July 2, 1963 C. J. FINK ETAL 3,095,671

MULTIPLE SHINGLE STRUCTURE

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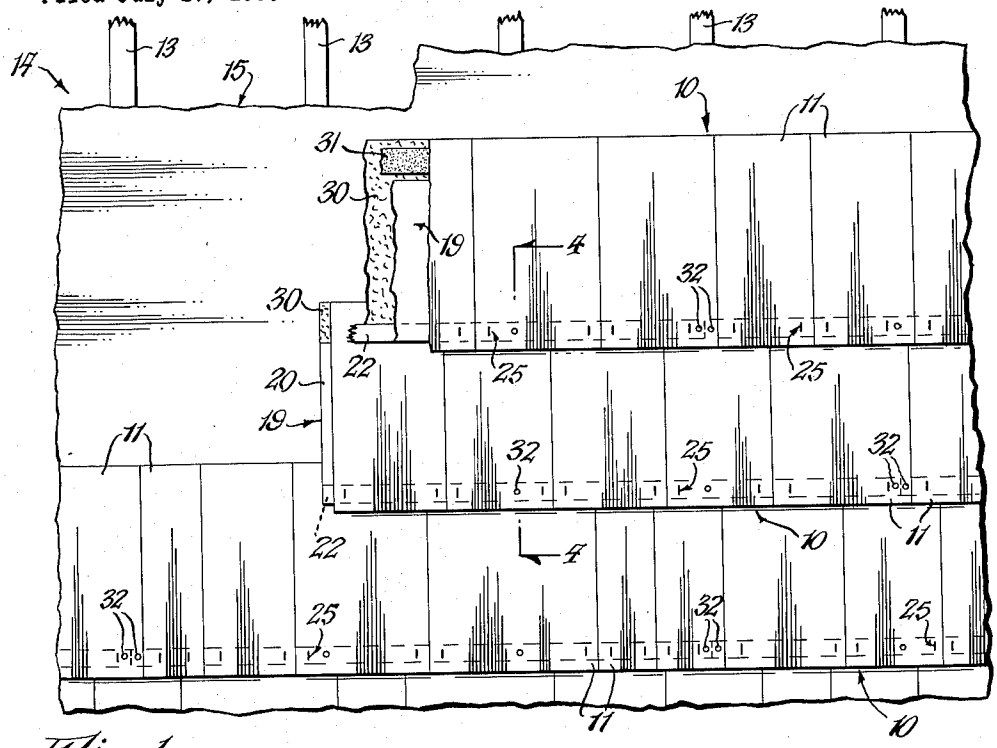


Fig. 1.

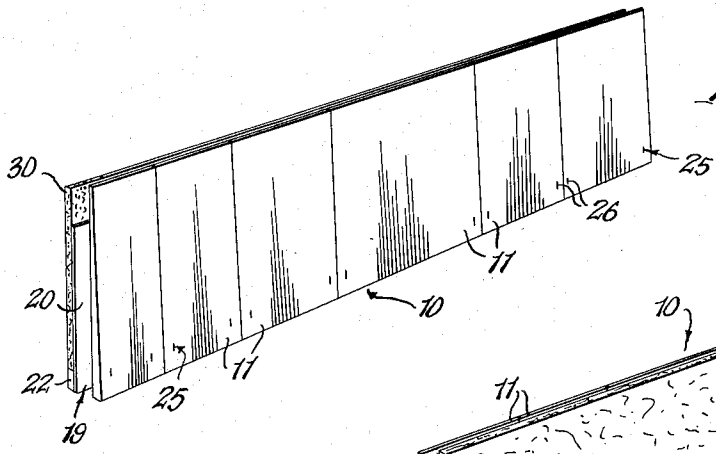


Fig. 2.

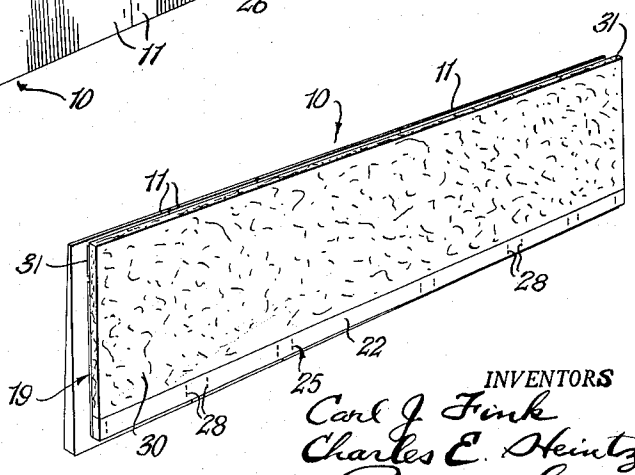


Fig. 3.

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Fig. 5.

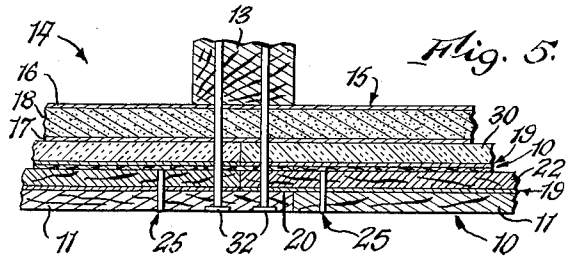


Fig. 4.

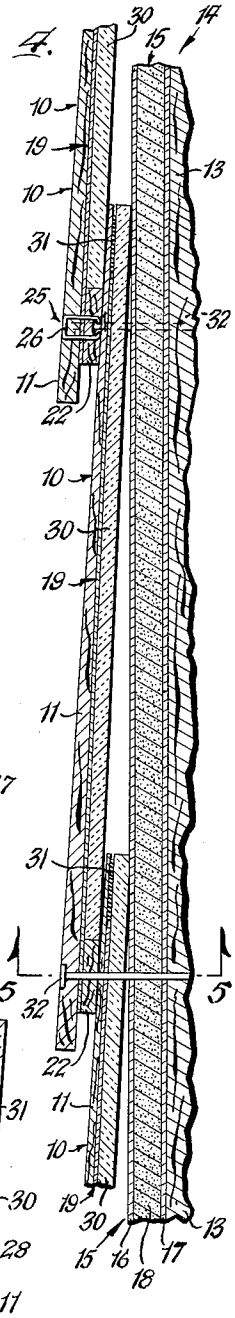


Fig. 6.

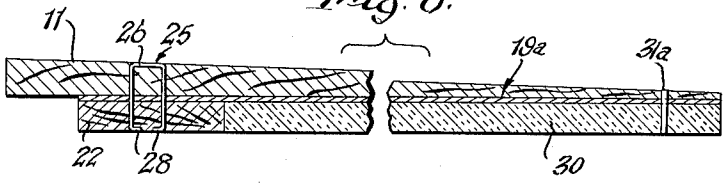


Fig. 7.

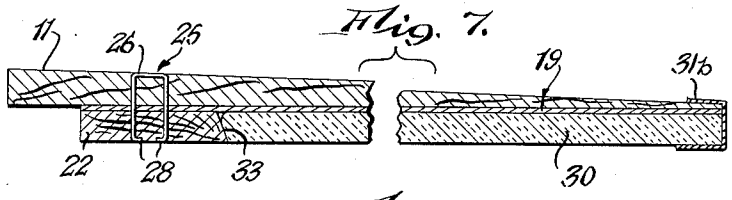


Fig. 8.

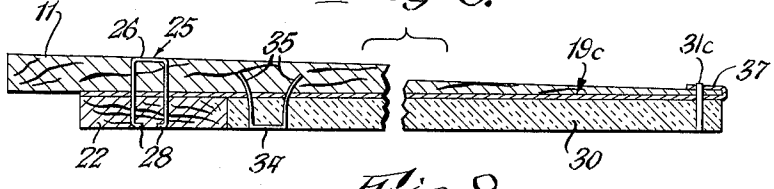


Fig. 9.

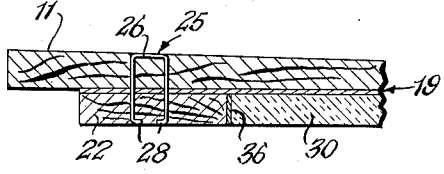


Fig. 4a.

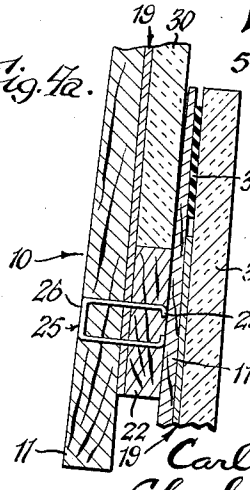


Fig. 10.

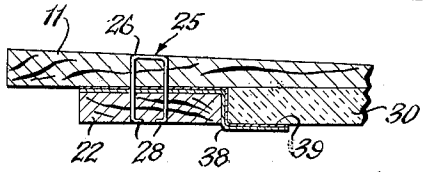
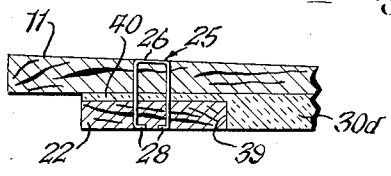


Fig. 11.



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MULTIPLE SHINGLE STRUCTURE

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Filed July 17, 1956, Ser. No. 598,310
2 Claims. (Cl. 50—251)

This invention relates to a multiple shingle structure and more particularly to a shingle panel unit having a horizontal length spanning two or more studs or rafters and including a roll of individual tapered wooden shingles.

The present invention is an improvement on the multiple shingle structure described and claimed in our United States Patent No. 2,672,831 dated March 23, 1954, and in common with this patent an important object is to provide a multiple shingle structure which insures a tightly shingled side wall with each individual shingle reliably secured by metal fasteners to the framework of the building.

Another object is to insure a tightly shingled side wall regardless of the care exercised by the carpenters at the site since any carelessness as would affect the tightness of the shingling would immediately make itself known and require little effort to remedy.

Another very important object is to provide such a unit which can be applied to any building structure having wooden studs or rafters, regardless of whether such studs or rafters carry wooden sheating or substitute sheathing such as plywood or gypsum sheathing, old siding of any type, or, for that matter, regardless of whether the studs carry any sheathing at all.

Another aim is to provide such a multiple shingle unit which can be applied with a minimum of effort, it being merely necessary to drive one nail through each unit into each stud. This results in rapid shingling of large areas.

Another purpose is to provide such a multiple shingle unit in which a broken shingle can be readily removed, replaced, and the replaced shingle firmly secured and in which such replacement can be as the structure is being shingled or after the shingled structure has been in service for years.

Another aim is to provide such units which include a moisture barrier in the form of a sheet of water repellent felt or paper and which protects the underside of the panel as well as the backing for the shingles.

Another important object is to provide such units which are light in weight and at the same time tight against wind and rain passage.

Another object is to provide such a unit which can be produced in any type or style of shingling and in particular in which the butts of the several shingles are spaced from the faces of the next lower course to provide pronounced shadow lines in the shingling.

Another important object is to provide such a multiple shingle unit which conforms to present building codes and which at the same time is low in cost even when made with materials of lasting character, such as stainless steel nails and staples.

Another object is to provide such a unit which is adapted for sale with a prime coating with the builder determining the color of the final coat.

Another object is to provide such a unit in which there are no parts interfering with the application of such final coat of paint and in which such final coat of paint augments the tightness and lasting qualities of the shingling.

Another aim is to provide such a unit which can readily be adapted to special conditions of fit often encountered in shingling.

A specific object of the present invention is to provide

such a unit which includes a thermal insulation panel of very substantial thickness without giving rise to any abnormal appearance in the shingling or undesirably projecting the butts of the shingles beyond window frames or other trim.

Other specific objects and advantages of the invention will be apparent from the following description and drawings in which:

FIG. 1 is a fragmentary side elevational view of a frame building having its studs shingled with multiple shingle units or structures embodying the present invention.

FIG. 2 is a prospective view of one of the multiple shingle units or structures shown in FIG. 1 and viewed from the front or exposure side thereof.

FIG. 3 is a view similar to FIG. 2 but viewed from the reverse or rear side thereof.

FIG. 4 is a fragmentary enlarged vertical section taken generally on line 4—4, FIG. 1.

FIG. 4*a* is a fragmentary further enlarged vertical section similar to FIG. 4.

FIG. 5 is a fragmentary horizontal sectional view taken generally on line 5—5, FIG. 4.

FIGS. 6–11 are vertical sections through different modified forms of multiple shingle units embodying the present invention.

Each shingle unit or structure of the present invention includes a row **10** of shingles **11** with the length of the row preferably being equal to the space of the studs **13** of the supporting structure shown as a wall **14**, the length of the row **10** of shingles being equal to the space of, say, three studs **13** or four feet. Before the shingle units are applied to the wall structure **14**, the studs **13** would normally be sheathed with a sheathing **15**. Such sheathing **15** is commonly in the form of paper-faced panels of gypsum, the paper facings being indicated at **16**, **17** and the gypsum core at **18**. The multiple shingle units of the present invention can be applied to any type of sheathing or siding, new or old, and also can be applied directly to the bare studs **13**. However, in view of the common use of so-called substitute or gypsum sheathing as illustrated, and in view of the special problems involved in shingling a structure so sheathed with gypsum sheathing, such gypsum sheathing has been illustrated. So far as shingling is concerned, the principal characteristic of such substitute or gypsum sheathing is that its does not form an anchorage for nails so that individual shingles cannot be nailed to the gypsum sheathing between the studs.

The row **10** of shingles **11** of each multiple shingle structure of the present invention is backed by a sheet **19** of water repellant paper. This sheet of water repellant paper is of rectangular shape and in the form of a thin flexible sheet of paper or felt impregnated with tar, asphalt or other plastic or resin so as to render it water repellant. This sheet of water repellant paper covers the greater part of the rear side of the row **10** of shingles and preferably has its lower edge arranged in spaced parallel relation to the butts of the row of shingles and its upper edge similarly arranged in spaced relation to the tips of the row of shingles. Desirably, the length of this sheet **19** of water repellant paper is the same as the length of the row **10** of shingles **11** but it is preferably offset with reference to the row of shingles so as to have a forwardly exposed face or extension **20** at one end of the row of shingles which is adapted to underlay the end shingle of the succeeding unit and thereby underlay the cracks between shingles of successive units.

To permit application of the row **10** of shingles **11** to a side wall having substitute sheathing, a narrow nailing strip **22**, preferably of wood, is arranged along the rear face of the row **10** of shingles parallel with and adjacent to but spaced from the butt ends of the shingles. In the

form of the invention shown in FIGS. 1 through 5, the lower edge of the wooden strip 22 is coincident with the lower edge of the sheet 19 of water repellant paper so that this sheet 19 of water repellant paper is interposed between the rear face of the row of shingles and the wooden nailing strip 22. The narrow nailing strip is preferably in the form of a narrow strip being, say, nominally 1¼ inches wide and ⅜ inch thick although a nailing strip which is larger in cross section can be employed. This strip is preferably made of wood so that nails and staples can not only be driven through this strip but also so that shingle nails can be driven into this nailing strip to become anchored therein in replacing a broken shingle. While wood is, of course, preferred, other materials capable of so receiving and anchoring nails and having the necessary strength and rigidity could be used.

Referring more particularly to the form of the invention shown in FIGS. 1 through 5, the butt end of each shingle is secured to the wooden strip 22 by two or more staples 25 which, as best shown in FIG. 4*a*, preferably have a cross part 26 arranged against the exposure face of each shingle 11 near each butt end corner thereof and with its legs driven completely through the shingle 11 and the wooden nailing strip 22 with the ends of these legs clinched over, as indicated at 28, against the rear face of the wooden strip 22. These staples 25 are preferably made of a substantially non-rusting material such as hot zinc dipped metal, stainless steel, Monel metal, aluminum, or the like.

A particular feature of the invention resides in the provision of a thick and relatively rigid thermal insulation panel 30 as a part of the multiple shingle structure without substantially increasing the thickness of the multiple shingle structure at the butt end thereof. This panel is of rectangular form in plan and is made of relatively thick soft but stiff felted fiber insulating material and since its insulating value is determined by its thickness, it is desirable that this panel be relatively thick and porous. Accordingly, in the form of the invention shown in FIGS. 1 through 5, the thickness of this panel is approximately equal to the thickness of the wooden nailing strip 22. The felted fiber panel 30 can also be water repellant. Also, in the form of the invention shown in FIGS. 1 through 5, the length and width of the thermal insulation panel 30 is approximately equal to the corresponding dimensions of the water repellant sheet of paper 19. The thermal insulation panel 30 is arranged against the rear face of the water repellant sheet of paper 19 with its vertical edges in register with the vertical end edges of the water repellant sheet of paper 19 so that as a course of the units is laid, the thermal insulation panel 30 and water repellant sheet of paper 19 of each unit underlays the end shingle of the next succeeding unit. However, the lower edge of the thermal insulation panel 30 is firmly fitted against the upper edge of the wooden nailing strip 22 and hence the upper edge of the thermal insulation panel 30 extends above the upper edge of the sheet 19 of water repellant paper.

In the form of the invention shown in FIGS. 1 through 5, the upper extremity of the insulation panel 30 is secured directly to the tips of the shingles 11 by a layer 31 of glue laid in a line or band of substantial width the full length of the row 10 of shingles 11. This layer 31 of glue, in combination with the friction force fit of the lower edge of the insulation panel 30 against the upper edge of the nailing strip 22, securely unites this thermal insulation panel to the unit and at the same time secures the upper part of the sheet 19 of water repellant paper in position between the row 10 of shingles 11 and this thermal insulation panel 30. It will particularly be noted that the thermal insulation panel is of substantial thickness to provide the required effectiveness as thermal insulation and at the same time the thickness of the unit along the butt edge is merely the thickness of the nailing strip 22 plus the butt thickness of the shingles in front of this nailing strip. This thickness provides a shadow line in the siding which is of pleasing appearance and at the same time avoids setting the butt edge of the shingles out so as to project beyond the normal wooden trim of a house. At the same time it will be seen that the water repellant sheet of paper 19 can be made of very thin and flexible water repellant paper and at the same time is fully effective in preventing water from seeping beyond the shingles to the nailing strip 22 or to the thermal insulation panel 30.

In applying the multiple shingle units of the present invention, it will be assumed that the structure 14 to be shingled is in the form of a wall having studs 13 on standard 16-inch centers and that these studs are sheathed with so-called substitute sheathing, that is, paper covered panels 15 of gypsum, such gypsum sheathing being characterized by the inability of the panels to anchor shingle or other types of nails.

In starting the bottom course of shingles, one of the multiple shingle units is placed in position to span four studs 13. This unit is then nailed to each stud 13 against which the unit has been placed by, say, a seven or eight-penny finishing nail 32. Accordingly, each multiple shingle structure is secured to each of the four studs 13 by four nails 32. Each of these nails 32 is preferably made of a rust-resisting metal and it is an important feature that each nail 32 passes through the butt end of a shingle 11 along a horizontal line delineated by the exposed or cross parts 26 of the line of staples 25; the water repellant sheet of paper 19; the wooden nailing strip 22; the assumed gypsum panel sheathing 15; and anchors in a corresponding stud 13.

After the first unit has been nailed in position, the next multiple shingle unit is placed in end-to-end relation with the nailed unit and with the overhanging shingle at the end of one unit in overlapping relation with the projected face or extension 20 of the sheet of water repellant paper 19 and the projecting ends of the nailing strip 22 and thermal insulation panel 30 which underlay this projecting end 20 of water repellant sheet of paper. The second unit is then secured to the studs 13 by nails 32 in the same manner as previously described with reference to the first unit and successive units are so secured to the studs 13 until the first course of shingles has been laid.

After the first course of shingle units has been so nailed to the studs 13, the second course of shingle units is applied. In starting this second course of shingle units the first unit to be applied is preferably arranged in break-joint relation with the multiple shingle unit over which it is placed, the purpose of this being to avoid a vertical line of shingle joints along particular studs 13. The first multiple shingle unit of the second course of shingles is applied so that its wooden nailing strip 22 is disposed against the front face of the first course of shingles adjacent to but spaced from the tip ends of this first course of shingles. The first unit of the second course of shingles is then nailed to the studs 13 in the same manner as with the first course of shingles. It will be noted, however, that each nail 32 of this second course of shingle units passes through the butt end of a corresponding shingle 11 of this second course; its sheet 19 of water repellant paper; its wooden nailing strip 22; the tip end of a corresponding shingle 11 of the next lower or first course; the sheet 19 of water repellant paper of this next lower or first course; through the thermal insulating panel 30 of this next lower or first course; the assumed gypsum panel sheathing 15; and anchors in the corresponding stud 13.

The second unit of the second course is applied in the same manner as the second unit of the first course and the units are applied, course upon course, until the shingling of the structure 14 is completed.

If any particular fitting conditions are encountered, it will be seen that the multiple shingle structure can be sawed to suit any particular condition so encountered. It will also be seen that if in any such fitting, or in the

nailing, any shingle **11** should be broken, it can readily be removed and replaced with another shingle. Thus the broken shingle can be split so as to free it from its staples **25** and it can be torn away from the soft insulation panel **30** at the glue line **31**. These staples can then be removed or hammered down and a new shingle cut to the width of the removed shingle and this new shingle fitted in the position of the removed shingle and secured by shingle nails (not shown) to the wooden nailing strip **22**. This replacement of broken shingles can be done after the shingle has been in service for many years and facilitates keeping the shingling in tight and serviceable condition.

It will particularly be noted that each shingle **11** is securely fastened to its wooden nailing strip **22** by two or more staples **25** as a factory operation thereby to insure the reliable securement of each individual shingle. Since each wooden nailing strip **22** is also secured to each stud **13** by a larger nail **32**, it will be seen that each shingle **11** is reliably secured to the studding. It will also be noted that this securement of each shingle **11** to the studs **13** is wholly independent of the type of sheathing **15** which also obviously could be old siding or, for that matter, could be non-existent with the multiple shingle structures of the present invention secured to the studs **13** without any sheathing. It will further be noted that the wooden nailing strips **22** act as barriers against wind or rain being driven up under the shingles and also serve to space the butt ends of the shingles **11** from the exposed faces of the next lower course of shingles so as to provide a pronounced shadow line in the shingling between the several courses thereof thereby to greatly enhance the beauty of the shingling.

Also to be noted is the fact that while the shingles are shown in regular arrangement they can be built into multiple shingle structures in any pattern, such as to provide a random length effect. It will be seen that at adjacent ends of the units the end shingle of one unit overlaps the extension **20** of the water repellant sheet of paper **19** so as to provide sealed joints between the ends of the successive units. It will also be seen that the thermal insulation panels **30** effectively provide a high degree of thermal insulation, particularly because of their thickness, without at the same time increasing the effective butt thickness of the units to a point which would render them objectionable both as to appearance and also in projecting beyond the normal wooden trim of a house.

Preferably, the shingles **11** and the wooden nailing strips **22** are prime coated following the assembly of the shingle units at the factory. When the shingling of the structure as above described is complete, a final coat of paint of any desired color can be applied over the exposed faces of the shingles. Such final coat covers the cross parts **26** of the staples **25** as well as the heads of the nails **32**, so as to provide a completely painted shingle siding.

Most building codes approve the application of wooden shingles to strips of latch extending between the studs and hence it will be seen that the present invention is not at variance with present building codes.

It is obvious that many modifications can be made of the shingle structure to achieve the objects and advantages of the invention and a number of modifications of the invention are severally illustrated in FIGS. 6 through 11.

Thus, in FIG. 6, the shingle structure is identical with that described except that the sheet **19***a* of water repellant paper is continued to the tips of the shingles **11** and the tip of each shingle is secured through this water repellant sheet of paper **19***a* to the thermal insulation panel **30** by one or more staples **31***a* instead of the glue line **31** as in the form of the invention shown in FIGS. 1 through 5. Since in other respects the shingle structures are identical, the same reference numerals have been applied.

In the modification shown in FIG. 7, the wooden nailing strip **22***b* is identical with the nailing strip **22** in the form of the invention shown in FIGS. 1 through 5 except that its upper edge or face is bevelled so as to be undercut, as indicated at **33**. In being forced against this upper undercut face **33**, the lower edge of the thermal insulation panel **30** assumes the form of this undercut and hence is more positively locked to the wooden nailing strip **22***b*, than obtains with the form of the invention shown in FIGS. 1 through 5. Also, in the form of the invention shown in FIG. 7, the tips of the shingles **11** are shown as joined to the thermal insulation board **30** by a U-shaped binding strip **31***b* which embraces these edges of these parts. This binding strip can be of metal, fabric, plastic or any other suitable material and can be adhered adhesively or merely by pressure.

With the form of the invention shown in FIG. 8, the upper part of the sheet **19***c* of water repellant paper is turned over the tip ends of the row **10** of the shingles **11**, as indicated at **37**, and this turned-over part **37**, as well as the tip ends of the shingles, is shown as being secured to the upper part of the thermal insulation panel **30** by staples **31***c*. Also, if a more secure attachment of the lower part of the thermal insulation panel **30** is required, staples **34** can be driven through the thermal insulation panel into the butts of the shingles **11**, such staples preferably not emerging from the exposure face of the shingles but having spread legs **35** which anchor internally in the shingles as shown.

The form of the invention shown in FIG. 9 is identical with the form of the invention shown in FIGS. 1 through 5 except that a layer of adhesive **36** is additionally applied between the upper face of the wooden nailing strip **22** and the lower edge of the thermal insulation panel **30**.

In FIG. 10, the thermal insulation panel **30** is secured directly against the rear faces of the shingles **11**, it being assumed that in this case, the thermal insulation panel would itself be water repellant. To protect the wooden nailing strip against water, a strip of paper **38** having adhesive **39** along one face is shown as interposed between the wooden nailing strip **22** and the row of shingles **11**. This strip of paper is shown as continued between the opposing edges of the wooden nailing strip **22** and the thermal insulation panel **30** and as having one edge adhered to the underside of the thermal insulation panel **30** adjacent the wooden nailing strip.

In the form of the invention illustrated in FIG. 11, the thermal insulation strip **30***d* is shown as grooved or rabbeted, as indicated at **39**, along its lower edge and rear face to receive the wooden nailing strip **22**. This leaves a small thickness **40** of the thermal insulation panel between the row of shingles **11** and the nailing strip **22** but this thickness could be of such small proportion as not to impair the applicability of the units in standard housing.

From the foregoing, it will be seen that the present invention provides a very low cost multiple shingle unit which can be applied to a frame structure having any kind of sheathing or siding, or which is unprovided with sheathing, and in which each shingle is firmly and reliably secured to the studding and in which the shingling in the field can be effected rapidly and by carpenters having little experience in shingling. It will further be seen that in addition to the above advantages, the shingle embodying the present invention has very effective thermal insulation qualities while at the same time the effective butt thickness of the shingle unit is not increased to an undesirable extent.

We claim:

1. As an article of manufacture, a multiple shingle structure comprising a row of separate nailable shingles arranged in edge-to-edge relation, a separate single preformed felted fiber relatively rigid backing panel extending in face-to-face relation along the greater part of the rear of said row and of each individual shingle, a separate narrow nailing strip capable of receiving and securely anchoring nails, said strip extending along the rear of said row substantially the full length and adjacent the

lower edge of said row and remote from the upper edge thereof, the upper edge of said nailing strip extending along close to and opposing the lower edge of said felted fiber backing panel whereby said nailing strip forms a downward continuation of said felted fiber backing panel, means securing each shingle adjacent its lower edge to said nailing strip, means securing said felted fiber backing panel to at least some of said shingles, and a layer of water repellant material interposed between said nailing strip and said row of shingles, said layer of water repellant material being in the form of an integral continuation of said felted fiber backing panel, with said nailing strip arranged in a rabbet provided in the lower rear part of said felted fiber backing panel.

2. As an article of manufacture, a multiple shingle structure comprising a row of separate nailable shingles arranged in edge-to-edge relation, a separate single preformed felted fiber relatively rigid backing panel extending in face-to-face relation along the greater part of the rear of said row and of each individual shingle, a separate narrow nailing strip capable of receiving and securely anchoring nails, said strip extending along the rear of said row substantially the full length and adjacent the lower edge of said row and remote from the upper edge thereof, the upper edge of said nailing strip extending along close to and opposing the lower edge of said felted fiber backing panel whereby said nailing strip forms a downward continuation of said felted fiber backing panel, means securing each shingle adjacent its lower edge to said nailing strip, means securing said felted fiber backing panel to at least some of said shingles, and a layer of water repellant material interposed between said nailing strip and said row of shingles, said layer of water repellant material being in the form of a water repellant flexible paper extending from between said row of shingles and said nailing strip rearwardly between said opposing edges of said nailing strip and said felted fiber backing panel and thence upwardly along the rear face of said felted fiber backing panel.

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