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2,887,345

RAILWAY AXLE BOX JOURNAL STOP

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FIG. 1.

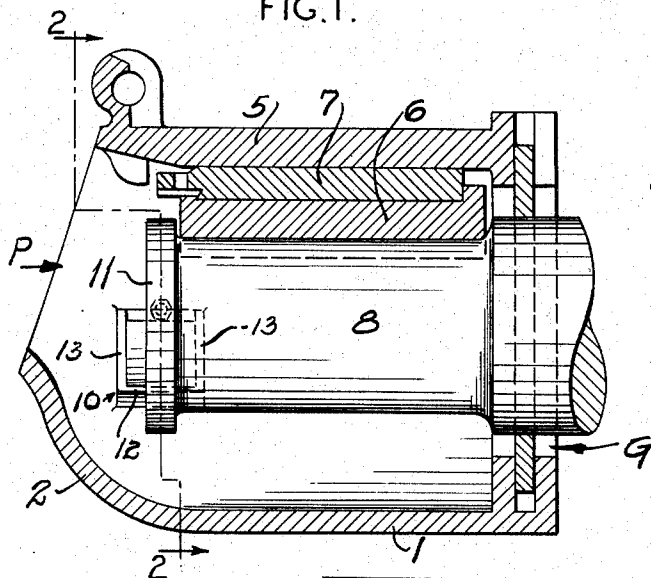


FIG. 4.

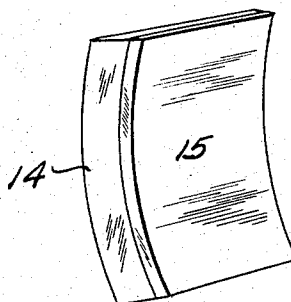


FIG. 5.

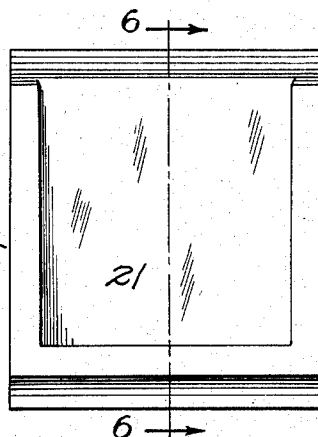


FIG. 2.

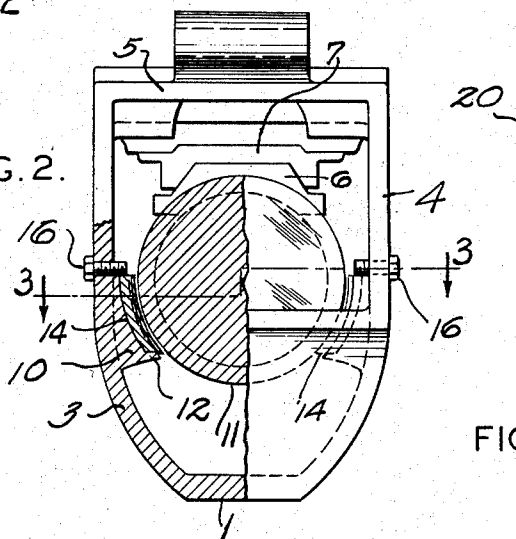


FIG. 3.

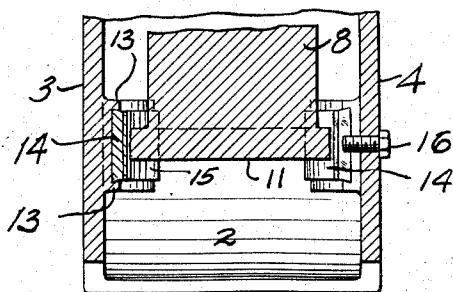
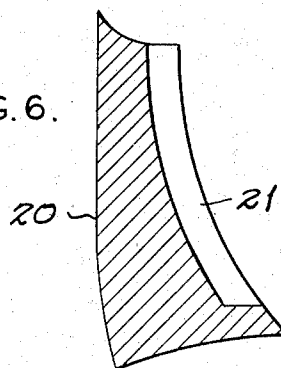


FIG. 6.



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RAILWAY AXLE BOX JOURNAL STOP

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7 Claims. (Cl. 308—40)

The invention relates to railway vehicle axle journal and journal box assemblies and consists in a stabilizer comprising stop elements readily provided on the interior of the box to oppose the usual end collar on the journal.

The main objects of the invention are to prevent relative movement of the axle and box transversely of the axle axis; also, to prevent the bearing rising from the journal.

These general objects correspond to those of my Patent No. 2,704,694, issued March 22, 1955.

A specific object of the present invention is to simplify the application and removal of journal-engaging shoes or stops to the box inner wall and to lessen the expense of maintaining the box and journal assembly stable.

In the accompanying drawings, Figure 1 is a vertical longitudinal section through an American Association of Railroads (A. A. R.) journal box equipped with my invention and showing the journal upon which the box is mounted.

Figure 2 is in part a view of the structure shown in Figure 1 looking towards the left hand end of the same and in part a vertical transverse section on the line 2—2 of Figure 1.

Figure 3 is a horizontal section through the forward portion of the box taken on the line 3—3 of Figure 2.

Figure 4 is a perspective of one of the stops or wear shoes shown in Figures 1, 2, and 3.

Figure 5 is an elevation of a separate mounting for the wear shoe embodying another form of the invention.

Figure 6 is a vertical transverse section on the line 6—6 of Figure 5.

The journal box shown in Figures 1, 2 and 3 includes a bottom wall 1, curving upwardly at its forward end, as indicated at 2. The box has side walls 3, 4 and a top wall 5. The forward or left hand edges of these walls form the front opening P of the box providing access to the interior for oiling and for the application and removal of the usual bearing 6 and wedge 7, which are applied to the axle journal 8 after it has been inserted into the box from the rear or right hand end of the latter and the box elevated as far as the opening G in the box will permit. Then the wedge and bearing are inserted and the box lowered until it rests upon the wedge and bearing, as shown in Figure 1.

The above described elements are commonly used and in themselves do not constitute the present invention.

Each side wall of the box is provided with a boss or mounting element 10 having a horizontal width substantially greater than the thickness of the journal flange or collar 11 and disposed lengthwise of the box at a point where it will always oppose the journal collar irrespective of the play of the journal back and forth in the box lengthwise of the axle. The upper edge of each boss 10 is approximately at the same level as the journal axis and the journal-opposing face of the boss is concavely arcuate vertically and extends downwardly

and inwardly to underlie the widest portion of the journal collar and at its lower end terminates in an upwardly facing lip or shelf 12. Preferably the inner face of the boss is provided with upright ribs 13 at the opposite ends of shelf 12 which form therewith a recess facing toward the journal collar.

A shoe or stop 14 has a generally upright arcuate convex rear face corresponding to the inner face of boss 10 and a generally upright arcuate concave forward face corresponding to the periphery of collar 11. The shoe is movable downwardly in the recess to rest on shelf 12 between the boss and the journal collar with but slight clearance between them. The thickness of the bosses and shoes prevents the box and journal from substantial relative movement transversely of the journal axis. The arcuate extension of the shoes beneath the level of the journal axis prevents the wedge and bearing from rising from the journal but does not interfere with the slight inclination of the box itself, lengthwise of the axle, due to relatively high and low spots in opposite rails, or if the truck side frames move out of parallel or out of alignment transversely of the truck, all of these irregularities being accommodated by the crown surface of journal bearing wedge 7 in the usual manner. The shoe extension under the journal prevents the bearing from rising and dropping to pound the journal surface, which would deteriorate the interengaging surfaces, permit the entrance of waste packing or any other type of packing or particles of any other foreign matter that may enter the box which would be detrimental to the bearing and contribute to the development of a hot box.

Preferably the shoe has a lining 15 of brass or bronze or similar bearing metal for engaging the journal collar. Preferably the opposing sides of ribs 13 are re-entrant and the corresponding edges of the shoes are similarly inclined to hold the shoes to their seats.

When it is necessary to jack up the box to replace bearing 6, studs 16 may be backed off from above shoes 14, without removal from the box wall, and the shoes readily removed, whereupon the box may be raised far enough to withdraw wedge 7, and then bearing 6, over the top of collar 11 and out through the box front opening P. Similarly shoes 14 may be readily replaced by backing off studs 16.

Figures 1, 2 and 3 illustrate a box with the mountings 10 integral with the box side walls, but the invention is readily embodied in a box made without these integral bosses and having straight side walls. For such boxes, the mounting may be a separate unit 20, as shown in Figures 5 and 6, and such units may be welded to the sides of the box and thereby mount the wear shoes in the boss recesses 21 corresponding to that provided in the integral bosses.

With the structure described, the stops may be removed and replaced readily without jacking up the box. Because of the small size of the wear shoes or stops, they may be replaced inexpensively and thereby a snug fit between the box and journal may be maintained. Since the stops engage the end collar only of the journal, they do not cause any wear of the bearing-engaging periphery of the journal. Any blows due to acceleration or deceleration are absorbed through the collar and not through the bearing-engaging periphery of the journal surface. The journal and box are not only held against relative movement transversely of the journal axis in a horizontal direction, because of acceleration, deceleration forces, but the box, bearing and wedge are held from rising from the top face of the journal because of movement of the truck wheels over alternate high and low rail spots.

The details of the invention may be varied otherwise than as shown without departing from the spirit of the

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invention and the exclusive use of those modifications coming within the scope of the claims is contemplated. What is claimed is:

1. In combination, a railway axle having a journal, a bearing carried on the journal, the journal having a collar at its outer end of larger diameter than the journal and projecting radially therefrom beyond the end of the bearing, a wedge mounted on the bearing, a journal box having a top wall supported on the wedge and having upright side walls spaced from the journal, a mounting on each journal box side wall abreast of the journal collar and having a recess facing the journal collar, and a removable thrust block seated in said mounting recess and filling the space between its seat and the journal collar and extending downwardly from the level of the journal axis along the under surface of the collar a substantial distance toward the vertical plane of said axis, and held by its seat against downward movement on said mounting, and individual detachable means holding the block against upward movement in the box, thereby preventing movement of the box, wedge and bearing upwardly from the journal, the thrust block being removable upwardly from said seat when the wedge is removed and the box jacked up and said means detached.

2. A railway journal box, having side walls, and a journal stabilizer structure comprising a support element rigid with and projecting from each inner side wall of the box, and a stop block mounted on said element with a side face extending downwardly and inwardly of the box away from said side wall so as to underlie a portion of a journal in the box, said block being applicable to and removable from said element by relative downward and upward movement, respectively, of the block and the box, and detachable means securing the block to the box to prevent such relative movement.

3. Stabilizer structure according to claim 2 in which the means holding the block against movement in the box is readily detachable from the exterior of the box.

4. Stabilizer structure according to claim 2 in which the means holding the block against movement in the box includes a stud insertible and removable through the box side wall from the exterior of the box with its head positioned outwardly of the box side wall and with its inner end engaging the block.

5. Stabilizer structure according to claim 2 in which there are spaced ribs rigid with and extending upwardly from the ends of the support element on the box wall

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and undercut along their opposing faces and forming with said element an upwardly opening recess, the opposing faces of said ribs having re-entrant surfaces holding the block against movement away from the side of the box.

6. Journal stabilizer structure for a railway axle journal box having spaced upright side walls, comprising a spacer projecting inwardly from each side wall and having a concave face opposing the other wall and extending downwardly and inwardly of the box from the level of the longitudinal axis of the box, said spacer including a substantially horizontal ledge projecting from the lower portion of said face, a removable takeup element having a curved convex rear face fitting against said block concave face and having a curved concave surface facing in the opposite direction whereby the takeup element may be applied downwardly and inwardly by arcuate movement over said block concave surface into a position where it is supported by said ledge, and may be retracted upwardly and rearwardly by arcuate movement from said position, without any portion of the element being projected into the space between opposed elements at the level of said axis when they are seated on said ledges.

7. A railway journal box with side walls provided with journal stabilizer structure comprising a boss projecting inwardly from each wall and having an inner face concaved downwardly and inwardly from a horizontal plane at the level of the longitudinal axis of the box and terminating in a horizontal upwardly facing shelf, and a renewable shoe seated on each shelf and fitting against said boss and having a similarly downwardly and inwardly concave inner face, said shoe faces opposing each other across the box, with their lowermost end portions substantially closer together than their more nearly upright portions, and spaced apart to snugly receive an axle journal between them and fit against the lower and side portions of the journal so as to hold the box against movement upwardly relative to the journal.

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