Oct. 16, 1934. W. A. BREWER 1,977,468

FREIGHT CAR CONSTRUCTION

Filed March 7, 1932 4 Sheets-Sheet 1

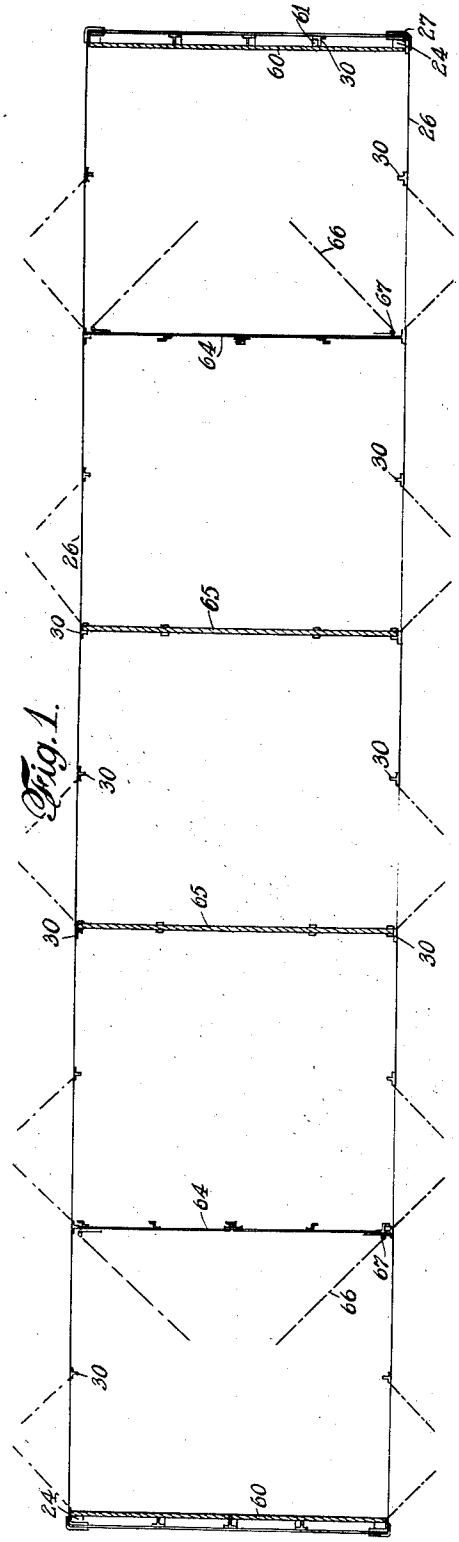

Fig. 1.

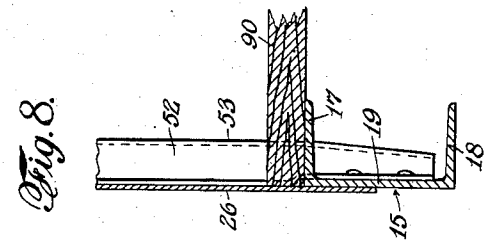

Fig. 8.

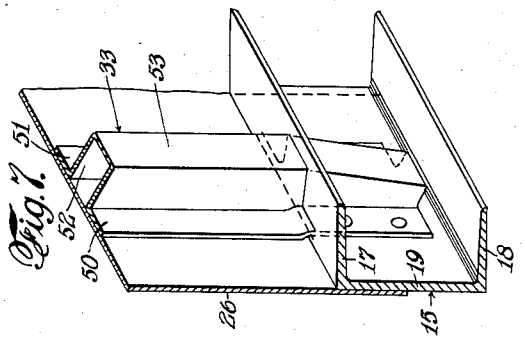

Fig. 7.

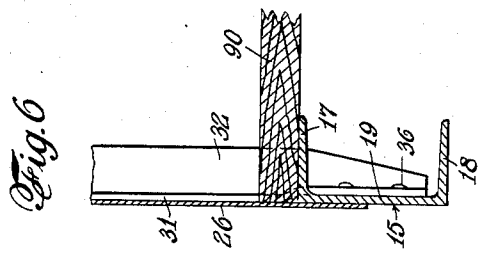

Fig. 6

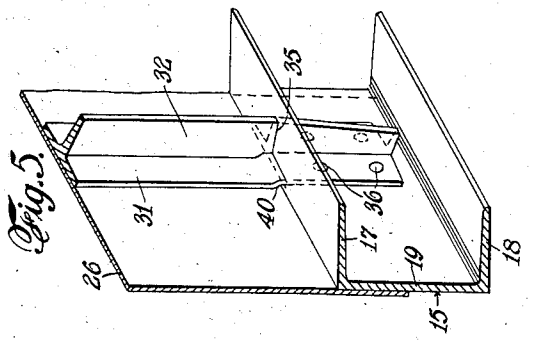

Fig. 5.

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FREIGHT CAR CONSTRUCTION

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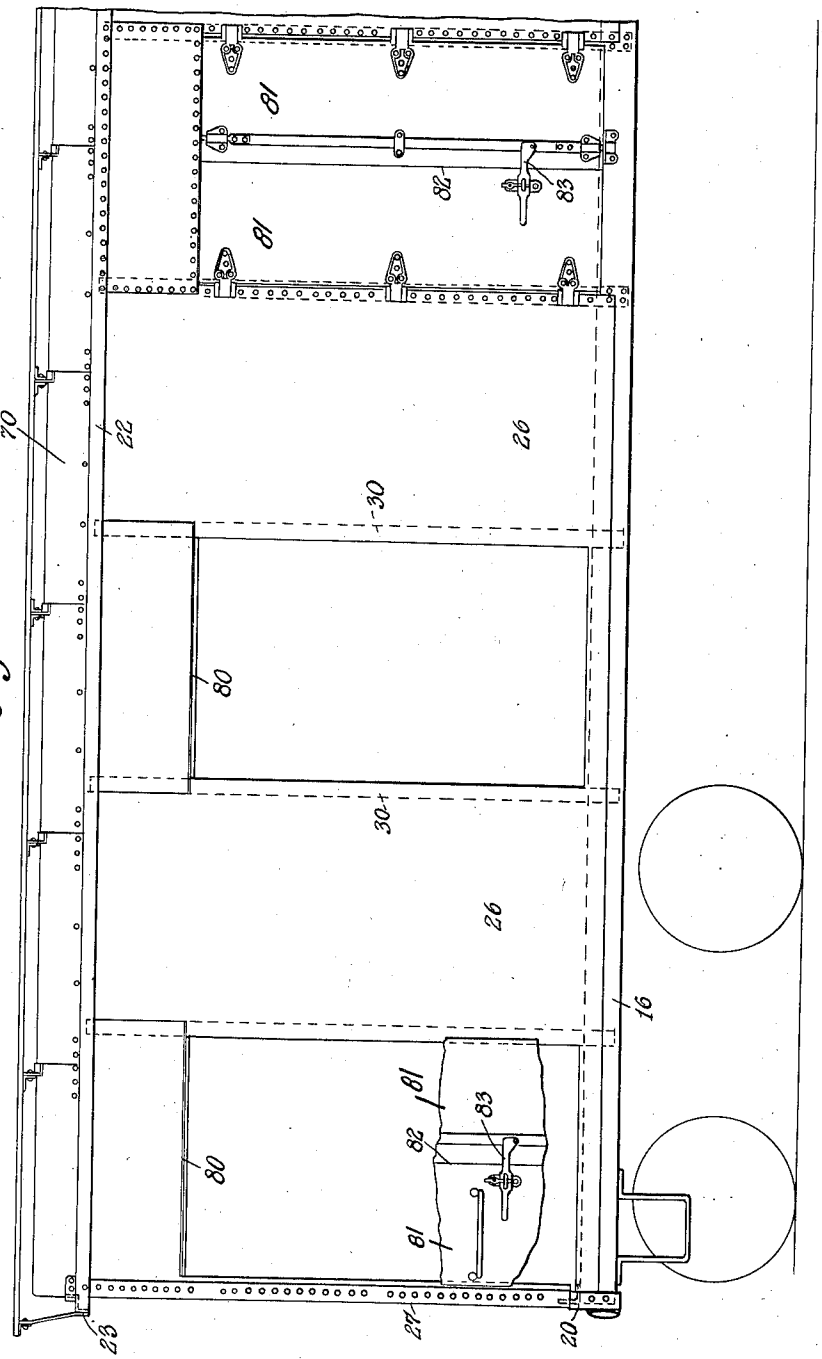
Fig. 2.



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FREIGHT CAR CONSTRUCTION

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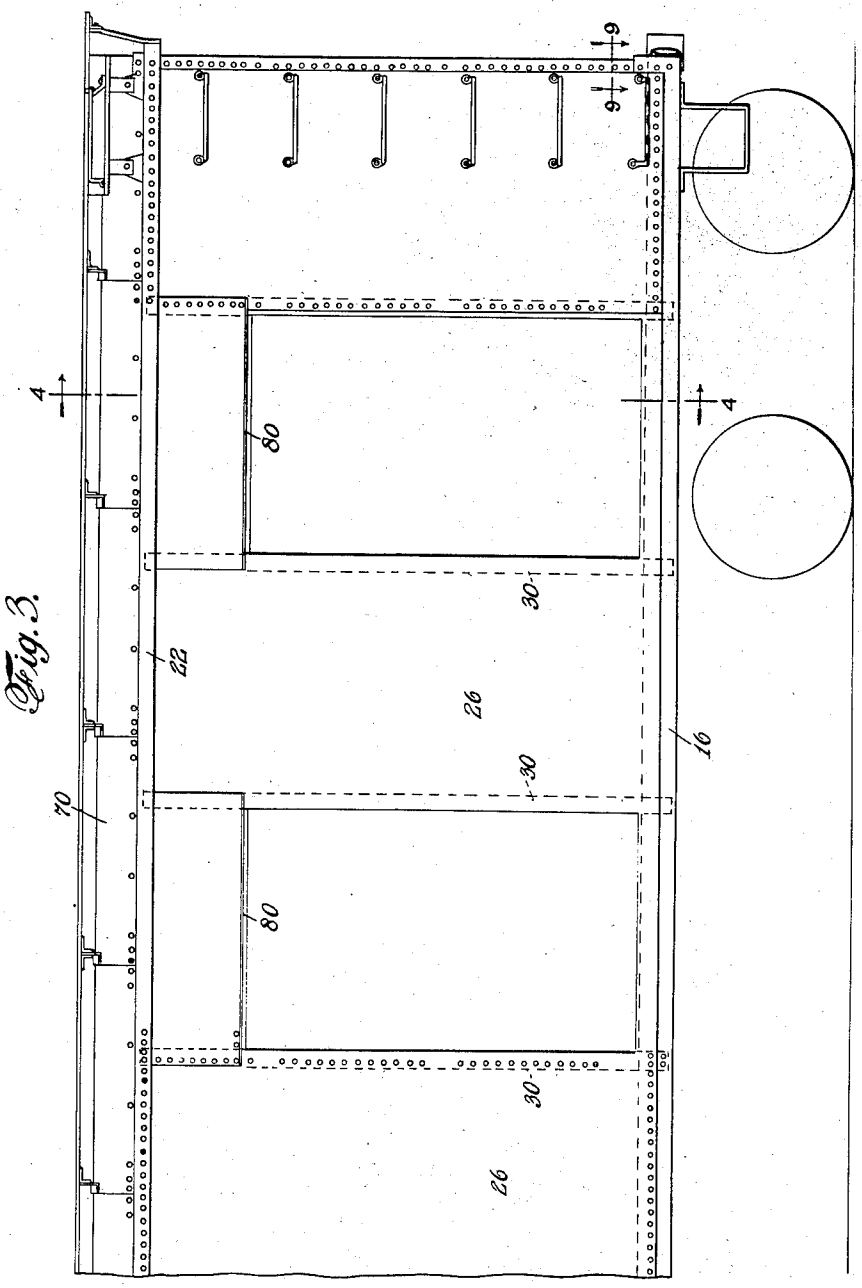

Fig. 3.

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FREIGHT CAR CONSTRUCTION

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Fig. 4.

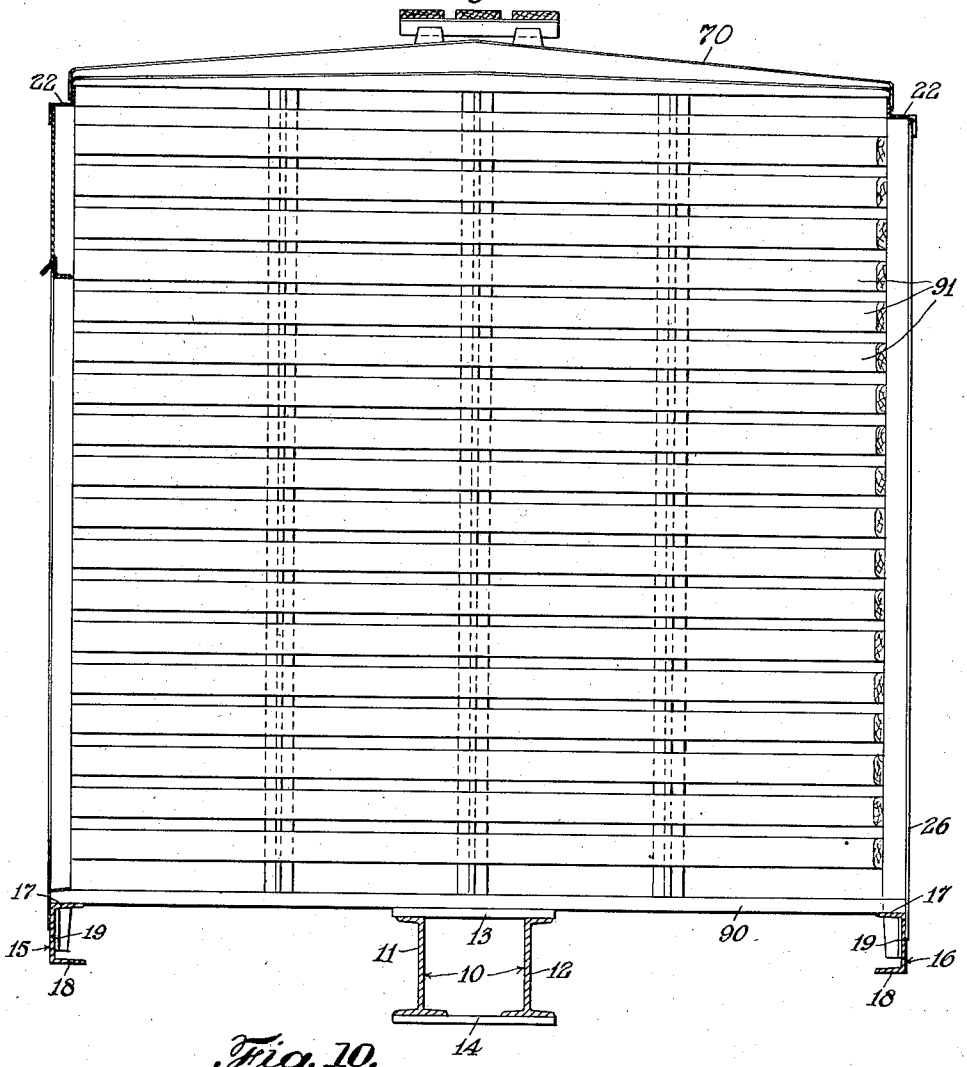


Fig. 10.

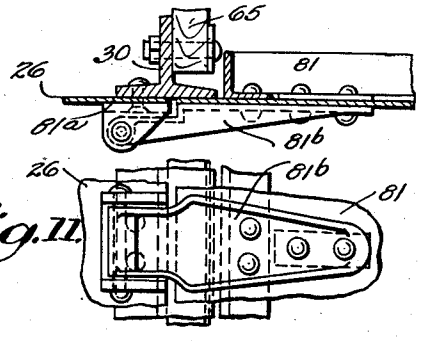
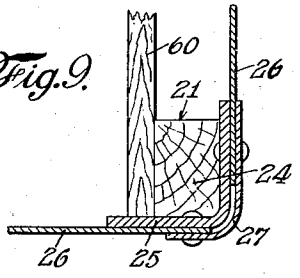


Fig. 11.

Fig. 9.



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Patented Oct. 16, 1934 1,977,468

UNITED STATES PATENT OFFICE

1,977,468

FREIGHT CAR CONSTRUCTION

William A. Brewer, St. Louis, Mo., assignor to American Car and Foundry Company, New York, N. Y., a corporation of New Jersey

Application March 7, 1932, Serial No. 597,166

8 Claims. (Cl. 105—355)

This invention relates to freight car construction and with regard to certain more specific features thereof to box or house car construction and to improved methods of manufacture of the same.

The invention has for one of its objects to provide an inexpensive and durable box car divided by transverse partitions for the reception and transportation of different lots of loose freight respectively in individual or distinct compartments, and having side doors for each compartment whereby a shipment may be loaded or unloaded without disturbing the contents of any other compartment.

Another object lies in certain of the partitioning means being in the form of doors displaceable when desired to enlarge one compartment by opening it to one or more of the others. In a preferred form of the invention this object is carried out by hinging the doors at the car sides so that substantially the entire transverse partition may be quickly removed when uniting the adjacent chambers or compartments.

Another object of the invention is to provide a frame construction of improved type which facilitates the operation of applying a cover or sheathing so that it will produce a substantially flush exterior, lowering wind resistance and presenting a neat external appearance, and which serves substantially in support of the partitions or the side doors, or both.

Still another object of the invention is to provide a union of flanged or reinforced metal frame pieces to produce a sturdy frame for flush exterior sheathing and the securing of partitions or doors, or both, if desired, and also to provide a novel method of uniting flanged or reinforced metal frame pieces at right angles to each other.

Other objects will be in part obvious and in part pointed out particularly hereinafter.

The invention accordingly consists in the various features of construction, combinations of elements, and arrangements of parts which will be exemplified by the construction hereinafter set forth and the scope of the application of which will be indicated in the appended claims.

In the drawings Figure 1 is a view in horizontal longitudinal section of a freight car embodying the invention.

Figs. 2 and 3 are complemental views in side elevation of the car shown in section in Fig. 1.

Fig. 4 is a view in cross section taken on the line 4—4 of Fig. 3.

Fig. 5 is a view in perspective showing a union of certain of the frame pieces and the manner of application of the exterior sheathing.

Fig. 6 is a sectional view of the same showing how the floor of the car is supported.

Fig. 7 is a view in perspective of a union of frame pieces according to a modified form of the invention.

Fig. 8 is a sectional view of the parts shown in Fig. 7 showing the manner of application of the floor.

Fig. 9 is an enlarged view in section taken on the line 9—9 of Fig. 3, showing the corner post construction.

Fig. 10 is a fragmentary sectional view of a portion of the car, showing the hinge connection for the doors closing the compartments, and

Fig. 11 is a front elevation of the parts shown in Fig. 10.

Referring now more particularly to the drawings, the car of the present invention comprises an underframe having a center sill 10 formed of standard A. R. A. sections 11 and 12 connected by top and bottom cover plates 13 and 14, respectively. The underframe also includes longitudinally extending side sills which preferably are commercially rolled ship channels each having a web 19 and inwardly extending upper and lower flanges 17 and 18, respectively.

Suitable bolsters and crossbearers (not shown) connect the side sills and the center sill and the side sills are suitably connected at their ends by end sill members. The end connection may be by channels similar to the side sills or by any other rolled or plate section. The flooring for the car may be applied over the side and center sills and the transverse end connections may be applied over the flooring. As specifically shown herein, the transverse connection between the ends of the side sills is an angle member 20 which overlies and is riveted to the top flanges 17 of the sills.

Corner posts 21 extend to the corners of an upper metal frame comprising longitudinal Z-bars 22 and transverse metal end members 23. The corner posts comprise wooden uprights 24 fitted in metal angles 25, the latter receiving marginal portions of exterior covering or sheathing 26. A facing strip 27 covers the edges of the sheathing at the corners.

Posts or uprights 30 are spaced along the sides and ends of the car. They are united with the side sills in a novel manner whereby a strong union is effected quickly and conveniently and the main facing portions of the uprights are brought substantially flush with the outer face

of the side sill web. These posts may be in any of a number of cross sectional forms, two suitable embodiments being shown in the drawings. Preferably each post has a facing portion 31, specifically a flange, and a reinforcing or strengthening portion 32 which may be in the form of a flange or web as shown in Fig. 5 of the drawings or may be a pressed channel 33 as shown in Fig. 7 of the drawings.

In making the union above mentioned, upper inwardly extending flanges of the side sills are provided with spaced apertures 35 preferably of a shape and size corresponding to the shape of the post to be used in connection therewith, and also preferably lying wholly within the flange leaving the inner edge thereof intact and continuous. The size and shape of the aperture is such that the end of the post may have a sliding fit with the flange of the sill at the aperture. The end of each post is inserted through the flange of the sill at the aperture preferably until the inserted end comes at or near the lower flange of the sill. The apertures are so positioned in the upper flange of the sill that the facing 31 of the inserted portion of the post is brought substantially against the inner face of the web of the sills. Rivets 36 secure the facing portion of the post to the web of the sill. The edges of the flange at the aperture serve as a means for supporting the two parts of the union in assembled position while the riveting operation is effected, and also serve generally to prop the post and to an extent relieve the rivets 36 of shearing strain.

The posts 30 are preferably offset from a point 40 inwardlly, that is, the inserted end portion of the post is set in so that when the post is in assembled position the facing portion of the body of the post comes substantially flush with the outer face of the sill web. The sheathing 26 is secured to the facing portion of the posts 30 and may overlap and be secured to the web portion of the sills.

In Figs. 7 and 8 the post is shown as a pressed metal member having a facing portion constituted by flanges 50 and 51. The strengthening portion is in channel form as indicated at 33 having channel sides 52 and a web 53. The manner of offsetting the end and inserting it through the flange of the sill and securing it to the inner face of the sill web is substantially the same as previously described in connection with the form shown in Figs. 5 and 6.

The upper ends of the posts are riveted or secured in any suitable way to the metal Z-bars 22 of the upper frame and at the ends of the cars the posts 30 according to the present showing have their lower ends substantially abutting the inwardly extending lower flange of the angle 20.

End walls 60, preferably of wood, abut the corner posts 21 and the end uprights 30. Suitable wooden fillers may be fitted in the shoulders of the posts as indicated at 61.

A series of transverse partitions are shown at 64 extending between and secured to the posts on opposite sides of the car. Some of these partitions may be in substantially permanent form as indicated at 65 and others may be in the form of pairs of hinged doors 66. These may be of plate metal suitably reinforced and they are hinged at 67 at the posts on opposite sides of the car. They are interfitting at 68 where suitable locking devices may be applied if desired. As shown clearly in Fig. 1 of the drawings, the hinged doors may be movable to opposite sides of the car so as to unite two compartments and enlarge the space to accommodate a larger shipment. The upper frame is formed with a roof 70 of substantially conventional style.

Door frames are formed in the car sides by certain of the successive spaced posts 30 together with the side sills of the car, and angle members 80 connected to the posts forming lintels. The sides and ends of the car are completely sheathed to the door frames, there being one of these frames at each side of the car for each of the compartments provided by the partitions 64.

Each door frame is provided with a pair of doors 81 provided with hinge leaves 81*b* connected to hinge members 81*a* which latter are secured by rivets or other suitable fasteners to the posts 30. The doors 81 are, therefore, sturdily supported and may be swung together at the middle of the frame as shown at 82, in which position they may be locked by any suitable locking device as indicated at 83. The arrangement of the side doors and the partition doors is such that when two compartments are united the partition doors may overlap or overlie one set of side doors but will in so doing clear the partition door well away from another set of side doors which provides free access to the enlarged compartment, for loading and unloading purposes.

The rolled sections constituting the side sills are not materially weakened by the apertures. The aperturing of the flange may be by punching or burning or the posts may be forced through the flange by electrical process. Several comparatively inexpensive methods are open to the manufacturer. Flooring 90 may be laid over the upper sill flange and fitted neatly around the uprights.

A lining 91 of open slat work of wood may be continued around the compartment walls to prevent the freight from coming in contact with the sheathing or uprights and some or all of the compartments may be insulated and arranged for refrigeration.

What is claimed is:

1. In a freight car, a metal frame comprising channel shaped side sills and side posts extending through the upper flanges of and secured to the side sills, a plurality of spaced sheathing sections, each thereof extending between and secured to the outer surfaces of adjacent posts whereby door openings are defined between adjacent sheathing sections, and a plurality of transverse partitions between oppositely arranged posts dividing the car into a series of individual compartments.

2. In a freight car, a metal frame comprising channel shaped side sills and side posts extending through the upper flanges of and secured to the side sills, a plurality of spaced sheathing sections, each thereof extending between and secured to the outer surfaces of adjacent posts whereby door openings are defined between adjacent sheathing sections, a plurality of transverse partitions between oppositely arranged posts dividing the car into a series of individual compartments, and doors secured to the side posts and adapted to close said door openings.

3. In a freight car, a metal frame comprising channel shaped side sills and side posts extending through the upper flanges of and secured to the side sills, a plurality of spaced sheathing sections, each thereof extending between and se-

cured to the outer surfaces of adjacent posts whereby door openings are defined between adjacent sheathing sections, a plurality of transverse partitions between oppositely arranged posts dividing the car into a series of individual compartments, doors secured to the side posts and adapted to close said door openings, and flooring extending between the side sills and supported thereby.

4. In a freight car, a metal frame comprising channel shaped side sills and side posts extending through the upper flanges of and secured to the side sills, a plurality of spaced sheathing sections, each thereof extending between and secured to the outer surfaces of adjacent side posts whereby door openings are defined between adjacent sheathing sections, a plurality of transverse partitions between oppositely arranged side posts dividing the car into a series of individual compartments, certain of said partitions comprising doors movable adjacent the sheathing interiorly of the car to merge adjacent compartments, flooring extending between the side sills and supported thereby, and doors secured to the side posts and adapted to close said door openings.

5. In a freight car, an underframe having channel shaped side sills, side posts having their lower end portions extending through the upper flanges of and secured to the side sills, said posts having facing portions and the portions of said posts extending through the flanges of the sills being offset in such a manner as to dispose the facing portions of the posts in substantially vertical alinement with the outer surfaces of the webs of the side sills, a plurality of spaced external sheathing sections extending between adjacent posts and secured to the facing portions thereof and to the webs of the side sills so as to provide a plurality of door openings in the sides of the car, and doors supported by the posts and adapted to close said door openings.

6. In a freight car, an underframe having channel shaped side sills, side posts having their lower end portions extending through the upper flanges of and secured to the side sills, said posts having facing portions and the portions of said posts extending through the flanges of the side sills being offset in such a manner as to dispose the facing portions of said posts above said offset ends in substantially vertical alinement with the outer surfaces of the webs of the sills, a plurality of spaced straight sheathing sections extending between adjacent posts and secured to the facing portions thereof and the outer surfaces of the webs of said sills so as to provide a plurality of door openings in the sides of the car, doors secured to the posts and adapted to close said door openings, and an upper frame secured to the outer surfaces of the sheathing sections and secured to the posts.

7. In car construction, a side sill comprising a web and an upper inturned floor supporting flange, the latter having apertures formed therein intermediate the edge portion thereof and the sill web, and posts projecting through said apertures and secured to the inner surface of the web, the projected portions of said posts resting against the web of said sill for substantially the full length of said projected portions.

8. In car construction, a side sill comprising a web having an integral inturned flange at its upper edge portion, said flange being continuous from end to end of the side sill and having apertures formed therein intermediate the edge portion thereof and the sill web, posts projecting through said apertures and secured to the inner surface of the web, and flooring supported on said flange.

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