

[54] **INTERLOCKING SHINGLE  
ARRANGEMENT**

[76] Inventor: **William Joseph Kirkhuff**, 18414 S.  
Wilton Pl., Torrance, Calif. 90504

[22] Filed: **Jan. 12, 1973**

[21] Appl. No.: **323,278**

[52] U.S. Cl. .... **52/539, 52/555, 52/556,  
52/560**

[51] Int. Cl. .... **E04d 1/18, E04d 1/28**

[58] Field of Search .... **52/555, 535, 560, 554,  
52/542, 556, 539, 530, 540, 544, 541, 551**

[56] **References Cited**

**UNITED STATES PATENTS**

|           |         |                     |          |
|-----------|---------|---------------------|----------|
| 638,802   | 12/1899 | Donaldson .....     | 52/542   |
| 2,110,579 | 3/1938  | Robinson .....      | 52/556 X |
| 3,111,787 | 11/1963 | Chamberlain .....   | 52/540 X |
| 3,605,369 | 9/1971  | Merrill et al. .... | 52/560 X |
| 3,626,439 | 12/1971 | Kneisel .....       | 52/539 X |

**FOREIGN PATENTS OR APPLICATIONS**

|           |        |              |        |
|-----------|--------|--------------|--------|
| 1,369,567 | 7/1964 | France ..... | 52/539 |
|-----------|--------|--------------|--------|

*Primary Examiner*—Frank L. Abbott

*Assistant Examiner*—Leslie A. Braun

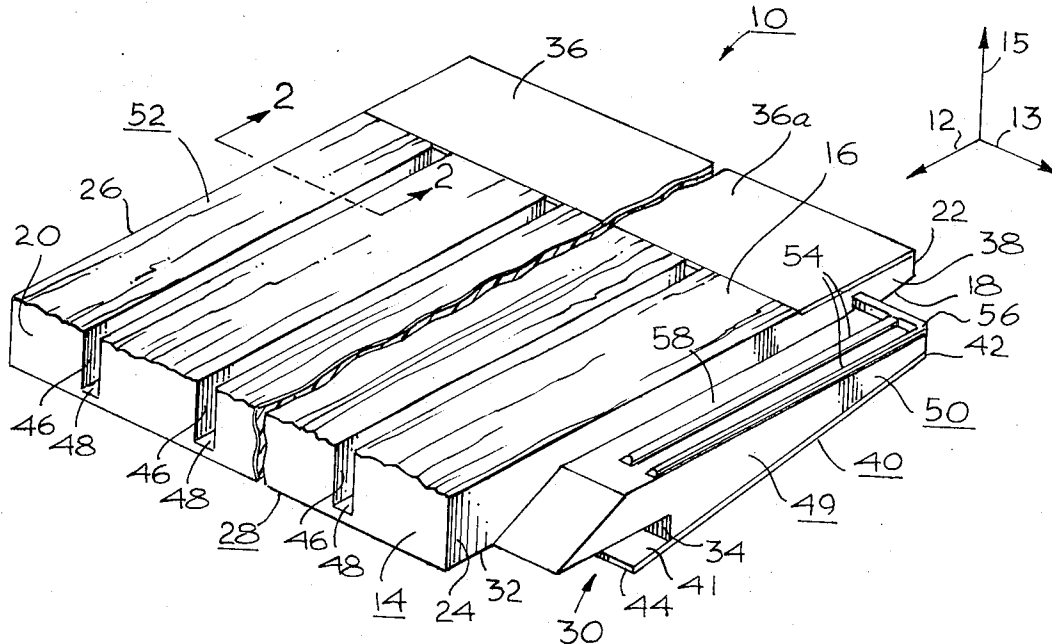
*Attorney, Agent, or Firm*—Don B. Finkelstein

[57]

**ABSTRACT**

An interlocking simulated shingle arrangement providing interlocking interconnections between the simulated shingles in one course with simulated shingles in adjacent courses and interlocking sealing interconnection between adjacent shingles in the same course. The simulated shingles are formed in extended panels simulating a plurality of shingles. The bottom plate portion of the simulated shingles are in intimate contact with the supporting structure, such as the sheeting on a roof or on a wall, throughout the extended length and width thereof to provide improved thermal insulation effective structural integrity and reduced environmental deterioration.

**17 Claims, 9 Drawing Figures**



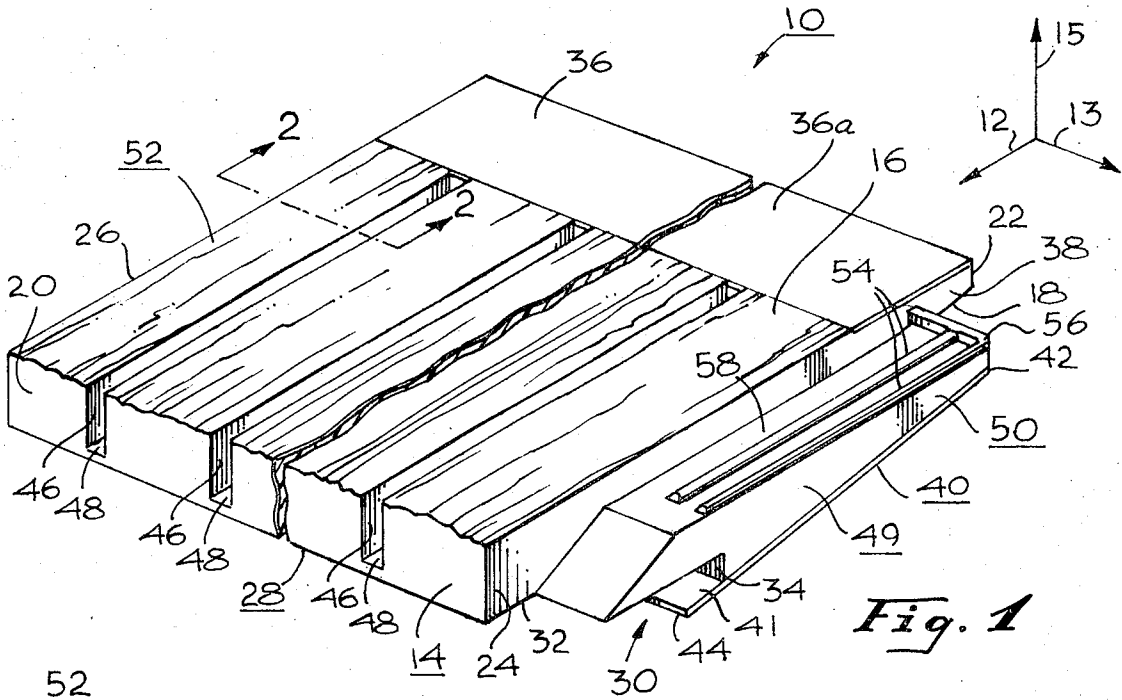


**Fig. 1**

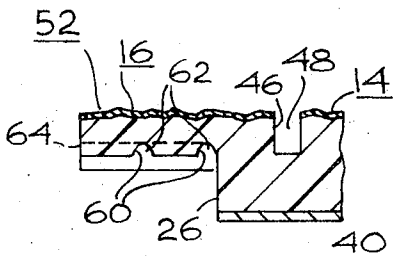


**Fig. 2A**

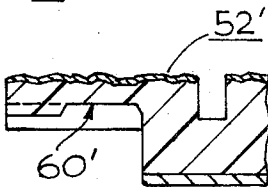


**Fig. 2B**

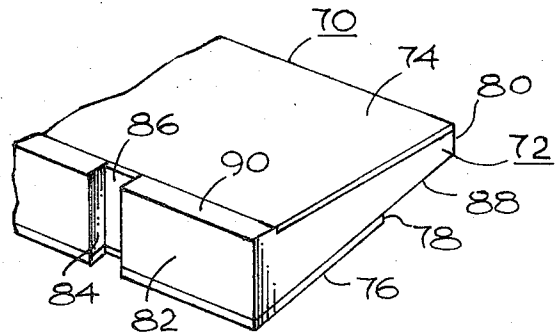


**Fig. 3**

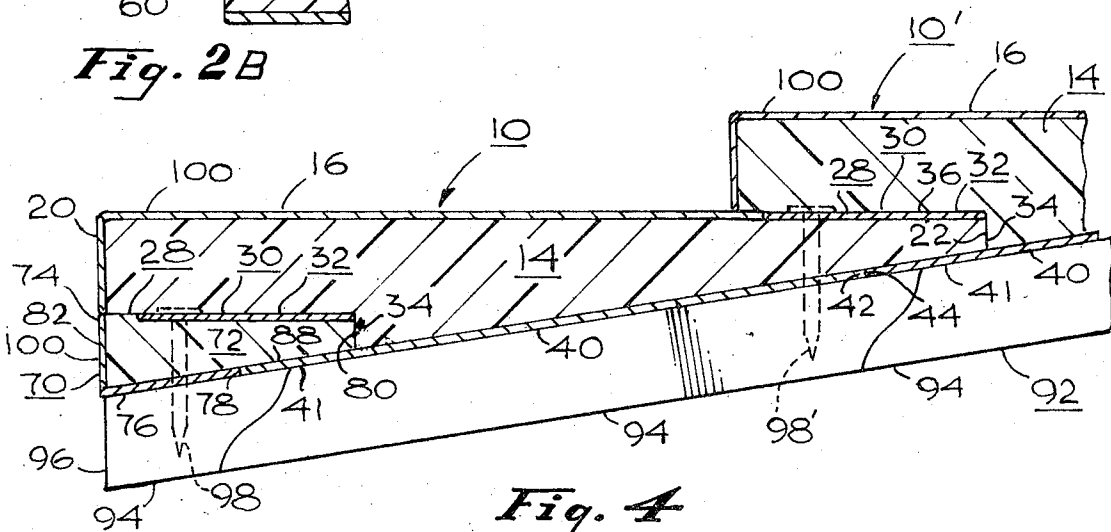


**Fig. 4**



# INTERLOCKING SHINGLE ARRANGEMENT

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

This invention relates to the roofing and siding art more particularly to improved interlocking simulated shingle construction.

### 2. Description of the Prior Art

The conventional types of shingles, such as wood, concrete or clay tiles or asphalt, have generally not proven to be completely satisfactory in all applications. In general, the comparatively small size of the individual conventional shingles requires a comparatively lengthy time for covering an entire roof or wall. Further, such shingles require periodic maintenance in order to maintain them in satisfactory condition. These shingles, of course, have not proven to be effective thermal insulators and normally some other form of packing or insulation material has been utilized in the roof, ceiling or wall structure to provide the necessary thermal insulations.

Therefore, there have heretofore been developed various types of simulated shingles attempting to solve these problems. For example, conventional wood shingles were utilized on metallic carriers, such as those shown in U.S. Pat. Nos. 3,418,777 and 3,232,020. Such arrangements often require separate elements, such as clips or the like, for complete installation. Utilization of such metallic carriers for holding conventional shingles did little to either decrease the cost of installing a shingle roof or improve the thermal or structural integrity of the shingles.

Other types of roofing of siding structures have incorporated various plastic laminates combined with one or more ridged members for installation as a simulated shingle on roofs or on walls as sidings. In certain of these prior art simulated shingle arrangements the nail heads were exposed to the environment thereby requiring utilization of corrosive resistant steel, or other similar materials resistant to environmental effects, in order to avoid rusting or the like. One such arrangement is shown in U.S. Pat. No. 2,362,236. Such exposed nails or screws detracted from the true simulated shingle structural appearance of the roof or wall.

In other simulated shingles the utilization of metallic elements not only increased the cost but required cutting tools, generally not available to the roofer, for sizing the simulated shingle elements to the particular roof or wall being covered. Thus, special saws or shears were required to cut through such metallic elements. Additionally, in utilization of metallic elements the weight of the load on the roof was thereby increased thus increasing the required strength of the supporting structure.

Further, the lower edge of most prior art shingles rested on the top edge of the adjacent course of shingles leaving a void between the sheeting and the shingles, thus resulting in fractures of the shingles and increased fire hazard.

One type of simulated shingle heretofore sold by National Pacific Roofing Products, a Division of Stephan Chemical Company, 8748 Remmet Avenue, Canoga Park, Cal., utilized fiberglass shingle panels which were heavy, expensive and difficult to trim to size and then install in the field. Further, while providing a water tight seal between adjacent shingles in the same course, such a seal was not interlocked between adjacent

courses resulting often in wind forces loosening an entire panel.

While certain of the prior art simulated shingles have utilized various forms of interlock between simulated shingles in adjacent courses, such interlocks have generally not been of the type allowing a rapid-slide fit of one course into the immediately previously installed course. Further, there has been no provision, in general, in prior art simulated shingles for a water tight sealing interlock between adjacent shingles in the same course.

## SUMMARY OF THE INVENTION

Accordingly, it is the object of the present invention to provide an improved simulated shingle arrangement.

It is another object of the present invention to provide an improved simulated shingle having an interlocking connection between shingles in adjacent courses as well as between adjacent shingles in the same course.

It is another object of the present invention to provide an interlocking shingle arrangement in which no separate structural elements such as, clips, spacers, or the like are utilized.

It is yet another object of the present invention to provide an improved simulated shingle that may be rapidly and easily installed by roofers without utilization of special tools, equipment or techniques.

It is still another object of the present invention to provide a simulated shingle that is inexpensive to fabricate, has exceptional long lasting characteristics without periodic maintenance and is highly resistant to environmental deterioration.

It is still another object of the present invention to provide a simulated shingle arrangement in which a minimum number of structural elements are utilized to provide cover for an entire roof or wall.

The above and other objects of the present invention are achieved, in a preferred embodiment of the present invention, by providing a body member, preferably made of a molded foam plastic such as polyurethane foam, and the body member has an upper surface, a lower surface, a forward surface, a rear surface spaced from the forward surface and a pair of side surfaces. The upper surface of the body member is textured to simulate any desired type of surface. For example, it may be textured with undulations and striations therein to simulate the appearance of shake shingles. The lateral distance between the side surfaces may be any desired length to simulate any desired number of adjacent shingles in the same course. For example, it may be 3, 4, 6, 8, or more feet between the side surfaces and simulating a corresponding number of conventional 8 inch wide shake shingles.

Suitable channels, extending longitudinally from the forward surface towards the rear surface, may be incorporated in the body member to simulate the division between adjacent shingles in the same course. The longitudinal width between the forward surface and rear surface may be, for example, on the order of 15 inches or so for a simulated shake shingle of one course in longitudinal depth.

It will be appreciated that in describing a preferred embodiment of the present invention the description and drawing herein utilize a simulate shake shingle for illustrative purposes. The present invention is not lim-

ited to only simulated shake shingles but may equally well be utilized to simulate any type of shingle or other roofing or wall siding structure.

The body members are also provided with first walls defining a channel adjacent the forward surface thereof. The first walls have a top portion spaced from the upper surface of the body member and extending rearwardly from the forward surface towards the rear surface and a base portion extending transversely from the lower surface towards the upper surface. The base portion of the first wall is spaced a first preselected longitudinal distance from the forward surface of the body member to define the channel opening toward the forward surface. The base portion has a second preselected transverse height.

A top plate which, for example, may be a thin sheet of plywood on the order of one-eighth of inch thick, is coupled to the upper surface of the body member on a rear portion thereof and extends laterally between the side surfaces and extends longitudinally forwardly from the rear surface toward the front surface and allows nailing at any desired transverse position. The combined transverse thickness of the top plate and the rear portion of the body member at the rear surface of the body member is substantially equal to the transverse height of the base portion of the first walls in the body member so that the rear portion of a simulated shingle in one course fits into and underlies the forward portion of a simulated shingle in an adjacent course. That is, the top portion of the first walls defining the channel of one simulated shingle overlays the top plate of the simulated shingle in the immediately adjacent course.

A bottom plate, which may also be fabricated from a thin sheet of plywood, such as one one-eighth of inch plywood, is coupled to the lower surface of the body member and extends laterally between the side surfaces. The bottom plate has a back edge that is spaced a third preselected longitudinal distance from the rear surface of the body member and has a front portion that extends longitudinally forwardly from the base portion of the first walls of the body member towards the forward surface of the body member.

In preferred embodiments of the present invention the top plate and bottom plate are molded in place during molding of the body member and thereby are bonded to the body member during the molding of the body member. It will be appreciated, of course, that any other type of bonding such as epoxy bonding, or otherwise, may be utilized for adhering the top and bottom plates to the body member.

The front portion of the bottom plate of one shingle underlies the lower surface of the rear portion of the shingle in the immediately adjacent course and thus provides an interlock arrangement between adjacent courses of simulated shingles. Sufficient overlap between adjacent courses is provided, in the preferred embodiment of the present invention, so that spacing between adjacent courses of the shingles may be made to accommodate any desired size roof. However, in other preferred embodiments of the present invention such spacing need not be calculated and the final course of shingles adjacent to the hip and ridge may be trimmed as desired.

A separate structural element which may be fabricated in lengths similar to that provided for the course of simulated shingles defined above is utilized as an

eaves starter. The eaves starter strip is virtually identical to the rear portion of the above described course of shingles and is provided with the top plate and, if desired, the rear-most portion of the bottom plate. The eaves starter strip may also be provided with channels in the forward face thereof to simulate division between shingles when it is fabricated in lateral lengths exceeding the length of a single shingle and be textured to simulate the exposed forward have of a shingle.

A separate simulated shingle arrangement is utilized for the hip and ridge shingles and for the rake or wall corner shingles. The hip and ridge and the rake shingles are similar to the above described simulated course shingles except that they are symmetrical about a longitudinal plane and formed in the shape of a "V" with the plane at the apex thereof. These may be fabricated in longitudinal lengths simulating, one, two, three or more shingles, as desired, and are provided with the above described top plate and bottom plate and the channel to provide interlocking between adjacent hip and ridge or rake shingles in the same course. However, there is no necessity, in general, for providing any interlocking sealing engagement between adjacent courses for the hip and ridge and the rake shingles. A starter strip which is also shaped in the form of a "V" and similar to the above described eaves starter strip is also utilized for the end simulated shingle in a hip and ridge and rake installation.

Thus, basically, four separate simulated shingle units are utilized to provide coverage for a roof or wall.

In order to provide a sealing interlock between adjacent simulated shingle strips in the same course where the length of the roof exceeds the lateral length of one simulated shingle, panel, sealing means are provided on each side surface of the simulated shingle. One side contains a male sealing member having upstanding ridges thereon and the opposite side is provided with a female sealing member having walls defining a ridge accepting groove or grooves therein for sealing interlocking with the male sealing member of an adjacent simulated shingle.

It will be appreciated that the lateral width of the simulated shingles may be cut as desired to match the length of the roof and, in general, may be cut with tools usually available to a roofer.

The simulated shingle, according to the present invention, is nailed to the sheeting of the roof, or the siding of the wall, by driving nails through the top plate in regions thereof overlying the bottom plate. Thus, the nails are secured to the shingles through the plates and the nail heads do not bear against the body member. When the body member is, for example, molded plastic such as molded foamed polyurethane, such an installation prevents the nails from pulling loose from the body member or impact destruction of the body member during nail installation. In the preferred embodiments of the present invention the bottom plates of the simulated shingle are planar and lie against, for example, the sheeting of the roof throughout the extended length and width thereof. Thus, intimate contact throughout is provided and air gaps between the simulated shingle and the roof are eliminated. This prevents the ripping off of the shingles during high winds or the like. Further, the sealing engagement between adjacent shingles in the same course and the interlocking engagement between adjacent courses of shingles provides a waterproof covering for the roof or wall to prevent moisture

and water from impinging directly upon the structure of the supporting means. The shingles conveniently slide into one another and are quickly nailed into place, thus minimizing the cost of installation and allowing easy installation by conventional roofing techniques.

When the body member is fabricated from a polyurethane foam suitable exterior coating is applied thereon to prevent environmental deterioration due to exposure of the polyurethane foam to the ultraviolet radiation contained in sunlight. All exposed surfaces may be suitably coated with a protective coating during the manufacture of the simulated shingles in accordance with the present invention and where it is necessary to trim the shingles to fit a particular installation the exposed edges may be quickly and easily coated on the job site.

#### BRIEF DESCRIPTION OF THE DRAWING

The above and other embodiments of the present invention may be more fully understood from the following detailed description taken together with the accompanying drawings wherein similar reference characters refer to similar elements throughout and in which:

FIG. 1 is a perspective view of one embodiment of the present invention;

FIG. 2A is a sectional view on the line 2—2 FIG. 1;

FIG. 2B illustrates another embodiment of a female sealing member;

FIG. 3 illustrates an eaves starter strip useful in practice of the present invention;

FIG. 4 illustrates installation of the shingle shown in FIG. 1 and the eaves starter strip shown in FIG. 3 on a roof;

FIG. 5 illustrates the covering of the roof with shingles in accordance with the present invention;

FIG. 6 illustrates a hip and ridge or rake shingle in accordance with the principles of the present invention;

FIG. 7 is a sectional view along with the lines 7—7 of FIG. 6; and

FIG. 8 illustrates another embodiment of the present invention.

#### DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawing there illustrated in FIG. 1 a perspective view of one embodiment of the present invention, generally designated 10. As shown on FIG. 1 the embodiment 10 is a simulated shingle simulating a shake shingle and has a longitudinal width in the direction of the arrow 12 approximately equivalent to the exposed longitudinal width of a single conventional wood shake shingle as installed. However, as explained below in greater detail, the longitudinal width may be made to simulate any desired number of shingles in adjacent courses. Similarly, the lateral width in the direction of the arrow 13 may also be made to simulate any desired number of adjacent shingles in the same course.

The body member 14 is provided with an upper surface 16 and a lower surface 18 that is transversely spaced, in the direction of the arrow 15, from the upper surface 16. Body member 14 is also provided with a forward surface 20 and a rear surface 22 that is longitudinally spaced from the forward surface 20. The body member 14 also has a pair of side surfaces 24 and 26

laterally spaced from each other. First walls 28 are provided in the body member 14 to define a channel 30 therein adjacent the forward surface 20 and the first walls 28 have a top portion 32 transversely spaced from the upper surface 16 and extending a first preselected longitudinal distance rearwardly therefrom towards the rear surface 22. The first walls 28 in the body member 14 are also provided with a base portion 34 extending from the lower surface 18 a second preselected transverse distance towards the upper surface 16.

A top plate 36 is coupled to the upper surface 16 of the body member 14 on a rear portion 38 thereof and extends laterally between the side surfaces 24 and 26. The top plate 36 also extends longitudinally from the rear surface 22 towards the front surface 20. The combined transverse thickness of the top plate 36 and the body member 14 at the rear surface 22 is substantially equal to the second preselected transverse distance of the base portion 34 of first walls 28 defining the channel 30.

A bottom plate 40 is coupled to the lower surface 18 of the body member 14 and extends laterally between the pair of side surfaces 24 and 26 thereof. The bottom plate 40 has a rear edge 42 that has spaced a third preselected longitudinal distance from the rear surface 22 of the body member 14 and extends therefrom to a front edge 44 adjacent the channel 30. A front portion 41 of the bottom plate 40 extends from the base portion 34 of the first walls 28 of the body member 14 a fourth preselected distance towards the front surface 20 of the body member 14 and underlies a section of the top portion of the first walls 28 in regions adjacent the base portion 34. The bottom plate 40 may extend any desired longitudinal distance towards the rear surface 22 from the base portion 34.

In a preferred embodiment of the present invention the body member 14 may be fabricated from a foam plastic such as polyurethane, the top plate 36 and the bottom plate 40 may be fabricated of, for example, plywood on the order of 1/8 inch in transverse thickness. The upper surface 36a of the top plate 36 is substantially coplanar with the upper surface 16 of the body member 14 and the bottom plate 40 is preferably planar between the rear edge 42 and front edge 44 thereof.

In the embodiments of the present invention wherein polyurethane is utilized as the material forming the body member 14, it is preferable to coat any portion of the polyurethane that may be exposed to ultraviolet light with a coating to prevent such exposure. Therefore, in the preferred embodiments of the present invention, the portions of the body member 14, when the body member 14 is fabricated from foam polyurethane that may normally be exposed to sunlight after installation, are coated with a coating such as polyester, adhesive aggregate mixture, polyvinyl chloride, polyethylene, vinyl weather resistant coating, or the like. These coatings may be applied after forming of the simulated shingle 10 and also may be quickly applied at the job site during installation on exposed portions that may be cut in providing coverage on a given sized roof. The coating need not be applied, of course, to the top plate 36, bottom plate 40 or to areas that are not exposed to sunlight.

When the shingle 10 simulates a shake shingle, the upper surface 16 between the forward surface 20 and the top plate 36 is preferably striated and undulating in

order to simulate the appearance of shake shingles. Further, when the lateral distance between the side walls 24 and 26 is greater than the conventional lateral width of wood shake shingles, the upper surface 16 may be provided with second walls 46 defining a plurality of longitudinal grooves 48 therein to simulate the separation between adjacent shake shingles in the same course for the shingle 10. For example, the conventional width of shake shingles is on the order of 11 to 15 inches. Therefore, the lateral spacing between the grooves 48 may be on the order of 11 to 15 inches in order to simulate the desired shingle roof appearance after installation. Preferably, the grooves 48 extend transversely towards the lower surface 18 a predetermined depth in the body member 14 and leave a comparatively thin web between the top portion 32 of the first walls 28 and the walls 46 defining the grooves 48 since the forward surface 20 of the body member 14 is exposed to view after installation.

On installation of a plurality of simulated shingles 10 on a roof, the rear portion 38 of a simulated shingle 10 in a first course fits into the channel 30 of a simulated shingle 10 in a second adjacent course and the rear surface 22 of the first simulated shingle 10 may abut against the base portion 34 of first walls 28 of the simulated shingle 10 in the second adjacent course. The forward portion 41 of the bottom plate 40 of the simulated shingle 10 in a second source underlies the rear part of the lower surface 18 of the body member 14 of the simulated shingle 10 in the first course. However, in order to allow flexibility in longitudinal spacing of adjacent courses of simulated shingles 10, the rear surface 22 of any simulated shingle 10 may be spaced from the base portion 34 of the simulated shingle 10 in adjacent course. Installation of a plurality of simulated shingles 10 on a roof is described below in greater detail in connection with FIG. 5.

In the preferred embodiment of the present invention, in order to achieve the planar support of bottom plate 40 upon the supporting structure the body member 14 is preferably tapered from the forward surface 20 towards the rear surface 22. Upon installation this provides the simulation of conventional shingles which, in general, are constant thickness and do not decrease in transverse thickness between the forward surface and rear surface thereof. Thus, in conventional shingles the shingles are not in planar contact with the supporting structure throughout the extent thereof but only upon the rear edges, the forward edges being supporting on the shingles of the adjacent course. This allows an air gap between the supporting structure and the shingles and is often one cause of shingles being blown away during high winds.

In preferred embodiments of the present invention the simulated shingle 10 interlocks with an adjacent simulated shingle 10 in the same course. In order to provide such an interlock, which is also preferably a water tight sealing interlocking connection, interlocking sealing means 49 are provided and comprise a male sealing member 50 coupled to sidewall 24 and a female sealing member 52 coupled to sidewall 26. The interlocking male sealing member 50 extends laterally outwardly from the sidewall 24 and is provided with at least one longitudinally extending ridge 54 thereon. In the embodiment shown in FIGS. 1 and 2, there are provided two longitudinally extending ridges 54 and also a laterally extending ridge 56. The upper surface 58 of

the male sealing member 50 is transversely spaced from the upper surface 16 of the body member 14 and, in preferred embodiments of the present invention, the male sealing member 50 is preferably molded unitarily with the body member 14. The bottom plate 40 extends under the lower surface of the male sealing member 50. The laterally extending ridge 56 is preferably longitudinally spaced from the rear wall 22 of the body member 14.

As shown more clearly in FIG. 2A, the female sealing member 52, which is also preferably molded unitarily with the body member 14, is provided with walls 60 defining a pair of longitudinally extending ridge accepting grooves 62 for accepting the longitudinal ridges 54 of an adjacent simulated shingle 10 in the same course thereof. Similarly, a laterally extending ridge accepting groove 64 is provided in the female sealing member 52 for accepting the laterally extending ridge 56 of an adjacent male sealing member 50. The sizes of the ridges 54, 56 and grooves 62, 64 are selected to provide a substantially water tight sealing therebetween.

FIG. 2B illustrates another embodiment of a female sealing member 52' in which a single groove 60' accepts both ridges 54. This structure may be preferred where thermal expansion may produce undesired stresses on the members.

In utilizing the principles of the present invention of the simulated shingles arrangement for covering a roof, it is preferable to have a separate eaves starter strip. Such an eaves starter strip is illustrated in FIG. 3 and is generally designated 70. The eaves starter strip 70 generally simulates the rear portion 38 of the simulated shingle 10 and has a body member 72 which, for example, may be fabricated from a foam polyurethane and is provided with a top plate 74 substantially identical to the top plate 36 and a bottom plate 76 having a rear edge 78 that is spaced from the rear edge 80 of the body member 72 the above defined third preselected longitudinal distance. The bottom plate 76 may extend to the forward face 82 of the eaves starter strip 70 and the forward face 82 of the eaves starter strip 70 is provided with a plurality of first walls 84 defining a plurality of grooves 86 therein extending transversely from the bottom surface 88 of the body member 80 to the top surface 90 thereof and also through the bottom plate 76. The lateral width of the eaves starter strip 70 may be made in lengths similar to the lateral width of the simulated shingles 10 described above and thus define a simulation of any desired number of adjacent shingles in the same course. Thus, the grooves 86 may be spaced on the order of 11 to 15 inches apart.

Exposed portions of the body member 82, when the body member 82 is fabricated of foam polyurethane, may also be coated as described above in order to prevent exposure thereof to ultraviolet radiation in the sunlight.

Referring now to FIG. 4 there is shown the installation of a plurality of shingles 10 in accordance to the present invention as installed upon a roof structure 92. Roof structure 92 generally comprises a plurality of interlocking sheeting members 94 upon which the simulated shake shingles 10 are installed. An eaves starter strip 70 is installed adjacent the outer edge 96 of the roof structure 92 and held in place with a conventional roofing nail 98. As can be seen, the roofing nail 98 is driven through the top plate 74 and bottom plate 76 of the eaves starter strip 70 and into the sheeting 94. A

first simulated shake shingle 10 in a first course is then slid into place with the forward portion 41 of the lower plate 40 underlying the lower surface 88 of the eaves starter strip 70 and the eaves starter strip 70 fitting into the channel 30 defined by the first walls 28 of the first simulated shake shingle 10. In this embodiment illustrated in FIG. 4 the rear surface 80 of the body member of the eaves starter strip 70 abuts against the base portion 34 of the first walls 28 defining the channel 30 in the first course of simulated shingles 10. Similarly, the forward edge 44 of the bottom plate 40 abuts against the rear edge 78 of the bottom plate 76 of the eaves starter strip 70. The roofing nail 98 is thus not exposed to the environment since it is covered by the first simulated shake shingle course 10. Since the bottom plate 40 is preferably planar it is in substantially continuous contact with the sheeting 94 throughout the lateral and longitudinal extent thereof.

Roofing nails 98' are then driven through the top plate 36, and bottom plate 40 of the simulated shingle 10 in those embodiments where the bottom plate extends longitudinally thereto, in the first course and into the sheeting 94 for securing the first course of simulated shake shingles 10 thereon. It will be appreciated that a plurality of roofing nails 98 and 98' may be utilized for securing the simulated shingle in the course of the present invention to sheeting 94 at any desired location throughout the lateral extent thereof.

Another course of simulated shake shingles, generally designated 10' is then installed by sliding the simulated shingle 10', which may be in a second course adjacent to the first course of the simulated shingles 10, into position so that the rear portion 38 of the first course of simulated shake shingles 10 is positioned within the channel 30 defined by the first walls 28 of the simulated shake shingle 10'.

The lower surface of the rear portion 38 may be tapered slightly to allow easier installation of the adjacent course of shingles.

As noted above when the body members of the simulated shingles according to the principles of the present invention are fabricated from a foam polyurethane it is preferable to apply a coating on surfaces thereof that after installation may be exposed to sunlight in order to prevent ultraviolet light from damaging the polyurethane foam. Accordingly, both FIGS. 2 and 4 show the coating 100 as applied to the upper surfaces 16 of the simulated shingles 10 as well as the forward surfaces 20 thereof. Similarly, for the eaves starter strip 70 the coating 100 may be applied on the forward surface 82 thereof. If it is necessary to trim or cut the simulated shingles 10 or the eaves starter strip 70 during installation on a roof as shown in FIG. 4 the cut surfaces may be coated on the job site with an appropriate coating to protect them from ultraviolet radiation.

FIG. 5 illustrates a section of the roof 92 extending to the hip and ridge 102. As shown on FIG. 5 each simulated shingle 10 simulates a single course of shingles and adjacent courses are interlocked in the manner shown in FIG. 4. Thus, adjacent courses are installed until the hip and ridge 102 is reached. If the courses have been installed as shown in FIG. 4, then the last simulated shingle 10a may be trimmed to the appropriate longitudinal length at the appropriate angle for matching the hip and ridge. Alternatively, of course, the plurality of courses of simulated shingles 10 may be installed without complete abutment of the shingles in

the channel of the next succeeding course and the amount of spacing precalculated so that an integral number of simulated shingle courses may be utilized up to the hip and ridge 102. Thus, the top plate 36 in each of the simulated shingles 10 may extend longitudinally to the rear surface 22 the first preselected longitudinal distance which is equivalent to the longitudinal depth of the top portion 32 of the first walls 28 defining a channel 30. Alternatively, if it is desired to have a spacing of the rear surface 22 from the base portion 34 of adjacent courses simulated shingles then the top plate 36 may extend a longitudinal distance towards the front surface 20 less than the first preselected longitudinal distance in order that the top surface 16 extends up to the next succeeding course of shingles. Thus, the aesthetic effect of a true simulated shingle roof may be provided regardless of the method of installation.

As shown in FIG. 5 a separate hip and ridge simulated shingle 104 is provided. The hip and ridge shingle 104 may also be utilized, of course, as a shingle on the rake of a roof.

The hip and ridge shingle 104 is illustrated in detail in FIGS. 6 and 7 and, as shown, is structurally similar to the simulated shake shingles 10. The hip and ridge shingle 104 is symmetrical about a longitudinal plane extending therethrough at the apex 106 thereof and has a first side portion 108 and a second side portion 110 substantially identical to first side portion 108. The angle  $b$  at which the first side portion 110 intersects the second side portion 108 along the apex 106 is preselected to be other than  $180^\circ$  and, for example, may be  $120^\circ$  or any other desired angular value. The shake shingle 104 illustrated in FIGS. 6 and 7 simulates two adjacent courses of shake shingles and, as is conventional in roofing, the longitudinal direction of the hip and ridge shake shingle 104 is at  $90^\circ$  to the longitudinal direction of the shake shingles 10, as illustrated most clearly in FIG. 5. An eaves starter strip 112 is utilized in the outer most hip and ridge shingle 104 in a manner analogous to the utilization of the eaves starter strip 70 and simulated shingles 10. The eaves starter strip 112 is similarly symmetrical about a plane passing through the apex thereof and has a lateral width equivalent to the lateral width of the simulated hip and ridge shingle 104.

The hip and ridge simulated shingle 104 is provided with a body member 114 which, for example, may be fabricated from foam polyurethane and the exposed surfaces of which may be coated with the coating 116, similar to the coating 100 described above. Body member 114 has a forward surface 118, a rear surface 120 spaced longitudinally therefrom, an upper surface 122 and a lower surface 124 spaced transversally from the upper surface 122. The body member 114 is also provided with first walls defining a channel 128 similar to the channel 30 of the simulated shingle 10 described above. A top plate 132 is coupled to the upper surface 122 at a rear portion 134 of the body member 114 and extends from the rear surface 120 longitudinally towards the front surface 118. The top plate 132 may be similar to the top plate 36 described above. A bottom plate 136 is coupled to the lower surface 124 and may be similar to the bottom plate 40 described above.

Each side portion 108 and 110 of the simulated hip and ridge shingle 104 simulates a single shingle in lateral width and thus the lateral distances between the side surface 138 and the apex 106 and the side surface 140 and the apex 106 are equivalent to the lateral width

of a single shingle. Thus, grooves simulating the relationship between adjacent shingles in the same course are not provided. When the hip and ridge shingle 104 simulates a shake shingle then the upper surface 122 may be both straited and undulating as described above.

The simulated hip and ridge shingle 104 simulates two shingles in adjacent courses. However, it will be appreciated, that the simulated hip and ridge shingle 104 made be made in any desired longitudinal length to simulate any desired number of shingles in adjacent courses. Since the hip and ridge shingle 104 does not adjoin shingles in the same course, there is no necessity for providing interlocking sealing means on the side edge 138 and 140 thereof and the side edges 138 and 140 made be coated with the coating 116 to prevent exposure thereof to ultraviolet radiation. Successive simulated hip and ridge shingles 104 in adjacent courses interlock in a manner as described above for the interlocking of adjacent courses of the shingles 10.

The simulated shingle 10 described above simulated a single course of shingles. It will be appreciated that the simulated shingles 10 may also be fabricated to simulate not only a plurality of shingles in the same course but also a plurality of adjacent courses of shingles extending in the longitudinal direction thereof. FIG. 8 illustrates a sectional view through a simulated shingle, generally designated 150, which simulates a plurality of courses of shingles. In general, the simulated shingle 150 is fabricated similarly to shingle 10 described above. Simulated shingle 150 is provided with a body member 152 having a forward surface 154, a rear surface 156 longitudinally spaced from the forward surface 154, an upper surface 158 and a lower surface 160 spaced transversely from the upper surface 158. The longitudinal spacing between the forward surface 154 and rear surface 156 is selected, in this embodiment of a shingle 150, to simulate four adjacent courses of shingles. In order to provide a more realistic simulation of shingles the walls 162 defining the channels 164 which simulates the separation between adjacent shingles in the same course, are staggered in the four portions so they are not longitudinally aligned. Thus, only the channel 164 in the portion 150' is shown in FIG. 8. The lateral width of the shingle 150 may simulate any desired number of adjacent shingles in a single course.

The shingle 150 is also provided with a top plate 166 coupled to the upper surface 158 in a rear portion 168 of the body member 152 and in general is similar to the top plate 36 described above. Similarly, a bottom plate 170 is coupled to the lower surface 160 of the body member 152 and in general is similar to the bottom plate 40 described above. The simulated shingle arrangement 150 also has first walls 172 defining a channel 174 adjacent the forward surface 154 into which the rear portion 168 of a similar adjacent shingle may be positioned as described above. It will be appreciated that simulated shingles 150 may be used in conjunction with single course simulated shingles, such as simulated shingle 10 described above, in the same roofing installation and with hip and ridge and rake shingles such as the simulated hip and ridge and rake shingle 104 shown in FIGS. 6 and 7.

When the body member 152 is fabricated from a foam polyurethane a coating 176 is applied to the external surfaces thereof that may be exposed to sunlight.

The coating 176 may be similar to the coating 100 described above.

This concludes the description of the preferred embodiments of the present invention. Those skilled in the art may find many variations and adaptations thereof and the attached claims are intended to cover all such variations and adaptations falling within the true scope of spirit thereof.

I claim:

1. An interlocking simulated shingle arrangement for installation on roofs, walls and other structures and comprising, in combination:

a body member having an upper surface, a lower surface transversely spaced from said upper surface, a forward surface, a rear surface longitudinally spaced from said forward surface, a pair of side surfaces laterally spaced from each other, and first walls defining a channel, and said first walls having a top portion transversely spaced from said upper surface and extending a first preselected longitudinal distance from said forward surface towards said rear surface, and said first walls having a base portion extending from said lower surface a second preselected transverse distance towards said upper surface;

a top plate coupled to said upper surface on a rear portion thereof adjacent said rear surface and extending laterally between said pair of side surfaces and extending longitudinally substantially said first preselected longitudinal distance to leave exposed said upper surface of said body member between said forward surface thereof and said top plate, and a combined transverse thickness of said rear portion of said body member at said rear surface thereof and said top plate substantially equal to said second preselected transverse distance;

a bottom plate coupled to said lower surface of said body member and extending laterally between said pair of side surfaces and having a back edge spaced a third preselected longitudinal distance from said rear surface of said body member and having a front portion extending from said base portion of said first walls of said body member a fourth preselected longitudinal distance therefrom towards said front surface of said body member and said front portion underlying and transversely spaced from said top portion of said first walls;

whereby said top plate and said rear portion of said body member of a first simulated shingle in a first course of simulated shingles is positionable in said channel of a second simulated shingle in an adjacent course of simulated shingles, and said front portion of said bottom plate of the second simulated shingle underlies the lower surface of the rear portion of the first shingle, and said bottom plate of said first and said second simulated shingles are in substantially continuous contact with the structure upon which the simulated shingles are installed.

2. The arrangement defined in claim 1 wherein: said body member is tapered and increases in transverse thickness from said rear surface towards said forward surface; and said lower surface and said bottom plate are planar.

3. The arrangement defined in claim 2 wherein:

said body member is foamed polyurethane plastic and said top plate and said bottom plate are plywood, and each of said top plate and said bottom plate have a transverse thickness on the order of  $\frac{1}{8}$  inch;

said top plate has an upper surface substantially coplanar with said upper surface of said body member; and

a preselected coating means on predetermined surface portions of said body member for preventing exposure thereof to ultraviolet light.

4. The arrangement defined in claim 3 wherein said simulated shingle simulates a shake shingle and further comprising:

second walls in said body member defining a plurality of longitudinal grooves in said upper surface of said body member extending longitudinally from said forward surface to said top plate, and extending transversely a predetermined depth towards said lower surface, and said plurality of longitudinal grooves in a predetermined spaced array; and said upper surface of said body member intermediate said plurality of longitudinal grooves is undulating and striated.

5. The arrangement defined in claim 2 wherein said third preselected longitudinal distance is substantially equal to said fourth preselected longitudinal distance, whereby said rear surface of the body member of the first simulated shingle in a first course is positionable adjacent said base portion of said first walls of said body member of the second simulated shingle in an adjacent course.

6. The arrangement defined in claim 2 wherein: said top plate extends a fifth preselected longitudinal distance from said rear surface of said body member towards said front surface thereof and said fifth preselected longitudinal distance is less than said first preselected longitudinal distance.

7. The arrangement defined in claim 1 and further comprising:

interlocking sealing means coupled to said pair of side surfaces of said body member and extending laterally therefrom for providing a water tight seal between adjacent simulated shingles in the same course.

8. The arrangement defined in claim 7 wherein said interlocking sealing means further comprises:

a male sealing member coupled to a first of said pair of side surfaces of said body member and extending laterally therefrom, and said male sealing member having at least one longitudinally extending ridge thereon; and

a female sealing member coupled to the other of said pair of side surfaces and extending laterally therefrom, and said female sealing member having walls defining a longitudinally extending, ridge accepting groove therein for accepting said longitudinally extending ridge on said male sealing member of an adjacent simulated shingle in the same course in water tight sealing relationship.

9. The arrangement defined in claim 8 wherein said interlocking sealing means further comprises:

a laterally extending ridge on said male sealing member; and

walls defining a laterally extending, ridge accepting groove in said female sealing member for accepting said laterally extending ridge on said male sealing

member of an adjacent simulated shingle in the same course in water tight sealing relationship.

10. The arrangement defined in claim 9 wherein: said male and said female sealing members are unitarily molded with said body member from a foamed polyurethane;

said laterally extending ridge on said male sealing member is spaced from said rear surface of said body member; and

a preselected coating means on predetermined surface portions of said body member for preventing exposure thereof to ultraviolet light.

11. The arrangement defined in claim 10 wherein: said top plate and said bottom plate are plywood and each have a transverse thickness on the order of  $\frac{1}{8}$  inch;

said lower surface of said body member and said bottom plate are planar and one of said male and female sealing members has a lower surface substantially planar with said lower surface of said body member;

said bottom plate extends co-extensively with and is coupled to said lower surface of said one of said male and female sealing members; and

said top plate has an upper surface substantially coplanar with said upper surface of said body member.

12. The arrangement defined in claim 11 wherein said interlocking simulated shingles simulates a shake shingle, and further comprises:

second walls in said body member defining a plurality of longitudinal grooves in said top surface of said body member extending longitudinally from said forward surface to said top plate, and extending transversely a predetermined depth towards said lower surface from said top surface, and said plurality of longitudinal grooves in a predetermined spaced array; and

said upper surface of said body members intermediate said plurality of longitudinal grooves is undulating and striated.

13. The arrangement defined in claim 1 wherein said body member is symmetrical about a longitudinal plane extending therethrough, and further comprises:

a first side portion extending from a first of said pair of side surfaces to said longitudinal plane; and

a second side portion extending from the other of said pair of side surfaces to said longitudinal plane and intersecting with said first side portion thereat and at a preselected angle, and said preselected angle is other than  $180^\circ$ .

14. The arrangement defined in claim 13 wherein: said body member is foamed polyurethane plastic and said top plate and said bottom plate are plywood, and each of said top plate and said bottom plate have a transverse thickness in the order of  $\frac{1}{8}$  inch;

said top plate has an upper surface substantially coplanar with said upper surface of said body member; and

a preselected coating means on predetermined surface portions of said body member for preventing exposure thereof to ultraviolet light.

15. The arrangement defined in claim 14 wherein: said third preselected longitudinal distance is substantially equal to said fourth preselected longitudinal distance, whereby said rear surface of the body

15

member of the first simulated shingle is position-  
able adjacent said base portion of said first walls of  
said body member of the second simulated shingle.

16. The arrangement defined in claim 15 wherein: 5  
said top plate extends substantially said first pre-  
selected longitudinal distance from said rear surface  
of said body member towards said front surface

16

thereof.

17. The arrangement defined in claim 13 wherein:  
said top plate extends a fifth preselected longitudinal  
distance from said rear surface of said body mem-  
ber towards said front surface thereof, and said  
fifth preselected distance is less than said first pre-  
selected longitudinal distance.

\* \* \* \* \*

10

15

20

25

30

35

40

45

50

55

60

65