

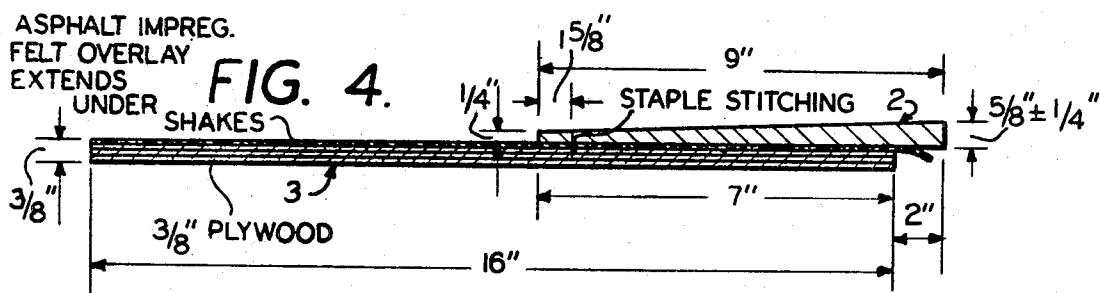
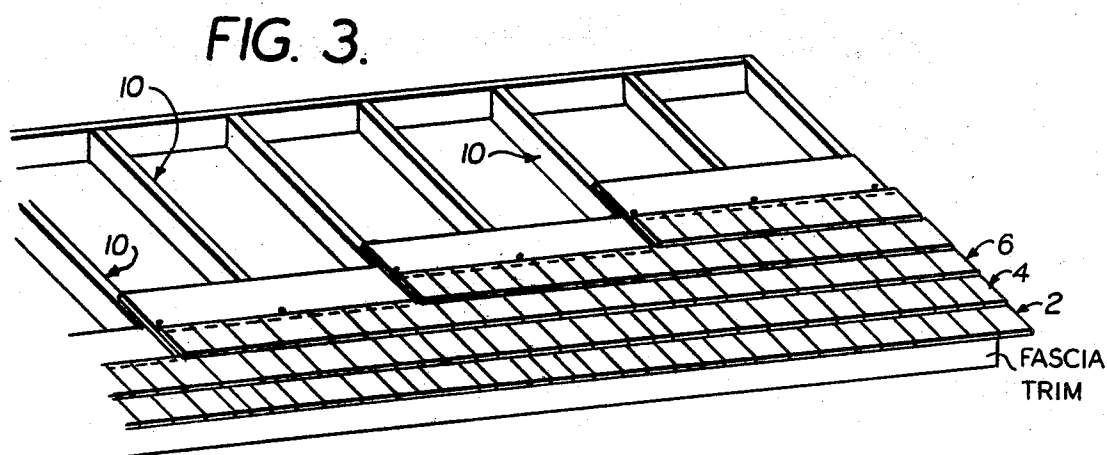
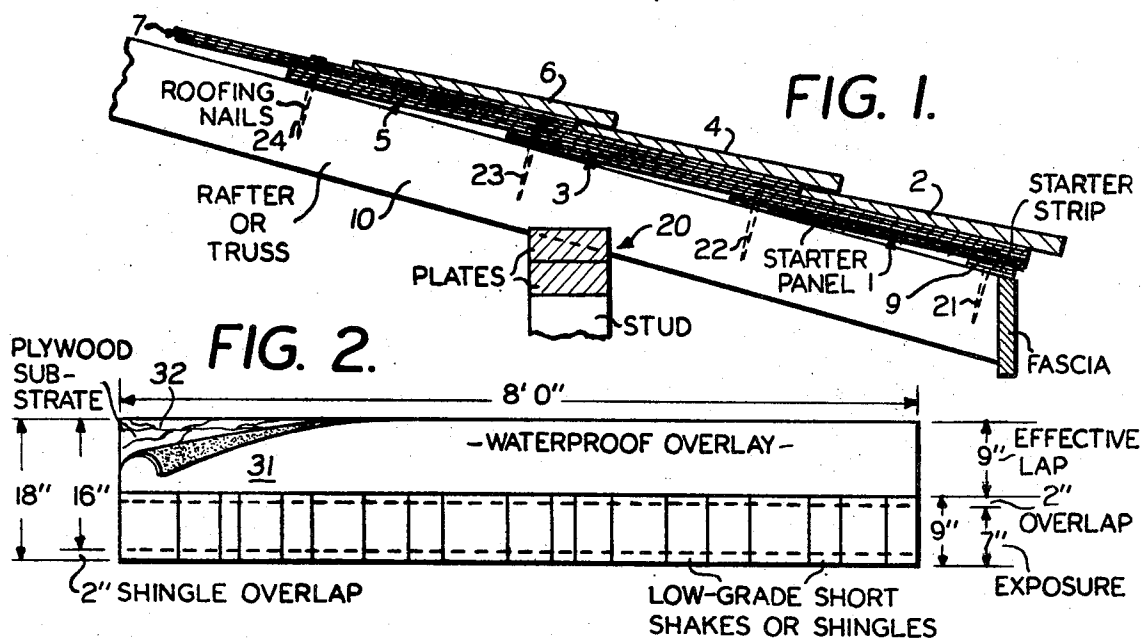
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COMBINATION ROOFING-SHEATHING PANEL SYSTEM

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COMBINATION ROOFING-SHEATHING PANEL SYSTEM

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ABSTRACT OF THE DISCLOSURE

A system of weatherproof plywood panels provided with decorative facings of wood shakes, shingles or the like, the system combining the functions of roof sheathing and roofing to permit rapid installation by relatively unskilled labor over conventional roof framing to produce a decorative roof.

The present invention is concerned with a high quality decorative roof system consisting of a combination of waterproofed plywood panels and shakes, shingles, or other suitable decorative facings. The system comprises essentially a series of plywood panels with a durable waterproof overlay and decorative facing which are applied to suitable studding or rafters in overlapping fashion. The panels are self-supporting and are affixed directly to the roof framing without the requirement of conventional roof sheathing. Nailing may be concealed under the lap of the subsequent course above. The action of the nails thus applied is such as to place a leverage on the roofing panel to hold the lower portion down securely against the previous course affixed below.

The panels are installed so as to provide slightly more than double coverage; that is, the roof is covered at all places with at least two layers of the weatherproof plywood panels. The ends of the panels are alternated in each successive course so that the open joint between neighboring panels is always backed up by the waterproof surface of the previous course beneath. End joints need not occur over the structural framing elements, since the overlapping nature of the installation provides adequate reinforcement wherever such joints might fall. A decorative facing such as shakes, shingles, tiles, slates, aggregate, granules, thatch, etc. is affixed to the exposed portions of the plywood panels in manufacture. This decorative facing need not perform the function of excluding water and the weather since the supporting panel beneath is completely waterproof. Thus, the decorative element may be of a discontinuous nature, of low grade and/or with open defects.

The present invention may be fully understood by reference to the drawings illustrating adaptations of the same. FIG. 1 is a side view showing the overlapping and the interrelationship of respective panels with decorative shake facing. FIG. 2 is a top view illustrating in some detail a single panel with the waterproof overlay and decorative shakes. FIG. 3 is a perspective view showing the application of the panels to a conventional roof structure, while FIG. 4 illustrates a single panel with overextending shake facing.

Referring specifically to FIG. 1, a rafter or roof truss 10 illustrates a series of similar rafters which are suitably supported by means of lumber plates and upright studding 20 which also represents a series of upright studs. In application, a starter strip 9 along with a starter panel 1 is affixed to rafter 10 at the end thereof by means of a nail 21. It is to be noted that the lower edge of starter panel is substantially flush with starter strip 9. A first full panel 3 with decorative shakes 2 attached as illustrated, is positioned so that the lower edge of the ply-

wood base is also substantially flush with the edge of starter strip 9 which permits the shake to overextend the fascia. Panel 3 is affixed to rafter 10 by means of nail 22 at substantially its midway point or imaginary center line located midway between the upper and lower edges of the base panel 3 in a manner that nail 22 passes through the upper edge of starter panel 1. Thus, there is a leverage exerted by panel 3 along the entire area of starter panel 1.

A second full panel 5 is abutted to the tips of the decorative shakes 2 of panel 3 and affixed to rafter 10 at its substantial midpoint or imaginary center line by means of nail 23 in a manner that the nail also passes through the upper edge of panel 3. Here again, a leverage is exerted by panel 5 along the upper area of panel 3. A third full panel 7 is then abutted to the tips of shakes 4 of panel 5 and affixed to rafter 10 by means of nail 24 in a manner that the nail passes through the upper edge of panel 5. The fastening nails, such as, 22, 23, and 24, do not pass through the decorative elements of shakes, slate, tile, or other decorative covering elements.

Referring specifically to FIG. 2, one satisfactory set of desired dimensions is illustrated. A waterproof overlay 31 is affixed over the entire face of panel 32. This overlay may comprise any suitable weatherproof material such as 55-lb. asphalt-impregnated roofing felt and any satisfactory adhesive may be used for bonding the overlay, although the overlay need not be bonded in all cases if staples or other means are used to secure it in place. It is to be noted in this detail that the shakes overlap the plywood base panel approximately two inches.

Referring specifically to FIG. 3, the panels applied in overlapping fashion are affixed to rafters 10 with end joints staggered.

Referring specifically to FIG. 4, one particular configuration which is satisfactory consists of $\frac{3}{8}$ " x 16" x 96" exterior plywood panel to which a 55-lb. roofing felt is laminated using suitable adhesive. The $17\frac{3}{8}$ " wide felt preferably extends about 1 $\frac{1}{2}$ " over the drip edge of the plywood panels. Special sized Western Red Cedar shakes of 9" length are then fastened over the felt with $\frac{3}{4}$ " crown, 1" long, divergent point, galvanized steel staples approximately 3" o.c. so that the butt ends extend about 2" over the drip edge.

The manner of installing roofing panels is to tack a $\frac{3}{8}$ " thick starter strip at the eave. Then position the starter panels with plywood edges aligned to the starter strips and nail through the panels and starter strips into each rafter using preferably 2 $\frac{1}{2}$ " galvanized asphalt roofing nails. The roofing panels are positioned so that the plywood edge aligns with that of the starter strip and starter panel and staggering the joints with the starter panels, roofing panels are nailed at each rafter at approximately their midpoint with the 2 $\frac{1}{2}$ " roofing nails. The subsequent courses are positioned in overlapping fashion so that the plywood edge butts up to the tip of the shakes on the previous course and staggering the joints with the previous panels. The roofing panels should overhang approximately 1" at the rake edge.

The installation results in small triangular open spaces at the rake edge of the roof at the gable ends. These spaces may be filled in with small wedge-shaped pieces of wood (approximately 2" wide x $\frac{3}{8}$ " at the thick end and of suitable length) to produce a flat, pleasing appearance on the underside of the overhang.

The last course is affixed so that the shake tips reach as close as possible to the ridge peak and the surface is cut off. The ridge is capped with flashing and subsequently covered with individual shakes in the conventional manner. As to hips, the panels are cut to the appropriate angle and fitted tightly; triangular pieces

of flashing are interwoven as the courses are laid up and the hip is subsequently covered with individual shakes in the conventional manner. As to the valleys, blocking is provided to at least 3" from the valley center when framing the roof. In laying up the roof, the panels are cut to the appropriate angle at valley and fitted tightly to form a closed valley. Approximately 20" x 20" squares of flashing are interwoven with each course and the roofing panels are nailed at least 2½" in from the valley center.

Although the foregoing has emphasized a decorative facing of shakes, it should be noted that the split shakes may be replaced with other decorative facings such as slate, tile, mineral granules, aggregate, thatch and the like. Such decorative facings may be affixed by any suitable permanent means, including nails, staples, adhesive, mastic, and other fastening devices.

Thus, the present invention is concerned with a unique combined roofing and sheathing single panel which is adapted for rapid and efficient application direct to the roof framing with a minimum of skill. The present invention provides a system which will accommodate to any detail normally encountered in covering a roof which includes the flashing at chimneys, the vents, the valleys, details for hips, ridges, eaves, and rakes. Also the overlapping plywood base with weatherproof overlay performs the actual function of excluding the elements, while the visible portion of the panel may be manufactured with any number of conventional or unconventional facing materials to provide the desired esthetic effect. Limited use of the normally expensive decorative elements substantially reduces cost and in the case of materials such as tile or slate, also materially reduces the weight which otherwise would require heavier structural framing to support the load.

The large proportionate overlap of the plywood base panels is very important in that it precludes the necessity for the use of shims, strips, caulk, and the like or any other special treatment at the end joints because it provides a weatherproof back-up at these joints wherever they occur. The panels may be cut to any length necessary on the site with a simple straight cut. Thus, the resulting pieces may be used without special attention to the cut ends. In addition, the substantial degree of lap permits the use of thin plywood panels since the installation described results in at least two layers at any point on the roof. This reinforcing effect also permits random location of end joints, since they do not require support of the structural framing beneath. The double coursing of plywood base also simplifies flashing details in that it provides continuous support for the flashing pieces which extend up under the lap. The present invention represents a distinct advance over the art since several functions are combined into one piece and into larger panels which are self-aligning with no complicated installation details.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. Weatherproof and decorative structure which comprises a plurality of weatherproof base panels affixed to supporting means in overlapping fashion as a first course of base panels and succeeding courses of base panels, said base panels having upper edges and lower edges, in combination with decorative elements affixed to the top surfaces of said base panels in manufacture, said decorative

elements being affixed in a manner that the lower edges of said decorative elements over-extend the lower edges of said base panels and that the upper edges of said decorative elements under-extend the upper edges of said base panels, said base panels having imaginary center lines located substantially midway between said upper edges and said lower edges of said base panels and extending parallel to said edges, said base panels being affixed to said supporting means by nails passing through said base panels at points substantially along said center lines, said nails spaced from an edge of the decorative element and out of contact therewith, and said structure characterized in that the lower edges of said base panels in a succeeding course abut against the upper edges of a decorative element in a preceding course and that the lower edges of decorative elements in said succeeding course overlap the upper edges of decorative elements of said preceding course.

2. Structure as defined by claim 1 wherein said panels are laminated plywood panels.

3. Structure as defined by claim 2 wherein said structure comprises a roof covering.

4. Structure as defined by claim 2 wherein said structure comprises a sidewall covering.

5. Structure as defined by claim 2 wherein said decorative element comprises wooden shakes.

6. Structure as defined by claim 2 wherein said decorative elements comprise cedar shingles.

7. Structure as defined by claim 2 wherein said decorative elements comprise mineral granule decorative, weather-resistant facings affixed to the functional plywood base panels during manufacture.

8. Decorative structure as defined by claim 1 wherein said base panels are plywood panels of about 8 feet long and wherein the distances between said upper edges and said lower edges of said base panels are about 16 inches.

9. Structure as defined by claim 8 wherein the upper edges of said decorative elements over-extend the lower edges of said base panels by about 7 inches and the lower edges of said decorative elements over-extend the lower edges of said base panels by about 2 inches.

10. Structure as defined by claim 9 wherein waterproof materials are bonded to the upper surfaces of said base panels.

11. Structure as defined by claim 10 wherein said waterproof materials are roofing felts which over-extend the lower edges of said base panels by about 1½ inches.

12. Structure as defined by claim 1 wherein waterproof membranes are affixed to the top surfaces of said base panels, characterized in that said membranes have overextensions which extend beyond the lower edges of said base panels, said overextensions being positioned between the lower edges of said base panels and the upper edges of said decorative elements.

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