J. T. CRAWFORD.

METALLIC ROOFING FOR CARS.

APPLICATION FILED OCT. 21, 1908.

945,918. Patented Jan. 11, 1910.

Fig. 1

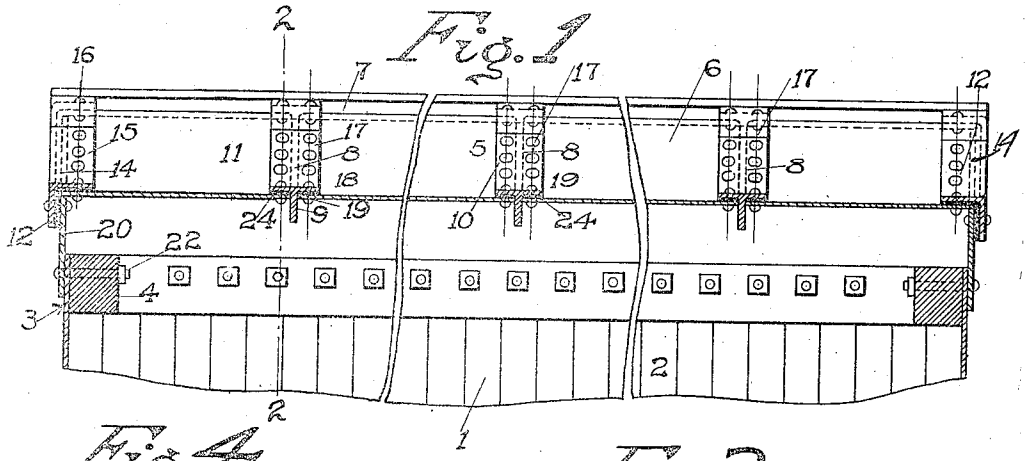


Fig. 4

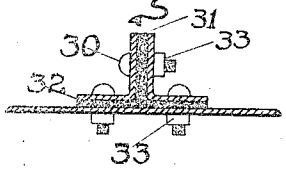


Fig. 2

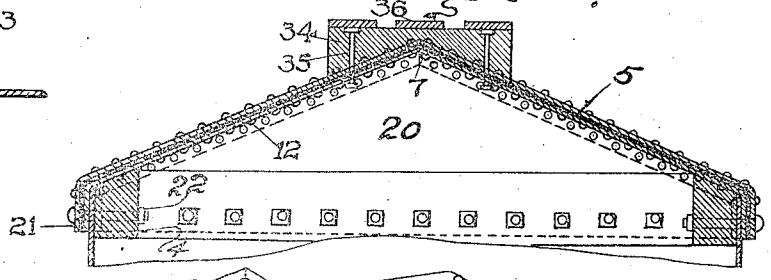
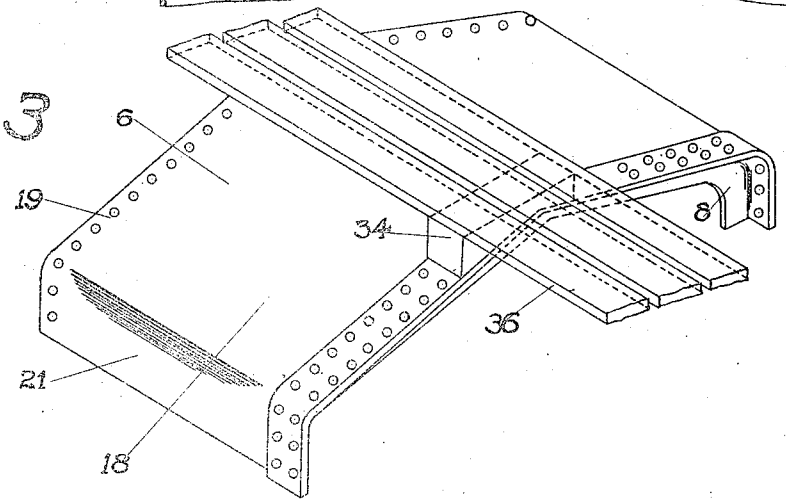


Fig. 3



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METALLIC ROOFING FOR CARS.

945,918. Specification of Letters Patent. Patented Jan. 11, 1910.

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To all whom it may concern:

Be it known that I, JOSEPH T. CRAWFORD, a citizen of the United States of America, residing at 1611 Vine street, city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Metal Roofing for Cars, of which the following is a specification.

The object of this invention is the production of a car roofing in the form of a set of sheet metal plates. Either a part or all of the plates are suitably strengthened and when joined at their edges form a complete roof which does not require to be otherwise supported; *i. e.*, there are no bridge beams, carlines, purlins, etc.

In the accompanying drawings,—Figure 1 is a fragmentary vertical, longitudinal, sectional elevation of a car showing the application of my roofing. Fig. 2 is a fragmentary transverse section on the line 2—2 of Fig. 1. Fig. 3 is a perspective of a middle plate. Fig. 4 is a fragmentary section taken longitudinally of the car showing in detail a slightly modified form of joint.

The car body 1 is of the usual type having upright sides 2 and ends 3 and the usual plate beams, or top frames, 4. The roof 5 rests directly on the plate beams. It is composed of rectangular elongated plates 6 bent on a transverse line 7 midway of their longest dimension to form the ridge of and give suitable pitch to the roof, and bent down at their ends to form a facia 21. These plates are to be placed on the car with their longest dimension extending across the car and joined at their edges to form a continuous roof. Each plate is strengthened by a web, the general direction of which is parallel to the length of the plate and transverse of the roof. In the preferred type shown in Figs. 1 to 3, this web consists of a flanged girder or T iron placed with a flange or side web on top of the plate extending along one of its long edges; *i. e.*, across the car, and with the web 9 depending. The girder is secured to the plate by means of rivets 10 passing through the side web. Packing 24, of rubber, or other compressible material, is placed between the girder and the plates. The end plates 11 are provided at their outer edges with a depending flange 12 formed of the web of an angle iron 14, the other web, 15, of which is placed on top of the end plate and secured thereto by suitable rivets 16, and front and rear plates 20, cut on the upper edge to conform to the pitch of the roof, are secured to the flange 12 at each end of the car. The plates forming the roof of each car consist of a set or series. That at one end is provided with an angle iron 14, as described, extending along one edge, and a T iron 8 extending along the opposite and parallel edge. The plate at the other end is provided with an angle iron 14 extending along one edge, the other edge being free. Of the other plates of the series, each is provided with a T iron 8 extending along one edge, the other edge being free. The free longitudinal edge of each plate is punched with a line of rivet holes and the free side web 17 of each stiffener is punched with a line of rivet holes adapted to register with those of the plate.

To set up the roof, a middle plate 18 having a T iron 8 secured to one longitudinal edge is placed with its free edge 19 under the free side web 17 of the T iron 8 carried by the end plate 11, and the rivet holes therein are brought into registration with the rivet holes of the web. The rivets are driven and another middle plate is similarly placed with its free edge 19 under the free web 17 of the T iron carried by the middle plate 18, and the operation is repeated. The other end plate 11′ which carries no T iron, but has one edge provided with an angle iron 14 and the other edge free, is placed with its free edge under the web 17 and attached thereto, as previously described. It is obvious that as many middle plates as necessary may be used, depending on the length of the car and the width of the plates. A saddle piece 34 may be secured to each stiffening member by bolts 35, as shown. These saddles receive running boards 36.

The operation of setting up the roof as described may be performed on any suitable support, or by placing the plates in position on the car. If the setting up operation is performed away from the car, the roof is lifted bodily and placed on the plate beams with the facia flanges 21 and the front and rear plates 20 inclosing the upper portion of the side walls. The roof may be allowed to rest in this position, held by the force of gravity and limited in its horizontal motion by the webs 9, the end plates 20, and the facia flanges. If desired, the plates may be punched and secured to the car by means of bolts 22 passing through the plate beams

4. In the modification of my invention illustrated in Fig. 4, angle irons 30 are substituted for the T irons 8 of Figs. 1, 2 and 3, and the vertical webs turned upward. Suitable packing of rubber, or compressible material, is placed between the angle irons at 31, and between the angle irons and the plates at 32. When the bolts 33 by which the members are secured together are tightened, the packing is compressed and the structure is made waterproof.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. As an article of manufacture, a roofing material for cars consisting of substantially rectangular metal plates or strips, each bent to form a central ridge extending transversely of the plate, and a T iron secured to and extending along one edge of the plate at right angles to the ridge.

2. As an article of manufacture, roofing material for cars consisting of substantially rectangular metal plates or strips, each bent to form a central ridge extending transversely of the plate, and a flanged beam secured to and extending along one edge of the plate at right angles to the ridge, the edges of the plate parallel to the ridge and the ends of the flanged beams being deflected to form reinforced flanges.

3. A car roof comprising a set of sheet metal plates placed parallel and extending transversely of the car, T irons between the plates connecting their edges, each T iron having its side webs on the top of and secured to the adjacent edges of the plates and its middle web between the plates the whole forming a rigid structure.

4. In a car roof, a set of sheet metal plates placed parallel and extending transversely of the car, T irons between the plates connecting their edges, each T iron having its side webs secured to the adjacent edges of the plates and its central web depending between the plates the whole forming a rigid roof.

5. In a car roof, a set of sheet metal plates placed parallel and extending transversely of the car, T irons connecting the edges of having its side webs secured to the adjacent edges of the plates, and angle irons, each having one web depending, one such angle iron secured to the outer edge of each end plate.

6. In a car roof, a set of sheet metal plates placed parallel and extending transversely of the car, T irons connecting the edges of the plates, each having its side webs secured to the adjacent edges of the plates and its center web depending between the plates, and an angle iron having one web depending secured to the outer edge of each end plate.

7 As a car roof, a set of sheet metal plates placed edge to edge and extending transversely of the car, T irons connecting the adjacent edges, the side webs of the T irons secured to the edges of the plates, the central webs of the T irons upright, and an angle iron having one web depending secured to the outer edge of each end plate parallel to the T irons.

8. In a car roof, the combination of a series of metal plates having parallel edges arranged transversely to the car and bent in the center to form a ridge, a series of T irons arranged between the juxtaposed edges of the plates bent to the same shape as the plates and having the central web depending between the edges of the plates and the lateral webs on top of and secured to the edges of the adjacent plates, thus forming a roof composed of alternate plates and trusses.

9. In combination with a car body having the usual plate beams extending along and secured to the tops of the car walls, a rigid roof consisting of a set of sheet metal plates, T irons extending across the car between the plates and secured to the edges of the plates, the plate beams notched and the central webs of the T's depending and resting in the notches.

10. In combination with a car body having the usual plate beams extending along and secured to the tops of the car walls, a rigid roof consisting of a set of sheet metal plates, T irons extending across the car between the plates and secured to the edges of the plates, the plate beams notched and the center webs of the T's depending and resting in the notches, the outer edges of the plates and the ends of the T irons deflected to form a reinforced flange, and means securing the flange to the plate beams.

Signed by me at Baltimore, Maryland, this 14th day of October 1908.

JOSEPH T. CRAWFORD.

Witnesses:
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