

L. STRUBLE.
Metallic-Roofing.

No. 215,989.

Patented May 27, 1879.

Fig. 1.

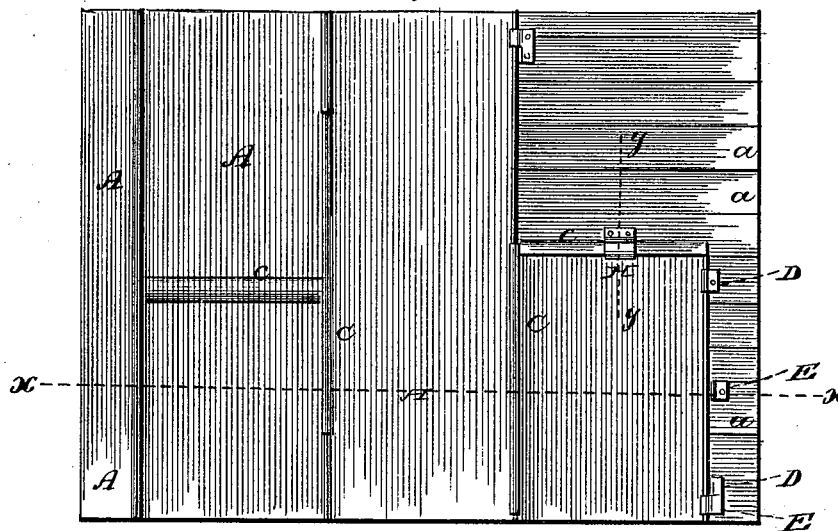


Fig. 2.

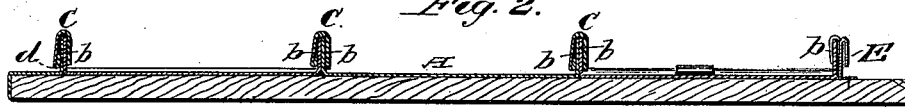


Fig. 3.

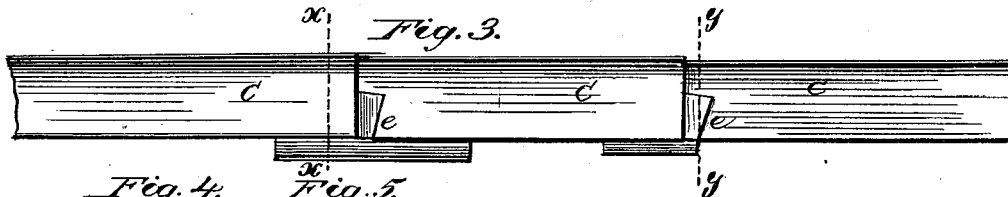


Fig. 4.

Fig. 5.

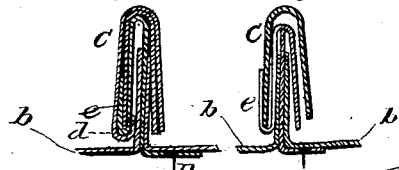


Fig. 6.



Fig. 7.

Fig. 8.

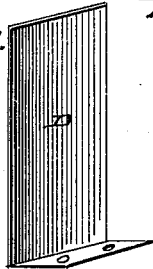
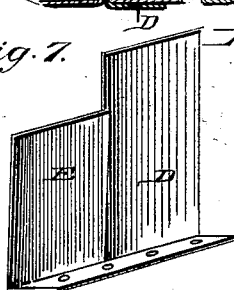


Fig. 9.

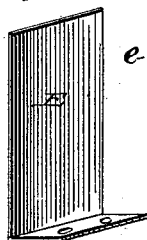
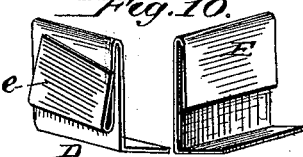


Fig. 10.



Witnesses

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UNITED STATES PATENT OFFICE.

LAFAYETTE STRUBLE, OF FOREST, OHIO.

IMPROVEMENT IN METALLIC ROOFING.

Specification forming part of Letters Patent No. **215,989**, dated May 27, 1879; application filed March 24, 1879.

To all whom it may concern:

Be it known that I, LAFAYETTE STRUBLE, of Forest, in the county of Hardin and State of Ohio, have invented certain new and useful Improvements in Metal Roofing; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a plan or top view of a section of my improved metallic roofing, left partly unfinished to better show its construction. Fig. 2 is a transverse section taken on the line *x x* in Fig. 1, enlarged. Fig. 3 is an enlarged side view of one of the ridges formed by the upturned meeting edges of the roofing-sheets and their overlapping caps. Fig. 4 is a cross-section on line *x x*, Fig. 3. Fig. 5 is a similar section on line *y y*, Fig. 3. Fig. 6 is an enlarged cross-section on line *y y*, Fig. 1; and Figs. 7, 8, 9, and 10 represent detail views of the cleats or clamps used in combination with the roofing-sheets and their caps.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to metallic roofing; and consists, essentially, in the combination, with the roofing-sheets, of a system of caps and cleats by which the roofing-sheets are united together and fastened down upon the roof-boards.

The object of this invention is twofold, viz: first, to construct a roofing capable of being readily adjusted upon a roof and again removed without perforating or otherwise damaging the sheets; and, second, to so unite the component parts of the roof that it, as a whole, will allow of expansion and contraction without "bulging" of the sheets, substantially as hereinafter more fully described.

In the drawings, *a a*, Fig. 1, are the roof-boards, and *A* the metallic roofing-sheets, each of which has two parallel upturned edges, forming flanges *b b*, of about one inch in height. These sheets are generally about eight feet long by two feet wide, each; but it is obvious that my improvement is not dependent upon any particular size of sheets,

that being merely a matter of choice or convenience.

To put on my improved roofing, the beginning should be made at the lower left-hand corner of the roof, where the first sheet is laid, turning down an edge wide enough to reach below the bottom of the roof-boards. The upper edge of the sheet is then turned or doubled, as shown at *c*, Fig. 6, to form a lock for the overlapping edge of the sheet next above. This doubled edge of the first sheet is secured upon the roof-boards by a cleat, *H*, which is nailed down upon the boards and interlocks with the doubled edge, as shown in Fig. 6, after which the next sheet of the course is placed in position with its front edge doubled and interlocking with the upper edge of the sheet next below, so as to cover the fastening-cleat *H*. After the meeting edges of the two sheets *A A* in the same course have been thus interlocked, they are firmly united by beating down and flattening the seam with a mallet, when the next sheet of the course is ready to be placed in position and secured in like manner, and so on until the course has been finished.

The roofing-sheets *A A* are united sidewise or laterally in the following manner: Having laid the first course in the manner described, commence at the eave, and nail a cleat, *D E*, (shown in Fig. 7,) close up against the upturned edge *b* at the lowermost right-hand corner of the finished course. This done, take one of the capping-pieces *C*, and cut off from one end a small piece, about one inch in length, to be used as a gage in measuring the overlaps of the caps. Each of these caps consists of a strip of metal about twenty-six inches in length and two and one-fourth inches wide, which is doubled and made with an inturned edge, *d*, along one or both of its sides, and having one or both of its lower corners made beveled or tapering, in order that another cap may be readily inserted upon it endwise and slipped over it, hooking its inturned edge or edges under the beveled or tapering end of the cap next below which it overlaps. Previous to inserting the first cap *C* upon the meeting flanges *b b* the long lip *D* of the double cleat *D E* is bent over said edges, and the short lip *E* is bent in the opposite direction, which allows its edge to interlock with the inturned

flange *d* of cap C, as shown in the cross-section, Fig. 5. After the cap has been inserted upon the cleat and meeting flanges, the long lip D, which will project below the lower edge of the cap, is turned up sharp, as shown at *e* in Fig. 4, and is partly covered by the overlapping end of the cap C next above. This is followed up along the standing edge or flange of the course just laid, the cleats D E being nailed to the roof-boards before they are bent or doubled.

It is sometimes preferable, in practice, to make the cleats D E in two separate parts, as shown in Figs. 8 and 9, in which case the short cleat, E, alternates with the long cleat, D, as shown in Fig. 1. In either case the short-lipped cleat is turned down to the right over the standing edge of the last sheet laid, the lower part of the cleat projecting up between the two upturned edges of adjoining sheets A A. The long-lipped cleat D is turned to the left, in like manner as if the parts D E were made in one piece.

Having nailed the cleats in position upon the roof-boards along the upturned edge or flange of the course just laid, the next course is commenced by starting with a part of a sheet, so as to break joints with the course just laid. The angle formed by the upturned edge at the lower left-hand corner of this starting-sheet is cut into a depth of about one inch, the sheet overlapping the eaves with its front edge a corresponding space, and the projecting part of the flange *b* is turned to the left around the standing edge of the sheet next to it, its lower edge being trimmed off slantingly, so that it may be readily bent. When doubled upon the front end of the first ridge in the manner described it will overlap the downturned lip of the first cleat, D, on said ridge, which projects below it, and which is turned up sharp, and the ridge formed by the meeting flanges *b b* is ready to receive the first cap C, which is followed up by a series of overlapping caps in the manner already described. When the whole course of caps has been finished the whole is firmly locked by flattening the sides of the ridges so formed with a pair of lever-tongs, or by the aid of a mallet and seamer.

The caps should not be put on until the

sheets are all down. Commence at the lower end of each standing edge or seam formed by the upturned edges of adjoining sheets, when they are readily placed in position and hooked into each other, in the manner hereinbefore described.

My improved roofing is adapted to all styles of roofs, even the most complicated, and is very easy to put on and again removed, which may be done without injury to the roofing-sheets. It allows for expansion and contraction both ways; and as its construction makes it absolutely water-proof it may be used with advantage upon very flat roofs.

The method of making the cross-seams, which interlock the roofing-sheets lengthwise, makes allowance for expansion and contraction in that direction, taking the strain off of the seam, so that the paint will not crack or break, but the joint will always remain perfectly water-tight. When the metal contracts it straightens out or flattens, while, when it expands, it makes the seam deeper.

I am aware that it is not new to secure metallic roofing-sheets upon the roof-frame by cleats or anchors, which are nailed upon the frame, and then doubled over the upturned edges or flanges of adjoining sheets; and I am also aware that caps or saddle-pieces have been used before in combination with the upturned sheets and their cleats or anchors. I do not claim such construction, broadly; but,

Having thus described my improvement, I claim and desire to secure by Letters Patent of the United States—

The sheet-metal roofing-joint consisting of the combination, substantially as described, of the sheets A, having parallel flanges *b b*, doubled caps C, having inturned edge *d*, cleats E, and cleats D, bent into an S shape, with its upturned lip *e* inserted between the overlapping ends of adjoining caps C C, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

LAFAYETTE STRUBLE.

Witnesses:

HARVEY S. HOW,
JOHN N. BARLITT.