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LATERAL MOTION ROLLER BEARING FOR CARS.

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1,090,266. Patented Mar. 17, 1914.

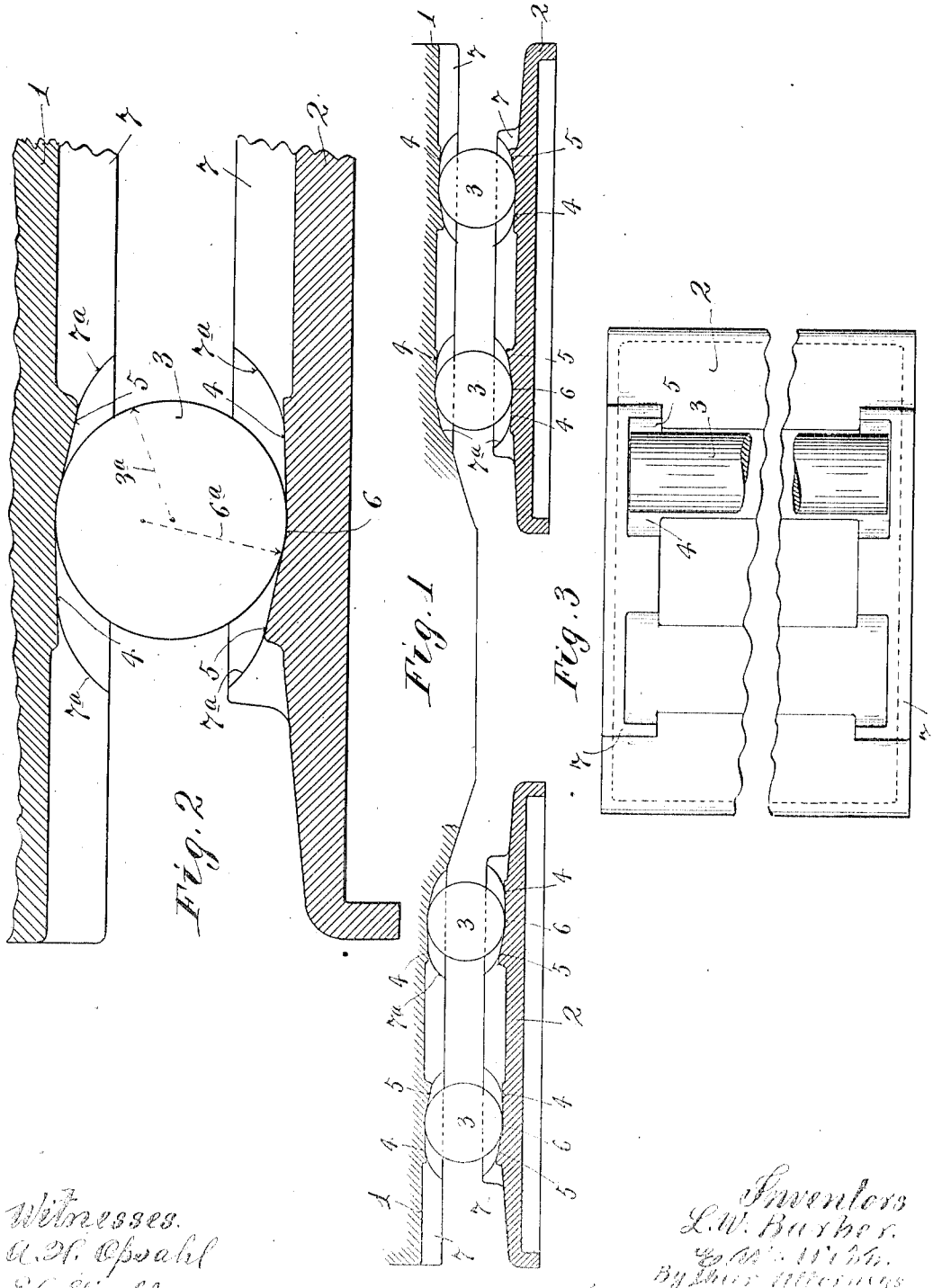

Fig. 1

Fig. 2

Fig. 3

Witnesses.
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UNITED STATES PATENT OFFICE.

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LATERAL-MOTION ROLLER-BEARING FOR CARS.

1,090,266. Specification of Letters Patent. Patented Mar. 17, 1914.

Application filed November 4, 1912. Serial No. 729,276.

To all whom it may concern:

Be it known that we, LEE W. BARBER and EDWIN W. WEBB, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lateral-Motion Roller-Bearings for Cars; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our present invention relates to roller-bearing lateral-motion devices for cars, and is in the nature of an improvement on or modification of the lateral-motion device disclosed and claimed in Letters Patent Number 784,096, granted to L. W. Barber of date March 7, 1905. This invention so modifies the construction of the said prior patent that one side of the car will be raised more than the other when the car body is moved laterally in respect to the trucks in rounding curves in the track.

It is a well known fact that the outer rails of a curved track are raised higher than the inner rails of the curve, so as to offset centrifugal force in the train and which, under high train speeds, exerts great force, tending to throw the body of the car outward and to thrust the flanges of the wheels against the rails. This invention provides in the lateral-motion roller-bearings themselves means which will further offset this action of centrifugal force, and thus further reduce the force under which the body of the car will be thrown outward in traveling the curve at high speed and reduce also the tendency of a car body to topple over in traveling a curve at very high speed. This result is accomplished in the roller bearings by so constructing and arranging the same that when the car body moves laterally outward in traveling the curve, the roller-bearings on the outer side of the car will raise that side of the car, while the roller bearings on the inner side of the car, will raise the inner side of the car very little if any.

In the accompanying drawings which illustrate the invention, like characters indicate like parts throughout the several views.

Referring to the drawings: Figure 1 is a fragmentary view, partly in diagram and partly in section, taken transversely of the car, and showing the lateral-motion roller bearings which work on the opposite sides of the car; Fig. 2 is an enlarged view, partly shown in the left hand half of Fig. 1; and Fig. 3 is a plan view with some parts broken away, showing the lower bearing plate and one of the rollers of one of the roller-bearing devices.

Referring to the drawings, the numeral 1 indicates the upper and the numeral 2 the lower roller-bearing plates of the lateral-motion roller-bearing device. The said upper bearing plates 1 must be assumed to move laterally with the car body, while the lower bearing plates 2 must be assumed to move laterally with the flanges of the car truck. The connections between the said bearing plates and the parts with which they move laterally may be made in many different ways, and for the purposes of this case, it may as well be assumed that they are connected substantially as shown in the prior Barber patent, above identified. For important reasons, fully set forth in the said prior Barber patent, the roller-bearing plates were formed with divergent flat roller engaging or bearing surfaces, and this invention involves this feature in a modified and novel arrangement.

The numeral 3 indicates the bearing rollers which are interposed between the upper and lower bearing plates 1 and 2. For engagement with the said rollers, the lower bearing plates 2 are formed with flat diverging roller-bearing surfaces 4 and 5, and with an intermediate cylindrical or curved surface 6, with which the flat bearing surfaces 4 and 5 join tangentially. The radius 6^a of the curve of the cylindrical surface 6 is slightly greater than the radius 3^a of the coöperating roller 3 (see particularly Fig. 2). The inwardly extended flat bearing surface 4 rises inwardly but very slightly from a horizontal direction, while the outer flat bearing surface 5 has a very much greater rise in an outward direction. The end portions of the flat bearing surfaces 4 and 5 join tangentially with the curved surface 7^a of stop lugs or flanges 7, cast integral with the said roller bearing plates 2. The radius of the curve 7^a is preferably the same as that of the coöperating roller 3. The lower

roller-bearing plates 2 on opposite sides of the car have their flat bearing surfaces 4 and 5 in just the opposite arrangement; that is, in both instances, nearly horizontal surfaces 4 extend inward toward the center of the car, while the relatively steep plate bearing surfaces 5 extend outward from the intermediate curve or cylindrical surface 6. The upper bearing plates 1 have the bearing surfaces 4, 5 and 6 and also the stop lugs or flanges 7 with curved stop surfaces 7ª, constructed just as above described, except that the said bearing surfaces 4 and 5 are in just the reverse arrangement in respect to those of the underlying plates 2. Otherwise stated, the nearly horizontal flat bearing surfaces 4 of the upper bearing plates 1 are extended outwardly, while the relatively steep or more inclined bearing surfaces 5 are extended inwardly.

With the above described arrangement of rollers and roller-bearing surfaces, when the car body, in traveling a curve, is thrown outward of the side toward the left in respect to Figs. 1 and 2, the following action will take place. The rollers at the left hand side of the car will be caused to run up the relatively steep flat bearing surfaces 5 of the lower left hand bearing plate 2, and the relatively steep flat bearing surfaces 5 of the upper left hand bearing plate 1 will be caused to run onto the left hand rollers 3. This will, of course, cause the left hand side of the car to be raised considerably. Under the above movement, the rollers 3 at the right hand side of the car roll upon the nearly horizontal flat bearing surfaces 4 of the lower right hand bearing plate 2, and the nearly horizontal flat bearing surfaces 4 of the upper right hand bearing plate 1 will roll upon the right hand bearing rollers 3 and thereby cause the right hand side of the car to be raised but very slightly.

The curve of the intermediate roller bearing surfaces 6 of the upper and lower plates exceeds the curve of the rollers so slightly that there is a very considerable tendency to maintain the rollers centered in the bearing plates in intermediate positions without, however, producing any lock or solid resistance against the initial movements of the rollers. When the rollers move on the flat inclined bearing surfaces 5, the resistance to lateral movement of the car is constant, as distinguished from an accelerated resistance such as produced by true cylindrical surfaces. The said bearing surfaces 4, 5 and 6 are so designed that the rollers traveling thereon will take care of the maximum lateral motion desired between the car trucks and the car body, but when the rollers, by extreme movement, are run into contact with the curved stop surfaces 7ª, further traveling or rolling movements thereof will be intercepted. Such engagement of the rollers with the said surfaces 7ª also serves to straighten up the rollers, that is, to force the same back into proper parallelism with each other and with the coöperating bearing surfaces, if, as sometimes happens, they should have worked out of position.

What we claim is:

1. A lateral motion device for cars, comprising upper and lower roller bearing plates and interposed rollers, said roller bearing plates having flat diverging surfaces and intermediate cylindrical bearing surfaces tangentially joining said flat bearing surfaces, the said bearing plates, on opposite sides of the car, being in duplicate, but in such reverse arrangement as to cause the car body to rise more on one side than on the other when moved laterally, and the flat bearing surfaces on the upper bearing plates being in reverse arrangement in respect to those of the under-lying roller bearing plates.

2. A lateral-motion device for car trucks, comprising upper and lower roller-bearing plates and an interposed roller, said bearing plates having flat diverging bearing surfaces and an intermediate cylindrical bearing surface tangentially joining said flat bearing surfaces, the radius of said cylindrical bearing surface being slightly greater than the radius of said roller, the said parts being arranged in duplicate on opposite sides of the car and the flat inwardly extending bearing surfaces of the lower bearing plates having a very slight inward rise, while the outwardly extending flat bearing surfaces of said lower bearing plates have a relatively great outward rise, and the flat bearing surfaces of the upper bearing plates being in a reverse arrangement in respect to those of the under-lying lower bearing plates.

In testimony whereof we affix our signatures in presence of two witnesses.

LEE W. BARBER.
EDWIN W. WEBB.

Witnesses:
ROY ANDERSON,
MABEL G. LAW.