April 2, 1940. O. V. BUMPAS 2,195,847

INTERLOCKING SHINGLE

Filed Jan. 19, 1939 3 Sheets-Sheet 1

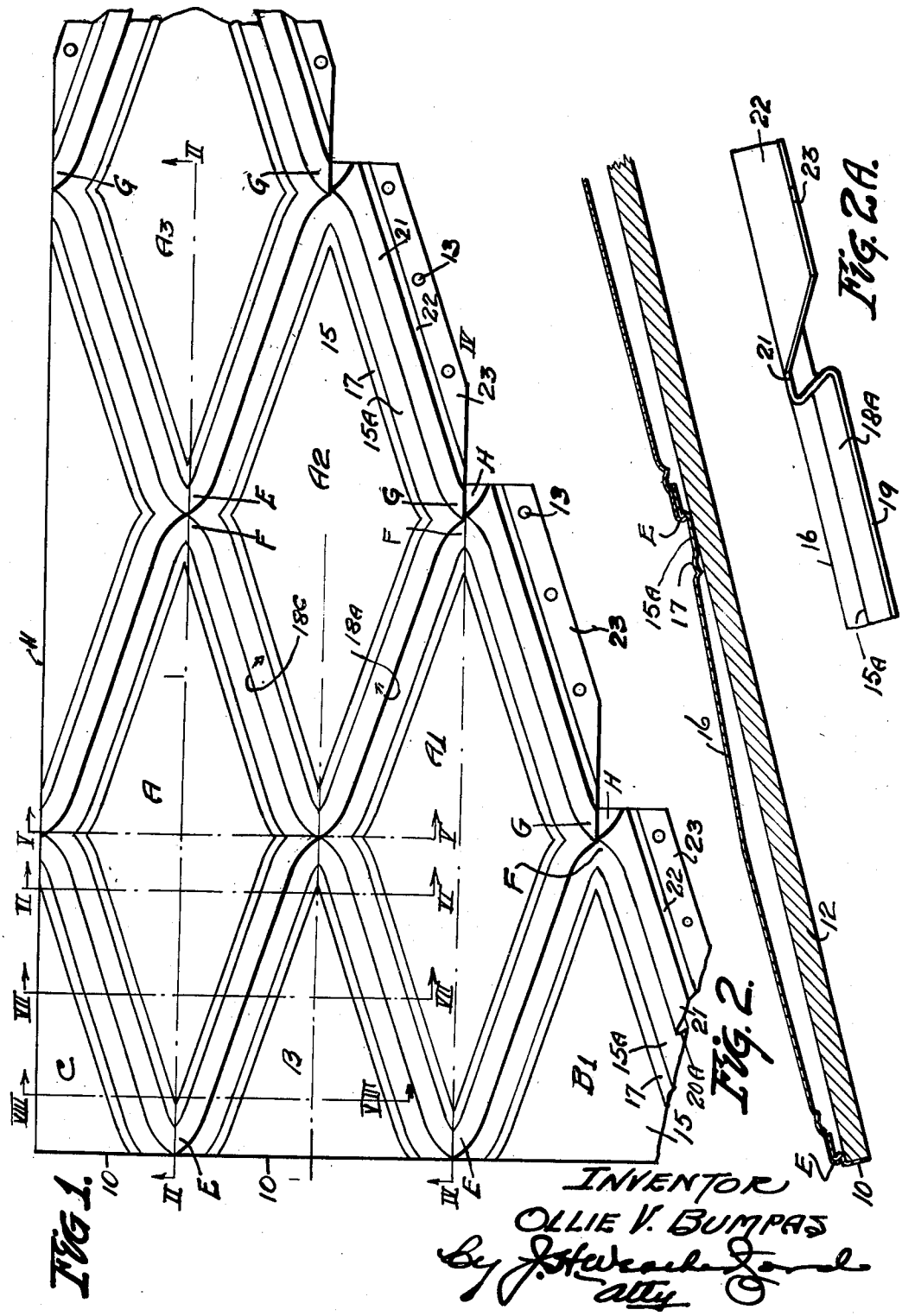

Fig. 1.

Fig. 2A.

Fig. 2.

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FIG. 3.

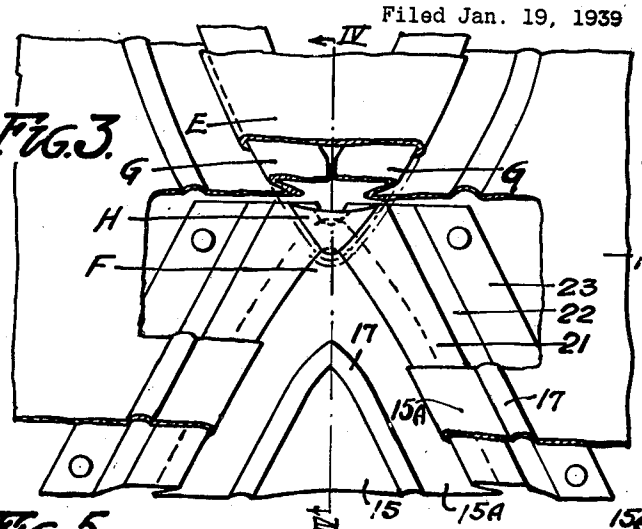

FIG. 4.

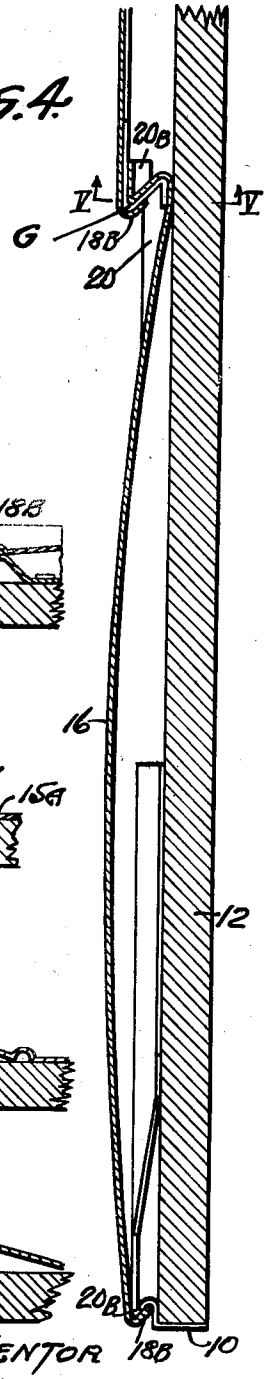

FIG. 5.

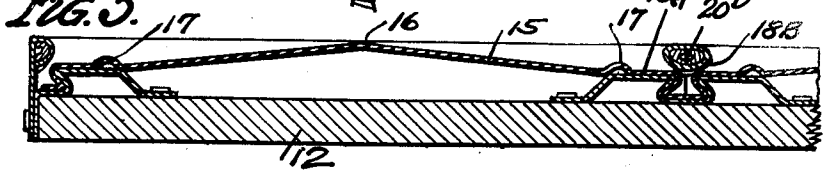

FIG. 6

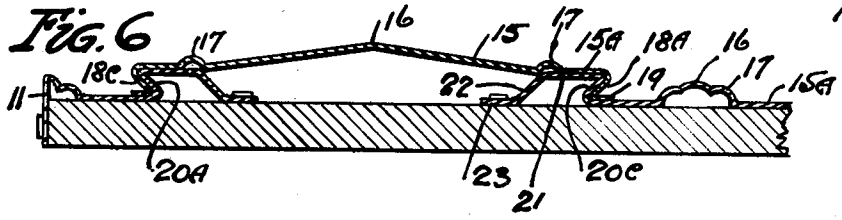

FIG. 7.

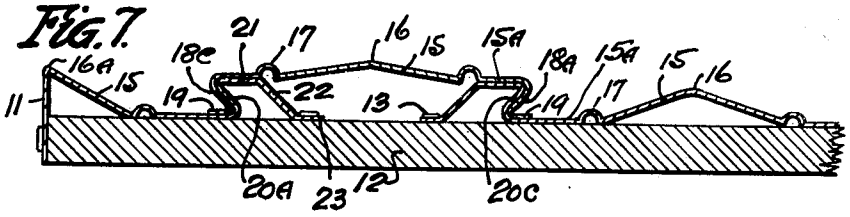

FIG. 8.

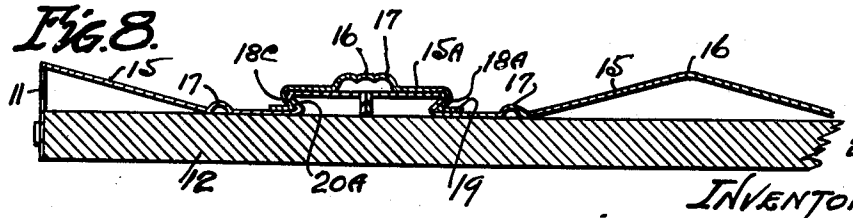

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Fig. 9.

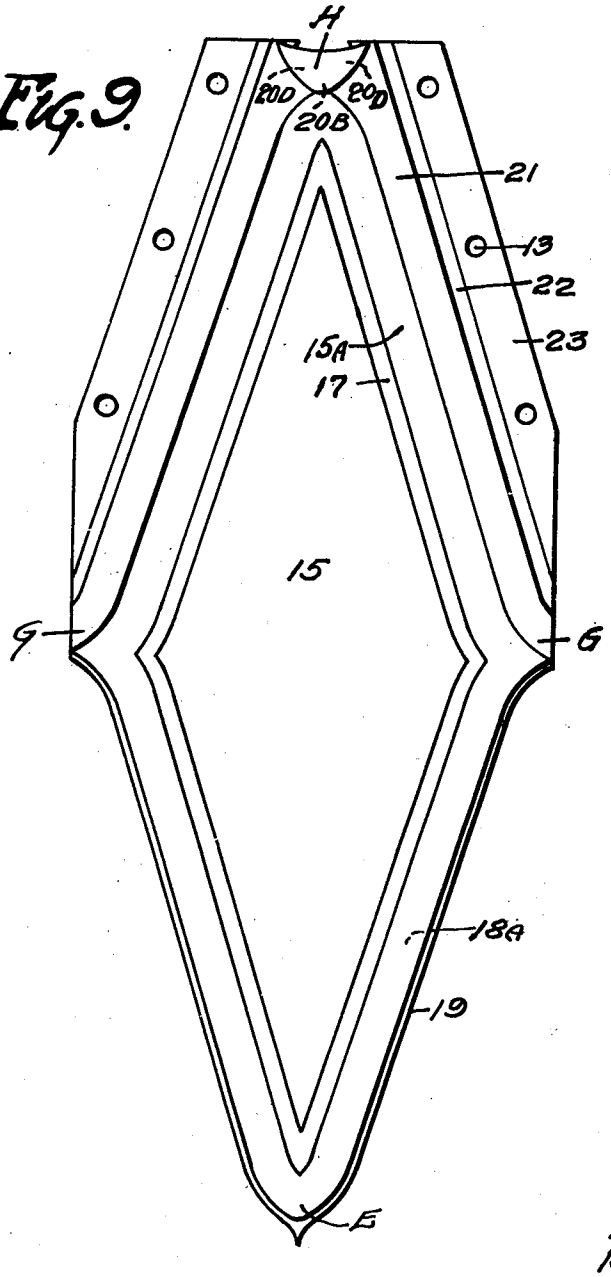
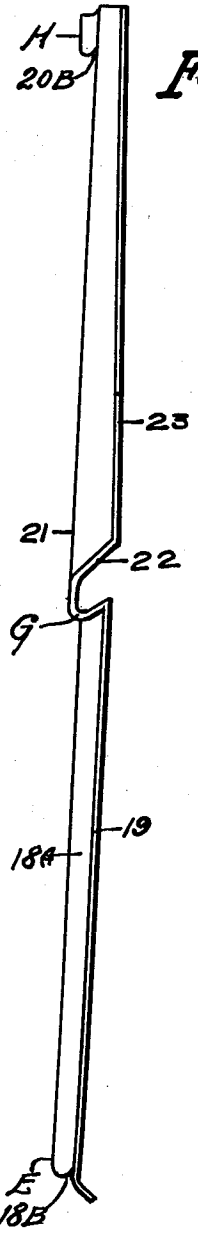


Fig. 10



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Patented Apr. 2, 1940 2,195,847

UNITED STATES PATENT OFFICE

2,195,847

INTERLOCKING SHINGLE

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Application January 19, 1939, Serial No. 251,668

5 Claims. (Cl. 108—17)

This invention relates to roofing shingles and a roof made therefrom, and has particular relation to roofing shingles having edge portions adapted to engage with and to be engaged by the complementary edges of adjacent shingles and thereby accomplish a unitary roofing surface.

Much time and thought has been given in roof construction to roofing units or shingles which can be securely fastened to an underlying sheeting or support and in which the fastening means of one shingle is covered by a subsequently placed shingle, but substantially all of the roofs constructed from such shingles require that the roof be covered by a double or even a triple thickness of the material throughout in order to effectually prevent leakage.

The objects of the present invention are:

To make a roofing shingle, the major portion of which when laid affords protection through a single layer of material only and in which it is necessary to overlap edge portions only, except for such edge portions, doubling of the thickness of the material is not required.

A further object of the invention is to make a shingle unit in which the side edge portions of the lower half of the shingle unit overlie and lock together the complementary edge portions of the upper halves of two adjacent shingles of a lower row and the extreme lower end portion of said shingle unit overlies and interlocks with said adjacent shingles and the extreme upper end of a shingle of the next successively lower row of shingles, and in which the side edge portions of the upper half of the said shingle unit underlie and lock together the complementary side edge portions of an upper row of shingles and the extreme upper end of said shingle unit underlies and interlocks with the latter said side edge portions and the extreme lower end of a shingle of the next successively upper row.

The means by which the foregoing and other objects are accomplished and the manner of their accomplishment will readily be understood from the following specification on reference to the accompanying drawings, in which:

Fig. 1 is a fragmentary portion of the roof showing a plurality of shingles including lower and side edge starting shingles.

Fig. 2 is a longitudinal section taken as on the line II—II of Fig. 1.

Fig. 2A is a fragmentary side elevation showing an edge view of the mid portion, lengthwise, of the shingle.

Fig. 3 is a fragmentary plan on a larger scale than Fig. 1 showing the upper end portion of a shingle and fragmentary intermediate portions of two overlying shingles and the lower end of a third overlying shingle, all of the shingles being in the relative positions they occupy when laid in the roof, but the overlying ones being partially broken away to disclose the underlying shingle.

Fig. 4 is a longitudinal sectional elevation taken on the line IV—IV of Figs. 3 and 1.

Fig. 5 is a transverse sectional elevation taken on the line V—V of Figs. 3, 4 and 1.

Fig. 6 is a transverse section on the line VI—VI of Fig. 1;

Fig. 7 a transverse section on the line VII—VII of Fig. 1;

Fig. 8 a transverse section on the line VIII—VIII of Fig. 1;

Fig. 9 is a plan view of an individual shingle on substantially the scale shown in Figs. 3 to 8 inclusive; and

Fig. 10 is a corresponding side view.

The drawings show a plurality of substantially diamond shape shingles or units A, A1, A2 and A3; half-diamond starting units B, B1; a quarter-diamond corner starting units C; and a half-diamond edge unit D; the half units or shingles B being identical with the upper half of a shingle A, with the addition of a downwardly turned edge portion 10, and the edge units or shingles D being a half of a shingle A divided along a longitudinal line with the addition of a downwardly extending edge portion 11. 12 is the roof sheeting, ordinarily of wood, to which sheeting the shingles are fastened as by nails 13.

Each shingle comprises a substantially diamond shaped central or body portion 15 sloping slightly downward, laterally and oppositely from a longitudinal mid ridge 16, this central portion being entirely surrounded by edge members adapted to interlock with complementary edge members of additional shingles. Preferably the body portion is stiffened, and, incidentally, ornamented, by ribs 17 which preferably form a diamond shaped pattern conforming in general outline to the outline of the body portion, with an outlying portion 15A therearound.

The interlocking members along the lower half of the shingle body are formed by turning or bending the edge-portions of this half of the body downwardly and inwardly to form a flange 18A, 18B, 18C, the lower edge of which may be outwardly turned horizontally to form a stiffening member 19. The flange 18A extends continuously from substantially the middle, length-

wise, of the body to, the lower end of the body, the portion 18B is arcuately curved around the lower end of the body and the portion 18C thence extends along the opposite side of the body back to the middle, the structure forming at the lower end of the shingle an arcuate nose E with a downwardly and inwardly turned edge flange. The stiffener member 19 preferably stops short of and does not follow around the ower end of this nose.

The edge-portions of the upper half of the body are upwardly and inwardly turned to form a flange 20A, 20B, 20C, having substantially identical slopes with the flange portions 18C, 18B and 18A respectively of the lower half, and at the upper end of the body form an arcuate nose F with an upwardly and inwardly turned edge flange, the noses E and F being preferably similar but oppositely faced. From the upper edge of the flange 20, a stiffener belt 21 extends horizontally outward. On the opposite sides of the shingle the outer edges of this belt are bent downwardly and outwardly on a slope parallel to the slope of the flange portions 20A, 20C respectively, forming riser members or risers 22, the lower edges of which risers are outwardly turned horizontally to form nailing strips 23. The risers 22 terminate substantially at the middle, lengthwise, of the body and the flange portions 20A, 20C are respectively continued arcuately outward around the corresponding ends of the belt 21, each to form a half-nose G on one such end, these noses being shaped in substantially identical conformity respectively each with a half of the nose E. Beginning at the apex of the nose F the belt 21 is upwardly and outwardly flanged to form an oppositely faced nose H above such belt level. In forming the nose H, the apex of the flange 20B is continued upward and forms the apex of said nose H. From this apex, said upwardly and outwardly flanged portions 20D curve arcuately apart toward the top edge of the shingle. 20E is an integral plate at the upper edge of the flange portions completing the nose H.

The term "diamond" shaped used in the specification aptly describes the structure disclosed in the drawings. I wish it distinctly understood however that the shingle may be a substantially square "diamond", or even wider than the height and that the edges may be curved throughout their length instead of straight in part so long as the interlocking edge features are maintained.

The shingle is preferably made of sheet-like material which will retain its form, and preferably is of sheet metal, such as copper, iron or other suitable material.

In building a roof, a starter shingle C is placed at the lower and side edge of the roof with the downwardly turned edge portions 10 and 11 of the shingle against the edge and side respectively of the roof and these edges and the flanged edge 23 are secured by nailing to the sheeting. A starter shingle B is then placed with its lower edge against the lower edge of the shingle C. Its edge portion 10 is nailed to the edge of the sheeting and its flanges 23 nailed down, and such additional starting shingles, as the shingle B1, are then placed successively and similarly secured.

The shingle A is then placed with the side edges of its lower half overlying the side edges of the starter shingles C and B and with the nose E projecting over the edge of the roof so that the downwardly turned flange portions 18A, 18B and 18C may slip downward over the flanged portions 20C and 20A of the shingles B and C respectively and over the half-nose of such starter shingle corresponding to the half-nose G of the shingles A1, etc. The shingle A is then moved longitudinally upward along the roof causing the interlocking engagement of the flanges 18A and 18C with the flanges 20C and 20A respectively, and the flange portion 18B of the nose E to interlock with the flange portions of the half-noses G of the starter shingles and tends to draw these noses together. When flange engagement of the shingle A with the shingles B and C has been accomplished, nails 13 are driven through the flanges 23 securely fastening the upper half of the shingle A directly to the roof sheeting. Thereafter the edge shingle D may be similarly engaged with the upper half of the shingle A and its edge portion and nailing flange 23 be fastened to the roof and additional shingles A1, A2 and A3 be similarly and successively placed and secured.

It will be noted that the nose F at the upper end of each shingle underlies and interlocks with the upper end of the adjacently placed side flanges of the lower halves of two superposed shingles forming an edge locking and sealing joint at such place, and that the nose H forms an undercut abutment against which the half noses G of these same shingles seat.

Over this structure the lower nose E of the next overlying shingle forms a cap which overlies and interlocks with the half-noses G and locks these half-noses laterally and longitudinally against said abutment.

I claim:

1. A roofing shingle comprising a substantially diamond shaped body portion having downwardly and inwardly turned flange portions forming a first nose at one corner of said body, said flange portions continuing along the side edges of said body to the mid point thereof; upwardly and inwardly turned flange portions forming a recess at the diametrically opposite corner of said body, the latter said flange portions continuing along the side edges of the body to the mid point thereof and having a belt portion extending horizontally outwardly from the upper edges thereof, said belt portion extending around said recess, and said belt and flange portions flaring outwardly and terminating at said mid point in a half-nose conforming in plan to one-half of said first nose; and flange portions forming a second nose, said flange portions extending upwardly and outwardly from said belt with their apex contiguous to the apex of said underlying recess, and flaring apart, the nose thus formed conforming in plan to said first nose.

2. A roofing shingle comprising a substantially diamond shaped body portion having downwardly and inwardly turned flange portions forming a first nose at one corner of said body, said flange portions continuing along the side of said body to the mid point thereof; upwardly and inwardly turned flange portions forming a recess at the diametrically opposite corner of said body, the latter said flange portions continuing along the side edges of the body to the mid point thereof and having a belt portion extending horizontally outward from the upper edges thereof, said belt portion extending around said recess, and said belt and said flange portions flaring outwardly and terminating at said mid portion in a half-nose conforming in plan to one-half of said first nose; and flange portions forming a second nose,

said flange portions extending upwardly and outwardly from said belt with their apex contiguous to the apex of said underlying recess, and flaring apart, the nose thus formed conforming in plan to said first nose, portions of said belt along said sides having integral risers depending from their outer edges, said risers having outwardly turned nailing strips along their lower edges.

3. A roofing shingle comprising a substantially diamond shaped body portion having peripheral locking members therearound, said locking members of one intersecting pair of said edges, including a first flange, said flange being downwardly and inwardly turned extending continuously around the apex of said intersection, and the locking member of the other pair of said edges including a second flange, said second flange being upwardly and inwardly turned and extending continuously around the apex of the intersection of said latter edges, said second flange having an outwardly extended belt therearound, the side edges of said belt being downwardly bent, and thence outwardly turned to form nailing strips; said belt at the apex of said second flange having an upwardly and outwardly turned flange, said latter flange in plan diverging from said apex in conformity with the apex divergence of said first flange, said second flange and belt continuing along said body sides adjacent the mid portion and diverging outward in plan at said mid portion along lines respectively conforming each to one-half of the apex divergence of said first flange.

4. A roofing shingle of sheet material comprising a substantially diamond shaped body portion having a stiffening rib lying in a diamond shaped pattern spaced inward from the edges of said body, said body having downwardly and inwardly turned flange portions forming a first nose at one corner of said body, said flange portions continuing along the side edges of said body to the mid point thereof; upwardly and inwardly turned flange portions forming a recess at the diametrically opposite corner of said body, the latter said flange portions continuing along the side edges of the body to the mid point thereof and having a belt portion extending horizontally outward from the upper edges thereof, said belt portion extending around said recess, and said belt and flange portions flaring outwardly and terminating at said mid point in a half-nose conforming in plan to one-half of said first nose; and flange portions forming a second nose, said flange portions extending upwardly and outwardly from said belt with their apex contiguous to the apex of said underlying flange portions, and flaring apart, the nose thus formed conforming in plan to said first nose.

5. A roof, including a sheeting course and a plurality of shingles in conformity with claim 2, supported on said sheeting with their edges and noses interlocked and their nailing strips secured to said sheeting.

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