March 29, 1932. W. E. WINE 1,851,656

RAILWAY CAR

Filed Feb. 27, 1929 3 Sheets-Sheet 1

Fig. 1.

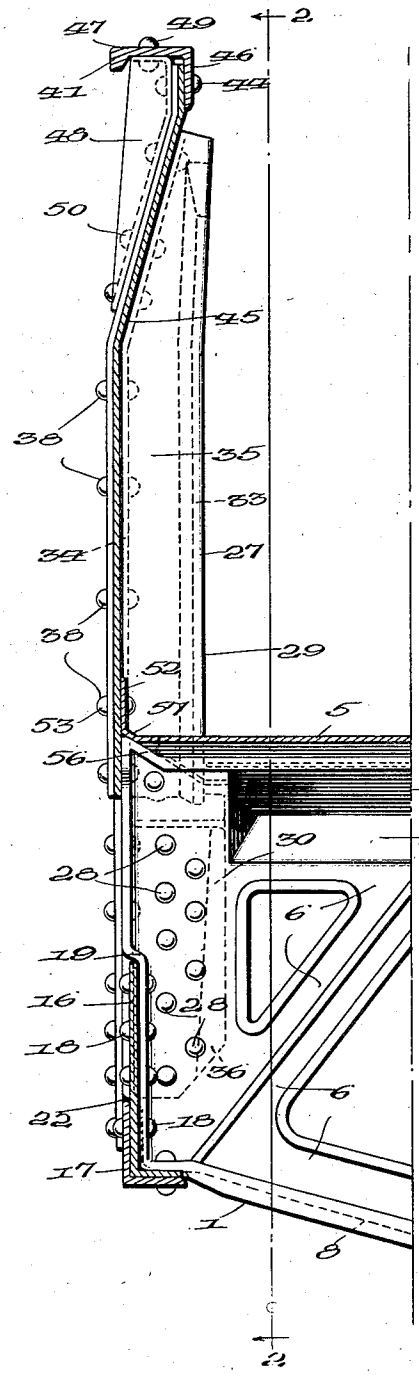
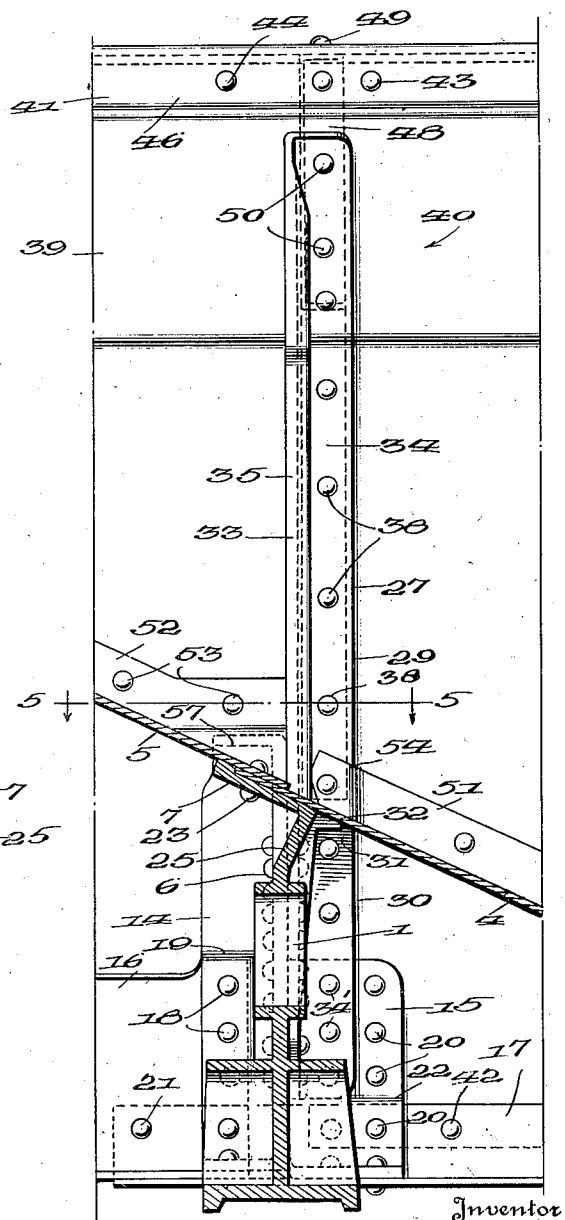


Fig. 2.



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RAILWAY CAR

Filed Feb. 27, 1929 3 Sheets-Sheet 2

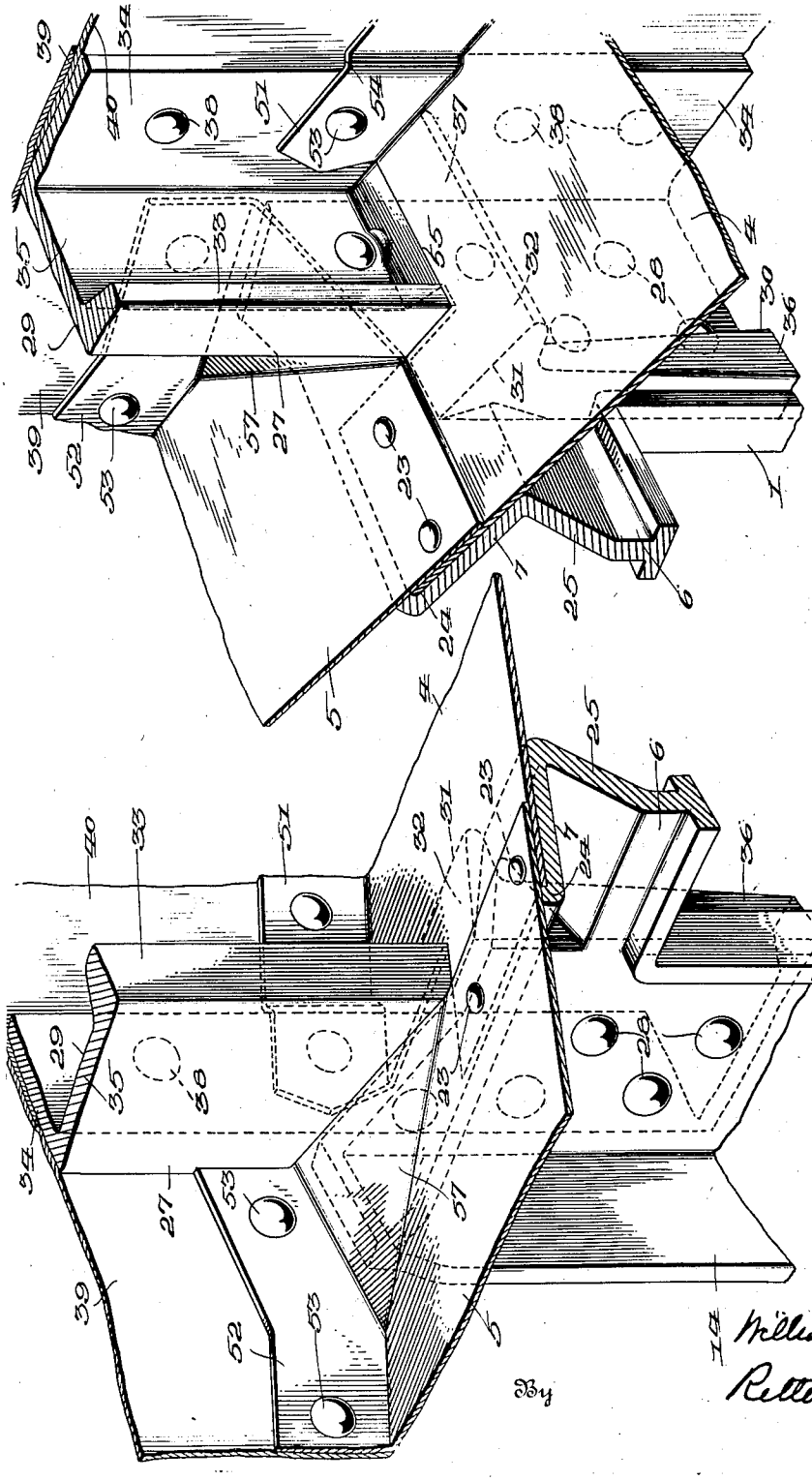

Fig. 4.

Fig. 3.

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March 29, 1932. W. E. WINE 1,851,656

RAILWAY CAR

Filed Feb. 27, 1929 3 Sheets-Sheet 3

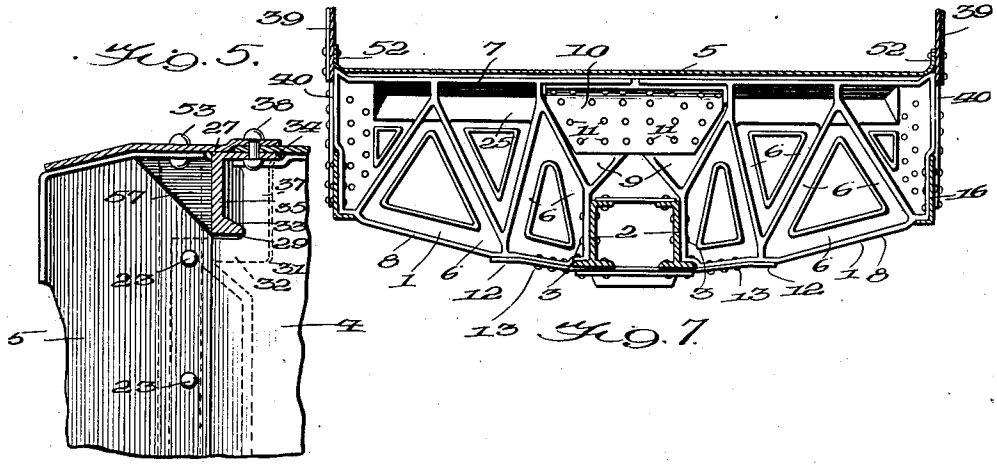

Fig. 5.

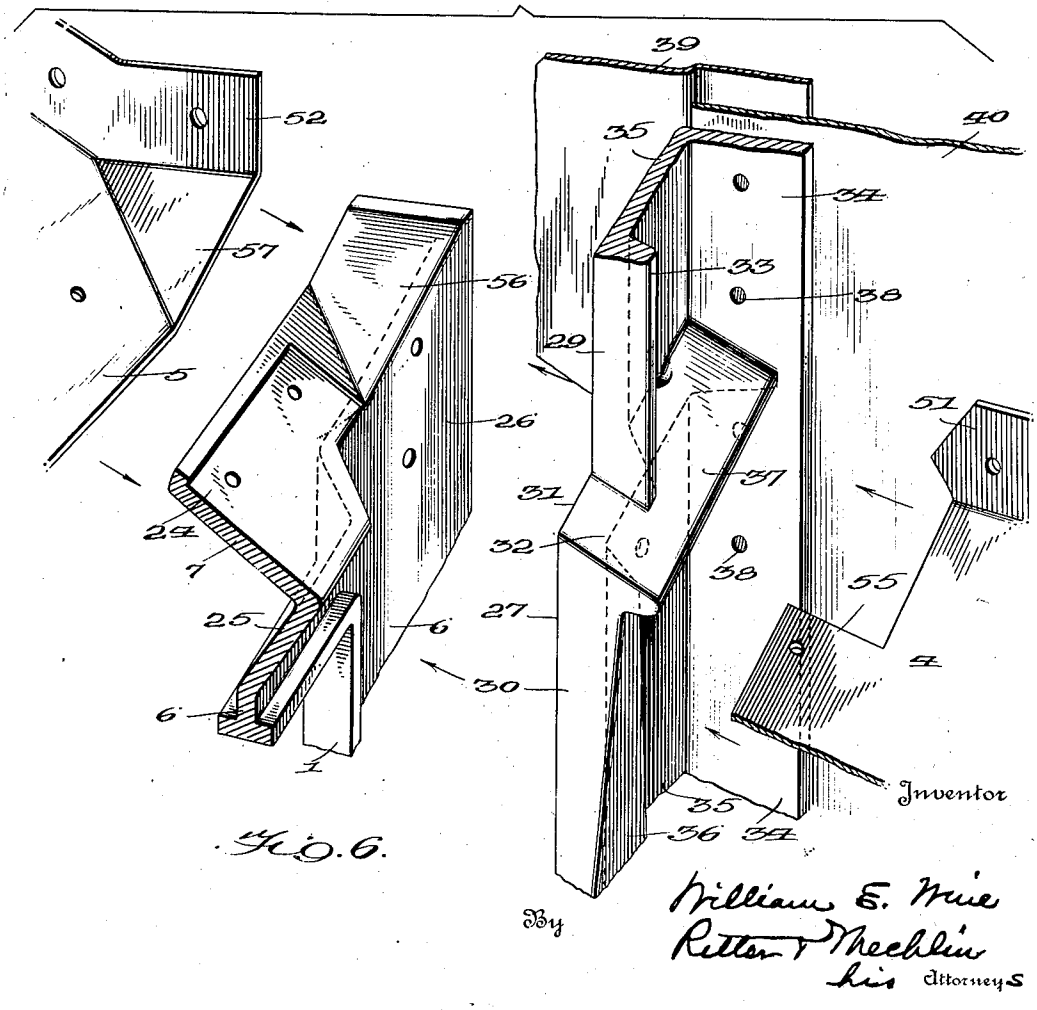

Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE

WILLIAM E. WINE, OF TOLEDO, OHIO

RAILWAY CAR

Application filed February 27, 1929. Serial No. 343,024.

My invention relates to railway cars and more particularly to an improvement in the construction and arrangement of the body bolster and associated parts.

A principal object of the invention is to produce a body bolster of simple and rugged construction especially suitable for application to drop bottom railway cars having an inclined floor.

A further object of the invention is to produce a car side stake especially suitable for attachment to the inside of the car side sheet of a railway hopper car.

A further object of the invention consists in forming the interior of a railway hopper car with means whereby granular lading or the like will be deflected around the inside car stakes as the lading is being discharged from the car.

A primary feature of the invention consists in forming the top surface of a body bolster adjacent the opposite ends thereof with inclined surfaces disposed in planes substantially parallel with the longitudinal axis of the car.

A further feature of the invention resides in constructing a side stake adapted to be attached to the inner face of a car side sheet with a shoulder projecting into the car to afford a support for the floor sheet thereof.

Another feature of the invention consists in disposing those portions of the inclined floor sheet of a hopper car which are adjacent the car stakes in inclined planes intersecting the car side in a horizontal line.

Other and more specific features residing in advantageous forms and combinations and relations of parts will hereinafter appear and be pointed out in the claims.

In the drawings illustrating a preferred embodiment of the invention:

Figure 1 is a transverse sectional view of a railway hopper car embodying the invention, the view illustrating only that portion of the car adjacent one of the ends of the body bolster.

Figure 2 is a fragmentary longitudinal sectional view of the hopper car taken on line 2—2, Figure 1.

Figure 3 is a perspective view looking down the inclined floor sheet of the car of the construction adjacent the end of the body bolster.

Figure 4 is a view similar to Figure 3 looking up the inclined floor sheet.

Figure 5 is a fragmentary sectional view taken on line 5—5, Figure 2.

Figure 6 is a perspective view of the various parts of the car construction adjacent one end of the body bolster, the parts being shown in disassembled positions.

Figure 7 is a fragmentary transverse sectional view of a railway hopper car showing the manner in which the body bolster is associated with other elements of the car.

Referring more particularly to the drawings and especially to Figure 7 thereof 1 indicates the body bolster which may advantageously be made in two sections, preferably of cast steel. Each section is secured to opposite sides of the car center sill 2 by rivets 3 and project upwardly above the sill to support the underside of the inclined floor sheets 4 and 5, respectively. Each bolster section has a main web portion 6 and top and bottom flanges 7 and 8, respectively. Adjacent the inner ends of the sections the webs 6 thereof overlie the top of the center sill thereby affording extensions 9 which cooperate with a connecting plate 10, the latter being rigidly secured to the extensions by rivets 11. The lower inner ends of the bolster sections may be connected by a bottom plate 12 which extends under the center sill and is secured by rivets 13 to the bottom flange 8.

The outer ends of the bolster are fashioned with a plurality of side flanges 14 and 15, respectively, which project from opposite sides of the web 6 and constitute means to which the car side sills may be attached.

Instead of having this member of the car underframing extending continuously from one end of the car to the other it is preferred to make it in sections 16 and 17, each of which is connected to the body bolster. The sill 16 which extends between the bolster and the car end is rigidly secured to the side flange 14 of the bolster by rivets 18, the flange being offset inwardly as at 19 a sufficient distance such that the outer face of the side sill 17, which

extends between the two bolsters of the car, may lie in substantially the same plane as that of the upper portion of the flange 14. The side sill 17 is secured to the flange 15 of the bolster by rivets 20 and to the outer face of the side sill 16 by rivets 18 and 21. The flange 15 is offset as at 22 similarly to and for the same purpose as the offset in the flange 14. While the flange 15 extends only for a part of the depth of the bolster the flange 14 extends continuously from the lower edge thereof to its top edge. From the foregoing it will be perceived that the bolster sections are connected together and to the members of the car underframing in a manner such that all of these parts are rigidly tied together.

The upper surface of the main portion of the top flange 7 of the bolster inclines downwardly in a plane parallel with the inclined floor sheets 4 and 5, the floor sheets being arranged in overlapping relation at the bolster and being secured thereto by rivets 23. This inclined top surface may be recessed as at 24 so that each of the floor sheets may engage therewith thus eliminating the necessity of offsetting or bending one of the sheets. The top flange of the bolster projects on opposite sides of the web thereof and is connected by a portion 25 which extends at an oblique angle to the latter and at a right angle to the flange. The portion 25 and the flange 7 of the bolster form in reality an angle whose neutral axis lies substantially in the plane of the web thus reducing to a minimum any eccentricity which may be developed in the bolster due to the load imposed thereon by the lading within the car.

The lower portion of the inclined top flange 7 and the connecting member 25 merge into the web 6 inwardly of the opposite ends of the bolster thereby affording a plane surface 26 to which side stakes 27 may be attached by rivets 28. Each of the side stakes is disposed within the car and have upper and lower portions 29 and 30, respectively, the latter extending inwardly from the car side for a greater distance than the upper portion, the said portions forming at their junction a shoulder 31 whose upper surface 32 inclines downwardly in a plane parallel with the top flange 7 of the bolster, thus forming in effect a continuation of the latter. The upper portion of the side stake is of a modified channel construction having flanges 33 and 34, and an intermediate web portion 35, and the lower portion is of somewhat the same configuration, the flange 34 and the web 35 being common to both portions. The inner side edge of the lower section is fashioned with a flange 36 which progressively decreases in depth and increases in width from a point adjacent the shoulder 31 to a point adjacent the lower end of the stake. The shoulder 31 instead of terminating adjacent the flange 33 of the upper portion of the stake extends inwardly as at 37 to the outer flange 34. In addition to securing the stake to the bolster by rivets 28, rivets 34′ may be employed for attaching the lower portion of the flange 34 of the side stake to the side flange 15 of the bolster.

Rigidly secured to the flange 34 of the side stake by rivets 38 are a plurality of side sheets 39 and 40, respectively, the latter being in engagement with the flange and the former being offset to overlappingly engage the outer face thereof. The side sheet 40 extends continuously from the side sill to the side plate 41, being rigidly connected to each by rivets 42 and 43, respectively, while the side sheet 39 extends only from the inclined floor sheet to the side plate, being secured to the latter by rivets 44.

At its upper end the outer flange 34 of the side stake inclines inwardly and upwardly as at 45 and the side sheets are bent to conform to the contour of the stake. The side plate 41 is of angular form having a vertical flange 46 to which the side sheets 39 and 40 are secured and a horizontal flange 47 overlying the inwardly bent portions of the side sheets and terminating substantially in the plane of the main body portion of the sheets. For strengthening the side plate angular filler members 48 are preferably disposed within the angle formed by the horizontal flange of the side plate and inclined portions of the side sheets, being rigidly secured to the former by rivets 49 and to the sheets and flange 34 of the side stake by rivets 50.

The floor sheets 4 and 5 are flanged upwardly as at 51 and 52, respectively, so that they may be secured by any suitable means such as rivets 53 to adjacent portions of the neighboring side sheets, the upper end of the flange 51 being offset as at 54 to overlappingly engage the inner face of the flange 34 of the side stake. The opposite upper corners of the floor sheet 4 are cut away or notched as at 55 to receive the side stakes. These corners of the sheets overlappingly engage the upper inclined surface of the shoulder 31—37 and are supported thereby, the portion 37 adjacent the web of the side stake also serving to prevent the escape of lading between the cut out portion 55 of the floor sheet and the stake.

In hopper cars employing inside side stakes considerable difficulty has been experienced due to the lading becoming trapped as it flows down the inclined floor sheet in the pocket formed by the intersection of the side stake, side sheet and floor sheet. Not only does this pocket trap portions of the lading but it also retards to a considerable extent the flow of lading as it is being discharged from the car. To obviate this difficulty the upper surface of those portions of the bolster adjacent the side stake and consequently the portions of the side sheet overlappingly engaging these portions of the bolster are inclined downwardly as at 56 and 57, respectively, toward the

longitudinally axis of the car and are disposed in planes substantially parallel therewith. The planes in which the main inclined surface 22 and the inclined surface 56 of the bolster are disposed and consequently the planes in which the main body portion of the floor sheet 5 and their inclined portion 57 are disposed, intersect in lines forming an angle with the plane of the side of the car, one end of which terminates adjacent the inner edge of that portion of the stake adjacent the floor sheet. Thus it will be seen that that portion of the interior of the car adjacent the side stake inclines downwardly away from the side of the car toward the longitudinal axis thereof thereby deflecting the lading around the side stakes as it flows down the inclined floor sheets.

From the foregoing description it will be appreciated that a hopper car construction in a similar manner will possess many advantageous features enhancing the durability and rigidity of the car and that the discharge of lading from the car will not be impeded by the car side stakes.

I claim:

1. In a railway car having a side and a longitudinal inclined floor portion, the combination with a body bolster, of a side stake secured to the bolster and car side and extending through the inclined floor portion, the car being provided on its interior adjacent the stake with a transversely inclined surface extending downwardly away from the car side, said inclined surface lying in a plane parallel with the longitudinal axis of the car.

2. In a railway car, the combination with a car body having sides and an inclined floor, of a body bolster, and side stakes overlapping the inner faces of the car sides, said stakes extending through said inclined floor and being secured to the bolster the car body being provided on its interior adjacent the side stakes with transversely inclined portions extending downwardly away from the car sides, said inclined portions being disposed in planes respectively intersecting the planes of the car sides in substantially horizontal lines.

3. In a railway car, the combination with a car body having a side sheet and an inclined floor sheet, of a body bolster, and a side stake secured to the bolster and extending inwardly of the side sheet, one of said sheets being provided adjacent the side stake with a transversely inclined portion extending downwardly toward the longitudinal axis of the car, said inclined portion being disposed in a plane which intersects the plane of the car side in a substantially horizontal line.

4. In a railway car the combination with a car body having a side sheet and an inclined floor sheet, of a side stake extending inwardly of the side sheet, a portion of said floor sheet adjacent the side stake being inclined upwardly toward the side sheet, the inclined surfaces of said floor sheet intersecting in a line forming an angle with the car side.

5. In a railway car, a car body having a side sheet and an inclined floor sheet, a side stake extending inwardly of the side sheet, and a body bolster secured to the side stake and having one of its ends projecting outwardly beyond the inner edge thereof, the upper surface of the bolster adjacent the side stake being inclined transversely of the car and extending downwardly toward the longitudinal axis thereof, said inclined surface being disposed in a plane intersecting the plane of the car side in a horizontal line, one of said sheets being fashioned with a portion overlappingly engaging the said inclined surface of the bolster.

6. In a railway car having a body bolster, the upper surface of said bolster adjacent its ends being inclined downwardly toward the longitudinal axis of the car and the upper surface of said bolster intermediate said inclined end portions being inclined downwardly transversely of the car, the said inclined upper surfaces of the bolster intersecting in lines respectively forming angles with the car side, and a floor sheet having portions in overlapping engagement with the inclined upper surfaces of the bolster.

7. In a railway hopper car having a body bolster provided with an upper surface disposed in a plurality of intersecting inclined planes, said inclined planes intersecting in lines forming acute angles with the car side, and a floor sheet overlappingly engaging the inclined upper surfaces of the bolster.

8. A body bolster for a railway hopper car, the upper surface of said bolster adjacent its opposite ends being inclined downwardly toward the longitudinal axis of the car and being disposed in planes substantially parallel with the latter, the upper surface of the bolster intermediate its inclined end surfaces being inclined downwardly transversely of the car.

9. In a railway hopper car having a side and an inclined floor, a body bolster, a side stake secured to the bolster inwardly of the car side and extending upwardly through the floor, said stake being integrally provided intermediate its ends with a shoulder having a downwardly inclined upper surface affording a support for the floor.

10. In a railway hopper car having a side and an inclined floor sheet, a body bolster, and a side stake projecting inwardly from the car side and overlapping the bolster in a plane substantially normal to the latter, said stake being secured to the bolster and having a shoulder projecting toward the longitudinal axis of the car, the upper surface of said shoulder being inclined downwardly and affording a support for the said floor sheet.

11. In a railway hopper car having a side

sheet and an inclined floor sheet, a body bolster, and a car stake having vertically extending angularly disposed flanges for attachment to the side sheet and bolster respectively, said stake being also provided with a shoulder having a downwardly inclined upper surface for supporting the floor sheet, said shoulder extending from said side sheet attaching flange to a point adjacent the opposite side of the stake.

12. In a railway hopper car having a side sheet and an inclined floor sheet, a body bolster and a side stake having an inner and an outer flange connected by an intermediate portion, the latter affording means for attaching the stake to the bolster and the outer flange affording means for attaching the stake to the side sheet, said stake being integrally formed with a shoulder having an inclined upper surface affording a support for the floor sheet, said shoulder connecting the inner and outer flanges and being disposed on opposite sides of the inner one.

13. In a railway car, the combination with a body bolster, of a floor sheet, and a side stake having portions of unequal width transversely of the car, the said portions at their junction being provided with a shoulder for supporting the said floor sheet and the widest of said portions being secured to the body bolster.

14. In a railway car, the combination with a body bolster, of a floor sheet, and a side stake having upper and lower portions, each of said portions being of angular shape and having a web normal to the side of the car, the lower portion extending inwardly from the side of the car for a greater distance than the upper portion and provided with a shoulder constituting a support for the floor sheet, the web of said lower portion being secured to the bolster.

15. In a railway hopper car, the combination with a body bolster, of an inclined floor sheet, and a side stake having upper and lower portions respectively disposed above and below said floor sheet, said lower portion being secured to the bolster and extending inwardly from the side of the car for a greater distance than the upper portion thereof to thereby form a shoulder, the upper surface of said shoulder being disposed in an inclined plane and underlying the floor sheet to support the latter.

16. In a railway hopper car having a side sheet and an inclined floor sheet, a body bolster having an inclined upper surface, and a side stake secured to the bolster inwardly of the side sheet and being integrally formed with a projecting shoulder, the upper surface of said shoulder being inclined to form a continuation of the inclined upper surface of the bolster and a support for the floor sheet.

17. In a railway hopper car having a body bolster provided with an inclined upper surface, an inclined floor sheet overlapping the inclined surface of the bolster, and a car stake having upper and lower portions the latter of which is secured to the bolster, the lower portion extending inwardly from the side of the car for a greater distance than the upper portion and being provided with a shoulder, the upper surface of said shoulder being disposed in a plane substantially parallel with the said upper surface of the bolster and constituting a continuation of the latter to afford a support for the adjacent corner of the floor sheet.

18. In a railway hopper car having a body bolster provided with an inclined upper surface, and a side stake having upper and lower portions, the lower portion extending inwardly from the car side for a greater distance than the upper portion to thereby form a shoulder, the upper portion of the bolster adjacent the side stake being inclined downwardly toward the longitudinal axis of the car and being disposed in a plane substantially parallel therewith.

19. In a railway hopper car, the combination with a floor sheet, of a body bolster having a substantially vertical web and an inclined top flange extending on opposite sides of the latter affording a support for the floor sheet, the portion of the flange on one side of the web terminating inwardly of the ends of the bolster, and side stakes secured to the bolster adjacent the ends thereof, each of said stakes being integrally formed with an inclined portion constituting a continuation of the said flange of the bolster and affording a support for the adjacent portions of the floor sheet.

In testimony whereof I affix my signature.

WILLIAM E. WINE.