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(54) **INSULATIVE SIDING APPARATUS AND METHOD OF MAKING THE SAME**

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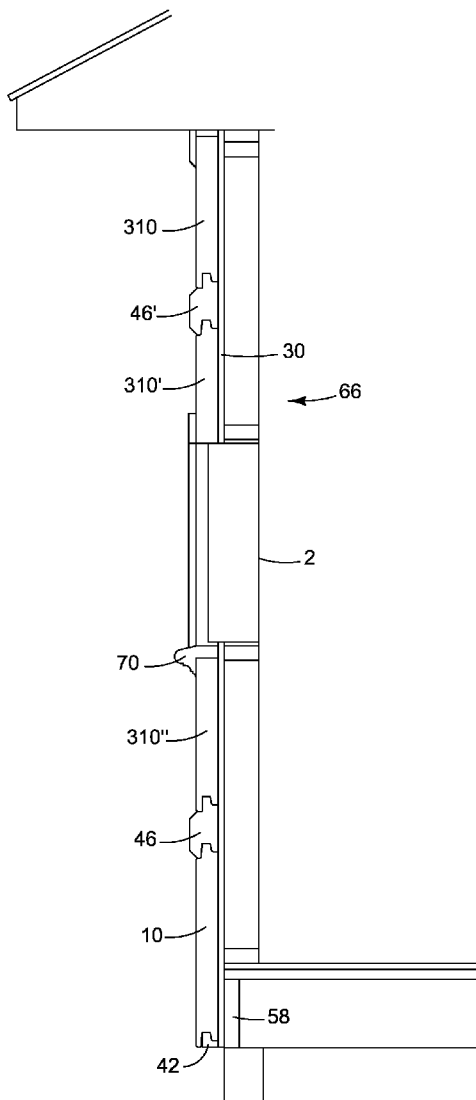
(57) **ABSTRACT**

(22) Filed: **Jun. 15, 2009**

The present invention is (in some embodiments) a system of decorative siding panels made from high-density expanded polystyrene (EPS) foam, such panels configured for overlapping, having interlocking tongue and groove structure. These panels for covering a surface, such as wall sheathing, of a structure.

Related U.S. Application Data

(63) Continuation of application No. 11/747,094, filed on May 10, 2007.



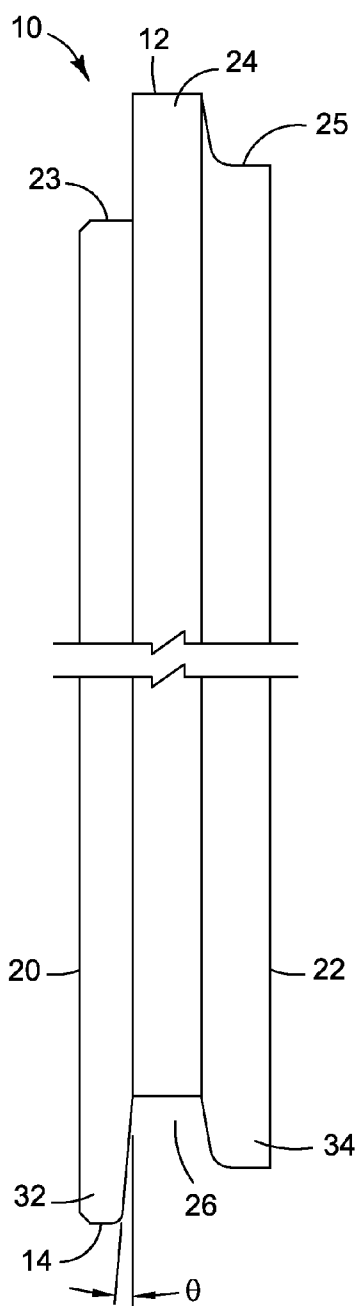


FIG. 1

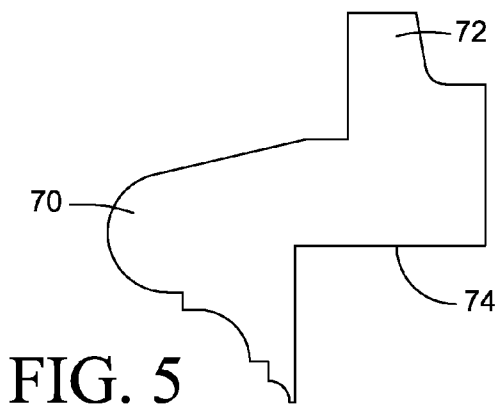


FIG. 5

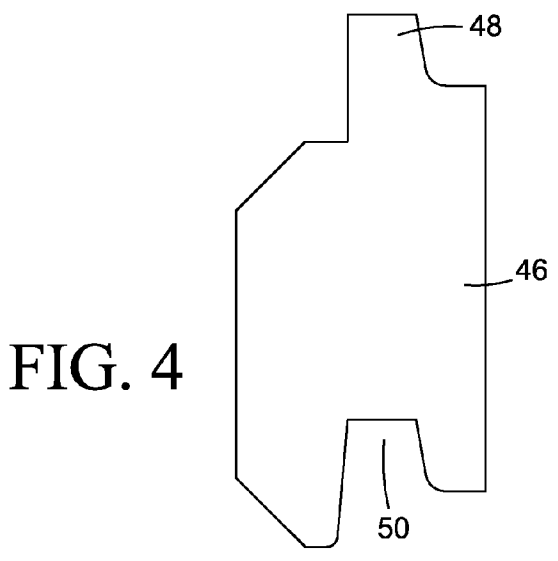


FIG. 4

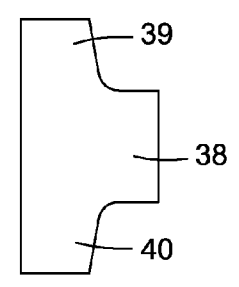


FIG. 3

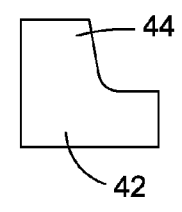


FIG. 2

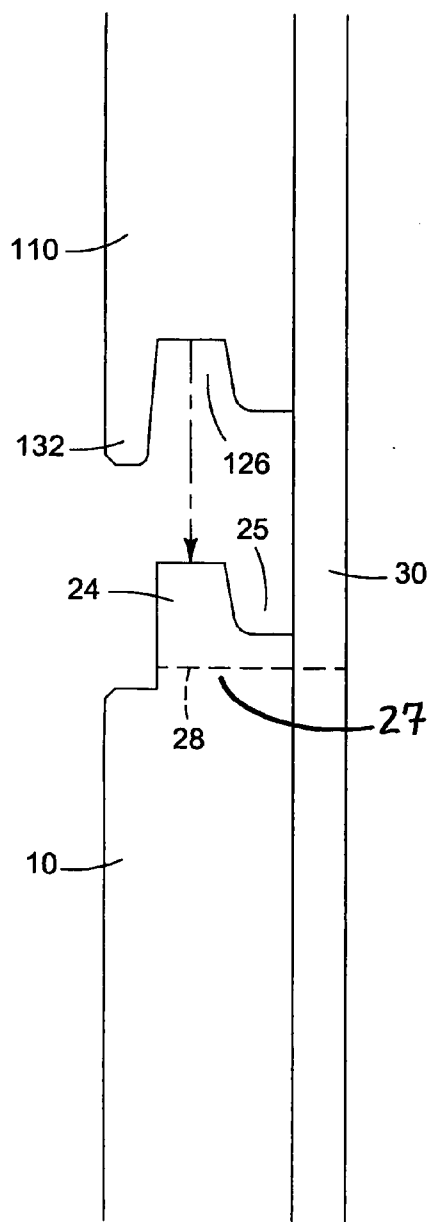


FIG. 6

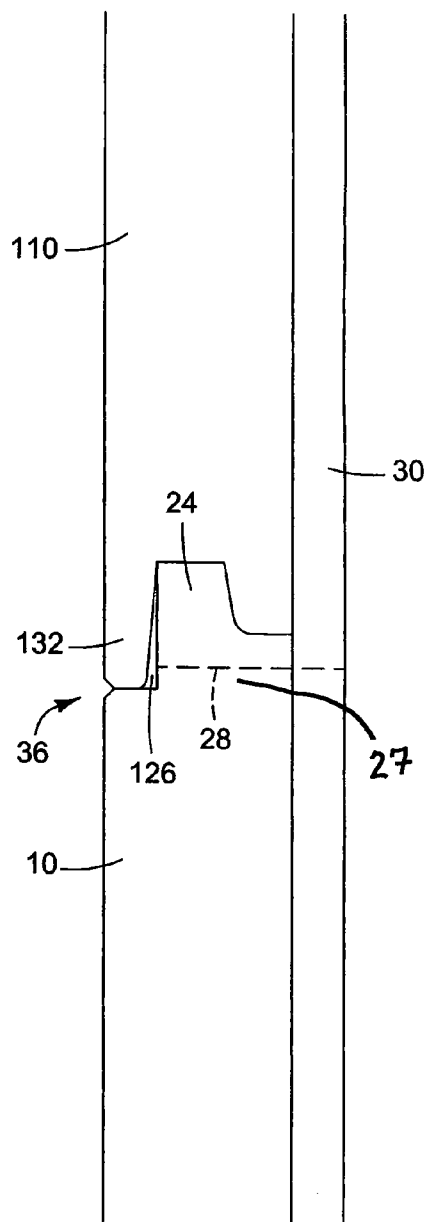


FIG. 7

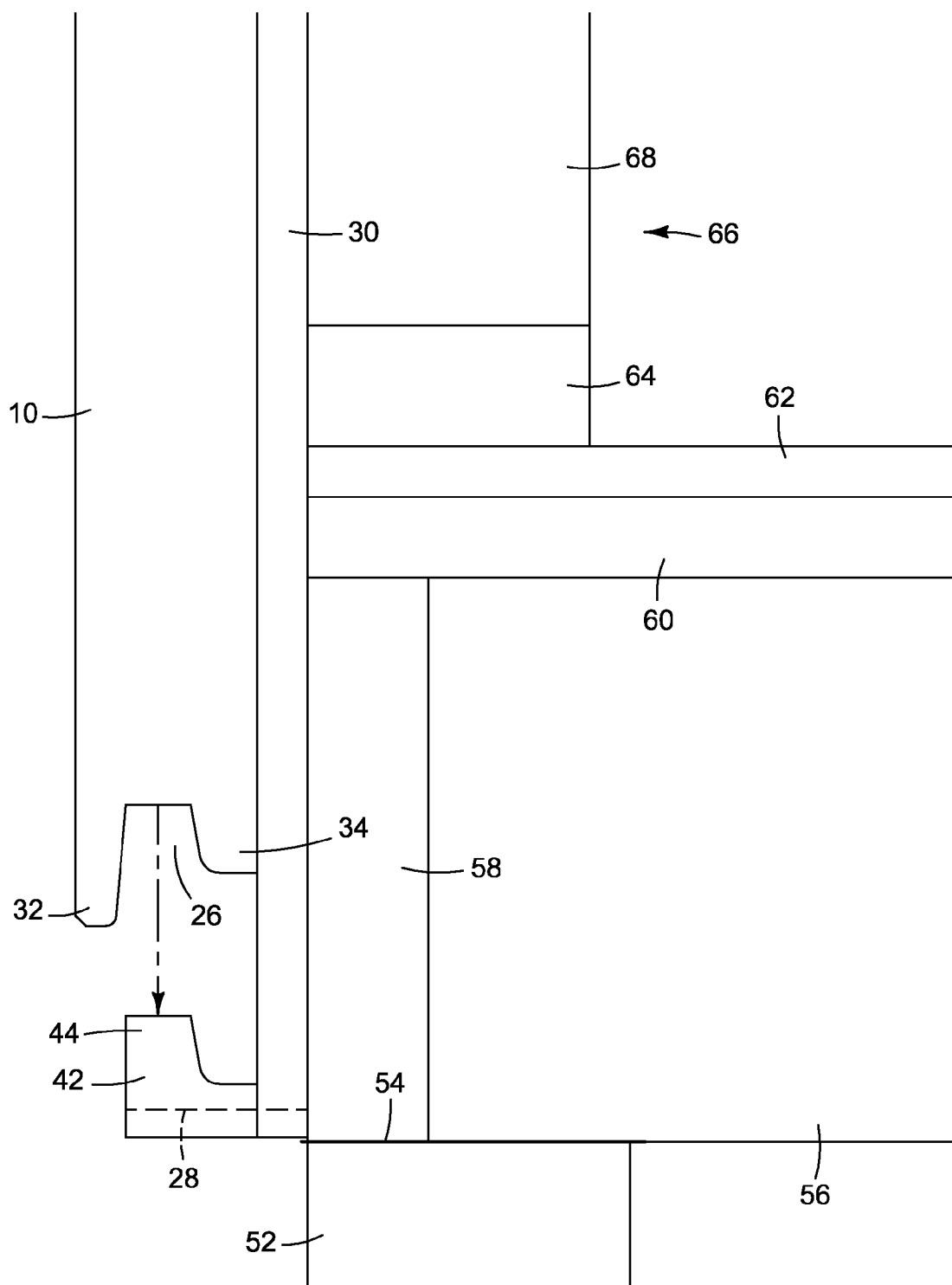


FIG. 8

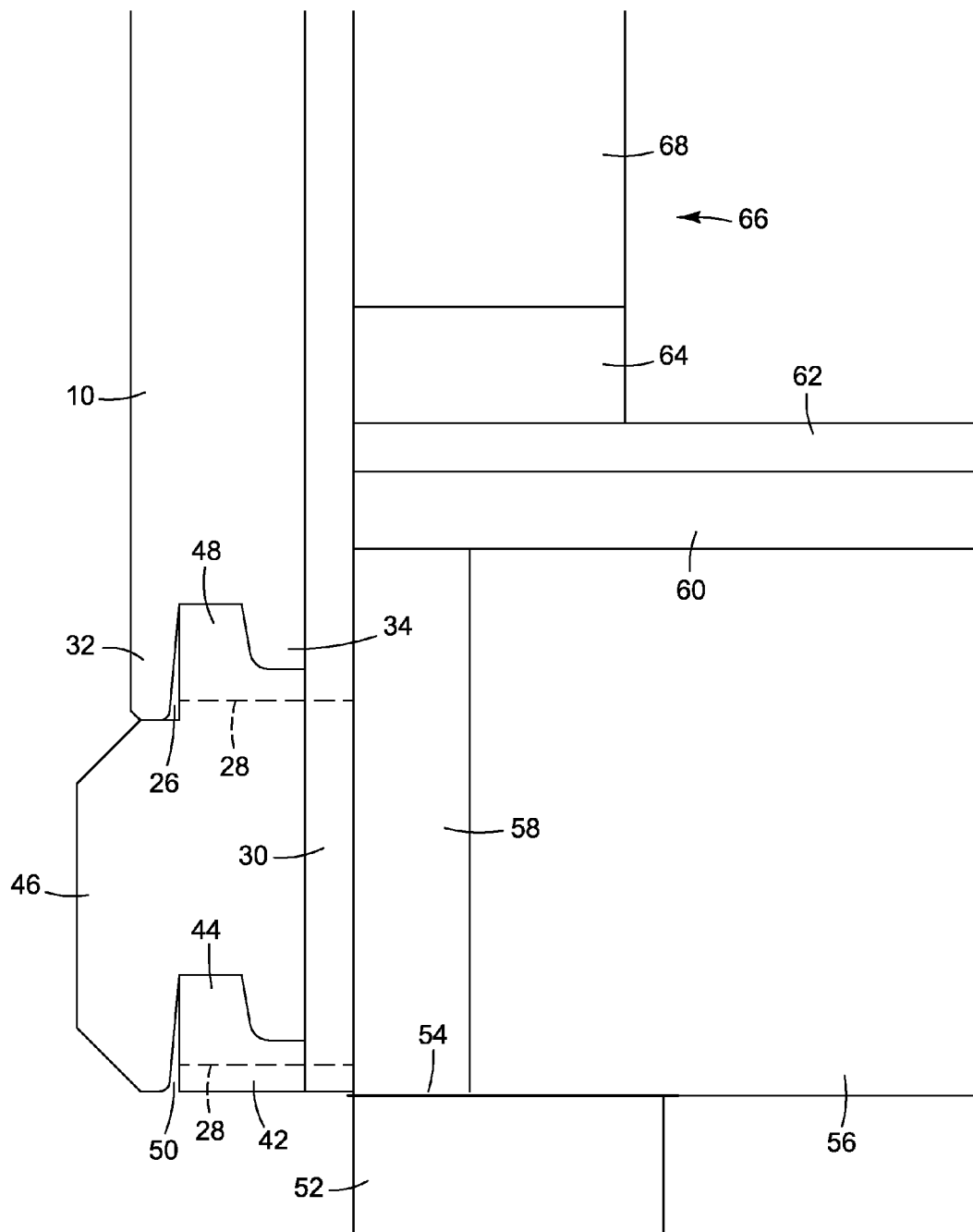


FIG. 9

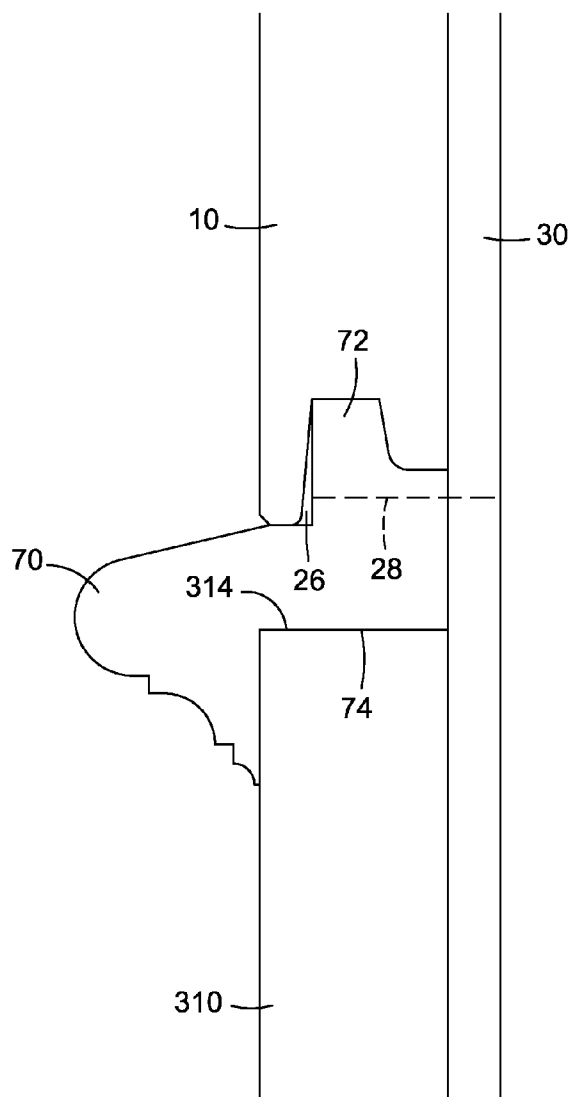


FIG. 10

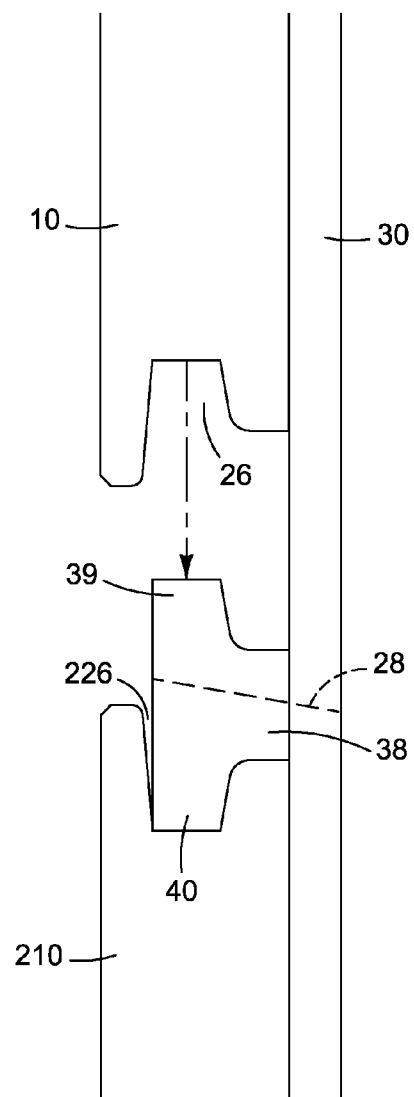


FIG. 11

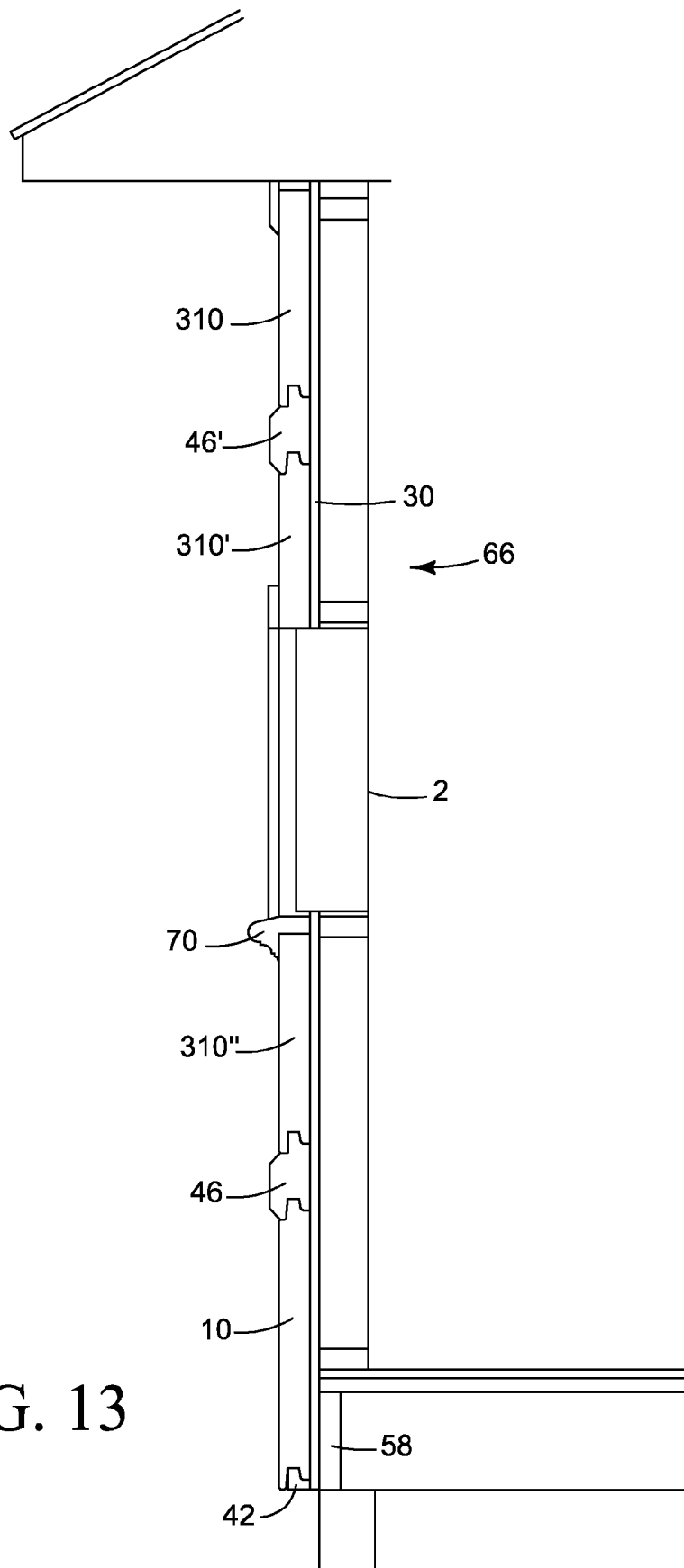


FIG. 13

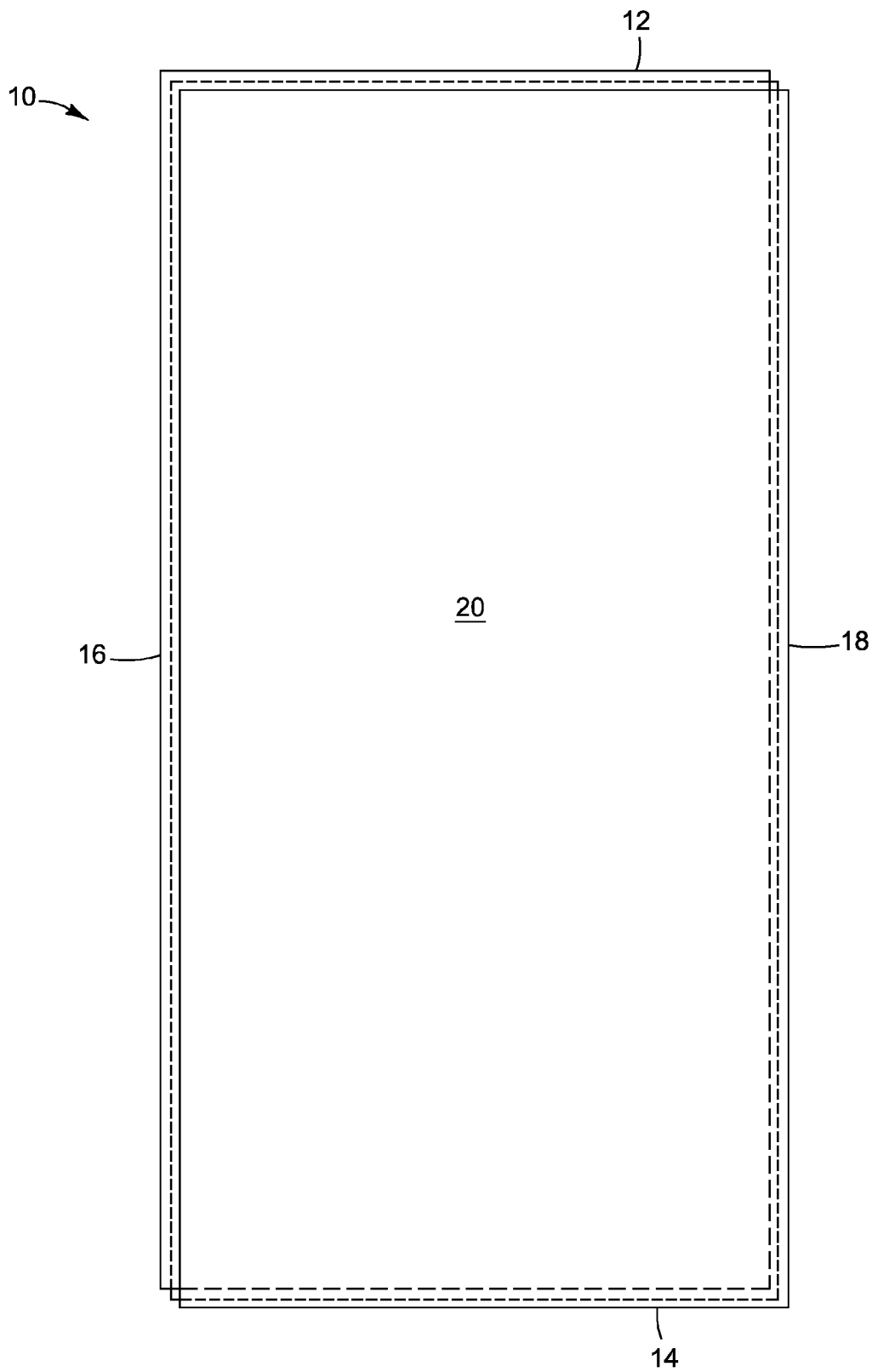


FIG. 14A

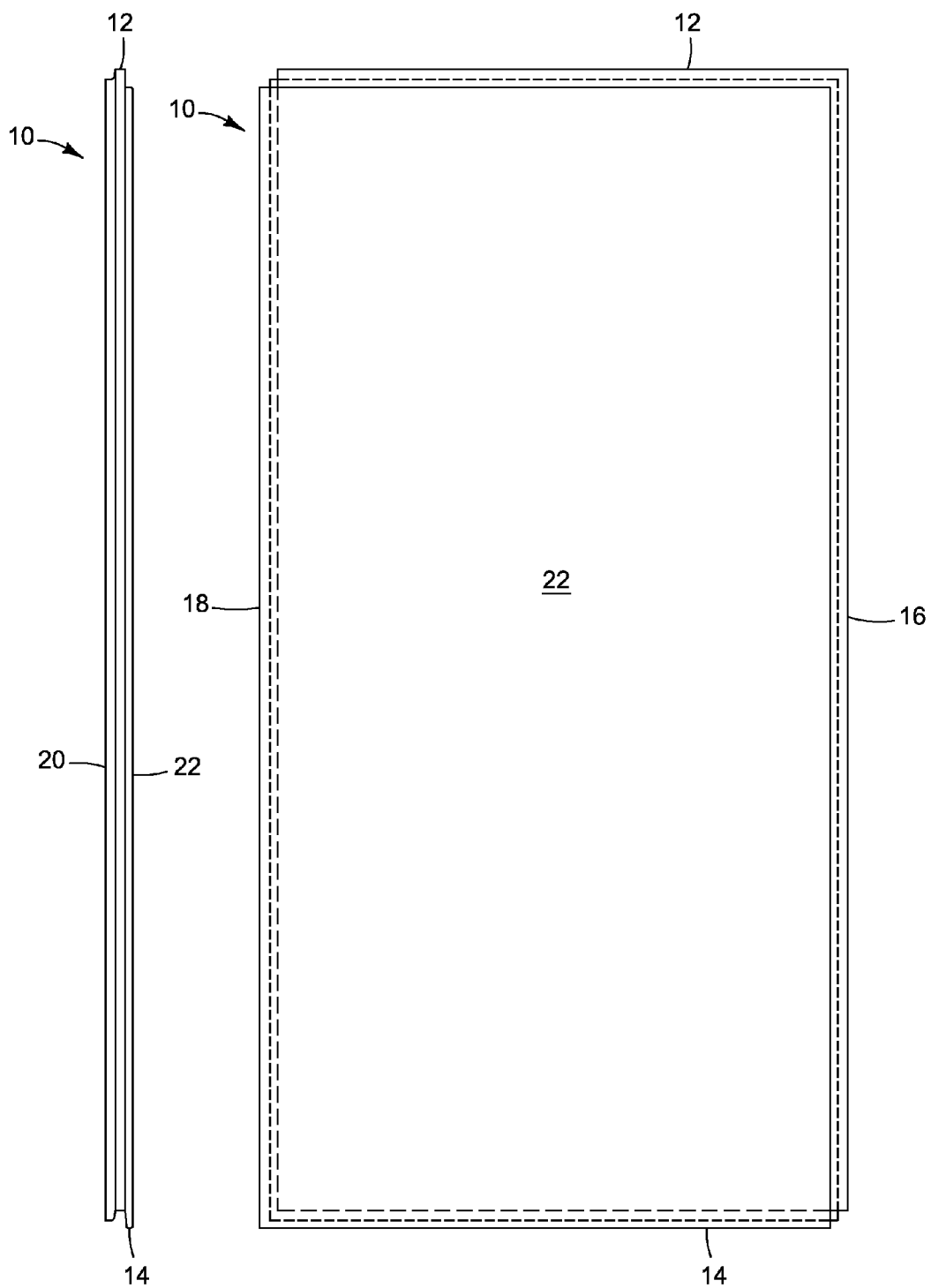


FIG. 14B

FIG. 14C

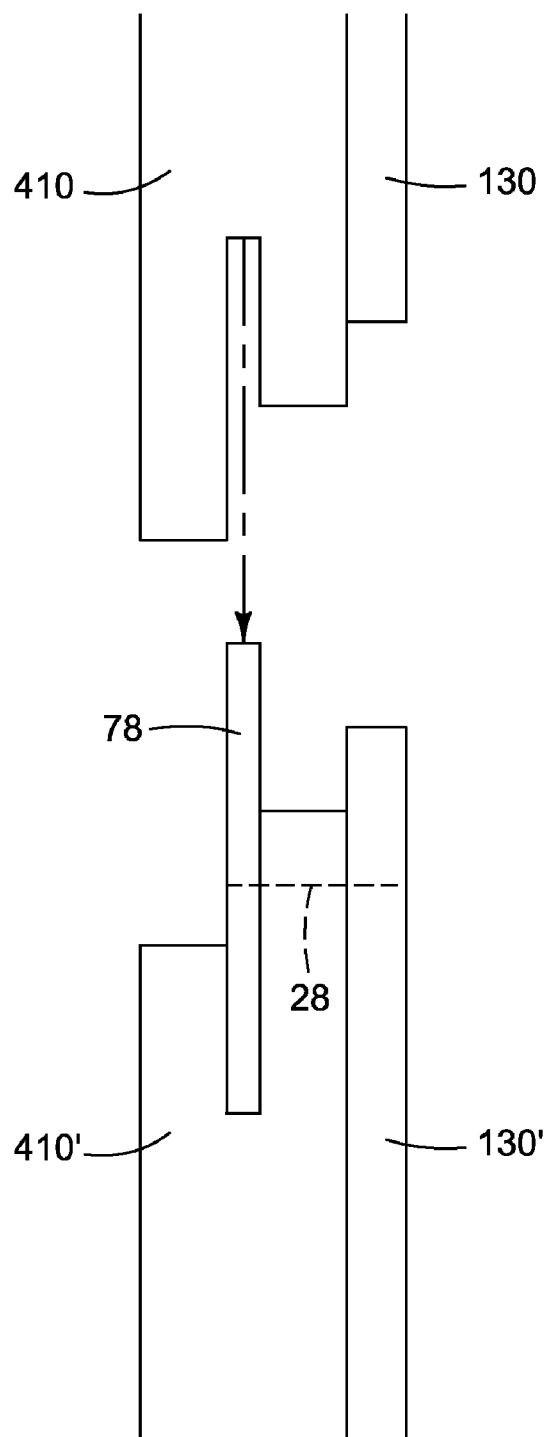


FIG. 15

INSULATIVE SIDING APPARATUS AND METHOD OF MAKING THE SAME

PRIORITY

[0001] The present invention is a non-provisional of U.S. Application Ser. No. 60/746,910, filed on May 10, 2006, the disclosure of which is incorporated by reference.

FIELD OF THE INVENTION

[0002] The present invention generally relates to coverings for structures such as homes, commercial or industrial buildings. One embodiment of the present invention particularly relates to foam insulative panels for such structures.

BACKGROUND

[0003] Stucco has been used for many years as a veneer covering for both commercial and residential walls. There are three typical representative methods of stucco construction:

[0004] (1) The house is first covered with plywood, wafer board (OSB) or insulation board, then lathe is attached to the walls and sprayed with a cement coating to form a stucco wall. The surface would then be painted.

[0005] (2) The utilization of an Exterior Insulated Finishing System (“EIFS”). In one example implementation of EIFS, the relevant portions of the exterior of the house is covered with one-pound extruded polystyrene foam (“EPS”), one-inch thick. Lathe or fiberglass mesh is then attached to the EPS. A coating, called “brown coat,” is then troweled or sprayed onto the EPS as an under coat. After the brown coat dries, a finish coat of synthetic stucco is applied, usually with the coloring in it.

[0006] (3) Most recently, due to water intrusion problems which can result in mold issues, a combination of the two (stucco and EIFS) has been tried to reduce costs. Installation of this hybrid system usually begins with the exterior side of the sheathing covering the house being covered with a water resistant barrier of house wrap or weather resistant felt paper. The barrier covered house is then covered with a wall sheathing or surface (in example, plywood, OSB and EPS foam). Chicken wire or mesh (called lathe) then is installed over the substrate. A concrete layer is then either sprayed or troweled directly on the substrate/lathe. After drying, the concrete layer is painted with an acrylic top coat. This is commonly referred to as a “two-coat” or “three-coat” stucco system. The “three-coat stucco system” requires a “brown” coat, a second concrete coat, and then the finish coat (usually an elastomeric acrylic stucco or paint coating).

[0007] The problems with these prior systems include: (1) if the concrete coating ever fractures, which it inevitably does, water can run in behind the stucco and/or foam and cause problems (in example, mold, mildew, or wood rot) since the moisture cannot escape; (2) as the seasonal temperature changes, a large wall without expansion joints is continually stressed and develops waves, bulges, and eventually cracks; and (3) the onsite labor time window required is not especially friendly to stucco construction, for instance, bad weather can bring stucco work to a halt, low temperatures may result in the concrete not curing correctly (which itself results in later cracks and peeling), and freezing temperatures often negatively affect the curing of cement products.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a partial, side view of a first embodiment of a panel.

[0009] FIG. 2 is a side view of an embodiment of a starter section.

[0010] FIG. 3 is a side view of an embodiment of an adapter.

[0011] FIG. 4 is a side view of an embodiment of a block out.

[0012] FIG. 5 is a side view of an embodiment of a rail section.

[0013] FIG. 6 is a partial, side view of one embodiment of two panels (of the embodiment of FIG. 1) about to be connected together, also showing the sheathing.

[0014] FIG. 7 is a partial, side view of one embodiment of two panels (of the embodiment of FIG. 1) connected together, also showing the sheathing.

[0015] FIG. 8 is a partial, side view of a panel (of the embodiment of FIG. 1) about to be connected with a starter section (of the embodiment of FIG. 2), also showing the building structure.

[0016] FIG. 9 is a partial, side view of a panel (of the embodiment of FIG. 1) connected to a block out (of the embodiment of FIG. 4) connected with a starter section (of the embodiment of FIG. 2), also showing the building structure.

[0017] FIG. 10 is a partial, side view of a panel (of the embodiment of FIG. 1) connected to a rail section (of the embodiment of FIG. 5) connected to a second embodiment of panel, also showing sheathing.

[0018] FIG. 11. is a partial, side view of a panel (of the embodiment of FIG. 1) connected to an adapter (of FIG. 3) connected to a third embodiment of panel, also showing sheathing.

[0019] FIG. 12 is a plan view of an embodiment of insulated siding installed on a stud wall, showing a corner connection.

[0020] FIG. 13 is a partial, side view showing an embodiment of insulated siding installed on a stud wall.

[0021] FIG. 14A is a first side view of the panel of FIG. 1.

[0022] FIG. 14B is a first end view of the panel of FIG. 1.

[0023] FIG. 14C is a perspective view of the second side of the panel of FIG. 1.

[0024] FIG. 15 is a partial, side view of a fourth embodiment of a panel (two panels shown) shown about to be connected together.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0025] The present invention is a system for covering the inside or outside surface of a structure, and the method of making said covering and its components.

[0026] While the present invention is susceptible of various modifications and alternative constructions, certain illustrated embodiments thereof have been shown in the drawings and will be described below in detail. It should be understood, however, that there is no intention to limit the invention to the specific form disclosed, but, on the contrary, the invention is to cover all modifications, alternative constructions, and equivalents falling within the spirit and scope of the invention as defined in the claims.

[0027] In the following description, the use of “or” indicates a non-exclusive, alternative without limitation unless otherwise noted. The use of “for example,” “in example,”

“i.e.,” “e.g.,” “such as,” and the like indicates the disclosure of certain listed examples with the express intention that there are other objects of the same category that are not listed. The use of “including” means “including, but not limited to,” unless otherwise noted.

[0028] The figures show a number of embodiments of the present invention. One or more of these embodiments could be used in a wall panel system. One representative wall panel system would comprise the application of decorative siding panels (and associated structure) made from high-density expanded polystyrene (EPS) foam to the outside wall surface of a structure. These siding panels configured for overlapping, having an interlocking tongue and groove structure, for purposes of sealing out moisture.

[0029] Referring to FIG. 1, shown is one embodiment of a decorative siding panel 10. It is preferred that the panel (as well as the other components of these embodiments, including but not limited to the starter sections, block outs, rail sections, corner covers, etc.) be made from high density foam board, for instance expanded polystyrene (EPS), polyurethane, etc. It is preferred that the foam used have a density of 3-lb or greater, for instance 3.3-lb dense. Softer foams (such as, 1-lb, 2-lb, etc.) can likewise be used, preferably provided that they are coated with a hard coating such as epoxies, urethanes, elastomers, polyurea, minerals, cement, fiber cement, fiberglass, etc. Such foam board could also be mold-resistant and/or insect-resistant.

[0030] Because they are comprised of foam board, the panels can be cut into various decorative patterns, including but not limited to flat, grooved, lapboard, log shapes for log cabin look, etc. The panels could even be embossed by stamping, or various designs, such as brick patterns, rock or stone patterns, etc., could be applied or melted therein. The panels can also be colored and/or covered with various finishing treatments, as desired, to further add to their appearance. This variety of panel shapes and configurations (including how they are configured for attachment to one another) allows a designer and/or an installer great freedom in creating decorative patterns in the structure's covering.

[0031] In this description, the term “panels” refers to a sheet, regardless of length, width, thickness or shape, that forms a distinct (usually flat) section or component of a structure.

[0032] In the preferred embodiment, the main panels are 4' by 8' in size. One example of such a 4'x8' panel can be seen in FIG. 14A. Other panel sizes are likewise envisioned, for example, 2" by 8" to 96"×192" and everything in between.

[0033] The panels are configured to be interlocking and for being generally water/air tight. Being interlocking prevents water from traveling through the tongue and groove of the panels and/or from running horizontally (like lapboard siding typically does), thereby preventing water damage and/or mold.

[0034] Referring to FIGS. 1 and 14A, the panel 10 having a top side 12, a bottom side 14, a first side 16 and a second side 18. The panel 10 also having a face side (the first planar side) 20 and a back side (the second planar side) 22.

[0035] It is preferred that one or more of the top/bottom/first/second sides is configured to interlock with one or more adjacent panels/structures. The preferred manner of interlocking is through use of “tongue and groove” style interlocking. By such interlocking (overlapping/abutting), water and vapor flow is blocked and the resulting damage is prevented.

[0036] In such a tongue and groove arrangement, at least one of the sides has a tongue or other flange extending therefrom. This tongue is for receipt into a groove on a second panel or building structural element. Note: while the phrase “tongue and groove” is used herein, such exact functionality is not required, for instance opposing flanges are intended within the definition of “tongue and groove.”

[0037] Referring particularly to FIG. 1, the top side 12 has a tongue 24 defined therein and the bottom side 14 has a groove 26 defined therein. The tongue 24 defined by a weather overlap rabbet 23 and a locking rabbet 25. The groove 26 defined by an outside flange (weather overlap) 32 and an inside flange (locking flange) 34. In this embodiment, the taper Θ serves as an anti-siphon feature, preventing water at the seam from moving through the joint when there is relatively negative pressure in the building structure. This is a preferred feature that is present in this embodiment, but may not be present in other embodiments.

[0038] As is shown in FIGS. 6-7, the flange 24 of a first panel 10 is configured for interlocking receipt into the groove 26 of a second panel 110 to form a tongue and groove joint 36. FIG. 6 showing the two panels (10, 110) unlocked, whereas FIG. 7 shows the two panels interlocked.

[0039] In the embodiment shown in FIGS. 6-7, the panels (10, 110) generally have a one and one-half inch overlap (shiplap). Providing such a degree of overlap may make a building wrap (such as DuPont Tyvek®) optional, depending on code requirements.

[0040] FIGS. 6-7 showing another feature, covering up the fastener heads/holes. The fastener 28 would clearly be visible from the outside (left) in FIG. 6. As the connection is made (FIG. 7), the outside flange 132 overlaps the tongue 24, thereby hiding the head of the fastener 28. Overlapping in such a manner is very aesthetically pleasing because the fastener heads cannot be seen.

[0041] Such tongues and grooves can be formed in a number of ways, including but not limited to being cut or otherwise formed in the foam and being made from a separate material (metal, plastic, etc.) that is attached to the panel side (for example, by adhesives or fasteners).

[0042] Preferably, as is shown in FIGS. 6-7, the tongue 24 is configured to provide an attachment surface through which a fastener 28 (including but limited to staples, screws, bolts, and nails) can be driven therethrough (at a fastener receiving portion adjacent said tongue) and into a surface 30 (such as an exterior wall). This fastener 28 thus used to attach the panel 10 to the surface 30. These fasteners are preferably used every three to twelve inches along the tongue side of the panel, however other spacing is possible.

[0043] The term “surface 30” when used herein intended to represent not only the outside or exterior “surface” of the building structure, but also includes any and all construction materials that the panel and associated components can be attached to, such as a sheet of OSB, plywood, dry wall, etc., regardless of their location on the structure (exterior, interior, etc.).

[0044] It may be desirable to have tongues on at least one of the horizontal ends as well as on the vertical ends, and grooves on one of the horizontal ends and one of the perpendicular ends. Such an arrangement would allow adjacent panels to interlock together and would allow the panels to be installed either vertically or horizontally in a continual pattern to achieve a desired height or width.

[0045] However, do to the layout used in constructing the wall (for instance, it may be advantageous to start at the ends of the wall and work towards the center), situations may arise where adjacent panels are not configured for such “tongue and groove” interlocking, for instance, as shown in FIG. 11, where the two panels (10, 210) to be joined both have grooves. In such a case it may be useful to use a female-to-female adapter 38 (shown in FIGS. 3 and 11) having a pair of opposing tongues (39, 40) that can be installed into the grooves (26, 226) to allow the two panels to interlock. It is preferred that such an adapter be configured for fastening, for instance through use of the screw 28 shown) to the surface 30. In such an instance, a special overlapping piece may be necessary to join in the center. Installation starting at the center and going outwards is discussed later in this description.

[0046] It is preferred that, on the panels, the tongue be consistently on one side (left or right) and the top, with the groove on the other side and the bottom. If the side grooves are reversed, the panels must be left and right handed and cannot be rotated interchangeably. Further, panels can be made with the tongue on top and the groove on the other edges, with the utilization of an adapter that can be glued or otherwise fastened into a groove to provide a tongue as required.

[0047] Using such interlocking joints allows for expansion and contraction to take place, something that traditional foam/stucco methods, such as the EIFS, 2- and 3-part systems mentioned previously, are not particularly effective at doing. Because EIFS doesn’t account for such expansion and/or contraction, oftentimes cracking in the finish results.

[0048] As discussed above, the panels can be fastened to the structure through use of at least one fastener (for example, a screw or staple), inserted through the tongue (as shown in FIGS. 6-7). The panels could be fastened to the structure using an adhesive (preferably a 100% silicone, or low temperature urethane adhesive, preferably one that can be applied down to -20 degrees F.), either along with or separate from the utilization of a fastener. The utilization of both fasteners and adhesive is preferred. Such an adhesive, or a waterproof sealant (i.e., caulk, paintable silicone), could further be used on the tongue and groove joints, as well as any other locations that could be permeated by water or vapor, to sealed such joints and connections water tight.

[0049] It is preferred that the vertical seams be sealed, while the horizontal seams are not. This allows the wall system to ventilate vapor and/or moisture out from the interior portions of the building structure while inhibiting exterior water penetration. Further, the backsides of the panels could be vertically or diagonally grooved to assist in the evacuation of moisture/condensation.

[0050] Referring now to FIG. 2, shown is a starter section 42. Starter sections 42 be used on the ends of the panels as they terminate adjacent the ground (as shown in FIGS. 8-9), between panels, etc. For instance, FIG. 8 showing the starter section 42 having a tongue 44 configured for receipt into the groove 26 of the panel 10. FIG. 9 showing the starter section 42 having a tongue 44 configured for receipt into the groove 26 of the block out 46 (discussed below). A preferred starter section comprises a piece of EPS foam. Other starter section configurations include but are not limited to a metal clips (for instance a “J-shaped” clips), or plastic structures generally shaped to fit the groove with a defining channel therein to receive the bottom edge of a siding panel therein.

[0051] Preferably, a fastener 28 would be utilized to attach the starter section 42 to the structure 30. The starter section can be the first general structure attached (using fasteners) mounted to the wall surface, providing a flange (or groove) that the lowermost siding panel bottom edge mates with.

[0052] FIG. 4 shows a “block out” (also referred to as a “design band” or “pop out”) 46 having a tongue 48 and a groove 50. FIG. 9 shows this block out 46 installed on a surface 30, where the tongue 48 is configured for receipt into a connected panel’s 10 groove 26. The block out’s groove 50 receives therein adjacent tongue, for instance the tongue 44 of a starter section 42.

[0053] FIGS. 5 and 10 showing a rail section 70. The rail section 70 having an upper end having a tongue 39 configured for connection with the groove 26 of the panel 10. A fastener 28 could extend through the tongue 39 for attaching the rail section 70 to the surface 30. The opposite portion of the rail section 70 comprising a rabbet or lower connection 74 configured for attachment to a panel 310 having a flat side 314. The rail section 70 serving as a decorative addition to a wall, and may also serve other functional purposes, for instance as a plant shelf or window sill. It is preferred that when a rail section is used under a window, the tongue section of the rail would be removed and the rail sealed with caulk to the window.

[0054] FIGS. 8 and 9 further showing, for purposes of representation, general structure that may or may not be present in a common structure upon which these embodiments are installed. Disclosure of this structure is intended to supplement the reader’s understanding of general concepts and are not necessarily intended to be required structure in any structure. Specifically, these Figures showing a foundation wall 52 upon which a floor joist 56 rests, typically with a moisture barrier 54 such as a sill seal gasket sandwiched there-between. The floor joist(s) connect with one or more rim joists 58 which cooperate to support a sub-floor 60. An underlayment 62 is placed over the sub-floor 60. The bottom plate 64 of a stud wall 66 rests on the sub-floor, this stud wall comprising a plurality of studs 68. The outside surface of the stud walls having a wall sheathing or other surface 30 attaching there-to. Sheathing including but not limited to OSB, plywood, particle board, wood products, metal coverings, plastic coverings, composite coverings, concrete board, ceramic fiber board, fireproof materials, etc. Again, this description merely intended as a general discussion of components typically found in a common structure.

[0055] Referring now to FIG. 12, shown is a top view of one embodiment of the present invention. This figure showing a pair of stud walls (66, 66’) connected together at a corner. Sheathing 30, 30’ covers the stud walls. Attaching to this sheathing are a plurality of components of the present invention, a panel 10’ having a grooved end interlocking with a panel’s 510 tongue. The opposite end 514 of this panel 510 having a flat end. The panels could also be directly attached to the studs.

[0056] The flat end of this panel (510) connecting to the flat end of a second panel (510’) so as to make a corner. This corner being covered by a corner cover 76. Such a corner cover being a trim piece designed to be glued in place without use of fasteners after siding panels are secured to the structure. Corner trims allow the present invention to traverse around corners without showing fasteners on the outside thereof. A second type of corner trim would be an outside 45-degree corner—a shallow pop-out design designed to be

used on 45-degree corners such as bay window or angled walls. Another type of corner trim would be on the inside corner which is shaped like a triangle shape designed to be used on an inside corner of a structure to hide the seam where the siding joins.

[0057] This panel **510'** connecting with a panel **10**. These panels (**10, 10', 510, 510'**) connecting to the sheathing **30, 30'** for covering the structure.

[0058] Referring now to FIG. 13, shown is one example of how a building structure could be covered using this insulative siding. A starter section **42** is attached to the rim joist **58**. A panel **10**, external to a stud wall **66**, would connect with this starter section **42** and itself would be fastened to the sheathing **30** at its tongue end. A decorative block out **46** could attach to the top end of the panel **10**, this block out further configured for connection with a panel **310"**. This panel **310"** connecting with a rail section **70** that is a portion of the window assembly **2**. From the top portion of the window assembly extends a panel **310'** configured for connection with another decorative block out portion **46**. This block out portion **46** configured for attaching to a panel **310**, which is external to a stud wall **66** is configured for abutting (through use of additional structure) the building's soffit. The main purpose of this drawing being to show that various of the components of the present invention can be assembled as desired by the designer/installer to form a decorative wall assembly.

[0059] Another example (not particularly shown in FIG. 13) would be the application of a wainscot (e.g., rock, block, brick) onto the outer surface of the panel, with stucco and/or sandstone panel styles (discussed below) for the upper wall portion.

[0060] The panels may be coated with any number of coatings, including but not limited to hard finishes, rubbery "stucco-like" coatings, etc. Resins including hardeners and fireproofing can be applied to the outside. These coatings preferably being applied at the factory, rather than in at the job site, but could be applied at the job site. Noise reduction is another benefit of the present invention, a benefit that may be enhanced through use of coatings. Preferred coatings include but are not limited to a "stucco" finish, "sandstone" finish, and "smooth" finish.

[0061] "Stucco" finish. One example would be the application, to the panels and/or other components of the present invention, of a hard coating of an epoxy, polyurea or urethane (or any such coating mentioned herein). The coating could include a quantity of sand (or other granular/textured material) for texture/added strength and a paint coat to create a stucco-like appearance. This granular material can be added to the coating before or after it is applied to the components. Multiple plies of the coating and the material may be applied to increase the strength of the coating. Various grits of the material could be used to change the roughness of the finish.

[0062] "Sandstone" finish. One example would be the application, to the panels and/or other components of the present invention, of an epoxy, polyurea or urethane coating (or any such coating mentioned herein) with a quantity of sand (or other granular/textured material). A coating of paint (preferably acrylic) would then be applied, followed by a second (or more) coat of the granular/textured material. The granular/textured material preferably being applied and immediately shaken off so as to provide an attractive "sandstone" finish. A urethane sealer, preferably clear, can then be applied as a finish coat. The color of the paint (preferably acrylic paint) can reflect through the sand to change the apparent color of the sandstone finish.

[0063] "Smooth" finish. One example would be the application, to the panels and/or other components of the present

invention, of a coating of urethane, polyurea, or the like (without sand), resulting in a smooth finish. Multiple coats can be applied for extra hardness and strength.

[0064] Referring now to FIGS. 14A, 14B and 14C, shown are additional views of the panel of FIG. 1. FIG. 14A showing a front side view, FIG. 14B showing a front side perspective view, and FIG. 14C showing a second end view (FIG. 1 showing a partial, first end view) of one embodiment of a panel **10** of the present invention.

[0065] Referring now to FIG. 15, shown is another embodiment of the present invention. This embodiment showing the provision of a tongue **78** that is separate from the panels (**410, 410'**) themselves. Utilization of a such a tongue would allow a single form of panel to be used, whereby (if the double tongued section is used and all the panels are grooved all the way around) by merely flipping the panel 180 degrees and inserting the tongue would allow it to mate up with another panel section. In such an arrangement, a fastener could be used to fasten the tongue to the panel **410'** (**410**) and to the sheathing **130'** (**130**). Adhesive could likewise be used. Further, instead of the tongue **78**, a female-to-female adapter **38** (discussed above) could be utilized.

[0066] Optionally, as shown in the drawing, the sheathing wouldn't be a single piece but would be adhered directly to the panel **410'** (as described infra). In such an embodiment the fastener would pass through the sheathing and into a stud of the stud wall (or other structure), thereby attaching the panel to the structure. The sheathing, in this Figure, is shown configured for overlapping the joints of the connection, however such overlapping isn't mandatory and the sheathing could terminate that the end of rabbets.

[0067] As discussed above, the panels could be manufactured with the panels themselves backed, laminated, adhered or otherwise attached directly to the sheathing (the sheathing thus becoming, in this embodiment, a portion of the panel). Doing so would eliminate the need for the wall sheathing to be separately attached to the framed structure (for instance to the exterior portions of the stud wall).

[0068] This figure (FIG. 17) showing both the features of the removable tongue **78** and the attachment (before installation) of the sheathing to the panel. While these two features are shown herein together, they could just as likely be separately utilized and/or could be used (together or apart) as part of other embodiments of the present invention.

[0069] A foil coating and/or film could be applied to the back (house) side of the panels, this foil or other coating serving as additional R-value, as a moisture barrier, and/or providing a location for installation, instructions and other written materials to be printed.

[0070] Utilization of high-density expanded polystyrene (or equivalent foam) has an insulative benefit. Such panels provide an insulative R-value, typically an R-4.9 value for every inch of panel thickness. If the invented siding is used on the outside of a structure, the amount of insulation required within the building's wall can be reduced and/or eliminated, thereby saving construction costs and providing other benefits. For instance, if part of the R-value desired to be used in a wall, is applied to the outside of the building (as insulative siding), then the thickness of the walls themselves can be lower; from 2' by 6' construction, to 2' by 4' construction thereby saving the building and lumber costs.

[0071] In one example, two and one-quarter inch thick EPS foam is installed over a 2"x4" framed stud wall having typical R-13 insulation. Such a combination would result in a wall with an overall thickness of approximately six (6) inches having a R-value of approximately R-24. Most current walls (2"x6" construction) have R-values around R-21. Thus,

utilization of this embodiment in a 2"×4" wall could achieve greater insulative value while reducing the costs of construction materials and labor over traditional 2"×6" construction.

[0072] In another example, currently framed building structures have lower R-values at the location of studs and other structural members. Since the insulative siding's insulative value is applied over the entire exterior surface of the wall, as opposed to merely being insulated in-between the studs (as fiberglass insulation is, for example), the present invention provides superior insulation characteristics and a true R-value gain at all points in the wall.

[0073] Installation (in one embodiment) could start in the center of a stud wall with a panel having double tongue center pieces or using a female-to-female adapter (38) to convert a groove into a tongue. The installer would then work outwards both directions from there so that trimming would be equally on the wall's ends. Doing so would result in the most centered look upon the wall. Such a center piece thus designed as a starter panel for the center of a large wall. Thus allowing other siding panels to be installed on the sides creating even spacing at the end of the wall. Such a double tongue center piece could be used to utilize waste panel sections as well as on gables where a panel grooved on all sides is used. After cutting the panel diagonally, the tongue can be glued into the waste piece to locate the tongue where desired and make the panel usable.

[0074] Another manner of starting the wall would be to install a starter section (42) at the base of the wall. The installer could then begin at one side, preferably the left, and install the panels from left to right. The first panel is installed at the corner of the structure with the groove side of the panel adjacent to the corner. The groove side can be secured to the wall with the starter section or with screws or staples that will be hidden by the outside corner trim. For taller walls, the process would be repeated with the lower panel providing the tongue to interlock into the upper panels.

[0075] There are benefits to using some of the embodiments of the present invention. Some embodiments will be much quicker to install than traditional vinyl siding. Installation, in comparison to traditional stucco, has the potential of having about a thirty-percent (30%) lower installed cost than "EIFS" stucco applications and be competitively priced with "2 or 3 coat" stucco systems. Other benefits include the insulation R-value, expansion joints, reduced potential for cracks, flatness and consistency of the wall, and elimination of problems created from applying water based coatings under inclement weather conditions (i.e. freezing temperatures can inhibit or destroy the curing of cement or other water based products).

[0076] Since installation of the insulative siding is a siding process, it does not "shutdown" the construction of the building while it is being installed (a common problem with the installation of stucco). In addition, there is little mess and no overspray to get on windows or other parts of the structure that may be in a finished state. These benefits, again, are related to specific embodiments and may not be present in each embodiment.

[0077] There are many different types of siding panels that comprise the preferred embodiments of the present invention. This paragraph lists five examples of the many types. The first type being a siding panel that is 24"×48" long having a tongue on top and one side, the groove on the bottom and the other side. A second being a 48"×48" siding panel having a tongue on top and one side with a groove on the bottom and another side. Another siding panel could be the 24"×96" panel having a tongue on top and on one side, the groove on the bottom and the other side. A fourth would be 48"×96" in dimension having a tongue on top and one side, the groove on the bottom

and the other side. Finally, a fifth would be a double tongue center panel having a tongue on top and on both sides with a groove on the bottom side. Other panel embodiments likewise exist.

[0078] The purpose of the Abstract is to enable the public, and especially the scientists, engineers, and practitioners in the art who are not familiar with patent or legal terms or phraseology, to determine quickly from a cursory inspection, the nature and essence of the technical disclosure of the application. The Abstract is neither intended to define the invention of the application, which is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

[0079] Still other features and advantages of the present invention will become readily apparent to those skilled in this art from the following detailed description describing preferred embodiments of the invention, simply by way of illustration of the best mode contemplated by carrying out my invention. As will be realized, the invention is capable of modification in various obvious respects all without departing from the invention. Accordingly, the drawings and description of the preferred embodiments are to be regarded as illustrative in nature, and not as restrictive in nature.

[0080] While there is shown and described the present preferred embodiment of the invention, it is to be distinctly understood that this invention is not limited thereto, but may be variously embodied to practice within the scope of the following claims. From the foregoing description, it will be apparent that various changes may be made without departing from the spirit and scope of the invention as defined by the following claims.

What is claimed is:

1. An insulative siding panel system comprising:
 - a first siding panel a first planar side opposite a second planar side and having a tongue and a fastener receiving portion adjacent said tongue, wherein a fastener can be inserted through said first siding panel at said fastener receiving portion and into a building surface, thereby allowing said first siding panel to be attached to said surface;
 - a fastener for fastening said first siding panel to said surface; and
 - a second siding panel having a first planar side opposite a second planar side and having a first end extending to a second end, wherein, said second end comprises a groove configured for receiving therein the tongue of the first siding panel, said groove defined by a pair of opposing flanges,
 wherein when the tongue of said first siding panel is inserted into the groove of said second siding panel one of said flanges extends to cover said fastener receiving portion thereby hiding said fastener from view.
2. The insulative siding panel system of claim 1, wherein:
 - said second siding panel second end has a tongue and a fastener receiving portion adjacent said tongue, wherein at least one fastener can be inserted through said second siding panel at said fastener receiving portion and into said surface, thereby allowing said second siding panel to be attached to said surface; and
 - said insulative siding panel system comprises a third siding panel having a second end, said third siding panel second end having a groove configured for receiving therein the tongue of said second siding panel, said third siding panel groove defined by a pair of opposing flanges, namely an outside flange and an inside flange;

wherein when the tongue of said second siding panel is inserted into the groove of said third siding panel said third siding panel outside flange extends to cover said fastener receiving portion of said second siding panel thereby hiding the fastener attached there-to from view.

3. The insulative siding panel system of claim 1, wherein said panels are comprised of high density foam.

4. The insulative siding panel system of claim 3, wherein said high density foam is selected from the group consisting of expanded polystyrene and polyurethane.

5. The insulative siding panel system of claim 1, wherein one or more of said second planar surfaces are covered with a coating, said coating selected from the group consisting of epoxy, polyurea and urethane.

6. The insulative siding panel system of claim 1, wherein one or more of said second planar surfaces are covered with a coating, said coating selected from the group consisting of epoxy, polyurea and urethane, wherein said coating includes a textured material, wherein a paint coat is applied to said coating to create a stucco-like appearance.

7. The insulative siding panel system of claim 1, wherein one or more of said second planar surfaces are covered with a coating, said coating selected from the group consisting of epoxy, polyurea and urethane, said coating including a quantity of a textured material, wherein said coating and textured material is then painted and additional textured material applied thereto, and wherein finally the resulting planar surface is coated with a urethane sealer.

8. The insulative siding panel system of claim 1, wherein one or more of said second planar surfaces are decorative.

9. The insulative siding panel system of claim 1, wherein said sheathing is fixed to said panel through use of an adhesive.

10. The insulative siding panel system of claim 1, wherein said second panel outside flange is longer than said second panel inside flange; and where the first panel has an inner rabbet and an outer rabbet adjacent said groove, said rabbets shaped to mate with the flanges of said second panel.

11. An insulative siding panel system comprising:

- a first siding panel having a first planar side opposite a second planar side, said first siding panel having a tongue and a fastener receiving portion adjacent said tongue, wherein at least one fastener can be inserted through said first siding panel at said fastener receiving portion and into sheathing, thereby allowing said first siding panel to be attached to said sheathing and holding said first panel first planar side against said sheathing;
- at least one fastener for fastening said first siding panel to said sheathing, wherein; and
- a second siding panel having a first end extending to a second end and a first planar side opposite a second planar side, said second siding panel second end having a groove configured for receiving therein the tongue of the first siding panel, said groove defined by a pair of opposing flanges, namely an outside flange and an inside flange;

wherein when the tongue of said first siding panel is inserted into the groove of said second siding panel said outside flange extends to cover said fastener receiving portion thereby hiding said fastener from view; and wherein said inside flange is sandwiched between said tongue and said sheathing, thereby holding said second panel first planar side against said sheathing.

wherein when the tongue of said second siding panel is inserted into the groove of said third siding panel said third siding panel outside flange extends to cover said fastener receiving portion of said second siding panel thereby hiding the fastener attached there-to from view; and wherein said third panel inside flange is sandwiched between said second panel tongue and said sheathing, thereby holding said third panel first planar side against said sheathing.

12. The insulative siding panel system of 11, wherein:

said second siding panel second end has a tongue and a fastener receiving portion adjacent said tongue, wherein at least one fastener can be inserted through said second siding panel at said fastener receiving portion and into said sheathing, thereby allowing said second siding panel to be attached to said sheathing and holding said second panel first planar side against said sheathing; and said insulative siding panel system comprises a third siding panel having a first end opposite a second end and a first planar side opposite a second planar side, said third siding panel second end having a groove configured for receiving therein the tongue of said second siding panel, said third siding panel groove defined by a pair of opposing flanges, namely an outside flange and an inside flange;

wherein when the tongue of said second siding panel is inserted into the groove of said third siding panel said third siding panel outside flange extends to cover said fastener receiving portion of said second siding panel thereby hiding the fastener attached there-to from view; and

wherein said third panel inside flange is sandwiched between said second panel tongue and said sheathing, thereby holding said third panel first planar side against said sheathing.

13. The insulative siding panel system of claim 11, wherein said panels are comprised of high density foam.

14. The insulative siding panel system of claim 13, wherein said high density foam is selected from the group consisting of expanded polystyrene and polyurethane.

15. The insulative siding panel system of claim 11, wherein one or more of said second planar surfaces are covered with a coating, said coating selected from the group consisting of epoxy, polyurea and urethane.

16. The insulative siding panel system of claim 11, wherein one or more of said second planar surfaces are covered with a coating, said coating selected from the group consisting of epoxy, polyurea and urethane, wherein said coating includes a textured material, wherein a paint coat is applied to said coating to create a stucco-like appearance.

17. The insulative siding panel system of claim 11, wherein one or more of said second planar surfaces are covered with a coating, said coating selected from the group consisting of epoxy, polyurea and urethane, said coating including a quantity of a textured material, wherein said coating and textured material is then painted and additional textured material applied thereto, and wherein finally the resulting planar surface is coated with a urethane sealer.

18. The insulative siding panel system of claim 11, wherein one or more of said second planar surfaces are decorative.

19. The insulative siding panel system of claim 11, wherein said sheathing is fixed to said panel through use of an adhesive.

20. The insulative siding panel system of claim 11, wherein said second panel outside flange is longer than said second panel inside flange; and where the first panel has an inner rabbet and an outer rabbet adjacent said groove, said rabbets shaped to mate with the flanges of said second panel.