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(54) **PREFABRICATED HOUSE**

(57) A floor, walls, and a roof are fabricated in a board form so that a prefabricated house can be immediately assembled using manual tools at a required site, and thus it is not necessary to use heavy equipment or power tools, thereby enabling anyone to easily and conveniently assemble and safely use the prefabricated house. In particular, boards are fabricated using plywood and rectangular lumber, and thus the prefabricated house can be fabricated using easily obtainable inexpensive materials and widely distributed, and a kit including boards is stored, and thus a space occupied by a kit for a single prefabricated house is small, thereby enabling kits for many prefabricated houses to be stored even in a small space and to be used when necessary. The prefabricated house is constructed by assembling components, and thus people can easily and conveniently assemble and safely use prefabricated houses by themselves.

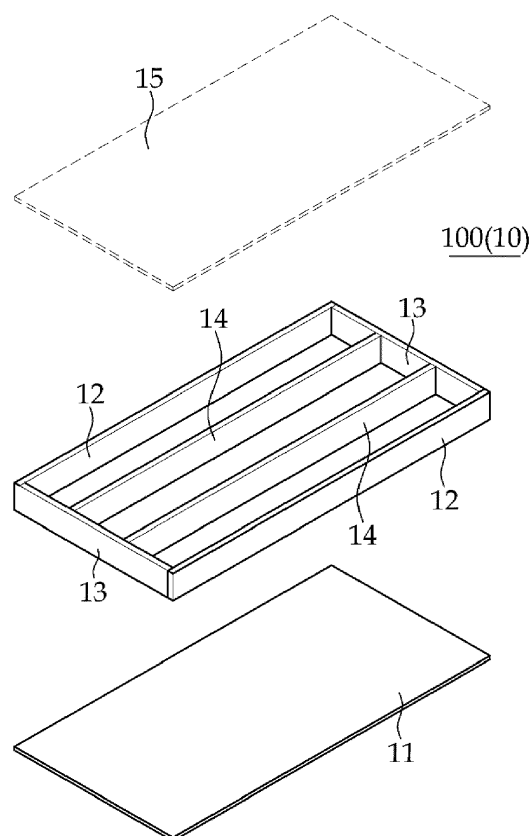


FIG. 1

Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of Korean Patent Application No. 10-2018-0119550 filed on October 8, 2018, which is hereby incorporated by reference herein in its entirety.

BACKGROUND

1. Technical Field

[0002] The present invention relates generally to a prefabricated house, and more specifically to a prefabricated house which is configured in a kit form so that it can be easily assembled using only manual tools and immediately used even in a situation in which heavy equipment or power tools cannot be used at an epidemic prevention site, earthquake site, landslide site, or disaster site.

2. Description of the Related Art

[0003] In general, prefabricated houses are designed to be suitable for various purposes, such as a residential use, a warehouse use, an idyllic house use, etc., depending on the purposes of use. Conventional prefabricated houses are assembled and used in various forms, as disclosed in Patent documents 1 to 3 below.

(Patent document 1) Korean Patent Application Publication No. 10-2007-0091249

This conventional technology relates to a method of fabricating a semi-tubular house structure constructed by a simple assembly method in a method of fabricating structures for a prefabricated house, and more specifically to a method of fabricating structures for a prefabricated house, which is fabricated by forming the shapes of connection members in synthetic resin or moldable structures and sequentially assembling and connecting the structures in order to overcome the low visual, economical and warmth keeping efficiency of semi-tubular structures which are generally used. For this purpose, the moldable structures are fabricated, successively extendable tubular connection mediation structures and structure attachment and detachment members based on various application forms are fabricated, and they are used to construct a house. Accordingly, this conventional technology is characterized in that the efficiency of application according to use is improved by overcoming the inefficient utilization of the house structures.

(Patent document 2) Korean Utility Model Registration No. 0483900

This conventional technology relates to a prefabricated dome house, which can be easily assembled

and disassembled by using composite panels without a frame structure, has a hemispherical skylight and a window for indoor ventilation using natural convection, can provide basic heating without floor heating through the insertion of carbon heating sheets into panels, facilitates the installation of a plurality of windows when a user desires, and has a sliding entrance door composed of a curved thermal insulation panel, thereby minimizing the space required for the entrance door and maximize insulation functionality. In the prefabricated dome house, a dome-shaped circular circumference in which the top of a ceiling is open is equally divided into panels at regular intervals, a plurality of unit panels into each of which a carbon heating sheet, a heat reflecting sheet, and a heat insulating material are inserted are successively assembled by being inserted into H-shaped metal profiles configured to couple adjacent unit panels, a washer having a protrusion formed in a circular shape and capable of reinforcing an open dome ceiling portion and the structure of a panel wall having a window hole is included, a skylight having a plurality of small holes through which external natural convection can be used and a window formed in a wall panel are further included, and a curved insulation panel sliding entrance door having the same curvature as the wall panel is combined, thereby enabling a dome-shaped residence space to be constructed.

(Patent document 3) Korean Patent Application Publication No. 10-2018-0015908

This technology relates to a prefabricated house. The prefabricated house includes a first side part having a door portion formed therein, a second side part having the same shape as the first side portion and provided at a location opposite to the first side portion, and a body part connecting the first side part and the second side part. The body part includes a plurality of plates which connect the first side part and the second side part. The body part is configured to be assembled by coupling a plurality of first coupling portions formed on the first side part and the second side part to second coupling parts formed on the plurality of plates.

[0004] However, the conventional prefabricated houses have the following problems:

- (1) It takes an excessively long time to assemble the conventional prefabricated houses.
- (2) Although it is necessary to secure many residential facilities within a short period of time in a place requiring prefabricated houses, e.g., an epidemic prevention site, earthquake site, a landslide site, a disaster site, or the like, in order to enable people suffering from a disaster to take good rests, it takes an excessively long time to assemble the conven-

tional prefabricated houses, and thus there is a difficulty in securing sufficient residential facilities.

(3) In some cases, although some conventional prefabricated house is configured such that part of the conventional prefabricated house is assembled in advance in a factory or walls and a ceiling are assembled into a modular form in a factory and then the remaining part is assembled at a disaster site, there are cases where the prefabricated house cannot be assembled into a final form at a disaster site and, thus, cannot be used.

(4) In other words, the conventional prefabricated house assembled in a housing form or in a modular form requires heavy equipment when assembled, but it may not be possible to secure heavy equipment necessary for assembling a prefabricated house at a disaster site. Furthermore, power tools are often used to assemble the conventional prefabricated house, but the power tools cannot be used due to the shutoff of power supply. Accordingly, there may be cases where the conventional prefabricated house cannot be assembled.

(5) In order to rapidly supply prefabricated houses in case of a disaster, it is convenient to store the prefabricated houses in a kit form. However, the conventional prefabricated houses cannot be stored in a kit form but are fabricated in a modular form, and thus a space in which a single prefabricated house is stored is excessively large, thereby causing difficulty in storing a plurality of conventional prefabricated houses.

(6) Power tools or heavy equipment need to be used, and thus there are cases where people suffering from a disaster cannot directly assemble the conventional prefabricated houses.

SUMMARY

[0005] The present invention has been conceived by taking the above-described problems into consideration, and an object of the present invention is to provide a prefabricated house in which a floor, walls, and a roof are fabricated in a board form so that it can be immediately assembled using manual tools at a site at which a disaster situation has occurred, and thus it is not necessary to use heavy equipment or power tools, thereby enabling anyone to easily and conveniently assemble and safely use the prefabricated house.

[0006] In particular, another object of the present invention is to provide a prefabricated house for which boards to be used are fabricated using plywood and rectangular lumber, and thus the prefabricated house can be fabricated using easily obtainable inexpensive materials and widely distributed, and for which a kit including boards is stored, and thus a space occupied by a kit for a single prefabricated house is small, thereby enabling kits for many prefabricated houses to be stored even in a small space and to be used when necessary.

[0007] Still another object of the present invention is to provide a prefabricated house which is constructed by assembling components having plate shapes, and thus people suffering from a disaster can easily and conveniently assemble and safely use prefabricated houses by themselves.

[0008] In order to accomplish the above objects, the present invention provides a prefabricated house which is fabricated using boards having a predetermined area and thickness and rectangular lumber having a predetermined length and width, wherein there are used panels (10) each including two pieces of first rectangular lumber (12) configured such that they are mounted on opposite longer edges of a first board (11) and a plurality of fastening holes is formed predetermined locations, two pieces of second rectangular lumber (13) configured such that they are mounted on shorter edges of the first board (11) so that they are opposite each other on ends of the first rectangular lumber (12) and a plurality of fastening holes is formed predetermined locations, third rectangular lumber (14) configured to be mounted on the first board (11) so that it is located inside an area surrounded by the first rectangular lumber (12) and the second rectangular lumber (13), and a second board (15) which is mounted over the area surrounded by the first rectangular lumber (12) and the second rectangular lumber (13); and wherein the prefabricated house includes: a floor panel (100) which is formed by the plurality of panels (10) and is disposed on a floor; a first wall (200) which is mounted in such a manner that any one of longer edges of each of the first board (11) and the second board (15) of the panel (10) overlaps a thickness of one of the first rectangular lumber (12), a remaining one of the longer edges protrude outward from a remaining first rectangular lumber (12), any one of shorter edges of each of the first board (11) and the second board (15) of the panel (10) protrudes outward from one of the second rectangular lumber (13) by a thickness (t) of the panel (10), and a remaining second rectangular lumber (13) retracts from an edge of the first board (11) by the thickness (t) of the panel (10); a second wall (300) which is mounted in such a manner that any one of longer edges of each of the first board (11) and the second board (15) of the panel (10) overlaps a thickness of one of the first rectangular lumber (12), a remaining one of the longer edges protrude outward from a remaining first rectangular lumber (12), any one of shorter edges of each of the first board (11) and the second board (15) of the panel (10) protrudes outward from one of the second rectangular lumber (13) by a thickness (t) of the panel (10), and a remaining second rectangular lumber (13) retracts from an edge of the first board (11) by the thickness (t) of the panel (10), in which a door opening (16) is formed therethrough, and in which reinforcing rectangular lumber (12) is added to edges of the door opening (16); a third wall (400) which is mounted in such a manner that any one of longer edges of each of the first board (11) and the second board (15) of the panel (10) overlaps a thickness of one of the first

rectangular lumber (12), a remaining one of the longer edges protrude outward from a remaining first rectangular lumber (12), any one of shorter edges of each of the first board (11) and the second board (15) of the panel (10) protrudes outward from one of the second rectangular lumber (13) by a thickness (t) of the panel (10), and a remaining second rectangular lumber (13) retracts from an edge of the first board (11) by the thickness (t) of the panel (10), in which a window opening (17) is formed therethrough, and in which reinforcing rectangular lumber (12a) is added to both side edges; a fourth wall (500) which is mounted in such a manner that any one of longer edges of each of the first board (11) and the second board (15) of the panel (10) overlaps a thickness of one of the first rectangular lumber (12), a remaining one of the longer edges protrude outward from a remaining first rectangular lumber (12), any one of shorter edges of each of the first board (11) and the second board (15) of the panel (10) protrudes outward from one of the second rectangular lumber (13) by a thickness (t) of the panel (10), and a remaining second rectangular lumber (13) retracts from an edge of the first board (11) by the thickness (t) of the panel (10), and in which a width of the panel (10) is reduced by half; a wall setup plate (600) which includes basic rectangular lumber (610) configured to be a same as the rectangular lumber used in the panel (10) and a plurality of pieces of protruding rectangular lumber (620) fastened to the basic rectangular lumber 610 and configured to protrude to face the pieces of second rectangular lumber (13) when the first to fourth walls (200, 300, 400 and 500) are mounted onto the wall setup plate (600), and in which at least one through hole for fastening and coupling is formed through a surface opposite to each of the pieces of second rectangular lumber (13) at a predetermined location; a rear gable wall (700') which is formed by cutting the board into a triangular body, fastening a plurality of pieces of border rectangular lumber (710) at locations of the triangular body which retract inward from edges of the triangular body by a thickness of the panel (10), and disposing reinforcing rectangular lumber (720) in a space surrounded by the pieces of border rectangular lumber (710); a front gable wall (700'') which is formed by cutting the board into a triangular body, fastening a plurality of pieces of border rectangular lumber (710) at locations of the triangular body which retract inward from edges of the triangular body by a thickness of the panel (10), disposing reinforcing rectangular lumber (720) in a space surrounded by the pieces of border rectangular lumber (710), and forming a window opening (730), and roof plates (800) each of which is configured such that one edge of the panel (10) is chamfered at a predetermined angle and a V-shaped groove (820) having a right internal angle is formed along an opposite edge of the panel (10), wherein the opposite roof plates (800) are coupled to each other with the chamfered edges held against each other.

[0009] The board may have dimensions of 1220 mm (width) $\times$ 2440 mm (length); and the lumber may have

dimensions of 40 mm (height) $\times$ 100 mm (width) $\times$ 2400 mm (length) or 40 mm (height) $\times$ 150 mm (width) $\times$ 2400 mm (length).

[0010] The board may be OSB plywood or typical plywood.

[0011] The floor panel (100) may be configured such that, when the floor panel (100) is used as the floor of a second floor, an opening is formed thorough the floor panel (100) and used as a path.

[0012] Each of the rear gable wall (700') and the front gable wall (700'') may include at least two parts which are assembled into a single body.

[0013] When the first to fourth walls (200, 300, 400 and 500) are mounted onto the wall setup plate (600), wiring work or insulation work may be performed before the second board (15) is finally installed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The above and other objects, features, and advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view showing the overall configuration of a panel (a floor panel) according to the present invention with both boards separated therefrom;

FIG. 2 is a front view showing the configuration of the panel (the floor panel) according to the present invention with one board separated therefrom;

FIG. 3 is a perspective view showing the configuration of a first wall according to the present invention with one board separated therefrom;

FIG. 4 is a front view showing the configuration of the first wall according to the present invention with one board separated therefrom;

FIG. 5 is a front view showing the configuration of a second wall according to the present invention with one board separated therefrom;

FIG. 6 is a front view showing the configuration of a third wall according to the present invention with one board separated therefrom;

FIG. 7 is a front view showing the configuration of a fourth wall according to the present invention with one board separated therefrom;

FIG. 8 shows a wall setup plate according to the present invention, with FIG. 8(a) being a perspective view and FIG. 8(b) being a front surface;

FIG. 9 is a front view showing a state in which walls are mounted onto the wall setup plate according to the present invention;

FIG. 10 shows gable walls according to the present invention with one board separated therefrom, with FIG. 10(a) being a front view showing a rear gable wall and FIG. 10(b) being a front view showing a front gable wall;

FIG. 11 shows a roof plate according to the present

invention with one board separated therefrom, with FIG. 11(a) being a plan view and FIG. 11(b) being a front view; and
FIG. 12 shows photos illustrating the sequence of assembly of a prefabricated house according to the present invention.

DETAILED DESCRIPTION

[0015] Preferred embodiments of the present invention will be described in detail below with reference to the accompanying drawings. Prior to the following description, it should be noted that the terms or words used in the present specification and the claims should not be interpreted as being limited to common or dictionary meanings, but should be interpreted as having meanings and concepts suitable for the technical spirit of the invention based on the principle that an inventor may appropriately define the concepts of terms in order to describe his or her invention in the best way.

[0016] Accordingly, the embodiments described in present specification and the configurations shown in the drawings are merely the most preferred embodiments of the invention and do not represent the overall technical spirit of the invention, so that it should be understood that there may be various equivalents and modifications that can replace the embodiments at the time when the present application is filed.

(Configuration)

[0017] As shown in FIGS. 1 to 12, a prefabricated house according to the present invention includes a floor panel 100, first to fourth walls 200, 300, 400 and 500, a wall setup plate 600, a rear gable wall 700, a front gable wall 700, and roof plates 800.

[0018] In particular, according to the present invention, the above components are fabricated using boards having a predetermined area and thickness and rectangular lumber having a predetermined length and width, and thus the components may be manufactured in a place, such as a factory, and stored in large quantities in advance and may then be easily assembled and conveniently and safely used later.

[0019] In this case, the prefabricated house according to the present invention is configured such that it can be immediately assembled using manual tools, and thus it can be easily, conveniently and immediately assembled and used even in a place where heavy equipment cannot be used or the supply of electricity is cut off due to flooding or the like.

[0020] Furthermore, the individual components are fabricated by modifying panels 10 having a predetermined size and area, and thus the components according to the present invention can be fabricated more easily and more inexpensively.

[0021] The above-described configuration will be described in greater detail below with reference to the ac-

companying drawings. In this case, the floor panel 100, first to fourth walls 200, 300, 400 and 500, the wall setup plate 600, the rear gable wall 700, the front gable wall 700, and the roof plates 800 which constitute the prefabricated house according to the present invention are obtained by deforming a panel 10 which is fabricated using a board having a predetermined area and thickness and rectangular lumber having a predetermined length and width and has a basic shape. Accordingly, in this case, a description will be given with a focus on the panel 10, and then the individual components will be described later.

<Panel>

[0022] As shown in FIGS. 1 and 2, the panel 10 is fabricated using boards having a predetermined area and thickness and rectangular lumber having a predetermined length and width. In this case, boards and rectangular lumber that are usually sold in the market are used as the boards and the rectangular lumber. For example, boards having dimensions of 1220 mm (width) × 2440 mm (length) are used as the boards, and lumber having dimensions of 40 mm (height) × 100 mm (width) × 2400 mm (length) or 40 mm (height) × 150 mm (width) × 2400 mm (length) is used as the rectangular lumber. Furthermore, although typical plywood may be used as the boards, OSB plywood is preferably used as the boards.

[0023] As shown in FIGS. 1 and 2, the panel 10 includes two pieces of first rectangular lumber 12 which are disposed opposite each other, and two pieces of second rectangular lumber 13 which connect the opposite ends of the two pieces of first rectangular lumber 12 in a rectangular lattice form. In this case, a plurality of fastening holes is formed through each of the first rectangular lumber 12 and the second rectangular lumber 13 at predetermined locations, thereby enabling the first rectangular lumber 12 or second rectangular lumber 13 to be coupled to a wall or floor panel composed of another panel 10.

[0024] In a preferred embodiment of the present invention, it is preferable that the area of a rectangle formed by the pieces of first rectangular lumber 12 and the pieces of second rectangular lumber 13 be equal to the size of a first board 11 and a second board 15 to be described later, i.e., the size of the above-described basic board.

[0025] Furthermore, as shown in FIGS. 1 and 2, the panel 10 includes at least one piece of third rectangular lumber 14 which is fastened to be located parallel to the first rectangular lumber 12 or second rectangular lumber 13 in an inner space constructed in a rectangular lattice form. The third rectangular lumber 14 reinforces the structural rigidity of the panel 10. Depending on the size of the panel 10, it is preferable that at least one piece of third rectangular lumber 14, preferably two pieces of third rectangular lumber 14, be disposed inside the panel 10.

[0026] In a preferred embodiment of the present invention, it is preferable that the second board 15 be config-

ured to be connected later unlike the above-described first board 11, as shown in FIGS. 1 and 2. The reason for this is to provide a space in which the work of inserting an insulation material between the first board 11 and the second board 15, the work of deploying an electric wire, and the like can be performed.

Floor panel

[0027] As shown in FIGS. 1, 2, 12(a), and 12(c), the floor panel 100 refers to a panel which is used to construct the floor of a first or second floor. The floor panel 100 is fabricated using the above-described panel 10 without change.

[0028] The floor panel 100 is used to form the floor of a first floor which is installed on a ground surface or floor surface formed by performing floor construction or placing concrete, as shown in FIG. 12(a), or is used to form the floor of a second floor after walls to be described later have been erected, as shown in FIG. 12(c).

[0029] In a preferred embodiment of the present invention, when the floor panel 100 is used as the floor of a second floor, as shown in FIG. 12(c), it is preferable that at least one opening be formed, thereby enabling a person to climb from a first floor to the second floor through the opening.

First wall

[0030] The first wall 200 is fabricated in the same manner as the above-described panel 10, as shown in FIGS. 3 and 4 except for the following differences.

[0031] First, when a first board 11 and a second board 15 are fastened to both sides of a rectangle shape formed by first rectangular lumber 12 and second rectangular lumber 13 so that the open sides of the rectangle shape are covered with the first board 11 and the second board 15, each of the first board 11 and the second board 15 is fabricated to have an area equal to an area formed by the first rectangular lumber 12 and the second rectangular lumber 13, but the first board 11 and the second board 15 are mounted such that adjacent two edge portions of each thereof are off-centered from a rectangle formed by the first rectangular lumber 12 and the second rectangular lumber 13.

[0032] In other words, as shown in FIG. 4, the first board 11 is mounted such that adjacent two edges (in the drawing, the edges which form a reversed and inverted "L" shape) protrude outward from the first rectangular lumber 12 and the second rectangular lumber 13 by a predetermined distance "a." Furthermore, the remaining two edges (in the drawing, the edges which form an "L" shape) retract inward from the first rectangular lumber 12 and the second rectangular lumber 13 by a predetermined distance "a." The reason for this is that when two panels 10 are connected to each other, the portions of first boards 11 overlap each other by the distance "a" so that a single plane can be formed through assembly.

[0033] Meanwhile, in a preferred embodiment of the present invention, it is preferable that the distance "a" be set to a half of the width of the rectangular lumber supporting the first board 11, as shown in FIG. 4, so that the boards can be stably supported on and fastened to the rectangular lumber, can be easily assembled into a single plane, and can be conveniently used.

[0034] Furthermore, the first wall 200 is different in that any one piece of second rectangular lumber 13 retracts inward from the edges of the first board 11 by the thickness of the above-described panel 10 and is formed in an integrated form, as shown in FIGS. 3 and 4.

[0035] The reason for this is to, when the first wall 200 is mounted into the wall setup plate 600 to be described later, enable easy fit mounting at a predetermined location by allowing the protruding rectangular lumber 620 of the wall setup plate 600 to be fitted into the portion which retracts inward, i.e., a portion surrounded by an edge of the first board 11, the second rectangular lumber 13 and the opposite pieces of first rectangular lumber 12, as shown in FIGS. 4, 9, and 12.

[0036] Furthermore, although the single piece of third rectangular lumber 14 is mounted in the first wall 200 in FIGS. 3 and 4, it will be readily apparent to those having ordinary knowledge in the art to which the present invention pertains that two or more pieces of third rectangular lumber 14 may be mounted in the first wall 200.

Second wall

[0037] As shown in FIG. 5, although the second wall 300 is fabricated in the same manner as the first wall 200 formed by modifying the above-described panel 10, a door opening 16 is additionally formed so as to mount a door therein.

[0038] Furthermore, it is preferable that in the second wall 300, reinforcing rectangular lumber 12a be added to first rectangular lumber 12 constituting the edges of the door opening 16, as shown in FIG. 5. The reason for this is to prepare for a situation in which as the door opening 16 is formed, the load which is applied to the first rectangular lumber 12 may be increased.

[0039] Accordingly, the second wall 300 is fastened by being fitted into the wall setup plate 600 to be described later, as described above, and is utilized as an entrance with a door installed in the door opening 16, as shown in FIGS. 5 and 12(b).

Third wall

[0040] As shown in FIG. 6, although the third wall 400 is fabricated in the same manner as the first wall 200 formed by modifying the above-described panel 10, a window opening 17 is additionally formed so as to construct a window.

[0041] Furthermore, it is preferable that in the third wall 400, reinforcing rectangular lumber 12a be added to pieces of first rectangular lumber 12 constituting both side

edges, as shown in FIG. 6. The reason for this is to prepare for a situation in which as the window opening 17 is formed, the load which is applied to the first rectangular lumber 12 may be increased.

[0042] Accordingly, the third wall 400 is fastened by being fitted into the wall setup plate 600 to be described later, as described above, and a window may be installed in the window opening 17 of the third wall 400, as shown in FIGS. 5 and 12(b).

Fourth wall

[0043] As shown in FIG. 7, although the fourth wall 500 is fabricated in the same manner as the first wall 200 formed by modifying the above-described panel 10, the width length thereof is set to half of that of the first wall 200.

[0044] As shown in FIGS. 7 and 12(b), the fourth wall 500 is used between the above-described first and third walls 200 and 400, or is used to extend the wall area of the prefabricated house.

Wall setup plate

[0045] As shown in FIGS. 8 and 9, the wall setup plate 600 constitutes an edge of the prefabricated house, and is configured such that the above-described first to fourth walls 200 to 500 can be erected and installed thereon.

[0046] As shown in FIGS. 8 and 9, the wall setup plate 600 includes basic rectangular lumber 610 which is disposed along an edge of the above-described floor panel 100, and a plurality of pieces of protruding rectangular lumber 620 which is mounted on the basic rectangular lumber 610.

[0047] In particular, as shown in FIG. 9, each of the plurality of pieces of the protruding rectangular lumber 620 is formed to be fitted into the portion of a wall where the second rectangular lumber 13 retracts inward by the thickness t of the panel 10. Accordingly, the length of the protruding rectangular lumber 620 varies depending on the location at which one of the first to fourth walls 200 to 500 is mounted.

[0048] Furthermore, the interval W between two adjacent pieces of protruding rectangular lumber 620 is formed to be about twice the thickness w of the rectangular lumber, as shown in FIG. 9. The reason for this is to, when two first walls 200 are mounted onto the wall setup plate 600, enable fit mounting by making the sum of the thicknesses w of the two adjacent pieces of first rectangular lumber 12 of the first walls 200 equal to the interval W .

[0049] Accordingly, the basic rectangular lumber 610 is disposed on the floor panel 100 in accordance with the plane shape of the prefabricated house according to the present invention, and predetermined pieces of protruding rectangular lumber 620 are fastened onto the basic rectangular lumber 610 in accordance with the locations at which the above-described first to fourth walls 200 to

500 will be mounted.

[0050] A through hole is formed through the wall setup plate 600 so as to erect and fasten the first walls 200, as shown in FIG. 9, and the two adjacent first walls 200 erected and fastened onto the wall setup plate 600 are coupled and fastened via through holes formed through the pieces of first rectangular lumber 12.

[0051] In this case, although an example in which the first walls 200 are mounted onto the wall setup plate 600 has been shown in the drawing, it will be readily apparent to those having ordinary knowledge in the art to which the present invention pertains that the above-described second to fourth walls 300 to 500 may be also mounted in the same method.

Rear gable wall and front gable wall

[0052] As shown in FIGS. 10 and 12(d), the rear gable wall 700' and the front gable wall 700" refer to gable walls which are fabricated in triangular shapes and are installed on the upper portions of columns to be opposite to each other in order to construct a roof.

[0053] As shown in FIG. 10, the rear gable wall 700' and the front gable wall 700" are formed by cutting boards into triangular shapes having the same size and including pieces of border rectangular lumber 710 and pieces of reinforcing rectangular lumber 720 onto the triangular boards.

[0054] In particular, the pieces of border rectangular lumber 710 retract inward from the edges of the triangular board by a predetermined width, and are configured to cover finished portions when they are installed on walls including the above-described first to fourth walls 200 to 500, as shown in FIG. 10.

[0055] Furthermore, the pieces of reinforcing rectangular lumber 720 are mounted on each of the triangular boards so that they are located within an inside surrounded by the above-described pieces of border rectangular lumber 710, as shown in FIG. 10. In this case, at least one piece of reinforcing rectangular lumber 720 is mounted to distribute external force which is applied to the rear gable wall 700' or front gable wall 700."

[0056] Meanwhile, a window opening 730 is additionally provided in the middle portion of the front gable wall 700" so as to be able to view the outside even from a second floor or to ventilate an inner space, as shown in FIG. 10(b).

[0057] Finally, it is preferable that each of the rear gable wall 700' and the front gable wall 700" according to the present invention be configured to include at least two parts which are assembled into a single body, depending on the size of the prefabricated house. The reason for this is to prevent a problem from occurring because the rear gable wall 700' and the front gable wall 700" are too large to carry or store. FIG. 10 shows an example in which each of the rear gable wall 700' and the front gable wall 700" includes three parts including a middle part and parts on the left and right of the middle part.

Roof plates

[0058] As shown in FIGS. 11 and 12(e), although the roof plates 800 are fabricated in the same manner as the above-described panel, they are fabricated such that a roof is formed in an inclined shape.

[0059] In other words, each of the roof plates 800 is formed by chamfering one side of the panel 10 at a predetermined angle (see a chamfer 810), as shown in FIG. 11. The reason for this is to allow an upwardly pointed roof portion to be formed when two opposite roof plates 800 are fastened to each other with the chamfers 810 held against each other. In this case, although the angle at which the chamfering is performed may be selected within a wide range according to the degree to which a roof is pointed, it is most preferable that the chamfering be performed at 45°.

[0060] Furthermore, a V-shaped groove 820 having a right internal angle is formed along the edge of the roof plate 800 opposite to the above-described chamfered edge, as shown in FIG. 11. The reason for this is to allow the V-shaped groove 82 to engage with walls so as to facilitate assembly because the above-described first to fourth walls 200 to 500 are vertically mounted.

[0061] Although not shown in the drawing, a through hole may be formed through the roof plate 800 in which the chamfer 810 and the V-shaped groove 820 are formed at a predetermined location, and thus two opposite roof plates 800 may be easily and rapidly coupled to each other by tightening screws into such through holes.

[0062] As described above, according to the present invention, the prefabricated house is configured to be assembled in such a manner that the wall setup plate is mounted onto the floor panel in accordance with the plane shape of the prefabricated house, the first to fourth walls are erected onto the wall setup plate at predetermined locations and coupled to each other, the floor of a second floor is laid thereon, the rear gable wall and the front gable wall are fastened on opposite sides, and the roof plates are held against each other, thereby enabling the prefabricated house to be easily and conveniently assembled using manual tools and to be conveniently used.

[0063] In particular, manual tools are used as described above, and thus anyone can easily and conveniently assemble and safely use the prefabricated house in a place where a disaster has occurred, such as a flooded area where electricity cannot be used or heavy equipment cannot be operated.

[0064] The prefabricated house according to the present invention has the following advantages:

(1) The prefabricated house can be immediately assembled and used at a required place, and thus convenience is provided.

(2) In particular, the prefabricated house can be immediately assembled using manual tools and then used, and thus the prefabricated house can be easily assembled and safely used as a shelter house even

in a place where heavy equipment or electricity cannot be used due to flooding, a disaster, or the like.

(3) The prefabricated house can be constructed by assembling predetermined panels having predetermined sizes, and thus a standardized prefabricated house can be immediately constructed and conveniently used.

(4) In this case, the panels are fabricated using boards and rectangular lumber, and thus they can be fabricated into desired sizes by using materials easily obtainable from the surroundings in advance and used to assemble the prefabricated house.

(5) Accordingly, the prefabricated house can be fabricated inexpensively, easily and conveniently, and can be immediately assembled and conveniently and safely used in a desired place.

(6) When the prefabricated house is fabricated, it can be easily enlarged or reduced on a per-panel basis according to a desired area and size.

Claims

1. A prefabricated house which is fabricated using boards having a predetermined area and thickness and rectangular lumber having a predetermined length and width, wherein there are used panels (10) each including two pieces of first rectangular lumber (12) configured such that they are mounted on opposite longer edges of a first board (11) and a plurality of fastening holes is formed predetermined locations, two pieces of second rectangular lumber (13) configured such that they are mounted on shorter edges of the first board (11) so that they are opposite each other on ends of the first rectangular lumber (12) and a plurality of fastening holes is formed predetermined locations, third rectangular lumber (14) configured to be mounted on the first board (11) so that it is located inside an area surrounded by the first rectangular lumber (12) and the second rectangular lumber (13), and a second board (15) which is mounted over the area surrounded by the first rectangular lumber (12) and the second rectangular lumber (13); and wherein the prefabricated house comprises:

a floor panel (100) which is formed by the plurality of panels (10) and is disposed on a floor; a first wall (200) which is mounted in such a manner that any one of longer edges of each of the first board (11) and the second board (15) of the panel (10) overlaps a thickness of one of the first rectangular lumber (12), a remaining one of the longer edges protrude outward from a remaining first rectangular lumber (12), any one of shorter edges of each of the first board (11) and the second board (15) of the panel (10) protrudes outward from one of the second rectangular lum-

ber (13) by a thickness (t) of the panel (10), and a remaining second rectangular lumber (13) retracts from an edge of the first board (11) by the thickness (t) of the panel (10);

a second wall (300) which is mounted in such a manner that any one of longer edges of each of the first board (11) and the second board (15) of the panel (10) overlaps a thickness of one of the first rectangular lumber (12), a remaining one of the longer edges protrude outward from a remaining first rectangular lumber (12), any one of shorter edges of each of the first board (11) and the second board (15) of the panel (10) protrudes outward from one of the second rectangular lumber (13) by a thickness (t) of the panel (10), and a remaining second rectangular lumber (13) retracts from an edge of the first board (11) by the thickness (t) of the panel (10), in which a door opening (16) is formed there-through, and in which reinforcing rectangular lumber (12) is added to edges of the door opening (16);

a third wall (400) which is mounted in such a manner that any one of longer edges of each of the first board (11) and the second board (15) of the panel (10) overlaps a thickness of one of the first rectangular lumber (12), a remaining one of the longer edges protrude outward from a remaining first rectangular lumber (12), any one of shorter edges of each of the first board (11) and the second board (15) of the panel (10) protrudes outward from one of the second rectangular lumber (13) by a thickness (t) of the panel (10), and a remaining second rectangular lumber (13) retracts from an edge of the first board (11) by the thickness (t) of the panel (10), in which a window opening (17) is formed there-through, and in which reinforcing rectangular lumber (12a) is added to both side edges;

a fourth wall (500) which is mounted in such a manner that any one of longer edges of each of the first board (11) and the second board (15) of the panel (10) overlaps a thickness of one of the first rectangular lumber (12), a remaining one of the longer edges protrude outward from a remaining first rectangular lumber (12), any one of shorter edges of each of the first board (11) and the second board (15) of the panel (10) protrudes outward from one of the second rectangular lumber (13) by a thickness (t) of the panel (10), and a remaining second rectangular lumber (13) retracts from an edge of the first board (11) by the thickness (t) of the panel (10), and in which a width of the panel (10) is reduced by half; and

a wall setup plate (600) which includes basic rectangular lumber (610) configured to be a same as the rectangular lumber used in the pan-

el (10) and a plurality of pieces of protruding rectangular lumber (620) fastened to the basic rectangular lumber 610 and configured to protrude to face the pieces of second rectangular lumber (13) when the first to fourth walls (200, 300, 400 and 500) are mounted onto the wall setup plate (600), and in which at least one through hole for fastening and coupling is formed through a surface opposite to each of the pieces of second rectangular lumber (13) at a predetermined location.

2. The prefabricated house of claim 1, further comprising:

a rear gable wall (700') which is formed by cutting the board into a triangular body, fastening a plurality of pieces of border rectangular lumber (710) at locations of the triangular body which retract inward from edges of the triangular body by a thickness of the panel (10), and disposing reinforcing rectangular lumber (720) in a space surrounded by the pieces of border rectangular lumber (710); and

a front gable wall (700'') which is formed by cutting the board into a triangular body, fastening a plurality of pieces of border rectangular lumber (710) at locations of the triangular body which retract inward from edges of the triangular body by a thickness of the panel (10), disposing reinforcing rectangular lumber (720) in a space surrounded by the pieces of border rectangular lumber (710), and forming a window opening (730).

3. The prefabricated house of claim 2, further comprising roof plates (800) each of which is configured such that one edge of the panel (10) is chamfered at a predetermined angle and a V-shaped groove (820) having a right internal angle is formed along an opposite edge of the panel (10), wherein the opposite roof plates (800) are coupled to each other with the chamfered edges held against each other.

4. The prefabricated house of claim 3, wherein:

the board has dimensions of 1220 mm (width) × 2440 mm (length); and

the lumber has dimensions of 40 mm (height) × 100 mm (width) × 2400 mm (length) or 40 mm (height) × 150 mm (width) × 2400 mm (length).

5. The prefabricated house of claim 3, wherein the board is OSB plywood or typical plywood.

6. The prefabricated house of claim 3, wherein the floor panel (100) is configured such that, when the floor panel (100) is used as a floor of a second floor, an opening is formed thorough the floor panel (100) and

used as a path.

7. The prefabricated house of claim 3, wherein each of the rear gable wall (700') and the front gable wall (700") includes at least two parts which are assembled into a single body. 5
8. The prefabricated house of claim 3, wherein, when the first to fourth walls (200, 300, 400 and 500) are mounted onto the wall setup plate (600), wiring work or insulation work is performed before the second board (15) is finally installed. 10

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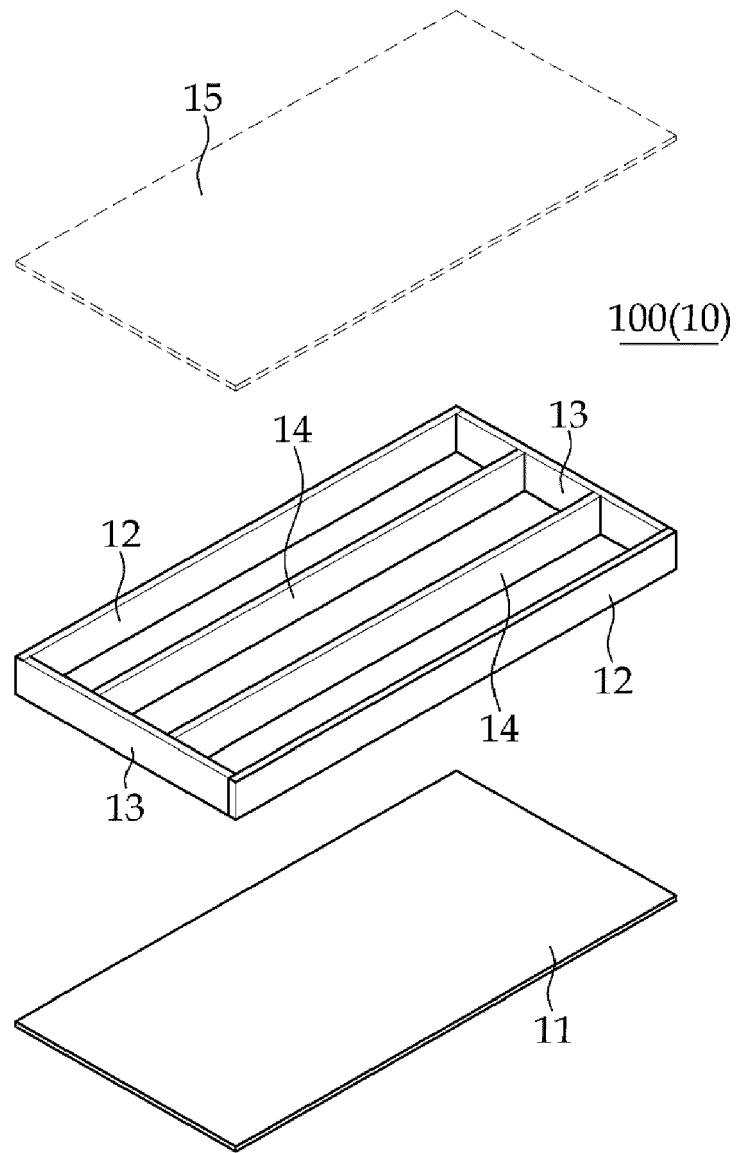


FIG. 1

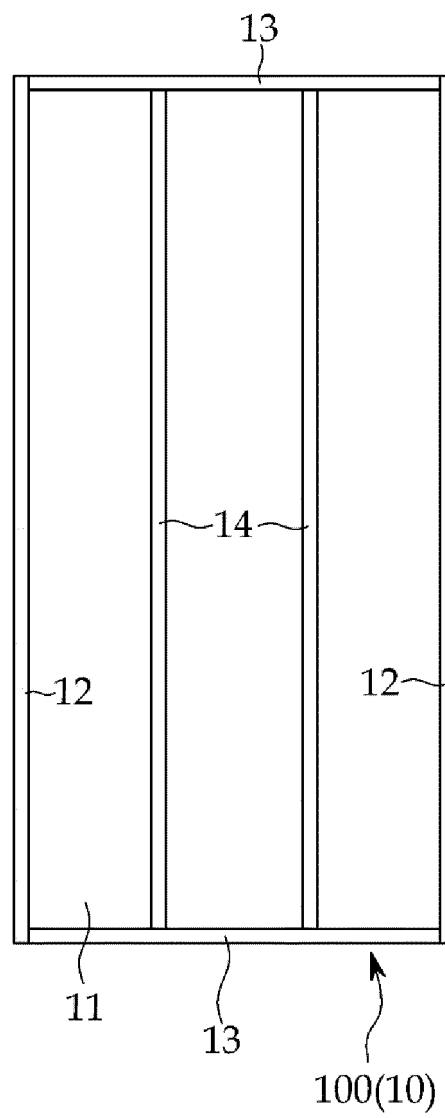


FIG. 2

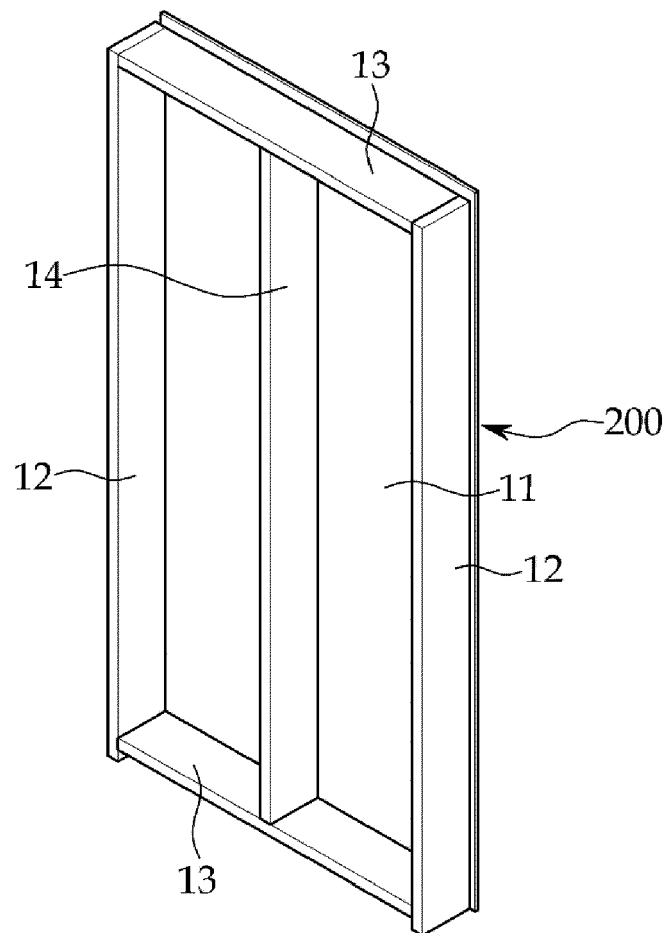


FIG. 3

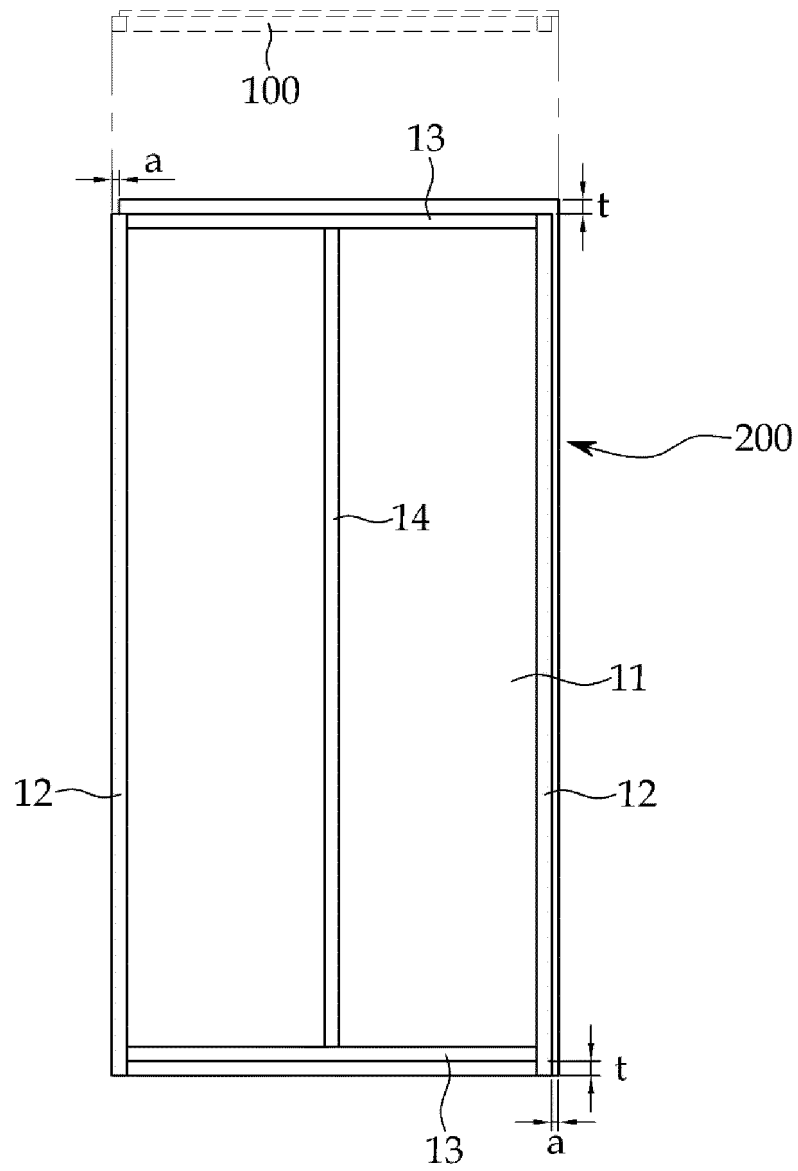


FIG. 4

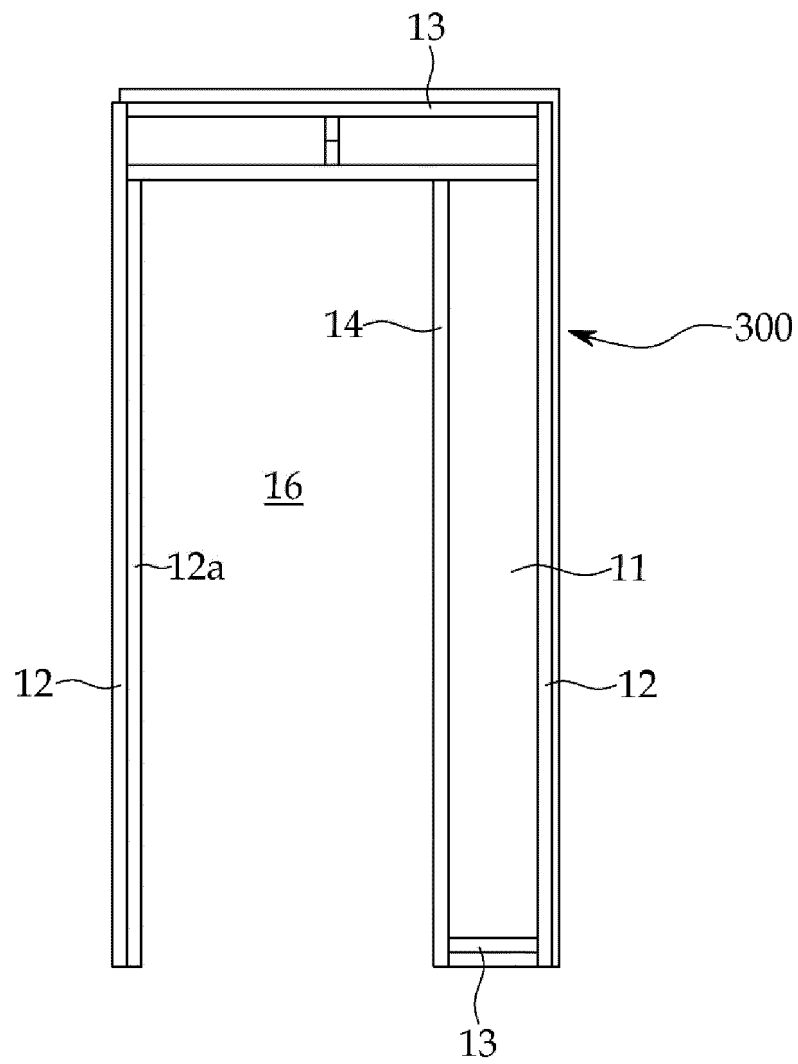


FIG. 5

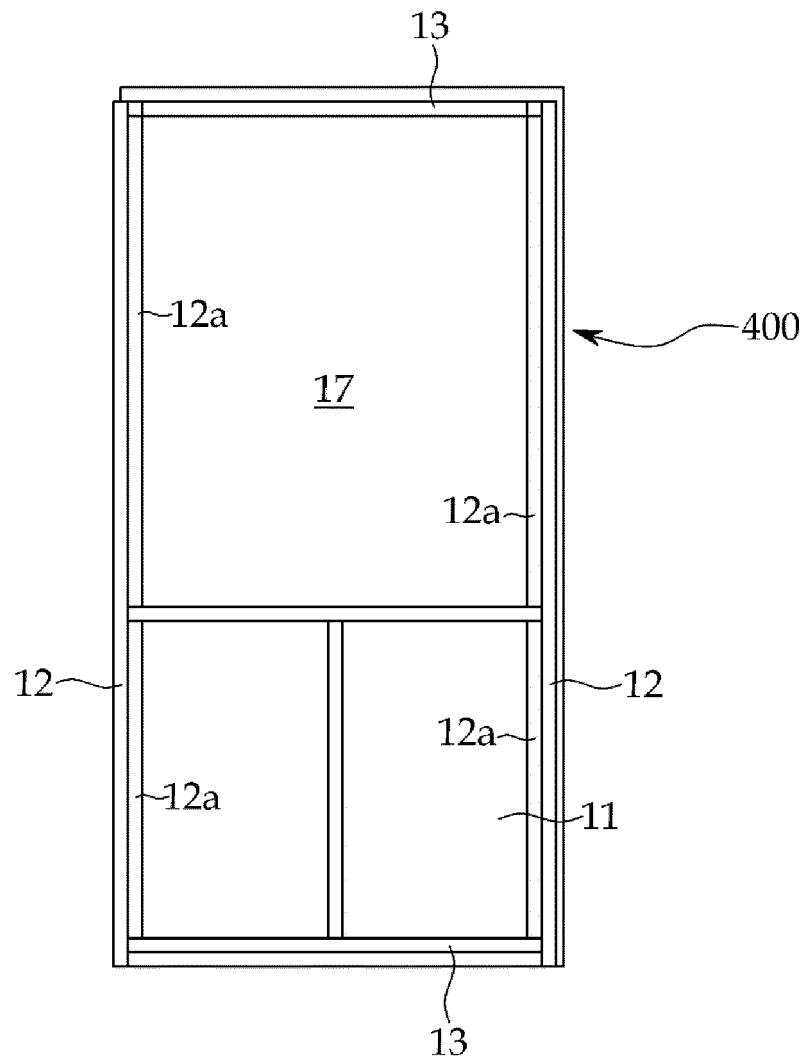


FIG. 6

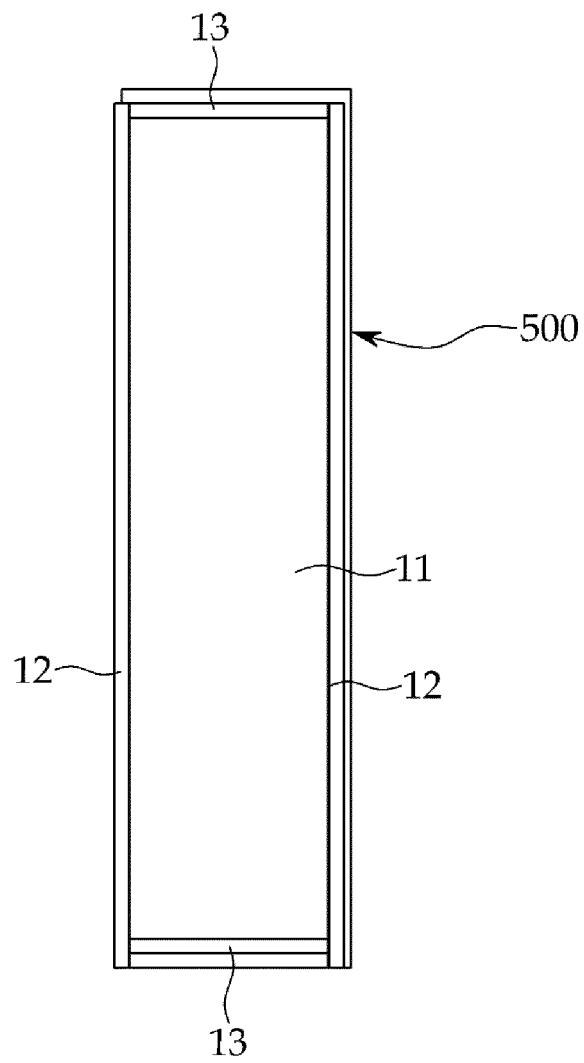


FIG. 7

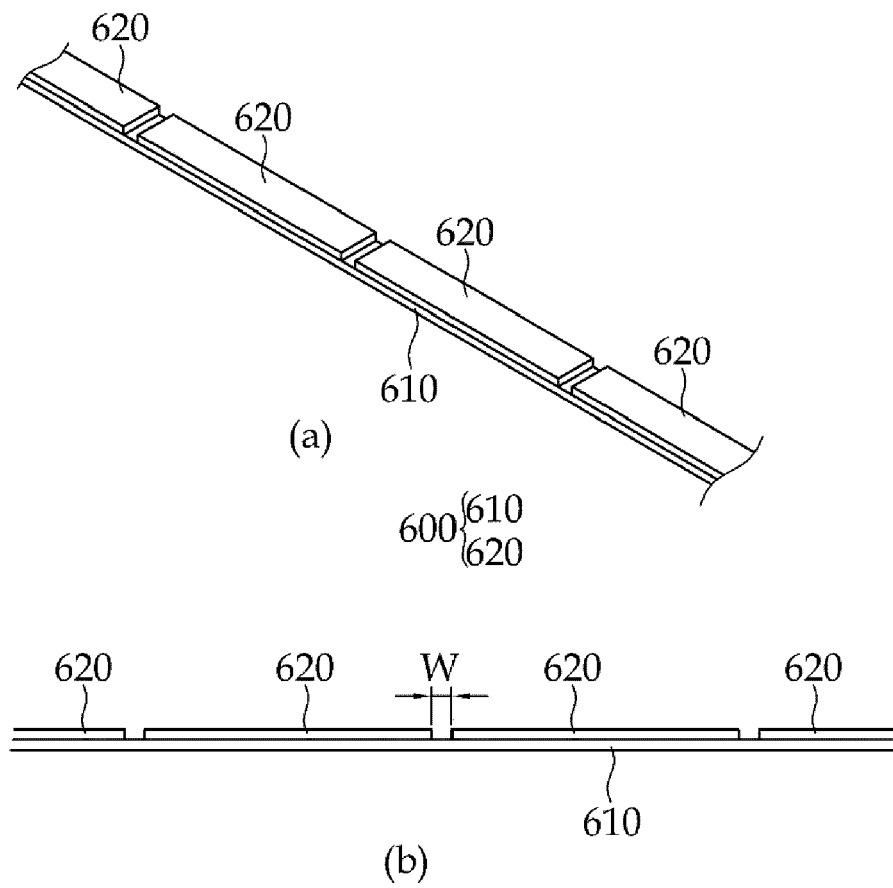


FIG. 8

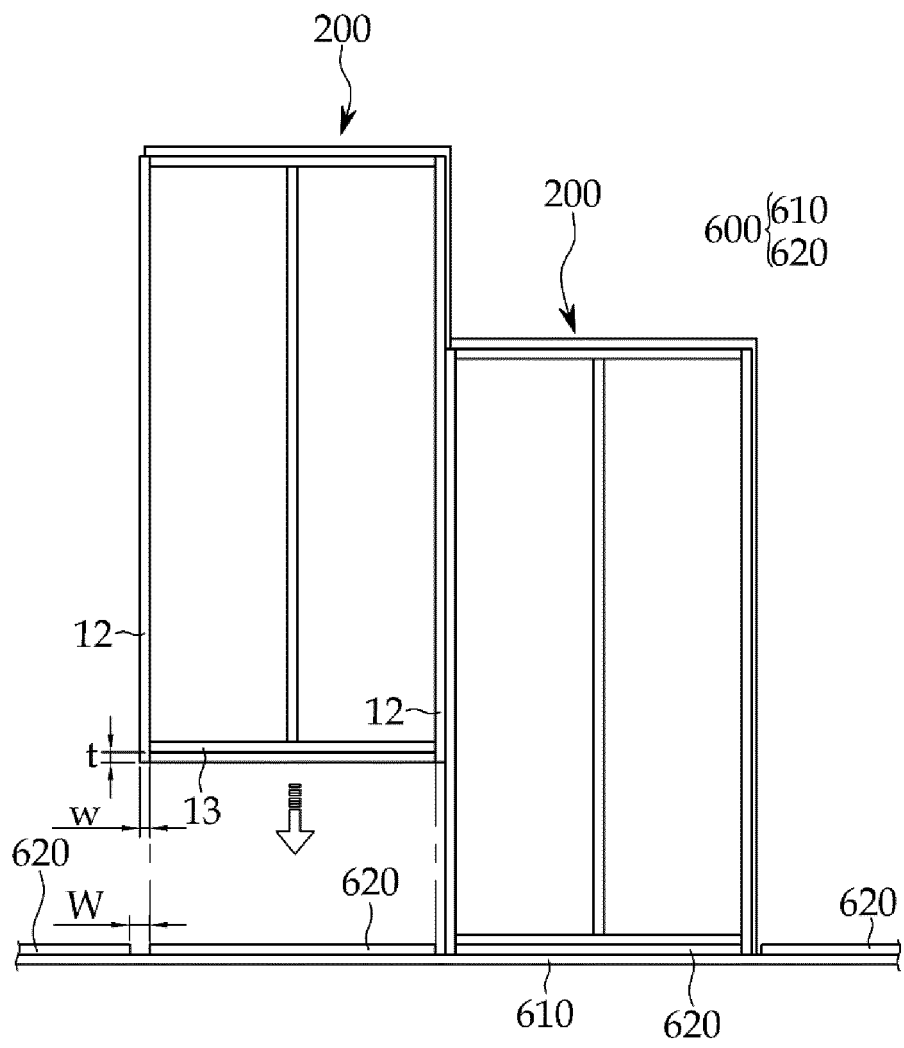


FIG. 9

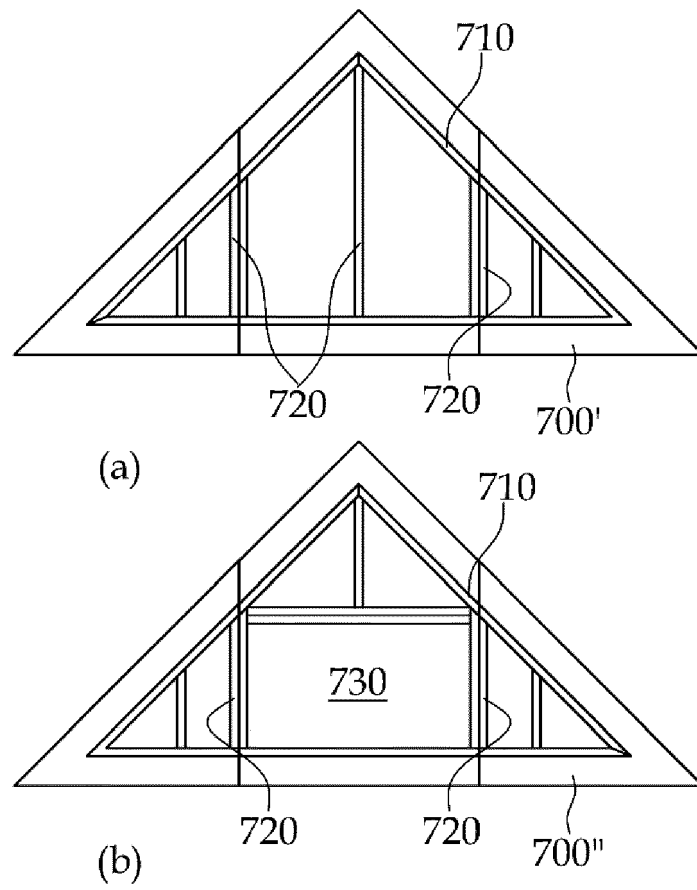


FIG. 10

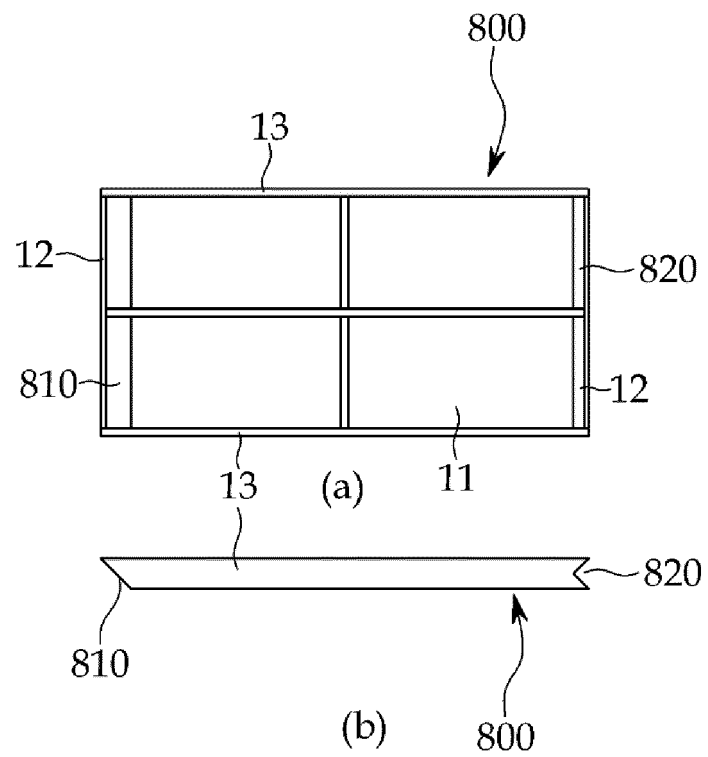


FIG. 11

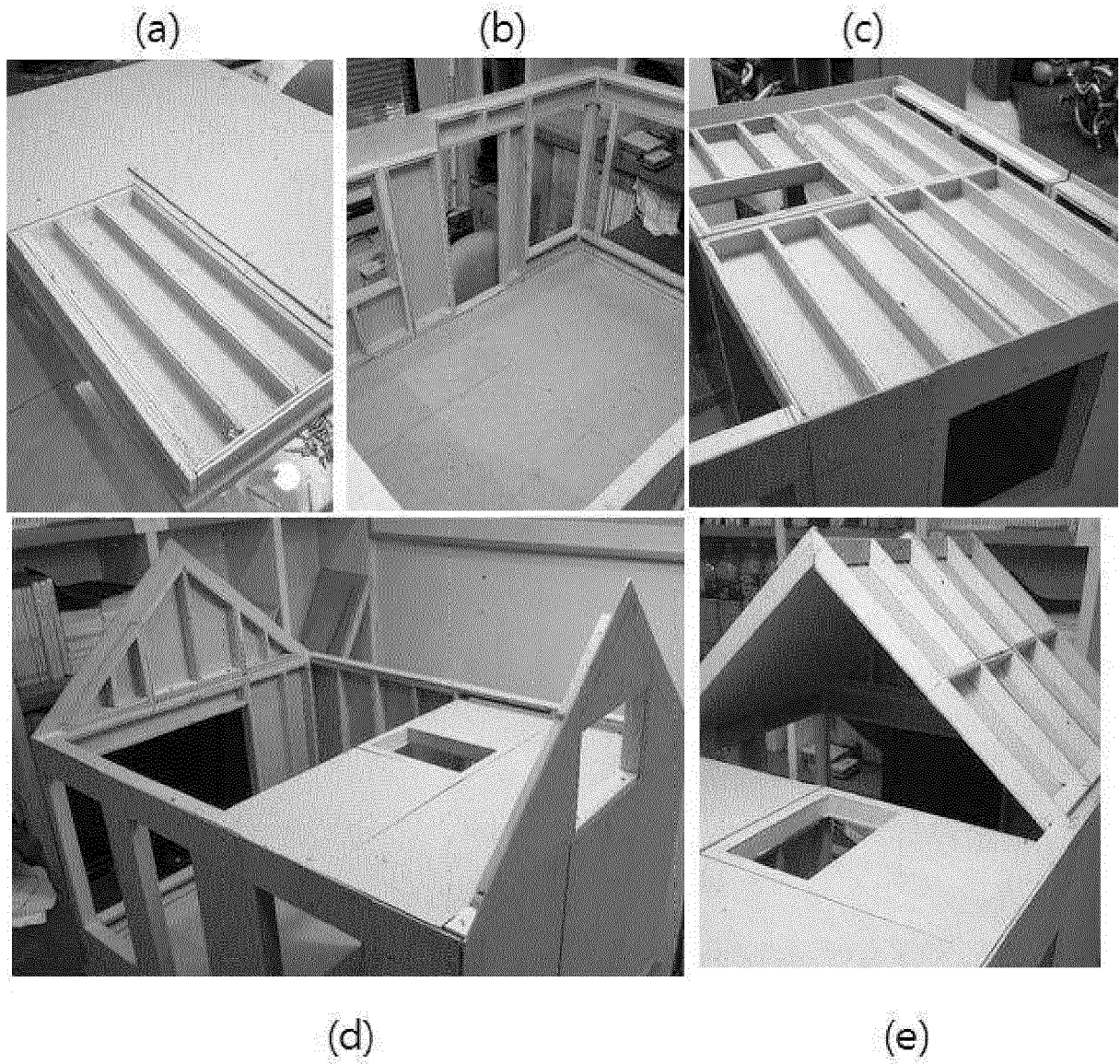


FIG. 12



EUROPEAN SEARCH REPORT

 Application Number
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X	US 2 129 441 A (OTTO KARL F) 6 September 1938 (1938-09-06) * page 1, column 1, line 1 - page 4, column 1, line 34; figures 1-9 *	1-8	
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			E04B E04C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 17 February 2020	Examiner Dieterle, Sibille
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The members are as contained in the European Patent Office EDP file on
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17-02-2020

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

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