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(54) **HIDDEN STIFFENING PANEL CONNECTOR AND CONNECTING METHOD**

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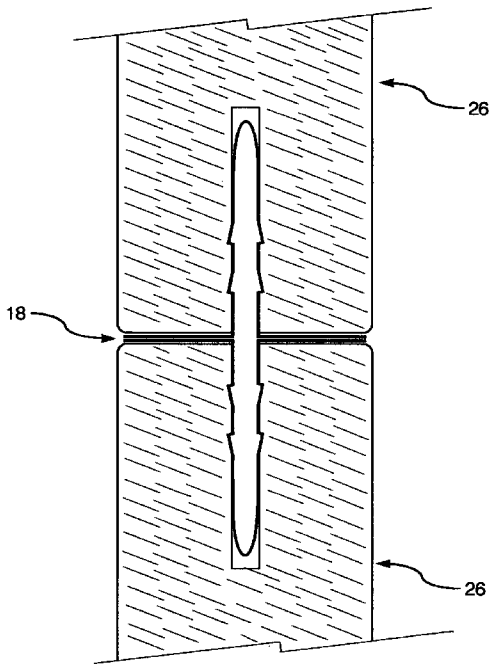
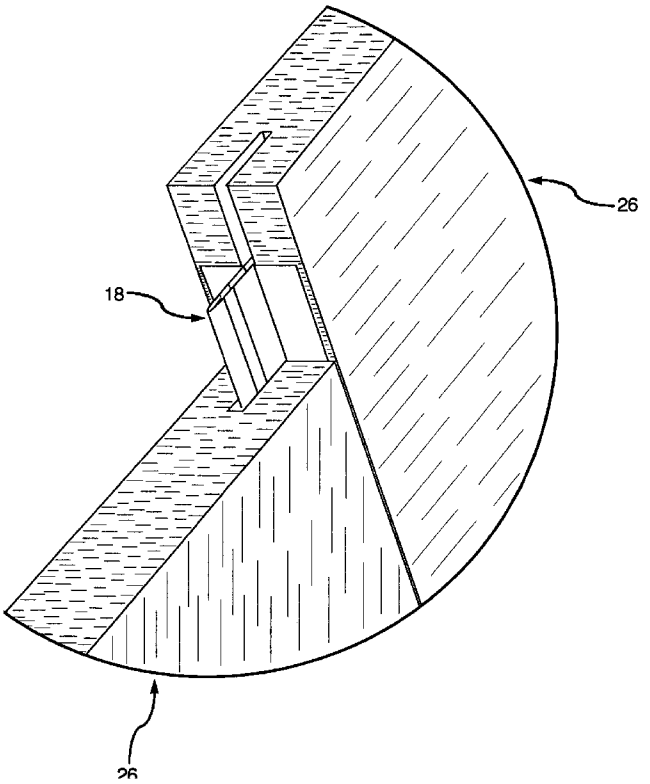
(57) **ABSTRACT**

An aligning, stiffening and connecting device and system for composite building panels comprising composite building panels (**26**) of a predetermined composition and dimensions having a substantially lengthwise slot (**28**) of a predetermined width and depth in the abutting edges (**32**) of the composite building panel (**26**), and a stiffening panel connector (**18**) made of substantially rigid material comprising flat parallel stiffening splines (**20**) of a predetermined width, thickness and length in a planar relationship joined together by opposing compressable v-channels (**22**) of a predetermined dimension oriented open-end to open-end. The Composite building panels (**26**) are aligned and connected when the opposing compressable v-channels (**22**) of the connecting device are inserted into the lengthwise slots (**28**) in the abutting edges (**32**) of two composite building panels (**26**) and the composite building panels (**26**) are pushed together edgewise in a planar relationship causing the opposing compressable v-channels (**22**) to be compressed within the slots (**28**) until the composite building panel (**26**) abutting edges (**32**) are sandwiching the stiffening splines (**20**) of the stiffening panel connector (**18**) thereby aligning and connecting the composite building panels (**26**) in a straight and flat wall. The stiffening splines (**20**) are of a predetermined mass and are oriented perpendicular to the panel face (**30**) thereby imparting additional stiffness to the assembled wall. A wall thereby constructed has no part of the stiffening panel connector externally visible and no external fittings or fasteners bridging the joint where the composite building panels (**26**) are abutting, thereby requiring no additional wall covering prior to taping, floating, painting or papering. Composite building panels (**26**) aligned, connected and stiffened with the stiffening panel connector (**18**) are able to span greater distances, both horizontally and vertically, without the need for additional studs or framing.





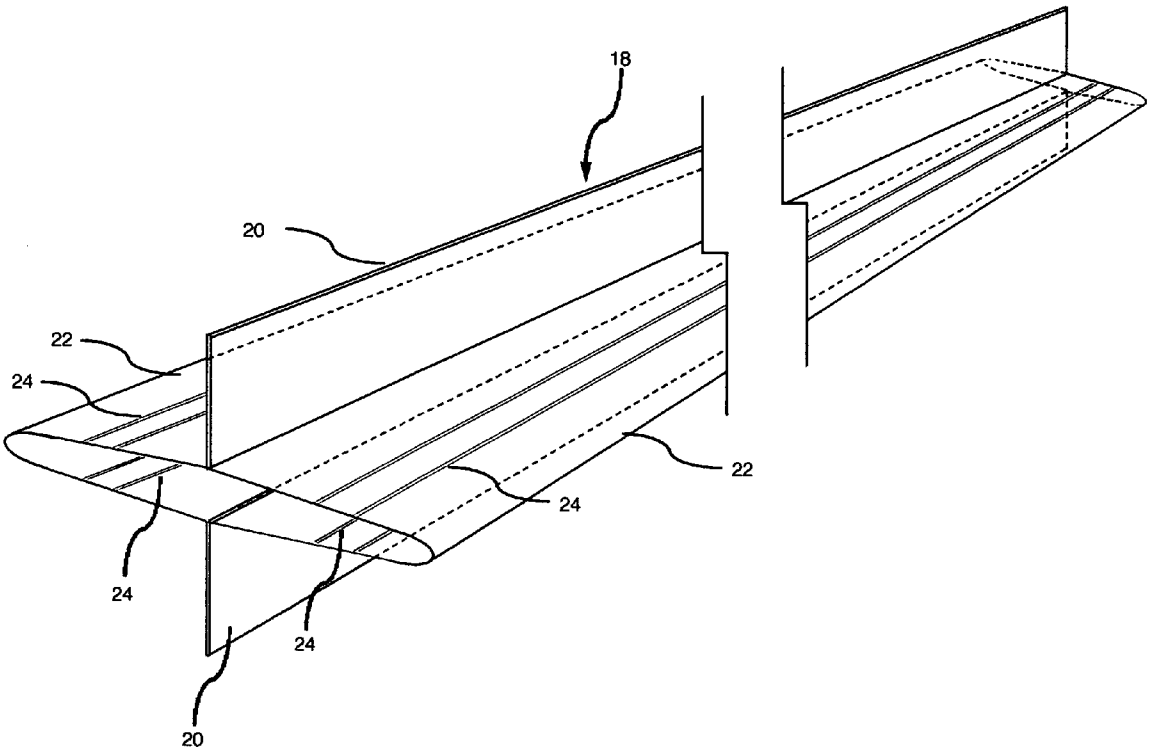


Figure 1

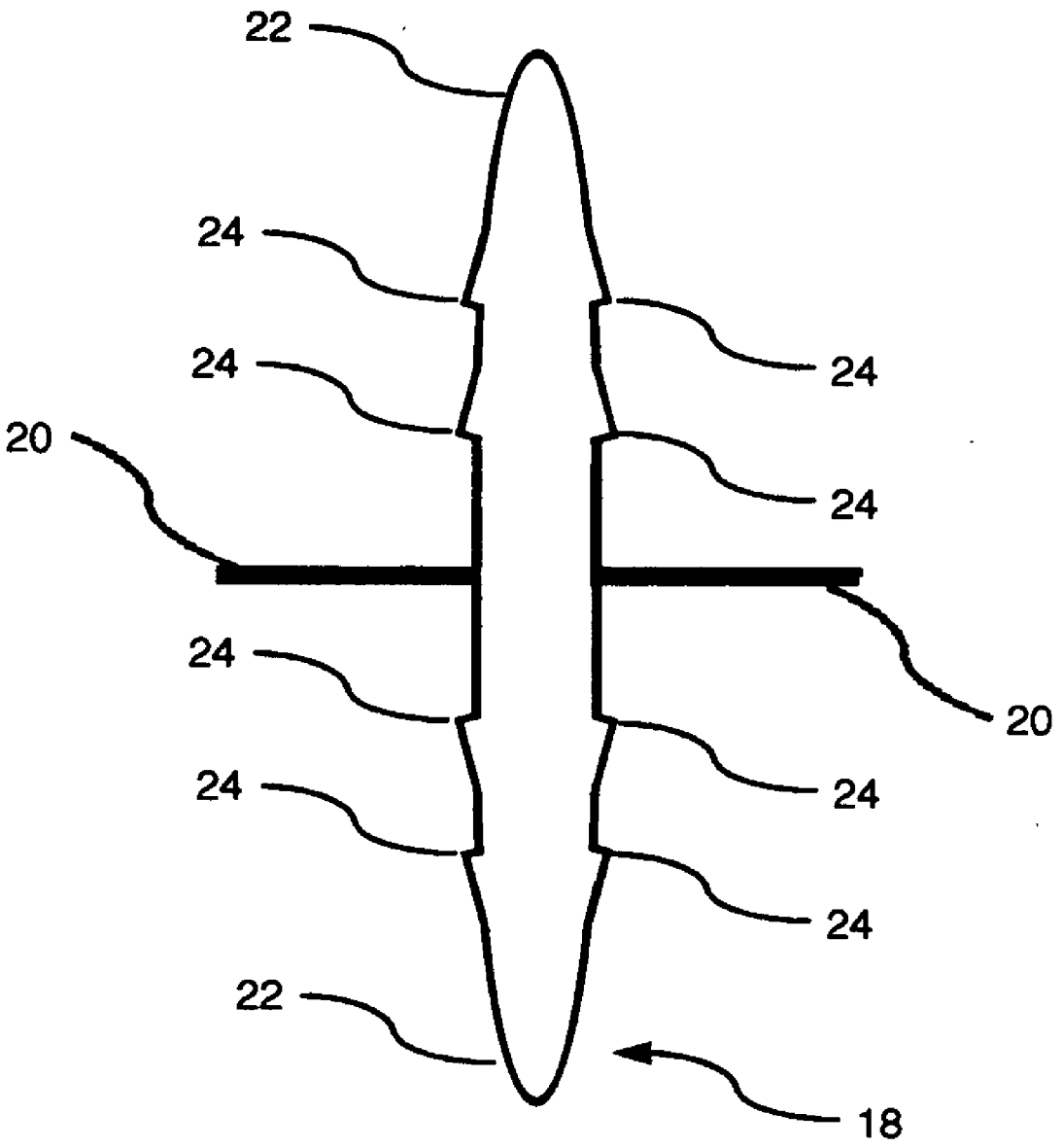


Figure 2

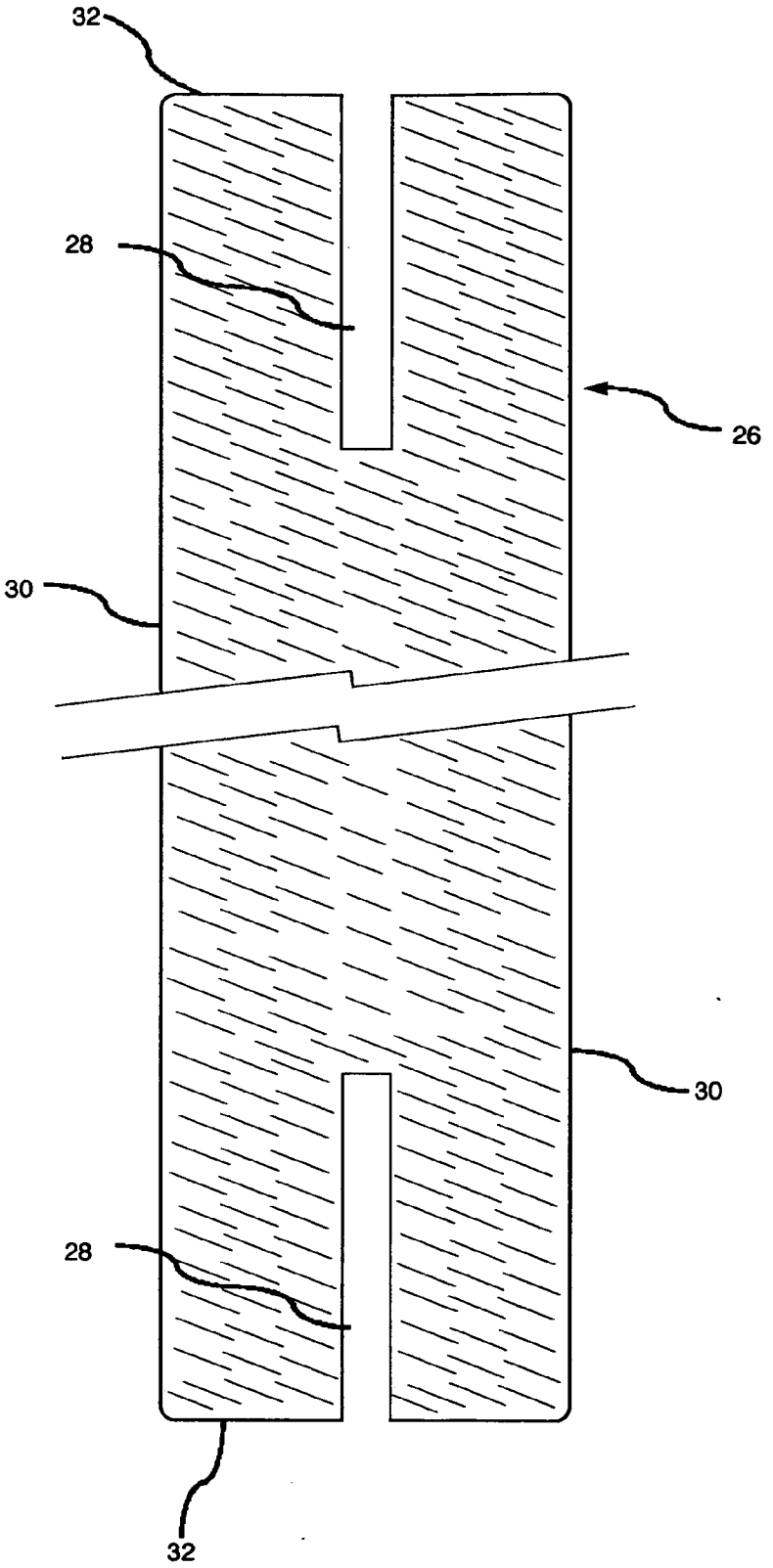


Figure 2A

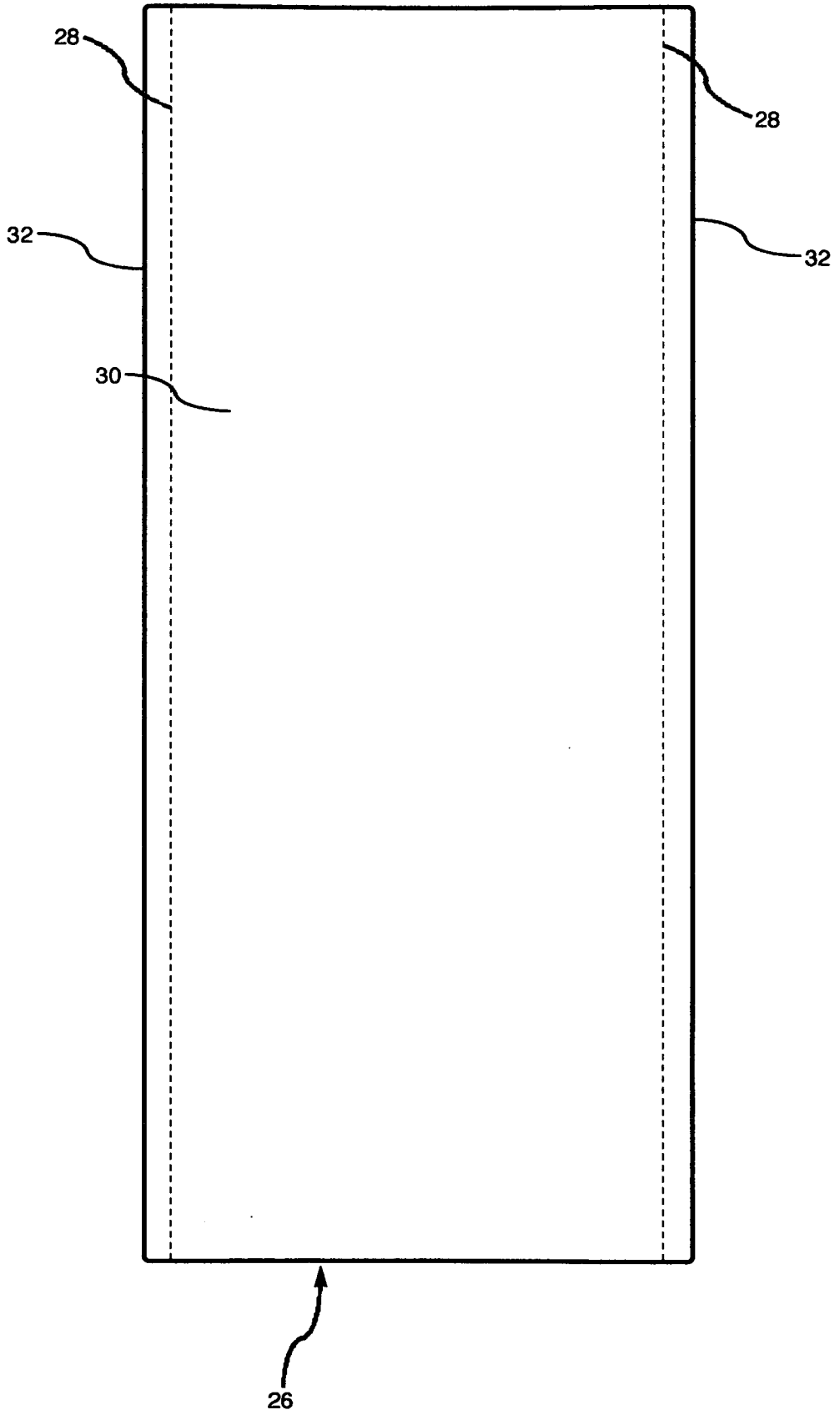


Figure 2B

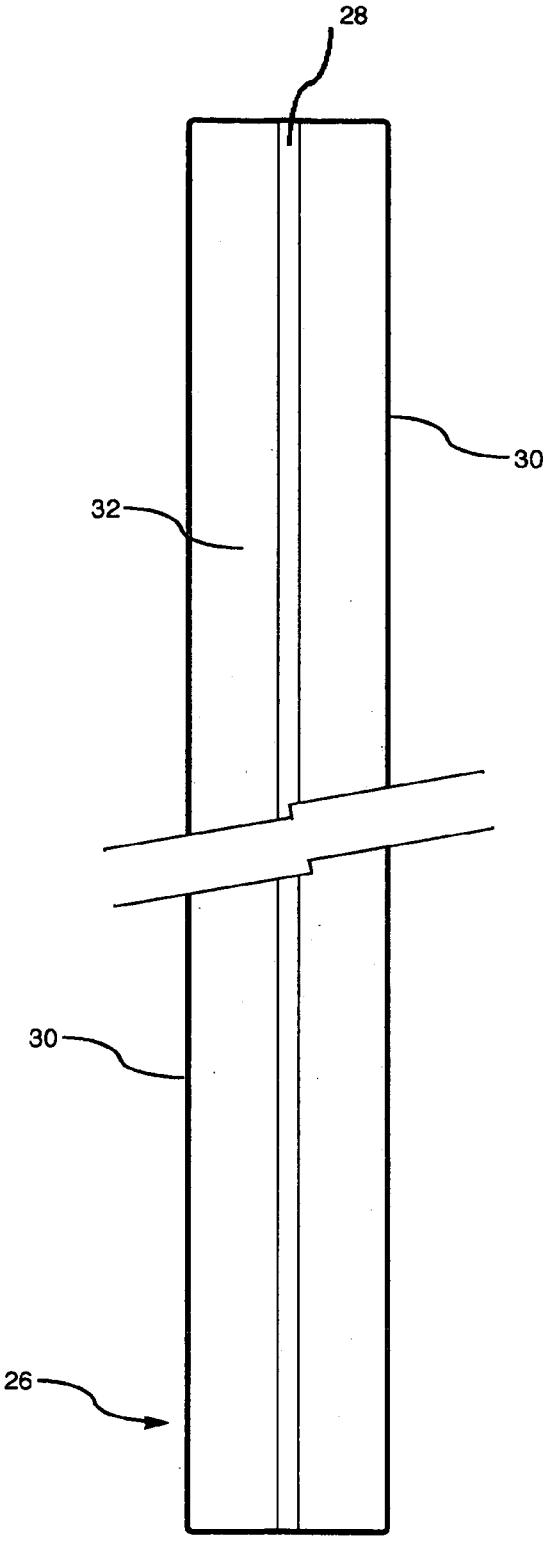


Figure 2C

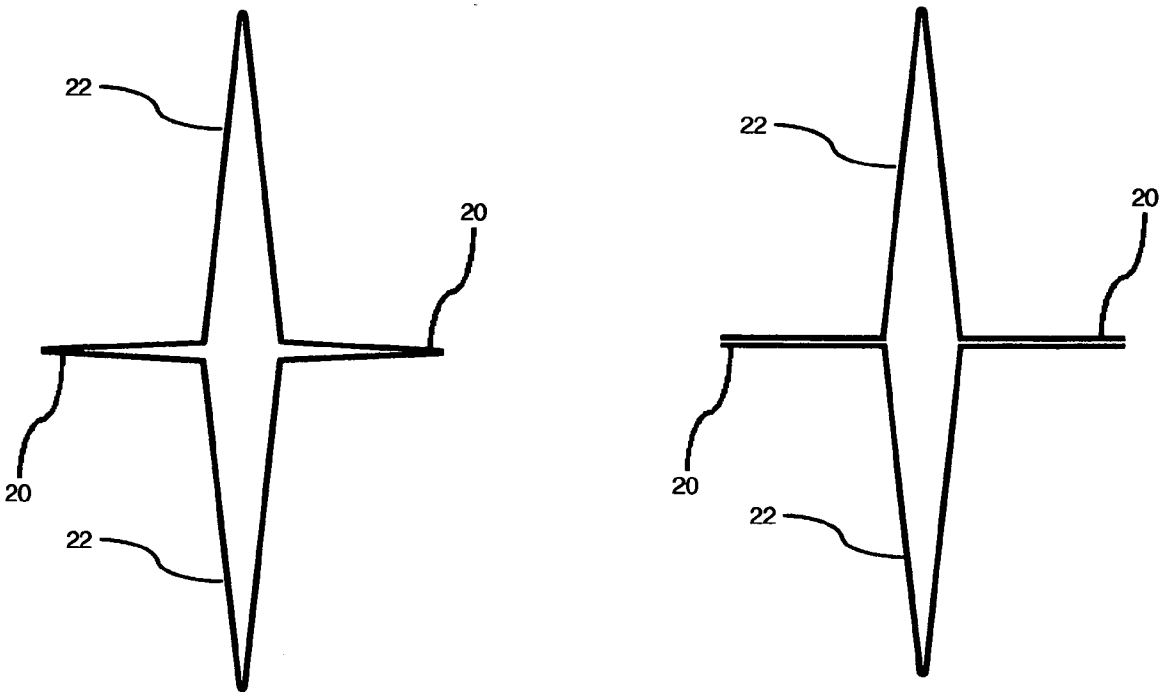


Figure 2D

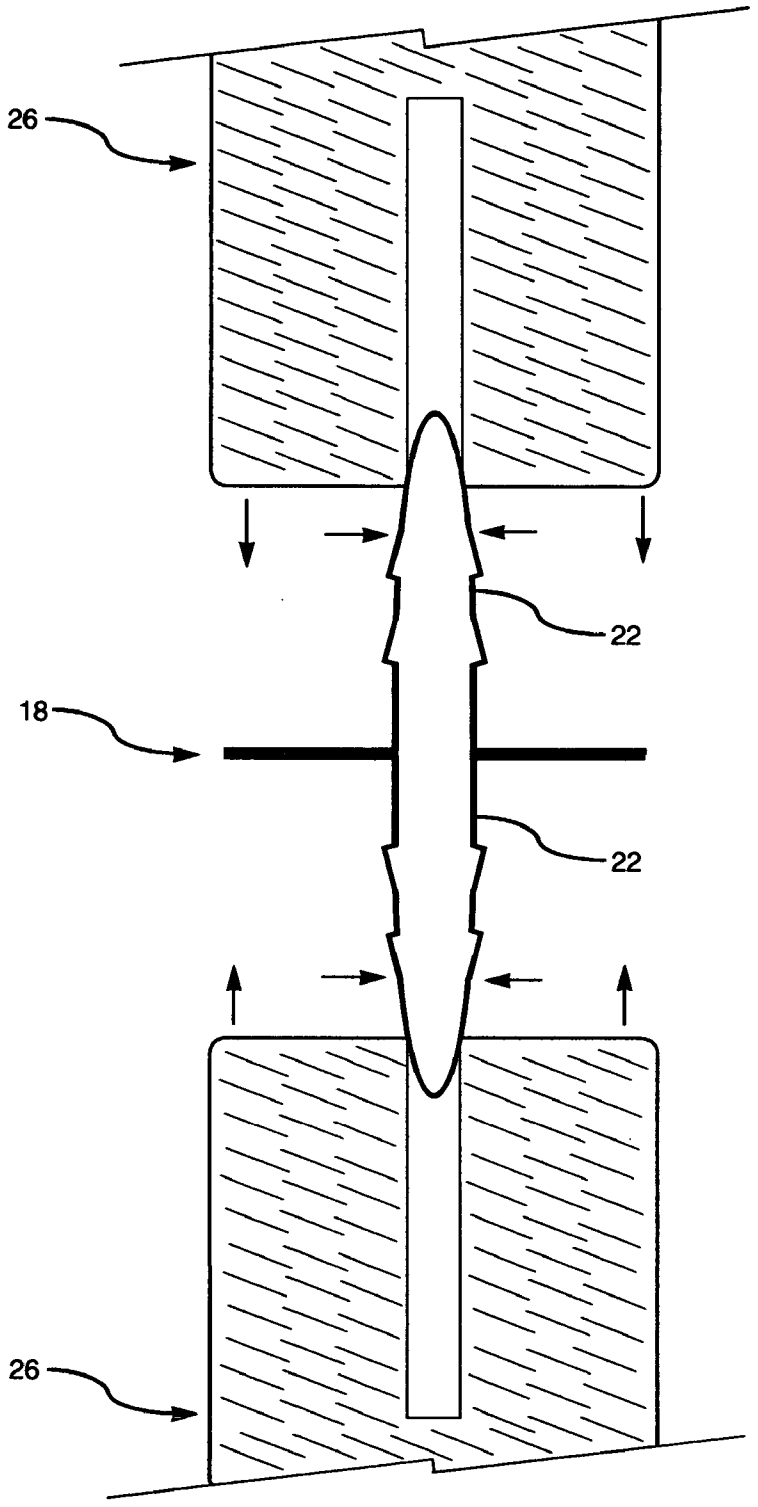


Figure 3

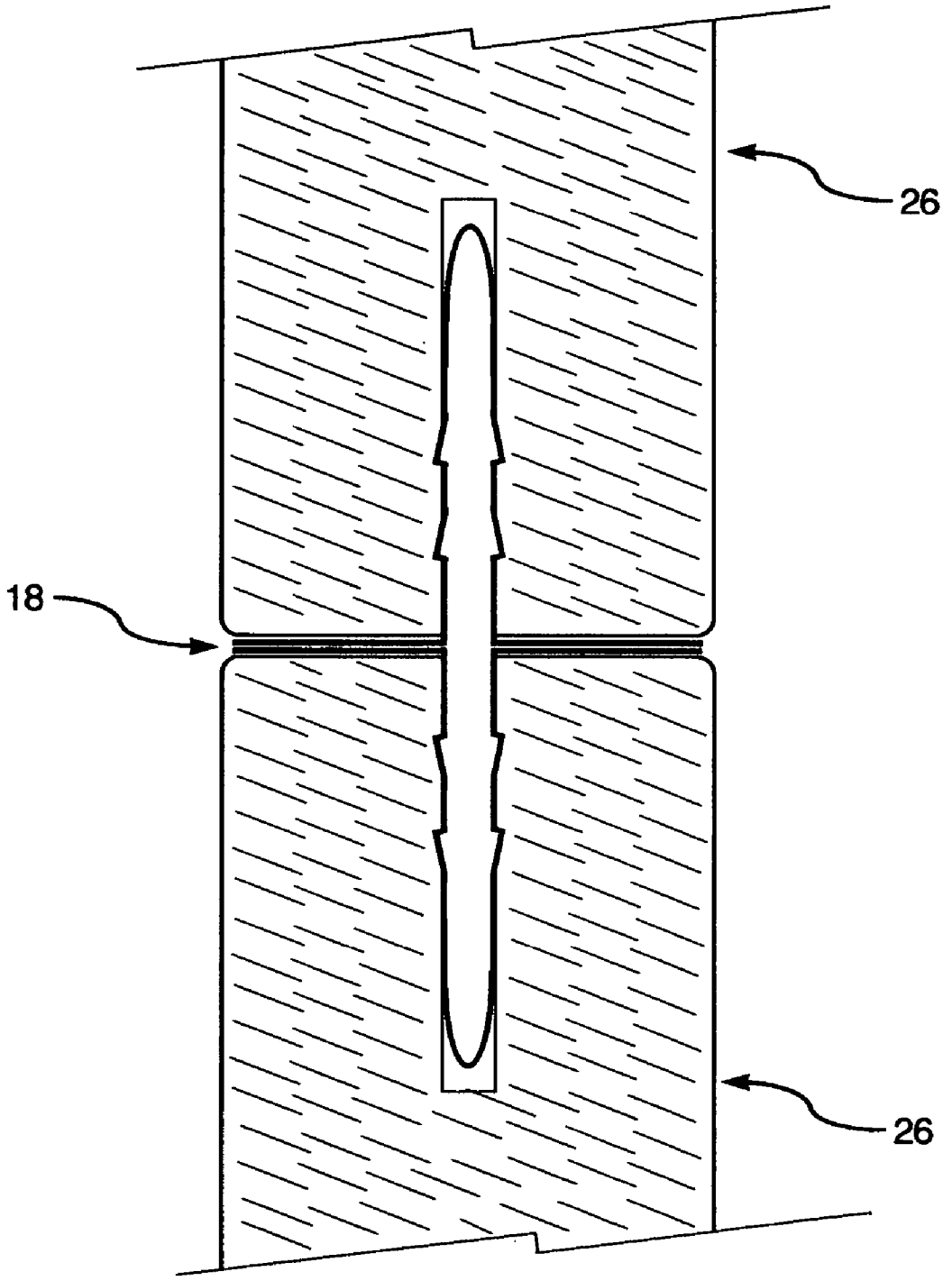


Figure 4

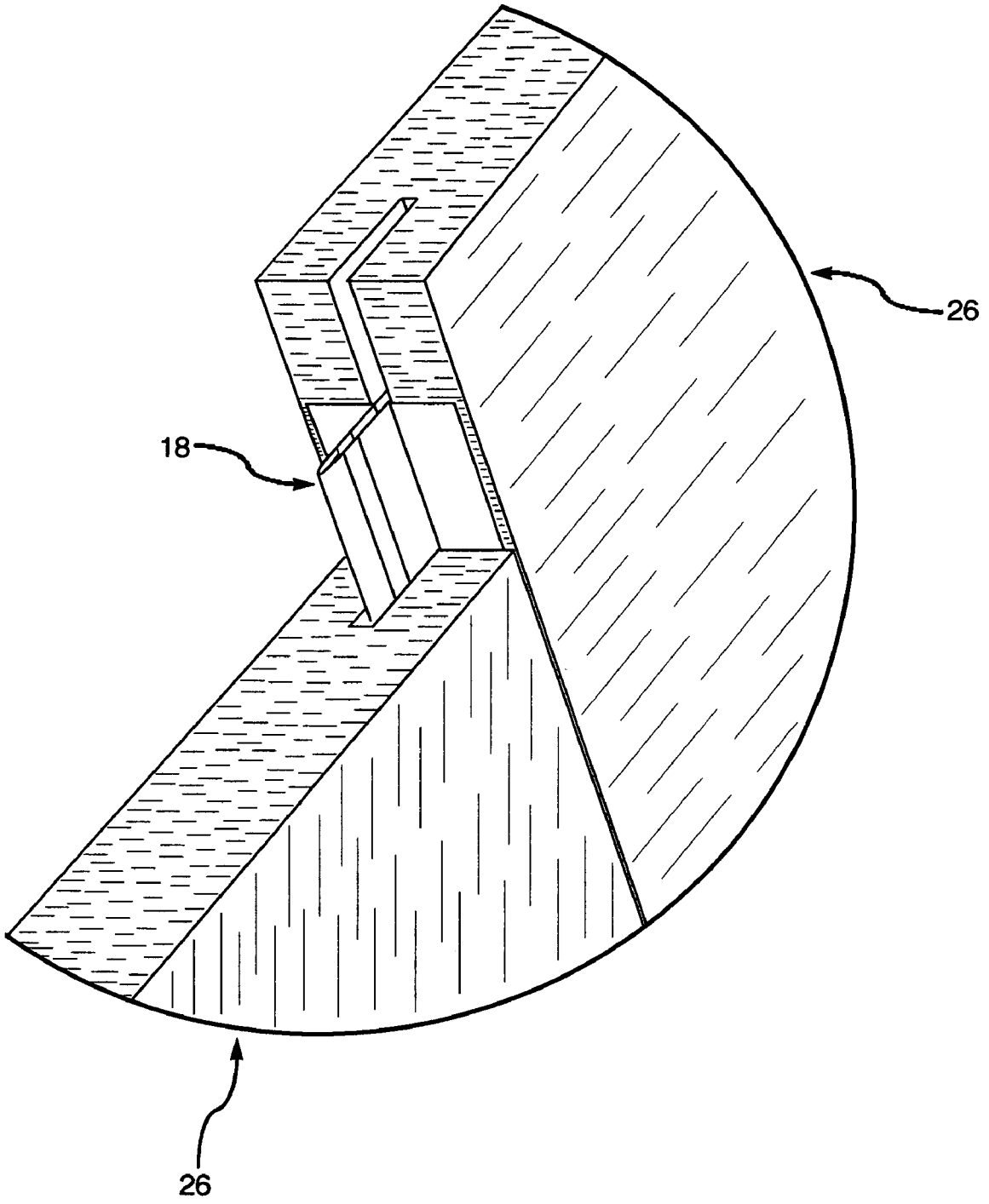


Figure 5

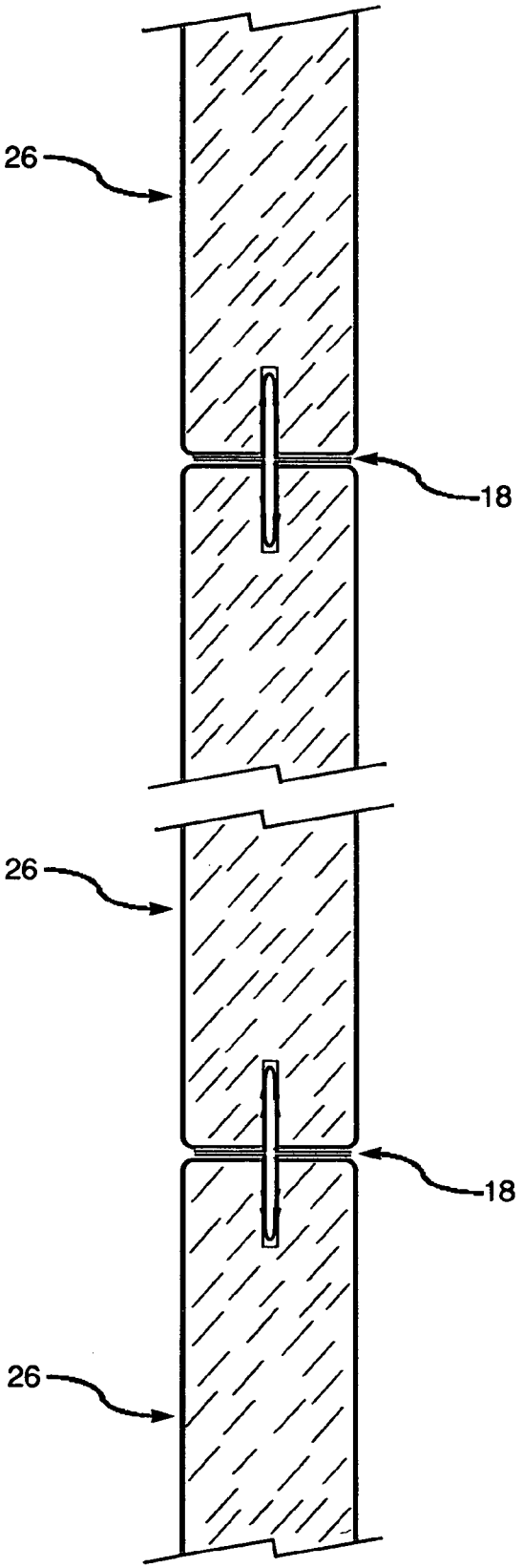


Figure 6

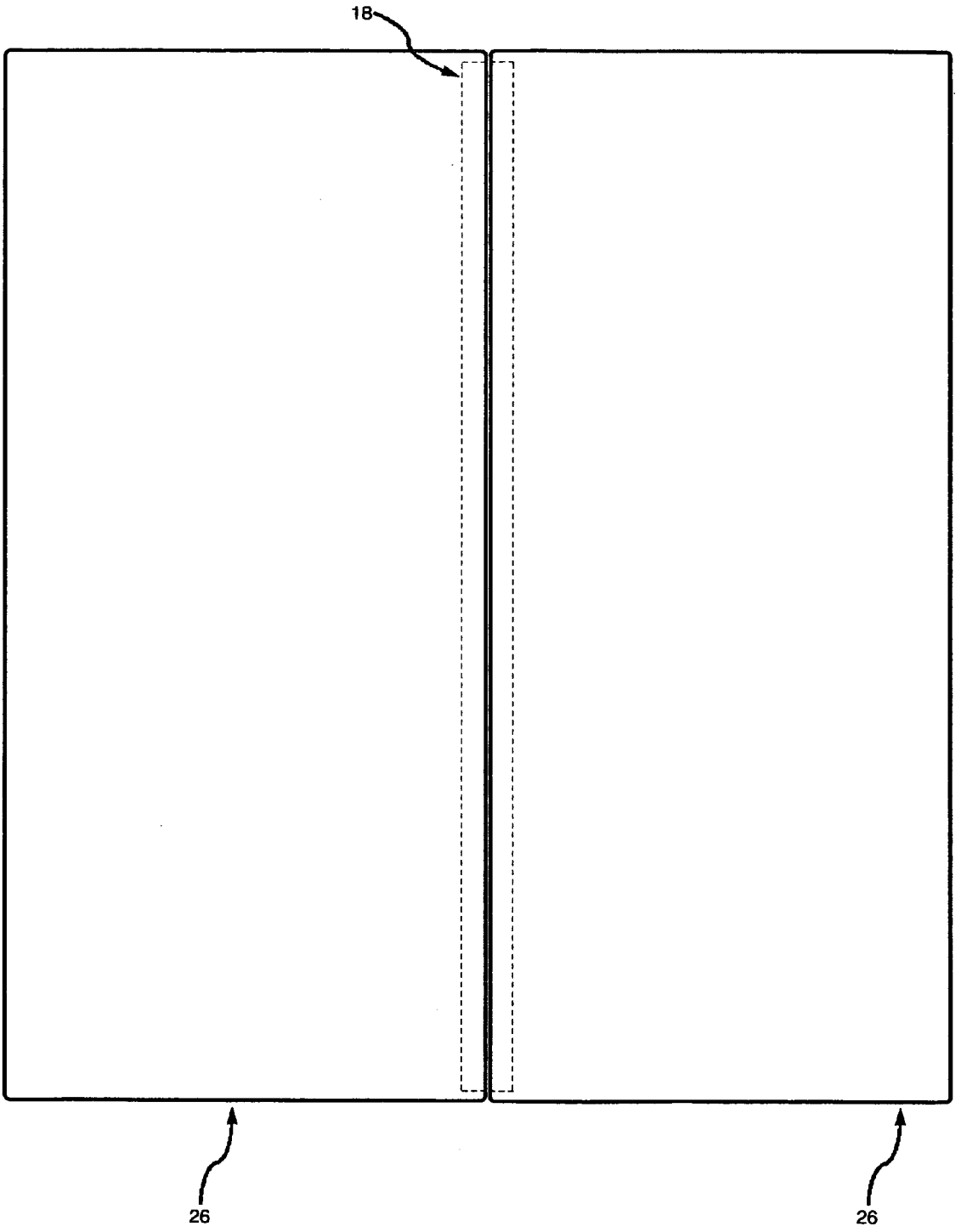


Figure 7

HIDDEN STIFFENING PANEL CONNECTOR AND CONNECTING METHOD

BACKGROUND

[0001] 1. Field of Invention

[0002] The present invention relates to the means and method of connecting, aligning, and stiffening composite building panels without such means being visible on the surface of panels so connected.

[0003] 2. Background and Description of Prior Art

[0004] The use of modular composite building panels has become an effective way to lower costs for labor and materials. The use of composite building panels can also eliminate time-consuming internal framing requirements utilized in traditional building practices. Composite building panels are currently utilized in the construction of both residential and commercial buildings. Methods of aligning and connecting these panels vary depending on the type of panel being used. Panels that have added exterior coverings of wood or metal to add structural strength are difficult to handle and often require additional covering to be finished and painted.

[0005] One of the advantages of some of the composite building panels being utilized in the building trades is that they can be light enough to be erected and assembled by hand. Unfortunately, many of these lighter weight panels lack the stiffness required to span more than a limited distance, both horizontally and vertically. Additionally, in order to have an aesthetically pleasing surface when painted or papered, the panels must be aligned edge-to-edge very accurately, ideally with no raised joint or visible connector to mar the finished wall.

[0006] Many of the systems used to connect building panels rely on a combination of structural coverings and exposed connecting pieces. These however, do leave unsightly joint coverings or require the placement of an additional wall covering to cover the connectors. This adds additional time and expense to the building project and all but defeats the purpose of using composite building panels in the first place.

[0007] One type of building panels on the market today is a panel made of compressed wheat or rice straw. Such panels make leaps and bounds toward more ecologically sound building practices by reducing the amount of wood used in a building. Unfortunately, these panels lack the stiffness to span very far both horizontally and vertically. In the past, there have been several different ways to join these panels. The use of external metal fasteners was and still is in use. Panels connected with externally mounted metal fasteners often lack proper alignment and again leave an exposed fastener that does not lend itself to typical tape, float, texture or paint techniques. On internal walls, aesthetics are important and the use of hidden connectors is therefore important. Since many composite panels are designed for their surfaces to be textured and painted directly, use of additional drywall to cover a panel is a costly additional step in construction.

[0008] One approach to a hidden means of aligning and connecting composite panels is a simple flat disc patented by Layfield on Oct. 21, 2003, U.S. Pat. No. 6,634,077. This disc is designed to fit into corresponding disc shaped slots cut in the edges of each panel. All panels have such slots that are along every lateral edge of the panel and are located strategically along the edge from top to bottom and spaced evenly. As the panels are erected, a disc is placed in each slot and glued in place. Additional glue is spread on the exposed portion of the disc and the next panel is then aligned edge to edge with the first and pushed into place. Additional screws are then sunk into the panel and through the discs for additional strength.

[0009] While the approach taken with Layfield's discs solve the problem of alignment and effectively hides the connecting means when the panels are erected, they do not add any stiffening capability to the finished wall. When using the discs, the panels can only span a limited distance unless additional framing is added. Adding such framing adds additional cost and time to a building project and effectively defeats the purpose of using the panels.

[0010] Two similar joining methods are a biscuit invented by Dils on Mar. 24, 1998, U.S. Pat. No. 5,730,544 and another biscuit invented by Stanley on Oct. 17, 1995, U.S. Pat. No. 5,458,433. While these designs are primarily intended for joining wood panels, it could easily be employed on composite panels as well. Both of these do not add any stiffness to wood or panels when employed.

[0011] An internally mounted plastic stud and corresponding plastic panel receptacle was invented by Raymond on Apr. 16, 1991, U.S. Pat. No. 5,007,222. This design can lend additional stiffness through the internal stud depending on the material it is made of. However, the design requires that the panels have exposed receptacles manufactured into each edge to receive the stud when the panels are pushed together. The exposed portion of the receptacle creates finishing problems for a wall constructed in this manner and adds cost to the panel manufacturing process.

[0012] A spline joint invented by Shroyer Feb. 16, 1971 U.S. Pat. No. 3,563,582 solves the problem of an exposed means of connection for panels, however, it lacks the cross sectional depth perpendicular to the panel faces to lend any desired stiffening. The minimal cross piece in the connector acts as little more that an index or stop for the two panels when pushed together.

[0013] There are a number of other connecting means listed in the prior art, however, they relate to connecting means that are either manufactured into panels and have external structural skins or have externally visible means of connection. These are less than desirable embodiments because they mar the aesthetics of a completed wall or require additional wall covering with drywall at added expense.

OBJECTS AND ADVANTAGES

[0014] It is the principle object of the present invention to provide a means and method of alignment, connection and strengthening for use in construction, primarily the construction of buildings utilizing composite prefabricated building panels in lieu of traditional framing practices.

[0015] Another important object of the invention is to provide a method of alignment for composite panels in a planar relationship resulting in a smooth, straight and substantially flat wall.

[0016] Still another important object of the invention is to add stiffness to composite building panels and assembled walls.

[0017] It is a further object of the invention to remain hidden from view when used to connect, align, and stiffen composite building panel walls, resulting in a flat wall that is ready for traditional tape, float, texture, paint or papering techniques.

[0018] It is a further object of the invention to simplify the construction of buildings utilizing composite panels by making the alignment, connection and stiffening of the panels in one step.

[0019] Still another important object of the invention is a means and method of aligning, connecting, and stiffening of composite building panels that eliminates the need for internal framing for support of the composite panel walls.

[0020] It is a further object of the invention to allow greater spans for composite building panels both horizontally and vertically.

[0021] Still another important object of the invention is to eliminate flex in walls constructed of composite building panels.

[0022] Additional objects and advantages of the invention will become more apparent upon further discourse.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] **FIG. 1** shows a perspective view of the connecting device of the invention system.

[0024] **FIG. 2** shows an end view of the connecting device of the invention system.

[0025] **FIG. 2A** shows an end view of a composite building panel as prepared for the invention system.

[0026] **FIG. 2B** shows a planar view of a composite building panel as prepared for the invention system.

[0027] **FIG. 2C** shows a side view of a composite building panel as prepared for the invention system.

[0028] **FIG. 2D** shows an end view of alternative embodiments of the connecting device of the invention system.

[0029] **FIG. 3** shows an end view of the invention system as it aligns two composite building panels prior to being connected.

[0030] **FIG. 4** shows an end view of the invention system with two composite building panels connected.

[0031] **FIG. 5** shows a cut-away perspective view of two composite building panels joined by the invention system.

[0032] **FIG. 6** shows an end view of a series of composite building panels joined by the invention system.

[0033] **FIG. 7** shows a planar view of two joined composite building panels showing the location of the invention system.

REFERENCE NUMERALS IN DRAWINGS

[0034] **18**—Stiffening Panel Connector

[0035] **20**—Stiffening Spline

[0036] **22**—Compressable V-Channel

[0037] **24**—Optional Gripping Rib

[0038] **26**—Composite Building Panel

[0039] **28**—Slot

[0040] **30**—Panel Face

[0041] **32**—Abutting Edge

SUMMARY

[0042] The present invention addresses the needs of builders and architects who want to take advantage of the speed and cost savings of construction using composite building panels, but who don't want to be limited in the length of panel spans, and who don't want to be forced to use traditional studs and framing on interior walls. The Hidden Stiffening Panel Connector and Method of Assembly will address these needs. By using the present invention, builders can put up interior and exterior walls in a fraction of the time needed using traditional construction techniques. When connected with the present invention, interior walls need no framing and can be taped and floated as soon as erected. In other words, each panel so connected provides a wall surface on both sides that can be painted or papered with no drywall needed.

[0043] According to the present invention, I align, connect, and stiffen composite building panels by aligning two suitably prepared panels in a planar relationship and place the Hidden Stiffening Panel Connector between them and then push the two panel edges together, actuating the connecting device.

[0044] The connecting device which is ideally made from a suitably hard metal or other similar material, is made up of two parallel strips, plates, bars or splines in a planar relationship that are joined by two axially opposed elongated and tapered V or U shaped appendages or V-Channels in an open-end to open-end relationship. The material in the splines is ideally twice the thickness of the material in the V-Channels. Each V-Channel can optionally have one or more raised ridges or ribs parallel to the splines formed into each side of the V-Channel. The ideal hardness of the material allows the V-Channels to be flexed in a manner which brings the stiffening splines closer together. The area between the two splines is left open a predetermined distance by virtue of the opposed connecting V-Channels. The connecting device can be any length that is necessary as dictated by the length of the panels to be connected.

[0045] To prepare composite building panels for use with the connecting system, an opening, slit, channel or slot is cut lengthwise in each panel edge that will abut an adjacent panel. The slots are cut to a predetermined width, which is less than the width of the V-Channels. The slot can be cut the entire length of the panel or any other suitable length. The slots in the panels are cut slightly deeper than the length of the V-Channels as measured from the Stiffening Splines to the bottom of the V-Channels.

[0046] To connect two Composite Building Panels, one of the connecting device V-Channels is started into the pre-cut slot in the edge of one of the panels. The taper of the V-Channel facilitates entry into the slot. As the V-Channel is pushed into the slot in the panel edge, it flexes or compresses

bringing the stiffening splines closer together. The V-Channel is pushed into the slot until the stiffening splines lay flat against the edge of the panel. The optional raised ribs in the V-Channel embed in the composite material of the panel providing the grip necessary to hold the V-Channel securely in the slot. A second panel is aligned in a planar fashion next to the first with it's pre-cut slot aligned with the exposed v-channel. The second panel is pushed toward the first panel and onto the exposed V-Channel until the edges of the two panels are abutting each other with the stiffening splines flat between them. The optional raised ribs in the second V-Channel grip the inside of the slot in the second panel and the connecting device holds the two panels together securely. When secured, the sides of the V-Channels have moved closer together, but still exert pressure on the interior walls of the slots. Optionally, an adhesive or glue can be injected into the slots before connecting the panels to provide additional security for the connection. Once connected with the device, the panels gain stiffness by virtue of the stiffening splines which function similarly to a wall stud since they are oriented perpendicular to the face of the panels. The architecture of the device creates significant structural integrity when locked into a cohesive unit with two panels.

[0047] The slots, which are cut lengthwise in the edges of the panels, are located in the abutting edge of each panel in such a way as to align each panel accurately with the next panel when connected using the system. This creates a straight wall surface that is smooth, even, and flat leaving only a visible joint when connected.

[0048] Once two panels have been connected by the system, the connecting device is not visible on the panel wall surface. The joint where the two panels have been connected can then be traditionally taped and floated on both sides in preparation for texture, paint, or papering, just like drywall.

[0049] The raised ribs formed into the Compressable V-Channels are optional and the connecting device can be made without them. Such a configuration would allow for temporary alignment and connection of panels or could be used as a permanent connecting device if screws or nails were driven through the panel face into such rib-less Compressable V-Channels. Such nails or screws would be no different than traditional drywall fasteners and could be taped and floated same as drywall.

[0050] The connecting device could be embodied differently and still accomplish the desired aligning, stiffening and connecting of composite building panels. The V-Channels could be formed with a less rounded end and the slots in the panels altered to accommodate the different shape. Additionally, the stiffening splines could be made differently as well, so long as they could allow the panel edges to abut each other when connected.

[0051] Typically, most composite building panels are rectangular in shape, but can be any shape so long as they have straight abutting edges. The connecting device can be used to connect two panels edge to edge in a planar relationship, or can be embodied to connect panels with edges abutting at any angle up to 90 degrees. The angle of the connecting device can be altered by changing the angle where the Compressable V-Channels connect to the Stiffening Splines. The invention system will allow alignment, connection, and stiffening in both horizontal and vertical applications.

DESCRIPTION—FIGS. **1-7**

[0052] The typical embodiment of the connecting device of the present invention is illustrated in **FIG. 1** (perspective view) and **FIG. 2** (end view). The Stiffening Panel Connector **18** is comprised of several distinct features or parts. There are two Stiffening Splines **20** of a pre-determined thickness, width and length in a parallel planar relationship to each other. These are connected by two Compressable V-Channels **22** of a predetermined width and depth, which are axially opposed to each other open-end to open-end. The material thickness of the stiffening splines **20** is ideally twice the material thickness of the Compressable V-Channels **22**. There can be one or more raised Optional Gripping Ribs **24** on each side of the Compressable V-Channels **22** running parallel to the Stiffening Splines **20**. There is no limit to the overall length of the assembled stiffening panel connector **18**.

[0053] The typical embodiment of the present invention, relating to preparation of a composite building panel for use with the system, is illustrated in **FIG. 2A** (end view), 2B (planar view) and 2C (side view). A Composite Building Panel **26** is prepared by cutting or milling a Slot **28** of predetermined width, depth and length in each abutting edge **32** of the composite building panel **26** lengthwise. The centerline of the slot **28** is located in a predetermined location between the panel faces **30** in the abutting edge **32** of every composite building panel **26**.

[0054] Other possible embodiments of the connecting device are demonstrated in **FIG. 2D** (end view). The stiffening splines **20** could be separated into two different connected parts and the Compressable V-Channels **22** could be formed in a more acute angle or with little or no separation between the tiffening splines **20**.

[0055] **FIG. 3** (end view) demonstrates the method of alignment of two composite building panels **26** with the stiffening panel connector **18** situated between them. Arrows on the drawing show the direction the composite building panels **26** are pushed and the direction that the Compressable V-Channels **22** are compressed.

[0056] **FIG. 4** (end view) shows two composite building panels **26** locked together and aligned by the stiffening panel connector **18**.

[0057] **FIG. 5** (cut-away perspective view) shows two composite building panels **26** aligned and locked together by the stiffening panel connector **18**.

[0058] **FIG. 6** (end view) shows three composite building panels **26** aligned and locked together by two stiffening panel connectors **18** as they would appear in a wall configuration.

[0059] **FIG. 7** (planar view) shows two composite building panels **26** aligned and locked together along with the location of the stiffening panel connector **18** (hidden).

OPERATION—FIGS. **3**, **4**, **5**, **6**, **7**

[0060] Composite building panels **26** are aligned, connected, and stiffened by the present invention in the following manner. One of the Compressable V-Channels **22** of the Stiffening Panel Connector **18** is inserted into the Slot **28** which has been cut into the Abutting Edge **32** of a Composite Building Panel **26**. The Stiffening Panel Connector **18**

is the pushed toward the Abutting Edge **32**, compressing the Compressable V-Channel **22** as it enters the Slot **28**. The Compressable V-Channel **22** is pushed into the Slot **28** until the Stiffening Splines **20** lay flat against the Abutting Edge **32**. The Optional Gripping Ribs **24** embed in the wall of the Slot **28** and securely hold the Stiffening Panel Connector **18** and the Composite Building Panel **26** together. A second Composite Building Panel **26** is aligned in a planar relationship with the first such that the exposed Compressable V-Channel **22** enters the Slot **28** in the second composite building Panel **26**. The second Composite Building Panel **26** is pushed toward the first, thereby sinking the second Compressable V-Channel **22** into the Slot **28** of the second Composite Building Panel **26** until both Abutting Edges **32** meet, sandwiching the Stiffening Splines **20** flat between them, leaving only a joint visible.

[**0061**] When the two Composite Building Panels **26** are connected with the Stiffening Panel Connector **18**, they are forced into alignment by the Compressable V-Channels **22** creating a straight and even surface across the joint between the two Composite Building Panels **26**. No part of the Stiffening Panel Connector **18** protrudes above the Panel Faces **30**. A series of Composite Building Panels **26** assembled and connected with Stiffening Panel Connectors **18** thereby creates a straight, flat, and smooth wall with no visible connection means to mar the aesthetics of the finished wall.

[**0062**] Once Composite Building Panels **26** and the Stiffening Panel Connector **18** become a locked cohesive unit, additional structural integrity and stiffness is imparted to the finished wall since the stiffening splines **20** are perpendicular to the panel faces **30**. The Stiffening Panel Connector **18** can be utilized in both horizontal and vertical applications.

SUMMARY, RAMIFICATIONS, AND SCOPE

[**0063**] Thus the reader will see that the present invention provides a means of aligning, connecting, and stiffening composite building panels that leaves no unsightly projections or protuberances to mar the assembled wall or create problems for taping, floating, texturing, painting or papering. The Hidden Stiffening Panel Connector and Connecting Method has additional advantages in that:

[**0064**] The system will allow greater spans of composite panels both vertically and horizontally by imparting additional stiffness and structural integrity;

[**0065**] The connecting device can be made to any length required as dictated by the length of the panels to be connected;

[**0066**] The system will simplify construction using composite building panels thus saving time and money on building projects by combining alignment, connection and stiffening of panels in one step;

[**0067**] The system will add stiffness and structural integrity to composite building panel walls;

[**0068**] The system will provide a means of alignment of composite building panels that results in a straight and flat wall;

[**0069**] The system remains hidden allowing a clean, flat panel wall that can be taped, floated, textured, painted or papered easily;

[**0070**] The system eliminates the need for costly additional studs or framing to support composite building panel walls;

[**0071**] The system will eliminate flex in walls constructed of composite building panels;

[**0072**] The system can be employed without the need for any special training or skilled labor;

[**0073**] The system can be employed to connect panels in a planar relationship, or can be embodied so as to allow connections of panels at varying angles;

[**0074**] Although the previous descriptions contain many specific details concerning the design and employment of the invention, these should not be construed to limit the scope of the invention, but should be considered as the preferred illustrations of the invention. For example, the V-Channel does not necessarily have to be tapered and rounded, but could be more pointed. The stiffening splines could be drilled or slotted to reduce weight. The stiffening splines could be oriented in a fashion similar to the V-Channels and be compressed between panel edges. The system could be modified to provide a means of providing passage for cables or wires. Any such modifications would not detract from the essence of the invention. All the markings, references, and indexes shown or implied could be represented in different ways or with different symbology. The composite building panels referred to could be made from any suitable substrate material and any reference to a particular type of composition is used merely as an example.

[**0075**] With these variations in mind, the scope of the invention should be determined by the attached claims and their equivalents, rather than solely on the examples given.

What is claimed is:

1. A hidden stiffening panel connector and connecting method for composite building panels comprising:

A. composite building panels of a predetermined composition and dimensions having a substantially lengthwise opening of a predetermined width and depth in the lateral edges thereof, and

B. a connecting device of an indefinite length made of substantially rigid material comprising flat parallel strips of a predetermined width and thickness in a planar relationship joined together by opposing channels of a predetermined dimension oriented open-end to open-end,

whereby said opposing channels of the connecting device are inserted into the lengthwise openings in the lateral edges of two composite building panels and said composite building panels are pushed together edgewise in a planar relationship causing said opposing channels of the connecting device to be compressed within said lengthwise openings until the composite building panel edges are sandwiching the flat parallel strips of the connecting device thereby aligning and connecting the panels.

2. The hidden stiffening panel connector and connecting method for composite building panels of claim 1 wherein the dimensions of said flat parallel strips are such that no part of the connecting device is visible when composite building panels have been connected thereby.

3. The hidden stiffening panel connector and connecting method for composite building panels of claim 1 wherein the opposing channels can further include a means for gripping the inside walls of the lengthwise openings in the composite building panel edges so that the connection thereof is secure.

4. The hidden stiffening panel connector and connecting method for composite building panels of claim 1 wherein the flat parallel strips of the connecting device are disposed substantially perpendicular to the face plane of connected composite building panels.

5. The hidden stiffening panel connector and connecting method for composite building panels of claim 1 wherein the thickness of said flat parallel strips of the connecting device is such that substantial rigidity is imparted to composite building panels connected thereby.

6. The hidden stiffening panel connector and connecting method for composite building panels of claim 1 wherein the material thickness and rigidity of the opposing channels of the connecting device is such that said opposing channels can be compressed within the lengthwise openings in the lateral edge of the composite building panels and exert pressure thereon.

7. The hidden stiffening panel connector and connecting method for composite building panels of claim 1 wherein said composite building panels and said connecting device can be a multitude of lengths.

8. The hidden stiffening panel connector and connecting method for composite building panels of claim 1 wherein said lengthwise openings are disposed in the lateral edges of the composite building panels so that said composite building panels are evenly aligned in a substantially flat planar relationship when connected by the connecting device.

9. The hidden stiffening panel connector and connecting method for composite building panels of claim 1 wherein the disposition of the opposing channels of the connecting device can be altered to allow composite building panels to be connected at a multitude of non-planar angles.

10. The hidden stiffening panel connector and connecting method for composite building panels of claim 1 wherein the depth and width of the opposing channels of the connecting device are predetermined according to the width and depth of the lengthwise opening in the edge of the composite panels and vice versa.

11. A hidden stiffening panel connector and connecting method for composite building panels comprising:

A. composite building panels in a multitude of compositions and dimensions having a slot of predetermined width and depth cut substantially lengthwise in the edges thereof, and

B. a connecting device in a multitude of lengths made of a rigid material comprising flat bars in a parallel planar relationship with opposing hollow appendages of a predetermined dimension oriented open-end to open-end contiguous with said flat bars,

whereby said opposing hollow appendages of the connecting device are inserted into the slots in the edges of two composite building panels and said composite building panels are pushed toward each other in a planar relationship causing said opposing hollow appendages to be compressed within the slots until the composite building panel edges are sandwiching the flat bars of the connecting device thereby aligning and connecting the panels.

12. The hidden stiffening panel connector and connecting method for composite building panels of claim 11 wherein the dimensions of said flat bars are such that no part of the connecting device is visible when composite building panels have been connected thereby.

13. The hidden stiffening panel connector and connecting method for composite building panels of claim 11 wherein the opposing hollow appendages can further include a means for gripping the inside walls of the slots in the edges of the composite building panels so that the connection thereof is secure.

14. The hidden stiffening panel connector and connecting method for composite building panels of claim 11 wherein the flat bars of the connecting device are oriented perpendicular to the planar face of connected composite building panels.

15. The hidden stiffening panel connector and connecting method for composite building panels of claim 11 wherein the mass of said flat bars of the connecting device is such that substantial stiffness is added to composite building panels connected thereby.

16. The hidden stiffening panel connector and connecting method for composite building panels of claim 11 wherein the material of the opposing hollow appendages of the connecting device is such that said opposing hollow appendages can be compressed within the slots in the edges of the composite building panels and exert outward pressure thereon.

17. The hidden stiffening panel connector and connecting method for composite building panels of claim 11 wherein said slots are oriented in the edges of the composite building panels so that said composite building panels are evenly aligned in a flat planar relationship when connected by the connecting device.

18. The hidden stiffening panel connector and connecting method for composite building panels of claim 11 wherein the angles of the opposing hollow appendages of the connecting device can be changed to allow the composite building panels to be connected in a multitude of non-planar angles.

19. The hidden stiffening panel connector and connecting method for composite building panels of claim 11 wherein the dimensions of the opposing hollow appendages of the connecting device are predetermined according to the dimensions of the slots in the edges of the composite building panels and vice versa.

20. The hidden stiffening panel connector and connecting method for composite building panels of claim 11 wherein said composite building panels and said connecting device can be a multitude of lengths.

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