United States Patent

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[54] **RAILWAY CAR HAVING INCREASED COUPLER SWING FOR CURVE NEGOTIABILITY**
8 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **105/362,** 105/358, 213/15
[51] **Int. Cl.** **B61f 5/04,** B61g 7/10
[50] **Field of Search** 105/362, 360, 199, 200, 3, 4, 358; 213/57, 15

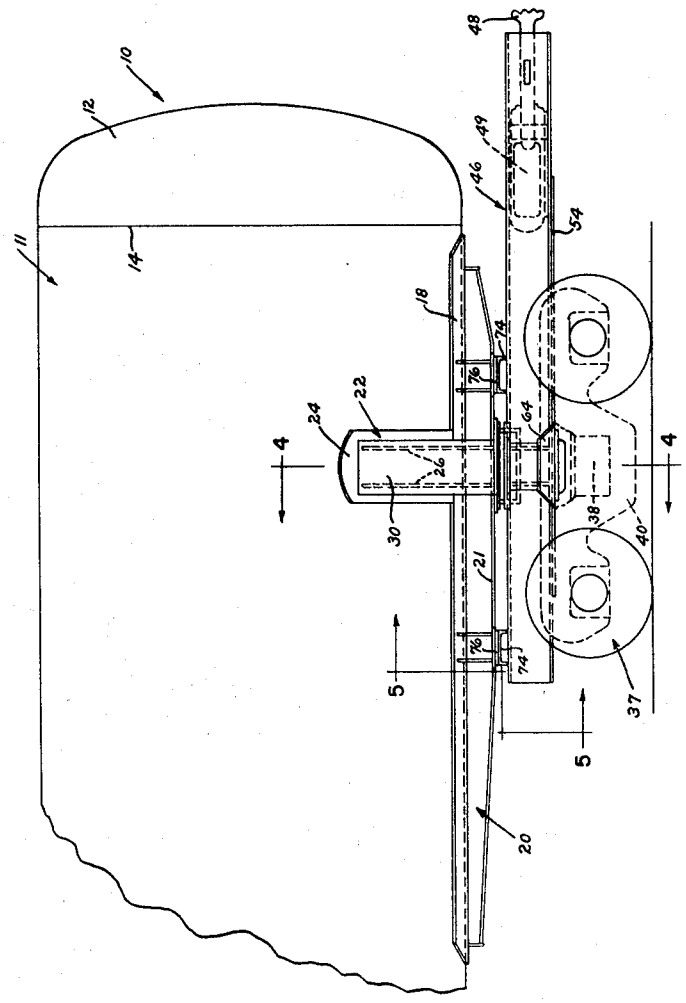
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ABSTRACT: A railway car having a stub center sill structure at each end mounted for relative swinging movement between the underframe and truck of the car. A coupler carried by each stub center sill structure swings in a horizontal plane with the associated center sill structure relative to the body or underframe of the railway car thereby to permit any desired coupler swing. The stub center sill structure pivots between vertically spaced bearing members carried by the superjacent underframe and subjacent truck.



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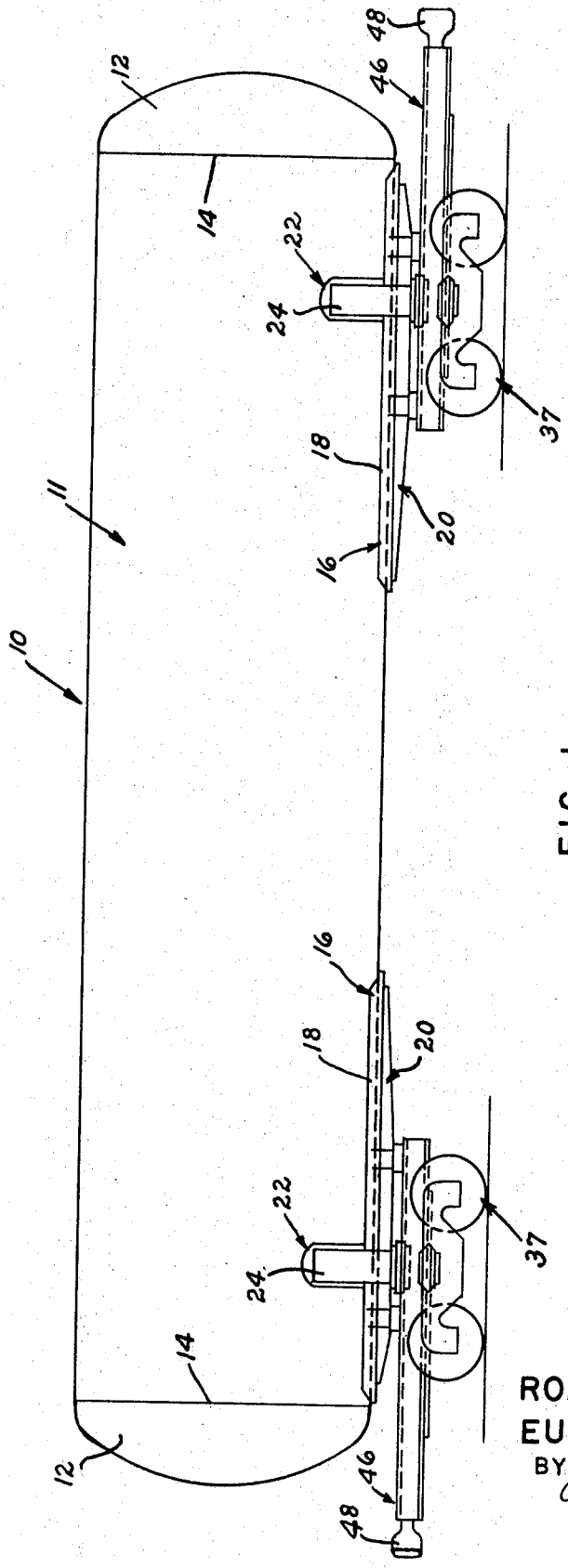


FIG. 1.

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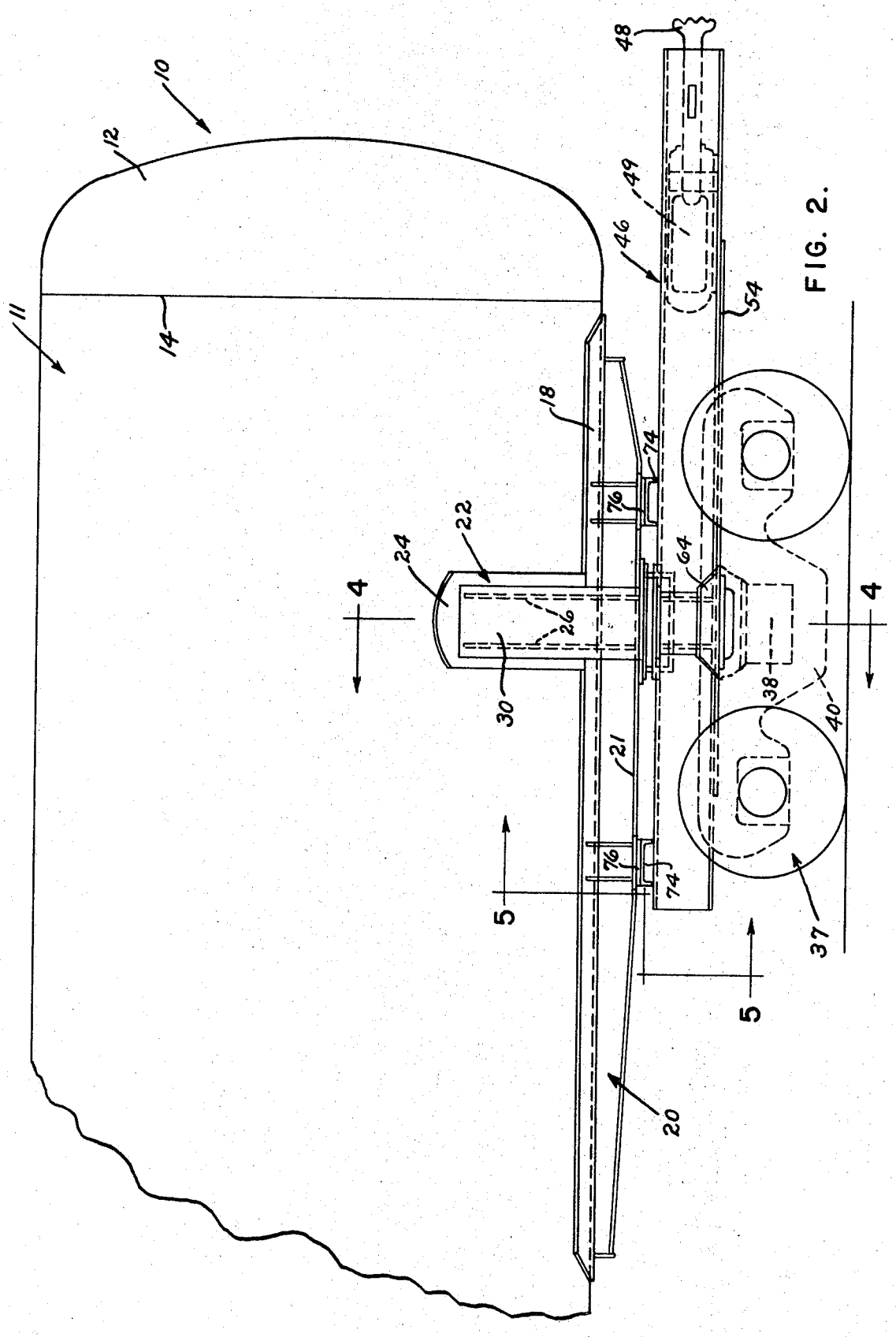

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FIG. 2.

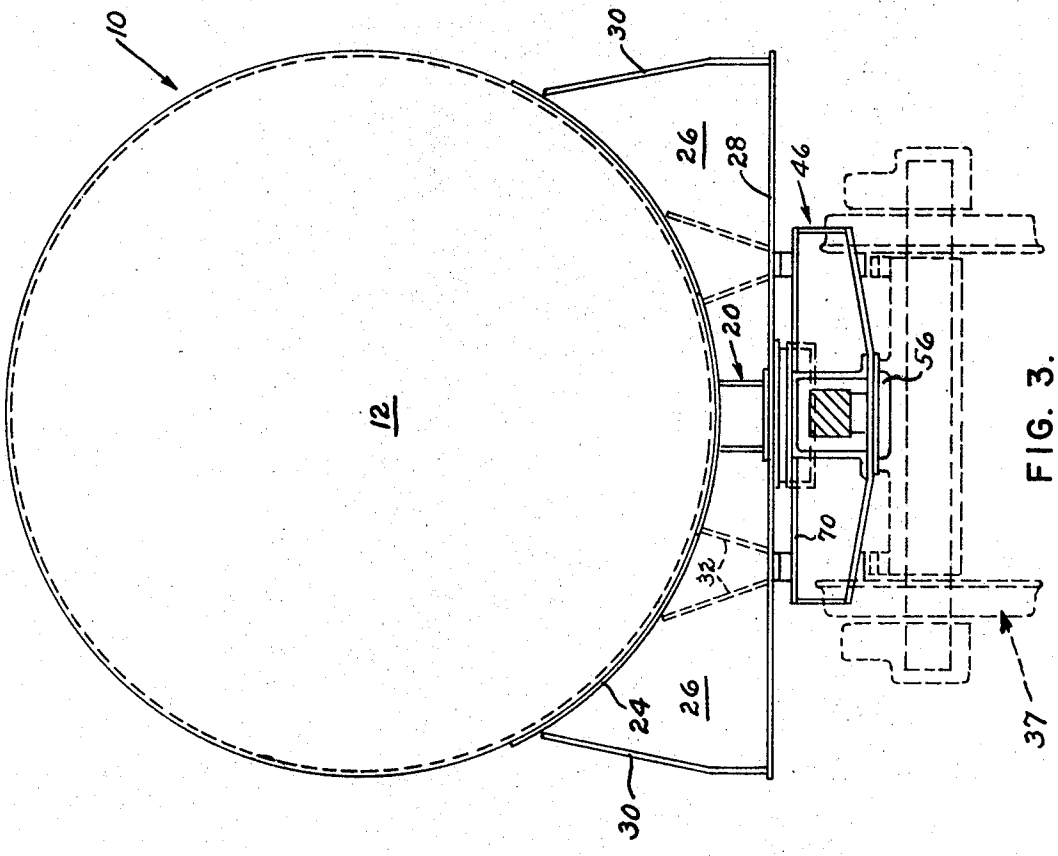


FIG. 3.

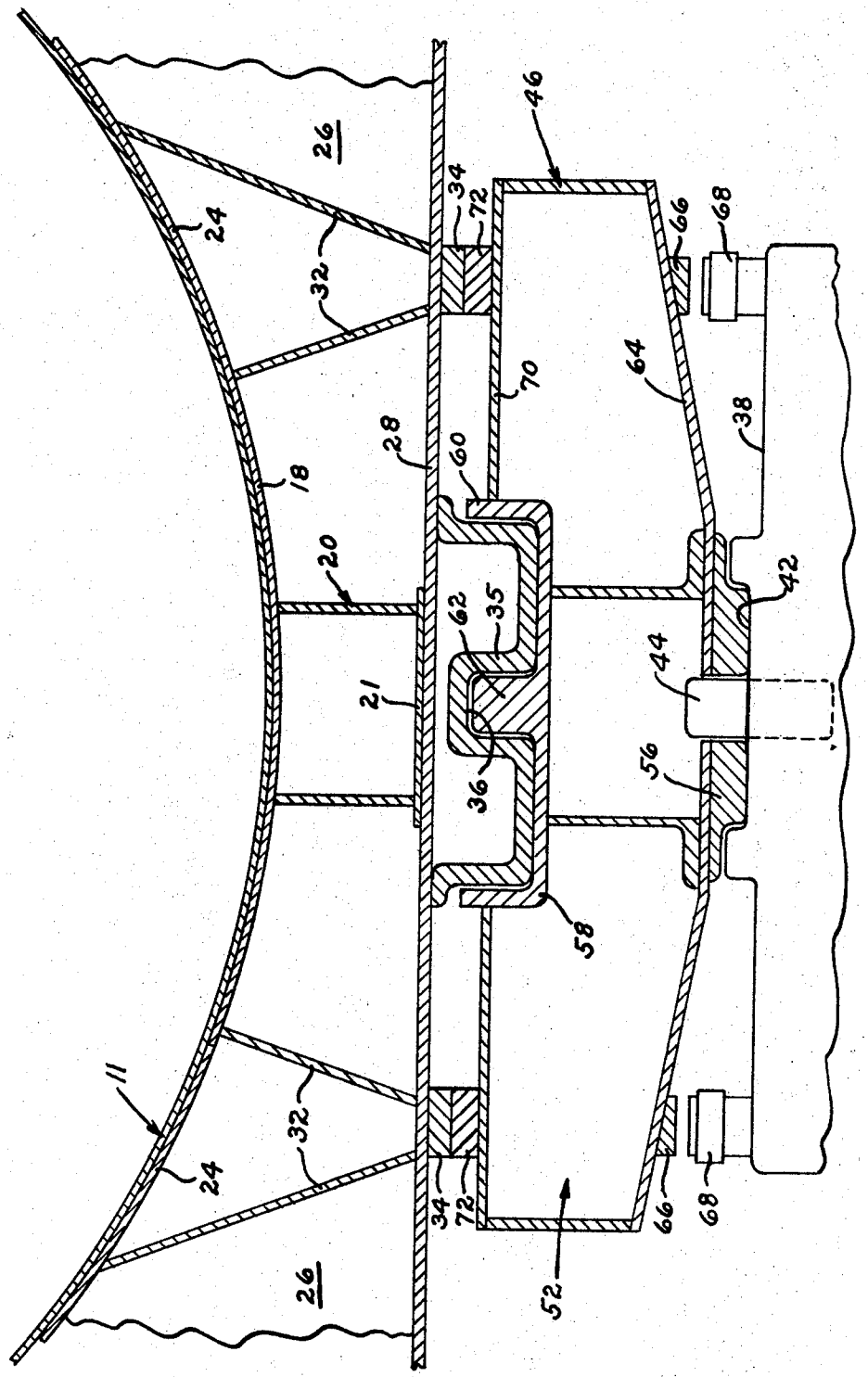

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FIG. 4.

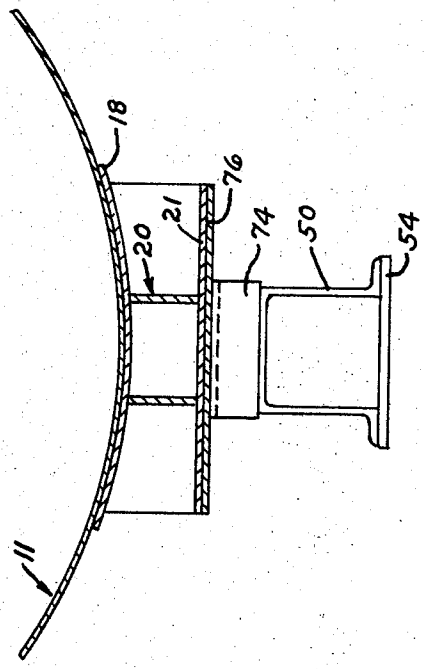


FIG. 5.

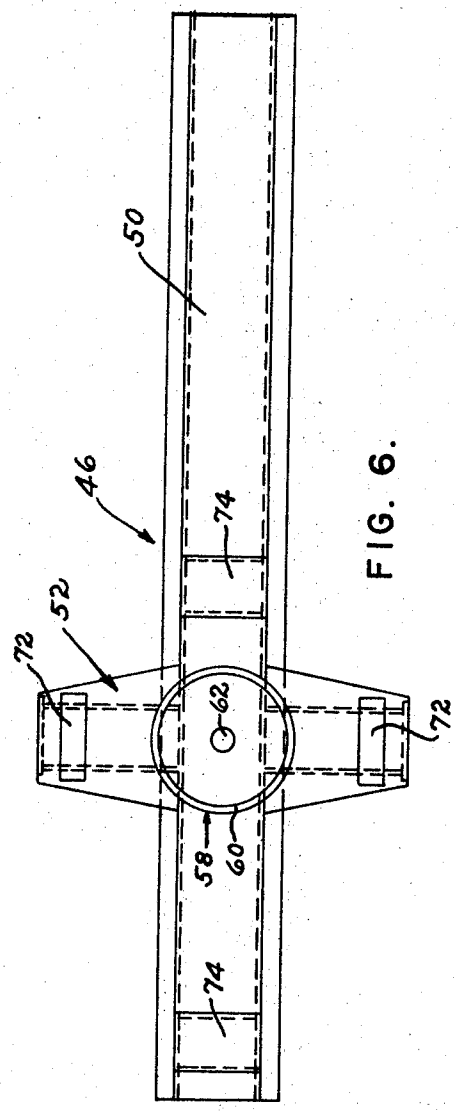


FIG. 6.

RAILWAY CAR HAVING INCREASED COUPLER SWING FOR CURVE NEGOTIABILITY

BACKGROUND OF THE INVENTION

Heretofore, the center sill structure for railway freight cars has usually been fixed to the underframe or body of the car. A coupler has been carried by the center sill structure and the coupler has been mounted for limited swinging movement relative to the associated center sill structure. Particularly with long length cars, a relatively wide coupler swing is desirable and this has been accomplished to a limited degree heretofore by having a long length coupler shank and a relatively wide end opening in the center sill to permit a wide swing of the coupler.

DESCRIPTION OF THE INVENTION

The present invention is directed to a railway car having a separate stub center sill structure mounted between the body or underframe of the railway car and the supporting wheeled truck for independent swinging lateral movement relative to the car body and the truck. The stub center sill structure carries a coupler and thus, a generally unlimited coupler swing may be provided by the present invention for improved curve negotiability. Therefore, the stub center sill structure does not have to be provided with a large end opening to permit a wide swing of the coupler and the coupler does not have to have a long overhang or project a considerable distance from the end of the car as heretofore for long length cars. A bearing plate member on the bottom of the underframe and a separate bearing plate member on the truck bolster support the stub center sill structure therebetween and provide pivots for the lateral swinging movement of the stub center sill structure.

Since the stub center sill structure is not secured to the car body or underframe, this arrangement has particular applicability for insulated railway tank cars in which the end heads of the tank are desired to be welded to the tank after the underframe or tank body sill is secured. The underframe or fixed support for the tank is spaced inwardly from the end heads and this permits welding of the heads after assembly of the remainder of the car.

The invention accordingly comprises the constructions hereinafter described, the scope of the invention being indicated in the following claims.

In the accompanying drawings, in which one of various possible embodiments of the invention is illustrated:

FIG. 1 is a side elevation of a railway tank car having a swing center sill structure comprising the present invention;

FIG. 2 is an enlarged fragment of FIG. 1 showing the swing center sill structure comprising the present invention;

FIG. 3 is an end elevation of the railway car illustrated in FIGS. 1 and 2;

FIG. 4 is a section taken generally along line 4—4 of FIG. 2;

FIG. 5 is a section taken generally along line 5—5 of FIG. 2; and

FIG. 6 is a plan of the swing sill structure removed from the railway car shown in FIGS. 1—5.

Corresponding reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings for a better understanding of this invention, a railway tank car generally indicated 10 has a cylindrical tank generally indicated 11 with end heads 12 welded along seams 14. An underframe generally indicated 16 is secured to the underside of tank 11 and includes a saddle plate 18 welded to each end of the intermediate tank 11 inwardly of tank heads 12. A body center sill structure generally indicated 20 has a lower cover plate 21 and forms a box-shaped cross section with saddle plate 18.

A support cradle or body bolster structure generally indicated 22 is secured to tank 11 adjacent each end of car 10 and includes a cradle pad or plate 24 of an arcuate shape fitting along the outer surface of tank 11 and having a cutout portion receiving saddle plate 18 as shown in FIG. 4. Vertical webs 26 extend between cradle pad 24 and a lower body bolster plate 28. A side body bolster plate 30 extends between each outer end of lower bolster plate 28 and saddle plate 24. Intermediate reinforcing members 32 extend between a lower body bolster cover plate 28 and saddle plate 24. Side bearing members 34 are secured beneath cover plate 28 and a body bearing or center plate 35 is secured to the underside of lower cover plate 28 and has a central opening 36 therein.

Mounted beneath each body bolster 22 is a wheeled truck generally indicated 37 and having a truck bolster 38 extending between side frames 40. A center bowl-shaped plate 42 on truck bolster 38 is vertically spaced from body center plate 36 and has a center pin 44.

Mounted for pivotal movement between the body bolster center plate 36 and the truck bolster center plate is a swing sill structure generally indicated 46 and comprising the present invention. Swing sill structure 46 forms the stub center sill structure and has a coupler 48 mounted within its outer end. Suitable conventional draft gear 49 is connected to coupler 48. The stub swing sill structure 46 comprises a generally hat-shaped stub center sill 50 and an integral bolster structure indicated generally 52. A lower cover plate 54 is secured to the lower flanges of center sill 50. As shown particularly in FIG. 4, bolster structure 52 includes a center plate 56 receiving center pin 44 of the truck bolster and fitting within the truck bolster center plate 42. An upper bowl-shaped center bearing plate 58 has a circumferential rim 60 and an integral center pin 62. Center plate 35 fits within bearing plate 58 and opening 36 thereof receives center pin 62. A lower cover plate 64 of bolster structure 52 has side bearings 66 thereon spaced around three-eighths inch from subjacent side bearings 68 on truck bolster 38. An upper cover plate 70 has upper side bearing pads 72 in bearing contact with superjacent side bearing pads or members 34 on the car body.

Mounted on the upper surface of center sill 50 are longitudinal bearing pads 74 in bearing contact with superjacent bearing pads 76 on cover plate 21 of fixed sill 20 as shown in FIGS. 2 and 5. Bearing pads 76 extend laterally outwardly from center sill 20 to provide a bearing surface upon a relatively wide swing of sill structure 46. Further, impact loads received by coupler 48 are partly dissipated by pads 76. Longitudinal bearing pads 74, 76 also aid in maintaining swing sill structure 46 in a generally horizontal plane. Side bearings 66 and 68 limit the rocking movement of tank 11 and sill structure 46.

Swing sill structure 46 is thus mounted for generally unlimited swinging movement between truck 36 and the fixed body or underframe 16 of railway car 10. Center bowl-shaped bearing plate 42 on truck bolster 38 and center plate 36 on underframe 16 support stub sill structure 46 for pivotal swinging movement in a generally horizontal plane. Thus, coupler 48 carried by swing sill structure 46 is mounted for substantially unrestricted swinging movement in a horizontal plane.

I claim:

1. A railway car comprising, an underframe having a body bolster adjacent an end thereof and a lower center bearing member on the underside of the body bolster, a wheeled truck beneath said lower bearing member and having a truck bolster with an upper center bearing member thereon in spaced vertical alignment from said lower bearing member on the underframe, a stub center sill structure mounted between the spaced lower and upper bearing members, a coupler carried by the stub center sill structure, and means mounting the stub center sill structure for swinging movement in a generally horizontal plane between said upper and lower bearing members relative to the underframe and the truck.

2. A railway car comprising, an underframe structure including a lower center bearing member secured adjacent each end thereof, a wheeled truck beneath each of said lower center bearing member and having an upper center bearing member thereon in spaced vertical alignment with an associated lower center bearing member, a stub center sill structure mounted between each lower center bearing member of the underframe and the associated upper center bearing

member of the associated truck and extending rearwardly beyond the associated upper and lower center bearing members, a coupler carried by each stub center sill structure, and means mounting each stub center sill structure for swinging movement in a generally horizontal plane between and relative to associated upper and lower center bearing members.

3. A railway tank car comprising, a generally cylindrical outer shell including end heads welded thereto, a longitudinally extending saddle plate secured to the shell adjacent each end thereof and inwardly of the adjacent end head, a cradle support secured adjacent each end of said outer shell and having a lower bearing member secured thereto, a wheeled truck beneath said lower bearing member and having an upper bearing member thereon in spaced vertical alignment from said lower bearing member on the cradle support, a stub center sill structure mounted between the spaced, vertically aligned lower and upper bearing members and extending rearwardly beyond the associated cradle support, a coupler carried by the stub center sill structure, and means mounting the stub center sill structure for swinging movement in a generally horizontal plane between said upper and lower bearing members relative to the cradle support and the truck.

4. A railway car comprising, an underframe having a lower bearing member secured adjacent an end thereof, a wheeled truck beneath said lower bearing member and having a bolster with an upper bearing member thereon in spaced vertical alignment from said lower bearing member on the underframe, a stub center sill structure mounted between the spaced lower and upper bearing members, said center sill structure comprising a longitudinally extending center sill and a transverse bolster structure secured to the center sill and positioned generally over the truck bolster, a pair of bearing pads on the upper portion of said center sill spaced on either side of said transverse bolster structure, a pair of coacting bearing pads on the underside of the underframe in vertical alignment with the longitudinal bearing pads on the center sill, a coupler carried by each stub center sill structure, and means mounting each stub center sill structure and associated coupler for swinging movement in a generally horizontal plane between said upper and lower bearing members relative to the underframe and the truck.

5. A railway car as set forth in claim 4 wherein said bearing pads on the underside of said underframe are of a length greater than the width of the associated center sill to accommodate a wide swing of the center sill structure.

6. A railway car as set forth in claim 4 wherein said transverse bolster structure on the stub center sill structure has a pair of side bearings on its upper surface and a pair of side bearings on its lower surface, and coacting side bearings are secured respectively to said underframe and said truck bolster in vertical alignment with the side bearings on said transverse bolster structure.

7. A railway tank car comprising, a generally cylindrical outer shell including end heads welded thereto, a longitudinally extending saddle plate secured to the shell adjacent each end thereof and inwardly of the adjacent end head, a body center sill structure secured to each saddle plate, a cradle support secured adjacent each end of said outer shell and having a lower bearing member secured thereto, a wheeled truck beneath said lower bearing member and having a bolster with an upper bearing member thereon in spaced vertical alignment from said lower bearing member on the cradle support, a swing stub center sill structure mounted between the spaced lower and upper bearing members, said stub center sill structure comprising a longitudinally extending center sill and a transverse bolster. structure secured to the center sill and positioned generally over the truck bolster, a pair of longitudinal bearing pads on the upper portion of the center sill spaced on each side of said transverse bolster structure, a pair of coacting longitudinal bearing pads on the underside of the body center sill structure in vertical alignment with the longitudinal bearing pads on the swing center sill structure, a coupler carried by the stub center sill structure, and means mounting the stub center sill structure for swinging movement in a generally horizontal plane between said upper and lower bearing members relative to the cradle support and the truck.

8. A railway tank car as set forth in claim 7 wherein said transverse bolster structure on the stub center sill structure has a pair of side bearings on its upper surface and a pair of side bearings on its lower surface, and coacting side bearings are secured respectively to said cradle support and said truck bolster in vertical alignment with the side bearings on said transverse bolster structure.