C. L. MEISTER.

ROLLER SIDE BEARING.

APPLICATION FILED JAN. 17, 1913.

1,200,005. Patented Oct. 3, 1916.

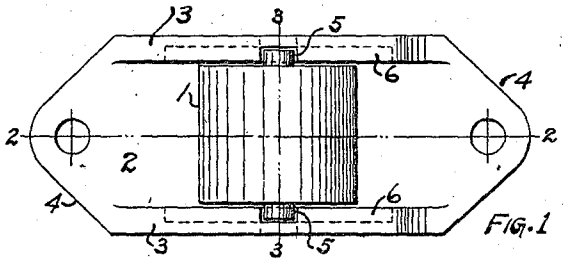

FIG. 1

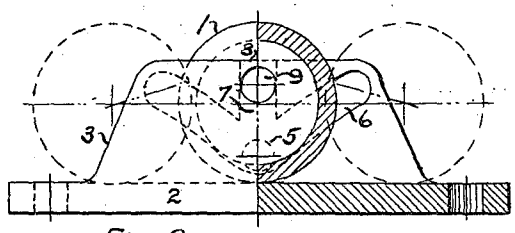

FIG. 2

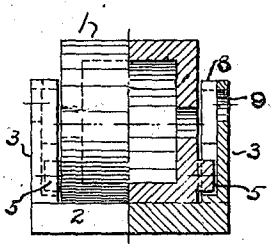

FIG. 3

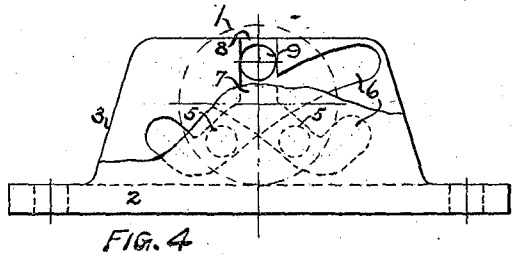

FIG. 4

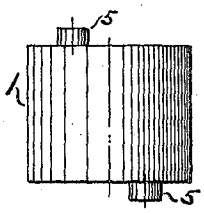

FIG. 5

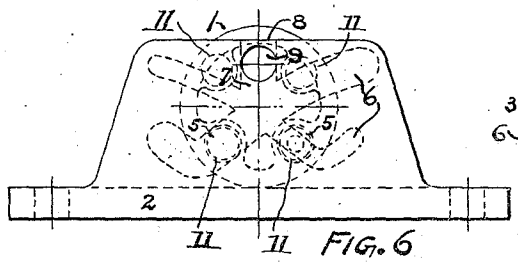

FIG. 6

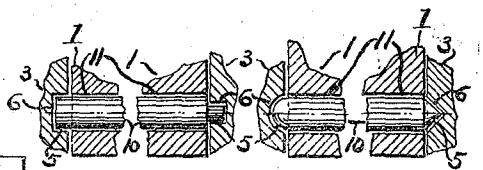

FIG. 7 FIG. 8

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UNITED STATES PATENT OFFICE.

CONRAD L. MEISTER, OF WILMINGTON, NORTH CAROLINA.

ROLLER SIDE BEARING.

1,200,005. Specification of Letters Patent. Patented Oct. 3, 1916.

Application filed January 17, 1913. Serial No. 742,628.

To all whom it may concern:

Be it known that I, CONRAD L. MEISTER, a citizen of the United States, residing in Wilmington, in the county of New Hanover and State of North Carolina, have invented certain new and useful Improvements in Roller Side Bearings, of which the following is a specification.

My invention relates to improvements in roller side bearings for railway cars.

In roller side bearings for railway cars, difficulty has heretofore been experienced in causing the roller to return automatically to its central or normal position, except by the use of springs or intricate and numerous parts.

The object of my invention is to produce a roller side bearing, simple in construction, consisting of the least number of parts and so arranged that the roller will return to its central or normal position by the action of gravity.

My invention consists in the novel constructions and combination of parts as herein shown, described, and claimed.

In the drawings Figure 1 is a plan view of the bottom plate and roller. Fig. 2 is a partial longitudinal view of the side elevation of the device and a partial longitudinal vertical section along lines 2—2 shown in Fig. 1. Fig. 3 is a partial end view of the device and a partial vertical section along lines 3—3 shown in Fig. 1. Fig. 4 shows a side elevation of the device in a modified form, one of the side walls of the bottom plate being partially removed so as to indicate that the arrangement of the channels in the side walls are opposite instead of coincident with each other, due to the use of one lug on each side of the roller, the lugs not being located opposite to each other. Fig. 5 is a plan view of the roller used with the combination illustrated in Fig. 4, showing more clearly the lugs on each side. The reason for locating the lugs in this manner will be more fully explained later. Fig. 6 is another modification of the device showing a side elevation of the combination when more than one lug is used on each side of the roller and where the opposite ends of the lugs are different. Fig. 7 shows more clearly the arrangement of the ends of the lugs where they project beyond the sides of the roller and the corresponding cross sections of the channels in the side walls, as illustrated in Fig. 6. Fig. 8 shows another modification of ends of the lugs. The reason for arranging the channels in the side walls as shown in Fig. 6 and making the ends of the lugs, which are opposite each other, of different size, as shown also in Fig. 6, this detail being more fully illustrated in Fig. 7; or making the ends of the lugs which are opposite each other of different shape, as illustrated in Fig. 8, will also be more fully explained later.

Referring now to Fig. 1 and its corresponding Fig. 2 and Fig. 3: 1 is a roller, 2 is a bottom plate with side walls 3 to guide the roller 1, and with projecting ears 4 arranged for securing the bottom plate to a part of the car truck. The roller 1 is provided with a lug 5 projecting beyond its side and located near its rolling surface. Fig. 1 and Fig. 3 show this lug 5 projecting from each side of roller 1 but the arrangement would be just as practical if the lug 5 projected from only one side of the roller instead of both as shown. The side walls 3 of the bottom plate have channels or grooves 6 formed in them in which the lug or lugs 5 move; the walls of these channels being shaped to suitably receive the lugs 5. The object of the channels 6 is that their walls prevent the translation of the roller when provided with its projecting lugs 5 between the side walls 3, but permit the roller to roll freely toward either end of the bottom plate 2; therefore, I term the walls of these channels 6 the guiding means for the lugs on the roller. The channels 6 in the side walls 3 are provided with an extension 7, at the end of which is an opening 8 for the purpose of entering the roller 1 with its side lugs between the walls 3 of the bottom plate 2. This extension 7 and opening 8 can be located at any suitable place in the side walls 3, the drawings showing them located centrally merely because it is deemed the most suitable arrangement. Holes 9, located at some place in the extensions 7 are also shown through which the lugs 5 can be inserted between the side walls 3 when the lugs 5 are not fixed parts of the roller, but are in the

form of loose pins passing through the roller. This arrangement of the lugs will be more fully explained in a modified form of the combination later.

The operation of this device will be readily apparent. The bearing is secured in place to the proper part of the car truck on which it is to be used in any suitable manner and when contact is made between the top or body side bearing (not here shown) and the roller, and the truck to which the bearing is secured, is deflected, the roller rolls along the top surface of the bottom plate and in so doing the lugs attached thereto move in the channels of the side walls, following a curved path known as a trochoid. When the top or body side bearing is not in contact with the roller and the roller is away from its central or normal position, the roller is caused to roll back again to its central or normal position by the action of gravity on the lugs and also by the walls of the channels guiding the lugs of the roller so as to cause the roller to roll in a predetermined manner.

Fig. 4 and Fig. 5 show a modified arrangement of the combination in that the roller 1 has a lug 5 on each side, but the lugs are not located opposite each other as illustrated in Fig. 1, Fig. 2 and Fig. 3. On account of this difference in location of the lugs 5 on the roller 1, the walls of the channels 6 in the side walls 3, are shaped in a trochoidal form different to that shown in Fig. 2 and at the same time they are formed in each side wall oppositely from each other, this being necessary so that those in each side wall can properly act as the guiding means for the lug 5 projecting between them.

In Fig. 2 it is evident that the walls of the channel 6 prevents the lateral translation of the roller 1 along the bottom plate 2, although they permit the roller to freely roll, yet, owing to the extension 7 being located centrally, the roller 1 is not prevented from being moved vertically off the bottom plate, which might be considered objectionable. This objection, however, is overcome by the arrangement of the lugs 5, as shown in Fig. 4 and Fig. 5, and the roller 1 while being free to roll toward either end of the bottom plate 2 is at the same time prevented from being translated along the bottom plate or raised vertically off the same.

A still further modification of the combination to accomplish the results described above is shown in Fig. 6 and Fig. 7, or Fig. 8. In this arrangement the lugs are not fixed parts of the roller but are in the form of loose pins 10 passing through suitably provided holes in the roller and instead of one lug on each side of the roller more than one is used, thus providing a stronger means of holding the roller 1 between the side walls 3. When loose pin lugs are used, the opening 8 at the end of the extension 7 may be used if desired, but an improved means of introducing the pins between the side walls 3 is through the holes 9 located at the outer end of the extension 7 and then through the holes 11 in the roller. By locating the holes 9 in the side walls at some place other than that occupied by the channels the pins are held in place between the side walls as securely as if they were a fixed part of the roller instead of being loose in the same.

If the lugs on the ends of the pins were all the same size or same shape and if the walls of the channels 6, or guiding means for these lugs, were also of the same shape and size to suitably receive the lugs and if at the same time they were located symmetrically opposite each other, the roller 1 might be rendered inoperative owing to the possibility of both lugs on each side being placed in the same symmetrically located pair of channels when the roller is off the central or normal position. To overcome this possibility the opposite ends of the lugs are made of different size or of different shape as illustrated in Fig. 7 and Fig. 8, and when the pins are inserted through the holes 9 of the side walls, and through the holes 11 of the roller, they should be inserted from opposite sides so that the roller will have its projecting lugs on each side of different size or different shape to each other. The guiding means for these lugs when so inserted being suitably arranged in each of the side walls, the roller, while being prevented from translation along the bottom plate or from being lifted off the same, and while being prevented from becoming inoperative due to the impossibility of the lugs on each side being located both in the same guide channel, on account of their difference in size or shape, as explained above, is free to roll toward each end of the bottom plate in precisely the same manner as in the other forms of the combination.

It is evident from the foregoing description and illustrations of my invention that the roller is perfectly free to roll on either side of its central or normal position toward the ends of the bearing plate and when the contact of the top or body side bearing is removed the roller will return to its central or normal position, provided the force of gravity acting through the combined center of gravity of the roller and its lugs pass through some point on the bottom plate which is between the contact line of the roller and the central or normal position of the roller.

It is also evident that when the travel of the roller on each side of its central or normal position is so limited as to comply with the restrictions in the above paragraph that

it is impossible to cause the roller to rotate about its lugs, notwithstanding the number of lugs used or their location on the sides of the roller.

The roller 1 can be provided with a series of holes 11 for the insertion of the pins 10 at one or more locations, so that in case the roller 1 becomes worn or flattened at any part of its rolling surface, the pins 10 can be applied in new locations and new contact surfaces provided.

The lugs 5 can be located at different distances from the bottom rolling surface of the roller 1 on the same or opposite sides of the roller 1 and the channels 6 properly located in the side walls to correspond.

Realizing that considerable variation is possible in the details of this construction without departing from the spirit of the invention, I therefore do not intend to limit myself to the specific forms shown herein and described.

I claim as my invention:

1. In an antifriction bearing the combination of a bearing plate having side walls, said side walls having trochoidal shaped recesses therein and a roller having eccentrically located lugs consisting of members extending laterally therefrom and engaging the said trochoidal shaped recesses in said walls.

2. In an antifriction bearing the combination of a bearing plate having side walls, said side walls having trochoidal shaped recesses therein and a roller having eccentrically located lugs engaging said trochoidal shaped recesses.

3. In an antifriction bearing the combination of a bearing plate having side walls, said side walls having trochoidal shaped recesses therein and a roller having eccentrically located lugs extending laterally therefrom, and from the opposite sides thereof, engaging said trochoidal shaped recesses.

4. In an antifriction bearing the combination of a bearing plate having side walls, said side walls having trochoidal shaped recesses therein and a roller having eccentrically located lugs consisting of members extending laterally therefrom, the opposite ends of which are differently formed and engaging said trochoidal shaped recesses.

5. In an antifriction bearing, the combination of a bearing plate having side walls, said side walls having trochoidal shaped recesses therein, and a roller having lugs consisting of members extending laterally therefrom and from opposite sides thereof, eccentrically located with respect to each other and engaging said trochoidal shaped recesses.

6. In an antifriction bearing the combination of a bearing plate having side walls, said side walls having trochoidal shaped recesses therein and a roller having a series of eccentrically located apertures therein and having members extending within said apertures and engaging said trochoidal shaped recesses.

7. In an anti-friction bearing the combination of a bearing plate having side walls, and a roller having eccentrically located lugs projecting into recesses into said side walls, the lugs being so located on the roller and the recesses in the side walls being so shaped as to prevent the sliding of the roller along the bottom plate and assist the return of the roller to its central or normal position.

8. In an anti-friction bearing the combination of a bearing plate having side walls, and a roller having eccentrically located lugs consisting of loose pins projecting into recesses in said side walls, the loose pin lugs being so located on the roller and the recesses in the side walls being so shaped as to prevent the sliding of the roller along the bottom plate and assist the return of the roller to its central or normal position.

9. In an anti-friction bearing the combination of a bearing plate having side walls, and a roller having lugs on opposite sides of the same eccentrically located with respect to each other, said lugs projecting into recesses in said side walls, the lugs being so located on the roller and the recesses being so shaped in the side walls as to prevent the roller from sliding along the bottom plate, and assist the return of the roller to its central or normal position.

10. In an anti-friction bearing the combination of a bearing plate having side walls, and a roller having eccentrically located lugs consisting of loose pins, the ends of which are of different shape, projecting into suitable recesses in said side walls, the lugs being so located on the roller and recesses in side walls being so shaped as to prevent the sliding of the roller along the bottom plate, and to assist the return of the roller to its central or normal position.

11. In an anti-friction bearing the combination of a bearing plate having side walls, and a roller having eccentrically located lugs projecting into recesses in said side walls, said lugs generating trochoidal curves when the roller rolls along the bottom plate, the lugs being so located on the roller and the recesses in the side walls being so adapted as to prevent the roller sliding along the bottom plate and assist in returning the roller to its central or normal position.

12. In an anti-friction bearing the combination of a bearing plate having side walls, and a roller having eccentrically located lugs consisting of loose pins projecting into recesses in said side walls, said lugs generating trochoidal curves when

the roller rolls along the bottom plate, the lugs being so located on the roller and the recesses in the side walls being so adapted as to prevent the roller sliding along the bottom plate and assist in returning the roller to its central or normal position.

13. In an anti-friction bearing the combination of a bearing plate having side walls, and a roller having lugs on opposite sides of the same eccentrically located with respect to each other, said lugs projecting into recesses in said side walls, said lugs generating trochoidal curves when the roller rolls along the bottom plate, the lugs being so located on the roller and the recesses in the side walls being so adapted as to prevent the roller sliding along the bottom plate and assist in returning the roller to its central or normal position.

14. In an anti-friction bearing the combination of a bearing plate having side walls, and a roller having eccentrically located lugs consisting of loose pins, the ends of which are of different shape, projecting into recesses in said side walls, said lugs generating trochoidal curves when the roller rolls along the bottom plate, the lugs being so located on the roller and the recesses in the side walls being so adapted as to prevent the roller sliding along the bottom plate and assist in returning the roller to its central or normal position.

15. In an anti-friction bearing the combination of a bearing plate having side walls, and a roller having a series of eccentrically located apertures therein, lugs consisting of loose pins projecting into said apertures and into recesses in said side walls, the apertures being so located in the roller and the recesses in the side walls being so shaped that the lugs projecting into the apertures and the side wall recesses prevent the sliding of the roller along the bottom plate and assist the return of the roller to its central or normal position.

16. In an anti-friction bearing the combination of a bearing plate having side walls, and a roller having a series of eccentrically located apertures therein, lugs consisting loose pins projecting into said apertures and into recesses in said side walls, said lugs generating trochoidal curves when the roller rolls along the bottom plate, the apertures being so located in the roller and the recesses in the side walls being so shaped that the lugs projecting into the apertures and the side wall recesses prevent the sliding of the roller along the bottom plate and assist the return of the roller to its central or normal position.

17. In a side bearing, the combination with a bearing plate provided with a wall thereon, having a guideway therein, of a roller adapted to roll on said bearing plate and means for guiding said roller, comprising an eccentrically located trunnion on the roller operating within the guideway in said wall, the walls of said guideway being substantially parallel to the path of said trunnion and coöperating therewith to maintain an unchanged rolling surface on said roller for contact with said bearing plate.

18. In a side bearing, the combination with a bearing plate provided with side walls having channels therein, of a roller adapted to roll on said bearing plate and means for guiding said roller, comprising eccentrically located trunnions on the roller operating within the channels in said side walls, the walls of said channels being substantially parallel to the path of said trunnions and coöperating therewith to maintain an unchanged rolling surface on said roller for contact with said bearing plate.

19. In a side bearing, the combination with a bearing plate provided with side walls having channels therein, of a roller adapted to roll on said bearing plate and means for guiding said roller, comprising eccentrically located trunnions on the roller operating within the channels in said side walls, said trunnions operating in trochoidal curves within the channels during the rolling movement of the roller, the walls of said channels being substantially parallel to the path of said trunnions and coöperating therewith to maintain an unchanged rolling surface on said roller for contact with said bearing plate.

20. In a side bearing, the combination with a bearing plate provided with side walls having channels therein, of a roller adapted to roll on said bearing plate and means for guiding said roller, comprising eccentrically located trunnions on the roller operating within channels in said side walls, said trunnions being formed by a pin extending from the side of said roller, the walls of said channels being substantially parallel to the path of said trunnions and coöperating therewith to maintain an unchanged rolling surface on said roller for contact with said bearing plate.

21. In an anti-friction bearing the combination of a bearing plate having side walls, said side walls having trochoidal shaped recesses therein and a roller having eccentrically located lugs engaging said trochoidal shaped recesses.

22. In an anti-friction bearing the combination of a bearing plate having side walls, said side walls having trochoidal shaped recesses therein and a roller having eccentrically located lugs consisting of members extending laterally therefrom and engaging the said trochoidal shaped recesses in said walls.

23. In an anti-friction bearing the combination of a bearing plate having side walls, said side walls having trochoidal shaped

recesses therein and a roller having eccentrically located lugs extending laterally therefrom, and from the opposite sides thereof, engaging said trochoidal shaped recesses.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 15 day of January, 1913.

C. L. MEISTER.

Witnesses:
WALTER D. THOMAS,
W. J. LAWTHER.