Feb. 9, 1937. C. H. WILLIAMSON 2,069,986

HOUSE CAR

Filed Nov. 2, 1933 3 Sheets-Sheet 1

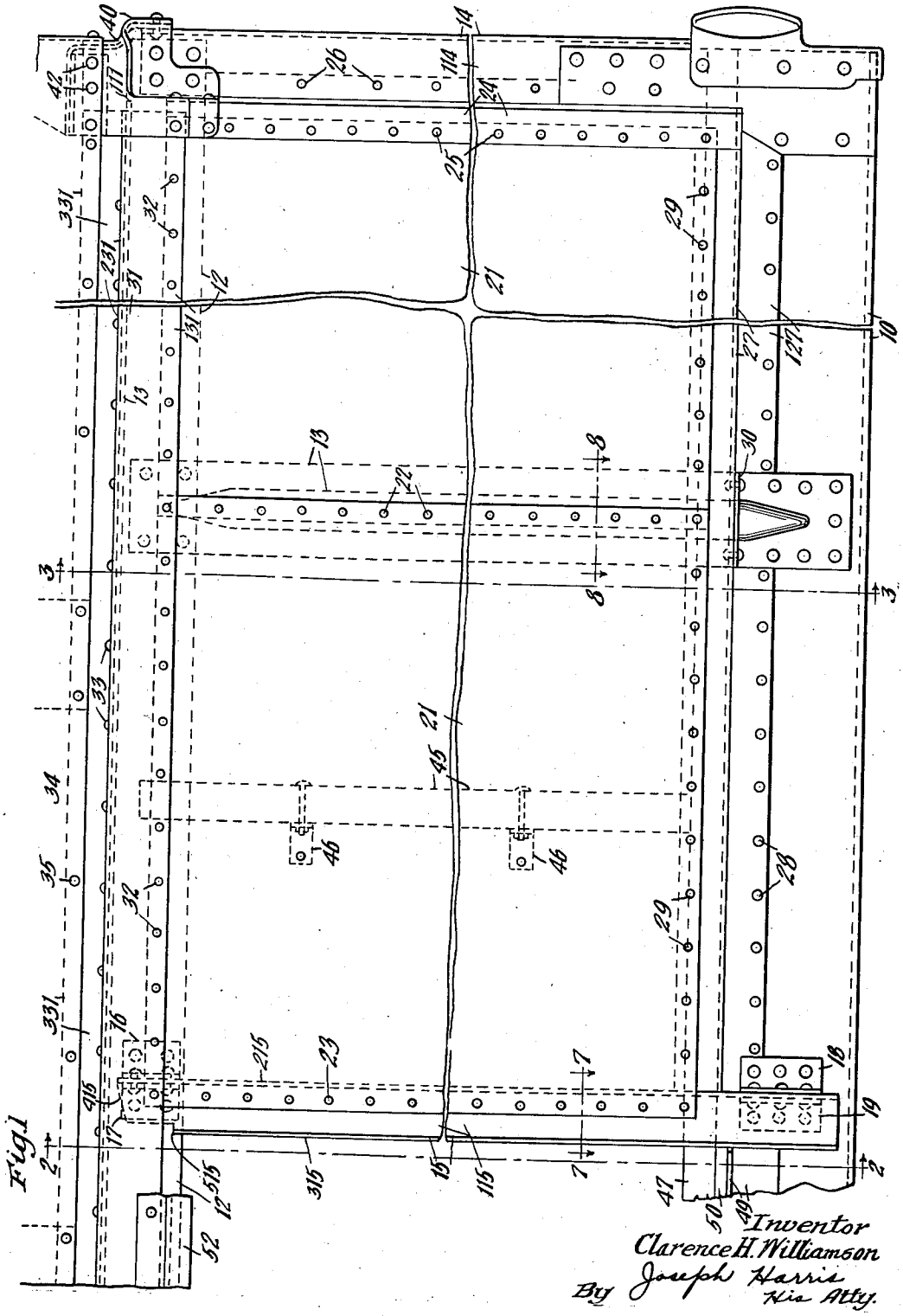


Fig. 1

Inventor
Clarence H. Williamson
By Joseph Harris
His Atty.

Feb. 9, 1937. C. H. WILLIAMSON 2,069,986

HOUSE CAR

Filed Nov. 2, 1933 3 Sheets-Sheet 2

Fig. 2

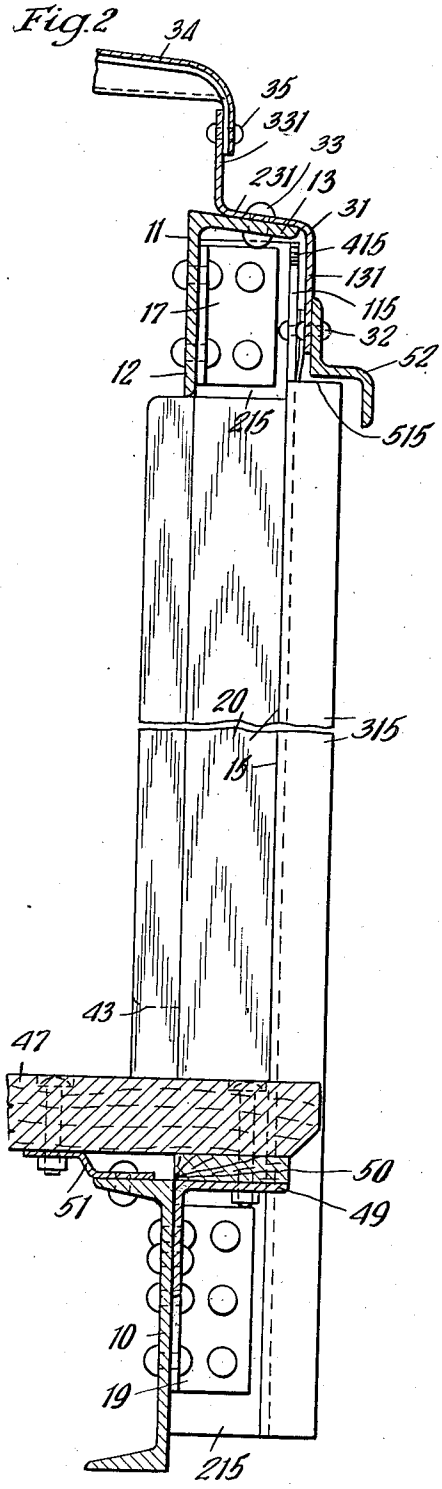
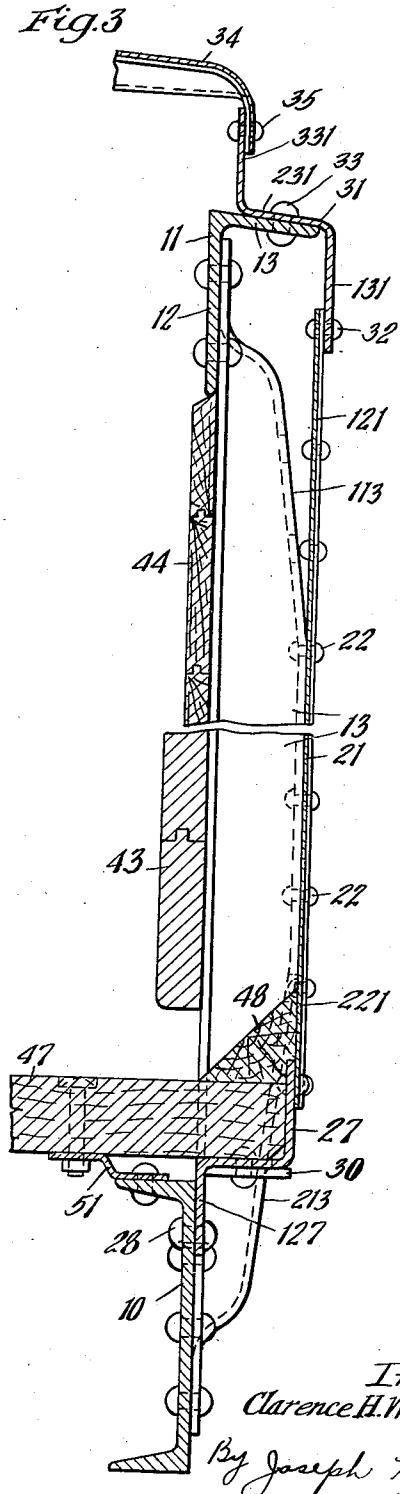


Fig. 3



Inventor
Clarence H. Williamson
By Joseph Harris
His Atty.

Feb. 9, 1937. C. H. WILLIAMSON 2,069,986

HOUSE CAR

Filed Nov. 2, 1933 3 Sheets-Sheet 3

Fig.4

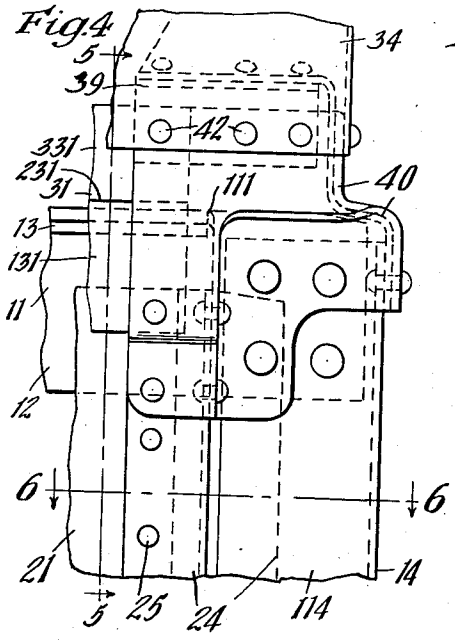


Fig.5

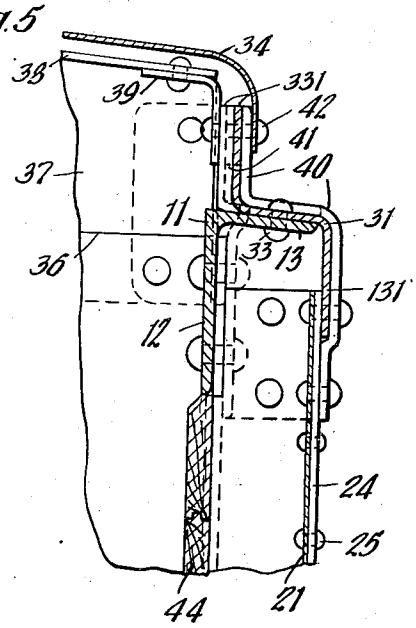


Fig.6

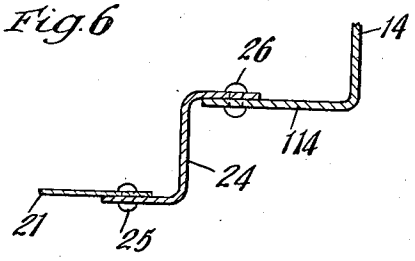


Fig.8

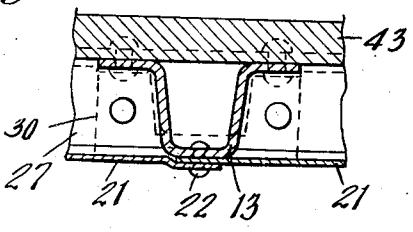


Fig.7

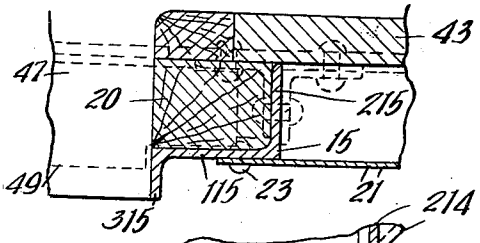
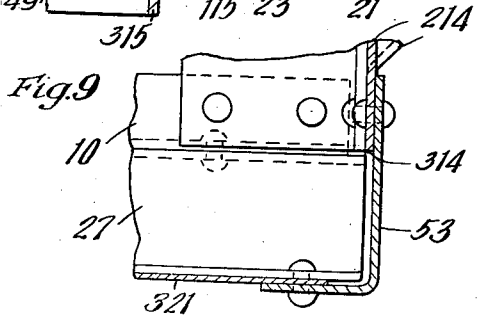


Fig.9



Inventor
Clarence H. Williamson

By Joseph Harris
His Atty.

Patented Feb. 9, 1937 2,069,986

UNITED STATES PATENT OFFICE

2,069,986

HOUSE CAR

Clarence H. Williamson, Cleveland, Ohio, assignor to The Youngstown Steel Door Company, Cleveland, Ohio, a corporation of Ohio

Application November 2, 1933, Serial No. 696,369

9 Claims. (Cl. 105—409)

This invention relates to improvements in house car and more particularly an all steel house car converted from a single wood sheathed house car.

Many box cars of the type commonly known as single wood sheathed house cars with standard steel underframes, are owned by the railroads, such cars comprising a steel underframe including channel side sills; steel side plates usually of special angle cross section; pressed steel side posts; pressed steel diagonal braces; sheet metal ends; and wood side wall sheathing applied to the inner sides of the posts and braces. Experience has shown that such cars have serious disadvantages, particularly on account of the wood sheathing, permitting leakage due to shrinkage of the boards, the common practice of driving nails therethrough when attaching the lading on the interior of the car, and on account of abuse in the use of pinch bars in forcing the doors into closed position. A great many of said cars are now in such condition as to be practically useless unless the sheathing is completely renewed, the steel or metal parts, however, being still serviceable. Railroad officials, therefore, are confronted with the difficult choice of either repairing such cars with new wood sheathing with the knowledge that the same will be subject to the same disadvantages hereinabove pointed out, with the attendant maintenance expense, or of providing an all steel car which will be free from the disadvantages pointed out and at the same time have longer life and provide a more rigid car than the wood sheathed car. Furthermore, there is a definite tendency toward providing cars of greater capacity than that of the ordinary single wood sheathed car.

One object of this invention, therefore, is to provide an all steel car of such construction that a single wood sheathed car may be readily converted thereto with a minimum expense for additional material and labor.

Another object of the invention is to provide a car of the type indicated in the preceding paragraph such that, in making the conversion from the wood sheathed form to the all steel form, the capacity may be materially increased without any change in the position or location of the underframe elements, side plates and side posts and at the same time reusing the usual metal car ends.

More specifically, an object of the invention is to provide an all steel car wherein the metal sheathing is applied to the outer sides of the posts and so united to the side plates as to provide for location of the roof at any desired distance within reasonable limits above the side plates to thereby provide increased inside height and hence increased capacity for the car with a given side wall framework.

Other objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawings forming a part of this application, Figure 1 is a side elevational view of approximately one half the length of a house car showing the improvements incorporated therein, parts being broken out to better accommodate the figure on the sheet. Figures 2 and 3 are vertical, sectional views, upon enlarged scales, corresponding to the section lines 2—2 and 3—3 respectively of Figure 1. Figure 4 is an enlarged detailed elevational view of the structure of one of the upper corners of the car. Figure 5 is a vertical, sectional view, corresponding to the section line 5—5 of Figure 4. Figure 6 is a horizontal, detailed sectional view corresponding to the line 6—6 of Figure 4. Figure 7 is a detailed horizontal sectional view corresponding to the line 7—7 of Figure 1. Figure 8 is a horizontal detailed sectional view, corresponding to the line 8—8 of Figure 1. And Figure 9 is a view similar to Figure 6, showing another embodiment of the connection between the side sheathing and car end.

In the drawings, only approximately one half of one side of the car has been illustrated, it being understood that the remaining portion will be complemental thereto and that the opposite side of the car will be of duplicate construction.

In said drawings and referring first to the form of the invention shown in Figures 1 to 7, 10 indicates one of the usual channel side sills of an all steel underframe, it being understood that the usual end sills, bolsters and cross bearers will be employed therewith. One of the side plates is indicated at 11, the same being of special angle formation such as commonly found in standard single wood sheathed cars at the present time, said side plate having an inner relatively deep depending flange 12 and an upper outwardly inclined narrow flange 13, said flange 13 corresponding to the usual slope of the roof and to which it is customary, in the ordinary wood sheathed car, to apply the roof sheets and carlines thereon with a consequent inside available clear height corresponding to the height of the side plate above the floor. One of the usual pressed side posts is indicated at 13, the same being of generally U or bath tub section having a maximum depth at its intermediate portion and tapering inwardly and upwardly as indi-

cated at 113 and inwardly and downwardly at its lower end as indicated at 213. Said posts 13 at their ends, overlie and are riveted to the side plate and side sill, as shown. In carrying out the present invention, where the same is employed in a car converted from a wood sheathed car, the usual diagonal pressed steel braces are removed since the same are rendered unnecessary by reason of the metal sheathing hereinafter referred to. The posts 13, however, are left intact in a converted car without change or relocation of either the posts or the side plates with reference to the underframe. One of the usual metal car ends is indicated at 14, the same having vertically extending side flanges, as indicated at 114. In carrying out the invention with reference to a converted car, Z bar door posts are employed, one of the same being indicated at 15. Each door post is so arranged, as indicated in Figure 7, that its web 115 extends parallel to the side wall of the car and with one flange 215 adjacent the door opening, extended inwardly and the other flange 315, extended outwardly. In a converted car, the door posts are turned through an angle of 90° with reference to their original position and that flange referenced 315 is partially burned off so as to narrow the same and thus maintain the over-all width of the car. In its turned position, each door post is secured at its upper end to the depending flange 12 of the side plate, by a pair of angle plates 16 and 17 riveted to the flange 215 of the post and similarly secured at its bottom end to the side sill by the two angle plates 18 and 19. The post is provided with the usual wood post filler as indicated at 20. At its upper end, the post 15 is shown with its web section beveled as indicated at 415 and the outer flange 315 coped, as indicated at 515, this formation corresponding to the original cutting of the post in the wood sheathed car due to its web underlying the sloping flange 13 of the side plate.

In carrying out the present invention, the metal sheathing indicated at 21 consists of a plurality of flat sheet metal panels each of a width corresponding to spacings between adjacent pairs of posts, the adjacent vertical edges of the panels being lapped in line with the posts and riveted to the crest of the non-tapered portions of the posts as indicated by the rivets 22—22. The sheathing is continued vertically upwardly in spaced relation to the upper tapered ends of the posts 13 as indicated at 121 and similarly is continued vertically downwardly in spaced relation to the lower tapered ends of the posts 13, as indicated at 221. The end panel adjacent the door post has its vertical edge lapped over the web 115 of the door post and riveted thereto as by the vertical series of rivets 23. The end panel adjacent the corner of the car is united to the car end 14 by means of an interposed and vertically extending formed Z plate 24, the latter having its outer flange lapped over the corresponding adjacent vertical edge of the sheathing and secured thereto by the vertical series of rivets 25 and its inner flange underlapped with the car end flange 114 and secured to the latter by the vertical series of rivets 26.

The lower edge of the sheathing, as clear from Figure 3, is terminated some distance above the top of the side sill 10 and is united with the latter with a weather protecting arrangement comprised of a longitudinally extending formed Z plate 27. The latter is disposed with its web horizontal, its inner flange 127 extending downwardly and riveted to the web of the side sill as by the horizontal series of rivets 28, and its outer flange extending upwardly on the inner side of the sheathing and riveted to the latter by the horizontal series of rivets 29. Where the plate 27 passes the side posts 13, it is suitably coped out to accommodate the latter and, preferably, in order to insure complete weather protection at the coped out sections, notched plates 30 are employed, the latter being riveted to the underside of the web of the plate 27, as best shown in Figures 3 and 8.

To provide for a simplified union between the upper edge of the sheathing and the side plate and at the same time make provision for attachment and location of the roof sheets at any desired distance above the side plate, a formed substantially Z sectioned member 31 is employed, the same preferably extending the full length of the car, the same as the side plate. Said member 31 is provided with a depending flange 131 overlying and riveted to the upper edge of the sheathing as by the horizontal series of rivets 32. The web section 231 is conformed to the slope of the flange 12 of the side plate and overlies the same, being rigidly united thereto either by spot welding or by the series of rivets 33 as shown. Where rivets are employed, the same may be so located as to reutilize the rivet holes previously in the flange 13 where the invention is carried out in a car converted from a wood sheathed car. The other inner flange 331 is extended upwardly the desired distance corresponding to the increased inside height of the car desired, the down turned edges of the roof sheets 34 and ends of the carlines being secured thereto as by the horizontal series of rivets 35. In the construction shown, the increased clear inside height of the car over the wood sheathed car prior to conversion is approximately four inches, although this amount may be varied, as will be apparent.

With the arrangement of the sheathing and connection of its upper and lower edges to the side plate and side sill as shown, it is evident that the side wall structure becomes a rigid girder with the top chord formed by the side plate 11 and Z member 31 and the lower chord by the side sill 10 and Z member 27.

To permit of the increased inside height of the car when reusing the metal car ends 14, the latter are cut off along the line 36, that is, in a line slightly below the upper edge of the side plate, thus removing the usual upper sections of the car ends which are formed to correspond with the roof slope. Car end extension plates 37 are then added, the same being overlapped and riveted to the cut off car end, the extension plate 37 having an inturned flange 38 to which is riveted an angle plate 39, the latter in turn being riveted to the corner construction about to be described.

At each corner, the side plate is cut off on the line indicated at 111 so as to terminate adjacent the vertical Z connecting member 24 and, similarly, the web and flange sections 231 and 131 of the Z member 31 are cut off at the same point. A weather seal joint of all the members meeting at the corner is provided by a corner cap casting 40 so constructed as to conform to the vertical attaching member 24, Z member 31 and car end and being riveted to all of said members, as shown. The upstanding flange 331 of the side plate Z-31 is suitably offset in line with the vertical edge of the cap casting and a filler 41 interposed between it and the adjacent wall of the cap casting and all

including the angle plate 39 securely united by the rivets 42.

The car is preferably finished with an inner wood lining, the lower portion of which, up to the usual guard rail, is preferably comprised of thicker boards as indicated at 43 and the remaining portion up to the side plate by thinner boards 44. Said lining is adapted to be nailed to nailing posts 45, each located midway between a pair of posts and secured to the sheathing by suitable angle clips 46—46 as best shown in Figure 1. As customary, the lining terminates a short distance above the floor 47 and shedding strips 48 are preferably employed, each extending from post to post and located as best shown in Figure 3.

The floor 47, between door post and corresponding ends of the car is supported along its outer edge on the web of the Z member 27 as shown in Figure 3. In the doorway, the outer edge of the flooring is supported by an angle 49 riveted to the side sill and an interposed wood filler 50. Preferably, also, a longitudinally extending formed approximately Z-shaped plate 51 is employed to additionally support the flooring, the same being interposed between and secured to the underside of the floor and the top flange of the side sill, as shown in Figures 2 and 3. With this construction, floor boards of lesser thickness may be employed than in a car prior to conversion without changing the distance of the floor level above the tracks. Over the door opening and to one side thereof, a combined door guiding and retaining plate 52 is riveted to the depending flange 131.

Referring next to the modification shown in Figure 9, the sheathing 321 is shown extended almost to the plane of the metal car end 214 and in this construction, the car end has its usual side flange cut off so that the car end terminates in the line 314 and the union between the sheathing and the car end is made by means of a vertically extending angle plate 53, having its respective flanges overlapping the adjacent edges of the sheathing and car end and riveted thereto.

Although the invention has been herein described with particular reference to a car converted from a wood sheathed car, and in connection with which the invention has especial utility, nevertheless it is apparent that the invention may be incorporated in a completely new car. The preferred manner of carrying out the invention has been chosen for illustration but various changes and modifications may obviously be made without departing from the spirit of the invention and all such changes and modifications are contemplated that come within the scope of the claims appended hereto.

What is claimed is:

1. A house car comprising: an underframe including a metal side sill; a metal load carrying member extending substantially from end to end of the car having an outwardly extending flange; metal posts secured at their top and bottom ends to said load carrying member and sill; sheet metal sheathing secured to the outer sides of said posts; means connecting the lower edge of the sheathing with the side sill; and means uniting the upper edge of the sheathing to the load carrying member, including a longitudinally extending connecting member having a depending flange connected to the upper edge of the sheathing and a section overlying and secured to said flange of said load carrying member.

2. A house car comprising: an underframe including a metal side sill; a metal load carrying member extending substantially from end to end of the car having an outwardly extending flange; metal posts secured at their top and bottom ends to said load carrying member and sill; sheet metal sheathing secured to the outer sides of said posts; means connecting the lower edge of the sheathing with the side sill; roof sheets; and means for uniting the side edges of the roof sheets and the upper edge of the sheathing with the load carrying member comprising a longitudinally extending connecting member having an upstanding flange attached to the roof sheets and a depending flange attached to the upper edge of the sheathing independently of said side plate.

3. A house car including: a metal side sill, a metal load carrying member extending substantially from end to end of the car having a depending flange and an upper outwardly extending flange; metal posts secured at their lower ends to the sill and at their upper ends to the depending flange of the load carrying member; metal sheathing located on the outer sides of said posts; and means uniting the upper edge of the sheathing to said outwardly extended flange of the load carrying member comprising a longitudinally extending connecting plate having a section overlying and secured to said outwardly extending flange and an outer depending flange overlapping and secured to the upper edge of the sheathing.

4. A house car having a metal side sill; a metal load carrying member extending substantially from end to end of the car; metal side posts secured at their top and bottom ends to the load carrying member and sill, said posts being of maximum depth at their central portions and tapering inwardly toward their top ends; metal sheathing secured to the outer sides of said posts at said central portions and extending upwardly in a vertical plane spaced outwardly of the upper tapered ends of the posts; and connecting means for attaching the upper edge of the sheathing to the load carrying member in spaced relation to the upper ends of the posts, said means being extended over and secured to the top of the load carrying member.

5. A house car having a metal side sill; a metal load carrying member extending substantially from end to end of the car with an upper outwardly extending flange; metal side posts secured at their top and bottom ends to the load carrying member and sill, said posts being of maximum depth at their central portions and tapering inwardly at their top ends; metal sheathing secured to the outer sides of said posts at said central portions and extending upwardly in a vertical plane spaced outwardly of said tapered ends of the posts; roof sheets spaced above said load carrying member; and unitary connecting means uniting said roof sheets and sheathing to the load carrying member.

6. A metal sheathed house car converted from a single wood sheathed house car originally having a metal underframe including a side sill, metal side plate, metal posts and Z bar door posts with the webs of the latter disposed perpendicular to the car side, the converted car having Z-bar door posts positioned each with the web thereof extending parallel to the car side and the flange thereof adjacent the door opening extending outwardly and narrowed relative to the other flange to thereby maintain the over-all width of the car; and metal sheathing secured to the outer sides of the side posts and lapped, at its edges adjacent the door posts, over the webs of the latter and secured thereto.

7. A house car including: a metal underframe including a side sill; a load carrying member extending substantially from end to end of the car of angular section having an outwardly extending flange; metal side and door posts secured at their upper and lower ends to said load carrying member and sill; sheet metal side wall sheathing secured to the outer faces of said side posts and door posts; metal car ends terminating at their upper edges approximately at the upper level of the load carrying member; car end extension plates secured to said car ends and extending above the load carrying member; roof sheets; means uniting the lower edge of the sheathing to the side sill; and a longitudinally extending Z sectioned connecting member having its web overlying and secured to said flange of the load carrying member, its outer flange depending and secured to the upper edge of the sheathing, and its inner flange extending upwardly and secured to the roof sheets.

8. A converted house car of the character described including: a metal underframe including side sills, sheet metal ends, load carrying members extending substantially from end to end of the car and metal side posts, the latter being secured to the load carrying members and sills, the said load carrying members and posts corresponding in position and location to those of a standard steel underframe, single wood sheathed box car; metal sheathing secured to the outer faces of said posts; means uniting the lower edge of the sheathing with the side sills; Z sectioned connecting members extending lengthwise of the load carrying members and each having an outer depending flange and an inner upwardly extending flange, the former being united with the upper edges of the sheathing independently of the side plates; and metal roofing secured along its side edges to said upstanding flanges of the Z members and supported and spaced by the latter above the tops of the load carrying members, whereby to provide greater inside clear height than that of the car prior to conversion.

9. A converted house car of the character described including: a metal underframe including side sills, sheet metal ends, load carrying members extending substantially from end to end of the car and metal side posts, the latter being secured to the load carrying members and sills, the said load-carrying members and posts corresponding in position and location to those of a standard steel underframe, single wood sheathed box car; metal sheathing secured to the outer faces of said posts; means uniting the lower edge of the sheathing with the side sills; Z sectioned connecting members extending lengthwise of the load carrying members and each having an outer depending flange and an inner upwardly extending flange, the former being united with the upper edges of the sheathing; metal roofing secured along its side edges to said upstanding flanges of the Z connecting members and supported and spaced by the latter above the tops of the load carrying members, whereby to provide greater inside clear height than that of the car prior to conversion; vertically extending members of angular cross section at each corner of the car uniting the corresponding adjacent vertical edges of sheathing and car end; and corner cap pieces uniting said vertically extending members, load carrying members, Z members, roofing and car ends.

CLARENCE H. WILLIAMSON.