F. H. STARK.

JOURNAL BOX.

APPLICATION FILED MAY 16, 1910.

1,067,153. Patented July 8, 1913.

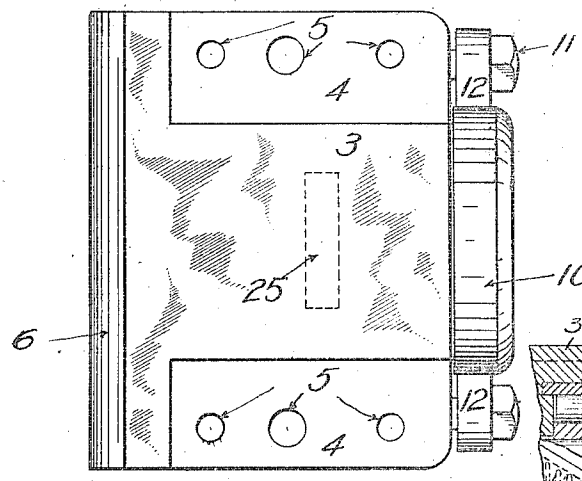

Fig. 2.

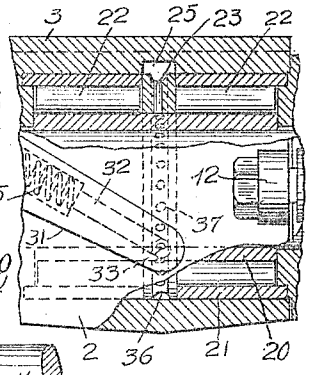

Fig. 4.

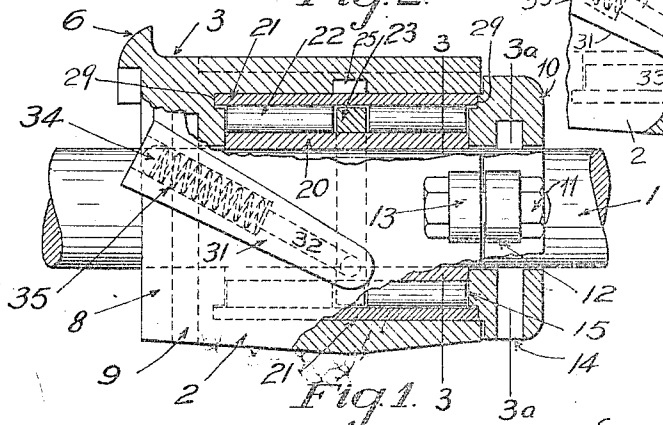

Fig. 1.

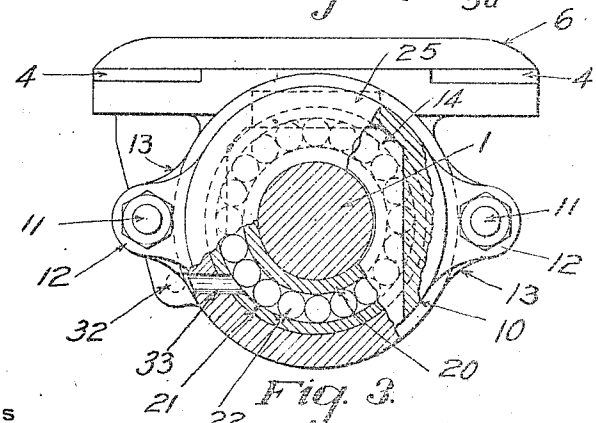

Fig. 3.

WITNESSES

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JOURNAL-BOX.

1,067,153. Specification of Letters Patent. Patented July 8, 1913.

Application filed May 16, 1910. Serial No. 561,674.

To all whom it may concern:

Be it known that I, FRANK H. STARK, a resident of Coraopolis, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Journal-Boxes, of which the following is a specification.

This invention relates to journal boxes for heavy vehicles, and more particularly to journal boxes for use on mine and railway cars.

The object of the invention is to provide a journal box for the purpose named which secures more perfect and constant lubrication and with a lesser amount of oil than in boxes as heretofore constructed, which is practically dust proof, and which can be used either in connection with roller bearings or with the usual solid brass.

My improved journal box comprises the construction and arrangement hereinafter described and claimed.

In the accompanying drawings Figure 1 is in part a side view and in part a central longitudinal vertical section of my improved journal box; Fig. 2 is a plan view of the same; Fig. 3 is in part an outside end view thereof, and in part a transverse section on the lines 3—3 and 3^a 3^a, Fig. 1; and Fig. 4 is a detail view, similar to Fig. 1, showing a modified form of parting ring.

In the drawings 1 represents the journal of the axle and 2 the body of the box. This box is provided with a top face 3, and is provided with outwardly projecting flanges 4, provided with holes 5, or other suitable means for securing the same to the vehicle or car body, or to the truck pedestals, as the case may be. Preferably said body at one end is provided with the upwardly projecting flange 6 for abutting against a portion of the vehicle or car body or truck frame and assisting in preventing endwise movement of the journal box.

The journal box at one end, preferably the outer end, is provided with an integral head 8, provided with an opening through which the axle, shaft or journal projects, and with the vertical recess 9, preferably opening from the bottom, for receiving a dust guard of any suitable or preferred construction. The opposite end of the box is closed by means of a cap 10, which may be secured to the body of the box by any suitable means, such as bolts 11 passing through perforated ears 12 and 13 formed respectively on the cap and the body of the box. This cap is also provided with a circular opening for the axle, shaft or journal, and is also provided with a vertical recess 14 for receiving a dust guard. The cap is provided on its inner face with a circular portion 15 which projects into the circular chamber in the body of the box, and holds said cap properly centered.

The box is adapted either for roller bearings or for an ordinary brass. The chamber in said box is circular, as shown, to conveniently receive a roller bearing which may be of any suitable type, but which preferably is as shown in the drawings. The roller bearing shown comprises an inner bushing 20 surrounding the journal or shaft, and which may be either fairly tight thereon so as to rotate therewith, or loose thereon, as desired; and an outer bushing 21 fitting the circular walls of the chamber in the box and forming a tread for the rollers 22 and having its ends fitting recesses 29 in the head 8 and cap 10. The primary purpose of the inner bushing 20 is to prevent the rollers from dropping out when the axle is withdrawn, although said bushing also serves to relieve the journal from wear, as will be readily apparent, and constitutes a renewable wear member which can be replaced from time to time when worn. The rollers 22 may be of the full length of the bearings, but preferably will be divided into two or more annular series of rather short rollers, the drawing showing two such series. The meeting ends of adjacent annular series of rollers are separated by a dividing ring 23 which surrounds the inner bushing 20, and may, if desired, not extend quite out to the outer bushing 21, as in Fig. 1, or, if desired, may be of substantially the diameter of the circular chamber in the box, in which latter event the outer bushing will be in two sections as shown in Fig. 4.

As shown in Figs. 1 and 4, one of the series of rollers is prevented from longitudinal movement by engagement of the ends of its rollers with the head 8 and parting ring 23, while the other set is prevented from longitudinal motion by engagement of the ends of its rollers with the parting ring and cap 10.

In order to adapt the box for an ordinary solid brass, the top wall of the box is provided with an internal recess 25 extending transversely of the box, for receiving a projection or lug on the brass, which brass in

other particulars is made to conform to the circular inner walls of the chamber in the box. Preferably the brass will be provided with end flanges projecting into the recesses 29 in the integral outer head 8 and cap 10, said flanges serving to hold the brass from dropping out when the axle is removed.

For lubrication, the box is provided on one side with a projection 31 cast integral therewith and leading from the outer end of the box inwardly and downwardly, as shown in Fig. 1, and provided with an oil passage 32 communicating with a cross port 33 leading to the chamber in the box. This oil opening is preferably closed by means of a dust excluding member, shown as a ball or similar valve 34 seating outwardly against a suitable seat and held thereagainst by means of spring 35.

The cross port 33 delivers the oil into the chamber in the box substantially midway of its length and near its bottom. When the outer bushing 21 is continuous from end to end the oil port 33 will extend therethrough so as to deliver the oil inside of the same. When, however, the parting ring 23 extends outwardly beyond the rollers, in which case the outer bushing 21 is sectional, as shown in Fig. 4, said ring is preferably provided with an annular groove 36 on its outer face, and with a series of radial holes 37 to permit the oil to readily enter the chamber inside of the outer bushing. The lubrication is effected by the rollers 22, which at each revolution dip down into the oil contained in the bottom of the chamber and carry it upwardly and lubricate the entire bearing. The parting ring 23 has practically no lubricating function, although it could if desired be made to act as a lubricating ring, but this is not necessary.

The box described, by reason of a dust guard at each end is practically dust proof, and the oil opening is also closed practically dust proof. The construction is such that all parts of the journal, rollers and bearing are amply lubricated, and in a manner which prevents the loss or waste of oil. As a consequence, the box remains well lubricated with a minimum amount of oil, and necessitates attention only at considerable intervals. It is also less subject to wear than prior boxes.

Should the roller bearings for any cause whatsoever become injured or excessively worn they can be removed and an ordinary brass put in their place. In this case, the bottom portion of the chamber, below the journal or axle will be filled with waste or other substance saturated with oil or other lubricant.

What I claim is:

1. The combination with a journal, of a journal box, a plain tubular inner bushing loosely surrounding the journal, a plain tubular outer bushing in the box, a plurality of annular series of rollers between said bushings, the axes of the rollers of one series being in parallelism with the axes of the rollers of the other series, a loosely rotating parting ring between the meeting ends of adjacent series of rollers and separate from said bushings and surrounding the inner bushing and extending outwardly, and an oil conduit in said box having a delivery opening in the plane of said parting ring for delivering oil to said box, said parting ring being adapted to distribute the oil to said rollers.

2. The combination with a journal, of a journal box provided with an integral head at one end, a removable cap closing the opposite end of said box, the walls of said box being provided with an oil passage opening at the integral head and extending downwardly along said wall and inwardly and opening through the side of the box into the chamber thereof, a closure for said oil passage, roller bearings in said box surrounding said journal, and a parting ring for said roller bearings located in the plane of the entrance of the oil passage, said parting ring being provided with a plurality of radial openings therethrough for permitting the oil to reach the journal.

In testimony whereof, I have hereunto set my hand.

FRANK H. STARK.

Witnesses:
F. W. WINTER,
JAS. L. WELDON.