J. M. HOPKINS & P. M. ELLIOTT.

CENTER BEARING FOR CARS.

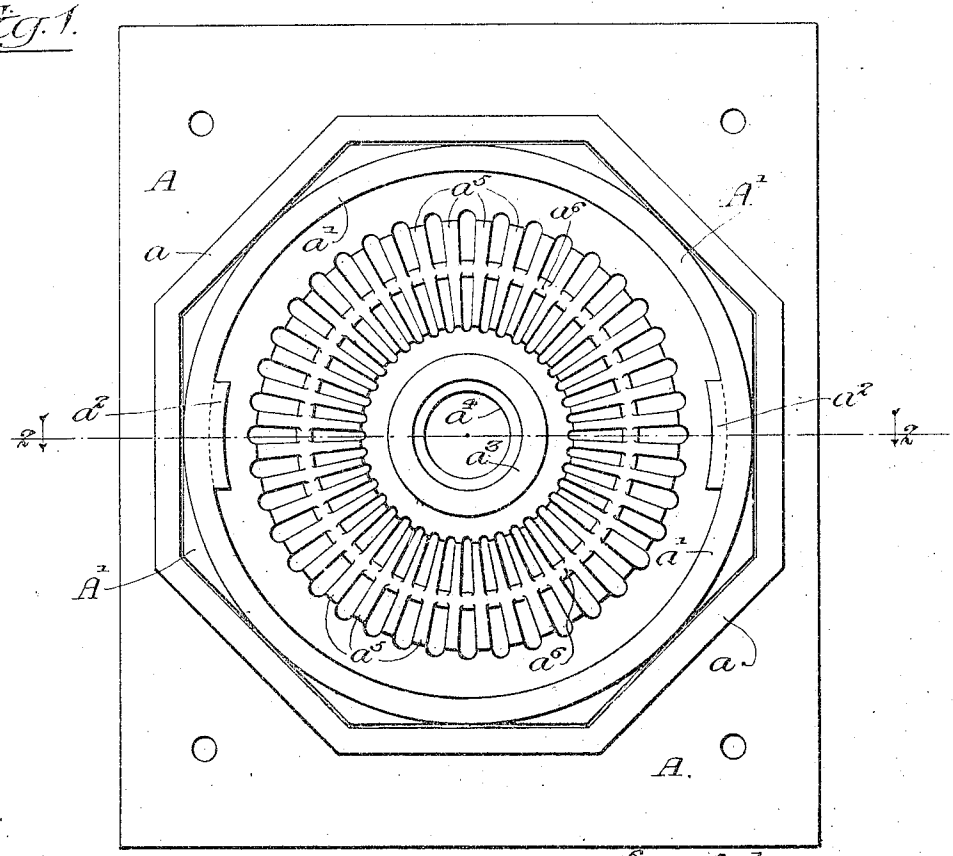
APPLICATION FILED MAR. 4, 1907.

1,069,699.

Patented Aug. 12, 1913.

2 SHEETS—SHEET 1.

FIG. 1.



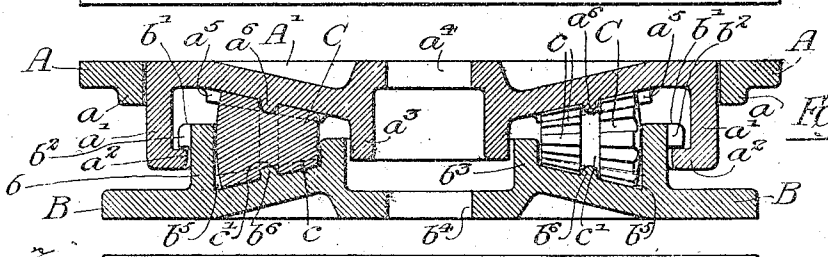
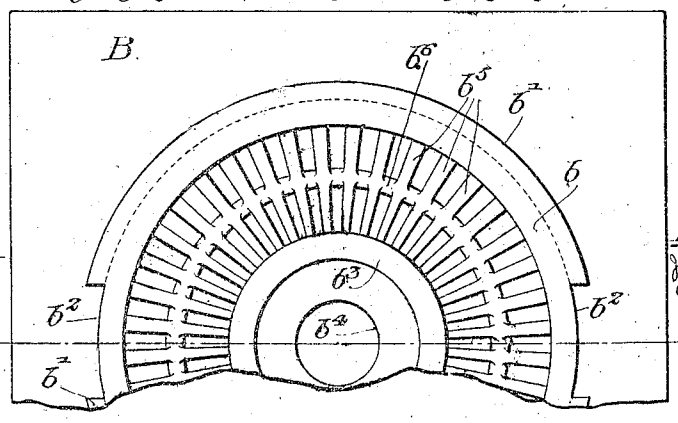


FIG. 2.

FIG. 3.



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2 SHEETS—SHEET 2.

Fig. 4.

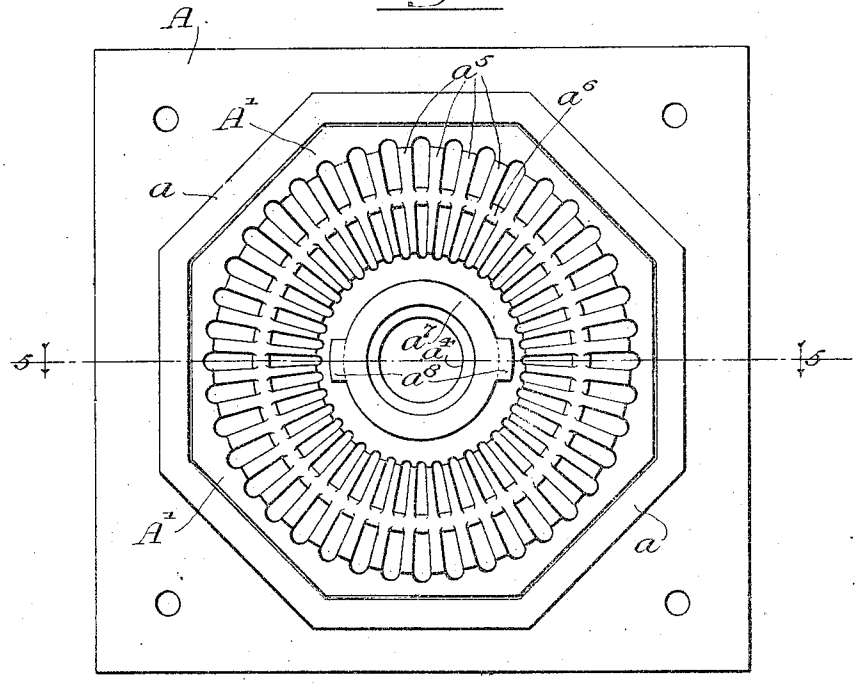


Fig. 5.

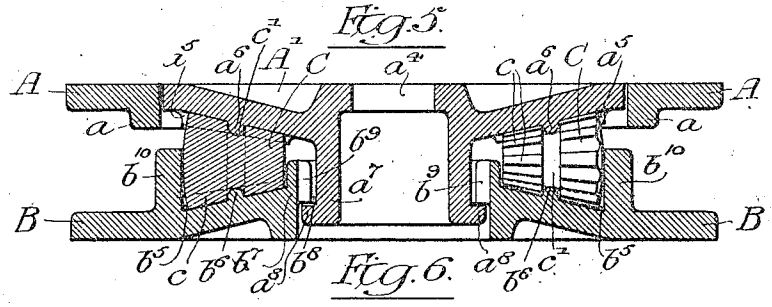
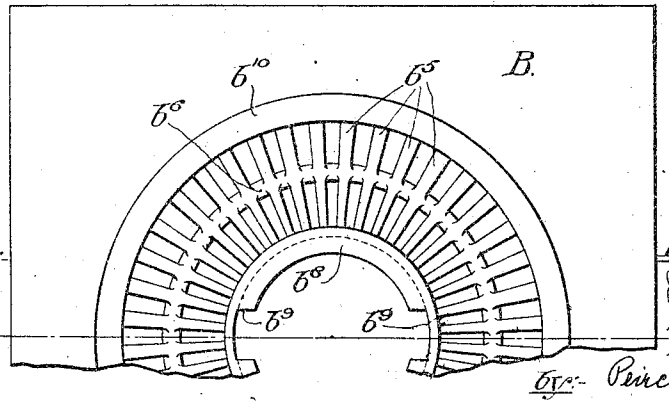


Fig. 6.



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UNITED STATES PATENT OFFICE.

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CENTER-BEARING FOR CARS.

1,069,699. Specification of Letters Patent. Patented Aug. 12, 1913.

Application filed March 4, 1907. Serial No. 360,323.

To all whom it may concern:

Be it known that we, JAMES M. HOPKINS and PERCY M. ELLIOTT, 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 Center-Bearings for Cars, of which we do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

The present invention has relation to that class of center bearings for railway cars in which upper and lower bearing plates or members are employed with interposed bearing rollers or like anti-friction means between said members.

One object of this invention is to improve such type of center bearing so that the danger of separation of the upper and lower bearing plates incident to the lifting or tilting of the body may be avoided.

Another object of the invention is to improve the center bearing so that there shall be a more uniform disposition of the strain incident to the load imposed upon the members of the bearing and so that the liability of the breakage and excessive wear of the parts of the bearing shall be avoided.

The invention consists in the features of improvement hereinafter described, illustrated in the accompanying drawings and particularly defined in the claims at the end of this specification.

Figure 1 is an inverted plan view of the upper member of our improved center bearing showing it in position within the retaining plate. Fig. 2 is a view in central vertical section through the upper and lower members of the bearing and through the retaining plate encircling the upper member, one of the intermediate rollers being shown in section and another of said rollers being shown in elevation. Fig. 3 is a detail plan view of the lower member or plate, a portion being broken away. Figs. 4, 5, and 6 are views similar to Figs. 1, 2 and 3 respectively but showing a somewhat modified form of our invention.

With railway cars, it is frequently desirable, as when making repairs, or replacing parts, to "jack up" the body of the car and with center bearing plates of prior constructions this jacking up of the car body necessarily lifted or disconnected the upper member of the center bearing from the lower plate or member with the result that the rollers or anti-friction devices between these members were apt to become disarranged or assume an improper relation when the parts were restored to working position. So also, with certain types of freight cars it is frequently desirable to lift or tilt the body of the car in order to discharge its load and such lifting or tilting of the body of the car was apt to separate the upper and lower bearing plates and permit the bearing rollers or like intermediate anti-friction devices to get out of proper relation when the parts were restored to normal position.

Our present invention contemplates providing upper and lower bearing plates or members that shall be interlocked against accidental separation when the car body is lifted or tilted.

It has heretofore been proposed to provide center bearings for railway cars with interposed anti-friction rollers having smooth, conical faces and it has also been heretofore proposed to provide such anti-friction rollers with long guard teeth extending from end to end thereof. With such prior constructions, however, it has been found that the severe strains incident to the peculiar movements of the car were apt to force the conical rollers into a grinding contact against the flange of the center bearing that encircles the outer ends of the rollers and the friction occasioned by the bearing of the outer ends of the rollers against such encircling flange tended to produce a distortion and uneven wear of the rollers as the bearing members turned with respect to each other. Our invention contemplates providing means whereby a uniform action of the bearing rollers shall occur notwithstanding the severe strains to which the members are necessarily subjected under conditions of ordinary usage.

In the drawings A designates a retaining plate or frame that will be attached to the underside of the body bolster of the car; this retaining plate or frame A is preferably formed with a polygonal opening and by preference, also, the edge of this opening is reinforced by depending flange *a*. Within the opening of the retaining plate A will set the upper bearing plate or member A' that is preferably of polygonal shape to correspond with the polygonal opening of the plate or frame A. It is manifest, however, that instead of forming the plate A with a

polygonal opening and the upper member A′ of corresponding polygonal outline, any other suitable means could be employed to secure these parts together in such manner as to prevent their relative movement when in position for use. The upper plate or member A′ is formed with an inclined bearing surface and a correspondingly inclined bearing surface is formed upon the lower member B. These members A′ and B are interlocked to guard against their vertical separation and this interlocking of the members A′ and B is effected through the medium of flanges or projections extending between these parts. In the form of the invention illustrated upon Sheet 1 of the drawings, the upper member A′ is shown as formed with a depending annular flange a' having inwardly extending lugs a^2, and the lower member B is shown as provided with an upwardly projecting annular flange b having an outwardly extending rim b' at its top, this rim b' being formed with cut-away spaces b^2 to receive the lugs or projections a^2 of the member A′. By preference, the upper and lower members A′ and B are also provided respectively with flanges a^3 and b^3 which are formed about the openings a^4 and b^4 through which the center pin or king-bolt will pass. Between the upper and lower members A′ and B will be interposed suitable anti-friction devices, preferably conical anti-friction rollers C but so far as concerns that part of our invention which relates to the interlocking of the upper and lower members A′ and B, the precise character of the anti-friction devices is not essential.

When the parts are to be placed together for use, lugs a^2 of the upper member A′ will be passed through the openings or cut-away spaces b^2 of the member B and the upper member A′ will then be turned a quarter of a revolution so that the lugs a^2 shall securely interlock with the flange b' of the lower member and thus hold the members against separation in vertical direction. The upper member A′ will then be set within the retaining plate or frame A. It will be seen that when the parts are in this position, which is their normal operative position, the car body can be lifted or tilted without danger of disarranging the position of the bearing rollers C with respect to the upper and lower members A′ and B, but when it becomes necessary to separate these bearing members, the upper member A′ can be turned a quarter of a revolution and to an abnormal position so as to permit its lugs a^2 to be withdrawn through the opening b^2 of the member B. While in normal position there is but a comparatively slight relative revolution of the upper and lower bearing members and hence there is no danger of any accidental separation of the parts whereby these members are interlocked; but by turning the upper member to an abnormal position (say a quarter of a revolution) which can be done when the upper member is freed from its retaining plate, the upper and lower members are readily separable.

In order to insure a uniform distribution of strain and load upon the rollers C, these rollers are formed with teeth c extending to both ends thereof and adapted to mesh with corresponding teeth a^5 and b^5 formed respectively upon the bearing surfaces of the upper member A′ and the lower member B. Notwithstanding the provision of these teeth between the anti-friction rollers C and the upper and lower members A′ and B, there is a tendency of the rollers to work outward and grind against the retaining flange b of the lower member B and such bearing or grinding of the ends of the rollers against the flange b necessarily results in an unequal and improper action of the rollers as the upper and lower members A′ and B turn with respect to each other. To guard against this we provide an interlocking groove-and-rib arrangement between the rollers and the upper and lower bearing members and preferably to this end the bearing faces of the upper and lower members A′ and B are formed respectively with the annular ribs a^6 and b^6 to engage in peripheral grooves c' formed in the rollers C about the centers of their axial lengths. By this arrangement the teeth extending lengthwise and substantially from end to end of the rollers C insure a uniform bearing of the rollers under the severe strains to which the parts are subjected while the rib-and-groove interlock between the rollers C and the bearing members hold the rollers against longitudinal movement and so prevent their bearing against the outer flange of the lower member which bearing would tend to throw them out of axial line.

In the form of the invention illustrated upon Sheet 2 of the drawings, the retaining plate A is the same in construction as that hereinbefore described; but the interlocking of this upper member A′ with the lower member B is effected by means of the annular flange a^7 of the upper member and the annular flange b^7 of the lower member. The flange a^7 is formed with outwardly projecting lugs a^8 and the flange b^7 of the member B is formed with inwardly extending circular ribs b^8 having cut-away spaces b^9 through which the lugs a^8 may pass. In this modified form of the invention the upper member A′ is not provided with a depending flange at its outer edge, but the lower member B is formed with a plain annular upwardly extending flange b^{10} which incloses the outer ends of the rollers C. It will be understood that in placing the parts

last described in position for use, the lugs a^8 of the upper member will be passed through the openings b^9 of the lower member and the upper member A′ will then be turned a quarter of a revolution so that the lugs a^8 shall securely interlock with the circular flanges b^8 and hold the members against separation.

It is manifest that the precise details of construction above set forth may be varied without departure from the spirit of the invention and that features of the invention may be employed without its adoption as an entirety.

Having thus described our invention what we claim as new and desire to secure by Letters Patent, is:—

1. A center bearing for railway cars comprising upper and lower bearing members provided with means for holding them against vertical separation and a retaining plate adapted to receive the upper bearing member and hold said member against revolution while permitting it to be disengaged from said plate in vertical direction.

2. A center bearing for railway cars comprising upper and lower bearing members provided with interlocking means for holding said members against vertical separation while in normal position but permitting said members to be separated when one of them is turned to abnormal position and means adapted to be fixed beneath the car for engaging the upper member, said means serving to hold said upper member against revolution while permitting it to pass from engagement therewith in vertical direction.

3. A center bearing for railway cars comprising upper and lower bearing members having interlocking flanges to hold the members against vertical separation and intermediate anti-friction devices and a retaining plate having an opening of irregular outline to receive the upper bearing member, said retaining plate serving to hold said upper member against revolution while permitting it to be withdrawn from the plate in vertical direction.

4. A center bearing for railway cars comprising upper and lower bearing members, intermediate anti-friction devices and a retaining plate having an opening to receive the upper bearing member, the edge of said opening being reinforced by a flange.

5. A bearing for railway cars comprising upper and lower members having bearing surfaces and provided with means for holding said members against vertical separation, anti-friction rollers interposed between and engaging said bearing surfaces, and a retaining device engaging one of said members to hold the same against horizontal movement while permitting a vertical movement independent of said retaining device.

6. A center bearing for railway cars comprising upper and lower members having inner and outer, annular, overlapping flanges and conical, toothed, bearing surfaces intermediate said inner and outer annular flanges, and a circular series of independent, toothed, conical rollers interposed between said upper and lower members and having the toothed surfaces thereof in bearing and rolling contact with the toothed bearing surfaces of said members, said rollers and said members having an annular rib and groove interlock formed upon the toothed bearing surfaces thereof and intermediate the ends of said rollers for holding the latter against movement in axial direction, substantially as described.

7. A center bearing for railway cars comprising upper and lower members having toothed, conical bearing surfaces and provided with overlapping flanges having interlocking lugs and notches for holding said members against vertical separation, said lugs and notches being arranged to register to permit the separation of said members when one of the members is turned to an abnormal position, a circular series of independent, toothed, conical rollers interposed between and in rolling contact with said toothed bearing surfaces, and a retaining device for holding one of said members against horizontal movement, but arranged to permit the independent vertical movement thereof.

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