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Jackson

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[54] **MANSARD ROOF STRUCTURE**

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[51] **Int. Cl.** **E04b 7/02,** E04d 1/36

[58] **Field of Search** 52/90, 94, 417, 419, 420, 52/471, 478, 541, 558

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Primary Examiner—Alfred C. Perham

[57] **ABSTRACT**

Disclosed is an improved mansard type roof and a method of installing same. Roofing panels, made of expanded clay, foam, waterproofing, and wire mesh are provided in a form and shape that permits the panels to be assembled in horizontal rows with the upper and lower edges of adjacent panels overlapping to provide a watertight joint. Special vertical connection members are provided to assure watertight sealing between the vertical edges of adjacent panels and special means are provided to join the top row of roofing panels to the flat portion of the roof that overlies the majority of the building or house. The construction and installation of the roofing panels according to the disclosed method eliminates the need for separate waterproofing membranes and insulating layers and provides a fire resistant, waterproof roof of any desired color and surface configuration.

5 Claims, 9 Drawing Figures

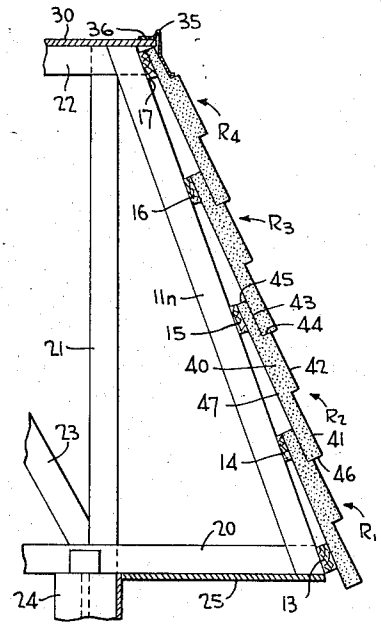
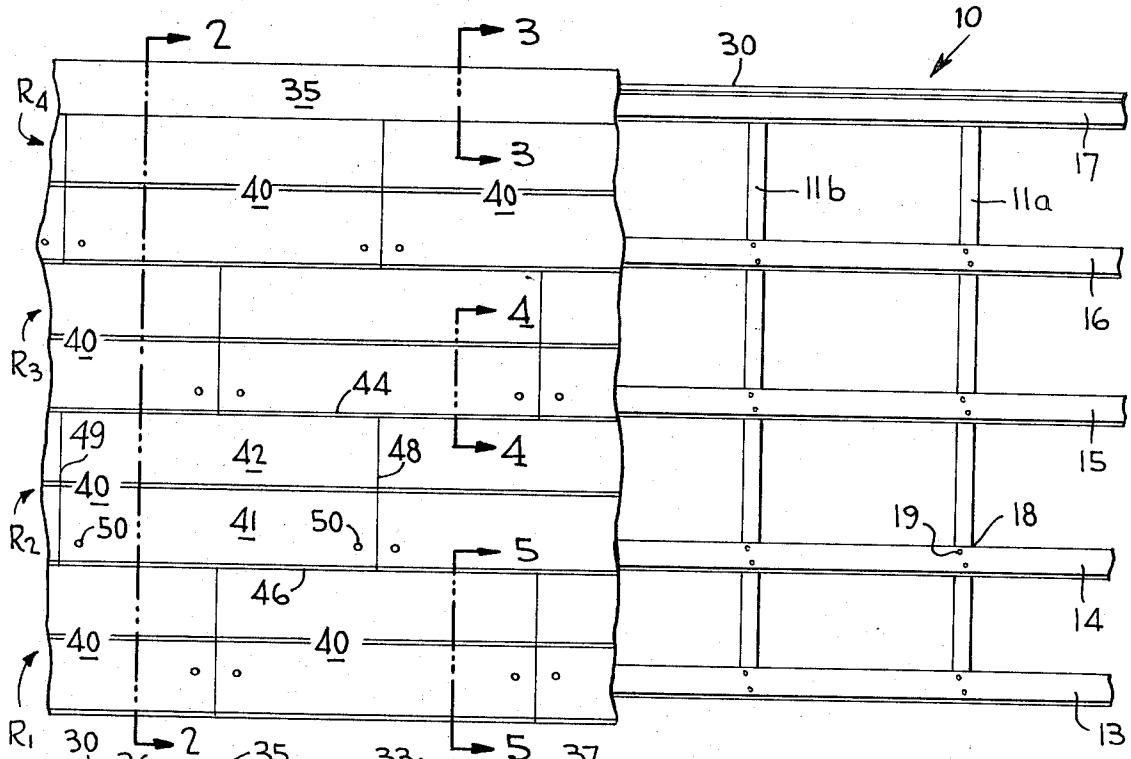


FIG. 1



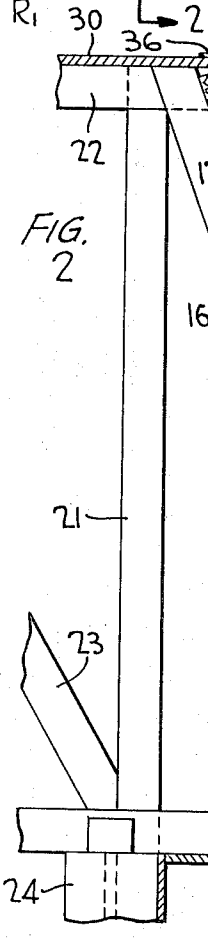


FIG. 2

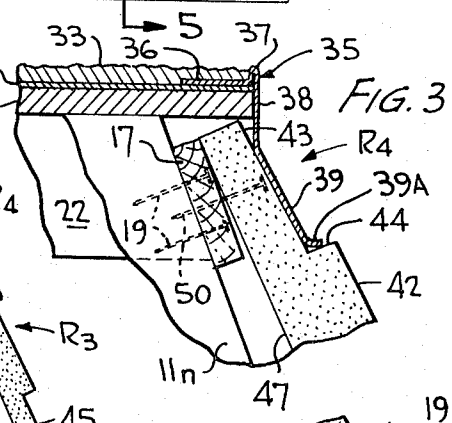


FIG. 3

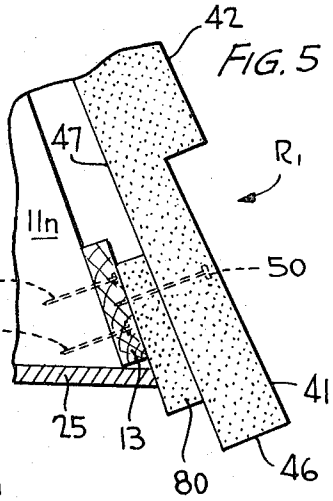


FIG. 5

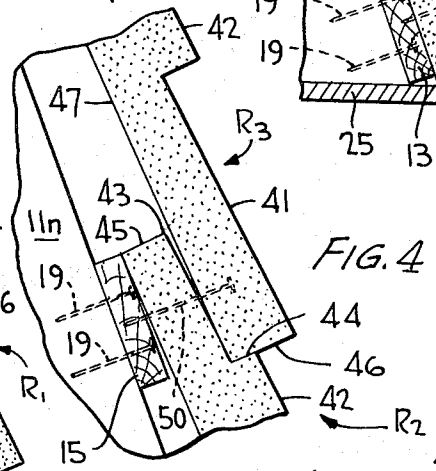


FIG. 4

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FIG. 6

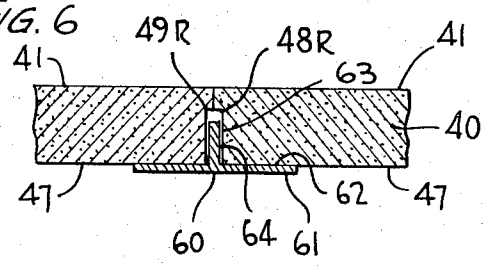


FIG. 7

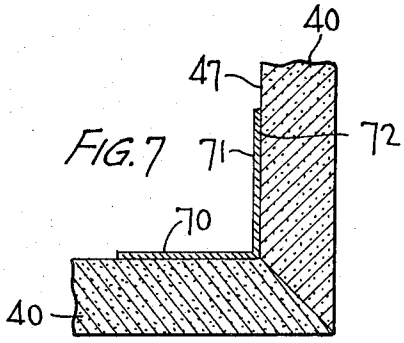


FIG. 8

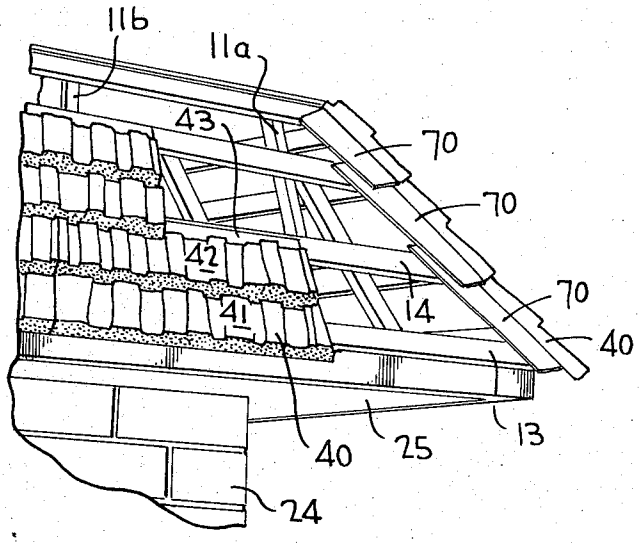
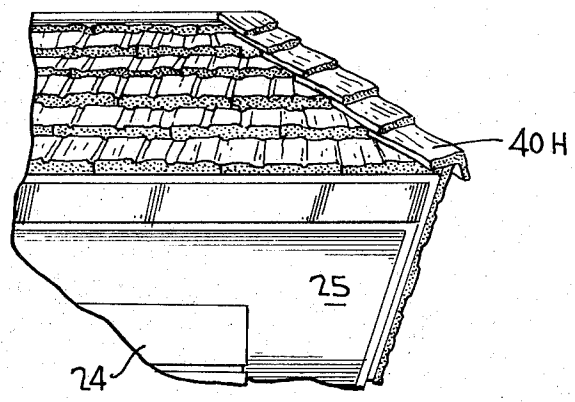


FIG. 9



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MANSARD ROOF STRUCTURE

BACKGROUND OF THE INVENTION

A mansard roof is a form of roof that has a lower slope that nearly approaches the vertical. This slope surrounds the upper edge of the building upon which it is installed, and merges with an upper flat portion of the roof. This flat or nearly flat portion covers the greater portion of the building's area yet is virtually invisible from the position of an observer on the ground.

In the milder climate areas of the country such as Florida, certain requirements exist for successful installation and maintenance of building roofs. In addition to the usual requirement of providing a waterproof covering for a building, roofs for these climates must be resistant to damage from humidity, dampness, mildew, hurricanes and the like. Relative freedom from maintenance is always a consideration, particularly for roofs presenting unusual appearances in, for example, color and surface configuration.

Several types of roofs are well known and often employed in the aforementioned milder climate areas, as well as other climate areas.

The most common type roof, no doubt due to its lower cost, is the tar and gravel or asphalt and gravel roof. This type roof consists of a roof sheathing such as plywood attached to a roof support frame. The sheathing is covered with a waterproofing membrane that usually consists of alternate layers of roofing paper or roofing felt and mopped pitch or tar. A layer of gravel is generally added for protection and may also serve as a decorative touch. The just-described tar and gravel roof is economical and provides adequate waterproofing, but its appearance leaves something to be desired, particularly after exposure to the elements causes much of the gravel to be washed off the roof.

Cement and ceramic tiles are also used in roof construction and, although they provide a more attractive appearance than a tar and gravel roof, they suffer from several significant disadvantages. A tile roof is considerably more expensive than a tar and gravel roof and weighs much more. It is not uncommon for a cement tile roof for an average size home to weigh between ten and fifteen tons. Additionally, the cement tiles are generally installed with non-waterproof joints and consequently a waterproof membrane of mineral surface roofing, felt and asphalt or the like must be installed over the entire roof sheathing before the tiles are installed.

Other types of roofs, such as a Bermuda roof, consist of a large slab of insulating concrete and are more completely described in my U.S. Pat. No. 3,133,377 entitled "Roof Construction". In this same patent, I disclosed a new and improved roof giving the appearance of a Bermuda roof.

Among the most attractive type roofs are roofs of wood shingles or cedar shakes. Although wood shake roofs are very popular, they are expensive to install, require continuous maintenance especially in humid climates and offer relatively little insulating protection and fire resistance.

SUMMARY OF THE INVENTION

The mansard roof of the instant invention is constructed of roofing panels that are attached directly to a roof supporting frame composed of near vertical truss

or rafter members and horizontal, pressure treated wood stringers. The panels are attached to the frame by means of screws passing through the panels and into the stringers.

The panels themselves are made of expanded clay mixed with a foaming agent, such as controlled air bubbles, and a waterproofing agent. The panels may be colored by the addition of pigments such as iron oxide pigments. I have found that the panels have improved strength and load-bearing capacity if each panel, when formed in a mold, is reinforced by casting a piece of wire mesh or similar reinforcing material inside the panel.

That part of the surface of the panels that will be exposed when the panels are installed in the finished roof may be formed with a decorative finish such as a simulated cedar shake design. It is only necessary to incorporate the desired surface configuration in the panel mold, care being taken to assure that the chosen surface design will not interfere with the other requirements of the panels such as complimentary lap joints and the like. These latter requirements will be described below.

Materials other than the preferred expanded clay may be employed in the roofing panels. An example of such material is a lightweight insulating concrete mixed from cement and a lightweight aggregate filler such as vermiculite. As with the clay panels, coloring pigments may be added to the mixture to provide integral coloring throughout.

The roofing panels are generally rectangular in shape with a flat back surface and a stepped or notched front surface. The steps or notches provide complementary shaped lap joints on the panels to facilitate watertight joints after assembly.

The lower edge surface of the panels may be made with an irregular appearing but periodically repeating shape and a portion of the complementary step near the top edge of the panel may be similarly shaped with a repeating irregularity offset from that of the lower edge. In this manner, alternate horizontal rows of panels may be installed so that the vertical joints between panels are staggered from the joints in the rows above and below, yet the top and bottom portions of the panels may fit snugly into each other and still provide an irregular, wood shake appearing edge. Alternatively, the upper and lower edges of the panels may be made straight so that the overlapped joints form straight horizontal rows.

Vertical abutment connection means are provided to join the vertical edges of the panels to each other. A joining member or element of aluminum, galvanized steel or other corrosion resistant material is provided for insertion between the joints. An element with a "T" shaped cross section is used between panel joints on a given flat surface of the roof, and a joining element with a cross section "L" shaped or right angle configuration is provided for the joints at the valleys and hips of the roof.

The edge surfaces of the roof panels each have a recess therein to accommodate the T-shaped connection means. When two panels are positioned adjacent each other, the recesses will provide a space for the connection means and permit the two panels to be butted against each other. In this manner, the connection means will be hidden from view.

Special upper roof sealing means are provided to insure a tight weather seal between the upper, flat portion of my roof and the sharply slanted mansard style side roof panel. This sealing means provides a smooth, unbroken transition surface between the upper notch in the highest horizontal row of mansard roof panels and the waterproof sealing membrane that is installed on the flat portion of the roof.

The roof panels of my invention are designed primarily for mansard type installations but they may be used on shallower roof slopes. In such a case, they could be installed over a waterproof membrane, with screws or similar fastening devices on relatively steep slopes and with mortar beds on gently sloping roof sections.

The method of installing the mansard roof of my invention involves a number of steps. A wooden roof support frame of desired slope is built along the edges of the roof. This frame slopes sharply and provides the mounting means for the panels in the mansard portion of the roof.

The greater portion of the building in question is covered with a flat or nearly flat roof that is finished with a conventional tar and gravel finish. The sloped portion of the mansard roof is the only portion employing the previously described roofing panels.

The panel supporting frame consists of a number of rafter or truss members that extend from the upper flat portion of the roof downwardly and outwardly from the wall at the angle of the inclined mansard section of the roof. A number of pressure-treated wooden support frame members or stringers are disposed horizontally along the truss members and are spaced a distance from each other that is slightly less than the height of one of my roof panels. The lowermost stringer or eave may be somewhat thicker than the remaining stringers on the roof frame structure. The increased thickness of the lowest stringer will insure that the lowest row of panels is at the correct slope angle after they are fastened to this stringer.

As an alternative to a thicker eave stringer, a beveled under eave member of expanded clay may be fastened between a standard sized eave stringer and the lowest row of panels. Because this under eave member is beveled, the lower panel will be positioned at the proper slope angle and a neat, clean appearing joint will be produced at the under edge of the mansard overhang.

The lowermost row of roof panels, known as the eave panels, are the first to be installed. The first panel is positioned so that its upper edge is substantially even with the upper edge of the second lowest stringer in the roof frame. The panel is fastened to the lower eave stringer with fastening means such as 3 galvanized sheet metal anchor screws.

An inverted T-shaped joining element is provided that is of a length slightly less than the height of the roofing panel and which has a web or upstanding portion somewhat smaller than the thickness of a roofing panel. One side of the interior portion of the T-shaped joining element is coated with a plastic roofing cement and slipped between the back surface of the roofing panel already in place and the two stringer or frame members in the roof supporting structure so that the roofing cement is in contact with the back surface of the panel.

Another roofing panel is positioned adjacent to and beside the first roofing panel after the other side of the joining element is coated with the plastic roofing cement. A recess, formed in each side edge of the panels will permit the edge of the second roofing panel to be pushed tight enough against the corresponding edge of the first roofing panel to insure the invisibility of the joining element. This procedure may be repeated until the entire eave row of panels is in position.

A notch or step is formed in the upper edge of all of the roofing panels. A plastic roofing cement of the same type employed on the joining element is applied to this upper notch of the roofing panels in the eave row and a second row of panels are positioned with their lower edges forming a lap joint with the upper step surface in the eave row of panels. The plastic roofing cement forms a watertight seal between the upper portion of the eave row of panels and the lower portion of the next highest row of panels. It is noted that the panels may be staggered so that the vertical joints between adjacent panels in one row are aligned with the center of the panels above and below the joint. The various rows of the panels are installed until the upper row is reached.

Special sealing means are provided to joint the flat portion of the roof with the notch on the upper edge of the highest row of roofing panels. Additionally, galvanized flashing or angle joining members are provided to assure a weathertight seal at the hip and the valley portions of the roof.

Installation of the roof is completed by the installation of a soffit along the under portion of the mansard overhang in a conventional manner, as well as the installation of small hip or angle tiles along the corners of the roof.

It is noted that the panels may be attached directly to the roof supporting frame without the need for separate waterproofing membranes or insulating material. The plastic roofing cement is of a type that retains some degree of resilience even when dry, thereby providing flexible joints that will accommodate a certain degree of expansion and contraction while still retaining the waterproofing qualities of the original laps or joints.

Other features of my invention will be apparent from the following specification when read in connection with the accompanying drawing.

DESCRIPTION OF THE DRAWING

FIG. 1 is a split elevation view of the roof of my invention, showing the stringer and truss support framing on the right side of the figure and showing the roofing panels positioned on and fastened to the support framing on the left side of the figure.

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1, showing the overlapping relationship of the roofing panels when in place on the roof.

FIG. 3 is a detailed sectional view taken on the line 3—3 in FIG. 1, showing the manner in which the uppermost roofing panel is attached at the upper edge of the mansard frame.

FIG. 4 is a detailed sectional view taken on the line 4—4 of FIG. 1 and showing an overlapping joint between two roofing panels and their attachment to the wooden stringer.

FIG. 5 is a detailed sectional view taken on the line 5—5 of FIG. 1 showing the lowermost roofing panel and its manner of attachment to the eave stringer of the roof supporting frame.

FIG. 6 is a cross-sectional view of the T-shaped vertical abutment connection member, shown in position between two roofing tiles.

FIG. 7 is a sectional view of a corner or hip connection member shown in position relative to two corner roofing panels.

FIG. 8 is a perspective view of the corner of the roof of my invention showing several roofing panels in position on the support frame and illustrating the installation of the hip-connecting member of FIG. 7.

FIG. 9 is a perspective view of a corner section of a finished roof of my invention illustrating the positioning of the hip tiles and the soffit installed on the underside of the mansard roof overhang.

DESCRIPTION OF A PREFERRED EMBODIMENT

The roof of the present invention will now be described with particular reference to the drawing.

A roof supporting frame structure **10**, such as the one visible in the right-hand side of FIG. **1**, is provided as a base structure for the roof panels of the instant invention. A number of rafters or support trusses **11***a*, **11***b*, . . . *11n*, are fastened at their upper ends to flat roof **30** and extend downwardly and outwardly at an angle that determines the slant of the mansard portion of the roof. As is visible in FIG. **2**, rafter **11**n is attached to an upper frame member **22** which itself is a support member for the flat portion **30** of the upper roof. The lower end of truss **11**n is fastened to a horizontal truss member **20** which extends perpendicularly from wall **24**. A brace member **21** continues vertically upward from wall **24** and completes a triangular support configuration consisting of truss **11**n, truss **20** and support **21**. Additional cross bracing members such as at **23** are provided in the roof in a conventional manner.

A number of stringers or horizontal supporting strips **13, 14, 15, 16, 17** are fastened to the outside surface of trusses **11***a*, **11***b*, etc. At each joint **18**, several fastening nails or screws **19** are inserted through the stringers and into the corresponding truss. The lowermost stringer **13** is known as the eave stringer and may be approximately twice the thickness of the other stringers in the roof support frame (FIG. **2**). A modified version of my roof may have a standard sized stringer **13** with a beveled under eave member **80** placed between the stringer and the roof panel (FIG. **5**) in a manner to be described in greater detail below.

An entire roofing panel **40** is visible in cross section in FIG. **2**. The roofing panel has a stepped front surface consisting of decoratively finished surfaces **41** and **42** and lap joint surface **43**. The step face forming the transitional step between surface **42** and **43** is designated as lap joint supporting surface **44** and, as is visible in FIG. **4**, this surface is provided to supply a supporting surface for the lower edge **46** of the roofing panel in the next highest horizontal row of installed panels.

The roofing panel has a back surface **47** and two edge surfaces **48, 49** (FIG. **1**), is generally rectangular in overall shape, and has a height as measured from lower edge **46** to upper edge **45** that is slightly larger than the distance between two adjacent stringers in roof support structure **10**.

The portion of the mansard roof shown in elevation in FIG. **1** consists of four separate horizontal rows of roof panels **40** although a lesser or greater number of horizontal rows may be chosen as a function of the desired size of the roof. FIG. **2**, taken along section line **2—2** of FIG. **1** is particularly useful in understanding the overlapping relationship of the various rows of roofing panels as they are installed in my roof assembly. The lowermost row of panels is designated as R_1, the next row up is R_2, then R_3 and the uppermost row of roofing panels is designated as R_4.

FIGS. **3, 4** and **5** are sectional views taken along the appropriate section lines of FIG. **1** and illustrate the manner in which the roof panels in the various horizontal rows overlap to form watertight horizontal roof joints With particular reference to FIG. **2**, row R_1 of roof panels **40** is the first to be installed. One of the roof panels shown in row R_2 of FIG. **2** is specifically numbered with reference numerals but it is to be understood that all of the panels in the various horizontal rows are the same and consequently the same reference numerals will be used to refer to each of the panels. The panel in row R_1 is positioned so that its upper edge **45** is substantially even with the upper edge of stringer **14**. The lower edge **46** will extend somewhat below the eave stringer **13** because the height of the roofing panel **40** is slightly larger than the distance between stringer **13** and **14**. The roofing panel **40** is attached to stringers **13** and **14** by means of fastening devices such as screws **50** — visible in FIGS. **3, 4** and **5**. As is to be explained more completely below, the roofing panels in the lowermost row R_1 are initially fastened only to eave stringer **13** because the next highest row of panels should be positioned in an overlapping relation with the upper part of the lower panel before the panels are screwed to stringer **14**.

As is visible in FIG. **2**, stringer **13** is thicker than the remaining stringers to provide an adequate spacing member behind the lowermost row of panels. As an alternative, a beveled under eave member **80** may be positioned between surface **47** of panel **40** and stringer **13**. Such an under eave member is visible in FIG. **5** and provides an attractive finished joint on the edge of the mansard overhang. It is noted that soffit **25** may be carried up to the back edge of member **80** to complete the joint. The under eave member may be made from the same type of expanded clay as the roofing panels **40**.

Moving up to the overlapping joint between row R_2 and R_3 of the roofing panels, particular reference is made to FIG. **4**. The uppermost portion of panel **40** has a stepped groove with a nearly vertical face **43** and, at right angles thereto, a nearly horizontal surface **44**. This groove or notch is of such a size and configuration as to provide a supporting surface for the lowermost end **46** of the next highest roofing panel. During the installation of the roof, all of the surfaces **43** of the roofing panels are coated with a resilient or plastic roofing cement prior to the installation of the next higher row of panels. In this manner, and with particular refernnce to FIG. **4**, a layer of plastic roofing cement will be interspaced between surface **43** of lower panel **40** and back surface **47** of upper panel **40**. After the lower edge **46** of the panel in row R_3 is firmly seated against surface **44** of the panel in row R_2, the panel in row R_3 is gently lowered back until its uppermost portion contacts stringer **16** (FIG. **2**). At this point fastening screws **50** may be inserted through the front face of section **41** of the panel in row R_3, through the layer of plastic roofing cement between the two panels, through the uppermost portion of the roofing panel in row R_2 and finally into the roof support structure at stringer **15**. This installa-

tion procedure is continued until all the rows are installed.

With particular reference to FIG. 1, it is noted that each roofing panel has a right edge 48 and a left edge 49. These edges are joined to each other by a vertical abutment means to be described below but it is emphasized that the joints formed by the abutment of the vertical edges of the roofing panels are staggered from row to row (FIG. 1) so that any water or moisture that drains along the joint in an upper row of panels runs onto the center of the panel immediately below the joint.

The uppermost row of the roofing panels 40, designated as R_4, is positioned on the highest part of the sloped portion of the mansard roof in a manner particularly visible in FIGS. 2 and 3. Fastening screws 50 are driven through surface 43 of roofing panel 40 into the highest stringer 17 and a sealing member 35 is provided to seal the sloped section of the mansard roof to the flat portion 30 of the roof of the instant invention. As is evident from an inspection of FIG. 3, a plurality of horizontal supporting members 22 span the full extent of the flat portion 30 of the roof. This flat portion consists of roof sheathing 31 such as a sheet of plywood laid horizontally and in contact with support members 22, with a number of layers 32, 33 of mineral surface, felt or building paper layers interspaced with hot asphalt mopped thereon. Sealing member 35 is a long strip extending along the entire upper edge of the roof as visible in FIG. 1 and consists of a horizontal flange 36 adapted to be positioned between layers of the waterproof membrane that is applied to roof sheathing 31. The layers 32, 33 are intended to be a schematic representation of a conventional waterproofing membrane such as the type installed in a pitch and gravel roof.

An upstanding flange 37 joins horizontal portion 36 and vertical portion 38 of sealing member 35, and flange 37 may extend slightly higher than the waterproof membrane formed by the layers laid upon roof sheathing 31. Vertical section 38 of sealing member 35 extends downwardly an extent sufficient to contact surface 43 of the roofing panels in uppermost row R_4 and then bends to form flange 39 (and a conventional 45° tip flange 39A) which is angularly disposed to flange 38 at an angle sufficient to lie flat and in contact with surface 43 of the uppermost row of roofing panels. Alternatively, the flange 38 may descend from flange 37 at a slight outward angle and contact face 43 of the uppermost panels. In this instance flange 39 would be replaced with a conventional 45° tip flange on the lower edge of flange 38. This modified sealing member would accommodate minor alignment differences due to the placement of the upper stringer and the amount of overhang of the flat portion of the roof. Plastic roofing cement of the type used to seal the other joints of the roof may be placed between surface 43 of the uppermost row of roofing panels and the rear surface of flange 39 of sealing member 35.

FIG. 6 illustrates a T-shaped abutment or joining member 60 positioned between two roof panels 40. An upstanding flange 63 is of a height somewhat less than the thickness of the panels. Recesses 48R, 49R are formed in end surfaces 48, 49 of the panels and, when two panels are butted up against one another as shown in FIG. 6, these recesses provide a space for flange 63. In this manner, the joining element 60 will be hidden from view because the front edges of the panels may actually touch each other when they are installed on the roof.

Plastic roofing cement is placed on surface 62 and the facing surface of flange 63 before the element is positioned adjacent one of the roofing panels. The other surface 62 and flange surface are then coated with the roofing cement and another panel is placed adjacent the first. The second panel is pushed up against the edge of the first panel so that flange 63 will be enclosed in the panel edge recesses. The recess is large enough to accommodate not only flange 63 but also the coating of roofing cement, yet still allow the front edges of the panels to hide element 60.

Both the joining element 60 and the corresponding recesses in the edges of the panels have a length slightly less than the height of the panels. The recess starts at the upper edge 45 of panel 40 and extends along sides 48 and 49 toward lower edge 46. The recess does not quite reach edge 46 so that the joining element will not be visible to an observer standing on the ground and looking up at the part of the roof visible in FIG. 5. If the recess did not end before it reached edge 46 of the panel, it would be visible on the back surface of the part of the panel that extends beyond element 80.

A joining element 60 is used for each vertical joint in the mansard section of the roof, but an L-shaped abutment member 70 is provided for an overlapping sealing means at the hips and valleys of the roof. In the case of a hip location and, as is visible in FIG. 7, both surfaces 72 of the abutment member would be placed adjacent the rear surface 47 of the corresponding panel 40, with a layer of plastic roofing cement therebetween. For valleys, the roofing element would be applied to both surfaces 71. The edges of the adjoining roofing panels would have a 45° miter formed thereon to insure proper mating.

A plurality of abutment members 70 are visible in FIG. 8 as they appear when installed at a hip joint on the roof. It is noted that they are installed in an overlapped relationship to each other and contact the back surface of the corresponding roofing panel to assure a weatherproof joint. Hip panels 40H, visible in FIG. 9, are used to finish the hip joint on the roof after the flat panels 40 are laid at both sides of the joint. The hip panels may be screwed in place in the same manner as the flat panels 40.

The flat panels 40 that are placed on the roof adjacent to hip and valley joints must be cut along one edge. FIGS. 8 and 9 are perspective views of a hip corner of the roof, and an inspection of FIG. 8 will illustrate the manner in which the panels must be cut.

A corner of the finished roof is shown in FIG. 9. Soffit 25 is attached to the underside of the roof overhang and extends from the outer edge of the roof back to wall 24. Decorative surfaces 41 and 42 are particularly visible in FIGS. 8 and 9 and, as previously mentioned, I have found that a simulated cedar shake design is a very satisfactory decorative surface.

The roofing panels of my invention are not limited to any particular size, color or surface configuration, but the following dimensions have been employed in my roof and have been found to be acceptable.

The width of panel 40, as measured from edge 48 to edge 49 may be 3 feet. The height of the panel as measured from edge 45 to edge 46 may be 20 inches, with surfaces 41 and 42 each measuring 8 inches and surface 43 measuring 4 inches. The thickness of the panel

at lower edge **46** may be 2 inches and the thickness of the upper flange at edge **45** may be 1¼ inches. The recess along the edges of the panel may be 19½ inches long, three-quarters of an inch wide and one-sixteenth of an inch deep. The maximum thickness of the panel, at the step where surface **41** joins surface **42,** may be 2¾ inches. The wire screen used to reinforce the panel may be 2 × 2 16/**16** galvanized steel mesh.

Other suggested dimensions may include a joining element **60** (FIG. **6**) of a length of 19½ inches, and with a flange **63** of about one-half inches high. Each half **62** of the T-shaped joining member may be 1½ inches wide, making a total width of 3 inches. The abutment connecting element **70** (FIG. **7**) may have two right angle 4 inch flanges. Both of elements **60** and **70** may be 0.040 inch thick aluminum or 24 gauge galvanized steel. Flange **36** of element **35** (FIG. **3**) should overlie the flat part of the roof by at least 2½ inches.

Beveled under eave **80** may be approximately 5 inches high, 18 inches wide, seven-eighths inches thick at its upper edge and one and one-fourth inches thick at the bottom edge.

Trusses **11***a*, **11***b*, etc., may be placed 2 feet apart although local building codes may require other dimensions. Eave stringers **14, 15, 16,** etc., may be 1 × 4 pressure treated wooden support frame members. Eave stringer **13** may be a 2 × 4 pressure treated piece of wooden support framing or, when used with a beveled under eave member, may be the same as the other stringers. Each of the joints **18** may be fastened with at least two 8-penny common bright nails.

Panels **40** may be fastened to the stringers with number 8, 3 inch galvanized sheet metal anchor screws. No fewer than seven screws should be used per panel. In this manner, the connection of the panels to the supporting structure may accommodate an outward force of 50 pounds per square foot and an inward force of 96 pounds per square foot.

It should be apparent that the present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, all of which are intended to be encompassed by the appended claims.

I claim:

1. A roof construction comprising a plurality of roofing panels arranged in horizontal rows upon a supporting frame structure, vertical joints between adjacent panels being sealed with an element provided with an upstanding flange having a height less than the thickness of the panels, said element being located between said supporting frame structure and the back surface of said panels so as to contact a portion of both of said adjacent panels, the vertical edges of said adjacent panels having a recessed portion extending from the back surface to a position spaced from the front surface for accommodating said upstanding flange and, at the same time, allowing the front surface of said adjacent panels to contact each other in their assembled position, said element having a coat of plastic roofing cement to form a resilient layer between said element and the back surface of said panels, and horizontal joints between adjacent panel rows being sealed with sealing means integrally formed with said panels, said roof construction being characterized by the absence of an additional water-proofing membrane between said panels and said supporting frame structure.

2. The roof construction of claim **1,** wherein said sealing means integrally formed with said panels comprises a lap joint surface formed along the upper edge of said panel of a shape complementary to the bottom edge of said panel in said adjacent row whereby said upper edge is positioned over said bottom edge.

3. The roof construction of claim **2,** wherein a layer of plastic roofing cement is positioned between the overlapped portion of said panels.

4. The roof construction of claim **2,** wherein the lower edge of said panels has an irregular appearing but periodically repeating shape, and a portion of said lap joint surface on said panels has a complementary irregular appearing, periodically repeating shape offset from that of the lower edge.

5. The roof construction of claim **1,** wherein said supporting frame structure slopes downwardly and forwardly towards the eaves of the roof and said upper edge of said supporting frame structure is attached to a flat, horizontal roof portion that is of a size to overlie the majority of the building to be covered by said roof whereby only said roof construction is visable from ground level.

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