

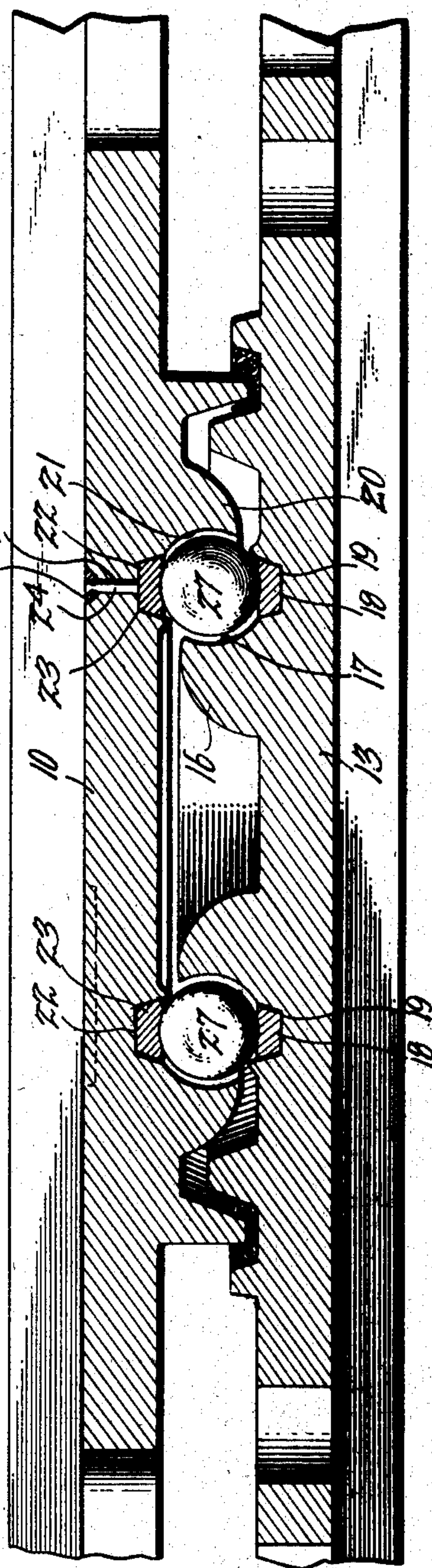
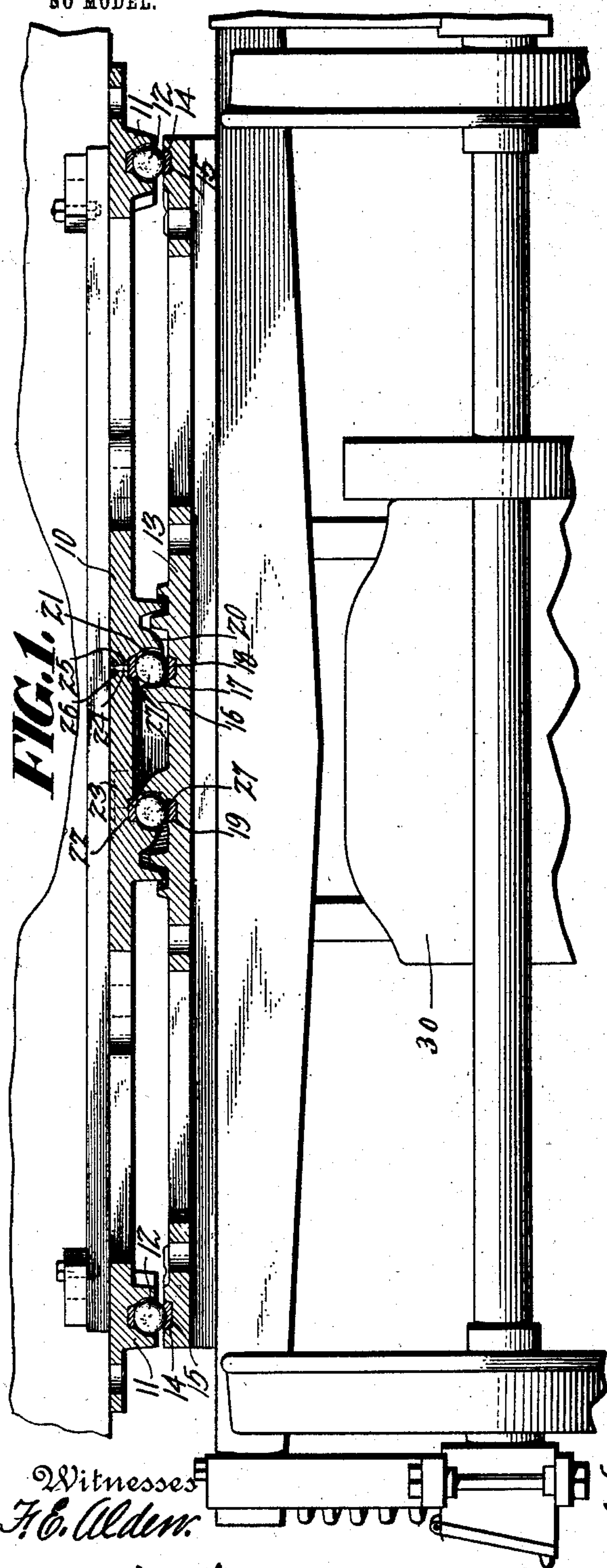
No. 719,496.

PATENTED FEB. 3, 1903.

J. E. NORWOOD.  
INTERLOCKING CENTER BEARING FOR CARS.

APPLICATION FILED JUNE 4, 1902.

NO MODEL.



Witnesses  
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# UNITED STATES PATENT OFFICE.

JOHN E. NORWOOD, OF BALTIMORE, MARYLAND, ASSIGNOR TO BALTIMORE BALL BEARING COMPANY, OF BALTIMORE, MARYLAND, A CORPORATION OF MARYLAND.

## INTERLOCKING CENTER-BEARING FOR CARS.

SPECIFICATION forming part of Letters Patent No. 719,496, dated February 3, 1903.

Application filed June 4, 1902. Serial No. 110,219. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. NORWOOD, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Interlocking Center-Bearings for Cars; and I 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.

This invention relates to roller-bearings for car-trucks; and it has for its object to provide a construction some of the features of which will especially adapt it to street-car trucks, wherein the motor is carried by the trucks and in consequence of which there is a tendency of the trucks to pull out from under the car-body, particularly when starting under a heavy load.

A further object of the invention is to provide a construction wherein the interlocking mechanism, which prevents pulling of the truck from beneath the car, will be normally inactive and will be active only when this tendency referred to exists, thus permitting the body of the car to be jacked up from the truck.

An additional object of the invention is to provide a construction wherein riding of the balls out of the races will be prevented when the car is subject to sudden heavy thrusts, such as those incident to coupling and curving.

Other objects and advantages of the invention will be understood from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in both views, Figure 1 is a section taken transversely of a car body and truck and longitudinally of the body and truck bolsters and showing the latter equipped with bearing-plates embodying the present invention. Fig. 2 is an enlarged section of the center bearing-plate.

Referring now to the drawings, there is shown a form of the invention including an upper bearing-plate 10, at the ends of which are formed bearing-casings 11, equipped with bearing-balls 12, the casings 11 being the side

bearing-casings and embodying the structure shown in my copending application for patent filed the 14th day of April, 1902, Serial No. 102,866. In connection with the upper bearing-plate 10 is employed a lower bearing-plate 13, in the ends of which are recesses 14 to receive the race-plates 15, on which the balls 12 operate. Midway between the race-plates 15 is an annular flange 16, having its outer face concaved, as shown at 17, and at the base of this concaved face is disposed the annular race-plate 18 in the seat 19. On the under face of the upper bearing-plate 10 is the depending annular flange 20, which when the bearing-plates are in coöperative relation incloses the flange 16, and the inner face of this flange 20 is concaved, as shown at 21. At the base of the flange 20 is the annular seat 22, in which is disposed the similarly-shaped race-plate 23, which is held in place by the stems 24 on the race-plate, which enter perforations 25 in the plate 10 and are held in place by the soft-metal seals 26, passed into the countersunken upper ends of the perforations 25 and the annular grooves of the stems. It will be understood, of course, that, if desired, these race-plates may be omitted and the metal of the bearing-plates may be hardened instead.

Between the plates 23 and 18 are disposed bearing-balls 27, which support the central portion of the plate 10 in proper relation to the plate 13. The diameter of the outermost upper point of the flange 16 is so much less than the diameter of the lowermost point of the flange 20 that the transverse distance between these portions of the flanges is greater than the diameter of a ball 27, so that with the balls and flanges in their normal positions the upper bearing-plate may be raised from the lower bearing-plate; but, on the other hand, these values are so nearly equal that the least tendency to lateral displacement of one plate with respect to the other, which causes the flanges at that side opposite to the direction of displacement to move together, causes the balls at such side to enter the concavities of the flanges, and thus lock the flanges, so that the car-body cannot lift from the truck and the truck cannot draw from



under the body. The race-plates 18 and 23 are slightly concaved, as shown, so that there is a minimum tendency of the balls to roll out of the passages and off from the plates, and this provision is sufficient under ordinary circumstances to maintain proper relation of the truck to the body. A motor carried by the truck for driving the car is shown at 30. Under normal conditions, therefore, the body is held against lateral swing or movement without the truck being locked to the body, and as soon as the truck starts to draw from under the body the balls at the proper points enter the concavities of the flanges, and the parts are locked together.

When the motive power is applied to a car-body, there is little tendency for the body to pull off of the truck, and this tendency is decreased as the load on the body is increased. In street-cars, however, the motive mechanism is placed on the truck, and in starting, particularly when there is a heavy load, there is a tendency for the truck to pull out from under the car-body, this tendency being increased as the load on the body increases. Thus in a structure such as herein shown and described there is a definite relation between the interlocking bearing and the motor on the truck, for the reason that the interlocking bearing cures defects incident to the location of the motor on the truck, and which defects do not exist when the motive power is applied to the body.

What is claimed is—

1. The combination with a vehicle having a truck provided with motive mechanism of a bearing between the vehicle body and truck said bearing comprising two members each having a race and rotatable bodies engaged with the races, and means for preventing the truck from drawing from under the body, said means comprising portions projecting from said members and lying respectively at opposite sides of the rotatable bodies for engagement thereby.

2. The combination with a vehicle having a truck provided with motive mechanism of a bearing between the vehicle body and truck, said bearing comprising two members having each a race and rotatable bodies engaged with the races, and means for preventing the truck from drawing from beneath the body, said means comprising portions projecting from said bearing members beyond the centers of the rotatable bodies and lying respectively at opposite sides of the rotatable bodies, said projecting portions having their mutually adjacent faces recessed whereby the projecting portions will be locked against vertical displacement when the rotatable bodies engage the recesses.

3. The combination with a vehicle having a truck provided with motive mechanism of a bearing between the vehicle body and truck, said bearing comprising two members having each a race and rotatable bodies engaged with the races, and means for preventing the truck

from drawing from beneath the body, said means comprising portions projecting from said bearing members beyond the centers of the rotatable bodies and lying respectively at opposite sides of the rotatable bodies, said projecting portions having their mutually adjacent faces recessed whereby the projecting portions will be locked against vertical displacement when the rotatable bodies engage the recesses, said projecting portions being arranged to lie normally spaced a distance greater than the diameter of any rotatable body therebetween whereby normal vertical displacement of the members will be permitted.

4. The combination with a vehicle having a truck of a bearing between the vehicle body and truck said bearing comprising two members each having a race and rotatable bodies engaged with the races, and means for preventing the truck from drawing from under the body, said means comprising portions projecting from said members and lying respectively at opposite sides of the rotatable bodies for engagement thereby.

5. The combination with a vehicle having a truck of a bearing between the vehicle body and truck, said bearing comprising two members having each a race and rotatable bodies engaged with the races, and means for preventing the truck from drawing from beneath the body, said means comprising portions projecting from said bearing members beyond the centers of the rotatable bodies and lying respectively at opposite sides of the rotatable bodies, said projecting portions having their mutually adjacent faces recessed whereby the projecting portions will be locked against vertical displacement when the rotatable bodies engage the recesses.

6. The combination with a vehicle having a truck of a bearing between the vehicle body and truck, said bearing comprising two members having each a race and rotatable bodies engaged with the races, and means for preventing the truck from drawing from beneath the body, said means comprising portions projecting from said bearing members beyond the centers of the rotatable bodies and lying respectively at opposite sides of the rotatable bodies, said projecting portions having their mutually adjacent faces recessed whereby the projecting portions will be locked against vertical displacement when the rotatable bodies engage the recesses, said projecting portions being arranged to lie normally spaced a distance greater than the diameter of any rotatable body therebetween whereby normal vertical displacement of the members will be permitted.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN E. NORWOOD.

Witnesses:

THOS. C. BAILEY,  
SAML. BEALMEAR.