My invention relates to certain new and useful improvements in metallic shingles which are particularly designed so that they will provide, when laid, definite shadow lines that will enhance the artistic and ornamental appearance of the resulting roof.

More particularly, my invention represents certain distinctive improvements in the metallic shingles which form the subject matter of Letters Patent No. 2,142,996, issued to me on January 10, 1939, and of Letters Patent, 2,202,839, issued to me on June 4, 1940.

My present shingles, like those in my patents aforesaid, are all approximately rectangular in shape, having side nailing corners and truncated butt and top corners, both of which are preferable and similarly bent downwardly and inwardly to form a lock lip, the lower of which is adapted to interlock with, and be held down by complemental hold-down elements on the abutting nailing corners of the subjacent shingles in the roof. While the flat type of shingle, which is shown in my Letters Patent aforesaid, has proven in practical service quite effective, a ready market is not available for it for dwelling roofs because it presents a flat or unrelieved roof surface which lacks the effectiveness and ornamentation that is derived from roofing elements of a shape to produce more or less of a shadow line outline for the individual shingles comprising the roof.

In the shingle design of my Letters Patent No. 2,202,839, effort was sought to obtain the relief from the flat, unrelieved roof effect by deforming the body portion of the shingle, both in its center panel and in its marginal lap areas.

One object of my present invention is to reduce to a minimum and simplify the deformation of the main shingle body, which involves certain production difficulties, and to provide marginally about the shingle body a downturned flange sufficient to give the appearance of thickness to, and so to produce the desired shadow line effect form, the shingles as laid to form a roof.

A further object is to devise novel means, confined preferably to the downturned flange area, for interlocking with and holding down the lock lip on the superjacent shingle.

A further object of my present invention is to cut the shingle from stock to provide rectangular side nailing corners and so to bend the marginal edges of these corners as to produce a rigid support about each, adjacent to its nailing hole, that will prevent these nailing corners being deformed or flattened down, due to the driving of the anchor nails therethrough, sufficiently to interfere with their free and effective coaction with the butt lock lips which they respectively hold down.

My invention further contemplates truncating the nailing corners before bending down their edge flanges so as to enable the shingles as laid in a course to be more readily abutted and aligned and to avoid the presence of sharp corners which are liable to injure the workmen.

My invention further contemplates forming the nailing corner elements, under which the butt lock lip of the superjacent shingles is interlocked in place, as transversely aligned hold-down flanges forming portions of the converging side flanges of the subjacent shingles, and in so shaping and bending these hold-down flanges that they will form a tight, wedging engagement with each end of the butt lock lip of the superjacent shingle, and act both to center it and firmly and securely hold it in place without nailing or other attachment.

My invention further comprises the novel details of construction and arrangements of parts which, in their preferred embodiment only, are illustrated in the accompanying drawings and which by reference thereto are described in detail in the specification that follows.

According to the drawings:

Fig. 1 is a plan view of my improved metallic shingle.

Fig. 2 is an elevation of Fig. 1.

Figs. 3 and 4 are enlarged fragmental views taken respectively on lines III—III and IV—IV of Fig. 1.

Fig. 5 is a perspective view of the under side of an upwardly inclined nailing corner as viewed upwardly and in a direction normal to the vertical axis of the shingle.

Fig. 6 is an exploded view, in perspective, of a section of a roof laid with my improved shingles, showing the elements of the first and second courses in place and one shingle of the third course about to be interlocked in position.

Fig. 7 is a fragmental bottom view showing in plan the manner of interlock between the butt lock element of a shingle with the nailing corners of the two subjacent shingles in the course below, shade lines being used to better distinguish the three shingle portions wherever visible.

Similar reference numerals refer to similar parts throughout the drawings.

In the embodiment of my invention as illustrated, I show a shingle formed from rigid, pref-
erably metal stock, which is sufficiently flexible to permit of the deformation of its marginal flanges and locking lips as hereinafter described. The shingle as shown is formed from a substantially square sheet metal blank, though I do not limit myself specifically to such shape, and comprises a body portion 10 having side nailing corners, generally designated by the numeral 11, and having locking lips formed by bending the truncated but and top corners down to form the flange 12 and under to form the locking lip 13 which stands parallel with and under the body portion 10 of the shingle, as will appear more clearly in Fig. 4. The shingle blank has notches 14 adjacent, and symmetrical with respect to, each of its side nailing corners 11, said notches being formed so that corresponding side edges of each lie parallel with the transverse diagonal of the shingle. I bend down the marginal edges of the blank to form flanges 15 which extend uniformly along each side edge of the shingle from its respective notch 14 and merge into the lock flanges 12 at butt or top corners. This flange 15 is bent down slightly less than 90°, being just enough outwardly inclined to spread out and not under the shingle body if pressed upon forebodingly enough to deform it. The edges of the flanges 15 are slightly flattened out where they merge into the butt and top body portions 12 of the lock lips, such deformation being, however, purely incidental to the bending of a continuous flange about the obtuse angle formed between the meeting flanges 12 and 15.

In Fig. 4 it will be apparent how this flange 15 is brought up to the level of the shingle body at the transverse line of bend to form the lock flange 12.

The notch edge 16, as will be seen by comparing Figs. 7 and 5, is bent down and inwardly slightly so as to leave the upwardly and outwardly bent notch edge 17 free for a lock lip 12 to be brought into engagement with it. The bending of the notch edges is such that in plan they appear at such angles to each other as to fully open the notches and present the edges 16 on abutting corners 11 as slightly flared and spaced to receive the butt flange 12 of a superposed shingle snugly between them and to center and guide the even so said flange 12 into engagement with the notch edges 11. The portion of flanges 15 lying between the notch edges 17 and the nailing corner tips are designated 18 and they are bent down on a curve to present their lowest edges slightly above the level of the bottom edge of the flanges 15 so that they will receive under them the lock lips 13 and serve as hold-downs therefor. This flange portion 18, as it appears in Fig. 3, seems to be shorter or narrower than the flange 15, but this effect results from the fact that it is bent down less than the latter flange to more easily receive the butt lock lip 13 between it and the subjacent roof elements and to afford a spring clamping lock means for securely holding said lock member 13.

Continuing to refer to Fig. 3, this portion 18 of the flange 15 has its edge adjacent to the nailing corner bent upwardly, as indicated at 19, to the level of the shingle body adjacent to the point where the nailing corners are truncated and bent to form the edge flanges 20 which stand in substantially vertical relation to the shingle body, thereby forming a strong support for corners 11 adjacent to the nail hole 21 in each.

In Fig. 3 the nailing corner flange 20 as it is viewed seems disposed at an angle leading away from the near edge of the nailing corner, while in Fig. 5 the perspective view looking upwardly under an up tilted nailing corners makes it appear to be inclined inwardly under the corner 11, but in fact it is a vertical flange parallel with the vertical axis of the shingle as appears clearly in Figs. 7 and 2.

Referring now to Fig. 6, a starting strip 22 is laid along the eave of the roof and the whole shingles 19 are driven with their butt lock lips 13 engaged under the eave edge of such starting strip, the marginal flanges 15 and 20 of their exposures resting on the starting strip so as to support the bodies of the shingles in elevation above it, and the flanges 20 of their nailing corners centered and abut. When nails 23 are driven down through the corner holes 21, the shingles will be securely anchored both at their butts and side corners, it being noted that the corners 11 are sufficiently reinforced by their marginal flanges 15 and 20 to resist deformation by the hammer blows by which the nails are driven home.

When this nailing operation is completed for the corners of the first course, the whole shingles 19 of the second course are ready to be laid and this operation is repeated when it is pointed out that the lock lip flange 12 of each second course shingle is drawn into engagement between the sides edges 16 of the opposed notches 14 in the shingle corners that will underlie it until it abuts the edges 17 of such notches. When this occurs its lock lip 13 will have been drawn under the flanges 15 of such corners and since the shape of the notches 14 is such as to center by their edges 16 the flange 12 accurately in position between them, its lock lip 13, due to the shape and disposition of the flanges 12, will be firmly engaged under and held down by said flanges so that the shingle butt thus, by an easy quick motion, can be positively centered and powerfully locked down in place. The hold-down flanges 18, being juxtaposed to the corner nails 23, will not only form an effect of these nails as a means for positively and powerfully holding down the butt tips of the shingles.

After engaging the butt lock lips under the corners of the first course shingles, it is a simple matter to engage their corner flanges 20 into matched abutment and when so placed their vertical alignment of the shingles is made sure.

The flange 12 of the butt lock lips contributes its portion to the shadow line effect of the roof which is carried out by the upstanding flanges 15 along each shingle exposure. To make it fit, the vertical height of the butt flange 12 of a shingle 19 should exceed that of its flanges 15 by one thickness of the shingle stock, since flange 12 of a shingle will rest on a shingle in the second course below it, whereas its flanges 15 will rest on the shingles of the first course below it.

Referring more particularly to Fig. 6 and bearing in mind that the flanges 15 on the shingle exposures have an outward and downward slope and that the design of the shingles is such that, when the nails 23 are applied at the corners after the shingle has been driven down until its lock lip is tightly engaged in centering position, these flanges 15 will be held firmly down against the body portions of the subjacent shingles, with the result that they not only tend to shed the water outwardly and away from the side joints, but they also stiffen and reinforce the shingles along their lap joint areas to avoid sagging or distortion and prevent open cracks of a size to permit water
to an appreciable extent being blown in under the flanges 15. When such water as does work under the shingle flanges 15 will be prevented by a substantial width in the lap joint area and the pitch of the roof from gaining access to the underlaying shingles or deckling but will tend to work down along the flanges 15 and have a free escape through the contracted outlets, indicated at 12a in Fig. 4, where the lower end of the flanges 15 are bent upwardly to the shingle body level and then down to form part of the flange 12 of the interposed butt lock lip. This Fig. 4 shows clearly that the flanges 15 lose engagement with the underlying shingle body only at points immediately adjacent to the ends of the interposed lock lip flange 12, while at the same time the outward and upward deflection of the flanges 15 to form the outlets 12a form in the flanges deflecting surfaces adapted to turn away any water that may be running down along the outside of either flange 18 toward the shingle's butt end and turn it away from the outlets 12a.

The shingle being symmetrical both with respect to its vertical and its horizontal axes, can be inverted, and sections cut off the end shingles of a course will be available for use elsewhere in the roof, so that shingle waste per roof is reduced to a minimum.

When assembled in a roof we have not only the pleasing attractive appearance desired from the prevalence of shadow lines and the absence of a flat effect, but the shingles are very securely held in place and the shingle flanges are held firmly pressed against the bodies of their respective subjacent shingles and being slightly outwardly inclined act effectively to shed the water and protect against its access to, and traversing of, the lap joint areas in the roof.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are imposed by the prior art or as are specifically set forth in the appended claims.

What I claim is:

1. A metallic shingle having a side substantially horizontally aligned nailing corners and butt and top corners, and a lock lip for the butt corner formed by bending it down and then under to define an upright flange and an underturned lock lip, all the marginal edges of the shingle body between said corners being bent down to support said body in sufficiently raised position when laid on a roof and to give a shadow line effect, the said bent down edges adjacent to each nailing corner being notched and shaped to define elements which are spaced to receive the upright butt flange of a subjacent shingle between them and disposed to define flanges which receive and hold down the butt lock lip of a subjacent shingle.

2. A metallic shingle of approximately square stock with its butt corner truncated and then bent down and under to define a lock lip, and its horizontally aligned side corners marginally flanged to define raised nailing sites, the shingle edges being bent down on all sides between its corners to support the shingle and produce a shadow line effect when laid in a roof, and the bent down flanges adjacent said nailing corners being cut away to center and engage over the lock lip of a subjacent shingle.

3. A metallic shingle of approximately square stock with its butt corner truncated and then bent down and under to define a lock lip, and its horizontally aligned side corners truncated and marginally flanged to define raised nailing sites, the shingle edges being bent down on all sides between its corners to support the shingle and produce a shadow line effect when laid in a roof, and the flanges adjacent said nailing corners being cut away to center and engage over the lock lip of a subjacent shingle.

4. A metallic shingle according to claim 1, in which the vertical height of its butt flange exceeds that of its bent down marginal edges by approximately the thickness of the shingle stock.

5. A metallic shingle according to claim 1, in which the marginal flange portions disposed between the side corner and their adjacent notches have a vertical height, where they engage and hold down the lock lip of the subjacent shingle, less, by approximately the thickness of the shingle stock, than the vertical height of the remaining marginal flange portions, as and for the purposes described.

6. A metallic shingle having a body formed with horizontally aligned side nailing corners, a butt lock element, and marginal edges bent down all around the shingle body edges to form a marginal supporting flange for such body, said flange being interrupted adjacent to each nailing corner to provide divergent centering and hold-down edges arranged and disposed to engage the butt lock element of a superposed shingle, as and for the purposes described.

7. A metallic shingle according to claim 1, in which the flange notch edges are reversely bent to define a side centering edge that flares slightly towards the vertical axis of the shingle to guide the butt lock element of a subjacent shingle to centered position.

8. A shingle according to claim 6, in which the edge that forms the shingle side and butt flanges is continuous and bent up at the junctions of said flanges to define drain outlets at each end of the butt flange for the escape of moisture from under said side flanges.

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