

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO	
RAD: 14-25627- -2	FECHA: 2015-06-25 10:15:47
DEP: 2020 DIRECCION DE NUEVAS CREACIONES	EVE: 1 REGISTRO/DEPOSITO/CONCESION/DEPOSITO
TRA: 3 PATENTES DE MODELO DE UTILIDAD	FOLIOS: 6
ACT: 430 REQUERSOLICITA	

DIRECCIÓN DE NUEVAS CREACIONES

2020
Bogotá, D.C.,

Abogado(a)/Señor(a)
ANDRÉS MÁRQUEZ ACOSTA

Asunto: Radicación: 14-25627- -2
Trámite: 3
Evento: 1
Actuación: 430
Oficio: 7099
Folios: 6

Patente de Invención				Patente de Modelo de Utilidad	X
Vía Nacional	X				
Vía PCT (Fase Nacional)		Capítulo I		Capítulo II	
No. Solicitud Internacional					
Fecha de Presentación Internacional					

Como resultado del Examen de Fondo realizado, con fundamento en el artículo 85 y en concordancia con el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

Descripción:	Rad. N° 14-025627-00000-0000	07/Febrero/2014
Reivindicaciones:	Rad. N° 14-025627-00000-0000	07/Febrero/2014
Dibujos:	Rad. N° 14-025627-00000-0000	07/Febrero/2014

2. Objeto de la invención

En el presente documento se aplicará lo establecido en la Circular Única en su Título X, con respecto a que cuando la solicitud contenga más de diez (10) reivindicaciones y no se haya pagado la tasa complementaria, sólo se estudiarán las cubiertas por la tasa pagada al momento de realizar el examen de patentabilidad consagrado en el artículo 45 de la Decisión 486. Por lo tanto se estudiaran la 1 a 9.

Título de la solicitud: “Sistema modular de construcción con modulo fabricado por rotomoldeo, soplado, inyección y/o termoformado, soplado, inyección y/o termoformado y proceso para la fabricación de dicho modulo” (Folio 1).

El problema planteado en esta solicitud, consiste en lograr un sistema de construcción

versátil con el que se puedan adaptar infraestructuras escolares, campamentos, albergues, baterías sanitarias etc., según los requerimientos de la zona de implementación, así como también del número de personas que ocuparía la construcción.

Para resolver este problema técnico, la solicitud en estudio propone un sistema de construcción modular que consta de un módulo base, paredes verticales, parales horizontales, una estructura de techo, módulos de ventana y una puerta.

El objeto de la presente Solicitud se relaciona con la Clasificación Internacional de Patentes (CIP): E 04 H 1/00.

3. De la Solicitud de Patente

Titulo

El título menciona los procesos por medio de los cuales fue fabricada la construcción modular. En una patente de modelo de utilidad solo se estudian las características estructurales de la creación reclamada y no los procesos o métodos que se hayan realizado para su fabricación. De acuerdo con lo anterior, se sugiere al solicitante replantear el título de tal manera que no haga referencia a procesos o métodos.

Por otra parte, El término “sistema” no está incluido dentro del marco legal que define un modelo de utilidad. De acuerdo con el artículo 81 de la decisión 486, se debe caracterizar “*un artefacto, herramienta, instrumento, mecanismo u otro objeto*”. Por lo tanto, se sugiere al solicitante eliminar dicho término.

Un ejemplo del título podría ser: “Construcción modular con parales y paneles deslizables en dichos parales”.

Reivindicaciones (Art 30 D 486, Art 22 PCT)

El capítulo reivindicatorio no es claro porque:

- 1- Los materiales no pueden ser objeto de protección vía modelo de utilidad. En este tipo de patente, solo se protegen las características constructivas del producto para el cual se solicita protección. Por ende, utilizar expresiones que hacen referencia a materiales o a sus propiedades, como: “*polietileno*”, “*metálica, de aluminio, madera o plástica*” (reivindicación 1) no pueden ser incluidas dentro de la reivindicación independiente como una característica esencial de la invención. Cabe agregar, que se pueden incluir como características particulares en reivindicaciones dependientes, pero no afectan el examen de patentabilidad.

De igual forma, los procesos, procedimiento o métodos tampoco son materia susceptible de protección, por lo cual expresiones como: “*por rotomoldeo, soplado, inyección y/o termoformado*” y el método descrito en las reivindicaciones 8 y 9 no pueden ser objeto de estudio. Tal y como se mencionó anteriormente, en un modelo de utilidad solo se estudian las características constructivas (tangibles) de un objeto. En consecuencia, se sugiere al solicitante eliminar las reivindicaciones 8 y 9 y las expresiones antes transcritas.

- 2- La reivindicación 5 y las expresiones: “...capaces de inmovilizar el aire seco y confinarlo en el interior de pequeñas celdas...” (reivindicación 4) “...para permitir la realización de la instalación eléctrica e hidráulica...” (reivindicación 6), describen funciones, efectos, ventajas o resultados a alcanzar, los cuales no son aspectos susceptibles de patente. Para mayor claridad, el producto reclamado se debe definir técnicamente mediante sus características estructurales. Se sugiere al solicitante eliminar la reivindicación y las expresiones citadas.

4. Determinación del Estado de la Técnica

El estado de la técnica se determinó con base en la fecha de presentación de la solicitud de patente nacional: febrero 7 de 2014, y se encontraron los siguientes documentos que anticipan el objeto de esta solicitud:

Ítem	Documento	Título	Fecha de Publicación
D1	US 2004/0049992	'Structuctures incorporating interlocking wall modules'	18/Marzo/2014
D2	US 2009/0120021	'Modular structure'	14/Mayo/2009

El documento D1 ¹ divulga un dormitorio prefabricado u otras estructuras rígidas de pared definido por una pluralidad de componentes prefabricados. Los componentes prefabricados incluyen postes de alineamiento, y postes de conexión en T (resumen).

El documento D2 ² divulga un sistema de edificación modular que comprende paneles que son deslizados en canales para formar las paredes (resumen).

5. Examen de Patentabilidad (Art 14 D486)

Novedad (Art 16 D486)

La reivindicación 1 consiste en: “Un sistema de construcción modular, caracterizado porque comprende:...” (Ver página 12 incluida en el radicado bajo No. 14-025627-00000-0000).

Comparación de las características técnicas **esenciales**, con las del Estado de la Técnica:

Características esenciales	D1	D2
Construcción modular caracterizada por:	Estructura para incorporar módulos de pared caracterizado por:	Estructura modular caracterizada por:
Módulo base.	Paneles (22) (Fig. 1; Párrs. [0026] y [0030]).	Paredes exteriores e interiores (12) y (14) (Fig. 1; Párr. [0053]).
Parales verticales sobre los que se deslizan los módulos base.	Cuatro postes de esquina (16), miembros en forma de T (18) y postes en línea (20) (Fig. 1; Párr. [0026]).	Parales verticales sobre los que se deslizan los módulos base (Figs.11, 12 y 14).
Parales horizontales los	Vigas (240) las cuales se	Vigas (16) las cuales se

1 <https://docs.google.com/viewer?url=patentimages.storage.googleapis.com/pdfs/US20040049992.pdf>

2 <https://docs.google.com/viewer?url=patentimages.storage.googleapis.com/pdfs/US20090120021.pdf>

cuales se entrelazan con los parales verticales.	entrelazan con los parales verticales (Fig. 10; Párr. [0034]).	entrelazan con los parales verticales) (Fig. 1; Párr. [0053]).
Una estructura de techo ubicada en la parte superior de la edificación y que descansa sobre los parales verticales.	Una plancha de concreto puede ser posicionada sobre las vigas (240), posicionadas sobre los postes (160), (180) y (200) (Fig. 10; Párr. [0034]).	Una estructura de techo ubicada en la parte superior de la edificación y que descansa sobre los parales verticales (Fig. 2).
Módulos de ventana y una puerta que se ubica entre los parales verticales.	Uno o dos paneles (22) pueden ser reemplazados por paneles der puerta (Párr. [0030]).	Varios cortes pueden ser realizados en los paneles para obtener puertas, columnas, ventanas, etc. (Figs. 5 y 6; Párr. [0054]).

Las características esenciales de la construcción de la reivindicación 1 habían sido divulgadas previamente en D1 y D2. En consecuencia, la reivindicación 1 no es nueva.

Asimismo, los documentos antecedentes contienen las características de las reivindicaciones dependientes así:

- Reivindicación 2: Los paneles (22) son de tamaño 3/16” a 1/2” (D1: Párr. [0030]). Los paneles pueden ser de 15 a 30 pies (D2: Párr. [0049]).
- Reivindicación 3: Varios cortes pueden ser realizados en los paneles para obtener puertas, columnas, ventanas, etc. (Figs. 5 y 6; Párr. [0054]).
- Reivindicación 4: Los paneles son aislados (D2: Párr. [0049]).
- Reivindicación 6: Las vigas y los postes son huecos (D1: Figs. 3 a 8).

En cuanto a la reivindicación 7, es bien sabido en la técnica que los sistemas fotovoltaicos, de captación pluvial, sépticos y las baterías sanitarias son utilizados en cualquier tipo de construcción, especialmente si son para uso residencial³⁴. Por lo tanto, se consideran elementos implícitos de la invención. En consecuencia, no pueden dar novedad a la creación reclamada.

Las reivindicaciones 5, 8 y 9 fueron afectadas en el numeral 3 de la presente comunicación.

6. Conclusión

Los requisitos de Patentabilidad de la presente Solicitud están afectados así:

Ítem	Documento	Reivindicaciones afectadas	Requisito que afecta
D1	US 2004/0049992	1 a 7	Novedad
D2	US 2009/0120021	1 a 7	Novedad

3 [http://www.unge.gg/ftp/biblioteca%20digital/Energias%20renovables/DISENO%20DE%20SISTEMA%20FOTOVOLTAICO%20AISLADO%20\(150W\)%20PARA%20VIVIENDA%20RURAL%20UNIFAMILIAR.pdf](http://www.unge.gg/ftp/biblioteca%20digital/Energias%20renovables/DISENO%20DE%20SISTEMA%20FOTOVOLTAICO%20AISLADO%20(150W)%20PARA%20VIVIENDA%20RURAL%20UNIFAMILIAR.pdf)

4 <http://www.mopc.gob.do/media/105324/R-008%20INSTALACIONES%20SANITARIAS.pdf>

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de treinta (30) días contados a partir del día siguiente de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Se invita al solicitante se sirva indicar, si así lo considera, su renuncia al término faltante de treinta (30) días para dar respuesta a este requerimiento y presentarla por escrito.

Finalmente, se le recuerda al solicitante que si como respuesta a este requerimiento llegara a modificar el capítulo reivindicatorio y éste contenga más de diez (10) reivindicaciones, no pagará la tasa de modificación voluntaria pero sí la correspondiente al pago por reivindicación adicional.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única No. 10 de 2001.



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El anterior requerimiento fue notificado por fijación en lista, de fecha 2015-06-30

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Revisó: Sonia Andrea Diaz Pirazan



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(19) **United States**

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Seavy

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(43) **Pub. Date: Mar. 18, 2004**

(54) **STRUCTURES INCORPORATING
INTERLOCKING WALL MODULES**

Publication Classification

(51) **Int. Cl.⁷** **E04H 1/00; E04H 3/00;
E04H 5/00; E04H 6/00; E04H 9/00;
E04H 14/00; E04H 12/00**

(52) **U.S. Cl.** **52/79.1; 52/302.5**

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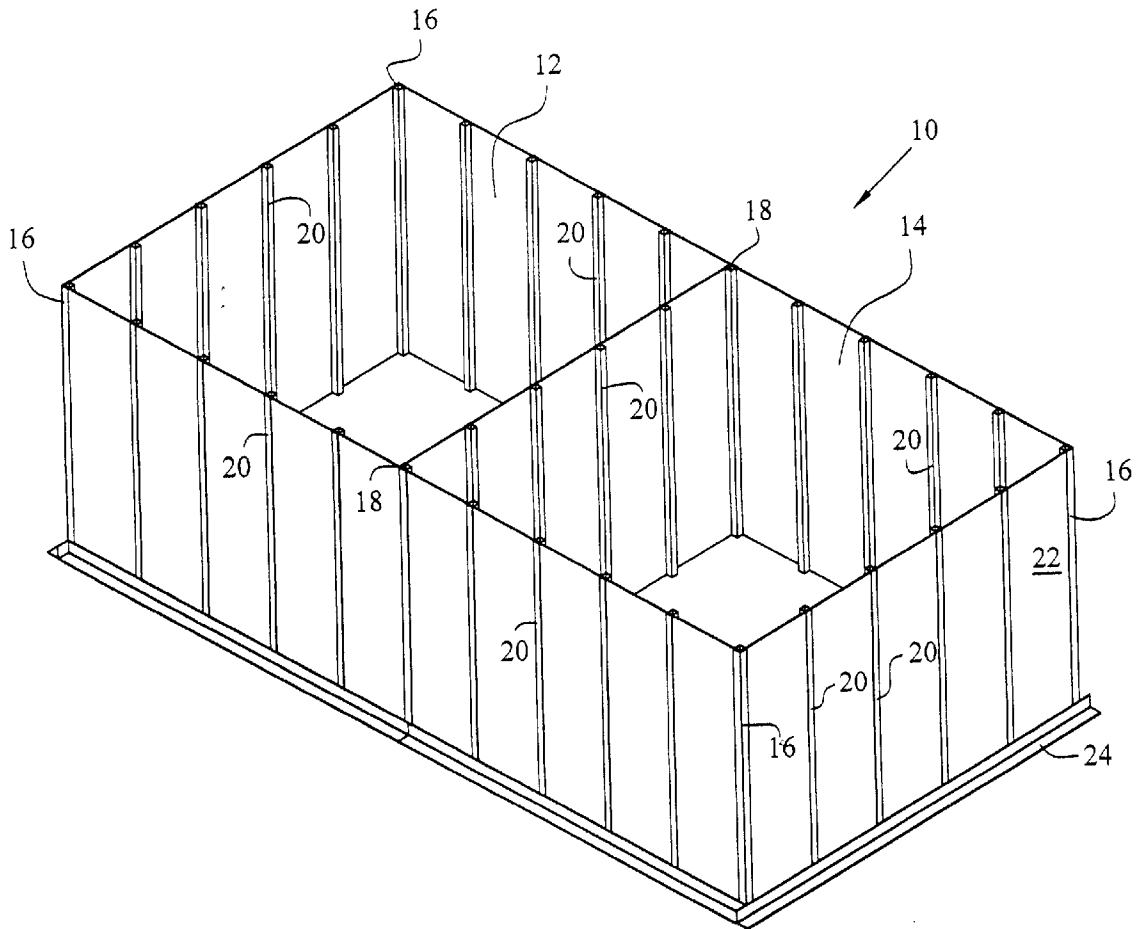
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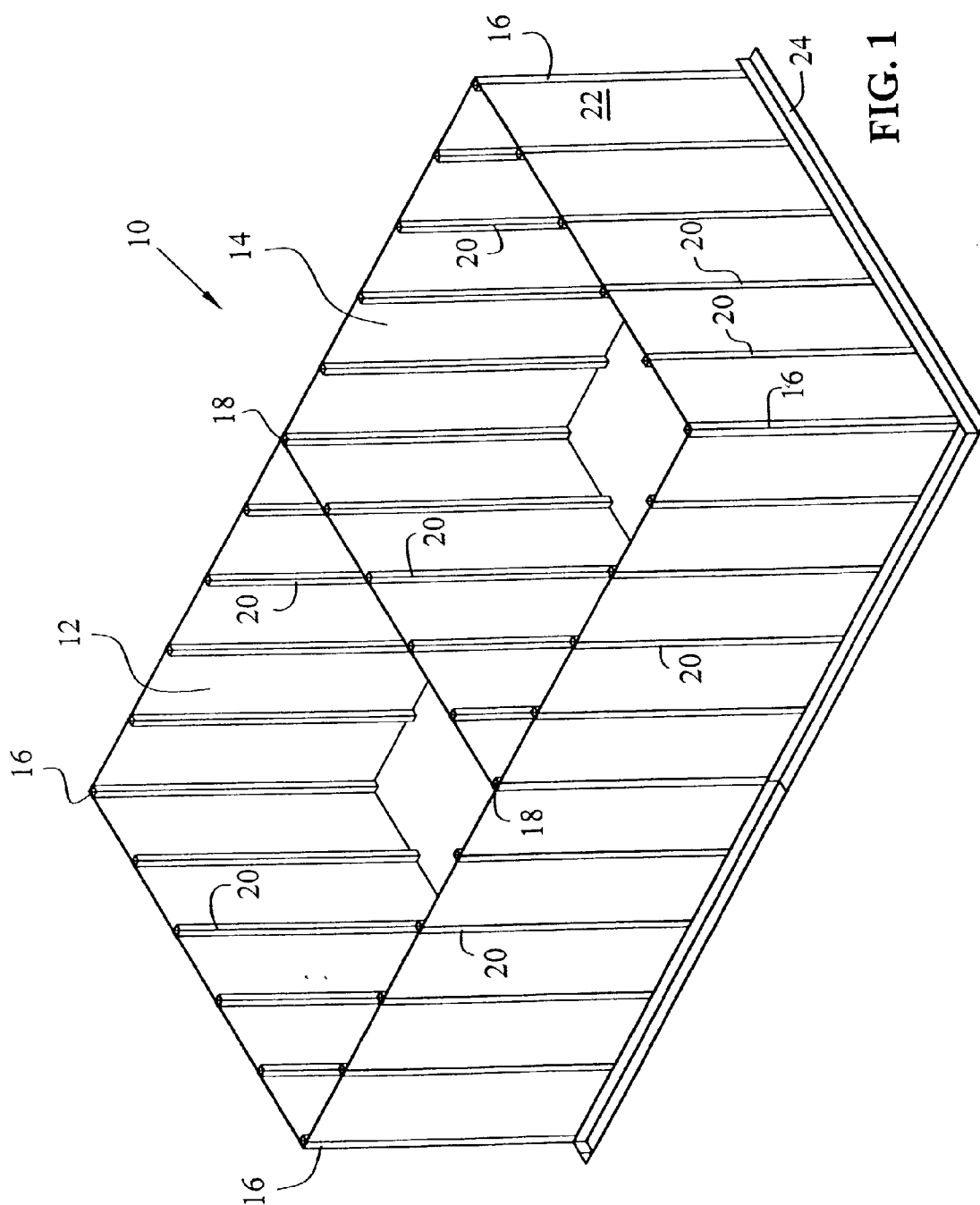
(21) **Appl. No.: 10/242,888**

(22) **Filed: Sep. 13, 2002**

(57) **ABSTRACT**

A prefabricated dormitory or other rigid wall structure is defined by a plurality of prefabricated components. The prefabricated components include corner alignment posts, in-line connection alignment posts, and T-connection posts. Each of the posts includes two or more alignment grooves to either connect prefabricated wall panels at right angles, for a corner, in-line for the extension of a wall in a co-planar manner, or include three alignment grooves for a T-connection wall.





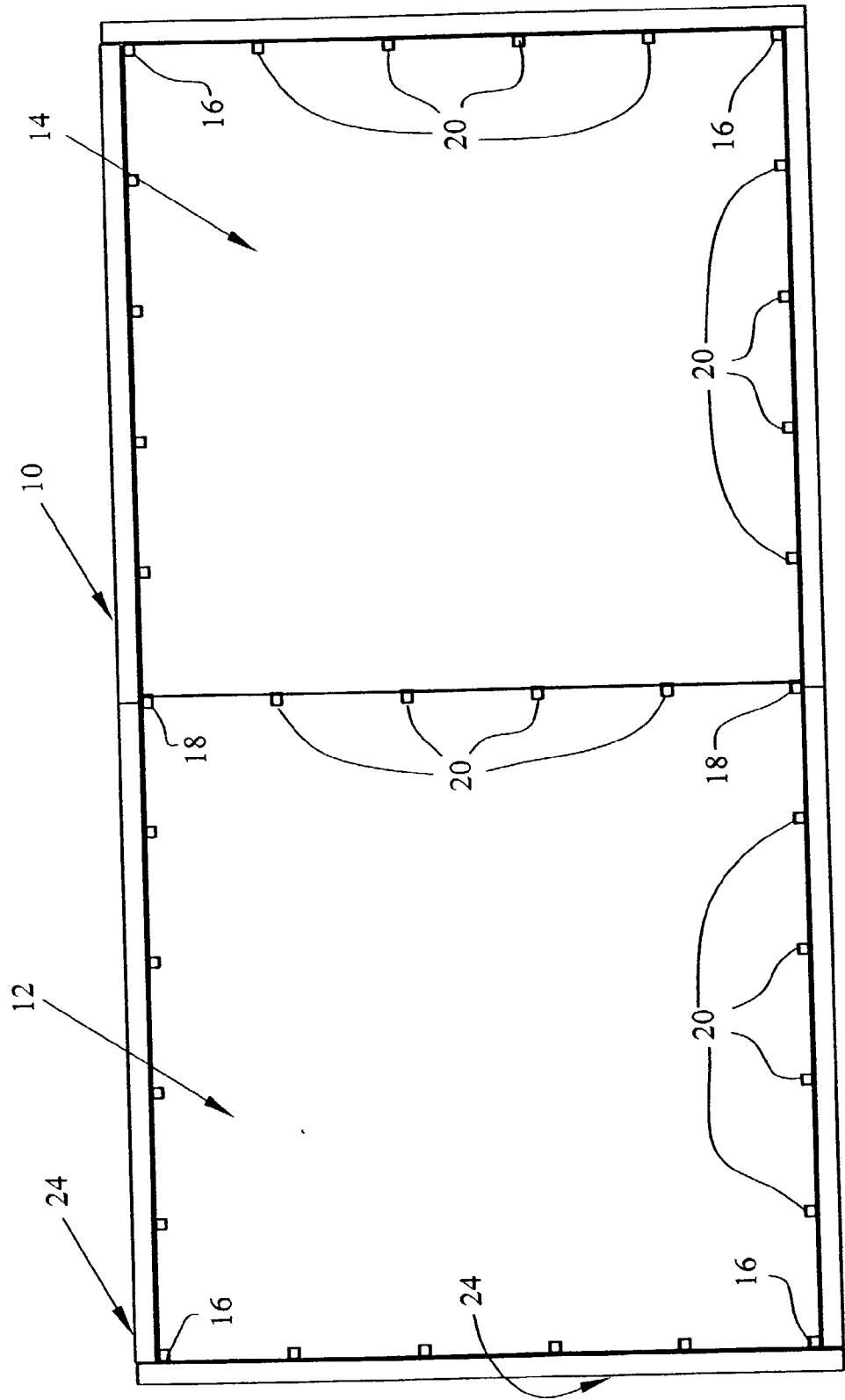


FIG. 2

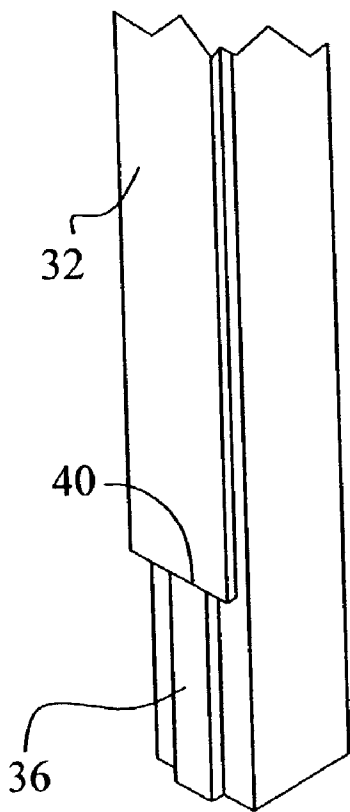
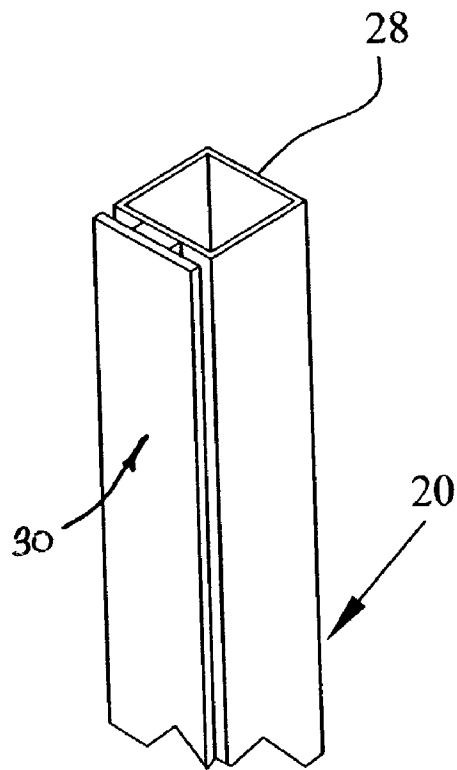


FIG. 3A

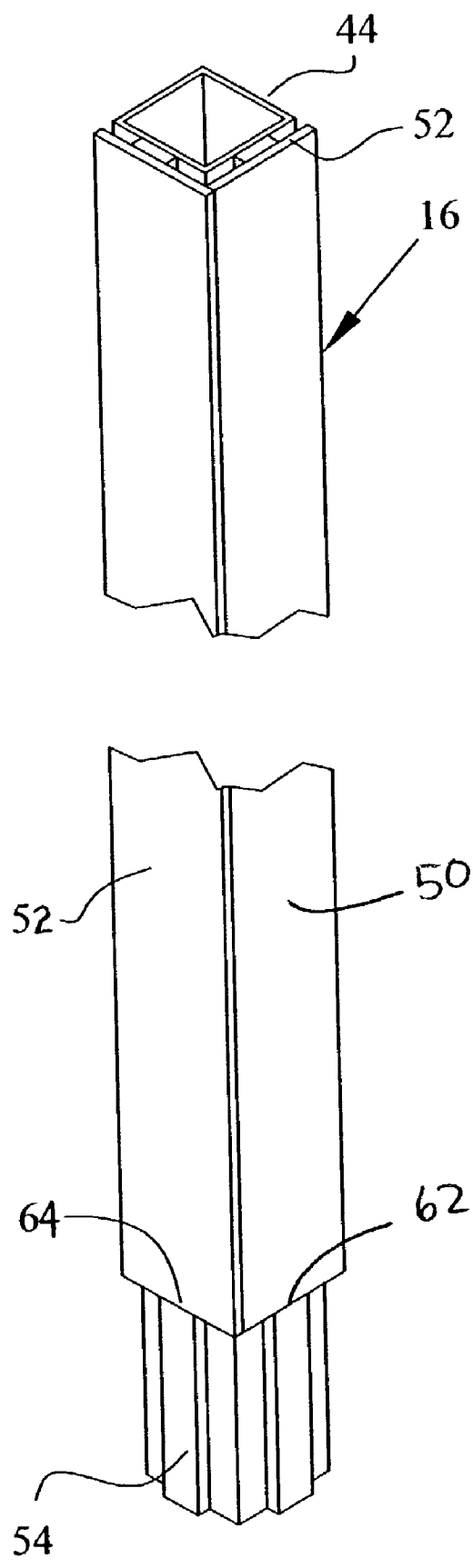
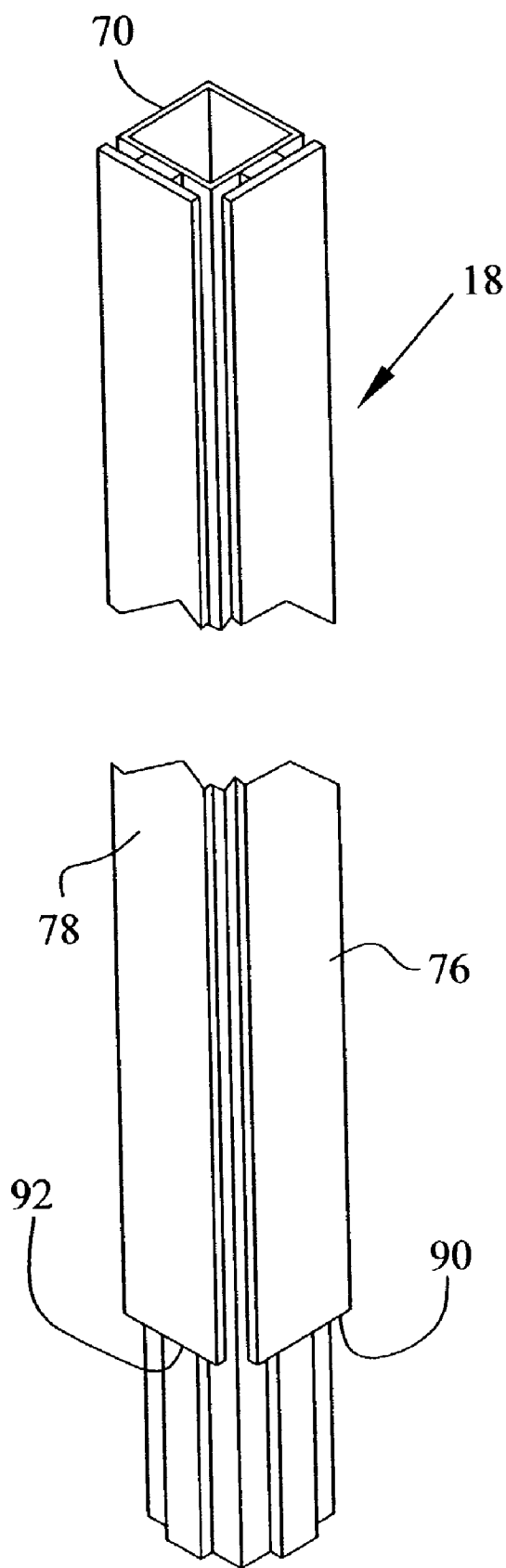
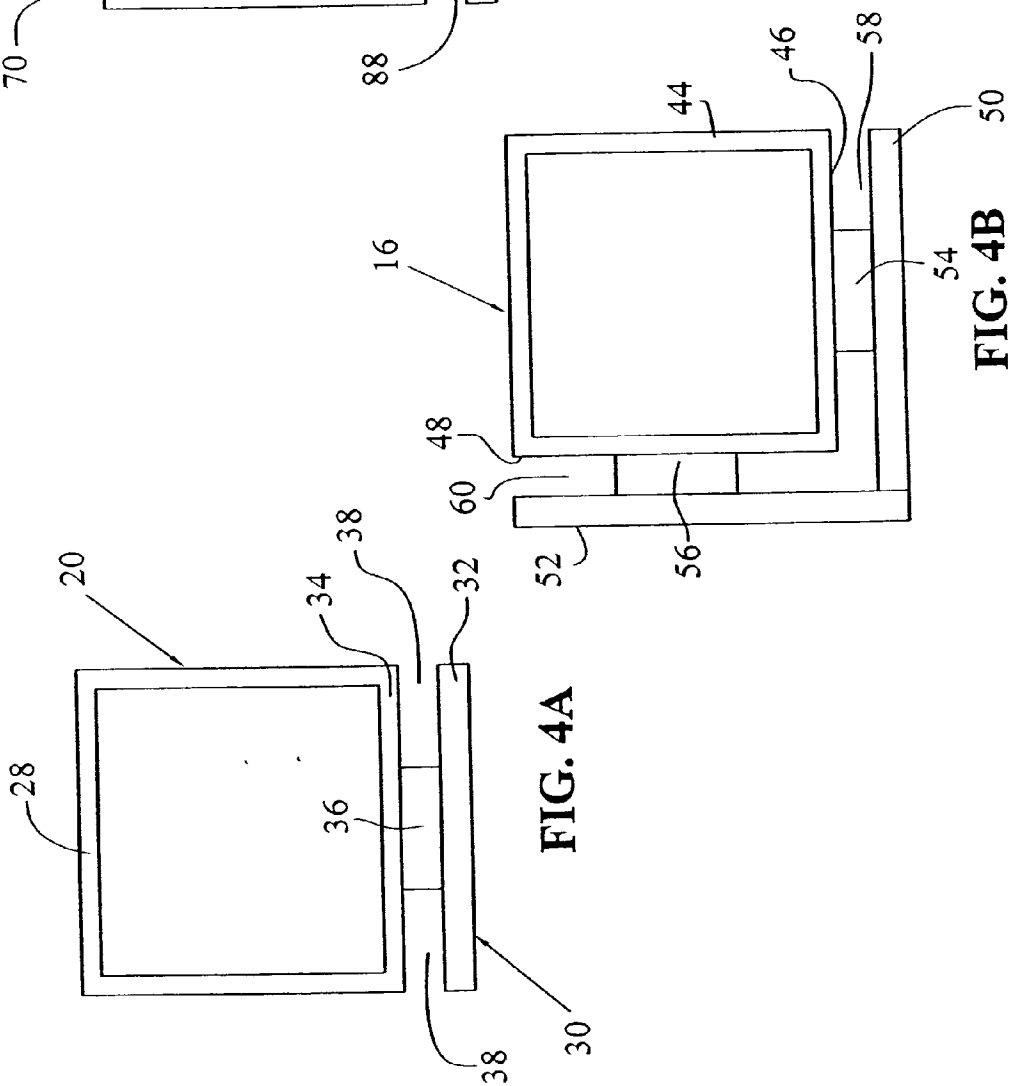
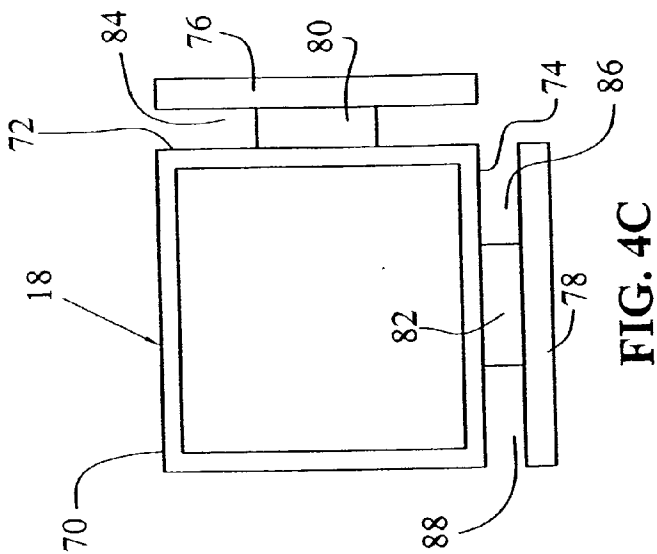


FIG. 3B





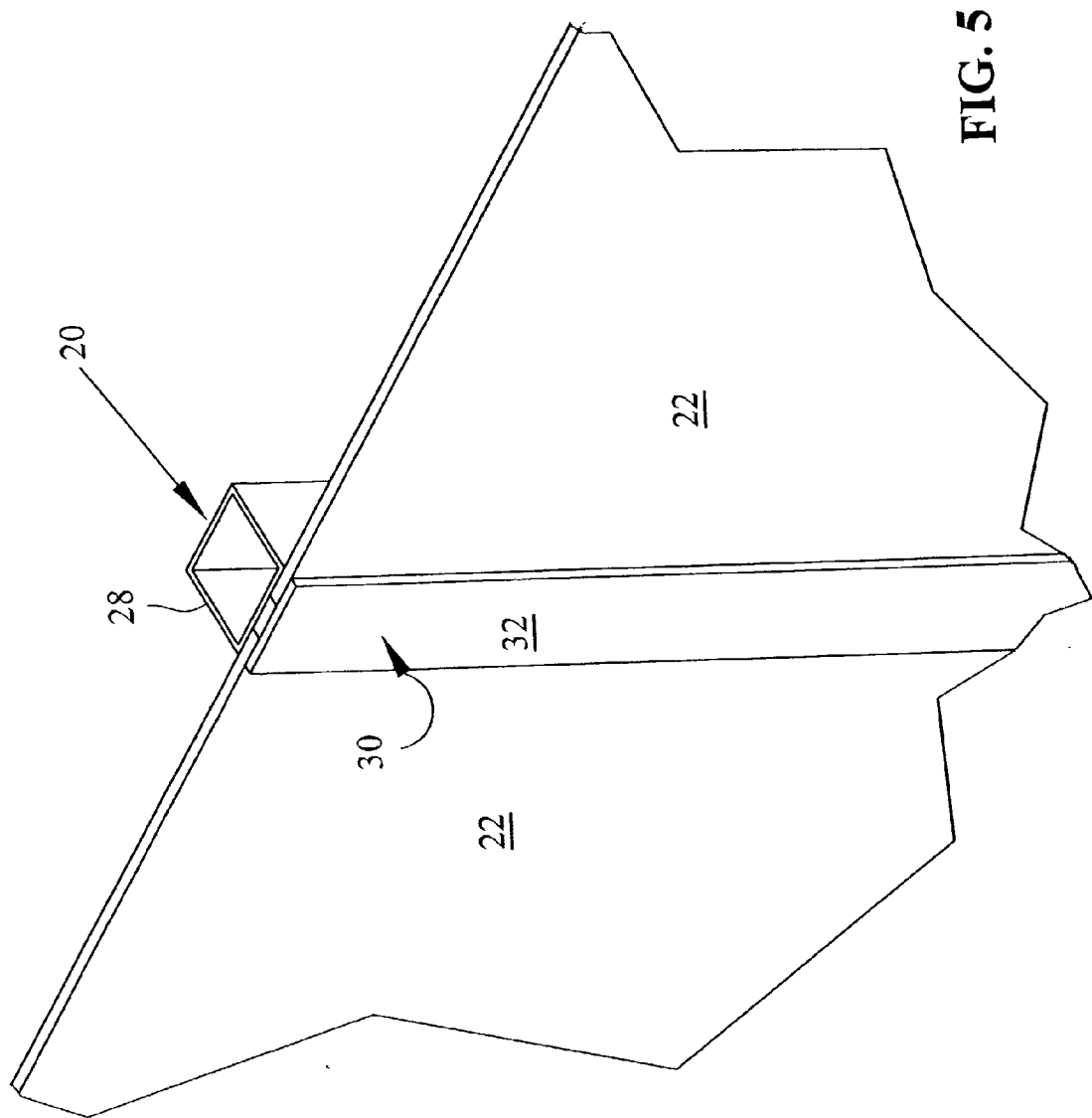
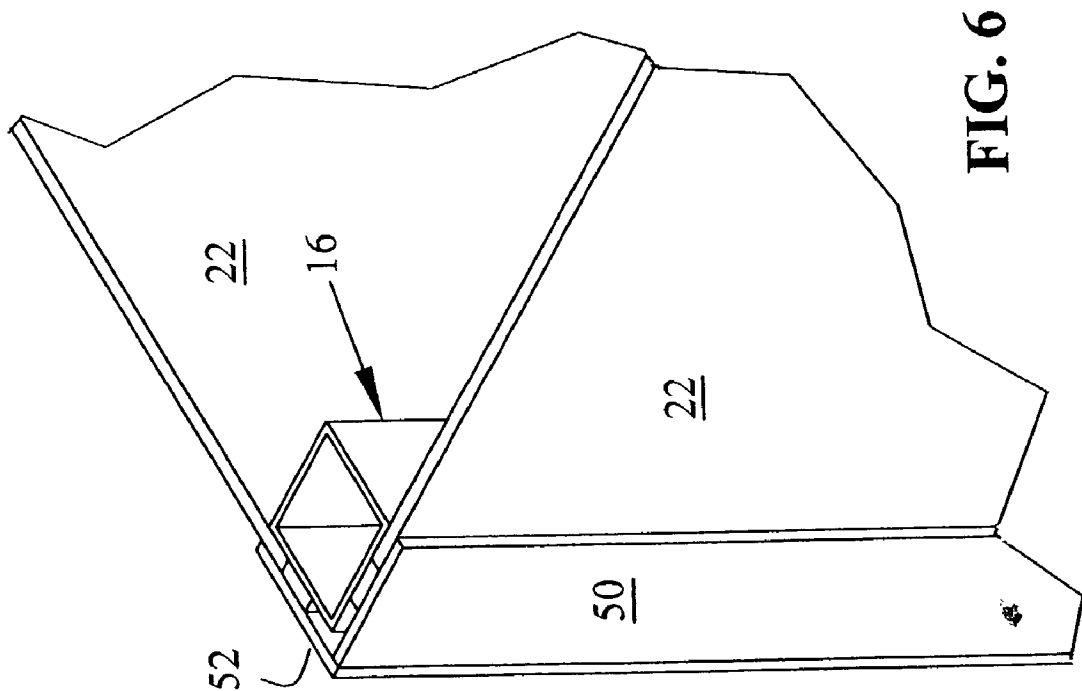


FIG. 5



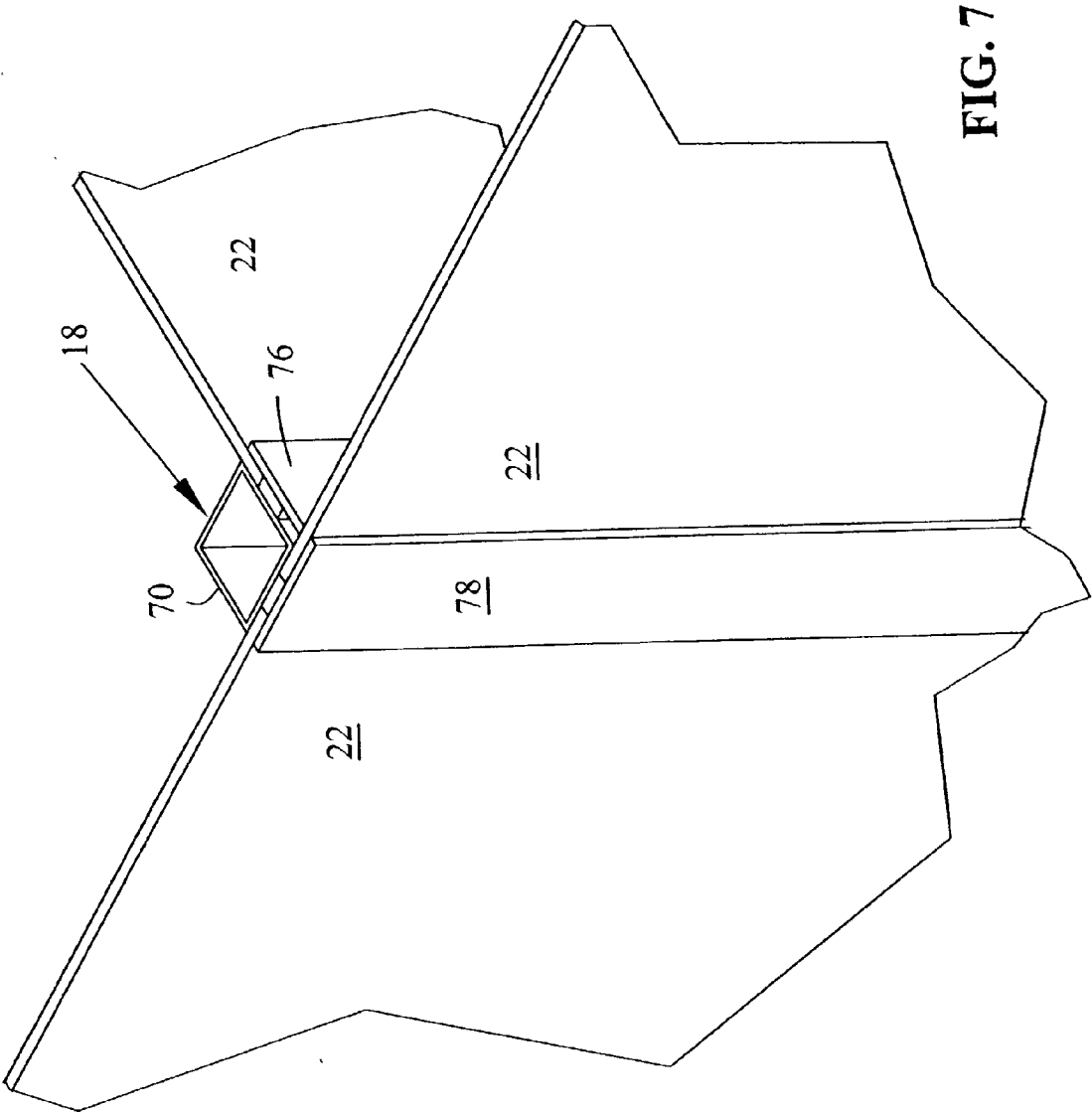


FIG. 7

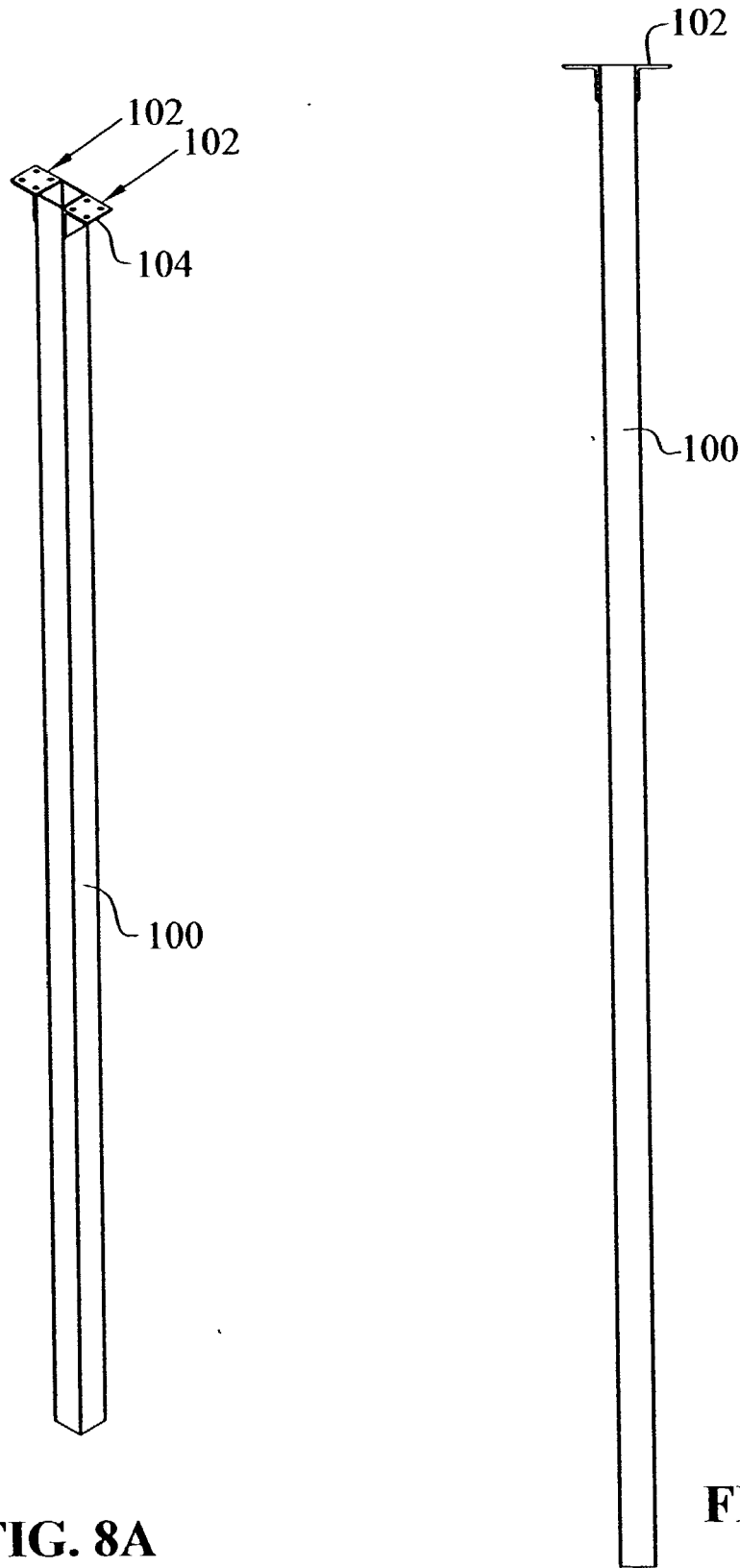


FIG. 8A

FIG. 8B

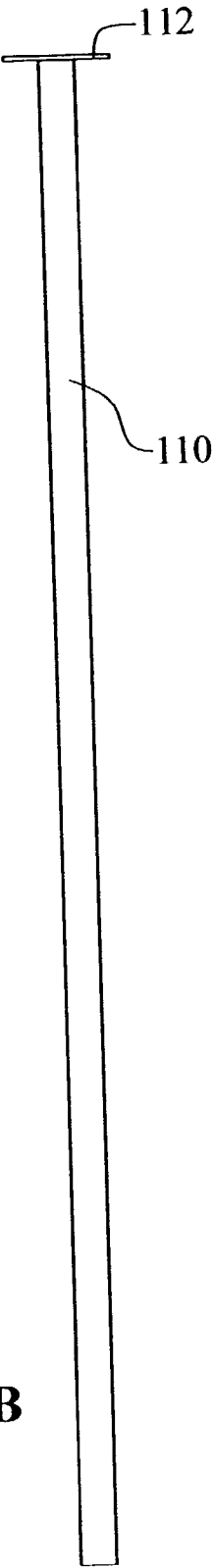


FIG. 9B

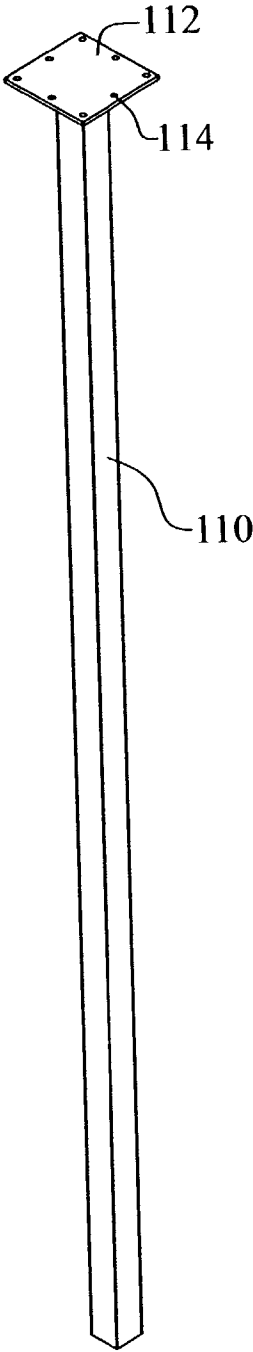
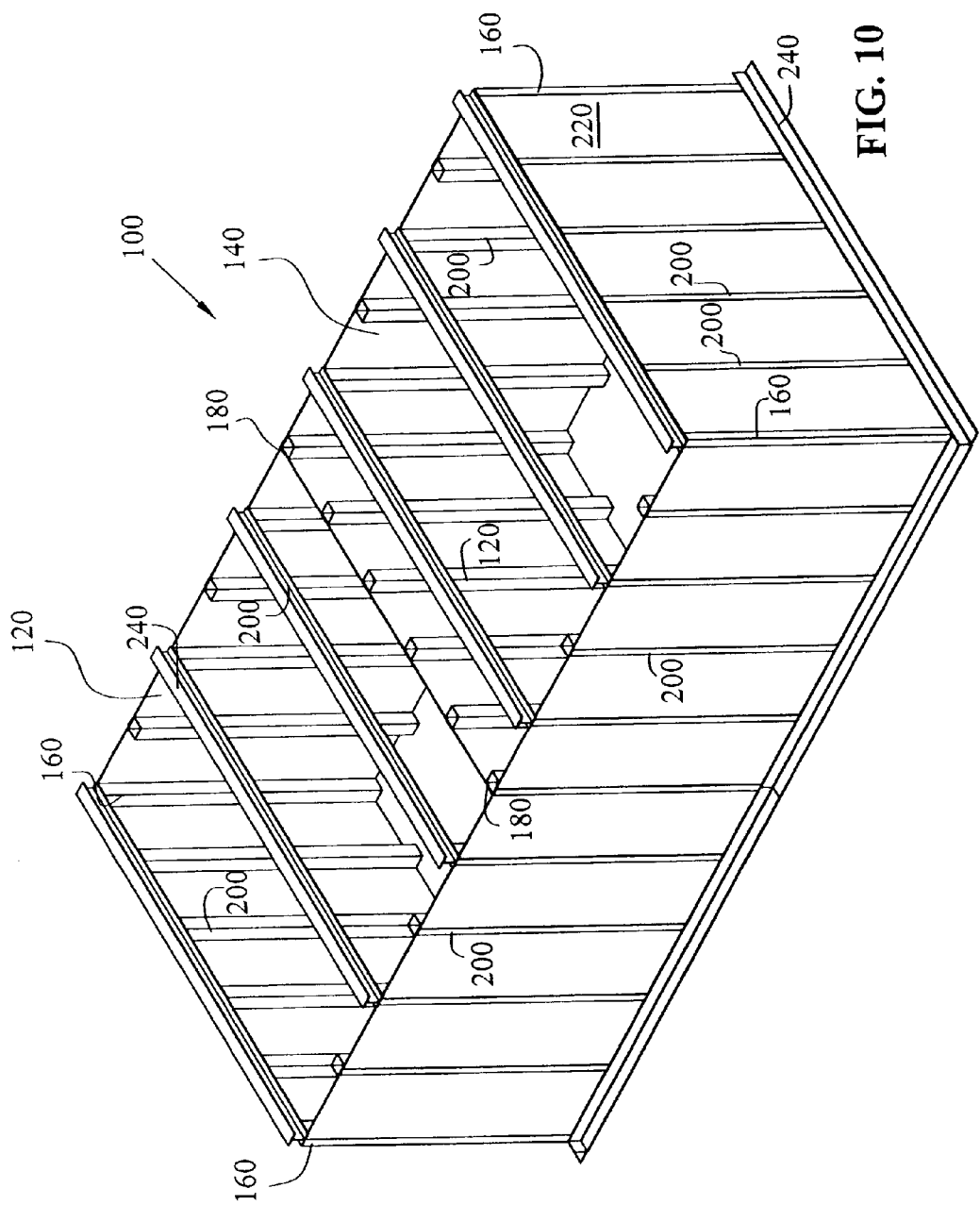


FIG. 9A



STRUCTURES INCORPORATING INTERLOCKING WALL MODULES

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to the construction of prefabricated structures incorporating interlocking walls constructed from plate steel which are guided and positioned through the use of tongue and groove guide elements.

[0003] 2. Description of Prior Art

[0004] In recent years, there has been a substantial increase in the population housed by our prison system. Prisons have become overcrowded with inmates, with some cells housing more than twice the recommended number of inmates. One reason for this overcrowding relates to the high cost associated with the building of prisons which are adequately secure to house prisoners. The lengthy construction time required to construct secure units also adds cost to unit, thereby also contributing to the overcrowding problem.

[0005] In an effort to reduce construction costs and times, prefabricated prison cells have been developed. These prefabricated prison cells are modular in design, meaning, each cell comprises an individual, separate unit with the components of each cell being manufactured at a facility distant from the final location of the prison facility. Upon arrival at the final location, the individual components may then be assembled, forming an individual cell unit. These individual cell units are then assembled adjacent to one another creating a cell block. In forming a cell block, the individual cells must be carefully aligned so as to form a cohesive-looking structure. It is the difficulty encountered in properly aligning the individual cells in creating the cell block toward which this invention is directed.

[0006] Along these lines, the need occasionally arises in law enforcement to quickly construct temporary structures capable of housing dangerous individuals. These structures are often limited in size and weight due to the fact that they may be constructed within a more permanent structure or setting. For example, many court houses within the United States do not include holding cells or the like, making it difficult to bring dangerous prisoners to trial, as these prisoners must be transported from the local jail to the court house to stand trial. This represents an opportunity in which the dangerous prisoner may either escape or harm a guard during the transport process. Solutions to this problem have included converting a mediation room within the courthouse or something similar, into a temporary lock-up room. However, this presents a further problem, whereby the mediation room is being used for a purpose not intended. Further, employees of the court house may be caught unaware, perhaps due to poor communication, and may not realize that a mediation room previously reserved for that purpose has been transformed into a temporary holding cell. It is toward the construction of panelized prison cells that this invention may also be applied.

[0007] In addition to limitations encountered in housing prisoners, recent population expansion has increased the need for one-room classrooms, especially in rural areas. It is desirous that these classrooms be relatively inexpensive and have the capability of being constructed quickly and easily when compared to the traditional brick school houses tra-

ditionally employed. Along these lines, the present invention may be modified in order to facilitate the construction of relatively inexpensive school rooms, both sturdy enough to provide adequate protection to our children, and yet easily constructed so as to avoid substantial construction costs.

SUMMARY OF THE INVENTION

[0008] The objects of the invention have been accomplished by providing a prefabricated wall structure defining a plurality of rooms, each room having a front wall, a rear wall, and a pair of side walls, where some of said walls may be shared between rooms. The wall structure comprises a plurality of elongate wall panels having top and bottom edges, and side edges. A plurality of support posts have alignment grooves for receiving said side edges of said panels to join said panels.

[0009] In the preferred embodiment of the invention the post is defined as a post configured for a corner, with alignment grooves defined orthogonally of each other. In this configuration, the post is square in cross-section and includes alignment plates attached to adjacent sides of the post, in a spaced-apart manner so as to form the grooves.

[0010] Also in the preferred embodiment, the prefabricated wall structure has another post defined as a post configured for in-line connection, with alignment grooves defined in a co-planar relation with each other. In this configuration, the modular wall structure has a post which is square in cross-section and includes an alignment plate attached to a side wall of the post, in a spaced-apart manner so as to form said grooves.

[0011] The preferred embodiment also has a further post configuration, where the post is defined as a post configured for a T-connection, with alignment grooves for in-line connection, with alignment grooves defined in a co-planar relation with each other, and with a groove defined orthogonally of said two in-line grooves. The post in this configuration is square in cross-section and includes alignment plates attached to adjacent sides of the post, in a spaced-apart manner so as to form said orthogonal grooves, and with one of the plates having grooves extending from both sides thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] These and other features of the invention will become more apparent and the present invention will be better understood upon consideration of the following description and the accompany drawings, wherein:

[0013] **FIG. 1** is a perspective view of a double prefabricated dormitory construction in accordance with the disclosed invention;

[0014] **FIG. 2** is a top floor plan view of the prefabricated dormitory disclosed in **FIG. 1**;

[0015] **FIG. 3A** is a perspective view of the support post for an in-line connection;

[0016] **FIG. 3B** is a perspective view of the corner connection post;

[0017] **FIG. 3C** is a perspective view of the support post for the T-connection;

[0018] FIGS. 4A-4C show top plan views of the support posts of FIGS. 3A-3C, respectively;

[0019] FIG. 5 shows a magnified view of an in-line connection in accordance with the present invention of the two prefabricated dormitory shown in FIG. 1;

[0020] FIG. 6 shows a magnified view of a tongue and groove corner connection in accordance with the present invention of the two prefabricated dormitories shown in FIG. 1;

[0021] FIG. 7 shows a magnified view of a T-connection in accordance with the present invention of the two modular prison cells shown in FIG. 1;

[0022] FIGS. 8A and 8B show alternative embodiments for any of the posts shown in FIGS. 3A-3C;

[0023] FIGS. 9A and 9B show alternative embodiments to the posts shown in FIGS. 8A and 8B; and

[0024] FIG. 10 shows an alternate embodiment to that shown in FIG. 1, where a multi-story unit can be provided.

DETAILED DESCRIPTION OF THE EMBODIMENTS OF THE INVENTION

[0025] The embodiments of the invention described herein are not intended to be exhaustive nor to limit the invention to the precise forms disclosed. Rather, the embodiments selected for description have been selected to enable one skilled in the art to practice this invention.

[0026] Referring in detail to the drawings and with particular reference to FIGS. 1 and 2, a prefabricated dormitory has been generally indicated by numeral 10, and comprises individual dormitories 12 and 14, but any number or plurality of individual dormitories could be assembled, given the hardware and discussion herein described. As shown in FIG. 1, the two dormitories are generally configured and defined by four corner post members 16, two T-shaped members 18, and a plurality of in-line posts shown generally at 20. It should be appreciated that each of the components is prefabricated in nature and therefore can be erected at the work site. With reference still to FIGS. 1 and 2, the dormitories also comprise panel sections 22, and angle sections 24, which circumscribe the dormitories structure 10.

[0027] With reference now to FIGS. 3A and 4A, the in-line connection, including in-line connector post 20, will be described in greater detail. The in-line post 20 is comprised of a generally square tube or post section 28, which is generally comprised of a structural steel material, which is formed in an elongate manner. An alignment groove assembly 30 is fixed to an outside of one of the walls of the tube 28 in a manner such as by welding. The alignment groove includes an outer alignment plate 32, which is mounted in a parallel manner to wall 34 of tube 28 and spaced apart by a spacer plate 36. It should be appreciated from viewing FIG. 4A that spacer plate 36 is defined with a much narrower width than alignment plate 32, leaving elongate alignment grooves 38 on opposite sides of the post for alignment of the steel panels 22, as will be described further herein. As shown best in FIG. 3A, plate 32 is shorter at the lower end than post 28, thereby forming an edge 40.

[0028] With reference now to FIGS. 3B and 4B, corner post 16 is shown having a substantially square post 44

having perpendicular side walls 46 and 48 to which parallel and spaced-apart walls 50 and 52 are attached by and through spacer plates 54 and 56, respectively. As with in-line post 20, the spacer plates 54 and 56 are narrower than their counterpart plates 50 and 52, thereby defining alignment grooves 58 and 60. As shown in FIG. 3B, plate 50 is shown with a lower edge 62 positioned above the end of post 44, and plate 52 is shown with a lower edge 64, as will be described herein.

[0029] With reference now to FIGS. 3C and 4C, the T-connection post 18 is shown comprising a square post member 70 having walls 72 and 74 to which spaced plates 76 and 78 are attached, by and through spacer plates 80 and 82. As before, the spaced-apart plates 76 and 78 define alignment grooves 84, 86 and 88. As shown best in FIG. 3C, plates 76 and 78 include lower edges 90 and 92, respectively, as will be described further herein.

[0030] As mentioned above, the panels 22 are each in prefabricated form, such that a plurality of panels 22 could be shipped to the work site, and assembled at the work site. In the preferred embodiment of the invention, the steel panels 22 are each approximately 2' in width, and rise to a height equal to the desired height for the ceiling. In the preferred embodiment, the panels 22 are steel sheets of approximately $\frac{3}{16}$ " to $\frac{1}{2}$ ", but could comprise heavy-duty steel mesh for at least a portion of the panels in order that an observer can see into the dormitory and the occupant can see out of the dormitory. Moreover, while the construction shown in FIGS. 1 and 2 shows two solid dormitories, it would also be understood that one or two of the panels should be replaced by a door panel member for ingress and egress of dormitories 12 or 14. With the components as described above, the assembly of the cells will now be described in greater detail.

[0031] The assembly of the dormitories would begin by placement of one or more of the angle members along the floor in a longitudinal manner in a position where the dormitory construction is desired. As shown in FIGS. 3A, 3B and 3C, each of the posts has a notch created at the bottom of the post created by the lower edges 40, 62, 64, 90, and 92, respectively, such that this notch is placed with the spacer plates 36, 54, or 90, 92 abutting the back side of the angle member 24, as best shown in FIG. 1. Thus, the corner post 16 could be set with spacer plate 54 abutting the panel, which will thereby align the post 16 with the edge of the angle piece 24. It should be appreciated that the back side of the angle will also be co-planar with the inner surface of plate 32, and a steel plate 22 can be slidably received within alignment groove 60 of the corner member 16. The next post is an in-line post 20 positioned with one of the slots 38 joining the opposite side edge of the steel panel, again with its spacer plate 36 in abutment against the inside surface of the angle member 24.

[0032] Plate members 22 and in-line members 20 can continue until the inside corner of the wall is desired, that is, where placement of a T-connection post 18 is desired. When a T-connection is desired, the alignment groove 86 is positioned over the end edge of the last panel 22, again with the lower edge of spacer plate 82 abutting the angle member 24. At this point, another in-line panel could be positioned in slot 88 or the transverse or separation wall could be begun by placing a wall panel within alignment groove 84. It

should be appreciated that the walls continue to be constructed as described above until the dormitories **12** and **14** are completed. It should also be appreciated that the panels and their connection posts are fixed in place with each other by some means, such as welding along a portion or the entirety of their interconnection seams.

[0033] It should also be understood that there may be differing requirements for ceiling structures. In some instances, it may be desired to have prefabricated dormitories installed within a building or room where a concrete ceiling is already in place. In this situation, several or all of the posts could take on the configuration of any of the posts shown in **FIGS. 8A, 8B, 9A** or **9B**, where the post includes a post section **100** with an attachment flange assembly positioned along the top of the post, shown as **102** in **FIGS. 8A and 8B** and shown as flange **112** in **FIGS. 9A and 9B**. In this situation, the posts would replace any of the posts **16, 18** or **20**, but include their interlocking structure, but would extend upwardly to the ceiling and include fasteners extending through apertures such as **104, 114** to attach the posts **100, 110** to the ceiling.

[0034] In other instances, it may be desired to require a second story of dormitories, and in this case, as shown in **FIG. 10**, each of the corner posts, in-line posts and T-posts will be comprised of a more rigid and larger square post section, such as a 4" tube member, as shown as items **160, 180, 200**, respectively. In this case, the walls can be load-bearing walls, and include transverse I-beams **240** spanning across the walls. Given the wider nature of the posts **160, 180** and **200**, an I-beam such as **240** can simply be placed on top of the post and welded securely in place. A concrete pan (not shown) can thereafter be placed over the top of the I-beams with a concrete floor being poured and set up within the pan, whereby the construction of the second story of walls will be identical to that for the lower set of walls and as identical to that described with reference to **FIGS. 5-7**.

[0035] In this manner a prefabricated wall construction is designed, whereby the walls or a plurality of dormitories can be constructed at a work site or within an existing building. The prefabricated walls, by and through the posts **16, 116;**

18, 180; and **20,120** self-align the walls in parallel/perpendicular fashion for ease and accuracy of construction.

I claim:

1. A prefabricated wall structure defining a plurality of rooms, each room having a front wall, a rear wall, and a pair of side walls, where some of said walls may be shared between rooms, said wall structure comprising:

a plurality of elongate wall panels having top and bottom edges, and side edges; and

a plurality of support posts having alignment grooves for receiving said side edges of said panels to join said panels.

2. The prefabricated wall structure as set forth in claim 1, wherein said post is defined as a post configured for a corner, with alignment grooves defined orthogonally of each other.

3. The prefabricated wall structure as set forth in claim 2, wherein said post is square in cross-section and includes alignment plates attached to adjacent sides of said post, in a spaced-apart manner so as to form said grooves.

4. The prefabricated wall structure as set forth in claim 1, wherein said post is defined as a post configured for in-line connection, with alignment grooves defined in a co-planar relation with each other.

5. The prefabricated wall structure as set forth in claim 4, wherein said post is square in cross-section and includes an alignment plate attached to a side wall of said post, in a spaced-apart manner so as to form said grooves.

6. The prefabricated wall structure as set forth in claim 1, wherein said post is defined as a post configured for a T-connection, with alignment grooves for in-line connection, with alignment grooves defined in a co-planar relation with each other, and with a groove defined orthogonally of said two in-line grooves.

7. The prefabricated wall structure as set forth in claim 6, wherein said post is square in cross-section and includes alignment plates attached to adjacent sides of said post, in a spaced-apart manner so as to form said orthogonal grooves, and with one of said plates having grooves extending from both sides thereof.

* * * * *



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(54) **MODULAR STRUCTURE**

Publication Classification

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E04H 1/00 (2006.01)

(52) **U.S. Cl.** **52/270; 52/745.2**

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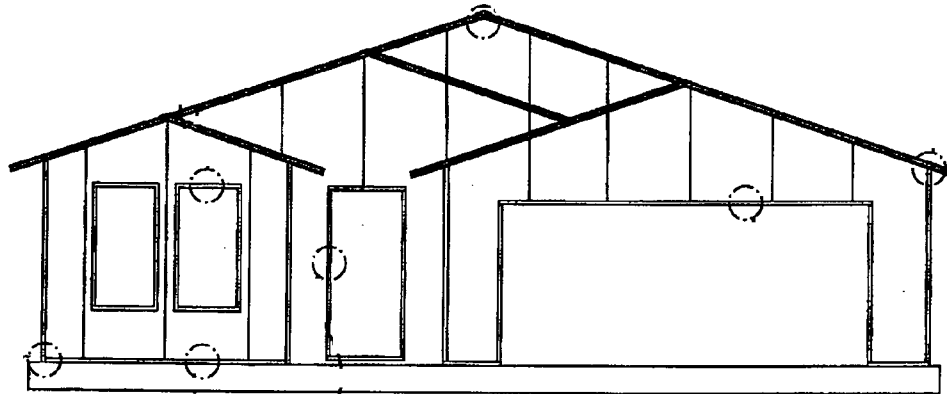
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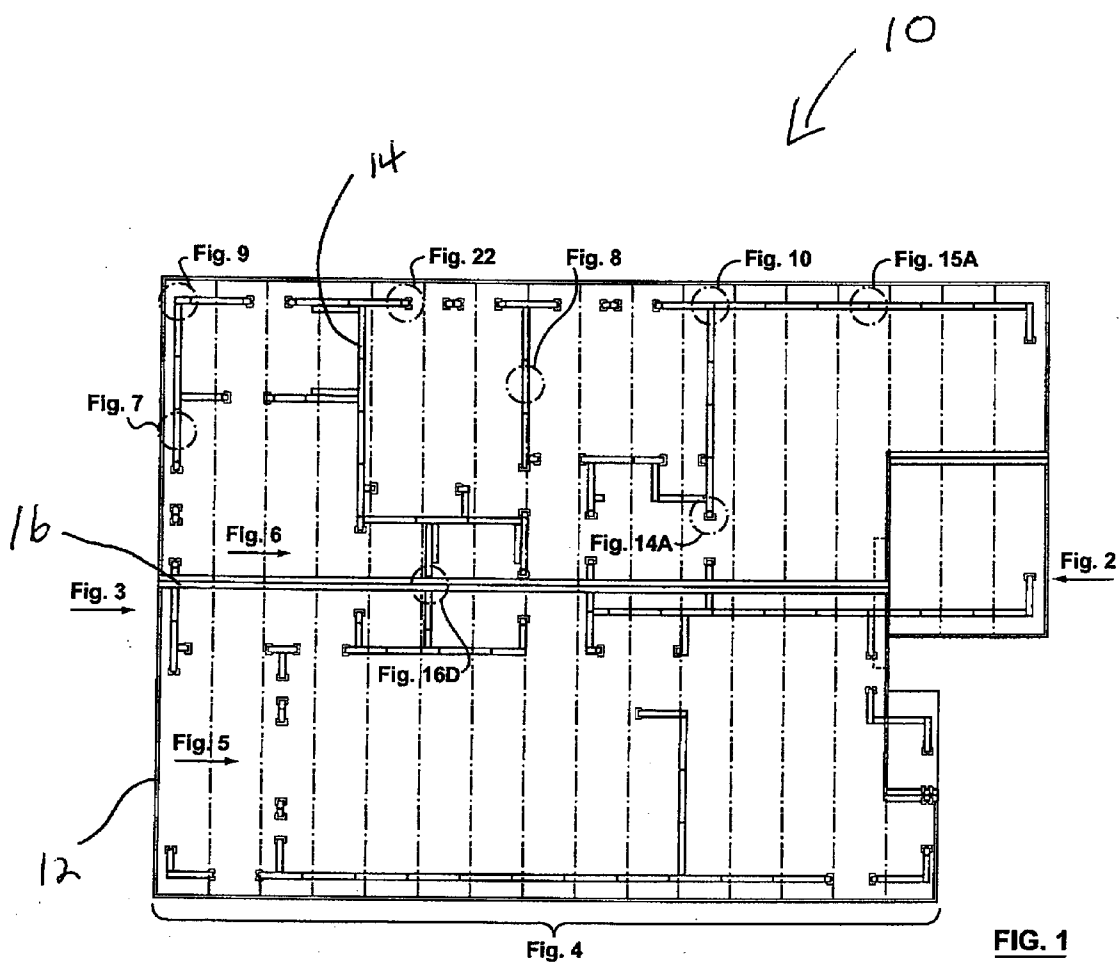
(57) **ABSTRACT**

(21) Appl. No.: **11/984,111**

A modular building system including methods and kits is provided. The system comprises C-channels anchored to a base. Structural insulated panels are slid into the channels to form walls. Adaptors are provided to provide channels at an angle for the insertion of roof panels. The building system provides for the rapid construction of a building without the need for framing or the use of roof trusses.

(22) Filed: **Nov. 13, 2007**





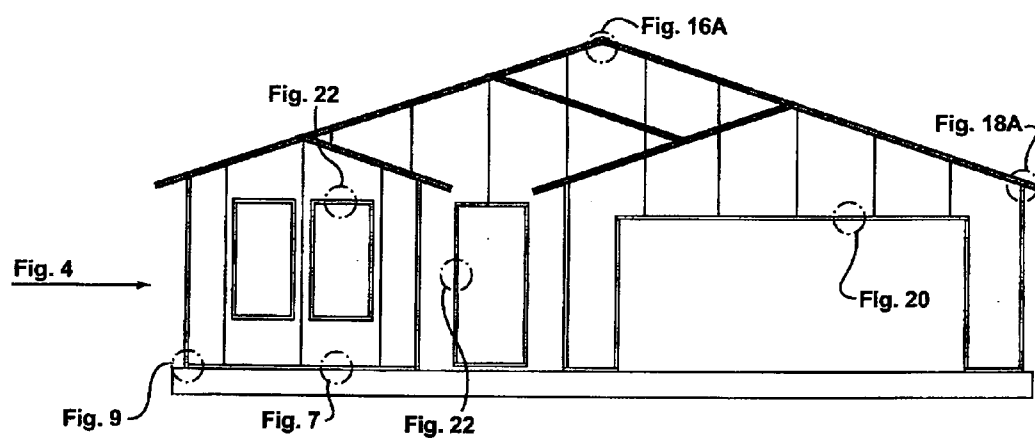


FIG. 2

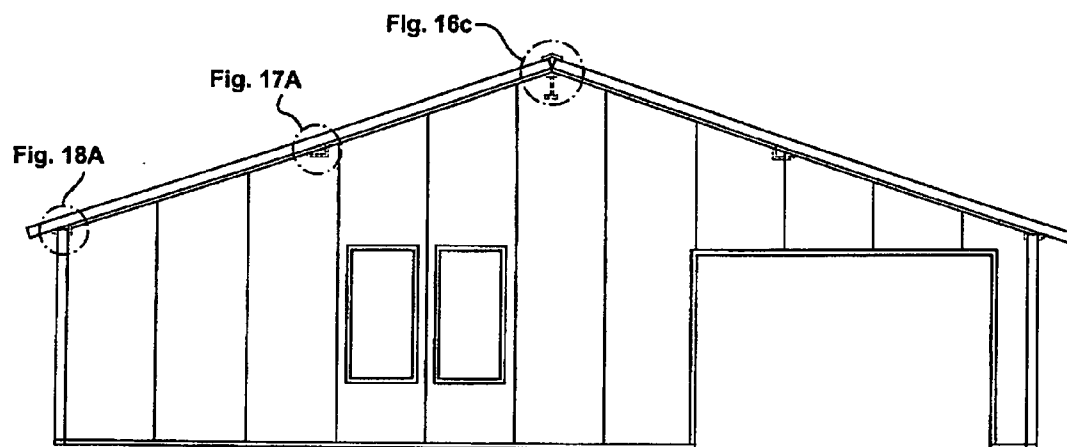


FIG. 3

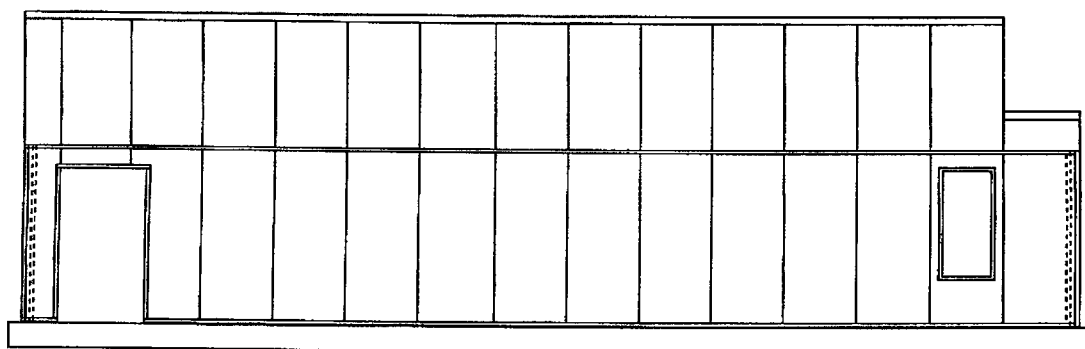


FIG. 4

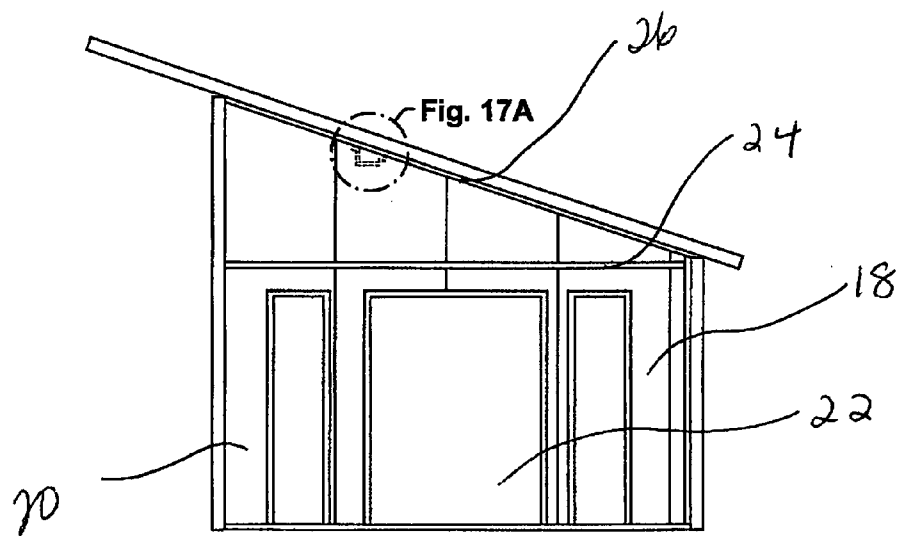


FIG. 5

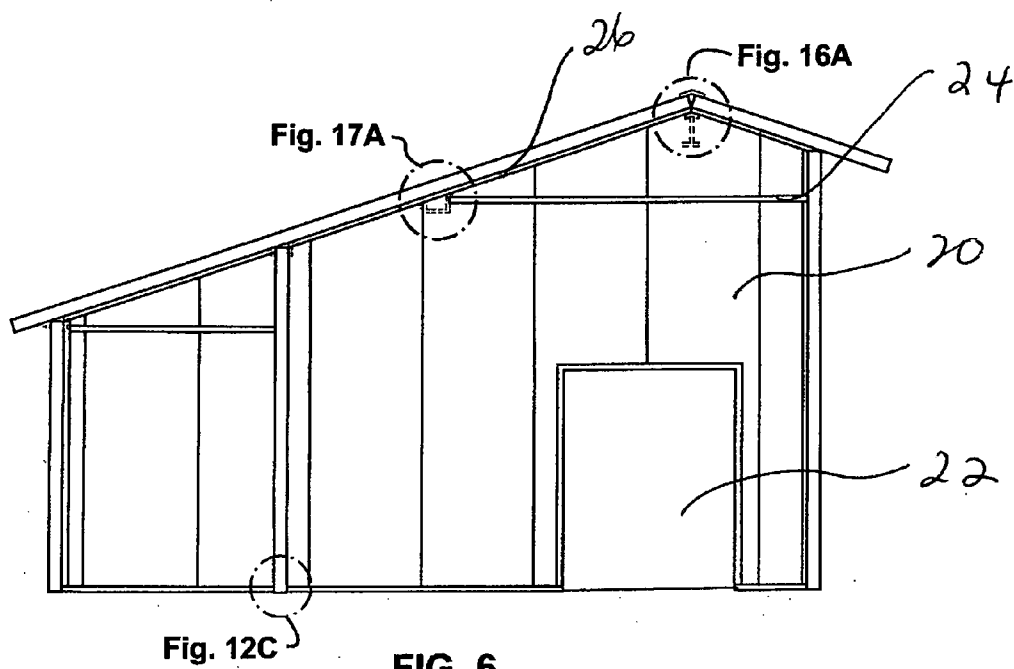


FIG. 6

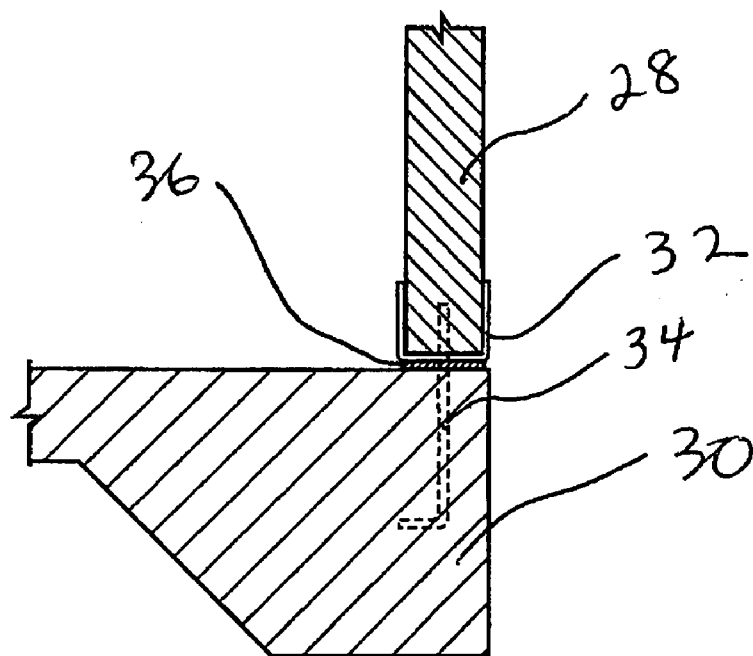


FIG. 7

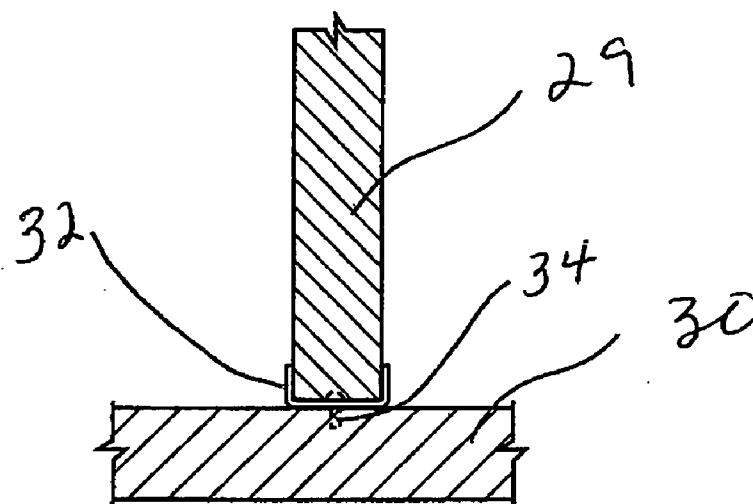
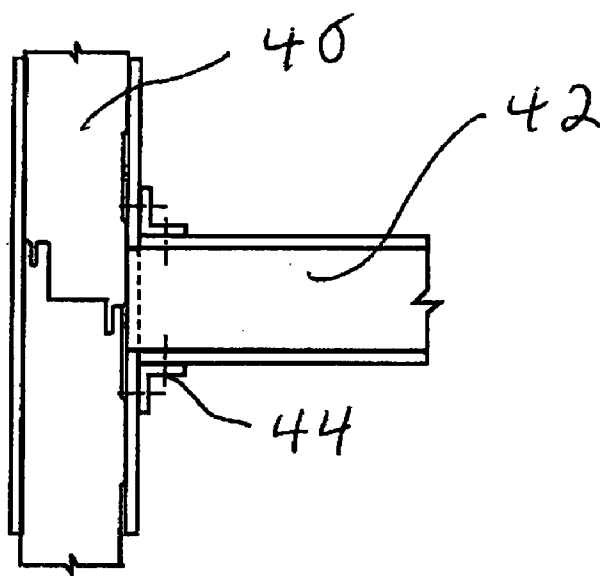
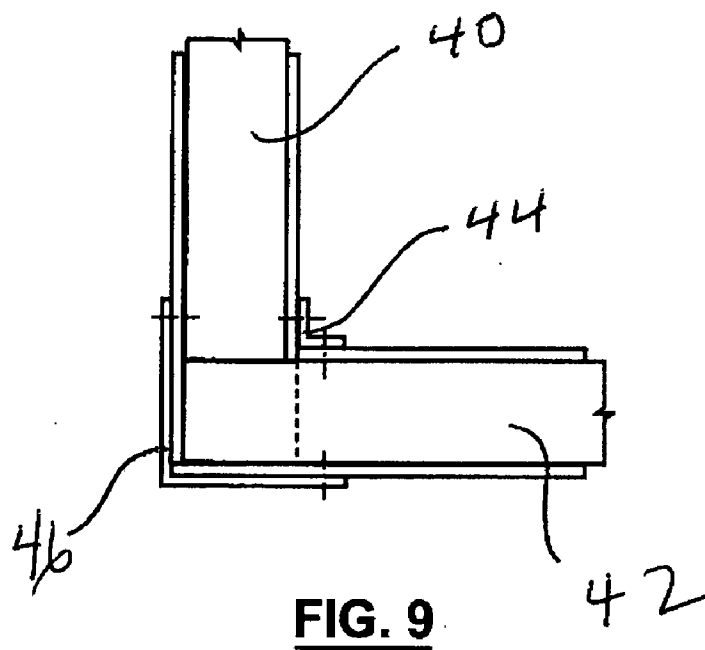


FIG. 8



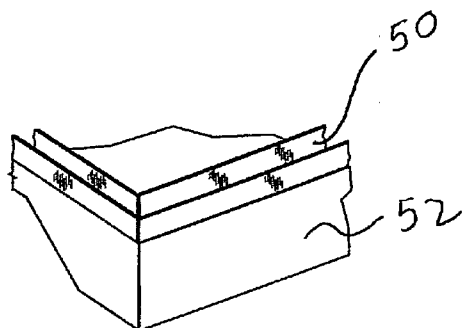


FIG. 11A

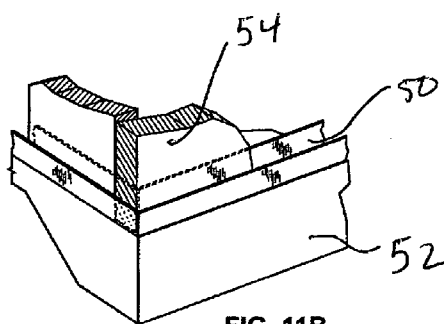


FIG. 11B

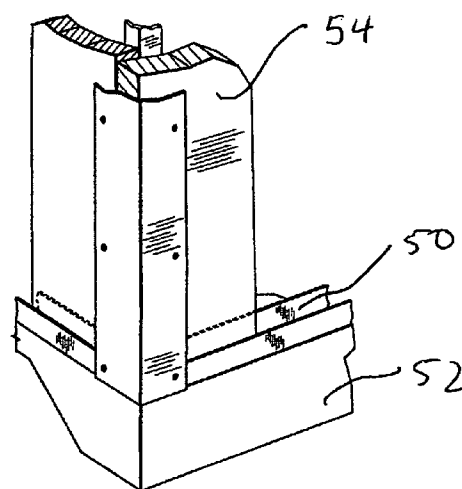


FIG. 11C

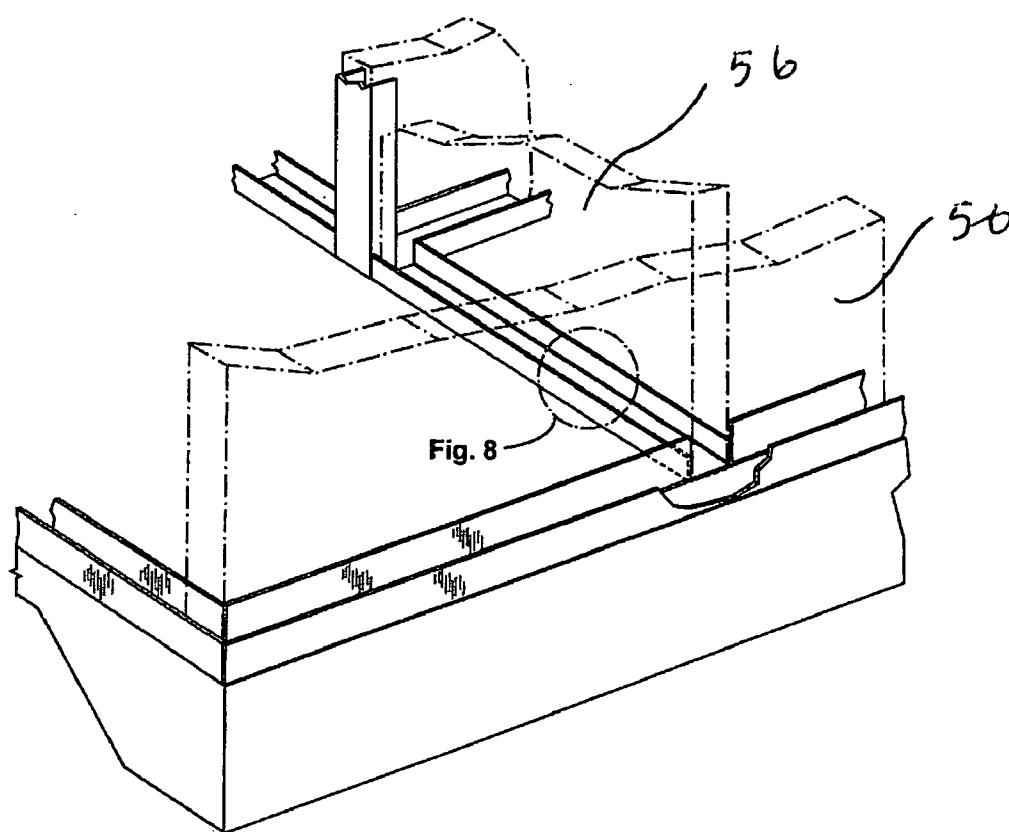


FIG. 12

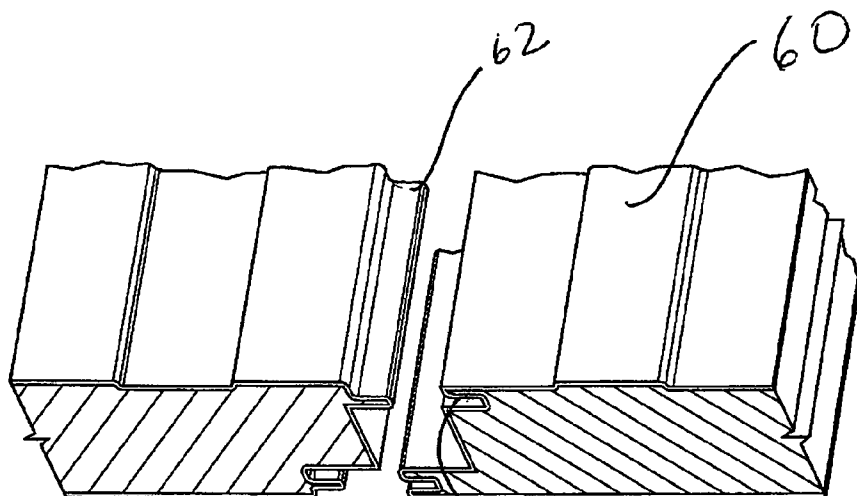


FIG. 13A

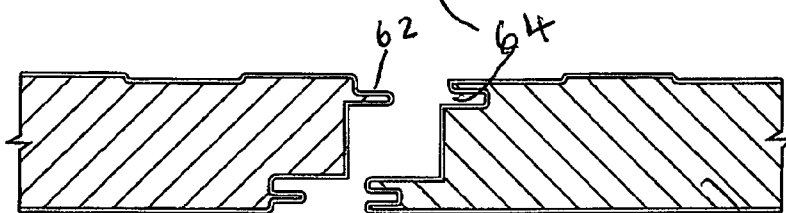


FIG. 13B

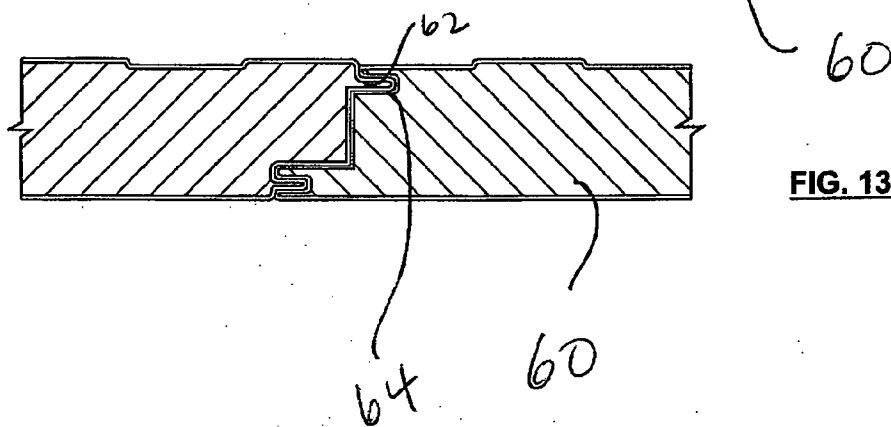
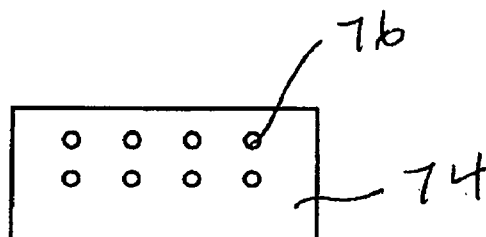
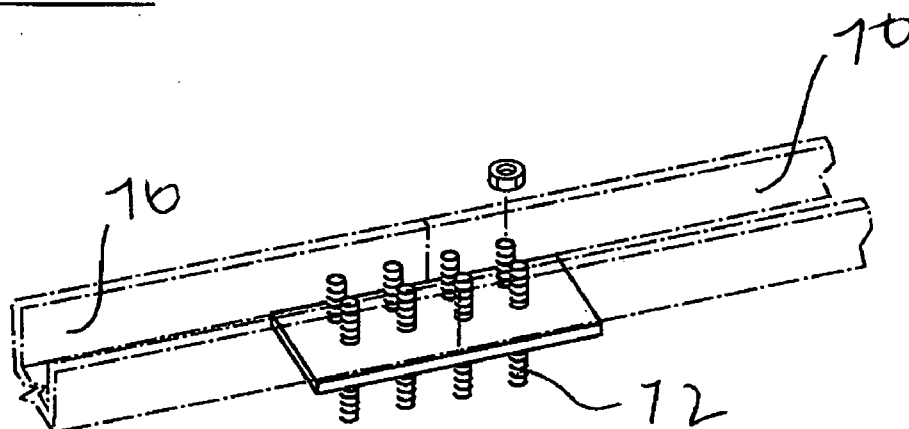
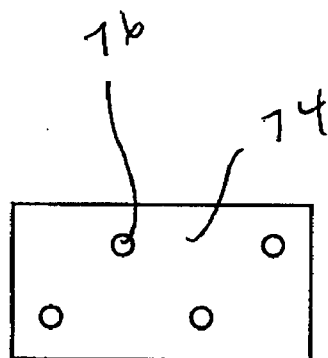
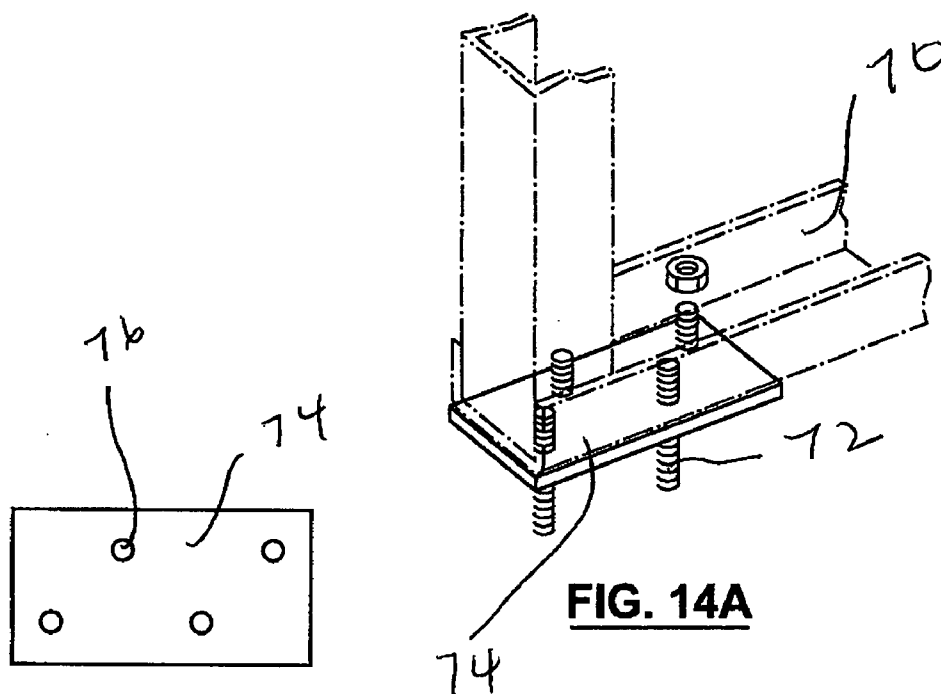
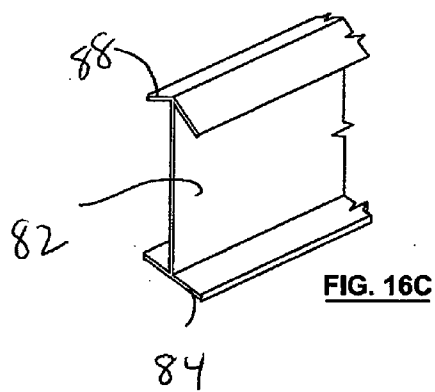
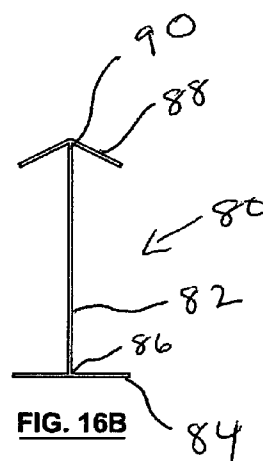
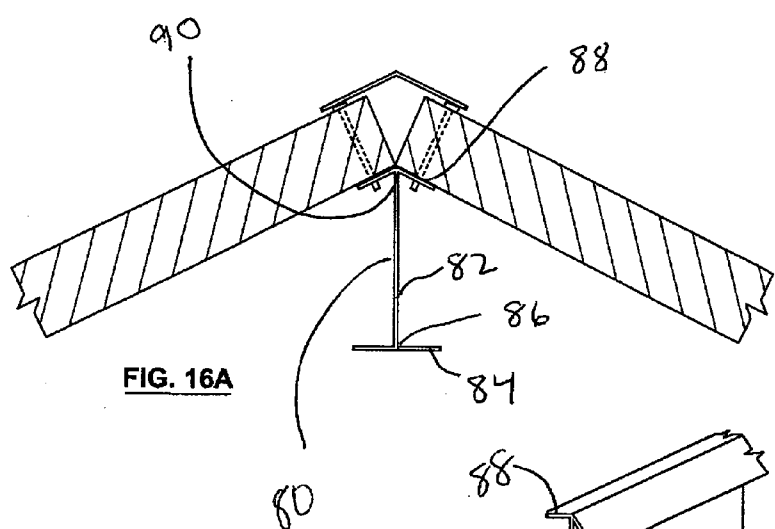


FIG. 13C





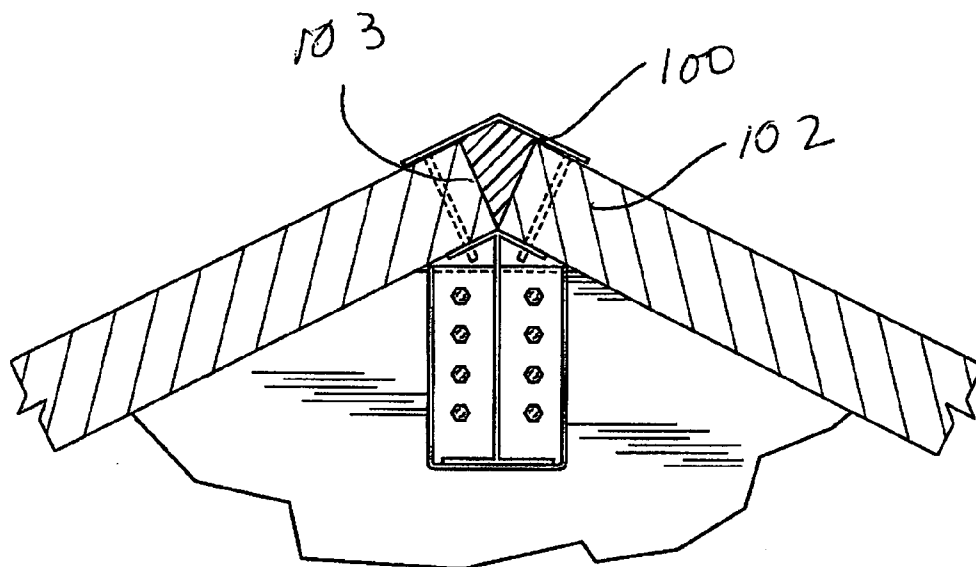


FIG. 16D

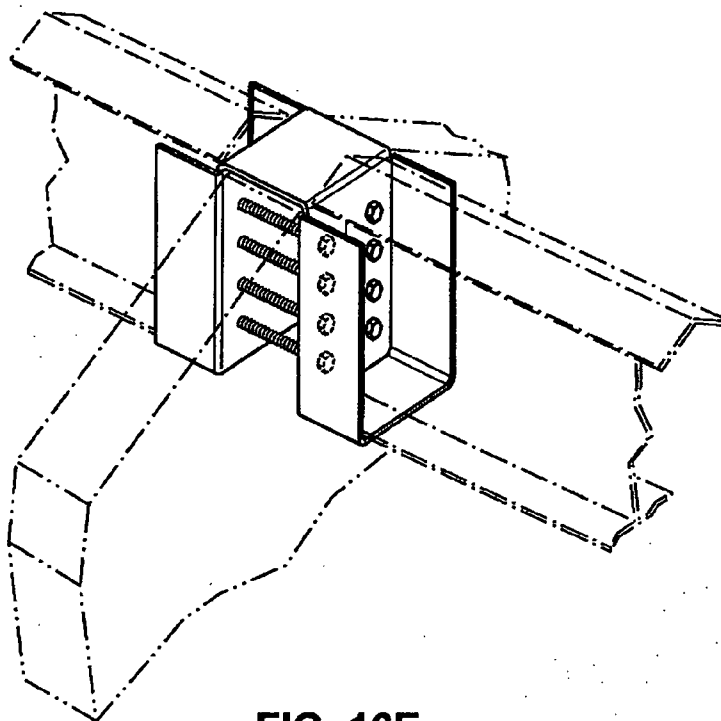


FIG. 16E

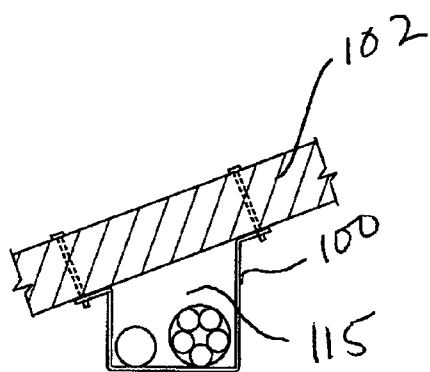


FIG. 17A

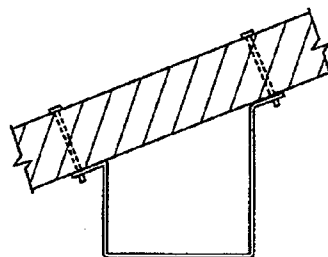


FIG. 17B

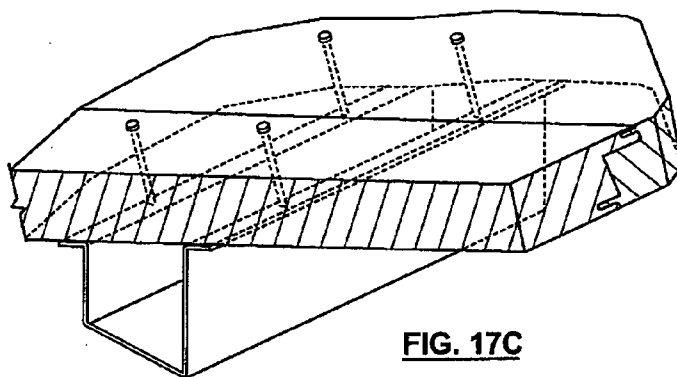
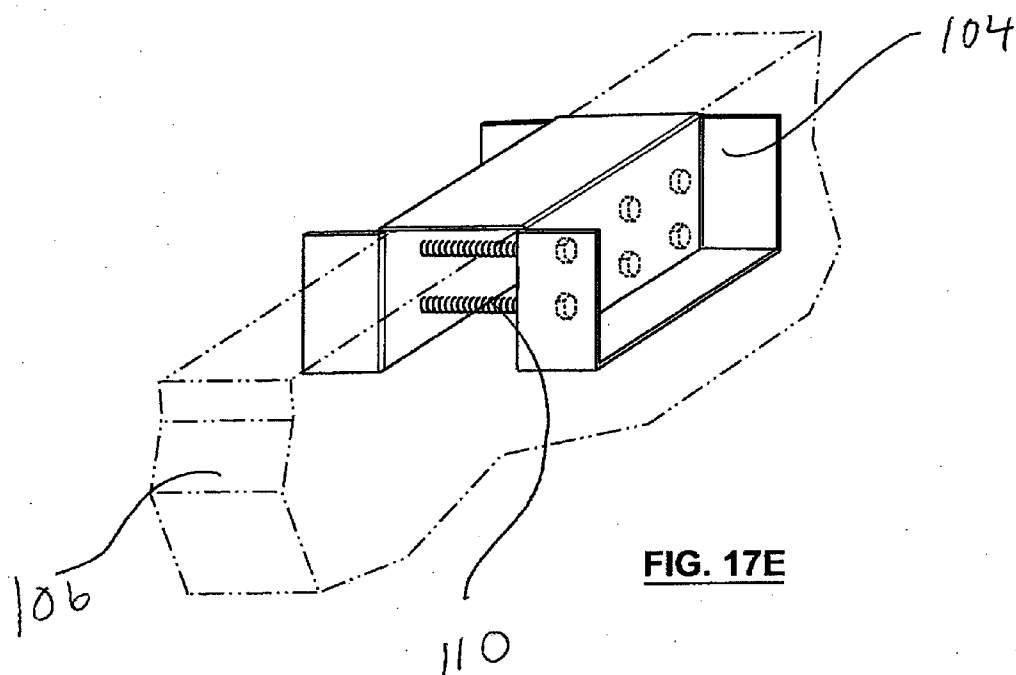
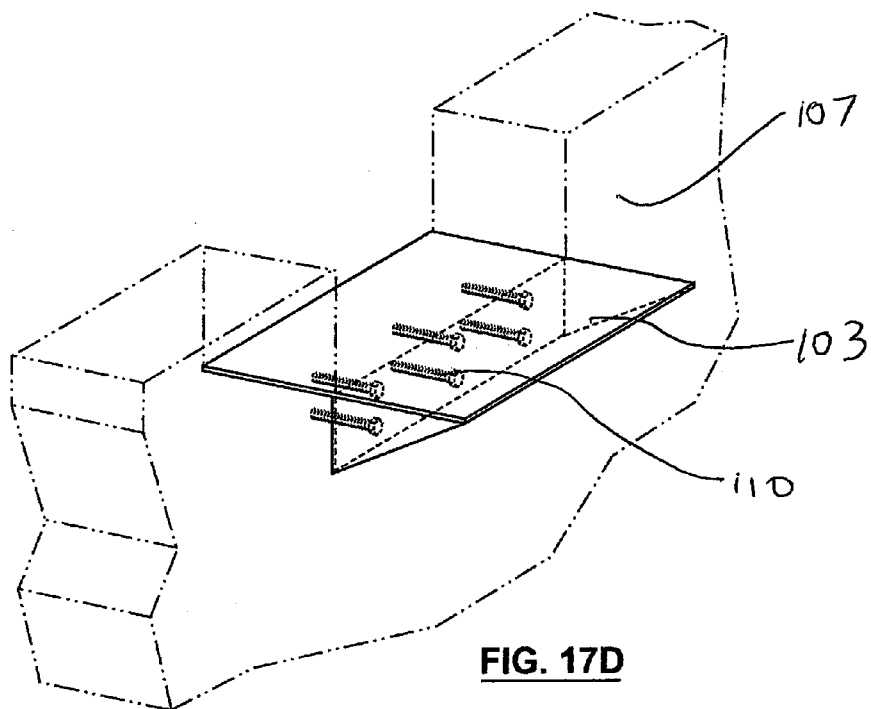


FIG. 17C



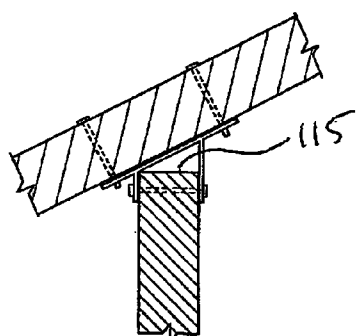


FIG. 18A

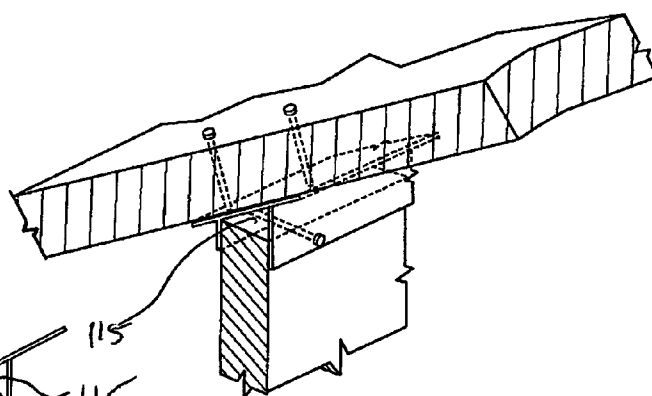


FIG. 18B

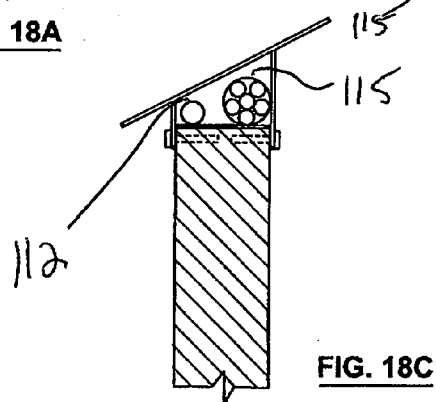


FIG. 18C

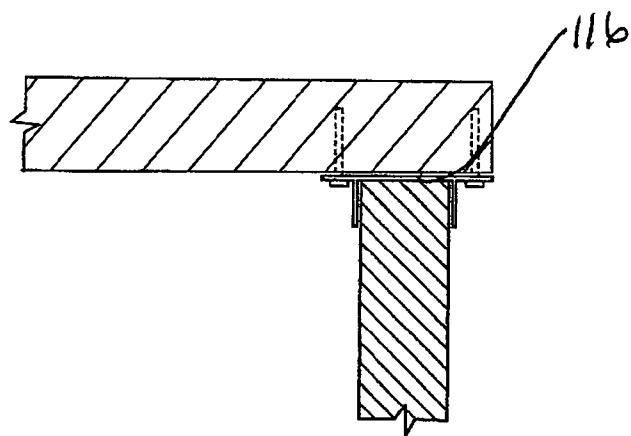


FIG. 19

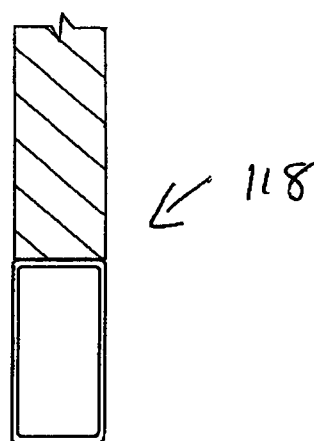


FIG. 20

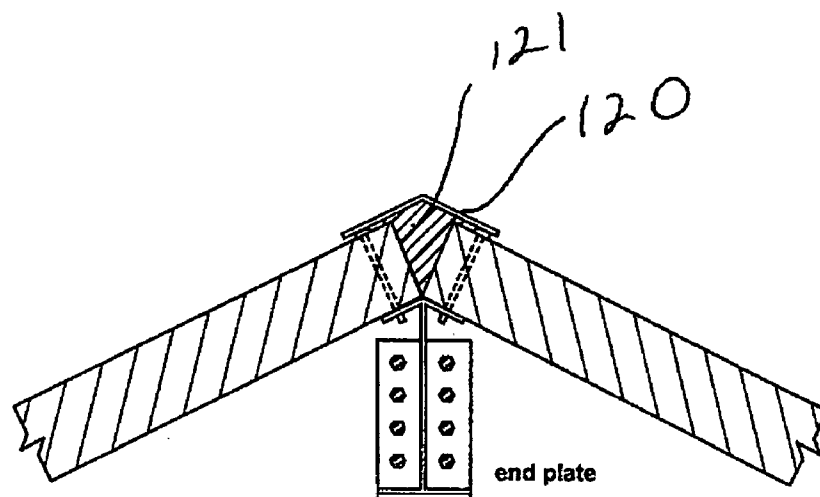


FIG. 21

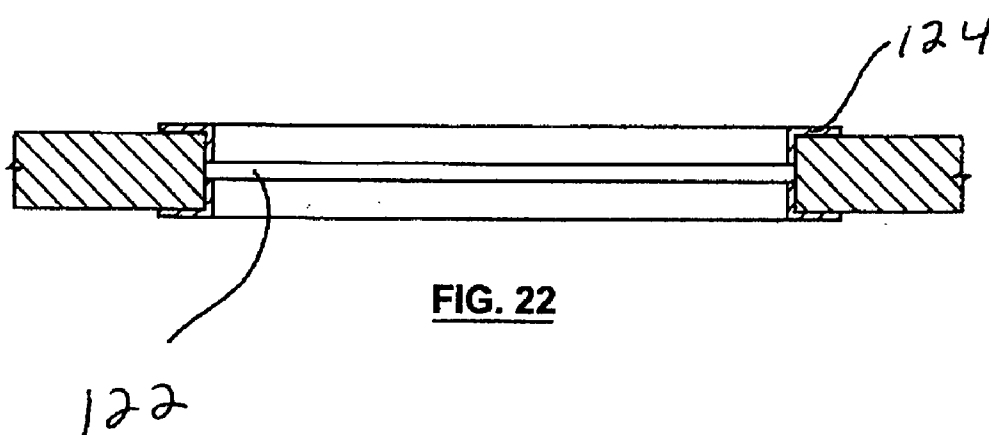


FIG. 22

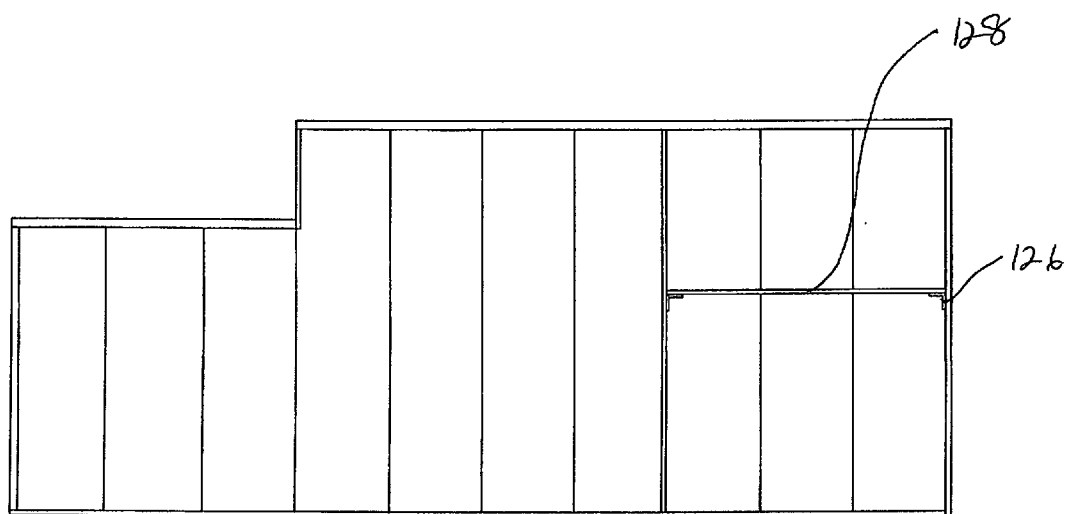


FIG. 23

MODULAR STRUCTURE

FIELD OF INVENTION

[0001] The present invention relates to a modular construction system. In particular, the invention relates to modular homes comprising prefabricated elements that can be quickly assembled.

BACKGROUND OF THE INVENTION

[0002] There is an increasing demand for affordable housing that can be constructed quickly. This is particularly true in some areas that have been hit by natural disasters. However, the need high quality homes at an affordable price extends to all areas. Most standard homes are made of brick, stone or wood on a wood frame. Framing a house is time consuming and often requires specialized equipment to, for example, lift heavy roof trusses. A major cause of delay in home construction is coordinating the work of various trades. Particularly in view of several recent natural disasters, there is an increasing demand for homes that can be constructed

[0003] To try and overcome some of the costs and time involved in on-site construction, various attempts have been made to prefabricate certain components of the house off-site and to use them to assemble a modular house.

[0004] For example, U.S. Pat. No. 6,349,509 discloses a prefabricated wall and roof unit. United States patent application 2007/0051059 describes a structural building system that uses standard material in a configuration that provides for high wind resistance.

[0005] There still remains a need for high quality modular homes that are indistinguishable from custom built homes and yet are affordable. Most previous modular homes have few architectural features and tend to be limited in options customized to a particular buyer.

SUMMARY OF THE INVENTION

[0006] The present invention addresses the need for an improved modular construction system by providing an alternative to wood or metal-framed structures.

[0007] According to an aspect of the present invention there is provided a modular construction system for housing, retail sites, offices and the like.

[0008] The system comprises a series of prefabricated wall and roof panels and a channel and beam system for assembly. The number of walls, the location of pre-cut windows and doors can be varied depending upon the model of home desired. The slope and orientation of the roof can also be varied and the appropriate channels can be provided as part of the building system. This represents an advantage of the present invention over previously known modular construction units, such as container type units that have a pre-set design.

[0009] In the present invention, the walls are load bearing and thus there is no need for wood framing. In addition to the advantages of cost saving and ease of construction, the elimination of a wood frame removes the possibility of mold and termites.

[0010] The modular system of the present invention comprises wall and roof structural insulated panels (SIP) and channels for receiving those panels. The panels may be from about 2 to 8 inches thick, preferably about 3 to 6 inches.

[0011] In a preferred embodiment, the panels are insulated metal panels. More preferably, the panels have a tongue and groove configuration for easy joining.

[0012] The shape of the channels depends on the role they play. The channels may include C-channels, L-channels, eave channels, gable channels, etc.

[0013] In a preferred embodiment the channels are galvanized steel channels.

[0014] C-channels typically form the floor channels, while L-channels are used at corners. In addition to channels, fastening systems such as brackets and adhesives may be used to secure panels in position.

[0015] At least one roof beam is also included.

[0016] At least two hat section beams are also typically included.

[0017] In one aspect of the invention, there is provided a modular building comprising: i) a foundation; ii) a plurality of C channels anchored on said foundation; load bearing panels inserted in said channels; at least one ridge beam; at least one set of hat beams; and connectors for connecting the various components.

[0018] In another aspect of the invention, a kit for the construction of a building is provided. The kit comprises prefabricated load bearing panels, a series of C channels for receiving the panels, at least one roof beam, a roof assembly set of adaptors, and instructions for assembly. In a preferred embodiment, the roof assembly set includes an eave channel, an exterior gable channel, a channel for attachment to the exterior walls, a ridge beam and at least one set of hat beams. In another preferred embodiment, the panels are prefabricated insulated panels. The panels are about 2 to 8 inches thick, more preferably about 5 inches thick. The kit typically further includes securing fasteners.

[0019] In yet another aspect of the invention, a method of building a modular unit is provided. The method comprises the steps of: i) laying a foundation; ii) anchoring a plurality of C-channels to the foundation; iii) sliding a series of load bearing panels along a C-channel; attaching a number of panels together to form a wall; securing intersecting walls with an L-bracket; installing a ridge saddle at the gable end and along interior walls; inserting a beam into the saddles and installing a hat saddle over the roof assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] These and other features of the invention will become more apparent from the following description in which reference is made to the appended drawings wherein: [0021] FIG. 1 is a plan view of a modular structure according to an embodiment of the present invention;

[0022] FIG. 2 is a view of one side of a modular structure according to an embodiment of the present invention;

[0023] FIG. 3 is a view of another side of modular structure according to an embodiment of the present invention;

[0024] FIG. 4 is a view of a third side modular structure according to an embodiment of the present invention;

[0025] FIG. 5 is a view of an internal wall of a modular structure according to an embodiment of the present invention;

[0026] FIG. 6 is a view of another internal wall of a modular structure according to an embodiment of the present invention;

[0027] FIG. 7 illustrates how an exterior wall of a modular structure can be attached to a foundation according to an embodiment of the present invention;

[0028] FIG. 8 illustrates how an internal wall can be attached to a foundation in a modular structure according to an embodiment of the present invention;

[0029] FIG. 9 illustrates a means for connecting corner walls in a modular structure according to an embodiment of the present invention;

[0030] FIG. 10 illustrates a means for connecting intersecting walls in a modular structure according to an embodiment of the present invention;

[0031] FIG. 11 is a perspective view illustrating connecting walls of a modular structure according to an embodiment of the present invention;

[0032] FIG. 12 is a perspective view illustrating how multiple walls can be connected in a modular structure according to an embodiment of the present invention;

[0033] FIG. 13 demonstrates how the load bearing panels join together;

[0034] FIG. 14 illustrates one type of fastening means for securing intersecting support channels and walls; in a modular structure according to an embodiment of the present invention;

[0035] FIG. 15 illustrates a fastening means for joining linear support channels and walls in a modular structure according to an embodiment of the present invention;

[0036] FIG. 16 A-C illustrate means for attaching a peaked roof in a modular structure according to an embodiment of the present invention;

[0037] FIG. 16 D-E illustrates one type of fastening means for attaching the roof support means;

[0038] FIG. 17 A-C illustrates how the roof is attached to the hat beam.

[0039] FIG. 17 D-E illustrates the hat saddles that supports hat beam on interior and exterior walls

[0040] FIG. 18 A-B illustrates the eave channel that attaches roof to exterior side walls and shows how they connect

[0041] FIG. 18 c illustrates how utility conduits can be formed in a modular structure according to an embodiment of the present invention;

[0042] FIG. 19 illustrates the exterior gable channel used to connect roof to gable end walls, similar to eave channel on exterior side walls

[0043] FIG. 20 illustrates the header to column and column to support header that carries load

[0044] FIG. 21 illustrates an embodiment of an end-plate for attaching a roof support;

[0045] FIG. 22 illustrates a window inserted into a wall of a modular structure according to an embodiment of the invention.

[0046] FIG. 23 illustrates the use of the 'L' channel being used to support an interior ceiling panel/or loft support.

DETAILED DESCRIPTION

[0047] The present invention provides a modular building system that is easy to assemble and avoids the cost and labor of framing and installation of roof trusses. While the description of a home building kit and its assembly is described below for exemplary purposes, it is apparent that the system can also be used to construct offices, stores and other buildings.

[0048] The modular building system comprises support channels, exterior and interior walls, structural & non-structural components, adhesives and fasteners. The components are preferably provided as a kit based on a pre-selected

design. Alternatively, individual pieces may be selected to adapt to a particular consumers desires or requirements and to form a "custom" kit.

[0049] The walls comprise pre-fabricated panels. These panels are typically structural insulated panels that are load bearing when combined up to a length of about 15 to 30 feet or greater. Spans of about 16 to 18 feet are preferred. Each panel is preferably cut to a pre-determined specification including, for example, height, width, and openings for doors and windows. Of course, the panels can always be cut on site, but it is more efficient to provide standard models. The structural insulated panels typically range in thickness from 2 to 8 inches, more preferably from about 3 to 6 inches. A combination of panels having different thicknesses may be used on a single structure.

[0050] The support channels are preferably metal, although it is possible that other high strength materials may be used. Galvanized steel and aluminum channels have been demonstrated to be very effective. The channels may have various shapes depending on their location and function. These include C-Channel, L-Channel, Eave Channel, Exterior Gable Channel, Double Channel Section, Interior/Exterior Angle channels.

[0051] The modular building system also typically comprises an adhesive, a fastening system, usually bolts, and brackets or plates for securing the elements together. Galvanized steel and aluminum beams are also included.

[0052] The following is a description of a method for the assembly of a modular building system of the present invention. C-channels for both exterior and interior walls are affixed to a foundation. The exterior walls are formed by sliding a required number of prefabricated panels into the C-channels. The prefabricated panels typically have a tongue and groove construction to fit them together. Adhesive may also be used to seal the joints. At the corners, L-brackets are used to secure the two walls together. The exterior walls form a continuous perimeter. The interior walls meet up with the exterior walls and are supported by C-channel and L-channels. The panels for the interior walls are slid into the C-channels and affixed to each other. Next, a roof support is installed. This comprises beam that sits on plates in pre-cut openings in the walls. A ridge hanger is installed at the gable ends. Hat hangers are installed over the interior walls. The roof support beams are then fitted into the ridge hangers and hat hangers. A more detailed description of the construction of an exemplary structure, a house, can be found in Example 1 below.

[0053] Referring now to the figures, a modular house in accordance with one aspect of the invention is shown. FIG. 1 is an overall top plan view illustrating exterior walls and interior walls fitted into anchored C-channels. The house 10 comprises exterior walls 12 and interior walls 14. A roof beam 16 extends between two walls. FIG. 1 also indicates the locations of various features that are shown in subsequent figures.

[0054] FIGS. 2-4 show various sides of the house and indicate where further details can be found. As shown, the wall panels may include cut-outs for windows, doors, garage, etc.

[0055] FIGS. 5 and 6 show various aspects of internal walls. As can be seen, various cut-outs can be provided in the walls to obtain doors, columns, windows, etc, where desired. The wall 18 comprises a series of load bearing panels 20. The wall panels may include pre-cut openings 22. A ceiling support beam 24 spans the walls. A roof beam 26 is connected to

the top of the walls. The details of the connectors are shown in subsequent figures as indicated.

[0056] FIGS. 7 and 8 provide greater detail as to how the walls are installed. FIG. 7 illustrates attachment of an external wall and FIG. 8 illustrates an attachment of internal wall 29. The house comprises a foundation 30. This foundation may be a concrete slab, a wooden slab or any other suitable material. Alternatively, it may be a pre-existing basement. A C-channel 32 is attached to the foundation using an anchor 34. Various types of fastening means, such as, but not limited to bolts, rods and threads, etc. may be used. A gasket 36 may be positioned between the c-channel and the foundation. This is particularly useful in exterior walls. A wall panel is slid into position along the C-channel 32.

[0057] FIGS. 9 and 10 illustrate the securing of intersecting walls 40, 42 in position using interior 44 and exterior 46 L-brackets. This provides for a very sturdy construction that is resistant to high winds.

[0058] The steps involved in forming the walls are shown in FIG. 11. FIG. 11A illustrates the installation of C-channels 50 on a foundation 52, FIG. 11B illustrates the positioning of wall panels 54 in the C-channels 50 and FIG. 11C demonstrates the securing of walls. FIG. 12 illustrates the positioning of several walls 56.

[0059] FIG. 13 illustrates how wall panels 60 fit together to form a single long wall. Each panel has a tongue side 62 and a groove 64. Preferred wall panels are structural insulated panels such as those used for various commercial applications. These type of panels have previously been used on large framed buildings, such as airplane hangars. Analysis in the course of the present invention provided the surprising result that these panels can be load bearing over significant lengths (i.e. up to more than 20 feet) in the absence of any external frame. A typical house according to the present invention comprises walls up to about 17 feet without the need for a frame.

[0060] FIGS. 14 and 15 illustrate how the channels 70 can be held in position. A plurality of bolts 72 are inserted through a plate 74 that spans two channels. Depending on the type and orientation of the channels to be joined, the configuration of the pre-cut holes 76 for the bolts may vary.

[0061] FIG. 16 illustrates the configuration for attaching the roof. The components include a ridge beam 80 as shown particularly in FIGS. 16 A-C. The ridge beam 80 has an elongated plate 82 that has a first set 84 of oppositely directed flanges at the lower end 86 and a second set 88 of oppositely directed flanges at the upper end 90. The flanges 88 at the upper end 90 are downwardly projecting. As shown in FIG. 16 D, the ridge beam 80 that runs opposite to the roof pitch and its placement in 9 gable ridge hanger 92. As shown in FIG. 16 E, illustrates the interior wall ridge hanger 94 that fit, over the interior walls. The ridge beam 80 fit between gable ridge hangers 92 and the interior ridge hangers 94 and are secured via fasteners 96.

[0062] FIGS. 17 A-C-illustrates the hat beam 100 and how the roof 102 is attached to the hat beam. The hat saddle 100 runs opposite to roof pitch and its placement in the gable end hat saddle 103 (exterior gable end wall) and into interior hat saddle 104. FIG. 17 D-E illustrates the hat saddle for both interior walls 106 and at the end 107 gable. The hat saddle 103 (exterior wall gable end) fit into a pre cut area and attached by the proper hardware. The hat saddle (interior wall) 104 fit over the walls and they are attached by the appropriate hardware 110.

[0063] As shown in FIGS. 17 and 18 illustrates how both the eave channels 112 and hat beam can act as a conduit 115 for utilities such as electricity, cable/internet, central vacuum, etc.

[0064] FIG. 19 illustrates gable channel 116 that fits on top of gable wall and attaches roof to wall. This channel supports the roof along the gable ends.

[0065] FIG. 20 illustrates a miscellaneous beam 118 used for a floor to roof tie-down beam, also used for certain span, such as a header beam for a garage door opening

[0066] FIG. 21 illustrates the ridge cap 120 that is placed over the joining of the roof panels at peak and filled with foam insulation 121.

[0067] FIG. 22 illustrates how a thermal break channel 122 can be inserted in an opening such as a window or door to prevent the transfer of heat or cold from the metal components in situations where the climate is extreme.

[0068] FIG. 23 illustrates the use of an 'L' channel 126 that is able to support an interior ceiling panel 128 or loft support.

[0069] The above disclosure generally describes the present invention. It is believed that one of ordinary skill in the art can, using the preceding description, make and use the compositions and practice the methods of the present invention. A more complete understanding can be obtained by reference to the following specific examples. These examples are described solely to illustrate preferred embodiments of the present invention and are not intended to limit the scope of the invention. Changes in form and substitution of equivalents are contemplated as circumstances may suggest or render expedient. Other generic configurations will be apparent to one skilled in the art. All journal articles and other documents such as patents or patent applications referred to herein are hereby incorporated by reference.

EXAMPLES

[0070] Although specific terms have been used in these examples, such terms are intended in a descriptive sense and not for purposes of limitation. Methods of construction referred to but not explicitly described in the disclosure and these examples are well known to those skilled in the art.

Example 1

Construction of Modular House

[0071] Phase 1 involves the foundation & channel layout. The steps are as follows:

[0072] Step 1: Foundation is constructed—concrete slab, basement, wood slab

[0073] Step 2: Exterior Perimeter and internal wall c-channels Bolted to foundation.

Phase 2 is the erection of the exterior walls according to the following steps.

[0074] Step 1: First panel slides into c-channel into starting position. Starting position is in a corner.

[0075] Step 2: Slide opposing corner piece, along the c-channel, to meet the first panel to create squared corner.

[0076] Step 3: Screw 'L' bracket on interior of corner to each panel Step 4: Screw 'L' Bracket on exterior of each corner.

[0077] Step 5: Apply adhesive to exposed panel side (tongue & grove).

[0078] Step 6: Slide next exterior wall panel along the c-channel into position—tongue and groove—adhere to previous panel.

[0079] Step 7: repeat step 5 & 6 till the first interior wall c-channel.

[0080] Step 8: Insert interior wall panel into interior c-channel, slide into place flush against the interior side of exterior wall panel.

[0081] Step 9: Screw “L” Brackets on both side of the interior wall panel, for support, to the interior of the exterior wall panel

[0082] Step 10: Apply adhesive to exposed side of Interior wall panel

[0083] Step 11: Slide next panel along the c-channel into position—tongue and groove.

[0084] Step 12: Repeat 5 to 11

Phase 3 is the installment of the roof support as follows:

[0085] Step 1: Install ridge saddle (exterior gable wall) into precut opening. Bolt into place with specified hardware.

[0086] Step 2: Install Ridge Saddle (interior wall) into pre cut opening on interior walls. Bolt into place with specified hardware.

[0087] Step 3: Install ridge beam (beam#1 main beam) into ridge saddles, this beam runs through the middle of the house.

[0088] Step 4: Install hat Saddle (exterior gable wall) into precut opening. Attach with proper hardware.

[0089] Step 5: Install hat saddle (interior walls) place over top of interior wall.

[0090] Step 6: Install hat beam inot the hat saddle. Attach with proper hardware.

Phase 4 relates to securing the parts of the structure together as follows:

[0091] Step 1: Each seam (where panels fit together) is screwed together. Using designated screws and engineered approved distances.

Phase 5 relates to providing utility services as follows:

[0092] Step 1: Each panel has wiring conduit prefabricated. All wires are to be installed according to the wiring schematics. Also have cable/internet, phone, central vacuum and alarms installed. All installed prior to installing roof

Phase 6 relates to the Eave Channel Conduit Section. The steps are:

[0093] Step 1: Place eave channel on exterior sidewalls (custom design with roof pitch) built in electrical conduit.

[0094] Step 2: Run electrical wires in conduit before fastening eave channel permanently to wall panels.

Phase 7 involves installation of an Exterior Gable Channel.

[0095] Step 1: Place exterior gable channel to both gable ends of the house. Attach with proper fasteners.

Step 8 is the installation of roof panels and the ridge cap. The steps are:

[0096] Step 1: Slide roof panel into position and using the proper screws and specified bolts, attach the panels to beam support (Beam #1, 2, 3, 4)

[0097] Step 2: Apply adhesive/sealant to grove & tongue section on each roof panel

[0098] Step 3: Install foam insulation where the two roof panels meet at the exterior peak

[0099] Step 4: Place ridge cap into place and fix with the proper fasteners.

Step 9 is the installation of an interior corner angle and interior ceiling/wall connection as follows:

[0100] Step 1: Interior corner angles are attached to the interior wall to ceiling connection. These connections are support connections.

Step 10 is directed to installing interior corner angles around window & door openings.

[0101] Step 2: Install interior corner angle (L channel), one on the exterior and one on the interior side for window and door attachment.

[0102] Step 3: Place interior corner angles one to each side leaving a space of 1" (one inch), which eliminates the thermo, break.

Example 2

Insulation of a Thermo Break

[0103] 1. Base bottom channel running around the perimeter of the house. The base channel must be flashed. The flashing cavity is to be 1½" deep and must be insulated to minimum R-19. Flash per detail drawings.

[0104] 2. Eave channel/sidewalls to Roof. This area must be flashed as well, leaving a cavity of at least 1½" (one and one half inch) and insulated minimum R19.

[0105] 3. The exterior gable channel, this area also must be flashed using the same procedure and insulated to minimum of R-19.

[0106] One or more currently preferred embodiments have been described by way of example. It will be apparent to persons skilled in the art that a number of variations and modifications can be made without departing from the scope of the invention as defined in the claims.

What is claimed is:

1. A modular building comprising: i) a foundation; ii) a plurality of C channels anchored on said foundation; load bearing panels inserted in said channels; at least one ridge beam; at least one set of hat beams; and connectors for connecting the various components.

2. A building according to claim 1 wherein a plurality of load bearing panels are attached to form a plurality of walls.

3. A building according to claim 2 wherein the walls comprise both exterior and interior walls.

4. A building according to claim 2 wherein the walls comprise prefabricated insulated panels.

5. A building according to claim 2 wherein the panels are connected via a tongue and groove mechanism.

6. A building according to claim 2 wherein intersecting walls are supported at right angles using L brackets.

7. A kit for the construction of a building, said kit comprising prefabricated load bearing panels, a series of C channels for receiving the panels, at least one roof beam, a roof assembly set of adaptors, and instructions for assembly.

8. A kit according to claim 7 wherein the roof assembly set includes an eave channel, an exterior gable channel, a channel for attachment to the exterior walls, a ridge beam and at least one set of hat beams.

9. A kit according to claim 7 wherein the panels are prefabricated insulated panels.

10. A kit according to claim 7 wherein the panels are about 2 to 8 inches thick.

11. A kit according to claim 7 wherein the panels are about 5 inches thick.

12. A kit according to claim **7** wherein the kit further includes securing fasteners.

13. A kit according to claim **12** wherein the fasteners are bolts.

14. A kit according to claim **12** further comprising supporting brackets or plates.

15. A method of building a modular unit, said method comprising: i) laying a foundation; ii) anchoring a plurality of C-channels to the foundation; iii) sliding a series of load bearing panels along a C-channel; attaching a number of panels together to form a wall; securing intersecting walls with an L-bracket; installing a ridge saddle at the gable end

and along interior walls; inserting a beam into the saddles and installing a hat saddle over the roof assembly.

16. A method according to claim **15** wherein the panels are attached via a tongue and groove mechanism.

17. A method according to claim **15** wherein the panels are affixed to each other with glue.

18. A method according to claim **15** wherein the wall has a length of about 15 to 30 feet.

19. A method according to claim **15** wherein the wall has a length of up to about 17 feet.

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