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(54) **Bouncy cushion**

(57) A bouncy cushion (1) of the kind that comprises an inflatable casing comprising a circumferential wall (6a, 6b, 6c, 6d), an upper side wall (4; 13) and a lower side wall (5; 14), in which the upper side wall (4; 13) is connected to the lower side wall (5; 14) by means of a number of flexible threads or strips (10; 12), is safer to use than conventional bouncy cushions. A part of the air at a compression site cannot be displaced as the threads do not

allow creation of enough space for this air, and the compression process is partly prevented, which provides the desired safety. The bouncy cushion can be used for e.g. springboard in connection with artistic gymnastics, as trampoline, as gymnastic equipment for e.g. promoting motor behaviour and as air mattress for sleeping on. The thickness, air pressure and number and distribution of flexible threads in the bouncy cushion are chosen in relation to the desired object.

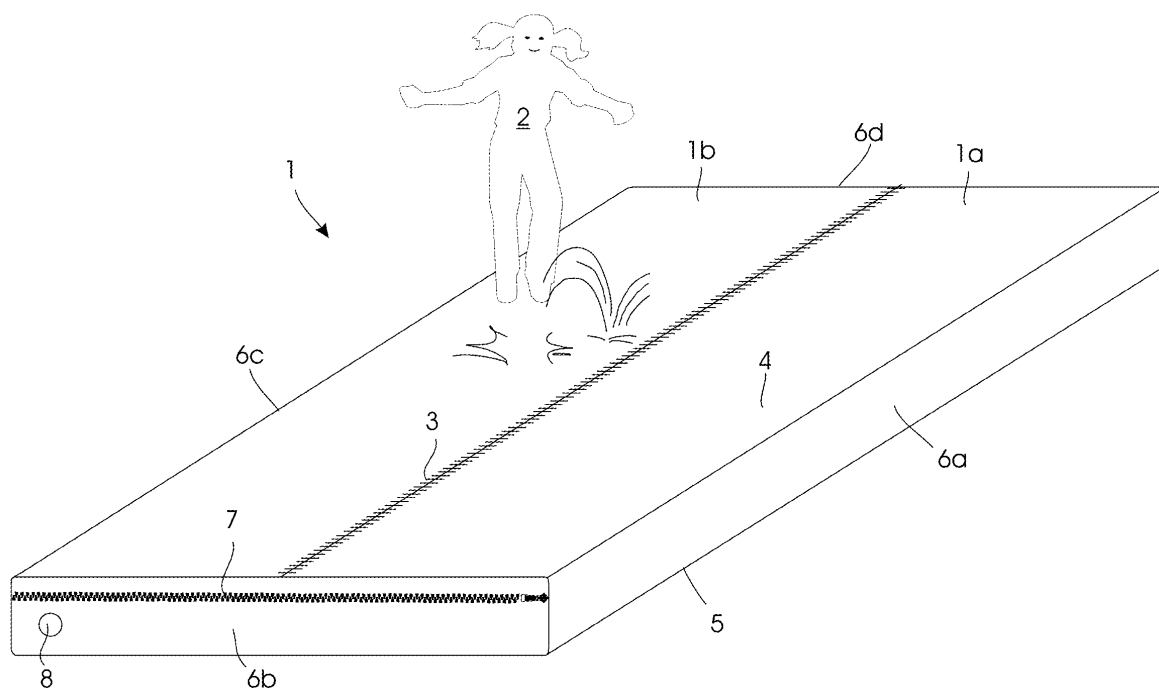


Fig. 1

Description

[0001] The invention relates to a bouncy cushion of the kind that comprises an inflatable casing comprising a circumferential wall, an upper side wall and a lower side wall.

[0002] It is known to use inflated cushions of different sizes and shapes for, among other things, stimulating the motor skills of children. The use of an inflatable bouncy cushion structure in form of a bouncy castle is known from, among others, British Patent No. GB2257370.

[0003] Such cushions are typically made as a simple, airtight casing or cushion of plastic-coated mesh. The casing is filled with air by means of a blower.

[0004] Comfort and safety during the use of inflated cushions as bouncy cushions is important. If a massive compression takes place in e.g. a first half of a conventional bouncy cushion, there is a risk that children standing somewhere else on the conventional bouncy cushion falls or are thrown off, and conventional bouncy cushions are often considered dangerous. Furthermore, the conventional bouncy cushion can often be compressed to such an extent that both walls of the bouncy cushion will be so close to the underlying hard base that children jumping on the bouncy cushion risk hurting themselves on impact.

[0005] The requirements to a safe bouncy cushion therefore include that a jumping person must not be able to compress the inflated bouncy cushion to an extent that has the effect that the person hurts himself during jumping-off or impact or that another jumping person accidentally is thrown off the bouncy cushion.

[0006] It is an object of the present invention to provide a bouncy cushion of the kind mentioned in the opening paragraph, which is safer and easier to use than known bouncy cushions.

[0007] The novel and unique feature according to the invention, whereby this is achieved, is the fact that the upper side wall is connected to the lower side wall by means of a number of flexible threads or strips.

[0008] When jumping on an inflated conventional bouncy cushion, its upper side wall and lower side wall are pressed towards each other. Hereby, an area of the bouncy cushion is compressed, and a partial amount of air is displaced to other areas of the bouncy cushion which immediately react by expanding. The result of the expansion is that the thickness of the bouncy cushion is momentarily increased a distance from the compression point. Upon relief of the compression, the air again spreads to the areas of the interior of the bouncy cushion in which this air can find the necessary space.

[0009] As the upper side wall and lower side wall are kept together by the flexible threads or strips, a part of the air at the compression point cannot be displaced as not enough space is created for it and the compression process is partly prevented. Instead, this volume of air presses on the inside of the bouncy cushion and on the

jumping child, which results in the bouncy cushion acting as a trampoline. When many children are jumping on the bouncy cushion, the steady momentary compression and relief results in the bouncy cushion always having different thickness and air volume per square metre.

[0010] When the upper side wall and lower side wall are connected to each other, the expansion options of the bouncy cushion are limited, and a displaced volume of air is forced to spread across a larger area. When the displaced air has more difficulty in escaping, the risk of excessive and dangerous momentary compression is reduced. The structure according to the present invention is thus safer to use than known bouncy cushions and also provides a controlled trampoline effect.

[0011] In a first embodiment of the invention, the flexible threads or strips can be uniformly distributed and attached to the walls, in which case the load distribution on compression and relief of the bouncy cushion is correspondingly uniform.

[0012] In a second embodiment of the invention, the flexible threads or strips can be non-uniformly distributed. For example, groups of threads or strips can be distributed in a random pattern so that the pressure relief is distributed across the area of the bouncy cushion in a controlled but varied manner.

[0013] The walls of the bouncy cushion advantageously comprise at least one, mainly airtight outer layer and at least one inner layer, which inner layer is connected to the flexible threads or strips.

[0014] Typically, the at least one inner layer of both the upper side wall and lower side wall is made of a textile such as polyester fabric, in which loops of polyester thread traverse the opposite facing inner layers of polyester fabrics and thus connect the walls in a flexible and defined maximum distance from each other. The maximum distance is defined by about half the length of the circumference of the loop, and the loops of polyester thread thus function as the flexible threads.

[0015] In the given example, the flexible threads or strips are made of the same material as the at least one inner layer but within the scope of the present invention, the threads can also be made of another material than the inner layer.

[0016] To be able to hold the air in the bouncy cushion to an extent sufficient to keep the bouncy cushion inflated and the upper side wall and lower side wall at a distance from each other, the at least one outer layer must, as mentioned above, be made of a mainly airtight material, for example a plastic material welded or glued together with the at least one inner layer.

[0017] Examples of materials for such a plastic layer can e.g. be polyvinyl chloride (PVC) or polyurethane (PUR) but other durable plastic materials that can be joined to the inner layer are also within the scope of the invention.

[0018] Within the scope of the present invention, many different materials can also be used for the inner layer and the outer layer. The invention is thus not limited to

use of polyester for the inner layer but can use similar, flexible materials having corresponding tensile and breaking strength just as the flexible threads can be made of an elastic material, the elasticity of which is chosen so that the above compression and relief can be controlled. That is to say that the maximum elastic elongation of the flexible threads is defined by the length that a corresponding non-elastic flexible thread must have.

[0019] The number of threads keeping the upper side wall of the bouncy cushion connected to its lower side wall can vary but for a bouncy cushion having a thickness in the order of between 50 mm and 335 mm, there can for example be at least 5 threads per cm², preferably at least 10 threads per cm², but especially 20 threads per cm².

[0020] If an airtight zipper is inserted in at least one of the walls of the bouncy cushion, it will be easy to obtain access to the interior of the bouncy cushion. This is for example expedient when the bouncy cushion is to be repaired and when the bouncy cushion is to be emptied of air quickly.

[0021] The bouncy cushion can be inflated particularly easy if an air intake opening is made in at least one wall, said opening being arranged to be connected to an air supply source, for example a blower.

[0022] When the upper side wall, the lower side wall and the circumferential wall of the bouncy cushion are one continuous length, the number of joints is reduced to a minimum and thereby the risk of leakage.

[0023] The invention is explained below with reference to the drawing on the exemplary assumption that the bouncy cushion is used as a play equipment in form of a bouncy cushion.

Fig. 1 shows a bouncy cushion according to the present invention,

fig. 2a is a diagrammatic, perspective, fractional view of how a first double-walled starting material for use in a bouncy cushion as shown in fig. 1 is constructed,

fig. 2b is a diagrammatic, perspective, fractional view of how a second double-walled starting material for use in a bouncy cushion as shown in fig. 1 is constructed,

fig. 3a is a diagrammatic, fractional sectional view taken along the line IIIa-IIIa of fig. 2a, and

fig. 3b is a diagrammatic, fractional sectional view taken along the line IIIb-IIIb of fig. 2b.

[0024] Fig. 1 shows a bouncy cushion 1 on which a child 2 is jumping up and down.

[0025] The bouncy cushion 1 is made up of two lengths 1a, 1b of a double-walled starting material which will be described in more detail with reference to figs. 2a and 2b. The two lengths 1a, 1b are joined by joint 3, for ex-

ample by welding or gluing.

[0026] The lengths 1a, 1b are long continuous lengths that are folded to form the upper wall side 4, lower wall side 5, and circumferential wall 6a, 6b, 6c, 6d of the bouncy cushion 1. In the short end wall 6b of the circumferential wall 6, an airtight zipper 7 is mounted and an air intake opening 8 is made. The air intake opening 8 can be fitted with e.g. a blind plug or non-return valve (not shown) to prevent air from blowing out. The bouncy cushion 1 can also be provided with a pump or blower (not shown) maintaining a constant pressure in the bouncy cushion 1.

[0027] Figs. 2a and 2b show in greater detail in perspective how the double-walled starting materials 9; 11 are constructed, and the constructions will be further explained with reference to figs. 3a and 3b.

[0028] Fig. 3a thus shows that the upper side wall 4 of the starting material 9 is made up of an inner layer 4a securely joined by means of for example gluing to an outer layer 4b and that the lower side wall 5 is made up of an inner layer 5a similarly securely joined to an outer layer 5b. The inner layer 4a of the upper side wall 4 is located opposite the inner layer 5a of the lower side wall 5 and is connected to this by means of flexible threads 10. The threads 10 are stretched to maximum extent as the bouncy cushion 1 is in its inflated and not-compressed state.

[0029] The stretched length of the threads 10 approximately defines the maximum internal distance between two opposite inner layers 4a, 5a of the bouncy cushion.

[0030] The alternative starting material 11 shown in fig. 3b employs another kind of threads 12 for connecting the upper side wall 13 and the lower side wall 14 but is basically constructed in the same way as the starting material 9 shown in figs. 2a and 3a. The upper side wall 13 and lower side wall 14 of the starting material 11 is made up of opposite inner layers 13a, 14a connected to each other by means of loops 12 created by letting the thread 12 traverse first one inner layer 13a and then the second inner layer 14a and then letting two ends of the thread 12 be connected to each other. This can for example take place during weaving or during another suitable textile manufacturing method.

[0031] Within the scope of the invention, the circumferential wall 6 can be made of the same double-walled material as the starting materials 9; 11 shown in figs. 2a and 2b, in which case the circumferential wall also must be inflated before use. Alternatively, the circumferential wall can merely be made up of a single wall without threads.

[0032] Within the scope of the present invention, the bouncy cushion can also be used for e.g. springboard in connection with artistic gymnastics, as trampoline, as gymnastic equipment for e.g. promoting motor behaviour and as air mattress for sleeping on. In any case, the thickness, air pressure and number and distribution of flexible threads in the bouncy cushion is easily chosen in relation to the desired object so that the bouncy cushion meet current safety requirements.

Claims

1. A bouncy cushion (1) of the kind that comprises an inflatable casing comprising a circumferential wall (6, 6b, 6c, 6d), an upper side wall (4; 13) and a lower side wall (5;14), **characterized in that** the upper side wall (4;13) is connected to the lower side wall (5;14) by means of a number of flexible threads or strips (10;12). 5
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2. A bouncy cushion (1) according to claim 1, **characterized in that** the flexible threads or strips (10;12) are uniformly distributed.
3. A bouncy cushion (1) according to claim 1, **characterized in that** the flexible threads or strips (10;12) are non-uniformly distributed. 15
4. A bouncy cushion (1) according to claims 1, 2, or 3, **characterized in that** the walls (4,5,6;13,14,6) of the bouncy cushion (1) comprises at least one outer layer (4b,5b;13b,14b) of a mainly airtight material and at least one inner layer (4a,5a;13a,14a), which inner layer (4a,5a;13a,14a) is connected to the flexible threads or strips (10;12). 20
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5. A bouncy cushion (1) according to claim 4, **characterized in that** the at least one inner layer (4a,5a; 13a,14a) is a textile. 30
6. A bouncy cushion (1) according to claim 4, **characterized in that** the flexible threads or strips (10;12) are made of the same material as the at least one inner layer (4a,5a;13a,14a). 35
7. A bouncy cushion (1) according to any of the claims 1 - 6, **characterized in that** the bouncy cushion (1) comprises at least 5 threads (10;12) per cm², preferably at least 10 threads per cm², but especially 20 threads per cm². 40
8. A bouncy cushion (1) according to any of the claims 1 - 7, **characterized in that** an airtight zipper (7) is inserted in at least one of the walls (6b) of the bouncy cushion (1). 45
9. A bouncy cushion (1) according to any of the claims 1 - 8, **characterized in that** the bouncy cushion (1) comprises at least one air intake opening (8). 50
10. A bouncy cushion (1) according to any of the previous claims, **characterized in that** the upper side wall (4), lower side wall (5) and circumferential wall (6) of the bouncy cushion (1) are one continuous length (1a, 1b). 55

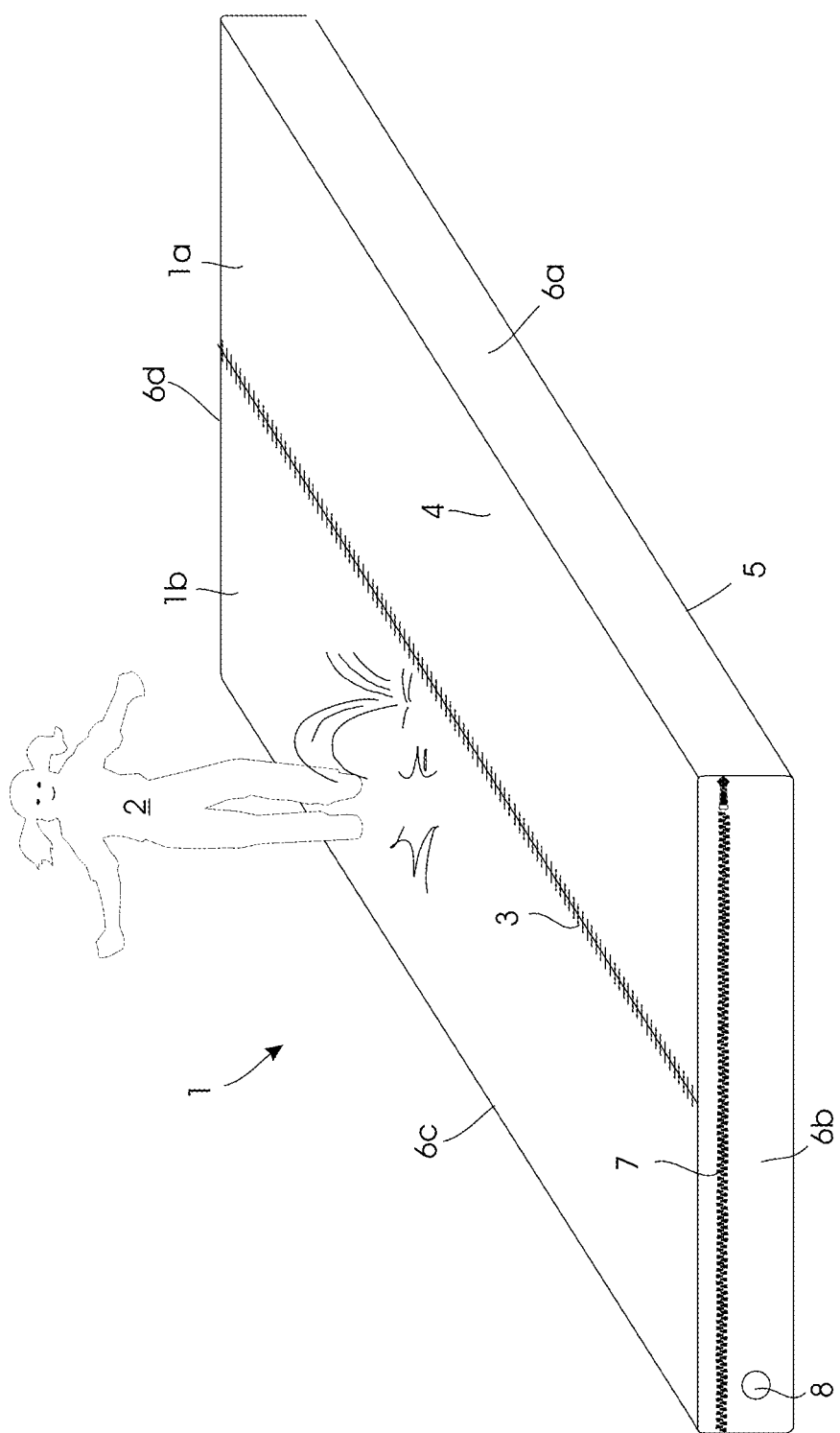


Fig. 1

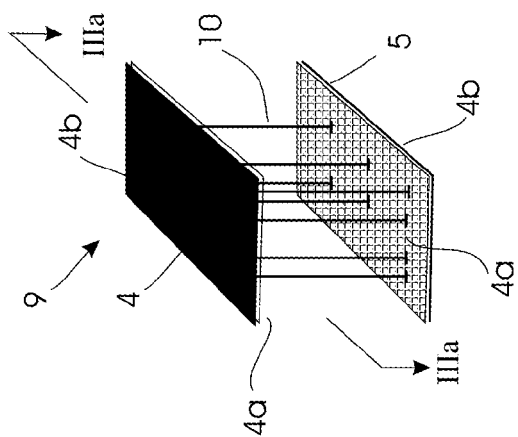


Fig. 2a

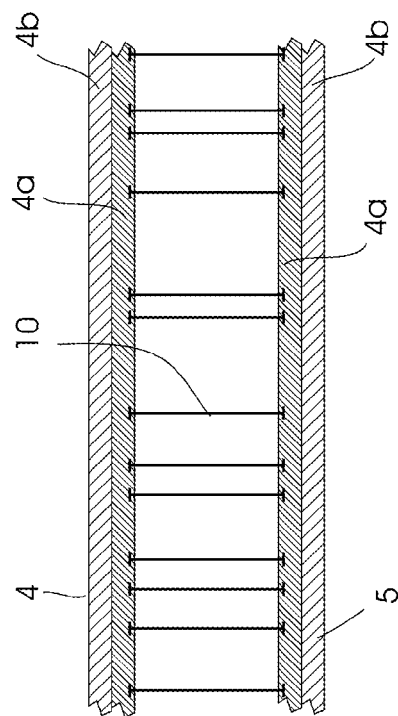


Fig. 3a

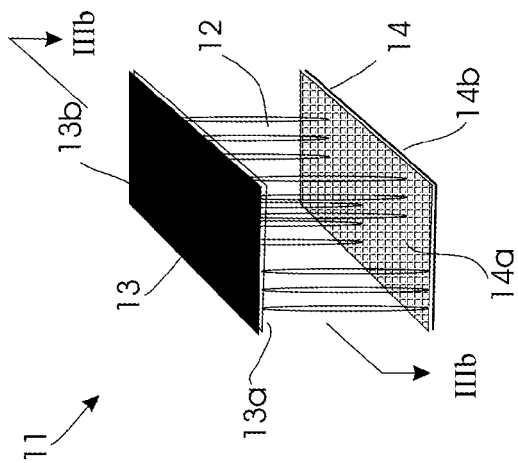


Fig. 2b

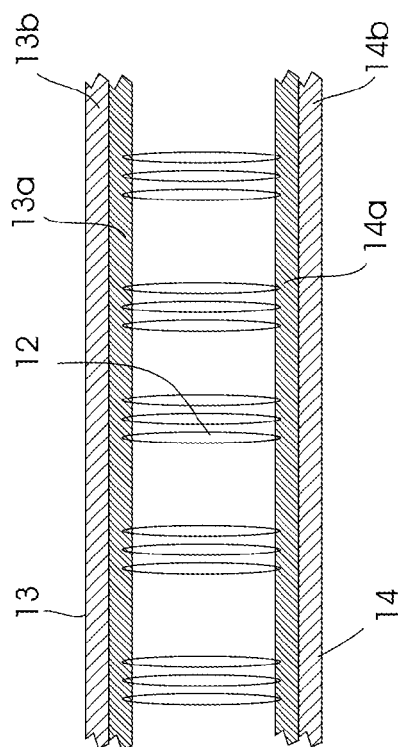


Fig. 3b



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 10 7307

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EPO FORM 1503 (03.82 (P04C01))

**ANNEX TO THE EUROPEAN SEARCH REPORT
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