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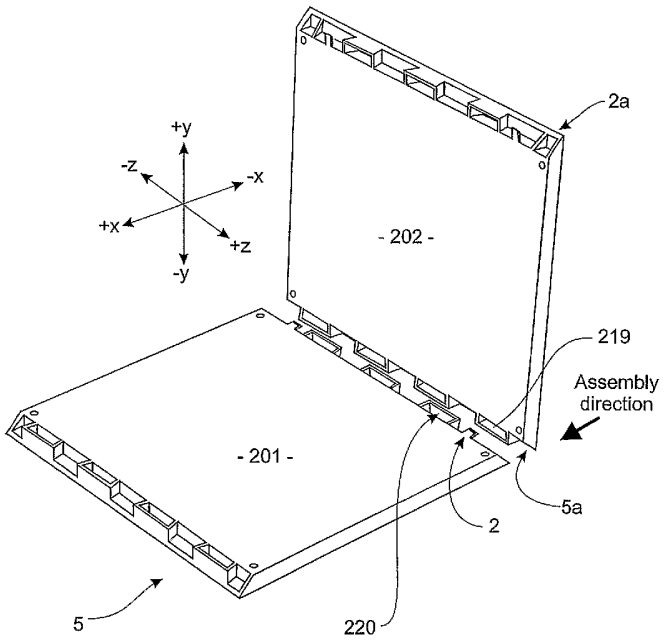
(54) Title: MODULAR FURNITURE SUBASSEMBLY, COMPONENT THEREFOR AND METHOD OF ASSEMBLING A MODULAR FURNITURE SUBASSEMBLY



(57) Abstract: A modular furniture component (201) that includes a first end (5) provided with an integral connector and an opposite second end (220) adapted to engage a second modular furniture component (202) at and with an integral connector of the second modular furniture component that is identical to the first mentioned connector to thereby, in use, connect the modular furniture component to the second mentioned modular furniture component, to define at least part of a furniture assembly.

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MODULAR FURNITURE SUBASSEMBLY, COMPONENT THEREFOR AND METHOD OF ASSEMBLING A MODULAR FURNITURE SUBASSEMBLY

FIELD OF THE INVENTION

The present invention relates to modular furniture, and in particular, but not exclusively to modular furniture and related components that can be used to assemble into an item of furniture.

BACKGROUND

There are many examples of modular furniture that can be assembled from a plurality of distinct components. Examples of patents in the area include:

- DE19949849 - this document shows panels that have tongues and grooves, but relies on pins to hold the panels together.
- US3836217 - this shows projections at the edges of panels but requires an edge engagement member that slides over the edges to hold panels together.
- US3583780 - this document also shows panels that require pins to affix the panels together.
- EP1022968 - this shows panels that require grooved interconnecting elements that engage with panel edges in order to create the required structure.
- US5588726 - this shows the use of mortise and tenon edges, but a channel is required in the wall member for a connector that includes the tenons.
- WO8700406 - this shows a number of panels that include tongues and grooves, but the upper and lower panels are of a different construction to the side panels and are required to connect the side panels together.

- US3885845 - this shows a mortise and tenon arrangement, but longitudinal pins are required to hold the panels in place.

All of these examples require at least two distinct component parts to be combined to define a component capable of assembly to define a single item of furniture.

Multiple component parts capable of assembly with other components for such a system relatively expensive. It can also make such a system relatively cumbersome to use by a consumer or user in that assembly of the component parts is required prior to the connection of the components to define the item of furniture. In addition inconvenience such as broken parts, losing parts and also accuracy in manufacturing to ensure that component parts can engage conveniently together also arise.

There exists a need for a modular furniture system having components from which an item of furniture can be manufactured or assembled or configured using for example components of a single design.

The reference to any prior art in this specification is not, and should not be taken as, an acknowledgment or any form of suggestion that that prior art forms part of the common general knowledge, or that the information would be found by a diligent search.

It is an object of the invention to provide a modular furniture component and a modular furniture assembly and furniture made therefrom that will overcome or ameliorate problems with components and assemblies available at present, or which will at least provide the public with a useful choice.

BRIEF DESCRIPTION OF THE INVENTION

Accordingly in a first aspect the present invention consists in a modular furniture component that includes a first end provided with an integral connector and an opposite second end adapted to engage a second modular furniture

component at and with an integral connector of said second modular furniture component that is identical to said first mentioned connector to thereby, in use, connect said modular furniture component to said second mentioned modular furniture component, to define at least part of a furniture assembly.

Preferably said component is a panel.

Preferably it is a substantially planar or flat panel.

Preferably alternatively said component is a curved panel.

Preferably said component defines said first and second ends at two parallel edges thereof.

Preferably said component is of a it is a quadrilateral shaped panel wherein said first and second ends are defined by two opposite edges of said quadrilateral shaped panel.

Preferably said connector includes releasable locking means to interact with a said second mentioned component in a manner to releasably lock said components together.

Preferably, when connected, the plane of said component may form an angle of substantially 90° to the plane of said second mentioned component.

Preferably said releasable locking means is selected from one of (a) a resiliently flexible tab that includes a barb to releasably snap-fit with a barb receiver provided at the second end of a second mentioned component, to thereby lock said first and second mentioned components together, wherein the second end of said first mentioned component includes a barb receiver identical to said first mentioned barb receiver and (b) a barb receiver to be releasably engaged in a snap-fit manner by a barb of a resiliently flexible tab at a second end of a said second mentioned component to thereby lock said first and second mentioned components together, wherein said second end of said first mentioned component includes a resiliently flexible tab that includes a barb, identical to said first mentioned resiliently flexible tab.

Preferably said connector includes one part of a two part male and female connection and the second end of said connector includes the other part of said two part male and female connection.

Preferably said connector includes one part of a two part mortise and tenon connection and said second end includes the other part of said two part mortise and tenon connection.

Preferably the mortise and tenon connection is a dovetail connection.

Preferably the first and second ends are defined by straight sides of said component that have been bevelled to, in one view of said component, define a trapezoidal outline shape, said bevelled edges so bevelled to abut like bevelled edges of second mentioned component once said first and second mentioned components are engaged together.

Preferably said component includes at least one aperture therethrough for securing said component, by way of a penetrate fastener to an identical component placed contiguous therewith.

Preferably said component is a flat panel of a quadrilateral plan shape and includes a first pair of opposed sides that define said first and second ends that are each to engage with a second and third like component respectively and a second pair of opposed sides that extend at 90 degrees to and between the first pair of opposed sides, said panel including an outer face side that, in use, will be positioned to face outwardly to said assembly and an inner face side that, in use, will be positioned to face inwardly to said assembly.

Preferably said panel includes, adjacent and parallel to each second pair of opposed edges, a channel located at the inner face side of said panel, said channel capable of receiving and locating an edge of a base panel that may optionally engage with said assembly, said base panel including an inner face side and an outer face side, wherein when engaged with said component, a normal of each inner and outer face side of said base panel extends in a plane parallel to a plane

passing through a normal of the inner and outer face sides of said component and the normal of each inner and outer face sides of said base panel extends perpendicular to the normal of the inner and outer face sides of said component.

Preferably said channel extends between said first pair of opposed edges.

Preferably said channel terminates at said first pair of opposed edges.

Preferably a channel cap is provided that may removably engage the component to provide and overcap to said channel.

Preferably said channel can removably receive a channel cap that may removably engage the component to provide and overcap to said channel.

Preferably all said components are identical.

In a further aspect the present invention consists in an item of furniture comprising a plurality of modular furniture components as herein described wherein all said components are identical and wherein said components are connected to each other by said connectors.

Preferably, when assembled, said components define an endless perimeter.

Preferably said components are flat panels that, when connected, each have the normal to their plane lying parallel each other.

Preferably said plurality of modular furniture components define an endless perimeter about a component defined cavity that has, at the most, two major openings each opening bounded in part by all said components.

Preferably said cavity includes only one opening, said cavity bounded by said components and also by a base panel that extends between all said components.

Preferably said components are flat panels that, when connected, each have the normal to their plane lying parallel each other and wherein said cavity includes only one opening, said cavity bounded by said components and also by

a base panel that extends between all said components, the normal of said base panel extending perpendicular to the normal of each said components.

Preferably each said component is a flat panel of a quadrilateral plan shape and includes a first pair of opposed sides that define said first and second ends that are each to engage with a like component respectively.

Preferably each said component includes a second pair of opposed sides that extend at 90 degrees to and between the first pair of opposed sides, said panel including an outer face side that, in use, will be positioned to face outwardly to said assembly and an inner face side that, in use, will be positioned to face inwardly to said assembly.

Preferably said panel includes, adjacent and parallel to each second pair of opposed edges, a channel located at the inner face side of said panel, each said channel of each panel capable of receiving and/or locating an edge of a base panel, said base panel including an inner face side and an outer face side, wherein when engaged with each said channel, a normal of each inner and outer face side of said base panel extends in a plane parallel to a plane passing through a normal of the inner and outer face sides of said each said panel and the normal of each inner and outer face sides of said base panel extends perpendicular to the normal of the inner and outer face sides of each said panel.

Preferably said channel extends between said first pair of opposed edges.

Preferably said channel terminates at said first pair of opposed edges.

Preferably a channel cap is provided that may removably engage a said component to provide and overcap to one of its said channels.

Preferably said channel can removably receive a channel cap that may removably engage the component to provide and overcap to said channel.

Preferably four components are connected to each other, a first pair of parallel upper and lower components and a second pair of parallel side components.

Preferably one of said cavity openings is selectively closable by a door that is hinged from said first pair of upper and lower components.

Preferably said door is hinged by a hinge located with each of said upper and lower components adjacent one of said side components to define a hinge axis parallel to the plane of a said side components.

Preferably said door includes a latch that interacts with at least one of said upper component and lower component and side component to hold said door in a condition closing said one of said cavity openings.

Preferably said latch establishes and interference fit with at least one of said upper component and lower component and side component to hold said door in a condition closing said one of said cavity openings in a resiliently resistive manner.

Preferably said latch is a pin that locates with a catch of one of said upper component and lower component and side component to hold said door in a resiliently resistive manner in a condition closing said one of said cavity openings.

Preferably said latch locates with a pin of one of said upper component and lower component and side component to hold said door in a condition closing said one of said cavity openings in a resiliently resistive manner.

Preferably said door includes a handle at or proximate an edge of the door distal from the hinged edge of said door.

Preferably said hinge is defined by two hinge pins that each can locate within an aperture defined in said upper and lower components.

Preferably said hinge is defined by two hinge pins that each can locate within an aperture defined in said upper and lower components, each said aperture extending into a respective upper and lower component from a side of said upper and lower component that face each other to allow the each aperture

to capture a said hinge pin upon the bringing together of said upper and lower component for assembly of the item of furniture.

Preferably each said hinge pin is integrally formed with said door.

Preferably alternatively each said hinge pin can also be inserted into a respective aperture of said door.

Preferably said aperture of each said upper and lower components is located adjacent one of the first and second ends of each said component.

Preferably there are two said apertures, one each located adjacent each of said first and second ends.

Preferably each said component includes a shelf mount located intermediate of said first and second ends of said component and by which a shelf can be supported wherein, when assembled, two opposed components of the item of furniture hold said shelf in a manner parallel to the other two opposed components.

Preferably said shelf mount is an aperture into which a mount of or for a shelf can engage.

Preferably said shelf mount is a lug that can push into and be supported by an aperture of said component, defining said shelf mount of said, said lug protruding from said component sufficiently to allow said shelf to engage therewith by locating on top of said lug.

Preferably each said component includes two shelf mounts each spaced equal distance from said first end of said component.

Preferably said or each said shelf mounts is located midway between said first and second ends of said component.

Preferably a wine rack is secured within said cavity.

Preferably a fastening aperture is provided through each said component, said fastening aperture capable of receiving at least one of:

a) a castor to engage at said fastening aperture of said component to allow said item of furniture to be conveniently mobile; and

b) a penetrative fastener that can extend through said fastening aperture and a fastening aperture of a contiguously placed identical component to said component of said item of furniture, to releasably connect said component of said item of furniture with said contiguously placed component.

Preferably said castor includes a mounting shaft that can penetrate said fastening aperture to engage a said component.

Preferably said penetrative fastener includes a shaft with a shaft head and a free end that can be engaged by a head, said head and said shaft head being of a shape to prevent their passing through said fastening aperture to thereby capture said component to said contiguously placed identical component.

Preferably a fastening aperture is provided through each said component, said fastening aperture capable of receiving at least one of:

a) a castor to engage at said fastening aperture of said component to allow said item of furniture to be conveniently mobile; and

b) a penetrative fastener that can extend through said fastening aperture and a fastening aperture of both of (i) a contiguously placed identical component to said component of said item of furniture, to releasably connect said component of said item of furniture with said contiguously placed identical component and (ii) a contiguously placed said base panel that includes fastening aperture.

In a further aspect the present invention consists in two of said item as hereinbefore described and at least one penetrative fastener wherein each said component includes at least one fastening aperture therethrough, the two items releasably engaged together by said penetrate fastener when a component of one item is placed contiguous a component of another of said items.

In a further aspect the present invention consists in two of said item as hereinbefore described and at least one penetrative fastener wherein each said component includes at least one fastening aperture there through, and said base panel includes at least one fastening aperture there through, said items releasably engaged together by said penetrate fastener when a base panel of one item is placed contiguous a component of another of said items.

Preferably fastening of assemblies together is achievable once a modular furniture component of at least two assemblies are placed contiguous each other (preferably parallel in a planar sense) to then allow a fastener to engage said modular furniture components together.

Preferably in a single condition a plurality of assemblies can be stacked one on top of each other and/or one adjacent each other.

In a further aspect the present invention consists in a modular furniture component that includes a first end including a connector and an opposite second end adapted to engage a said connector of a second said modular furniture component to thereby, in use, connect said modular furniture component to said second mentioned modular furniture component, wherein said connector includes one part of a two part mortise and tenon connection, and a barbed locking tab to releasably lock said component and said second mentioned component together.

Preferably said second end includes the other part of said two part mortar and tenon connection.

In a further aspect the present invention consists in a modular furniture assembly, constructed from a plurality of modular furniture components as hereinbefore described that are connected to each other by each said connector.

Preferably four modular furniture components are connected to each other, each said modular furniture component connected by its connector, each said component connected to two other said modular furniture components, said assembly defining a cavity therebetween, wherein an angle between each said

modular furniture component and any modular furniture component to which it is directly connected is substantially 90°.

In a further aspect the present invention consist in a modular furniture assembly constructed of a plurality of components as hereinbefore described connected to a modular furniture assembly as hereinbefore described.

In a further aspect the present invention consists in a modular furniture assembly including a plurality of substantially identical modular furniture components as hereinbefore described that are interconnected exclusively by said connector that are integral to said modular furniture components.

In a further aspect the present invention consists in an item of furniture comprising;

four modular furniture components as hereinbefore described that are engaged together by their connectors and whereby a cavity is defined that at least in part contains at least one of;

(a) a drawer,

(b) a wine rack

(c) a pigeon hole rack

(d) a shelf, and

(e) a door.

Preferably said four modular furniture components are flat panels and extending between all modular furniture components there is a flat base panel whose plane is substantially parallel to the normal of the planes of the modular furniture components.

In a further aspect the present invention consists in a furniture assembly defining a storage bin, said assembly consisting of at least three and preferably four or more modular furniture components as hereinbefore described, engaged together and having extending therebetween a base panel, wherein the base panel

extends substantially horizontally and transverse the modular furniture components that extend substantially vertically and wherein an upper opening is provided through which the assembly can receive or dispense items via the upper opening.

Preferably it includes a cladding panel receiving region to receive a cladding panel to be selectively engaged to the modular furniture component, the cladding panel providing an exterior finish to assembly.

Preferably the cladding panel can be selectively engaged to a modular furniture component.

Preferably the cladding panel is contiguous said component.

Preferably a plurality of cladding panels are available for mixing and matching of cladding panels with modular furniture components.

Preferably said cladding panels can receive an image.

Preferably said image may be printed onto said cladding panel.

Preferably said image may be adhesively applied as a film to said cladding panel.

Preferably said cladding panel includes apertures therethrough to define indicia by said apertures of said cladding panel.

Preferably said cladding panel can be used to define said base panel.

Preferably said cladding panel is snap lockable to a said modular furniture component.

Preferably said cladding panel is quadrilateral in shape.

Preferably the perimeter of said cladding panel is substantially contiguous with the perimeter of said modular furniture component when engaged therewith.

Preferably said cladding panel is substantially planar and substantially parallel with the preferred planar nature of the modular furniture component with which it is engaged.

In a further aspect the present invention consists in a method of assembling a modular furniture assembly from a plurality of components as hereinbefore described, comprising;

engaging a connecting means provided at a first end of a first modular furniture component with a second substantially identical modular furniture component and repeating with at least one further identical modular furniture component.

In a further aspect the present invention consists in an item of modular furniture comprising

at least two modular furniture assemblies each constructed from a plurality of modular furniture component that includes a first end provided with an integral connector and an opposite second end adapted to engage a second modular furniture component at and with an integral connector of said second modular furniture component that is identical to said first mentioned connector to thereby, in use, connect said modular furniture component to said second mentioned modular furniture component, to define at least part of a furniture assembly.

In a further aspect the present invention consists in a modular furniture system comprising;

a plurality of modular furniture components sufficient to define at least two modular furniture assemblies, wherein each component is a flat panel that includes a first end provided with an integral connector and an opposite second end adapted to engage a second modular furniture component at and with an integral connector of said second modular furniture component that is identical to said first mentioned connector to thereby, in use, at least connect a first modular furniture component to a said second modular furniture component and said second modular furniture component to a further modular furniture component of said plurality of modular furniture components, to define one of said two modular furniture assemblies having an endless perimeter and wherein all

component have the normal to their major plane lying parallel each other, each component including at least one fastening aperture therethrough

a penetrative fastener capable of penetrating two of said fastening apertures, one of each of two modular furniture assemblies when two of said modular furniture assemblies are placed adjacent each other in a manner so that a said component of each said assemblies are contiguous each other, said penetrative fastener releasably securing said two assemblies together.

Preferably that also includes cladding panels, each said cladding panel capable of being selectively engaged to a modular furniture component, the cladding panel providing an exterior finish to assembly.

Preferably the cladding panel can be selectively engaged to a modular furniture component.

Preferably the cladding panel is to be engaged, contiguous a said component.

Preferably the cladding panel includes on one major surface thereof a penetrative fastener to is to be engaged with said fastening aperture to thereby engage said cladding panel to a said component.

Preferably the penetrative fastener of said cladding panel is integrally formed and projects above a major surface of said cladding panel.

Preferably said cladding panels can receive an image.

Preferably said image may be printed onto said cladding panel.

Preferably said image may be adhesively applied as a film to said cladding panel.

Preferably said cladding panel includes apertures therethrough to define indicia by said apertures of said cladding panel.

Preferably said cladding panel can be used to define said base panel.

Preferably said cladding panel is snap lockable to a said modular furniture component.

Preferably said cladding panel is quadrilateral in shape.

Preferably the perimeter of said cladding panel is substantially contiguous with the perimeter of said modular furniture component when engaged therewith.

Preferably said cladding panel is substantially planar and substantially parallel with the preferred planar nature of the modular furniture component with which it is engaged.

Preferably that also includes at least one base panels, said base panel to engage and extend between all said components of an assembly to define an assembly with a cavity bounded by said base panel and said components and having one major opening to said cavity.

Preferably said base panel is to extend between all said components of an assembly in a manner so that the normal of said base panel extends perpendicular to the normal of each said components.

Preferably each said component is of a quadrilateral plan shape and includes a first pair of opposed sides that define said first and second ends that are each to engage with a first and second like component respectively.

Preferably each said component includes a second pair of opposed sides that extend at 90 degrees to and between the first pair of opposed sides, said panel including an outer face side that, in use, will be positioned to face outwardly to said assembly and an inner face side that, in use, will be positioned to face inwardly to said assembly.

Preferably said base panel includes a fastening aperture there through wherein said penetrative fastener is capable of penetrating two of said fastening apertures of two base panels, one of each of two modular furniture assemblies when two of said modular furniture assemblies are placed adjacent each other in

a manner so that a said base panel of each said assemblies are contiguous each other, said penetrative fastener releasably securing said two assemblies together.

Preferably said base panel includes a fastening aperture there through wherein said penetrative fastener is capable of penetrating said fastening apertures of said base panels and said fastening aperture of a said component, each being one fastening aperture of each of two modular furniture assemblies when two of said modular furniture assemblies are placed adjacent each other in a manner so that a said base panel of one said assembly and a component of an adjacent said assembly are contiguous each other, said penetrative fastener releasably securing said two assemblies together.

In a further aspect the present invention consists in a storage box that includes;

four identical side walls of a quadrilateral shape each side wall including;

two parallel and opposed fastening edges, a first of said fastening edges having one part of a two part mortise and tenon joint and a second of said fastening edges having the other part of said two part mortise and tenon joint engaged whereby the fastening edges of each said side wall are releasably engaged together by virtue of said mortise and tenon joint, and

two parallel and opposed free edges

a base panel that is engaged to each of said four side walls at one of said two parallel and opposed free edges to define a cavity with one major opening bounded in part by each of the other of said two parallel and opposed free edges.

In a further aspect the present invention consists in a modular furniture assembly as herein described and with reference to the accompanying drawings.

In a further aspect the present invention consists in a modular furniture component as herein described and with reference to the accompanying drawings.

In a further aspect the present invention consists in a modular furniture assembly comprising

at least three panels that are identical to each other, each panel including a first and second opposed major surface sides and each including two parallel fastening edges wherein at each said fastening edge there is provided at the first major surface side at least one fastening aperture

a fastening clip that includes two regions, each region including a fastening protrusion to locate into a respective fastening aperture of a first and a second said panels when such panels are positioned with their fastening edges contiguous each other clip said two panels reliably together.

Preferably said fastening clip includes a live hinge separating each region.

Preferably all said fastening edges are of an identical configuration.

Further aspects of the invention, which should be considered in all its novel aspects, will become apparent from the following description given by way of example of possible embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a front perspective view of a modular furniture assembly,

Figure 2 is an exploded view of the assembly of Figure 1,

Figure 3 is a plan view of one possible embodiment of a modular furniture component,

Figure 3a is a plan perspective view of the modular furniture component of Figure 3,

Figure 3b is a bottom perspective view of the modular furniture component of Figure 3,

Figure 3c is a perspective view of two furniture components prior to being engaged together showing in more detail the preferred dovetail connectors,

Figure 3d is a close up view of the dovetail connectors of two components,

Figure 4 is an end view of the first end of the modular furniture component of Figure 3,

Figure 5 is a cross-section through line A-A of the modular furniture component of Figure 3,

Figure 6 is a cross-section side view of the modular furniture assembly of Figure 1,

Figure 6a is an enlarged view of area D of Figure 6, showing a tab of a first modular furniture component engaging a second modular furniture component,

Figure 7 is a partially exploded view of a modular furniture assembly and associated cladding panels,

Figure 8 is a perspective view of a number of modular furniture assemblies connected together to form an assembled item of furniture,

Figure 8A is a front perspective view of a furniture assembly wherein a fastening bracket is shown,

Figure 8B is a rear perspective view of that of Figure 8A including the fastening bracket,

Figure 9 is a plan view of the furniture item of Figure 8,

Figure 9A illustrates a number of assemblies 100 engaged to each other in a configuration different to that shown with reference to Figure 9,

Figure 9B is an alternative perspective view of the structure shown in Figure 9A, both showing the engagement of assemblies 100 in a manner to allow for the resulting structure to define a table support structure with which a table top can be engaged,

Figure 9C shows a wine rack insert for a cavity of an assembly, as a further example of the versatility of the invention,

Figure 10 shows a cross-section view through cutting line A-A of Figure 9,

Figure 11 is an enlarged view of area B of Figure 10,

Figure 12 is an exploded perspective view of a fastener that includes a fastening pin and cap,

Figure 13 is a plan view of a base panel,

Figure 14 is a bottom view of the base panel of Figure 13,

Figure 15 is a perspective view of a modular furniture assembly with cladding panels and one open face,

Figure 16 is a perspective view of an assembly provided with a shelf,

Figure 17 is a partially exploded view of the assembly of Figure 16,

Figure 18 is a perspective view of an assembly provided with a door,

Figure 18A illustrates an exploded view of an assembly wherein the base panel and door panel are included,

Figure 18B illustrates a method of assembling of the assembly that includes for example the backing or base panel and door which may be a two step process, the first involving the connection of two adjacent components together and then the connection of the two other adjacent components together whereupon a sliding assembly can engage all components together including the backing panel and door to define an assembly,

Figure 18C is a perspective view of a door including the provision of a hinge pin and also locking pins and handle,

Figures 18D-F show variations to a door shown in Figure 18C,

Figure 19 is an enlarged cross-section view of a connection between the door and a modular furniture component of Figure 18,

Figure 20 is a partially exploded view of an assembly provided with a drawer system,

Figure 21 is a cross-section front view of an assembly of Figure 20,

Figure 22 is an exploded perspective view of a hexagonal assembly,

Figure 23 is a perspective view of a triangular assembly,

Figure 24 is a perspective view of an assembly for use as a bin,

Figure 24A is a perspective view of an assembly wherein casters are provided to one of the modular furniture components,

Figure 24B is an alternative perspective view showing the casters,

Figure 25 is an exploded view of an assembly wherein a backing panel is provided to allow for the assembly to act as a bin or other item of furniture in combination with or without further assemblies,

Figure 25B shows channel detail for engagement by a base or backing panel or cladding panel,

Figure 26 is a perspective view of an alternative configuration of a cladding panel,

Figure 26B is a perspective and partial cross sectional view through a furniture component 200 with which a cladding panel is engaged showing the interaction between the protrusion of the cladding panel and the opening or aperture of the furniture component,

Figure 27 is a perspective view illustrating how a cladding panel 11 may be engaged to a furniture component 200,

Figure 28 shows a furniture component 200 wherein the channel 581 has a dust cover provided to it, and

Figure 29 illustrates an alternative configuration of components 501 that can be assembled together to define a furniture assembly having similar application as that of the more preferred form as described with reference to Figures 1-28.

DETAILED DESCRIPTION OF THE INVENTION

The term "furniture" used herein is intended to have a broad meaning, and in particular includes for example but not exclusively, office furniture such as shelving, partitioning, book cases, storage bins and filing systems and the like.

Figures 1 and 2 show, a modular furniture assembly 100 according to one possible embodiment of the present invention.

Where reference herein is made to a furniture assembly it is to be appreciated that the assembly may on its own define an item of furniture such as the bin shown in Figure 24 or may, in combination with other assemblies, be used to create a structure that defines an assembled item of furniture such as for example that shown in Figure 10. Accordingly, the assembly 100 may be used on its own as an item of furniture, or, as is described further below, may be combined with further components and/or assemblies 100 to create more complex items.

As best seen in Figure 2, the assembly 100 may be constructed exclusively from a plurality of substantially identical modular furniture components, generally referenced 200. No additional connectors or fasteners are required to connect the components 200 of the assembly 100 together, as the components 200 may be interconnected by means of integral connectors, as is described further below. Each of the components is able to be made identical to the other components used to define the assembly 100 as shown in Figure 1.

Referring next to Figures 3 to 5, a modular furniture component 200 according to one possible embodiment of the present invention may be a

substantially square or rectangular or trapezoidal panel having at least one face side 1 that is preferably flat. It may be provided with some surface detailing as is illustrated in Figure 3b and have reasonable thickness, but is generally a flat panel. The component 200 has a first end or edge 2 and a second end or edge 5 at where connection with like components. The assembly 100 of components 200 as shown in Figure 1 in its bare form has two open ends bounded by the free edges 206 and 207 of each of the components 200. The free edges 206 and 207 extend between the first end 2 and second end 5 of each component.

A first end 2 of the modular furniture component 200 is provided with a connector 300. Each aspect of the connector 3 is preferably integrally formed with the modular furniture component 200.

The component is preferably made from a moulded material such as a plastic. The connector preferably includes a releasable fastener component that includes a tab 3 with a protruding barb 4. The barb 4 may act as a lock to releasably lock the tab 3 into engagement with a second modular furniture component 200. The tab and barb may alternatively be disposed at the second end 5 of a modular component.

Figure 6 shows a cross-section side view of a modular furniture assembly 100 such as that illustrated in Figure 1. Figure 6a shows a tab 3 and barb 4 of a first modular furniture component 201 releasably engaged with an aperture 7 or recess in a second component 202.

Referring in particular to Figures 3b and 4, the first end 2 of the modular furniture component 201 includes a connector 300 that preferably includes a mortar and tenon type connectors 8 adapted to interengage with complimentary mortar and tenon type connectors 8 at the second end 5 of a second substantially identical component 202. The mortar and tenon connectors 8 are preferably of a dovetail type.

With reference to Figure 3c, there is shown a first component 201 and a second component 202. The first component 201 includes a first end 2 and a

second end 5. The second component 2 includes a first end 2A and a second end 5A. The first end 2 of component 201 engages with second end 5A of component 202. The dovetail features 219 of the second end 5A of the second component 202 are of a complimentary shape to the dovetail features 220 of the first end 2 of the first component 201.

The dovetails 219 and 220 engage together to lock the components 201 and 202 together. Locking together may prevent movement in directions +Y and +Z and -Y and -Z. Movement is also prevented in the +X direction but not in the -X direction other than by the optional tab 3 and its barb 4 when employed. As can be seen with reference to Figures 3c, the assembly direction is in the +X direction resulting in a pushing together of the second component 202 with the first component 201 in a direction that is parallel to the plane of the first component 201 that lies in the XZ plane. The dovetails 220 of the first component 201 are presented to allow for a sliding engagement of the dovetails 219 of the second component 202 in the +X and -X direction.

With reference to Figure 3d, there is shown the releasable fastener to clip together adjacent components 201 and 202. The fastener includes the tab 3 that carries a barb 4. The tab 3 is of a resiliently flexible nature in the +Y and -Y direction. This slight flexibility allows for the barb to resiliently move in these directions to facilitate the fastening and releasing of the tab 3 with the aperture 7 defined by the adjacent second component 202. The aperture 7 is provided by the second component 202 to allow for the barb 4 to locate therewith and retain the second panel 202 with the first panel 201 in a releasable manner. A person can, through the aperture 7, access the barb and tab to push the tab in the -Y direction to thereby move the tab to a condition allowing separation of the component 201 from the component 202. The tab is preferably elongate in nature and extends parallel to the direction of sliding engagement of the component it is disposed from, with a second component.

In the most preferred form the tab and barb are provided intermediate of the inward and outward facing sides of the component 201 (and 202 at its first end 2/2A) so that when the two adjacent components are assembled together, the tab and barb are positioned in a non-obstructive and non-visible location. Likewise the aperture 7 with its retention surface 7A that is engaged by the barb 4, is located between the interior and exterior sides of the component so that it is also located in a position of non-obstruction (and when a cladding panel is engaged, of a non-visible nature).

Referring next to Figures 5 and 7, the second face side 9 of the modular furniture component 200, opposite the face side 1, may be flat. Preferably it may be provided with one or more ribs 10 to increase the stiffness of the component 200.

The components assembled together to define an assembly, such as the four components shown in Figure 1, have each of the face sides 1 and 9 extending substantially parallel to the X direction as shown in Figure 1. None of the components 200 to define the assembly 100 extend to have the planes of the face sides 1, 9 in a direction that is perpendicular to the X direction.

In some embodiments a cladding panel 11 (preferably of flat thin sheet) may be removably connectable to the second face side 9 of each modular furniture component 200 by suitable means. In a preferred embodiment the panel 11 is provided with protruding lugs 30 that engage corresponding apertures 31 or recesses at the second face side 9 of a modular furniture component 200. Panels 11 may be available in a variety of colours so as to allow the user to decorate an assembled item of furniture in the colour of their choice. In some embodiments a cladding panel 11 may have advertising, branding or other indicia printed on them (not shown). In a still further embodiment a panel 11 may be made from a material that is suitable for use with erasable felt pens or whiteboard markers, such as are known to the art. In some forms the cladding panels may include cut outs which define indicia. The cut outs allow for the material of the furniture

component 200 to be seen therethrough. The panel 11 may be of metal or plastic or paperboard or of multi layer.

With reference to Figure 26 there is shown an alternative form of cladding wherein the cladding panel 11 has square corners rather than recessed corners.

The cladding panel, on the same side providing the protruding lugs 30, may be provided with secondary lugs 604 for locating with features of a furniture component. In particular the secondary lugs 604 can locate into the openings or apertures or rebates, that are defined as aperture 12 in the figures. Alternatively the cladding panel 11 may not include the protruding lugs 30 but does include the secondary lugs 630.

Referring next to Figures 8-11, an item of furniture 400 may be created by connecting two or more assemblies 100 together to define furniture structures 400. Referring in particular to Figure 11, each of the components 200 may be provided with one or more apertures 12 through which suitable fasteners may be passed in order to allow two adjacent components 200 to be fastened together. Such fastening together is preferably with the face sides 1 of a component 200 facing inwards and the second face sides 9 of adjacent assemblies facing each other. The fastener preferably includes a fastener pin 13. The apertures 12 may include recessed portions 12a adapted to accommodate a head 13a of the pin or a suitable pin lock such as a cap 14, so that the head 13a and cap 14 do not protrude beyond the aperture 12 and preferably mount flush with each face side 1 and 9 of a component.

Figure 12 illustrates a preferred embodiment of a pin 13 and cap 14. The pin 13 is configured to engage and fasten to the cap 14 in a turning manner such as by a ¼ turn.

With reference to Figures 8A and 8B, there is shown a fastening bracket 117 that can be secured to the assembly 100. In the preferred form the fastening bracket 117 is secured to a component 200 such as by way of a machine screw or bolt or similar. Alternatively a push fit arrangement may facilitate the

engagement of the fastening bracket 117 with the furniture component 200. For example apertures or upstands may be provided to the edges 206 and 207 of the component with which a fastener arrangement 118 can be provided for securing the fastening bracket 117 to the assembly 100. The fastening bracket 117 can be used to allow for the assembly 100 to be secured to a building structure or other stable structure. For example where the assembly forms part of a total assembly of furniture assemblies 100 that is relatively high, some support at the top of the stack of assemblies 100 will need to be provided. The fastening bracket 117 can allow for a person to screw or otherwise fasten the structure of assemblies to a wall adjacent to which the structure of assemblies is provided. A plurality of apertures may be provided along or by the fastening bracket 117 to allow for some adjustability in the location of the fastening bracket and the related fasteners to be provided. The fastening bracket may also be used for the purposes of suspending the assembly 100 from a wall or ceiling or similar without any additional support from below.

Further apertures 15 may be provided to allow the component 200 to be fastened to a wall with a screw or similar fastener. The apertures 15 may alternatively be used to engage other components such as, for example, draw slides or rails, as is described below.

Referring next to Figures 13 and 14, a base panel 16 may be incorporated to engage with an assembly 100 such as that shown in Figure 1 to create an assembly 500, illustrated in Figure 15. The assembly 500 defines a single open side; for example a cube with one face. The base panel 16 may engage and abut the free edges 107 of each of the components 200. The base panel 16 includes a perimeter lip 601 that can locate into slots 581 of a component 200. Such slots 581 preferably extend between the first and second ends 2, 5 of a furniture component 200. The base panel, like the component 200, may provide cladding receiving detail to secure cladding of the same kind as that for the components. A base panel 16 may include reinforcing webs 603 similar to the reinforcing

webs provided to the component 200. A variation to the base panel 16 is shown with reference to Figure 25 wherein a panel 571, without reinforcing webs is shown for engagement with the furniture components 200. A second base panel (not shown) may be added on the opposite side of the assembly 500 to close the open face to define an enclosed cube.

The base panel 16 may include apertures 17 or recesses adapted to engage casters 119, so that mobile items of furniture may be created. The casters may also be adapted to engage apertures 12 in the modular components 200.

With reference to Figures 24A and 24B, casters 119 are shown to be engaged to the apertures 12 of the modular furniture components 100/200. A push fit with preferably a releasable snap locking feature is the manner in which the casters 119 can be located to a modular furniture component and/or to the base panel 16. The elements of the casters 119 that protrude into the apertures 12 and/or 17 are of a kind so as to not extend into the cavity 561 of the assembly. This ensures that the cavity remains un-intruded by the casters thereby allowing the cavity to provide for space usable by the likes of the drawers/doors and similar as herein been described. The elements of the casters 119 that protrude into the aperture 12 and/or 17 may receive additional fastening elements to fasten the casters in place. Such fastening elements may be a threaded arrangement or may be as per the cap 14. In the most preferred form each component 100 includes four apertures 12 for receiving the casters. The same apertures may be used for receiving the penetrative fasteners such as the pin/cap arrangement for fastening adjacent assemblies 100 together as hereinbefore described.

Where reference herein is made to apertures, it will be appreciated by a person skilled in the art that such apertures may in some circumstances be a through bore or may be a blind aperture.

Referring next to Figures 16 and 17, the interior volume of an assembly 500 such as that illustrated in Figure 15 may be divided into two compartments by provision of a shelf 18. The shelf 18 may be supported on suitable pegs 19

that engage apertures 20 of each component 200 or recesses provided by each modular furniture component 200.

As seen in Figures 18 and 19, an assembly 600 may be provided with a door 21. The door 21 may be provided with protruding lugs 21a adapted to rotatably engage complimentary recesses 22 or apertures provided in the subassemblies 200. Alternative hinges may be provided.

With reference to Figure 18A, there is shown an alternative configuration of a door 21 that has separate rather than integrally formed protruding lugs 21A to define the hinges. In addition the door may include lugs 21B that may be integrally formed or preferably assembled as shown with reference to Figure 18A, with the door. With reference to Figure 18C, the lugs 21B are preferably of a shorter kind than those lugs 21A that define the hinge or pivot axis of the door 21. The lugs 21B act as catches to catch the door in a closed condition, with a complimentary or interactive feature of one or two opposite (upper and lower) components 200 or side components of the assembly. The lug or lugs 21 can catch with for example a recess 21C of opposed components 200 so as to resiliently hold the door 21 in a closed condition. Alternatively the lug or lugs are provided by the component(s) and recess by the door. An alternative form of clipping the door in a closed position is shown with reference to Figure 18D-18F. With reference to Figures 18D-18F a door 21 is shown that includes a handle 529 that can be grasped by the hand of a person. Incorporated as part of the handle or as part of the door from which the handle extends, there may be a clip 528 that can locate with an edge surface protrusion recess or the like of the side component 200 of Figure 18F. This can ensure resilient closure of the door can be maintained until sufficient force supplied by a user to pull the door open. The door may include a lock.

Construction of any of the assemblies described with reference to for example Figures 1, 15, 24 and 25, may occur in a manner as described with reference to Figure 18B. With reference to Figure 18B, two sets of a pair of

adjacent components 100 are assembled. These are then assembled with the other pair of components 100 in a sliding manner as shown in Figure 18B. The backing panel 16/571 and the like can then be captured by the components as they are engaged together. The backing panel may be captured within the channels 581 and any door 21 that may be provided can have its protrusions to define the pivot axis engaged with apertures of the upper and lower components.

Figures 20 and 21 show an assembly 700 provided with a drawer system. The drawers 23 are provided with outwardly extending flanges 24 along the upper edges of their sides 25. The flanges 24 slidably engage rails 26 defining longitudinal slots, which are attached to the inside of the subassembly 700, preferably by engagement of protruding lugs 27 provided on the rails 26 with suitable recesses 28 or apertures provided on each modular furniture component 200.

Alternatively the upper drawer may be supported on a shelf of a kind as shown for example with reference to Figure 17. The lower drawer may merely be supported on the lower most component 200. In this alternative configuration a two upper and lower drawer configuration may be provided or a dual upper and lower drawer configuration may be provided where on each level, two or more dependent drawers are supported by the shelf and/or the lower most furniture component.

As illustrated in Figure 1, in one embodiment the planes of the first and second components 200 are at an angle of substantially 90°, preferably with the face sides 1 on the inside of the assembly formed by the two components 200. Figure 22 shows an exploded view of an assembly 800 of an alternative embodiment in which each modular furniture component 900 is adapted to engage a similar modular component 900, such that the adjacent modular furniture components are at an angle of substantially 60°. This embodiment may be useful for forming substantially hexagonal assemblies 800. Figure 24 shows a three sided assembly 1000 according to a further possible embodiment. In still

further alternative embodiments (not shown) the modular components may connect together so as to form assemblies with any suitable number of sides.

While the examples of the modular furniture components of the present invention described herein have all been substantially square, further embodiments are envisaged in which the modular furniture components are rectangular.

By joining adjacent modular furniture components together, multiple assemblies may be joined to create larger structures, such as TV stands, coffee tables, office space dividers, pigeon holes, garage shelving, video/CD storage and the like. Various combinations of assemblies may also be provided, and connected together, some with doors, some with shelves etc.

Figure 9C shows a wine rack insert for a cavity of an assembly, as a further example of the versatility of the invention.

With reference to Figure 24, there is shown four modular furniture components 200 that have been engaged together to define a cavity 561. The cavity has an opening defined by perimeter edges 562 of each of the modular furniture components 200 and has at the opposite end of each of the modular furniture components a closure panel 571 provided. The closure panel 571 (also referred to as a base panel) extends between the perimeter edges of the modular furniture components 200 to close the opposite end of the otherwise double open ended cavity 561. The closure panel 571 closes one of the openings to the cavity 561. The closure panel 571 is preferably planar and extends preferably parallel to the normal of the generally planar furniture components 200. The closure panel 571 can engage with the furniture components 200 so as to lock therewith.

Figure 25 shows an exploded view of this variation of the furniture assembly wherein the closure panel 571 is positioned for engagement within a channel or channels 581 provided at an edge of each of the furniture components 200. With reference to Figure 25B, there is shown the channel 581 and the closure panel 571 engaged together. The channel 581 includes a recess or

opening 605 into which a lug 607 of the closure panel 571 can locate. The closure panel 571 can push fit the lug 607, into the aperture 605 of the channel 581. A similar releasable locking of the base panel 16 may occur with the components 200. However alternatively no such lug 607 and apertures 605 to facilitate releasable locking of the closure panel 571 or the base panel 16, may be provided. The furniture assembly so defined (like that of Figure 15 having a base panel 16) that includes the closure panel 571 can be used as a bin wherein the closure panel 571 extends substantially horizontally and is below the upper opening 608 of the cavity 561 defined by the perimeter edges 565 of the furniture components 200. In the mode as a bin, the furniture assembly can receive the likes of toys or LPs or CDs or other items. Assemblies so defined can also be interconnected adjacent each other in a like manner as hereinbefore described. Like the furniture assemblies as hereinbefore described, cladding panels 11 can engage parallel with each of the furniture components 200 to clad the exterior of the furniture assembly. Indeed a cladding panel 11 may be used to define the closure panel 571.

With reference to Figures 9A and 9B, there is shown an alternative configuration of a furniture structure 400 consisting of a number of assemblies 100 engaged together. In the configurations shown with reference to Figures 9A and 9B, a furniture component 200 of an assembly 100 does not engage with a furniture component 200 of an adjacent assembly but rather with the base panel 16 of an adjacent assembly 100. Accordingly each cavity opening of the structure 400 faces in a different direction to the openings of the cavities of the adjacent assemblies 100. In this manner assemblies 100, have fasteners extend through apertures 12 of a component 200 of one of the assemblies and through the apertures 17 of the base panel 6 of the adjacent assembly. Accordingly the apertures 17 and the apertures 12 are defined in their respective component 100/16 in the geometric ally similar spacing. This allows for alignment of the apertures 17 and 12 to occur to allow the fastener and in particular the fastener pin 13 to extend. In this manner the assemblies 100 can be connected together to

define a structure 400 different to the structures shown with reference to Figures 8 and 9 and 10 in that the openings to the cavities are facing in different directions rather than in the same direction.

With reference to Figure 28 there is shown a furniture component 200 wherein the channel 581 has been closed by a dust cover 610. The dust cover 610 closes the longitudinal opening to the channel 581 in a manner so that dust and debris, cannot become lodged within the channel 581. The dust cover 610 is preferably removable from the channel 581 but can releasably lock therewith. A snap fit or friction fit or interference fit arrangement may be utilised.

With reference to Figure 29, there is shown furniture components 501 that include a first end 502 and second end 503. Each of the first and second end can engage with first and second ends of an adjacent furniture component 501 in a manner to allow for such interconnectivity to define an item of furniture such as the cube (with two opposed cavity openings) shown in Figure 29. Each of the components 501 is preferably panel shaped and is preferably identical. Each of the components 501 includes a bevelled edge defining the first and second ends 502 and 503. The bevelled ends angle inwardly so that for example when viewed in direction AA with reference to Figure 29, the side view of the panel is substantially trapezoidal in shape. The bevelled edges are preferably 45 degree bevels so that they can locate with corresponding 45 degree angled bevels of adjacent panels to form a square or rectangular form of assembly. If an alternative form of furniture is to be defined such as a triangular shape for example shown with reference to Figure 23, the bevels at the first and second ends 502 and 503 will need to be angled less or more than 45 degrees. For any form the components 501 are preferably all of an identical shape. Connectors 506 may be provided to fasten adjacent panels together. Each of the panels or components 501 include an exteriorly positioned aperture or blind hole 506 that is preferably set down into a surface rebate 507 of the exterior most surface 508. The recess or rebate 507 can accommodate part of the connector 506 being that

part 509 that carries a protrusion 510 for locating into the aperture or blind recess 506 of the component 501. In the most preferred form the connector 506 carries two such protrusions 510 separated by a live hinge region 511. The live hinge region 511 allows for the connector 506 to be bent to for example 90 degrees to allow for a first of its protrusions 510 to locate into an aperture 506 of one panel and the other of its protrusions 510 to locate into an aperture 506 of an adjacent panel 501. The recess 507 ensures that a flush mounting of the connector 506 with each of the components 501 occurs. As seen with reference to Figure 29, each end 502 and 503 preferably includes two apertures or blind recesses 506 and corresponding rebates 507 so that at each end, two connectors 506 can engage. The connectors will ensure that the adjacent components 501 are fastened together in order to define a furniture component having substantial structural integrity. Each of the components 501 may be provided with detail of a kind as described with reference to the most preferred form of the invention described in Figures 1-28 and may include provisions for attaching cladding panels, for attaching casters, for attaching drawers and doors and the like and also for interconnecting assembled furniture components with adjacent furniture components to define bookshelves, storage cabinets, filing cabinets and the like.

Where in the foregoing description, reference has been made to specific components or integers of the invention having known equivalents, then such equivalents are herein incorporated as if individually set forth.

Although this invention has been described by way of example and with reference to possible embodiments thereof, it is to be understood that modifications or improvements may be made thereto without departing from the spirit or scope of the invention.

CLAIMS:

1. A modular furniture component that includes a first end provided with an integral connector and an opposite second end adapted to engage a second modular furniture component at and with an integral connector of said second modular furniture component that is identical to said first mentioned connector to thereby, in use, connect said modular furniture component to said second mentioned modular furniture component, to define at least part of a furniture assembly.

2. A modular furniture component as claimed in claim 1 wherein, said component is a panel.

3. A modular furniture component as claimed in claims 1 or 2 wherein said component defines said first and second ends at two parallel edges thereof.

4. A modular furniture component as claimed in any one of claims 1 to 3 wherein said connector includes releasable locking means to interact with a said second mentioned component in a manner to releasably lock said components together.

5. A modular furniture component as claimed in claim 4 wherein, said releasable locking means is selected from one of (a) a resiliently flexible tab that includes a barb to releasably snap-fit with a barb receiver provided at the second end of a second mentioned component, to thereby lock said first and second mentioned components together, wherein the second end of said first mentioned component includes a barb receiver identical to said first mentioned barb receiver and (b) a barb receiver to be releasably engaged in a snap-fit manner by a barb of a resiliently flexible tab at a second end of a said second mentioned component to thereby lock said first and second mentioned components together, wherein said second end of said first mentioned component includes a resiliently flexible tab that includes a barb, identical to said first mentioned resiliently flexible tab.

6. A modular furniture component as claimed in any one of claims 1 to 5 wherein said connector includes one part of a two part male and female connection and the second end of said connector includes the other part of said two part male and female connection.

7. A modular furniture component as claimed in any one of claims 1 to 6 wherein said connector includes one part of a two part mortise and tenon connection and said second end includes the other part of said two part mortise and tenon connection.

8. A modular furniture component as claimed in claim 7 wherein the mortise and tenon connection is a dovetail connection.

9. A modular furniture component as claimed in any one of claims 1 to 8 wherein the first and second ends are defined by straight sides of said component that have been bevelled to, in one view of said component, define a trapezoidal outline shape, said bevelled edges so bevelled to abut like bevelled edges of second mentioned component once said first and second mentioned components are engaged together.

10. A modular furniture component as claimed in any one of claims 1 to 9 wherein said component includes at least one aperture therethrough for securing said component, by way of a penetrate fastener, to an identical component placed contiguous therewith.

11. A modular furniture component as claimed in any one of claims 1 to 10 wherein said component is a flat panel of a quadrilateral plan shape and includes a first pair of opposed sides that define said first and second ends that are each to engage with a second and third like component respectively and a second pair of opposed sides that extend at 90 degrees to and between the first pair of opposed sides, said panel including an outer face side that, in use, will be positioned to face outwardly to said assembly and an inner face side that, in use, will be positioned to face inwardly to said assembly.

12. A modular furniture component as claimed in claim 11 wherein said panel includes, adjacent and parallel to each second pair of opposed edges, a channel located at the inner face side of said panel, said channel capable of receiving and locating an edge of a base panel that may optionally engage with said assembly, said base panel including an inner face side and an outer face side, wherein when engaged with said component, a normal of each inner and outer face side of said base panel extends in a plane parallel to a plane passing through a normal of the inner and outer face sides of said component and the normal of each inner and outer face sides of said base panel extends perpendicular to the normal of the inner and outer face sides of said component.

13. A modular furniture component as claimed in claims 12 wherein said channel extends between said first pair of opposed edges.

14. A modular furniture component as claimed in claims 12 or 13 wherein a channel cap is provided that may removably engage the component to provide and overcap to said channel.

15. A plurality of modular furniture components as claimed in anyone of claims 1 to 14 wherein all said components are identical.

16. An item of furniture comprising a plurality of modular furniture components as claimed in anyone of claims 1 to 14 wherein all said components are identical and wherein said components are connected to each other by said connectors.

17. An item of furniture as claimed in claim 16 wherein, when assembled, said components define an endless perimeter.

18. An item of furniture as claimed in claims 16 or 17 wherein said components are flat panels that, when connected, each have the normal to their plane lying parallel each other.

19. An item of furniture as claimed in any one of claims 16 to 18 wherein said plurality of modular furniture components define an endless perimeter about

a component defined cavity that has, at the most, two major openings each opening bounded in part by all said components.

20. An item of furniture as claimed in claim 19 wherein said cavity includes only one opening, said cavity bounded by said components and also by a base panel that extends between all said components.

21. An item of furniture as claimed in claim 19 wherein said components are flat panels that, when connected, each have the normal to their plane lying parallel each other and wherein said cavity includes only one opening, said cavity bounded by said components and also by a base panel that extends between all said components, the normal of said base panel extending perpendicular to the normal of each said components.

22. An item of furniture as claimed in any one of claims 16 to 21 wherein each said component is a flat panel of a quadrilateral plan shape and includes a first pair of opposed sides that define said first and second ends that are each to engage with a like component respectively

23. An item of furniture as claimed in claim 22 wherein each said component includes a second pair of opposed sides that extend at 90 degrees to and between the first pair of opposed sides, said panel including an outer face side that, in use, will be positioned to face outwardly to said assembly and an inner face side that, in use, will be positioned to face inwardly to said assembly.

24. An item of furniture as claimed in claim 23 wherein said panel includes, adjacent and parallel to each second pair of opposed edges, a channel located at the inner face side of said panel, each said channel of each panel capable of receiving and/or locating an edge of a base panel, said base panel including an inner face side and an outer face side, wherein when engaged with each said channel, a normal of each inner and outer face side of said base panel extends in a plane parallel to a plane passing through a normal of the inner and outer face sides of said each said panel and the normal of each inner and outer

face sides of said base panel extends perpendicular to the normal of the inner and outer face sides of each said panel.

25. An item of furniture as claimed in claim 24 wherein a channel cap is provided that may removably engage a said component to provide and overcap to one of its said channels.

26. An item of furniture as claimed in any one of claims 18 to 20 wherein four components are connected to each other, a first pair of parallel upper and lower components and a second pair of parallel side components.

27. An item of furniture as claimed is claim 26 wherein one of said cavity openings is selectively closable by a door that is hinged from said first pair of upper and lower components.

28. An item of furniture as claimed in claim 27 wherein said door is hinged by a hinge located with each of said upper and lower components adjacent one of said side components to define a hinge axis parallel to the plane of a said side components.

29. An item of furniture as claimed in claim 27 or claim 28 wherein said door includes a latch that interacts with at least one of said upper component and lower component and side component to hold said door in a condition closing said one of said cavity openings.

30. An item of furniture as claimed in claim 29 wherein said latch establishes and interference fit with at least one of said upper component and lower component and side component to hold said door in a condition closing said one of said cavity openings in a resiliently resistive manner.

31. An item of furniture as claimed in any one of claims 26 to 30 wherein said hinge is defined by two hinge pins that each can locate within an aperture defined in said upper and lower components.

32. An item of furniture as claimed in any one of claims 26 to 30 wherein said hinge is defined by two hinge pins that each can locate within an aperture

defined in said upper and lower components, each said aperture extending into a respective upper and lower component from a side of said upper and lower component that face each other to allow the each aperture to capture a said hinge pin upon the bringing together of said upper and lower component for assembly of the item of furniture.

33. An item of furniture as claimed in any one of claims 26 to 32 wherein each said component includes a shelf mount located intermediate of said first and second ends of said component and by which a shelf can be supported wherein, when assembled, two opposed components of the item of furniture hold said shelf in a manner parallel to the other two opposed components.

34. An item of furniture as claimed in any one of claims 16 to 33 wherein a wine rack is secured within said cavity.

35. An item of furniture as claimed in any one of claims 16 to 34 wherein a fastening aperture is provided through each said component, said fastening aperture capable of receiving at least one of:

a) a castor to engage at said fastening aperture of said component to allow said item of furniture to be conveniently mobile; and

b) a penetrative fastener that can extend through said fastening aperture and a fastening aperture of a contiguously placed identical component to said component of said item of furniture, to releasably connect said component of said item of furniture with said contiguously placed component.

36. An item of furniture as claimed in claim 35 wherein said castor includes a mounting shaft that can penetrate said fastening aperture to engage a said component.

37. An item of furniture as claimed in claim 35 or 36 wherein said penetrative fastener includes a shaft with a shaft head and a free end that can be engaged by a head, said head and said shaft head being of a shape to prevent their

passing through said fastening aperture to thereby capture said component to said contiguously placed identical component.

38. An item of furniture as claimed in any one of claims 20 to 34 wherein a fastening aperture is provided through each said component, said fastening aperture capable of receiving at least one of:

a) a castor to engage at said fastening aperture of said component to allow said item of furniture to be conveniently mobile; and

b) a penetrative fastener that can extend through said fastening aperture and a fastening aperture of both of (i) a contiguously placed identical component to said component of said item of furniture, to releasably connect said component of said item of furniture with said contiguously placed identical component and (ii) a contiguously placed said base panel that includes fastening aperture.

39. Two of said item as claimed in any one of claims 16 to 38 and at least one penetrative fastener wherein each said component includes at least one fastening aperture therethrough, the two items releasably engaged together by said penetrate fastener when a component of one item is placed contiguous a component of another of said items.

40. Two of said item as claimed in claims 20 or 21 and at least one penetrative fastener wherein each said component includes at least one fastening aperture there through, and said base panel includes at least one fastening aperture there through, said items releasably engaged together by said penetrate fastener when a base panel of one item is placed contiguous a component of another of said items.

41. A modular furniture component that includes a first end including a connector and an opposite second end adapted to engage a said connector of a second said modular furniture component to thereby, in use, connect said modular furniture component to said second mentioned modular furniture

component, wherein said connector includes one part of a two part mortise and tenon connection, and a barbed locking tab to releasably lock said component and said second mentioned component together.

42. A modular furniture assembly, constructed from a plurality of modular furniture components as claimed in anyone of claims 1 to 14 that are connected to each other by each said connector.

43. A modular furniture assembly as claimed in claim 42 wherein four modular furniture components are connected to each other, each said modular furniture component connected by its connector, each said component connected to two other said modular furniture components, said assembly defining a cavity therebetween, wherein an angle between each said modular furniture component and any modular furniture component to which it is directly connected is substantially 90°.

44. A modular furniture assembly constructed of a plurality of components as claimed in any one of claims 1 to 14 connected to a modular furniture assembly as claimed in claim 42 or 43.

45. A modular furniture assembly including a plurality of substantially identical modular furniture components as claimed in any one of claims 1 to 14 that are interconnected exclusively by said connector that are integral to said modular furniture components.

46. An item of furniture comprising;

four modular furniture components as claimed in any one of claims 1 to 14 that are engaged together by their connectors and whereby a cavity is defined that at least in part contains at least one of;

(a) a drawer,

(b) a wine rack

(c) a pigeon hole rack

(d) a shelf, and

(e) a door.

47. An item of furniture as claimed in claim 46 wherein said four modular furniture components are flat panels and extending between all modular furniture components there is a flat base panel whose plane is substantially parallel to the normal of the planes of the modular furniture components.

48. A furniture assembly defining a storage bin, said assembly consisting of at least three and preferably four or more modular furniture components as claimed in any one of claims 1 to 14 , engaged together and having extending therebetween a base panel, wherein the base panel extends substantially horizontally and transverse the modular furniture components that extend substantially vertically and wherein an upper opening is provided through which the assembly can receive or dispense items via the upper opening.

49. A component as claimed in any one of claims 1 to 14 wherein it includes a cladding panel receiving region to receive a cladding panel to be selectively engaged to the modular furniture component, the cladding panel providing an exterior finish to assembly.

50. A component as claimed in claim 49 wherein the cladding panel can be selectively engaged to a modular furniture component.

51. A component as claimed in claim 50 wherein the cladding panel is contiguous said component.

52. A method of assembling a modular furniture assembly from a plurality of components as claimed any one of claims 1 to 14, comprising;

engaging a connecting means provided at a first end of a first modular furniture component with a second substantially identical modular furniture component and repeating with at least one further identical modular furniture component.

53. An item of modular furniture comprising

at least two modular furniture assemblies each constructed from a plurality of modular furniture component that includes a first end provided with an integral connector and an opposite second end adapted to engage a second modular furniture component at and with an integral connector of said second modular furniture component that is identical to said first mentioned connector to thereby, in use, connect said modular furniture component to said second mentioned modular furniture component, to define at least part of a furniture assembly.

54. A modular furniture system comprising;

a plurality of modular furniture components sufficient to define at least two modular furniture assemblies, wherein each component is a flat panel that includes a first end provided with an integral connector and an opposite second end adapted to engage a second modular furniture component at and with an integral connector of said second modular furniture component that is identical to said first mentioned connector to thereby, in use, at least connect a first modular furniture component to a said second modular furniture component and said second modular furniture component to a further modular furniture component of said plurality of modular furniture components, to define one of said two modular furniture assemblies having an endless perimeter and wherein all component have the normal to their major plane lying parallel each other, each component including at least one fastening aperture therethrough

a penetrative fastener capable of penetrating two of said fastening apertures, one of each of two modular furniture assemblies when two of said modular furniture assemblies are placed adjacent each other in a manner so that a said component of each said assemblies are contiguous each other, said penetrative fastener releasably securing said two assemblies together.

55. A modular furniture system as claimed in claim 54 that also includes cladding panels, each said cladding panel capable of being selectively engaged to

a modular furniture component, the cladding panel providing an exterior finish to assembly.

56. A modular furniture system as claimed in claim 55 wherein the cladding panel can be selectively engaged to a modular furniture component.

57. A modular furniture system as claimed in claim 55 or 56 wherein the cladding panel is to be engaged, contiguous a said component.

58. A modular furniture system as claimed in any one of claims 54 to 57 wherein the cladding panel includes on one major surface thereof a penetrative fastener to is to be engaged with said fastening aperture to thereby engage said cladding panel to a said component.

59. A modular furniture system as claimed in any one of claims 54 to 58 that also includes at least one base panels, said base panel to engage and extend between all said components of an assembly to define an assembly with a cavity bounded by said base panel and said components and having one major opening to said cavity.

60. A modular furniture system as claimed in claim 59 wherein said base panel is to extend between all said components of an assembly in a manner so that the normal of said base panel extends perpendicular to the normal of each said components.

61. A modular furniture system as claimed in claims 59 or 60 wherein said base panel includes a fastening aperture there through wherein said penetrative fastener is capable of penetrating two of said fastening apertures of two base panels, one of each of two modular furniture assemblies when two of said modular furniture assemblies are placed adjacent each other in a manner so that a said base panel of each said assemblies are contiguous each other, said penetrative fastener releasably securing said two assemblies together.

62. A modular furniture system as claimed in any one of claims 59 to 61 wherein said base panel includes a fastening aperture there through wherein said

penetrative fastener is capable of penetrating said fastening apertures of said base panels and said fastening aperture of a said component, each being one fastening aperture of each of two modular furniture assemblies when two of said modular furniture assemblies are placed adjacent each other in a manner so that a said base panel of one said assembly and a component of an adjacent said assembly are contiguous each other, said penetrative fastener releasably securing said two assemblies together.

63. A storage box that includes;

four identical side walls of a quadrilateral shape each side wall including;

two parallel and opposed fastening edges, a first of said fastening edges having one part of a two part mortise and tenon joint and a second of said fastening edges having the other part of said two part mortise and tenon joint engaged whereby the fastening edges of each said side wall are releasably engaged together by virtue of said mortise and tenon joint, and

two parallel and opposed free edges

a base panel that is engaged to each of said four side walls at one of said two parallel and opposed free edges to define a cavity with one major opening bounded in part by each of the other of said two parallel and opposed free edges.

64. A modular furniture assembly as claimed in any one of claims 16 to 38 and claims 46 or 47 as herein described and with reference to the accompanying drawings.

65. A modular furniture component as claimed in any one of claims 1 to 15 as herein described and with reference to the accompanying drawings.

66. A modular furniture assembly comprising

at least three panels that are identical to each other, each panel including a first and second opposed major surface sides and each including two

parallel fastening edges wherein at each said fastening edge there is provided at the first major surface side at least one fastening aperture

a fastening clip that includes two regions, each region including a fastening protrusion to locate into a respective fastening aperture of a first and a second said panels when such panels are positioned with their fastening edges contiguous each other clip said two panels reliably together.

67. A modular furniture assembly as claimed in claim 66 wherein said fastening clip includes a live hinge separating each region.

68. A modular furniture component as claimed in any one of claims 66 or 67 wherein all said fastening edges are of an identical configuration.

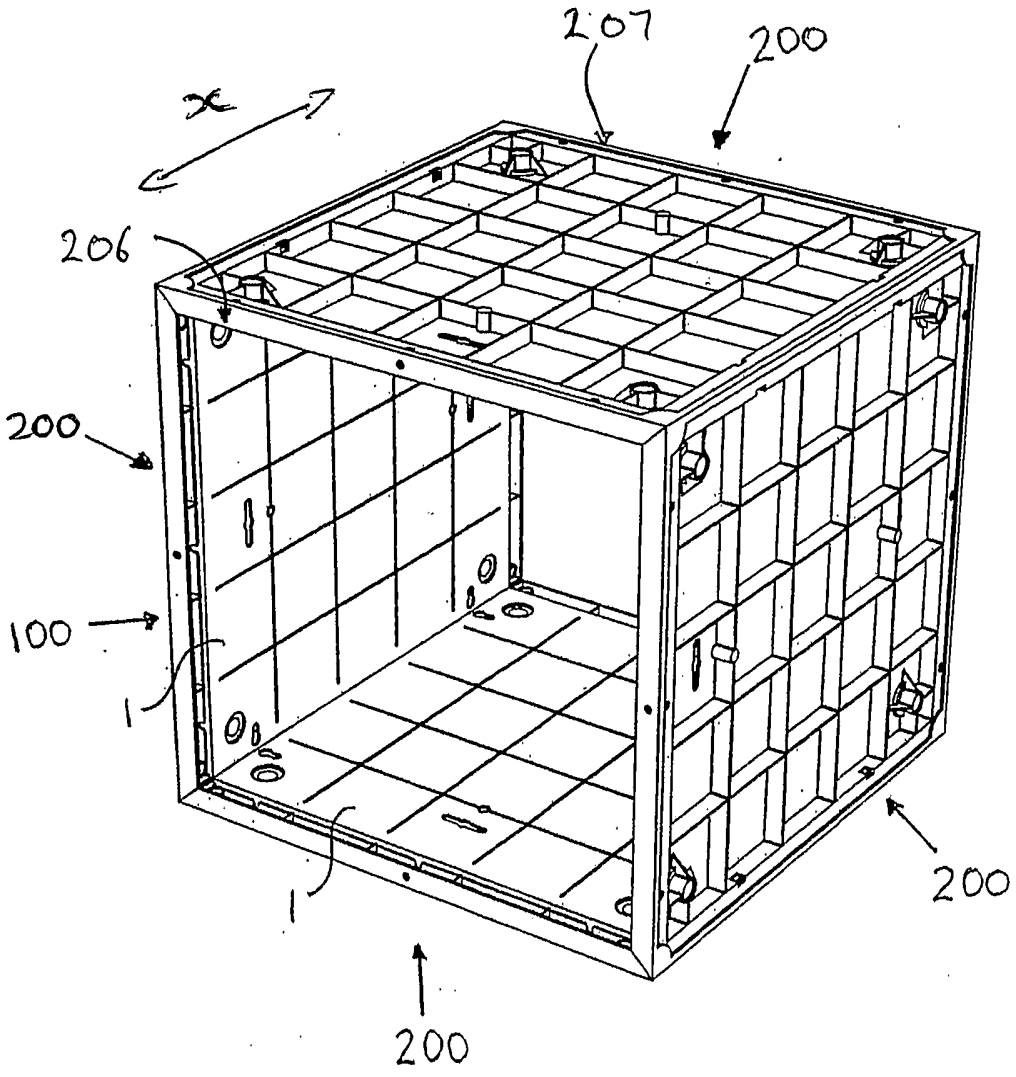


FIGURE 1

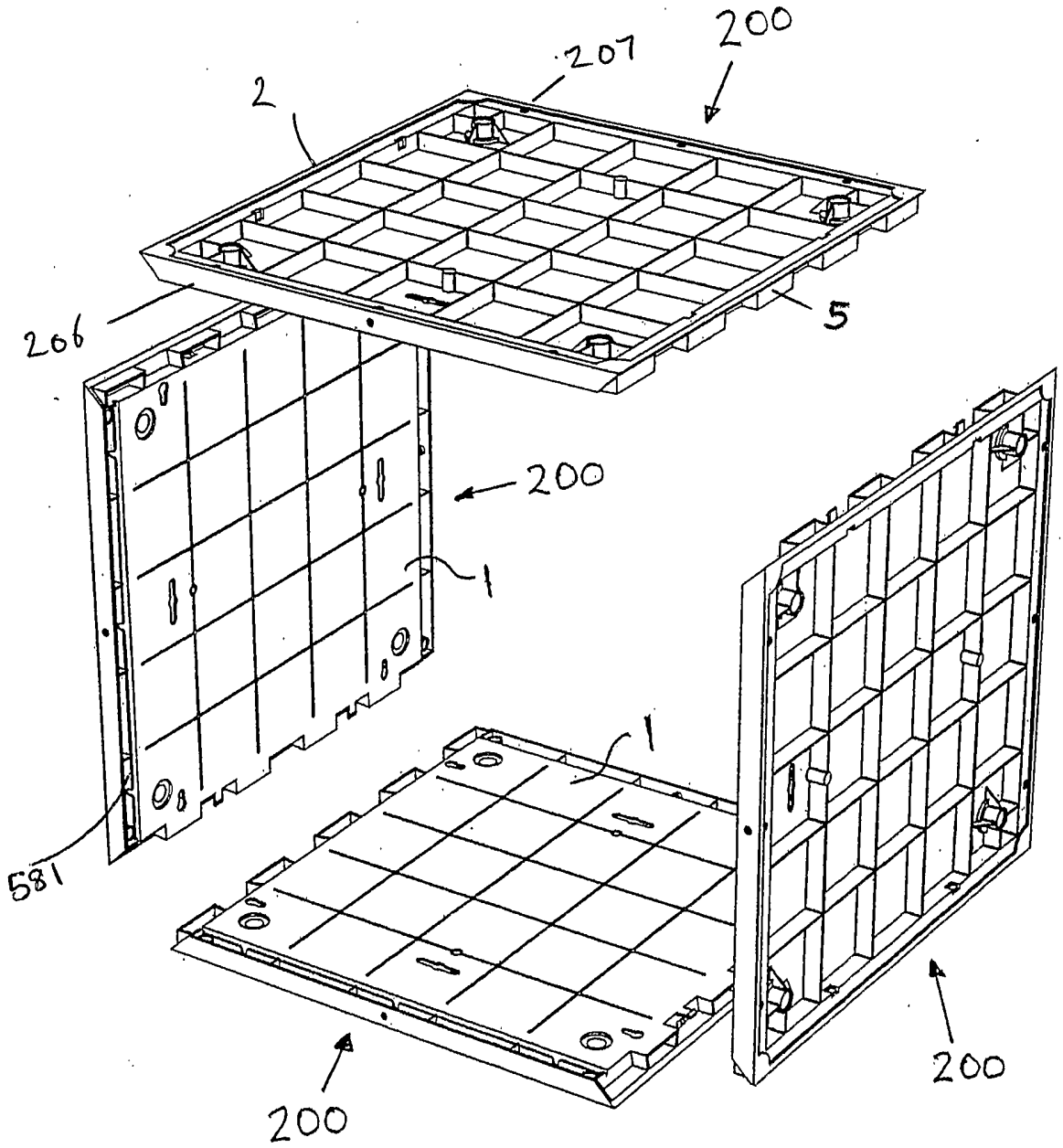


FIGURE 2

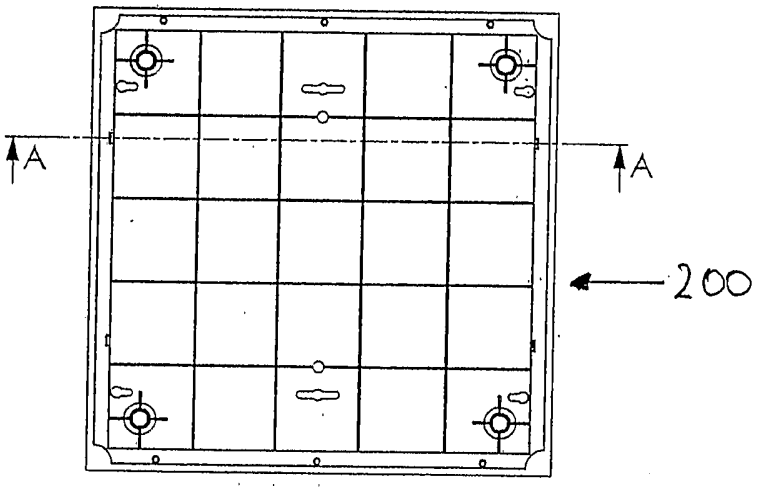


FIGURE 3

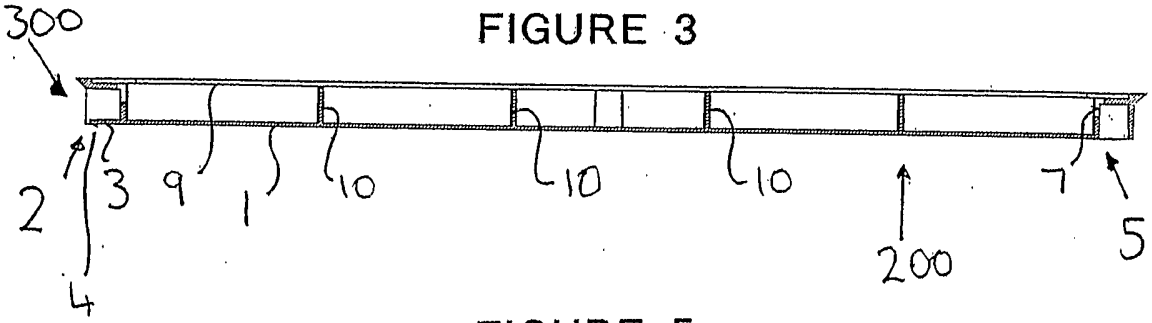


FIGURE 5

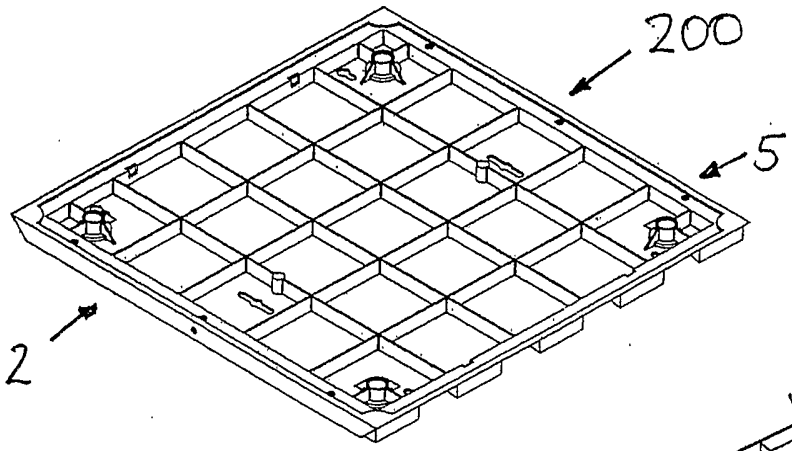


FIGURE 3a

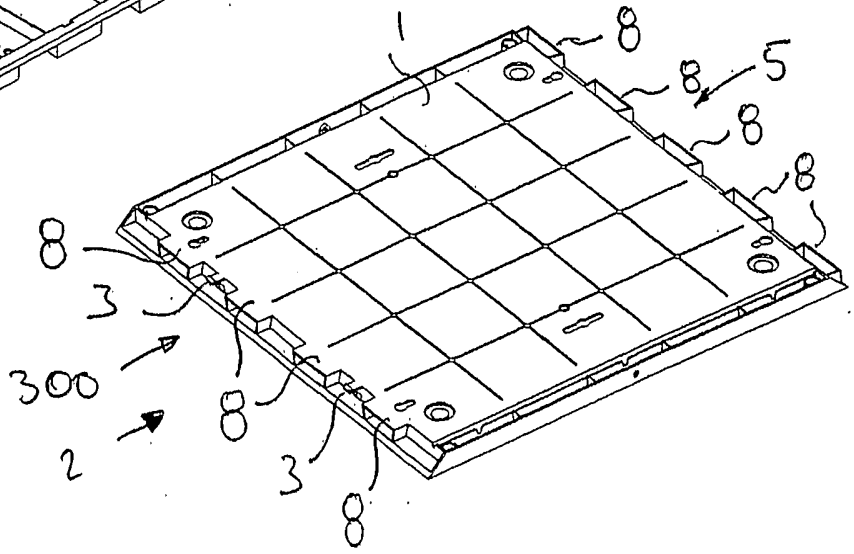


FIGURE 3b

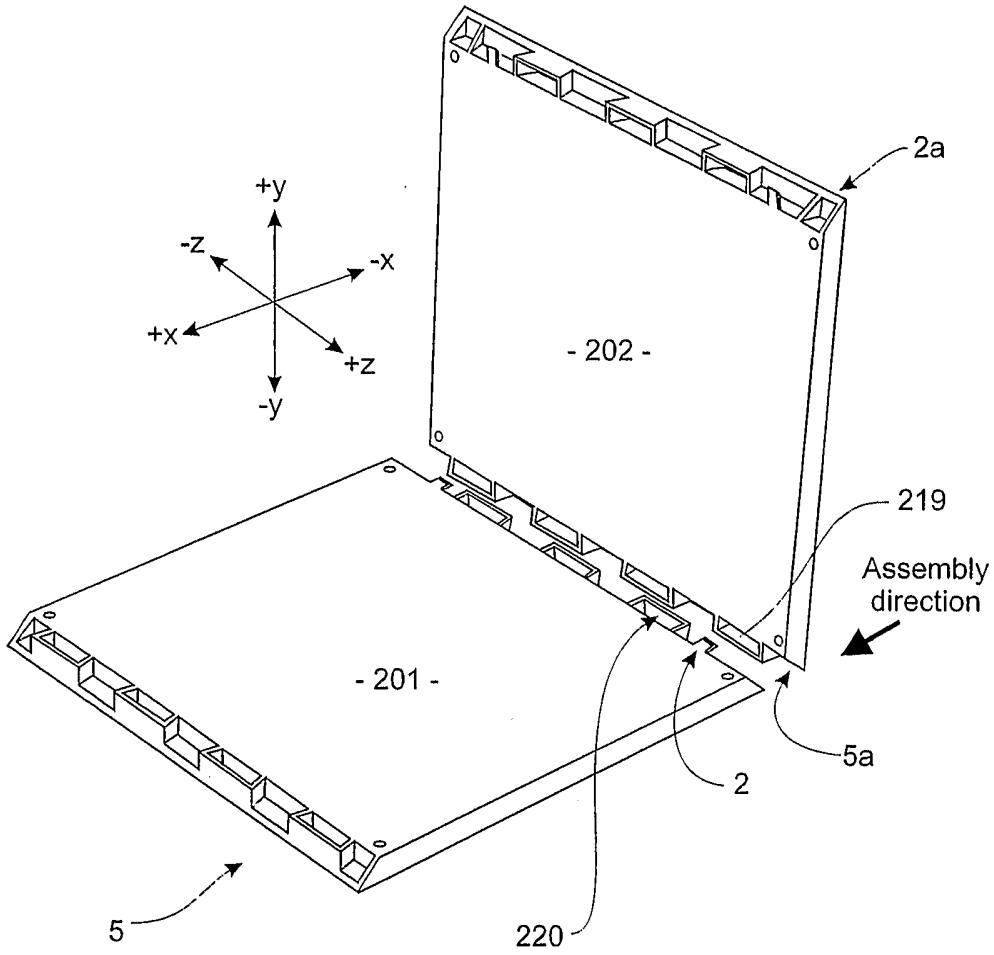


FIGURE 3C

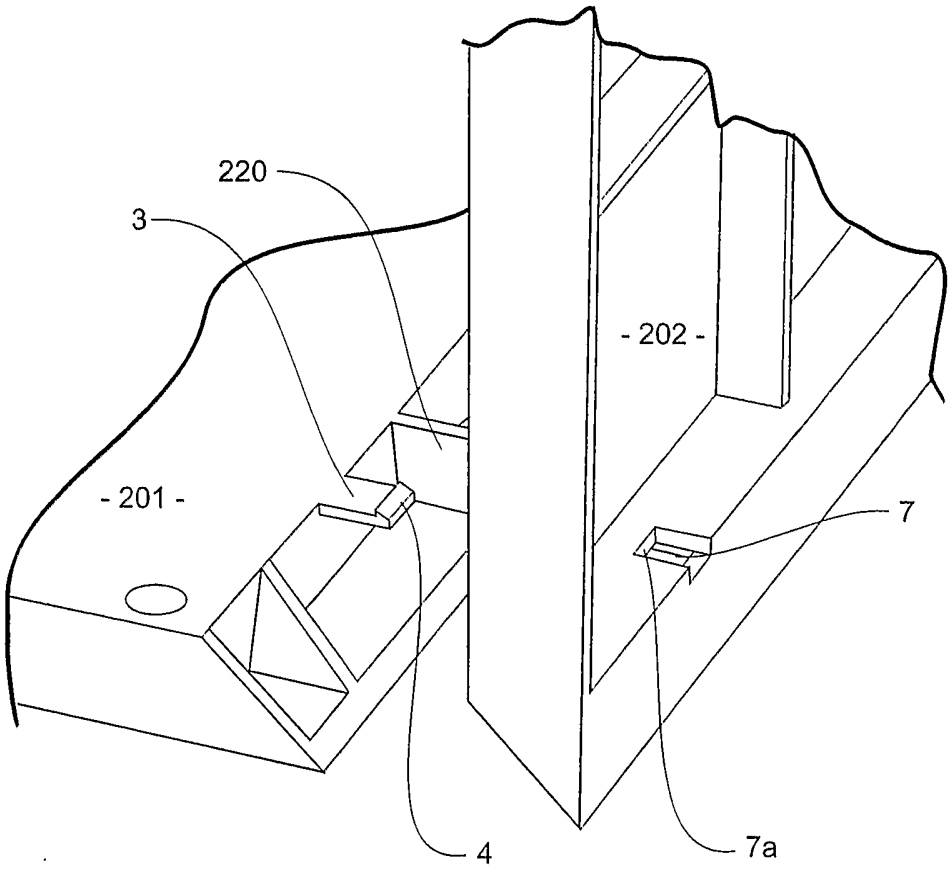


FIGURE 3D

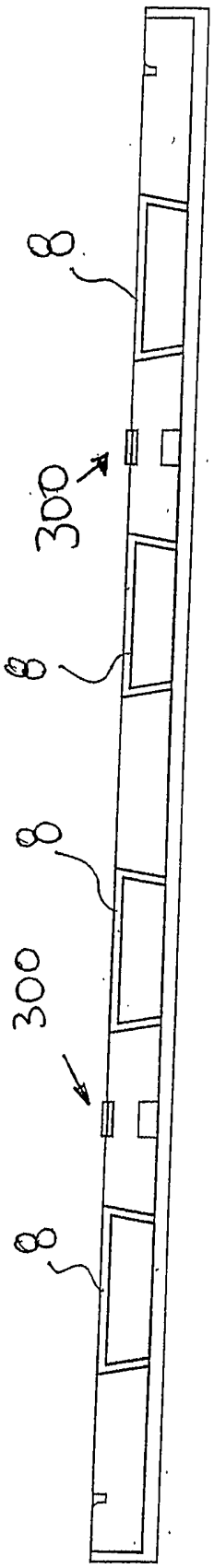


FIGURE 4

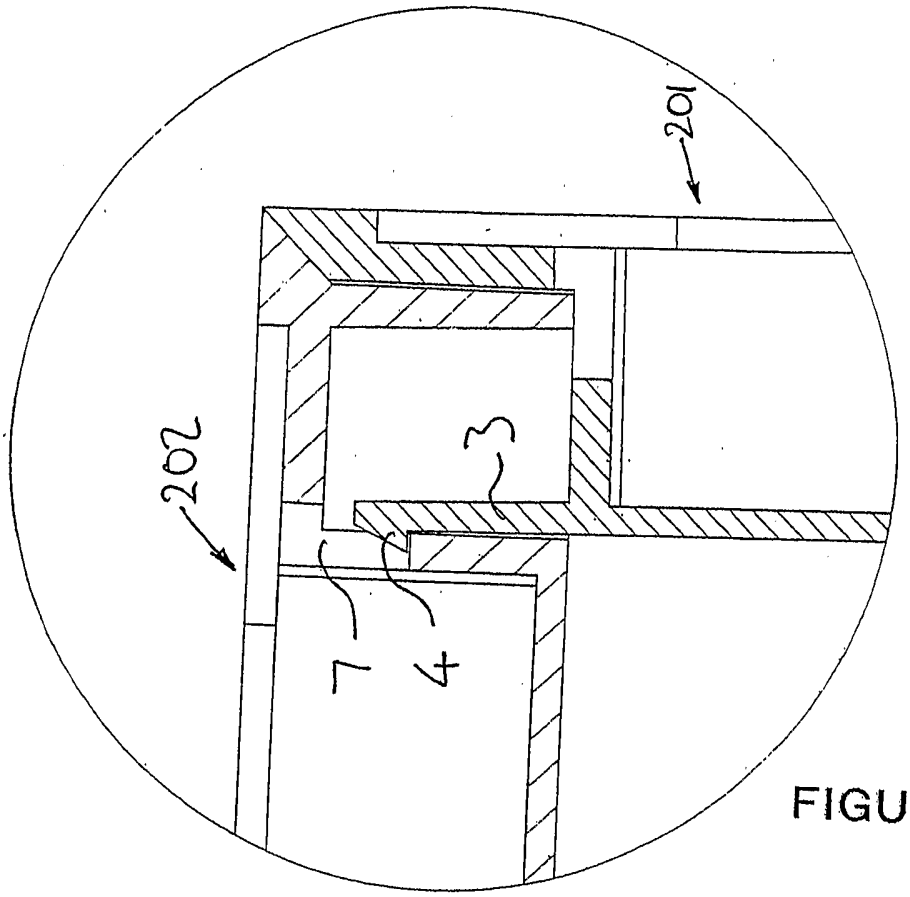


FIGURE 6a

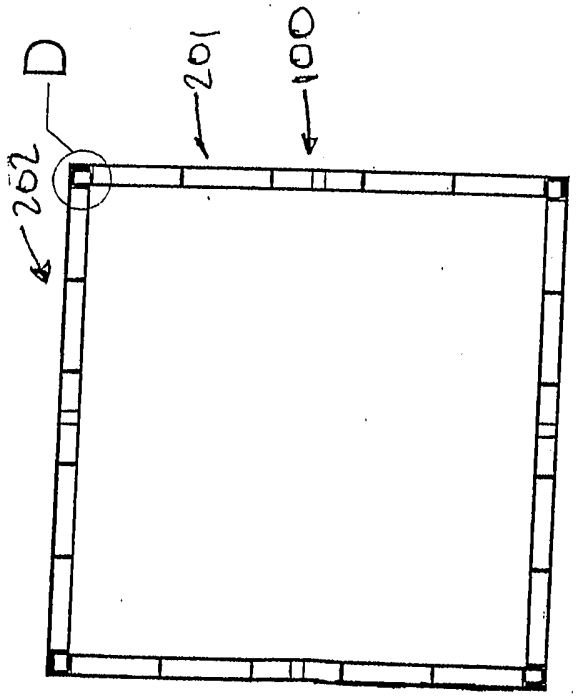


FIGURE 6

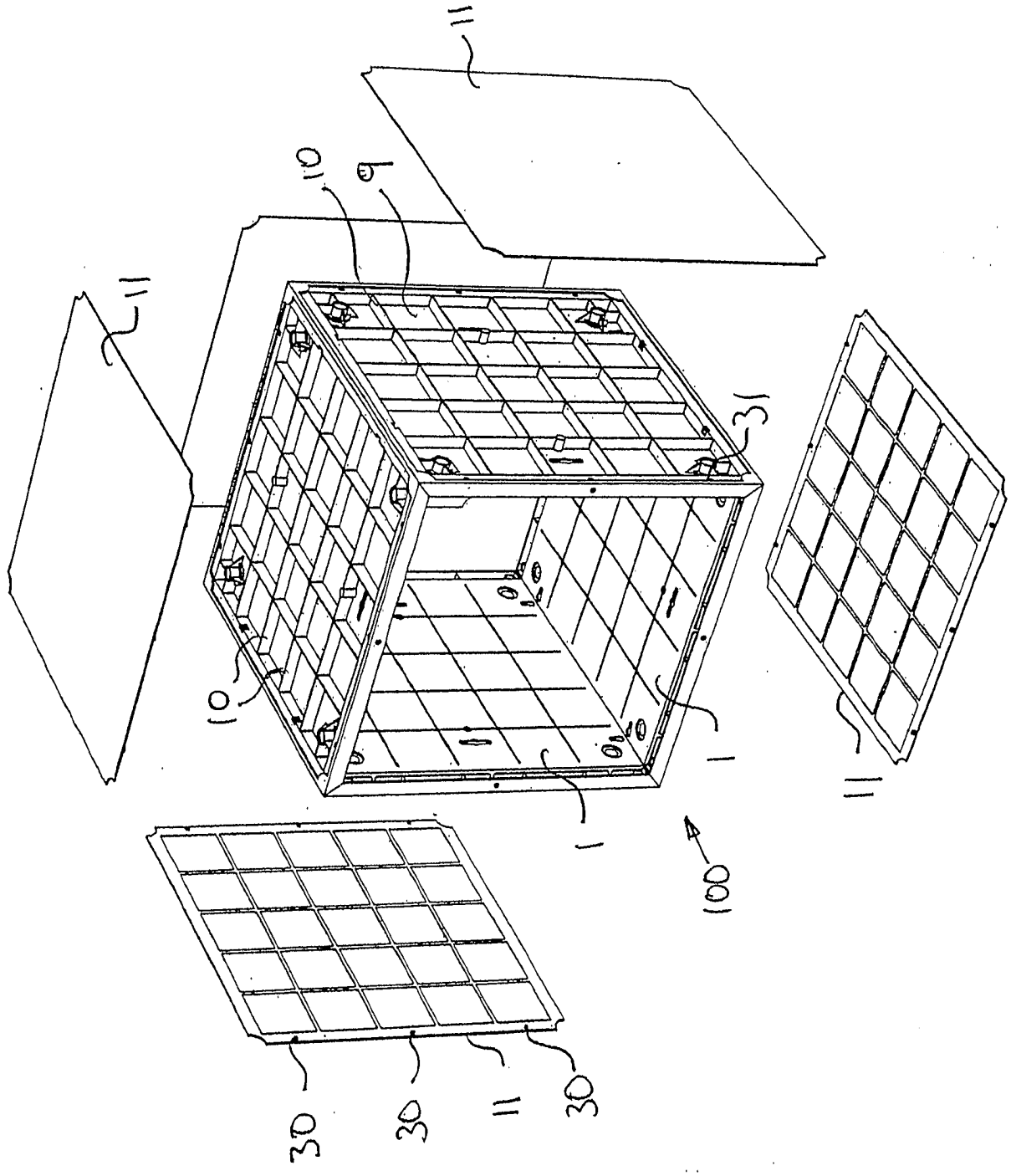


FIGURE 7

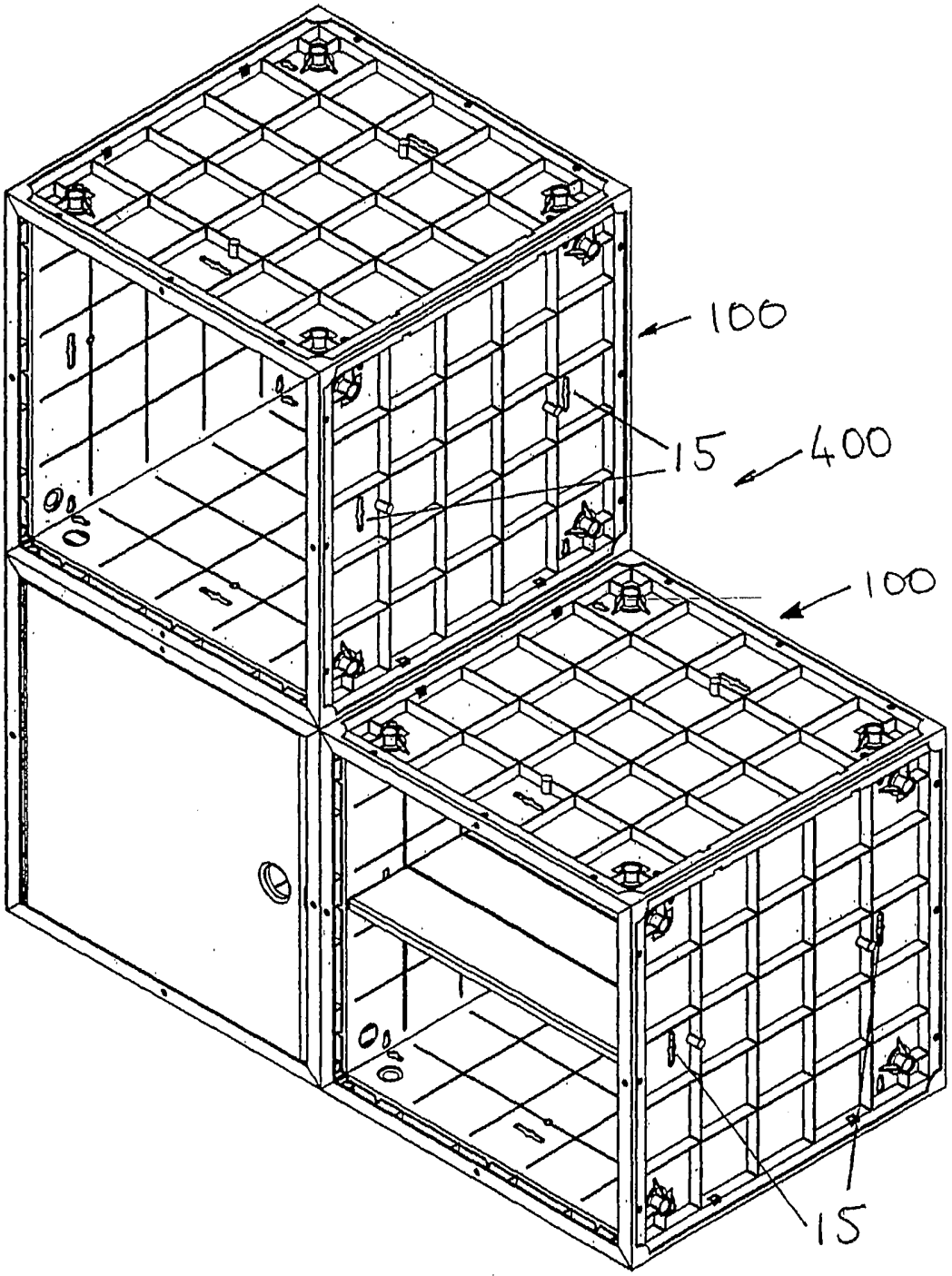


FIGURE 8

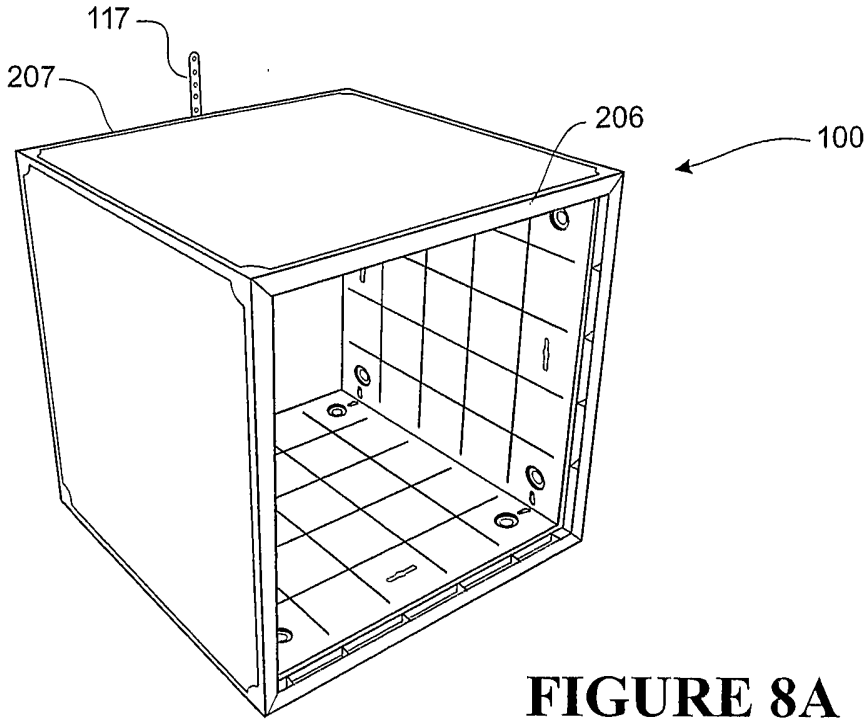


FIGURE 8A

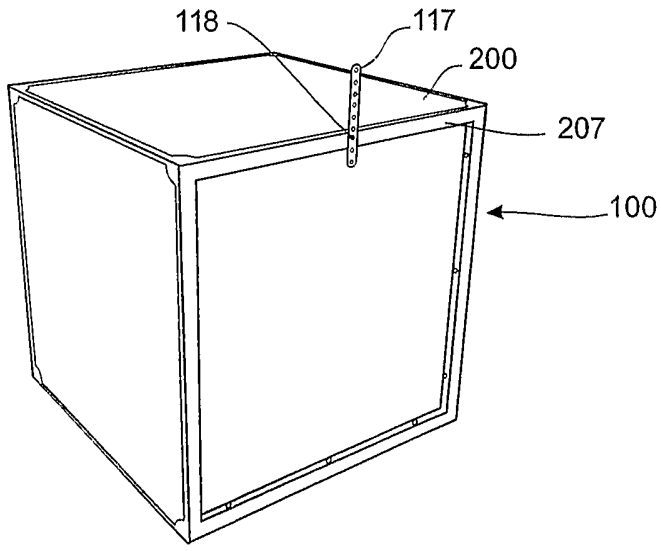


FIGURE 8B

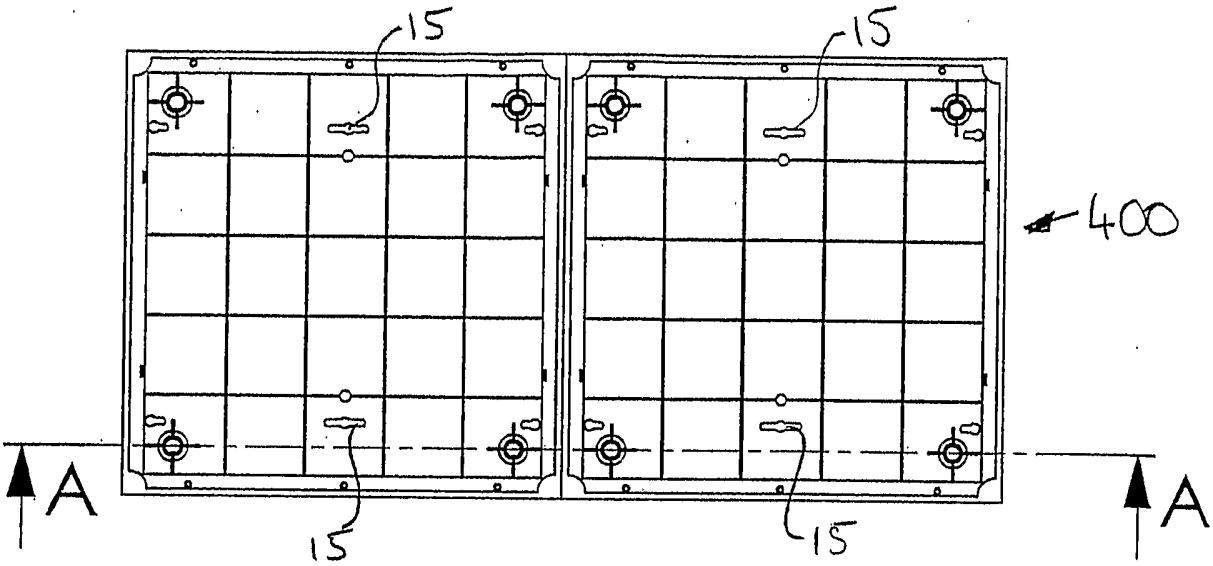


FIGURE 9

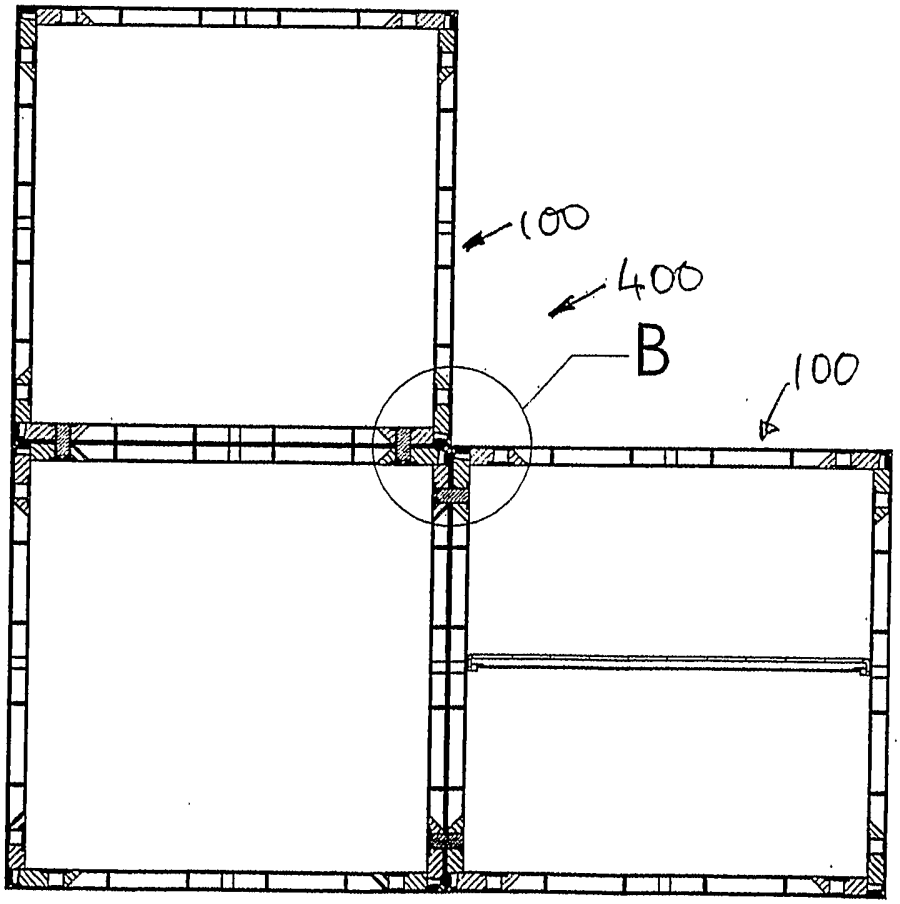


FIGURE 10

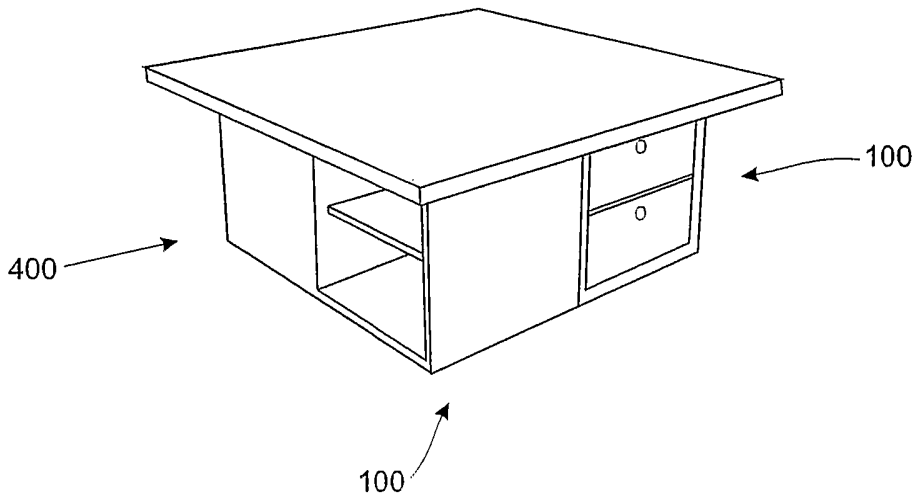


FIGURE 9A

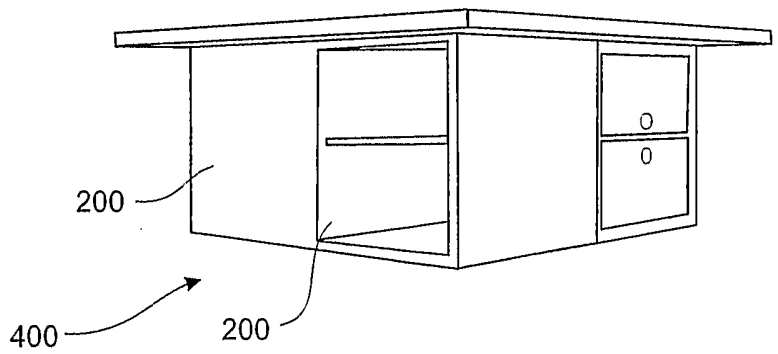


FIGURE 9B

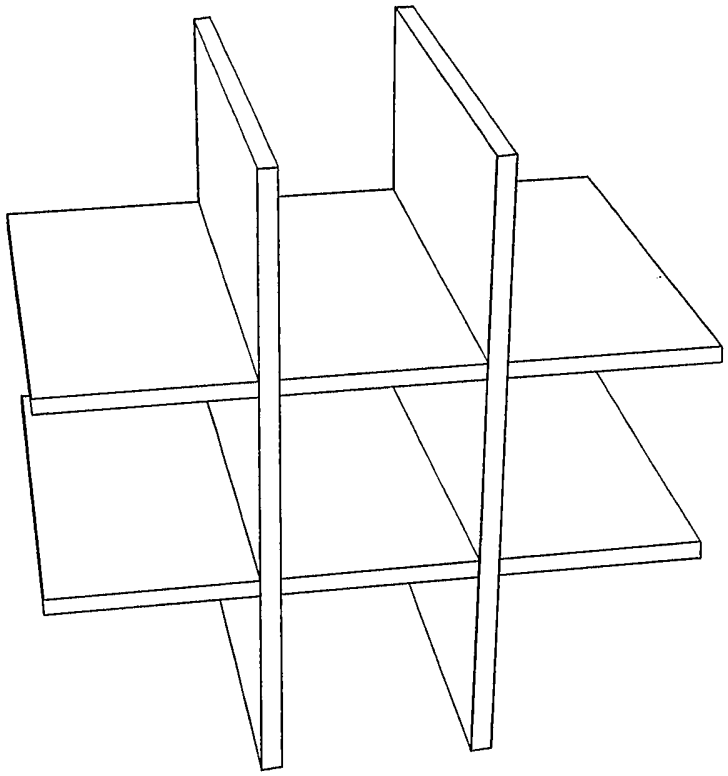


FIGURE 9C

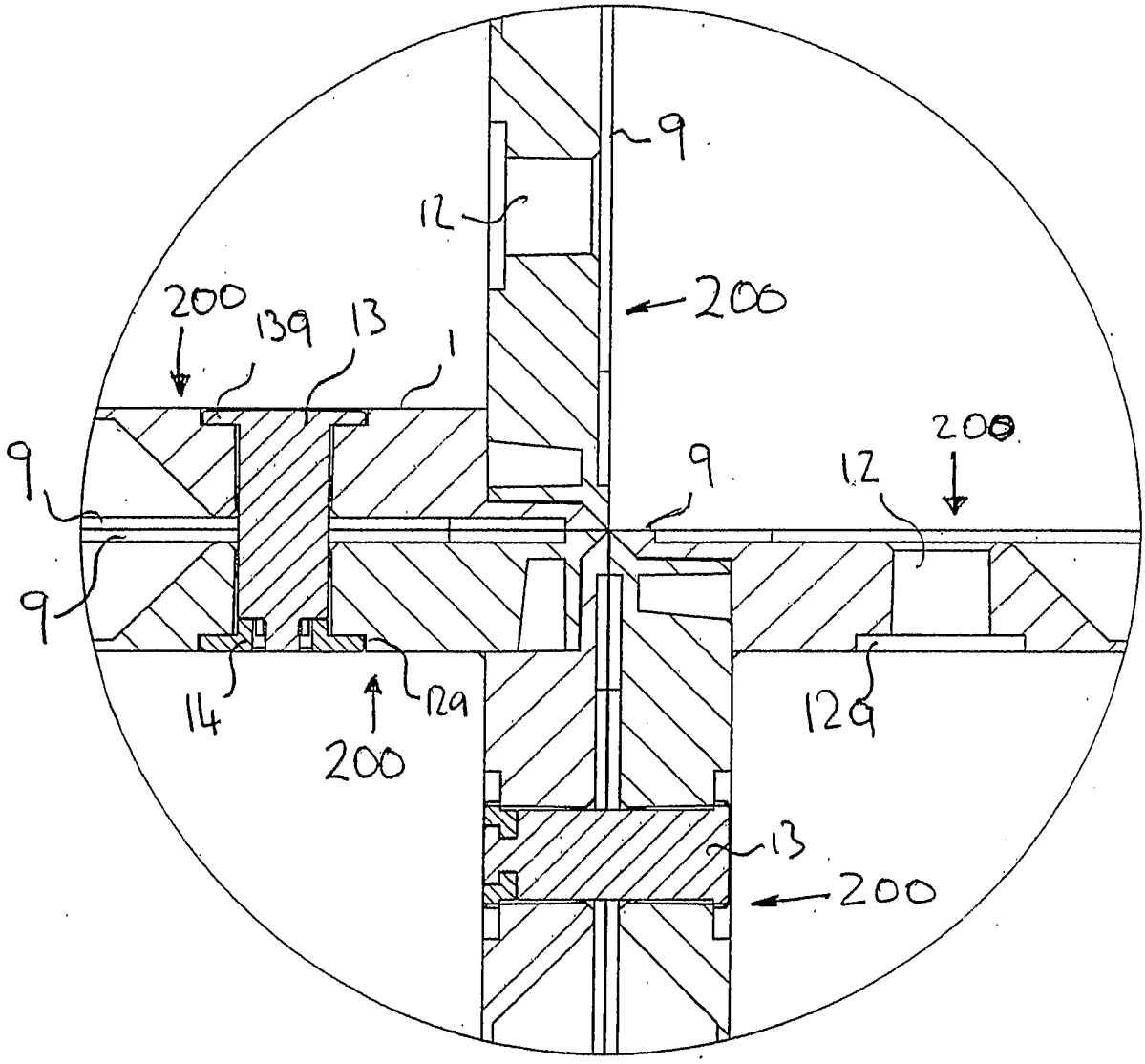


FIGURE 11

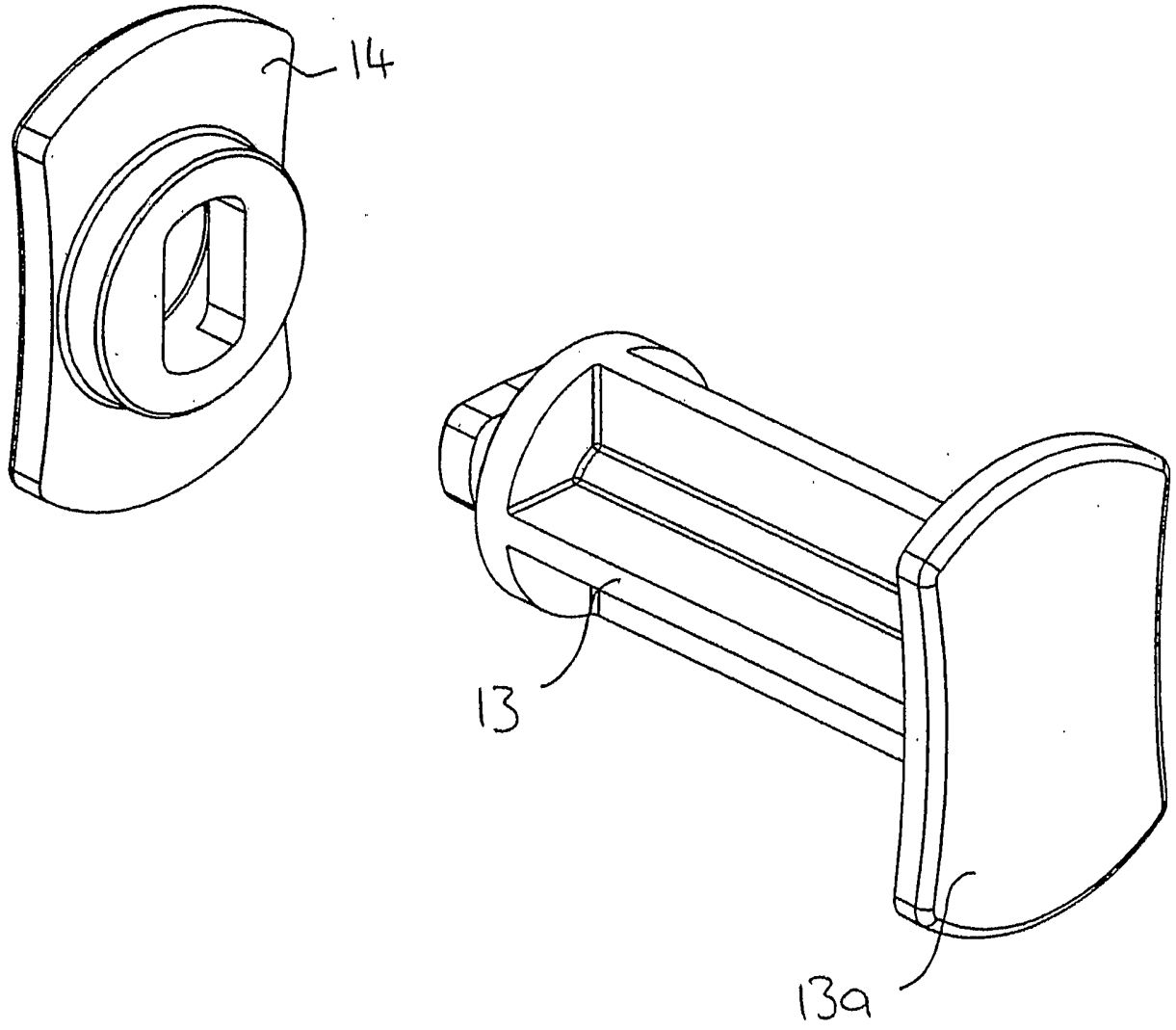


FIGURE 12

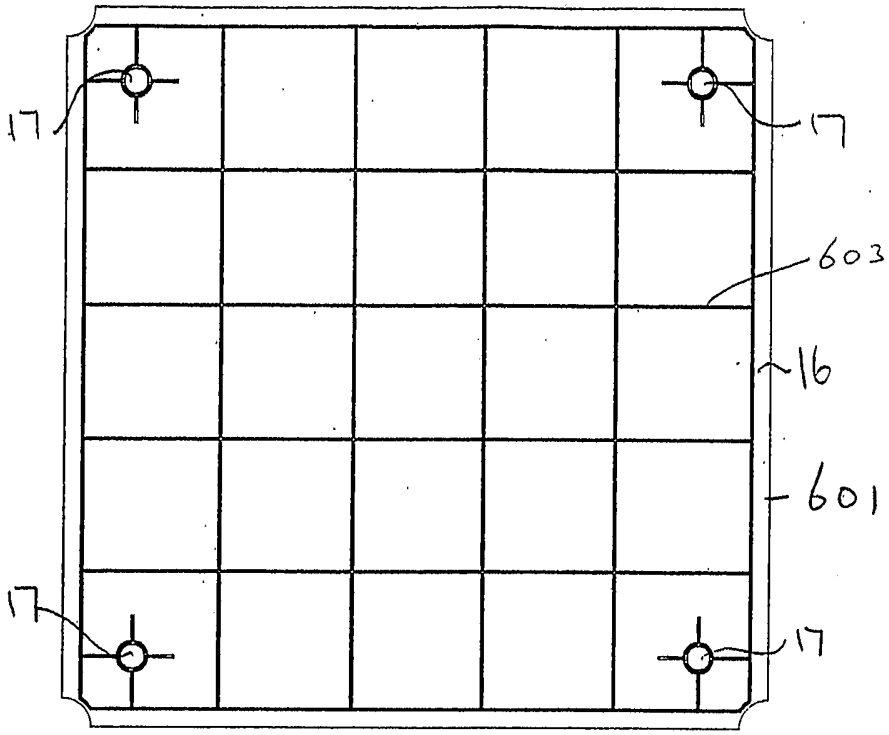


FIGURE 13

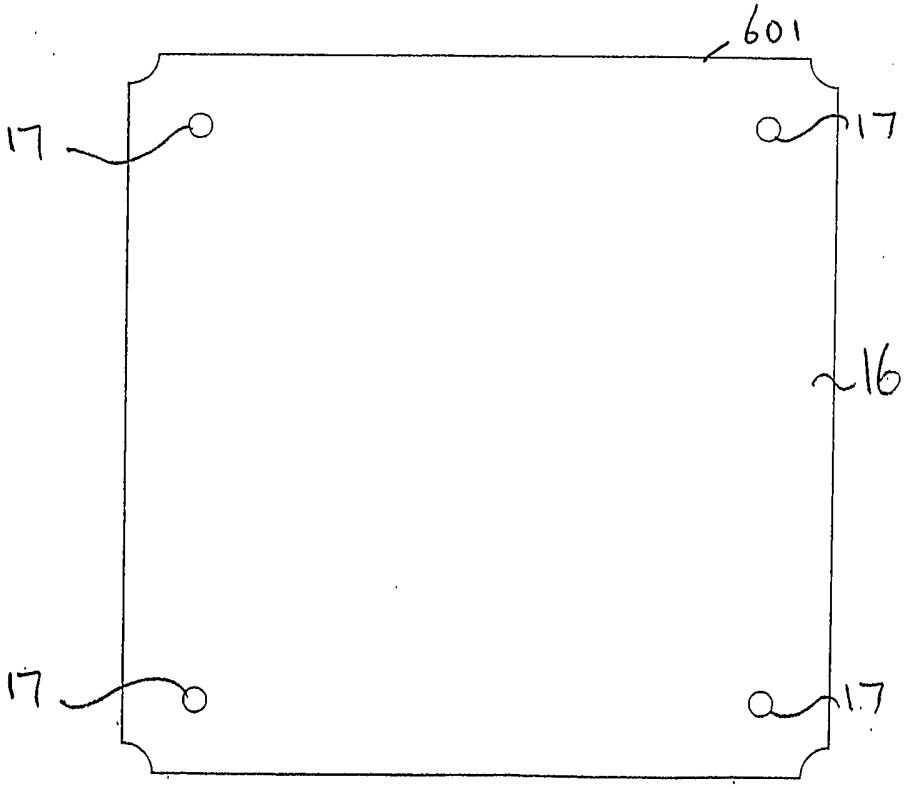


FIGURE 14

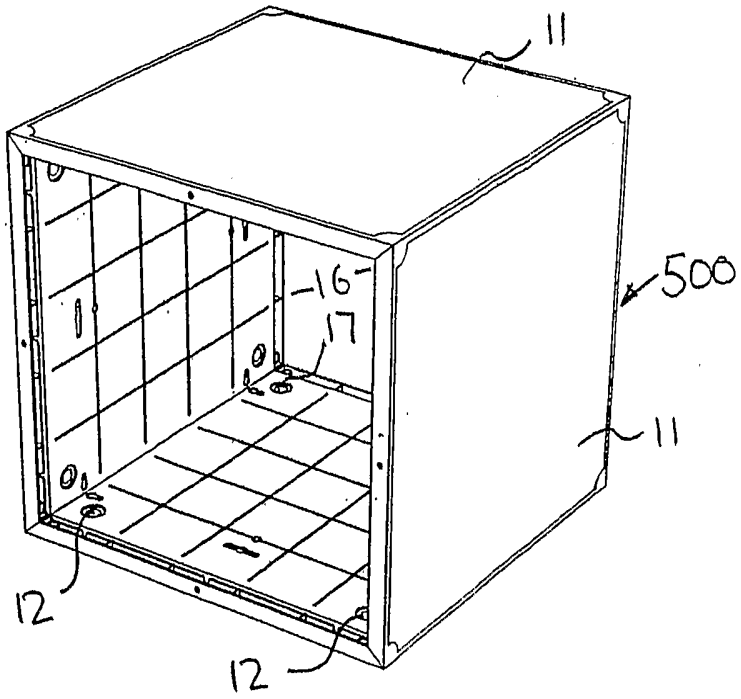


FIGURE 15

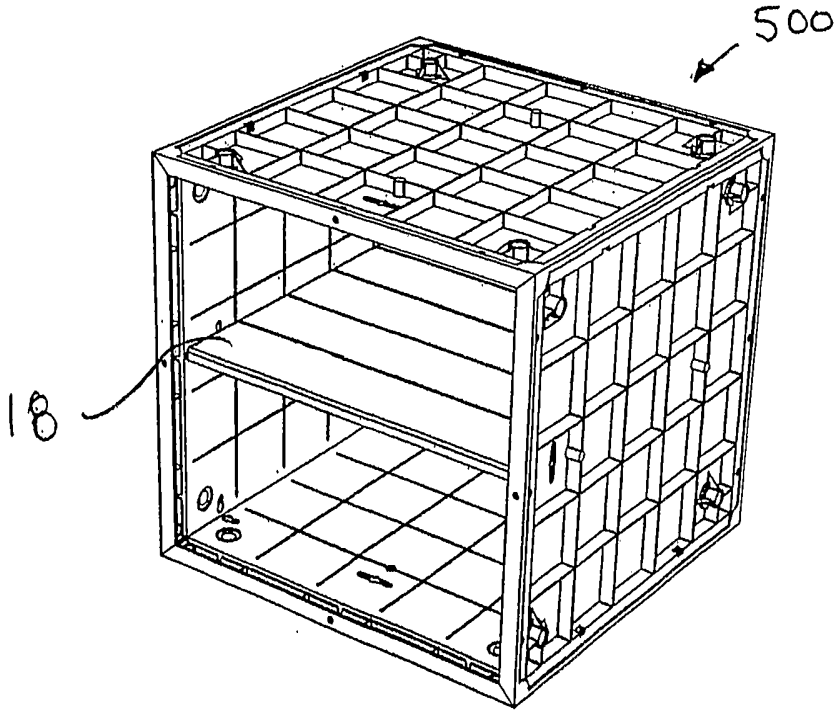


FIGURE 16

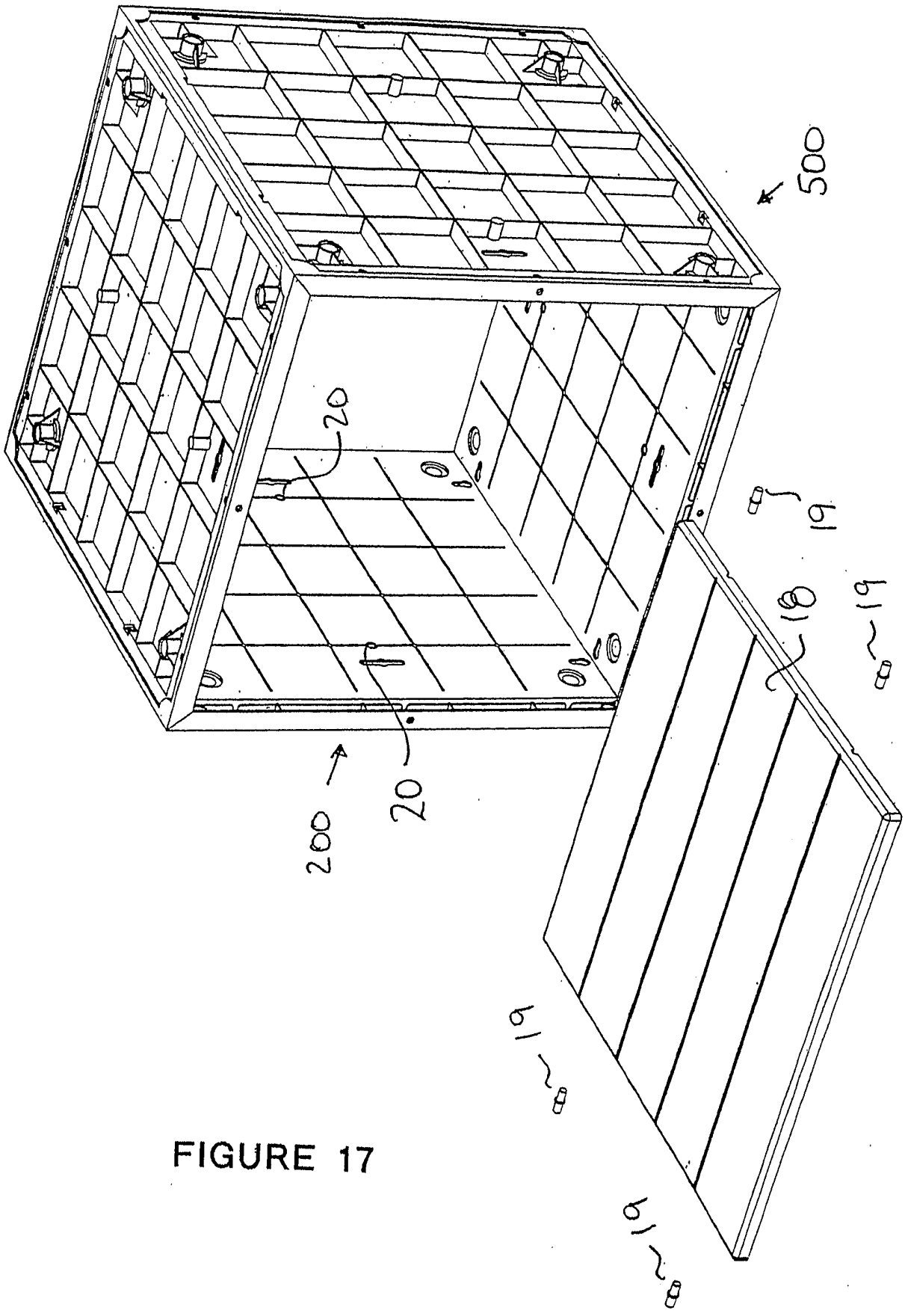


FIGURE 17

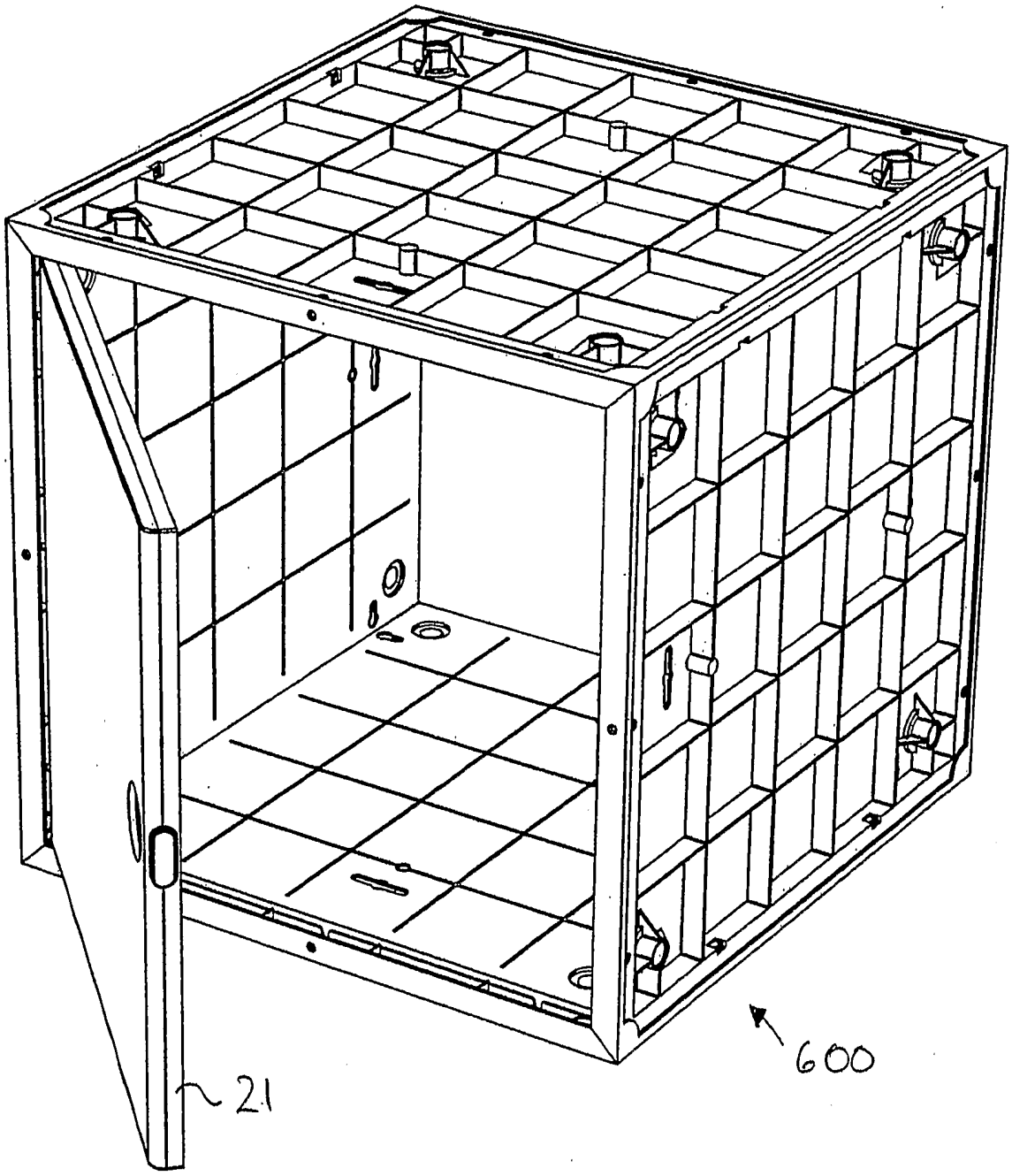


FIGURE 18

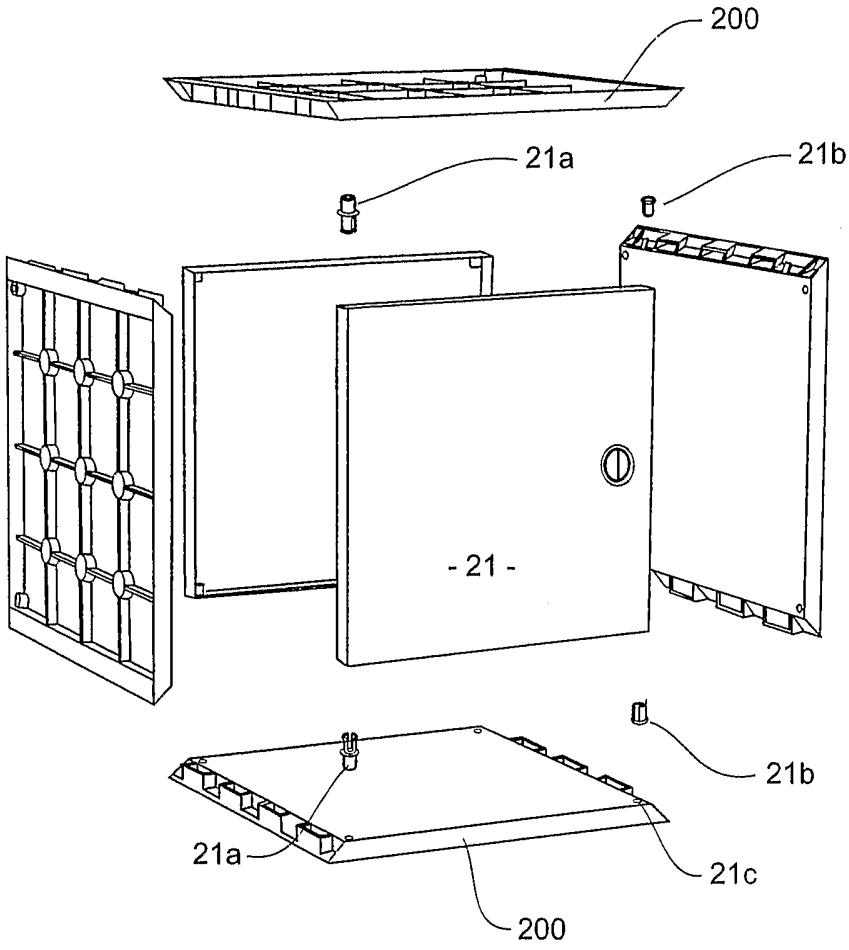


FIGURE 18A

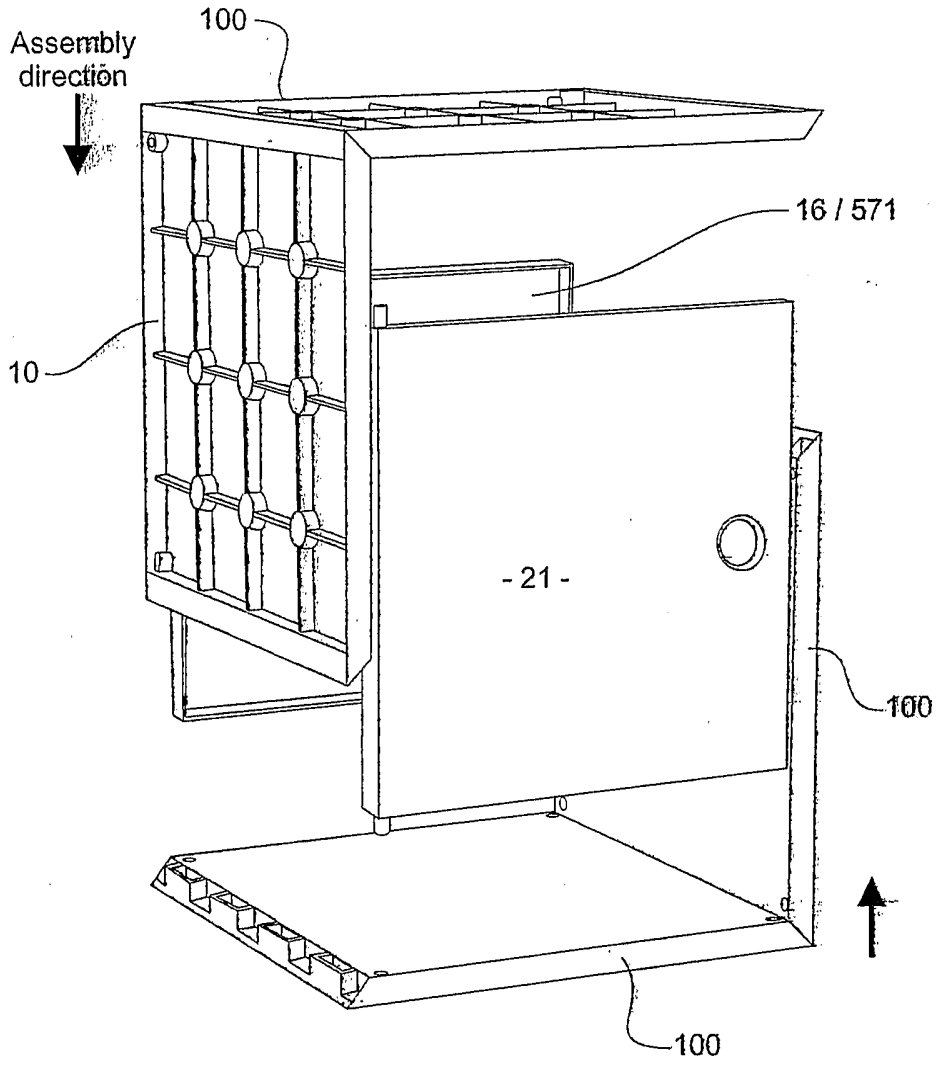


FIGURE 18B

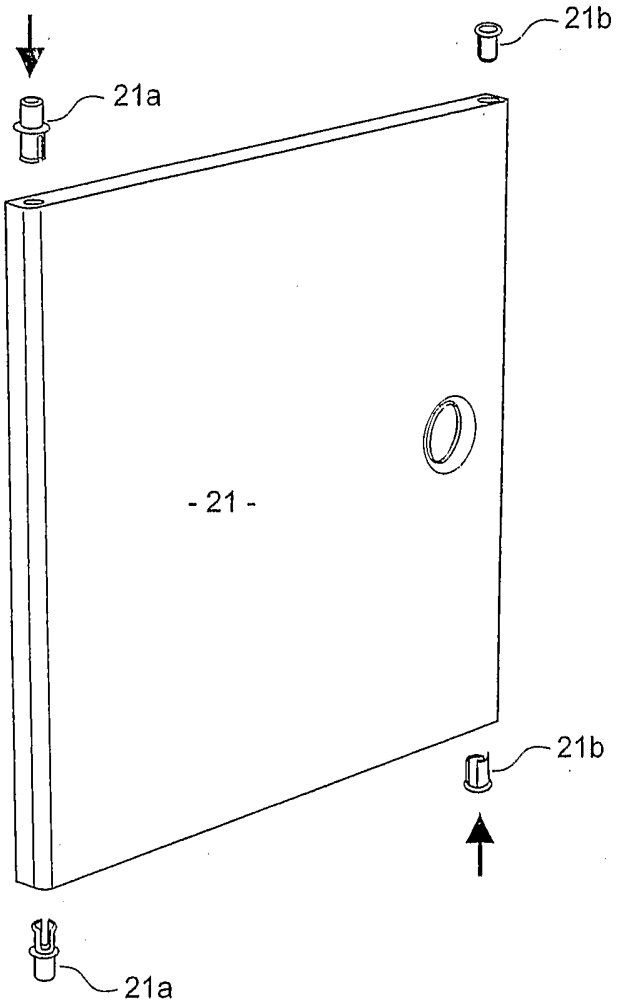
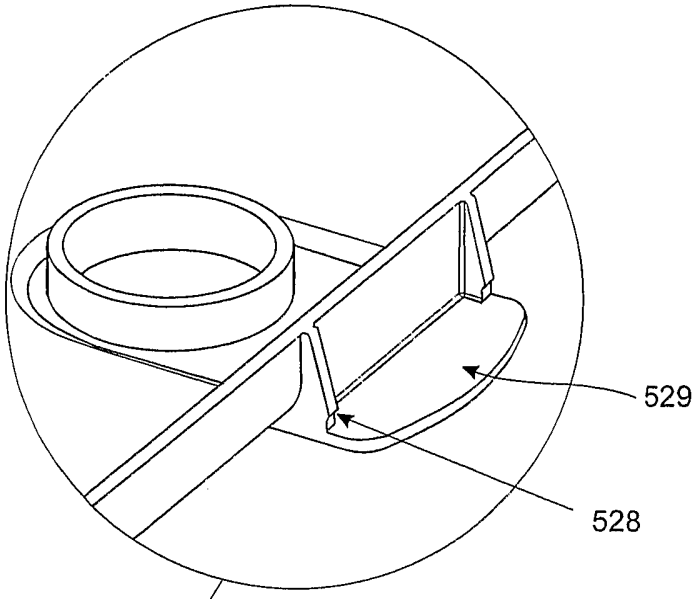


FIGURE 18C

FIGURE 18D



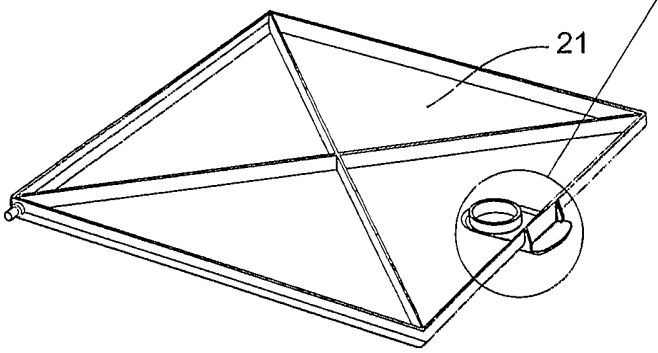


FIGURE 18E

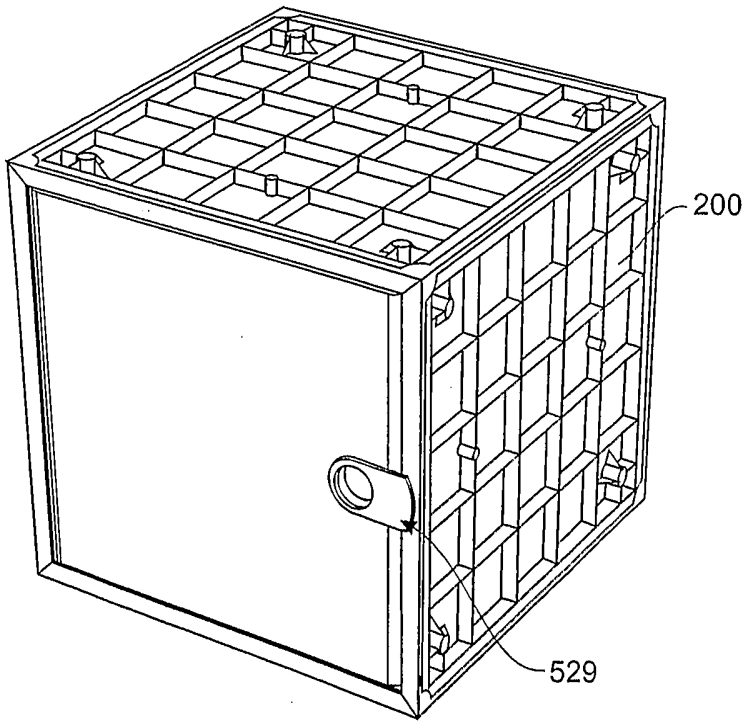


FIGURE 18F

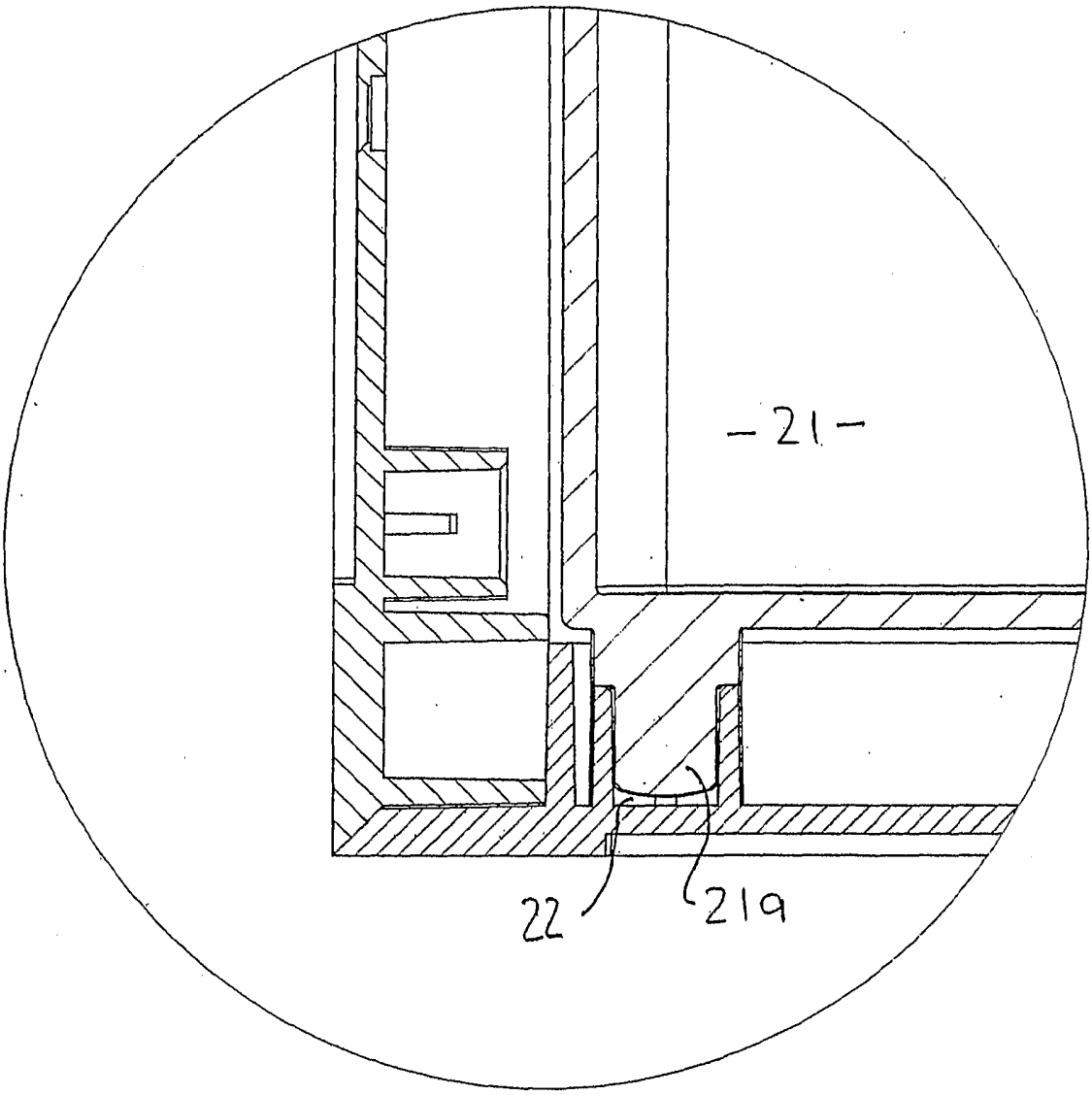


FIGURE 19

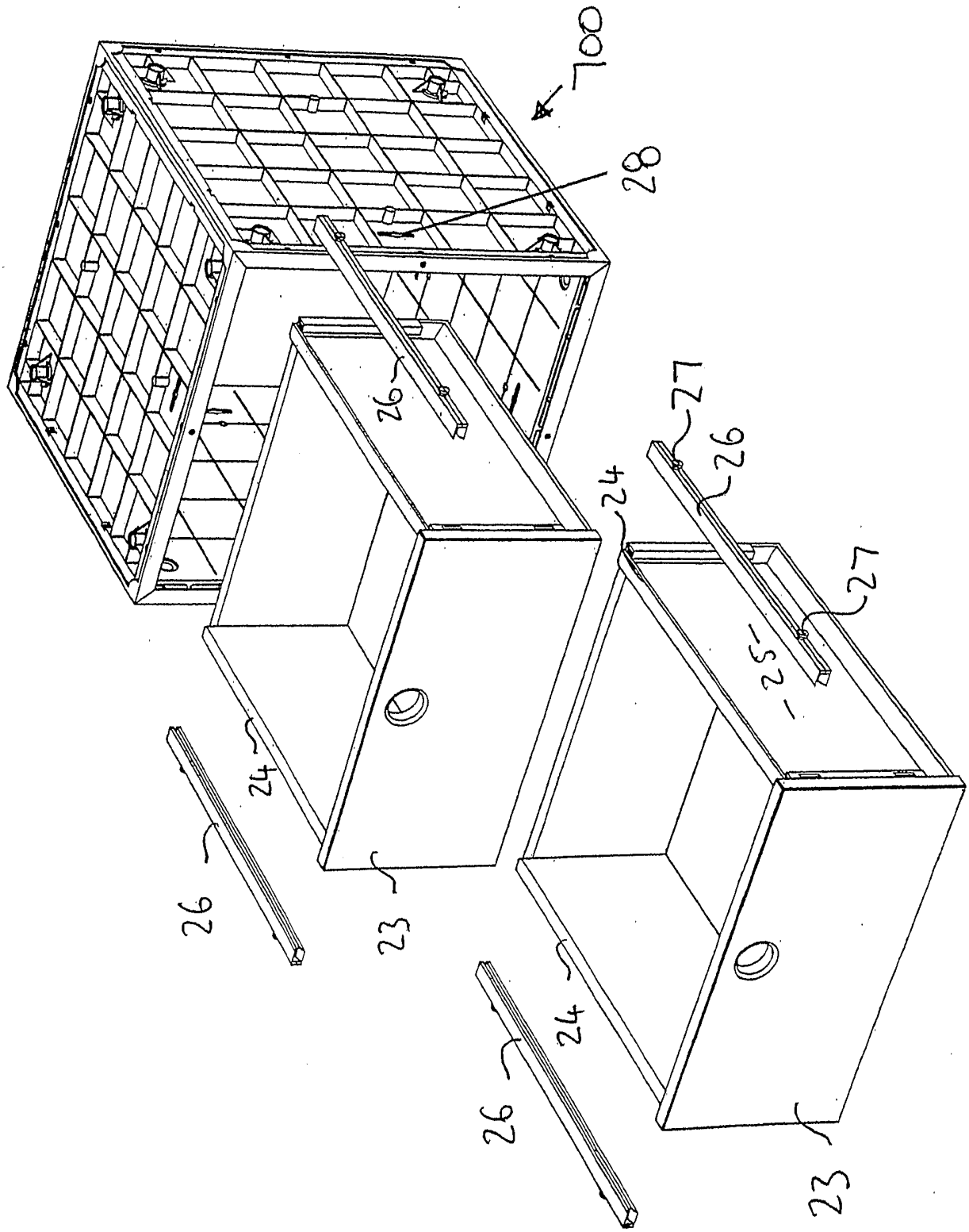


FIGURE 20

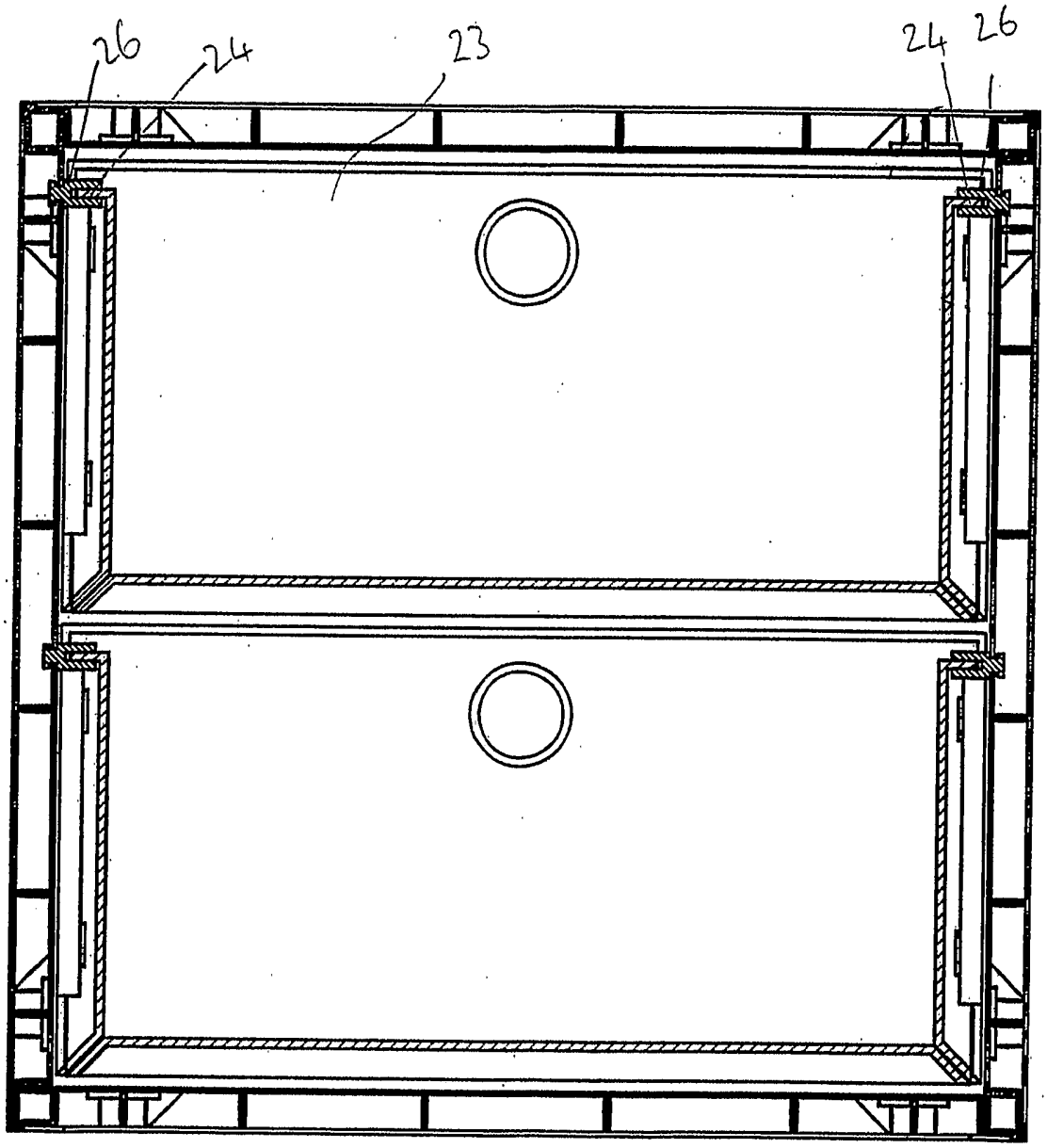


FIGURE 21

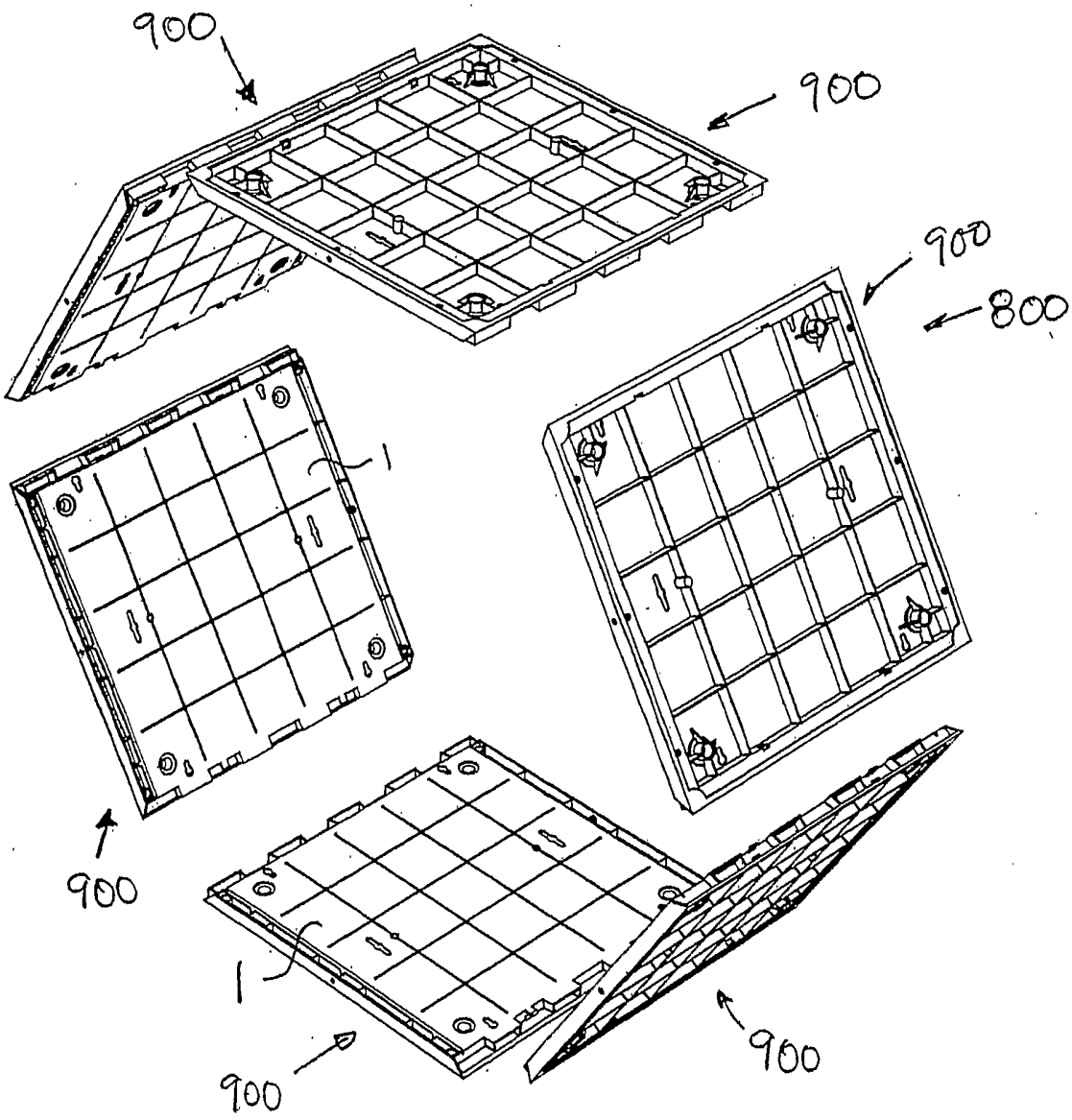


FIGURE 22

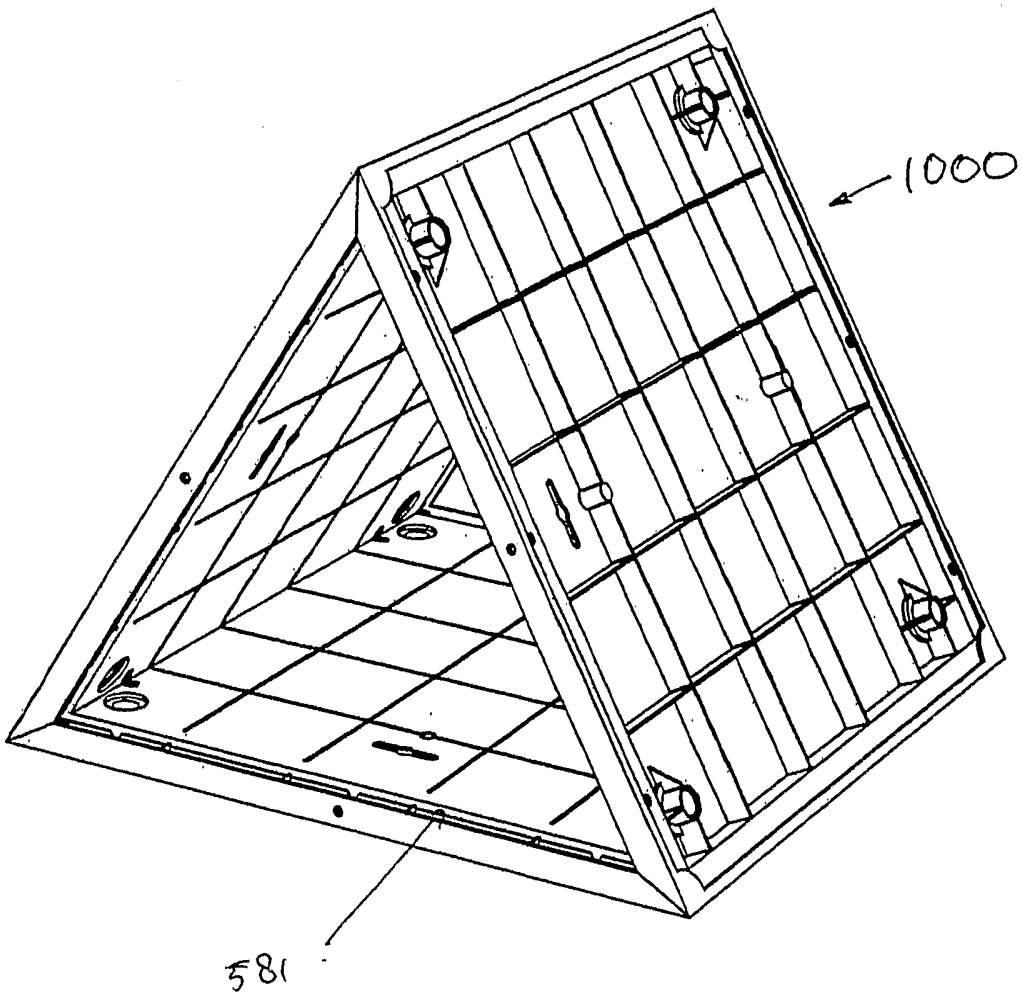


FIGURE 23

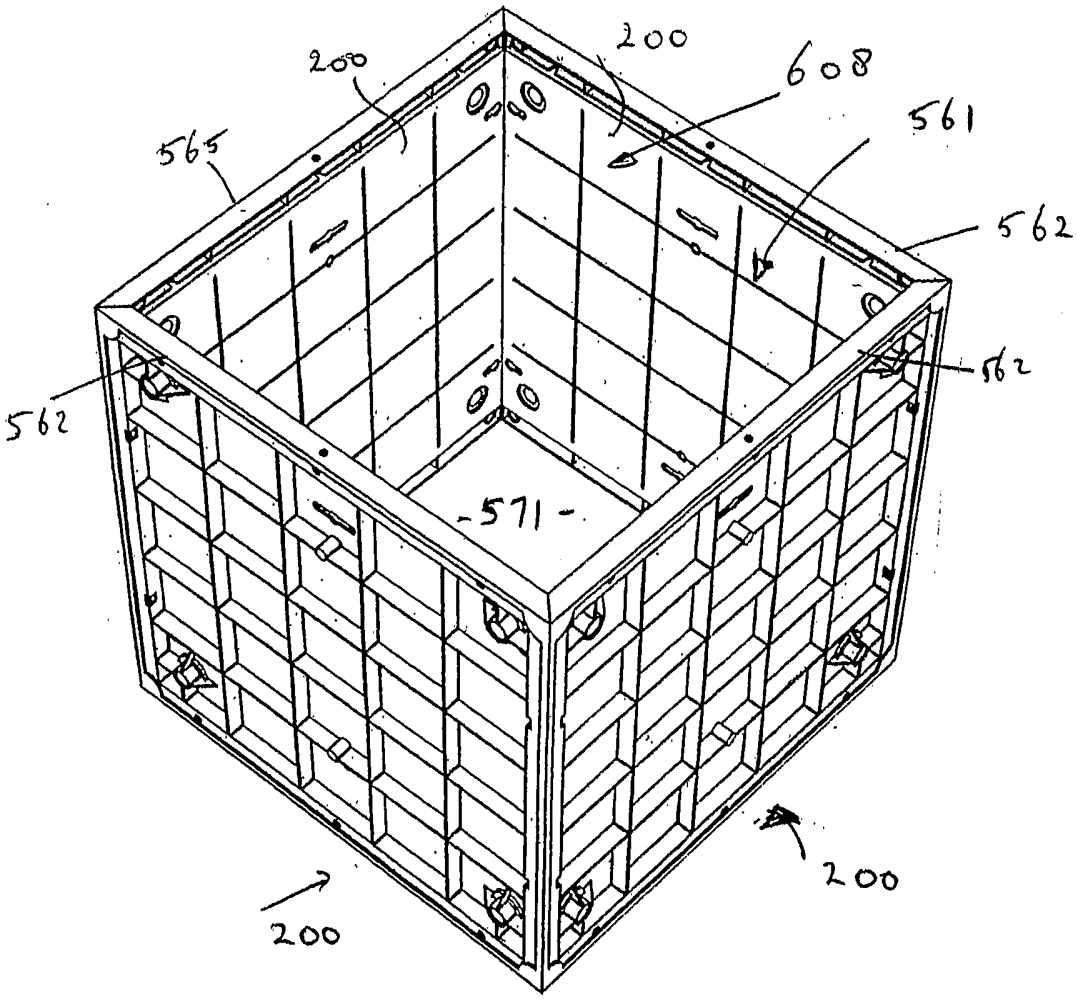


FIGURE 24

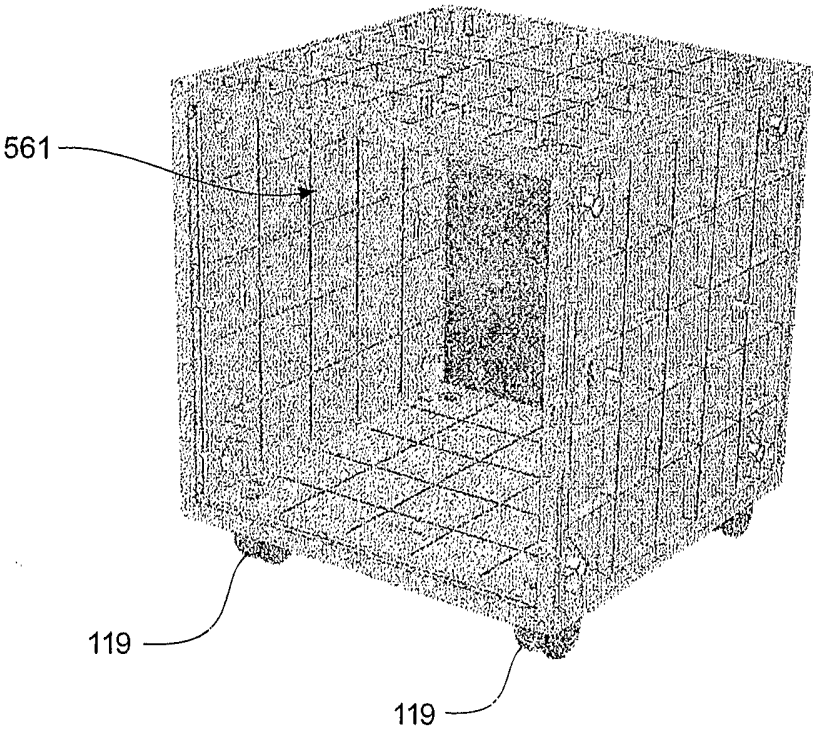


FIGURE 24A

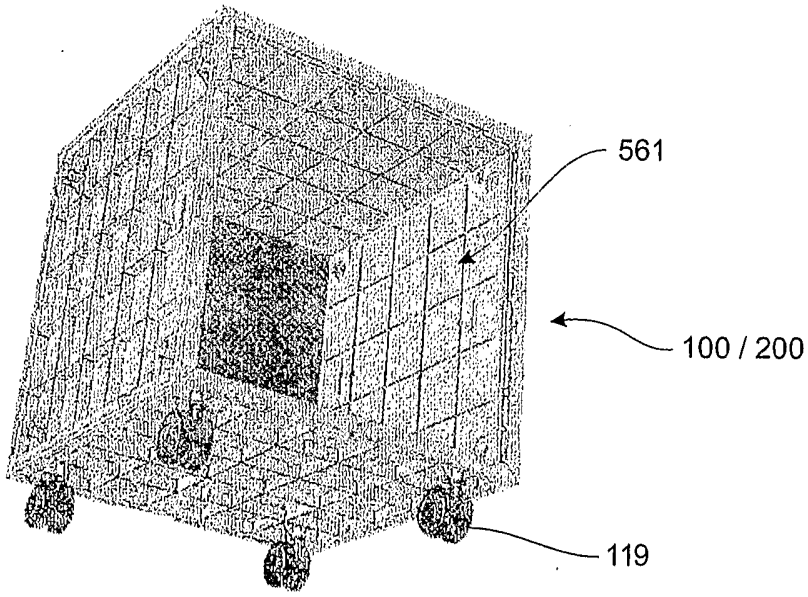


FIGURE 24B

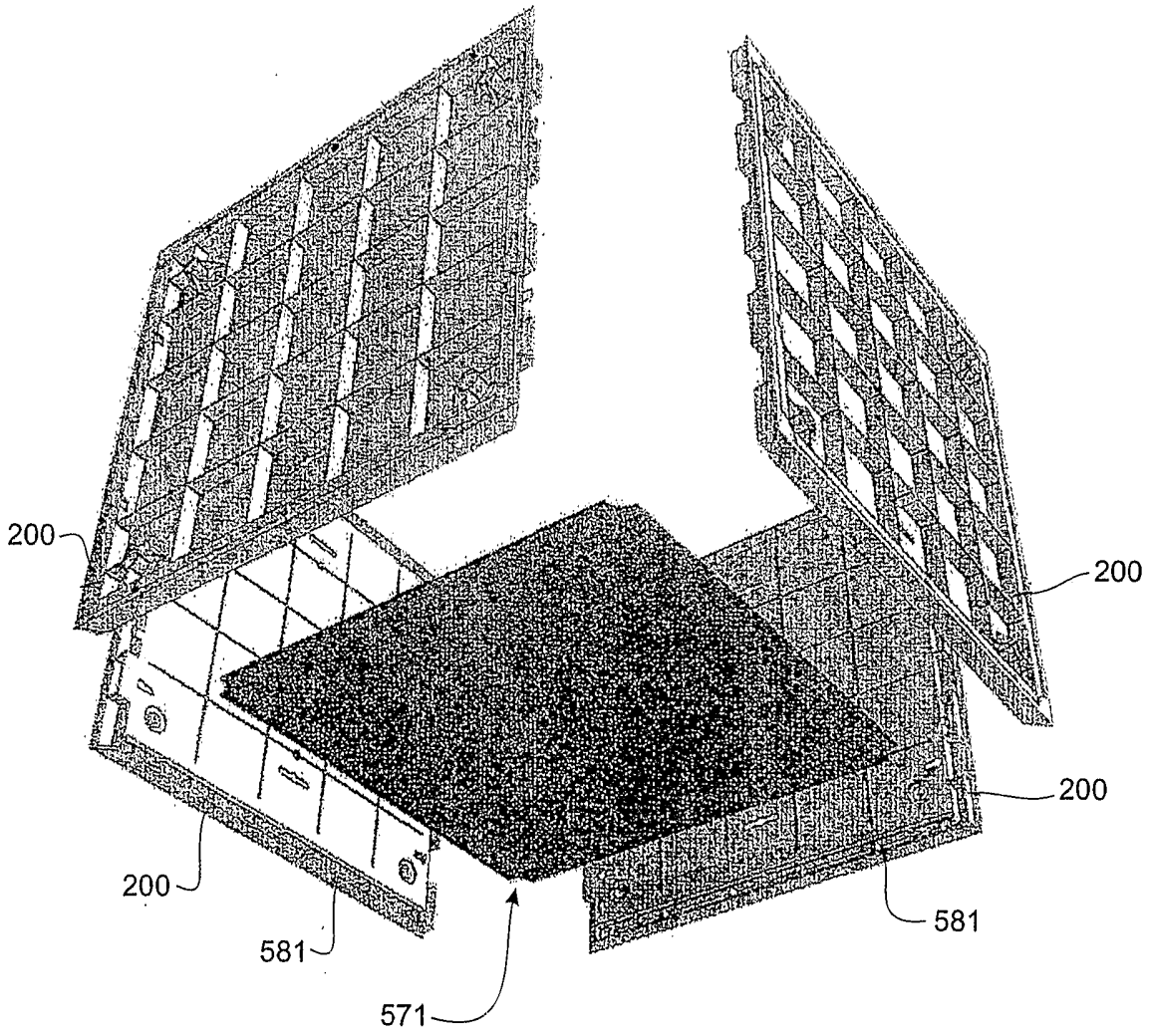


FIGURE 25

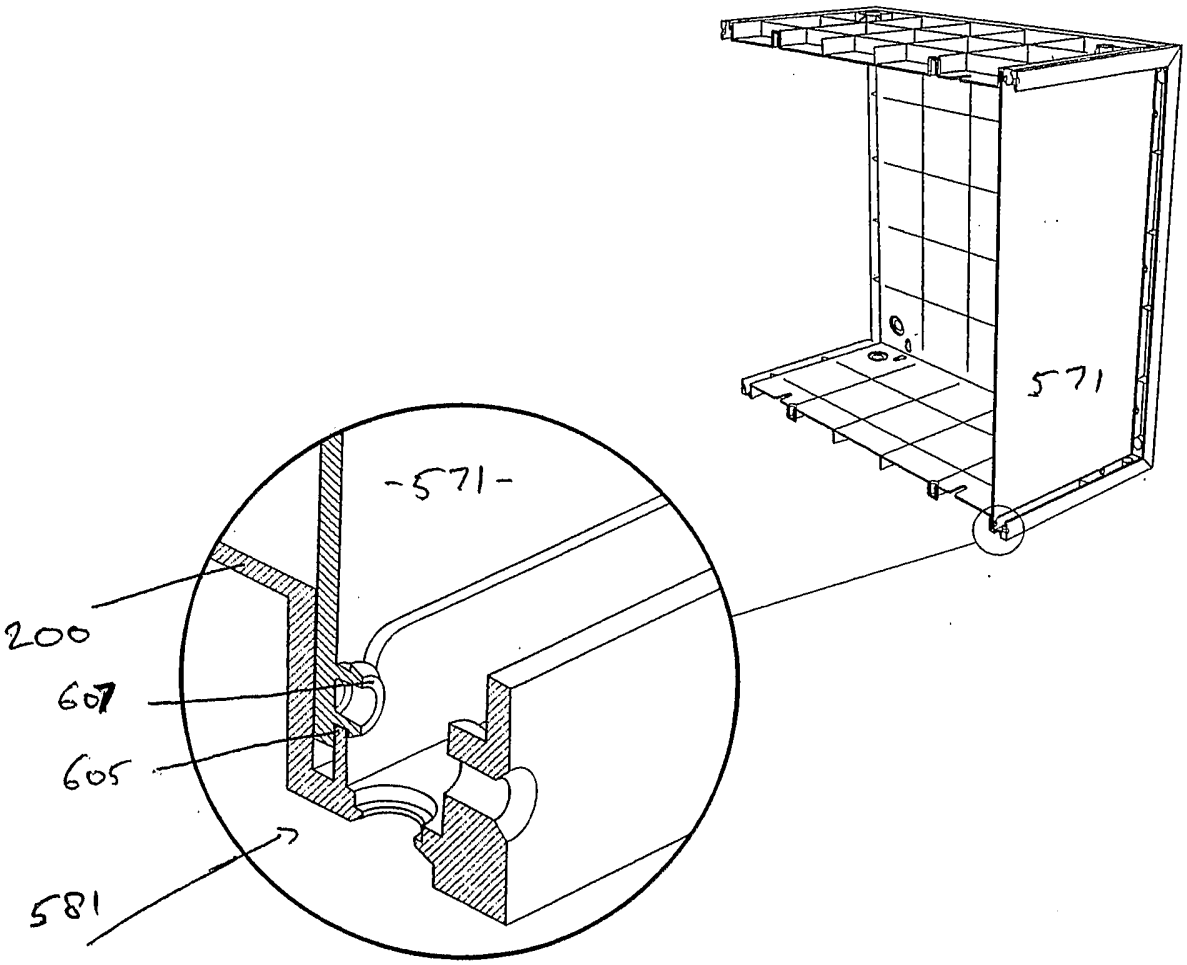


FIGURE 25B

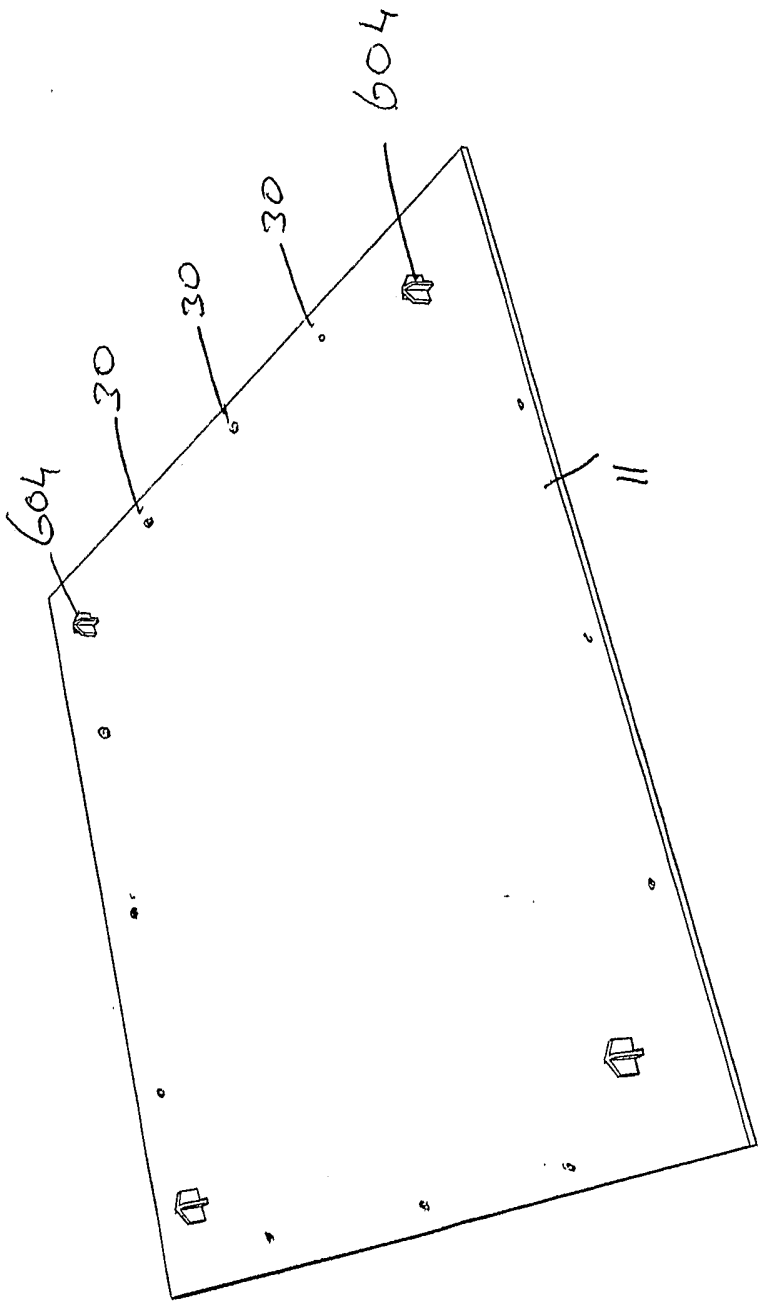


FIGURE 26

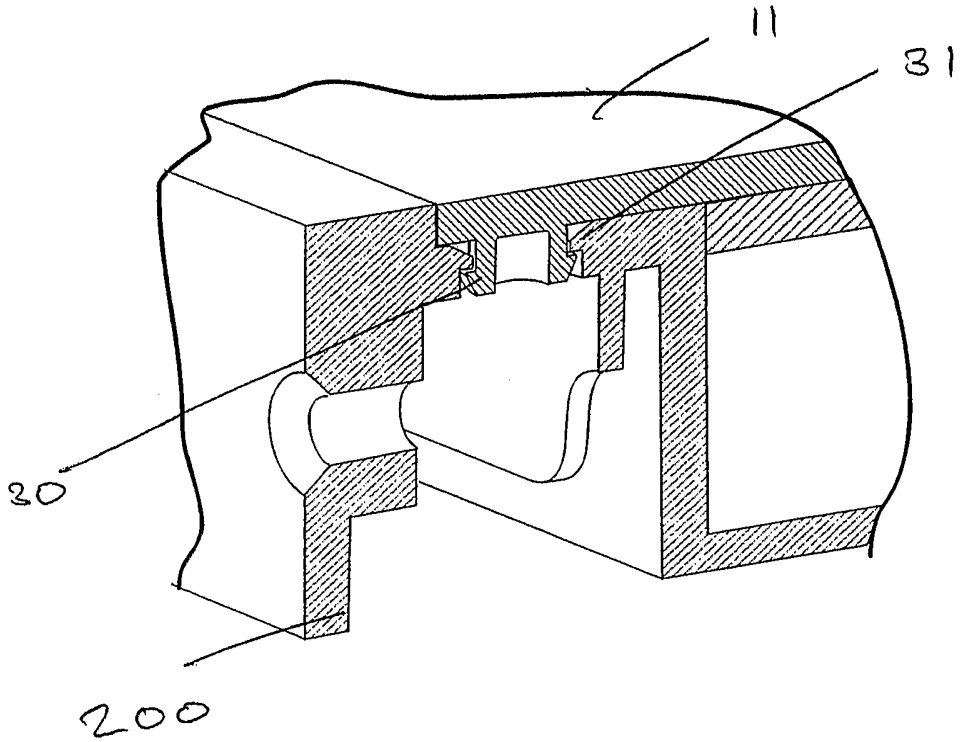


FIGURE 26B

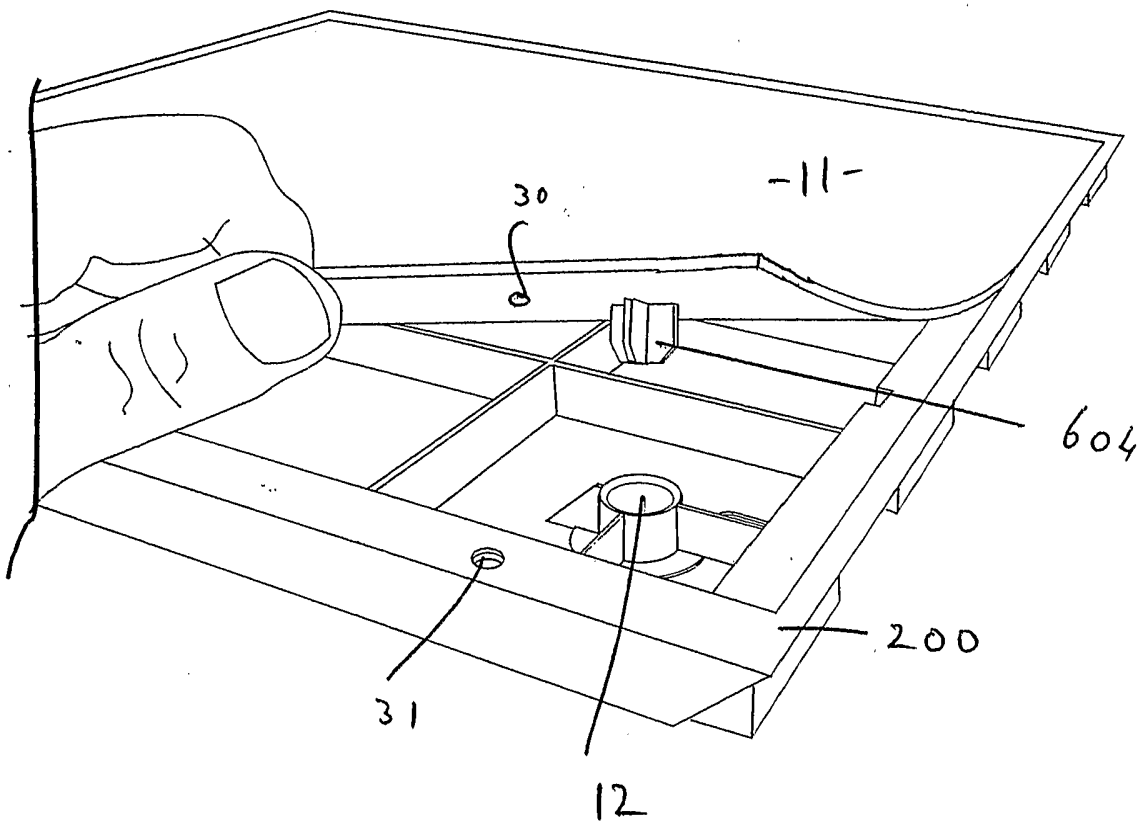


FIGURE 27

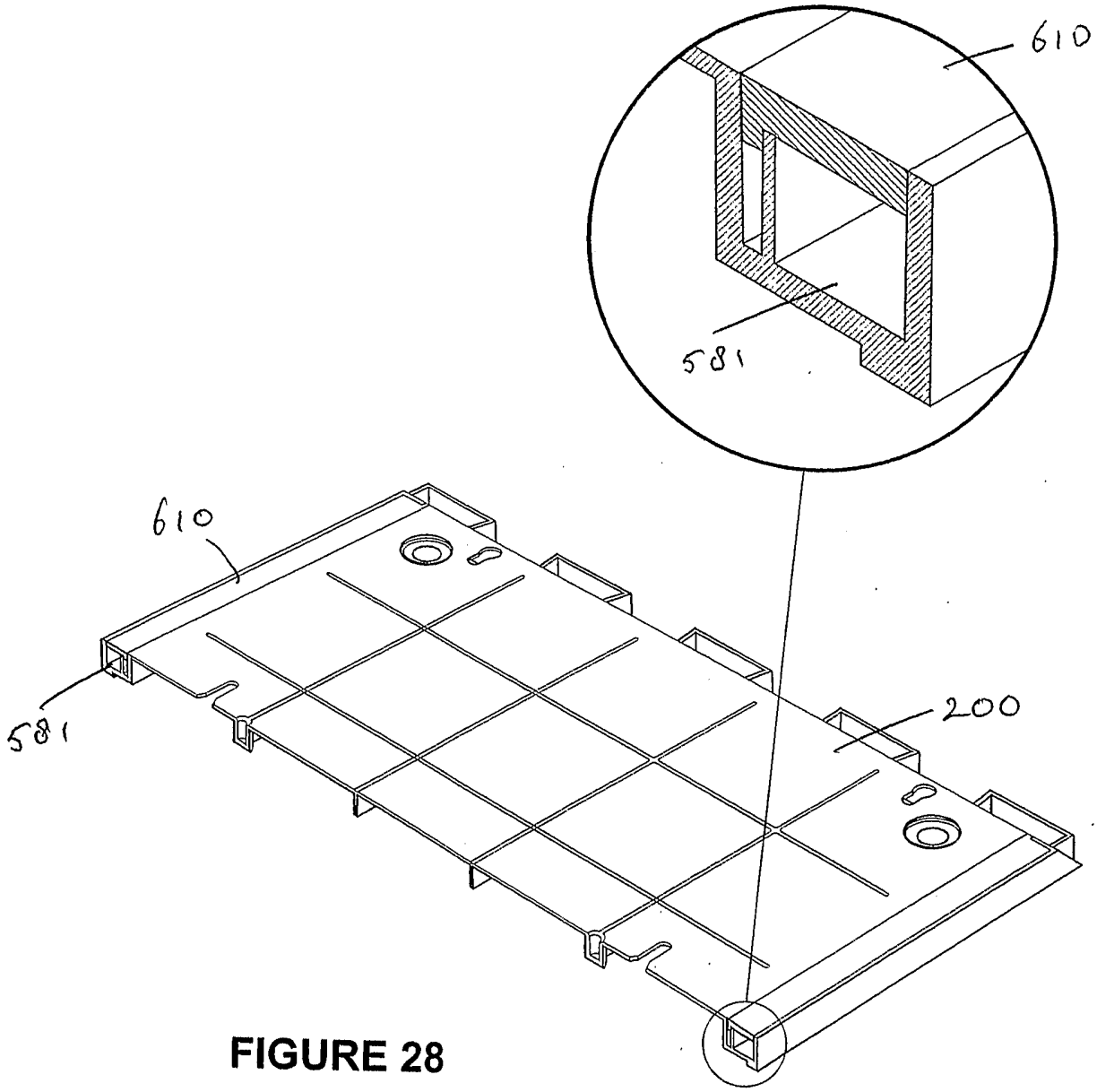


FIGURE 28

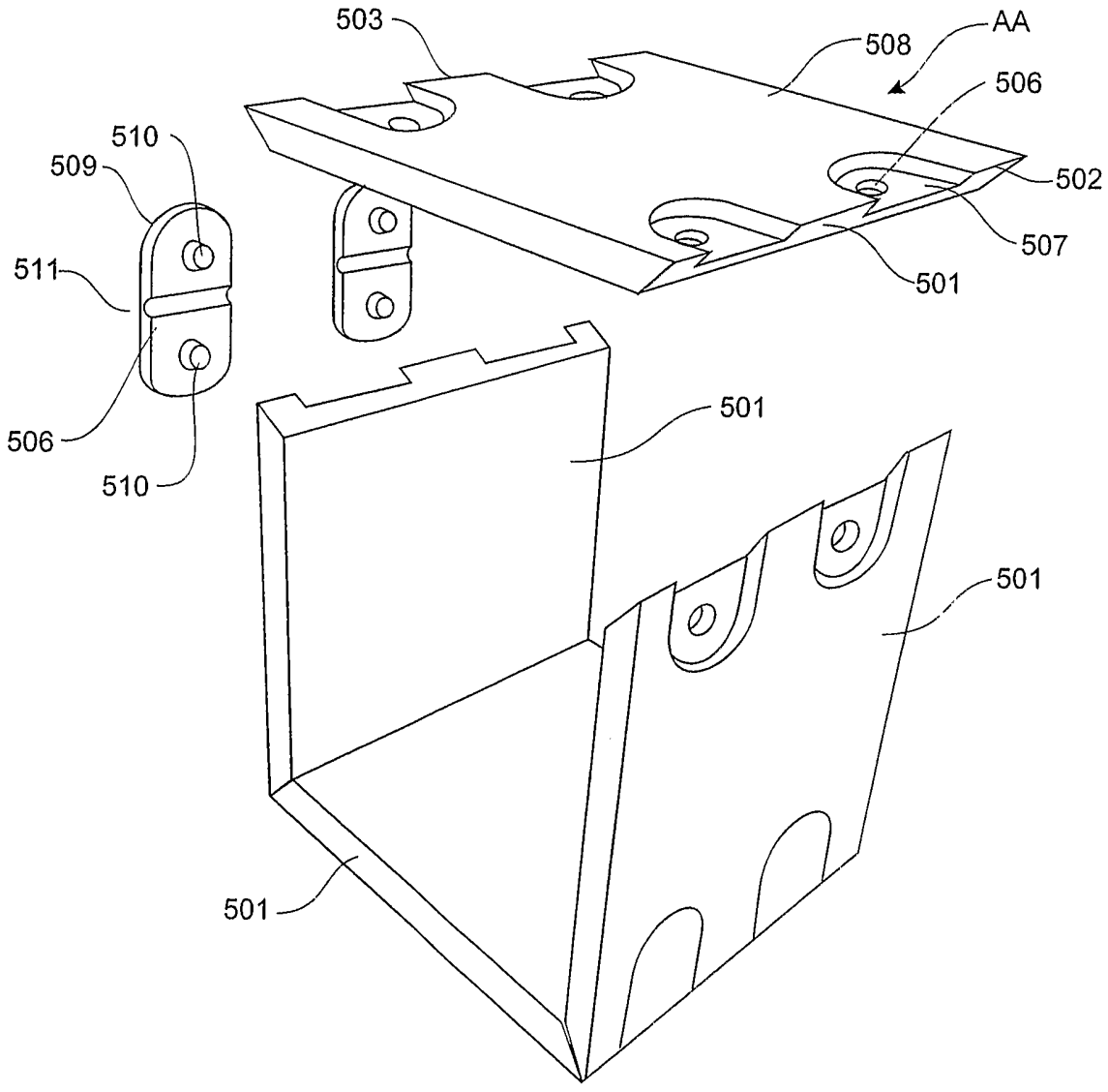


FIGURE 29

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ2006/000067

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

F16S 1/02 (2006.01) ***A47B 87/00*** (2006.01)
A47B 47/00 (2006.01) ***A47B 96/20*** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
Refer Electronic Database consulted below.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Derwent World Patent Index:
F16S-001/02;
A47B-047, A47B-087, A47B-096/00, A47B-096/20 AND PANEL+ AND (CONNECT+ OR INTERCONNECT+) AND MODUL+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	Derwent Abstract no. 2003-647757/62, Class P27, DE 20309712 U (KOCH) 28 August 2003 See the abstract, and the whole DE document	1 – 65
X	Derwent Abstract no. 1999-154732/14, Class Q68, DE 19735185 A (SCHRÄDER) 18 February 1999 See the abstract, and the whole DE document	1 – 65
X	AU 50490/96 (METRO PRODUCTS AND CO. PTY LTD) 17 October 1996 See the whole document	1 – 65

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
07 July 2006	12 JUL 2006
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer **C. NGUYEN-KIM** Telephone No : (02) 6283 2121

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ2006/000067

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5357728 A (DUNCANSON) 25 October 1994 See the whole document	1 – 65
X	Derwent Abstract no. 1994-250255/31, Class Q41, DE 4306250 C (WERNAL D. PILLATH GmbH) 18 August 1994 See the abstract, and the whole DE document	1 – 65
X	AU 69962/91 (BRASTEMP S.A.) 3 October 1991 See the whole document	1 – 65
X	GB 2231820 A (SELZER FERTIGUNGSTECHNIK GmbH & CO) 28 November 1990 See the whole document	1 – 65
X	US 4717214 A (MOORE et al.) 5 January 1988 See the whole document	1 – 65
X	US 4704313 A (MAIER) 3 November 1987 See the whole document	1 – 65
X	Derwent Abstract no. 1983-724299/31, Class Q24 Q43 Q44, DE 3302105 A (MACGREGOR INTERNATIONAL S.A.) 28 July 1983 See the abstract, and the whole DE document	1 – 65
X	Derwent Abstract no. 1981-M9554D/51, Class Q68, DE 3020836 A (ESTEL HOESCH WERKE AG) 10 December 1981 See the abstract, and the whole DE document	1 – 65
X	Derwent Abstract no. 1977-D0323Y/15, Class R32, FR 2316679 A (HISPA) 28 January 1977 See the abstract, and the whole FR document	1 – 65
X	Derwent Abstract no. 1991-110572/16, Class Q42, DE 3933611 A (VARTA-PLASTIC GmbH) 11 April 1991 See the abstract, and the whole DE document, particularly in reference to Figs. 1 – 11	1 – 65
X	See the abstract, and the whole DE document, particularly in reference to Figs. 12 – 18	66 – 68
X	GB 2370239 A (TE-LI HUANG) 26 June 2002 See the whole document, particularly in reference to item 20	66 – 68
X	GB 2355672 A (TE-LI HUANG) 2 May 2001 See the whole document, particularly in reference to item 20	66 – 68
X	WO 2001/027395 A (GRIGUER) 19 April 2001 See the whole document, particularly in reference to Fig. 5	66 – 68
X	EP 801912 A (EDITIONS DUPUIS S.A.) 22 October 1997 See the whole document, particularly in reference to Fig. 10	66 – 68

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ2006/000067

C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5492399 A (TILLACK) 20 February 1996 See the whole document, particularly in reference to items 12, 18	66 – 68
X	US 5486041 A (SYKES) 23 January 1996 See the whole document, particularly in reference to item 34	66 – 68
X	Derwent Abstract no. 1994-280776/35, Class Q17, DE 4313330 A (GARNICH) 8 September 1994 See the abstract, and the whole DE document, particularly in reference to item 3	66 – 68
X	US 5119610 A (BIRKELAND et al.) 9 June 1992 See the whole document, particularly in reference to Figs. 11, 12, items 66, 67	66 – 68
X	GB 2206280 A (EASTMAN) 5 January 1989 See the whole document, particularly in reference to Fig. 11, items 120, 32	66 – 68
X	EP 270495 A (LINTH MÖBELFABRIK) 8 June 1988 See the whole document, particularly in reference to Fig. 6, items 80, 81, 82, 83	66 – 68
X	US 4403554 A (VALENTINE et al.) 13 September 1983 See the whole document, particularly in reference to Figs. 1, 2, item 60	66 – 68
X	GB 2101202 A (KEPAC LIMITED) 12 January 1983 See the whole document	66 – 68
X	Derwent Abstract no. 1978-J0375A/41, Class P36, FR 2376677 A (BECHTLOFF-FRANZ) 4 August 1978 See the abstract, and the whole FR document, particularly in reference to items 20, 20', 20''	66 – 68
P,X	EP 1642630 A (YOSHIRITSU KABUSHIKI KAISHA) 5 April 2006 See the whole document	66 – 68
P,X	Derwent Abstract no. 2005-358346/37, Class P25, FR 2862356 A (BLONDEL) 20 May 2005 See the abstract, and the whole FR document	66 – 68

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ2006/000067

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
(see the supplemental box)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

Supplemental Box
(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box No: III

This International Application does not comply with the requirements of unity of invention because it does not relate to one invention or to a group of inventions so linked as to form a single general inventive concept.

In assessing whether there is more than one invention claimed, I have given consideration to those features which can be considered to potentially distinguish the claimed combination of features from the prior art. Where different claims have different distinguishing features they define different inventions.

This International Searching Authority has found that there are different inventions as follows:

- Claims 1 – 65 are directed to a modular furniture component having a first end with an integral connector to be engaged to a second component (eg. male-female connection, mortise and tenon connection, or dovetail connection) to define at least part of a furniture assembly.
  It is considered that the component having an integral connector to be engaged to a second component in a male-female connection, mortise and tenon connection, or dovetail connection, comprises a first distinguishing feature.

- Claims 66 – 68 are directed to a modular furniture assembly comprising panels having at least one fastening aperture at each fastening edge and a fastening clip having two regions each including a protrusion to locate into a respective fastening aperture to hold the panels reliably together with their fastening edges contiguous each other.
  It is considered that the combination of fastening apertures at the fastening edges of each panel and the fastening clip having protrusions to be located in the respective fastening apertures comprises a second distinguishing feature.

PCT Rule 13.2, first sentence, states that unity of invention is only fulfilled when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding special technical features. PCT Rule 13.2, second sentence, defines a special technical feature as a feature which makes a contribution over the prior art.

Each of the abovementioned groups of claims has a different distinguishing feature and they do not share any feature which could satisfy the requirement for being a special technical feature. Because there is no common special technical feature it follows that there is no technical relationship between the identified inventions. Therefore the claims do not satisfy the requirement of unity of invention *a priori*.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/NZ2006/000067

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
DE	20309712						
DE	19735185						
AU	5049096	AU	50490/96	NZ	286333		
US	5357728	AU	55621/90	CA	2053301	EP	0470978
		NO	914278	NZ	233510	WO	9013402
DE	4306250	EP	0614017				
AU	6996291	AR	243987	AU	69962/91	BR	9001543
		CA	2031462	US	5360263		
US	4717214	JP	61185208	US	4844566		
US	4704313	EP	0195916	JP	61196705		
DE	3302105	FR	2520483				
DE	3020836						
FR	2316679						
DE	3933611						
GB	2370239	DK	200100028	FR	2820157		
GB	2355672	AU	58252/99	CA	2288422	FR	2800296
WO	01027395						
EP	0801912						
US	5492399	CA	2118008	EP	0637923	WO	9419989
US	5486041	AU	25202/95	BR	9507654	EP	0760613
		WO	9532646				
DE	4313330						
US	5119610	AU	37752/89	DK	297190	EP	0426695
		NO	882685	NO	905341	WO	8912412
GB	2206280						
EP	0270495						
US	4403554						
GB	2101202	AU	84948/82	CA	1171612	FR	2508529
		HK	44685	ZA	8204154		
FR	2376677	AT	6277	SE	7714966		
EP	1642630	US	2006080928				
FR	2862356						

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX