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(54) BED BASE AND LIFT-UP BED INCLUDING THE SAME

(57) The present invention relates to a bed pallet and a lift-up bed including the same, and more particularly, to a bed pallet in which a plurality of members formed of a wood or metal material are combined into the shape of a frame to form a light framework, and an inner space of the framework is reinforced with light urethane foam, thereby achieving weight reduction, having excellent durability and structural stability, and being easy and convenient to manufacture.

The bed pallet according to the present invention includes: a main body part which is formed by a plurality of members being combined into the shape of a frame having a predetermined pattern, has a plurality of filling spaces spaced apart from each other formed by the members, and has a mattress mounted thereon; and a reinforcing part filled in each of the filling spaces to reinforce the main body part.

A lift-up bed according to another embodiment of the present invention includes: a bed frame in which goods are stored; a bed pallet configured to open or close an upper opening of the bed frame and have a mattress mounted on an upper surface thereof; and a pair of upward/downward moving parts coupled to both side walls of the bed frame and the bed pallet at the corresponding positions and configured to move the bed pallet upward or downward by rotation relative to the bed frame.

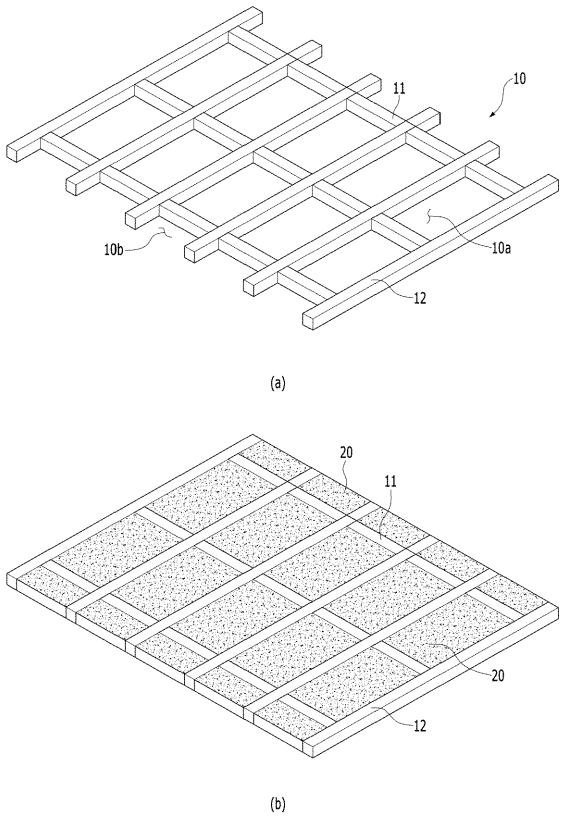

Fig. 1

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a bed pallet and a lift-up bed including the same, and more particularly, to a bed pallet in which a plurality of members formed of a wood or metal material are combined into the shape of a frame to form a light framework, and an inner space of the framework is reinforced with light urethane foam, thereby not only achieving weight reduction and having excellent durability and structural stability, but also being easy and convenient to manufacture due to a finishing plate, which comes in direct contact with and supports the framework and a mattress, being naturally coupled as the urethane foam hardens, and a lift-up bed including the same.

BACKGROUND OF THE INVENTION

[0002] In recent years, lift-up beds have been widely used to reinforce a storage function and improve convenience in use.

[0003] Lift-up beds are beds made to enable an upper plate, that is, a pallet on which a mattress is placed, to be lifted or lowered and typically have either of the following two structures.

[0004] First, a pallet with slats may be used in a lift-up bed. A pallet with slats is most commonly used in lift-up beds due to convenience of assembly.

[0005] However, due to characteristics of the structure with slats, the slats may break or cause noise.

[0006] In addition, mattress dust may enter and accumulate in a goods storage space through gaps between the slats and degrade the storage function.

[0007] Second, instead of a pallet with slats, a pallet made of a single large plate body may be used in a lift-up bed.

[0008] That is, a single large pallet having a size that corresponds to a mattress may be manufactured using wood, plywood, medium-density fiberboard (MDF), or the like to substitute for a pallet with slats.

[0009] When the one-body type pallet is applied, problems such as breakage of slats and noise caused by the slats may be eliminated. However, since the large volume of the pallet makes it difficult to ship and assemble the pallet, use of the pallet is avoided. Various types of lift-up beds to which the one-body type pallet is applied as described above have been proposed and some of them have actually been released. However, thoroughly considering that the conventional pallets have various problems such as a problem of breakage of slats, a problem of noise caused by slats, and a problem of difficulty of shipping and assembling the one-body type pallet, there is a need for technological development of a new concept of lift-up bed that was previously unknown.

[0010] Accordingly, in order to address the problems of the conventional pallets, the present applicant has proposed a lift-up bed in Korean Utility Model Registration No. 20-0494909 (Title: Lift-up bed).

[0011] The previously registered utility model provides a lift-up bed including: a bed frame forming a space therein to be used as a goods storage space; a pair of pallets configured to open or close an upper opening of the bed frame, have a mattress mounted thereon, and be separable from each other; a pair of upward/downward moving parts coupled to both side walls of the bed frame and the pallets at the corresponding positions and configured to move the pallets upward or downward relative to the bed frame; and a reinforcing plate configured to connect the pair of upward/downward moving parts and be connected to the pair of pallets to reinforce the pair of pallets, wherein the upward/downward moving parts include a wall-fixed bar screw-fixed to the side wall of the bed frame, a pallet fixing member having a fixed part screw-fixed to the pallet and a bent part bent to intersect with the fixed part, a first link member having one side freely rotatably connected to one side end of the wall-fixed bar and the other side freely rotatably connected to an end of the fixed part of the pallet fixing member, a second link member having one side freely rotatably connected to the other side end of the wall-fixed bar and the other side freely rotatably connected to the fixed part of the pallet fixing member, a bracket connected to the second link member, a cylinder device having a cylinder main body fixed to the bracket and a cylinder rod length-adjustably coupled to the cylinder main body, and a hinge pin part freely rotatably coupled to the cylinder rod and the bent part of the pallet fixing member, thereby having an efficient structure, thus not only being easy to ship and assemble and significantly improving durability compared to the related art, but also eliminating problems such as breakage of slats and noise caused by slats.

[0012] However, since plastic or metal should be added to pallets to address the problems such as breakage of slats and noise caused by slats, there are problems in that the weight is heavy, and it takes a long time to manufacture.

[0013] Therefore, there is an urgent need to develop a product that achieves weight reduction and has excellent durability and structural stability.

[Related Art Document]

[Patent Document]

[0014] (Patent Document 0001) Korean Utility Model Registration No. 20-0494909 (January 18, 2022)

OBJECT OF THE INVENTION

[0015] The present invention is directed to providing a bed pallet in which a plurality of members formed of a wood or metal material are combined into the shape of a frame to form a light framework, and an inner space of the framework is reinforced with light urethane foam, thereby not only achieving weight reduction and having excellent durability and structural stability, but also being easy and convenient to manufacture due to a finishing plate, which comes in direct contact with and supports the framework and a mattress, being naturally coupled as the urethane foam hardens, and a lift-up bed including the same.

SUMMARY OF THE INVENTION

[0016] One embodiment of the present invention provides a bed pallet including: a main body part which is formed by a plurality of members being combined into the shape of a frame having a predetermined pattern, has a plurality of filling spaces spaced apart from each other formed by the members, and has a mattress mounted thereon; and a reinforcing part filled in each of the filling spaces to reinforce the main body part.

[0017] Also, the reinforcing part may be formed as urethane foam applied in each of the filling spaces.

[0018] Also, the bed pallet may further include a finishing plate disposed on at least one or more of an upper surface and a bottom surface of the main body part and fixed by the urethane foam.

[0019] Another embodiment of the present invention provides a lift-up bed including: a bed frame in which goods are stored; a bed pallet configured to open or close an upper opening of the bed frame and have a mattress mounted on an upper surface thereof; and a pair of upward/downward moving parts coupled to both side walls of the bed frame and the bed pallet at the corresponding positions and configured to move the bed pallet upward or downward by rotation relative to the bed frame.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] The present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1: is a perspective view illustrating a main body part and a reinforcing part applied to a bed pallet according to one embodiment of the present invention.

Figure 2: is a coupling perspective view illustrating the bed pallet according to one embodiment of the present invention.

Figure 3: is a perspective view illustrating a lift-up bed according to one embodiment of the present invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0021] Advantages and features of the present invention and methods of achieving the same should become clear with embodiments described in detail below with reference to the accompanying drawings.

[0022] However, the present invention is not limited to the embodiments disclosed below and may be implemented in various different forms. The present embodiments are only provided to make the disclosure of the present invention complete and completely inform those of ordinary skill in the art to which the present invention pertains of the scope of the invention, and the present invention is defined only by the scope of the claims. Like reference numerals refer to like components throughout.

[0023] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings to allow those of ordinary skill in the art to which the present invention pertains to easily carry out the present invention. However, the present invention may be implemented in various different forms and is not limited to the embodiments described herein. Like parts are denoted by like reference numerals throughout.

[0024] FIG. 1 is a perspective view illustrating a main body part and a reinforcing part applied to a bed pallet according to one embodiment of the present invention, and FIG. 2 is a coupling perspective view illustrating the bed pallet according to one embodiment of the present invention.

[0025] A bed pallet 1 according to one embodiment of the present invention is a product that achieves weight reduction

to facilitate transportation and shipping, has excellent structural rigidity, and can suppress noise generated during upward/downward movement.

[0026] To this end, the bed pallet 1 according to one embodiment of the present invention may include at least one or more of a main body part 10 and a reinforcing part 20. The main body part 10 supports a mattress while disposed at an upper side of a bed frame 110 which will be described below.

[0027] The main body part 10 is formed by combining a plurality of members into the shape of a frame having a predetermined pattern.

[0028] Here, the members may be formed of a wood or metal material.

[0029] Referring to FIG. 1, the members include a plurality of horizontal members 11 disposed to be spaced apart at predetermined intervals in parallel to each other and a plurality of vertical members 12 disposed to be spaced apart at predetermined intervals in parallel to each other.

[0030] Also, the horizontal members 11 are disposed between the vertical members 12. Although an example in which the horizontal members 11 are disposed at left and right side end portions and central portions of the vertical members 12 is illustrated in the drawings, it should be noted that the positions at which the horizontal members 11 are disposed in the bed pallet 1 according to one embodiment of the present invention are not limited thereto.

[0031] Due to the combination of the horizontal members 11 and the vertical members 12, the main body part 10 may be completed in the shape of a latticed frame.

[0032] Here, it should be noted that the shape of the main body part 10 is not limited to the shape of a latticed frame.

[0033] Also, the horizontal members 11 and the vertical members 12 may be formed of a material with excellent rigidity and durability, such as a metal, to stably support the load of the mattress and not be easily bent or cut.

[0034] Further, due to the combination of the horizontal members 11 and the vertical members 12, a plurality of filling spaces 10a are formed in the main body part 10. The filling spaces 10a are positioned in spaces partitioned from each other by the horizontal members 11 and the vertical members 12.

[0035] For example, the horizontal members 11 and the vertical members 12 may be coupled to each other by the reinforcing part 20 (urethane foam) filled in each of the filling spaces 10a.

[0036] As another example, the horizontal members 11 and the vertical members 12 may be coupled by welding or using bolts.

[0037] Due to completing the main body part 10 in the shape of a latticed frame and forming the plurality of filling spaces 10a using the horizontal members 11 and the vertical members 12, the main body part 10 may have a thin cross-section. Accordingly, weight reduction of the main body part 10 may be achieved. Here, since the horizontal members 11 and the vertical members 12 are coupled to intersect with each other, it is possible to efficiently suppress the main body part 10 from being twisted or bent due to the load of the mattress or the user.

[0038] That is, due to completing the main body part 10 in the shape of a latticed frame, the load of the main body part 10 itself can be reduced, and the main body part 10 can have excellent rigidity and structural stability.

[0039] Meanwhile, the reinforcing part 20 is a component filled in each of the filling spaces 10a to further reinforce the main body part 10.

[0040] The reinforcing part 20 may be formed as urethane foam filled in each of the filling spaces 10a by being applied therein.

[0041] For example, the main body part 10 and the reinforcing part 20 may be integrated by placing a nonwoven fabric on an upper surface of a table, placing the main body part 10 on an upper surface of the nonwoven fabric, and then sequentially applying urethane foam in the filling spaces 10a using a gun and hardening the urethane foam.

[0042] Here, the reinforcing part 20 may be filled to the same height as the height of the filling spaces 10a.

[0043] Also, since the nonwoven fabric is also attached to a bottom surface of the main body part 10 when the urethane foam is hardened, the bed pallet 1 may be used while the nonwoven fabric is either attached thereto or removed therefrom.

[0044] Here, predetermined areas at left and right sides of each of the vertical members 12 may be formed to protrude a predetermined length from the horizontal members 11. As a result, a plurality of additional filling spaces 10b are formed at both sides of the main body part 10.

[0045] When filling the reinforcing part 20 in the additional filling spaces 10b, urethane foam may also be applied in the additional filling spaces 10b to form the reinforcing part 20 therein.

[0046] Here, in order to fill the reinforcing part 20 in the additional filling spaces 10b, a blocking plate (not illustrated) formed in the shape of a rectangular plate may be brought into contact with a left side surface and a right side surface of each of the vertical members 12, and then urethane foam, which is the reinforcing part 20, may be applied so that the urethane foam is hardened without leaking and fills the additional filling spaces 10b.

[0047] In addition, the protruding areas at the left and right sides of each of the vertical members 12 are placed on upper surfaces of side walls 112 when the bed pallet 1 is rotated downward by upward/downward moving parts 130 which will be described below.

[0048] In this way, by allowing the protruding areas at the left and right sides of each of the vertical members 12 to be supported by the side walls 112, the mattress may also be stably supported on the bed frame 110.

[0049] Meanwhile, a finishing plate 30 is a component configured to finish the main body part 10.

[0050] Here, the finishing plate 30 may be coupled to at least one or more of the upper surface and the bottom surface of the main body part 10, and an example in which only the upper surface of the main body part 10 is finished by the finishing plate 30 is illustrated in the drawings.

[0051] The finishing plate 30 is formed to have a size that covers the entire upper surface of the main body part 10. Further, the finishing plate 30 is formed of a wood material or a synthetic resin material.

[0052] The finishing plate 30 is applied together when applying the reinforcing part 20 to the main body part 10.

[0053] That is, the finishing plate 30 is coupled to the upper surface of the main body part 10 by the urethane foam constituting the reinforcing part 20. The main body part 10, the reinforcing part 20, and the finishing plate 30 may be integrated by placing a nonwoven fabric on an upper surface of a table, placing the main body part 10 on an upper surface of the nonwoven fabric, sequentially applying urethane foam in the filling spaces 10a using a gun, and then placing the finishing plate 30 on the upper surface of the main body part 10.

[0054] Specifically, since the urethane foam (reinforcing part 20) applied in the filling spaces 10a is fixed to each of the horizontal members 11, the vertical members 12, and the finishing plate 30 as it naturally hardens, the main body part 10, the reinforcing part 20, and the finishing plate 30 may be integrated.

[0055] In particular, since the urethane foam has a property of being hardened when exposed to air after being foamed, the time taken to fix the reinforcing part 20 to the main body part 10 and the finishing plate 30 may be reduced.

[0056] Further, since the urethane foam is fixed to the horizontal members 11, the vertical members 12, and the finishing plate 30 as it hardens, and thus the finishing plate 30 is naturally coupled to the main body part 10, the bed pallet 1 according to one embodiment of the present invention has an advantage in that a process of coupling the reinforcing part 20 to the main body part 10 and the finishing plate 30 using parts such as bolts or pieces may be omitted.

[0057] In addition, since the reinforcing part 20 is filled in each of the filling spaces 10a of the main body part 10 and reinforces the cross-section of the main body part 10, it is possible to prevent twisting of the main body part 10, which is completed by combining the horizontal members 11 and the vertical members 12, and improve the durability of the main body part 10.

[0058] Further, since the reinforcing part 20 is formed of relatively light urethane foam, and as described above, the main body part 10 is completed in the shape of a latticed frame using the horizontal members 11 and the vertical members 12 and thus has a thin cross-section, the bed pallet 1 according to one embodiment of the present invention may secure rigidity, durability, and structural stability while achieving weight reduction.

[0059] Further, the bed pallet 1 according to one embodiment of the present invention has advantages in that, since the reinforcing part 20 is disposed in each of the filling spaces 10a, twisting and creaking, which are shortcomings of wood, do not occur even when the main body part 10 is manufactured using a wood material, and since urethane foam, which is the reinforcing part 20, serves to absorb impact when external impact is applied, durability is significantly improved.

[0060] Meanwhile, a lift-up bed 100 according to one embodiment of the present invention may include at least one or more of the bed frame 110, the above-described bed pallet 1, and the upward/downward moving parts 130.

[0061] The bed frame 110 forms an outer framework of the lift-up bed 100 according to one embodiment of the present invention. The bed frame 110 has a box-shaped structure with an open upper surface.

[0062] The bed frame 110 may be manufactured using wood, but plastic or a metal may also be added thereto. Further, a foot member configured to prevent slippage may be added to the bottom of the bed frame 110.

[0063] A goods storage space 111 is formed in the bed frame 110. Since goods may be stored in the goods storage space 111 in the bed frame 110 while the bed pallet 1 is moved upward or downward, space utilization may be maximized.

[0064] The bed pallet 1 is a component configured to open or close an upper opening of the bed frame 110 and has a mattress mounted on an upper surface thereof. Since the above-described bed pallet 1 according to one embodiment of the present invention has the main body part 10, which is completed by combining the plurality of members into the shape of a latticed frame and thus has excellent structural stability and rigidity, and the reinforcing part 20, which is formed of lightweight urethane foam, it is possible to prevent breakage of the members constituting the main body part 10 when the bed pallet 1 supports the mattress or is moved by the upward/downward moving parts 130 which will be described below, and noise can be minimized or eliminated by the reinforcing part 20 that absorbs impact and noise by itself.

[0065] Both sides of the bottom surface of the bed pallet 1 are placed on upper surfaces of pallet fixing members 132.

[0066] Here, the protruding areas at both sides of the vertical members 12 described above protrude toward the pallet fixing members 132 and are placed on the upper surfaces of the side walls 112.

[0067] The upward/downward moving parts 130 are coupled to the side walls 112 at both sides of the bed frame 110 and the bed pallet 1 at the corresponding positions and serve to move the bed pallet 1 upward or downward relative to the bed frame 110. The upward/downward moving parts 130 include the pair of pallet fixing members 132 having a fixed bar (not illustrated) screw-fixed to the side walls 112 of the bed frame 110, a fixed part (not illustrated) screw-fixed to the bed pallet 1, and a bent part (not illustrated) bent to intersect with the fixed part.

[0068] Further, the upward/downward moving parts 130 include a first link member (not illustrated) having one side freely rotatably connected to one side end of the fixed bar screw-fixed to the side wall 112 and the other side freely rotatably connected to an end of the fixed part (not illustrated) of the pallet fixing member 132, a second link member (not illustrated) having one side freely rotatably connected to the other side end of the fixed bar screw-fixed to the side wall 112 and the other side freely rotatably connected to the fixed part of the pallet fixing member, a bracket (not illustrated) connected to the second link member, and a cylinder device 131 connected to the bracket.

[0069] The cylinder device 131, which is also referred to as a shock absorber, includes a cylinder main body fixed to the bracket and a cylinder rod length-adjustably coupled to the cylinder main body.

[0070] For smooth operation of the cylinder device 131, a hinge pin part (not illustrated) is freely rotatably coupled to the cylinder rod and the bent part of the pallet fixing member.

[0071] Since the configuration of the upward/downward moving parts 130 has already been described in the previously registered Korean Utility Model Registration No. 20-0494909 filed by the present applicant, detailed description thereof will be omitted. In the lift-up bed 100 according to one embodiment of the present invention, when a plurality of bolt holes are formed in at least one or more of the horizontal members 11 and the vertical members 12, the upward/downward moving parts 130 may be easily coupled, and due to constitutional features of the main body part 10 and material characteristics of the reinforcing part 20, the bed pallet 1 has advantages in that impact of the mattress can be absorbed, and noise is not caused even when the bed pallet 1 is moved upward or downward by the upward/downward moving parts 130.

[0072] Also, the reinforcing part 20 suppresses twisting, deformation or the like of the main body part 10 due to an external force or a temperature change and blocks cold air, thus allowing a user using the lift-up bed 100 according to one embodiment of the present invention to save heating expenses even during the cold winter season.

[0073] According to a bed pallet of the present invention, a plurality of members formed of a wood or metal material are combined into the shape of a frame to form a light framework, and an inner space of the framework is reinforced with light urethane foam, thereby not only achieving weight reduction and having excellent durability and structural stability, but also being easy and convenient to manufacture due to a finishing plate, which comes in direct contact with and supports the framework and a mattress, being naturally coupled as the urethane foam hardens.

[0074] Those of ordinary skill in the art to which the present invention pertains should understand that the present invention may be embodied in other specific forms without changing the technical spirit or essential features thereof. Therefore, the embodiments described above should be understood as illustrative, instead of limiting, in all aspects. The scope of the present invention is shown by the scope of the appended claims rather than the detailed description, and all changes or modifications derived from the meanings and scope of the claims and equivalent concepts thereof should be construed as belonging to the scope of the present invention.

[Description of reference numerals]

[0075]

1:	bed pallet	10:	main body part
11:	horizontal member	12:	vertical member
20:	reinforcing part	30:	finishing plate
100:	lift-up bed	110:	bed frame
111:	goods storage space	112:	wall
130:	upward/downward moving part	131:	cylinder device

Claims

1. A bed pallet comprising:

a main body part which is formed by a plurality of members being combined into the shape of a frame having a predetermined pattern, has a plurality of filling spaces spaced apart from each other formed by the members, and has a mattress mounted thereon; and
a reinforcing part filled in each of the filling spaces to reinforce the main body part.

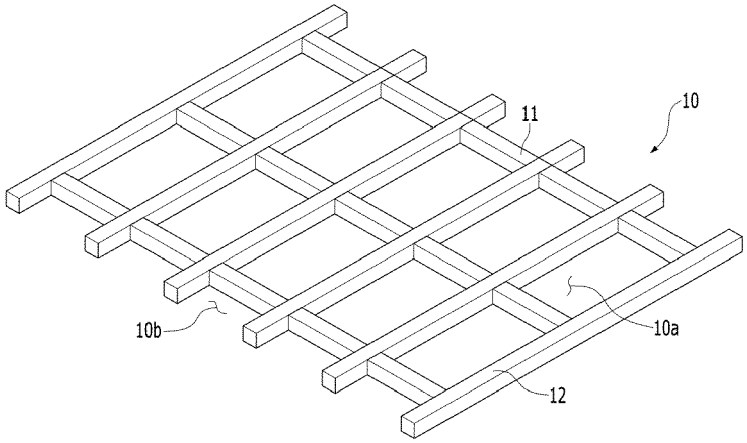
2. The bed pallet of claim 1, wherein the reinforcing part is formed as urethane foam applied in each of the filling spaces.

3. The bed pallet of claim 2, further comprising a finishing plate disposed on at least one or more of an upper surface

and a bottom surface of the main body part and fixed by the urethane foam.

4. A lift-up bed comprising:

a bed frame in which goods are stored;
the bed pallet of any one of claims 1 to 3 that is configured to open or close an opening formed at an upper portion of the bed frame and have a mattress mounted on an upper surface thereof; and
a pair of upward/downward moving parts coupled to both side walls of the bed frame and the bed pallet at the corresponding positions and configured to move the bed pallet upward or downward by rotation relative to the bed frame.



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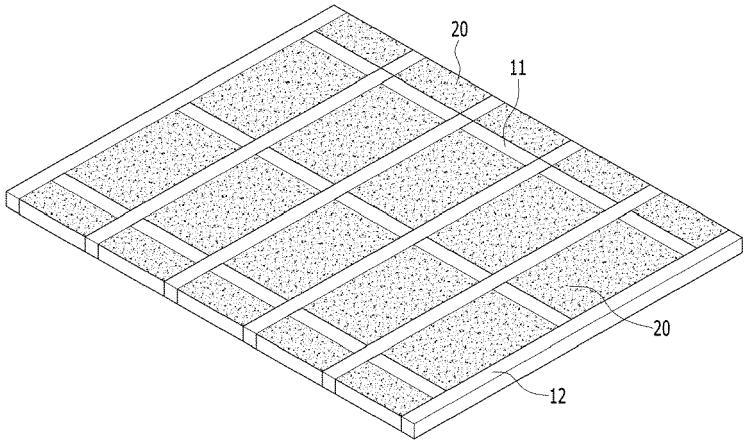

(b)

Fig. 1

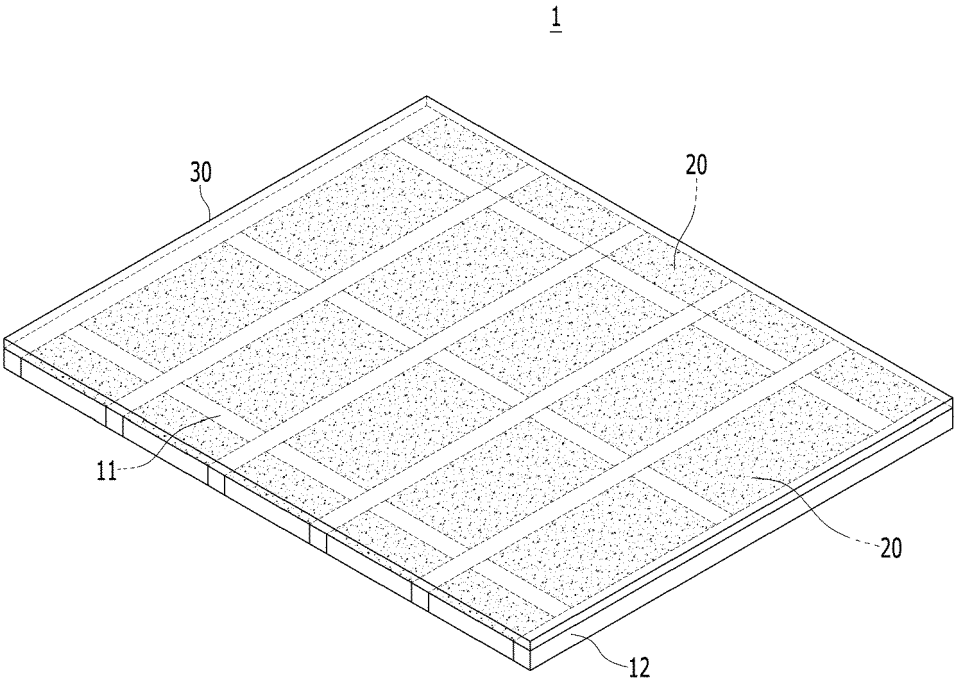

Fig. 2

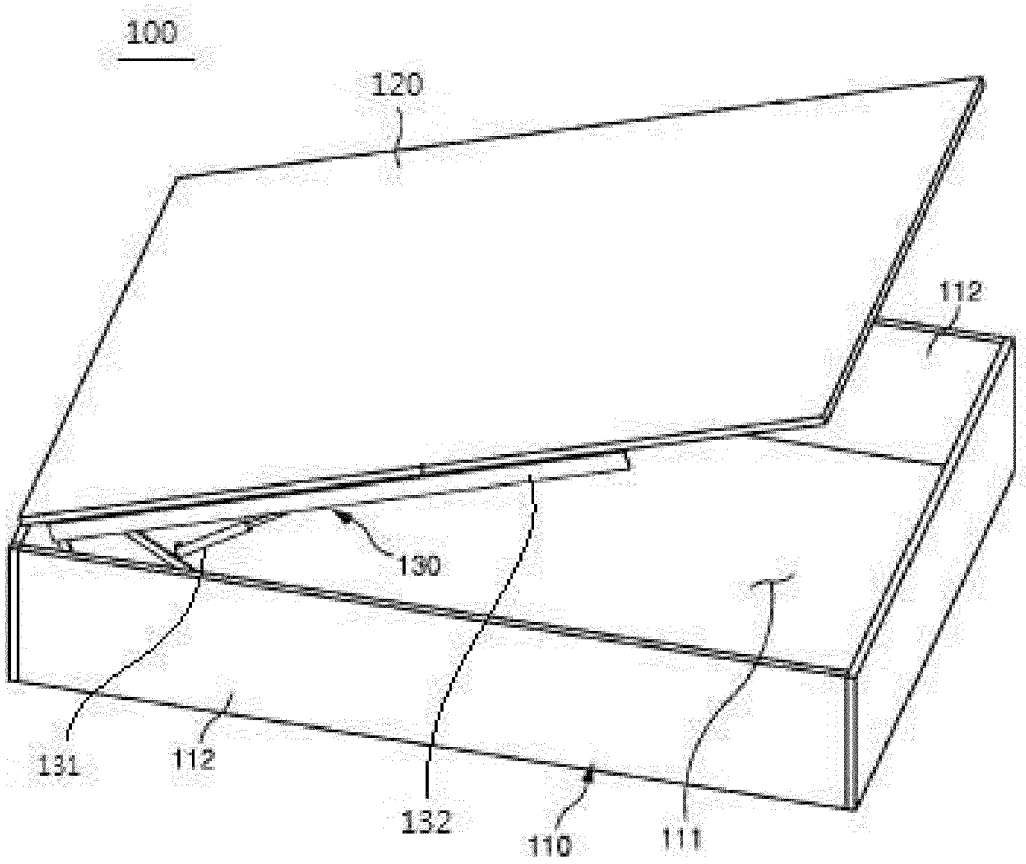

Fig. 3

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EUROPEAN SEARCH REPORT

Application Number
EP 24 15 7588

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	KR 200 378 299 Y1 (UNKOWN) 14 March 2005 (2005-03-14) * figures 1-3 *	1-3	INV. A47C17/86 A47C19/00
X	AT 934 U1 (FLADL HEINZ [AT]) 26 August 1996 (1996-08-26)	1	
Y	* figures 1-16 *	4	
Y	US 2014/159410 A1 (RASMUSSEN C MARTIN [US]) 12 June 2014 (2014-06-12) * figures 235-242 *	4	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	15 July 2024	Linden, Stefan

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 24 15 7588

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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15-07-2024

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

REFERENCES CITED IN THE DESCRIPTION

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