





# UNITED STATES PATENT OFFICE.

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## ROOFING CONSTRUCTION.

No. 846,572.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, CHARLES J. KUNZLER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Roofing Construction, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention refers to improvements in roofing construction, and relates particularly to a roof composed of layers of felt paper or other similar material and to the means for securing the layers to the roof-sheathing and for entirely protecting the metallic parts from corrosion.

In carrying out my invention I employ strips of metal arranged to cross the layers at substantially right angles to the edges thereof, nailed down through the layers into the supporting-sheathing, with protecting-cover strips of felt or other suitable material, and intervening layers of asphaltum, cement, or other substance, with a final covering laid thereon.

Referring to the drawings, Figure 1 is a transverse vertical sectional view through a portion of the roof constructed in accordance with my invention indicated by the line I I of Fig. 2. Fig. 2 is a partial plan view of the roof, portions of the successive layers of metal having been removed to show the securing-strip and its manner of attachment. Fig. 3 is an enlarged detail cross-sectional view on the line III III of Fig. 2. Figs. 4, 5, and 6 are detail views showing modified constructions of attaching or securing strips.

Heretofore felt roofing has been secured by means of nails driven through the various layers of felt at suitable intervals and provided with washer-disks of thin tin-plate, usually in dish form; but a common source of annoyance and leakage of the roof is found in the rapid destruction of the disks and nails due to moisture and consequent rusting out.

My invention has in view to prevent such deterioration of the attaching means by completely and permanently protecting all metallic parts, and for this purpose I employ strips 2 of brass, copper, or any suitable sheet metal, which are laid at intervals transversely across the layers 3 of felt, as clearly shown in Fig. 2. The strips are secured in

place by tacks or nails 4, driven down through the strips and through each projecting exposed edge of the felt layers, passing through all of the layers and into the sheathing 5, as clearly shown in Figs. 1 and 3.

The arrangement of the felt layers is such as to always shed the water, although any suitable arrangement may be utilized, the best results being secured by arranging the strips 2 transversely at substantially right angles to the exposed edges of the layers of felt 3.

It will be understood that the strips 2 may be arranged at any desired distances apart, depending on the number of layers, their thickness, and other conditions.

Between the sheathing 5 and the under faces of the layers 3 and between the layers themselves throughout I employ asphaltum or cement 6 or any other suitable filling equivalent, as tar, pitch, or mixtures of these materials, as will be readily understood by those familiar with this class of roofing, and the same material is employed underneath the strip 2 and also above it for the purpose of completely surrounding and protecting the strip itself and the nails from moisture.

As a further protection to the strip and nails I employ covering-strips 7, also of felt or other suitable material, of considerably greater width than the metallic strips 2, laid along the top thereof from one end to the other and securely cemented down by means of the intervening layers of asphaltum 6. The same covering material is employed entirely over the top surface of the flat layers and the protecting-strips 7, forming a final bed of cement 8, upon which an outer covering 9, of cracked stone, slag or gravel, or other suitable material may be laid and which will become firmly embedded in place.

The edges of the roof are preferably surrounded by upwardly-extending ledges *a*, formed of sheet metal and provided with inwardly-extending securing-flanges 2', which cover and hold the layers of felt in the same manner generally as just described, being covered in turn by strips of felt 7' and surrounded above and below by the asphaltum filling.

As thus constructed the entire roof will be practically amalgamated together by means of the copious proportion of cement, and the metallic strips 2 and their nails 4 will be en-



5 tirely protected from moisture, particularly  
 by reason of the superimposed strips 7 and of  
 the top layers of asphaltum and the final roof  
 ing-coat. A particular advantage of the  
 strips 2 is that they are of minimum thick-  
 10 ness and add substantially no additional  
 depth to the roof, so that even with the cov-  
 ering-strip 7 there is no visible ridge in the  
 roof, all inequalities being merged into the  
 same general level by reason of the surround-  
 15 ing asphaltum. The strips being thin and  
 narrow and secured at closely-adjacent in-  
 tervals by the nails 4, firmly hold the layers 3  
 in position, each nail of attachment exerting  
 its holding effect continuously throughout  
 the strip rather than at isolated points, as in  
 the case of the ordinary disks.

20 When desired, the central portion of the  
 strip may be extended upwardly along the  
 middle of the strip, as indicated at 10, Fig. 4,  
 the edges 11 of the strip being preferably flat-  
 tened to prevent cutting of the layers 3, al-  
 though the flattening of the edges is not essen-  
 25 tial. With such construction by driving the  
 nails clear down considerable additional pres-  
 sure will be exerted along each edge of the  
 strip, tightly securing the exposed parts of  
 the layers 3 in place and making an abso-  
 lutely close joint.

30 In Fig. 5 I show the same general construc-  
 tion, except that a double-ridge construction  
 10' 10' is used, with an intervening longitu-  
 dinal depression or gutter 12, adapted to re-  
 ceive the securing-nails. The edges 11' may  
 35 be of the form shown or may merely termi-  
 nate in the same general plane as the lat-  
 eral downwardly-sloping outer faces of the  
 ridges 10'.

40 In Fig. 6 the same general construction as  
 in Fig. 4 is shown, having the central up-  
 wardly-projecting ridge 10'', the lateral  
 edges 13 13 being rounded by doubling the  
 metal inwardly upon itself, and such con-  
 45 struction additionally stiffens the strip,  
 while securing all of the edge-pressure qual-  
 ities noted and completely avoiding any cut-  
 ting of the asphaltum or felt.

50 It will be obvious that the same general  
 character of the strip may be secured by va-  
 rying the construction, so that when the nails  
 are driven through a spring-pressure will be  
 exerted along the outer edges, and I do not  
 desire to be limited to the forms shown. The  
 strip 2 (shown in the principal figures of the  
 55 drawings) may be simply flat when originally  
 used, or the same binding effect may be se-  
 cured by originally forming the strip in  
 trough form, as indicated in dotted lines at  
 14, the driving of the nails securing the same  
 60 general result. With an ordinary flat strip,  
 however, laid in the manner described and  
 illustrated and when combined with the  
 other portions of the roof the resulting effect  
 is highly successful and obviates all of the  
 65 deficiencies and disadvantages above noted.

Having described my invention, what I claim is—

1. In a roof, the combination with a plu-  
 rality of overlapping layers of roofing mate-  
 rial, of transversely-laid metallic strips and  
 securing-nails arranged to pass through the  
 exposed portion of each layer of roofing ma-  
 70 terial, substantially as set forth.

2. In a roof, the combination with a plu-  
 rality of overlapping layers of roofing mate-  
 75 rial, of metallic securing-strips laid continu-  
 ously over the successive exposed portions  
 of said layers, and securing-nails passing  
 through the strips and the exposed portions  
 of the roofing material, substantially as set  
 80 forth.

3. In a roof, the combination with a plu-  
 rality of overlapping layers of roofing mate-  
 rial, of metallic securing-strips laid contin-  
 85 uously over the successive exposed portions  
 of said layers, securing devices passing  
 through the strips and the exposed portions  
 of the roofing material, and covering-strips  
 of flexible material laid over the metallic  
 strips lengthwise thereof and transversely  
 90 across the exposed portions of the roofing  
 material, substantially as set forth.

4. In a roof, the combination with a plu-  
 rality of overlapping layers of roofing mate-  
 95 rial, of metallic securing-strips laid continu-  
 ously over the successive exposed portion  
 of said layers, securing devices passing  
 through the strips and the exposed portions  
 of the roofing material, and covering-strips  
 of flexible material laid over the metallic  
 100 strips lengthwise thereof and transversely  
 across the exposed portions of the roofing  
 material, with intervening layers of cement-  
 ing material between the roofing material,  
 metallic strips, and covering-strips respec-  
 105 tively, substantially as set forth.

5. In a roof, the combination with a plu-  
 rality of overlapping layers of roofing mate-  
 rial, of transversely-laid metallic strips and  
 securing-nails arranged to pass through the  
 110 exposed portion of each layer of roofing ma-  
 terial, and longitudinal covering-strips of  
 flexible material laid over said metallic  
 strips, with cementing material laid between  
 the metallic strips and the covering-strips  
 115 and entirely over the overlapping layers, and  
 an outer coating of gravel or the like em-  
 bedded in the upper surface thereof, sub-  
 stantially as set forth.

6. In a roof, the combination with the sup-  
 120 porting-sheathing of the roof, of upwardly-  
 extending metallic edge reinforcing-strips  
 having inwardly-extending flanges, overlap-  
 ping layers of roofing material extending be-  
 neath said flanges and against the upwardly-  
 125 extending reinforcing-strips, securing-nails  
 passing through said flanges and the exposed  
 portions of the roofing material, supplement-  
 al metallic securing-strips laid continuously  
 over the successive exposed portions of the  
 130



overlapping layers of roofing material, and securing-nails passing through said strips and layers, substantially as set forth.

7. The combination with a plurality of overlapping layers of roofing material, of a transversely-laid metallic strip having a longitudinal ridge and secured upon the layers by nails driven through the strip and layers into a supporting-base, substantially as set forth.

8. The combination with a plurality of overlapping layers of roofing material, of a transversely-laid metallic strip having a longitudinal ridge and rounded edges, and secured upon the layers by nails driven through the strip and layers into a supporting-base, substantially as set forth.

9. A securing device for roofing consisting of a metallic strip having a longitudinal ridge portion extending above the plane of the bearing edges, laid transversely across the exposed portions of overlapping layers of roofing material and secured thereon by nails driven through the body portion between the edges and through said layers of roofing material to cause the edges of the strip to bear downwardly thereon and across the edges of the roofing material, substantially as set forth.

10. In a roof, the combination with a plurality of overlapping layers of roofing material, of transversely-laid metallic strips having a longitudinal ridge and secured upon the layers by nails driven through the strips and the exposed portion of each layer of roofing material, and longitudinal covering-strips of flexible material laid over said metallic strips with an intervening layer of cementing material, substantially as set forth.

11. In a roof, the combination with a plurality of overlapping layers of roofing material, of transversely-laid metallic strips having a longitudinal ridge and secured upon the layers by nails driven through the strips and the exposed portion of each layer of roofing material, and longitudinal covering-strips of flexible material laid over said metallic strips, with cementing material laid between the metallic strips and the covering-strips and entirely over the overlapping layers, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES J. KUNZLER.

Witnesses:

CHAS. S. LEPLEY,  
O. M. CLARKE.