Feb. 14, 1933. J. F. O'CONNOR 1,897,585

ANTIFRICTION BEARING

Original Filed Aug. 24, 1928

Fig. 1

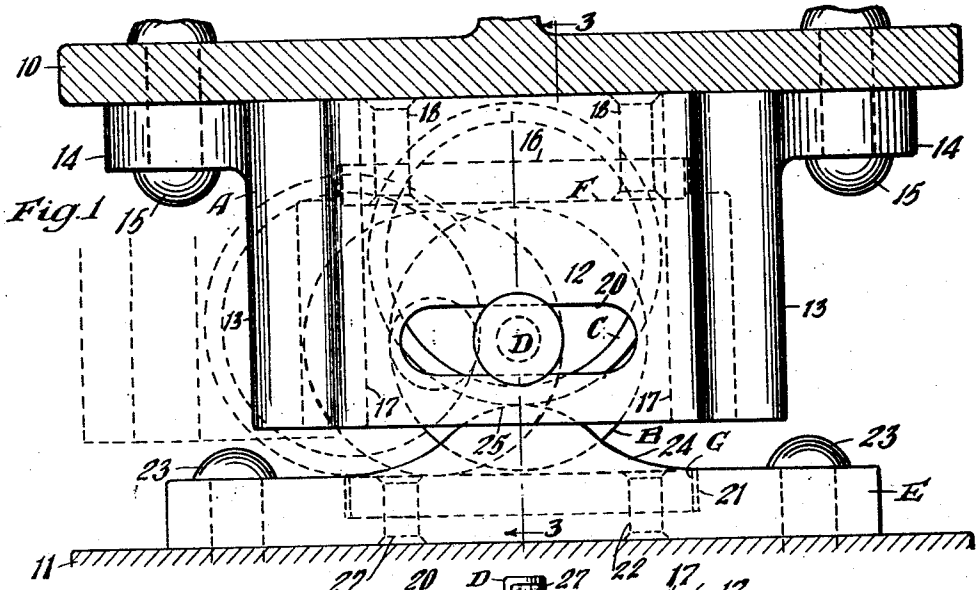


Fig. 2

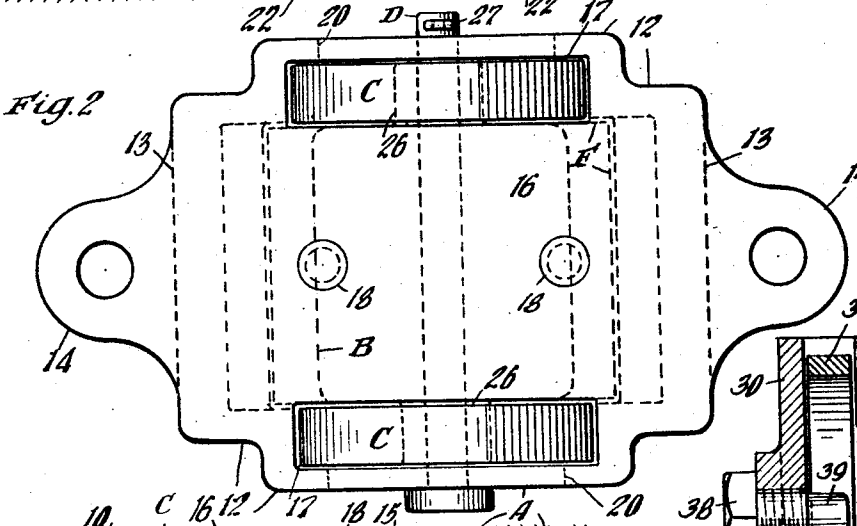


Fig. 3

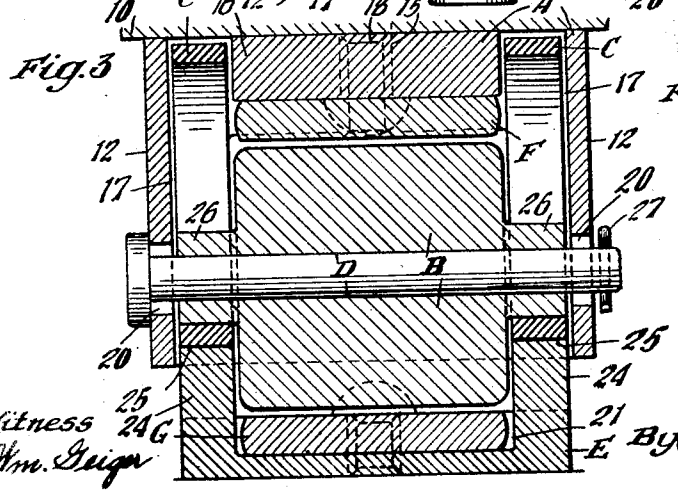
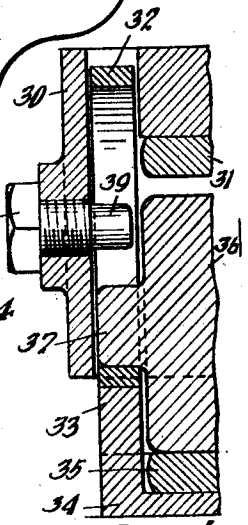


Fig. 4



Witness
Wm. Geiger

Inventor
John F. O'Connor
By Joseph Harris
His Atty.

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UNITED STATES PATENT OFFICE

JOHN F. O'CONNOR, OF CHICAGO, ILLINOIS, ASSIGNOR TO W. H. MINER, INC., OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE

ANTIFRICTION BEARING

Application filed August 24, 1928, Serial No. 301,834. Renewed July 9, 1932.

This invention relates to improvements in anti-friction bearings.

One object of the invention is to provide an anti-friction bearing especially adapted as a side bearing for railway cars, including a roller element interposed between the usual body and truck bolsters of a car, wherein the roller element is automatically centered after each actuation thereof by centering means controlled by relative angular movement of the bolsters.

A further object of the invention is to provide a roller side bearing of the character indicated, having means associated therewith for centering the roller, the centering means being movable with the body bolster and cooperating with means on the truck bolster for actuating the same, to center the anti-friction roller.

A still further object of the invention is to provide an anti-friction roller bearing element interposed between the body and truck bolsters of a railway car, together with centering means operated by cam tracks on one of the bolsters and moved laterally by means engageable therewith, carried by the other bolster.

A more specific object of the invention is to provide an anti-friction side bearing of the character indicated, including a housing element suspended from the body bolster of a railway car, an anti-friction roller element within the housing and cooperating with a bearing plate associated with the housing, centering ring elements having rolling movement and cooperating with the anti-friction roller, when displaced, to center the same, and actuating cam means on the truck bolster for controlling movement of the center rings upon relative angular movement of the body and truck bolsters.

Yet another object of the invention is to provide a roller side bearing for railway cars, having positively controlled means associated therewith for centering the roller automatically upon relative movement of the bolsters and wherein the centering means is so arranged that relative adjustment of the bolsters toward and away from each other does not effect the adjustment of the centering means.

Other objects of the invention will more clearly appear from the description and claims hereinafter following.

In the drawing forming a part of this specification, Figure 1 is a vertical, sectional view through portions of the body and truck bolsters of a railway car, illustrating my improvements in connection therewith, the anti-friction roller element and certain of the centering elements being shown in dotted lines, both in the normal centered position of the parts and the position of the parts when the roller has moved to one side of centered position during relative angular movement of the body and truck bolsters. Figure 2 is a top plan view of the bearing element shown in Figure 1, detached from the body bolster. Figure 3 is a vertical transverse sectional view corresponding to the line 3—3 of Figure 1. And Figure 4 is a view similar to Figure 3, partly broken away, illustrating another embodiment of the invention.

In said drawing, and referring first to the embodiment of the invention illustrated in Figures 1 to 3, inclusive, 10 denotes the underside portion of the usual body bolster of a railway car and 11 the top portion of the opposed cooperating truck bolster.

My improved anti-friction bearing, as shown in Figure 1, comprises broadly, a retaining housing A; an anti-friction roller B; two centering ring members C—C; a retaining pin D; a truck bolster bearing plate E; and wear plates F and G.

The housing A is of substantially rectangular box-like form having longitudinally disposed side walls 12—12 and transverse end walls 13—13. At opposite ends, the body portion of the housing is provided with attaching lugs or ears 14—14, by which the housing is held to the bottom side of the body bolster 10. As shown in the present instance, the housing is secured by rivets 15—15, extending through the ears 14 and the bottom plate member of the body bolster. The housing is provided with a top wall 16 having openings 17—17 at the opposite sides thereof extend-

ing lengthwise of the housing, for a purpose hereinafter pointed out. The top wear plate F is disposed within the housing and is secured to the top wall thereof by rivets 18—18. The wear plate F is of such a width as to fit between the openings 17 of the housing and is seated within an interior pocket 17 provided in the top wall of the same. The side walls 12 of the housing are provided with alined horizontally extending slots 20—20, which receive the retaining pin D.

The bearing plate E is of substantially rectangular shape and has a pocket 21 provided therein within which the wear plate G is accommodated, the wear plate being secured to the bearing plate E by means of rivets 22—22. The bearing plate E is secured to the top of the truck bolster 11 by means of rivets 23—23. At opposite sides and immediately adjacent the wear plate G, the bearing plate E is formed with cam tracks 24—24 which, as shown, have central high points 25—25, the cam tracks presenting bearing surfaces which are slightly curved, as clearly shown in Figure 1.

The centering rings C are disposed at opposite sides of the anti-friction roller B and are of such a diameter that they fit loosely within the openings 17 in the top wall of the housing. As shown in Figure 1, in the normal position of the parts, the centering rings C rest directly on the high points 25 of the cam tracks and the upper portions of the rings are accommodated within the openings 17 of the housing.

The anti-friction roller, as most clearly shown in Figure 3, is provided with integral trunnions 26—26 on the opposite sides thereof which engage within the centering rings C.

In order to maintain the parts in assembled relation with the housing, the retaining pin D is employed. The pin D, as shown, is headed at one end and extends through the openings or slots 20 in the side walls of the housing and a central opening provided in the anti-friction roller B. A cotter pin 27 is employed to secure the pin D in position, as clearly shown in Figure 3.

In assembling the parts of my improved roller side bearing, the centering rings C are placed about the trunnions 26 of the anti-friction roller B and the roller and rings are inserted within the housing through the bottom thereof. After the central opening of the roller has been brought into alinement with the slots 20 in the side walls of the housing, the retaining pin D is applied and secured in position.

In the normal position of the parts, the two centering rings C rest directly on the high points of the cam tracks 24 and the anti-friction roller element is slightly raised from the bottom wear plate G. As soon as the parts are slightly displaced to either side of the centered position, the rings will ride downwardly on the cam tracks, thereby insuring immediate contact of the anti-friction roller with the bearing plate G of the truck bolster.

During operation of the anti-friction bearing, when the weight of the body bolster is brought to bear on the top of the roller B and the body and truck bolsters are moved angularly with respect to each other, the roller is rolled along between the opposed bearing surfaces of the wear plates F and G of the body and truck bolsters. During this time, the centering rings C will roll down the inclined surfaces of the cam tracks. When the anti-friction roller is moved to the extreme lefthand dotted line position shown in Figure 1, the two centering rings will be substantially in the dotted line position at the lefthand side of said figure and will be resting on the low portions of the cam tracks 24. When the load is removed from the anti-friction roller B and the body and truck bolsters moved angularly with respect to each other, to their normal centered position, the centering rings C will be engaged by the adjacent end wall 13 of the housing and compelled to roll upwardly on the cam tracks 24. During this rolling movement, the interior surfaces of the rings will engage the trunnions of the roller and cause the same to be rolled back to its normal centered position. This centering action is due to the upward movement imparted to the centering rings by the cam tracks during the lateral movement of the rings.

Referring next to the embodiment of the invention illustrated in Figure 4, the general structure of the side bearing is substantially the same as that of the side bearing disclosed in Figures 1, 2 and 3, inclusive. In the embodiment shown in Figure 4, the anti-friction roller is provided with solid trunnions which cooperate with the centering rings and separate retaining means is employed for holding the centering rings assembled with the housing.

The housing, which is indicated by 30 in Figure 4, is substantially the same as the housing A hereinbefore described and is provided with an interior top wear plate 31, similar to the wear plate F. Two centering rings 32 are accommodated within the housing at opposite sides thereof, and have rolling movement on cam tracks 33 formed integral with a bearing plate 34 secured to the truck bolster, the bearing plate 34 and the cam tracks 33 being in all respects similar to the bearing plate E and the cam tracks 24, hereinbefore described. A wear plate 35 is supported on the bearing plate and cooperates with the bottom side of the anti-friction roller element. The anti-friction roller element, which is indicated by 36, is provided with integral solid trunnions 37, at the opposite sides thereof, which engage within the rings 32. The rings 32 are held in assembled

relation with the housing by cap screws 38 which are threaded within the side walls of the housing and have extensions 39 projecting into the rings 32. The operation of the side bearing illustrated in Figure 4 is in all respects substantially the same as the operation of the bearing hereinbefore referred to.

From the preceding description, taken in connection with the drawing, it will be evident that I have provided an exceedingly simple and efficient side bearing, wherein the centering means is not affected by relative separation of the body and truck bolsters. It is often necessary to make adjustment between bolsters by inserting shims or spacing members between the parts of the center bearing or removing shims therefrom. As will be evident, the body bolster is thus raised with respect to the truck bolster. In my construction, when the body bolster is thus raised and the housing moved upwardly therewith, the anti-friction roller element B and the centering rings C will remain seated on the bearing plate G and the cam tracks 24, the housing proper being free to move upwardly with respect to the same. It is clear from this that the adjustment of the centering rings is not in any way affected by the upward movement of the housing.

I have herein shown and described what I now consider the preferred manner of carrying out my invention, but the same is merely illustrative and I contemplate all changes and modifications that come within the scope of the claims appended hereto.

I claim:

1. In an anti-friction bearing for railway cars provided with opposed body and truck bolsters, the combination with an anti-friction roller supported on one of the bolsters; of centering rings cooperating with the anti-friction roller element; a cam track on the last named bolster cooperating with the rings; and a housing secured to the other bolster enclosing said rings and roller element, said housing having means thereon engaging the rings to actuate the same when said bolsters are moved angularly with respect to each other.

2. In an anti-friction bearing for railway cars provided with body and truck bolsters, the combination with a movable anti-friction element interposed between the bolsters and adapted to have rolling engagement therewith, of a housing secured to one of the bolsters and enclosing said anti-friction element, said housing being provided with end walls; a centering ring cooperating with the anti-friction element, said ring being disposed between the end walls of the housing and engaged and moved thereby when the bolsters are moved angularly with respect to each other; and cam tracks on the other bolster supporting the ring and controlling the position thereof.

3. In an anti-friction bearing for railway cars provided with body and truck bolsters the combination with a roller element interposed between the bolsters, said roller element being provided with trunnions; of centering rings engaging said trunnions; cam means on one of the bolsters cooperating with the rings to control the position thereof; and means on the other bolster engaging the rings to actuate the same along said cam means.

4. In an anti-friction bearing for railway cars provided with cooperating body and truck bolsters, the combination with an anti-friction roller interposed between the bolsters and supported for rolling movement on the truck bolster; of a housing enclosing said roller, said housing being fixed to the body bolster; centering ring means within the housing cooperating with the roller and engaged by certain of the wall portions of the housing to effect rolling movement thereof; and cam track means on the truck bolster on which said centering means is movable.

5. In an anti-friction side bearing for railway cars having opposed body and truck bolsters, the combination with an anti-friction roller element interposed between the bolsters; of centering rings cooperating with the roller to center the same; a housing secured to one of the bolsters and having engagement with the rings to control the position thereof: and cam means on the other bolster cooperating with said centering rings.

6. In an anti-friction side bearing for railway cars having opposed body and truck bolsters, the combination with an anti-friction roller interposed between the bolsters; of a centering ring engaging portions of the roller to center the same, one of said bolsters supporting the roller and having a cam track cooperating with the centering ring, said cam track having a high central point on which said ring rests when the bolsters are in alinement; and means on the other bolster for actuating the ring and controlling movement thereof.

7. In an anti-friction side bearing for railway cars having opposed body and truck bolsters, the combination with a housing secured to the body bolster; of an anti-friction roller within the housing, said roller being provided with trunnions; centering rings disposed about said trunnions and cooperating therewith to center the roller; retaining means for holding the rings assembled with the housing; and cam means on the truck bolster cooperating with the centering rings.

8. In an anti-friction side bearing for railway cars provided with opposed body and truck bolsters, the combination with a housing secured to the body bolster, said housing having end and side walls; of an anti-friction roller within the housing, said roller be-

ing provided with trunnions; centering rings disposed about the trunnions and interposed between the ends of the roller and the side walls of the housing, said centering rings cooperating with the trunnions to center the roller; a retaining pin extending through the roller and side walls of the housing to hold the parts assembled; and means on the truck bolster cooperating with the centering rings to control the position thereof during relative angular displacement of the bolsters.

9. In an anti-friction bearing for railway cars provided with body and truck bolsters, the combination with an anti-friction element interposed between said bolsters and having rolling movement with respect thereto; of centering means for said element; means on one of said bolsters engaging and actuating said centering means by raising and lowering the same during relative movement of the bolsters to center said roller; and means on the other bolster engaging said centering means and effecting lateral bodily movement of said centering means in unison with said last named bolster lengthwise on the other bolster to render said actuating means effective to operate said centering means to center the anti-friction element.

10. In an anti-friction bearing for railway cars provided with body and truck bolsters, the combination with a movable anti-friction member interposed between the bolsters and having rolling bearing contact therewith; of a floating centering element engaging the anti-friction member to center the same; and separate means on each bolster for positively actuating said centering element at all times, during relative angular movement of the bolsters with respect to each other, said actuating means including means on one of said bolsters engaging said element for moving said element to travel to and fro on the other bolster, and means on the last named bolster engaging said element for displacing the same with respect to the first named bolster, thereby jointly controlling the position of the centering means.

11. In an anti-friction side bearing for railway cars having body and truck bolsters, the combination with a rolling anti-friction element interposed between said bolsters; of movable means having engagement with the anti-friction element for centering the same, said last named means being supported for movement on one of said bolsters; and means on the other bolster engaging said centering means to actuate and move the later bodily laterally in unison with said bolster to effect a corresponding displacement thereof on the bolster on which it is supported; and means dependent upon the relative displacement of the bolsters for positively controlling the centering engagement of said centering means and anti-friction element.

12. In an anti-friction side bearing for railway cars provided with body and truck bolsters, the combination with an anti-friction roller element interposed between said bolsters; of centering means for the roller movable laterally in unison with one of said bolsters and guided for reciprocating movement on said bolster and supported on the other bolster for reciprocating movement in a different direction; means fixed with respect to said last named bolster, and along which said centering means is reciprocated for actuating the latter with respect to the first named bolster when said bolsters are moved angularly with respect to each other, said actuating means of the truck bolster and said actuating means of the body bolster jointly positively controlling the position of the centering means at all times during relative angular movement of said bolsters.

13. In an anti-friction bearing for railway cars provided with body and truck bolsters, the combination with an anti-friction element interposed between said bolsters and having rolling movement with respect thereto; of centering means for said element; cam means on one of the bolsters for actuating the centering means during relative movement of the bolsters; and means on the other bolster for reciprocating said centering means along said cam means during relative movement of the bolsters and positively controlling the position of the centering means on said cam means at all stages of relative angular displacement of said bolsters.

In witness that I claim the foregoing I have hereunto subscribed my name this 22nd day of August, 1928.

JOHN F. O'CONNOR.