Aug. 16, 1938. B. F. FITCH 2,126,764

RAILWAY CAR

Filed Feb. 3, 1936 4 Sheets-Sheet 1

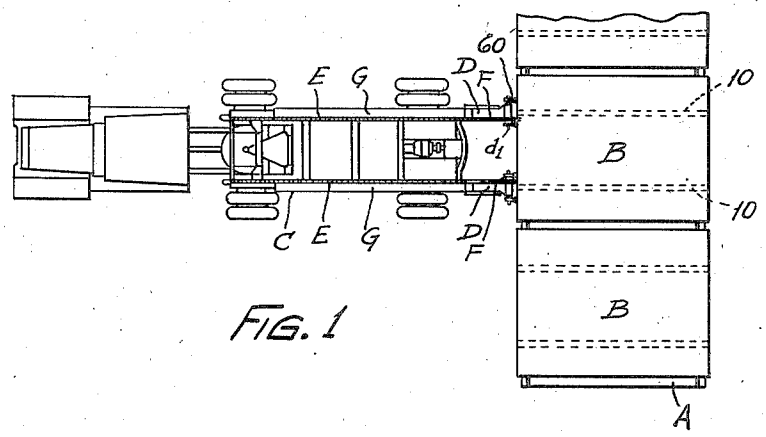


FIG. 1

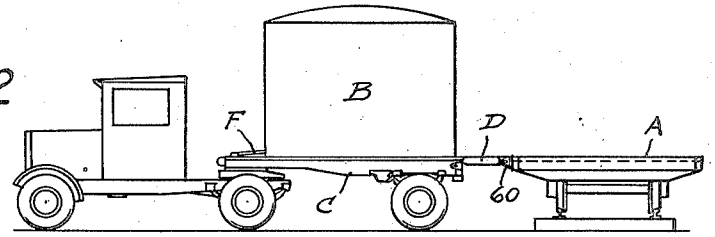


FIG. 2

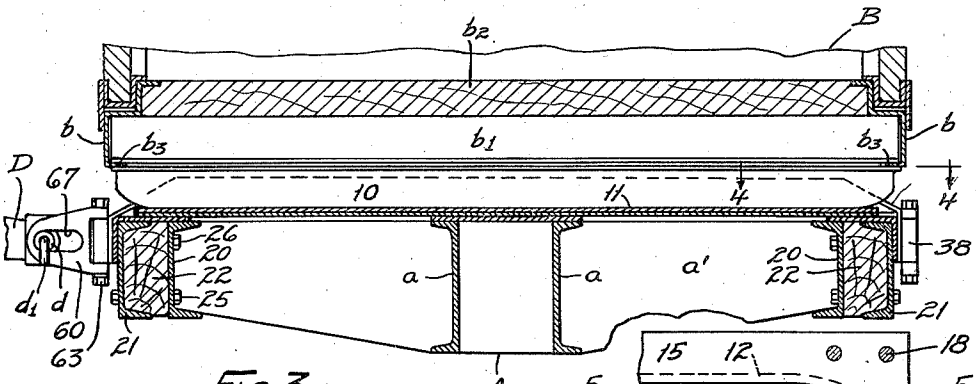


FIG. 3

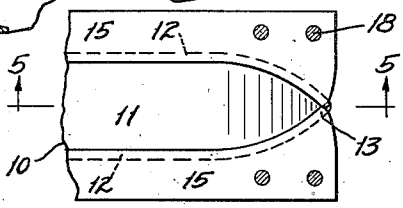


FIG. 4

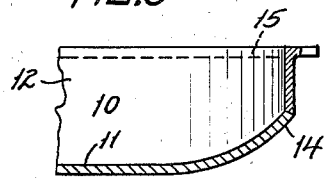


FIG. 5

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RAILWAY CAR

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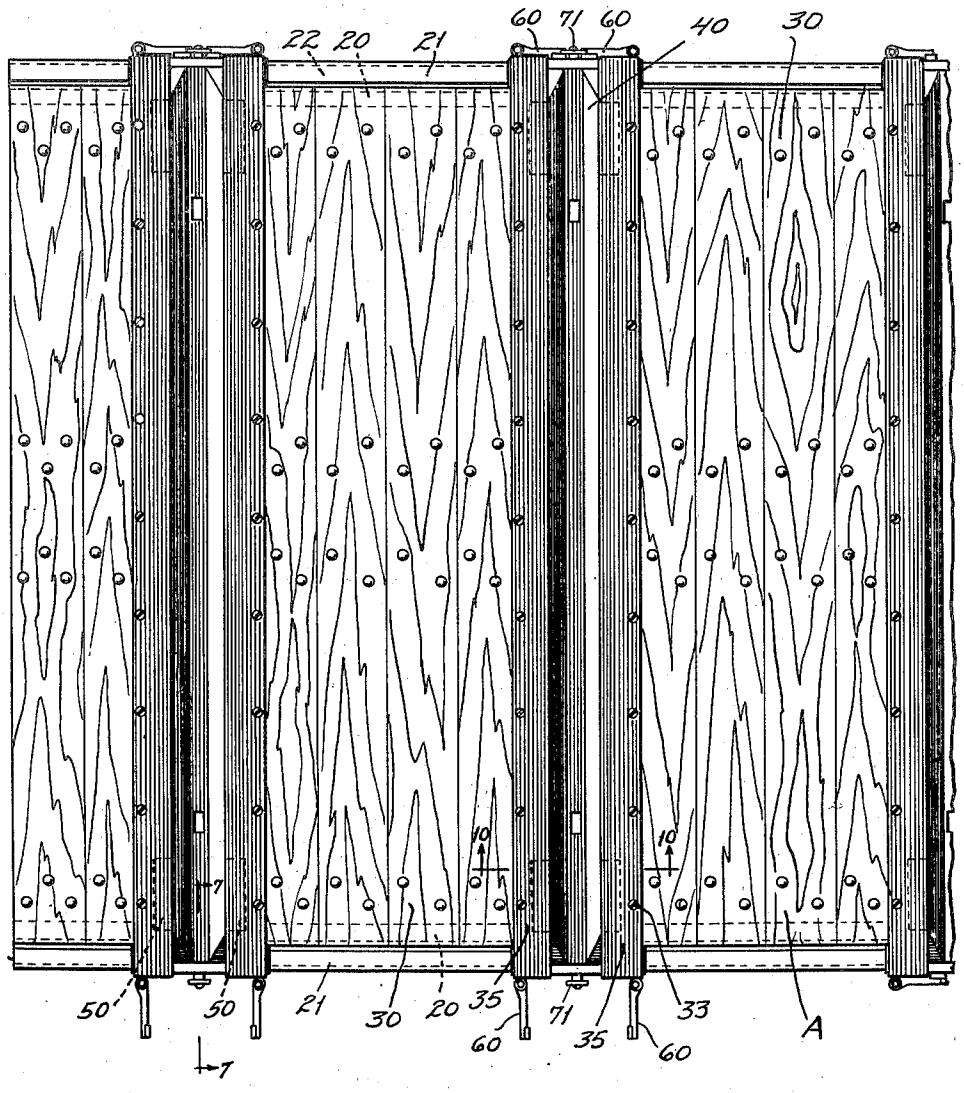


FIG. 6

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RAILWAY CAR

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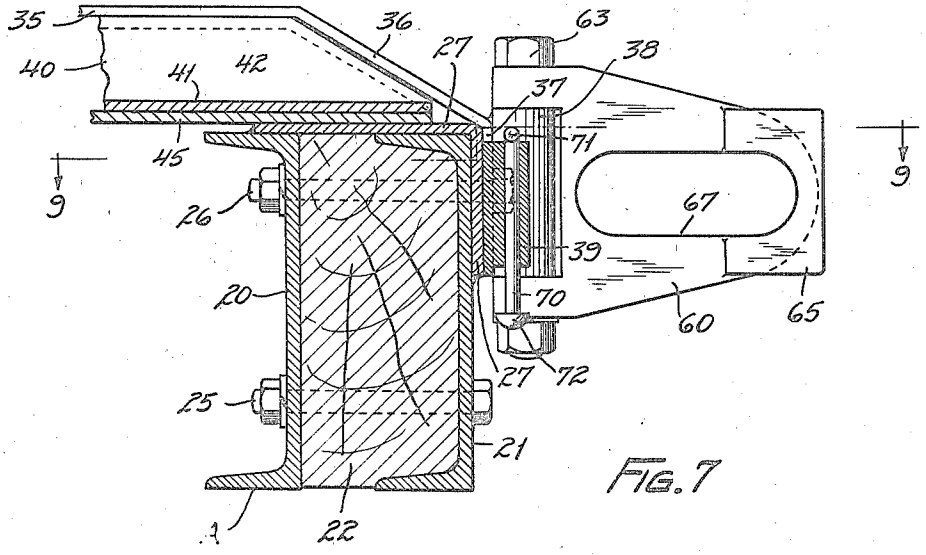


FIG. 7

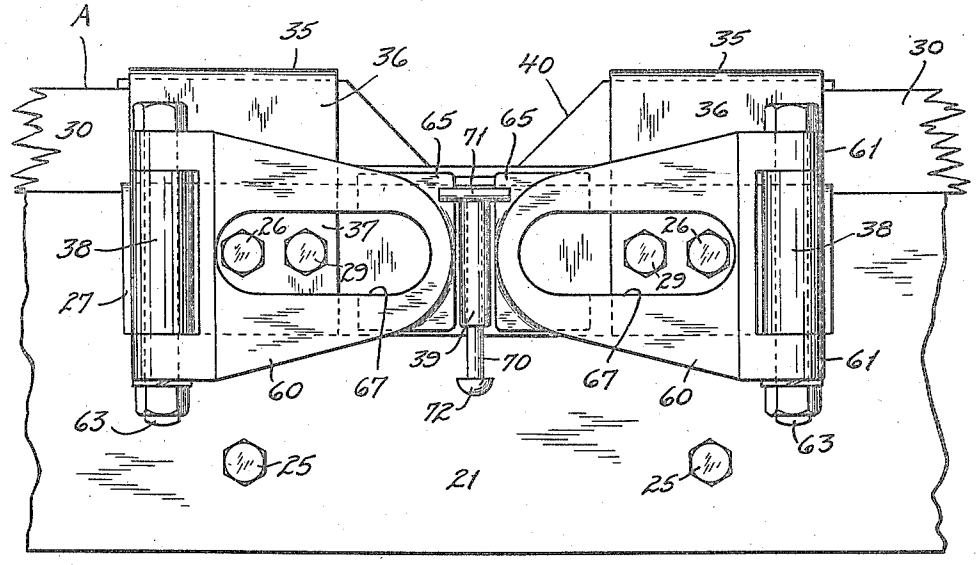


FIG. 8

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RAILWAY CAR

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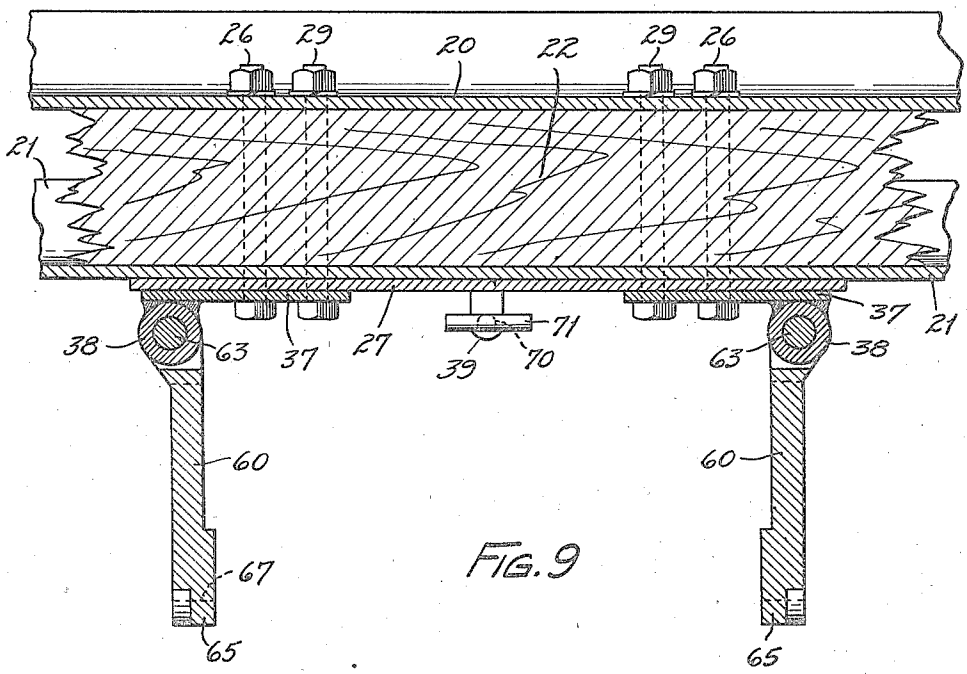


FIG. 9

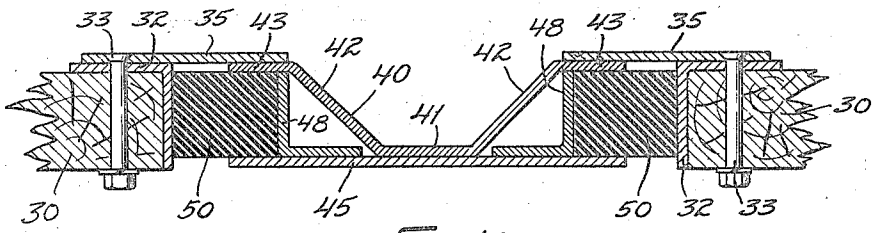


FIG. 10

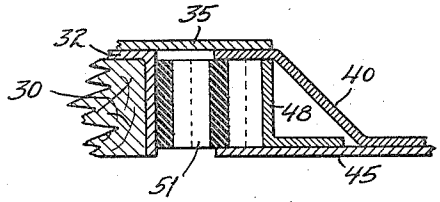


FIG. 11

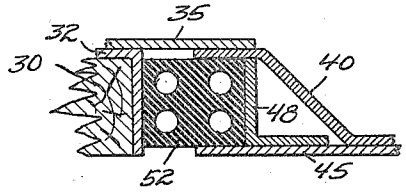


FIG. 12

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UNITED STATES PATENT OFFICE

2,126,764

RAILWAY CAR

Benjamin F. Fitch, Greenwich, Conn.

Application February 3, 1936, Serial No. 62,097

15 Claims. (Cl. 105—366)

Various prior applications of mine, among which may be mentioned Serial Numbers 32,029 and 32,131, filed July 18th, 1935, and Serial Number 39,725, filed September 9th, 1935, show and describe a system of transferring freight involving the use of demountable truck bodies having skid rails on their bases, and a highway truck having receiving channels for such skid rails and equipped with channeled bridges adapted to be attached to a railway car, the truck having propelling chains to move the body from the truck across the bridges onto a car equipped with receiving channels, or vice versa. The applications mentioned and other applications of mine claim various features of such construction.

The present invention is concerned with a very efficient shock-absorbing mounting of channels on the car which receive the body skid rails, and with an effective connection between the ends of such channels and the bridges of the highway truck. These characteristics are fully explained herein in connection with the drawings and are summarized in the claims.

In the drawings, Fig. 1 is a plan illustrating a railway car having several demountable bodies resting thereon and a highway truck having end bridges connected to the car, so that a body may be moved from the car to the truck; Fig. 2 is a side view of such construction after the body has been transferred to the truck; Fig. 3 is a vertical section through the floor frame of a container and through the supporting portion of the car carrying the same; Fig. 4 is an enlarged fragmentary plan of the skid rail, being a section on the line 4—4 on Fig. 3; Fig. 5 is a fragmentary vertical section of the skid rail, as indicated by the line 5—5 on Fig. 4; Fig. 6 is a plan of a portion of a railway car equipped with my body-receiving channels and truck-attaching devices; Fig. 7 is an enlarged vertical section through side sill members of a railway car showing the connection of the body guiding channels thereto and the truck-attaching device; Fig. 8 is a side elevation of the truck-attaching device folded into idle position; Fig. 9 is a horizontal sectional view showing the truck-attaching device extended ready for use, being a section on the offset plane indicated by the line 9—9 on Fig. 7; Fig. 10 is a vertical cross-section through the guiding channel and its shock-absorbing members, as indicated by the line 10—10 on Fig. 6; Figs. 11 and 12 are fragmentary elevations of the guiding channel and associated parts, illustrating modified forms of shock-absorbing cushions.

As indicated in Figs. 1 and 2, A indicates a railway car, B demountable bodies which may rest thereon, and C a suitable highway truck which may also carry a demountable body and which is shown as comprising a tractor and trailer. This truck is equipped at its rear end with bridges D adapted to be attached to the car and with propelling chains E, which may be attached to the body by push-and-pull bars F, to move the body from one vehicle to the other across the bridges. The body B is provided with a pair of skid rails on its base, hereinafter described, which are adapted to occupy the channels on the car or the bridges or truck.

Fig. 3 illustrates the floor portion of the body sectioned along one of the skid rails. As there indicated, this demountable body B has sill members *b*, cross-beams *b1* supporting a floor *b2*. The sill members have inwardly extending base flanges *b3* and the skid rails extend substantially the full width of the body, being attached to these flanges on opposite sides. Such skid rail, indicated at 10 in Figs. 3, 4 and 5, comprises a hollow trough having a substantially flat bottom 11, vertical sides 12, which are brought inwardly toward a point shown at 13 in Fig. 4, while the bottom curves upwardly toward such point, as indicated at 14 in Fig. 5. At the top of the hollow skid rail is an outward flange 15, by which the rail is secured. Fig. 4 indicates rivets 16 which may pass through the flange 15 into the body flange *b3* to attach the skid rail thereto. If desired, the skid rail flange 15 on opposite sides may lie beneath flanges of the floor beams *b1*, being attached thereto through suitable intermediate spacing plates.

It is to be understood there are two of these skid rails for each body properly positioned beneath it for distribution of the load and to cooperate with a truck of desirable width to carry the body. Fig. 1 indicates by dotted lines 10 the skid rails on one of the bodies B. It will be seen these are in line with the two bridges D of the truck and with supporting channels G of the truck in front thereof.

I have indicated in Fig. 3 a frame for the car A comprising center sills *a*, transverse bolsters *a'*, and side sills. I have found that when skidding a heavily loaded body to and from the car, there is considerable lateral stress against the side of the car not usual in ordinary railway transportation. A feature of the present invention is concerned with so arranging the car side sills as to resist this stress. This is clearly illustrated in Figs. 3 and 7, where the normal side sills 20, (carried by transverse bolsters from the

center sills) are supplemented on their outer sides by longitudinal wooden beams 22 which are housed within the flanges of protecting longitudinal supplemental channels 21. These parts are secured together by through bolts 25, 26, extending through the webs of the two channels and the intermediate wooden beam. As indicated in Fig. 7, I prefer to provide an angle bar 27 resting on the top flanges of both channel beams 20 and 21 and extending down the outer face of the outer channel beam 21, and welded at its edges to the channel beams. The construction described is very effective in resisting lateral stresses against the side of the car, without unduly increasing the weight of the car or its width.

The side reinforcing may be readily applied to existing cars, the reinforcing beams 22 and the protecting channels 21 taking the place of the region ordinarily occupied by stake pockets. Accordingly, by removing the stake pockets and supplying the additional reinforce, I not only strengthen the side sills against lateral distortion, but I increase the effective floor width of the car without increasing the over-all dimension. I may utilize the original stake pocket holes in the car sills 20 for placing some of the bolts by which I secure the reinforcing side beam.

As car widths vary somewhat, the wooden filler beams 22 may be of variable widths according to the size of the car, with the result of bringing the entire width up to the standard desirable for carrying demountable bodies.

The normal side sill members 20 and the center sills ordinarily carry the flooring. This may be suitable planking extending from side to side of the car, as indicated at 30 in Fig. 6. Now, when I mount my cross-channels on the car, I omit or remove this planking at stated intervals and insert in place thereof the channel guides which are supported at their ends on both longitudinal protecting channels 20 and 21 and intermediately on the floor planking.

The skid-receiving channel is composed of an approximately V-shaped upper member 40 and a lower member 45. The upper member has a flat central zone 41, then two outwardly inclined zones 42, and finally horizontal top edge flanges 43. The member 45 is a flat plate contacting with the flat portion 41 of the channel and welded or otherwise secured thereto. In the spaces between the top flanges 43 and the plate 45 forming the bottom member I mount angle bars 48.

The cross-channel rests on the angle bar 27 of the side sills, as shown in Fig. 7, but may shift somewhat longitudinally of the car thereon. The channel is held against lateral shifting by strap plates 35 secured to the floor 30 and bent downwardly at their ends at an angle at 36, Fig. 7, across the correspondingly chamfered ends of the channel guide, the strap plates having finally vertical portions 37 engaging the vertical webs of the angle irons 27, and bolted to the entire side sill.

As shown in Fig. 10, the floor planking 30 is protected by a transverse angle bar 32 and suitable bolts 33 pass through the strap plates 35 and the planking 30 to hold these parts together. Between the vertical flanges of the angle bars 48 and the vertical flanges of the floor planking protectors 32, I place suitable yielding cushions, as, for instance, the rubber blocks 50 of Fig. 10.

It will be seen from the description given, that the channel guides are firmly retained on the car against movement crosswise of the car of up or down, but may move slightly in a horizontal plane lengthwise of the car as the rubber blocks 50 on one side or the other are compressed. This shock-absorbing feature reduces the jar on the container and contents in case of sudden starting or stopping of the car.

Fig. 10 shows the yielding resistors for the guide channels as solid blocks of rubber 50. It is to be understood, however, that other forms of yielding cushions may be employed, as desired. For instance, in Fig. 11, I have illustrated diagonal zig-zag rubber 51; in Fig. 12 cellular rubber 52, and other forms of blocks may be used.

As the truck bridges D in my system, which are to be temporarily attached to the car sides, cooperate directly with the car channels 40 as the body is being shifted from one vehicle to the other across the bridges, I find it very efficient to attach the bridges directly to the ends of the channel guides. This is illustrated particularly in Figs. 6 to 9, and will now be described.

The vertical end portions 37 of the strap plates 35 have welded to them vertical tubular members 38 adapted to receive hinge pins connected with ears on the attaching brackets 60. Such ears are shown at 61 extending above and below the stationary tubular member 38 and a pintle 63 extends through such aligned parts, so that the brackets are effectively hinged to the supplemental car side and the channel retaining straps.

The brackets 60, when not in use, lie flat against the side of the car, as shown in Fig. 8, and are there held by a suitable retaining device carried by the car side. As shown, I have welded a vertical tubular member 39 to the plate portion 27 midway between the hinge members 38. Slidably mounted in this tubular portion 39 is a pin 70 having a T head 71 at its upper end. This head is adapted to extend across the outer face of the flanges 65 of reduced thickness on the brackets 60 when the brackets are flat against the plate portion 37.

The simple construction described enables the brackets to be effectively held out of the way against the car side. A mere upward pressure or blow against the head 72 at the lower end of the pin 70 carries the head 71 above the flanges 65, and releases the wings so that they may be swung out at right angles to the car, as shown in Fig. 9.

The attaching wings 60 are shown as having horizontal slots 67 through them, these slots being adapted to be occupied by cross-members on the ends of the bridges D. As indicated in Figs. 1 and 3, these bridges carry transversely of their ends suitable tubes *d* adapted to occupy the slots 67. These tubes may contain rods with downturned ends *d1*, Fig. 3, which may overhang the brackets and prevent separation of the parts.

When the brackets are to be attached to the bridge-tubes *d*, the latter are positioned in substantial registration with the slots 67 and the brackets are manually swung inwardly so that the tube extensions pass into the slots while the rod ends *d1* are held projecting horizontally. Then, when the rod end is released, the same drops by gravity into the position shown in Fig. 3, holding the parts together.

The system of locking the bridge to the car by the slotted brackets and cross-tubes on the bridge and the bent bars occupying the tubes is claimed in my prior application 32,131, referred to. The feature here claimed is the association of bridge-attaching brackets with the supplemental side

sills of the car and the channel guide holding straps.

The attaching straps 35 of this invention preferably have the bracket ear members 38 secured to them in the shop, and likewise the pin holder 39 secured in the shop to the flange of the angle iron 27. The members 40, 45 and 46 of the channel guide are also preferably secured together as a unit in the shop. It is therefore only necessary in preparing the flat car having the usual side channel 20 and flooring 30 to remove the flooring at intervals; apply the protecting bars 32; bolt on the side beams 22 and protecting channels 21 by the lower bolts 25; then secure the angle bar 27 in place, overlapping the two channel flanges, preferably by electrode welding at the edges of the channel beam, as shown in Fig. 7. Then the channel guides are put in place between the remaining floor portions and the holding straps 35 secured in place by insertion of the upper through-bolts 26 and by additional bolts 29. The outer heads of the bolts 26 and 29 are horizontally aligned and adapted to occupy the slots 67 of the brackets when the latter are against the car side. The final operation of attaching the device to the car may be the insertion of the bolts 33 through the marginal portion of the straps 35 in the car floor.

It will be seen that my construction provides for simple and efficient shock-absorbing channel guides for the car; provides for the ready mounting of such guides on ordinary flat cars; furnishes the desirable characteristic of enabling effective bracing of the car sides against lateral stresses, and the desirable characteristic of readily widening existing cars in the region ordinarily occupied by stake pockets, and finally the construction enables the direct anchorage of the truck bridge to parts in the immediate vicinity of the receiving channels to prevent any bending moments in such side structure.

I claim:

1. The combination of a railway car having an interrupted floor, transverse body-receiving channels mounted between the floor sections, and rubber blocks between the channels and the floor sections.

2. The combination of a railway car having transverse body-receiving channels and intermediate car flooring, said channels being formed with recesses in their edges facing the flooring, and rubber blocks occupying such recesses and abutments on the other side of the blocks whereby they are adapted to form shock absorbers between the channels and car flooring.

3. A railway car having side sills, wooden beams extending longitudinally on the outer sides of the side sills and protecting channel beams on the outer sides of the wooden beams, interrupted flooring carried by said side sills, transverse body-receiving guides resting on said channel beams, transverse hold-down plates overlapping the guides and flooring, and rubber blocks between the guides and flooring.

4. The combination of a car having side sills, transverse body-receiving channels slidably supported on the side sills and having longitudinally extending top and bottom flanges, hold-down straps extending crosswise of the car overlapping the top flanges of the channels to hold them against lateral or upward movement while allowing longitudinal movement, the ends of said straps being bent down and secured to the side sills, flooring carried by the car between adjacent body-receiving channels, and rubber blocks seated in the recesses between the channel flanges and adapted to bear against the adjacent flooring to act as shock-absorbers to cushion the body from longitudinal jars delivered to the car and restore the body to normal position.

5. A railway car having in combination side sills, interrupted flooring, transverse body-receiving channels occupying the space between floor sections and resting on the side sills, said channels having horizontal bottom plates and horizontal top flanges, the edge of the flooring adjacent the channels being protected by transverse angle bars having top flanges in the same plane as the top flanges of the body-receiving channels, hold-down straps on the top flanges of the floor protecting angles and overlapping the top flanges of the body-receiving channels, and rubber blocks extending into the space between the bottom plate and top flange of the body channel and abutting the vertical flange of the floor protecting angle.

6. In a railway car the combination with side sills, of flooring sections interrupted at intervals, transverse body-receiving channels between flooring sections, each channel having a horizontal bottom plate, a top member comprising a horizontal central portion resting on and secured to the bottom plate, then upwardly and outwardly inclined web portions and horizontal outward flanges at the top, and internal angle bars having horizontal flanges resting on and secured to the bottom plate and upwardly extending flanges located some distance behind the edges of the bottom plate and top flange, and rubber blocks mounted between the bottom plate and top flange and having one vertical edge abutting the internal angle bar of the body-receiving channel and the other vertical edge abutting the car floor.

7. The combination of a railway car having an interrupted floor, transverse body-receiving channels mounted between the floor sections, and rubber blocks between the channels and the floor sections, said blocks having openings in them to increase their resilience.

8. The combination of a railway car having an interrupted floor, transverse body-receiving channels mounted between the floor sections, rubber blocks between the channels and the floor sections, said blocks being zig-zagged to substantially maintain contact between the body-receiving channels and the car floor and still allow considerable longitudinal movement of the channels.

9. In a combination with the usual side sills of a railway flat car, reinforcing beams secured to the outer faces of said side sills in the region ordinarily occupied by stake pockets, whereby the car is reinforced against lateral stresses during the moving of a demountable body laterally thereon or therefrom, transverse upwardly facing channel members resting on the side sills and reinforcing beams respectively, and strap plates extending completely across the car and lying above portions of the channel members to hold the latter against upward displacement, the plates being further characterized in that their ends are bent downwardly over said reinforcing beams and secured thereto, to prevent lateral movement of the channels relative to said car.

10. The combination of a railway flat car having a running frame, interrupted flooring carried thereby and forming spaced floor sections between which body-guiding channel members may be disposed, the transverse edges of the

flooring adjacent the interruption being protected by transverse angle bars, laterally extending body-guiding channel members disposed between the floor sections having horizontal top flanges in the same plane with the horizontal portions of the protecting angle bars, and strap plates extending completely across the car and lying above portions of the channel members and protecting angle bars respectively to hold said channels against upward movement, the plates also having their ends bent downwardly to prevent lateral displacement of said channels relative to said car.

11. The combination with a railway car having side sills, of transverse body guiding channels carried thereby, each channel having horizontally projecting top flanges, floor sections on the car between adjacent channel members, so arranged that the channels are inset downwardly with respect to the floor surface generally, and strap plates extending across the car each overlapping a channel flange and the adjacent portion of the floor and bent down at the ends across end portions of the channels and secured to the side sills of the car, whereby said strap plates prevent upward movement and lateral displacement of said channels relative to said car.

12. In a combination with the usual side sills of a railway flat car, transverse channel members resting on said sills, floor means supported by the sills and recessed to receive and limit movement of the channel members longitudinally relative to said car, strap plates extending completely across said car and overlapping the channel members to hold the channel members against upward displacement from said sills and recesses of the floor means, the plates being further characterised in that their ends are bent downwardly over said sills and secured thereto, to prevent lateral movement of the channel members relative to said car.

13. In a railway flat car, a floor having side sills, channels forming upwardly facing troughs extending across the car with their ends resting on the side sills, and operable as guides for a demountable body, the floor having recesses for the channels, which recesses are wider than the channels so that the latter may move in the recesses longitudinally of the car, means for yieldingly resisting such movement, and strap plates overlying opposite side portions of the channels, said plates being secured at their ends to the side sills in locating abutment with end portions of the channels for holding the same against substantial movement laterally of the car and upwardly, while allowing them to shift in said recesses longitudinally of the car.

14. The combination of a car having reinforced side sills, each comprising an inner channel, an outer channel and an intermediate wooden beam, transverse open ended upwardly facing body-receiving channels, the ends of which overlie and are supported by the reinforced side sills, and interconnect the reinforced side sills.

15. A railway car having a side sill in the form of an inwardly facing channel beam, a wooden beam on the outside of the side sill, an inwardly facing channel beam engaging the outer side of the wooden beam, and an angle bar adapted to support an attaching device for coupling the car to another vehicle in effecting load transferance from one to the other, said angle bar having a vertical flange on the outer side of the outer channel and a top flange overlapping the flanges of both channels.

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