

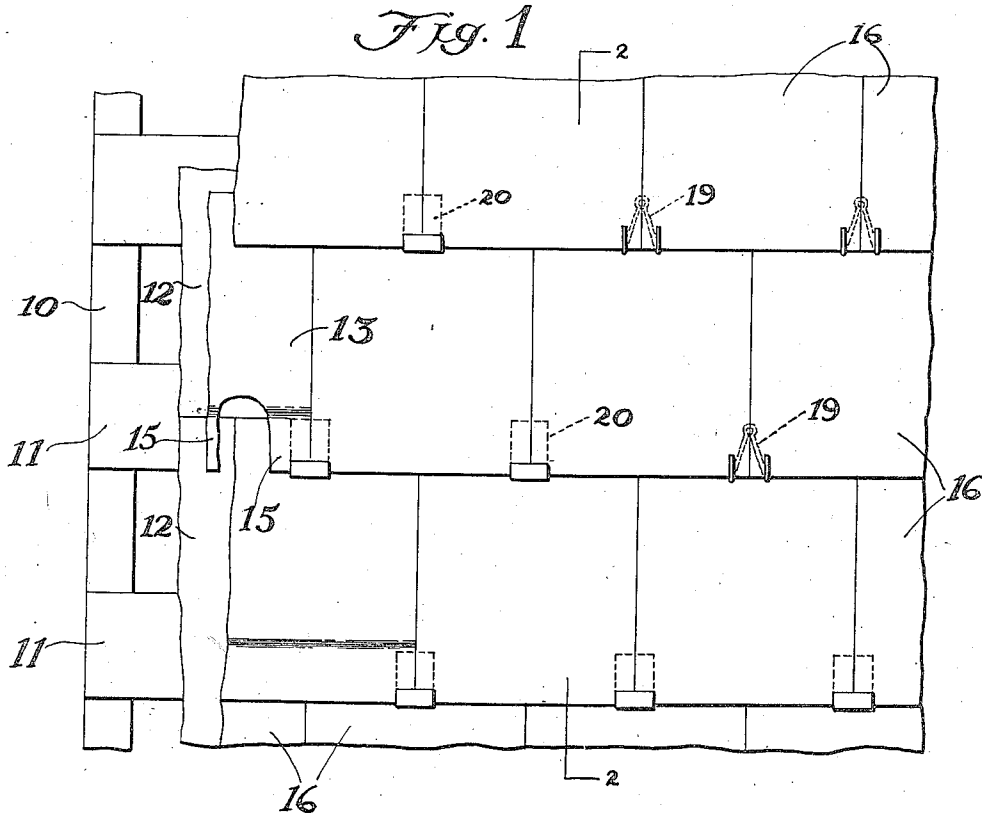
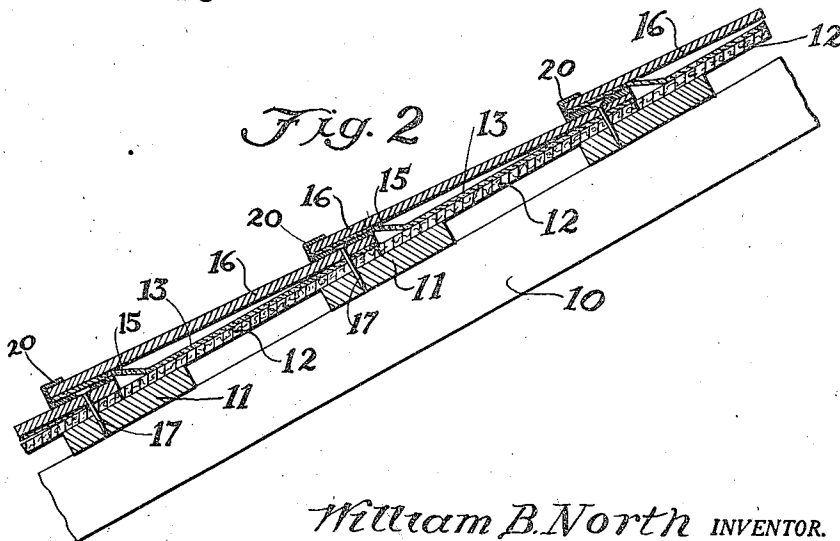
March 7, 1939.

W. B. NORTH
BUILDING CONSTRUCTION

2,149,818

Filed Oct. 1, 1937

3 Sheets-Sheet 1



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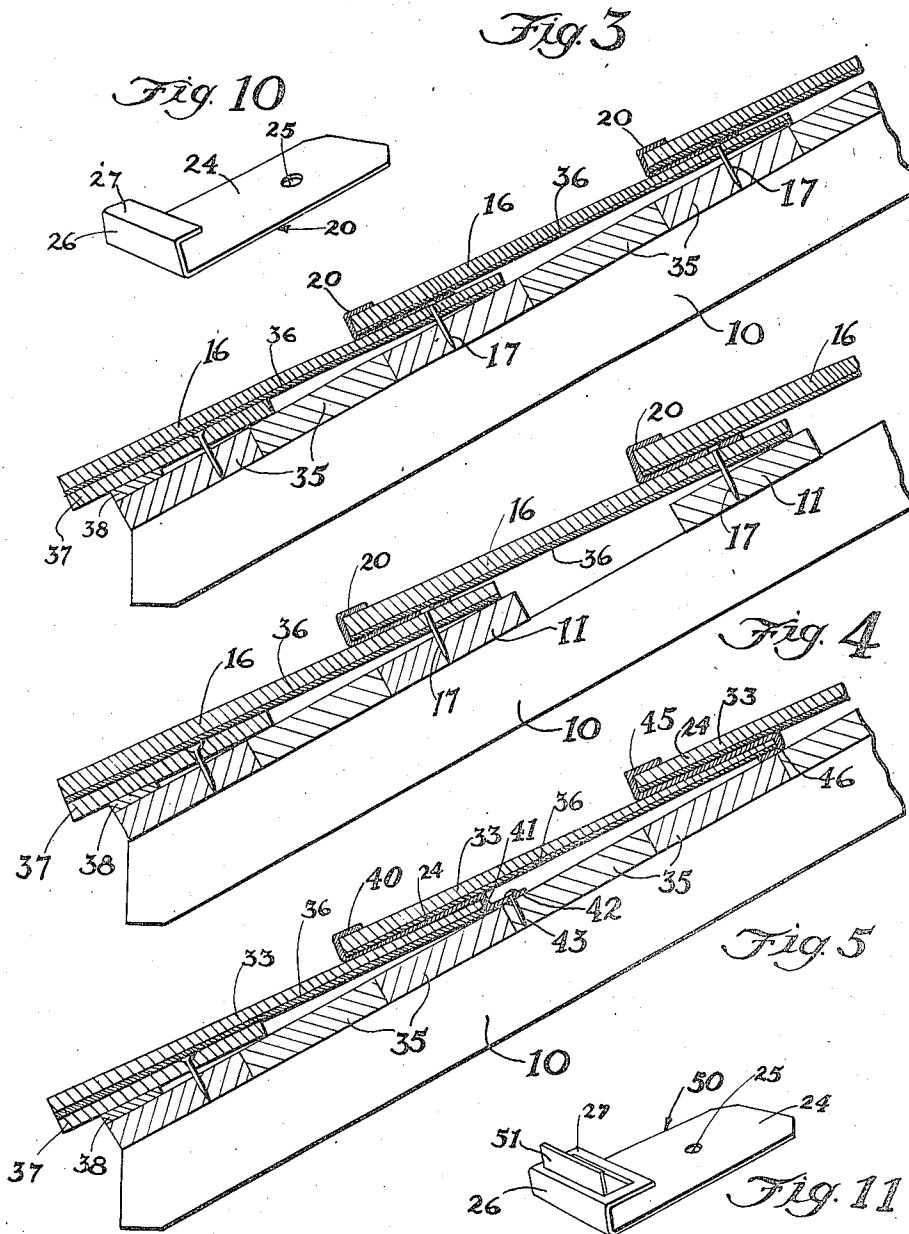
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3 Sheets-Sheet 2



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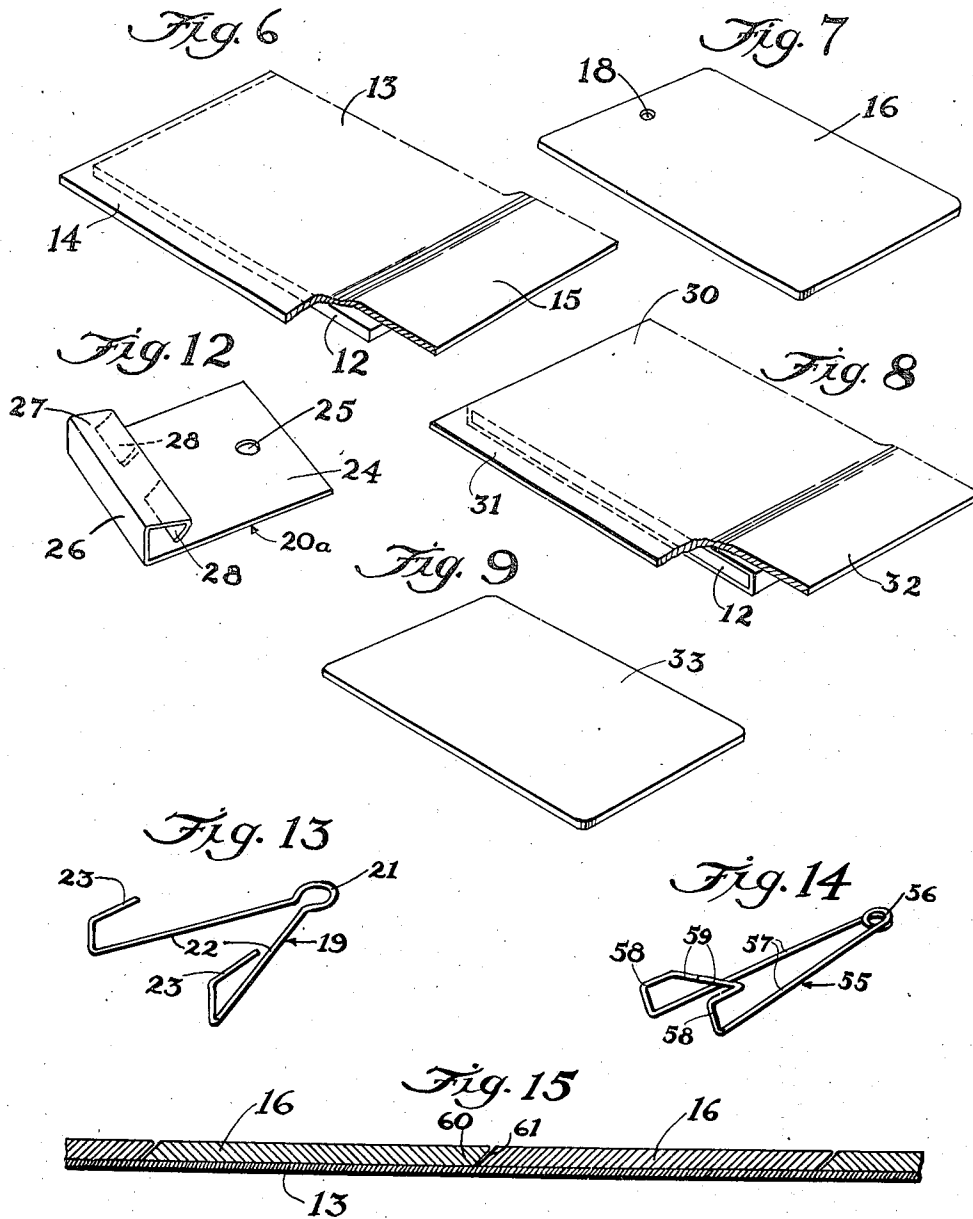
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,149,818

BUILDING CONSTRUCTION

William B. North, East Orange, N. J.

Application October 1, 1937, Serial No. 167,985

12 Claims. (Cl. 108—9)

This invention relates to building construction and more particularly pertains to roofing and siding constructions for buildings, enclosures and the like, and to methods of applying such constructions.

This application is a continuation-in-part of my application Serial No. 48,252, filed November 4, 1935, which is a continuation-in-part of my application Serial No. 655,981, filed February 9, 1933. The present application also contains disclosures of my abandoned application, Serial No. 644,809, filed April 6, 1933.

The invention provides a roof and siding construction of the shingle type, employing composition, slate, wood, asbestos and cement shingles, or shingles of other materials, wherein the shingles are disposed and secured in such manner that only a single overlapping of the successive rows of shingles is required, thereby providing a construction which is economical of material but in which there is no sacrifice of durability. Roof and siding constructions embodying the invention are of considerable less weight than equivalent conventional arrangements and they can be applied with less manual effort and with relatively inexperienced labor. The composite construction embodying the invention not only provides an exterior exposed surface, but also provides insulation against transmission of heat therethrough and may, if desired, constitute the entire structure of the wall or roof other than the structural supporting members such as studs, rafters, and the like. In some instances it may be desirable to bevel abutting edges of adjacent shingle units to prevent the passage of direct sun rays between the units and resultant damage to underlying felt.

In the preferred method of securing the shingle units in the application of the roof or siding construction, each unit is secured to the base structure at three spaced points with the exposed corners of each unit so secured that even if a unit cracks or breaks, all parts of the unit will remain secured in place and the construction will not leak as each course of shingle units is underlaid with felt or other waterproofing material. For these reasons, roof and siding constructions embodying the invention are particularly well suited to climates in which high wind storms or sudden temperature changes are prevalent.

The invention and its advantages will be understood from the following description when considered in connection with the accompanying drawings forming a part thereof, and in which:

Fig. 1 is a partial plan view of a roof or siding

construction embodying the invention, with parts removed to show the novel form of insulation and waterproofing utilized;

Fig. 2 is a longitudinal sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a sectional view similar to Fig. 2 showing a form of the invention applied to closed sheathing;

Fig. 4 is a sectional view similar to Fig. 3 showing a form of the invention applied to open sheathing or shingle lath;

Fig. 5 is a sectional view similar to Fig. 3 illustrating other forms of clips for securing the shingle units to the base structure;

Fig. 6 is a fragmentary perspective view of an insulation unit of the invention;

Fig. 7 is a perspective view of a surfacing unit;

Fig. 8 is a perspective view of another form of an insulating unit;

Fig. 9 is a perspective view of another form of surfacing unit;

Figs. 10 to 14 inclusive are perspective views of several forms of clips for the shingle units, and

Fig. 15 is a transverse sectional view of a shingle course showing another form of shingle unit.

Like characters of reference refer to the same or similar parts throughout the several views.

Referring to the drawings, particularly to Figs. 1 and 2, reference character 10 designates studs or rafters upon which the composite shingle or siding structure of my invention is laid. Spaced and parallel wooden strips or shingle lath 11 extend at right angles to the members 10 and are secured thereto by nails or the like on centers which ordinarily are no greater than the length of the exposed portion of the shingle units applied thereto. Strips or units of insulation board 12 of fibre or other suitable material are laid on the strips 11. The insulation units 12 are preferably of a width equal to the length of the shingle unit to be laid thereover less the amount of the shingle overlap and these units 12 are secured to the shingle lath 11 in abutting relationship as shown, to form a continuous covering for the roof or wall structure. The form of insulation unit shown in Figs. 1 and 2 is illustrated more clearly in Fig. 6. Referring to Fig. 6, the unit 12 has a sheet 13 of waterproof material such as asphalt, saturated and/or coated felt, secured to the upper surface thereof by any suitable adhesive. The sheet 13 extends beyond one side of the unit to provide a side flap 14 and also beyond one end of the unit to provide an end flap 15. The other end of the sheet 13 is preferably square with the

other end of the insulation unit 12, but the other side of the sheet stops short of the other edge of the unit 12 to accommodate the side flap 14 of an adjacent abutting shingle unit and thus avoid overlapping of the waterproofing sheets. Overlapping courses of surfacing or shingle units 16, Fig. 7, are laid upon the insulation units in the manner illustrated in Figs. 1 and 2.

In applying the covering to a wall or roof, the insulating units 12 are placed in abutting relationship on the strips 11 with the side flaps 14 of the waterproofing sheets 13 overlapping the adjacent units 12 to seal the joints between the sides of these units and with the end flaps 15 overlapping the abutting ends of adjacent units 12 to seal the joints between the ends of these units. The shingle units 16 are then laid in overlapping courses with the heads of the shingle lying under the end flaps 15 of the waterproofing sheets 13 as clearly shown in Figs. 1 and 2. Each shingle is secured to the insulation and to a strip 11 by a nail or other driven element 17 which passes through an aperture 18 in the central portion of the head of the shingle and is covered by the end flap 15 on a unit in the course next above. Each driven element 17 also secures a shingle clip in place which serves to support the adjacent ends of the two shingles which overlap the shingle through which the driven element passes. If the shingles provide a roof covering, the hook-shaped wire clip 19 shown in Fig. 13 may be used, and if the shingles are part of a siding or wall, the sheet metal form of clip 20 shown in Fig. 10 may be conveniently used although these clips are not limited to these particular uses. These clips are nailed directly to, or in direct contact with, the surface of the shingles at the head portions thereof, and both the body portions of the clips and the nails which secure them in position are covered by a flap extension 15 on the sheet 13 of the next succeeding course. In other words, the nails 17 do not pass through the waterproof sheets 13 or their side or end flaps at any place where the latter overlap the shingles of the course below. After one course of shingles has been laid in the manner described and the end flaps 15 of a succeeding course have been laid over the heads of the shingles and the clips and nails holding the shingles of said one course in place, another course of shingles overlapping said one course is then laid. In laying the overlapping course, the shingles are positioned so that the joints between adjacent shingles are disposed between or staggered with reference to the joints in the overlapped course, with adjacent butt corners of the shingles resting in one of the clips 19 or 20. In positioning the shingles in the overlapping course, the head of each shingle is disposed under the overhanging flap 15 of a waterproof sheet in the course next above while one corner of the butt of the shingle is placed into a supporting clip 19 or 20. By this method, the roof or siding structure is built up course by course until the entire covering is completed. It will be apparent that since the end flaps 15 of the waterproof sheets 13 are positioned on top of the shingles at their head ends and also over the driven elements and clips as overlapping courses of shingles are applied, the flaps 15 serve as seals between the heads of one course of shingles and the butts of the shingles in the overlapping course and thereby prevent the entry of moisture between the contacting surfaces of the heads and butts of the shingles and around the driven elements into the roof or wall structure.

From the foregoing it will be perceived that roof and wall constructions embodying the invention use less shingle material and can be built up or applied with much less labor as compared with that involved in the application of shingles laid in accordance with any method heretofore used, for the reason that the shingle courses overlap but one other course and the overlap is only a minor portion of the length of the shingles, instead of overlapping at least two other courses or overlapping both the head and side portions of the shingles as has been customary heretofore, and for the further reason that by providing nail holes 18 in the heads of the shingles (or nailing markings in lieu of holes) it is unnecessary to be continually measuring during application of the shingles to be certain that the shingles are being applied with the proper exposure. In accordance with the present invention, the shingles cannot be applied otherwise than in their proper relationship because the position of each shingle is predetermined by the positioning and nailing down of the clips 19 and 20 which serve to hold the shingles of each preceding or overlapped course in place.

The shingle clip 19 is formed from a single length of wire of suitable character and is so formed that it has a nail receiving loop 21 at one end of diverging leg members 22, and a shingle butt receiving hook 23 at the other end of each leg.

Shingle clip 20 is formed from a single piece of sheet metal and has a rectangular body portion 24 having a nail receiving hole 25 therein centrally disposed in one end portion. The other end has angled portions 26 and 27 which provide a pocket with the body portion approximately the thickness of a shingle butt. The body portion 24 may be provided with one or more corrugations running parallel to the side edges to prevent bending of the body portion if desired.

For siding or wall constructions, the sheet metal clip 20a is preferably used rather than the wire clip 19 to avoid the danger of clothes being caught on the outer hooked ends of the wire clip. Clip 20a is like clip 20 excepting that portion 27 has a pair of spaced, integral lugs 28 which extend toward the body member as shown in Fig. 12. When the butt of a shingle is forced into the pocket aforesaid, the lugs 28 press against the shingle butt and tend to pull the portion 27 tightly against the upper surface of the shingle so that there are no projecting ends on the siding or wall construction to catch and tear clothing and the like.

Fig. 8 discloses another form of insulation unit with a waterproofing sheet. This unit is the same as the unit shown in Fig. 6 excepting that waterproofing sheet 30 is wrapped entirely around the two faces and both ends of the insulation unit 12 with one end of the sheet 30 being disposed at the point at which the end flap begins as shown in Fig. 8. Sheet 30 has an integral side flap 31 extending from the upper face only of the unit and an integral end flap 32 which extends only from the upper face of the unit like the flaps 14 and 15 respectively. Sheet 30 is secured to the unit 12 by any suitable adhesive material.

Fig. 9 shows a surfacing or shingle unit 33 similar to the unit 16 of Fig. 7 excepting that the unit 33 is not provided with a nail hole. If desired, the unit 33 may be provided with nailing markings to assist in properly locating the nails

and clips when applying the shingles. Unit 33 may also be used with the form of clip shown in Fig. 5 and presently to be described.

The form of the invention shown in Fig. 3 is similar to the form shown in Fig. 2 excepting that the shingles 16 are laid over closed sheathing 35 on the studs or rafters 10 and no insulation is disposed over the sheathing. Also in lieu of the weatherproofing sheets 13 and their flaps 14 and 15, strips 36 of asphalt, impregnated or similar waterproof felt are laid under each course of shingles and over the heads of the shingles in the overlapped course and over the clips 20 and the nails 17 to provide the requisite seals and waterproofing. The felt strips 36 are preferably continuous for each course and are laid from a roll of felt prior to applying the shingles in the course under which the felt is disposed. The first course of shingles is laid over a starter strip 37 which is given the required cant by a cant strip 38. Insulation units such as the units 12 may be used between the sheathing and the shingles if desired, although waterproofing sheets 13 on the units 12 are not required in this instance.

The embodiment of the invention illustrated in Fig. 4 is similar to the form shown in Fig. 3 excepting that open sheathing or lathing 11 is used above the wall line instead of closed sheathing. Insulation material such as the units 12 or in any other convenient form, may be disposed over the lathing 11, but with the use of the felt 36, the waterproofing sheets 13 are not necessary.

The form shown in Fig. 5 is the same as that disclosed in Fig. 3 excepting for the form of the shingle clips used. Shingle clip 40 is like clip 20 excepting that the body portion 24 has no nail receiving aperture but the body portion has an integral right angled flange 41 at its upper end which abuts the head end of the shingle and a flange 42 integral with flange 41 and extending parallel to and outwardly from the body portion 24 which has an aperture therein for receiving a nail 43. With this form of clip, the shingle is secured in position without having any nails passing through the shingle, since the nailing down of the clip to the sheathing or laths firmly presses the head of the shingle against the sheathing or laths so that it cannot readily be dislodged. Shingle clip 45 is like clip 40 with the exception that the upper end of the body portion 24 has an integral hook-like portion which forms a pocket into which the head of the overlapped shingle is received. With this form of clip, no nails are used.

Clip 50 illustrated in Fig. 11 is the same as clip 20 shown in Fig. 10 with the exception that portion 27 has a part 51 struck out of it and bent at right angles thereto to provide a snow guard which extends normal to the plane of the roof to prevent snow and ice from sliding off a roof on which the clips 50 are used.

Clip 55 shown in Fig. 14 is a wire clip similar to wire clip 19 of Fig. 13, but the wire is coiled to form a nail receiving loop 56 from which extend the diverging leg members 57 on the other ends of which the hook-like members 58 formed to receive in a snug fit the butt of a shingle, have aligned and abutting extensions 59 which lie on the upper face of the shingle received in the members 58.

In the form of the invention illustrated in Fig. 15, the abutting side edges 60 and 61 of the shingles 16 are provided with parallel bevels, that is to say one side edge of each shingle is bevelled and the other side edge is provided with a bevel

parallel to the bevel on the other edge. When shingles so formed are applied in courses as indicated in Fig. 15, direct entry of the rays of the sun through the joints at the sides of the shingles is prevented, whereby the waterproof sheet 13 which generally includes some asphalt, is protected from the damaging effect of the actinic rays of the sun.

The insulating boards 12 having waterproof sheets 13 adhering thereto, may be of a width equal to the length of a shingle minus the amount of the shingle overlap, or they may be of a width which is equal to the center to center spacing of the shingle laths where the latter are used. However, larger units of insulating material may be used with waterproofing material arranged and disposed thereon so as to provide a plurality of spaced and parallel rows of flaps under which the heads of the shingles of the underlying course are inserted in the manner illustrated in Fig. 2.

From the foregoing it will be perceived that with a roof or wall siding construction as herein described and embodying any of the various types of shingles or strip shingles or siding, there is provided not only an exterior surface for such structure but in addition the construction provides a heat insulated structure which is insulated not only by the fiber insulating board of the combination but which is also further insulated by the amount of the effective insulation of the closed air space which is formed between the back side of each shingle and the outer surface of the waterproof sheet 13 which is secured on the surface of each of the insulating boards 12. An important advantage obtained by the use of this construction and one which is particularly advantageous in the construction of low cost homes, is that if dressed lumber is used for the studs or rafters and dressed lumber is used for the shingle lath, the interior of the structure—particularly in the form shown in Figs. 1 and 2—having such exterior surface need not be otherwise finished since it is unnecessary to apply inside of the studs or rafters insulating board as interior finish or lath and plaster or like common interior finish materials. It will be understood that if desired, the inner surface of the fiber insulating boards 12 may be stained or painted and that the studs or rafters may be stained or painted. From the structural standpoint, surfaces embodying the invention comprise complete and finished exterior surfaces, and an interior finish, which additionally affords insulation against the transmission of heat therethrough.

The embodiments of the invention herein disclosed are preferred forms, and since changes in these embodiments and their several features, including changes in size, shape, materials, and relative location of the several parts may be made without departing from the principles of the invention, the invention is not to be limited excepting by the scope of the appended claims.

What is claimed is:

1. A roof or siding construction comprising a base structure, overlapping courses of shingles on the base structure, each course having adjacent shingles therein laid in substantially abutting relationship and having the head ends only of the shingles therein overlapped by but one other course, driven elements for securing the shingles of each course to the base structure, said elements being disposed beneath the overlapping portions of shingles in another course, shingle supporting members arranged to support the lower edge portion of each shingle and

weatherproofing means under the joints between shingles in each course and over the driven elements in an overlapped course, said shingle supporting members having a portion underlying the weatherproofing means in the overlapped course.

2. A roof or siding construction comprising a base structure, overlapping courses of shingles on the base structure, each course having adjacent shingles therein laid in substantially abutting relationship and having the head ends only of the shingles therein overlapped by but one other course, driven elements for securing the shingles of each course to the base structure, said elements being disposed beneath the overlapping portions of shingles in another course, shingle supporting members secured in position by said driven elements and arranged to support the lower edge portion of each shingle, and weatherproofing means under the joints between shingles in each course and over the driven elements in an overlapped course.

3. A roof or siding construction comprising a base structure, overlapping courses of shingles on the base structure, each course having adjacent shingles therein laid in substantially abutting relationship and having the head ends only of the shingles therein overlapped by but one other course, a single driven element passing through the upper portion of each shingle for securing the shingles to the base structure, said driven elements being disposed beneath the overlapping portions of shingles in another course, a shingle supporting member secured in position by each driven element and arranged to engage and support a lower corner portion of a shingle in an overlapping course, and weatherproofing means under the joints between shingles in each course and over the driven elements in an overlapped course.

4. A roof or siding construction comprising a base structure, overlapping courses of shingles on the base structure, each course having adjacent shingles therein laid in substantially abutting relationship and having the head ends only of the shingles therein overlapped by but one other course, driven elements for securing the shingles of each course to the base structure, said elements being disposed beneath the overlapped portions of shingles in another course, shingle supporting members arranged to support the lower edge portion of each shingle, weatherproofing means under the joints between shingles in each course and over the driven elements in an overlapped course, and insulating material between the shingles and the base structure.

5. A roof or siding construction comprising a base structure, overlapping courses of shingles on the base structure, each course having adjacent shingles therein laid in substantially abutting relationship and having the head ends only of the shingles therein overlapped by but one other course, driven elements for securing the shingles of each course to the base structure, said elements being disposed beneath the overlapping portions of the shingles in another course, shingle supporting members arranged to support the lower edge portion of each shingle, and weatherproofing means under the joints between shingles in each course and over the driven elements in an overlapped course, adjacent edges of adjacent shingles having parallel bevels.

6. A roof or siding construction comprising a base structure, overlapping courses of shingles on the base structure, each course having ad-

jacent shingles therein laid in substantially abutting relationship and having the head ends only of the shingles therein overlapped by but one other course, the shingles in alternate courses being positioned in staggered relationship with the shingles in the other courses, a plurality of shingle supporting members each engaging the head of a shingle, a driven element driven into the base structure above the head end of each shingle for securing each of said members in position to secure each shingle to the base structure, said driven element being disposed beneath overlapping portions of shingles in another course, each of said shingle supporting members engaging the lower portion of a shingle, and weatherproofing means under the joints between shingles in each course and over the driven elements in an overlapped course.

7. A roof or siding construction comprising a base structure, overlapping courses of shingles on the base structure, each course having adjacent shingles therein laid in substantially abutting relationship and having the head ends only of the shingles therein overlapped by but one other course, the shingles in alternate courses being positioned in staggered relationship with the shingles in the other courses, a plurality of shingle supporting members each engaging the head of a shingle, a driven element driven into the base structure through the head end of each shingle for securing each of said members in position to secure each shingle to the base structure, said driven element being disposed beneath overlapping portions of shingles in another course, each of said shingle supporting members engaging the lower portion of a shingle, and weatherproofing means under the joints between shingles in each course and over the driven elements in an overlapped course.

8. A roof or siding construction comprising a base structure having open or closed sheathing, insulating material over the sheathing, waterproofing material on the insulating material arranged to provide a plurality of spaced, parallel rows of loose flaps, overlapping courses of shingles on the waterproofing material with the head ends of the shingles disposed under said flaps and securing means for the head ends of the shingles also disposed under said flaps, said flaps being disposed under the butt ends of shingles in courses disposed above said flaps.

9. A roof or siding construction comprising a base structure having open or closed sheathing, insulating material over the sheathing, waterproofing material on the insulating material arranged to provide a plurality of spaced, parallel rows of loose flaps, overlapping courses of shingles on the waterproofing material with the head ends of the shingles disposed under said flaps and a driven element passing through the head end of each shingle and into the base structure and disposed under a flap, said flaps being disposed under the butt ends of shingles in courses disposed above said flaps.

10. In a roof or siding construction, a base structure, courses of heat insulation boards laid upon the base, each insulation board having secured to its upper face a weatherproof surfacing sheet having one edge portion extending beyond one edge of the corresponding insulation board, overlapping courses of shingles laid upon the insulation board courses, each of the shingles having driven elements disposed therethrough and into the base structure, the weatherproof surfacing extensions disposed between the adjacent

overlapping edges of the shingles whereby the said extensions overlaid the upper portions of the driven elements there being secured under the head of each driven element a clip having a portion extending around an edge of an overlapping shingle and bearing on the outer face thereof.

11. In a roof or siding structure, a base structure, covering structure thereon comprising heat insulation board units applied over the base structure, each of said units having sheet form waterproof material secured on its upper surface and extending beyond its lower edge and shingles applied over the heat insulation units, the shingles being secured adjacent their head ends by nails driven through the insulation into the base structure and at their butt ends by securing clips held in place by the nails securing the head ends of a preceding course, the extending portion of the waterproof sheet material being positioned between the underside of the shingle at its butt end

and the clip and providing a weatherproof seal over the nail head, the nails extending through the shingles at predetermined positions and serving to secure the entire covering structure to the base structure.

12. A roof or siding construction comprising a base structure, overlapping courses of shingles on the base structure, the courses being laid in such manner that the head ends only of the shingles in each course are overlapped by but one other course, driven elements for securing the shingles of each course to the base structure, said elements being disposed beneath the overlapping portions of shingles in another course, shingle supporting members arranged to support the lower edge portion of each shingle and weatherproofing means under the joints between shingles in each course and over the driven elements in an overlapped course.

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