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CAR ROOF WITH INTEGRAL RUNNING BOARD

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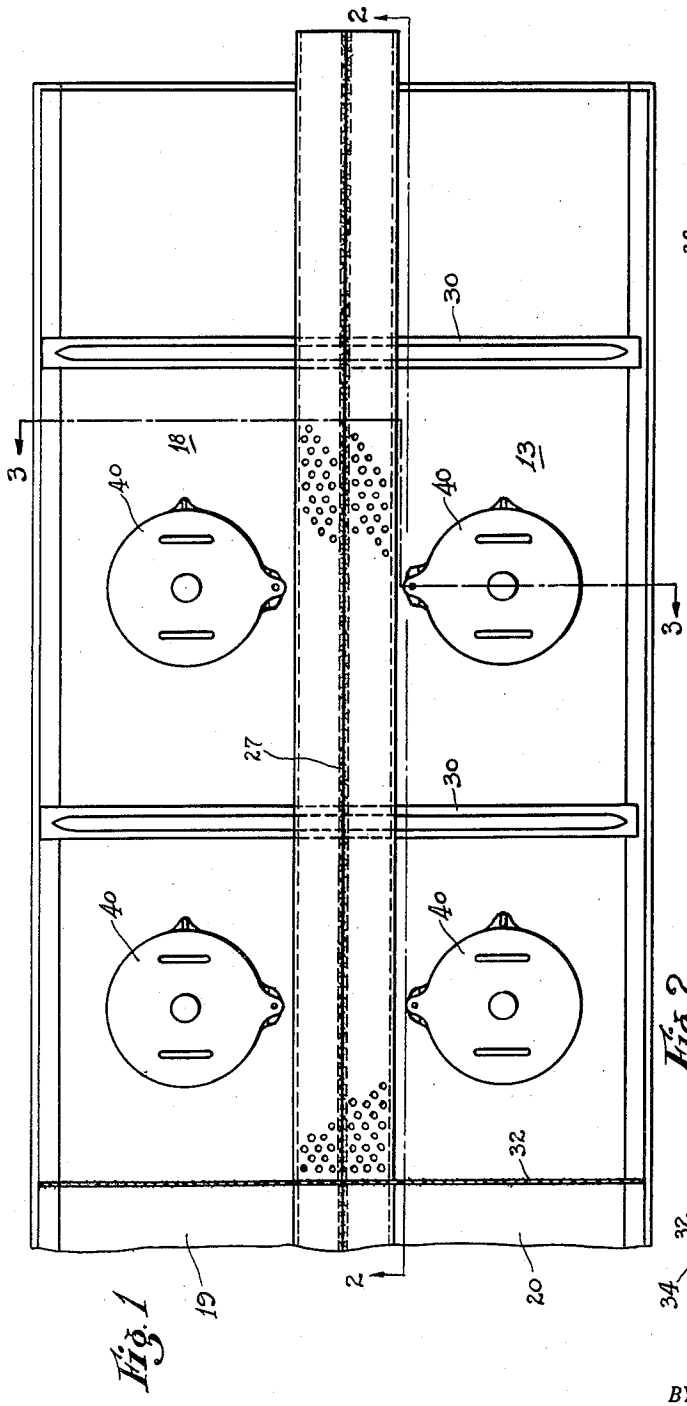


Fig. 1

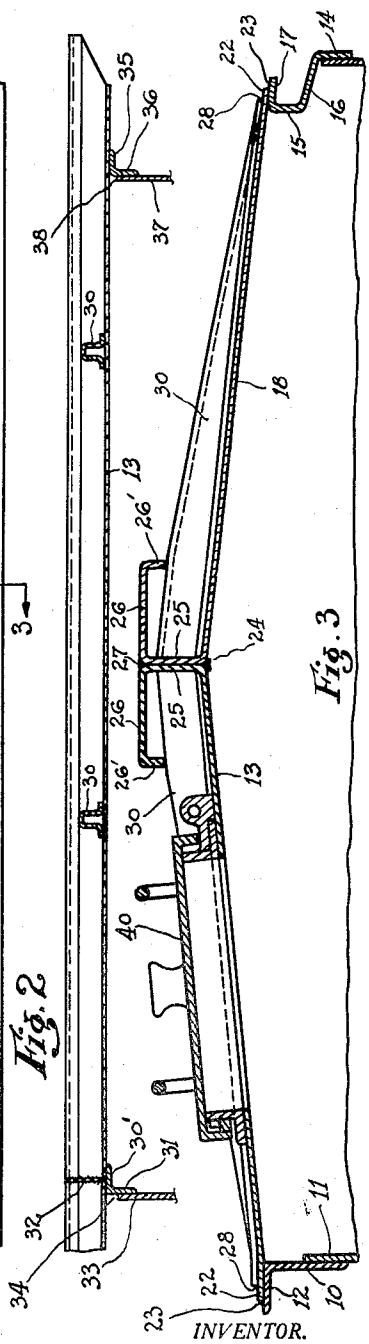


Fig. 2

Fig. 3

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CAR ROOF WITH INTEGRAL RUNNING BOARD

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9 Claims. (Cl. 108—5.4)

This invention relates to railway car roofs especially designed for use with open top cars of the hopper type to thereby convert a hopper car into an all purpose car, suitable for carrying many different kinds of bulk lading not ordinarily carried in open topped cars.

It is the principal object of the present invention to provide an economical roof for hopper cars which may be constructed in four, and possibly two parts which not only results in economy of manufacture but also lowers installation costs.

It is also an important object of the invention to provide a car roof having a running board integrally formed therewith, which also lessens the overall cost of the roof.

Other objects and advantages of the invention will appear in the following description of the invention, taken in connection with the accompanying drawing, in which—

Figure 1 is a top plan view of a fragmental portion of a hopper car roof illustrative of the invention.

Figure 2 is a longitudinal section on line 2—2 of Figure 1.

Figure 3 is a transverse section on line 3—3 of Figure 1.

In the building of sheet metal railway cars, it is common practice to provide such cars with a running board extending along the longitudinal center of the car on the roof. In practice these running boards are separate structures, are attached to the roof by means of running board saddles, and add considerably to the cost of the roof, especially when the added expense of applying them is considered.

My invention provides a running board that is an integral part of the roof structure, and is incorporated in the roof sheets as they are formed, thereby eliminating the necessity of providing and applying a separate running board.

In the accompanying drawing I have illustrated in Figure 3 two common types of side plates as used in hopper car construction. One comprises an ordinary angle iron with one leg 10 disposed vertically against which the upper margin 11 of the side sheathing of the car is secured. The other leg 12 of the angle iron is disposed horizontally and provides a support for the outer margin of the roof sheet 13. The other side plate is what is known in the trade as a ZU side plate which comprises two spaced vertically disposed flanges 14 and 15, an inclined web 16 extending therebetween, and an outturned inclined flange 17 issuing from the upper edge of the inner flange 15 and forming a support for the outer margin of the roof sheet 18. My invention is applicable to a car equipped with either of these side plates, or any other side plate which provides a horizontal surface to support the outer margin of the roof sheets.

Figure 1 illustrates approximately one-half of a railway hopper car roof, and my invention contemplates that the whole roof will be composed of not more than four like roof sheets 13, 18, 19 and 20, the sheets 19 and 20 being broken away in the drawing, but it is understood they are

identical to the sheets 13 and 18. If the material of which the roof is made can be obtained in long enough sheets or rolls, the roof may be formed in two halves, joined together at the longitudinal center of the car, and extend from end to end of the car.

The roof sheets are formed of flat sheet metal, each having an outer margin 22 resting upon the horizontally disposed flange 12 or 17, as the case may be, of the side plate, and secured thereto by a continuous weld 23, longitudinally along the edge of the roof sheet and top of the side plate flange. The sheets from side to side of the car are inclined to the pitch of the roof, and each extends from its respective side plate to the longitudinal center or ridge of the roof where they are turned upwardly forming vertical flanges 25—25 and secured together by a continuous bottom weld 24. From the upper edges of these vertical flanges 25—25 the sheets are turned outwardly in the same horizontal plane forming flanges 26—26 which together form the running board for the car.

The upper edges of these flanges 25—25 are also joined together by a longitudinal continuous top weld 27. The outer edges of the flanges 26—26 are turned downwardly forming flanges 26'—26', the lower edges thereof abutting the tops of the hereinafter described carlines 30, to which they are spot welded. Since the carlines 30, are welded to the roof sheets, as hereinafter described, and the fianges 26'—26' are welded to the carlines, the running board section, as clearly seen in Figure 3, forms a box girder running the entire length of the car at the ridge. The flanges 26—26 are perforated as indicated in the drawings to form an anti-slip surface on which a trainman may walk. It is thus apparent that any downward load on the roof is resisted thereby by tension (as a membrane) rather than by bending (as a beam).

Extending transversely of the roof at spaced intervals are a plurality of outside carlines 30 which are of inverted U-shape with lateral base flanges, the outer edges of which are welded preferably continuously to the roof sheets. The inner ends of these carlines butt against and are welded to the flanges 25—25 as clearly seen in Figure 3, and they diminish in height progressively toward their outer ends where the U corrugation disappears entirely and the flat end is edge welded to the roof sheet as at 28. Thus there is provided a strong arched support for the roof.

An inside carline of angle form is provided at the transverse center of the car, it having a horizontal flange 30' and a vertical flange 31. This carline is shaped to conform to the pitch of the roof and the roof sheets meet over and are supported by said horizontal flange 30'. The sheets are welded together and to flange 30' by a row of weld material 32. The upper margin 33 of the central transverse partition of the car rests flatwise against the vertical flange 31 of the inside carline and is secured thereto by a row of weld material 34.

Another inside carline, also of angle form is provided at each end of the car, which carline also conforms to the pitch of the roof, with one flange 35 disposed horizontally upon which the roof sheet rests and the other flange 36 disposed vertically, against which the upper margin 37 of the end bulkhead rests and is secured thereto by a row of weld metal 38.

Both of these inside transverse carlines are secured at their ends to the side plates of the car.

Covered hopper cars are of course provided with hatches and covers therefore such as indicated at 40, through which the car may be loaded.

There is thus provided a very economical roof for hopper cars, having the running board formed integral therewith, which, because of its structure, forms a hollow box girder extending from end to end of the car at the

ridge and consequently provides great strength for the roof.

I claim:

1. A railway car roof, comprising longitudinally disposed roof sheets, arranged on opposite sides of the roof, the inner side margins of said sheets having vertical flanges secured together at the ridge of the roof, and lateral flanges issuing from the upper edge of said vertical flanges providing an integral running board for the car roof.

2. A railway car roof, comprising side plates, longitudinally disposed roof sheets, arranged on opposite sides of the roof, the inner side margins of said roof sheets having vertical flanges secured together in flatwise abutting relation at the ridge of the roof, lateral flanges issuing from the upper edge of said vertical flanges providing an integrally formed running board for the car roof, and vertical flanges issuing from the outer margins of the lateral flanges downwardly, thereby providing a central box girder longitudinally of the roof which girder also provides a running board, the outer side margins of said roof sheets being secured to said side plates.

3. A railway car roof, comprising roof sheets, arranged on opposite sides of the roof, said roof sheets having vertical flanges secured together in flatwise abutting relation at the ridge of the roof, lateral flanges issuing from the upper edge of said vertical flanges and vertical flanges issuing from the outer margins of the lateral flanges downwardly, thereby providing an integrally formed central box girder extending longitudinally of the roof, which girder also provides a running board for the car.

4. A railway car roof, comprising spaced side plates, roof sheets, secured along one edge to the side plates, and having vertical flanges secured together in abutting relation at the ridge of the roof, lateral flanges issuing from the upper edge of said vertical flanges providing an integrally formed running board for the car roof, carlines extending transversely of the roof from opposite sides of said vertical flanges to the side plates, and vertical flanges issuing from the outer margins of the lateral flanges downwardly, to and secured to said carlines, thereby providing a central box girder longitudinally of the roof which girder also provides a running board.

5. In a railway car having spaced side plates, roof sheets, arranged on opposite sides of the car roof and secured along one edge to the side plates, the other margin of said roof sheets being joined together at the ridge of the roof and formed so as to provide a central box girder longitudinally of the roof which girder also provides a running board for the car.

6. A car roof sheet having a flat margin along one side and a ridge portion along the opposite margin, said ridge portion comprising a flange extending substantially normal to the sheet, a lateral flange issuing from the upper edge of said normal flange and a downwardly extending flange issuing from the outer edge of said lateral flange.

7. A car roof comprising longitudinally disposed roof sheets arranged on opposite sides of the car, and meeting along adjacent margins at the ridge, the meeting margins of the roof being formed into a hollow box girder extending longitudinally of the car, said box girder also providing a running board for the car roof.

8. A railway car roof comprising spaced side plates, a pair of longitudinally disposed roof sheets extending from end to end of the car, the outer side margin of each sheet being secured to a side plate, the inner side margin of each sheet being turned upwardly into flanges that abut and are secured together at the ridge of the roof, and are then turned outwardly into lateral flanges providing an integrally formed running board for the roof.

9. In a railway car having spaced side plates, roof shets extending from said side plates to and meeting at the longitudinal center of the car, said roof sheets having upturned flanges at their meeting edges that are secured together, and lateral flanges extending outwardly from the upper edges of said upturned flanges, providing an integrally formed running board for the car roof.

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