J. J. HOFFMAN.

CAR ROOF.

APPLICATION FILED MAY 15, 1912.

1,039,401. Patented Sept. 24, 1912.

Fig. 1.

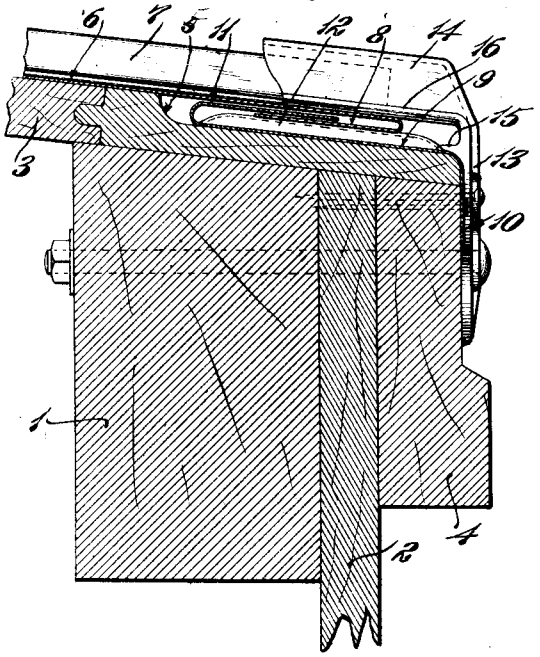


Fig. 2.

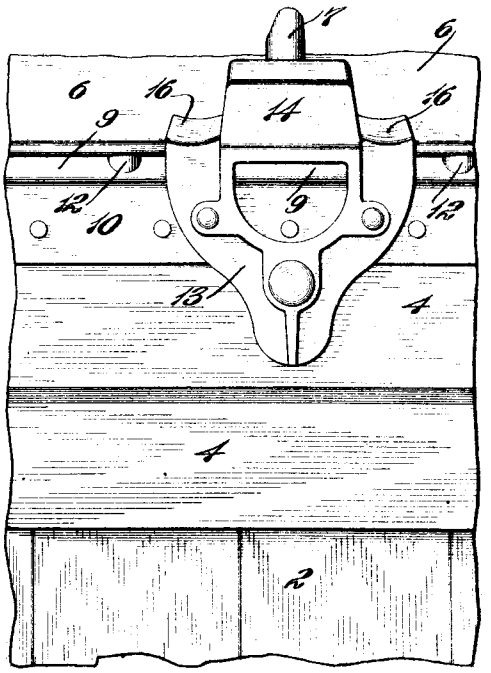


Fig. 3.

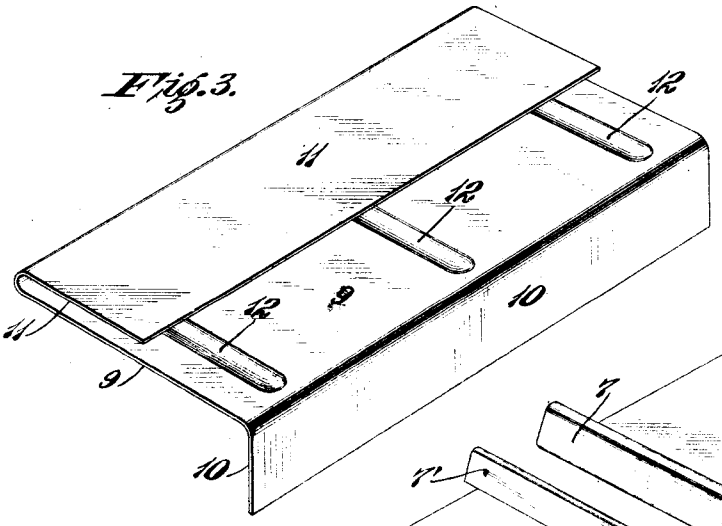


Fig. 5.

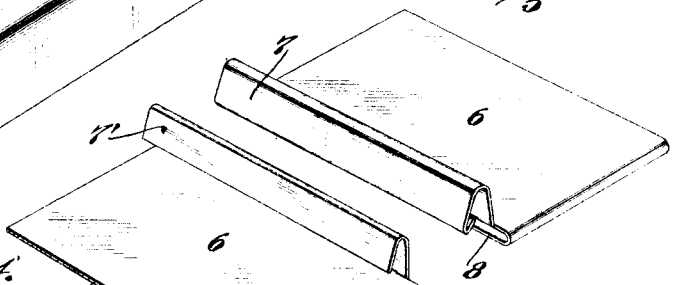
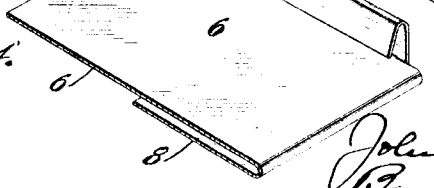


Fig. 4.



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UNITED STATES PATENT OFFICE.

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CAR-ROOF.

1,039,401. Specification of Letters Patent. Patented Sept. 24, 1912.

Application filed May 15, 1912. Serial No. 697,406.

To all whom it may concern:

Be it known that I, JOHN J. HOFFMAN, a citizen of the United States, and a resident of the city of New Kensington, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Car-Roofs, of which the following is a specification.

My invention relates to outside metal roofs for freight cars of the type shown in Patent No. 999,166 granted July 25, 1911, and resides in an improved form of flashing strip for the eaves joints of the metal roof sheets of which the roof covering is composed, and in improved means for securing the roof covering upon the roof substructure or framing of the car.

The object of my invention is to eliminate the possibility of water getting in the joint between the eaves ends of the roof sheets and the flashing, and to reduce the chafing between the flashing strip and the roof sheet, thus largely preventing the rusting out of the roof sheets at the eaves of the car.

Another object of my invention is to dispense with clips or other fastening means for securing the roof covering along the eaves of the car between the roof sheet joints, and to form and arrange the flashing strips in such manner that the flashing itself shall sufficiently secure the eaves ends of the sheets.

Further objects of my invention will appear in connection with the description of the embodiment thereof illustrated in the accompanying drawings, and the novel features of my invention will be more particularly pointed out in the appended claims.

In the drawings, in which like characters wherever they appear throughout the several views are used to designate like parts, Figure 1 is a vertical transverse section through the eaves of a car embodying my invention, showing a roof clip in elevation; Fig. 2 is a view in side elevation of a portion of a car at the eaves, showing the lower edges of two roof sheets and a roof clip and flashing strip; Fig. 3 is a perspective view of a portion of a flashing strip; Fig. 4 is a perspective view of a right hand eaves corner of a roof sheet; and Fig. 5 is a perspective view of left hand eaves corner of a similar roof sheet.

In the drawings I have illustrated my invention embodied in a metal roof for a box car having a wood side plate 1, side sheathing 2, and roof sheathing 3, and fascia board 4, but its use is not restricted to cars having wood bodies. Preferably, the boards of the roof sheathing extend longitudinally and the outermost board overlaps the side plate. The edge portion of the wooden sheathing or substructure for a distance of approximately four inches from the edge of the roof is offset or rabbeted (as shown at 5) so that its surface is lower than the plane of the surface of the main portion of such sheathing, in order to accommodate the rebent ends or interlocked flanges hereinafter mentioned. The metal roof sheets 6 lie flatwise on the sheathing and are arranged transversely of the car. They are connected at their side edges by rebent flanges 7, 7′, or interlocking seams of any suitable type which will permit limited relative movement of the sheets. The outer end 8 of each sheet is rebent to lie in the rabbet of the sheathing parallel with the body of the sheet and at a slight distance below such body, the rebend being made along a line close to the eaves or edge of the car.

Secured in the depressed marginal portion of the wooden sheathing is a flashing strip 9 whose outer marginal portion 10 is bent down over the eaves, and nailed or otherwise secured in the rabbet along the upper edge of the fascia 4. The inner margin of this flashing strip is bent upwardly and then backwardly so as to form flanges 11 which lie parallel with the body of the strip. The middle portion of the flashing strip is formed up into ribs or projecting portions 12, arranged parallel to each other at short intervals along the flashing, and having their upper faces spaced slightly below the rebent flanges 11. The rebent marginal portions or flanges 11 of said flashing strips engage the rebent marginal portions 8 of the

interlocking roof sheets, and the portions 12 of the strip support the roof sheets out of contact with the flashing strip, and allow water entering beneath the flanges 11 to run off the eaves instead of being caught by the rebent ends 8 of the roof sheets. In practice, the rebends of the flashing strip and of the roof sheets are so proportioned that normally a space of approximately one inch will intervene between the edge of the rebent portion and the loop with which it engages. By this arrangement, each sheet is free to move inwardly or outwardly for a distance of approximately an inch without becoming disengaged from the flashing strip which serves to hold it in position. By reason of the edge portion of the sheathing being depressed, the movement of the roofing sheets does not necessitate any bending or buckling thereof.

Secured to the eaves at the ends of the seams are clips 13 which have hoods 14 covering the ends of the seams and inwardly extending portions or fingers 16 adapted to overlap the margins of the roof sheets on each side of the seams. These clips are provided on the inner face with short studs or lugs 15 adapted to bear downwardly against the flashing strip and thereby serve as a means for positioning the inwardly projecting fingers, such fingers being far enough above such studs to keep them normally clear of the roof sheets. The distance from the rebent margin of the roof sheet to the upwardly extending member of the clip is short enough to cause the edge of the sheet to bear against said clip before the edge of its rebent portion becomes disengaged from the rebent portion of the flashing.

The flashing strips may extend from end to end of the car in one piece or be of shorter length arranged to abut edgewise or slightly overlap each other, but in all cases there is provided a continuous flashing arranged to lie beneath the roof sheets so as to shed the water at all points. By reason of the upwardly extending projections of the flashing strip, any water that may be blown under a roof sheet will find its way out over the eaves and the ends of the roof sheets cannot catch and hold it. The ribs 12 stiffen the flashing strip transversely, and prevent it from lifting up and allowing the ends of the roof sheets to get away.

By the construction above described, the roof sheets are free to slip on each other far enough to adjust themselves to the varying conditions caused by the "weaving" of the car, without danger of becoming disengaged from their fastening devices and without having to bend. At the same time, the flashing strips at the eaves constitute a flashing which fully protects the woodwork from moisture.

The invention is applicable to sheets which extend from eaves to eaves but is especially advantageous with roofs whose sheets terminate at the ridge where they are held by any suitable fastening device.

What I claim is:

1. A car roof comprising movably secured metal sheets mounted on the substructure and movable transversely thereof and whose side margins are interlocked to form seams and whose outer ends are rebent on the under side along a line short of the eaves, and metal flashing strips whose outer margins overlap the eaves continuously from end to end of the car and whose inner margins are rebent to be slightly above and movably engage the rebent portions of the roof sheets, the middle portion of said flashing strip below their rebent margin being provided with spaced upward projections lying below the rebent ends of said roof sheets and maintaining them above the middle portions of the flashing strips, the edges of said rebent portions being normally spaced from the corresponding bend to permit the rebent portions of the sheets to slide inwardly and outwardly over said flashing strips.

2. A car roof comprising metal sheets mounted on the substructure and whose outer ends are rebent on the under side along a line short of the eaves, and metal flashing strips whose outer margins overlap the eaves continuously from end to end of the car and whose inner margins are rebent to be slightly above and movably engage the rebent portions of the roof sheets, the middle portion of said flashing strip below their rebent margin being provided with spaced upward projections lying below the rebent ends of said roof sheets and maintaining them above the middle portions of the flashing strips.

3. In a car roof, the combination of roof sheets having their eaves ends turned under and spaced from the body portions of said sheets, flashing strips arranged along the eaves of the car and having their lower margins secured to the side of the car below the eaves, said flashing strips having their upper edges rebent over the turned under ends of said roof sheets to loosely engage therewith, and spaced upward projections on said flashing strips adapted to support the turned under ends of said roof sheets out of contact with said flashing strips.

4. In a car roof, the combination of roof sheets having their eaves ends turned under and spaced from the body portions of said sheets, flashing strips arranged along the eaves of the car and having their upper edges rebent over the turned under ends of said roof sheets to loosely engage therewith, and spaced stiffening ribs on said flashing strips adapted to support the turned under ends of said roof sheets out of contact with said flashing strips.

5. An eaves flashing strip for car roofs,

said flashing strip being formed with a flange adapted to overhang the eaves and be secured to the side of the car, and a rebent flange adapted to engage the ends of roof sheets arranged upon the car, said flashing strip having stiffening ribs arranged transverse to its length adapted to coöperate with said rebent flange for loosely securing the ends of said roof sheets above the eaves of the car.

Signed at New Kensington, Pa., this 10" day of May, 1912.

JOHN J. HOFFMAN.

Witnesses:
HARRY C. WALLEY,
A. A. POTTS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."