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Cook et al.

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[45] **Jan. 9, 1973**

[54] RAILWAY CAR CENTER BEARING

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[52] **U.S. Cl.**.....**105/199 C**, 105/199 CB, 308/137, 308/138

[51] **Int. Cl.**.....**B61f 5/14**, B61f 5/16, B61f 5/18

[58] **Field of Search**.....105/199 C, 199 CB; 308/307, 308/308, 137, 138

[56] **References Cited**

UNITED STATES PATENTS

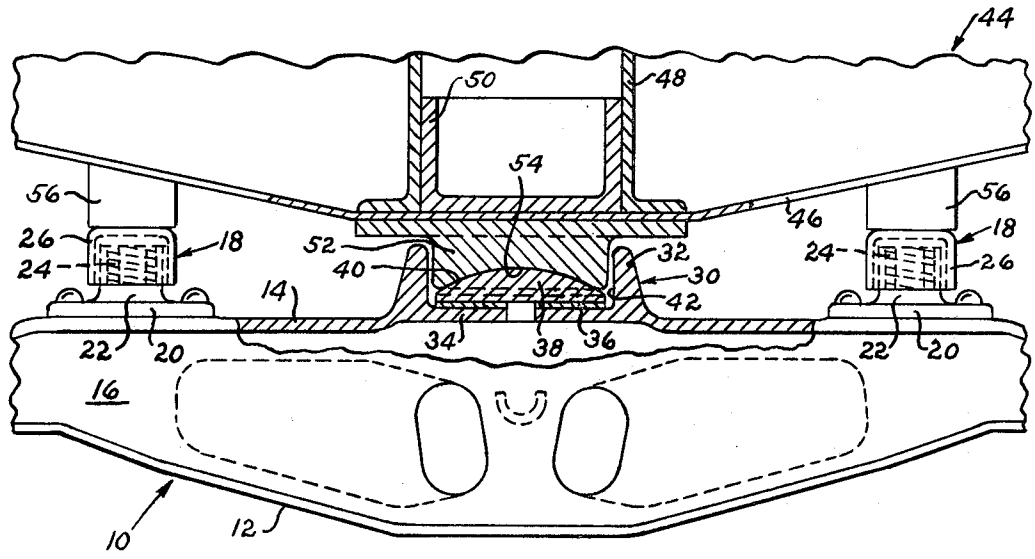
1,653,564	12/1927	Hawley	308/137
2,154,799	4/1939	Young	308/137
472,151	4/1892	Todd et al.	308/137

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[57] **ABSTRACT**

A center plate structure for a railway car having a bowl on the truck bolster to receive a center plate on the car body. A bearing insert for the body center plate is positioned within the bowl in a freely floating relation to the bowl and is movable within the bowl in a generally horizontal relation. The bearing insert has an upper convex surface which mates with a concave lower surface on the body center plate to permit a relative tilting movement between the body center plate and the bearing insert on the truck bolster.

10 Claims, 9 Drawing Figures



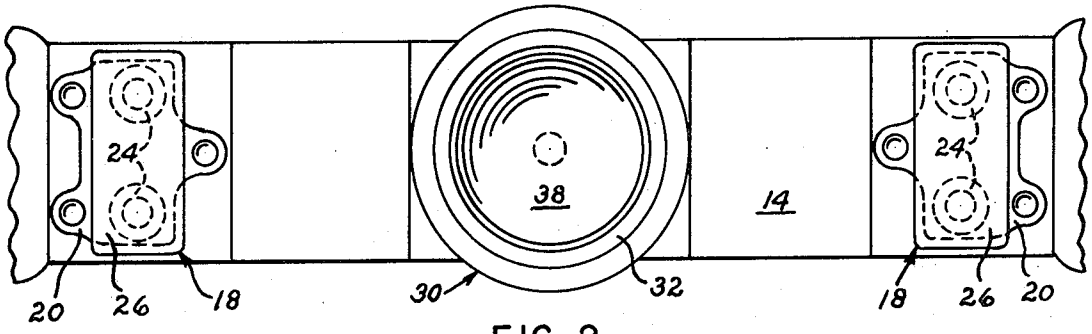


FIG. 2.

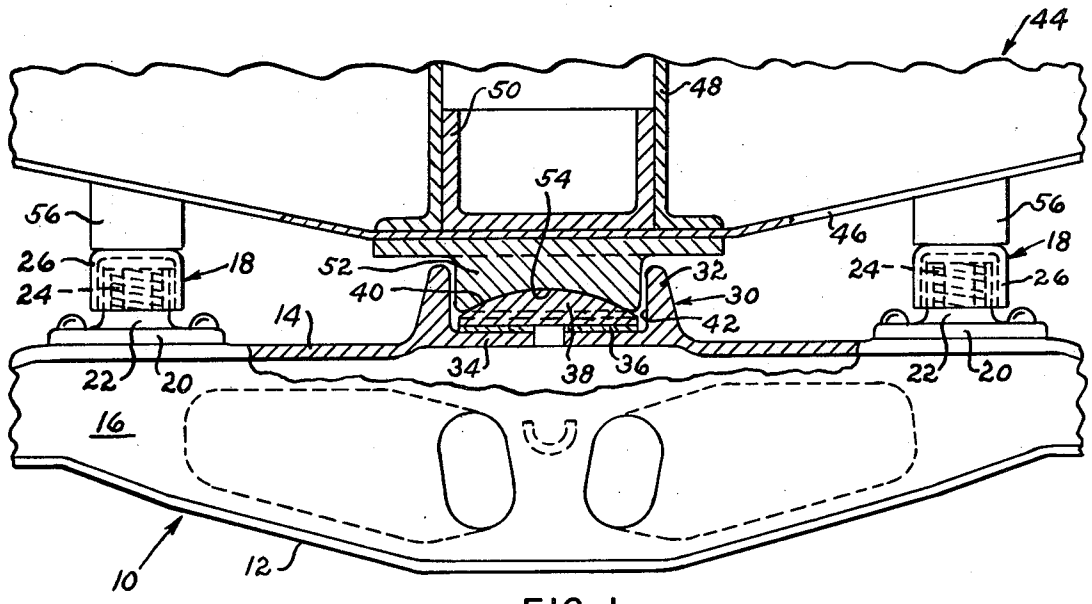


FIG. I.

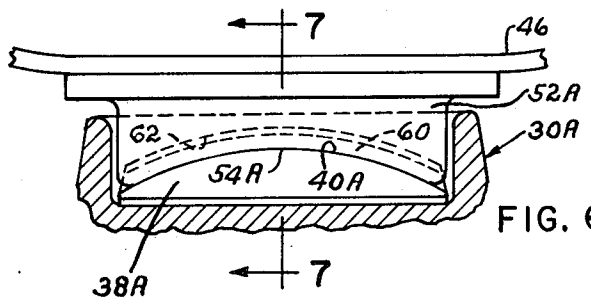


FIG. 6.

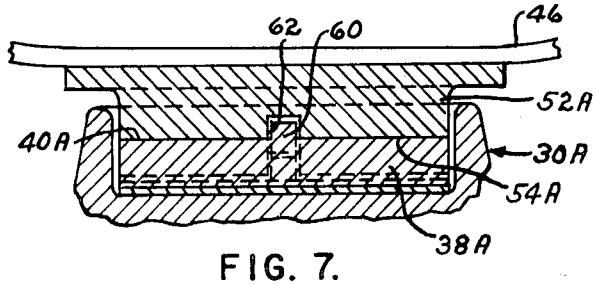


FIG. 7.

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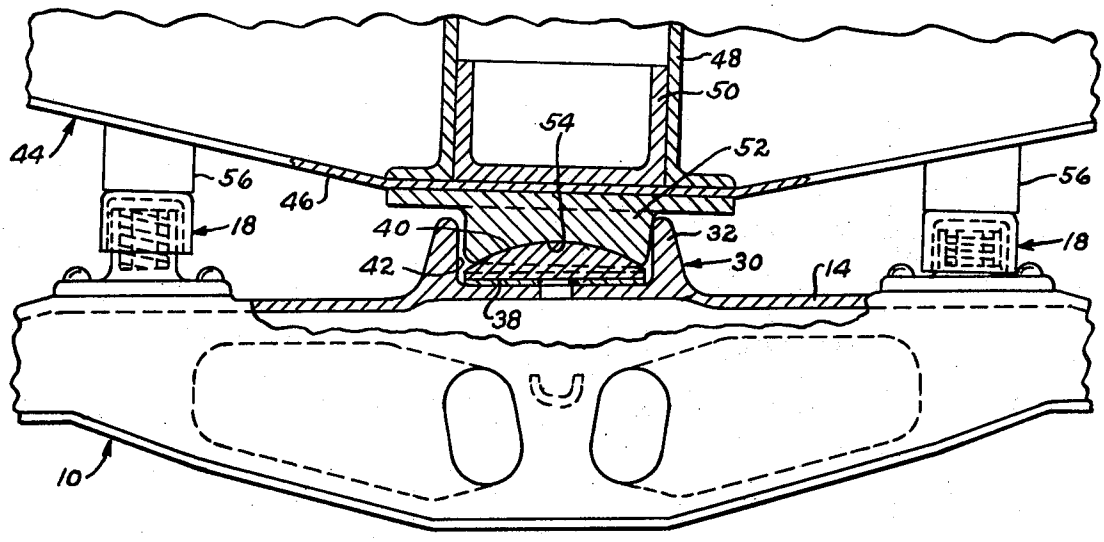


FIG. 5.

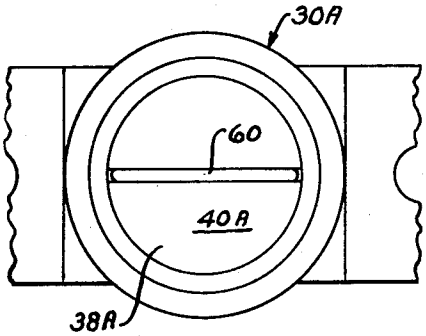


FIG. 8.

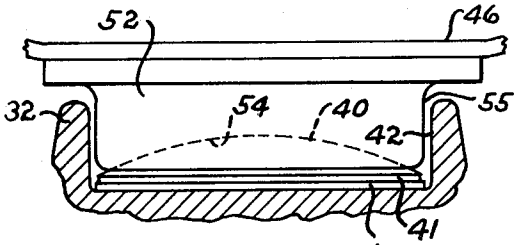


FIG. 3.

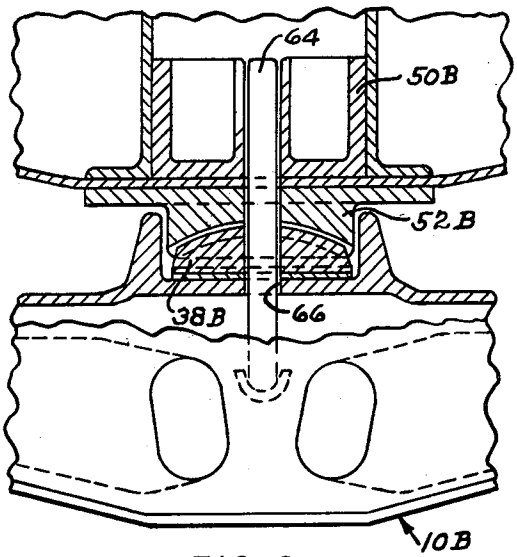


FIG. 9.

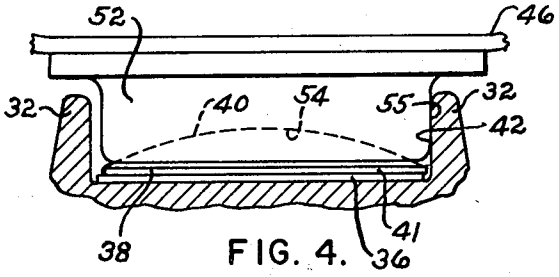


FIG. 4.

RAILWAY CAR CENTER BEARING

BACKGROUND OF THE INVENTION

Heretofore, center plate structures for railway cars have included truck bolsters with a bowl to receive the center plate on the car body for relative rotative movement. Further, arcuate upper surfaces have been provided heretofore on center plates for truck bolsters. However, none of the prior art arrangements have a freely floating bearing insert within the bowl of the truck bolster for supporting the center plate on the car body so that a limited, simultaneous horizontal movement of the bearing insert and center plate might occur between the truck bolster and the car body.

DESCRIPTION OF THE PRESENT INVENTION

The present invention provides a center plate structure having a center plate bowl on the truck bolster, and a bearing insert within the bowl freely movable relative to the bowl and having an upwardly facing convex surface. The car body bolster has a center plate with a concave lower surface mating with the convex bearing insert which permits a limited tilting between the body center plate and the convex bearing insert while the center plate remains fully seated on the bearing insert. The bearing insert is spaced from the outer circumferential rim of the bowl and will move horizontally with the center plate of the car body until the center plate abuts the adjacent surface of the bowl which acts as a stop against horizontal movement.

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 several of various possible embodiments of the invention are illustrated,

FIG. 1 is a front elevation of the truck and car body bolsters with one embodiment of the center plate structure comprising the present invention in section;

FIG. 2 is a top plan of the truck bolster shown in FIG. 1 with the bolster center plate thereon;

FIG. 3 is an enlarged elevational view of the center plate structure shown in FIGS. 1 and 2 with certain parts in section;

FIG. 4 is a view similar to FIG. 3 but illustrating the bearing insert and body center plate moved horizontally with the body center plate abutting an adjacent rim of the truck center plate;

FIG. 5 is a view similar to FIG. 1 but showing the body bolster tilted relative to the truck bolster while the body center plate remains fully seated on the bearing insert of the truck bolster;

FIG. 6 is an elevation of a separate embodiment of the center plate structure comprising the present invention and having mating cylindrical surfaces to permit tilting of the body center plate only in one direction transversely of the car;

FIG. 7 is a section taken generally along line 7—7 of FIG. 6;

FIG. 8 is a top plan of the truck center plate shown in FIGS. 6 and 7; and

FIG. 9 is a section of a further embodiment of the center plate structure comprising the present invention in which a center pin is mounted between the car and truck bolsters.

Referring now to the drawings for a better understanding of the invention, and more particularly to the embodiment shown in FIGS. 1–5, a truck bolster is generally indicated **10** and includes a lower cover plate **12**, an upper cover plate **14**, and transverse webs **16** extending between the lower and upper bolster cover plates **12** and **14**. A truck side bearing generally indicated **18** is mounted on each side of upper cover plate **14** and has a base **20** secured to cover plate **14**. An inner hollow housing **22** extends upwardly from base **20** and has a pair of coil springs **24** mounted therein. An outer housing **26** fits over lower housing **22** and forms a cap or cover therefor.

Mounted on the upper surface of cover plate **14** is a bolster center plate comprising a bowl **30** forming a rim **32**. A base **34** supports a wear plate **36** fixed thereto. Mounted on the upper surface of wear plate **36** for freely floating movement relative thereto is a bearing insert **38**. Bearing insert **38** has an upper convex, spherical surface **40** and a circumferential edge surface **41**.

As a representative example of a truck center plate, bowl **30** has an inner diameter of 14 inches, rim **32** is 4 inches in height, and convex surface **40** is struck from a radius of 28 inches. For satisfactory results, the radius of upper convex surface **40** should not be less than the diameter of bowl **30**. It is noted that bearing insert **38** is spaced slightly from the adjacent circumferential surface **42** of rim **32** so that bearing insert **38** may move horizontally relative to bowl **30** with the surface **42** acting as a stop to limit the lateral sliding movement of bearing insert **38** on wear plate **36**. An optimum clearance between circumferential surface **42** of rim **32** and outer circumferential edge **41** of bearing insert **38** is around one-eighth inch. Clearances between around one-sixteenth inch and one-half inch would be satisfactory.

The body bolster is generally indicated **44** and includes a lower cover plate **46** extending beneath a generally hat-shaped center sill **48** having a center plate reinforcement **50** secured therein at a position over a car body center plate generally indicated **52**. A lower concave spherical surface **54** of body center plate **52** is of a radius the same as the radius of bearing insert **38** and mates with convex surface **40** on bearing insert **38**. Body side bearings **56** secured to lower cover plate **46** are in contact with the upper surface of side bearings **18** on truck bolster **10**.

Referring to FIG. 4, the outer circumferential surface **55** of body center plate **52** is indicated as abutting the inner circumferential surface **42** of rim **32** with bearing insert **38** moved laterally and having its circumferential edge **41** slightly spaced from the inner circumferential surface **42** of rim **32**. Thus, car body bolster **44** may move horizontally a limited distance relative to truck bolster **10** while body center plate **52** remains fully seated on and supported by bearing insert **38** which likewise moves with body center plate **54**.

Referring to FIG. 5, body bolster **44** is indicated as being tilted relative to truck bolster **10**. Since surfaces **40** and **54** mate and are struck from the same radius, surface **54** may move or tilt relative to surface **40** while remaining in contact therewith and fully seated thereon. Thus, contact along the entire upper surface of bearing insert **38** is maintained even when body bolster **44** tilts relative to truck bolster **10**.

Referring now to FIGS. 6–8, another embodiment of a center plate structure comprising the present invention is illustrated in which tilting of body bolster **44** relative to truck bolster **10**, or vice versa, is limited to tilting in a single direction transversely of the railway car. A rib or guide **60** is provided along the upper cylindrical convex surface **40A** of bearing insert **38A**. A slot **62** facing downwardly and within the body center plate **52A** receives rib **60** and extends in a direction transversely of the car body. Lower cylindrical concave surface **54A** of body center plate **52A** mates with surface **40A** and rib **60** properly aligns surfaces **40A** and **54A**. Thus, tilting in a direction longitudinally of the car is restricted by the cylindrical surfaces **40A** and **54A**. However, tilting is permitted in a direction transversely of the car. Since bearing insert **38A** is freely floating within bowl **30A**, rotation of truck bolster **10** relative to body bolster **44** is permitted.

Referring now to FIG. **9**, a further embodiment of the center plate structure forming the present invention is illustrated in which a center pin **64** is mounted on truck bolster **10B** and extends upwardly therefrom. A suitable opening **66** extends through bearing **38B**, body center plate **52B**, and center sill reinforcement **50B** to receive center pin **64** therein. Thus, the center plate structure of the present invention may be easily modified to receive a center pin, if desired.

What is claimed is:

1. In a center plate structure for a railway car, a truck bolster having a center plate bowl facing upwardly, said bowl having an outer circular rim; a bearing insert with a convex upper surface located within the rim, said insert being spaced from the inner circumferential surface of said rim and being movable within the bowl in a generally horizontal plane relative to said rim, and a body bolster having a concave center plate mating with said convex bearing insert and supported thereof for relative rotative movement about a generally vertical axis, said concave center plate adapted to tilt in a generally vertical plane relative to said convex bearing insert while remaining seated on said insert.

2. In a center plate structure for a railway car as set forth in claim **1**, a wear plate within the center plate bowl and secured therein, said bearing insert being freely floating within said bowl and being supported on said wear plate for back and forth movement relative to said bowl.

3. A center plate structure according to claim **1** wherein a center pin passes through said center plate bowl, said bearing insert and said concave center plate.

4. In a center plate structure for a railway car, a truck bolster having a center plate bowl facing upwardly, said bowl having an outer circular rim, a bearing insert with a convex upper surface located within said rim, said insert being spaced from the inner circumferential surface of said rim and movable within the bowl in a generally horizontal plane relative to said rim, and a body bolster having a concave center plate mating with said convex insert and supported thereon for relative rotative moment about a generally vertical axis, said concave center plate adapted to tilt in a generally vertical plane relative to said convex insert while remaining seated on said insert, and at least one side bearing spaced from said center plate bowl comprising resilient means engaging said truck bolster and body bolster to urge the latter to a horizontally stable posture.

5. In a center plate structure for a railway car as set forth in claim **4**, a wear plate within the center plate bowl and secured therein, said bearing insert being freely shiftable within said bowl and being supported on said wear plate for back and forth movement relative to said bowl.

6. In a center plate structure for a railway car, a truck bolster having a center plate bowl facing upwardly, said bowl having an outer circular rim, a bearing insert with a convex upper surface located within the rim, the convex surface being struck from a radius having a minimum length at least as great as the diameter of said center plate bowl, said insert being spaced from the inner circumferential surface of said rim and movable within the bowl in a generally horizontal plane relative to said rim, and a body bolster having a concave center plate mating with said convex insert and supported for relative rotative movement about a generally vertical axis, said concave center plate adapted to tilt in a generally vertical plane relative to said convex insert while remaining seated on said insert.

7. In a center plate structure for a railway car, a truck bolster having a center plate bowl facing upwardly, said bowl having an outer circular rim, a bearing insert with a convex upper surface located within the rim, said convex surface being struck from a radius having a minimum length at least as great as the diameter of said center plate bowl, said insert being spaced from the inner circumferential surface of said rim and movable within the bowl in a generally horizontal plane relative to said rim, a body bolster having a concave center plate mating with said convex insert and supported for relative rotative movement about a generally vertical axis, said concave center plate adapted to tilt in a generally vertical plane relative to said convex insert while remaining seated on said insert, and at least one side bearing spaced from said center plate bowl comprising resilient means engaging said truck bolster and body bolster to urge the latter to a horizontally stable posture.

8. In a center plate structure for a railway car, a truck bolster having a center plate bowl facing upwardly, said bowl having an outer circular rim and a bearing insert having a convex upper cylindrical surface within the rim, said insert being spaced from the inner circumferential surface of said rim and movable in a generally horizontal plane relative to said rim, a body bolster having a center plate with a concave cylindrical surface mating with said insert and supported thereon for relative rotative movement about a generally vertical axis, and interfitting guide means on said concave center plate and said insert extending in a direction generally transversely of the car to align properly the mating cylindrical surfaces for tilting of the body center plate unidirectionally transversely of the car relative to said insert, said mating cylindrical surfaces restricting tilting of the center plate in directions other than transversely of the car.

9. In a center plate structure for a railway car as set forth in claim **8**, said interfitting guide means comprising an upstanding rib on the upper surface of said convex bearing insert extending in a direction transversely of the car and a mating groove in the lower concave cylindrical surface of said body center plate receiving the rib in a nesting relation.

10. In a center plate structure for a railway car as set forth in claim 9 said groove being of a depth greater than the height of said rib to space the rib from the surface defining the groove.

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