(12) STANDARD PATENT (11) Application No. **AU 2012238289 B2**
(19) AUSTRALIAN PATENT OFFICE

(54) Title
Sandwiched panel construction and a method of manufacturing thereof

(51) International Patent Classification(s)
E04C 2/02 (2006.01) ***B32B 27/40*** (2006.01)
B32B 15/14 (2006.01) ***B32B 27/42*** (2006.01)

(21) Application No: **2012238289** (22) Date of Filing: **2012.10.10**

(30) Priority Data

(31) Number	(32) Date	(33) Country
PI 2012003472	**2012.08.01**	**MY**

(43) Publication Date: **2014.02.20**
(43) Publication Journal Date: **2014.02.20**
(44) Accepted Journal Date: **2016.05.12**

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(56) Related Art
US 5842314 A
US 2008/0236077 A1
DE 102010062061 A
EP 2366524 A1
WO 2012/048367 A1
US 4765105 A
WO 2010/144951 A1

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ABSTRACT

SANDWICHED PANEL CONSTRUCTION AND A METHOD OF MANUFACTURING THEREOF

The present invention relates to a single piece of reinforced load bearing wall panel and a method of constructing insulated structures using prefabricated building materials more particularly using wall panels made of insulated material such as polyurethane or polyisocyanurate that is sandwiched between two sheets of fiber boards, characterized in that a metal sheet is inserted between the center of two panels, by applying a bonding adhesive which is suitable for cement based fiber-board and metal sheet materials to join the two panels together. The two wall panels can be configured in parallel or zigzag manner. The present invention also provides a method of erecting the building by use of wall panels of present invention.

The most illustrative drawing: Figure 1

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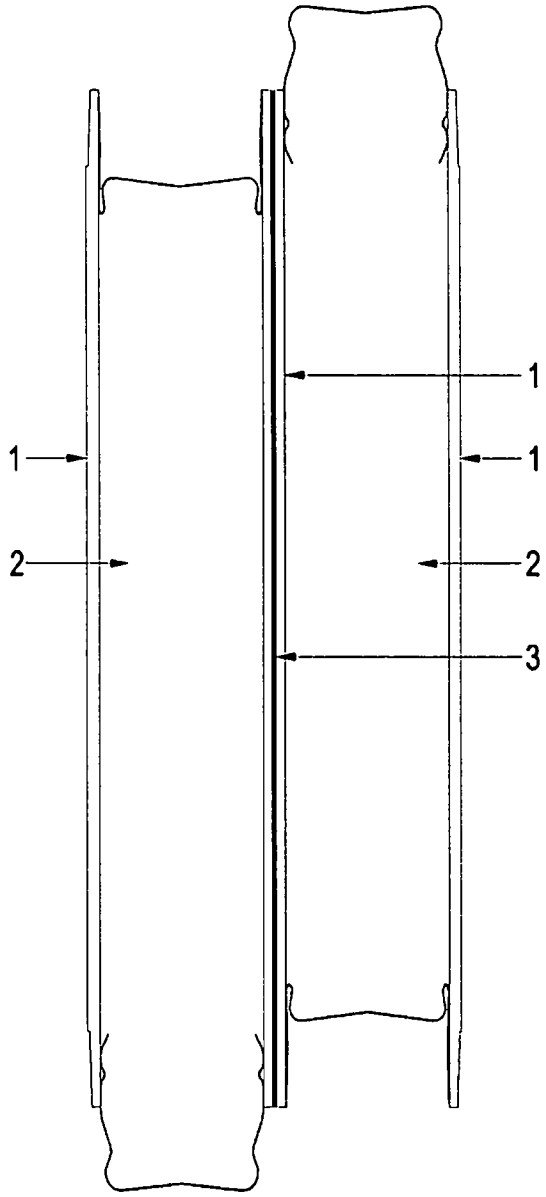

Figure 1

AUSTRALIA

PATENTS ACT 1990

COMPLETE SPECIFICATION

FOR A STANDARD PATENT

(Original)

APPLICATION NO:

LODGED:

COMPLETE SPECIFICATION LODGED:

ACCEPTED:

PUBLISHED:

RELATED ART:

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INVENTION TITLE: "SANDWICHED PANEL CONSTRUCTION AND A METHOD OF MANUFACTURING THEREOF"

DETAILS OF ASSOCIATED APPLICATION NO'S:

Malaysian Patent Application Number PI 2012003472 filed on 1 August 2012

The following Statement is a full description of this invention including the best method of performing it known to me/us:

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SANDWICHED PANEL CONSTRUCTION AND A METHOD OF MANUFACTURING THEREOF

FIELD OF INVENTION

The present invention relates to a single piece of reinforced load bearing wall panel and a method of constructing insulated structures using prefabricated building materials more particularly using wall panels made of insulated material such as polyurethane or polyisocyanurate that is sandwiched between two sheets of fiber boards, characterized in that a metal sheet is inserted between the center of two panels, by applying a bonding adhesive which is suitable for cement based fiber board and metal sheet materials to join the two panels together.

BACKGROUND OF THE INVENTION

Various types of construction are known in the prior art including wood framed buildings, steel framed buildings, pre-cast concrete structures, and cast in place concrete structures. The majority of structural design decisions that are made in conventional practice are driven by cost; there are enormous pressures on structural engineers of most building projects to minimize costs while upholding their first duty to ensure the safety of structures. These pressures tend to minimize the structure in many buildings. This tendency can be unfortunate when a structure is subjected to rare but extreme loads that cannot reasonably be incorporated into statistical load guidance provided by building codes.

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Accordingly, engineered structures are typically designed to safely resist code-specified loads without necessarily providing large reserve capacity beyond that achieved by virtue of required safety factors. By building to provide structural capacities that are significantly in excess of those required to resist the minimum loads required by building codes, new opportunities are created in the functionality and versatility of the built structure. The design of a structure of conventional construction typically seeks to concentrate forces to conserve usable floor space, and relies on secondary lateral systems, such as diagonal braces or shear walls, to stabilize the structure. Benefits can be gained by flaring the upper portion of a column structure to reduce the effective span of the structure supported by the column.

Conventional construction generally consists of either cast-in-place construction with obstructive and costly framework or of interconnected stick or panel framing that relies on diagonal bracing or shear walls for lateral stability. Because much of conventional construction is inherently unstable until the construction of structural diaphragms and lateral systems are complete, structural failures during the relatively brief construction period are more common than in completed buildings that stand for years of service.

The lateral bracing and shoring that is typically required for conventional construction creates building site obstructions that contribute to many construction accidents. Because conventional construction commonly involves the field assembly of parts that can be lifted and handled by one or two workers, the construction of exterior walls and roofs generally involves a significant amount of labor far above ground level; this creates the potential for

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falling hazards that generate the most lethal jobsite injuries. Where conventional construction utilizes large parts, such as with tilt-wall construction, expensive crane time is typically consumed holding those parts in position while lateral shoring and bracing members and connections are installed; this is required to stabilize the part prior to releasing the hoisting lines. It is desirable to build using a system of independently stable modules that minimize or eliminate the need for temporary shoring and bracing, and that allow crane time to be utilized efficiently. In the field of concrete buildings or concrete framed structures, the structural elements are typically either cast in place on site such as with flat-plate or beam and slab type of applications, prefabricated on-site such as with tilt wall construction, or prefabricated off-site such as with precast concrete planks, tees, and wall panels. Most significant building structures are built based on a unique design that is the result of the work a team of design professionals; the design of a given building is generally unique to that project. The design of unique projects under ever-increasing time, budget, and liability pressures presents real challenges to design professionals; it also places an enormous burden on the builder that must interpret and build a unique and complex project from what will inevitably prove to be an imperfect set of drawings and specifications. It is highly desirable to introduce a building system that allows design flexibility while offering vast simplifications in both design and construction; this can be accomplished by means of an expanding kit of compatible parts.

The use of on-site casting for concrete cast-in-place structures requires the expense and delay of field-fabricating the forms for pouring concrete. It is desirable to provide concrete

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structural elements which can be built in stacks or mass-produced by other means either on- site or under factory controlled conditions.

Tilt wall construction provides some advantage in pre-casting wall elements, but has the disadvantage of requiring the advance construction of large areas of grade-supported slab to serve as a casting surface for the wall blocks. Tilt wall construction also requires the use of temporary shoring during the assembly process to hold walls in place until additional structural elements are attached to the walls. It is desirable to provide pre-cast concrete structural elements that can be assembled into a variety of structural elements and finished buildings without the use of temporary shoring. Concrete building blocks such as cinder blocks are typically provided in relatively small units that require labor-intensive mortared assembly to form walls and structures. It is desirable to provide larger structural units that can be precast, trucked to a job site, and assembled together into a wide variety of structural forms without extensive use of mortar or adhesive.

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SUMMARY OF THE INVENTION

The present invention relates to a method of constructing insulated structures using prefabricated building materials more particularly using multiple wall panel configuration, wherein single piece of reinforced load bearing wall panels of the present invention are made of insulated material such as polyurethane that is sandwiched between two sheets of fiber boards, characterized in that a metal sheet is inserted between the center of two panels, by applying a bonding adhesive to join the two panels together.

One of the main components of the building block is a prefabricated multi-layered panel or corner panel comprising of polyurethane that is sandwiched between two external surface sheets, preferably in that the hard surface sheets are fiber boards, characterized in that a metal sheet is inserted between the center of two panels, by applying a bonding adhesive to join the two panels together.

Step 1 for construction is preferred that the construction floor be a concrete raft floor. Step 2 is the area to be built on is defined by channels placed according to the desired shape of the structures' floor plan and bolted in place using fasteners. Step 3 is the fitting of the prefabricated corner panel on the channel at the corner of the structure. The following pieces of body panels are placed in relation to the corner panel unit and extend outward from it. The panels are joined by a tongue and groove interlocking mechanism and variations of it. This interlocking mechanism reinforces the strength of the wall in its plurality and to further strengthen the panels during installation. Step 4 illustrates

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installing the panel in a U-shape and the use of a top channel that runs on the top end of panel units. Step 5 entails adding further prefabricated walls to form partitions within the structure to allow the making of rooms. Step 6 is to place the beam as a further support for the whole structure and also to support the roof. In Step 7 the roofing panel is installed from the left end of the structure to the right end. The roofing panel sheets are placed in a manner where the first rib of an adjoining sheet is placed atop the last rib of the previously placed sheet and they are further reinforced with a self-drilling screw or rivet through the ribs of the roof panel sheets and attached to the beam mentioned earlier. The final step is the roof installation finishing with the necessary flashing and capping onto the edges of the roof.

The outer wall which constituted by the corner panel and body panel, is further secured with at least one support member at its inner surface for accommodating floor panels and first floor wall panels for erecting more than one storied structure. The support member includes a base plate with at least one side plate perpendicular to the base plate, whereby the base plate is secured to the inner surface of the panels and the side plate for supporting the floor panels.

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BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a standard panel;

Figure 2 shows a standard panel to panel joint in zigzag manner;

Figure 3 shows a panel with conduit;

Figure 4 shows a conduit panel to conduit panel joint in zigzag manner;

Figure 5 shows a panel joint secured with fasteners;

Figure 6 shows a panel with inserted steel plate and conduit;

Figure 7 shows a section view of multistoried sectional joint detail showing roofing and cornice;

Figure 8 shows a panel joint and corner joint;

Figure 9 shows apron and concrete raft floor with line marking for floor track installation;

Figure 10 shows ground floor corner panels installation;

Figure 11 shows installation of corner panel and body panel;

Figure 12 shows installation of partition panel and capping of ground floor wall panel;

Figure 13 shows floor panel and floor track installation at first floor;

Figure 14 shows interlocking of floor at first floor;

Figure 15 shows installation of corner panel on the first floor;

Figure 16 shows installation of body panel and corner panel at first floor and capping of first floor wall panels;

Figure 17 shows installation of PC beam and roofing on the capped first floor wall panels;

Figure 18 shows installation of roof capping;

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Figure 19 is an isometric view of the panel system which shows a panel with top track and bottom track, wherein a metal plate is provided in between the two panels; and

Figure 20 is an isometric view of the panel system which shows a panel with top track and bottom track, wherein no metal plate is provided between the two panels.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE INVENTION

The construction method is now explained with reference to the drawings. One of the main components of the building block is a prefabricated multi-layered panel or corner panel comprising of polyurethane or polyisocyanurate that is sandwiched between two external sheets, and preferably in that the external sheets are fiber boards, characterized in that a metal sheet is inserted between the center of two panels, by applying a bonding adhesive which is suitable for cement based fiber-board and metal sheet materials to join the two panels together.

In the current invention, a metal sheet is inserted between the center of two panels. The metal sheet is inserted by applying a bonding adhesive to join the two panels together. The addition of this metal sheet will gain cyclone ratings. One of the cyclone test requirements is that a 10.16 cm (4") log is fired at the panel at a rate of approximately 60kph. The log is not allowed to penetrate through the panel. By inserting a metal sheet this will stop the projectile from penetrating through.

In the preferred embodiment of the present invention, the bonding adhesive has following composition: isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly ranging from 30 to 60 wt/wt % of the total adhesive composition, diphenylmethane diisocyanate in ratio of 13 to 30 wt/wt% of the total composition, isocyanic acid, polymethlenepolyphenylene ester and methylenediphenyl diisocyanate and phenyl isoyanate in ratio of 13 to 30 wt/wt% of the total composition.

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The adhesive is brown coloured liquid having a density of 1.14 g/cm^3 at 25^{0}C, a viscosity of 2750 mPas at 25^{0}C and having an isocyanate (NCO) value of 16% .

Two pieces of metal running through the upper and lower sections of the wall panel from end to end and are kept sturdy by the polyurethane and polyisocyanurate resin material in between the fiber boards.

The present invention also provides a method of erecting a building which comprises steps of:

(i) lining a base defining the floor outline;

(ii) placing a prefabricated corner panel at a corner of the said floor outline;

(iii) placing the prefabricated insulated walls;

(iv) attaching the prefabricated wall to the corner wall by using the tongue and groove coupling system on the edges of the walls;

(v) adding on further walls in likewise manner mentioned above till the four corners are placed and a box shape is formed; and

(vi) adding further prefabricated walls to form partitions within the said structure to allow the making of rooms.

The method further comprises the use of a prefabricated composite beam to lend strength to the structure and also to further support the roof panels.

The use of additional fitting like roof panels comprises of polyurethane injected between two pre-painted galvanized sheets which would sit on the top edges of the prefabricated

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walls and the roof panels are arranged in a manner where the last rib of the first roof panel sits underneath the first rib of the subsequent roof panel and arranged from the left to the right edges of the structure.

In an embodiment of the invention, the method of erecting a building of the present invention, also comprises windows and doors to be fitted into the complete structure by making opening on the wall panels and also using capping to utilize the tongue and groove mechanism on the edges of the wall panels.

Figure 1 illustrates a standard panel. The standard panel has the external sheets of fiber boards (1), with two panels bonded together using a bonding adhesive (3) suitable for cement based fiber board materials. Polyurethane or polyisocyanurate (2) is sandwiched between two sheets of fiber boards (1).

Figure 2 illustrates a standard panel to panel joint, wherein the two panels can be arranged in a zigzag manner. However, it must be noted that the panels can also be arranged in a parallel manner, if so preferred.

Figure 3 illustrates that the panels comprises of mechanical and electrical (M&E) conduits (4) and they are meant to assist M&E cabling in the houses built using the wall panel of the present invention.

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The panels having conduits can be joined to another panel in a zigzag manner as illustrated in Figure 4 or parallel manner.

Figure 5 shows a mounting detail of the panel. Shorter self-drilling screw (5) is able to hold two panels together on the tongue or groove interlocking mechanism on the exposed side of the panel. Longer self-drilling screw (6) is a double protection screw which is to hold the two panels together and to enhance the rigidness of the panel joint system by drilling through the tongue or groove interlocking mechanism on the exposed side of the panel to the inner skins of the panel. Thus the joint part of the panel becomes more rigid and stronger.

Figure 6 illustrates a steel plate (7) between the two panels having conduits (4). The steel plate between the two conduit panels is bonded together with the help of an adhesive (3). The insertion of steel plate between the two fiber boards provide extra strength and durability to the structure formed by prefabricated panels of the invention.

Figure 7 illustrates the joining of the panels for multi-storied building. The joining connects the multi-storied wall panel and floor panel system together to perform as a structural compartment. Thus the load from upper storied is transferred to the lower storied of the building through floor panel and uniformly along the load bearing wall panel. Roofing has been shown by (8) and the cornice has been shown by (9).

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Figure 8 illustrates an L shaped corner joint (11) and a panel to panel joint (10) interlocked to form a wall. This interlocking reinforces the strength of the wall in its plurality by allowing two pieces that coupled into each other, for example the tongue and groove interlocking mechanism or the male and female coupling mechanism, to hold the structure together.

An apron floor (12) is prepared as per engineering design as shown in Figure 9. It is preferred that the construction floor be a concrete raft floor (13). Apart from this flooring there is no other foundation needed to hold up the structure. This makes it a simple and convenient way to erect the structure and also add extensions to already existing buildings. A layout is marked on the concrete raft floor by a marking line (14). Floor track (15) is fixed according to building layout using fasteners.

Once the floor outline of the area to be built on is defined, a channel is attached with the longitudinal opened end facing upwardly according to the desired shape of the structures' floor outline and secured in place by using fasteners which are preferably vertically fastened into the base flooring. The fasteners are fastened at periodic intervals from the channel to the concrete raft floor. Preferably the channel used for the construction is a C-shaped or U-shaped channel.

Initially, a corner panel (17) comes close to a side track (16) at the corner of the building lay out as shown in Figure 10. Side track (16) is fixed on one edge of the corner panel (17) which the other corner panel (18) will slot in.

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Once the channel has been properly fastened, the body panel (19) is ready to be fitted on the concrete raft floor. The first piece of panel to be inserted into the channel track is prefabricated corner panel (17) at the corner of the floor outline as shown in Figure 11. The panels are joined by a tongue and groove coupling mechanism and variations of it. This coupling mechanism reinforces the strength of the panel in its plurality by allowing two pieces that fit into each other, for example the tongue and groove coupling mechanism or the male and female coupling mechanism, to hold the structure together. The tongue and groove coupling mechanism is provided at the opposing sides of the panels. The body panels that are placed on the channel can be further reinforced by riveting through the channel and a plurality of metal pieces within the insulated body panels. This will make the building more structurally sound as the channel is already secured to the ground and will be acting as the foundation supporting the structure.

In another embodiment of the invention, additional reinforcement means may be added to the wall panel, which runs along from the top to the lower part of the wall panel.

Furthermore, the wall panel units made of fiber board sheets on the exterior can be painted or decorated as a conventional wall. To further strengthen the structure during installation, the building is built by installing the outer wall in a U-shape.

Further panels in likewise manner are installed by inserting corner panels at the other corners of the floor outline and placing body panels extending from the sides of the corner panels (17, 18), to form an outer wall for the building. Additional partition/inner panel

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(20) can be added and attached to the body panels (19) for dividing the outer wall into rooms as shown in Figure 12. Cap top of wall panels with top track (21) and fastened with fasteners.

For further constructing first floor, a floor panel (22) is placed on top of the ground wall panels. Specially designed floor track (23) is placed, as shown in Figure 13. The floor panels (22) for the upper storied of the structure are similar in construction with other panels. The floor panels (22) are formed by a layer of resin material of polyurethane or polyisocyanurate which is sandwiched between two external sheets of fiber boards. The panels (22) of the floor are also attached together by the tongue and groove coupling mechanism as shown in Figure 13. Additional reinforcement means may also be added to the floor panels (22), which run along the longitudinal section of the panels and parallel to the tongue and groove sections.

All the floor panels are interlocked through the interlocking mechanism, to form an interlocking floor platform (24) as shown in Figure 14.

The corner panel (17a, 18a) is brought close to side track (16) for building a corner wall as shown in Figure 15. The manner followed is similar as the prefabricated panels were installed on the ground floor to build walls. After the building of corner, wall panel (19a) to build side walls, as shown in Figure 16. Cap top of first floor panels with top track (21) and fasten with fasteners.

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The beam (25) is preferably a prefabricated composite beam. The roofing panels (26) are installed from one side of the structure to the other side of the structure. The roofing panels (26) can be comprised of polyurethane or polyisocyanurate injected between two pre-painted galvanized sheets. This ensures the roofing panels (26) are light and strong.

Roof panel (26) is installed from one end of gable wall fastened with self-drilling roofing screws and this process is repeated until the building is completely covered, as shown in Figure 17. Roof capping is done by affixing a roof cap (27) from one end of gable wall fastened with self-drilling roofing screws as shown in Figure 18, and repeat the process until the roof panels are completely capped.

As apparent from Figures 19 and 20, the external cement fiber board (1 piece) and the two center pieces of the cement fiber board are bonded by the bonding adhesive. Polyurethane is provided between the tongue/ groove joint and the top and bottom caps.

In an another embodiment of the invention, there is provided a method for erecting a building, wherein floor panel (22) is insulated polyurethane panel embedded with two pieces of steel hollow section. This floor panel is a load bearing floor panel system, through which a light weight prefabricate floor panel which contains a minimum self-load (opposite of concrete slab) but can still perform structural functions as well as conventional construction method, is provided.

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In an another embodiment of the invention, there is provide a method of erecting a building, wherein multistoried building system is built up by arranging wall panels, floor panels and roof panels, wherein said panels comprises insulated material sandwiched between the panels. Thus the whole building system is insulated, load bearing and light weight.

The side of the panels has tongue and groove sections to facilitate the attachment of two wall panels wherein the tongue section of one wall panel conforms to the groove section of the other wall panel to form a unitary like structure.

In an embodiment of the invention, one panel has an extending male edge that fits into a suitable female edge on the other panel.

The erecting of the building can further be illustrated with the drawings of the specification. The method comprises installation of various sections of the building namely, floor, floor panel, first floor and roofing. Installation of each section is provided herein below for better understanding.

Floor Installation:

(i) mark building layout (14) on the concrete raft floor;

(ii) fix floor track (15) according to building layout using fasteners;

(iii) place first corner panel (17) come with 1 side track and 1 side (T/G) on the floor track at the corner of the building layout;

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(iv) fix side track (16) on one edge of the corner panel (17) which the other corner panel will slot in;

(v) slot in next corner panel (18) to first corner panel (17) to form a rigid L shape structure using;

(vi) all body panels are with (T/G)on both side;

(vii) place body panel (19) on floor track and slot into the corner panel (17) by a self-locking tongue & groove mechanism and strengthen by screw;

(viii) place body panel (19) on floor track and slot into the previous corner panel (18) by a self-locking tongue & groove mechanism and strengthen by screw;

(ix) repeat process until all ground panels are installed as per the marked building layout;

(x) fasten side track (16) onto the internal side of the wall panel where the partition panel (20) is to be erected;

(xi) place partition wall panel (20) onto the floor track (15) and slot into the exposed side of the side track (16) and fastened with fasteners;

(xii) repeat process until all partition panels are installed as per the marked building layout; and

(xiii) place and cap top of wall panels with top track (21) and fastened with fasteners.

Floor Panel Installation:

(i) place floor panel (22) on top of the ground wall panels;

(ii) place and slot pre-fixed dual U floor cap into side of floor panel (22) and fastened with fasteners; and

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(iii) repeat the process until all the floor panels are installed to form the floor interlocking platform (24).

First Floor Installation:

(i) place and fasten specially designed floor track (23) on top of ground wall panel (19) and floor panel (22) which is ready for installation of 1st floor external wall panel;

(ii) repeat process to cover all edge of external walls of the building layout;

(iii) place first floor corner panel (17a) come with 1 side track and 1 side (T/G) on the floor track at the corner of the building layout; and

(iv) repeat process similar to ground floor installation until all the first floor panels are installed.

Roofing Installation:

(i) cut slot into the two external gable walls and partition wall;

(ii) place PC Beam on slot of gable and partition walls and fastened with fasteners to form the roof structure;

(iii) install roof panel (26) from one end of gable wall fastened with self-drilling roofing screws and repeat the process until the building is completely covered;

(iv) install roof cap (27) from one end of gable wall fastened with self-drilling roofing screws and repeat the process until the roof panels are completely capped; and

(v) complete roof installation.

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As will be readily apparent to those skilled in the art, the present invention may easily be produced in other specific forms without departing from its essential characteristics. The present embodiments is, therefore, to be considered as merely illustrative and not restrictive, the scope of the invention being indicated by the claims rather than the foregoing description, and all changes which come within therefore intended to be embraced therein.

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CLAIMS:

1. A single piece of reinforced load bearing wall panel made of insulated material such as polyurethane and polyisocyanurate that is sandwiched between two sheets of fiber boards, wherein a metal sheet is inserted between the center of two panels by applying a bonding adhesive which is suitable for cement based fiber-board and metal sheet materials to join the two panels together characterised in that the panel has tongue and groove sections to facilitate the attachment of two wall panels wherein the tongue section of one wall panel conforms to the groove section of the other wall panel to form a unitary like structure.

2. The wall panel as claimed in claim 1, wherein the two wall panels are arranged in a zigzag manner.

3. The wall panel as claimed in claim 1, wherein one panel has an extending male edge that fits into a suitable female edge on the other panel.

4. The wall panel as claimed in claim 1, which has two pieces of metal running through the upper and lower sections of the wall panel (19) from end to end and are kept sturdy by the polyurethane and polyisocyanurate resin material in between the fibreboards.

5. The wall panel as claimed in claim 1, wherein the bonding adhesive comprises of isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly ranging from 30 to 60 wt/wt % of the total adhesive

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composition, diphenylmethane diisocyanate in ratio of 13 to 30 wt/wt% of the total composition, isocyanic acid, polymethlenepolyphenylene ester and methylenediphenyl diisocyanate and phenyl isocyanate in ratio of 13 to 30 wt/wt% of the total composition.

6. A method of manufacturing a single piece of reinforced load bearing wall panel according to any one of claims 1 to 5 comprising the steps of:

(a) two sheets of fiber board have two metal pieces taped to their reverse side where one metal piece is placed near the top edge of the fiber board and the other at the bottom edge;

(b) the two pieces of fiber boards are held in place to make the mold for the polyurethane and polyisocyanurate solution and said fiber board sheets are place apart according, to the thickness of the wall to be manufactured,

(c) the sheets are compressed against one another as to not to allow any variable to its thickness when the solution is poured in and allowed to harden; and

(d) a metal sheet is inserted between the center of two panels, by applying a bonding adhesive which is suitable for cement based fiber-board and metal sheet materials to join the two panels together.

7. The method of manufacturing a multiple single pieces of reinforced load bearing wall panel as claimed in claim 6, wherein the two wall panels are arranged in a zigzag manner.

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8. The method of manufacturing a multiple single pieces of reinforced load bearing wall panel as claimed in claim 6, wherein one panel has an extending male edge that fits into a suitable female edge on the other panel.

9. The method of manufacturing a multiple single pieces of reinforced load bearing wall panel as claimed in claim 6, wherein the wall panel has two pieces of metal running through the upper and lower sections of the wall panel (19) from end to end and are kept sturdy by the polyurethane and polyisocyanurate resin material in between the fibreboards.

10. The method of manufacturing a multiple wall panel as claimed in claim 6, wherein the bonding adhesive comprises of isocyanic acid, polymethylenepolyphenylene ester, polymer with alpha-hydro-omega-hydroxypoly ranging from 30 to 60 wt/wt % of the total adhesive composition, diphenylmethane diisocyanate in ratio of 13 to 30 wt/wt% of the total composition, isocyanic acid, polymethlenepolyphenylene ester and methylenediphenyl diisocyanate and phenyl isocyanate in ratio of 13 to 30 wt/wt% of the total composition.

11. A method of erecting a building using panels according to any one of claims 1 to 4, which comprises steps of:

(a) lining a base defining the floor outline;

(b) placing a prefabricated corner panel (17) and (18) at a corner of the said floor outline;

(c) placing the prefabricated insulated walls;

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(d) attaching the prefabricated wall to the corner wall by using the tongue and groove coupling system on the edges of the walls;

(e) adding on further walls in likewise manner mentioned above till the four corners are placed and a box shape is formed; and

(f) adding further prefabricated walls to form partitions within the said structure to allow the making of rooms.

12. The method as claimed in claim 11, further comprises the use of additional fitting like roof panels (26) which comprises of polyurethane injected between two pre-painted galvanized sheets which would sit on the top edges of the prefabricated walls and the roof panels (26) are arranged in a manner where the last rib of the first roof panel sits underneath the first rib of the subsequent roof panel and arranged from the left to the right edges of the structure.

13. The method as claimed in claim 11, further comprises the use of a prefabricated composite beam to lend strength to the structure and also to further support the roof panels.

14. The method as claimed in claim 11 or 12 also comprises windows and doors to be fitted into the complete structue by making opening on the wall panels and also using capping to utilize the tongue and groove mechanism on the edges of the wall panels.

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15. A method for erecting a building using panels according to any one of claims 1 to 5, wherein floor track is laid for a subsequent row of wall panels forming a multi-storied building, which connects multi-storied wall panel and floor panel system together to perform as a structural compartment.

16. The method of erecting a building as claimed in claim 15, wherein multi-storied building system is built up by arranging wall panels, floor panels, roof panels, wherein said panels comprises insulated material sandwiched between the panels.

17. A method for erecting a building according to claim 15 or 16, wherein floor panel is insulated polyurethane panel embedded with two pieces of steel hollow section.

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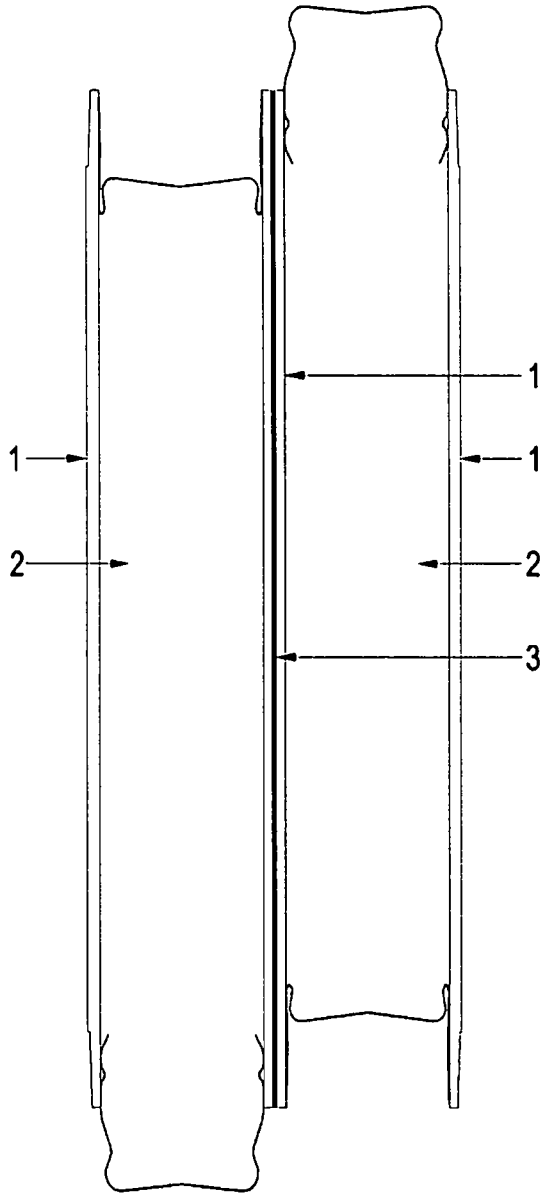

Figure 1

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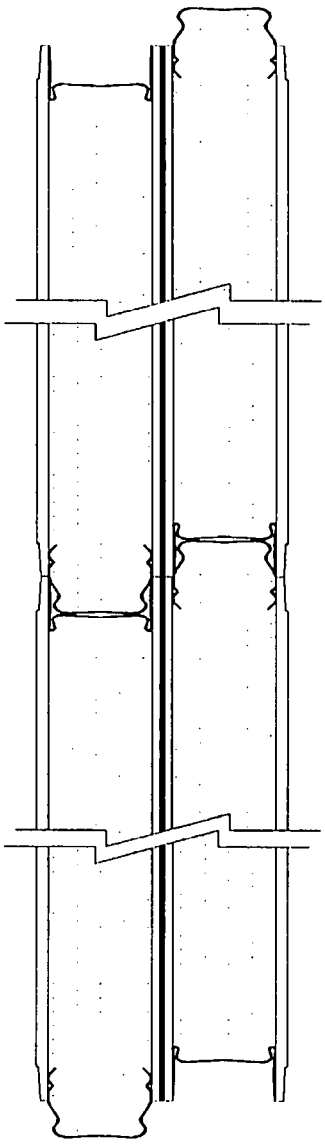

Figure 2

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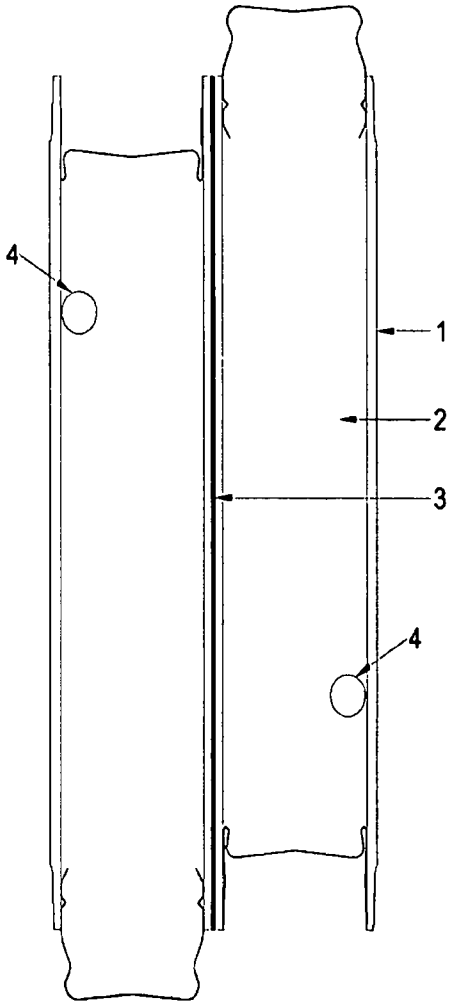

Figure 3

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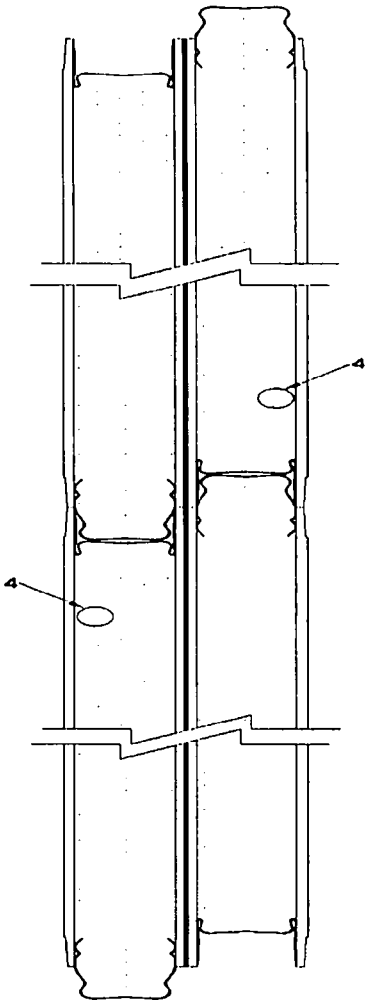

Figure 4

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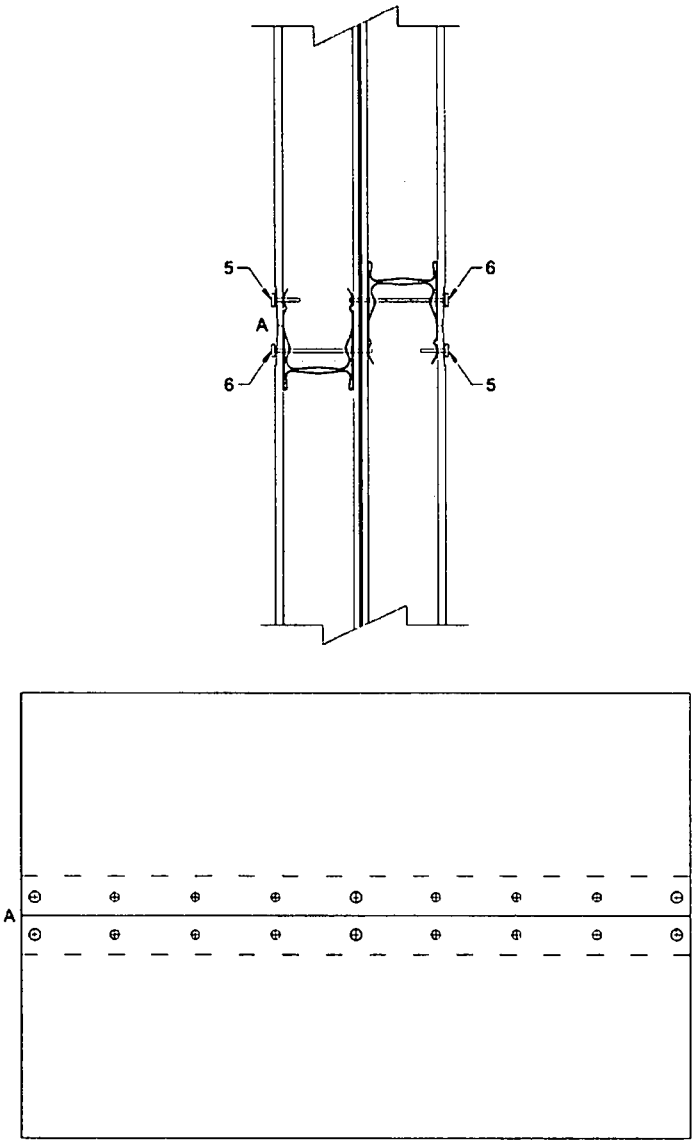

Figure 5

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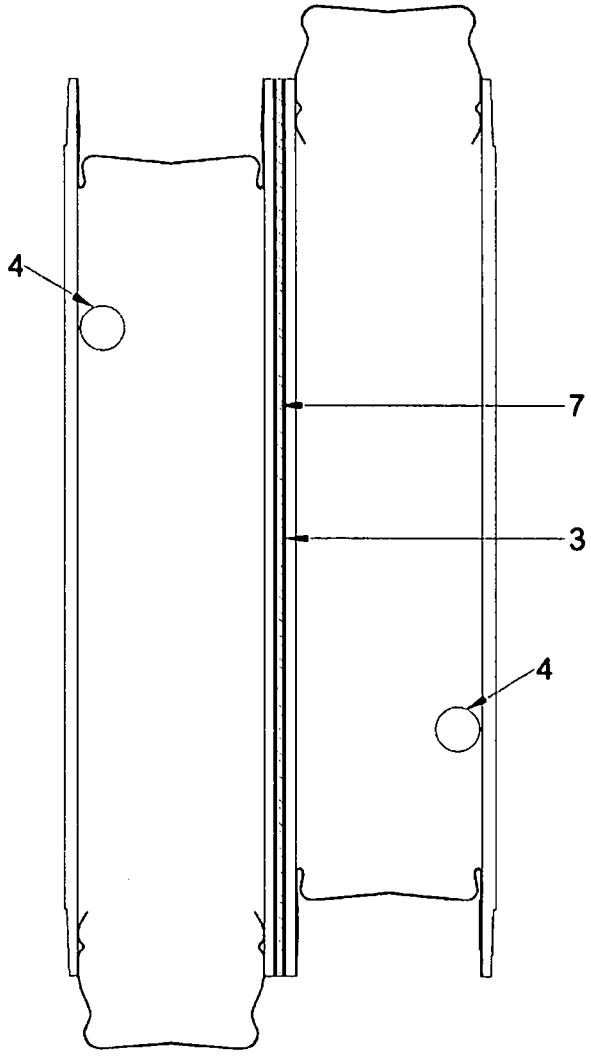

Figure 6

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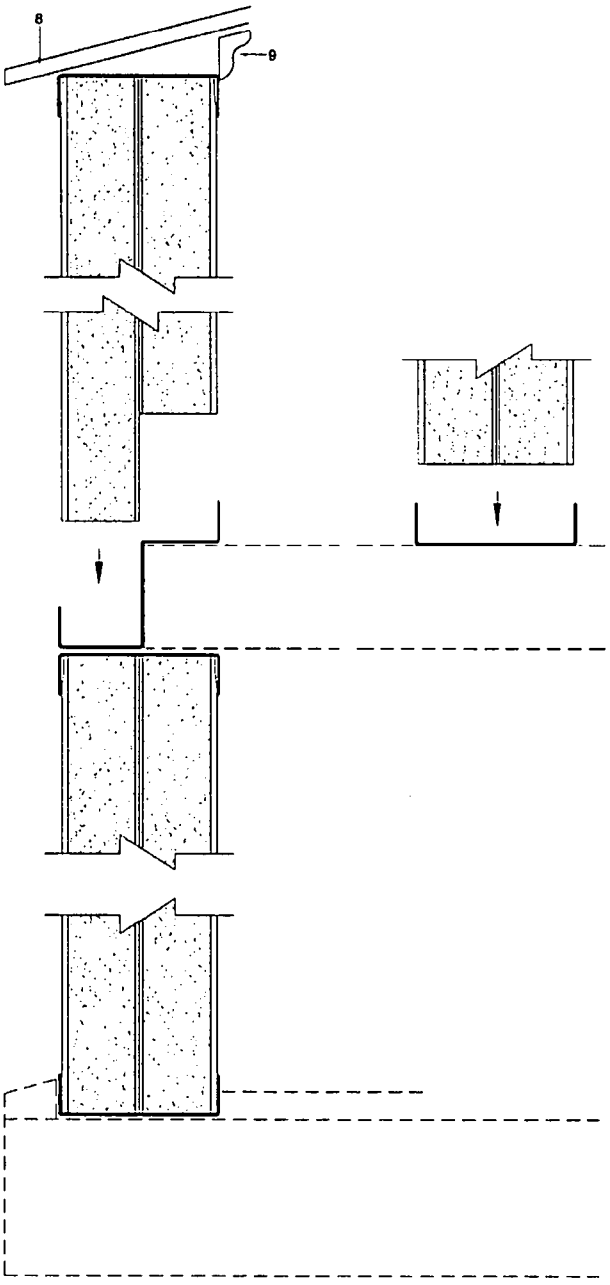

Figure 7

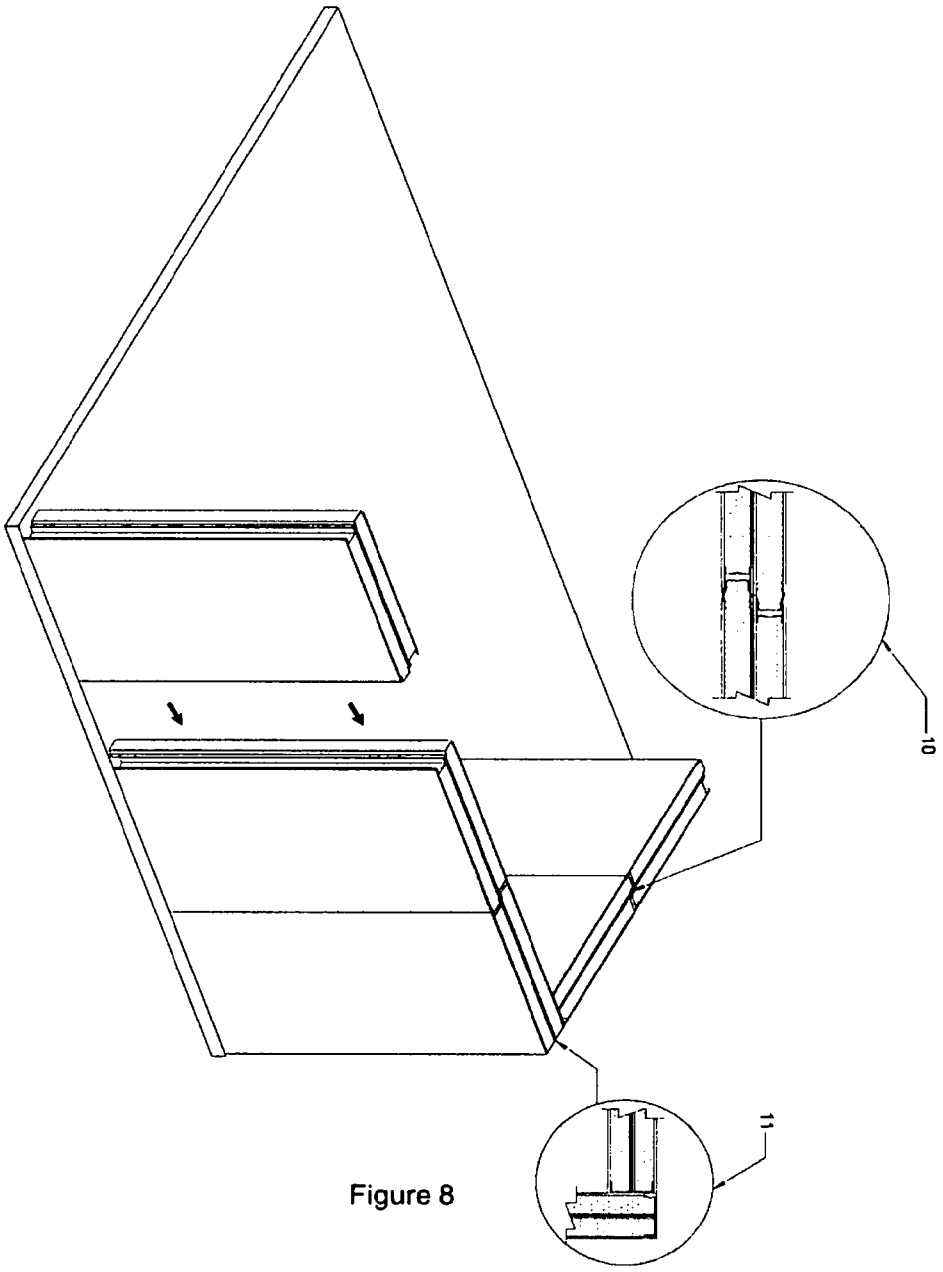

Figure 8

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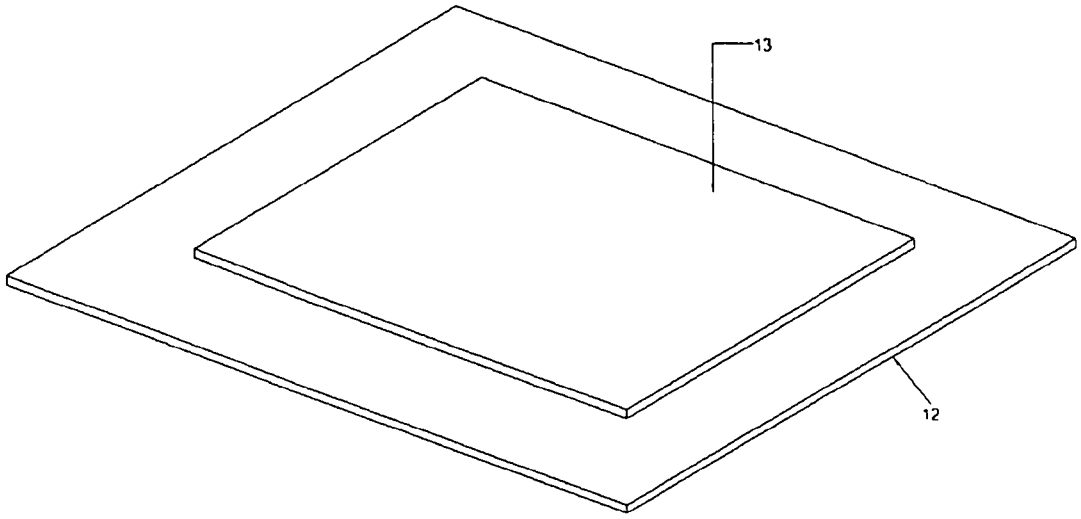

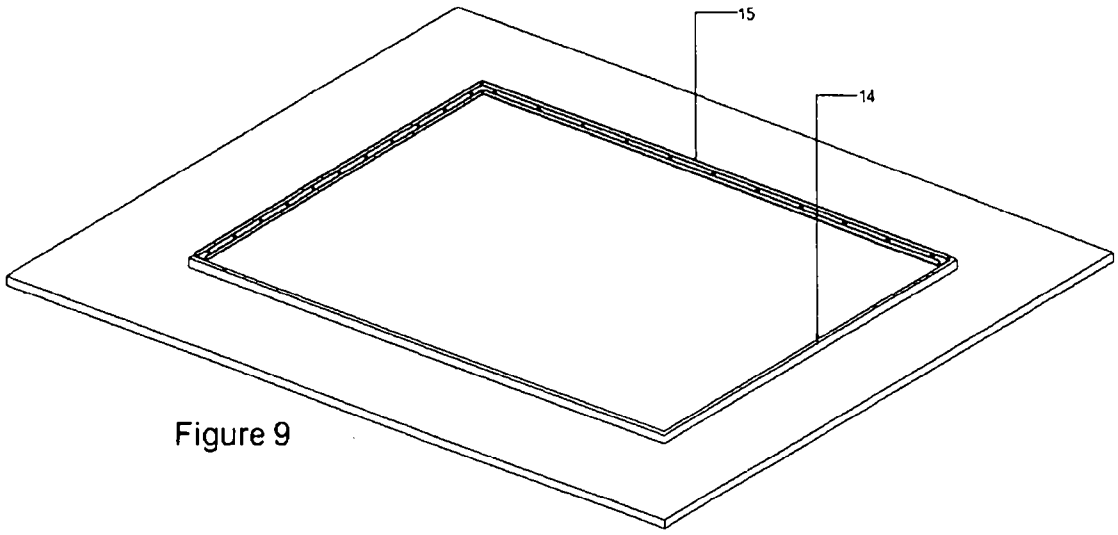

Figure 9

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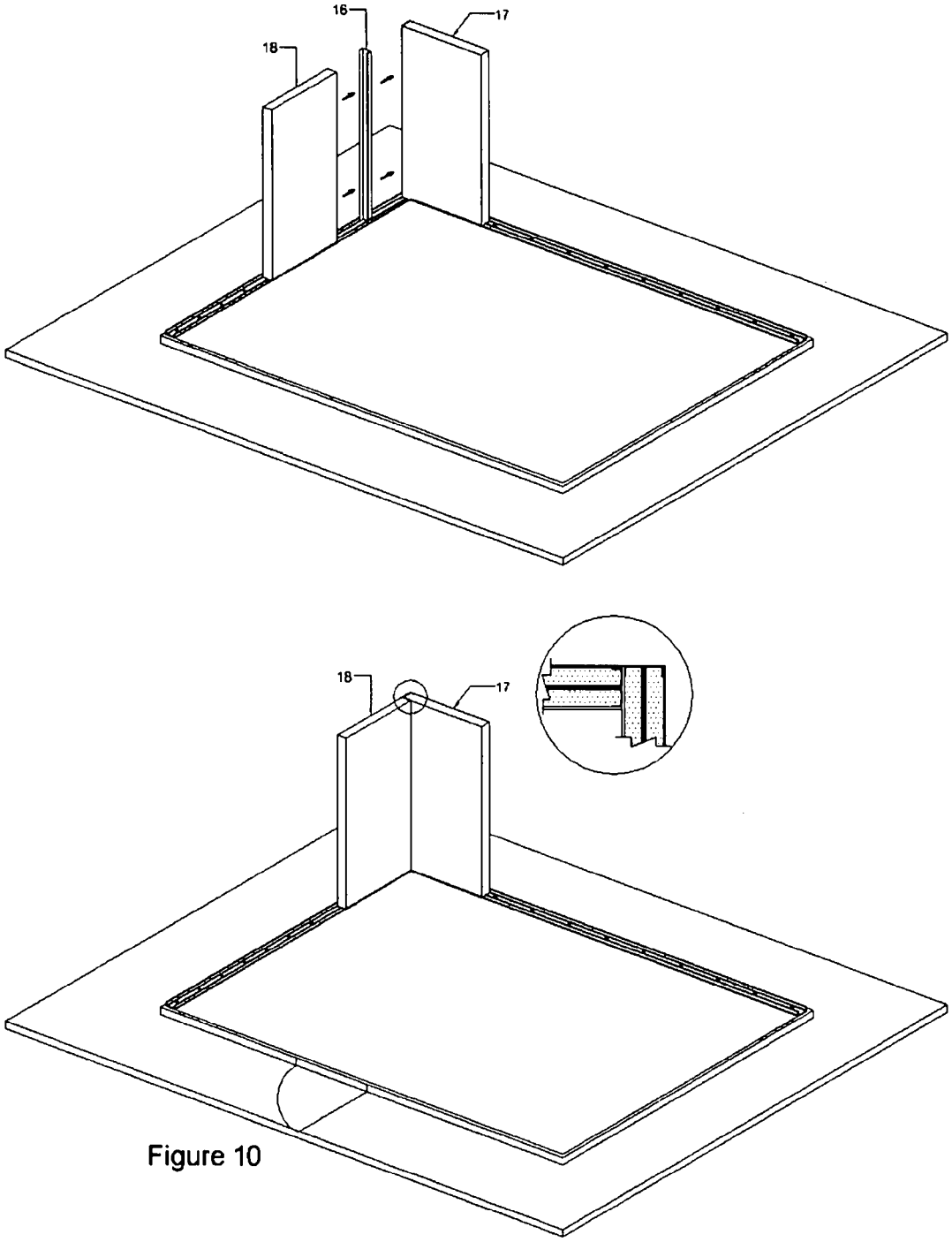
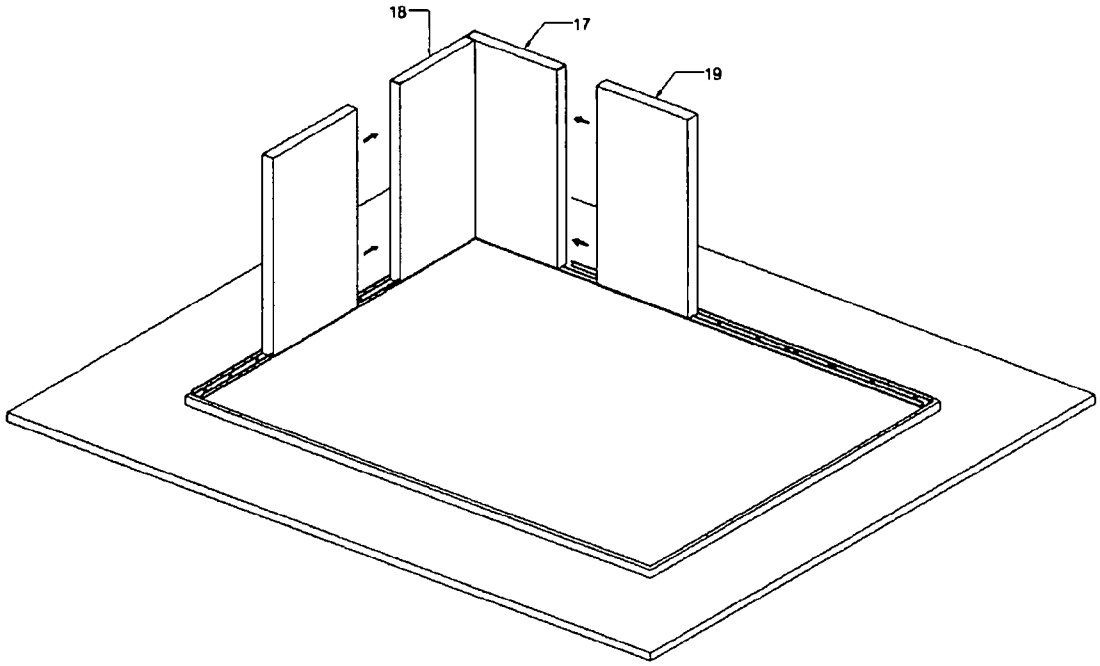


Figure 10



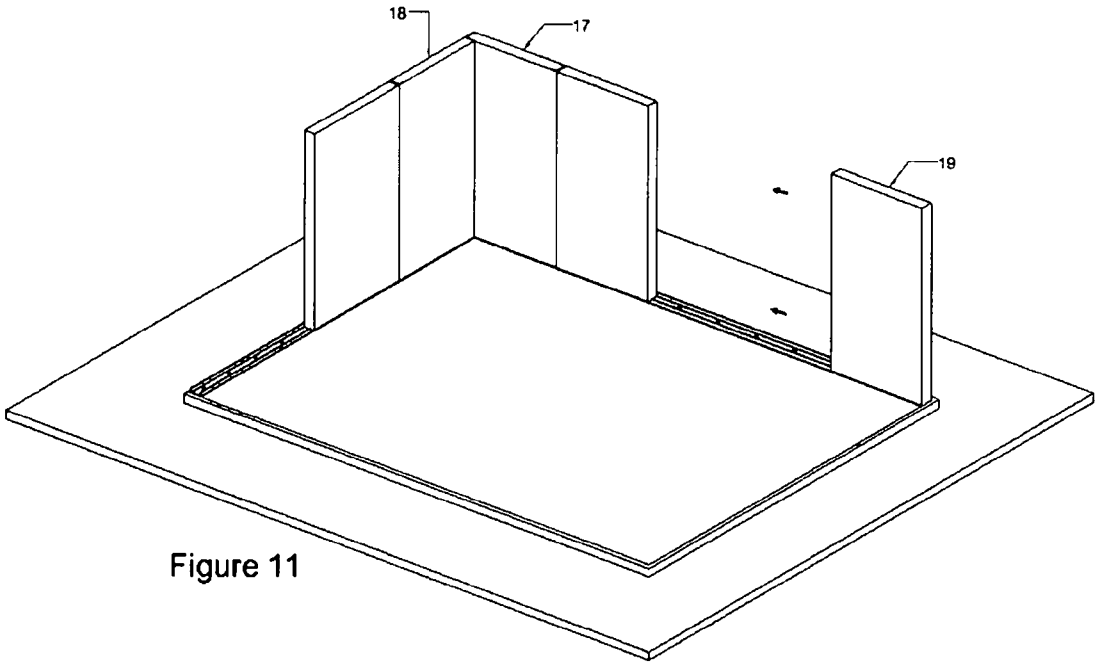


Figure 11

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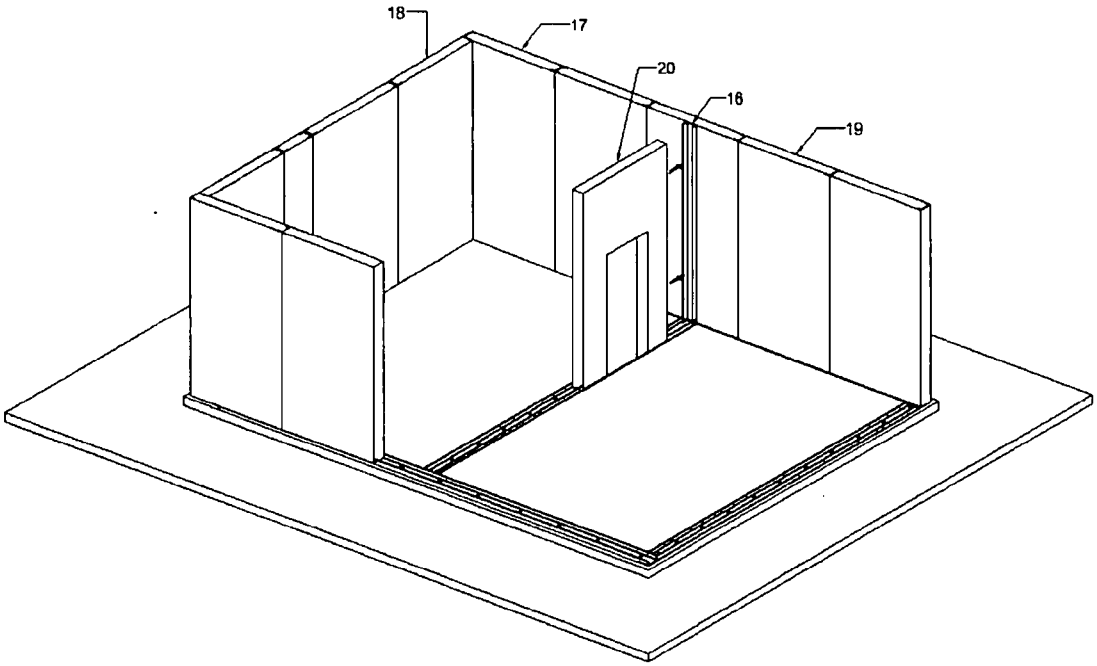

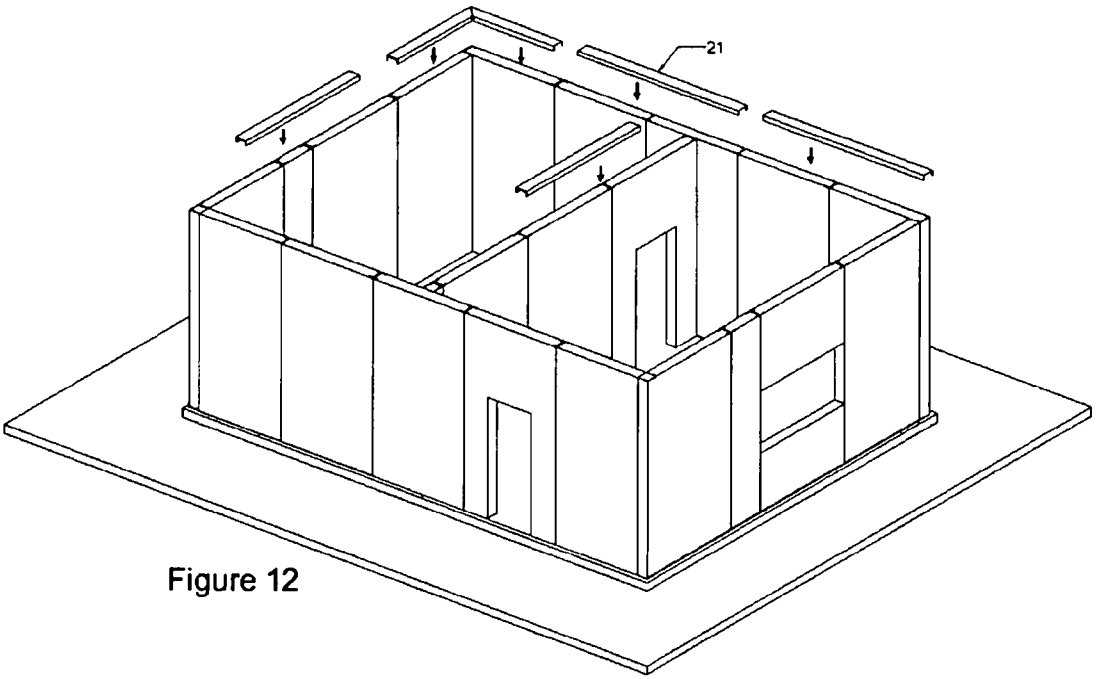

Figure 12

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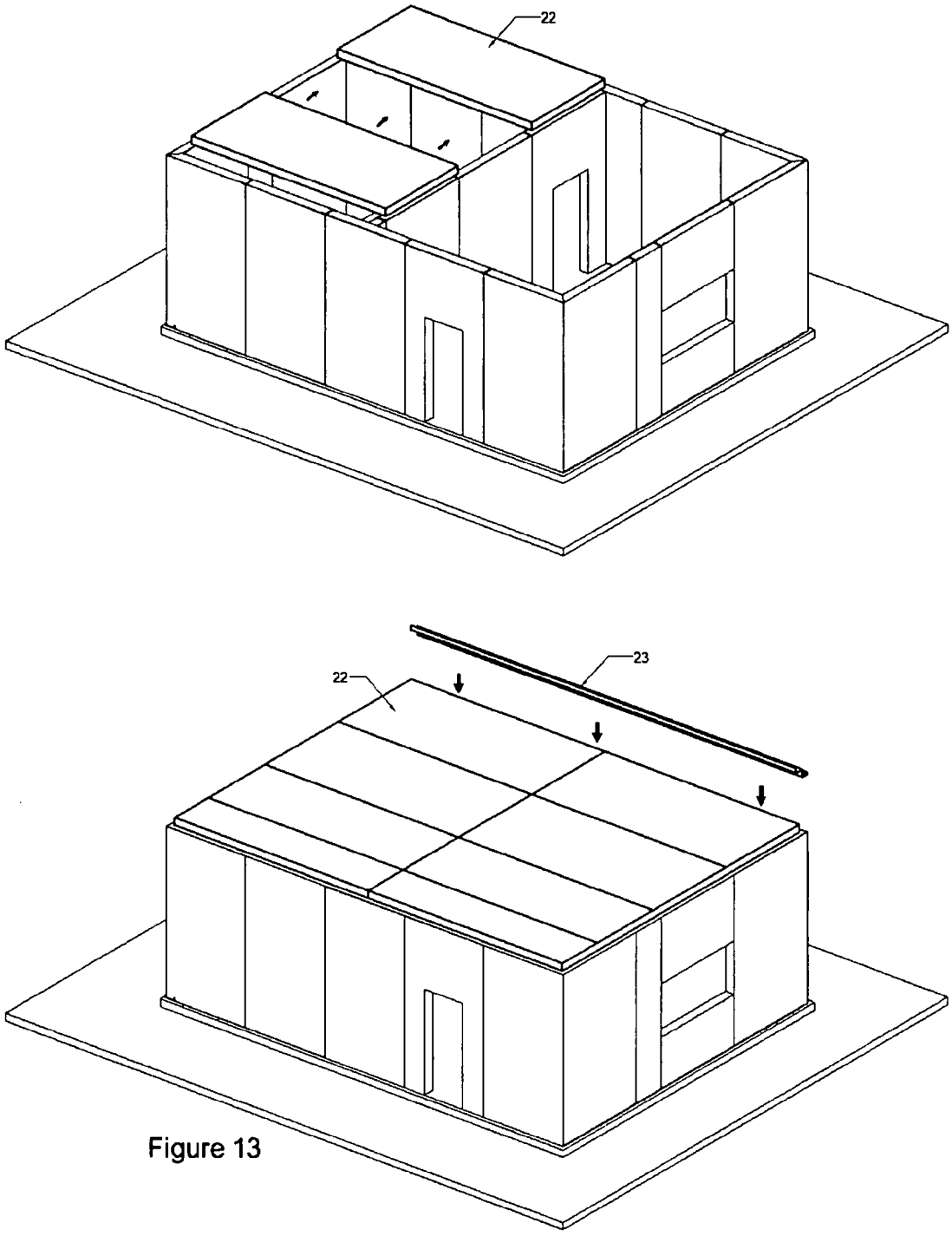

Figure 13

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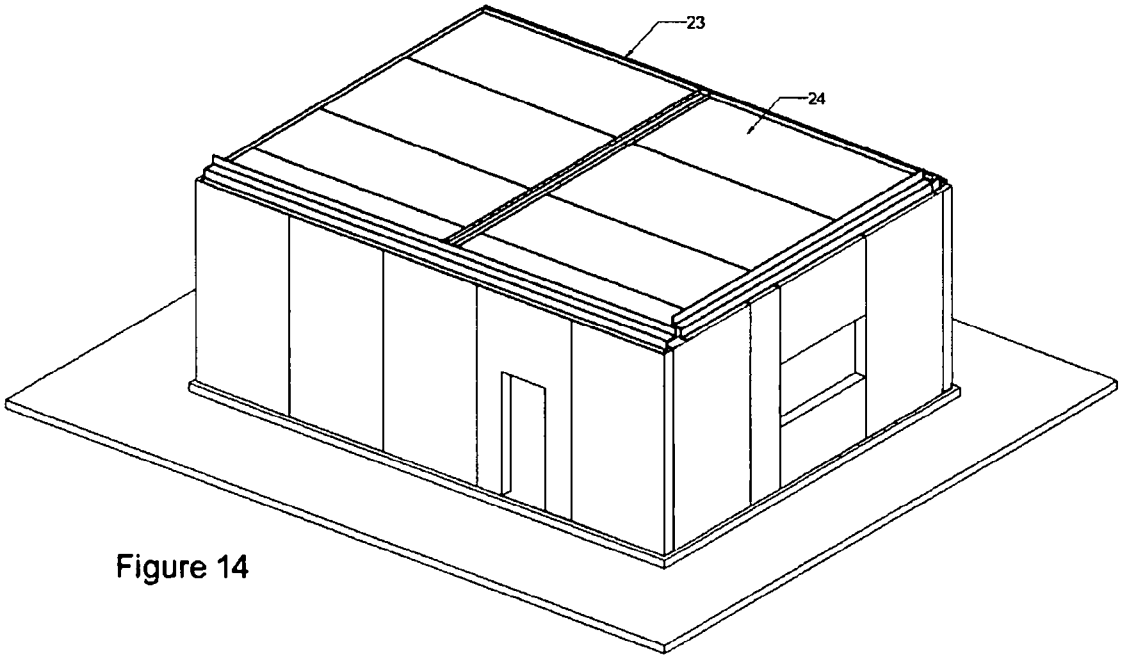

Figure 14

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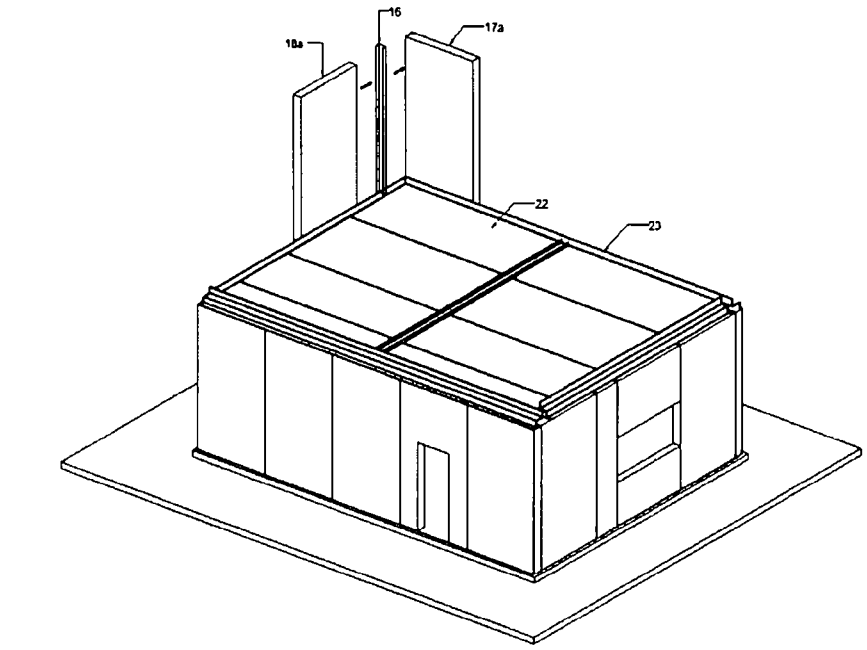


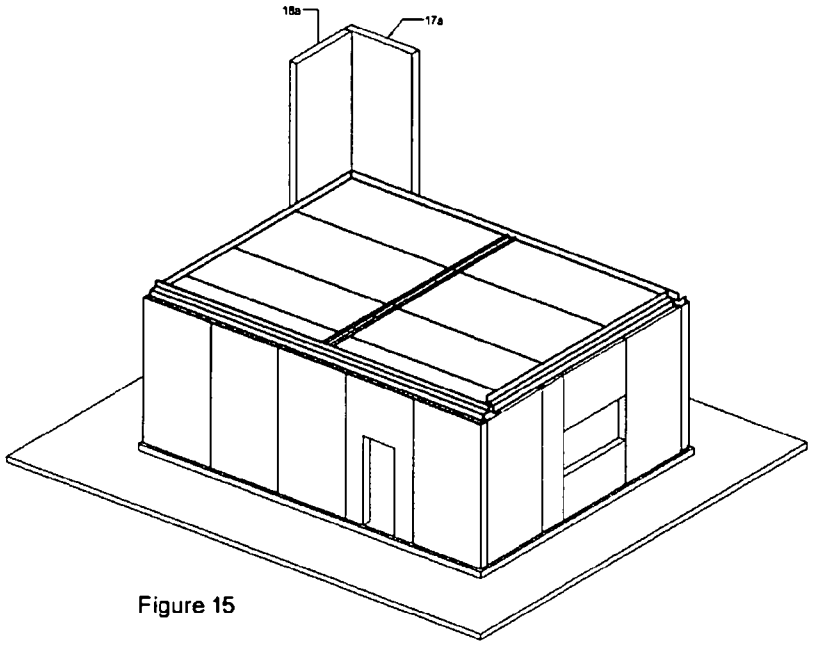
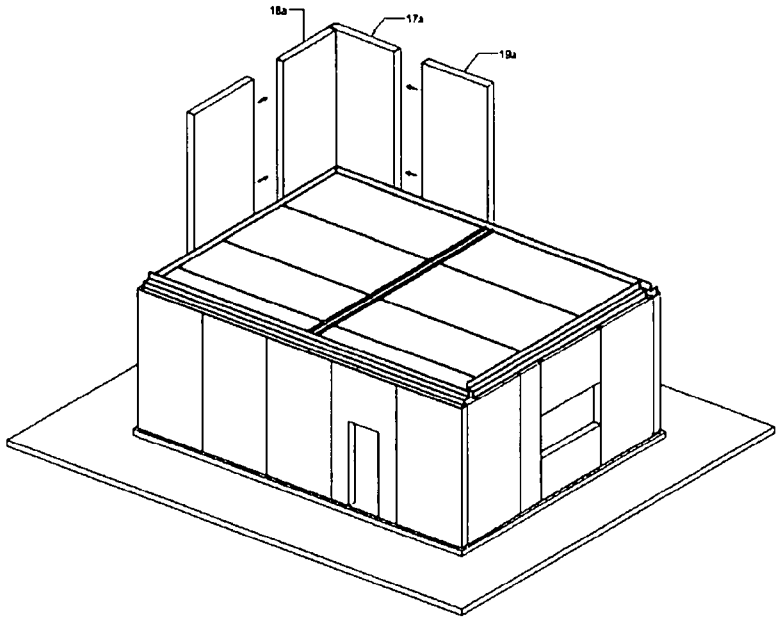


Figure 15



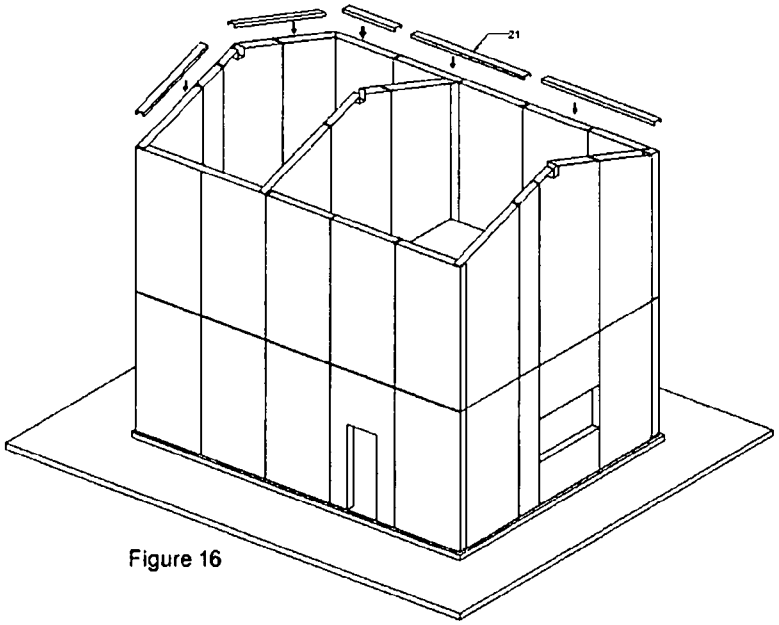


Figure 16

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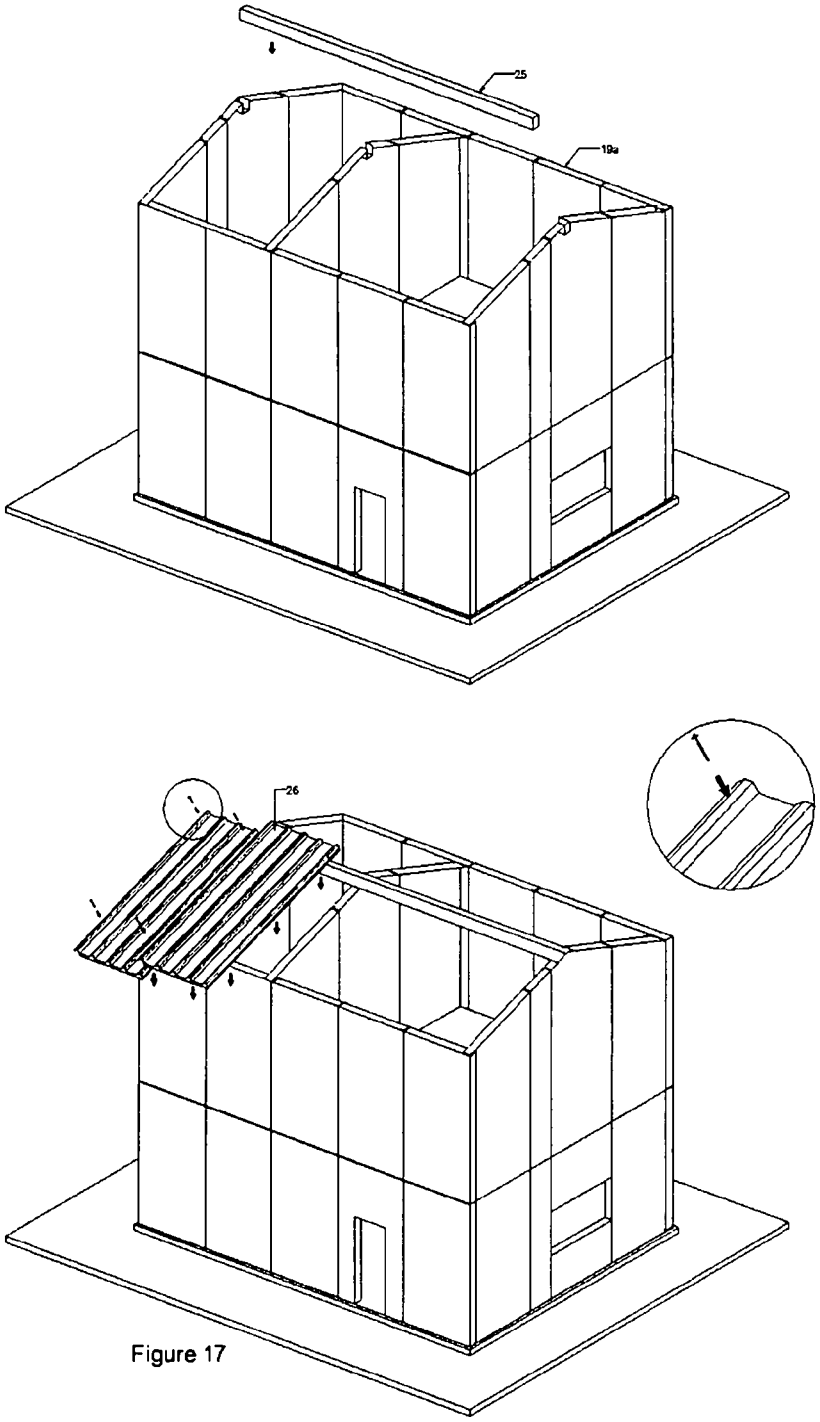

Figure 17

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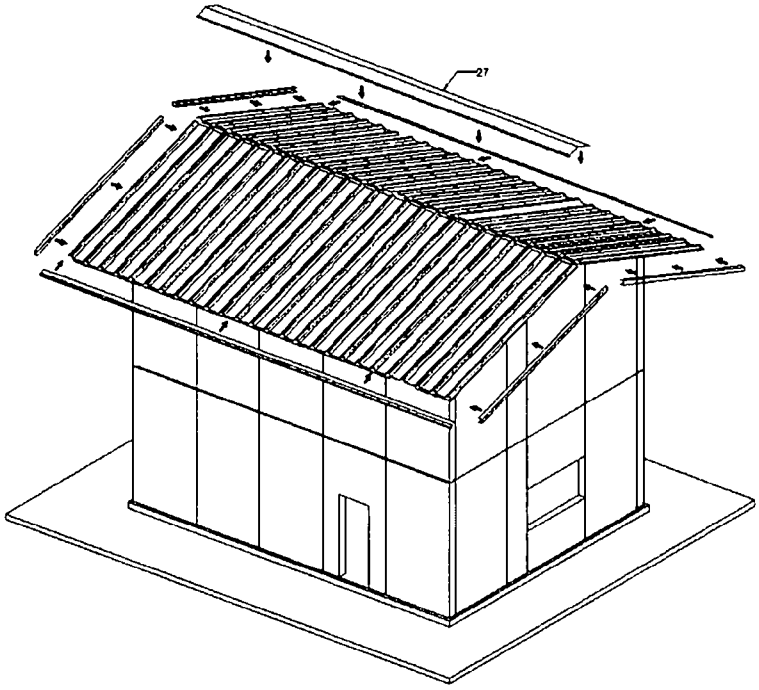

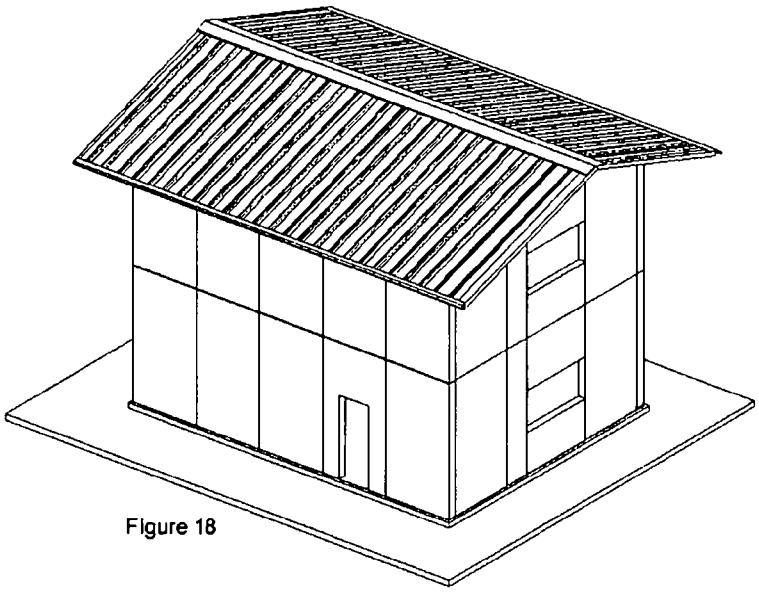

Figure 18

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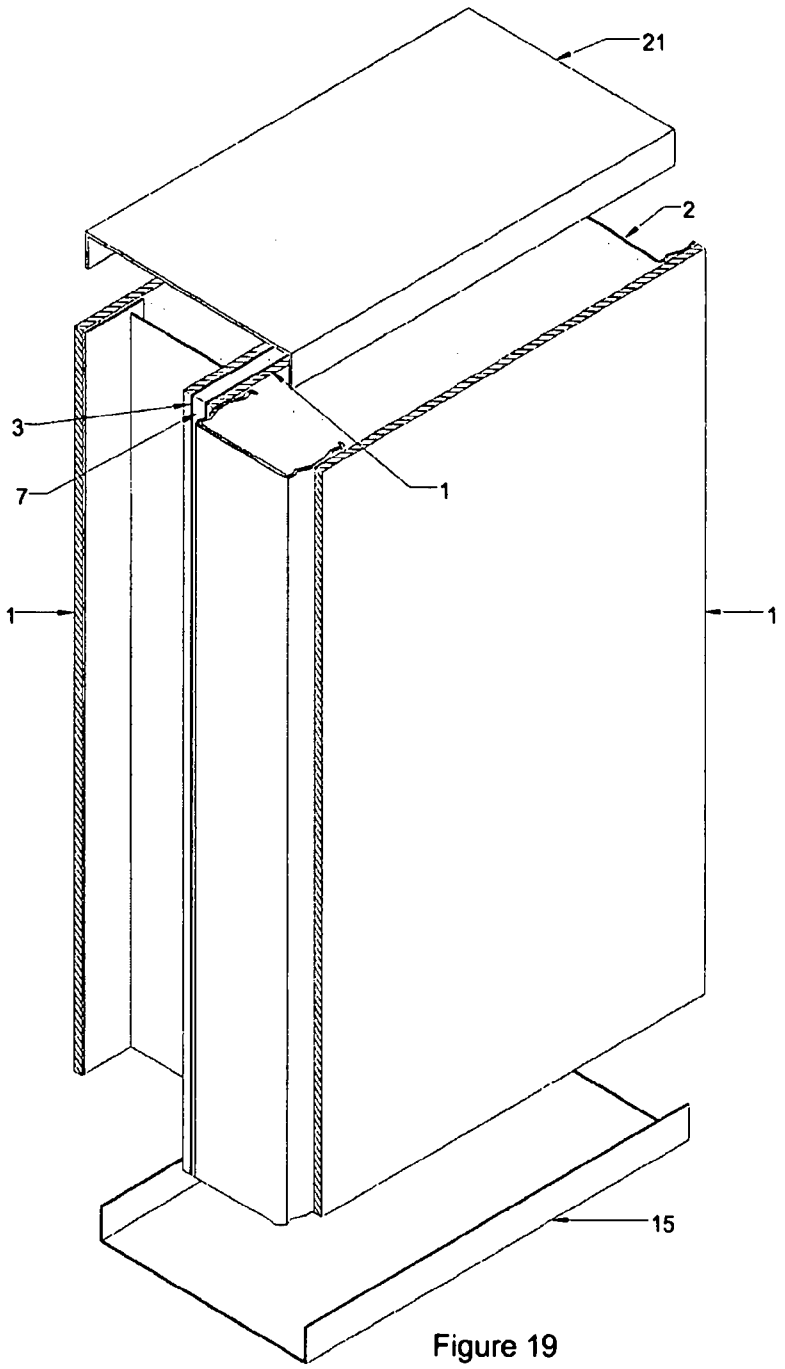

Figure 19

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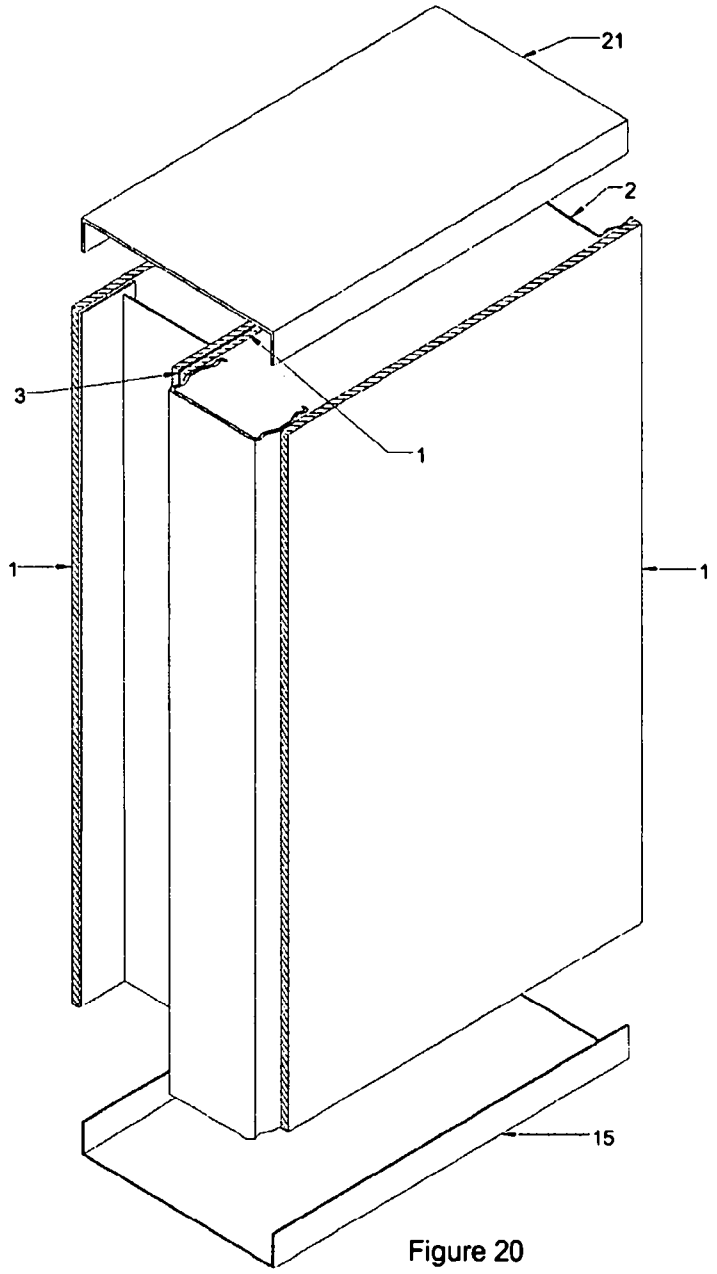

Figure 20