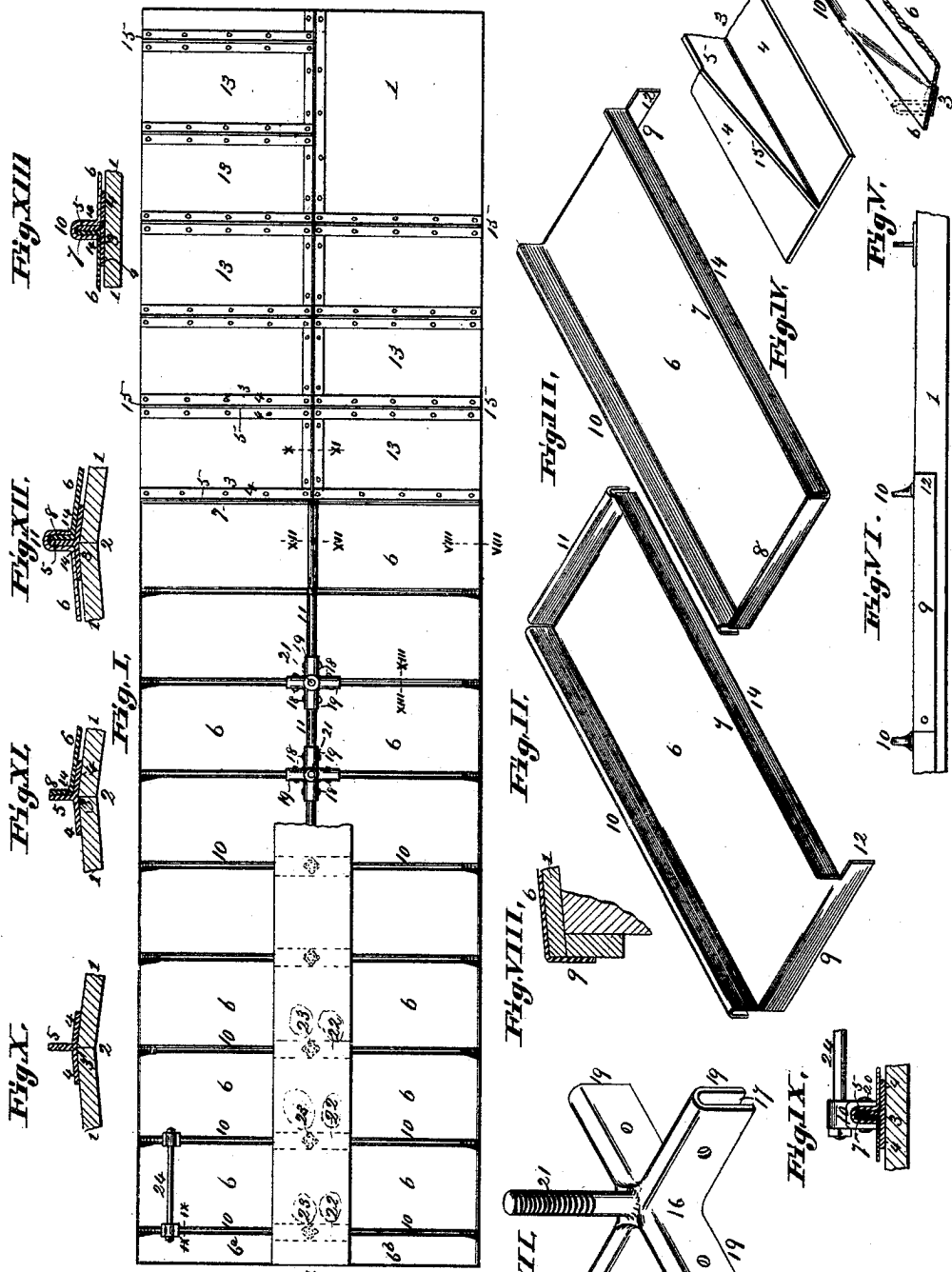


(No Model.)

P. H. MURPHY.  
CAR ROOF.

No. 414,069.

Patented Oct. 29, 1889.



Attesty:  
*C. Arthur*  
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*Fig. VII.*  
*Fig. IX.*  
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# UNITED STATES PATENT OFFICE.

PETER H. MURPHY, OF EAST ST. LOUIS, ILLINOIS.

## CAR-ROOF.

SPECIFICATION forming part of Letters Patent No. 414,069, dated October 29, 1889.

Application filed August 3, 1889. Serial No. 319,684. (No model.)

*To all whom it may concern:*

Be it known that I, PETER H. MURPHY, of the city of East St. Louis, in the county of St. Clair and State of Illinois, have invented a certain new and useful Improvement in Car-Roofs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a metal roof for railroad-cars, the metal plates being secured to vertical metal ribs by horizontal rivets passing through upright flanges on the plates.

Figure I is a top view of a car, illustrating the invention. Figs. II and III are views of the flanged sheets of roofing. Fig. IV is a detail perspective view showing the end portion of one of the angle-strips to which the metal plates are secured. Fig. V is a detail perspective view showing the manner of folding down the flanges of the metal sheets at the eaves. Fig. VI is a detail side view of the eaves of the car-roof. Fig. VII is a perspective view of one of the corner-caps. Fig. VIII is an enlarged detail transverse section at VIII VIII, Fig. I. Fig. IX is an enlarged detail longitudinal section at IX IX, Fig. I. Figs. X and XI are enlarged detail transverse sections at X XI, Fig. I. Fig. XII is an enlarged detail transverse section at XII XII, Fig. I. Fig. XIII is an enlarged detail longitudinal section at XIII XIII, Fig. I.

The wooden roof or sheeting of the car is shown at 1 inclining to the eaves from the peak 2. Upon the wooden roof or sheeting are fastened angle-strips 3, of metal, consisting of a base 4, with a central flange 5. The base 4 is laid flat on the sheeting 1 and secured by screws or nails, the flange 5 extending upward and forming a ridge. A row of the angle-strips is run along the center or peak of the roof, and transverse strips extend from the central line of strips to the eaves upon each side. The metal plates 6, forming the surface of the roof, are made with flanges all around the edges. Some of these flanges, as the side flanges 7 and the end flanges 8 and 9, are flat, while others of them, as the side flanges 10 and end flanges 11, are rebent into a U form, the U-formed flanges serving to cover the flat flanges and the flanges 5 of the angle-strips. (See Figs. XII and XIII.)

The flanges 9 extend downward and overlap the edges of the sheeting 1, and thus form the eaves of the roof. The flanges 9 have an end extension 12, overlapping or underlapping the end of the flange 9 of an adjoining plate. The wooden roof or sheeting is separated by the angle-strips 3 into spaces 13, each of which equals in size one of the plates 6, so that when the plate is laid in position its upper end flange and side flanges fit tightly against the flanges 5 of the angle-strips, while the corners 14 of the plate lie upon the bases 4 of the angle-strips.

In putting the plates 6 in position two of the plates 6 are first laid at one end of the car, one of these plates, as 6<sup>a</sup>, having an overlapping or U flange at its upper end, and the other 6<sup>b</sup> having a flat flange at the upper end. The latter plate is laid first with the flat upper end flange 8 against the flange 5 at the peak, while the side flange 7 is laid against the flange 5 of the transverse angle-strip. Then the plate 6<sup>a</sup> is placed in position with the U-flange 11 embracing both the longitudinal flange 5 and the flange 8 of the other metal sheet. These end plates 6<sup>a</sup> 6<sup>b</sup> are preferably turned down at the edges over the ends of the sheeting 1 in the same manner as the flanges 9 are turned down over the eaves. After the end plates 6<sup>a</sup> and 6<sup>b</sup> have been put in place the plate shown in Fig. III is put in place, with the U-shaped flange 10 embracing the side flange of the plate 6<sup>b</sup> and the flange 5 of the transverse strip 3, making a tight joint. The flange 7 is in close contact with the flange 5 of the next transverse strip, and the flange 8 in contact with the flange 5 of the longitudinal or middle strip. The plate shown in Fig. II is now placed in position, with its U-shaped flange 11 embracing the flanges 8 of the other plate and the flange 5 of the middle strip 3, and the U-shaped flange 10 embracing the flange 7 of the other plate and the flange 5 of the transverse strip 3. In this manner the plates 6 are put down, each one breaking the joints by means of the U-shaped flanges 10 and 11. The outer ends of the flanges of the transverse strips are sloped off at 15, and the flanges 7 10 are folded down at this point, so that the outer ends of the flanges lie down flat at the eaves.

It will be seen that the roof will now be

water-tight except at the intersections of the longitudinal and transverse strips 3, as the corners of the plates do not overlap at the exact corners. To cover these corners I provide caps 16, made of conical form and having channels 17, which receive the U-shaped flanges 10 and 11, the cap fitting tightly on these flanges and extending some distance from the corners along all of the four flanges or ribs. The caps are secured in position by bolts or rivets 18, which pass horizontally through the extensions 19 and the parts 10 7 5 or 11 8 5, as the case may be. One or more rivets also, 19<sup>a</sup>, pass horizontally through the parts 10 7 5 near to the eaves.

It will be seen that there are no nails, screws, or other fastenings passing through the plates 6 in a downward direction, and thus a fruitful cause of leakage is avoided, for it is found that the expansion and contraction of metal roof-plates will loosen a nail or screw passing through the plate into the wood beneath, and that water finds entrance through the nail-hole, rusting the nail and rotting the wood.

In order to give means for the attachment of the walk 20 along the top of the car, certain of the caps have upon them a screw-stud 21, which passes through the sleepers 22, to which the walk is secured, and receives a nut 23, which is countersunk in the sleeper.

24 is a hand-bar fixed to the ribs or flanges 10. I claim as my invention—

1. The combination, in a roof, of the angle-strips 3, adapted to be secured to the sheeting 1 and having a flange 5, and the plates 6, having flanges 7 and 10, substantially as and for the purpose set forth.

2. The combination, in a roof, of the angle-strips 3, with upright flanges 5, and the plates 6, having flanges 7, 8, 10, and 11, adapted for attachment to the angle-strips, substantially as set forth.

3. The combination, in a car-roof, of the angle-strips 3, the plates 6, having the flanges 7, 8, 10, and 11, and the corner-caps 16, all constructed and adapted to each other substantially as set forth.

4. The combination, in a roof, of the angle-strips 3, adapted for attachment to sheeting 1, and the plates 6, having marginal flanges adapted for engagement with the angle-strips, substantially as set forth.

5. The combination, in a car-roof, of the angle-strips 3, adapted for attachment to the sheeting 1, the plates 6, with marginal flanges adapted for engagement with the strips 3, and the corner-caps 16, having the studs 21, for engagement with the walk-sleepers, substantially as set forth.

PETER H. MURPHY.

In presence of—

SAML. KNIGHT,  
BENJN. A. KNIGHT.