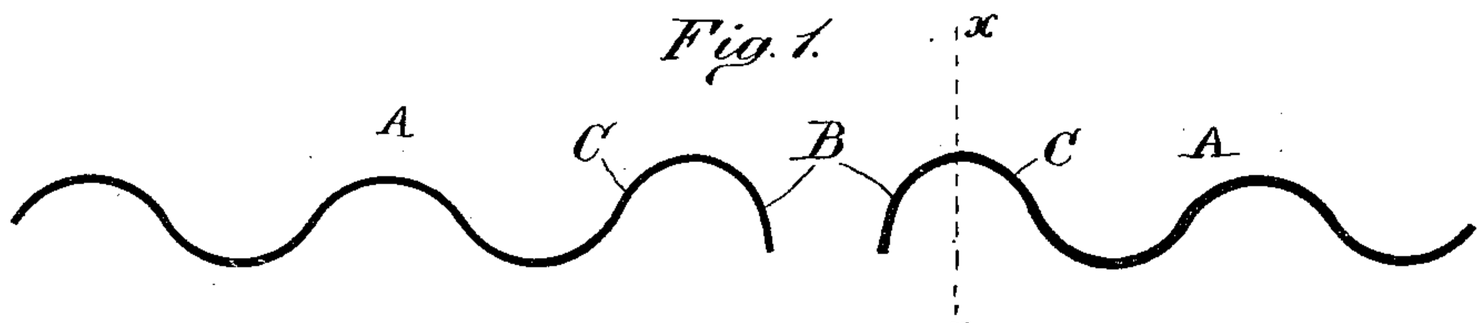
(No Model.)

J. G. BATTELLE.

JOINT FOR SHEET METAL.

No. 365,042. Patented June 21, 1887.

Fig. 1.



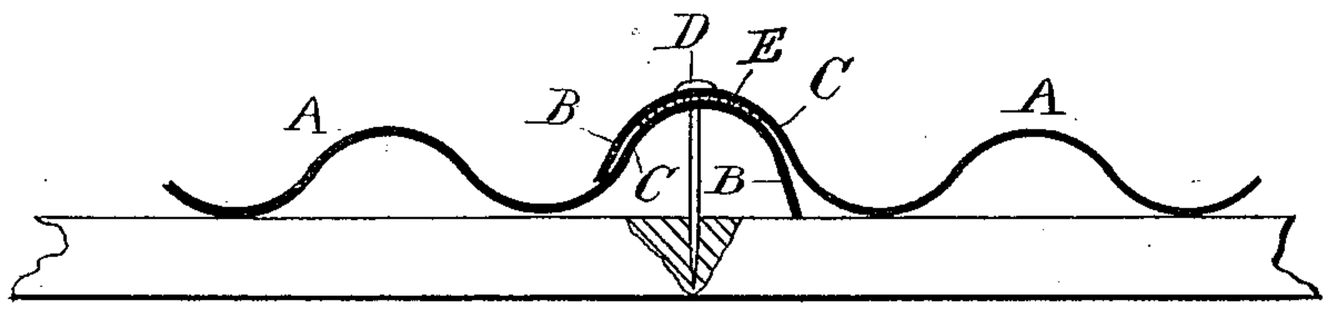


Fig. 2.

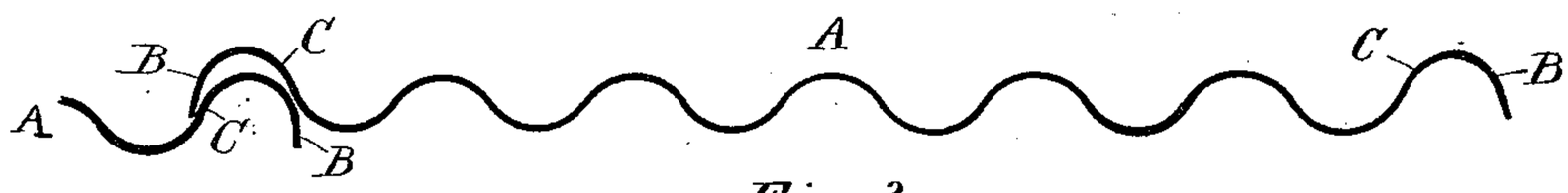


Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

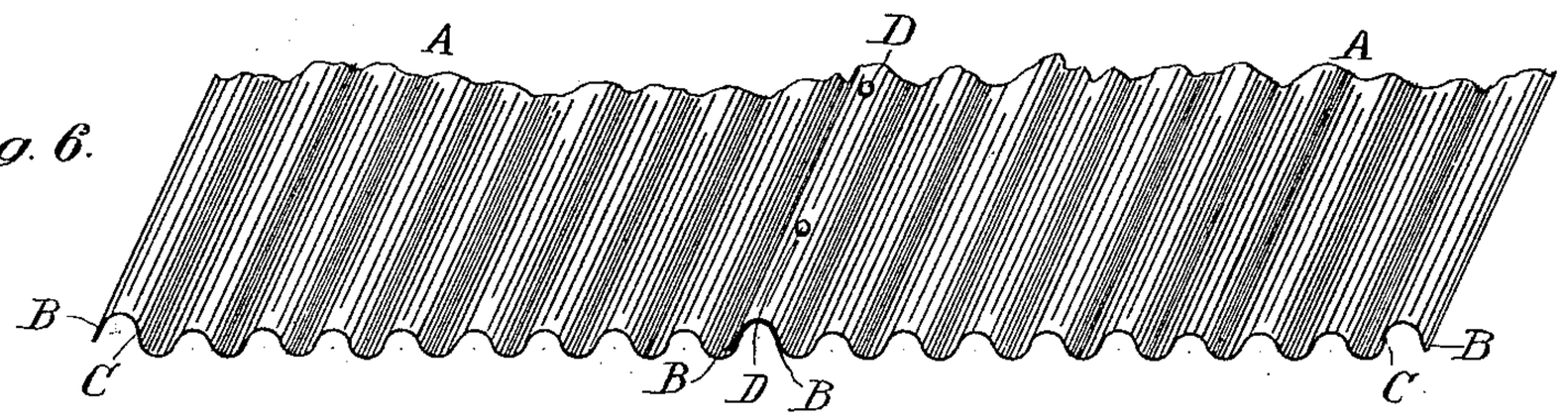


Fig. 7.

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JOINT FOR SHEET METAL.

SPECIFICATION forming part of Letters Patent No. 365,042, dated June 21, 1887.

Application filed January 31, 1887. Serial No. 225,992. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. BATTELLE, a resident of Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Joints for Sheet Metal, of which the following is a specification.

The principal object of my invention is to produce a joint for sheet-metal roofing and siding or other use, which shall form an effectual barrier against the entrance of water.

In the accompanying drawings, Figure 1 is an edge view of the ends of adjacent sheets of corrugated sheet metal, embodying my invention. Fig. 2 is a cross-section of the joint of two sheets of corrugated metal embodying my invention. Fig. 3 is an end view of a complete sheet of corrugated sheet metal embodying my invention. At the left in this figure the relative positions of two sheets about to be joined are shown. Fig. 4 is a view of the end of a sheet corrugated on the edges only, the latter being provided with my improvement. Fig. 5 is an end view of two sheets of metal provided with one form of my invention and placed in position to be united. Fig. 6 is a perspective view of a section of roofing or siding made of corrugated sheet metal embodying my improvements. Fig. 7 is a view illustrating the relative positions in a joint of the edge of the overlapping sheet in ordinary corrugated metal and the position of the edge of the overlapping sheet when provided with my improvements.

As my invention is especially valuable in connection with full corrugated sheets, I have very fully illustrated its use in such connection; but as the main features of the invention are applicable to plain sheets of metal, I have illustrated its application thereto in Fig. 4.

In the drawings the peculiarities of the device are exaggerated in order to better illustrate the various features of the invention.

The metal sheets A are corrugated, preferably into curved corrugations, in the same manner as ordinary corrugated metal, except at the edges. The outer fold, B, of each of the edge corrugations does not follow the same general curve found in the inner or ascending fold C of the same corrugation, but has a steeper pitch and extends downwardly with this steeper pitch until it reaches about the general level of the sheet, where it ends abruptly without being curved outwardly at all. The inner fold, C, has a less pitch than the outer fold, B, and the top of the corrugation uniting the folds is preferably curved. The corrugation formed as above described is of such a shape that if a line, as $x\ x$, be dropped from the highest point of the top of the corrugation perpendicular to the plane of the sheet, it will divide the corrugation into two unequal parts, of which the outer part is the narrower and the inner part the wider. Both edge corrugations are similar to each other. When the sheets are joined, the edge corrugation of one sheet is made to overlap the edge corrugation of the adjacent sheet, as shown on the left in Fig. 3.

By reference to Fig. 3 it will be seen that the free edge of the fold B of the overlapping corrugation rests upon the fold C of the lower corrugation, and the fold C of the overlapping corrugation rests on the upper part of the fold B of the lower corrugation, while the top of the overlapping corrugation is considerably elevated above the top of the lower corrugation. The nail D is driven directly through the tops of the corrugations into the wooden sheathing beneath. Instead of a nail, a rivet and cleat or other fastening device may be employed. As the nail D or other fastening is driven into place it forces the overlapping corrugation down onto the lower corrugation, and at the same time forces the fold B of the overlapping corrugation to spread slightly to accommodate itself to the fold C of the lower corrugation. The fold B, being forcibly spread in this manner, clasps the lower fold, C, closely and forms a tight joint.

When desired, cement, felting, red lead, or other suitable substance, E, may be used between the lapped-edge corrugations to assist in rendering the joint water-tight and to prevent the intrusion of water at nail-holes.

When desired, the overlapping corrugation may be made somewhat smaller than the lower corrugation—that is, with a somewhat narrower opening—and in this way still further assist in securing a tight joint. This is shown in Fig. 5.

Besides the advantages gained from the tight joint formed, my invention has several other important advantages. As shown in Fig. 2,

the fold B of the lower joining corrugation rests on the sheathing or other support to which the metal is attached. This forms an efficient support for the joint corrugation, making it as firm as the other corrugations. Without this support it is impossible to drive the nails through the tops of the corrugations without spreading or reducing the height of said corrugations. The joint formed as above described is very strong, and will sustain the weight of a man without materially yielding and without injury. When the edge of the outer fold, B, reaches the sheathing, as shown in Fig. 2, it catches on the sheathing or other support, and is prevented from slipping and from spreading the joint, and is compelled to serve as a firm support for the joint.

Another important feature of my invention consists in having the fastening device attached through the tops of the corrugations. At least two advantages follow from this feature. The openings for the passage of the fastening devices are less exposed to the intrusion of water, and the heads of the fastenings protect these openings more completely than when the fastenings are put in through the sides of the corrugations.

With ordinary corrugated sheet metal the nails or other fastenings are driven diagonally into the corrugation between the edge and top of the overlapping corrugation. This is done to hold the edge of the overlapping corrugation firmly down against the lower corrugation. It frequently fails in accomplishing this, as the edge of the overlapping corrugation usually bulges up between the nails, as shown in Fig. 7, making not only an unsightly appearance but also forming openings in the joint. This does not occur in my invention. On the contrary, the edge of the overlapping corrugation in my device closely clasps the lower corrugation and forms a straight line at the junction, as shown by the dotted line in Fig. 7. This line of junction is almost imperceptible.

I am aware that heretofore metallic sheets have been united by overlapping corrugations, and therefore I do not claim the same, broadly; but

What I claim as new, and desire to secure by Letters Patent, is—

1. A sheet of metal provided with similar edge corrugations, each of the said corrugations being so shaped that a line drawn from the center of the top of the corrugation perpendicular to the plane of the sheet divides the corrugation into a narrower outer portion and a wider inner portion, substantially as and for the purposes specified.

2. A sheet of metal provided with edge corrugations, in which the outer fold of each edge corrugation has a steeper pitch than the inner fold of said corrugation, substantially as and for the purposes specified.

3. The combination of two sheets of metal, each provided with edge corrugations, and each of the said corrugations having an inner fold, C, and an outer steeper fold, B, and the fold B of the corrugation of the lower sheet resting on the sheathing or other support, and fastenings passing through the tops of the said corrugations and securing the sheets to the support, substantially as and for the purposes specified.

4. A sheet of corrugated metal provided with edge corrugations, in which the outer fold of each edge corrugation has a steeper pitch than the inner fold of said corrugations, the edge corrugations being higher than the other corrugations of the sheet, substantially as and for the purposes specified.

5. The combination of two sheets of metal, each provided with an edge corrugation, the edge corrugation of one sheet being narrower than the edge corrugation of the adjoining sheet, the narrower corrugation pressed down upon and clasping the wider corrugation, and fastening, substantially as described, whereby the upper corrugation is held to the under corrugation, substantially as and for the purposes specified.

6. The combination of two sheets of metal provided with edge corrugations, the corrugation on one edge of each sheet being slightly wider than the corrugation on the other edge of the sheet, and the two sheets being united by having the narrow corrugation of one sheet overlapping the wider corrugation of the other sheet, substantially as and for the purposes specified.

7. In a joint for sheet-metal roofing and siding, the under arch or corrugation having the edge, as B, and a backing or support for the joint, the edge B resting upon the said backing in a direction at or nearly at right angles to the surface of the backing, substantially as and for the purposes specified.

8. The combination of two sheets of metal, each provided with edge corrugations, and each of the said corrugations having an inner fold, C, and an outer steeper fold, B, and the fold B of the corrugation of the lower sheet resting on the sheathing or other support, and fastenings passing through the tops of the said corrugations and securing the sheets to the support, and said joint provided with a cementing substance between the corrugations, and constituting a packing, which prevents the intrusion of water around the nail-holes, substantially as and for the purposes specified.

JOHN G. BATTELLE.

Witnesses:
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O. M. HILL.