No. 886,080. PATENTED APR. 28, 1908.

R. T. SENTER.

LUBRICATING DEVICE FOR CENTER BEARINGS.

APPLICATION FILED OCT. 23, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

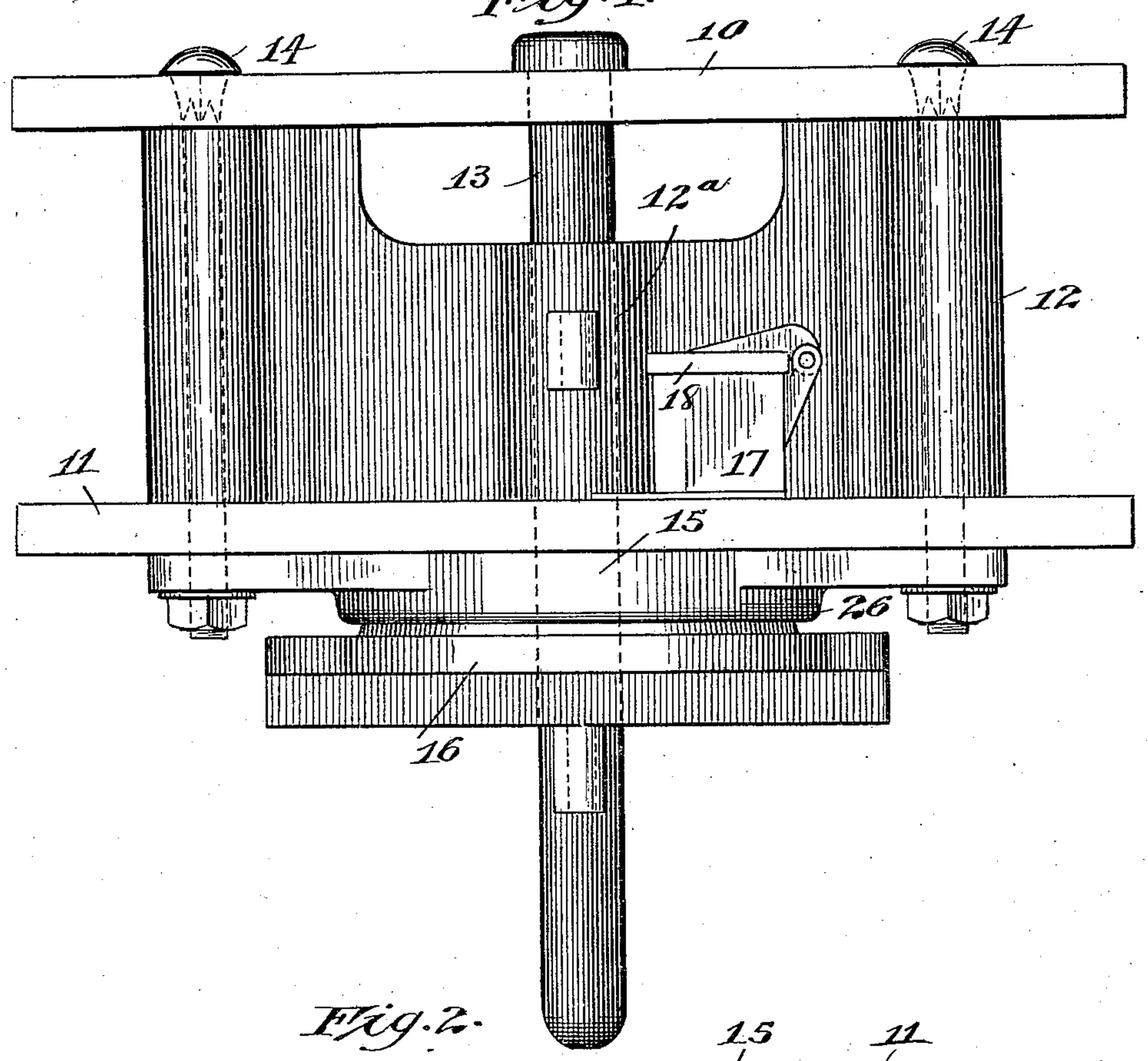
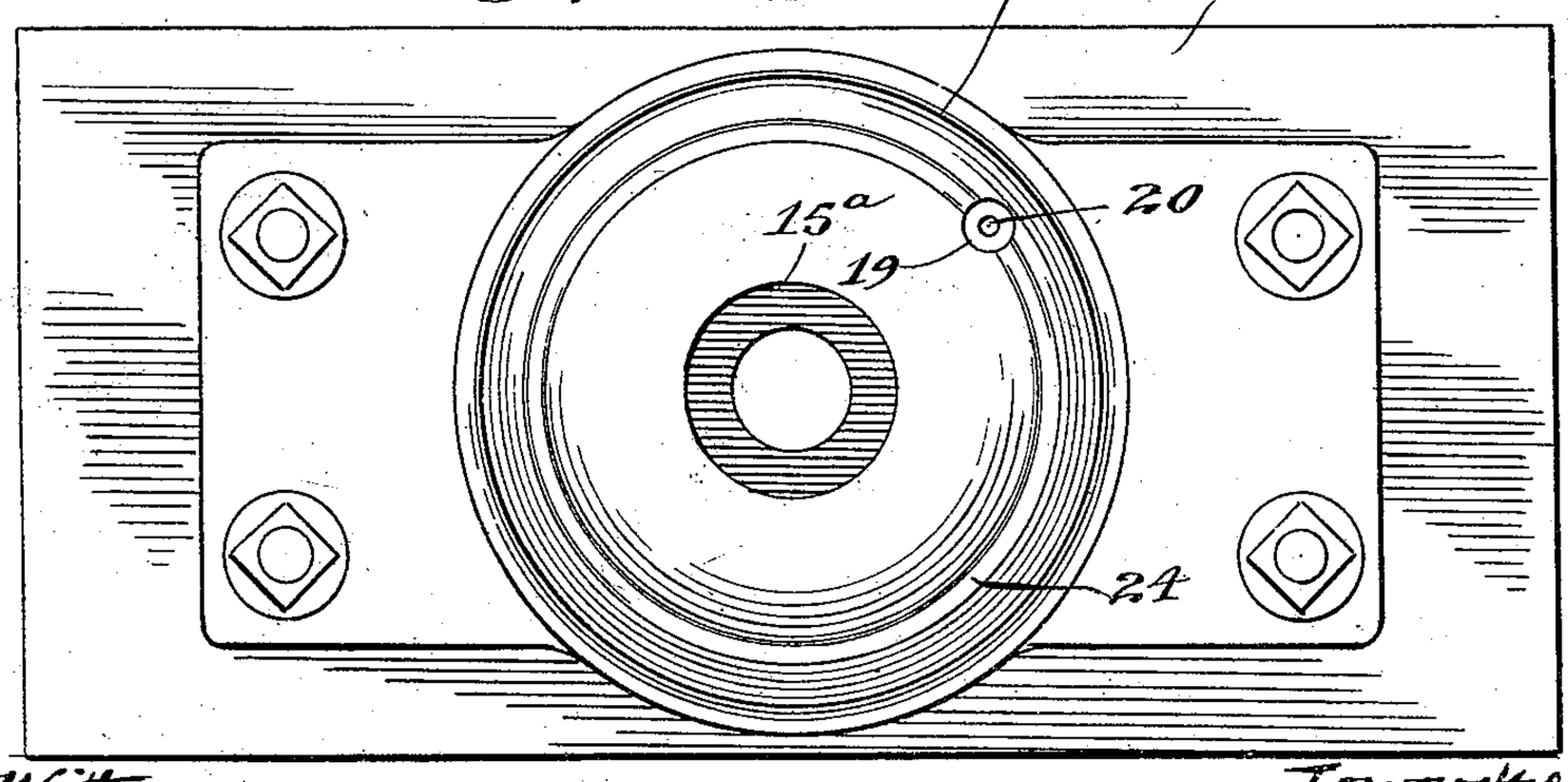


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

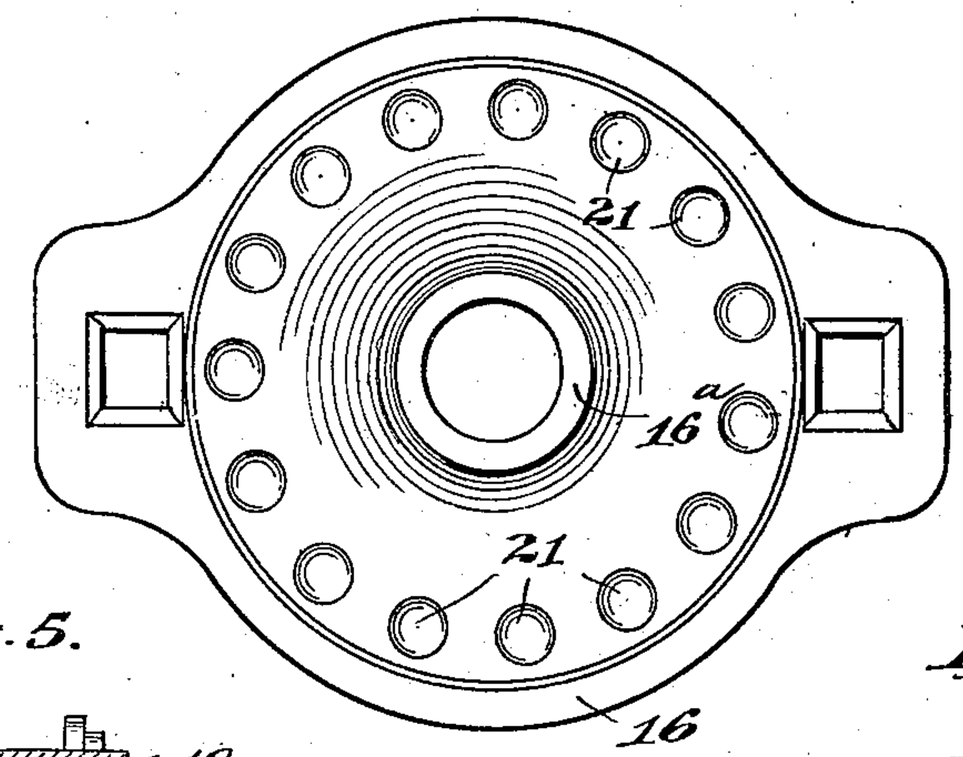


Fig. 5.

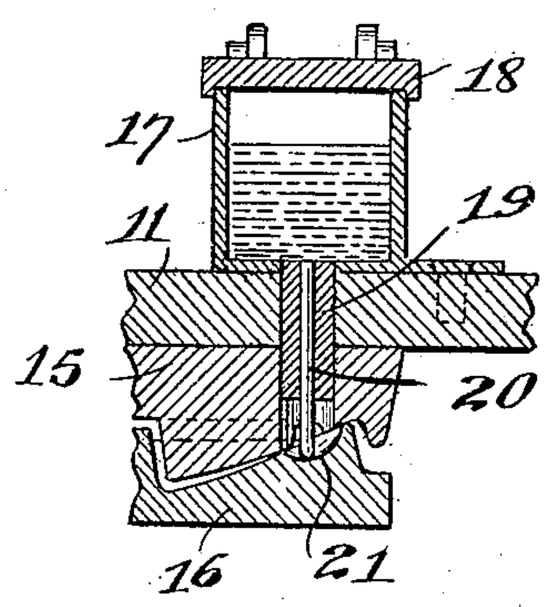


Fig. 6.

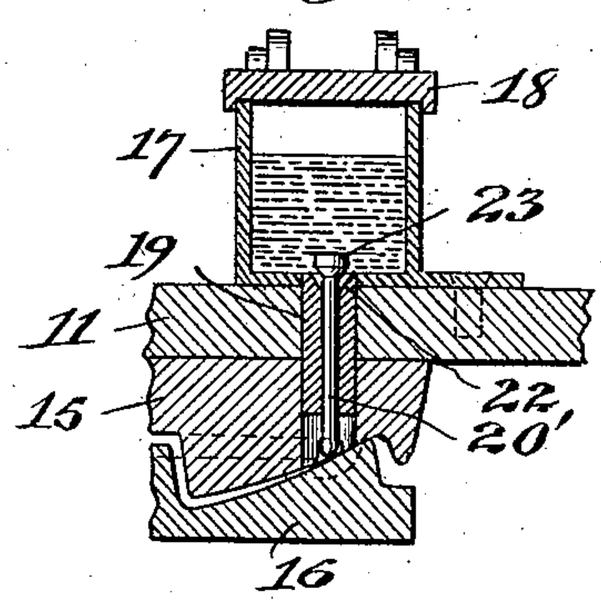
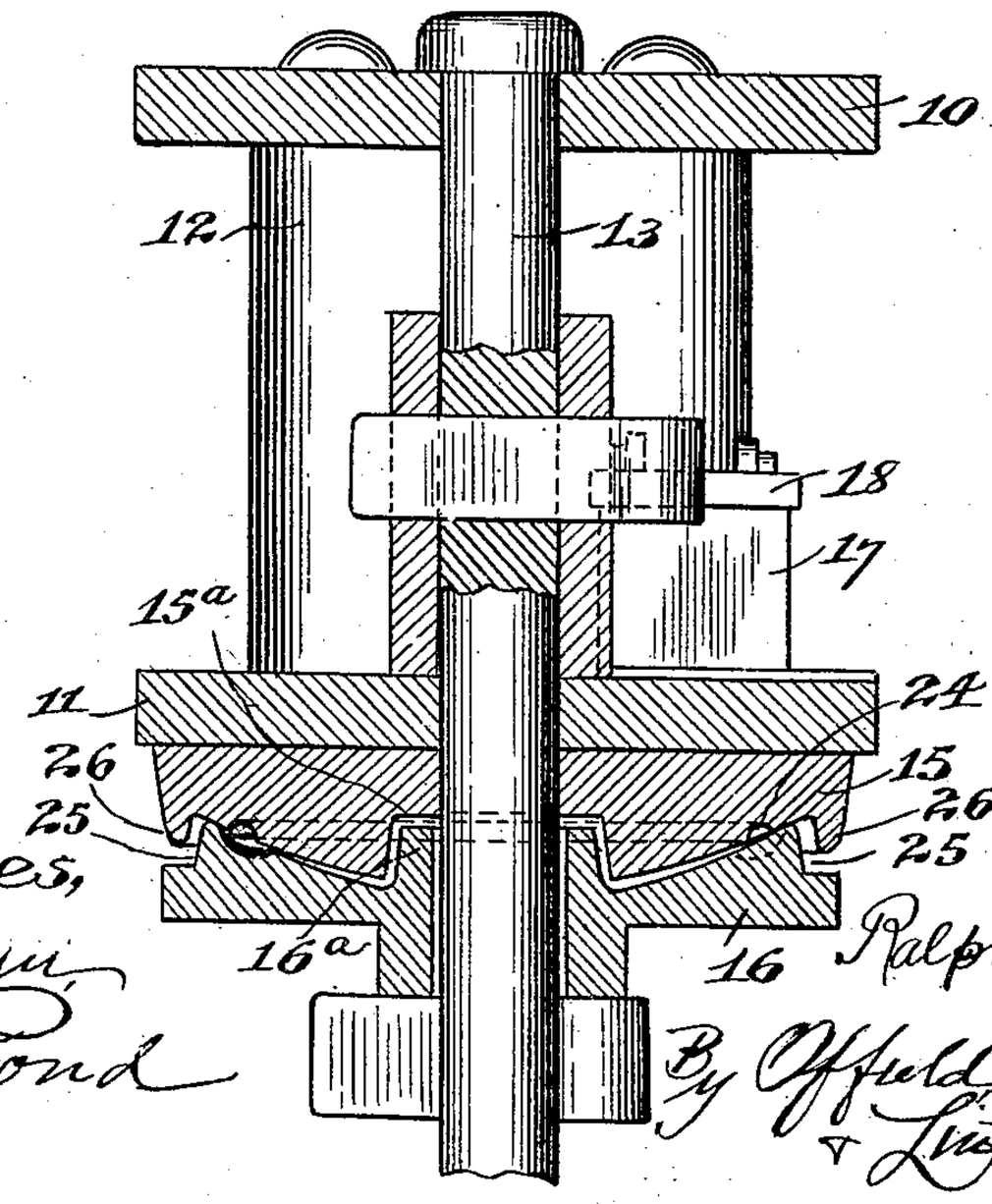


Fig. 4.



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UNITED STATES PATENT OFFICE.

RALPH T. SENTER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE J. G. BRILL COMPANY, OF PHILADELPHIA, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

LUBRICATING DEVICE FOR CENTER-BEARINGS.

No. 886,080. Specification of Letters Patent. Patented April 28, 1908.

Application filed October 23, 1907. Serial No. 398,800.

To all whom it may concern:

Be it known that I, RALPH T. SENTER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lubricating Devices for Center-Bearings, of which the following is a specification.

My invention relates to lubricating devices, and has reference more particularly to a new and improved device for effecting the automatic lubrication of the center bearings of railway cars, and more especially, street railway cars, although applicable to the center bearings of turn tables and the like.

So far as I am aware, the center bearings of street railways cars have hitherto in actual practice been unprovided with any means for supplying lubricant automatically and in properly regulated quantities to the center bearing plates; the mode of lubricating such bearing plates in vogue at the present time consisting in jacking up the body bolster, when required, so as to open the bearing sufficiently to permit a quantity of thick grease to be inserted between the bearings. There are numerous objections to this crude method of oiling the bearings. In the first place, too much or too little lubricant may easily be applied; and the lubrication may be neglected, when necessary, to the detrimental wear of the parts. In the second place, dust and dirt easily find their way into the bearing, attracted by the lubricant therein, thus contributing to injurious wear on the parts.

The object of my present invention is to provide an improved automatic device for effecting the constant and uniform supply of oil to the center bearings, without requiring their separation for the application of the lubricant, and in a manner to substantially protect the bearing against the deleterious effects of the attracted dirt and grit to which the bearing, by reason of its position on the car, is peculiarly subject.

To this end my invention consists substantially in the combination with the body and truck center plates, of an oil reservoir suitably mounted above the body center plate (preferably on the bottom plate of the body bolster) and communicating through a hole in the body center plate with the space between the center plates, together with means for regulating the supply of oil to the center plates, itself controlled by the relative angular movement between the two center plates which takes place when the car is passing over curved portions of the track.

In order that my invention may be readily understood by those skilled in the art, I have illustrated a practical mechanical embodiment thereof in the accompanying drawings, to which reference is had, and in which,—

Figure 1 is a side elevational view of a street railway car center bearing equipped with my improved oiling device. Fig. 2 is a bottom plan view of the body center plate and of a portion of the bottom plate of the body bolster to which it is secured. Fig. 3 is a top plan view of the truck center plate, more particularly illustrating a part of the means for regulating the supply of oil through the relative angular turning movement between the body and truck center plates. Fig. 4 is a central cross-sectional view, broken off at the bottom, through the center bearings and superposed body bolster. Figs. 5 and 6 are detail fragmentary cross-sectional views through the oil-cup and immediate underlying parts, showing different positions of the oil-controlling spindle, and Fig. 6 also showing a modification of Fig. 5 employing a valve serving to effect a positive shut-off of the oil.

Referring to the drawings, 10 designates a fragment of the top plate, 11 a fragment of the bottom plate, and 12 the usual interposed strut-block of a body bolster, this latter having a central web forming a bearing 12^a for the usual king-bolt 13, and the members 10, 11 and 12 being united by the usual thimble-bolts 14. The thimble-bolts 14 also rigidly secure to the under side of the bottom plate 11 the body center plate 15, beneath and coöperating with which is the truck center plate 16, this latter supported on the usual truck-bolster (not shown). The body and truck center plates 15 and 16 are provided, on their adjacent sides, as usual, with convex and concave bearing surfaces, respectively, the truck center plate having a central annular boss 16^a loosely fitting a correspondingly shaped socket 15^a formed in and centrally of the bearing face of the body center plate.

Mounted on and suitably secured to the bottom plate 11 of the body bolster is an oil-cup or holder 17 herein shown as provided with a hinged lid or cover 18. The bottom

of the oil-cup 17, and the underlying bottom plate of the bolster and body center plate are provided with registering apertures, as shown in Figs. 5 and 6, to which is fitted a bushing 19, in the axial bore of which is loosely and slidably mounted a rod or spindle 20. This spindle 20 fits the bore of the bushing loosely or with sufficient clearance to enable the lubricating oil in the cup 17 to trickle down around the same into the space between the center plates; and to facilitate this flow of lubricant, I provide means for imparting to the spindle 20 occasional reciprocating movements. This is accomplished, in accordance with my invention, by a construction which utilizes the relative angular movements of the center plates for this purpose.

Referring to Fig. 3, it will be observed that the upper surface of the truck center plate 16 is provided with an annular group or series of small shallow depressions or cavities indicated at 21; these depressions being so located as to be brought successively into registration with the lower end of the oil-duct under a relative turning movement between the truck and car body. It will thus be seen that when one of said cavities 21 is directly in register with the lower end of the oil-duct, the oil-feeding spindle 20 will rest in the bottom of the cavity; while, under a subsequent angular turning movement, the lower end of the spindle will ride up out of the cavity onto the space between adjacent cavities, and will drop into the next adjacent cavity upon the registration thereof with the lower end of the oil-duct. A longitudinally reciprocating movement is thus imparted to the rod or spindle 20 under angular turning movements between the two center plates, which movement facilitates the flow of the lubricant through the oil-duct and into the space between the center plates, especially at times when such lubricant is especially needed to reduce the frictional wear and resistance between the center plate under such angular turning movements.

Fig. 5 shows the spindle 20 in its lowermost position engaged with the bottom of one of the cavities 21, and Fig. 6 illustrates the spindle in its elevated or hoisted position, resting upon one of the spaces between adjacent cavities. In Fig. 6 I have also illustrated a slight modification wherein the bottom of the oil-cup is provided with a conical or tapered valve-seat 22 and the upper end of the spindle 20′ is provided with a correspondingly shaped valve 23 adapted to fit said valve-seat. The operation of this form of the device is the same as the operation of that shown in Fig. 5, with the exception that, when the spindle 20′ is at its lowest position, the valve is closed, and further supply of the lubricant is cut off until the valve has been subsequently raised.

The uniform and regular distribution of the lubricant around and between the center bearing plates is promoted by forming in the bottom surface of the upper plate 15 an annular groove 24 (Fig. 2) that intersects the lower end of the oil-duct; the oil trickling down the latter tending to hug and flow around the said groove 24 and thus become uniformly distributed over the adjacent surfaces of the two center bearing plates.

With a view to promoting the utility of the above described lubricating device, as well as increasing the durability and longevity of the center plates themselves, I preferably, and as herein shown, provide the bearing with a guard to lessen, and in a large measure prevent, the introduction to the bearing of dust, dirt and grit that is naturally attracted by the lubricant. To this end I cut away the periphery of the truck center plate 16 to form an annular inset 25 that accommodates a depending lip or flange 26 formed on the periphery of the upper body center plate 15, such lip or flange serving in a large measure as a guard or shield against the introduction of objectionable foreign matter between the two bearing members.

In the operation of the device, the oil reservoir 17 is, of course, kept supplied with a quantity of suitable lubricant. This lubricant gradually works its way down between the spindle 20 and its bearing into the space between the two center plates, its distribution by the latter being facilitated by the groove 24, as above explained. As the car passes around corners or over other curved portions of the track, the spindle 20 is reciprocated in the manner explained, thereby further facilitating the flow of the oil, and, when equipped with a valve 23, as shown in Fig. 6, substantially cutting off the oil supply excepting when traveling on curves. My invention thus does away with the necessity of separating the center plates and manually introducing a quantity of grease or other lubricant therebetween, and insures the steady and uniform lubrication of the bearing so long as the reservoir is maintained supplied with oil.

Among the advantages attained by the use of my invention, I may mention a saving of the flange wear and also of the track, by reason of the increased freedom of angular movement which the truck has with reference to the body of the car by virtue of the continuously and uniformly lubricated center bearing which my invention provides. It follows, as a corollary of this, that this reduction of friction and flange and track wear means a considerable saving in power required to propel the car.

I claim:

1. In a lubricating device for center bearings, the combination with a pair of centerplates, of an oil-holder having a discharge duct communicating with the space between

said center-plates, there being means actuated through the relative angular movements of said center-plates for controlling the flow of lubricant to the latter, substantially as described.

2. In a lubricating device for center-bearings, the combination with a pair of center-plates, of a superposed oil-holder having a discharge duct extending through the upper center-plate to the space between said center-plates, there being means actuated through the relative angular movements of said center-plates for controlling the flow of lubricant to the latter, substantially as described.

3. In a lubricating device for center-bearings, the combination with a body-bolster and body and truck center-plates, of an oil-holder mounted on said bolster and having a discharge duct extending through said bolster and body center-plate to the space between said center-plates, there being means actuated through the relative angular movements of said center-plates for controlling the flow of lubricant to the latter, substantially as described.

4. In a lubricating device for center-bearings, the combination with a pair of center-plates, of a superposed oil-holder having a discharge duct leading to the space between said center-plates, a spindle loosely fitted to said discharge duct, there being means for reciprocating said spindle under relative angular movements of said center-plates, substantially as described.

5. In a lubricating device for center-bearings, the combination with a pair of center-plates, of a superposed oil-holder having a discharge duct extending through the upper center-plate to the space between said center-plates, a spindle loosely fitted to said discharge duct, there being means on the lower center-plate engaging the lower end of said spindle and reciprocating the latter under relative angular movements of said center-plates, substantially as described.

6. In a lubricating device for center-bearings, the combination with a pair of center-plates, the lower whereof is formed with an annular series of depressions in its bearing face, of a superposed oil-holder having a discharge duct extending through the upper center-plate to the space between said center-plates, and a spindle loosely fitted to said discharge duct and having its lower end in register with said series of depressions, substantially as described.

7. In a lubricating device for center-bearings, the combination with a pair of center-plates the upper whereof is formed with an annular oil-distributing groove in its bearing face, of a superposed oil-holder having a discharge duct extending through said upper center-plate and communicating with said oil-distributing groove, and means for controlling the flow of oil through said discharge duct, substantially as described.

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