Jan. 13, 1942. G. H. GASTON 2,269,872

METAL SHINGLE

Filed Jan. 5, 1940 3 Sheets-Sheet 1

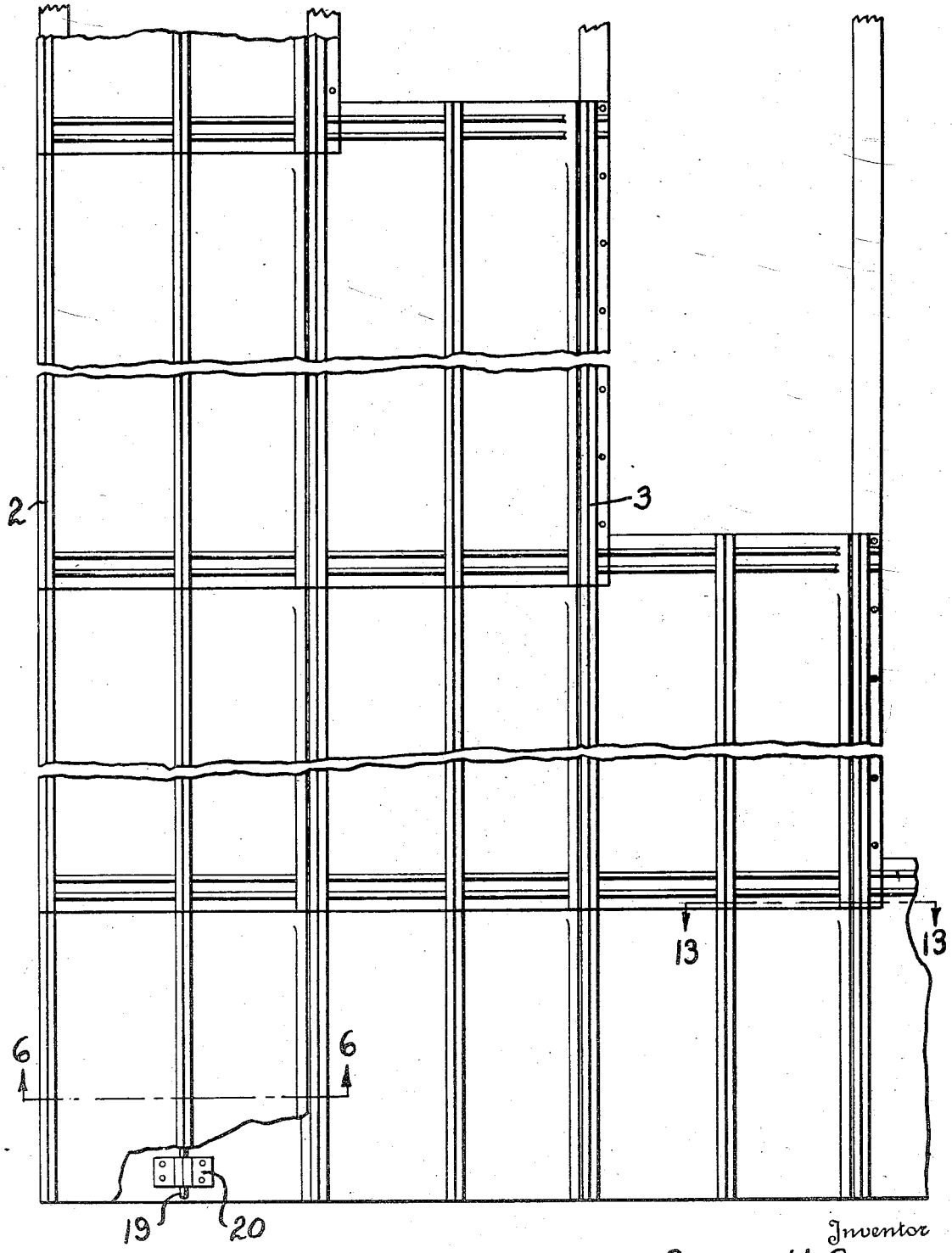


Fig. 1.

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METAL SHINGLE

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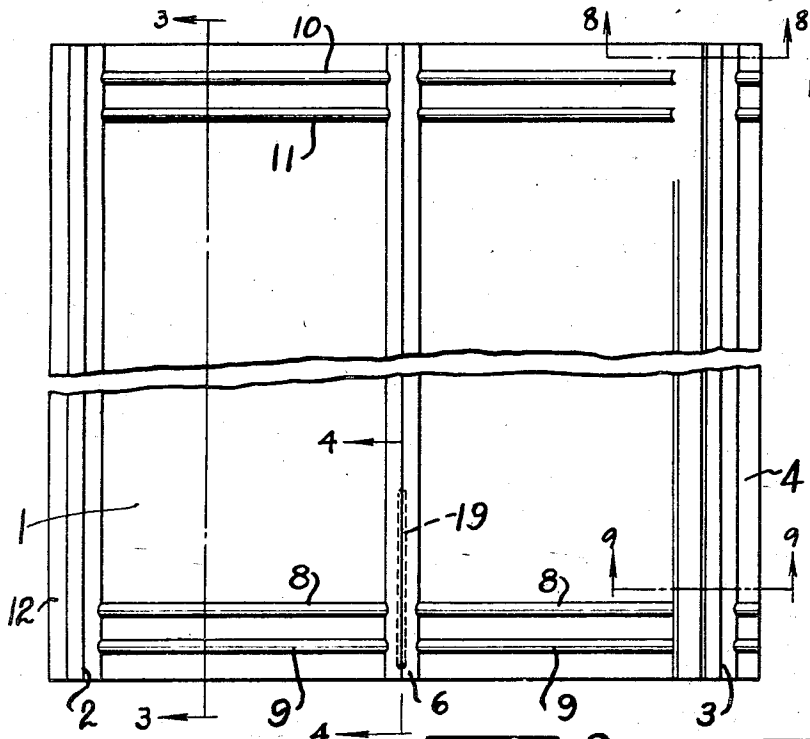


Fig. 2.

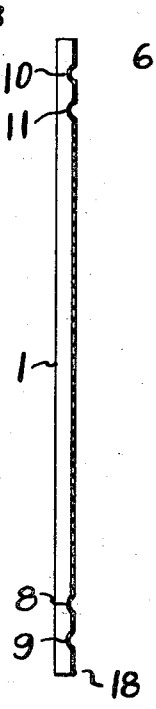


Fig. 3.

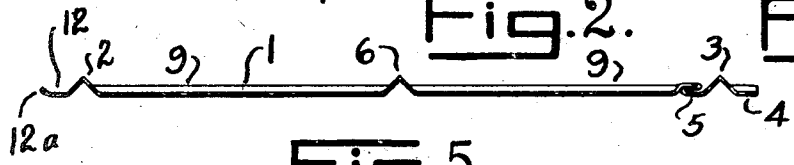


Fig. 5.

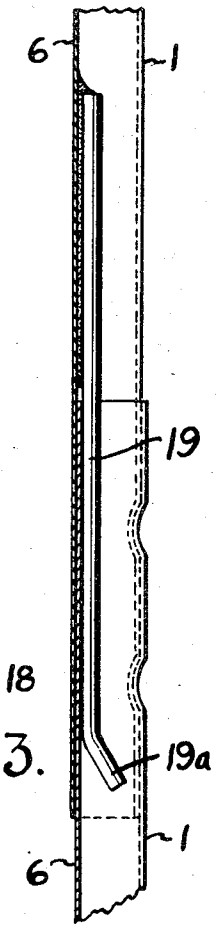


Fig. 4.

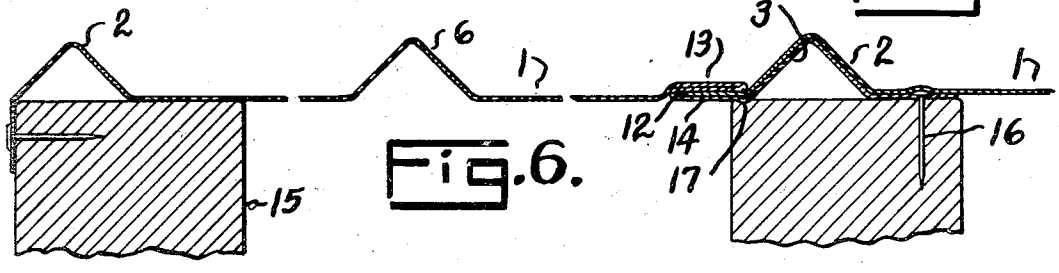


Fig. 6.

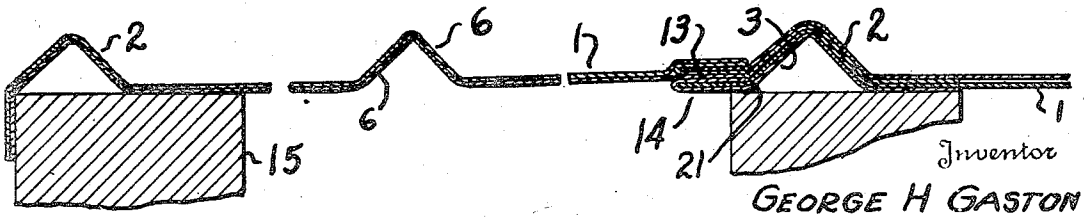


Fig. 13.

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METAL SHINGLE

Filed Jan. 5, 1940 3 Sheets-Sheet 3

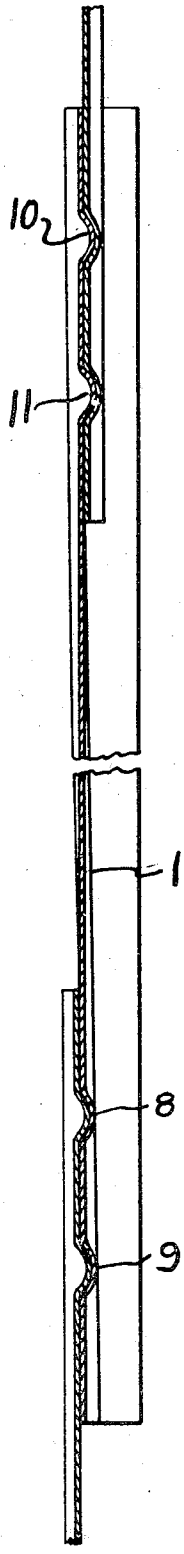


Fig. 7.

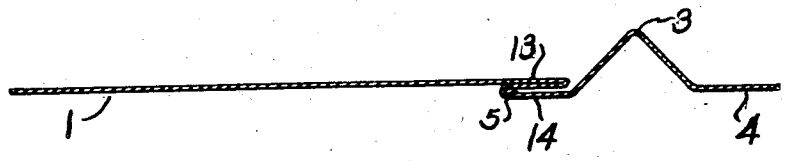


Fig. 8.

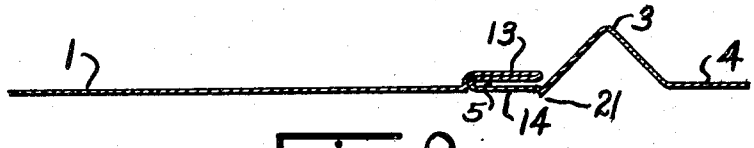


Fig. 9.

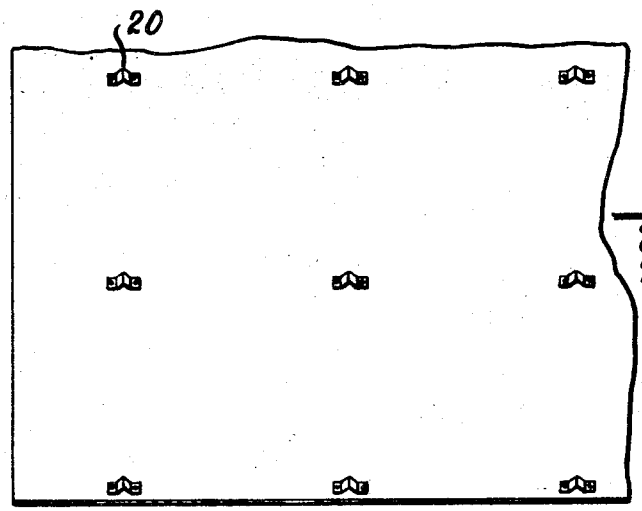


Fig. 10.

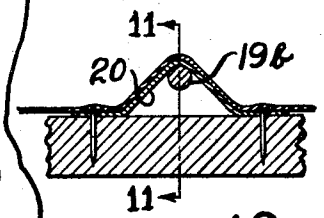


Fig. 12.

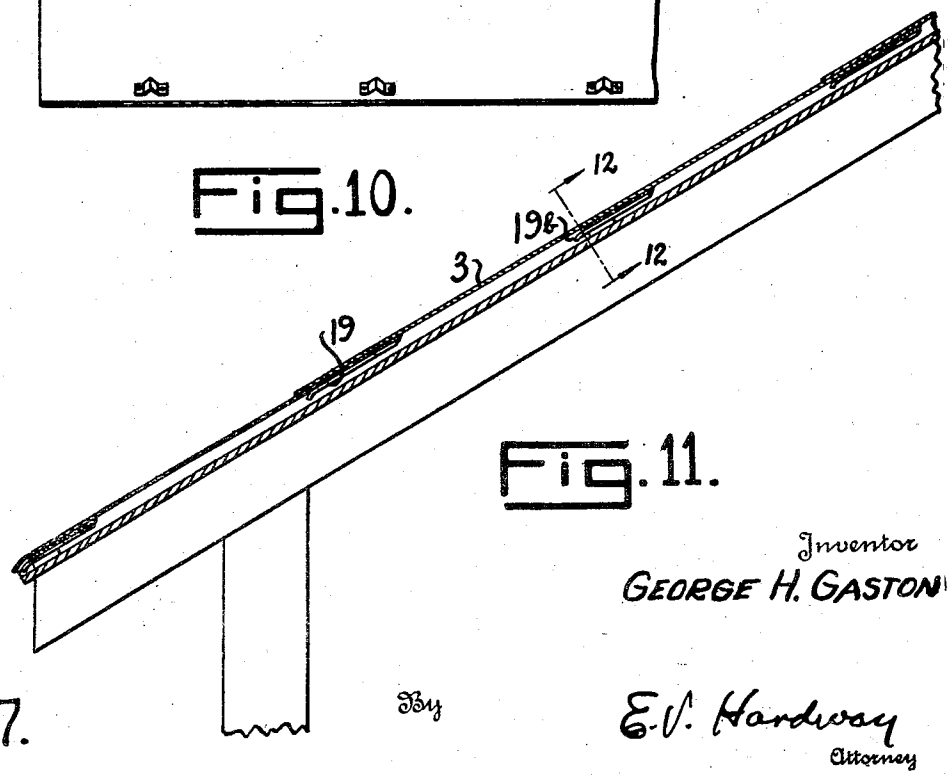


Fig. 11.

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UNITED STATES PATENT OFFICE

2,269,872

METAL SHINGLE

George H. Gaston, Kerrville, Tex.

Application January 5, 1940, Serial No. 312,450

13 Claims. (Cl. 108—13)

This invention relates to metal shingle.

An object of the invention is to provide a special type of shingle, or plate, adapted for use as a roof or wall covering.

An object of the invention is to provide a shingle of the character described adapted for use as a roof, or siding covering and so shaped that the margins of the plates of a tier may be securely interlocked together to form a sealed joint between the adjacent plates of the tier.

Another object of the invention is to provide a plate of the character described so shaped that the plates of adjacent tiers will overlap into close fitting relation so as to form a sealed joint between the overlapping portions.

It is a further object of the invention to provide clamp means for clamping the overlapping portions of adjacent tiers of the plates closely together to form sealed joints between them to effectively exclude the water.

The invention also embodies novel means for fastening the plates to the roof or wall structure.

It is still a further object of the invention to provide a roof or wall plate, or shingle, of such construction that it may be readily contoured to give the desired appearance.

With the above and other objects in view the invention has particular relation to certain novel features of construction, arrangement of parts and use, examples of which are given in this specification and illustrated in the accompanying drawings, wherein:

Figure 1 shows a fragmentary, elevational view of a roofing or siding structure embodying the invention.

Figure 2 shows an elevational view of one of the plates.

Figure 3 shows a sectional view taken on the line 3—3 of Figure 2.

Figure 4 shows an enlarged, fragmentary, sectional view taken on the line 4—4 of Figure 2.

Figure 5 shows an end view of one of the plates.

Figure 6 shows an enlarged, fragmentary, cross-sectional view taken on the line 6—6 of Figure 1.

Figure 7 shows an enlarged, longitudinal, sectional view of one of the plates showing the overlapping ends of the plates of adjacent tiers.

Figure 8 shows an enlarged, fragmentary, cross-sectional view taken on the line 8—8 of Figure 2.

Figure 9 shows an enlarged, fragmentary, cross-sectional view taken on the line 9—9 of Figure 2.

Figure 10 shows a fragmentary, elevational view of the roof or wall supporting structure illustrating means for securing the wall plates or shingles thereto.

Figure 11 shows an enlarged, fragmentary, sectional view of a roof showing the plates assembled and secured thereon, taken on the line 11—11 of Figure 12.

Figure 12 shows an enlarged, fragmentary, cross-sectional view taken on the line 12—12 of Figure 11, and

Figure 13 shows an enlarged, fragmentary, cross-sectional view taken on the line 13—13 of Figure 1.

Referring now more particularly to the drawings wherein like numerals of reference designate the same parts in each of the figures, the numeral 1 designates the main body of the plate, along opposite edges of which there are formed the ridges 2, 3, said ridges being of approximately the same shape in cross-section as illustrated more clearly in Figure 5. Outside of the ridge 3 there is provided a nailing flange 4 and on the opposite side of the ridge 3 and closely adjacent thereto there is a channel 5 which is formed by folding the metal longitudinally upon itself as more clearly illustrated in Figures 8 and 9. The channel 5 faces toward the adjacent wall of the ridge 3.

The plate 1 is also preferably formed with a longitudinal ridge 6 located approximately midway between the ridges 2 and 3 and of the same cross-sectional shape. These ridges 2, 3 and 6 lend strength to the plate.

The lower margin of the plate may also have one or more transverse corrugations as 8, 9 which are spaced apart and which extend from ridge to ridge and also extend across the nailing flange 4.

Adjacent the upper margin it may also have the transverse corrugations 10, 11. The corrugations 10, 11, however, may be dispensed with if desired.

Outside of the ridge 2 there is a longitudinal flange 12 provided to fit snugly in the channel 5 as shown in Figure 6. The flange 12 has a margin 12a which is slightly upturned, as illustrated in Figure 5, for a purpose to be hereinafter stated.

The fold 13 which forms the top of the channel 5 projects to within a short distance of the adjacent wall of the ridge 3, the plies of said fold 13 lying in parallel relation and fitting closely together. It will be noted that the sides of the ridges, above referred to, diverge at approximately the same angles to the plane of the plate.

In order to interlock the edges of the plates the flange 12 of one plate may be inserted into the channel 5 of the adjacent plate and the ridge 2, adjacent the flange 12, fitted down closely over the ridge 3 adjacent the flange 4, as more clearly illustrated in Figure 6. When so inserted the overturned margin 12a of the flange 12 will assume a position approximately parallel with the flange 12, as shown in Figure 6, but said overturned margin will seal against the lower ply of the fold 13, throughout its length, and by its reaction will cause the flange 12 to also seal closely against the bottom ply 14 of the fold thus forming a very close fitting and water tight joint.

However, at the ends of the roof the flange 12 may be turned downwardly against the outer side of the rafter 15, or other supporting structure, and nailed thereto as shown at the left in Figure 6. In the form shown in Figures 1 to 6, inclusive, the flange 4 of each plate should be nailed to the underlying structure before the adjacent plate is brought into said interlocking relation and the nails 16 used for that purpose are thus overlapped and concealed and securely held in place when the adjacent plate is interlocked into the channel 5.

When the adjacent margins of adjoining plates are interlocked together as shown in Figure 6 the angle between the flange 12 and the adjacent ridge 2 will fit very closely into the angle between the lower ply 14 of the fold and the adjacent side of the ridge as indicated at 17, Figure 6, so as to form a very tight leakproof joint at that point.

The channel 5 extends diagonally with relation to the plane of the plate, from the upper to the lower ends thereof as illustrated in Figures 8 and 9. In other words, at the upper margin of the plate the channel is below the plane of the upper surface of the plate and at the lower end of the plate the channel is above the plane of the upper surface of the plate. This is also illustrated in Figures 1 and 2. This is an important feature of the invention for the reason that at the upper end of the plate the upper plane surface of the plate is substantially smooth or flush between the ridges while at the lower end of the plate the under surface of the plate between the ridges is substantially smooth. Therefore, when the lower margin of an upper plate is overlapped onto the upper margin of a lower plate the contacting surfaces will lie in close fitting relation or, in other words, will fit very closely together between the ridges so that there will be no open space to allow leakage and furthermore, the lower margin of each plane is slightly downwardly curved at 18, Figure 3, and this downwardly curved margin will form a very tight transverse seal with the plate overlapped by it.

In erection a tier of plates may be secured to the supporting structure with the adjacent margins of the plates interlocked together as shown in Figure 6 and with the ridge 2 fitting closely over the ridge 3. The next succeeding tier of plates may then be similarly assembled with their lower margins overlapping the upper margins of the tier beneath and with their ridges overlying the corresponding ridges of the tier beneath. The corrugations 8, 9 of the upper tier will fit over, or nest with, the transverse corrugations 10, 11 at the upper margin of the tier beneath in the manner illustrated in Figure 4 thus forming additional seals to prevent leakage, it being again here noted that the overlapped upper portion of each plate beneath presents a plane surface which is overlapped by the plane smooth underface of the overlapping upper portion of the plate above.

Novel means have been provided for securely clamping the overlapping portion of an upper plate to the overlapped portion of the plate beneath. A form of this clamp means is shown more clearly in Figures 2, 4 and 11. It may consist of a slightly flexible clamp arm 19 secured in any preferred manner within the ridge 6. As illustrated its upper end is welded within the apex of said ridge and its lower end 19a is slightly downwardly turned. In assembly the plate above may be positioned above the plate beneath and then moved downwardly to bring the ridges into nested relation with the clamp arm 19 of the plate above moving into the apex of the ridge 6 of the plate beneath as shown in Figure 4 so as to clamp said overlapping parts very firmly together. It is obvious that other forms of clamp means, than that specifically shown and described, may be employed for the same general purpose. In order to securely anchor the lower margin of the lower tier of plates at the edges to the supporting structure suitable cleats as 20 are fastened to the supporting structure for the roof and the clamp arms 19 of the lower tier of plates are inserted through said cleats as more clearly illustrated in Figure 1.

As clearly illustrated in Figure 9 the free margin of the fold 13 is spaced a short distance from the corresponding ridge 3. As also illustrated in Figure 9 the lower end of the plate 1 has a depending longitudinal bead, or corrugations, 21. This bead fits down between the free end of the overlapped fold 13 and the overlapped ridge 2 as clearly illustrated in Figure 13. This bead or corrugation 21 is made of sufficient size to fill, or substantially fill, the channel, or space, between the free margin of the fold 13 and the opposing wall of the ridge 3 so that in case the wind is blowing toward the roof during a rain the water will not bank and run up said space and drip over the upper end of the overlapped shingle.

If desired, nails may be dispensed with and the cleats 20 arranged in the manner shown in Figure 10 for securing the plates, when assembled into a complete assembly, to the roof structure. In such event additional clamp arms as 19b should be provided and secured to the plates in a similar manner as the clamp arm 19 and positioned so as to be engaged under the corresponding cleats 20 as the plates are assembled and anchored together in the assembly, as shown in Figures 11 and 12.

What I claim is:

1. A plate for a wall or roof covering comprising a body formed of sheet material and having a longitudinal ridge at one edge, said body being longitudinally folded on the inner side of the ridge to form a channel which faces towards the ridge, the upper surface of the fold merging into a common plane with the upper surface of the plate at the upper portion of the plate and the lower surface of the fold merging into a common plane with the under surface of the plate at the lower portion of the plate.

2. A plate for a wall or roof covering comprising a body formed of sheet metal and having a longitudinal ridge at one edge, said body being longitudinally folded on the inner side of the ridge to form a channel which faces toward the ridge, the upper surface of the fold merging into a common plane with the upper surface of the

plate at the upper portion of the plate and the lower surface of the fold merging into a common plane with the lower surface of the plate at the lower portion of the plate, the lower margin of the plate being downwardly curved.

3. The combination with a roof or wall supporting structure of thin metal retainers on the structure, a covering for the structure formed of plates arranged with the lower margins of the plates of an upper series overlapping the upper margins of the plates of an adjacent lower series and elongated, flexible clamp means on the plates engageable with said retainers to secure the overlapping portions of the plates and the underlying retainers closely together and under tension.

4. A covering formed of plates arranged with the lower margins of the plates of an upper series overlapping the upper margins of the plates of an adjacent lower series, transverse interfitting corrugations on the overlapped portions of the plates the contacting surfaces of the overlapping portions having plane faces which contact closely together and clamp means holding said overlapping margins yieldingly together approximately throughout the overlapping area with said corrugations in interlocking relation.

5. A plate for a wall or roof covering comprising a body formed of sheet material, said body being longitudinally folded to form a flange receiving channel, said channel extending diagonally in a longitudinal direction with relation to the plane of the plate.

6. A plate for a roof or wall covering comprising a body of sheet material having an upstanding marginal ridge and a flange outside of the ridge, the material of the body being longitudinally folded on the other side of the ridge to form a channel which faces toward the ridge, the free margin of the fold being spaced from the ridge, the lower end of the plate having a depending longitudinal bead or corrugations positioned to fit between the free margin of the fold and the opposing ridge to prevent passage of water through said space of an overlapped plate.

7. In a roof or wall covering, adjacent plates, one of said plates having a longitudinal ridge at one edge and a marginal flange outside of said ridge, the other plate having a longitudinal ridge which may nest with the other ridge when positioned on the first mentioned plate, a clamp positioned in and aligned with the ridge, the clamp being adjacent the margin of the plate and effective to limit relative movement between the plates and clamp the overlapping margins of the plates together under tension and approximately throughout the overlap.

8. In a roof or wall covering, adjacent plates, one of said plates having a longitudinal ridge at one edge and a marginal flange outside of said ridge and being folded to provide a longitudinal channel facing the ridge, the other plate having a marginal flange adapted to fit snugly in the channel and having a longitudinal ridge which may nest with the other ridge when said marginal flange is fitted into the channel whereby the plates are interlocked together, a clamp positioned in and aligned with the ridge of the plate whose margin is fitted in the channel, the clamp being adjacent the margin of the plate and effective to limit relative movement between the plates and clamp the overlapping margins of the plates together under tension and substantially throughout the area of overlap.

9. A plate for a roof or wall covering comprising a body formed of thin sheet material, a flexible clamp arm on the under side of the plate and anchored thereto at one end and having its other end free, said free end lying closely adjacent said plate so that it will receive and yieldingly clamp the adjacent margin of a similar overlapped plate of thin material approximately throughout the area of overlap.

10. A plate forming a shingle for a roof or wall covering comprising a body formed of thin sheet material and formed with an elevated ridge, an elongated flexible clamp arm located within the trough of said ridge and having one end anchored to the body and having its other end free and lying closely adjacent said body.

11. A covering formed of plates arranged with the lower margins of the plates of an upper series overlapping the upper margins of the plates of an adjacent lower series, the contacting surfaces of the overlapping portions having plane faces which contact closely together, spring clamp means on the plates of the upper series engaging the overlapped portions of the plates of the adjacent lower series and effective to hold the lower margins of the plates of the upper series in close contact with the overlapped lower series.

12. A covering formed of plates arranged with the lower margins of the plates of an upper series overlapping the upper margins of the plates of an adjacent lower series, the contacting surfaces of the overlapping portions having plane faces which contact closely together, spring clamp means on the plates of the upper series engaging the overlapped portions of the plates of the adjacent lower series and effective to hold the lower margins of the plates of the upper series in close contact with the overlapped lower series, the overlapping portions of said respective series having registering transverse corrugations which interfit and are maintained interlocked by said spring clamp means.

13. The combination with a roof or wall supporting structure, of thin metal retainers on said structure, a covering for the structure formed of plates arranged with the upper margins of the plates of one series overlying the retainers and with the lower margins of the plates of an adjacent series overlapping said upper margins and elongated flexible clamp means on the undersides of the plates of the overlapping series, said clamp means engaging underneath the retainers and clamping the overlapping margins to the retainers and closely together and under tension.

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