Jan. 7, 1930. O. J. HORGER 1,742,860

CAR TRUCK AND METHOD OF MAKING SAME

Filed March 26, 1928

Fig. 1.

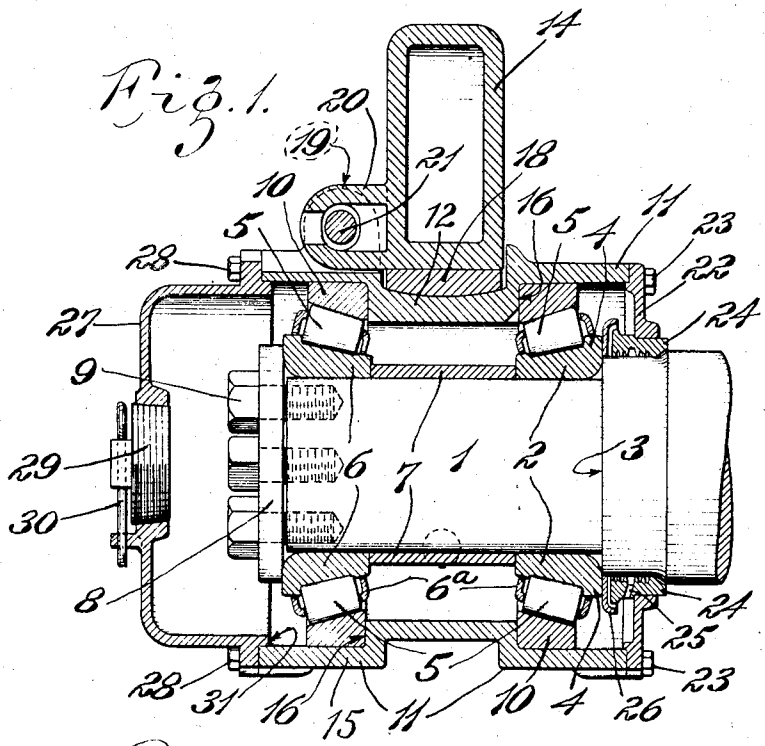
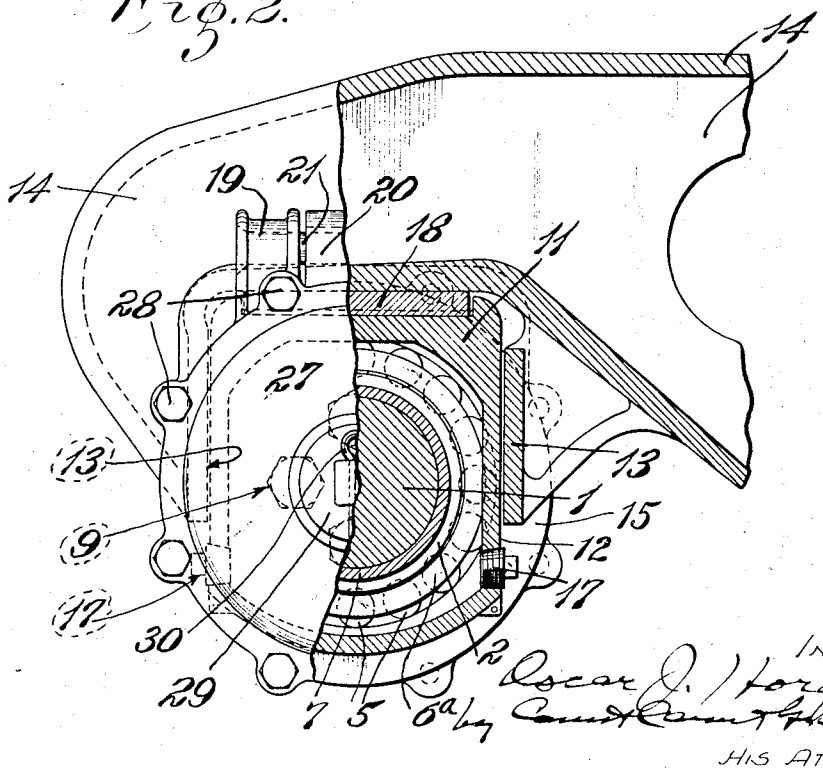


Fig. 2.



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UNITED STATES PATENT OFFICE

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CAR TRUCK AND METHOD OF MAKING SAME

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At the present time there are in service a very large number of railway cars whose axles are journaled in "brasses" provided therefor in journal boxes whose dimensions are prescribed by the standards of the American Railway Association. The principal object of the present invention is to make it practicable to equip such axles with roller bearings in lieu of their brasses without departing from the standard dimensions of the journal boxes or affecting their relations with the side frames of standard trucks. The invention consists principally in a housing whose middle portion is adapted for cooperation with standard truck side frames and whose end portions are formed into seats for conical roller bearings, and whose top middle portion is recessed to receive a plate that serves as a support for the truck side frame. The invention also consists in the combinations and arrangements of parts hereinafter described and claimed.

In the accompanying drawing wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a longitudinal sectional view of my construction applied to the journal portion of an axle; and

Fig. 2 is a cross-sectional view thereof.

The standard American Railway Association axle has a collar at each end thereof. According to the present invention, these collars are removed from standard axles and omitted from new axles. The inner end of the journal portion 1 of the axle is fitted with a bearing cone 2 whose large end bears against a shoulder 3 on the axle and is provided with a thrust rib 4 for the antifriction rollers 5. The outer end of the journal portion is provided with a similar bearing cone 6 arranged with its small end innermost. The bearing cones are spaced apart by means of a sleeve 7 that surrounds the journal portion of the axle. The outer bearing cone 6 is held in place by a plate or disk 8 that bears against the outer end of said bearing cone and is secured to the end of the axle by cap screws 9 that engage the threaded walls of holes provided therefor in the ends of the axle.

Surrounding each of the bearing cones is an annular series of conical rollers 5 which rollers are spaced apart by suitable cages 6ª. Surrounding each of the series of rollers is a cup 10 or outer bearing member therefor, which cups are mounted in seats provided therefor in the journal box that constitutes a housing 11 for them. The middle portion 12 of this housing or journal box is of proper size and shape for cooperation with the truck side frame. In the construction shown, this middle portion has vertical side walls adapted to fit in the jaws 13 of the side frame 14, while its end portions 15 are of cylindrical form and of a diameter enough larger than the width of the intermediate portion and is adapted to receive suitable bearing cups 10, above mentioned. The shoulders 16 between the relatively narrow middle portions and the larger cylindrical end portions serve as abutments for the ends of said bearing cups. Threaded openings are formed in the flat side walls of the middle portion and are normally closed with threaded plugs 17.

The top of the middle portion of the housing or journal box has a recess adapted to receive a thick plate or block 18, hereinafter called a rocker plate, upon which the end of the side frame 14 of the truck rests. The bottom of this recess is concaved longitudinally of the axle but is straight longitudinally of the truck side frame. The lower surface of the rocker plate 18 is convexed to fit the recess or seat thus formed therefor; and the rocker plate is slightly shorter and narrower than the seat to permit a rocking motion thereof. The rocker plate is thick enough to keep the truck side frame from bearing on any other portion of the housing. The exterior of the housing is adapted for cooperation with the truck side frame in conformity with standard practice. The drawing illustrates a side frame 14 of the so-called vulcan type wherein the end of the side frame is provided with downwardly projecting jaws 13 that fit over the sides of the middle portion of the journal box; the middle portion of the housing of the journal box in the present case being narrowed and flattened at the sides, as above described, for cooperation with such jaws. Likewise, the upper

part of the housing is provided with a perforated lug 19 arranged to aline with perforated lugs 20 formed on the side of the side frame, all the perforations being adapted to receive a locking bolt 21 after the manner of standard practice.

The inner end of the housing is provided with an annular closure plate 22 which is secured thereto in any suitable way, as by means of cap screws 23; and between the inner surface of said cap plate and the axle is mounted a suitable dust guard 24. In the construction shown, said dust guard comprises a sleeve with a portion of reduced diameter that fits the inner surface of the closure plate and a portion of larger diameter that bears against the inner surface of said closure plate. The inner surface of said dust guard is preferably grooved and at the lowermost portion a perforation 25 extends therethrough into the interior of the housing to permit of lubrication. A metallic ring 26 is also mounted on the axle and against the inner end of the inner bearing cone, this last mentioned ring being wider than the dust sleeve and having its marginal portion cupped to overlap the end of said ring; but preferably the disk does not touch said ring.

The end of the housing is provided with a closure plate 27 that is suitably secured thereto as by means of cap screws 28. Preferably the middle portion of this closure plate is provided with a threaded opening that is normally closed by a threaded plug 29, which in turn is preferably locked by a cotter pin 30 or the like. In order to make a tight joint, it is preferable that both closure plates should be provided with annular ribs 31 that fit in the cylindrical ends of the housing.

By the arrangement described, it is feasible to equip old trucks with roller bearings without any other change than removing the collars at the ends of the axles and discarding the old journal boxes and the brasses and wedges therein. The parts may be assembled in substantially the following order. The innermost annular parts (namely the inner closure plate, the dust or grease ring, the cupped disc and the inner bearing cone) are slipped over the end of the axle into proper position; then follow the inner series of sleeved rollers, the spacing sleeve, the housing with the bearing cups in the ends thereof, the outer series of caged rollers, and the outer bearing cone, after which the abutment ring is mounted on the end of the axle and the closure plate is mounted on the outer end of the housing. With the housing and its contained parts thus mounted on the axle, the truck side frame is applied to the middle portion of the housing after the manner of common practice in the assembly of car trucks. The new construction permits adequate rocking of the axles relative to the side frames; and the arrangement of the antifriction bearings in two annular series spaced apart resists the tendency of the journal box to tilt. In case the bearings wear, the spacing sleeve may be removed and replaced with a slightly shorter sleeve; or annular shims may be interposed between the spacing sleeve and the outer bearing cone and, in case of wear, one or more of such shims may be removed. Obviously the rocker plate may be made with its top convex.

What I claim is:

1. A car truck comprising wheeled axles, roller bearings at the end portions of said axles, housings for said roller bearings, and a truck frame with side portions engaging said housings, said housings comprising a middle portion arranged to fit the jaws of the truck side members and having enlarged end portions arranged to form seats for the bearing cups, said bearings comprising bearing cups seated in the end portions of the housing, cones mounted on the end portion of the axle and series of rollers between said cups and said cones.

2. A car truck comprising wheeled axles, roller bearings at the end portions of said axles, housings for said roller bearings, and a truck frame with side portions engaging said housings, said housings comprising a middle portion arranged to fit the jaws of the truck side members and having enlarged end portions arranged to form seats for the bearing cups, said bearings comprising conical cups seated in the end portions of the housing, cones mounted on the end portion of the axle and series of conical rollers between said cups and said cones.

3. A car truck comprising wheeled axles, roller bearings at the end portions of said axles, housings for said roller bearings, and a truck frame with side portions engaging said housings, said housings comprising a middle portion arranged to fit the jaws of the truck side members and having in its top a recess with a concave bottom and having enlarged end portions arranged to form seats for the bearing cups, said bearings comprising conical cups seated in the end portions of the housing, cones mounted on the end portion of the axle and series of conical rollers between said cups and said cones, and a rocker plate with a convex bottom in said housing recess for supporting the side member of the truck frame.

4. A car truck comprising wheeled axles, roller bearings at the end portions of said axles, housings for said roller bearings, and a truck frame with side portions engaging said housings, said housings comprising a middle portion arranged to fit the jaws of the truck side members and having in its top a recess with a concave bottom and having enlarged end portions arranged to form seats for the bearing cups, said bearings comprising conical cups seated in the end portions

of the housing, cones mounted on the end portion of the axle, a spacing sleeve between said cones and series of conical rollers between said cups and said cones, and a rocker plate with a convex bottom in said housing recess for supporting the side member of the truck frame.

5. A car truck comprising wheeled axles, roller bearings at the end portions of said axles, housings for said roller bearings, and a truck frame with side portions engaging said housings, said housings comprising a middle portion arranged to fit the jaws of the truck side members and having in its top a recess with a concave bottom and having enlarged end portions arranged to form seats for the bearing cups, said bearings comprising conical cups seated in the end portions of the housing, cones mounted on the end portion of the axle and series of conical rollers between said cups and said cones, and a rocker plate with a convex bottom in said housing recess for supporting the side member of the truck frame, and closure plates for the ends of said housing.

6. A car truck comprising wheeled axles, roller bearings at the end portions of said axles, housings for said roller bearings, and a truck frame with side portions engaging said housings, said housings comprising a middle portion arranged to fit the jaws of the truck side members and having in its top a recess with a concave bottom and having enlarged end portions arranged to form seats for the bearing cups, said bearings comprising conical cups seated in the end portions of the housing, cones mounted on the end portions of the axle and series of conical rollers between said cups and said cones, and a rocker plate with a convex bottom in said housing recess for supporting the side member of the truck frame, and closure plates for the ends of said housing, the outer closure plate having an opening for access to the interior of said housing.

7. A car truck comprising wheeled axles, roller bearings at the end portions of said axles, housings for said roller bearings, and a truck frame with side portions engaging said housings, said housings comprising a middle portion arranged to fit the jaws of the truck side members and having in its top a recess with a concave bottom and having enlarged end portions arranged to form seats for the bearing cups, said bearings comprising conical cups seated in the end portions of the housing, cones mounted on the end portions of the axle, series of conical rollers between said cups and said cones and an abutment member removably secured to the end of the axle for holding the outer cone in position, and a rocker plate with a convex bottom in said housing recess for supporting the side member of the truck frame.

8. A car truck comprising wheeled axles, roller bearings at the end portions of said axles, housings for said roller bearings, and a truck frame with side portions engaging said housings, said housings comprising a middle portion arranged to fit the jaws of the truck side members and having in its top a recess with a concave bottom and having enlarged end portions arranged to form seats for the bearing cups, said bearings comprising conical cups seated in the end portions of the housings, cones mounted on the end portion of the axle, series of conical rollers between said cups and said cones, and an abutment member removably secured to the end of the axle for holding the outer cone in position and a rocker plate with a convex bottom in said housing recess for supporting the side member of the truck frame and closure plates for the ends of said housing, the outer closure plate covering said abutment member and having an opening for access to the interior of said housing.

9. The process of equipping standard railway car trucks with roller bearings which consists in removing the end collars of the axles and replacing the standard journal boxes with housings whose middle portion fits the jaws of the standard truck side frame and whose end portions are enlarged and fitted with conical roller bearings comprising cups seated in said housings, cones mounted on the axle and conical rollers between them, and fastening the outer cone to the axle by means secured to the end of said axle.

10. A pedestal car truck comprising wheeled axles, roller bearings at the end portions of said axles, housings for said roller bearings, and a truck frame with side portions engaging said housings, said housings comprising a middle portion arranged to fit the pedestal jaws of the truck side members and having a recess in its top and having enlarged end portions arranged to form seats for the bearing cups, said bearings comprising conical cups seated in the end portions of the housing, cones mounted on the end portion of the axle and series of conical rollers between said cups and said cones, and a rocker plate in said housing recess for supporting the side member of the truck frame.

Signed at Canton, Ohio, this 22 day of March, 1928.

OSCAR J. HORGER.