INSULATING THIN-BRICK, THIN-STONE, AND THIN-BLOCK SIDING SYSTEM

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Patent Classification

ABSTRACT

Surface facing materials structured for facing indoor and outdoor surfaces, consisting of facing sections having interdigitating connectors on opposing first and second surfaces so as to securely connect a long connecting-side of a section to a long connecting-side of an adjacent section and/or interdigitating connectors on each end so as to securely connect each section end to an end of an adjacent section, so as to provide light weight, moisture resistant, sound and heat insulating facing. One style of the facing section comprises a single row of thin-bricks positioned short end to short end securely adhered to an elongate, lightweight, insulating backing-panel having interdigitating connectors sized so as to accept a single row of bricks so as to result in a thin-bricked panel. In one preferred embodiment, from 2 to 10 thin-bricks are adhered end to end to a backing-panel forming an elongated row of thin-bricks on a backing panel.
INSULATING THIN-BRICK, THIN-STONE, AND THIN-BLOCK SIDING SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This Application claims the benefit of U.S. Provisional Application No. 61/106,688, filed on Oct. 20, 2008.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable

REFERENCE TO SEQUENCE LISTING, A TABLE OR A COMPUTER PROGRAM LISTING COMPACT DISK APPENDIX

[0003] Not Applicable

BACKGROUND

[0004] The present invention relates generally to materials used to cover exterior walls and, more particularly, to a system providing for insulating, light weight, and moisture resistant units of thin-brick, thin-stone, and thin-block facing materials for exterior and interior use.

[0005] The background information discussed below is presented to better illustrate the novelty and usefulness of the present invention. This background information is not admitted prior art.

[0006] Inefficient home heating and cooling systems often account for up to one-half of a home’s energy expenditures. Additionally, emissions generated from the unnecessary heating and cooling of buildings not properly insulated, negatively impact the environment. It is easy to understand the importance of reducing both heating and cooling costs and of decreasing the environmentally deleterious emissions that result from cooling and heating energy use that is coupled with inefficient home insulation. One of the most effective ways of minimizing energy use is through effective use of building insulation. In winter, insulation can greatly reduce the flow of heat from the interior to the exterior of a building and, conversely, in the summer, insulation can greatly reduce the flow of heat from the outside to the inside of a building.

[0007] Insulation materials are rated by how well they can reduce heat flow. A material’s ability to resist heat flow is commonly indicated by a number referred to as an R-value. R-values are based on the thermal conductivity, the density, and the thickness of a given material. The higher the R-value, the less heat will flow through the material. Importantly, R-values can be additive. When additional insulation is installed, the R-value of each of insulation materials is added to obtain the total R-value.

[0008] There are many well-known insulating materials, including insulation blankets that are sometimes sold in rolls, such as fiber-glass and rock-wool; loose (blown-in) materials encompass rock wool, fiberglass, and cellulose, among others; examples of foamed-in-place insulating material are polyurethane or polyisocyanurate foam, and rigid insulation materials include extruded polystyrene foam (XPS), expanded polystyrene foam (EPS or bead board), polyurethane foam, and polyisocyanurate foam. Rigid insulation, made from fibrous materials or plastic foams, is pressed or extruded into board-like forms. Rigid insulation materials provide thermal insulation having strength, low weight, and provide for coverage with few heat-loss paths. Such boards, additionally, may be faced with a reflective foil that reduces heat flow when next to an air space. These boards generally have high R-values of 4 to 7 per inch. Rigid board insulation may be manufactured to be used in confined spaces such as exterior walls, basements, foundation and stem walls, concrete slabs, and cathedral ceilings. Polyurethane and polyisocyanurate insulations are usually double-faced with foil, or can be bonded with an interior or exterior finishing material. Such facing boards typically have an R-value of 5.8 per inch to 7.2 per inch. Extruded polystyrene (XPS) is a lightweight foam plastic board manufactured in low and high densities suitable for both above- and below-grade applications. Low-density extruded polystyrene has an R-value of 4.7 per inch while high-density XPS has an R-value of 5.0 per inch. Expanded polystyrene (EPS) or “bead board,” as it is often called, also comes in low- and high-density boards. This high-density board is more moisture resistant and can be used on the exterior of a foundation, providing the surrounding soil is dry, sandy, and properly drained. Low-density expanded polystyrene has an R-value of 3.7 per inch while the high-density type has an R-value of 4.0 per inch. In general, expanded polystyrene is less expensive than extruded polystyrene or other rigid insulations.

[0009] In addition to wanting the most thermally efficient home possible, many homeowners are deeply concerned about the aesthetic appeal of their home and about cost and time effective ways of maintaining the home’s appeal. Brick provides home owners with a maintenance-free siding that offers a classic and timeless look unequaled by any other exterior building product. Brick siding symbolizes prestige, elegance, strength, value, and comfort. For these reasons, brick homes are very much desired.

SUMMARY

[0010] The present Inventor recognized that the high cost of standard brick and brick-laying labor often makes brick-sided homes unaffordable for most. Standard load-bearing bricks are expensive for several reasons; or example, bricks are larger, thus, require more material to form, and are heavier. Furthermore, laying brick is time-consuming and requires highly trained masons. A compromise made by many homeowners is to limit their use brick to certain areas, such as the front of the house. This design choice is frequently seen in new development homes where the sides and backs of the brick-fronted homes are finished using vinyl siding. The present Inventor knew that an alternative to using traditional brick and vinyl as siding is to use thin-bricks as a siding. Thin-bricks, as a substitute for standard bricks, are known to be used to create brick facings. Some benefits offered by thin-bricks are that they are less expensive, weigh less, and may be easier to install. Thin-bricks can be mounted on a backing board that previously has been attached to a building. In order to save installation time and cost, “brick-panels” are pre-fabricated by gluing thin-bricks to a backing board. The bricked board is referred to as a brick-panel. The backing board part of the brick-panel is what is used to attach brick-panels to a structure. The pre-fabricated brick-panels are transported to the job site ready to be attached to a building.

[0011] The present Inventor, recognized that although pre-fabricated brick-panels are, as compared to real brick, an improvement in many respects, they still are of unwieldy size and weight and, thus, difficult to handle for transport, difficult to cut into desired shapes, and difficult to install. Moreover, even after the application of mortar as part of the installation
process, unsightly seam-line gaps usually appear. For non-professional installers, installation of the pre-fabricated brick panels is particularly burdensome as special installation tools, support structures, and skill are required.

Accordingly, the present inventor formulated a set of principles that make possible the creation of a wide variety of insulating building siding materials, all having the look and feel of traditional materials, such as brick, stone, or block, but all having the properties of being insulating, light-weight facing material, cost effective, and easy to use. In the interest of conciseness, the terms “thin-brick siding” and “thin-brick” will be used herein, but it should be understood that the terms include thin-stone, thin-block, and all other facing materials that will work within the principles of the present system. The insulated building siding, as taught herein, eliminates unsightly seam lines, is water resistant, light weight, sized for ease of handling even for a single person of average or less strength, and is insulating. A basic bricked-siding panel of the present invention comprises a row of thin-bricks positioned short end to short end securely attached to an elongate, insulating backing-panel sized to accept a single row of bricks. It should be understood though, that depending on the size and shape of the bricks, multiple rows of the specialty sized-bricks attached to a backing-panel could be encompassed by the present invention. For example, if each brick were considerably longer and narrower than an average-sized thin-brick, it would be within the principles of the present invention to attach at least two rows of the narrower bricks to a backing-panel and attain the same weight and ease of handling. Each insulating basic bricked-siding panel is fabricated by attaching a plurality of individual thin-bricks to a backing-panel so that the bottom long edge of each brick is aligned with the bottom long edge of the backing-panel, so that each horizontal row of bricks positioned on a wall casts a shadow on the basic bricked-siding panel directly beneath it. The shadow so created hides any seam line that might appear, or seem to appear. Thus, each insulating backing-panel is sized to accept a single row of thin-bricks positioned short end to short end, keeping in mind the exceptions discussed above. The principles of the present invention thus provide for a system that insures that each basic bricked-siding panel is always perfectly aligned providing for seams having a constant spacing, is lightweight, easy to install, and is cost effective, in addition to being insulating for both sound and heat.

The size of each panel is determined mainly by a desired workable size, weight, and ease of installation. Although, as mentioned, the height of each backing-panel is generally limited to accept one row of brick aligned short end to short end across the width of each backing-panel, if desired, backing-panels can be manufactured to accept more than one row. The number of thin-bricks aligned end to end per panel is about five, but can be more or less depending on required backing-panel design and the facing material used if not brick. The thin-bricks, or units of other facing material, are affixed to the outwardly facing face of each backing-panel using a suitable adhesive-type material, for example, the grout or mortar that is placed between the bricks once the bricks are laid, although any adhesive that will perform according to the principles of the invention is contemplated by this invention. Once the grout is dried, the bricked-backing-panels are ready to be installed. After each bricked-backing-panel is affixed to a building wall or building support structure, grout is again applied to the spacing between and around the bricks to complete the look of natural brick, stone, or other material with which grout would be used.

In the one preferred embodiment that is illustrated herein, each insulating backing-panel is formed during a molding process to provide for tongue and groove construction of the backing-panels. Tongue and groove construction in this case means that the upper surface of each panel has a tongue extension that fits into a groove on a bottom surface of a panel above it. Or, conversely each bricked-backing-panel could have a tongue extension on its bottom surface that fits into a groove on a top surface of a panel below it. Thus, each bricked-backing-panel is able to securely interdigitate with both a previously bricked-backing-panel over which the current backing-panel is installed and a bricked-backing-panel installed over the backing-panel currently being installed providing for maximum strength panel to panel attachment. Additionally, each backing-panel may be provided with interdigitating end connectors. In the example provided below, each backing panel is designed to have a male-connector end and a female-connector end, providing for secure, tight, and strong connections between the ends of adjacent panels. Besides ensuring that the panels fit together in an apparently seamless manner and providing for secure attachment of each panel to adjacent panels, the interlocking tongue and groove fitting of the panels to each other provides for maximizing the insulating thin-brick siding R-value by preventing air leakage. Because each panel is designed to be of a limited sized, the insulating thin-brick siding panels are extremely lightweight and, thus, easy to handle making installation possible by do-it-yourself handy men, women, and mature children, as well as by professionals. Moreover, the insulating brick-faced siding has an R-value of about 20, is also acoustically insulating, and is suitable for both indoor and outdoor installation. As will be seen the principles of the present invention provide for much more than just elongate bricked-backing-panels. There are, additionally, backing-panels that are corner-shaped making installation around the corners of structures not only easy, but providing for the insulating properties at the corners that would be if the panels were to end at the corner edge of a building and had to be connected only using grout. There are also trim features, such as window sills, lintels, and corner blocks that all continue the insulating and light-weight character of the siding and the interdigitating connectors where relevant. The corner blocks are different form the corner-shaped bricked-panels. The corner-shaped bricked panels are bricked-panels that are formed as one piece having two sides at 90 degrees from each other. The corner blocks are designed to look like a large block of stone that has been shaped to be a corner stone. Each panel is also provided with small protuberances, herein referred to as “weep spacers” to provide a space between the backing-panels and the building surface to prevent problems occurring from condensation. Problems caused by condensation include growth of mold and mildew, corrosion of metal, and degrading of insulation R-values do exist. Air normally contains water vapor in varying quantities and its capacity to do so is related to its temperature, that is, warm air can hold more water than cold air. Air is saturated when it cannot contain any more water vapor at its existing temperature and under these conditions it is said to have a relative humidity (RH) of 100%, and at this point condensation of water vapor on surfaces will begin. Condensed water usually appears as water droplets or water film on non-absorbent surfaces such as the building’s walls.
The principles of the present invention provide for a system, comprising:

- a system of surface facing materials structured for facing indoor and outdoor surfaces, comprising;
- facing sections having;
- interdigitating connectors on opposing first and second surfaces so as to securely connect a long connecting-side of a section to a long connecting-side of an adjacent section and/or interdigitating connectors on each end so as to securely connect each section end to an end of an adjacent section, so as to provide light weight, moisture resistant, sound and heat insulating facing. Where one style of the facing sections comprise a single row of thin-bricks positioned short end to short end securely adhered to an elongate, lightweight, insulating backing-panel having interdigitating connectors sized so as to accept a single row of bricks so as to result in a thin-bricked panel. In one preferred embodiment from 2 to 10 thin-bricks adhered end to end to a backing-panel forming an elongated row of thin-bricks on a backing panel.

The thin-bricks are adhered to the lightweight insulating backing-panel using grout or mortar or any other material that would perform the adherence desired.

Instead of thin-brick could be replaced by thin-stone or thin-block, and the facing section could further include multiple rows of thin-bricks.

The backing-panels are attached to each other in an air-tight manner using interdigitating connectors on the opposing first and second surfaces that could be tongue and groove connectors, and by using interdigitating connectors on the ends of each panel that could be male and female connectors.

The principles of the present invention include several facing section styles, one style of the facing section including both window sills and window lintels. Another style including various sizes of thin-bricked panels shaped to fit about surface corners. Yet, another style includes various sized and shaped corner blocks.

The facing sections are supplied with spacers protruding from their back surface so as to provide for a space between the back of each facing section and the surface that is being faced by the facing sections to prevent a build-up of moisture, wherein the facing section is structured so that the bottom edge of each brick of each.

The principles of the present invention include such aesthetic features as providing for the bottom edge of each brick to be even with the bottom edge of the backing-panel to which it is adhered, so that each row of bricks positioned on a wall casts a shadow on another bricked-panel directly beneath it so as to hide any seam lines.

Each facing section is attached to the surface it is facing using a fastener, such as a cleat or anchor, that is first fastened into the facing section and then fastened into the surface.

A particularly favored embodiment is a siding material, comprising:

- an insulating, lightweight, interior, exterior siding material, comprising;
- an insulating, lightweight backing-panel structured to have a length, a top, front, bottom, and back surface;
- the top surface having a tongue along its length,
- the bottom surface having a groove along its length, the
tongue and groove structure providing for tongue and groove attachment of one of the backing-panels stacked above another,
- the backing-panel having a male connector on one end and a female connector on another end providing for end to end connection of each siding panel,
- the front surface having one row of thin facing elements adhered across its length so as to form a lightweight, insulating siding-panel, where the thin-facing elements can be thin-bricks or thin-stone, and the backing-panel is a molded, foam backing-panel to ensure its being lightweight and insulating, and where the thin facing elements are fixed to a front surface using mortar.

The principles of the present invention also include a method of making the units that comprise the system, where the method is for making a bricked-panel facing section and comprises the following steps:

- a method of making a facing section, comprising
  - providing for a set of thin-bricks;
  - providing for a lightweight, insulating backing-panel having interdigitating connectors on opposing short and long surfaces;
  - providing for grout;
  - adhering at least one row of thin-bricks to the backing-panel using the grout so as to make a thin-brick, lightweight, insulating facing sections for facing indoor and outdoor surfaces.

Thus, there has been outlined some of the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the contribution of the present invention to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter, such as the fasteners, and which will form the subject matter of the claims appended hereto. Those skilled in the art will appreciate that the conception, upon which this disclosure is based, may readily be utilized as a basis for designing other structures, methods, and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention. Yet still other benefits and advantages of this invention will become apparent to those skilled in the art upon reading and understanding the following detailed specification and related drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that these and other objects, features, and advantages of the present invention may be more fully comprehended and appreciated, the invention will now be described, by way of example, with reference to specific embodiments thereof which are illustrated in appended drawings wherein like reference characters indicate like parts throughout the several figures. It should be understood that these drawings only depict preferred embodiments of the present invention and are not therefore to be considered limiting in scope, that the invention will be described and explained with additional specificity and detail through the use of the accompanying drawings, in which:

FIG. 1A is a plan view of the top of an insulating bricked backing-panel of the present invention.

FIG. 1B is an elevation view of the front or outer side (i.e., the side of the bricked panel that faces outwardly away
from a building and is the side on which the thin-bricks are attached) of the insulating bricked backing-panel, as illustrated in FIG. 1A.

0042] FIG. 1C is a plan view of the bottom side of an insulating bricked backing-panel, as illustrated in FIG. 1A.

0043] FIG. 1D is an elevation view of the back side of the insulating bricked backing-panel (i.e., the side that will be attached to a building), as illustrated in FIG. 1.

0044] FIG. 1E is an elevation view of the female connection end of the insulating bricked backing-panel illustrated in FIG. 1.

0045] FIG. 2 is a perspective view of a basic, insulating, bricked backing-panel (also referred to as a thin-brick panel).

0046] FIG. 3 is a perspective view of a thin-brick panel about to be installed over previously installed thin-brick panel and adjacent to another previously installed thin-brick panel.

0047] FIG. 4 is a perspective view of a stack of four thin-brick panels.

0048] FIG. 5 is a perspective view of an attachment cleat being readied to attach the top bricked backing-panel to a wall (not shown).

0049] FIG. 6 is a perspective view of an attachment cleat attached to the top most panel that is ready to be attached to a wall (not shown).

0050] FIG. 7 is a perspective view of an attachment cleat that has been attached to the top panel being attached to a wall.

0051] FIG. 8A is a plan view of the top side of a left bricked corner panel.

0052] FIG. 8B is a plan view of the bottom side of the left bricked corner panel, as illustrated in FIG. 8A.

0053] FIG. 9A is a plan view of the top side of a left block corner.

0054] FIG. 9B is a plan view of the bottom side of the left block corner, as illustrated in FIG. 9A.

0055] FIG. 10A is a plan view of the top side of a block window sill.

0056] FIG. 10B is a plan view of the bottom side of the block window sill, as illustrated in FIG. 10A.

LIST OF REFERENCE CHARACTERS AND THEIR CORRESPONDING PARTS

0057] 2 Male connector end of bricked backing-panel 12, also referred to as a surface facing section.

0058] 3 Female connector end of bricked backing-panel 12, also referred to as a surface facing section.

0059] 6 A thin-brick.

0060] 8 Grout or mortar.

0061] 10 A bricked panel, also referred to as a surface facing section.

0062] 12 A lightweight, insulating backing-panel or surface facing backer.

0063] 14 Bottom of backing-panel 12.

0064] 16 Front side of backing-panel 12.

0065] 18 Top side of backing-panel 12.

0066] 20 Rearward surface of backing-panel 12.

0067] 22 Tongue, of tongue and groove construction, running along the axial line of the panel to an equi-distance from each end 2.

0068] 24 Space between each end 2 of panel 12 and related end of tongue 22.

0069] 26 Groove, of tongue and groove interdigitating connector construction, extends from male connector end 2 of bricked backing-panel 12 to opposing female connector end 3 equidistant from each long side.

0070] 28 Cleat or anchor used to attach bricked panel 10 to wall 4.

0071] 32 End of cleat 28 that is adhered to backing-panel 12.

0072] 34 End of cleat 28 that is drilled into structure wall 4.

0073] 40 Clip (also referred to as cleat, anchor, or fastener) recess.

0074] 42 Weep spacers.

0075] 50 Window sill.


0077] 58 Bottom edge of backing-panel 12.

0078] 60 SO Set-off.

DEFINITIONS

0079] Grout, as used herein, refers to a construction material used to seal joints, such as the spaces found between bricks, to embed rebar in masonry walls, and to connect sections of pre-cast concrete. Grout is generally composed of a mixture of water, cement, sand, and sometimes fine gravel. Color tint may be applied as a thick liquid which hardens over time, much like the mortar. Main varieties of grout include: tiling grout (either cement-based or epoxy), flooring grout, resin grout, non-shrink grout and thixotropic grout.

0080] Insulated backing-panel, as used herein, refers to a rigid panel made from insulating material, such as extruded polystyrene foam (XPS), expanded polystyrene foam (EPS or bead board), polyurethane foam, and polyisocyanurate foam, keeping in mind that the present invention contemplates any lightweight, moisture resistant, insulating backing material.

0081] Thin-brick, as used herein, refers to a brick that is generally about ½ the weight of a standard brick so extra structural support and a brick ledge are not needed, resulting in cost savings. Thin-brick is not susceptible to wetting, termites, rotting, denting, or burning and it does not require painting.

0082] Thin brick pre-fabricated facing, cladding, or siding material or panel, as used herein, refers to a weather-resistant, non-combustible thin-bricks directly adhered to a structural backing material with an adhesive. The ready to be installed siding benefits includes more efficient and environmentally friendly use of natural resources, is light-weight, reduces construction costs, and provides better quality assurance.

0083] It should be understood that the drawings are not necessarily to scale. In certain instances, details which are not necessary for an understanding of the present invention or which render other details difficult to perceive may have been omitted.

DETAILED DESCRIPTION

0084] The principles of the present invention as disclosed herein teach both the constructions and methods for achieving cost effective, easy to install, lightweight, insulated thin brick panel assembly for forming a “brick”, or any other material-faceting on a building structure, corner-panels, corner-stones, window sills, and window-linltes. The insulating thin-brick siding, as taught, is light-weight, cost-effective, offers an R-factor of about 20, and excellent sound insulation. In addition to providing for excellent insulating properties, the insulated thin-brick siding, of the present invention, offers the look and feel of traditional brick, thus instantly communicates the
qualities of standard brick; permanence, warmth, and substance. Moreover, the insulating thin-brick siding, according to the principles of the present invention, eliminates unsightly seam lines of presently available brick-lined panels, is extremely light weight, and sized for easy handling, even by one person, and is structured to prevent any condensation build-up. Furthermore, the principles teach interdigitating connectors to be used on all sides of the panels that are to be connected, as well as novel cleats, or anchors that assure a tight, secure fit of the panels to a surface. Additionally, thin-brick panels inched thin-stone, thin-block, and any other building faceting material that is suitable for siding a building.

[0085] Thin-brick is made to the same exacting criteria and with the same materials as standard brick, which means that thin-brick has the exact look of brick with all the advantages, and none of the disadvantages of thin-brick. Thin-brick is extremely cost effective as its light-weight means low transportation cost, as compared to real brick. Additionally, lightweight and sized for handling by men, women, and children thin-brick is easy to handle and install even by one person, thus reducing labor costs. Moreover, thin-brick panels install quickly reducing labor time. Thin-brick is generally about ¼ the weight of standard brick so extra structural support and a brick ledge are not required for installation, resulting in additional cost savings. Thin brick is virtually maintenance free. It doesn’t rot, dent, burn, or need to be painted. And it won’t be eaten by termites.

[0086] The sidings, as taught herein, comprises a method of producing thin-brick sidings panels, the product so produced, and the use of the product. Thin-bricked sidings panels are manufactured by securely and permanently attaching a number of individual durable, thin-bricks to a mating, elongate, lightweight, insulating backing-panel. To keep manufacturing costs to a minimum, each backing-panel is generally a molded product that may be, if desired, molded with protruding contours which allow the thin brick tiles to be positioned uniformly across each row. Each backing-panel is molded to provide for tongue and groove attachment of the backing-panels to each other’s long sides and interdigitating connection means at each end of a panel to provide for interdigitating end connections. The height of each panel is generally limited to accept one horizontal row of thin-bricks, but could just as well accept two or three, rows of brick aligned short end to short end, depending on the height dimension of the bricks. The number of bricks aligned end to end per panel is about five, but can be more or less depending on the desired design. After the bricks are affixed to the insulating, light-weight foam backing using an adhesive-like material, such as grout, a layer of grout is applied to the spacing between and around the bricks to give the appearance of actual, grouted brick. Once the grout affixing the bricks to the backing and the grout deposited between the bricks are dried, the basic unit is ready for installation on a surface of a building.

[0087] Referring now to the drawings, how to make and how to use the invention will be described with more particularity. The structure of one favored embodiment of the principles of the present invention is illustrated as an elongate bricked-backing-panel in FIGS. 1A to 1E. FIG. 1A, a plan view, illustrates top surface 18 of backing-panel 12 having tongue 22, of tongue and groove interdigitating connector construction, running the axial length of panel 12 from male connector end 2 to female connector end 3. Tongue 22 is sized to fit into groove 26 of bottom surface 14 of an adjacent backing-panel (see FIG. 1C). The top surfaces of a series of weep spacers 42 can also be seen in FIG. 1A. The weep spacers provide a series of spaces between the back of panel 12 and the surface to which the panels are attached. Furthermore, slight indentations 40 can be seen on surface 18 of panel 12. Indentations 40 provide the space needed for the anchor cleat or clip that is used to secure panel 12 to a surface. More about the anchor cleat will be provided below.

[0088] FIG. 1B, an elevation view, illustrates front surface 16 of insulating backing-panel 12. It is onto front surface 16 that thin-bricks 6, or other desired facing material, are attached. Thin-bricks 6 can be attached to backing-panel 12 using the same grout that is used to attach real bricks to a surface. Just as in the installation of real brick, grout 8 is spread over the entire attachment surface so that grout 8 is present behind, between, above, and below each thin-brick 6 to present the appearance of real brick. A side view of tongue 22 extending upwards from top surface 18 of panel 12 also can be seen. The two dashed lines near the top of the front surface indicate the presence of recesses 40, as seen in FIG. 1, that provide an indented platform for anchor installation.

[0089] FIG. 1C, a plan view, illustrates bottom surface 14 of panel 12 with groove 26, of tongue and groove interdigitating connector construction, extending from male connector end 2 of bricked-backing-panel 12 to opposing female connector end 3 equidistant from each long side. The two dashed lines near the bottom edge of the bottom surface indicate the presence of recesses 40, as seen in FIGS. 1A and 1B, that provide an indented platform for anchor installation.

[0090] FIG. 1D, an elevation view, illustrates rearward surface 20 of insulating backing-panel 12. The back (rearward) side of the wall being faced shows recesses 40. The two dashed lines near the bottom edge of the bottom surface indicate the presence of recesses 40, as seen in FIGS. 1A and 1B, that provide an indented platform for anchor installation.

[0091] FIG. 1E, an elevation view of female connector end 3, illustrates the structural relationship of groove 26 to tongue 22 to backing-panel 12. Tongue 22 is shown extending upwards from top surface 18 and groove 26 extending up into the backing-panel from bottom surface 14.

[0092] FIG. 2 is a perspective view of a ready-to-install, insulating, single row, thin-bricked panel 10 showing thin-bricks 6 attached to backing-panel 12. Thin-bricks 6 are attached to front surface 16 of backing-panel 12 so that bottom edge BEB of each thin-brick 6 is aligned with the bottom edge BEP of the backing-panel 12 to provide for each fully bricked panel to cast a shadow over the connection line between itself and the thin-bricked panel it overlies. Thin-bricks are attached to the insulating backing-panel using any material compatible grout, cement adhesive, and the like. In this example, thin-bricks 6 are attached to backing-panel 12 using the same type of grout or mortar that is used to install real brick. The color of the bricks in this example are brick red and the grout is gray, but any color brick and any color grout is within the scope of the principles of the present invention. In the embodiment illustrated, the outward-facing surface of the backing-panel was first coated with a layer of mortar. Thin-bricks were then positioned on the mortar that acts as an adhesive to fixedly attach the thin-bricks to the backing-panel. To maximize the "real brick" appearance of the thin-bricked panel, once the thin-bricks are attached to the backing-panel, additional mortar is placed around the periphery of each thin-brick. At this point, the thin-bricked panel is ready for use. One example of a thin brick that works well to form
the present invention is Flexi-Brick™. Flexi-Brick™ thin-bricks are available, for example, in what are referred to as “brickettes” that are 7.5”x2.25”x0.5” thick. Each Flexi-Brick™ brickette weighs 0.75 pound. This example should not be taken as limiting. It is but one type of brick that may be used.  

[0093] FIG. 3, a perspective view, illustrates how a thin-bricked panel is interdigitaledly connected to adjacent bricked-panels that may be above, below, or next to it. In FIG. 3 a first and second row of thin-bricked panels are shown in the position they would be as affixed to a wall (that is not shown). A third row of thin-bricked panels is in the process of being installed. The thin-bricked panel on the left side of the drawing (facing the drawing) is situated against and fixedly attached to the top surface of a panel that was secured previously to a panel below it, a second thin-bricked panel (the panel on the right) is in the process of being installed so that its groove 26 is being interdigitated with tongue 22 of the panel onto which it is being positioned. This interlocking fitting of the panels to each other locks the panels in position, providing for lower panels to assist in the support of upper panels, and, importantly, helps to maintain the high R-value of the insulating thin-brick siding. Furthermore, the male connector end of the panel on the right that is in the process of being installed is in the process of being fitted into the female connector end of the panel on the left. The interlocking fitting of the tongue and groove connectors and the male and female connectors of thin-bricked panels eliminates the occurrence of unsightly seams and open spaces that would undermine the insulating properties of the bricked-panels. Moreover, because each panel is of a pre-determined limited sized, the insulating thin-brick siding panels are extremely light-weight and, thus, easy to handle making installation possible by do-it-yourself hand men, women, and mature children, as well as by, experienced professionals. Labor costs are greatly reduced, as one experienced installer can easily manage a job with untrained labor.  

[0094] FIG. 4 is a perspective view of four thin-brick panels installed onto a surface (not shown) to illustrate how each row is set-off 90° relative to the row above and below. The set-off installation provides for interdigitating-end coupling of one bricked-panel to another, which provides for both greater coupling strength, the elimination of unsightly seam lines, and for retaining a higher “R” insulation factor. FIG. 4 also shows that a wall “bricked” using thin-bricked panels has the appearance of a wall bricked with real bricks. Besides providing for the appearance of real brick, the insulating thin-brick panel siding has an R-value of about 20, is acoustically insulating, and is suitable for indoor and outdoor installation by professionals or do-it-yourselfers.  

[0095] FIG. 5, a perspective view, illustrates one example of how the bricked-panels may be attached to a surface, such a wall of a structure (not shown). In this example, attachment cleat or anchor 28 is going to be used to attach a bricked-panel to a wall. Although not required, attachment cleats provide for additional attachment security. In this example, cleat 28 may be described as having pointed insert portion 32 for vertical insertion into a bricked-panel that is of a density to accept the pointed insert portion of the cleat. There is a middle cleat portion that rests on the bricked-panel and a surface attachment segment that lies flat against the surface to which the panel is being attached.  

[0096] FIG. 6 illustrates how cleat 28 is used. After foam-compliant adhesive is applied to end 32 of cleat 28, end 32 is pressed into the backing-panel top surface 18 the middle portion of cleat 28 is press-fitted onto one of clip recesses 40 on top surface 18 of backing-panel 12. Clip recesses 40 provides for the top surface of cleat 28 to be at the same elevation as top surface 18. This assures that the interdigitating connection formed by the tongue/groove connectors is as tight as can possibly be. The attachment of the cleat to the foam backing can be done before or after a bricked-panel is placed into position for attachment to the wall. Once the panel and cleat are attached to the panel and the panel is in place, surface attachment end 34 of cleat 28 is attached to a surface, such as into a structural wall, using a drill, as illustrated in FIG. 7.  

[0097] FIG. 8A, a plan view, illustrates the top side of a left bricked corner panel and FIG. 8B, a plan view, illustrates the bottom side of the left bricked corner panel, as illustrated in FIG. 8A. These corner-shaped backing-panels provide for installation of bricked-panels around the corners of structures not only easy, but ensure that the panel’s insulating properties are at the same level of insulation ability at the corners of a structure than at surfaces requiring only straight-run panel. The corner-shaped bricked-backing-panels, as illustrated in FIG. 8A and FIG. 8B, are corner extensions of the bricked-panels illustrated in FIGS. 1a-7. These corner extensions provide for corners of bricked-panels that have no ends that require attachment at the corners. Extending straight-line panels to each corner and attaching the ends of the straight-line panels to the corner join using grout would create a potential weakness. If, for instance, the ground upon which the building was built, suffered settling and thus, the building suffered settling, it would be fairly easy for the stress created on the building by the settling to be released at the grouted corners. However, with the corners constructed as solid sections of cornered panels, the weakness would not reside at the corners, keeping the corners intact.  

[0098] FIG. 9A, a plan view, illustrates a top side of a left block corner and FIG. 9B, another plan view, illustrates a bottom side of the left block corner that is illustrated in FIG. 9A. Right block corners would be mirror images of the left block corners. Block corners differ from corner-shaped bricked-backing-panels in that the blocks are designed to look as if they were solid blocks of stone that were shaped as a corner. To accomplish this, each panel has its typically short vertical dimension enlarged to that of a corner stone. So instead of an individual panel of several inches in height, the stone corner panel might be a foot or more in height with corresponding dimensions of width on each side of the corner apex. The corner-stone backing panel would usually be faced with thin-stone large-sized slabs instead of thin-bricks. In other structural respects, both the corner-shaped bricked-backing-panels, as illustrated in FIG. 8A and FIG. 8B, and the block corners as illustrated in FIG. 9A and FIG. 9B, are designed to have weeping spacers 42, clip recesses 40, the interdigititating tongue 22 and groove 26 connector construction, and the interdigititating male 2 and female 3 connector construction.  

As illustrated in FIG. 10A and FIG. 10B the principles of the present invention also provide for trim features, such as window sills 50 and lintels (not shown) that offer the same insulating and light-weight properties of the bricked-panels. Each trim feature, as well as the window sill and lintel, is provided with weep spacers 42, to provide a space between the panels and the building surface to prevent problems occurring from condensation. All of the trim features come in a plurality of
shapes and sizes to complement whatever facing style is chosen, whether it be modern, colonial, Greek, or any other. [0099] The foregoing description, for purposes of explanation, uses specific and defined nomenclature to provide a thorough understanding of the invention. However, it will be apparent to one skilled in the art that the specific details are not required in order to practice the invention. Thus, the foregoing description of the specific embodiment is presented for purposes of illustration and description and is not intended to be exhaustive or to limit the invention to the precise form disclosed. Those skilled in the art will recognize that many changes may be made to the features, embodiments, and methods of making the embodiments of the invention described herein without departing from the spirit and scope of the invention. Furthermore, the present invention is not limited to the described methods, embodiments, features or combinations of features but include all the variation, methods, modifications, and combinations of features within the scope of the appended claims. The invention is limited only by the claims.

What is claimed is:

1. A system, comprising:
a system of surface facing materials structured for facing indoor and outdoor surfaces, comprising:
facing sections having:
interdigiting connectors on opposing first and second surfaces so as to securely connect a long connecting-side of a section to a long connecting-side of an adjacent section and/or
interdigiting connectors on each end so as to securely connect each section end to an end of an adjacent section, so as to provide light weight, moisture resistant, sound and heat insulating facing.

2. The system, as recited in claim 1, wherein one style of said facing sections comprise a single row of thin-bricks positioned short end to short end securely adhered to an elongate, lightweight, insulating backing-panel having interdigiting connectors sized so as to accept a single row of bricks so as to result in a thin-bricked panel.

3. The system, as recited in claim 2, wherein said thin-bricks are adhered to said lightweight insulating backing-panel using grout or mortar.

4. The system, as recited in claim 2, wherein said thin-brick could be replaced by thin-stone or thin-block.

5. The system, as recited in claim 2, wherein said facing section further comprises multiple rows of thin-bricks.

6. The system, as recited in claim 1, wherein said interdigiting connectors on the opposing first and second surfaces further comprise tongue and groove connectors.

7. The system, as recited in claim 1, wherein said interdigiting connectors on said ends further comprise male and female connectors.

8. The system, as recited in claim 4, wherein a style of said facing section comprise window sills or window lintels.

9. The system, as recited in claim 5, wherein a style of said facing section comprises thin-bricked panels shaped to fit about surface corners.

10. The system, as recited in claim 1, wherein said facing sections are made with spacers protruding from their back surface so as to prevent a build-up of moisture.

11. The system, as recited in claim 4, wherein a style of said facing section comprises corners blocks for forming corner facing sections.

12. The system, as recited in claim 2, wherein said facing section is structured so that the bottom edge of each brick of each bricked-panel is aligned with the bottom edge of its said backing-panel, so that each row of bricks positioned on a wall casts a shadow on another bricked-panel directly beneath it so as to hide any seam lines.

13. The system, as recited in claim 2, wherein said facing sections are attached to a surface using a fastener that first fastens into said facing section and then fastens into said surface.

14. The system, as recited in claim 2, wherein from 2 to 10 thin-bricks adhered to said backing-panel.

15. A siding material, comprising:
an insulating, lightweight, interior, exterior siding material, comprising:
an insulating, lightweight backing-panel structured to have a length, a top, front, bottom, and back surface, said top surface having a tongue along its length, said bottom surface having a groove along its length, said tongue and groove structure providing for tongue and groove attachment of one of said backing-panels stacked above another,
said backing-panel having a male connector on one end and a female connector on another end providing for end to end connection of each siding panel,
said front surface having one row of thin facing elements adhered across its length so as to form a lightweight, insulating siding-panel.

16. The siding, as recited in claim 15, further comprising wherein said thin-facing elements are thin-bricks.

17. The siding, as recited in claim 15, further comprising wherein said thin-facing elements are thin-stone.

18. The siding, as recited in claim 15, further comprising wherein said backing-panel is a molded, foam backing-panel.

19. The siding, as recited in claim 15, further comprising wherein said thin facing elements are fixed to a front surface using mortar.

20. A method, comprising:
a method of making a facing section, comprising
providing for a set of thin-bricks;
providing for a lightweight, insulating backing-panel having interdigiting connectors on opposing short and long surfaces;
providing for grout;
adhering at least one row of thin-bricks to said backing-panel using said grout so as to make a thin-brick, lightweight, insulating facing sections for facing indoor and outdoor surfaces.

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