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(54) METHOD FOR MANUFACTURING OF BUILDING UNITS FOR FURNITURE

VERFAHREN ZUR HERSTELLUNG VON BAUEINHEITEN FÜR MÖBEL

PROCÉDÉ DE FABRICATION DE MODULES DE CONSTRUCTIONS POUR MEUBLE

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Description

Field of the Invention

[0001] This invention pertains in general to the field of a manufacturing method of an article for the manufacturing of furniture.

Background of the Invention

[0002] In the field of furniture, such as bookshelves, shelves, doors, tables etc., it is common practice to manufacture such board products of wood. However, wooden products have a high density, which impairs transportation and transportation costs.

[0003] In this regard, it is known to manufacture such products of boards of lignocellulose-containing material, such as particle boards and fibreboards according to the dry method (MDF, HDF, LDF etc.). Here, the lignocellulose-containing material is first disintegrated into particles or fibre bundles. Subsequently these are dried and glue-coated and formed to a continuous mat in one or several forming stations. The mat is pre-pressed and subsequently finish-pressed to boards under pressure and heat in a continuous or discontinuous press. These boards are then adhered/attached on a frame of wood, to produce the product for withstanding vertical load. Optionally, the space defined by the boards and the frame is filled with a distance material, such as honeycomb structure or the like.

[0004] The technique of manufacturing such products of boards on an intermediate frame is accompanied by several failings and drawbacks. Still, such products are unsatisfactory heavy, since the frame still is of solid wood or fibre beams. The use of intermediate frames requires a lot of material and results in several manufacturing steps in the manufacturing process. Still further, such products have a very limited possibility to fasten parts/objects, such as table legs, lamps, etc., thereon in other positions than where the frame is located (this would imply the integration of yet another frame part within the product), without exterior metal frames or the like. Also, the low density of MDF, HDF, LDF, etc., results in the need of great amounts of paint, stain etc., when painting/staining the board product, since the surface of the product absorbs a lot of paint, and thus, several layers of paint are required.

[0005] It is known to manufacture structural elements, such as furniture components, by positioning laths of wood, particle board, or the like, parallel to each other on one glue-coated flat side of a first panel, the spaces between the laths being filled with distance material, such as honeycomb of cardboard, plastics or the like, or with foam plastic material, of approximately the same height as the laths, and then position a second glue coated panel on top of the laths and the distance material, where after the unit is compressed and glued together.

[0006] DE 102004007225 B3 shows a method and a device for producing sandwich boards for the furniture industry.

[0007] CN 201212293 Y describes a cellular sandwich composite plate used for furniture. The plate comprises an upper fibreboard, a lower fibreboard and a sandwich layer arranged between the fiberboards.

[0008] FR 2239573 A2 is considered as the closest prior art and shows sandwich panels comprising upper and lower sheets. The panels have edge stiffening means allowing interconnection of panels.

[0009] WO 90/04515 describes a method wherein such units are sawn across the laths in a transversal plane in respect of the longitudinal axis of the laths, such that a number of elongated pieces with rectangular cross section are obtained, where after said pieces are rotated 90 degrees about their longitudinal axis and positioned parallel to each other on a third glue coated panel and covered with a fourth glue coated panel. Thereafter, the third and the fourth panel are subjected to pressure and glued together with the pieces in between. Finally, the unit thus produced is sawn along and between the elongated pieces. The obtained product is however still comparatively heavy, since at least two sides, i.e. the ends, are made entirely of wood, particle board, or the like, not being of a light weight material, such as a distance material. Also, only parts of the product having pieces of laths underneath will be suitable for mounting elements thereon.

[0010] Hence, an improved composite board product would be advantageous, and in particular a board product having a comparatively low density, allowing for decreased weight of the product, resulting in a cost-effective manufacturing and transportation procedure, while still allowing for the possibility to rigidly attach other parts, such as armature, fittings, screw members etc, on parts not necessarily having parts of laths underneath, would be advantageous.

Summary of the Invention

[0011] Accordingly, the present invention preferably seeks to mitigate, alleviate or eliminate one or more of the above-identified deficiencies in the art and disadvantages singly or in any combination and solves at least the above mentioned problems by providing methods for manufacturing of an article for the manufacturing of furniture, according to claim 1 or 2.

Brief Description of the Drawings

[0012] These and other aspects, features and advantages of which the invention is capable of will be apparent and elucidated from the following description of embodiments of the present invention, reference being made to the accompanying drawings, in which

Fig. 1 is an elevated view of an example not forming part of the invention;

Fig. 2 is an elevated view of a second embodiment of the present invention; and

Fig. 3 is an elevated view of a third embodiment of the present invention.

Description of embodiments

[0013] The following description focuses on an embodiment of the present invention applicable to articles, such as a board product, and in particular to table tops, shelves, doors, panels, side pieces etc., wherein it is desired to enforce certain parts, such as reinforcing a part of a side piece in a shelf assembly, for mounting the horizontal shelf on said part, reinforcing a part of a table, for mounting a table leg on said part, etc., while still maintaining a low weight product, having a lower manufacturing cost and lower transportation cost.

[0014] Fig. 1 illustrates a perspective view of an article 100 not forming part of the invention. The article 100 is manufactured by arranging at least two laths 101, 102 on a first board 103, such as a fiber board, such as a HDF or MDF board. The laths 101, 102 are preferably arranged parallel to each other, extending longitudinally along two opposite sides/edges of the first board 103. Optionally, additional laths may be arranged in parallel with the two laths 101, 102 on said first board 103. The laths may be adhered to the first board by gluing, or other suitable adhering method or means.

[0015] A first strip 104 of a fiber material may then be applied and/or adhered to the first board. The strip may be arranged in parallel or perpendicular to the longitudinal extension of the laths 101, 102. The fiber material may be flexible, such that it is possible to roll the product into a roll, whereby the applying of the first strip 104 on the first board may be performed by simply rolling the strip into place.

[0016] The strip 104 of a fibermaterial may be manufactured by a manufacturing method, wherein long, slim fibers are created by defibration of starting material, to make it rollable. Starting material may be wooden chips made from any kind of wood, but also non-wooden material from e.g. one-year crops, such as straw and bagasse may be used. The decomposition may for example be performed in a defibrator of known kind. A defibator is a thermo-mechanical pulping refiner, in which the pulp material, such as wood chips, is ground in an environment of steam between a rotating grinding disc and a stationary disc each with radial grooves that provides the grinding surface. Wood chips are fed into the centre and are broken down as the centrifugal force pushes them towards the circumference of the discs where the grooves are finer to produce wood fiber. However, to obtain improved flexibility the decomposition is performed with an energy input in the in the range from 50 to 150 kWh/metric ton starting material. Said energy input is lower than most processes known within the art. This gives the advantage of slimmer/longer fibers, which is one of the factors providing a flexible fiber product. According to another example, the fibers that are created by the decomposition are substantially or dominantly slim fibers. The term fibers both mean singular fibers and bundles of fibers. Fiber bundles are generally longer than single fibers. Depending on the starting material, the temperature and the level of moisture, different size distributions of fibers are achieved by the decomposition. The term slim fibers are fibers where the relationship between the length and the thickness is at least 20, i.e. 20:1. Fibers of lignocelluloses are mechanically decomposed from larger particles, such as wooden chips. This decomposition may take place in a rotating mill, followed by heating to different temperature levels. The decomposition process may be varied by addition of different amounts of energy. More energy added results in shorter fibers and less energy added results in longer fibers, when the rest of the process is the same. The temperature needed for decomposition of fibers is in one example achieved by adding pressure in the form of e.g. saturated steam. The added steam may then have a pressure of 5 to 11 bar. Next, the fibers are dried and mixed with a binder. The binder may be a glue selected from the group comprising urea-formaldehyde (UF), and melamine-urea-formaldehyde (MUF). Other glues may also be used, but then the temperature and pressure has to be adapted to the curing temperature of said other glue. The fibers are then formed into a mat and compressed to desired density, such as from 300 to 750 kg/m^3 and thickness of below 3 mm, such as between 1 and 3 mm. The compression may be performed in a continuous double band press, well known to a person skilled in the art, under continuous addition of hot steam. The steam is supplied at 1 to 6 bar, whereby the mat may be heated all through to 100 to 150 °C and push out all air comprised in the mat. The compression resistance of the mat is hereby reduced significantly. This results in a solid but flexible, fiber product with homogeneous density profile. The fiber product may be rolled into a roll. The fiber product may then be cut along the length of the fiber product into narrow bands or strips. Thereafter the bands may be rolled into a roll. This provides easy storage and handling. According to one embodiment, the density of the fiber product after compression is homogenously 500 to 600 kg/m^3, such as 550 kg/m^3. When the density of the fiber product after compression is homogenously 500 to 600 kg/m^3, the strength and flexibility are such that the product conveniently may be rolled into rolls, and provide reinforcing properties to the fiber product. The mat that is formed from fiber and binder may have a density between 30 and 50 kg/m^3 and a surface weight corresponding to the desired thickness and density of the fiber product after compression. The transporter is continuously feeding the mat in a continuously working double band press where the mat is compressed and hot steam is injected into the mat. The injection may be performed through both bands of the press, since these bands typically comprise perforated steel belts with wire, which allow passage of steam. The distance between the bands is set to a value slightly high-

er than the desired thickness of the fiber product produced. By injecting steam, a very fast heating of the whole fiber mat is achieved. According to one example, the temperature of the steam is set so that a temperature of the mat of between 100 and 150°C is achieved. Most fiber products according to the state of the art are made in presses where the rollers are made of metal. The heating in these kinds of presses are achieved through conductivity, which heats the surface area more than the middle area. The injection gives a quick heating of the mat and makes the mat stay in the compressed state, which provides a homogeneous density across the thickness of the fiber product. A homogenous density makes the fiber product flexible. Accordingly, the flexible fiber product has a substantially homogeneous density profile, i.e. substantially the same density across the thickness of the product. The fiber product may be cut into strips before rolling. The flexible fiber product may be cut by a scissors method, well known to a person skilled in the art.

[0017] After the first strip 104 has been applied on the first board, a distance material 105 is applied onto the first strip 104 and in between the at least two laths 101, 102. The distance material 105 may for example be a honeycomb material, such as a cellulose honeycomb material.

[0018] A second strip 106 of a fiber material may then be applied and/or adhered, by for example glue, to the distance material 105. The strip 106 may be arranged in parallel or perpendicular to the longitudinal extension of the laths 101, 102, and the first strip 104. Thereafter, a second board 107 may be applied and adhered to the laths 101, 102, the distance material 105, and the second strip 106. Also the second strip 106 may preferably be made of the flexible fiber material according to above.

[0019] The example of Fig. 1 provides the advantage that the surfaces of said first and second boards, being located on a part of the first and second board having a strip beneath, will be reinforced for receiving mounting means, such as screw members, armature, fittings, frames, etc., there at.

[0020] Fig. 2 illustrates a perspective view of an article 200 according to an embodiment of the present invention. The article 200 is manufactured by arranging at least two laths 201, 202 on a first sheet of fiber material 203. The first fiber material 203 may be a flexible fiber material according to above, or a fiber board, such as a HDF or MDF board. The laths 201, 202 are preferably arranged parallel to each other, extending longitudinally along two opposite sides/edges of the first sheet of fiber material 203. Optionally, additional laths, such as a lath 204 may be arranged in parallel with the two laths 201, 202 on said first sheet of fiber material 203. The laths may be adhered to the first fiber material 203 by gluing, or other suitable adhering method or means.

[0021] Then, a distance material 205 is applied onto the first sheet of fiber material 203 and in between the at least two laths 201, 202. The distance material 205 may for example be a honeycomb material, such as a cellulose honeycomb material, as disclosed above. Thereafter, a second sheet of fiber material 206 may be applied and adhered to the laths 201, 202, and the distance material 205. The second fiber material 206 may be a flexible fiber material according to above, or a fiber board, such as a HDF or MDF board.

[0022] The obtained product is then sawn across the laths, i.e. sawn transversally of the longitudinal direction of the laths 201, 202. A number of elongated pieces with rectangular cross-section and parts of laths 201, 202 distributed therein, in between distance material 205, are then obtained. The article 200 is manufactured by arranging at least two such elongated pieces on a first board 207, such as a fiber board, such as a HDF or MDF board. The elongated pieces may be arranged with the first or second fiber material 203, 206 bearing against the first board 207. The elongated pieces are preferably arranged parallel to each other, extending longitudinally along two opposite sides/edges of the first board 207. Optionally, additional elongated pieces may be arranged in parallel with the two elongated pieces on said first board 207. The elongated pieces may be adhered to the first board 207 by gluing, or other suitable adhering method or means.

[0023] Then, a distance material 208 is applied onto the first board 207 and in between the at least two elongated pieces. The distance material 208 may for example be a honeycomb material, such as a cellulose honeycomb material. Thereafter, a second board 209 may be applied and adhered to the elongated pieces, and the distance material 208.

[0024] Of course, the embodiment according to Fig.2 may be combined with applying strips of a fiber material onto the first and second sheet of fiber materials 203, 206 or first and second boards 207, 209, according to the description in accordance with the example of Fig. 1.

[0025] The embodiment of Fig. 2 thus provides the advantage that the surfaces of said first and second boards, being located on a part of the first and second board having a strip or a sheet of fiber material beneath, will be reinforced for receiving mounting means, such as screw members, armature, fittings, frames, etc., there at.

[0026] Fig. 3 illustrates a perspective view of an article 300 according to another embodiment of the present invention. The article 300 is manufactured by arranging a distance material 301 onto a first sheet of fiber material 302. The first fiber material 302 may be a flexible fiber material according to above, or a fiber board, such as a HDF or MDF board. The distance material 301 may for example be a honeycomb material, such as a cellulose honeycomb material, as disclosed above. Thereafter, a second sheet of fiber material 303 may be applied and adhered to the distance material 301. The second fiber material 303 may be a flexible fiber material according to above, or a fiber board, such as a HDF or MDF board.

[0027] The obtained product is then sawn across the length thereof, i.e. sawn transversally of the longitudinal direction of the first and second sheets of fiber material

302, 303. A number of elongated pieces with rectangular cross-section, having distance material 301 in between the sheets of fiber material 302, 303, are then obtained. The article 300 is manufactured by arranging at least two such elongated pieces on a first board 304, such as a fiber board, such as a HDF or MDF board. The elongated pieces may be arranged with the first or second fiber material 302, 303 bearing against the first board 304. The elongated pieces are preferably arranged parallel to each other, extending longitudinally along two opposite sides/edges of the first board 304. Optionally, additional elongated pieces may be arranged in parallel with the two elongated pieces on said first board 304. The elongated pieces may be adhered to the first board 304 by gluing, or other suitable adhering method or means.

[0028] Then, a distance material 305 is applied onto the first board 304 and in between the at least two elongated pieces. The distance material 305 may for example be a honeycomb material, such as a cellulose honeycomb material. Thereafter, a second board 306 may be applied and adhered to the elongated pieces, and the distance material 305.

[0029] Of course, the embodiment according to Fig.3 may be combined with applying strips of a fiber material onto the first and second sheets of fiber material 302, 303 or first and second boards 304, 306, according to the description in accordance with the example of Fig. 1. Also, it is naturally within the scope of the present invention that the elongated piece according to the embodiment of Fig. 2 may be combined with elongated piece of Fig. 3. For example an elongated piece according to the embodiment of Fig. 2 may be arranged to extend longitudinally along one side/edge of the first board 304, while an elongated piece according to the embodiment of Fig. 3 is arranged parallel to the elongated piece according to the embodiment of Fig. 2 to extend longitudinally along the opposite side/edge of the first board 304.

[0030] The embodiment of Fig. 3 thus provides the advantage that the surfaces of said first and second boards, being located on a part of the first and second board having a strip or a sheet of fiber material beneath, will be reinforced for receiving mounting means, such as screw members, armature, fittings, frames, etc., there at.

[0031] In the embodiments wherein distance material is applied in more than one step, the type and form of distance material may be varied to compensate for differences in height in the article, due to sheets of fiber material and fiber boards only being present in some part or parts of the article. Thus, distance materials applied in separate steps may have different heights.

[0032] Many different types of materials can be used in the application of the above-mentioned boards. Apart from fibreboard, the boards may consist of laminate, particle board, veneer, plywood, cardboard, plastic, metal etc, and the laths may consist of solid wood, particle board or any other suitable material to which fittings or holders may be attached. Preferably, a honeycomb of cardboard is used as spacing element because of the low price and excellent properties of cardboard, but the honeycomb structures may also be made of e.g. plastic. In lieu of honeycombs, a suitable foam plastic material, e.g. polyurethane, may be disposed in the space between the laths or elongated pieces.

[0033] The boards, sheets of fiber material, or laths, described herein, do not necessarily have to be made of the same material in one embodiment.

[0034] Although the present invention has been described above with reference to specific embodiments, it is not intended to be limited to the specific form set forth herein. Rather, the invention is limited only by the accompanying claims and, other embodiments than the specific above are equally possible within the scope of these appended claims.

[0035] In the claims, the term "comprises/comprising" does not exclude the presence of other elements or steps. Furthermore, although individually listed, a plurality of means, elements or method steps may be implemented by e.g. a single unit or processor. Additionally, although individual features may be included in different claims, these may possibly advantageously be combined, and the inclusion in different claims does not imply that a combination of features is not feasible and/or advantageous. In addition, singular references do not exclude a plurality. The terms "a", "an", "first", "second" etc do not preclude a plurality. Reference signs in the claims are provided merely as a clarifying example and shall not be construed as limiting the scope of the claims in any way.

Claims

1. A method for manufacturing an article for the manufacturing of furniture, said method comprising the steps of:

   (i) arranging two laths (201, 202) in parallel to each other on a first sheet of fiber material (203), such that said laths (201, 202) are extending longitudinally along two opposite sides/edges of the first sheet of fiber material (203);
   (ii) arranging a distance material (205) in between the two laths (201, 202);
   (iii) arranging a second sheet of fiber material (206) on the laths (201, 202,) and the distance material (205);
   (iv) sawing across the laths (201, 202) transversally of the longitudinal direction of the laths (201, 202) to obtain elongated pieces with rectangular cross section;
   (v) arranging two such elongated pieces on a first board (207), with the first or second fiber material (203, 206), in the form of strips, bearing against the first board (207), and in parallel to each other, extending longitudinally along two opposite sides/edges of the first board (207);

(vi) arranging a distance material (208) in between the at least two elongated pieces; and
(vii) arranging a second board (209) on the elongated pieces and the distance material (208).

2. A method for manufacturing an article for the manufacturing of furniture, said method comprising the steps of:

(i) arranging a distance material (301) on a first sheet of fiber material (302);
(ii) arranging a second sheet of fiber material (303) on the distance material (301);
(iii) sawing transversally of the longitudinal direction of the first and second sheets of fiber material (302, 303) and the distance material (301) to obtain elongated pieces with rectangular cross section;
(iv) arranging two such elongated pieces on a first board (304), with the first or second fiber material (302, 303), in the form of strips, bearing against the first board (304), and in parallel to each other, extending longitudinally along two opposite sides/edges of the first board (304);
(v) arranging a distance material (305) in between the at least two elongated pieces; and
(vi) arranging a second board (306) on the elongated pieces and the distance material (305).

Patentansprüche

1. Ein Verfahren zum Herstellen eines Artikels zum Herstellen von Möbeln, wobei das Verfahren die folgenden Schritte umfasst:

(i) Anordnen zweier Leisten (201, 202) parallel zueinander auf einer ersten Matte aus Fasermaterial (203), so dass die Leisten (201, 202) in Längsrichtung entlang zweier sich gegenüberliegender Seiten/Kanten der ersten Matte aus Fasermaterial (203) verlaufen;
(ii) Anordnen eines Distanzmaterials (205) zwischen den zwei Leisten (201, 202);
(iii) Anordnen einer zweiten Matte aus Fasermaterial (206) auf den Leisten (201, 202) und dem Distanzmaterial (205);
(iv) Sägen durch die Leisten (201, 202) quer zu der Längsrichtung der Leisten (201, 202), um längliche Stücke mit rechtwinkligem Querschnitt zu erhalten;
(v) Anordnen zweier solcher länglicher Stücke auf einem ersten Brett (207), wobei das erste oder zweite Fasermaterial (203, 206) in Form von Streifen gegen das erste Brett (207) anliegt, parallel zueinander, in Längsrichtung entlang zweier sich gegenüberliegender Seiten/Kanten des ersten Bretts (207) verlaufend;
(vi) Anordnen eines Distanzmaterials (208) zwischen den zumindest zwei länglichen Stücken; und
(vii) Anordnen eines zweiten Bretts (209) auf den länglichen Stücken und dem Distanzmaterial (208).

2. Verfahren zum Herstellen eines Artikels zur Herstellung von Möbeln, wobei das Verfahren die folgenden Schritte umfasst:

(i) Anordnen eines Distanzmaterials (301) auf einer ersten Matte aus Fasermaterial (302);
(ii) Anordnen einer zweiten Matte aus Fasermaterial (303) auf dem Distanzmaterial (301);
(iii) Sägen quer zu der Längsrichtung der ersten und zweiten Matte aus Fasermaterial (302, 303) und des Distanzmaterials (301), um zwei längliche Stücke mit rechtwinkligem Querschnitt zu erhalten;
(iv) Anordnen zweier solcher länglicher Stücke auf einem ersten Brett (304), wobei das erste oder zweite Fasermaterial (302, 303) in Form von Streifen gegen das erste Brett (304) anliegt, parallel zueinander, in Längsrichtung entlang zweier sich gegenüberliegender Seiten/Kanten des ersten Bretts (304) verlaufend;
(v) Anordnen eines Distanzmaterials (305) zwischen den zumindest zwei länglichen Stücken; und
(vi) Anordnen eines zweiten Bretts (306) auf den länglichen Stücken und dem Distanzmaterial (305).

Revendications

1. Procédé de fabrication d'un article permettant la fabrication de meuble, ledit procédé comprenant les étapes consistant à :

(i) disposer deux lattes (201, 202) parallèlement l'une à l'autre sur une première plaque de matériau fibreux (203), de sorte que lesdites lattes (201, 202) s'étendent longitudinalement le long de deux côtés/bords opposés de la première plaque de matériau fibreux (203) ;
(ii) disposer un matériau intercalaire (205) entre les deux lattes (201, 202) ;
(iii) disposer une seconde plaque de matériau fibreux (206) sur les lattes (201, 202) et sur le matériau intercalaire (205) ;
(iv) scier à travers les lattes (201, 202) transversalement à la direction longitudinale des lattes (201, 202) de façon à obtenir des pièces allongées ayant une section transversale rectangulaire ;
(v) disposer deux desdites pièces allongées sur

un premier panneau (207), avec le premier ou le second matériau fibreux (203, 206), sous la forme de bandes, appuyant contre le premier panneau (207), et parallèlement l'une à l'autre, s'étendant longitudinalement le long de deux côtés/bords opposés du premier panneau (207) ;
(vi) disposer un matériau intercalaire (208) entre lesdites au moins deux pièces allongées ; et
(vii) disposer un second panneau (209) sur les pièces allongées et sur le matériau intercalaire (208).

2. Procédé de fabrication d'un article permettant la fabrication de meuble, ledit procédé comprenant les étapes consistant à :

(i) disposer un matériau intercalaire (301) sur une première plaque de matériau fibreux (302) ;
(ii) disposer une seconde plaque de matériau fibreux (303) sur le matériau intercalaire (301) ;
(iii) scier transversalement à la direction longitudinale des première et seconde plaques de matériau fibreux (302, 303) et du matériau intercalaire (301) de façon à obtenir des pièces allongées ayant une section transversale rectangulaire ;
(iv) disposer lesdites deux pièces allongées sur un premier panneau (304), avec le premier ou le second matériau fibreux (302, 303), sous la forme de bandes, appuyant contre le premier panneau (304), et parallèlement l'une à l'autre, s'étendant longitudinalement le long de deux côtés/bords opposés du premier panneau (304) ;
(v) disposer un matériau intercalaire (305) entre lesdites au moins deux pièces allongées ; et
(vi) disposer un second panneau (306) sur les pièces allongées et sur le matériau intercalaire (305).

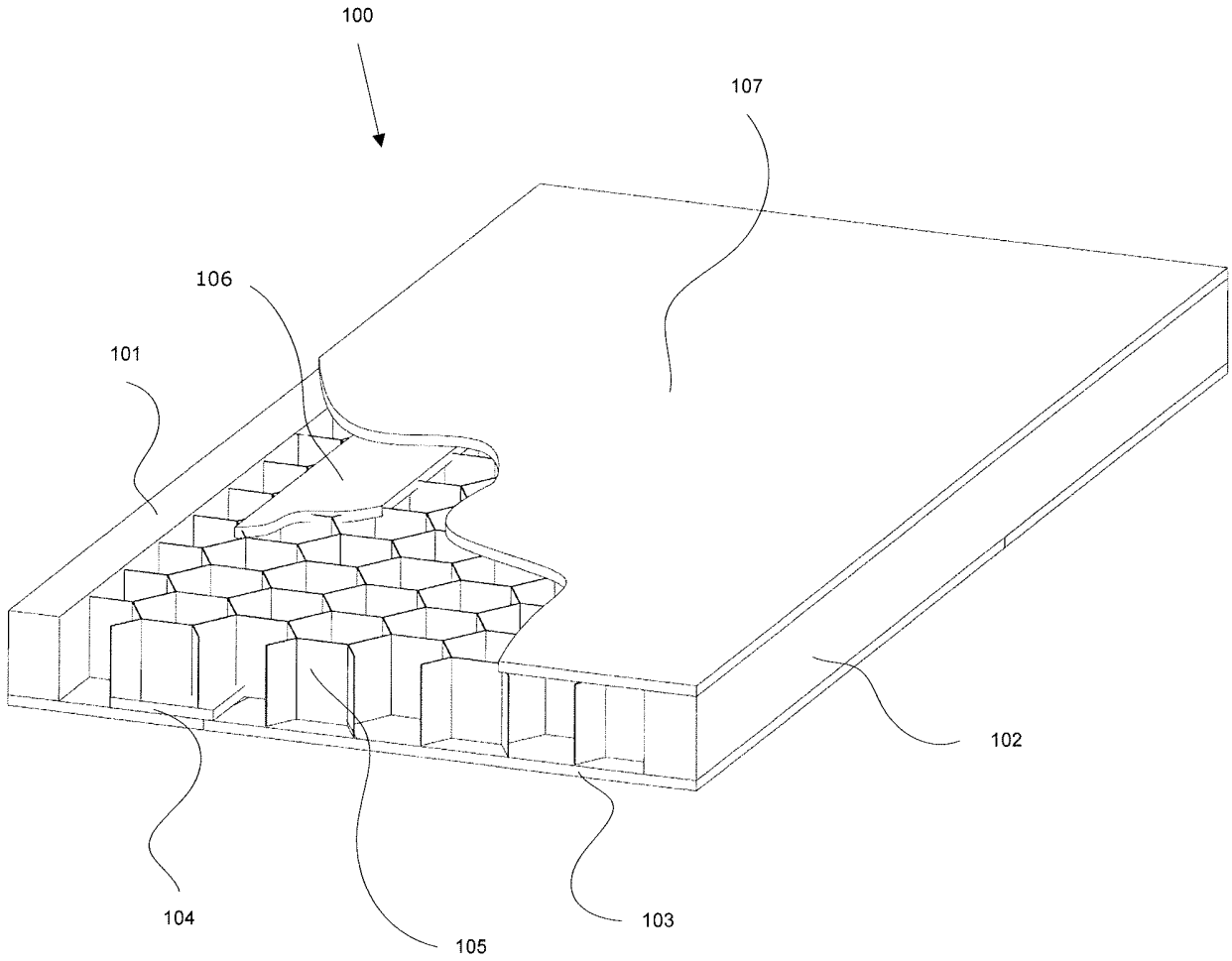


Fig. 1

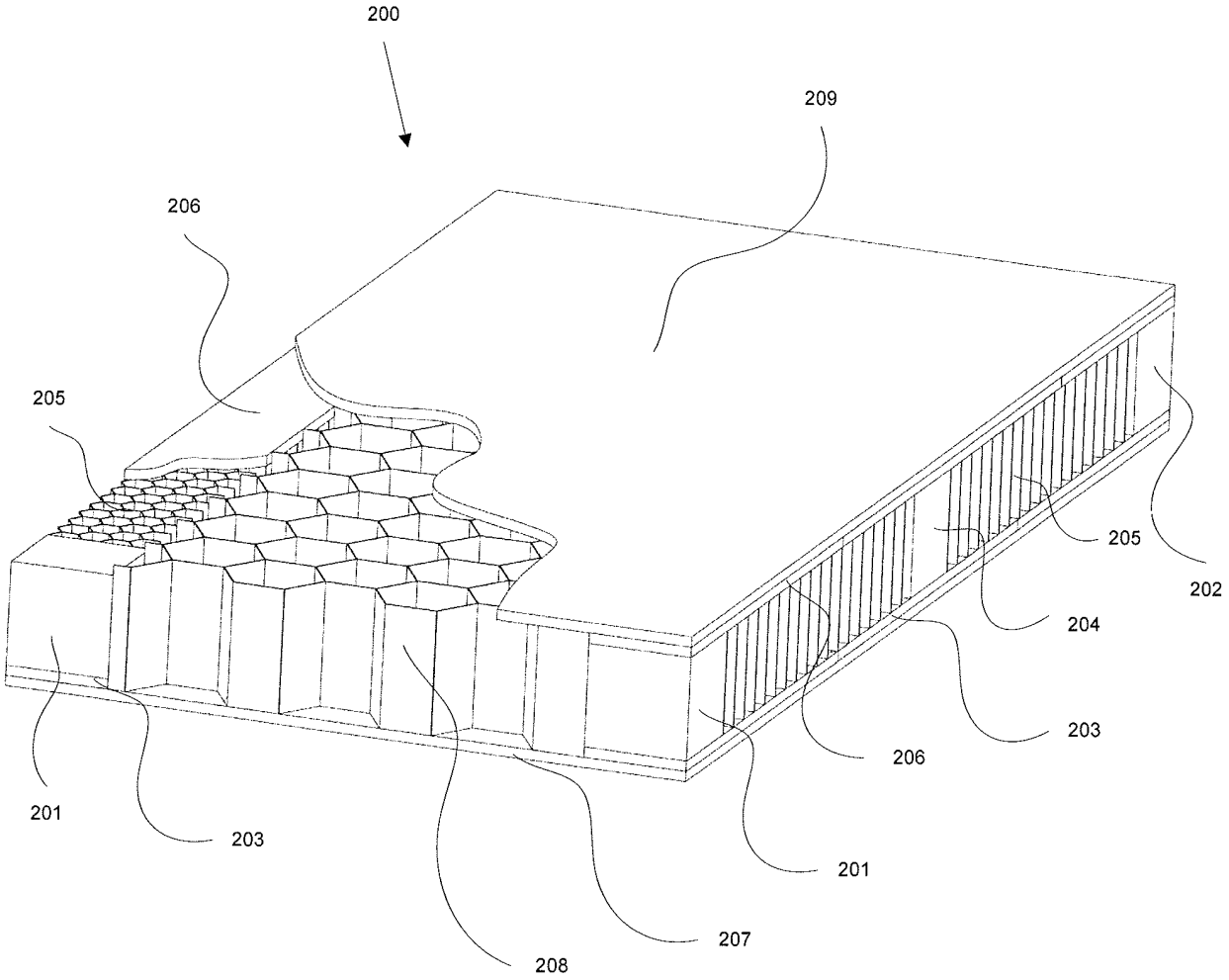


Fig. 2

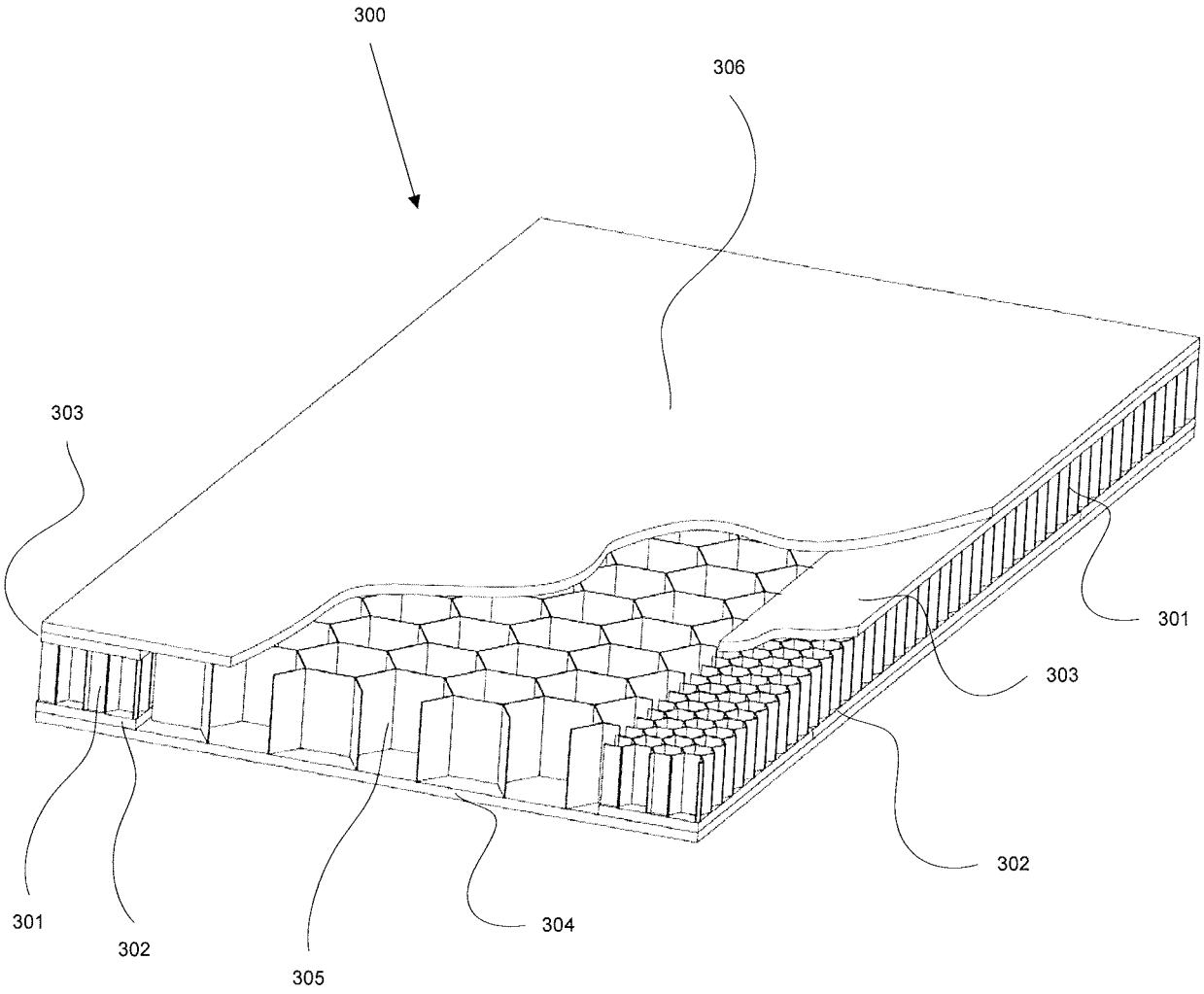


Fig. 3

REFERENCES CITED IN THE DESCRIPTION

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