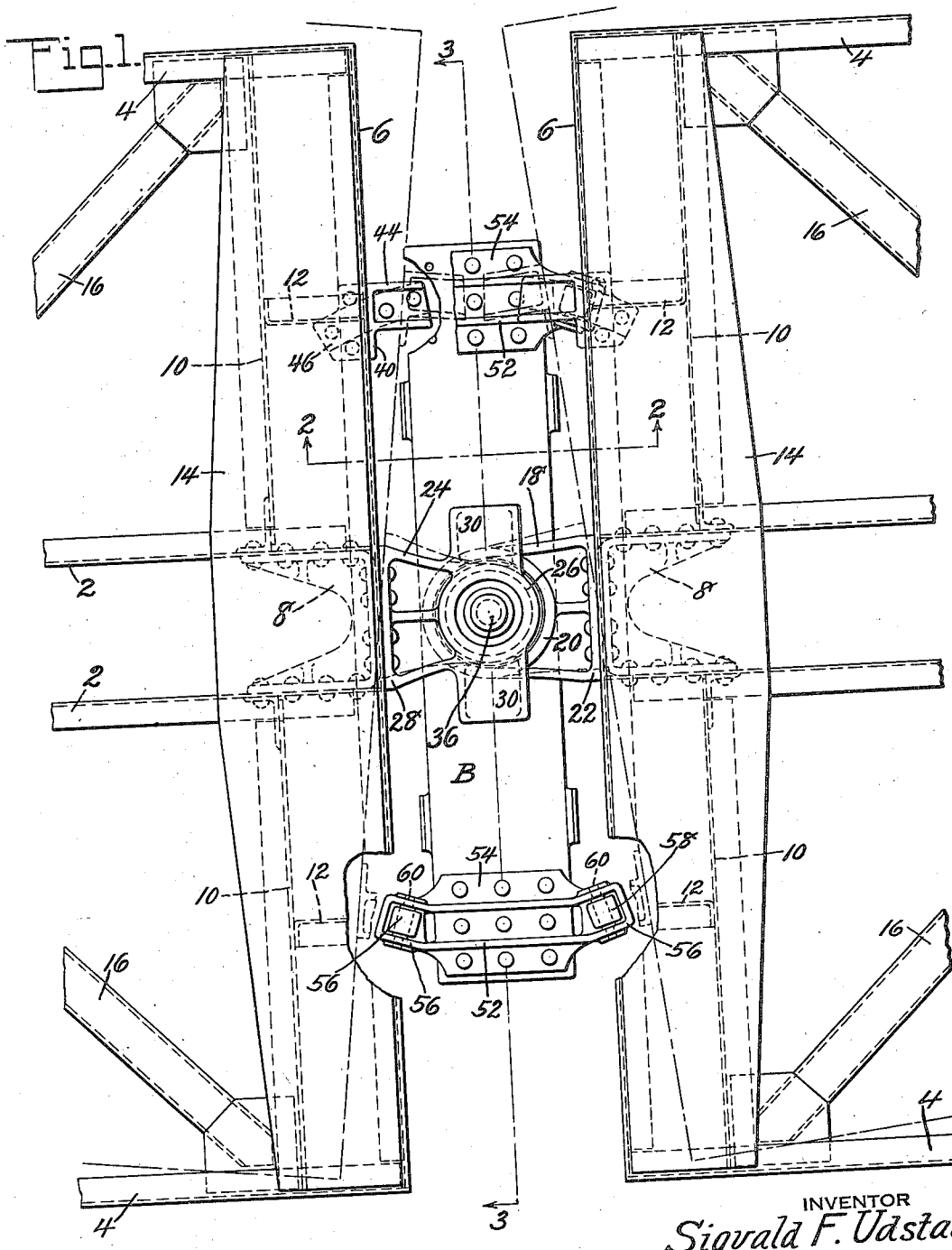
Feb. 15, 1938. S. F. UDSTAD 2,108,733

SIDE BEARING FOR ARTICULATED CARS

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Fig. 1.



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Fig. 2.

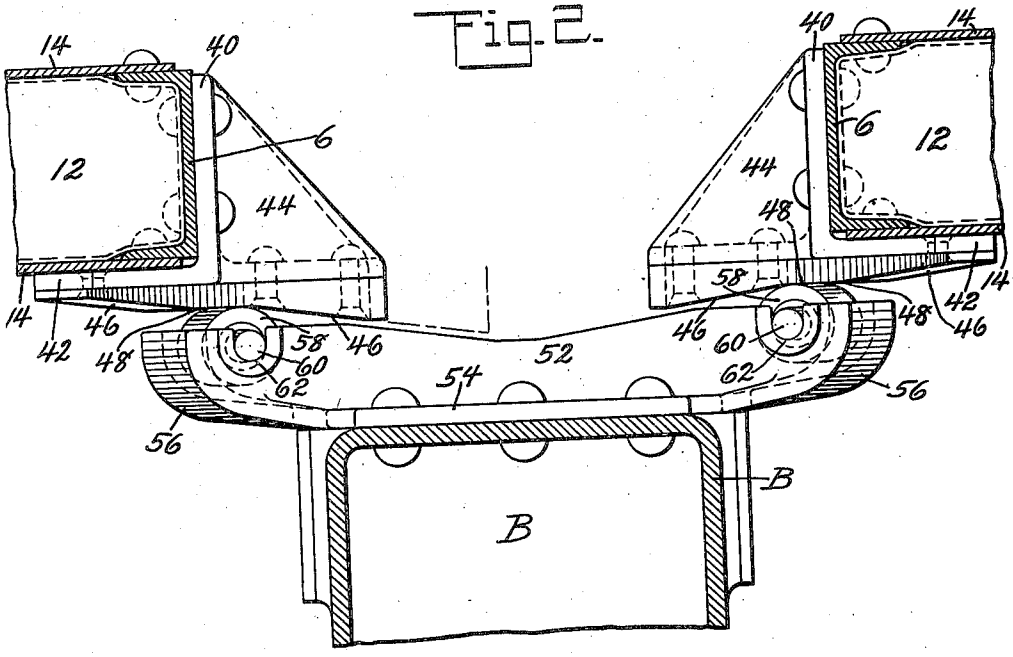
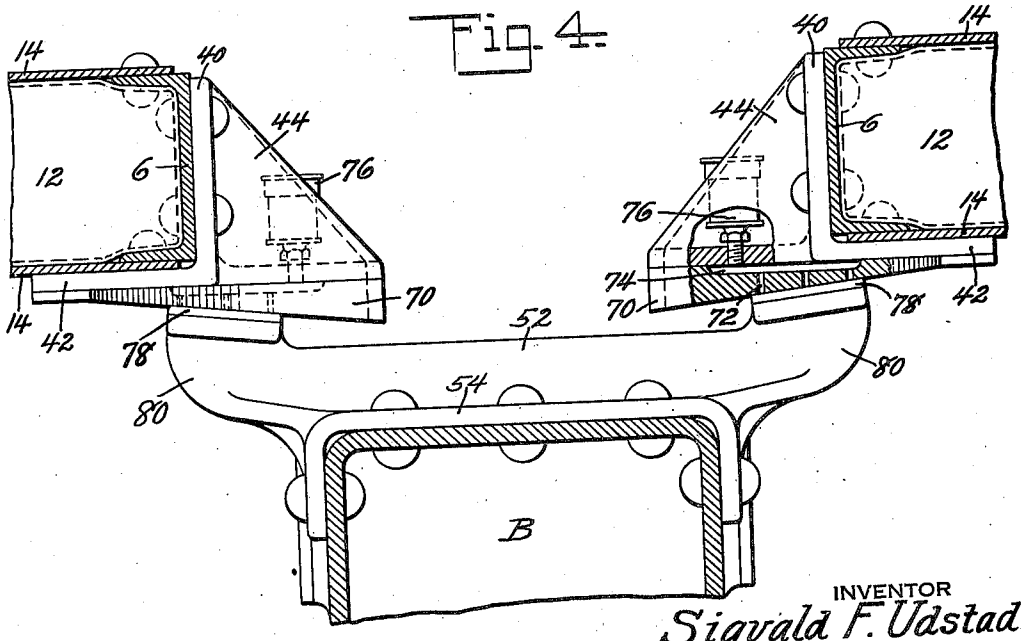


Fig. 4.



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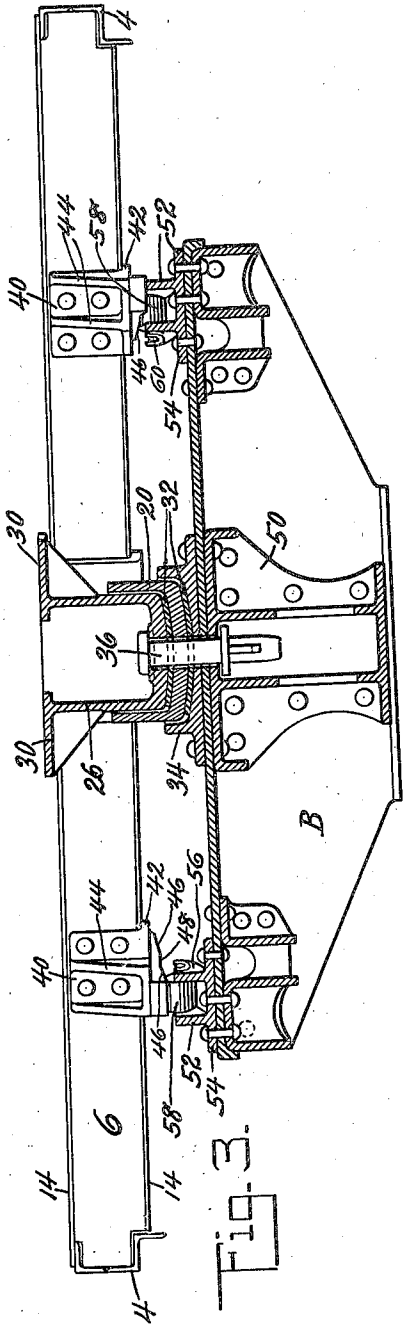


Fig. 3.

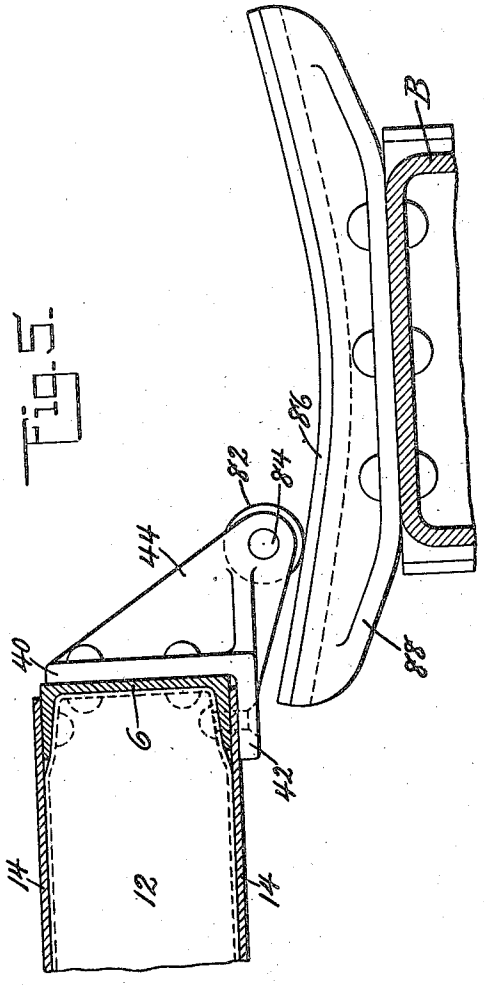


Fig. 5.

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SIDE BEARING FOR ARTICULATED CARS

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Application December 30, 1936, Serial No. 118,197

18 Claims. (Cl. 105—4)

This invention relates to railway cars in general and in particular to cars of the articulated type in which adjacent car bodies rest on a common truck.

Cars of this type as previously constructed have not made sufficient allowance for rocking of the car bodies during normal operation and on curves. Attempts have been made to provide for the necessary movement by use of spring mounted side bearings but these have proven impractical due to the expense and lack of positiveness. It is an object, therefore, of this invention to provide a construction which is positive in action yet inexpensive.

Another object of the invention is the provision of side bearings for articulated cars which will positively prevent abnormal rocking while permitting ample freedom of movement on curves.

A further object of the invention is the provision of an articulated construction which will positively tilt the cars in the proper direction when rounding curves thereby permitting higher speeds with greater safety.

A yet further object of the invention is the provision of an articulated construction which tends to hold the truck centered and prevent so-called nosing of the truck at high speeds.

A still further object of the invention is the provision of an articulated construction which will insure more equal loading of the truck springs during high speed operation on curves.

These and other objects of the invention will be apparent to those skilled in the art from a study of the following description and accompanying drawings, in which:

Fig. 1 is a plan view of an articulated joint using the improved side bearings and showing the position of the bodies when the cars are on a curve by dot and dash line;

Fig. 2 is an elevational view of one of the side bearings taken on line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a view similar to Fig. 2 but showing a modification, and

Fig. 5 is a view similar to Fig. 2 but showing a still further modification.

Referring now to the drawings in detail, it is seen that only the necessary parts of the adjacent car bodies and common truck are shown with all unnecessary portions omitted. Each car body as shown is formed with spaced center sills 2 and side sills 4, all of which may be of channel cross section if desired or of built up section as shown, and these sills are joined by channel end sills 6 which extend continuously from side sill to side sill. The end sill is tied to the center sills by center filler casting 8 and braced by backing members 10 and pressed fillers 12 at each side bearing. Top and bottom cover plates 14 join the end sill and backing members to the center and side sills thus forming a rigid box section end member which may be braced by the customary diagonal braces 16.

The end sill of one car body is provided with center casting 18 having an upwardly directed cup shaped portion 20 suitably braced to a rear portion 22 which is riveted to the center filler casting and end sill. The end sill of the adjacent car body is provided with a center casting 24 having a cup shaped portion 26 adapted to fit and pivot within the cup portion 20 of the other casting. The cup portion 26 is suitably braced to the rear vertical attaching face 28 secured to the center casting and end sill as shown and is provided with projecting wings 30 which support the foot plate (not shown). Suitable bearing members 32 are provided between the car carried cup members and between the lower cup member and the truck bolster cup 34. The customary locking pin 36 is provided which prevents separation of the car bodies and truck bolster, but which fits loosely enough to allow for the play necessary between the pin and center bearing members when the car bodies, as hereinafter described, are tilted during operation upon curved track.

At equal distances from the center castings the side bearings are secured to the end sill and each of these side bearings consists of a casting having a vertical and a horizontal end sill attaching face 40 and 42 respectively. The lower or horizontal face is extended and braced to the vertical face by gusset shaped portions 44. Secured to the lower face of the bearings are the wear or bearing members having substantially parallel spaced apart inclined surfaces 46 joined by a horizontal surface 48. These wear members are, of course, located so as to be substantially concentric with the pivot axis of the center castings and the inclination of the surfaces is so chosen as to give the desired car movements as will be later explained.

The truck bolster B is provided at its center with center filler brace 50 supporting the center bearing cup 34 and adjacent its ends with cast side bearings 52. Each of these truck side bearings consists of a channel shaped bolster engaging portion 54 by which it is securely fastened

to the bolster and from which extends the arms 56 adapted to support rollers 58. The rollers are formed with trunnions 60 carried in sockets 62 of the side bearing arms and these trunnions are arranged on radii drawn through the pivot axis of the cars and truck.

The operation of the device as shown in Figs. 1 to 3 inclusive is as follows and assuming the cars to be on tangent track. The horizontal surface 48 of the wear members will bear on the radial rollers 58 and prevent any excessive rocking of the car bodies. When the cars enter a curve the bodies will assume a position such as shown by dot and dash lines in Fig. 1 in which position the wear members on the approaching edges of the car bodies will engage the rollers on the lower inclined surface thus lowering the bodies on that side, while the wear members on the separating edges of the car bodies will engage the rollers on the upper inclined surface thus raising the bodies on that side. It is thus seen that as a car enters a curve the car bodies are tilted into the curve which will, of course, permit of considerably higher speeds than the curve was originally designed for and will also be more comfortable for the passengers. Of course, the entire shift will not appear in a shift of the car body since on a curve the centrifugal force causes the outer end of the bolster to be more heavily loaded than the inner end but the inclined surfaces are so chosen as to more than counteract this shift of load and actually tilt the bodies into the curve.

In the form shown in Fig. 4 the horizontal members 42 have secured thereto the inclined wear member 70 which is formed with oil openings 72 connected to oil cavity 74 which may be filled from oil cup 76. These wear members engage a wear pad 78 formed on the outwardly extending arms 80 of the truck side bearings.

The form shown in Fig. 5 is very similar to that described in connection with Figs. 1 to 3 inclusive with the exception that the horizontal member 42 and braces 44 support a roller 82 on trunnion 84 and this roller engages inclined wear member 86 carried by the truck side bearing 88.

The operation of the form shown in Figs. 4 and 5 is the same as that described in connection with Figs. 1 to 3 with the exception that a horizontal section is not provided for support of the car bodies when on tangent track. The elimination of the horizontal portion gives a more decided centering effect tending to hold the truck bolster at right angles to the car center line and prevent the so-called nosing of the truck under high speed operating which will add considerably to the life of the truck and comfort of the passengers.

While the device has been described more or less in detail, it is obvious that various modifications may be made and all such modifications are contemplated as fall within the scope of the following claims.

What is claimed is:

1. A railway car assembly comprising a plurality of bodies, a truck supporting the adjacent end portions of two of said bodies, body side bearings secured to said end portions and extending outwardly therefrom, and side bearings on said truck engageable by said body side bearings, said body side bearings being provided with inclined bearing surfaces directed downwardly toward the transverse center line of said truck.

2. A railway car assembly comprising a plurality of bodies, a truck supporting the adjacent end portions of two of said bodies, body side bearings secured to said end portions and extending outwardly therefrom, side bearings on said truck engageable by said body side bearings, said truck side bearings engaging downwardly inclined surfaces of said body side bearings during curving of the car assembly.

3. A railway car assembly comprising a plurality of bodies, a truck supporting the adjacent end portions of two of said bodies, body side bearings secured to said end portions and extending outwardly therefrom, and side bearings on said truck engageable by said body side bearings, said truck side bearings being provided with inclined bearing surfaces directed downwardly toward the transverse center line of said truck whereby during curving of the car assembly the inner side of the car with respect to the curve center is lowered.

4. A railway car assembly comprising a plurality of bodies, a truck supporting the adjacent end portions of two of said bodies, body side bearings secured to said end portions and extending outwardly therefrom, side bearings on said truck engageable by said body side bearings, said body side bearings being formed with bearing surfaces inclined downwardly toward the transverse center line of the truck.

5. A railway car assembly comprising a plurality of bodies, a truck supporting the adjacent end portions of two of said bodies, body side bearings secured to said end portions, said side bearings each being provided with a roller, side bearings on said truck engageable by said rollers, each of said truck bearings being formed with roller supporting surfaces inclined downwardly toward the transverse center line of said truck.

6. A railway car assembly comprising a plurality of bodies, a truck supporting the adjacent end portions of two of said bodies, body side bearings secured to said end portions, said side bearings each being provided with an antifriction wear member, side bearings on said truck engageable by said wear members, each of said wear members and associated truck side bearings being formed with substantially parallel bearing surfaces inclined downwardly toward the transverse center line of said truck.

7. A railway car assembly comprising a plurality of bodies, a truck supporting the adjacent end portions of two of said bodies, body side bearings secured to said end portions, said side bearings each being provided with a plurality of bearing surfaces inclined downwardly toward the transverse center line of said truck, and side bearings on said truck engageable with said bearing surfaces, each of said truck bearings carrying at least one radially arranged bearing element adapted to engage one of said inclined surfaces during curving of the car assembly.

8. A railway car assembly comprising a plurality of bodies, a truck supporting the adjacent end portions of two of said bodies, body side bearings secured to said end portions, said side bearings each being provided with spaced apart bearing surfaces inclined downwardly toward the transverse center line of said truck, and side bearings on said truck engageable with said bearing surfaces, each of said truck bearings carrying at least one radially arranged bearing element adapted to engage one of said inclined surfaces during curving of the car assembly, said body side bearings being provided with a substantially horizontal portion joining said inclined surfaces

and normally engaging said truck carried bearing elements.

9. A railway car assembly adapted to operate on curved track and comprising, a plurality of relatively movable bodies, a truck supporting the adjacent end portions of two of said bodies for relative movement, side bearings secured to each of said adjacent end portions, and side bearings on said truck engageable by said body side bearings, said body side bearings being formed with bearing surfaces inclined downwardly toward the transverse center line of said truck whereby the cars will be tilted toward the curve center during passage of the assembly over the curve.

10. A railway car assembly adapted to operate on curved track and comprising, a plurality of relatively movable bodies, a truck supporting the adjacent end portions of two of said bodies for relative movement, side bearings secured to each of said adjacent end portions, and side bearings on said truck engageable by said body side bearings, said truck side bearings being formed with bearing surfaces inclined downwardly toward the transverse center line of said truck, said surfaces being inclined sufficiently to tilt the car bodies and partly counteract the centrifugal force acting during curving of the assembly.

11. A railway car assembly adapted to operate on curved track and comprising, a plurality of relatively movable bodies, a truck supporting the adjacent end portions of two of said bodies for relative movement, side bearings secured to each of said adjacent end portions, and side bearings on said truck, said truck side bearings being provided with downwardly converging inclined bearing surfaces with which the body side bearings cooperate, said surfaces being so formed and arranged as to maintain the car truck longitudinal axis substantially parallel to the car body longitudinal axis during operation on tangent track.

12. In a railway car assembly, a plurality of car bodies, a truck supporting the adjacent end portions of two of said bodies, spaced side bearings secured to each of said bodies, each of said body side bearings comprising a substantially flat bearing surface and oppositely arranged bearing surfaces inclined downwardly toward the transverse center line of said truck, and side bearing elements on the truck normally engaging said flat bearing surfaces, said inclined bearing surfaces being so formed and arranged as to engage said bearing elements during passage of said assembly around a curve whereby the car bodies are tilted toward the curve center.

13. In a railway car assembly, a plurality of car bodies, a truck supporting the adjacent end portions of two of said bodies, side bearings on said bodies formed with bearing surfaces inclined downwardly toward the transverse center line of said truck, and side bearings carried by said truck, said truck side bearings being provided with fixed bearing surfaces with which said body side bearing surfaces are slidably engaged.

14. In a railway car assembly, a plurality of car bodies, a truck supporting the adjacent end portions of said bodies, side bearings on said bodies formed with bearing surfaces inclined downwardly toward the transverse center line of said truck, and side bearings carried by said truck, said truck side bearings being provided with bearing surfaces substantially parallel with said body side bearing surfaces and slidably engaged therewith.

15. In a railway car assembly, a plurality of car bodies, a truck supporting the adjacent end portions of said bodies, side bearings on said bodies and on said truck, said side bearings being formed with substantially parallel slidably engaged bearing surfaces inclined downwardly toward the transverse center line of said truck whereby upon operation of the assembly on a curve said car bodies are tilted toward the curve center.

16. In a railway car assembly, a pair of car bodies, a truck supporting the adjacent end portions of said bodies, spaced side bearings secured to said truck and each provided with converging bearing surfaces inclined downwardly toward the transverse center line of said truck, and roller side bearing elements secured to said end portions and engaging said bearing surfaces, said roller bearing elements and truck side bearings being cooperatively arranged whereby during operation on a curve said assembly is progressively tilted toward the curve center.

17. A body side bearing for railway cars comprising an attaching portion and a bearing portion, the latter being formed to provide a plurality of bearing surfaces inclined downwardly away from the car body.

18. A body side bearing for railway cars comprising an attaching portion and a bearing portion, the latter being formed to provide spaced bearing surfaces inclined downwardly away from the car body, and a horizontal bearing surface joining said inclined bearing surfaces.

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