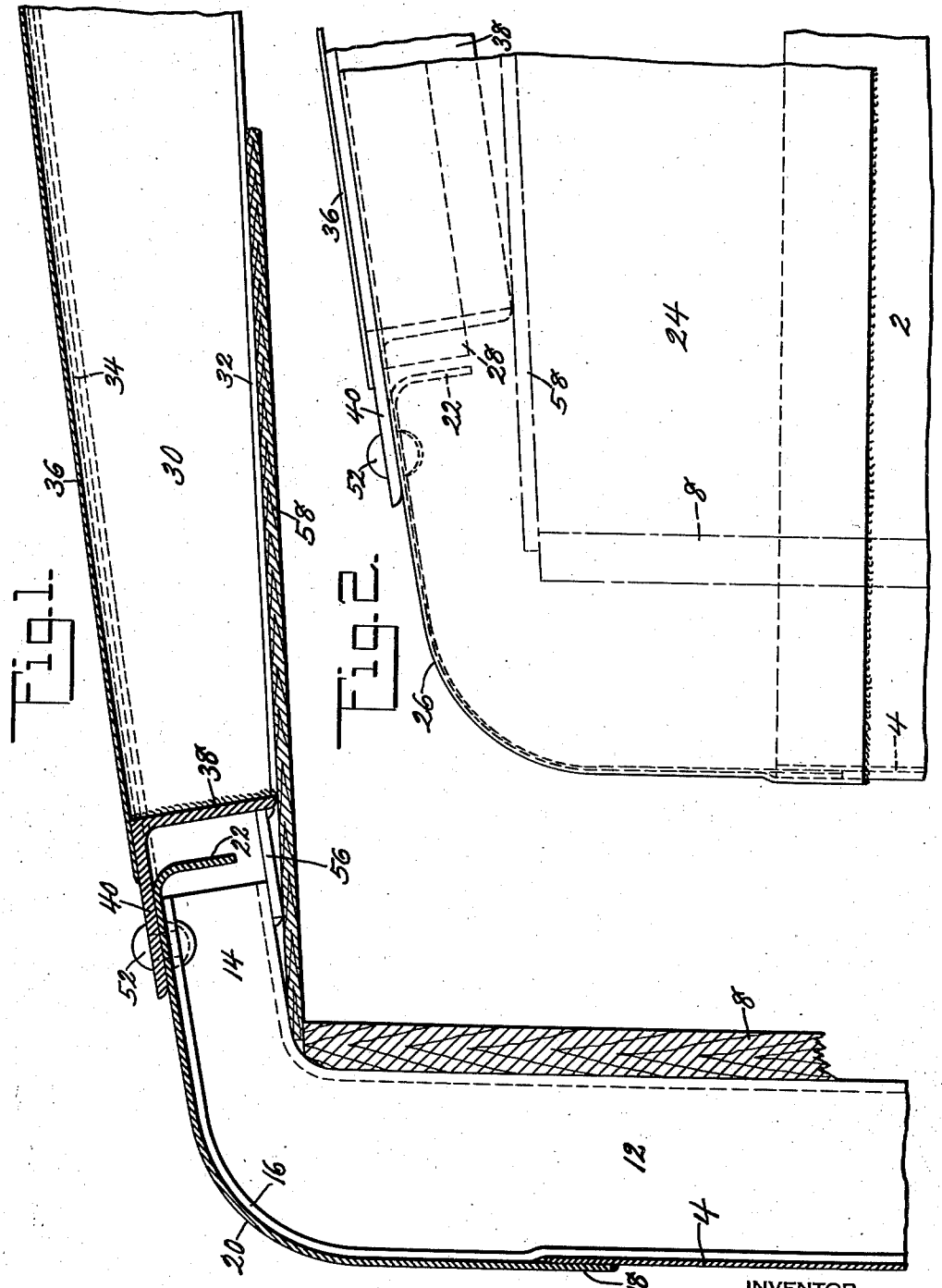
June 4, 1940. W. F. DIETRICHSON 2,203,490

RAILWAY CAR FRAME

Filed May 17, 1939 2 Sheets-Sheet 1

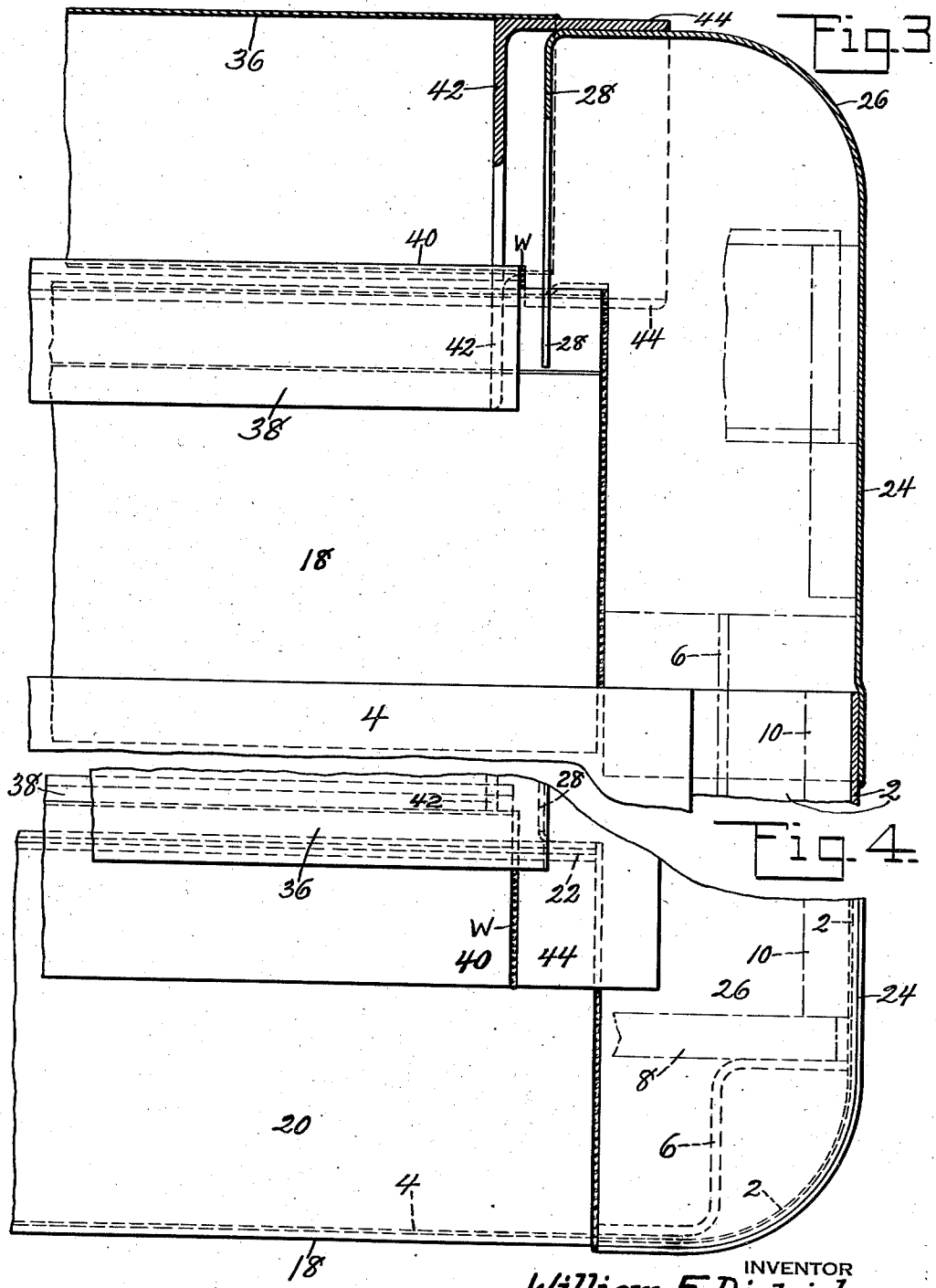


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UNITED STATES PATENT OFFICE

2,203,490

RAILWAY CAR FRAME

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Application May 17, 1939, Serial No. 274,159

7 Claims. (Cl. 105—401)

This invention relates to frames for railway cars in general and in particular to an improved frame construction for welded freight cars.

In the past the majority of freight cars have been built by riveting the component parts together on the underframe in much the same manner as any building as constructed. In this manner slight inequalities in the component parts were absorbed at each joint during the reaming and riveting operations, thus permitting the overall dimensions of the cars to be maintained substantially constant. In welded construction, however, it is almost necessary that the sides and roofs be preassembled and then joined together and to the underframe. It has been found that the heat of welding sets up stresses and causes warping which cannot be accurately predetermined, therefore, the preassembled side walls and roofs cannot be produced of constant dimensions. The warping due to welding heat will not be uniform throughout the structure due to the fact that it is impossible to know or determine the exact past history of the component metal parts; that is, one structural member may have been rolled at a higher temperature or handled differently than the next adjacent component parts and these differences in handling will cause different degrees of warping. These final inequalities in the side walls and roofs make it impossible to directly join the walls and roofs together, while maintaining the proper final dimensions for the car. It is an object, therefore, of the present invention to provide an improved car frame construction wherein inequalities in the welded subassemblies may be compensated for during the joining of the subassemblies.

A further object of the invention is the provision of an improved car frame construction in which the wall carried side plates and the roof carried side plates may be riveted together along substantially horizontal lines, thereby permitting compensation for inequalities in the welded sub-assemblies.

A still further object of the invention is the provision of an improved car frame construction in which the wall carried end plates and the roof carried end plates may be secured together along substantially horizontal lines, thereby permitting relative shifting of the end plate parts during connection of the sub-assemblies.

These and other objects of the invention will be apparent to persons skilled in the art from a study of the following description and accompanying drawings, in which:

Figure 1 is a transverse sectional view showing the improved frame construction;

Fig. 2 is an end view of a car utilizing the improved construction;

Fig. 3 is a longitudinal sectional view disclosing the improved end plate assembly, and

Fig. 4 is a plan view of the construction shown in Fig. 3.

Referring now to the drawings in detail, it will be seen that the car is constructed with the customary end wall 2 and side wall 4 joined together in any suitable manner and secured to the Z-shaped corner post 6. The customary side lining 8 and end lining 10 are used (Fig. 4). The side sheets are secured to Z section side posts 12, having their upper ends bent inwardly and upwardly as at 14 in order that the outer flange 16 may conform to the wall carried side plate and to the slope of the car roof. The wall carried side plate is preferably pressed from sheet metal and has its lower edge 18 welded to the side sheets, while the intermediate portion 20 is curved to any desired radius and extends inwardly substantially in the plane of the roof to terminate in a downwardly directed stiffening flange 22. This downwardly directed stiffening flange is preferably spaced from the inwardly directed ends of the side posts, although it is obvious that this flange may contact the posts if it is so desired. It will thus be seen that with the side sheets and wall carried side plate welded together and to the posts an extremely strong side construction has been provided. The ends of the wall carried side plate are joined together and to the end wall by means of the end wall carried end plate 24. This end wall carried end plate has its lower edge securely welded to the end sheet, while the intermediate portion 26 curves inwardly and merges into a downwardly directed flange 28 which may be securely fastened to the downwardly directed flange 22 of the wall carried side plate if so desired. It will thus be seen that with the wall carried side and end plates securely fastened together as by arc welding an extremely strong construction has been provided.

The car roof is preferably formed of Z section carlines 30 having the lower flanges 32 positioned substantially horizontal, while the upper flange 34 conforms to the slope or curvature of the roof sheet 36 to which it is attached by either spot or arc welding. The ends of the carlines are securely welded to downwardly directed leg 38 of the angle form roof carried side plate which is positioned with the one leg 40 sub-

stantially horizontal and directed outwardly away from the carlines. This outwardly directed leg supports the edges of the roof sheets to which it is fastened either by arc or spot welding. The ends of the flange 38 of the roof carried side plates are securely welded to the downwardly directed flanges 42 of the roof carried end plates which conform to the slope of the roof and have the flanges 44 thereof directed outwardly substantially in horizontal planes. The flanges 44 of the roof carried end plates support the ends of the roof sheets to which they are securely fastened either by arc welding or spot welding. The flanges 44 and 40 of the roof carried end and side plates are securely welded together as at W (Fig. 4), thus forming a rigid angular frame completely surrounding the roof sub-assembly.

Prior to welding the roof sub-assembly together the flanges 40 and if desired the flanges 44 are punched to provide openings for the reception of rivets. After the side and end subassemblies are secured together, the customary cross bracing is used to bring the sides to their proper spacing, after which the roof sub-assembly is lowered into position and centered between the flanges 22 and 28 of the wall carried side and end plates. With the roof centered in its final location the wall carried side plates and, if desired, the end plates, are drilled and rivets 52 driven, thus securely fastening the roof and wall carried side plates together to form a complete side plate. In the instance shown the flanges 44 are secured to the wall carried end plate by welding, although if desired these parts may be secured together by riveting in exactly the same manner as is done with the side plates. In some instances it may be possible to punch not only the flanges 40 and 44, but the wall carried side and end plates, thus necessitating a mere reaming operation after the roof sub-assembly is positioned, but the more accurate method is that of utilizing drilling as previously outlined. As soon as the roof sub-assembly has been securely fastened to the walls and ends of the car short gusset tie members 56 are securely welded to the lower ends of the roof carried side plate flange 38 and to the inner flange of the side posts (Fig. 1), thus securely tying the roof structure and side structures together and in effect continuing the carline to the post. The customary or any desired form of ceiling 58 is applied, thus completing the car interior.

While the invention has been described more or less in detail, it is obvious that various modifications and rearrangements of parts and changes in method of assembly will suggest themselves to persons skilled in the art and all such changes and modifications are contemplated as will come within the scope of the following claims:

What is claimed is:

1. In a railway vehicle the combination of side walls and end walls secured together, wall carried plates secured to said side and end walls and each formed by an upwardly and inwardly directed sheet of metal, said wall carried plates being secured together and forming an opening of less area and spaced inwardly on all sides from that inclosed by said side and end walls, a roof closing said opening and including roof carried side and end plates, and a roof sheet secured to said roof carried plates, said roof carried plates overlapping said wall carried plates and being secured thereto.

2. In a railway vehicle the combination of side walls and end walls secured together, wall carried plates secured to said side and end walls and each formed by an upwardly and inwardly directed sheet of metal, said wall carried plates being secured together and forming an opening of less area than that inclosed by said side and end walls, a roof assembly closing said opening and including roof carried side and end plates, and a roof sheet secured to said roof carried plates, said roof carried plates overlapping said wall carried plates and being secured thereto, and said roof assembly being bodily shiftable in said opening prior to being secured in place whereby inequalities may be compensated for in the vehicle wall structure.

3. In a railway vehicle the combination of side walls and end walls secured together, wall carried plates secured to said side and end walls and each formed by an upwardly and inwardly directed sheet of metal terminating in a downwardly directed stiffening flange, said wall carried plates being secured together and forming an opening bounded by said stiffening flanges and of less area than that inclosed by said side and end walls, a roof closing said opening and including, flanged roof carried side and end plates having one flange located substantially in the plane of the roof and the other flange directed downwardly, said last named flange being normally located in spaced relationship to said first named stiffening flange and a roof sheet secured to said roof carried plates, said one flange of the roof carried plates overlapping said wall carried plates and being secured thereto.

4. In a railway vehicle the combination of side walls and end walls secured together, wall carried plates secured to said side and end walls and each formed by an upwardly and inwardly directed sheet of metal terminating in a downwardly directed stiffening flange, said wall carried plates being secured together and forming an opening bounded by said stiffening flanges and of less area than that inclosed by said side and end walls, a roof closing said opening and including, flanged roof carried side and end plates having one flange located substantially in the plane of the roof and the other flange directed downwardly, and a roof sheet secured to said roof carried plates, said one flange of the roof carried plates overlapping said wall carried plates and being secured thereto, and said other flange being in spaced relationship to said stiffening flange whereby said roof may be bodily shifted in said opening prior to being secured in place thereby compensating for inequalities in the vehicle wall structure.

5. In a railway vehicle the combination of side walls and end walls secured together, wall carried plates secured to said side and end walls and each formed by an upwardly and inwardly directed sheet of metal terminating in a downwardly directed stiffening flange, said wall carried plates being secured together and forming an opening bounded by said stiffening flanges, a roof closing said opening and including flanged roof carried side and end plates connected together with one flange directed downwardly and the other flange directed outwardly substantially in the plane of the roof, roof sheets secured to said roof carried plates, carlines connected to said roof sheets and to the downwardly directed flange of the side plates, said outwardly directed flange overlapping said wall carried plates and being secured thereto, and means connecting said

side wall plates and said last named downwardly directed flange together.

6. In a railway vehicle the combination of side walls and end walls secured together, wall carried plates secured to said side and end walls and each formed by an upwardly and inwardly directed sheet of metal terminating in a downwardly directed stiffening flange, said wall carried plates being secured together and forming an opening bounded by said stiffening flanges, a roof closing said opening and including flanged roof carried side and end plates connected together with one flange directed downwardly and the other flange directed outwardly substantially in the plane of the roof, roof sheets secured to said roof carried plates, carlines connected to said roof sheets and to the downwardly directed flange of the side plates, said outwardly directed flange overlapping said wall carried plates and being secured thereto, and means connecting said side wall plates and said last named downwardly directed flange together, said means being located substantially in alignment with said carlines whereby said carlines are braced from the vehicle side walls.

7. In a railway vehicle the combination of, preassembled side and end wall structures secured together and including side and end wall plates secured together and defining an opening of less area than that inclosed by the side and end walls, and a preassembled roof structure adapted to close said opening and including roof carried side and end plates, said roof carried plates and side carried plates being so constructed and arranged as to permit shifting of the roof structure relative to the side and end wall structures to compensate for inequalities therein prior to attachment of the roof structure.

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