Dec. 17, 1935. W. F. DIETRICHSON 2,024,342

RAILWAY CAR CONSTRUCTION

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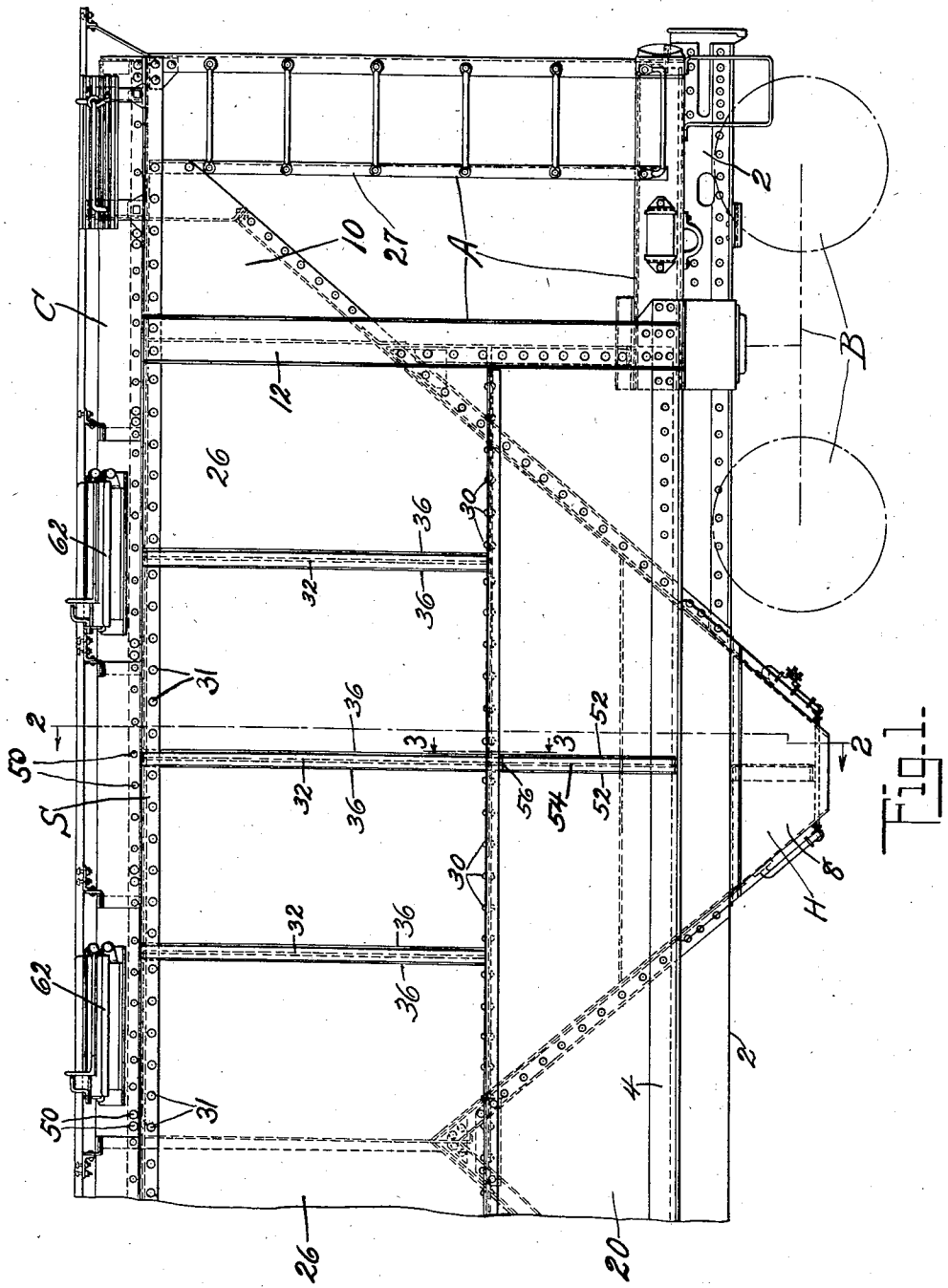

Fig. 1.

INVENTOR
William F. Dietrichson
BY F. H. Gibbs
ATTORNEY

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Fig. 2.

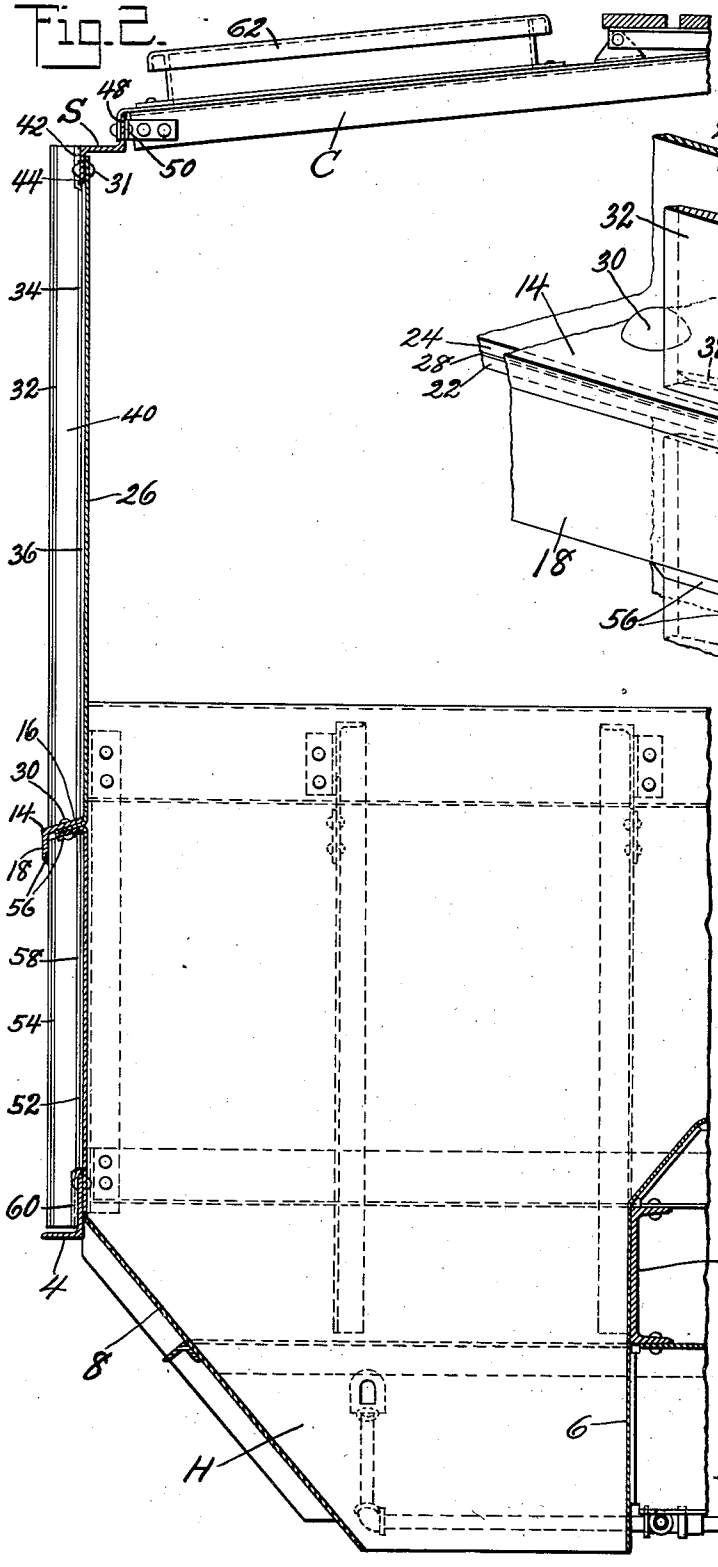


Fig. 3.

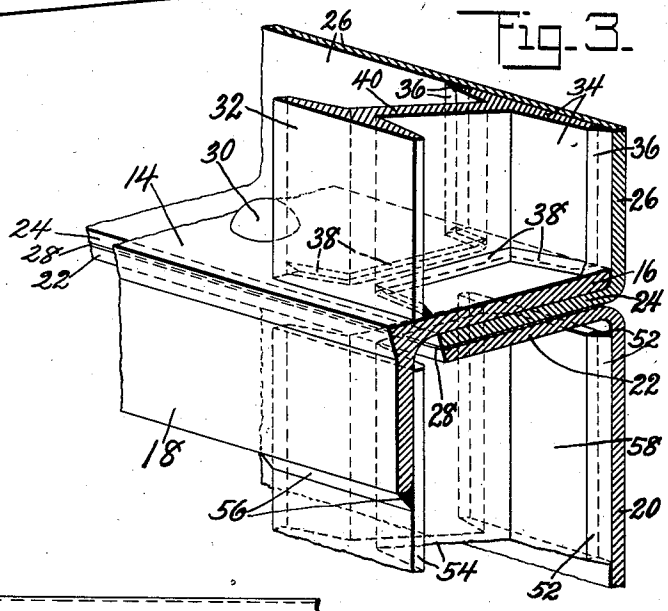


Fig. 4.

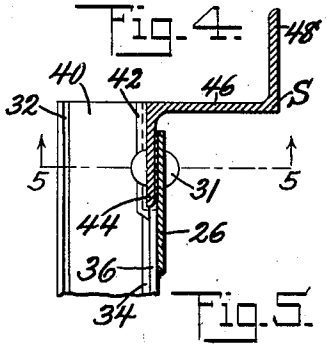
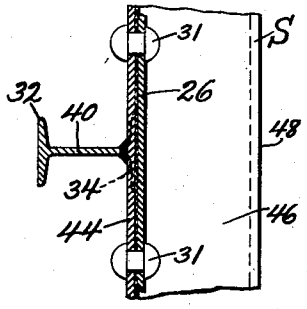


Fig. 5.



INVENTOR
William F. Dietrichson
BY
F. H. Gibbs
ATTORNEY

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RAILWAY CAR CONSTRUCTION

William F. Dietrichson, Berwick, Pa., assignor to American Car and Foundry Company, New York, N. Y., a corporation of New Jersey

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17 Claims. (Cl. 105—409)

This invention relates generally to railway car construction and has more specific reference to the construction of railway freight car bodies.

One object of this invention is the provision of a new and improved side wall construction for railway cars.

Another object of this invention is the provision of a new and improved hopper car body construction.

Still another object of this invention is the provision of a new and improved belt rail construction for railway cars.

Another object is to provide an assembly of the type set forth wherein each of the parts are materially braced and strengthened as regards its individual structure and also the unit formed by the parts is provided with a relatively higher degree of strength to support a load and distribute the strains to which it may be subjected.

Other objects and advantages of this invention including reducing the cost of manufacture will be apparent from the following description taken in conjunction with the accompanying drawings, in which

Figure 1 is a side elevation of one end portion of a freight car embodying the present invention;

Fig. 2 is a sectional view on the line 2—2, Fig. 1;

Fig. 3 is an enlarged sectional view on the line 3—3, Fig. 1;

Fig. 4 is an enlarged sectional view showing the construction at the side plate of the car; and

Fig. 5 is a sectional view on the line 5—5, Fig. 4.

Referring now more particularly to the drawings, the car shown therein is of hopper type, though this is merely by way of example, and comprises a body indicated generally at A which is supported on trucks diagrammatically indicated at B, and a roof indicated generally at C.

The car body underframe comprises center sills 2, channel shaped in the instance shown, and angle shaped side sills 4, the horizontal legs of which project outwardly as more clearly shown in Fig. 2. Formed in the car are hoppers of which only one is shown, the same being indicated generally at H and having one wall 6 thereof secured to and depending vertically from the center sill 2 while its opposite wall 8 slopes downwardly and inwardly from the side sill 4, to which latter it is secured in any suitable manner.

Adjacent opposite ends of the car are channel shaped posts 12 (one only being shown) which extend between the side plate S and side sill 4 as clearly shown in Fig. 1.

Extending between opposite posts 12 and connected thereto is a belt rail comprising an angle 14 one flange 16 of which is slightly inclined downwardly away from the car body while its other flange 18 is vertically arranged as more clearly shown in Figs. 2 and 3. The side wall of the car intermediate opposite posts 12 and below the belt rail comprises a plate 20 the lower edge portion of which is connected to the vertical flange of the side sill in any suitable manner as by welding or riveting and the upper edge portion of which is outwardly flanged as at 22 and arranged beneath the outwardly turned flanges 24 of an upper wall section 26 as clearly shown in Fig. 3. Interposed between flanges 22 and 24 is a sealing element 28 of paper or the like and the flanges 22 and 24 are connected with the horizontal flange 16 of belt rail 14 by suitable fasteners such as the rivets 30.

In the instance shown in the drawings, the side wall above the belt rail and between posts 12 comprises a single plate the side edge portions of which lap the posts 12 and are secured thereto in any suitable manner, the plate 26 having portions 10, substantially triangular in shape, which extend beyond the posts 12 and are connected with the side plate S and with the ladder 27. The plate 26 is secured at its upper edge portion by rivets 31 to the side plate S. Obviously, if desired, the side wall section 26 may be formed of a plurality of panels.

Intermediate posts 12 the side wall of the car is stiffened by a plurality of posts 32 which extend between the side plate S and the belt rail 14 as more clearly shown in Fig. 1. In the instance shown these posts comprise I-beams, one flange 34 of each of which being welded as at 36 to the plate or wall section 26. The posts 32 have their lower ends resting on the horizontal flange 16 of the belt rail and are preferably welded to said horizontal flange as shown at 38. The flange 34 of each of the posts 32 at the upper end portions thereof is removed (see Fig. 4) the webs 40 of posts 32 being welded as shown at 42 to the depending vertical flange 44 of the side plate S, the latter comprising a Z-section 46 having an upwardly extending vertical flange 48 to which the roof C is connected by suitable means 50. Also, as clearly shown in Fig. 4, the depending flange 44 of the side plate constitutes the attaching element for the upper edge portions of the side wall section 26.

For stiffening the lower portion of the side wall of the car posts 54 extend from the belt rail to the side sill, said posts 54 being I-beams in the instance shown with their upper end portions en-

gaged with the out-turned flange 22 of the plate 20. The posts 54 are preferably vertically alined with certain of the posts 32 (see Figs. 1 and 3) and the upper end portions thereof are welded to the vertical flange 18 of belt rail 14 and to the plate 20 as shown at 56. The lower end portions of posts 54 have their flanges 58 removed whereby to fit over the vertical flange of the side sill 4 (see Fig. 2) and the lower end portions of said posts 54 are connected in any suitable manner as by welding at 60 to the side sill. The posts 54 are also welded to the wall section 20 as shown at 52.

The roof C of the car shown may be of any preferred or desired construction, the car being a covered hopper car and hence said roof is provided with hatchways covered by hatch covers 62 to permit loading the car.

From the above description it is believed that the construction of the car of the present invention will be fully apparent to those skilled in the art without further elaboration. The present invention provides a construction which is strong and durable in service, the side walls of the car being suitably stiffened and reinforced not only by the particular construction at the belt rail of the car but also by the vertical body posts. The construction of the present invention, as will be apparent to those skilled in the art, is one in which the several connected elements are mutually reinforcing. In the specific form shown in the drawings the belt rail is strengthened by the flanged portions of the wall sections while the wall sections themselves are reinforced each by the other and by the belt rail.

Still further, it can be seen that the form of the invention shown in the drawings is one in which the joint provided at the flanged portions of the upper and lower wall sections is virtually concealed by the belt rail and hence is protected thereby, due to the fact that the adjacently arranged flanges underlap the inclined flange of the belt rail and are protected by the vertical leg 18 of the belt rail. The belt rail leg 16 while being substantially horizontally arranged when considered relative to the vertical leg 18 is actually slightly downwardly inclined away from the car body and thus provides for drainage of water therefrom and said belt rail, as will be obvious, constitutes a protection means for the wall section flanges.

The drawings herein illustrate one embodiment of this invention but it is to be understood that they are for illustrative purposes only and various changes in the form and proportions of the construction may be made within the scope of the appended claims without departing from the spirit of the invention.

What is claimed is:

1. A car wall construction comprising a side plate, a belt rail, an upper wall section secured to the side plate and having its lower end portion under-lapping the belt rail, and a lower wall section having its upper end portion underlying the lower end portion of said upper wall section and connected therewith and to the belt rail.

2. A car wall construction comprising a side plate, a side sill, an angle-shaped belt rail, upper and lower wall sections extending between the side plate and side sill and having adjacent portions thereof outwardly flanged and underlying the belt rail and secured thereto.

3. In a car wall construction, a side plate, a side sill, a belt rail, an upper wall section secured to the side plate and having its lower edge portion flanged and arranged in lapping relation with the belt rail, a lower wall section secured to the side sill and having its upper edge portion flanged in lapping relation with the flanged portion of the upper wall section, means connecting the belt rail and flanged portions of the wall sections, and posts supported by the belt rail and welded to the upper wall section.

4. In a railway car, a side wall comprising a side plate, a side sill, a post spaced from the end of the car and extending between the side plate and side sill, a belt rail connected to said post, an upper wall section extending between the belt rail and side plate and secured to said post, said section having a portion thereof extended beyond the post and connected to the side plate, the lower edge portion of said section having an out-turned flanged lapping the belt rail, a lower wall section having its upper edge portion outwardly flanged to underly the flange of said upper wall section, and means connecting the belt rail and flanged portions of said wall sections.

5. In a car wall construction, a side plate, an angle shaped belt rail having one flange thereof substantially horizontal and the other flange depending vertically downward, an upper wall section secured to said side plate and having its lower edge portion outwardly flanged and arranged in lapping engagement with the horizontal flange of the belt rail, a lower wall section having its upper edge portion outwardly flanged and arranged in lapping engagement with the flange of the upper wall section, and means connecting the belt rail and the flanged portions of said wall sections, said depending flange being spaced outwardly relative to the wall sections.

6. In a car wall construction, a side plate, a side sill, posts adjacent but spaced from opposite ends of the car and extending between the side plate and side sill, a belt rail, an upper wall section extending between and secured to the posts and the side plate and belt rail, said section having portions of the ends thereof extended beyond said posts and connected to the side plate, a flange at the lower edge portion of said upper wall section arranged in underlapping relation with the belt rail, a lower wall section connected to the side sill and extending only between said posts and having its upper edge portion outwardly flanged in underlapping relation with the flange of the upper wall section, and fasteners connecting the belt rail and the flanged portions of said upper and lower wall sections.

7. In a car wall construction, a side plate, a side sill, posts adjacent the ends of the car and extending between and connected to the side plate and side sill, a belt rail extending between and connected to said posts, an upper wall section extending between the posts and having portions of the ends thereof extended beyond said posts and connected to the side plate, a flange at the lower edge portion of said section arranged to underlap the belt rail, a lower wall section extending only between said posts and having its upper edge portion outwardly flanged to underlap the flange of the upper wall section, means connecting the belt rail and flanged portions of said upper and lower wall sections, and a plurality of posts supported by the belt rail and connected to the side plate and to the upper wall section.

8. In a car wall construction, a side plate, a side sill, posts adjacent the ends of the car and extending between and connected to the side plate and side sill, a belt rail extending between and connected to said posts, an upper wall sec-

tion extending between the posts and having portions of the ends thereof extended beyond said posts and connected to the side plate, a flange at the lower edge portion of said section arranged to underlap the belt rail, a lower wall section extending only between said posts and having its upper edge portion outwardly flanged to underlap the flange of the upper wall section, means connecting the belt rail and flanged portions of said upper and lower wall sections, and a plurality of posts resting on and welded to the belt rail and having their upper end portions welded to the side plate.

9. In a car wall construction, a side plate, a side sill, posts adjacent opposite ends of the car and extending between and connected to the side plate and side sill, and a wall portion between said posts comprising a belt rail extending between and connected to said posts, an upper wall section secured to the side plate and extending between and connected to opposite posts and having its lower edge portion outwardly flanged in lapping relation with the belt rail, extensions at the upper portions of the ends of said upper wall section connected to the side plate, a lower wall section extending between and connected to opposite posts and having its upper edge portion outwardly flanged to underlap the flanged portion of the upper wall section, means connecting the belt rail and flanged portions of the wall sections, posts resting upon and welded to the belt rail and extending between the belt rail and side plate and welded to the upper wall section and side plate, and posts secured to the side sill and belt rail and welded thereto and to the lower wall section.

10. A railway car side construction comprising an angle-shaped belt rail, body posts resting on and rising upwardly from said belt rail, and upper and lower side wall sections having adjacently arranged flanges lapping one portion of the belt rail and connected together and to said belt rail portion, said upper wall section being connected to said body posts.

11. In a railway car side construction, an angle-shaped belt rail, body posts resting on and rising upwardly from said belt rail, upper and lower side wall sections having adjacently arranged flanges lapping one portion of the belt rail and connected together and to said belt rail portion, said upper wall section being connected to said posts, and body posts below said belt rail and to which said lower wall section is connected.

12. In a railway car side construction, a side plate, a side sill, body posts extending between and connected to said side plate and said side sill, a belt rail extending between said posts, upper and lower side wall sections between said posts and provided with adjacently arranged flanges lapping one portion of the belt rail and connected together and to said belt rail portion and means for stiffening the upper wall section comprising a plurality of posts resting upon and rising upwardly from the belt rail and to which said upper wall section is connected.

13. A railway car side wall construction including a belt rail inclined downwardly away from the car and upper and lower side wall sections having flanges underlapping the belt rail and connected together and to said belt rail.

14. In a car side wall construction, upper and lower wall sections, an angle-shaped belt rail having one leg vertically arranged and spaced outwardly relative to the wall sections, and flanges formed on adjacent edge portions of the wall sections and underlapping and connected to the other leg of the belt rail whereby said belt rail provides protection means therefor.

15. In a car side wall construction, upper and lower wall sections, an angle-shaped belt rail having one leg substantially horizontally arranged and the other leg vertically arranged and spaced from the side wall sections, and flanges formed on adjacent edge portions of the wall sections and underlapping the substantially horizontally arranged belt rail leg whereby to be protected by both legs of said belt rail.

16. In a railway car side construction, a belt rail, upper and lower side wall sections having adjacent edge portions outwardly flanged and secured to one portion of said belt rail, external posts supported by and connected to said belt rail portion and rising upwardly therefrom, said upper wall section being connected to said posts, and lower posts secured to said lower section and to the other portion of the belt rail and extending downwardly from the latter.

17. A car wall construction comprising a side plate, a side sill, an angle-shaped belt rail, and longitudinally arranged upper and lower wall sections extending between the side plate and side sill and having adjacent portions thereof outwardly flanged and secured to the belt rail, one flange of said belt rail being arranged substantially parallel with but spaced from said wall sections.

WILLIAM F. DIETRICHSON.