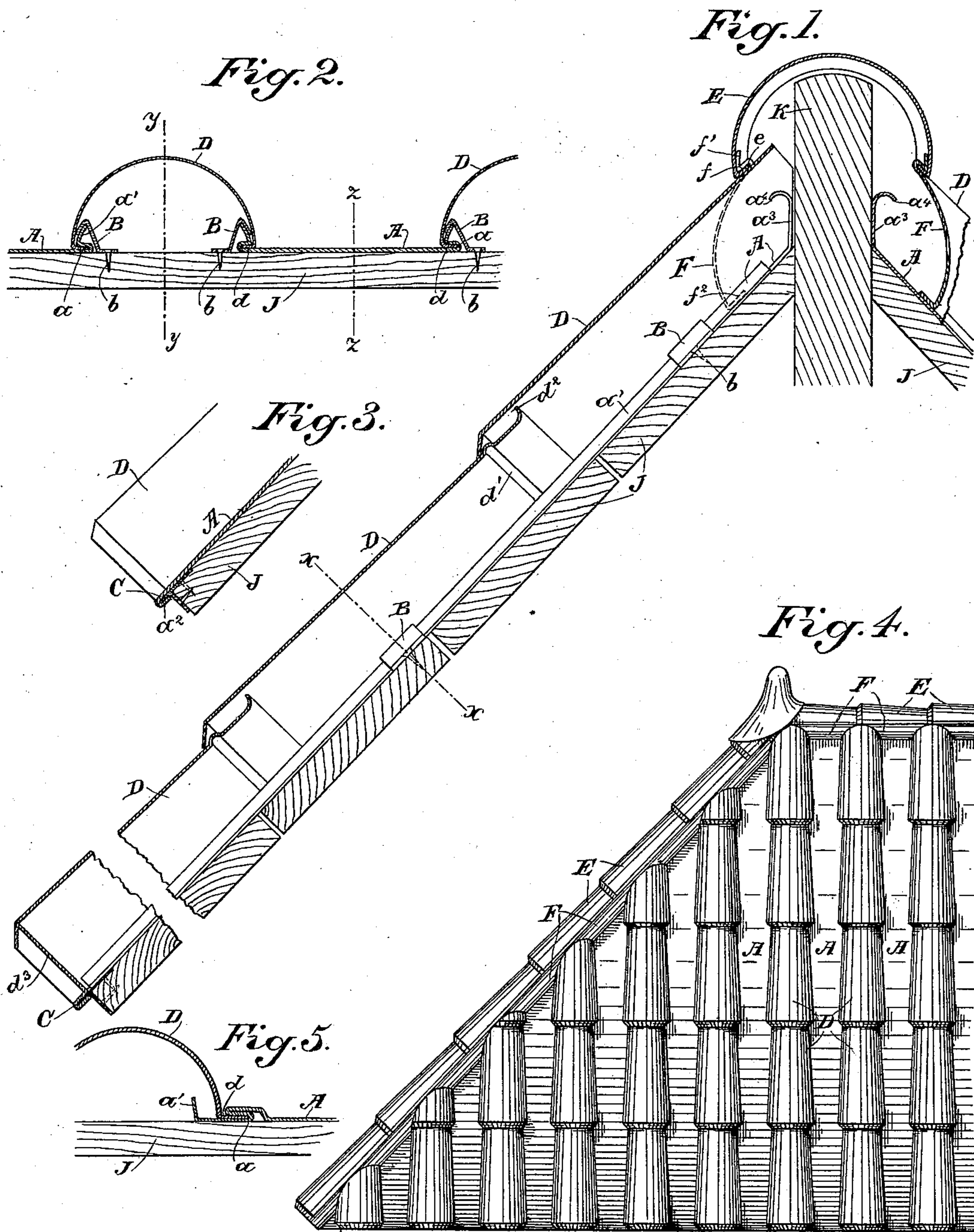


(No Model.)

W. HILLE.  
METALLIC TILE ROOFING.

No. 540,913..

Patented June 11, 1895.



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# UNITED STATES PATENT OFFICE.

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## METALLIC TILE ROOFING.

SPECIFICATION forming part of Letters Patent No. 540,913, dated June 11, 1895.

Application filed March 25, 1895. Serial No. 543,139. (No model.)

*To all whom it may concern:*

Be it known that I, WILHELM HILLE, a citizen of the United States, residing at Alameda, county of Alameda, State of California, have invented an Improvement in Metallic Tile Roofing; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of metallic roofing in which sheets of metal, usually in the form of galvanized iron, are laid together with suitable joints, and form a waterproof covering for all portions of the roof.

My invention consists in the novel construction and arrangement of the sheets of metal forming the roofing; the means by which they are secured in place and the joints by which they are connected, as I shall hereinafter fully describe and specifically claim.

The objects of my invention are to provide a metallic roof, preferably of the tile form, adapted to be secured to the board plates of the roof by means which are both concealed and are protected from the rain, and to unite the plates of which the roofing is composed by means of joints of such a character that while they afford full connection, they are also waterproof.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a section on the line  $yy$  of Fig. 2, showing the roofing over the slope and ridge. Fig. 2 is a section on the line  $xx$  of Fig. 1. Fig. 3 is a detail section of the joint at the eaves on the line  $zz$  of Fig. 2. Fig. 4 is a section of a completed roof. Fig. 5 shows a modification of the interlocking joint between the tiles and flat plates.

A are flat metal plates extending in strips the whole length of the roof slope from the eaves to the ridge or hip as the case may be. These are laid upon the boards  $J$  of the roof and are secured to them by metallic cleats  $B$  engaging their edges and fastened to the boards by nails  $b$ .

The sides of the plates  $A$  are first bent backwardly upon themselves, thus leaving a channel at  $a$ , and then their edges are bent upwardly at  $a'$ , either in a curve or straight, or at an inward inclination as may be desired. The cleats  $B$  have their upper edges hooked

over the edges  $a'$  and their foot portions rest on the boards and are nailed thereto.

At the eaves, the lowermost roof-board has nailed to it a projecting metallic tongue  $C$ , and over this the lower ends of the flat plates  $A$  are bent as shown at  $a^2$ . The upper ends of the flat plates  $A$  extend up to the ridge  $K$  or to the hip, where they are bent upwardly at  $a^3$  and curved at  $a^4$ .

The strips  $A$  are laid on the roof parallel but separated from each other. The space between them is bridged by the metallic tiles  $D$  of the usual tapering form.

The side edges  $d$  of each tile are bent horizontally, and they are fitted to the flat plates by inserting the horizontal edge  $d$  on one side into the channel  $a$  of the edge of one flat plate, and the horizontal edge  $d$  of its other side into the channel  $a$  of the adjacent flat plate, thus securing them and forming a water tight joint, while the tile, by arching over the space between the flat plates, conceals and covers the cleats  $B$  which fasten the plates, and no water can get through the nail holes.

The tiles are in sections of proper length, the larger end of one fitting and lapping over the smaller end of the other and crimped down thereon; but to insure this overlapped joint being water-tight, the smaller end of the lower tile is provided or formed with an encircling ridge  $d'$  which lies just back of the crimped down end of the upper tiles, and the extremity of said lower tile is upturned as shown at  $d^2$ . The lower end of the lowermost tile of each line is closed in by a plate  $d^3$ , which also bends over tongue  $C$ .

The tiles  $E$  which cover the ridge and hips are similar to the tiles  $D$ , and they overlap considerably the vertical planes of the upper ends of flat plates  $A$  and tiles  $D$ , so that the latter project well under their protecting sides or wings.

The side edges  $e$  of the tiles  $E$  are fitted into channels  $f$  formed by the bent upper edges of the curved metallic piece  $F$ , said upper edges being also bent upwardly inside of tiles  $E$ , as shown at  $f'$ , this joint being similar to that by which the plates  $A$  and tiles  $D$  are connected. The curved pieces  $F$  bend downwardly and are cut out to fit between adjacent tiles  $D$ , and their lower edges  $f^2$



which are bent upwardly, lie just over and upon the flat plates A. This construction at ridge and hip is a water-proof one, and is secure and permanent. It may be stated that  
 5 whenever found best, the various plates and parts of the roofing may be tacked together by a little solder.

In Fig. 5 I show a slightly modified form of the interlocking joint between the flat plates  
 10 A and the tiles D, in that the channel of the flat plates and its upturned edge are directed outwardly instead of inwardly or backwardly.

Having thus described my invention, what I claim as new, and desire to secure by Letters  
 15 Patent, is—

1. In metallic roofing, the slope covering consisting of the flat plates laid upon and secured to the roof-boards in parallel separated strips, tiles bridging the spaces between  
 20 said plates and interlocking flanges connecting the adjacent edges of said plates and tiles, consisting of the channeled and upwardly bent edges of the plates and the horizontally bent edges of the tiles entering the channeled  
 25 edges of said plates.

2. In metallic roofing, the slope covering consisting of the flat plates laid upon the roof-boards in parallel separated strips, cleats engaging their edges and nailed to said roof-  
 30 boards, tiles bridging the spaces between said plates and covering the securing cleats and a connection between the edges of the tiles and plates.

3. In metallic roofing, the slope covering  
 35 consisting of the flat plates laid upon the roof-boards in parallel separated strips, said plates having their side edges channeled and upwardly bent, cleats hooked on to said upwardly bent edges and nailed to the roof-  
 40 boards whereby the plates are secured to said boards, and tiles bridging the space between the flat plates and covering the cleats, said tiles having horizontal edges entering the channeled edges of the flat plates.

4. In metallic roofing, the flat plates se-  
 45 cured to the roof boards in parallel separated strips, and having upwardly bent and channeled edges, the said plates having their lower ends bent over projecting tongues at the eaves  
 50 of the roof, and tiles bridging the spaces between the plates having their edges to enter

the channeled edges of the plates, and plates  
 55 closing in the lower open ends of the tiles at the eaves.

5. In metallic roofing, the tapering tiles, 55 the larger end of each having a down-turned crimp or flange and adapted to overlap the smaller end of the next lower tile, and the small end of each having an encircling ridge adapted to lie just back of the crimp or flange  
 60 of the next higher tile, and having also an upturned upper edge.

6. In metallic roofing, the ridge and hip covering, consisting of the separated flat plates and intervening bridging tiles of the slope 65 covering, both approaching close to the ridge or hip, the overlying cap tiles of the ridge and hip, overlapping the vertical planes of the upper ends of the flat plates and slope tiles, and the curved pieces F joining the cap tiles  
 70 at their upper edges, and thence bending down between the slope tiles to the flat plates.

7. In metallic roofing, the separated flat plates and intervening bridging tiles of the slope covering, the cap tiles having their sides 75 overlapping the vertical planes of the upper ends of the flat plates and slope tiles and formed with horizontal edge flanges, and the curved pieces F having their upper edges channeled and bent upwardly to interlock 80 with the edge flanges of the cap tiles, said pieces bending down between the slope tiles to the flat plates.

8. In metallic roofing the separated flat plates having the upper ends bent upwardly 85 and intervening bridging tiles of the slope covering, the cap tiles having their sides overlapping the vertical planes of the upper ends of the flat plates and slope tiles, and formed with horizontal edge flanges and the curved 90 pieces F having their upper edges channeled and bent upwardly to interlock with the edge flanges of the cap tiles, said pieces bending down between the slope tiles to the flat plates and having their lower ends bent upwardly. 95

In witness whereof I have hereunto set my hand.

WILHELM HILLE.

Witnesses:

S. H. NOURSE,  
 H. T. ASCHECK.