No. 774,354. PATENTED NOV. 8, 1904.

M. A. GARRETT.

RAILWAY CAR.

APPLICATION FILED APR. 5, 1904.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

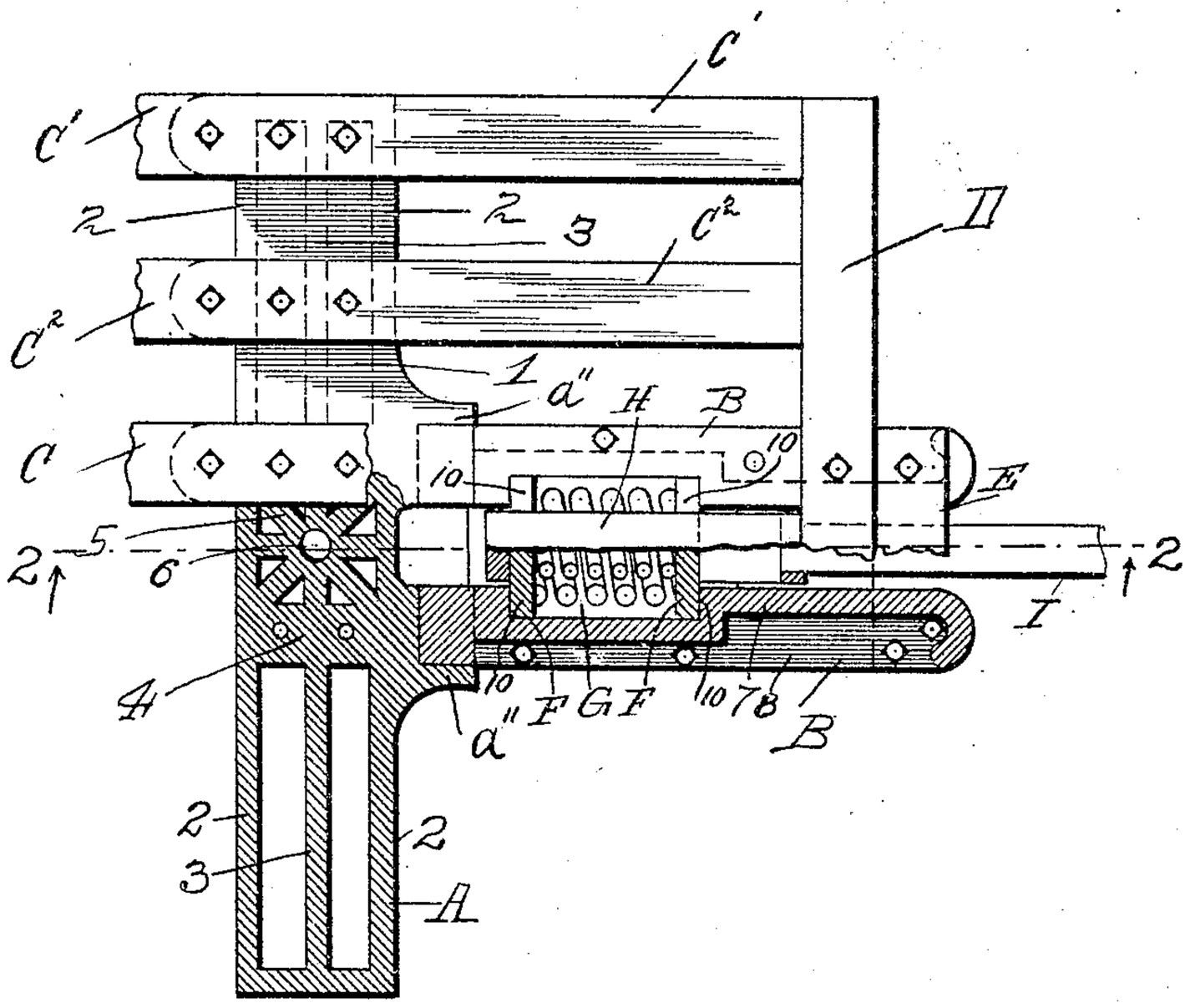
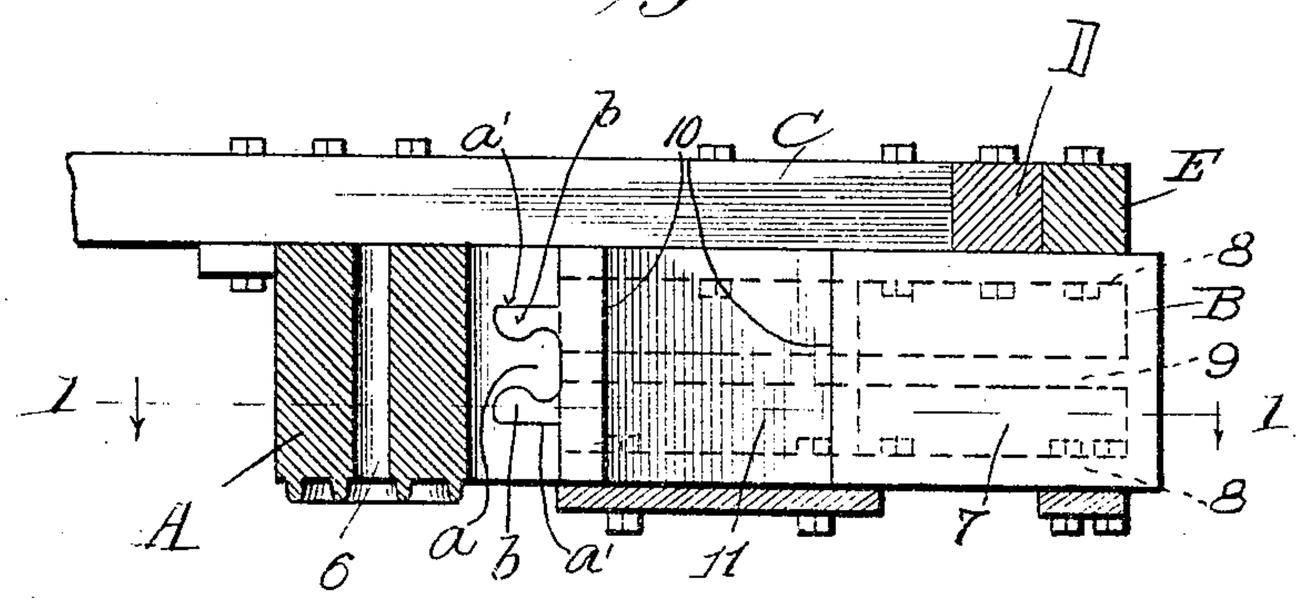


Fig. 2.



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APPLICATION FILED APR. 5, 1904.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

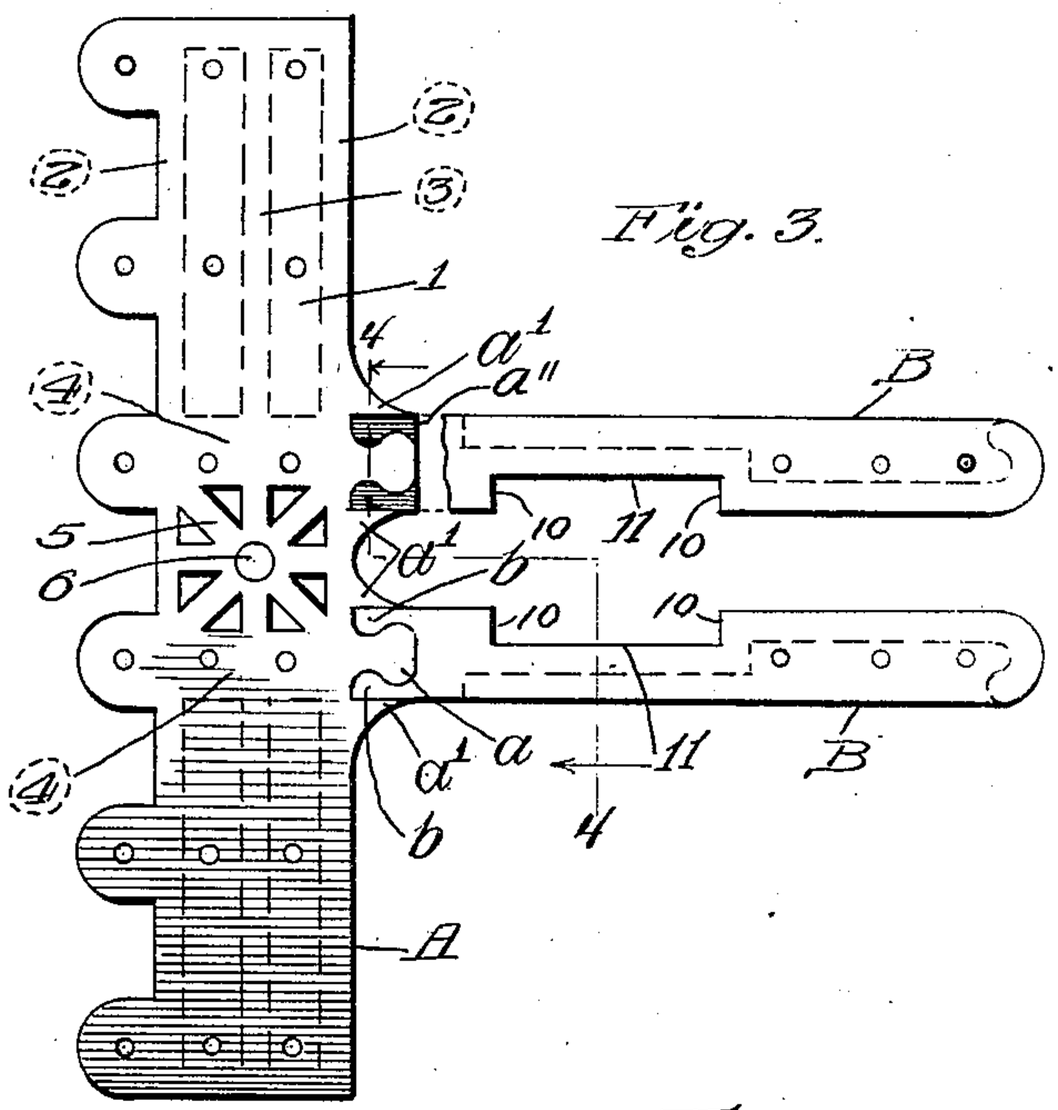


Fig. 4.

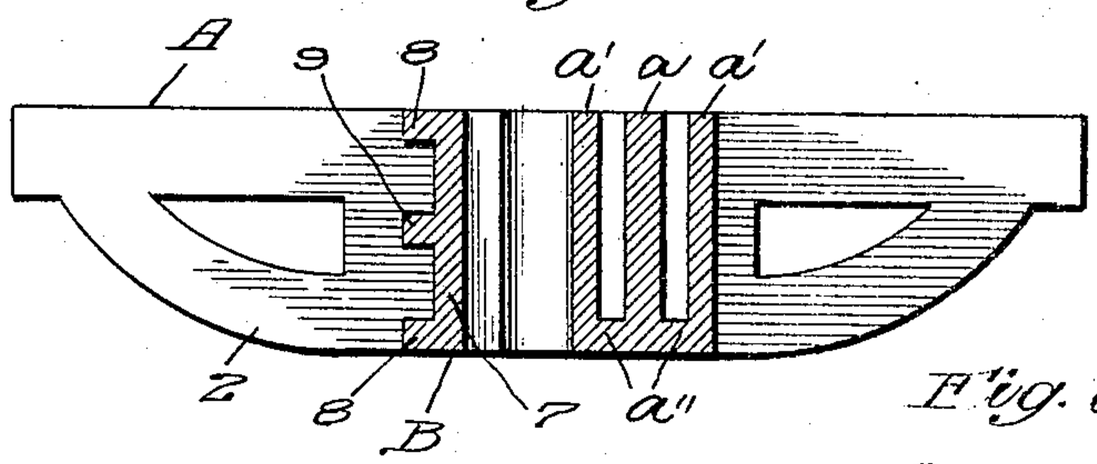


Fig. 5.

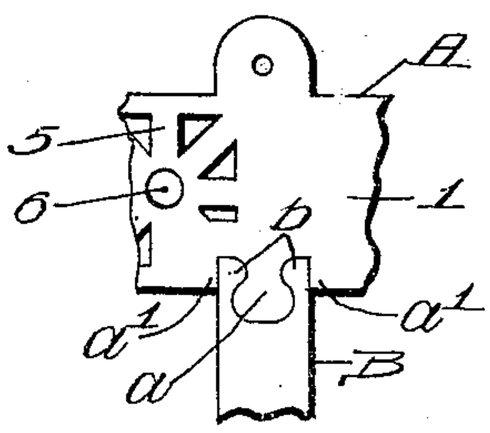
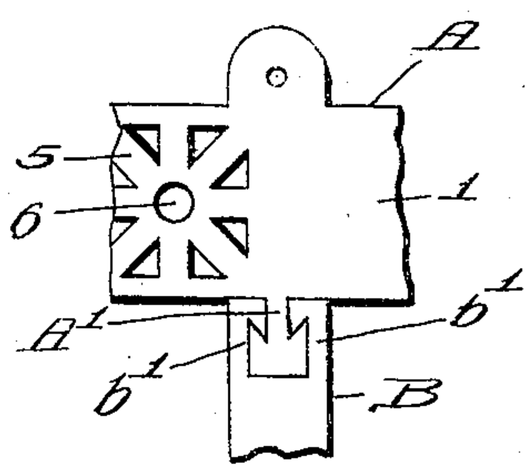


Fig. 6.



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No. 774,354. Patented November 8, 1904.

UNITED STATES PATENT OFFICE.

MYERS A. GARRETT, OF CHICAGO, ILLINOIS.

RAILWAY-CAR.

SPECIFICATION forming part of Letters Patent No. 774,354, dated November 8, 1904.

Application filed April 5, 1904. Serial No. 201,644. (No model.)

To all whom it may concern:

Be it known that I, MYERS A. GARRETT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Cars, of which the following is a specification.

The method heretofore principally followed in building railway-cars has involved a serious defect in the means for transmitting the strains—both pulling and bumping—from the draw-bar head at one end of the car to the draw-bar head at the other end of the car. The primary strain falls upon the draft-arms to which the draft-gear is attached in one way or another. Heretofore it has been customary with many builders to connect these draft-arms with the center sills of the car by means of bolts passing through them vertically, so that the resistance of these bolts to the lateral strains thus put upon them represented the maximum strength of the rigging. Let it be borne in mind that the draft-arms are in a plane wholly beneath the plane of the center sills and it will be seen that the lateral strain upon the connecting-bolts is enormous, and experience has demonstrated that this method of transmitting the drawing and bumping strains is inefficient, since the rigging is frequently injured and even destroyed where heavy trains are drawn up heavy grades and even by the severe handling of cars in the yards where cars are switched and trains made up.

It is manifest that in the constructions above referred to the entire stress of pull or impact must be resisted by the lateral strength of the few bolts that connect the draft-arms with those portions of the center sills that project beyond the transoms. This is faulty construction; and the object of the present invention is to overcome this fault. To this end I transmit the initial or primary strains of the draft-arms directly to the transverse bolsters or transoms, which are, in fact, the foundation of the entire superstructure. The draft-arms and transoms are located in the same horizontal plane, so that the arms and transoms being rigidly connected so as to be absolutely incapable of any movement relatively to each other each must receive the strains—both pulling and bumping—of the other, and these strains have no tendency to any disarrangement of the parts. The draft-arms, as before stated, receive the primary or initial strains, and according to my theory these strains should be transmitted as directly as possible to the part that stands in the mean line of resistance, and this part is the transom. Below it is the resistance due to the inertia of the trucks and above it is the inertia of the superstructure. Hence the transom is the part to which the primary strains should be transmitted as directly as possible.

In carrying out my invention I make the transoms and each of the draft-arms separate, and I connect them so that they are absolutely immovable relatively to each other, and I bolt or otherwise secure all of the longitudinal sills to the transom and the center sills to the draft-arms, so that the strains pass from the draft-arms to the transoms, thence to the connecting-bolts, and thence to the sills. In addition I so connect each of the draft-arms to the transom that should it become necessary to do so a draft-arm can be easily and quickly removed without disturbing the sill lying over it. The center sills break the joints between the transom and the draft-arms and are bolted to the draft-arms; but this is mainly for the purpose of holding the draft-arms in place and strengthening their connection with the transom, and while these connecting-bolts do sustain more or less of the pulling and bumping strains still they are not relied upon for this purpose.

To these ends the invention consists in the features of novelty that are hereinafter described with reference to the accompanying drawings, which are made a part of this specification, and in which—

Figure 1 is a view, partly in plan and partly in horizontal section, of the draft-rigging at one end of a car, the plane of the section being indicated by the line 1 1, Fig. 2. Fig. 2 is a view thereof, partly in elevation and

partly in vertical section, the plane of the section being indicated by the line 2 2, Fig. 1. In this figure the draw-bar and buffing mechanism are omitted. Fig. 3 is a plan view of the transom and draft-arms, showing a modification in the means for connecting them. Fig. 4 is a vertical section thereof on the line 4 4, Fig. 3. Figs. 5 and 6 are views showing still other modifications.

A represents the transom; B, the draft-arms; C, one of the center sills; C′, one of the side sills, and C^2 one of the intermediate sills. In Fig. 1 only one of each of the sills is shown; but it will be understood by those skilled in the art that they are duplicated upon opposite sides of the longitudinal center of the car, which is indicated by the line 2 2, Fig. 1.

D is the end sill, and E the buffer-block or dead-wood, which rests transversely upon and are bolted to the upper flanges of the arms. All of the longitudinal sills rest upon and are bolted to the transom, and in addition to this the center sills rest upon and are bolted to the upper flanges of the draft-arms, the upper surfaces of which are flush with the upper surface of the transom, and all of the longitudinal sills terminate at the end sill.

The transom is preferably made of cast-steel and comprises a top horizontal web 1, marginal flanges 2, depending from said web, an intermediate depending strengthening-web 3, disposed longitudinally, strengthening-webs 4, disposed transversely directly beneath the center sills and directly in line with the draft-arms, and a centrally-located spider 5, having a perforation 6 for the passage of the pivot-pin. The several flanges, webs, and spider are disposed with a view to giving the transom adequate strength throughout and maximum strength at the point that is subjected to the maximum strains—to wit, the center. At this point the flanges 2 and web 3 are deepest, and thus afford increased strength for resisting vertical strains, while the webs 4 and spider reinforce it not only vertically, but also horizontally with a view to resisting horizontal strains. Without reinforcement between the flanges 2 at this point almost the entire strain would fall upon the outer flange; but the webs 4, located directly in line with the draft-arms, unite the two flanges, so that each reinforce the other. The draft-arms, which are preferably made of cast-steel, terminate at the transom. Their rear ends abut solidly against the front side of the transom throughout its entire vertical extent, and the surfaces of the transom against which they abut are equal in vertical extent to the inner ends of the draft-arms. The inner ends of the draft-arms are rigidly secured to the front side of the transom, so as to be absolutely incapable of any movement relatively thereto. By reason of the rigidity of the attachment the initial strains that fall upon the draft-arms as the result of either pushing or pulling are transmitted directly to the transom and by it distributed both upward and downward. They are distributed upward to the sills through the bolts connecting them and downward through the king-pin to the truck. The bolts connecting the projecting portions of the center sills and the draft-arms may take some portion of these strains; but this is not their primary office, which latter is to prevent the lateral displacement of the draft-arms. Heretofore these bolts connecting the center sills have been used for transmitting the drawing strains to the center sills and the strains of the center sills have been transmitted to the transom through the connecting-bolts, so that the entire drag or traction of the truck is resisted solely by the lateral strength of these two sets of bolts, with a tendency to break or shear them off; but with the construction above described the primary strains are all exerted upon the transom and by it distributed upward to all of the sills from side to side of the car and downward to the truck. Each of the draft-arms is of E shape in cross-section—that is to say, it comprises a vertical web 7, horizontal flanges 8 at the top and bottom margins thereof, and a centrally-located horizontal web 9. For receiving the strains from the buffer mechanism the draft-arms are provided with abutments, and the character of these abutments will depend somewhat upon the draw-bar rigging. For a rigging consisting of follower-plates F, a spring or springs G, interposed between the yoke H embracing them, and a draw-bar I, all arranged as shown in Fig. 1, the abutments preferably consist of shoulders 10, and these shoulders are preferably the result of recesses 11 in the inner faces of the draft-arms, the vertical webs 7 being here offset. This manner of forming the abutments for a rigging of this type is desirable, because it causes the strains to fall directly in line with the vertical webs 7, so that lateral strains upon them are practically eliminated. I desire to have it understood, however, that in this precise aspect the invention is not limited to abutments of this form.

According to the present invention the transom and draft-arms are made in separate parts, secured together by interlocking features in the nature of shouldered tongues or tenons having the general characteristics of dovetails. For instance, in the preferred form of the invention, which is shown in Figs. 1 and 2, the inner end of each draft-arm is provided with two tongues *b b*, with an intervening groove or recess, while the transom is provided with a tongue *a*, that occupies and fills the groove or recess, and in addition it has two tongues *a′*, that lie outside of the tongues

b and provide shoulders for preventing the latter from being spread apart. The tongues *a* and *b* are, in fact and in effect, dovetailed, although their laterally presented or engaging shoulders, which prevent their being pulled apart, are rounded. They are disposed horizontally, so that the draft-arm may be put in place or removed by a lateral or sidewise horizontal movement without disturbing the sills or transom. This feature is of special advantage for repair purposes. Preferably the grooves or recesses resulting from the three tongues *a a' a'* of the transom have their outer ends closed by shoulders or fillets *a''*, so as to prevent the arms from spreading apart, their approach being prevented by the follower-plates F of the buffer mechanism interposed between them. I desire to have it understood, however, that in its broadest aspect the invention is not limited to horizontally movable or displaceable draft-arms, and in Figs. 3, 4, 5, and 6 I have shown modifications in which the arms are put in place or removed by a vertical movement from above. In the forms shown in Figs. 3, 4, and 5 the interlocking features are precisely the same as in Figs. 1 and 2, the only difference being that in one instance they are disposed vertically, while in the other they are disposed horizontally. In all of said figures the corresponding parts bear corresponding characters of reference. In the form shown in Fig. 6 the tongues *b'* of the draft-arm are prevented from spreading apart by their laterally-presented inclined shoulders engaging corresponding shoulders on the tongue A'.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a railway-car, a transom, draft-arms terminating at the transom and located in the horizontal plane thereof, the transom being provided at its front side with surfaces substantially equal in vertical extent to the inner ends of the draft-arms, against which they abut, means for rigidly but separably connecting the inner ends of the draft-arms to the front side of the transom, whereby the primary or initial strains are transmitted directly to the transom, superposed sills breaking the joints between the transom and the draft-arms, bolts connecting the sills and transom and bolts connecting the sills and draft-arms, substantially as described.

2. In a railway-car, a transom, draft-arms located in the horizontal plane of the transom, said transom and draft-arms having interengaging features which are adapted to be engaged and disengaged by lateral movements of the draft-arms, whereby the draft-arms are rigidly but separably attached to the transom so as to be incapable of any endwise movements relative thereto, superposed sills breaking the joints between the transom and draft-arms, bolts connecting the sills and the transom and bolts connecting the sills and draft-arms, substantially as described.

3. In a railway-car, a transom, draft-arms terminating at the transom and located in the horizontal plane thereof, the transom being provided at its front side with surfaces substantially equal in vertical extent to the inner ends of the draft-arms against which they abut, the front side of the transom and the inner ends of the draft-arms having interengaging features whereby the draft-arms are incapable of any endwise movement relatively to the transom and whereby the parts may be separated and reassembled at will, and superposed sills breaking the joints between the transom and draft-arms, bolts connecting the sills and transom and bolts connecting the sills and draft-arms, substantially as described.

4. In a railway-car, a transom, draft-arms located in the horizontal plane of the transom, the transom and draft-arms being provided with interengaging tongues whereby the draft-arms are incapable of endwise movement relatively to the transom, and sills bolted to the transom, substantially as described.

5. In a railway-car, a transom, draft-arms located in the horizontal plane of the transom, the transom being provided with a shouldered tongue, the draft-arms with shouldered tongues straddling the tongue of the transom and the transom being provided with shoulders engaging the tongues of the draft-arms to prevent their spreading, and sills secured to the transom, substantially as described.

6. In a railway-car, a transom, draft-arms located in the horizontal plane of the transom and sills secured to the transom, the transom and draft-arms having horizontally-disposed interlocking features whereby the draft-arms may be put in place or removed by a horizontal lateral movement, substantially as described.

7. In a railway-car, a transom, draft-arms made separate from each other and from the transom, the draft-arms and transoms having features adapted to be engaged and disengaged by lateral movements of the draft-arms whereby, when said features are in engagement, the draft-arms are rigidly but separably connected to the transom, and means for normally holding the draft-arms in place, substantially as described.

8. As a new article of manufacture, a structure comprising a hollow transom and draft-arms proceeding laterally therefrom, the transom being provided with a centrally-located spider extending from one side wall to the other and having a vertical perforation, substantially as described.

9. As a new article of manufacture, a structure comprising a hollow transom and draft-arms proceeding laterally therefrom, the transom being provided with a centrally-located

spider extending from side to side thereof and having a vertical perforation, and with transverse webs lying in line with the draft-arms, substantially as described.

10. A hollow transom having a horizontal web, marginal flanges depending therefrom longitudinal and transverse strengthening-webs, the transverse webs lying in line with the draft-arms, and a centrally-located spider lying between the transverse webs and marginal flanges and having a vertical perforation, substantially as described.

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