(No Model.) 2 Sheets—Sheet 1.

E. D. BEVITT.

ROOFING.

No. 422,178. Patented Feb. 25, 1890.

Fig. 1.

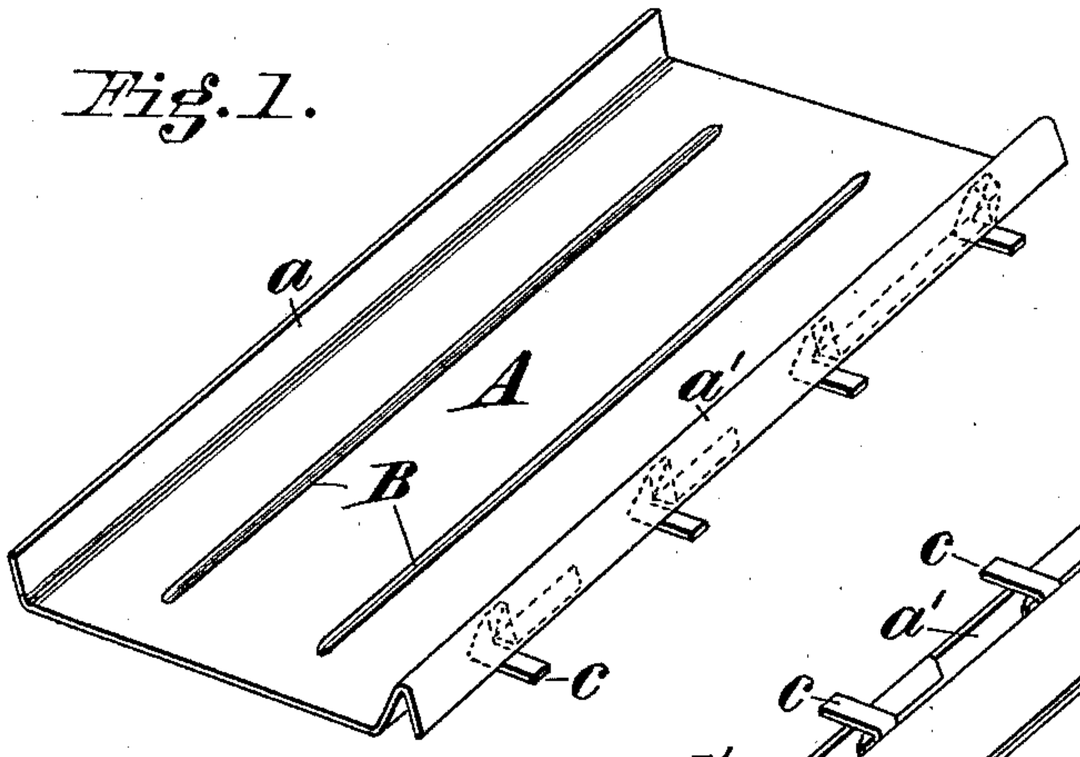

Fig. 2.

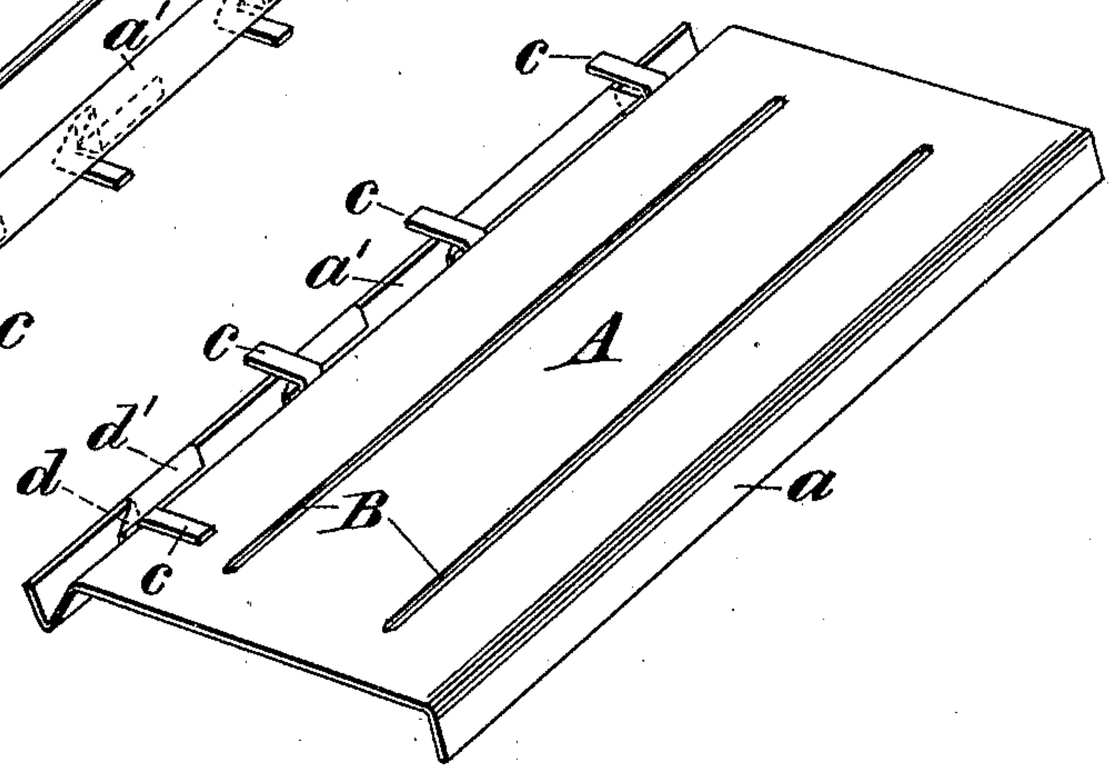

Fig. 3.

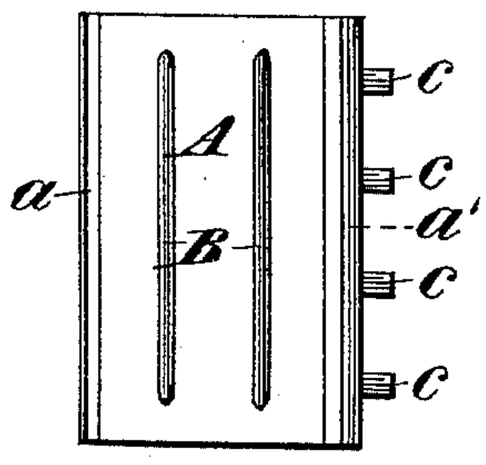

Fig. 4.

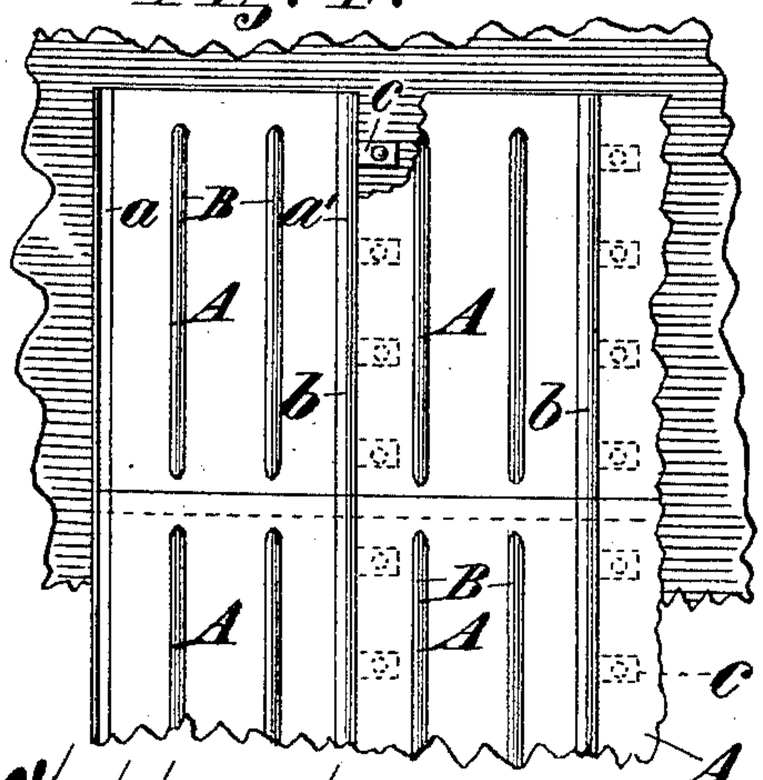

Fig. 5.

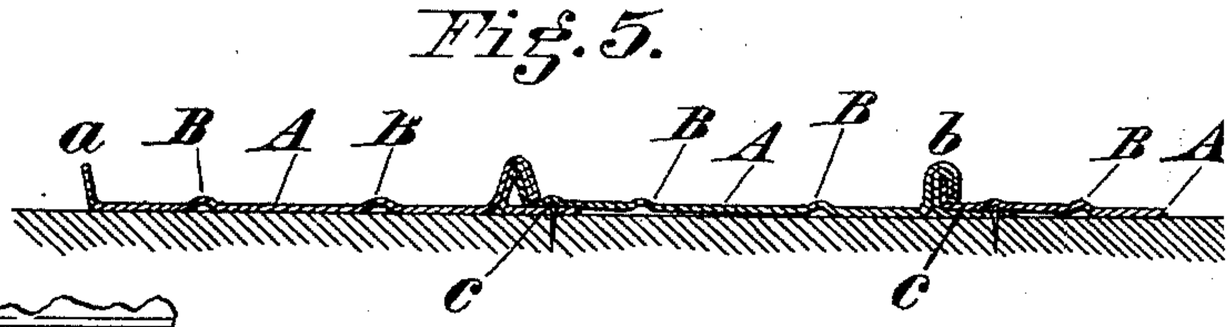

Fig. 6.

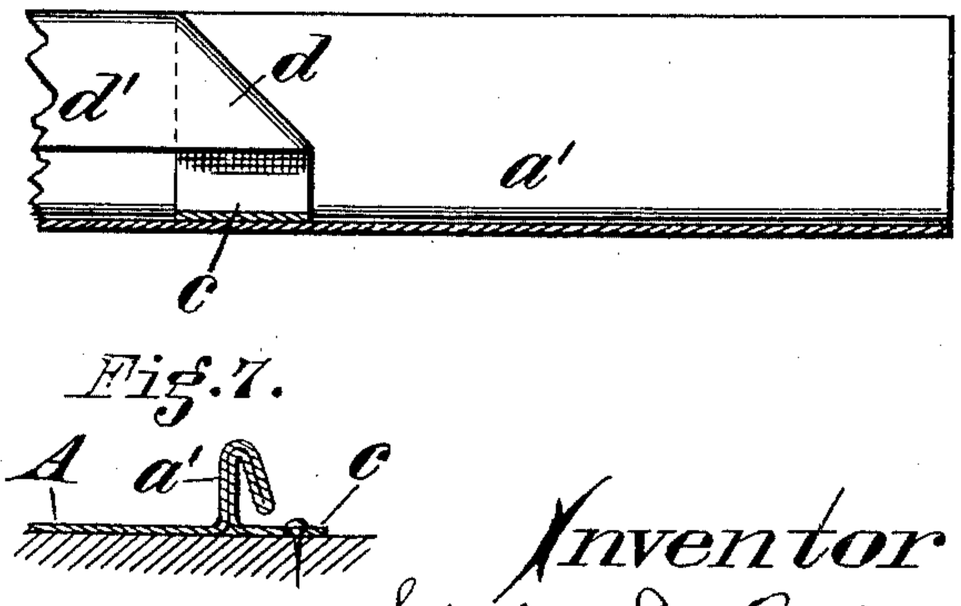

Fig. 7.

Attest

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by John E. Jones

his Attorney.

(No Model.) 2 Sheets—Sheet 2.

E. D. BEVITT.

ROOFING.

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Fig. 8.

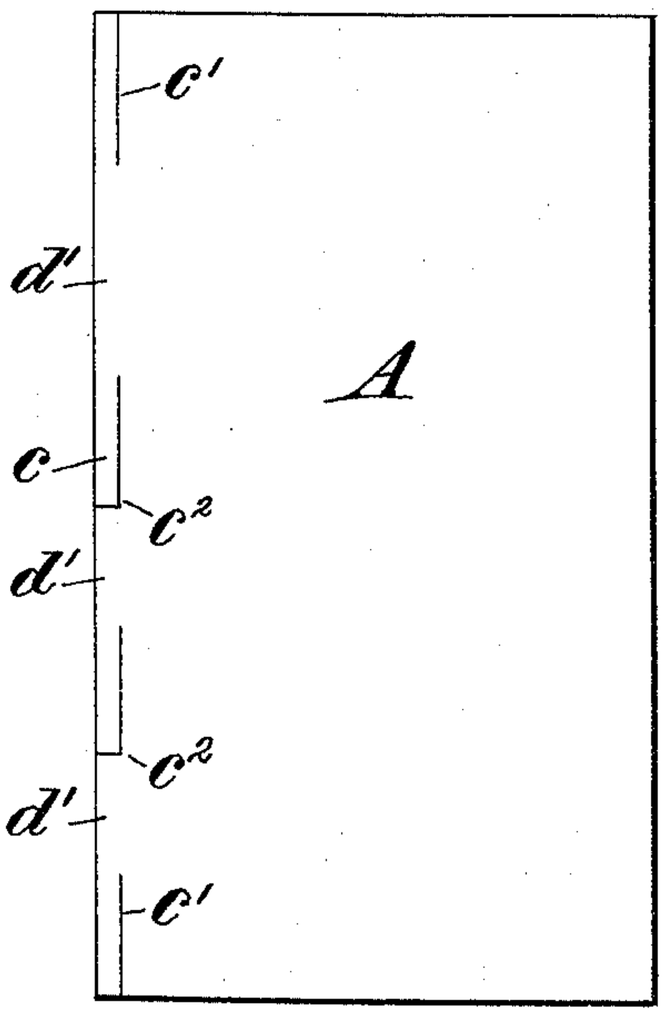


Fig. 9.

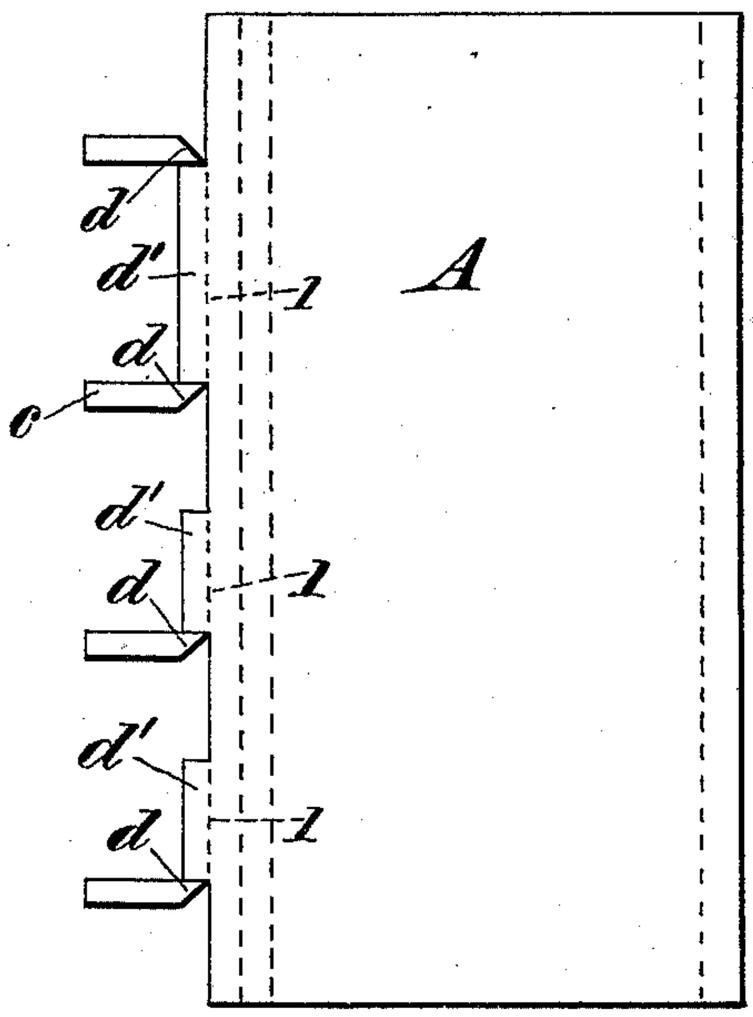


Fig. 10.

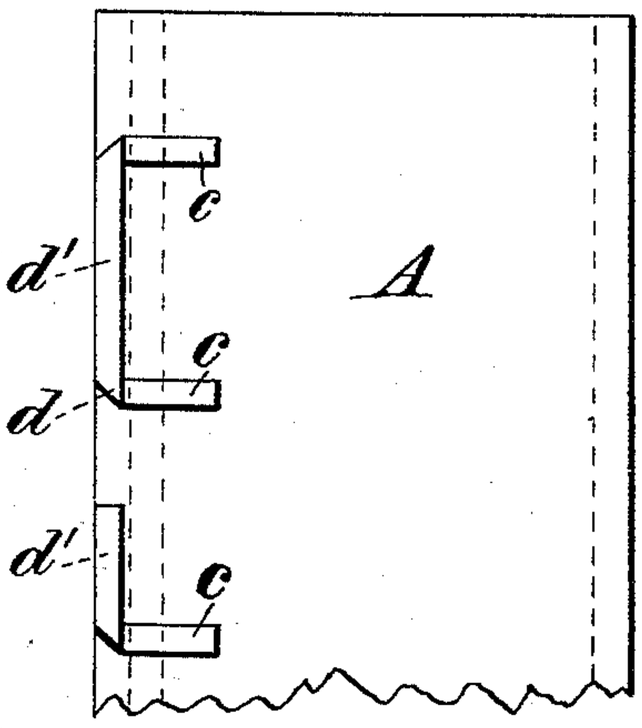
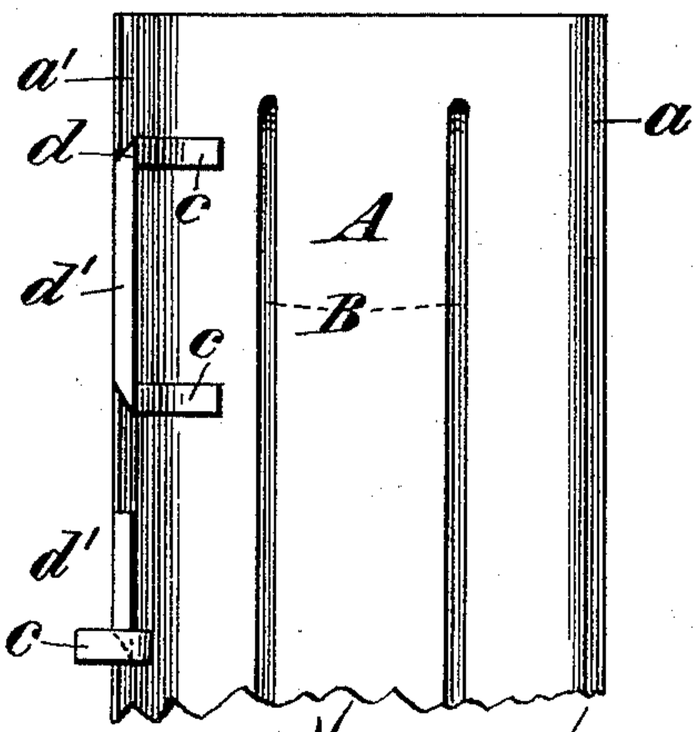


Fig. 11.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWIN D. BEVITT, OF CINCINNATI, OHIO.

ROOFING.

SPECIFICATION forming part of Letters Patent No. 422,178, dated February 25, 1890.

Application filed May 14, 1889. Serial No. 310,780. (No model.)

To all whom it may concern:

Be it known that I, EDWIN D. BEVITT, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Sheet-Metal Roofing, of which the following is a specification.

My invention relates to sheet-metal roofing, or, more particularly, to that class of metallic roofing having standing-seam joints, all of which will be fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a sheet of metallic roofing embodying my invention in its preferred form; Fig. 2, a perspective view of the sheet shown in Fig. 1, on the reverse side or bottom thereof; Fig. 3, a plan view of the sheet shown in Fig. 1; Fig. 4, a broken plan view showing the manner in which the sheets are laid and secured in place on the sheathing to form the roof; Fig. 5, a transverse section showing the manner in which several adjacent sheets are united together and secured in place on the sheathing, one seam being only partially closed and ready for the final pass of the crimping-tool; Fig. 6, a broken full-sized sectional elevation of one end of the flanged portion of the sheet, showing the manner in which its edge is cut and folded under to form the cleat, this view being that of the outer limb of the flange and contiguous parts in an inverted position; Fig. 7, a broken transverse section of the flanged edge of the sheet on which the cleats are formed, showing a modified construction in which the inner limb of the inverted-V flange is made perpendicular, instead of at an inclination, as in the previous figures; Fig. 8, a plan view or diagram of the under side of a sheet of metal cut ready for folding or crimping into the construction of sheet shown in the several views on Sheet 1; Fig. 9, a plan view of the sheet shown in the preceding figure with the cleats turned outwardly, which is the first position they assume in the process of construction of my improvement, the dotted lines in this view indicating the lines on which the various folds or crimps are subsequently made in the finishing process of the sheet; Fig. 10, a broken plan similar to Figs. 8 and 9, showing the succeeding step in the construction of my sheet; Fig. 11, a broken plan similar to Fig. 10, showing the next step in the construction of my sheet, this step being the final one when the remaining flanges, bends, and bulges or ridges are made in the sheet to form the finished sheet, one of the cleats being turned outwardly in the position it assumes when ready for securing in place on the sheathing.

A represents the body of a sheet or plate of metallic roofing having its opposite longitudinal edges upturned or formed into flanges *a* and *a'*, respectively, the latter *a'* being an inverted-V-shaped one in cross-section.

B represents one or more longitudinal ridges or bulges formed in the sheet for stiffening same. These ridges preferably terminate at a point three inches (more or less) from the opposite ends of the sheet, as clearly shown in the first four figures on Sheet 1, the object of thus abridging their length being to permit the interfolding or lapping of said ends of the sheet with the ends of the adjacent sheets, which is an important feature of my invention. Heretofore the stiffening-corrugations in the sheet have extended the full length thereof, (from end to end,) and thereby necessitated the use of an extra width or amount of material, and when it was desired to interlock or fold the ends of adjoining sheets it was first necessary to batter down or flatten the corrugations the proper distance back from said ends, thus making extra labor for the workman in laying the roofing, and the folds or laps were inferior in construction, owing to the difficulty of getting the metal perfectly flat after said corrugations were once formed therein. It is obvious that the bulges or ridges B could be made in the sheet so as to project in the opposite direction to that shown, or, in other words, to project downward, and instead of forming ridges they would thus form grooves, which would stiffen the sheet just as well, but would be objectionable on account of the water and other matter collecting in them.

c represents a series of lateral fastening-cleats on one of the longitudinal edges of the sheet, those shown in the drawings being formed on the outer limb of the inverted-V flange *a'*. These cleats are formed integral with said flanged edge of the sheet in the following manner: A slit *c'* the desired length

of the cleat is made in the sheet from both ends, parallel with one of its longitudinal edges and at such a distance from said edge as it is desired the width of the cleat shall be, which ordinarily is narrow. One or more right-angled slits c^2 are made simultaneously or otherwise with said slits c' in the said edge intermediate said slits c', all as shown in Fig. 8. The narrow strips of metal thus partially severed from the main sheet are then lapped over at d, so that the fold thus formed lies at an angle of about forty-five degrees to the edge of the sheet and the said strips at right angles to said edge, as shown in Fig. 9. The said narrow strips and the metal d' on the edge of the sheet which has not been slit, and which is of the same width as said strips, are then folded over onto the bottom of the sheet, as shown in Fig. 10, the line of fold being that indicated by the dotted line 1 in Fig. 9, and forming the webs which connect the cleats to the sheet. The dies or tools used to form the hereinbefore-described flanges and ridges on the sheet are now brought into action, and in such operation snugly press or force the narrow folds d' and a portion of the narrow strips which constitute the cleats into the hollow of the inverted-V flange a', which is formed simultaneous therewith, as shown in Fig. 11. Two of the cleats in this figure are shown lying flat upon the bottom of the sheet, which is the position they remain in until it is desired to place the sheet in position and secure it to the sheathing. The cleats while lying flat upon the bottom of the sheet enable the nesting of any number of sheets one on top of the other, convenient and advantageous for both transportation and storage. One cleat in said Fig. 11 is turned outward in the position it assumes when ready for securing the sheet in place.

It will be seen that in forming my cleats in the manner above described the use of but a very narrow width of metal is necessary on one edge of the sheet, and as said width is turned under the inverted-V flange to fit snugly in contact with the inner face of its outer limb said outer limb is materially strengthened and stiffened, and no waste of metal results.

In placing the sheets together to form a roof one sheet is first laid on the sheathing and then firmly secured thereto by driving nails through the projecting cleats c, as shown in Figs. 4 and 5. The upturned edge or flange a of the next sheet (to the right or left, as the case may be) is then inserted beneath the outer limb of the flange a', so as to lie in contact with the folded edge d' and the upper inner face of said limb, as shown in said Fig. 5, the second sheet thus covering and concealing the secured cleats of the first sheet. The crimping-tool is then used to close the seam in the condition shown at b in said Fig. 5. It will be seen that the two end cleats (the upper and lower, respectively) are formed so that they leave no metal between them and said ends to fold inwardly, thus avoiding too many thicknesses of metal at the point where the ends of adjoining sheets lap one another in laying the roof, and also enabling the ready bending or folding over of said ends when desired.

It is quite obvious that, instead of making the flange a' as hereinbefore described, the inner limb of its inverted-V shape could be made perpendicular, as shown in Fig. 7, thus enabling the use of a shorter cleat and closer nailing to the line of the finished seam.

I claim—

1. A sheet of metallic roofing having flanges a and a' on its opposite longitudinal edges, and a series of fastening-cleats c on said flange a', said cleats being formed integral with said flange a' and folded or turned under the sheet to lie flat on its bottom when said sheet is packed with others in stock or for shipment, and turned laterally outward from beneath said flange a' to lie flat on the sheathing and receive the fastening-nails when said sheet is to be used with others in covering a roof, substantially as herein set forth.

2. In a sheet-metal roofing, the sheet A, having flanges a and a' on its opposite longitudinal edges, and lateral cleats c formed on said flange a', the surplus metal or narrow strip d' on one edge of said flange a', which is not used in the formation of said cleats, being turned inwardly and in close contact with the inner face of the outer limb of said flange a', substantially as and for the purpose specified.

3. The sheet A, having upturned edges or flanges a and a', and cleats c on said flanges a', the upper and lower or end ones of said cleats being formed from narrow strips of the metal cut from both ends of the sheets inwardly, thereby leaving no metal at either end of the narrow inward fold d' from said upper and lower cleats outward, substantially as and for the purpose specified.

4. A sheet of metallic roofing having a plane face or body A, flanges a and a' on the opposite longitudinal edges of said body, and lateral cleats c, formed on said flange a', the surplus metal or narrow strip d' on one edge of said flange a', which is not used in the formation of said cleats, being turned or folded inwardly and contiguous with the inner face of the outer limb of said flange a', in combination with the elevations or ridges B B, made in said plane face or body and terminating at a point a suitable distance from either end thereof, substantially as and for the purpose specified.

In testimony of which invention I have hereunto set my hand.

EDWIN D. BEVITT.

Witnesses:
JOHN E. JONES,
B. DONALDSON.