular padded safety barrier arranged to extend about the mat and cover the springs and the spaces therebetween. The fabric that users jump or bounce on is often not elastic itself, instead the elasticity is provided by the springs which store potential energy. The padding layer generally serves a purpose of reducing the severity of impact injuries. Keeping the springs covered also reduces the risk of a limb falling between the gaps in the springs and the rest of the body falling off the trampoline.

**[0003]** Moreover, the recreational trampolines are often provided with a circumextending safety enclosure in the form of a safety net in order to reduce the likelihood that a user could fall off the trampoline mat while using the trampoline. The safety net can be retained by a frame structure (e.g. a number of support poles extending upwardly from the support structure), and accordingly attached at a lower end of the safety net, to the trampoline mat, padding layer or the support structure.

**[0004]** However, conventional safety net solutions are still associated with many problems and drawbacks. For example, in solutions where the lower end of the safety net is attached or fixed to the trampoline mat the safety net will inhibit the elasticity of the coil springs and therefore impair the overall user experience as the users will not achieve a proper "bouncing effect". Moreover, such solutions often attach the lower end of the net via the inner circumferential end of the padding layer, rendering the whole area defined by the padding layer unavailable for users.

**[0005]** Further, in solutions where the lower end of the safety net is attached or fixed to the support structure of the trampoline mat, there is a safety risk in that the safety net must be attached at the outer circumference thereof which consequently forms a circumextending pouch into which a user can land and potentially harm him- or herself. The only way to prevent this pouch at least partly from forming is to properly stretch the net during attachment to the support structure, but by doing this the risk of tearing the net during use is increased.

**[0006]** Moreover, it may be desirable to attach the lower end of the safety net to the padding layer in some way, however, the padding is generally not rigidly fixed to the support structure wherefore it does not provide proper anchoring of the safety net. The padding layer is typically tied to the mat and/or the support structure by ribbon ties or the like. Consequently, there is a risk of the padding layer moving out of position (lifted or moved sideways) during use of the trampoline if the safety net is attached to the padding layer.

**[0007]** Thus, there is a need for improvement in the art, particularly there is a need for a safety net arrangement for trampolines which reduces the risk of injuries while not negatively affecting the experience for users.

### SUMMARY OF THE INVENTION

**[0008]** It is therefore an object of the present invention to provide a safety net and a trampoline, which alleviate all or at least some of the above-discussed drawbacks of the presently known systems.

**[0009]** This object is achieved by means of a safety net and trampoline as defined in the appended claims.

**[0010]** The term exemplary is in the present context to be understood as serving as an example, instance or illustration.

**[0011]** According to a first aspect of the present invention, there is provided a safety net for surrounding a jumping area of a trampoline in order to prevent users falling out of the jumping area. The safety net comprises:

an anchoring section arranged to be removably fixed to a support structure of the trampoline; and
a skirt portion connected to and extending from the anchoring section towards a lower edge of said safety net, wherein a distal end portion of the skirt portion is arranged to be fixed to a padding layer of the trampoline.

**[0012]** A safety net for trampolines (may also be referred to as a safety enclosure, safety net enclosure, or retaining net) is arranged to form a tubular enclosure which circumferentially surrounds the jumping area defined by the trampoline mat of the trampoline. The safety net is generally arranged to be fixed to and supported/suspended by a type of rigid frame structure (e.g. straight or curved poles extending from the trampoline mat support structure), so to form the tubular enclosure. The rigid frame structure may also be known as a safety net retainer. The safety net may for example have a height of approximately 2 meters. The safety net may comprise a cloth or net-shaped structure. In more detail, the safety net can be made of any suitable material with adequate tensile strength, working load limit and resistance to various environmental factors (e.g. UV rays, heat, fire, mold rot, abrasive contacts, etc.), such as for exam-

ple, Polyethylene (PE) or polyester.

**[0013]** A support structure of the trampoline is in the present context to be construed as a rigid structure (e.g. steel frame) over which the trampoline mat (made from a strong fabric) is stretched by means of e.g. a plurality of coil springs. The support structure generally has a set of legs arranged to distance the trampoline mat away from the ground.

**[0014]** Removably fixed is in the present context to be understood that two elements/components can be repeatedly attached and detached to/from each other.

**[0015]** Further, in accordance with an exemplary embodiment of the present invention, the skirt portion has a distal edge portion which includes the lower edge of the safety net, and wherein the skirt portion is arranged to be fixed to the padding layer at said distal edge portion. The term distal (in reference to the skirt portion) is in the present context, to be understood as away from anchoring section safety net, i.e. towards the edge. Stated differently, the distal end portion of the skirt portion is the "bottom" edge portion of the safety net which is attachable to the padding layer of the trampoline. However, alternatively, the skirt portion may be arranged to be removably fixed to the padding layer at an attachment portion spaced proximally away from the lower edge of the safety net such that the edge extends past an outer circumference of the padding layer so to form a type of skirt surrounding the padding layer and part of the support structure.

**[0016]** The anchoring section may for example removably/temporarily fixed to the support structure by means of straps or ribbons attached to and extending from the anchoring section. The straps or ribbons may accordingly be tied or connected about suitable parts of the support structure.

**[0017]** In accordance with an exemplary embodiment of the present invention, the safety net also comprises a suspension section arranged to be fixed to and suspended by a frame structure. The suspension section is preferably provided at an upper end portion of the safety net. The term "upper" is to be construed as the vertically elevated end when the net is mounted and in use. Accordingly, the anchoring section and skirt portion are provided in the lower half of the safety net while the suspension section is provided on the upper half of the safety net. Again, the terms upper and lower are in reference to the vertically upper and lower ends of the safety net when it is mounted and in use.

**[0018]** The present invention is based on the realization that by utilizing two separate fixation points between the safety net and the trampoline assembly (support structure, trampoline mat, padding, coil springs, etc.), many surprising and advantageous effects can be achieved. Note that the connection to the vertically extending poles is not considered in the above mentioned two separate fixation points. In more detail, the present inventor realized that by anchoring a first portion of the safety net to the rigid support structure of the trampoline, and a second (vertically lower) portion of the safety net to the padding layer one can achieve the desirable effect having the safety net connected to the padding layer (improved safety) but having the safety net and the padding acting independently of each other. In other words, the padding stays still in a desired position while the safety net can stay tensed enough to dampen impacts from users bouncing into the net. Accordingly, the overall safety can be improved due to a reduction of the risk of impact injuries caused from users jumping into parts of the rigid structures of the trampoline, injuries associated with inadvertent displacement of the padding layer. Moreover, since the safety net now is attachable to the padding layer, there is no need to attach the lower end of the safety net to the trampoline mat (impaired performance) or to the support structure (impaired safety due to pouch formation).

**[0019]** Further, in accordance with the present invention, the anchoring section is arranged in a reinforced portion of the safety net. A reinforced portion is in the present context to be construed as a portion that is strengthened or supported, e.g. with additional material. For example, the reinforced portion may be in the form of a band or tape made of strong fabric attached to the safety net. Alternatively, or additionally, the reinforced portion may for example be an integrated part of the safety net, made from thicker and/or stronger material. This is advantageous since the anchoring section is arranged to be rigidly fixed to the support structure of the trampoline in order to provide adequate tensioning of the safety net. Thus, there is a risk of tearing the net when strained. Therefore, by having the anchoring section arranged in a reinforced portion of the safety net the risk of tearing the net during use can be reduced.

**[0020]** The reinforced portion may extend along the entire length or substantially the entire length of the safety net. Stated differently, the reinforced portion may extend along the entire circumference or substantially the entire circumference of the safety net when the safety net forms a/the tubular enclosure. This may for example be advantageous with respect to distribution of forces.

**[0021]** Yet further, in accordance with another exemplary embodiment of the present invention, the distal end portion has a plurality of fixation points extending along a majority of a length of the distal end portion, wherein a space between two adjacent fixation points is in the range of 5 to 40 cm. Stated differently, the skirt portion is a portion of the safety net extending from the anchoring section and is connectable to the padding layer at an "outer edge" therefrom. As mentioned, distal in the present context is to be understood as away from the "center" of the safety net, i.e. towards the edge. Generally, the "lower" edge since the "upper" edge of the safety net is not particularly addressed in the present invention. If the safety net is approximated as a tubular structure, the lower end portion of the tube is connectable to the padding layer and a section above the lower end (i.e. the anchoring section) is connectable to the support structure

of the trampoline (e.g. by means of a buckle and straps).

**[0022]** Moreover, the distal end portion preferably has a plurality of fixation points to be connected to the padding layer where the fixation points are distributed along a majority of the length of the distal end portion of the skirt portion by intervals in the range of 5 cm to 40 cm, preferably in the range of 10 cm to 30 cm, and more preferably in the range of 15 cm to 25 cm. Depending on the intended application and design option, the fixation points may extend along the entire length of the distal end portion (i.e. along the entire distal edge). This may for example be the situation if the entrance/exit into/from the jumping area is provided by means of a closable opening in the safety net. However, in other applications the safety net may instead be unattached to the padding layer along a smaller length thereof which will serve as an entrance/exit.

**[0023]** Further, in an embodiment of the present invention, the distal end portion of the skirt portion is fixed to the padding layer by means of a zip fastener. In other words, the distal end portion can be "continuously" attached to the padding layer, along a length of the distal end portion. This embodiment further facilitates the assembly of the complete trampoline arrangement.

**[0024]** Moreover, the distal end portion may be arranged to be elastically or resiliently fixed to the padding layer. For example, according to another embodiment of the present invention, the distal end portion is provided with a number of openings (may also be referred to as apertures, holes, etc.) and the padding layer may be provided with corresponding loops or a flange which corresponding openings such that the skirt portion can be removably/temporarily stitched to the padding layer. Preferably the stitching is performed by means of a resilient or elastic string/thread. Alternatively, the distal end portion may be fastened to the padding layer with other fastening means, such as e.g. elastically fixed buttons, or the like.

**[0025]** In accordance with another aspect of the present invention, there is provided a trampoline comprising:

a trampoline mat defining a jumping area;
a support structure circumferentially surrounding the trampoline mat, the support structure being connectable to the trampoline mat via a plurality of resilient members;
a padding layer arranged along a circumferential portion of the trampoline mat for providing a cover on top of the resilient members;
a safety net for surrounding the jumping area in order to prevent users falling out of the jumping area, wherein the safety net is arranged to be supported by and connected to a frame structure extending at a height above the support structure;
wherein the safety net comprises an anchoring section at a lower half thereof, the anchoring section being arranged to be removably fixed to the support structure; and
a skirt connectable to the anchoring section and to the padding layer. With this aspect of the invention, similar advantages and preferred features are present as in the previously discussed aspect of the invention.

**[0026]** The trampoline mat, made from a strong fabric (e.g. waterproof canvas or woven polypropylene material) is accordingly stretched by means of the resilient members (e.g. coil springs) connected to the support structure to form the jumping area. The padding layer may comprise any suitable conventional padding, such as e.g. a foam padding.

**[0027]** As in the previously discussed aspect of the invention, the safety net of the trampoline is fixed to two separate parts of the trampoline, namely to the padding layer and to the support structure.

**[0028]** The safety net is fastened to the rest of the trampoline via a first attachment portion (i.e. the anchoring section) which is arranged to be fixed to the support structure. This may for example be achieved by having appropriately arranged straps which can be tied or brought together with a buckle arrangement about pole or leg of the support structure. This first fixation provides for a rigid, stiff attachment and provides the desired tension of the safety net. By stretching or tensing the majority part of the safety net it can provide adequate dampening and thereby prevent users from injuring themselves against the rigid frame structure which carries the safety net.

**[0029]** Further, the safety net is fastened to the rest of the trampoline via the skirt which is connectable between the anchoring section and the padding layer. The skirt is an integral part of the safety net. The skirt is arranged to provide the connection between the safety net and the padding layer which in combination with the fixation between the anchoring section and the support structure allows the safety net to effectively be attached to the padding but to be able to act/move independently of each other. It is desirable to have the safety net connect to the padding in order to reduce the risk of injuries by preventing users from partially falling out of the safety enclosure and getting trapped between the safety net and the padding/support structure.

**[0030]** In accordance with an embodiment of the present invention, the skirt is an integrated part of the safety net and arranged to be removably fixed to the padding layer at a plurality of fixation points spread along an outer edge of the skirt and along a length of the padding layer. As mentioned, the skirt may be an integral part of the safety net, and accordingly permanently attached to the safety net along a proximal (i.e. upper) edge of the skirt. The skirt is arranged to be fixed to the padding layer at a plurality of fixation points spread along a distal (lower) edge of the skirt. Upper and lower are in the present context in reference to an assembled state of the trampoline, i.e. orientations during use. A length of the padding layer is to be understood as the main direction of

extension of the padding layer. In more detail, the padding layer, in the example of a circular trampoline mat, can be construed as having a thickness (extending in a vertical z-direction), a depth/width (extending radially outwards from the trampoline mat, r-direction) and a length (extending in the azimuthal or angular direction, φ-direction). The skilled reader readily realizes how the directional terms, and particularly the term "length of the padding layer" is translated in the case of a polygonal (e.g. square) trampoline mat.

**[0031]** The skirt need not be connected to the padding layer along the full length thereof since it may be desirable to provide an opening for entering/exiting the jumping area. Also, the padding layer may be provided as modular pieces to be assembled so to fully enclose the circumferential edge of the trampoline mat in order to facilitate assembly.

**[0032]** Moreover, the skirt and the padding layer may each be provided with one complementary half of a zip fasterner, according to another embodiment of the present invention, such that the skirt can be removably fixed to the padding layer by means of the zip fastener. Further, according to an example not covered by the scope of protection of the claims, the skirt may also be removably fixed to the anchoring section of the safety net by means of a second zip fastener, wherefore the whole skirt can be provided as a separate component. Having the skirt as a separate component allows for facilitated customization of the skirt (e.g. length, shape, color, patterns, etc.).

**[0033]** Further, in accordance with an embodiment of the present invention, the fixation points are in form of holes, and wherein the padding layer comprises a plurality of corresponding holes such that the skirt and the padding layer are arranged to be removably fixed to each other by means of stitching. The stitching (or seam) may be provided by means of a suitable thread, string, or wire. However, alternatively, or additionally, the padding layer may be provided with a plurality of corresponding buttons by means of which the skirt may be attached to the padding layer.

**[0034]** Even further, in accordance with the present invention, the skirt is an integrated part of the safety net and arranged to be elastically and removably fixed to the padding layer. This may for example be achieved by using an elastic thread, string, or wire for the stitching.

**[0035]** However, in accordance with an example not covered by the present invention, the skirt is an integrated part of the padding layer and arranged to be removably fixed to the anchoring section. Thus, instead of having the skirt as an integral part of the safety net, extending from the anchoring section, the skirt may be an integral part of the padding layer. Stated differently, the padding layer is to be removably attached to the anchoring section of the safety net, during assembly of the trampoline. Here, the elastic connection between the safety net and the padding layer may accordingly be provided by elastically attaching the skirt to the anchoring section/safety net instead.

**[0036]** Further, in accordance with another exemplary embodiment of the present invention, the anchoring section is arranged to be rigidly and removably fixed to the support structure. This may for example be achieved by using non-elastic attachment means (e.g. non-elastic straps). Thus, in accordance with yet another exemplary embodiment of the present invention, the anchoring section is rigidly and removably fixed to the support structure by means of a buckle arrangement. The buckle arrangement may for example be in the form of two rigid/non-elastic straps which can be detachably connected to each other by means of e.g. a clasp.

**[0037]** Further, in accordance with another exemplary embodiment of the present invention the padding layer comprises a flange extending along a length of the padding layer, and wherein the skirt is an integrated part of said safety net and arranged to be removably fixed to the flange. Preferably, the skirt is arranged to be fixed to an inner side (i.e. the side facing towards the trampoline mat) of the flange. By arranging a flange along the length of the padding layer assembly may be facilitated since the attachment interface is made more accessible. Also, by arranging the fixation/attachment of the skirt to the flange, safety is improved since the openings between the fixation points are slightly lifted from the padding layer surface wherefore the risk of users inadvertently reaching through the "openings" between the fixation points is reduced. More specifically, users generally tend to "slide" out under the safety enclosure, thus by providing a flange extending vertically upwards from the padding layer, the risk of "sliding" out is reduced. Moreover, the flange provides a dynamicity to the trampoline since the above mentioned elasticity in the connection between the skirt and the padding layer, may be provided by the flange (e.g. by having it made of an elastic material). The flange may be an integral part of the padding layer. Also, the flange may for example be arranged at an outer portion of the padding layer, i.e. proximal to an outer circumferential edge of the padding layer.

**[0038]** The skirt may be removably fixed to the padding layer at an outer circumference of the padding layer. Stated differently, the skirt may be removably fixed to the padding layer at an outer portion of the padding layer, i.e. proximal to an outer circumferential edge of the padding layer. In another embodiment, the skirt may be removably fixed to the padding layer "more midway" between the outer and inner circumferences of the padding layer.

**[0039]** At one or more sections along the padding layer, e.g. at corners of the padding layer and/or at poles of the trampoline, the skirt may be removably fixed closer to an inner circumference of the padding layer than at one or more other sections along the padding layer. In other words, the distance between the skirt and the inner circumference (boundary) of the padding layer may vary along the length of the padding layer. In this way, a zip fastener used to removably fix the skirt to the padding

layer can be shorter. Furthermore, it may allow at least one area of the padding layer to be accessed outside the safety net. Furthermore, in case the skirt is removably fixed closer to the inner circumference of the padding layer at the poles of the trampoline, the distance between the safety net and the poles may be increased, which may eliminate or at least reduce the collision force in case a user crashes into the safety net at one of the poles.

**[0040]** These and other features of the present invention will in the following be further clarified with reference to the embodiments described hereinafter.

## BRIEF DESCRIPTION OF THE DRAWINGS

**[0041]** For exemplifying purposes, the invention will be described in closer detail in the following with reference to embodiments thereof illustrated in the attached drawings, wherein:

Fig. 1 is a perspective view of a trampoline in accordance with an embodiment of the present invention;

Fig. 2a is a cross-sectional view of a portion the trampoline from Fig. 1;

Fig. 2b is a cross-sectional view of a portion of a trampoline in accordance with another embodiment of the present invention;

Fig. 2c is a cross-sectional view of a portion of a trampoline in accordance with yet another embodiment of the present invention;

Fig. 3 is a close-up perspective view of a portion of the trampoline from Fig. 1;

Fig. 4 is a cross-sectional view of a portion of a trampoline in accordance with yet another embodiment of the present invention.

Fig. 5 is a close-up perspective view of a portion of a trampoline according to an embodiment of the present invention.

Fig. 6 is schematic top view of the padding layer and the fixation of the skirt of the safety net of a trampoline according to an embodiment of the present invention.

## DETAILED DESCRIPTION

**[0042]** In the following detailed description, example embodiments of the present invention will be described. However, it is to be understood that features of the different embodiments are exchangeable between the embodiments and may be combined in different ways, unless anything else is specifically indicated. Even though in the following description, numerous details are set forth to provide a more thorough understanding of the present invention, it will be apparent to the one skilled in the art that the present invention may be practiced without these details. In other instances, well known constructions or functions are not described in detail, so as not to obscure the present invention.

**[0043]** Fig. 1 is a perspective view illustration of a trampoline 1 in accordance with an embodiment of the present invention. The trampoline 1 has a trampoline mat 2, here having a circular shape. The trampoline mat 2 can be said to define a jumping area. Further, there is a support structure 3 circumferentially surrounding the trampoline mat 2. The support structure 3 is connectable to the trampoline mat 2 via a plurality of resilient members, e.g. coil springs, (not shown in Fig. 1, see e.g. ref. 11 in Fig. 2a). The trampoline mat 2 is generally not made of an elastic material, but it is the resilient members that provide the "bounce" of the trampoline by storing and releasing potential energy. Accordingly, the resilient members are adapted to retain the trampoline mat 2 under tension. The support structure 3 further comprises a set of legs arranged to provide adequate distance between the trampoline mat 2 and the ground surface.

**[0044]** Further, the trampoline 1 has an annular padding layer 4 arranged along a circumferential portion of the trampoline mat 2 for covering the resilient members and a part of the support structure 3. The padding layer 4 serves to reduce the risk of impact injuries from users landing outside of the trampoline mat 2 area while jumping on the trampoline 1. Stated differently, the padding layer 4 is the form of an annular pad adapted for covering the resilient members.

**[0045]** The trampoline 1 also comprises a safety net 5 for surrounding the jumping area so to prevent users from falling out of the jumping area during use. The safety net 5 is arranged to be supported by and connected to a frame structure 6 which extends at a height above the support structure 2. The frame structure may e.g. be in the form of poles 6 attached to and extending (vertically) away from the support structure 3. The suspension section 16 of the safety net 5 is attached to the upper ends of the poles 6 as known in the art. In more detail, the suspension section 16 can be said to be arranged to be fixed to and suspended by a frame structure 6. The suspension section 16 is provided at an upper end portion of the safety net 5. The term "upper" is to be construed as the vertically elevated end when the net 5 is mounted and in use. Accordingly, the anchoring section 7 and skirt portion 8 are provided in the lower half of the safety net 5 while the suspension section 16 is provided on the upper half of the safety net 5. Again, the terms upper and lower are in reference to the vertically upper and lower ends of the safety net 5 when it is mounted and in use.

**[0046]** The safety net 5 has an anchoring section 7 which is arranged to be fixed or attached to the support structure 3 of the trampoline 1 via a plurality of attachment elements 9. The anchoring section 7 may e.g. have straps 9 extending therefrom, where the straps may be tied or locked about the "legs" of the support structure 3. The anchoring section 7 is preferably attached to the support structure so to provide proper tension to the safety net 5, whereby the safety net 5 can better prevent users from accidently jumping into the frame structure 6. The safety net may have an opening or doorway therethrough (not

shown) for users to reach the jumping area. The anchoring section 7 is arranged in a reinforced portion of the safety net 5. The reinforcement is here provided by a band of durable and strong fabric which is permanently fixed to the safety net 5. This is provided in order to reduce the risk of tearing the safety net 5 during use. The reinforced portion may be understood as a portion of the safety net having a higher tensile strength. The reinforcement and may for example be achieved by making a portion of the safety net 5 of a thicker material or attaching additional material thereto. As shown in fig. 1, the reinforced portion may extend along the entire length (circumference) of the safety net 5.

**[0047]** The trampoline 1 further comprises a skirt 8 connectable between the anchoring section 7 and the padding layer 4. Moreover, the skirt 8 has a distal end portion (lower end portion) arranged to be fixed to the padding layer 4 of the trampoline 1. The skirt 8 may be a portion of the safety net 5, a portion of the padding layer 4, or a separate element, as will be further described below in reference to Figs. 2a - 2c.

**[0048]** Fig. 2a is cross-sectional view of the trampoline 1 illustrated in Fig. 1. Here, the attachment points between the safety net 5 and the rest of the trampoline assembly are seen in more detail. Here, the skirt 8 is an integral portion of the safety net 5 and accordingly extends from the anchoring section 7. The anchoring section 7 is a reinforced portion of the safety net 5 as indicated by the additional layer of material attached thereto. The anchoring section 7 has a plurality of fastening elements 9, here in the form of straps and buckles, which are arranged to fix the safety net 5 to the support structure 3.

**[0049]** The padding layer 4 comprises a flange 12 which extends along a length of the padding layer 4. The length of the padding layer is the extension along a direction into or out from the drawing sheet (i.e. along a normal of a plane defined by the drawing sheet). With reference to Fig. 1, the length is defined as an extension in the azimuthal/angular direction, in a cylindrical coordinate system. The skirt 8 is then fixed to (as indicated by the stitching 13) the padding layer 4 at an inner side of this flange 12. More specifically, the distal end portion of the skirt 8 is fastened to the inner side of the flange 12.

**[0050]** Fig. 2b is cross-sectional illustration of a trampoline in accordance with another embodiment of the present invention. Here, the skirt 8 is comprised by the padding layer 4 as an extension of the flange 12. Stated differently, the skirt 8 is permanently fixed to or integrated with the padding layer 4.

**[0051]** Fig. 2c is cross-sectional illustration of a trampoline in accordance with yet another embodiment of the present invention. Here, the skirt 8 is a separate element arranged to be attached to both the padding layer 4 and the safety net 5 (in particular the anchoring section 7 of the safety net 5).

**[0052]** Fig. 3 is a close-up perspective view illustration of the trampoline of Fig. 1. The distal end portion of the skirt 8 is attached to the flange 12 of the padding layer 4 by means of temporary stitching. The distal end portion of the skirt 8 has a plurality of fixation points extending along a majority of the length of the distal end portion. The space between two adjacent fixation points (e.g. stitches) being in the range of 5 to 40 cm. Preferably, the space between two adjacent fixation points is in the range of 10 to 30 cm. Stated differently, the distal end portion of the skirt 8 is attached to the padding layer 4 at fixation points provided at intervals of 5 to 40 cm.

**[0053]** Alternatively, the distal end portion of the skirt 8 could be attached to the flange 12 of the padding layer 4 by means of a zip fastener 14 arrangement, as shown for example in fig. 5.

**[0054]** The fastening means 9 extending from the anchoring section 7 are preferably adjustable such that the tension of the safety net 5 can be adjusted. For example, in the illustrated example, the length of the straps 9 can be adjusted by means of a buckle arrangement so to provide a desirable tension to the safety net 5.

**[0055]** Fig. 4 is cross-sectional illustration of a trampoline in accordance with yet another embodiment of the present invention. This embodiment differs from the previously discussed in that the skirt/skirt portion 8 is not attached/fixed to the padding layer 4 at a distal end portion of the skirt 8, but instead the attachment 14 is provided at a central portion of the skirt 8. Central portion in reference to the skirt/skirt portion 8 is to be construed as any portion other than the upper/lower ends of the skirt/skirt portion 8. The skirt is removably fixed to the padding layer 4 by means of a zip fastener 14, which provides for a simple, reliable, and repeatable attachment principle.

**[0056]** The lower edge of the skirt/skirt portion 8 extends past the outer circumference of the padding layer 8, thereby forming a skirt which surrounds the padding layer 4 and a part of the support structure 3. Moreover, the skirt/skirt portion 8 may be arranged to be removably fixed to the anchoring section 7 (not shown in Fig. 4), so to form a separate component/element. This facilitates customization since the skirt/skirt portion 8 is one of the most externally visible parts of the trampoline and therefore suitable for personalization. In more detail, since the skirt/skirt portion 8 would be a separate component one does not need to customize any other parts of the trampoline (e.g. the padding layer or the rest of the net) which facilitates production.

**[0057]** Fig. 6 is schematic top view of the padding layer 4 and the fixation of the skirt 8 of the safety net 5 of a trampoline 1 according to an embodiment of the present invention. This embodiment 1 may be similar to e.g. the trampoline shown in fig. 1, but here the skirt 8 is removably fixed to the padding layer 4 between the outer circumference (boundary) 15 and the inner circumference (boundary) 16 of the padding layer 4, for example by means of a zip fastener 14. Namely, the distance d1 between the skirt 8 as fixed to the padding layer 4 and the outer circumference 15 may for example be at least

25mm or at least 10% of the width w of the padding layer 4, and the distance d2 between the skirt 8 as fixed to the padding layer 4 and the inner circumference 16 may for example be at least 25 mm or at least 10% of the width w of the padding layer 4. For a circular trampoline, the distances d1 and d2 could be constant throughout the length of the padding layer. For e.g. a rectangular trampoline 1, the skirt 8 can be closer to the inner circumference 16 at the corners than at the long and short sides of the padding layer 4, as in fig. 6. Furthermore, in the embodiment exemplified in fig. 6, the anchoring section of the safety net 5 could be (arranged to be) removably fixed to the poles 6 of the trampoline 1 rather than the "legs" of the support structure. This may also apply to a variant wherein the skirt at e.g. the long and short sides of the padding layer is removably fixed at the outer circumference of the padding layer, but closer to the inner circumference at e.g. the corners and/or the poles (i.e. d1 is locally equal or proximal to zero; not shown).

**[0058]** The invention has now been described with reference to specific embodiments. However, several variations of safety net and trampoline are feasible. It should be noted that the above-mentioned embodiments illustrate rather than limit the invention, and that those skilled in the art will be able to design many alternative embodiments without departing from the scope of the appended claims. In the claims, any reference signs placed between parentheses shall not be construed as limiting to the claim. The word "comprising" does not exclude the presence of other elements or steps than those listed in the claim. The word "a" or "an" preceding an element does not exclude the presence of a plurality of such elements.

## Claims

**1.** A trampoline (1) comprising:

a trampoline mat (2) defining a jumping area;
a support structure (3) circumferentially surrounding said trampoline mat, said support structure being connectable to said trampoline mat via a plurality of resilient members;
a padding layer (4) arranged along a circumferential portion of said trampoline mat for providing a cover on top of said resilient members;
a safety net (5) for surrounding said jumping area in order to prevent users falling out of said jumping area, wherein said safety net is arranged to be supported by and connected to a frame structure (6) extending at a height above said support structure;
wherein said safety net comprises an anchoring section (7) at a lower half thereof, said anchoring section being arranged to be removably fixed to said support structure (3), wherein said anchoring section (7) is arranged in a reinforced portion of said safety net; and
a skirt (8) connectable to said anchoring section and to said padding layer,
wherein said skirt (8) is an integrated part of said safety net (5) and arranged to be removably fixed to said padding layer (4) at a plurality of fixation points spread along an outer edge of the skirt (8) and along a length of the padding layer (4), and wherein said plurality of fixation points are in form of holes, and wherein said padding layer (4) comprises a plurality of corresponding holes such that said skirt (8) and said padding layer are arranged to be removably fixed to each other by means of stitching (13).

**2.** The trampoline (1) according to claim 1, wherein said skirt (8) is arranged to be removably and elastically fixed to said padding layer.

**3.** The trampoline (1) according to any one of claims 1-2, wherein said anchoring section is arranged to be rigidly and removably fixed to said support structure.

**4.** The trampoline (1) according to any one of claims 1-3, wherein said anchoring section is rigidly and removably fixed to said support structure by means of a buckle arrangement.

**5.** The trampoline (1) according to any one of claims 1-4, wherein said padding layer (4) comprises a flange (12) extending along a length of the padding layer, and wherein said skirt (8) is arranged to be removably fixed to said padding layer at an inner side of said flange (12).

**6.** A trampoline (1) comprising:

a trampoline mat (2) defining a jumping area;
a support structure (3) circumferentially surrounding said trampoline mat, said support structure being connectable to said trampoline mat via a plurality of resilient members;
a padding layer (4) arranged along a circumferential portion of said trampoline mat for providing a cover on top of said resilient members;
a safety net (5) for surrounding said jumping area in order to prevent users falling out of said jumping area, wherein said safety net is arranged to be supported by and connected to a frame structure (6) extending at a height above said support structure;
wherein said safety net comprises an anchoring section (7) at a lower half thereof, said anchoring section being arranged to be removably fixed to said support structure (3), wherein said anchoring section (7) is arranged in a reinforced portion of said safety net; and

a skirt (8) connectable to said anchoring section and to said padding layer,
wherein said skirt (8) is an integrated part of said safety net (5), and wherein said skirt is arranged to be removably fixed to padding layer by means of a zip fastener (14).

**7.** The trampoline (1) according to any one of claims 1-6, wherein said skirt (8) is removably fixed to the padding layer (4) at an outer circumference of the padding layer.

**8.** The trampoline (1) according to any one of claims 1-7, wherein said skirt (8) at one or more sections along the padding layer (4) is removably fixed closer to an inner circumference (16) of the padding layer than at one or more other sections along the padding layer.

**Patentansprüche**

**1.** Ein Trampolin (1), umfassend:

einer Trampolinmatte (2), die eine Sprungfläche definiert;
einer Stützstruktur (3), die die Trampolinmatte in Umfangsrichtung umgibt, wobei die Stützstruktur mit der Trampolinmatte über eine Vielzahl von elastischen Elementen verbunden werden kann;
einer Polsterschicht (4), die entlang eines Umfangsabschnitts der Trampolinmatte angeordnet ist, um eine Abdeckung auf der Oberseite der elastischen Elemente bereitzustellen;
einem Sicherheitsnetz (5) zum Umgeben des Sprungbereichs, um zu verhindern, dass Benutzer aus dem Sprungbereich herausfallen, wobei das Sicherheitsnetz so angeordnet ist, dass es von einer Rahmenstruktur (6) getragen wird und mit dieser verbunden ist, die sich in einer Höhe oberhalb der Trägerstruktur erstreckt;
wobei das Sicherheitsnetz einen Verankerungsabschnitt (7) in seiner unteren Hälfte umfasst, wobei der Verankerungsabschnitt so angeordnet ist, dass er abnehmbar an der Stützstruktur (3) befestigt werden kann, wobei der Verankerungsabschnitt (7) in einem verstärkten Abschnitt des Sicherheitsnetzes angeordnet ist; und
eine Schürze (8), die mit dem Verankerungsabschnitt und der Polsterschicht verbunden werden kann,
wobei die Schürze (8) ein integrierter Teil des Sicherheitsnetzes (5) ist und so angeordnet ist, dass sie an der Polsterschicht (4) an einer Vielzahl von Befestigungspunkten, die entlang einer Außenkante der Schürze (8) und entlang einer Länge der Polsterschicht (4) verteilt sind, abnehmbar befestigt werden kann, und wobei die Vielzahl von Befestigungspunkten in Form von Löchern vorliegt, und wobei die Polsterschicht (4) eine Vielzahl von entsprechenden Löchern umfasst, so dass die Schürze (8) und die Polsterschicht so angeordnet sind, dass sie mittels einer Naht (13) abnehmbar aneinander befestigt werden können.

**2.** Trampolin (1) nach Anspruch 1, wobei die Schürze (8) so angeordnet ist, dass sie abnehmbar und elastisch an der Polsterschicht befestigt werden kann.

**3.** Trampolin (1) nach einem der Ansprüche 1 bis 3, wobei der Verankerungsabschnitt so angeordnet ist, dass er starr und abnehmbar an der Stützstruktur befestigt werden kann.

**4.** Trampolin (1) nach einem der Ansprüche 1 bis 3, wobei der Verankerungsabschnitt mittels einer Schnallenanordnung starr und abnehmbar an der Stützstruktur befestigt ist.

**5.** Trampolin (1) nach einem der Ansprüche 1 bis 4, wobei die Polsterschicht (4) einen Flansch (12) umfasst, der sich entlang einer Länge der Polsterschicht erstreckt, und wobei die Schürze (8) so angeordnet ist, dass sie abnehmbar an der Polsterschicht an einer Innenseite des Flansches (12) befestigt ist.

**6.** Ein Trampolin (1), umfassend:

einer Trampolinmatte (2), die eine Sprungfläche bildet;
einer Stützstruktur (3), die die Trampolinmatte in Umfangsrichtung umgibt, wobei die Stützstruktur mit der Trampolinmatte über eine Vielzahl von elastischen Elementen verbunden werden kann;
einer Polsterschicht (4), die entlang eines Umfangsabschnitts der Trampolinmatte angeordnet ist, um eine Abdeckung auf der Oberseite der elastischen Elemente bereitzustellen;
einem Sicherheitsnetz (5) zum Umgeben des Sprungbereichs, um zu verhindern, dass Benutzer aus dem Sprungbereich herausfallen, wobei das Sicherheitsnetz so angeordnet ist, dass es von einer Rahmenstruktur (6) getragen wird und mit dieser verbunden ist, die sich in einer Höhe oberhalb der Trägerstruktur erstreckt;
wobei das Sicherheitsnetz einen Verankerungsabschnitt (7) in seiner unteren Hälfte umfasst, wobei der Verankerungsabschnitt so angeordnet ist, dass er abnehmbar an der Stützstruktur (3) befestigt werden kann, wobei der Verankerungsabschnitt (7) in einem verstärkten Abschnitt des Sicherheitsnetzes angeordnet ist;

und
eine Schürze (8), die mit dem Verankerungsabschnitt und der Polsterungsschicht verbunden werden kann,
wobei die Schürze (8) ein integrierter Teil des Sicherheitsnetzes (5) ist, und wobei die Schürze so angeordnet ist, dass sie mit Hilfe eines Reißverschlusses (14) abnehmbar an der Polsterschicht befestigt werden kann.

**7.** Trampolin (1) nach einem der Ansprüche 1 bis 6, wobei die Schürze (8) abnehmbar an der Polsterschicht (4) an einem äußeren Umfang der Polsterschicht befestigt ist.

**8.** Trampolin (1) nach einem der Ansprüche 1 bis 7, wobei die Schürze (8) an einem oder mehreren Abschnitten entlang der Polsterschicht (4) abnehmbar näher an einem Innenumfang (16) der Polsterschicht befestigt ist als an einem oder mehreren anderen Abschnitten entlang der Polsterschicht.

**Revendications**

**1.** Trampoline (1) comprenant :

un tapis de trampoline (2) définissant une zone de saut ;
une structure de support (3) entourant de manière circonférentielle ledit tapis de trampoline, ladite structure de support étant connectable audit tapis de trampoline via une pluralité d'éléments élastiques ;
une couche de rembourrage (4) disposée le long d'une partie circonférentielle dudit tapis de trampoline pour fournir une couverture au-dessus desdits éléments élastiques ;
un filet de sécurité (5) pour entourer ladite zone de saut afin d'empêcher les utilisateurs de tomber hors de ladite zone de saut, dans lequel ledit filet de sécurité est agencé pour être supporté par et connecté à une structure de cadre (6) s'étendant à une hauteur au-dessus de ladite structure de support ;
dans lequel ledit filet de sécurité comprend une section d'ancrage (7) à une moitié inférieure de celui-ci, ladite section d'ancrage étant agencée pour être fixée de manière amovible à ladite structure de support (3), dans lequel ladite section d'ancrage (7) est agencée dans une partie renforcée dudit filet de sécurité; et
une jupe (8) connectable à ladite section d'ancrage et à ladite couche de rembourrage,
dans lequel ladite jupe (8) fait partie intégrante dudit filet de sécurité (5) et est agencée pour être fixée de manière amovible à ladite couche de rembourrage (4) à une pluralité de points de fixation répartis le long d'un bord extérieur de la jupe (8) et le long d'un longueur de la couche de rembourrage (4), et dans lequel ladite pluralité de points de fixation est sous la forme de trous, et dans lequel ladite couche de rembourrage (4) comprend une pluralité de trous correspondants de telle sorte que ladite jupe (8) et ladite couche de rembourrage sont agencées pour être fixés l'une à l'autre de manière amovible au moyen de coutures (13).

**2.** Trampoline (1) selon la revendication 1, dans lequel ladite jupe (8) est agencée pour être fixée de manière amovible et élastique à ladite couche de rembourrage.

**3.** Trampoline (1) selon l'une quelconque des revendications 1 à 2, dans lequel ladite section d'ancrage est agencée pour être fixée de manière rigide et amovible à ladite structure de support.

**4.** Trampoline (1) selon l'une quelconque des revendications 1 à 3, dans lequel ladite section d'ancrage est fixée de manière rigide et amovible à ladite structure de support au moyen d'un agencement de boucle.

**5.** Trampoline (1) selon l'une quelconque des revendications 1 à 4, dans lequel ladite couche de rembourrage (4) comprend une bride (12) s'étendant sur une longueur de la couche de rembourrage, et dans lequel ladite jupe (8) est agencée pour être fixée de manière amovible à ladite couche de rembourrage sur un côté intérieur de ladite bride (12).

**6.** Trampoline (1) comprenant :

un tapis de trampoline (2) définissant une zone de saut ;
une structure de support (3) entourant de manière circonférentielle ledit tapis de trampoline, ladite structure de support étant connectable audit tapis de trampoline via une pluralité d'éléments élastiques ;
une couche de rembourrage (4) disposée le long d'une partie circonférentielle dudit tapis de trampoline pour fournir une couverture au-dessus desdits éléments élastiques ;
un filet de sécurité (5) pour entourer ladite zone de saut afin d'empêcher les utilisateurs de tomber hors de ladite zone de saut, dans lequel ledit filet de sécurité est agencé pour être supporté par et connecté à une structure de cadre (6) s'étendant à une hauteur au-dessus de ladite structure de support ;
dans lequel ledit filet de sécurité comprend une section d'ancrage (7) à une moitié inférieure de celui-ci, ladite section d'ancrage étant agencée

pour être fixée de manière amovible à ladite structure de support (3), dans lequel ladite section d'ancrage (7) est agencée dans une partie renforcée dudit filet de sécurité; et
une jupe (8) connectable à ladite section d'ancrage et à ladite couche de rembourrage,
dans lequel ladite jupe (8) fait partie intégrante dudit filet de sécurité (5), et dans lequel ladite jupe est agencée pour être fixée de manière amovible à la couche de rembourrage au moyen d'une fermeture à glissière (14).

**7.** Trampoline (1) selon l'une quelconque des revendications 1 à 6, dans lequel ladite jupe (8) est fixée de manière amovible à la couche de rembourrage (4) à une circonférence extérieure de la couche de rembourrage.

**8.** Trampoline (1) selon l'une quelconque des revendications 1 à 7, dans lequel ladite jupe (8) sur une ou plusieurs sections le long de la couche de rembourrage (4) est fixée de manière amovible plus près d'une circonférence intérieure (16) de la couche de rembourrage que sur une ou plusieurs autres sections le long de la couche de rembourrage.

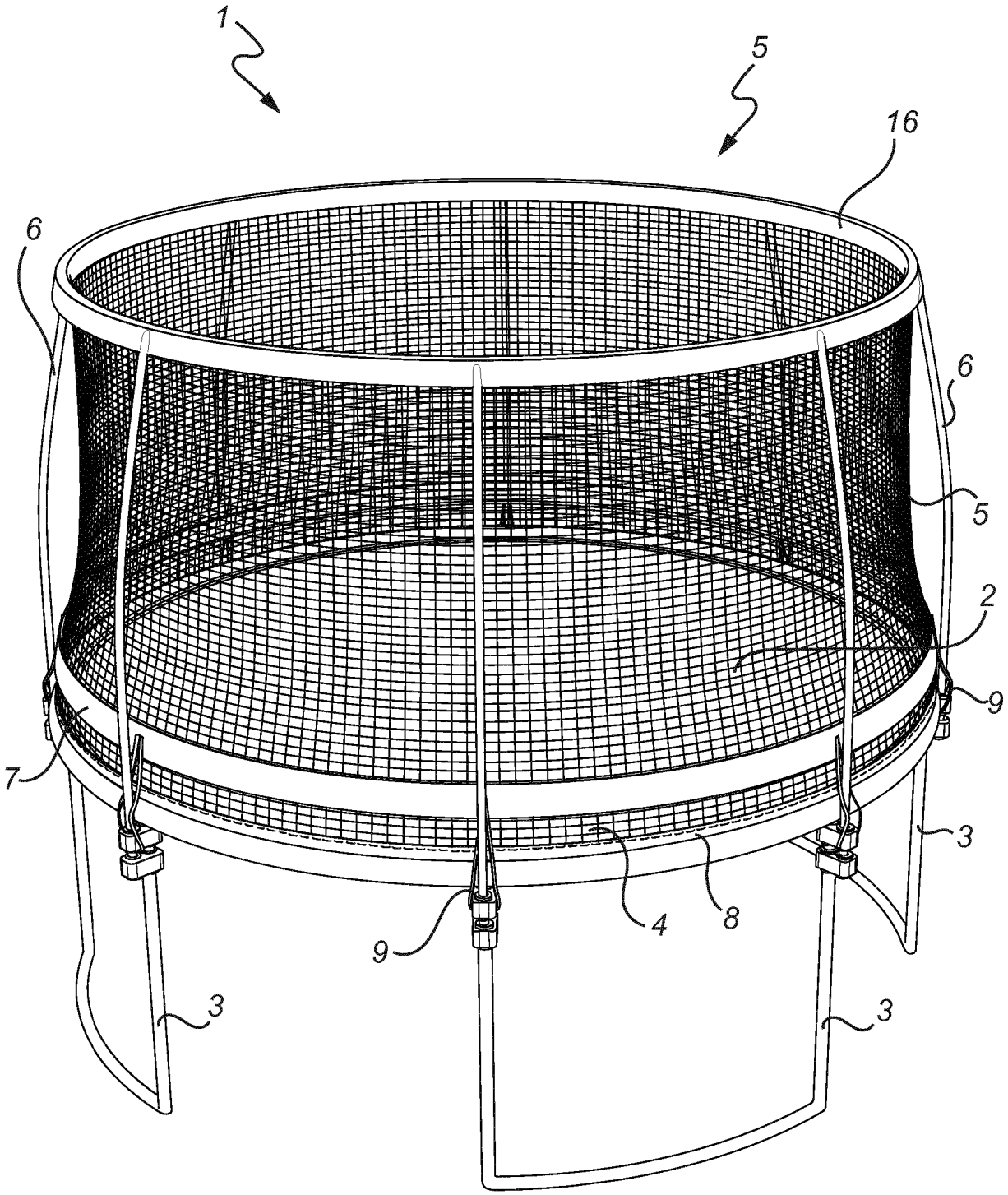


Fig. 1

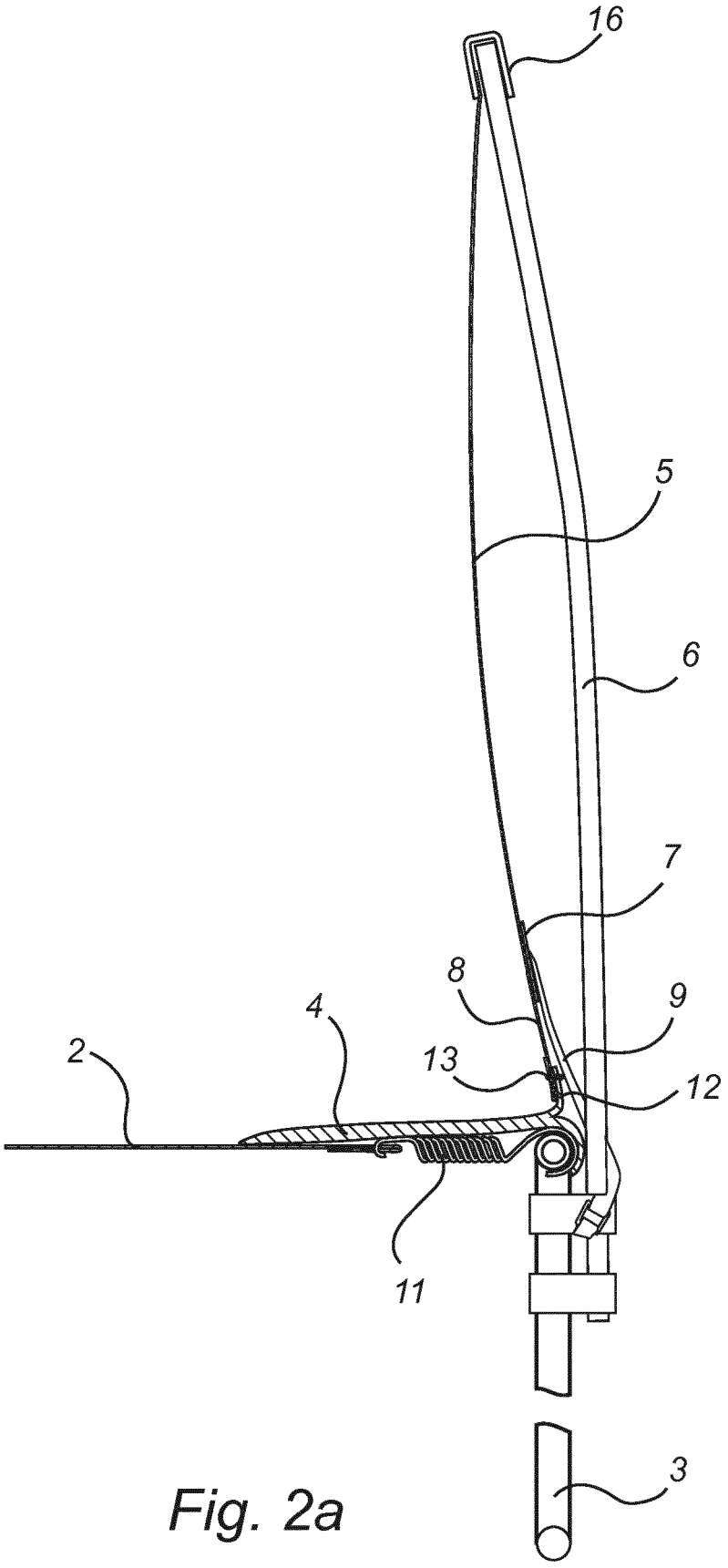


Fig. 2a

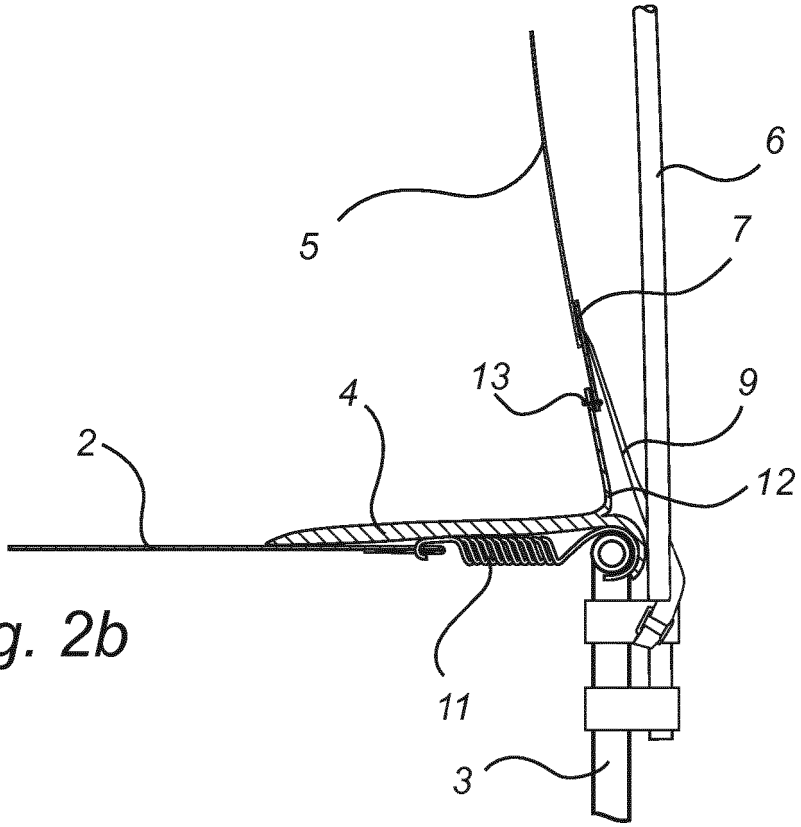


Fig. 2b

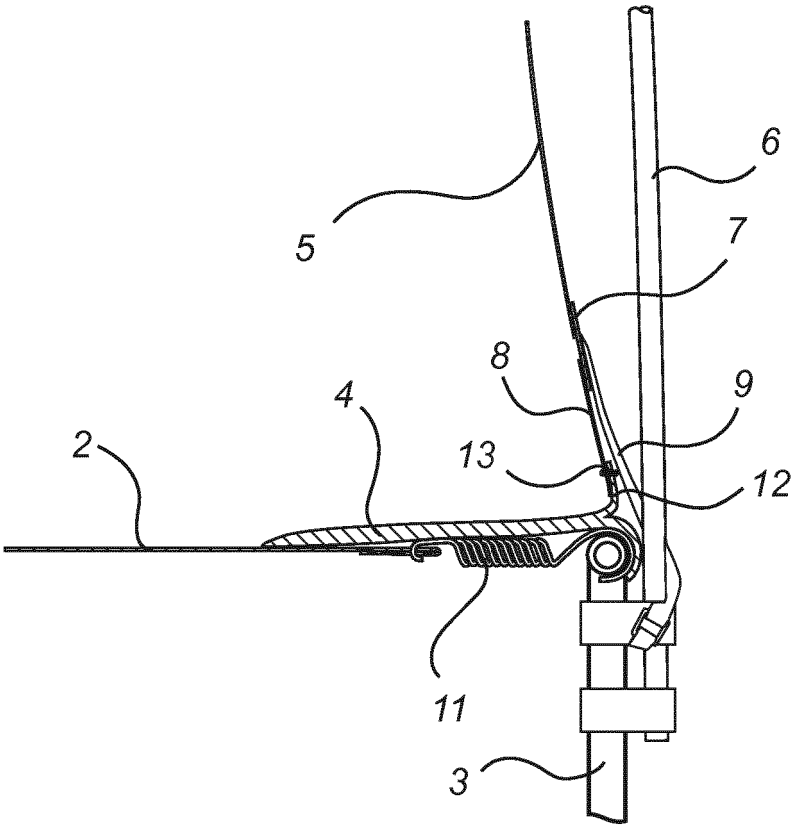


Fig. 2c

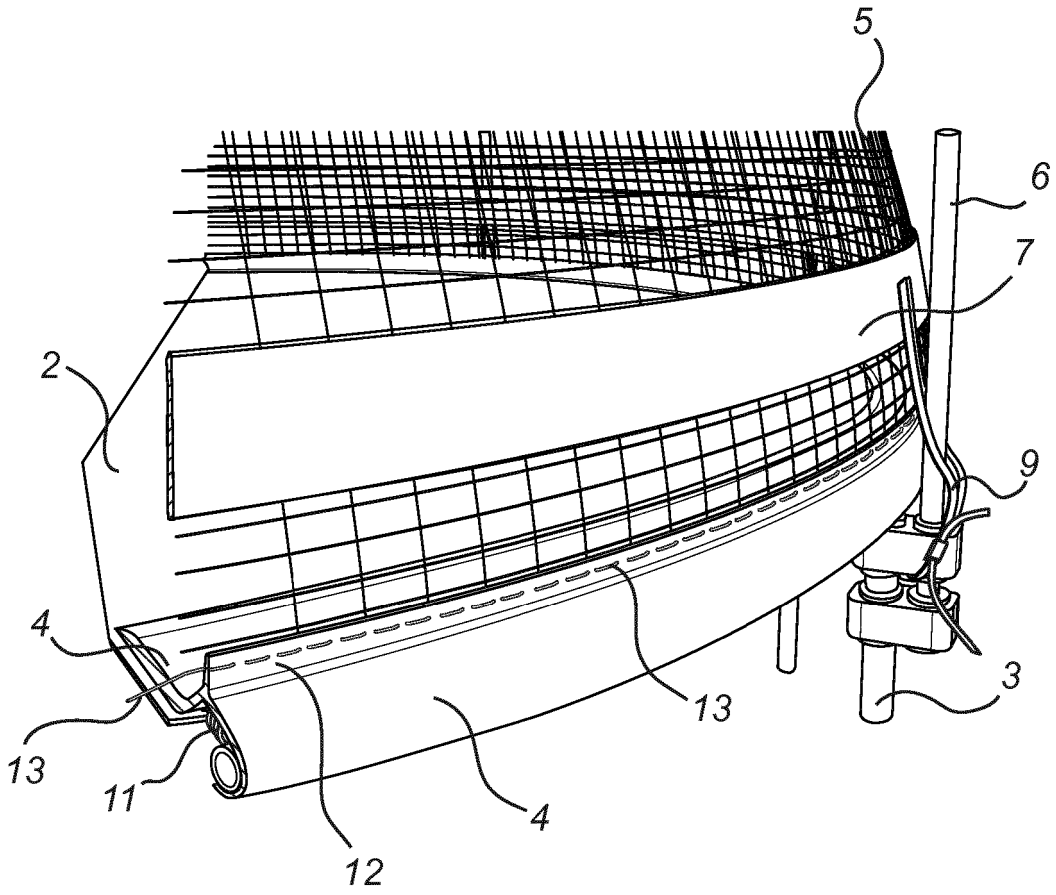


Fig. 3

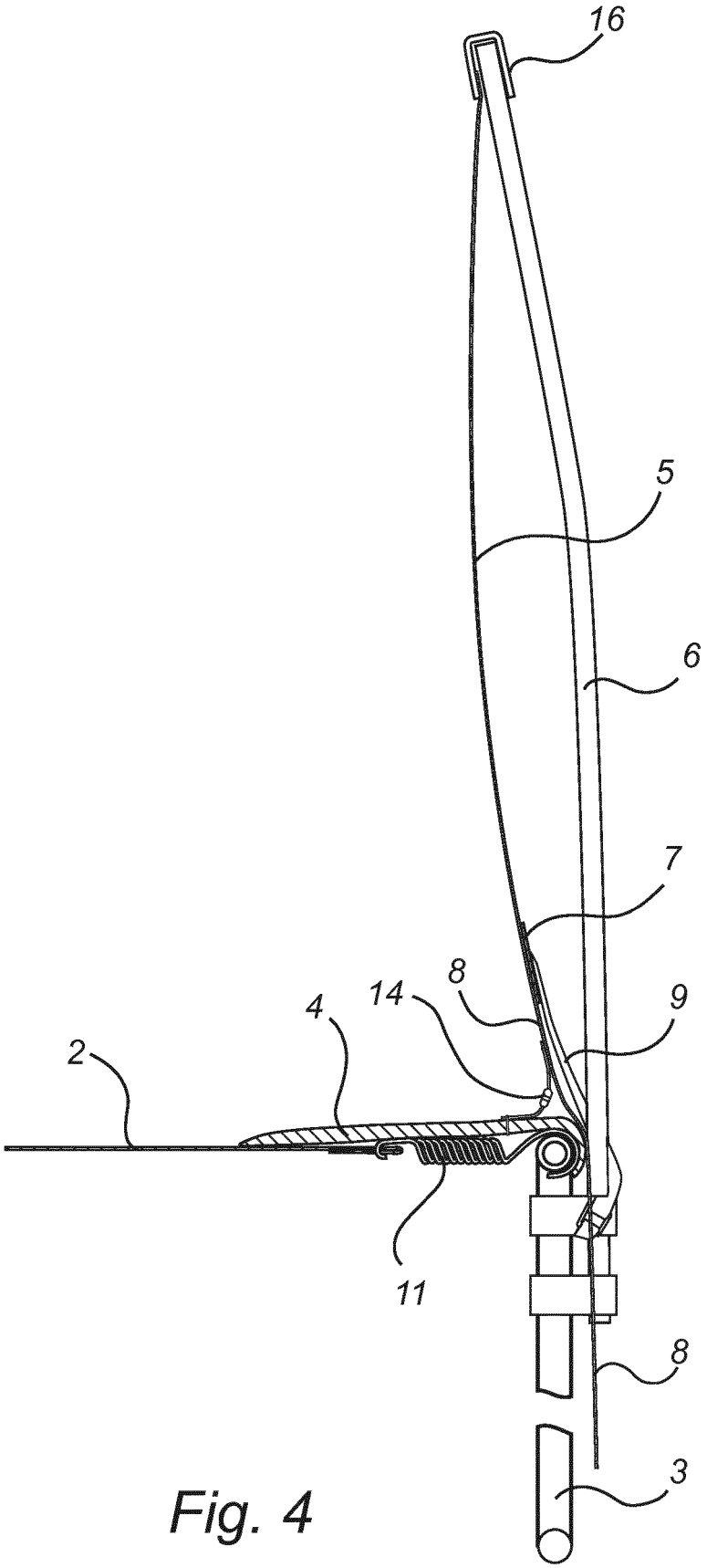


Fig. 4

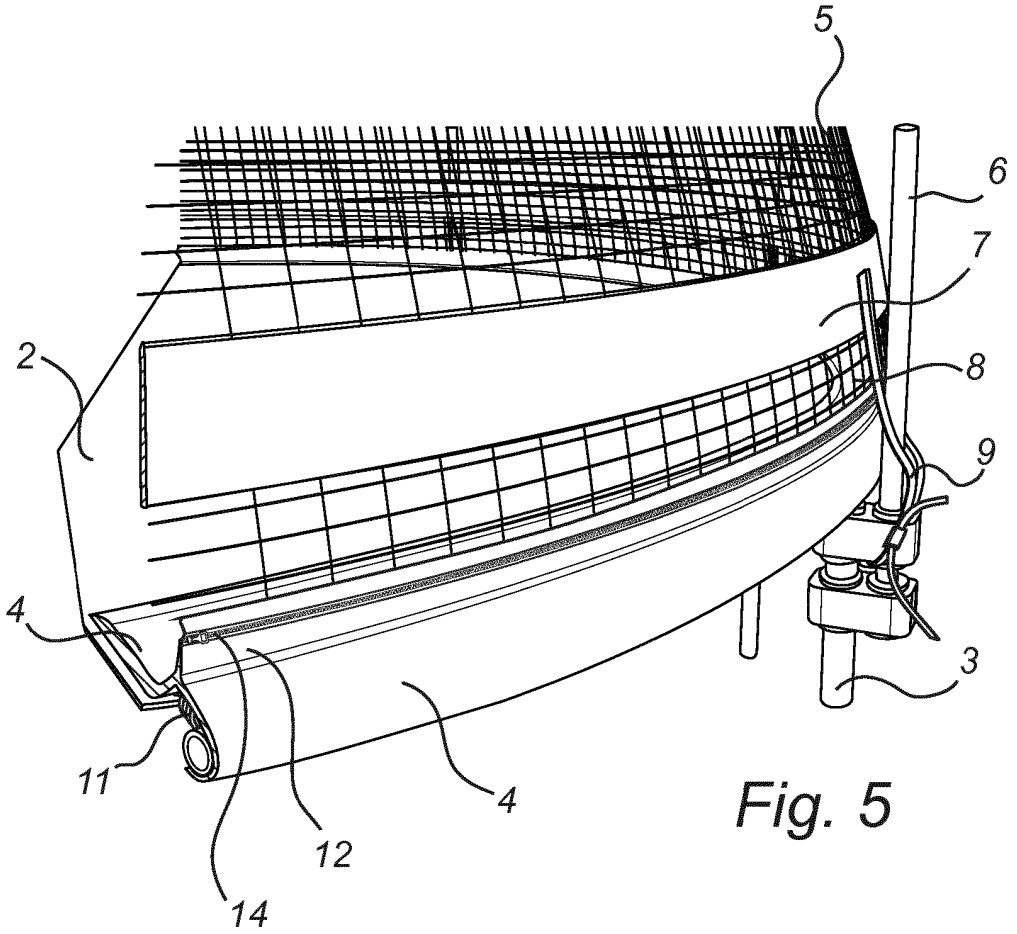


Fig. 5

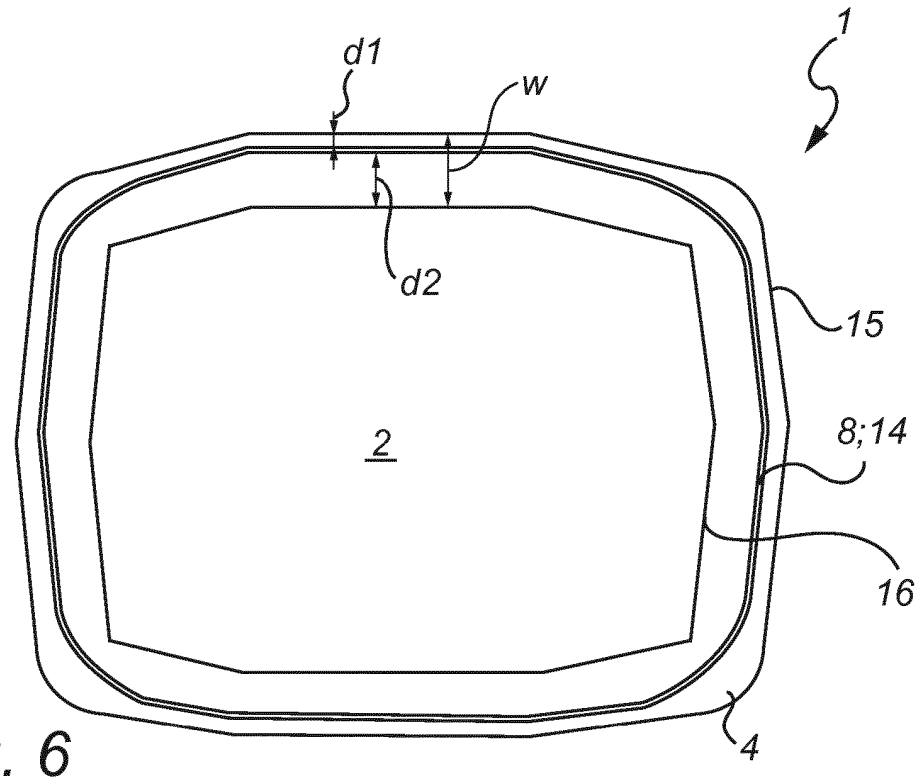


Fig. 6