(19) Europäisches Patentamt
European Patent Office
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(11) **EP 2 789 374 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
15.10.2014 Bulletin 2014/42

(51) Int Cl.:
A63H 33/04 *(2006.01)*

(21) Application number: **13163209.3**

(22) Date of filing: **10.04.2013**

(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

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(54) **Toy and construction toy set**

(57) Toy (1) comprising a plate (2) having a front side (3), a backside (4) a perimeter (5,11,12,13,14) and a flap (21) with a flexible part protruding out from the perimeter. The flexible part comprises a male touch fastener surface and a corresponding female touch fastener surface facing away from the male touch fastener surface. The male touch fastener surface corresponds to the front side of the plate and the female touch fastener surface corresponds to the backside of the plate.

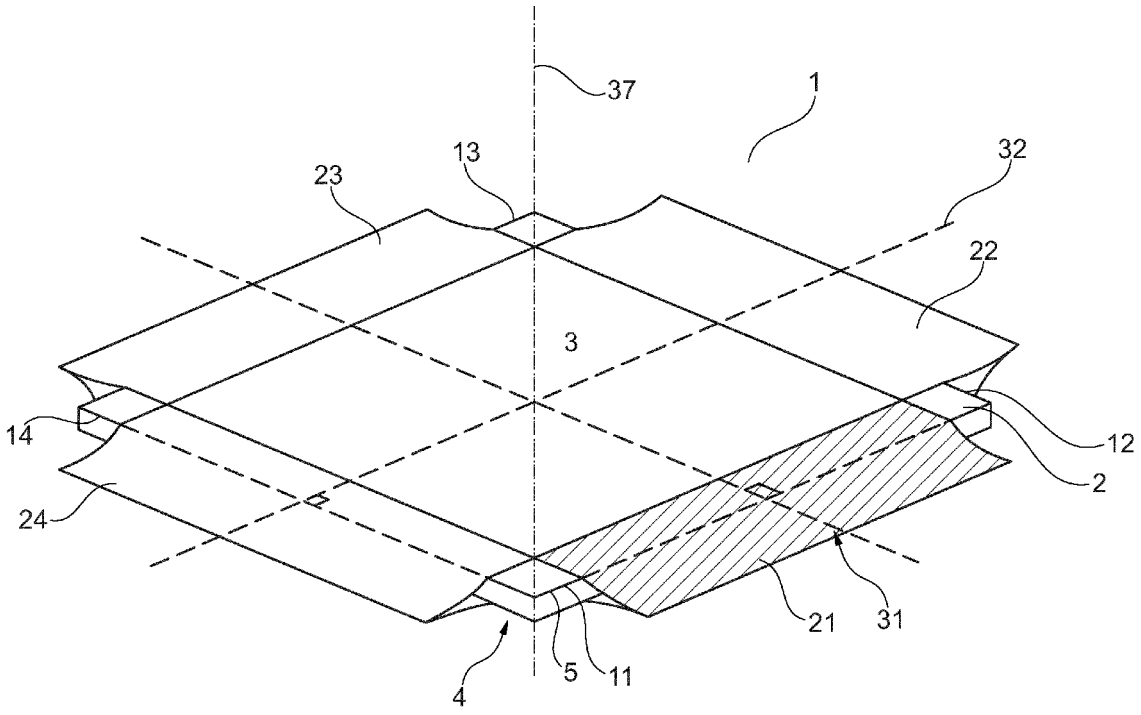

Fig. 1

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Description

[0001] The invention relates to toys useable for building constructions.

[0002] Known building toys comprise square shaped plates. At each of the 4 ribs of the square hinge parts protrude outward. On one of the 4 ribs, the first rib, the hinge parts are formed by two hubs. At the rib opposite to the first rib the hinge parts are also formed by two hubs. The hubs have a through hole with equal diameter. Also the centre lines of the through holes are on the same line. From each of the other two ribs two lips protrude outward. The two lips of each rib are parallel and each have an outer surface facing away from the other lip on the same rib. The outer surface comprises a disk shaped protrusion. The diameter of the disk shaped protrusion is equal to the inner diameter of the through holes of the hubs. The disk shaped protrusions have the same centre line. The plate is made from polypropylene so that the lips can bend a little bit.

[0003] The building toys can be used to build something by using a plurality of identical building toys. From a first plate the lips of a rib are brought between the two hubs of a second rib of a second plate. The distance between the lips and the hubs is such that the lips have to bend a bit to allow the disk shaped protrusions to be brought between the hubs. When the protrusions are brought in line with the through holes, the lips bend back and the first plate and the second plate are attached. Because the disk shaped protrusions and the through holes are circular symmetric and have equal diameters, the centre lines of the through holes of the hubs and the centre lines of the disk shaped protrusions are not equal. Therefore, the second plate can rotate around the common centre lines while the orientation of the first plate is fixed.

[0004] When the second plate is brought into an orientation perpendicular to that of the first plate a third plate identical to the first plate and the second plate can be attached to both the first plate and the second plate. This can be achieved by clicking the lips of a rib of the third plate between the hubs of a rib of the first plate and bringing the third plate to an orientation where by the hubs of a rib of the third plate are close to the lips of a rib of the second plate. The lips of the rib of the second plate are brought in between the rubs of the rib of the third plate whereby the lips bend a little as described above until the disk shaped protrusions on the lips are in the through holes of the hubs.

[0005] The plates itself are sturdy for facilitating the building of 3D-constructions. The lips however need be flexible to be fitted between the hubs and to be sturdy or relatively inflexible to provide a connection strong enough for the building activity. The less flexible, the stronger the connection is. Because the lips are relatively inflexible, the lips can break of the plates when playing with them. Not only is this a problem for using the toy for building, the lips can be swallowed by children. The toys have a size smaller than or comparable to children's hands. By itself the toys could be swallowed as well. When the plates would be made larger, the strength of the connection between the toys needs to be larger to avoid that a construction made with the toys would not be strong enough. However, for a stronger connection, the force needed to bring the lips in between the hubs of another plate would increase. For children it is a problem to deliver such an increased force.

[0006] To object of the invention is to reduce or solve one or more of these problems.

[0007] This object is reached by a toy comprising a plate having a front side, a backside and a perimeter, characterised by,

a flap with a flexible part protruding out from the perimeter wherein the flexible part comprises

- a male touch fastener surface and a corresponding female touch fastener surface facing away from the male touch fastener surface, wherein the male touch fastener surface corresponds to the front side of the plate and
- wherein the female touch fastener surface corresponds to the backside of the plate.

[0008] Because the toy has both a male touch fastener surface and a corresponding female touch fastener surface and because those surfaces are facing away from each other, the toy can be fastened to a further toy with identical configuration. Because the male and female touch fastener surface are on a flexible part of the flap protruding out of the perimeter, the flap can form a hinge between the toy and the further toy. By peeling the male and female surfaces from each other the force needed to detach the toy and the further toy is relatively low. Therefore the toy can be well fastened to the further toy. Because touch fasteners can be reused, the toy can be reused after detaching it.

[0009] According to a further embodiment of the invention, the toy comprises one or more additional flaps each having an additional flexible part protruding from the perimeter, the additional flexible part comprising an additional male touch fastener surface and an additional female touch fastener surface facing away from the additional male touch fastener surface, wherein the additional male touch fastener surface corresponds to the front side of the plate and the additional female touch fastener surface corresponds to the backside of the plate.

[0010] Because the toy has additional flaps, there are more possibilities to fasten the toy to the further toy.

[0011] Because the additional male touch fastener surface corresponds to the front side and the additional female touch fastener surface corresponds to the backside, it is possible to fasten the toy to at least one identical toys as well as fasten the at least one identical toy to a further identical toy which in turn is connected to yet another identical toy etcetera.

[0012] Because the male fastener surfaces of the flap

and the one or more additional flaps are correspond to the front side and the female surfaces of the flap correspond to the backside, the toy can be fastened to another, identical toy by stacking such that the front side of the toy faces the backside of the identical toy or such that the back side of the toy faces the front side of the identical toy. This is helpful when handling the toy and the identical toy.

[0013] According to a preferable further embodiment, the flap is arranged at a side of the perimeter and is arranged to extend on both sides of perpendicular bisector of the side of the perimeter.

[0014] Because the flap extends to both sides of the perpendicular bisector, the side of the toy can be completely in line with the side of the further toy when the toy is fastened to the further toy.

[0015] According to a further embodiment, the toy is mirror symmetric in the perpendicular bisector.

[0016] Because the toy is mirror symmetric in the perpendicular bisector, the complete male touch fastener surface of the toy can be connected to the complete female touch fastener surface of the further toy while the side of the toy is completely in line with the side of the further toy. By using the complete surfaces, the fastening is optimal because the highest amount of energy needs to be used to detach the toy from the further toy.

[0017] According to an embodiment of the invention, the toy has rotational symmetry around a centre line of the perimeter.

[0018] Because of the rotational symmetry, the toy may have different orientations suitable for being fastened to a further toy with a certain orientation. Therefore, the toy is easy to use for children.

[0019] According to an embodiment of the invention, the perimeter is square.

[0020] Because the perimeter is a square, it is easy for children to build a construction with the toy because it is easy for children to imagine what is needed to extend the construction in a certain direction.

[0021] Because the perimeter is square, it is easy for children to store the plates after playing, for instance in a box. The square shape also makes a package of plates easy to handle and to send.

[0022] According to an embodiment of the invention, the male touch fastener surface comprises protrusions arranged to hook into looks of a corresponding female touch fastener surface.

[0023] Touch fasteners of the hook and loop type are available at relatively low prices.

[0024] According to an embodiment of the invention, there is a construction toy set, comprising the toy and one or more further toys identical to the toy.

[0025] Embodiments of the invention will now be described, by way of example only, with reference to the accompanying schematic drawings. Corresponding reference symbols in the schematic drawings indicate corresponding parts.

Figure 1 toy according to the invention

Figure 2 part of the toy according to the invention and a further toy

Figure 3 top view of the toy, a first further toy and a second further toy fastened to the toy and a third further toy fastened to the first further toy.

Embodiments

[0026] A toy (1) according to the invention comprises a plate (2) of a thin but rigid material (see figure 1). The plate has a front side (3) and a backside (4). The plate has a square perimeter (5) both along the front side (3) and along the backside (4). The square perimeter has four sides, a first side (11), a second side (12), a third side (13) and a forth side (14). The sides are straight. On each of the four sides of the perimeter (5) the toy comprises a flap (21,22,23,24). The four flaps of the toy (1) are attached to the front side (3) and to the backside (4) of the plate (2) with glue. Of each flap, a part protrudes out from the perimeter. The flaps are each formed by a first piece of fabric and a second piece of fabric.

[0027] The first piece of fabric is attached to the front side of the plate. The first piece of fabric comprises a male touch fastener surface with hooks. This surface is shaded. The second piece of fabric is attached to the backside of the plate. The second piece of fabric comprises a female touch fastener surface with loops. The male touch fastener surface and the female touch fastener surface are facing away from each other.

[0028] The male touch fastener surfaces correspond, to the female touch fastener surfaces, i.e. when one of the male touch fastener surfaces of the toy would be pressed onto a female touch fastener surface of a further toy which is identical to the toy, the male touch fastener surface would be fastened to the female touch fastener surface.

[0029] The fabric with the male touch fastener surface and the fabric with the female touch fastener surface are flexible where they form the part of the flaps that protrude out of the perimeter and hence the part of the flaps that protrude out of the perimeter is flexible.

[0030] The four flaps each extend on both sides of the perpendicular bisectors of the corresponding sides of the plate.

[0031] The toy (1) is for instance used as in the following example wherein a first further toy is fastened to the flexible part of a flap (21) on the first side of the perimeter (see figure 2). This flap (21) is the first flap.

[0032] The first further toy (101) comprising a first further plate (102) is aligned with the first side (11) of the perimeter of the toy (1). The first further toy (101) is identical to the toy (1), i.e. the first further plate (102) is rigid and comprises a first further front side (103) and a first further backside (104). Being identical, the first further toy (101) also comprises a first set of further flaps (121,122,123,124) around its first further perimeter that protrude out from the first further perimeter, which is

square. Moreover, being identical, the flaps of the first set of further flaps are each formed by a first piece of fabric and a second piece of fabric. The first piece of fabric is attached to the front side of the first further plate (102). The first piece of fabric comprises a male touch fastener surface with hooks. The second piece of fabric is attached to the backside of the plate. The second piece of fabric comprises a female touch fastener surface with loops. The male touch fastener surface and the female touch fastener surface are facing away from each other.

[0033] Furthermore, because of the identical characteristics, the flaps from the first set of further flaps protrude out of the perimeter with a flexible part.

[0034] As a further result of the alignment, the perpendicular bisector (31) of the first side (11) is parallel to the perpendicular bisector (133) of the third side of the perimeter of the first further toy (101). Therefore, the first side (11) of the perimeter of the toy (1) is parallel to the third side (113) of the perimeter of the first further toy (101) where the third flap (123) from the first set of further flaps is located.

[0035] The perpendicular bisectors of the sides of the perimeter of the plate cross each other in a point on the centre line (37) of the perimeter. Because the flap and the third flap (123) from the first set of further flaps extend on both sides of their respective perpendicular bisectors, the protruding part of a third flap (123) of the first further toy (101) can be aligned such that the male touch fastener surface of the first further toy (101) faces the female touch fastener surface of the protruding part of the first flap (21) of the toy (1) while the centre line of the plate (2) crosses the perpendicular bisector of the third side of the first further toy. (Alternatively the female touch fastener surface of the first further toy (101) faces the male touch fastener surface of the protruding part of the toy (1).) Because the centre line crosses the perpendicular bisector of the third side of the first further toy, the first side of the toy and the third side of the first further toy are completely in line. The protruding part of the third further flap (123) of the first further toy (101) and the protruding part of the first flap (21) are pressed together such that hooks of the male touch fastener surface hook into loops of the female touch fastener surface. Therefore the male touch fastener surface is fastened to the female touch fastener surface.

[0036] After fastening the toy (1) and the first further toy (101), additional identical toys can be fastened to the toy (1) or the first further toy (101) in several ways. For example (see figure 3), a second further toy (201) is fastened to the flap (22) on the second side (12) of the toy (1) similar to how the first further toy (101) is fastened to the flap (21) on the first side (11) of the toy (1). The second further toy (201) is identical to the toy (1) in the same way as the first further toy (101) is identical to the toy (1) and for instance comprises a second further plate (202).

[0037] Because the protruding parts of the toy and the first further toy are flexible, the relative orientation of the plate and the first further plate can still be varied. Similarly the relative orientation of the plate and the second further toy can be varied. While keeping the plate of the toy (1) as bottom plate, the first further plate can form a first upward wall and the second further plate can form a second upward wall by varying the relative orientations. When the first further plate is an upright wall of the plate and is perpendicular to the plate and when also the second further plate is an upright wall of the plate and is perpendicular to the plate, the first further plate is perpendicular to the second further plate.

[0038] In the example (see figure 3) a third further toy (301) is fastened to the first further toy (101) the same way ahs the first further toy is fastened to the toy. The third further toy (301) is identical to the toy (1).

[0039] Preferably the toy (1) is mirror symmetric in a first mirror line (31) and in a second mirror line (32). The first mirror line (31) is the perpendicular bisector of the first side (11) as well as the third side (13). The second mirror line is the perpendicular bisector of the second side (12) and the forth side (14).

[0040] In this embodiment, by proper alignment, flaps which are attached to each other do not leave a part of the male touch fastener surface or a part of the female touch fastener surface unused.

[0041] In a further preferable embodiment, the toy (1) has 4-fold rotational symmetry around a centre line (37) of the square perimeter. For obtaining this 4-fold rotational symmetry, the flaps are arranged at equal distances form the centre line (37). The flaps are arranged to divide a plane perpendicular to the centre line (37) into equal angles. The 4-fold rotational symmetry means that the toy can be rotated by 90 degrees around the centre line (37) and look the same way as it did before. Furthermore the flaps have equal width along the perimeter (5,11,12,13,14).

[0042] Because the toy (1) is 4-fold rotationally symmetric, the toy may be in four different rotational orientations and still have an orientation allowing the toy to be fastened to the first further toy in the way as described above.

[0043] The flaps (21,22,23,24) do not extend to the corners of the plate (2) so that it is easier to attach the flaps to the plate (2) and it also makes the connection of the flaps with the plate less vulnerable

[0044] The dimensions of the sides of the plate are for instance 0.2,0.25, 0.3 m or larger. Such dimensions are preferred for the construction of a building which can be entered by the children with a relatively low amount of toys. Because the perimeter of the toy in this example is square, it is easy for children to create doors and windows in the construction they have built with the toy and identical toys by only fastening the toy with one flap, i.e. by not fastening flaps on other sides. This makes the self-constructed building accessible to enter via doors and this makes that children inside the building can look out of windows.

[0045] While specific embodiments of the invention have been described above, it will be appreciated by a

person of ordinary skill in the art that the invention may be practiced otherwise than as described, but still according to the teachings above. The descriptions above are intended to be illustrative, not limiting.

[0046] For example, in an alternative embodiment, the toy is configured as in the previously described embodiment corresponding to figures 1, 2 and 3. However, the toy is 2-fold rotationally symmetric instead of 4-fold rotationally symmetric. In addition, the sides of the second flap (22) and the forth flap (24) that correspond to the front side are formed by a fabric with a female touch fastener surface and the sides of the second flap (22) and the forth flap (24) that correspond to the back side are formed by a fabric with a male touch fastener surface. The sides of the first flap (21) and the third flap (23) that correspond to the front side are formed by a fabric with a male touch fastener surface and the sides of the first flap (21) and the third flap (23) that correspond to the backside are formed by a fabric with a female touch fastener surface.

[0047] In another alternative embodiment, the toy is configured as in the previously described embodiment corresponding to figure 1, 2 and 3. However, the toy is not mirror symmetric in the first mirror line (35). However, the first flap is partly situated on a first side of the perpendicular bisector of the first side (11). Also the third flap is partly situated on a second side of the perpendicular bisector.

[0048] In another alternative embodiment, the toy is triangular and 3-fold rotationally symmetric having three equally long straight sides. This for instance allows the construction of a tetrahedron.

[0049] In another alternative embodiment, the toy is rectangular and for instance has 2-fold rotational symmetry. In a first example of this embodiment is has 2 flaps, in another embodiment is has a flap on each side of the perimeter. In yet another alternative embodiment the plate is disk shaped and the flap surrounds the complete disk, i.e. the flap has a circular diameter.

[0050] From the description of the invention, the skilled person will understand that the flaps can be attached to front side or the backside of the plate by other means than glue. For instance, the flaps can be stapled or nailed to the plate. This is independent of the shape of the plate (for instance rectangular, square, triangular or disk shaped) and the symmetry of the toy.

[0051] From the description of the invention, the skilled person will also understand that the toy may have just one flap and this already allows the toy to be connected to an identical, second toy. In case the male touch fastener surface of the flap of the toy (1) is fastened to the female touch fastener surface of the flap of the second toy, a third identical toy can be fastened to the female touch fastener surface of the flap. Additionally, a forth, identical toy can be fastened to the male touch fastener surface of the second toy and so on.

[0052] From the description of the invention, the skilled person will also understand that the male fastener surface and the female fastener surface may not extend onto the part of the flap glued to the plate.

Claims

1. Toy (1) comprising a plate (2) having a front side (3), a backside (4) and a perimeter (5,11,12,13,14), **characterised by**
   a flap (21) with a flexible part protruding out from the perimeter wherein the flexible part comprises
   - a male touch fastener surface and a corresponding female touch fastener surface facing away from the male touch fastener surface, wherein the male touch fastener surface corresponds to the front side of the plate and
   - wherein the female touch fastener surface corresponds to the backside of the plate.

2. Toy according to claim 1 comprising one or more additional flaps (22,23,24) each having an additional flexible part protruding from the perimeter, the additional flexible part comprising an additional male touch fastener surface and an additional female touch fastener surface facing away from the additional male touch fastener surface, wherein the additional male touch fastener surface corresponds to the front side of the plate and the additional female touch fastener surface corresponds to the backside of the plate.

3. Toy according to claim 2, wherein the flap is arranged at a side (11) of the perimeter and is arranged to extend on both sides of perpendicular bisector (31) of the side of the perimeter.

4. Toy according to claim 3, wherein the toy is mirror symmetric in the perpendicular bisector.

5. Toy according to claim 2, 3 or 4 having rotational symmetry around a centre line (37) of the perimeter.

6. Toy according to any of the preceding claims, wherein the perimeter is square.

7. Toy according to any of the preceding claims, wherein the male touch fastener surface comprises protrusions arranged to hook into looks of a corresponding female touch fastener surface.

8. Construction toy set, comprising the toy (1) according to any of the claims 1 to 7 and one or more further toys (101,201,301) identical to the toy.

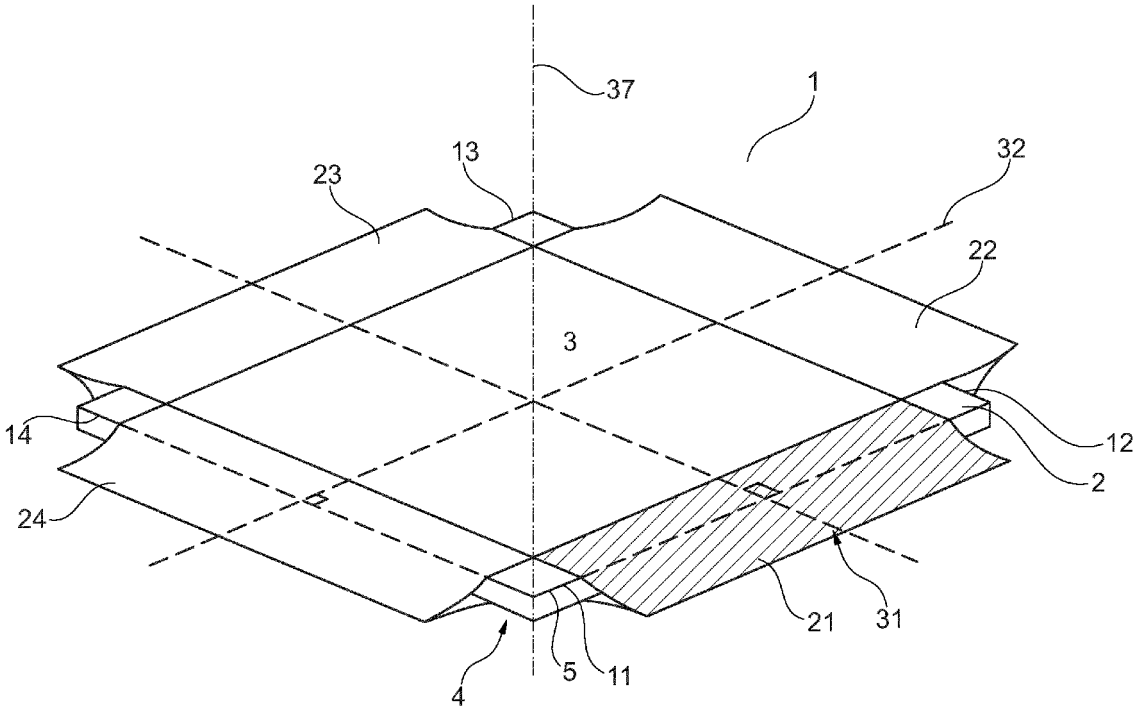

Fig. 1

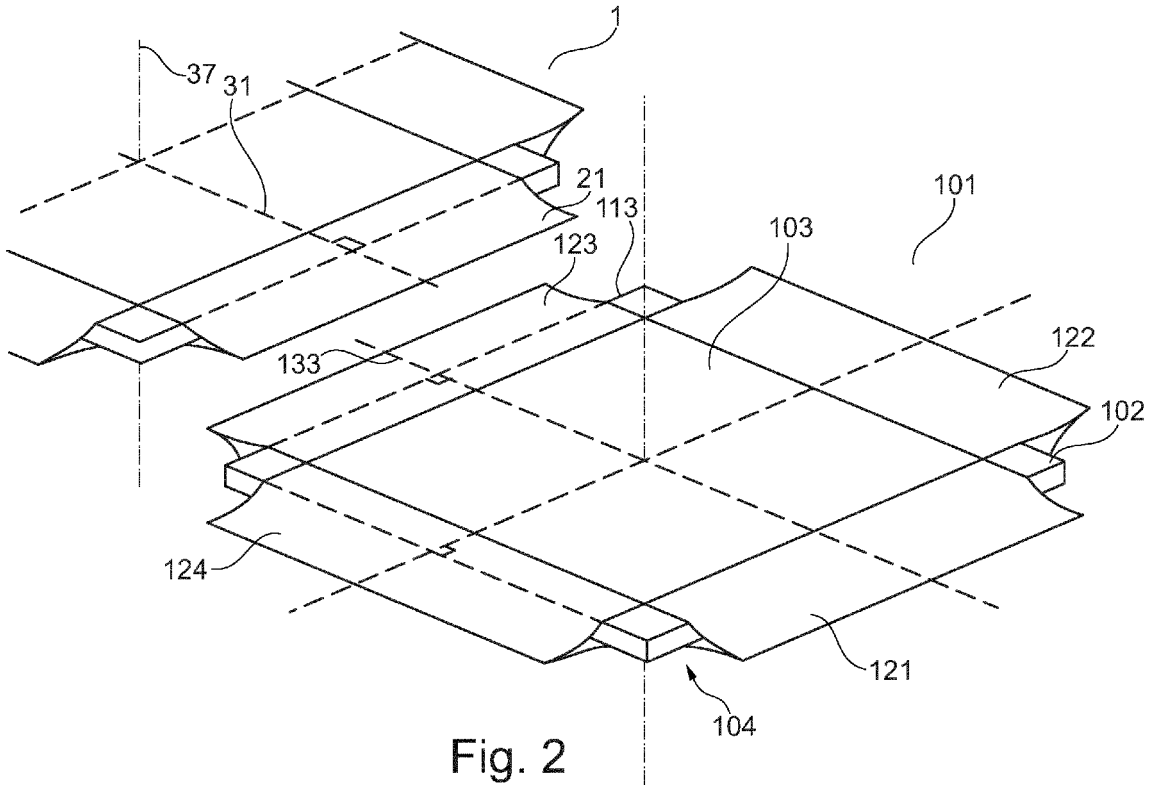

Fig. 2

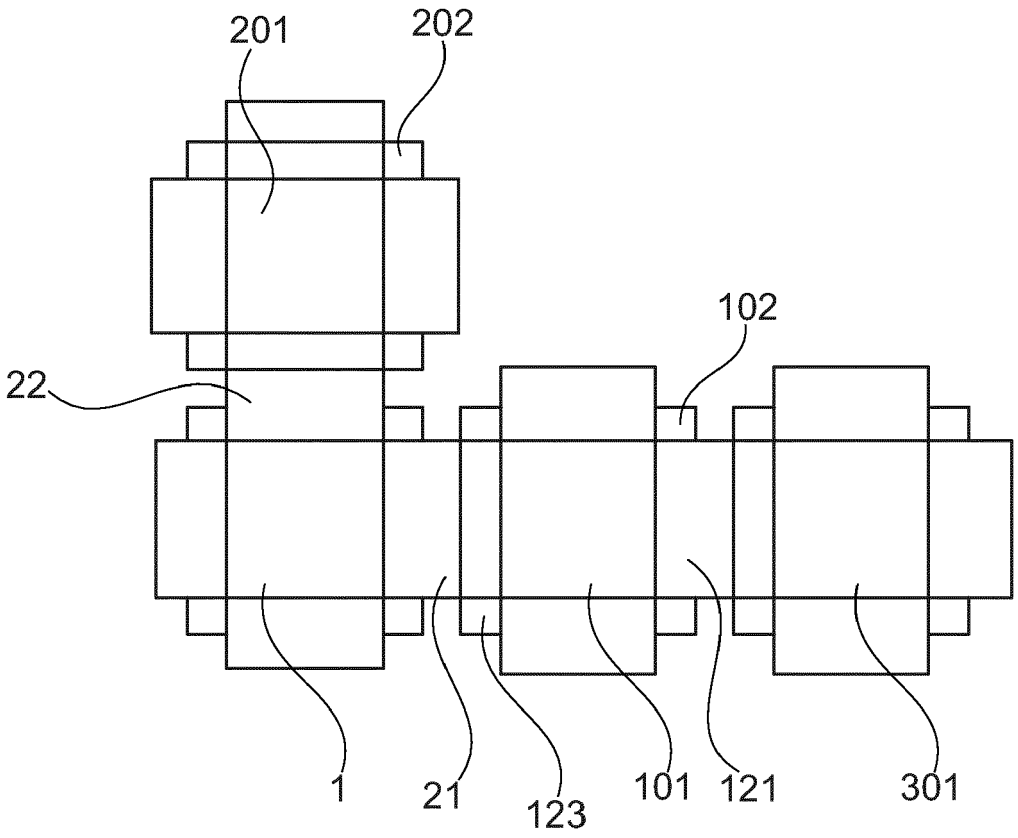

Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 13 16 3209

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	US 2003/153243 A1 (HAAS GORDON [US]) 14 August 2003 (2003-08-14) * paragraph [0033] - paragraph [0037]; figures *	1-8	INV. A63H33/04
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	12 June 2013	Lucas, Peter

CATEGORY OF CITED DOCUMENTS

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