July 31, 1945. G. B. BOOTH 2,380,398

ROOFING SHINGLE OR TILE

Filed June 2, 1944 4 Sheets-Sheet 1

FIG. 1.

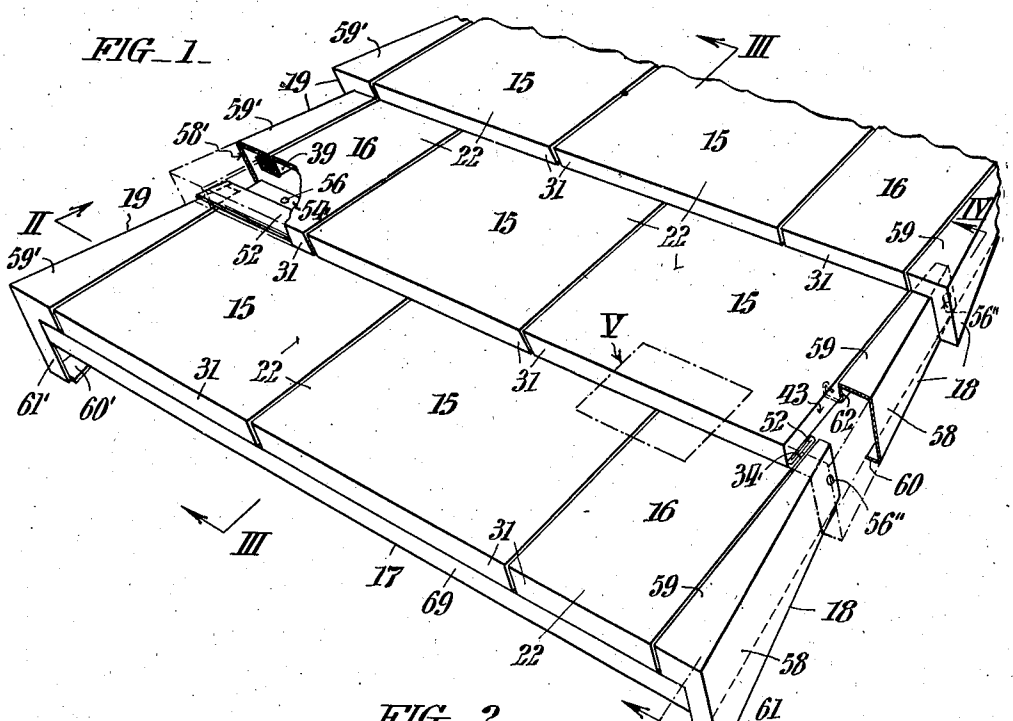
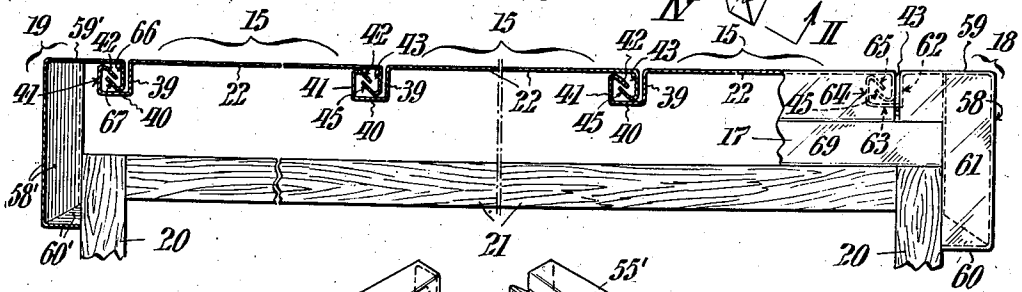


FIG. 2.



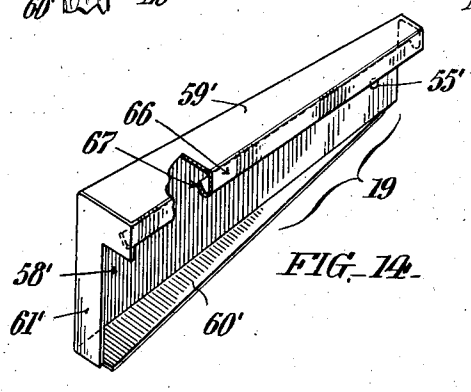


FIG. 14.

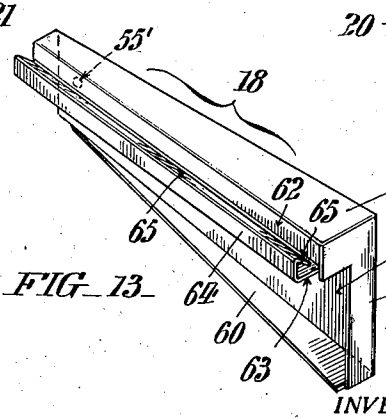


FIG. 13.

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July 31, 1945. G. B. BOOTH 2,380,398

ROOFING SHINGLE OR TILE

Filed June 2, 1944 4 Sheets-Sheet 2

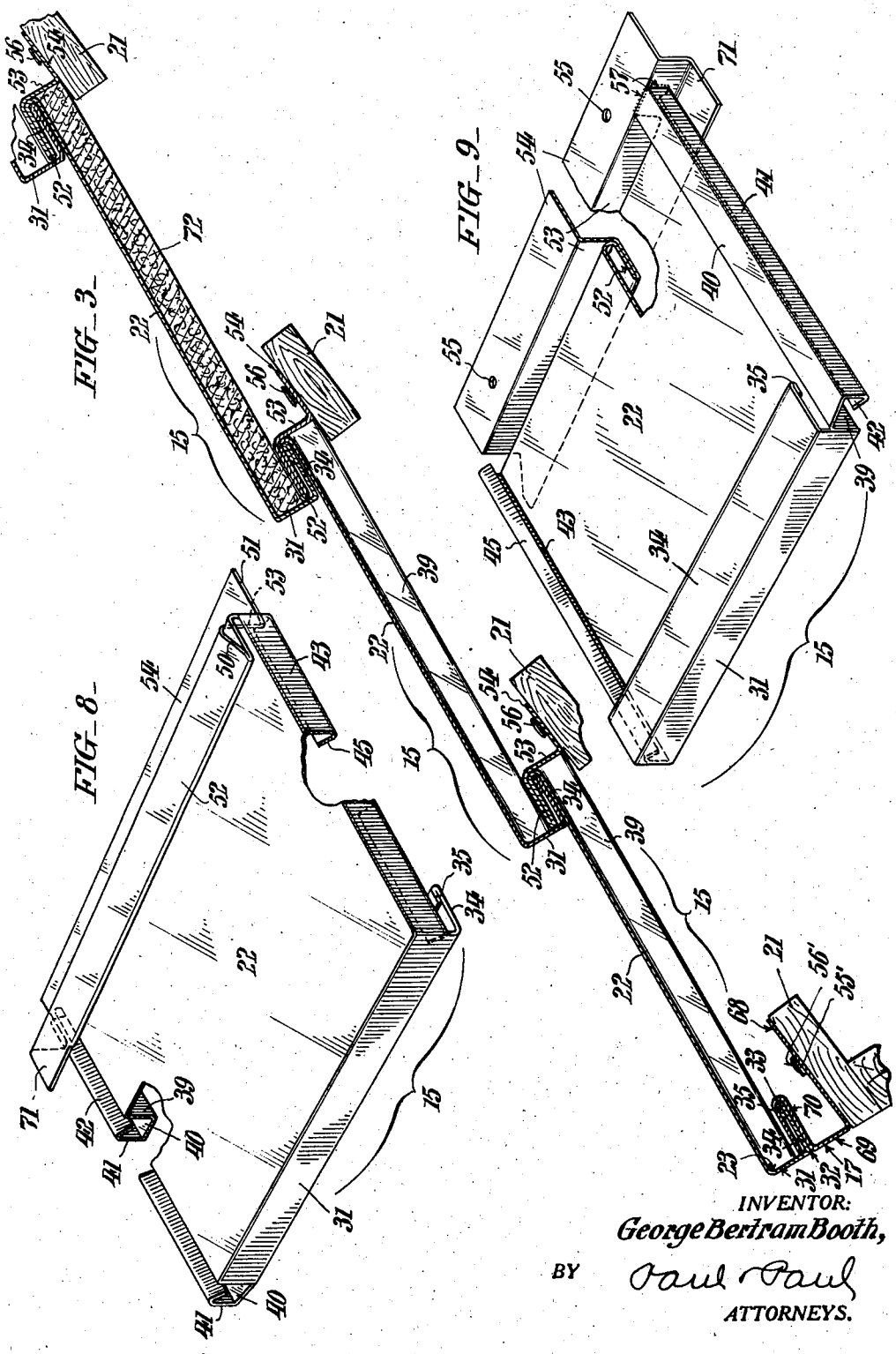


FIG. 3.

FIG. 9.

FIG. 8.

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July 31, 1945. G. B. BOOTH 2,380,398

ROOFING SHINGLE OR TILE

Filed June 2, 1944 4 Sheets-Sheet 3

FIG. 5.

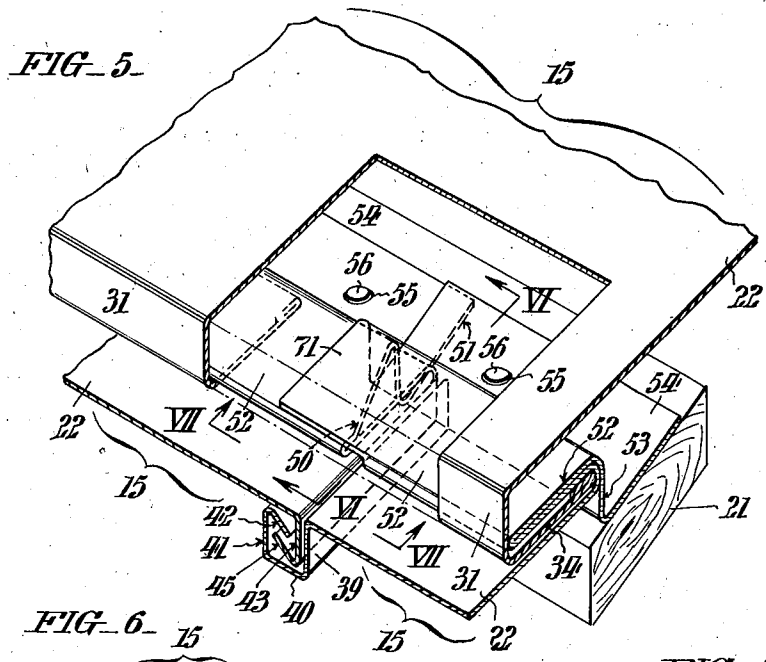


FIG. 6.

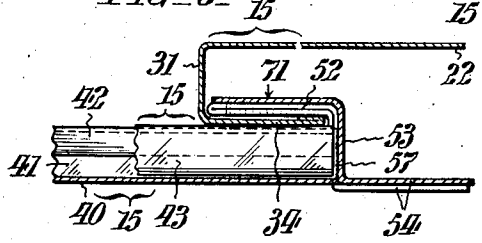


FIG. 7.

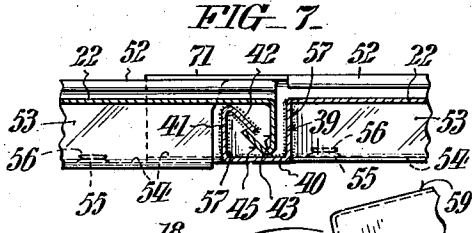
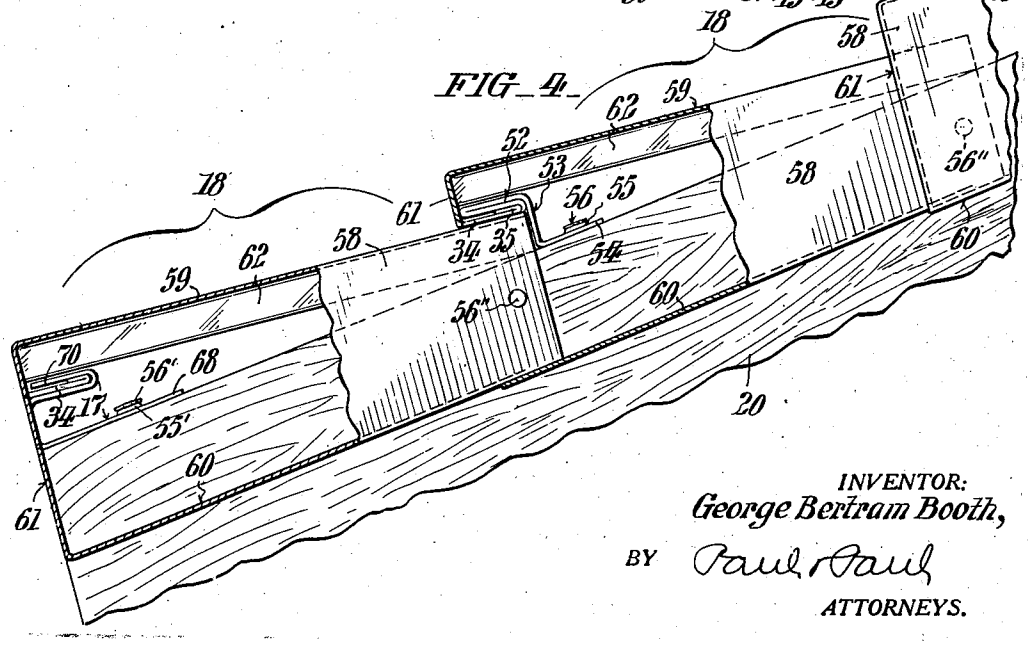


FIG. 4.



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July 31, 1945. G. B. BOOTH 2,380,398

ROOFING SHINGLE OR TILE

Filed June 2, 1944 4 Sheets-Sheet 4

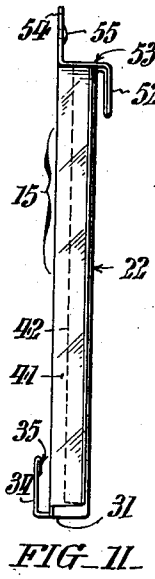


FIG. 11.

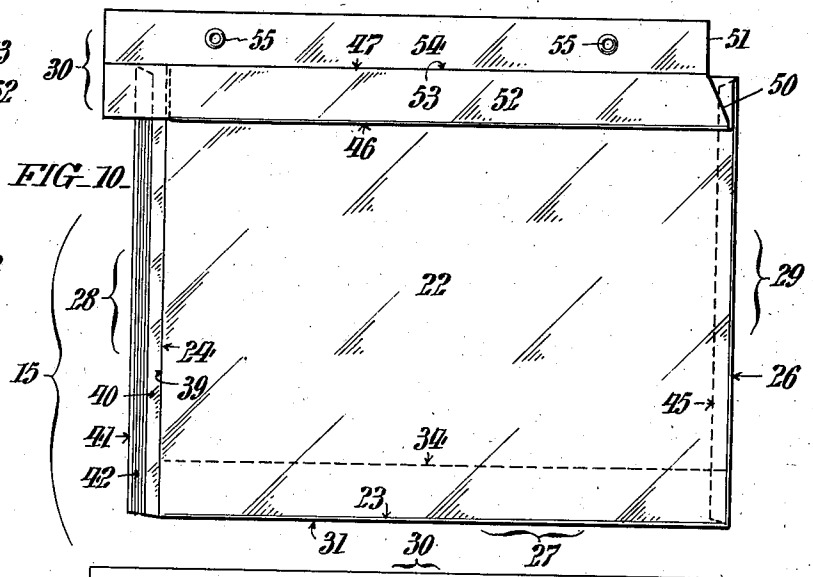


FIG. 10.

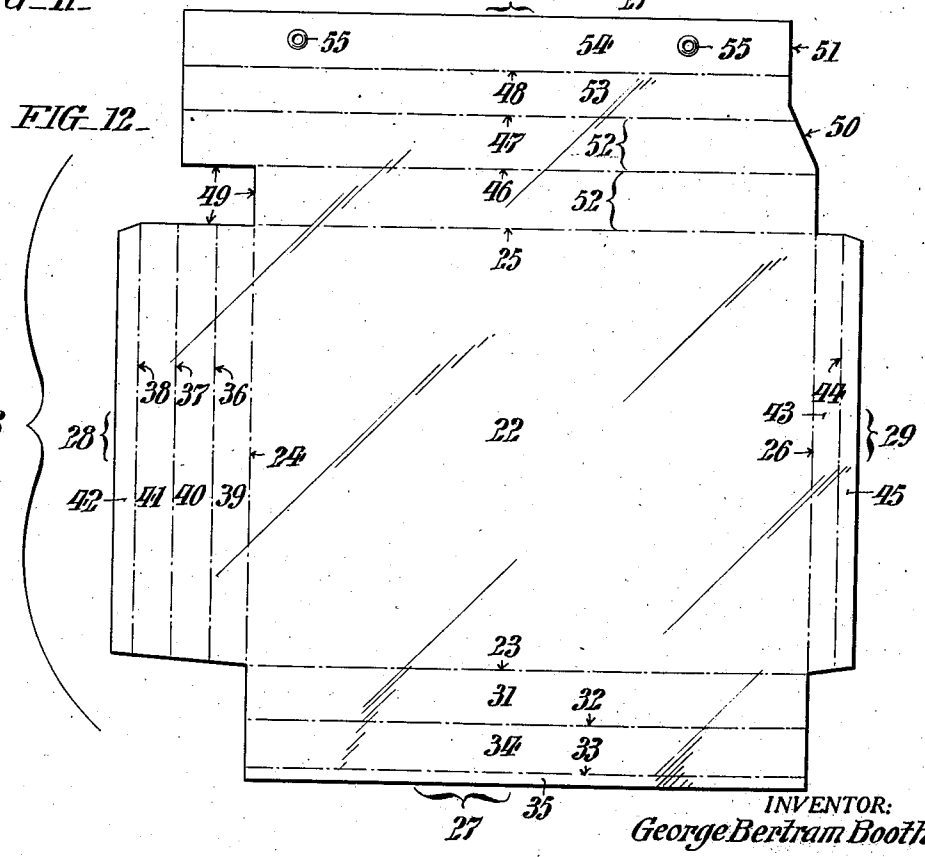


FIG. 12.

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Patented July 31, 1945 2,380,398

UNITED STATES PATENT OFFICE

2,380,398

ROOFING SHINGLE OR TILE

George Bertram Booth, Beaumont, Tex.

Application June 2, 1944, Serial No. 538,419

8 Claims. (Cl. 108—17)

This invention has general reference to protective covering for building structures while it relates, more particularly, to sheathing or tile preferably designed for use as a weather protective for buildings with pitched roofing.

The primary object of this invention is to provide what I preferably term a triple-locking shinge or tile which is not only durable but is more weather-proof than the generality of analogous known means.

Another object of my invention is the provision of triple-locking shingle or tile which, when laid, interlock with one another at the sides as well as with the relatively staggered succeeding tier of such shingles or tile so that when a surface is covered-in by the improved shingle or tile, in accordance with my improvements, it is wholly integrated, completely weather-proof and free of any vibratory tendencies, with ample provision for expansion and contraction.

A further object is to provide a triple-locking shingle or tile which can be laid on beams and rafters without the usual under-sheathing, while the individual shingle or tile can be fabricated of any desirable and suitable material by easy shaping, molding, or pressing.

Other objects, with ancillary advantages, will be duly noted or become apparent to those skilled in the art, upon a full understanding of the construction, arrangement and operation of the means hereinafter disclosed.

For the purpose of illustrating this invention, there is shown, by the accompanying four sheets of drawings, a typical embodiment of a preferred means which has been found in practice to definitely carry out the objects above stated; although it is to be understood said means is not conclusive, inasmuch as the various components may be otherwise arranged and organized with corresponding advantageous results; hence the instant disclosure should not be considered as limitative other than reasonable interpretation of the concluding claims requires.

In the drawings:

Fig. 1 is a fragmentary perspective view of an assembly of roof-tiling embodying the present inventive features, with parts broken out and in section to better disclose otherwise hidden structure.

Fig. 2 is a staggered cross-section of the same, taken approximately as indicated by the angled-arrows II—II in Fig. 1, and drawn to larger scale for greater clarity of structural details.

Fig. 3 is a longitudinal section through the tile assembly of Fig. 1, taken on the plane designated by the angled-arrows III—III and drawn to larger scale for clearer illustration; said section also showing how the improved tiling can be applied to spaced timbers without any undersheathing.

Fig. 4 is a similar section to the preceding, but taken on the plane indicated by the angled-arrows IV—IV in Fig. 1.

Fig. 5 is a fragmentary perspective view, with a part broken out and other portions in section, taken locally within the confines of the dot-and-dash lined area designated V in Fig. 1, and drawn to larger scale for better clarification of a triple-locking feature involved in this invention.

Fig. 6 is a section taken as designated by the angled-arrows VI—VI in Fig. 5.

Fig. 7 is a similar section on the plane VII—VII of Fig. 5.

Fig. 8 is a perspective view of the inverted shallow pan-like tile-unit, of this invention, with portions broken-out to better illustrate important details.

Fig. 9 is a similar illustration to the preceding, of the improved pan-like tile-unit as viewed from the bottom or underside thereof.

Fig. 10 is a top plan view of the tile-unit shown in perspective by the two preceding figures.

Fig. 11 is a side view looking toward the right-hand of Fig. 10.

Fig. 12 is a plan view of one form of blank from which the shallow pan-like tile-unit of this invention is formed.

Figs. 13 and 14 are perspective views, respectively of a right-hand and a left-hand side member, hereinafter fully described.

In describing the form of the invention exemplified by the drawings herewith, specific terms will be employed for the sake of clarity, but it is to be understood the scope of said invention is not thereby limited, each such term being intended to embrace all reasonable equivalents which form the same function for an analogous purpose.

Referring more in detail to the drawings the tile assembly or construction therein shown, comprises general units comprehensively designated 15, similarly formed half-units 16, an eave-starter 17, and associated right and left-hand side members or gables 18, 19, respectively; while 20 indicates rafters and 21 intervening spaced timbers.

Each unit or tile 15, as best understood from Figs. 8–12, inclusive is preferably fabricated from a sheet material blank B, Fig. 12, of either plain or ornamental character as desired, said blank

being conveniently of the general outline shown. More specifically, the blank B is of sheet metal and embodies a main or weather area 22 defined by the interior rectangularly-related dot-and-dash scorings 23, 24, 25 and 26; a bottom or eave-engaging section 27; flanking side gables 28, 29 respectively; and an upper interlocking-section 30; each of which will be described in detail. The eave-engaging section 27 is appropriately bent along the lower line or score 23 to define a wall 31 at a right-angle to the general plane of the weather area 22; and along other paralleling lines or scorings 32, 33 to respectively form a flange 34 with an inwardly-directed retroversion 35; said flange being approximately spaced parallel to the area 22, as readily understood on an examination of Figs. 3, 8, 9 and 11 more particularly: while the retroversion 35 reinforces and stiffens the flange 34, in an obvious manner.

The left-hand side portion 28 is scored and bent along parallel lines 36, 37 and 38 to define an inner wall 39—Figs. 8 and 9—similar to the wall 31 aforesaid, a web 40, as well as an outer wall 41 paralleling the wall 39, with the bend along the line 38 setting apart an approximately forty-five degree lip 42, serviceable to interlock with the adjoining tile unit 15, or gable 19, as hereinafter set forth; while it is to be noted the inner wall 39 is of less depth than the wall 31. On the other hand the right-hand side portion 29 of the blank B is bent along the line 26 to define a wall 43, of like depth to the wall 39, while the outer part of said portion 29, beyond an intermediate scoring or line 44 sets apart an approximately forty-five degree lip 45 for inter-engagement with the lip 42 of an adjoining tile unit 15, or the side gable 18, as later on explained. Incidentally it is to be particularly noted that the parts 31, 34 and 35 of the eave-engaging section 27 jointly form with the adjoining part of the area 22 what may be conveniently termed a channel-shape; the parts 39, 40, 41 a channel-section with an inwardly angled lip 42; and the parts 43, 45 a hook-section.

Referring now to the upper inter-locking section 30 it will be observed that the same is scored along lines 46, 47 and 48 paralleling the line 25, hereinbefore referred to; while it is to be further seen that the blank B is rectangularly notched out at one side as designated 49, and at the other side it is stepped or obtusely-angled inwards as indicated at 50, 51, for purposes later on set forth. The section 30 is bent along the lines 25, 46 to define a double-thickness retroversion or flange 52 spacedly-paralleling the upper portion of the weather area 22 of the tile 15; whereupon said section is further bent along the lines 47 and 48 for provision of a wall 53, paralleling the wall 31 hereinbefore referred to and an upper securing-flange 54, said parts 53, 54 forming an angle-section upper extension of the tile 15, and the flange 54 being provided with outwardly-projecting hollow truncate-offsets 55, for passage of the tile attaching means 56. It is noteworthy that by forming the offsets 55 as described when the means 56 are driven into the members 21, or rafter 20, said means 56 will be effectively locked or anchored in place, against working loose, incidental to partial collapse of the offsets 55 into "biting" engagement with the shank of the means 56, as readily understandable by those conversant with the art. At this juncture it is well to note, that the several walls 31, 41, 43 and 53 provide a surrounding flange for the weather area 22 and form the tile 15 into what may be aptly defined as an inverted shallow pan-like unit. Furthermore when the tile 15 has been fashioned, as above set forth, the wall 53 where it abuts the end of the parts 31, 40 and 41 is brazed or welded to such parts as conventionally indicated at 57, in Fig. 9. Obviously the abutting end edges of the several walls 31, 43, 44 and 53 may be similarly united if deemed expedient or necessary, although I have found in practice that such connection of said wall ends, for all ordinary purposes, is unnecessary.

Turning now to the side members or gables 18, 19 the former or right-hand gable 18, as best shown by Figs. 1 and 13, is of somewhat wedge-shape in plan and outside elevation as clearly shown in Fig. 1; or more particularly described the gable 18 embodies a flat main wall 58, an upper wall or flange 59, a lower inwardly-directed flange 60, and an inverted somewhat L-shaped end flange 61. The main wall is provided with a truncated hollow cutset 55' for passage of attaching means 56', see Fig. 4, as previously described in connection with the tile units 15; while attention is directed to the fact that the lower flange 60 merges from its lower or wider end into the upper end of the main wall 58, as clearly shown in Fig. 13. The upper flange 59 is formed with an inwardly located channel portion 62, 63, and 64 with an angular-lip 65, see Figs. 2 and 13 to best advantage, in all respects complemental to the parts 39—42 previously described. On the other hand, the side gable 19, embodies a flat main wall 58' having an outset 55', an upper flange 59', a lower flange 60', and an end flange 61'; all of which, with the exception of the upper flange 59' are the counterpart of the correspondingly numbered portions of the side gable 18: whereas the upper flange 59' is simply provided with a downwardly-directed hook-flange 66, 67 similar to the right-hand parts 43, 45 of the tile unit 15.

The eave-starter 17, as best understood from Figs. 3 and 4, consists of an unsymmetrical channel-shape embodying a securing flange 68, an angularly-related web or wall 69, and a U-section flange 70 of a dimension to snugly receive the flange 34 with its retroverted edge 35, of the tile 15, so that the wall 31 of the latter and the wall 69 of the eave-starter 17 are disposed in a common plane, and thereby present a neat and finished appearance along the lower edge of the tile assembly; while the securing flange 68 is provided with spaced truncate-outsets 55' for attaching means 56', as aforesaid.

From the foregoing disclosure the manner of laying the tile 15 will be more or less apparent, but it is desired to briefly point out, assuming no roof-sheathing is laid on or covers in, the rafters 20 and spaced members 21, that the eave-starter 17 is first secured to the lower roof-member 21, see Fig. 3 to best advantage, by aid of the attaching means 56'. The lower row of tile units 15, with an end half-unit 16, are next consecutively inter-engaged by an obvious upward sliding action from left to right for instance. Or, more specifically, the lowermost left-hand tile 15 is placed in position with the flange 34 moved into snug interengaging coaction with the U-shaped flange 70 of the eave-starter 17, such action normally positioning said tile vertically and laterally, whereupon the tile 15 is secured in place by driving the attaching means 56 through the associated outsets 55 into the spacedly-upwards roof-member 21. The adjoining tile 15 to the right-hand is next moved into position with

its parts 39—41 interengaged with the hooked-flange or parts 43, 45 of the first mentioned tile, and as readily understandable on an examination of Fig. 2; when said adjoining tile 15 is secured in place, as aforesaid. This latter operation is continued until the requisite number of tiles 15 are laid whereupon the half-tile 16 is correspondingly applied and fastened in position to complete the lower row of tiles; from end rafter 20 to end rafter 20. The super adjoining row of tile 15, 16 are reversely applied and secured in place, or they are laid downwardly from above and from right to left commencing with a tile 15 and ending with a half-tile 16, whereby proper staggering of the successive rows of tiles is attained, until the ridge of the roof is reached. The side members or gables 18, 19 are next matingly-applied by downward sliding engagement of their respective parts 62—65 and parts 66, 67, with the confronting parts 43, 44 and 39—42 of the adjoining tiles 15 or 16, in a manner clearly apparent; and, as each gable 18 or 19 is connected in position, it is fixed by driving the associated attaching means 56' into the confronting rafter 20, see Fig. 4.

Referring now to Figs. 3–7 it will be readily apparent that the respective tile 15, 16, when laid, are positively interlocked at three distinct and inter-related positions namely: (1) to the eave-engaging flange 70 or to the flange 52 of the relatively subjacent adjoining tile 15 and half-tile 16; and (2) to one-another at the respective adjoining sides. In other words the entire field tiles 15, 16, as well as the gables 18, 19 are so constructed that they are interlocked with the eave-starter 17 or with one another along their lower edges as well as at their respective sides; and that each tier or row of tiles 15, 16 is correspondingly interlocked to the immediately below and above tier or row of such tiles; which results in the entire field of said tiles being effectively integrated into a non-vibratory whole, that is weather-proof and highly efficient. It is also to be particularly noted that by forming the blank B with the notch 49 and stepped end 50, 51 provision is made for a rigidifying overlap 71, at the left-hand side of each tile 15 or 16, for example, which serves not only to maintain each row of tile in alignment but also as a clamping closure for the upper junctures of the tile side interlocks.

It will therefore be readily understood that the tile 15, 16, and associated gables 18, 19 can be readily fabricated of any desirable sheet or other material, that is capable of being molded or pressed into the shape desired or required, such as metal, wood, clay, cement, glass, plastic, and even certain types of paper, without departing from the fundamentals of this invention. Another important advantage of my invention resides in the fact that by making the tile 15, 16 in the form of shallow pan-like units each said tile may have a slab 72 of appropriate insulating material fitted therein, as conventionally indicated in the upper tile 15 of Fig. 3, such slab being retained in position by seating on the tile flange 52, or the eave-starter flange 70, along its lower edge portion, and by resting on the super-spaced member 21, as clearly understandable on inspection of Fig. 3.

From the foregoing it is considered the merits and advantages of the improved tile hereinbefore disclosed will be clearly apparent; also that the explained embodiment thereof fully justifies the objects set forth in the prefatory paragraphs of this specification; and furthermore that detail changes may be made in the form and assembly of the various items, without departing from the spirit of said invention as comprehended within the scope of the following claims.

Having thus described my invention, I claim:

1. A shingle construction which comprises in combination units of rectangular contour, each such unit embodying a channel-like lower-interlocking part with the lower flange having its free edge retroverted to define a reinforce; laterally spaced interlocking portions, respectively of channel and hook formation, said channel formation being below and within the confines of the shingle at one side with the hook formation flanking the other side of said shingle; a downwardly-directed overhang including an angle-section attaching-extension along the top of the shingle, such overhang serving to interengage with corresponding units of a superjacent tier of said units; approximately wedge-shaped gables having provisions for mating application to the respective sides of the shingle units; and an unsymmetrical channel section starter having one flange of compacted U-shape to snugly interengage the lower flange of the interlocking part of the initial row of shingle units, whereby said parts are integrated against vibration.

2. A roof construction which comprises in combination an eave-starter of unsymmetrical channel-section having one flange forming an attaching portion and the other flange retroverted to compacted U-shape; tile units of generally rectangular contour, each such unit embodying a channel-like lower part with the longitudinal edge of the relatively free flange inwardly retroverted for snug interlock in the eave-starter U-shaped flange; a rectangular-section groove formation along one side and a hook-formation flange along the opposite side of said units, said groove formation being below and within the confines of the unit with the hook-formation flanking the opposite side thereof; and a downwardly-directed overhang with an angle-section attaching-flange extension along the upper part of the tile unit, such overhang being spaced inwardly over the weather surface of the tile unit and serving to interengage with the lower channel-like flanged part of a superjacent tier of the units, whereby the entire roof construction can be integrated against vibration.

3. A roof construction which comprises in combination a starter of unsymmetrical channel-section having one flange forming an attaching portion and the other flange retroverted to compacted U-shape; tile units of generally rectangular contour, each such unit embodying a channel-like lower part with the longitudinal edge portion of the relatively free flange inwardly retroverted for snug interlock in the eave-starter U-shaped flange; a rectangular-section groove formation along one side and a hook-formation flange along the opposite side of said unit, said groove formation being below and within the confines of the tile unit with the hook-formation flanking the opposite side of such unit; a downwardly-directed overhang spaced inwardly over the weather surface of the tile unit and including an angle-section attaching extension at the upper end of said unit; and approximately wedge-shaped gables having interlocking provisions for mating application to the respective outer sides of the roof construction, whereby the entire roof area, including the eave-starter, tile units and gables, is integrated against vibration.

4. A roof construction as defined in claim 3 wherein each tile unit is fabricated of sheet-material to embody a lower rectangular channel-like part with the relatively free edge of the lower flange retroverted inwards as a reinforce; the opposing sides of the tile respectively including a rectangular channel-section, flankingly outset in respect to the plane of the tile unit, with the outer flange having its free edge portion angled downwardly inwards to define an approximately forty-five degree locking lip, and a paralleling rectangularly directed flange having its free edge angled upwardly inwards to form a substantially forty-five degree locking lip; and the upper portion of the tile unit embodying an inwardly-directed spaced retroversion paralleling the upper face of said tile unit as well as a right angled wall and attaching flange-extension, said flange-extension being co-planar with the tile upper face.

5. A roof construction as defined in claim 3 wherein the wedge-shaped gable units for one side of said construction each embodies a flat main wall, a rectangularly-related upper flange including a channel-section outer portion with the free edge thereof angled inwards to form an approximately forty-five degree locking lip, a lower rectangularly-related flange tapering from the gable lower end to merge with the main wall upper edge, and an inverted L-shaped end wall for closing-in the lower end of said gable when matingly applied to the roof construction side edge.

6. A roof construction as defined in claim 3 wherein the wedge-shaped gable units for the other side of said construction each embodies a flat main wall; a rectangularly-related upper flange with a right-angled down portion, said down portion including a complementally-angled section with the relatively free flange portion inwardly bent to form a downwardly-directed hook-shaped interlock; a lower right-angled flange tapering from the gable lower end into the main wall upper edge; and an inverted L-shaped end wall at a right-angle to the main wall for closing-in the lower end of the gable unit when matingly inter-engaged to the roof construction side edge.

7. As a new article of manufacture a sheet-material inverted pan-like tile of rectangular contour, said tile embodying a channel-shaped lower part with the relatively lower flange having its longitudinal free edge inwardly retroverted to define an edge reinforce; a channel-section outset to the plane of the tile at one side, with the relatively outer flange of such channel-section outset inwardly angled to provide an inwardly and downwardly-directed locking lip; a rectangularly-related flange, at the opposite side of the tile, having its outer longitudinal edge portion similarly angled inward to define an upwardly-directed locking lip paralleling the first mentioned lip; and a downwardly-directed upper spacially related overhang parallel with the weather surface of the tile, said overhang including a rectangularly shaped extension defining a top wall for the tile with a forwardly directed attaching flange in the plane of the lower surface of said tile.

8. A new article of manufacture as defined in claim 7 wherein the retroverted upper portion of the tile is extended beyond the one side of said tile to facilitate alignment of the adjoining one, and to close in the upper end of the registering channel-section outset.

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