United States Patent

Kneisel

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[45] **Sept. 26, 1972**

[54] **CAP ASSEMBLY FOR ROOF RIDGE**

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Related U.S. Application Data

[62] Division of Ser. No. 885,148, Dec. 15, 1969, Pat. No. 3,626,439.

[52] **U.S. Cl.** **52/276,** 52/465

[51] **Int. Cl.** **E04d 1/30**

[58] **Field of Search** 52/57, 300, 465, 466, 469, 52/276, 278

[56] **References Cited**

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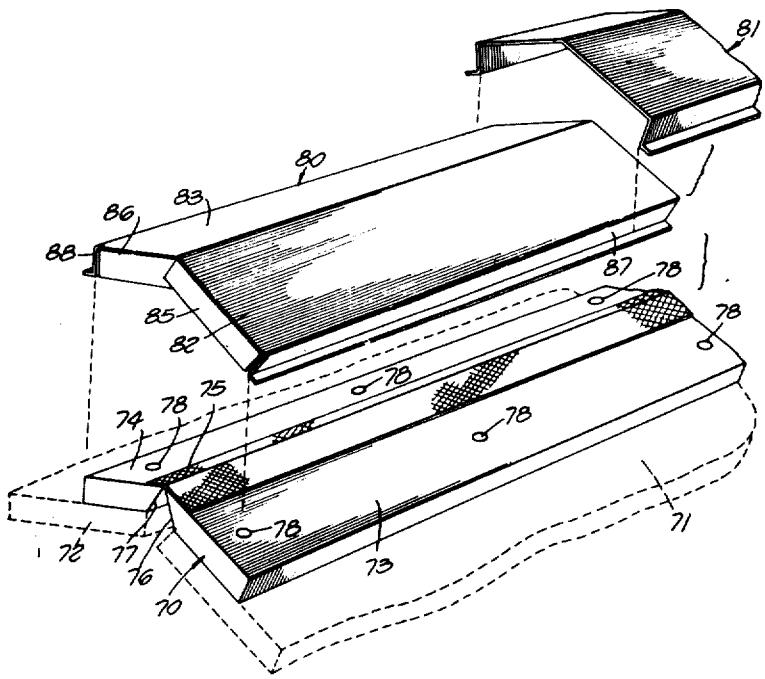
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[57] **ABSTRACT**

There is disclosed herein a new roof construction wherein the roofing material is in the form of planks and may be secured directly to rafters, eliminating the need for sheathing and a moisture barrier or membrane such as felt sheeting. The planking has a particular lock joint arrangement which, along with joint drain clips, provides a watertight construction. The exposed surfaces of the planks may be textured to simulate shakes, shingles, tiles or any other texture or pattern desired, and the planks may be of laminated construction, such as of plywood. Not only is the construction water-tight, but it is particularly structurally sound and with no exposed fasteners, such as nails and the like. The planks may be readily mass produced and then shipped to the site for installation. A fireproof coating and coloring may be applied to the planks during manufacture thereof.

1 Claim, 11 Drawing Figures



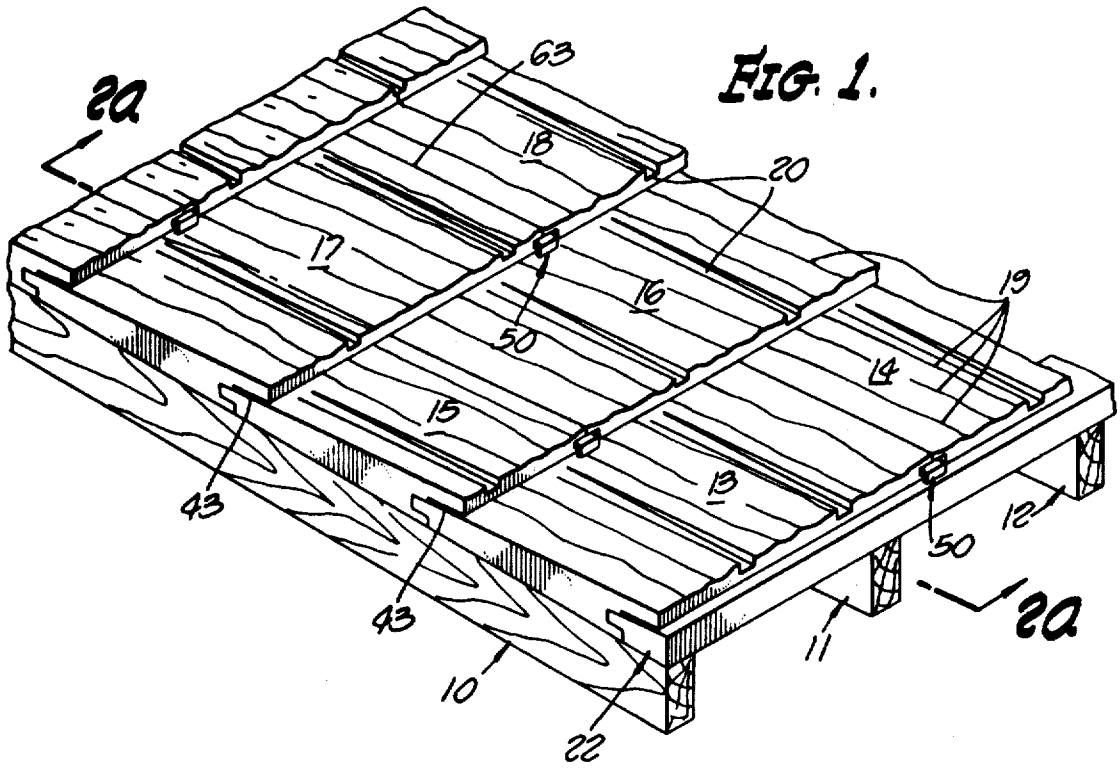


FIG. 1.

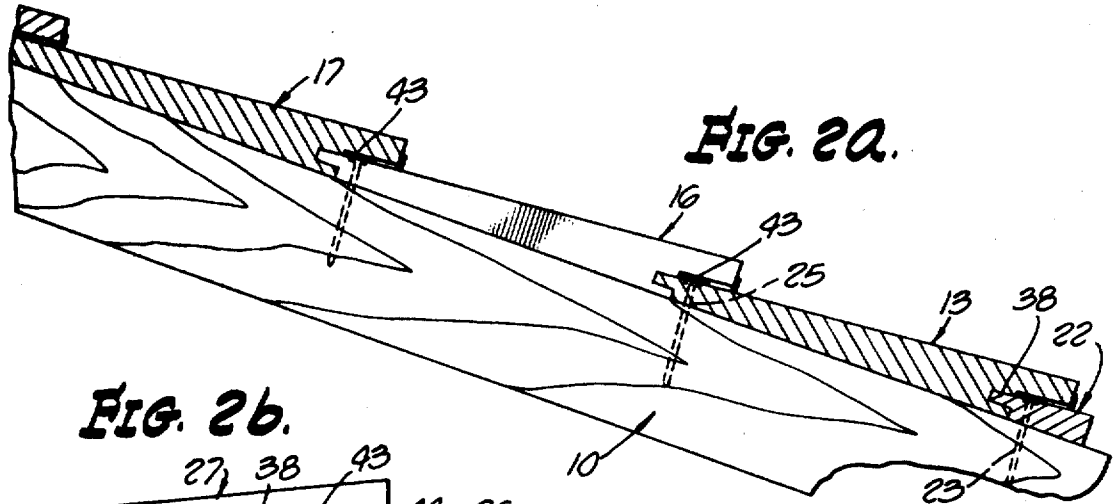


FIG. 2a.

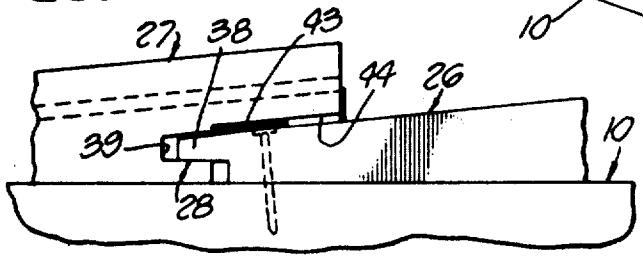


FIG. 2b.

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FIG. 3a.

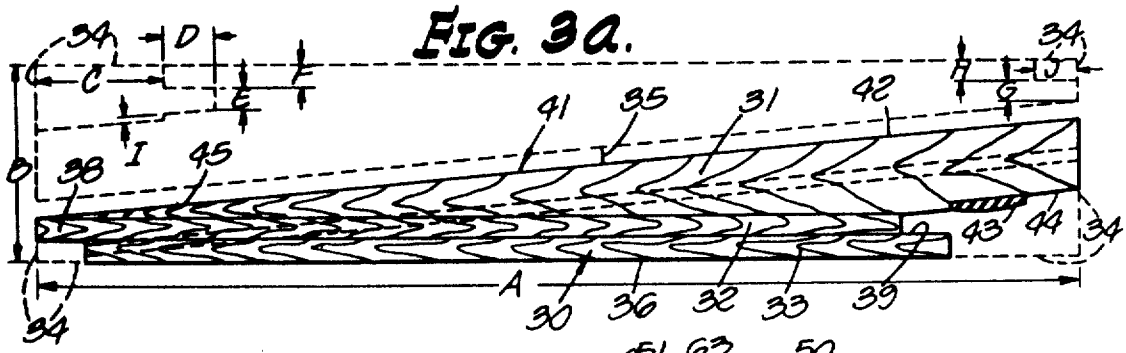
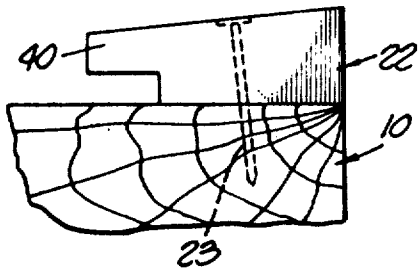


FIG. 3b.



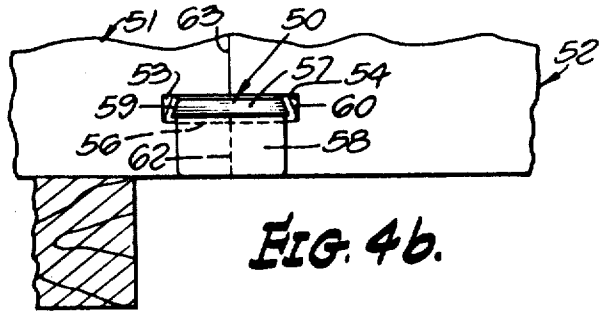


FIG. 4b.

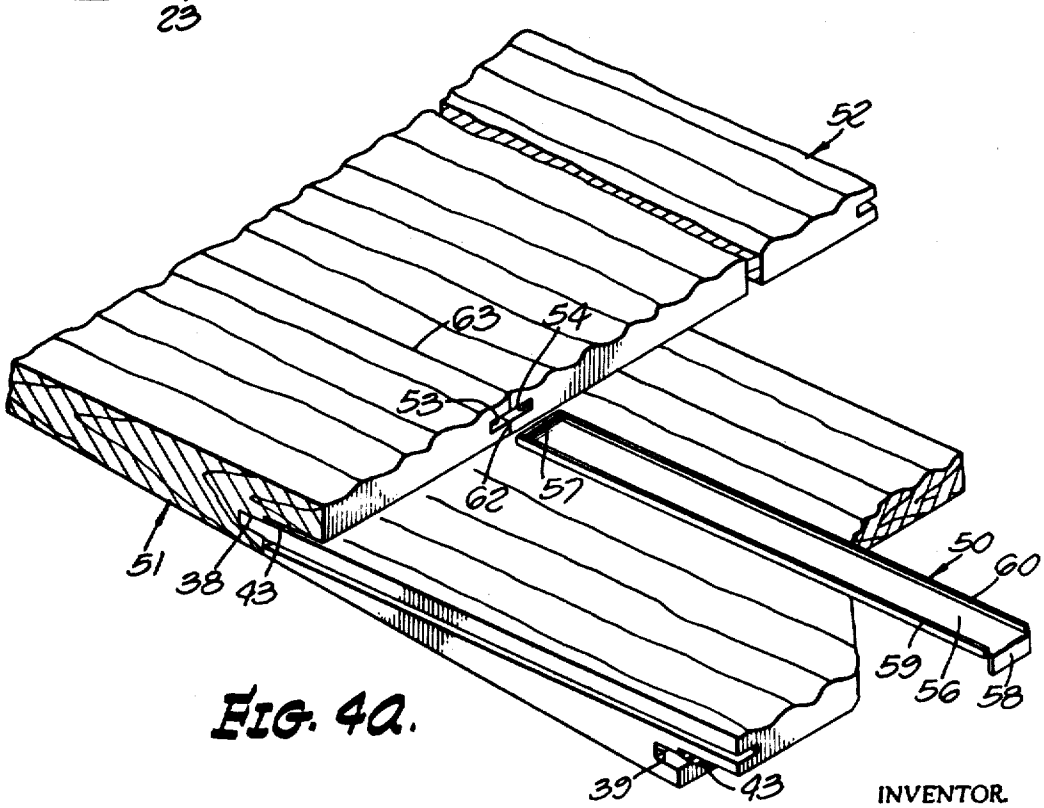


FIG. 4a.

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FIG. 5b.



FIG. 5c.

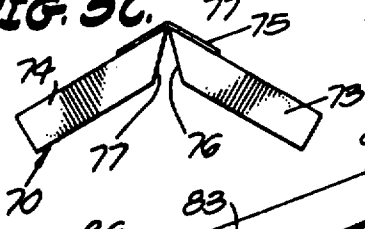


FIG. 5a.

FIG. 5d.

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CAP ASSEMBLY FOR ROOF RIDGE

This is a division of application Ser. No. 885,148, filed Dec. 15, 1969, now U.S. Pat. No. 3,626,439, issued Dec. 7, 1971.

BACKGROUND OF THE INVENTION

This invention relates to a new roof construction and more particularly to a sturdy and water-tight roof construction for buildings, and the like, and which eliminates the need for the installation of certain materials used in typical roof constructions.

There are many types of roofs and roof constructions which are well-known and have been used for many years. In fact, many current day roof constructions are relatively primitive. They generally are not waterproof, although they do shed water, are not of durable construction, and are relatively costly.

The typical roof is applied to the rafters of the building. First, sheathing is nailed to the rafters. Such sheathing usually is in the form of plywood sheets, or one by four boards laid several inches apart. Then, a layer of felt, such as 15 pound felt, is laid over the sheathing. Finally, individual singles, usually asphalt or shake, are nailed to the underlying materials, one at a time.

Roof construction of this nature suffers from a number of disadvantages in addition to the high cost of the various materials and installation. Such shingles do not seal themselves on top of each other because both sides usually are rough. They tend to shrink apart and curl. Only the felt, which serves as a membrane, prevents leaking; however, the nails which hold the shingles puncture the felt giving rise to leaks. In order to facilitate more rapid installation, minimum and insufficient nailing is a common practice. This gives rise to an unsturdy construction. Also, in the event of rain and a slight wind, water is easily blown underneath the shingles, and under severe wind conditions the shingles can be blown completely from the roof.

Other types of roof constructions involve tar paper and rock, ceramic tiles, aluminum, and so forth. The tar paper and rock construction is relatively cheap, but is less durable than shingle roofs because the tar paper deteriorates from exposure to the sun. A ceramic tile roof requires a very heavy rafter and sheathing structure, and still requires a membrane which is punctured with nails which hold the furring to which the tiles are secured. Aluminum shingles have all the constructional disadvantages of wood shingles plus the fact that they are extremely fragile and cannot be walked upon after installation.

Turning again to prior art shingle, pane or plank type roofs, several have been devised employing various types of joints between the roofing units. Each involves certain deficiencies. Typically, no provision is made for correction of accumulated error, without disturbing the integrity of the joint, when laying the various courses of the roofing units. Subsequent shrinkage of the material renders the joint ineffective from both a structural and waterproofing standpoint. Other roofing configurations have very complex joints, but they involve water leakage problems and costly manufacturing procedures and equipment. In many instances, the securing nails are exposed thereby giving rise to ultimate corrosion as well as leakage problems. Others must be installed from the roof ridge down which causes problems at the eave line. Examples of patents illustrating joints similar to those which have been used in roofing construction are found in U. S. Pat. Nos. 492,736, 2,013,218, 2,241,642, 2,390,087 and 2,659,938.

On the other hand, the present inventive concepts involve a new roof construction which obviates many, if not all, of the disadvantages of prior constructions, and has several novel and important features. The roof construction is in the form of planks, typically 1 foot wide and in 9, 10 and 12 foot lengths, having a relatively simple but sturdy and water-tight lock joint construction. The construction enables the planks to be applied directly to rafters without the requirement for underlying sheathing and felt or tap paper. Clips of a predetermined configuration are employed at the ends of each plank to provide a water-tight construction and to provide a water drain. A novel arrangement for capping the top of the roof also is provided.

Accordingly, it is a principal object of the present invention to provide a new roof construction.

It is another object of this invention to provide a novel roof planking which may be applied directly to rafters while still providing a sturdy and water-tight construction.

Another object of this invention is to provide a new construction for roofs which facilitates assembly of the roof.

An additional object of this invention is to provide roof planking which can be made to simulate shingles or shakes, and can be readily mass produced and installed relatively inexpensively while still providing a sturdy roof construction.

A further object of this invention is to provide a novel clip for use with adjoining planks.

Another object of this invention is to provide a novel cap arrangement for roofs.

These and other objects and features of the present invention will become better understood through a consideration of the following description taken in conjunction with the drawings in which:

FIG. 1 is a partial perspective view of a section of a roof constructed in accordance with the teachings of the present invention;

FIGS. 2A and 2B are cross-sectional views of the roof construction of the present invention;

FIGS. 3A and 3B are cross-sectional views of a plank and a starter strip, respectively, of the roof construction of the present invention;

FIGS. 4A and 4B are views illustrating a clip and the manner in which it is used in the present roof construction; and

FIGS. 5A through 5D illustrate capping arrangements for a roof.

Turning now to the drawings, a roof constructed in accordance with the teachings of the present invention may be applied directly to the rafters, such as rafters 10 through 12, of a building or other enclosure. The construction includes a plurality of planks, such as planks 13 through 18 which are nailed directly to the rafters. Each plank typically is manufactured 1 foot wide and in lengths of 9, 10 or 12 feet. The planks typically are of wood and may be made of plywood in a conventional manner; however, lumber and other suitable materials may be used. The upper surface of the planks may be textured to simulate a plurality of shingles or shakes as

illustrated by numeral **19** in FIG. **1**, and the shingles may be colored and fireproofed at the time of manufacture. Any suitable type of decorative finish may be applied. Examples are the texturing shown, various types of grooves, striations, and the like. The bottom surfaces of the planks are flat.

Plywood planks are preferred because of the added strength over solid wood construction. In the case of plywood, it may be made in any number of the usual layers typically five or seven laminations. The core may be wood, or may be formed of other materials such as styrofoam plastics or presently known sponge-type stone materials. Plywood itself itself is generally difficult to burn, and with an added fireproofing coating, a particularly suitable roof can be provided. The planks can be manufactured with conventional mill machines, and may be textured in any conventional manner, as for example by the method and apparatus described and illustrated in U. S. Pat. No. 3,294,014, issued Dec. 27, 1966, entitled Deep Cavity Die Burning Apparatus and Process, in the name of Joseph P. Kneisel.

Briefly, the roof as illustrated in FIG. **1** is layed up by nailing a starter strip **22** as illustrated in FIGS. **1** and **3B** which will be described in more detail subsequently, to the ends of the rafters at the eaves. Then, the first plank **13** is nailed to the rafters, the second plan **14** nailed to the rafters, and so forth. The nails are applied to the planks at predetermined points near the upper edge of each plank. A colored line may be applied to the plank during manufacture to identify the proper place for nailing. After the first course of planks is laid, any excess at the end of the course can be sawed off and the resulting piece used as the first plank **15** of the next course. The planks preferably are staggered. The lower edge of the planks overlie the nails at the upper edges of the next lower course of planks as will be described in more detail subsequently.

Turning now to a more detailed consideration of the particular plank configuration, FIG. **2A** is a cross-sectional view taken along a line **2A—2A** of FIG. **1**. The starter strip **22** is nailed to the rafters at **23**. The first plank **13** is mated with the starter strip **22** and nailed at **25**. Planks **16** and **17** are similarly applied and nailed to the rafters. FIG. **2B** illustrates the manner in which a plank **27** may be slid back from a shingle **26** for error correction while laying the courses or, alternatively, shows these shingles after some shrinkage has taken place. In both cases the resiliant material or gasket maintains a water-tight joint. FIG. **2B** also shows the integrity of the joint **28** as far as structural and water-tight considerations are concerned. The details of the joint will be covered more completely in the discussion of FIG. **3A** below.

FIG. **3A** is a cross-sectional end view of one plank **30** and FIG. **3B** is a cross-sectional end view of a starter strip **22** with which the first course of planks is mated. The plank **30** in FIG. **3A** may be made of solid wood, but preferably is made of plywood. The plywood plank as shown includes three layers **31** through **33**. Dotted lines **34** indicate the exterior configuration of an original plywood plank from which two planks like plank **30** are made. Such a plywood plank typically is laid up in a conventional manner with exterior glue in a three or five ply form, typically 4 feet by three-eighths inch wide from which four 12 inch wide (as viewed from left to right in FIG. **3A**) original planks are obtained. Each original plank then is cut apart at **35** in half to provide two planks like plank **30**. As noted earlier, each plank and thus each starter plank, may be any desired length, such as 9 feet, 10 feet or 12 feet.

Various cuts are made in the plank **30** after the two have been cut apart. The bottom flat surface **36** provides a reference plane for making the various cuts which can be made with conventional routing equipment. The capital letters in FIG. **3A** indicate the various dimensions, and preferable dimensions (in inches) are as follows: A–12; B–2.25; C–1.5; D–0.5625; E, F, G and H–0.25; I–0.0625, and J–0.50. It will be noted that the dimensions C and J allow a 2 inch overhang of one plank over another when they are laid in courses. The relatively long tongue **38** provided by the dimension J allows for error correction when laying courses and allows for shrinkage while still providing a strong joint. Also, the greater depth of dimension D over dimension J also aids in accommodating shrinkage or expansion.

It will be apparent that the groove **39** of an upper course of planks **30** mates with the tongue **38** of the next lower course of planks. The top surface, which is part of surface **41**, of the tongue **38** is inclined and the bottom thereof is flat. In the case of the first course of shingles, the groove **39** mates with the tongue **40** of the starter strip **22**. The upper surface **41** of the shingle preferably is textured, at least near the forward end **42**. The starter strip **22** may also be laminated, but preferably is solid inasmuch as it serves also as a facing strip at the lower edge of the roof.

A bead of resilient material **43** is provided on the inclined surface **44** as seen in FIG. **3A** to provide a seal which overlies the nail heads for the next lower course as seen in FIGS. **2A** and **2B**. Preferably a rubber mastic is used and is applied during manufacturing. When a course of planks is laid, a shearing action, plus pressure because of the wedge shape of joint surfaces at the edge of the planks, in forming the joint is obtained. Thus, there is a combination of a shearing and wedging action on the resilient material **43** which forms a good seal even if there are indentations in the plank surfaces at the joint. Reference numeral **45** identifies a nail line, which may be imprinted on the upper surface **41** in red. It will be apparent from the figures that the seal provided by the material **43** occurs over the nail and seals the nail head.

Starting with the strip **22** and then laying courses upwardly along the rafters, as compared with working from the top of the roof down, also aids in enabling a roof construction without exposed nails. The starter strip **22** gives a thick look to the edge of the roof. Each course is locked tight and will not leak or distort by walking on the roof. The gasket **43** compensates for the increased spacing at the joint between adjacent courses where one course is not tightly locked with the next because of error correction or shrinkage as seen in FIG. **2B**. The abutted ends of the planks are locked and supported on both the top and bottom of each joint. No membrane is needed because the roof is water-tight. The texturing **19** is principally at the front portion of the plank and any such texturing should taper off before the area of the tongue **38**. The texturing may include grooves **20** to better simulate a plurality of shingles or shakes.

FIGS. 4A and 4B illustrate the manner in which the ends of the planks are abutted and provided with a joint drain clip **50**. Each end of each plank is provided with a slot for receiving the drain clip. Thus, planks **51** and **52** have respective facing slots **53** and **54** therein. When these planks are abutted as seen in FIGS. 4A and 4B, the drain clip **50** may be hammered into the slots. The clip provides a resistance fit and is driven in with a mallet. The clip preferably is made of galvanized steel, but may be made of any other suitable metal or plastic. If made of metal, it may be bent from a single sheet, and if made of plastic it may be extruded or die cast.

Various types of clips for securing together pieces of wood for roofs, siding and so forth are illustrated in U.S. Pat. Nos. 152,892, 175,796, 2,127,199, 2,835,938 and 3,085,301. Such clips are used for holding and decorative purposes, but are different from the present clip and not satisfactory for the present application.

The clip **50** includes a base **56**, and upturned upper end tab **57** and a downturned lower end tab **58**. The clip also includes upstanding side walls **59** and **60**. The side walls **59** and **60** may be substantially perpendicular to the base **56**, or may extend upwardly at a diverging or converging angle. The upper tab **57** provides a seal at the upper end of the joint between the shingles **51** and **52** to prevent water from blowing into the joint between adjacent courses of shingles. The lower tab **58** covers the small space **62** existing between the abutting ends of the shingles **51** and **52**. The base **56**, as will be apparent, provides a drain for any water blowing into the slots **53–54**, or falling into the space **63** at the upper part of the abutting ends of the plank joint **51** and **52**.

It will be apparent that the abutting end construction of the planks as shown in FIGS. 4A and 4B requires only a saw kerf slot in both ends of each plank, thereby facilitating manufacture. The clip **50** is rigid enough to be driven into the resulting slots, because of the channel design thereof. The sides **59** and **60** of the clip **50** preferably are slightly larger than the height of the slots **53** and **54** so that the clip embeds itself into the plank material as the clip is driven in. The tab **57** blocks the drainage slots against water being blown through the rear of the joint between courses and the tab **58** blocks water from being blown up the joint between the ends of the shingle beneath the clip, and also acts as a stiffener and driving head.

FIGS. 5A through 5D illustrate the manner in which the ridge of the roof is capped. A cap locking strip **70** is nailed to the upper courses of shingles **71** and **72**. The cap locking strip includes two strip sections **73** and **74** which may be of wood and are hinged together by a waterproof tape **75**, such as that sold under the name Tedlar. The inside edges **76** and **77** of the strip sections **73** and **74** are bevelled, as best seen in FIGS. 5B and 5C, to allow the cap locking strip **70** to accommodate any pitch roof. In this manner, the locking strip will easily fit the upper edges of the planks regardless of the pitch of the roof. The strip **70** is manufactured in 9, 10 or 12 foot lengths, as are the planks.

The strip **70** is nailed to the upper courses of planks by nails **78**. Then, a plurality of caps, like caps **80** and **81** are snapped onto the cap locking strip **70**. These caps may be formed of metal or plastic and typically are made in two foot lengths. These cups may have decorative striations, have a decorative color, or the like. Typically, they are manufactured in the bent configuration illustrated in FIG. 5A for the typical minimum pitch roof of one-to-three, but a small brake may be used during installation of the roof to bend the faces **82** and **83** of each cap together to accommodate the pitch of the roof being installed. The cap **80** is an end cap and thus has end skirts **85** and **86**. Each of the caps has side skirts **87** and **88** which fit over the respective outer edges of the sections **73** and **74** of the locking strip **70**.

It will be apparent that the installer merely nails on the cap locking strip **70**, and then snaps on the various caps like caps **80** and **81**. In this manner, a sturdy and water tight construction is provided at the top of the roof.

FIGS. 5D illustrates an alternative cap configuration wherein the cap **90** is similar to the cap **81** but the side skirts **91**, instead of being rectangular as is the side skirt **87** in FIG. 5A, is trapezoidal in shape such that one end **92** of the cap is higher than the other end **93**. Each of these caps includes skirts **94** and **95** at one end and tabs **96** and **97** at the other. The skirts **94** and **95** overlap the tabs **96** and **97** of adjacent caps. The caps (not shown) used at both ends of the ridge of the roof have skirts, similar to the skirts **85** and **86** of cap **80**, of a suitable length to cover the ends of the cap locking strip **70**.

The relatively short caps (such as 2 feet each) facilitate capping the roof as compared to the use of one single long cap extending the length of the ridge, and also provide a more pleasing appearance. The finish on the caps can be the same as that for the shingles, such as textured, colored and so forth. Standard flashing, and the like may be used around chimneys, vent pipes and other protrusions from the roof structure.

The present embodiment of this invention is to be considered in all respects as illustrative and not restrictive.

What is claimed is:

1. A cap assembly for a roof construction comprising

cap locking strip means comprising first and second strip sections, and resilient means hingeably interconnecting said sections, each of said sections being adapted to be secured to respective adjoining courses of planks at the ridge of a roof, and

a plurality of cap means snapable onto said strip means for covering said strip means, each of said cap means including a unitary member having first and second surfaces for covering respective surfaces of said strip means along with the securing nails, and having depending skirt edges for snapping onto outer side edges of said strip means.

* * * * *