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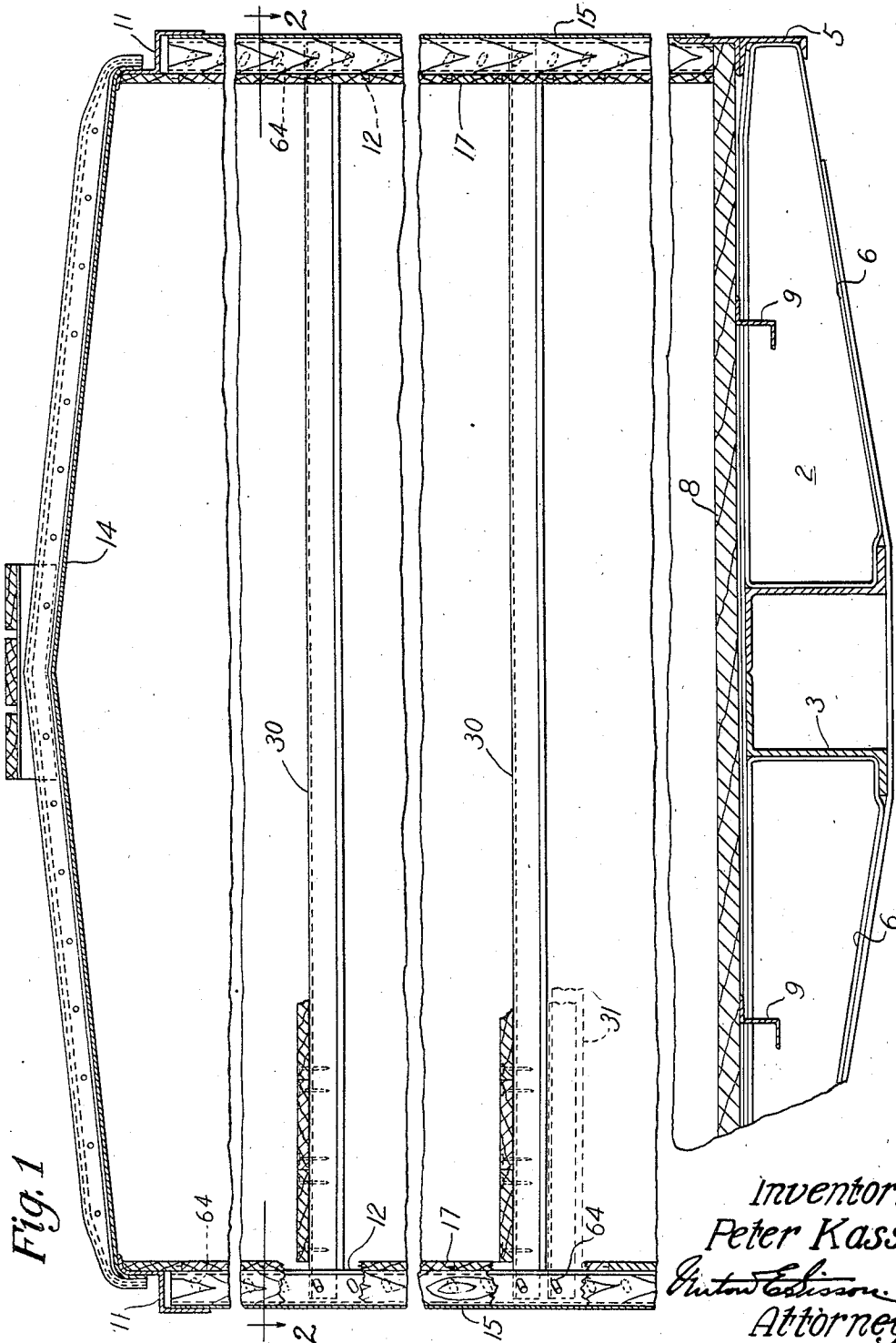
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2,336,440

RAILWAY CAR CONSTRUCTION

Filed Sept. 2, 1941

5 Sheets-Sheet 1



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5 Sheets-Sheet 2

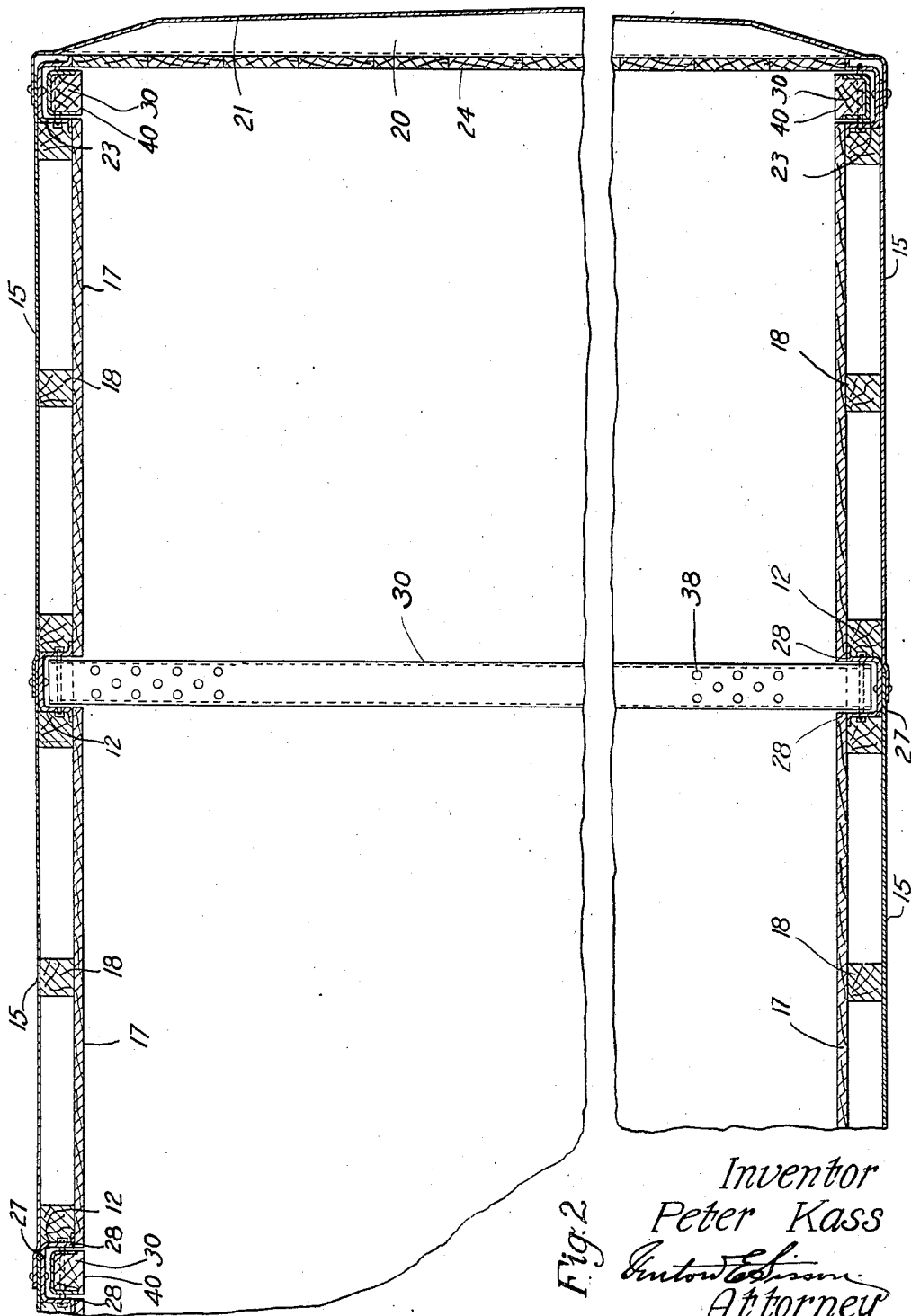


Fig. 2

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5 Sheets-Sheet 3

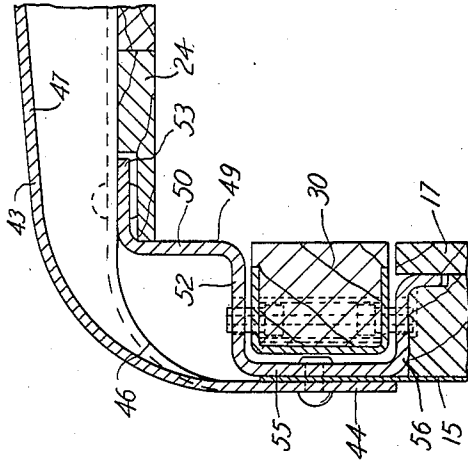


Fig. 3

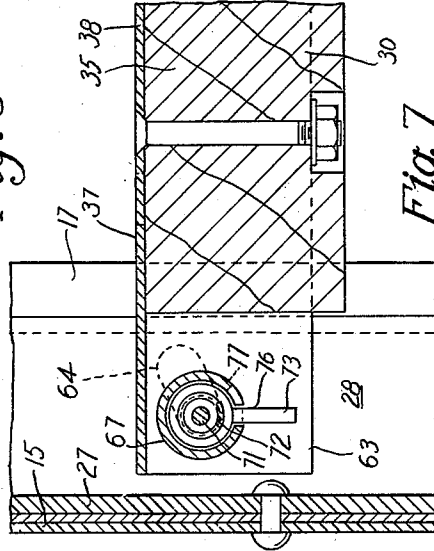


Fig. 7

Fig. 5

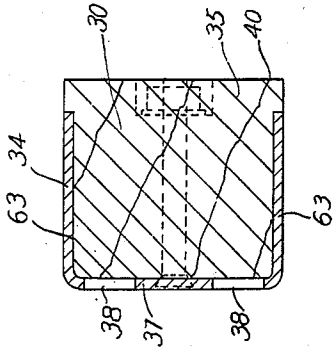


Fig. 4

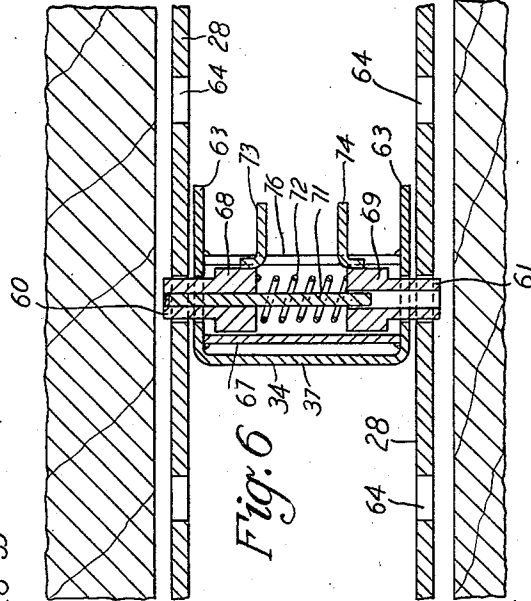
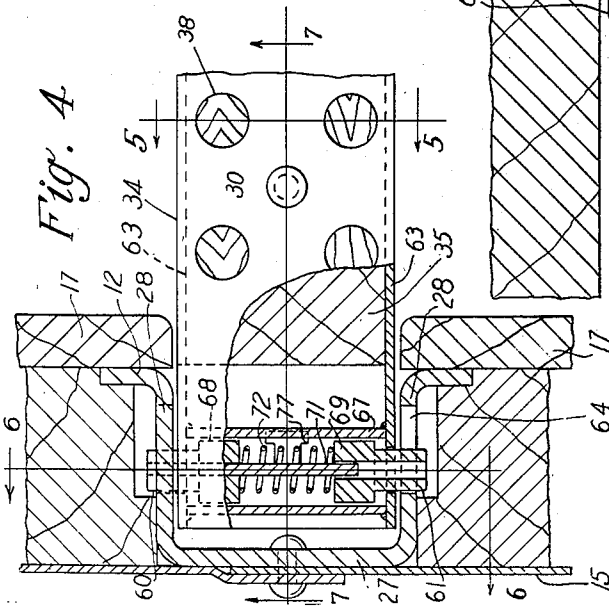


Fig. 6

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RAILWAY CAR CONSTRUCTION

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5 Sheets-Sheet 5

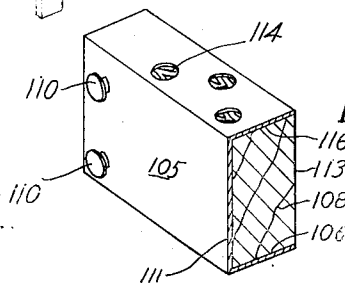
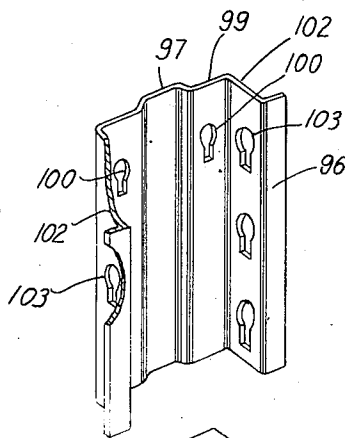
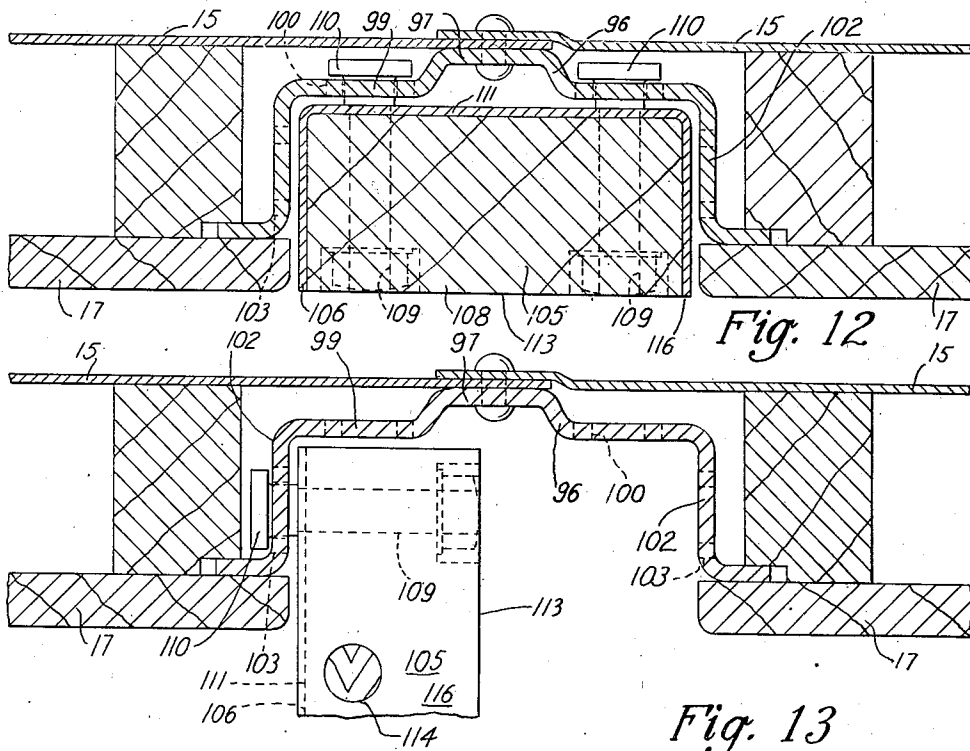


Fig. 15

Fig. 14

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UNITED STATES PATENT OFFICE

2,336,440

RAILWAY CAR CONSTRUCTION

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2 Claims. (Cl. 105-370)

This invention relates to railway house cars such as box cars, refrigerator cars, stock cars and the like and particularly to adjustable beams for such cars; which beams may be used to support a deck or decks within the car or to otherwise support or brace various types of lading.

An object of the invention is to provide conveniently adjustable beams preferably used for supporting one or more decks within the car, which beams are also adaptable to otherwise support or brace various types of lading.

Another object is to provide a means for storing such beams within the car in such a way that the beams do not encroach in any way on interior space available for the lading. Such means for storing the beams is also advantageous in that the beams are readily accessible and are to a very large degree protected from theft.

Another object is to provide a storage means for such beams which provides a smooth interior lining for the car suitable for retaining bulk loads or for supporting a temporary bracing, such as is commonly used with certain types of load.

A further object is to provide deck supporting beams and attaching means for such beams which adapt themselves to various widths of cars. In the manufacture of railway cars, close tolerances are not observed and cars of the same series or design often vary in width from a fraction of an inch to an inch or more. Furthermore, certain types of service tend to bulge the side walls outwardly and thereby increase the width of the car. In the invention herein disclosed, I provide means for taking into account this variation in width.

A further object is to design the vertical load supporting posts of the side wall structure in such a way that they form grooves or recesses facing inwardly of the car, which grooves or recesses I utilize as storage space for the beams when not required to be used for supporting or bracing the lading.

Cars having one or more decks spaced above the floor of the car are highly desirable where the lading is of a relatively fragile type such that the weight of the lading in the upper part of the car would damage the lower parts of the lading if permitted to rest thereon. Examples of such lading are storage batteries, automobile fenders and certain types of foodstuffs, particularly fruit when loaded in bulk or various commodities when loaded in packages of a non-rigid nature. Bananas are commonly trans-

ported in stems wherein the entire floor of the car is covered with stems on end and wherein the upper part of the car is entirely vacant because the bananas resting upon the floor are not capable of supporting bananas stored on top thereof. A deck above the lower layer of bananas would permit practically 100% increase in the load.

Cars having decks are also used for loads comprised of assembled and partially assembled machines. For example, tractors and other farm implements are commonly arranged in the car with the partially assembled machine comprising most of the heavy parts thereof loaded upon the floor of the car and parts or sub-assemblies for the same machines loaded upon decks in the upper part of the car. The assembly of the machines is completed at destination.

Decks in house cars are also useful where the lading is comprised of a miscellaneous group of small packages of various sizes wherein the large packages may be loaded on the floor and small packages upon the decks, the height of the decks to be determined by the size of the packages.

One of the primary advantages of a car equipped with means for providing one or more decks is that it is often possible to haul a much heavier load and thereby take advantage of freight rates existing for many commodities when the load in the car is large. In many types of commodities it is impossible, without a decking or other device, to load enough freight into the car to take advantage of the freight rate for a minimum carload.

Another advantage of a decked car is that very substantial savings are effected by the partial or whole elimination of dunnage, which is temporary bracing commonly used. The savings are brought about by the elimination of the first cost of the dunnage materials, such as lumber, nails and padding; by the elimination of the cost of installing and removing the dunnage; by the elimination or reduction of damage to car walls and floor caused by the frequent driving of nails and spikes; and by elimination of damage to the lading caused by the failure of insecurely attached bracing and by puncture of the lading with nails used to secure the bracing.

Other objects and advantages of my invention will be apparent from the following detailed description by referring to the accompanying drawings.

In the drawings:

Fig. 1 is a transverse section through a rail-

way box car showing the deck beams in position to support a pair of decks.

Fig. 2 is a plan section of the car on line 2—2 of Fig. 1 showing one beam in position to support a deck and other beams stored within the side posts of the car.

Fig. 3 is a plan section showing a modified corner construction.

Fig. 4 is an enlarged view similar to a portion of Fig. 2 showing the deck beam in position to support a deck and also showing details of the means for attaching such beam to the side posts of the car.

Fig. 5 is a section through the beam on line 5—5 of Fig. 4.

Fig. 6 is a section through the side wall on line 6—6 of Fig. 4.

Fig. 7 is a section on line 7—7 of Fig. 4.

Fig. 8 is an enlarged view of portion of Fig. 2 showing a deck beam stored within a side post and showing details of the attachment of such beam to the post.

Figs. 9 and 10 are views similar to Figs. 4 and 6 respectively, showing a modified form of the invention.

Fig. 11 is a view similar to Fig. 10 showing the pins in their retracted positions so that the height of the beam may be adjusted.

Fig. 12 shows another modification of the invention showing the deck beam stored within the side wall post.

Fig. 13 illustrates the same modification as Fig. 12 and shows the deck beam in position for supporting a deck.

Fig. 14 is a perspective view of a portion of the side wall post shown in Figs. 12 and 13.

Fig. 15 is a perspective view of a portion of the deck beam shown in Figs. 12 and 13.

Figures 1 and 2 show a common type of railway box car wherein the underframe 2 thereof is comprised of a center sill 3 and spaced apart side sills 5 connected to the center sill 3 by cross members, such as the bolsters 6 shown. The wood floor 8 of the car is commonly supported by the underframe 2, including the longitudinal floor supports 9. The upper chord of a side wall is formed by the side plate 11 and spaced apart side posts 12 extend between and are secured to the side plate 11 and side sill 5. The car roof 14 is secured to and supported by the side plates 11. The car illustrated embodies a metallic side sheathing 15 attached to the side posts 12 and a wooden side lining 17 supported by the side posts 12 and by wooden fillers 18 supported by the car sheathing 15. The end wall 20 of the car illustrated is comprised of a corrugated metallic plate 21 secured to the corner posts 23 of the car and wooden lining 24 supported by the corrugated plate 21.

The side posts 12, including the corner posts 23, are formed of inwardly facing channels each comprising a web 27, and spaced apart flanges 28. The metallic side sheathing 15 is preferably secured to the webs 27. The deck beams 30 have a length substantially equal to the height of the side posts 12, that is, the distance between the side sill 5 and side plate 11. As shown in Figs. 1 and 2, the deck beams 30, when not in use, are stored within the channels of the side posts 12 of the car and when used to support a deck or decks, the beams 30 are supported at their opposite ends by the oppositely disposed side posts 12 of the car. Means for attaching the beams to the posts will be hereinafter described in detail.

Since there is one beam provided for each side post, a pair of beams when in deck supporting position, must extend between each pair of oppositely disposed posts and consequently two decks may be supported within the car. If it should be desirable to use only one deck or if an extremely strong deck should be required, one beam may be placed immediately below another as shown in broken lines 31 in Fig. 1 and thereby provide a deck supported by double strength beams.

In the preferred form of the invention, the beams 30 are formed of metallic channel members 34 provided with wood fillers 35. The webs 37 of the channels 34 are formed with holes 38 so that decking or cleating may be nailed to the wooden fillers 35 of the beams 30. The opposite sides 40 of the beams 30 are formed by the wood fillers 35 which are arranged flush with the inner surface of the side wall lining 17 when the beams are stored within the side posts 12. Such wooden fillers 35 thereby form a continuation of the side wall lining for purposes of confining a bulk load or for nailing braces or cleats required for certain other types of load.

Figure 3 shows a modified corner construction adapted for use with an end wall comprising a metallic plate 43 formed with a flange 44 on a curve 46 of relatively large radius wherein the corrugations 47 merge into the curve 46. The corner post member 49 includes angularly disposed arms 50, 52 each provided with a flange 53, 55, one of the flanges 53 being secured to the body part of the wall plate 43 and the other flange 55 being secured to the flange 44 of the plate and to the side wall sheathing 15, thereby providing a hollow corner post. The flange 55 is provided with an inwardly directed reflare 56 which cooperates with the flange 53 and arm 52 to form an inwardly facing channel in which the deck beam 30 is stored as hereinabove described.

One modification of a means for attaching the ends of the deck beams 30 to the side wall posts 12 is illustrated in detail in Figs. 4 to 8. The attaching means consists essentially of pins 60, 61 which project beyond the flanges 63 of a deck beam channel 34 and which engage with any desired pair of a plurality of spaced apart holes 64 provided in the flanges 28 of the side posts 12 along substantially the full length thereof. The pins 60, 61 are retractable so that they may be moved inwardly until the ends thereof are flush with the external sides of the flanges 63 after which the beam 30 may be moved to any desired position. The holes 64 in the side post flanges 28 are preferably close together to permit fine adjustment of the height of the deck beams.

When the deck beam 30 is not being used, it is stored within the side post 12; the pins 60, 61 at one end of the beam 30 then engage holes 64 near the top of the post 12 and the pins 60, 61 at the other end of the beam 30 engage holes near the bottom of the post 64. The holes 64 in the post 12 are preferably elongated laterally to provide for such variations in the car width as occur during manufacture and use as hereinabove pointed out. Furthermore, the holes 64 are preferably inclined upward and inwardly as shown in Figures 1 and 7 so that the weight of the beam 30 when stored within the post 12 tends to move such beam toward the exterior of the car and thereby presents a flush surface with the side wall lining 17.

As shown most clearly in Figures 4 and 6, a tube 67 having an interior diameter somewhat

greater than the diameter of the pins 60, 61 extends between and is secured, preferably by welding, to the opposite flanges 63 of the deck beam channel 34, such tube being co-axial with the pins. The pins 60, 61 have enlarged inner ends 68, 69 which slidably engage the inside of the tube 67 and a guide rod 71 is rigidly attached to the pin 60 and is slidable through the opposite pin 61. A helical spring 72 is inserted between the opposite pins 60, 61 to yieldingly hold such pins in their extended positions for engagement with the holes 64 in a side post 12.

Finger clips 73, 74 are rigidly secured to the pins 60, 61 and extend outwardly through a longitudinally extending slot 76 in the tube 67. When it is desired to adjust the height of the beam 30 or to move the beam from the storage position to the deck supporting position or vice-versa, it is necessary only to squeeze the finger clips 73, 74 together, thereby retracting the pins 60, 61 from the holes 64 and making possible movement of the end of the beam 30. A keyhole slot 77 is provided in the tube 67 so that the finger clips 73, 74 in their squeezed together position may be moved into the keyhole 77 by a slight rotation of such clips and the beam may be thereby adjusted without holding the finger clips.

In the modification shown in Figures 9 to 11, the flanges 80 of the side post 81 are provided with longitudinally extending corrugations 83 projecting away from each other. Spaced apart holes 84, preferably elongated as hereinabove described, are provided in the corrugations 83 and are engaged by pins 60, 61 which operate substantially as described in reference to Figures 4 to 8. The pins 60, 61, guide rod 71 and spring 72 are substantially similar to corresponding members shown in Figures 4 and 6 except that the enlarged ends 88, 87 of the pins 60, 61 are made shorter to provide for greater movement of the pins.

Finger clips 89, 90 are attached to the pins 60, 61 and one of the clips 89 has its end 92 bent toward the other clip 90 so as to limit the amount by which the pins 60, 61 may be retracted as shown in Figure 11 wherein the pins are retracted substantially to the limit permitted by the finger clips 89, 90. The ends of the pins 60, 61 are then disengaged from the holes 84 but are confined within the corrugations 83. It is therefore apparent that the end 93 of the beam 30, shown in Fig. 9, may be adjusted from top to bottom of the post 81 and the pins 60, 61 engaged with any desired hole 84 but that the beam 30 cannot be disengaged from the post 81 because the ends of the pins are confined within the corrugations 83. The structure shown in Figures 9 to 11 may be conveniently assembled by bending the clip 89 to the position shown after the beam 30 has been assembled with the post 81.

One end of a beam may be provided with the permanent and adjustable attaching means disclosed in Figures 9 to 11 and the opposite end of the same beam may be provided with the removable and adjustable attaching means disclosed in Figures 4 to 8. The beam is therefore permanently secured to the car and the theft or loss thereof is not possible; but at the same time, the beam may be adjusted for supporting a deck at any height or may be stored within the post.

Figures 12 to 15 disclose another modification wherein the depth of a beam when used to support a deck is not limited by the thickness of the

side wall. The relatively wide, channel shaped post 96 is provided with an outwardly projecting, vertically extending corrugation 97 in the web 99, to which corrugation 97 the side wall sheathing 15 is attached. The upper and lower parts of the web are provided with keyhole slots 100 on either side of the corrugation 97 and the flanges 102 are provided with spaced apart keyhole slots 103 disposed along substantially the entire length of the post 96 from the top to the bottom thereof.

The beam 105 is comprised of a metallic channel member 106 and a wood filler 108. Bolts 109 having T heads 110 are secured to the beam 105 with the T heads 110 projecting outwardly beyond the web 111 of the metallic channel member 106. When the beam 105 is used to support a deck, it is disposed with its long side or web 111 in a vertical plane and with the T heads 110 engaged with certain of the keyhole slots 103 in one of the side post flanges 102. The height of the beam 105 may be adjusted by utilizing any of the several keyholes 103 provided.

When the beam 105 is not being used to support a deck, it may be stored within the side wall post 96 with its wide face 113 substantially flush with the side wall lining 17 and with the T heads 110 of the bolts 109 engaging the keyhole slots 100 in the upper and lower parts of the web 99. Holes 114 may be provided in one or both of the channel flanges 116 for nailing a decking or cleating to the wood filler 108.

The accompanying drawings illustrate the preferred form of the invention, though it is to be understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof, within the scope of the claims, will occur to persons skilled in the art.

I claim:

1. In a railway car, a wall including a substantially vertical post comprising an inwardly facing channel formed by a web and spaced apart flanges, a horizontally disposed beam adapted to support a load within the car and arranged to be stored vertically within said channel when not in use, outwardly projecting corrugations in said flanges extending lengthwise of said channel, a plurality of spaced apart apertures in said corrugations, retractable pins carried by said beam and adapted to engage with said apertures to provide a support for the beam, means to yieldingly maintain said pins in engagement with said apertures, means to retract said pins from said apertures for adjustment of the heights of said beam and means to limit the retraction of said pins so that the pins are disengaged from said apertures but not from said corrugations, whereby said beam is non-detachable from said post.

2. In a railway car, a pair of posts aligned laterally of the car, each post embodying an inwardly facing channel, a beam of such length that when horizontally disposed the ends thereof are within said channels, and means to anchor the beam to said posts respectively, said beam being so dimensioned that when inoperative it may be disposed vertically and stored within the channel of one of said posts, said means also providing means to retain said beam within said channel when inoperative.

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