Sept. 30, 1958 A. McEWEN 2,854,295

STABILIZERS FOR JOURNAL BOXES

Filed March 27, 1956

Fig. 1.

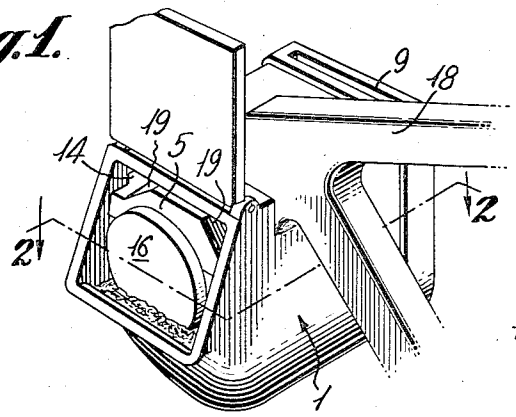


Fig. 3.

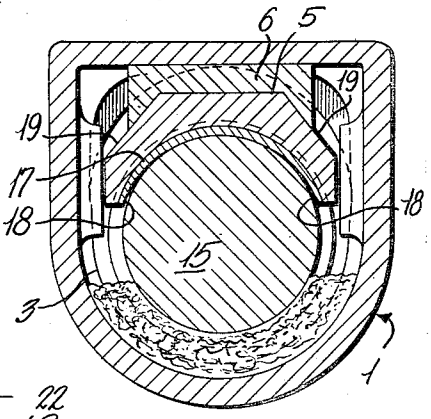


Fig. 2.

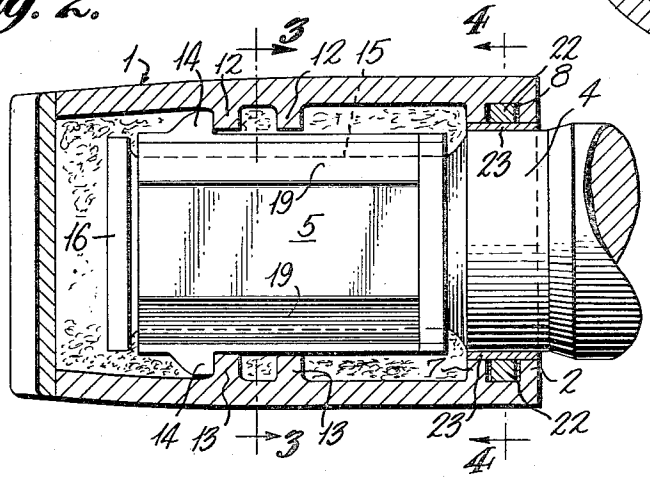


Fig. 4.

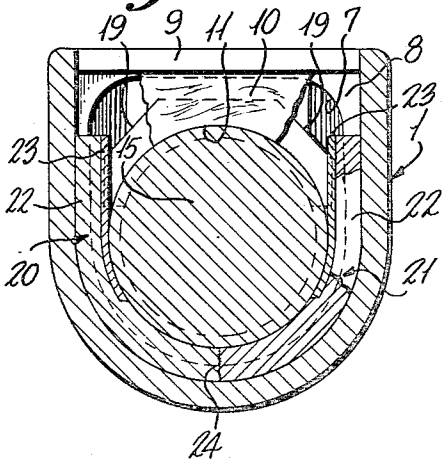
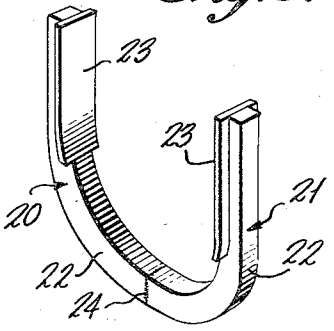


Fig. 5.



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STABILIZERS FOR JOURNAL BOXES

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3 Claims. (Cl. 308—38)

This invention relates generally, to railroad car journal boxes, and in particular, to improvements in stabilizers for journal boxes, the function of which is to limit the relative translatory movement between the journal and journal box when the car starts or stops, or which occurs for example, when the train is used to "hump" a freight car to give it starting momentum, in switching.

One of the objects of the invention is to provide a stabilizer comprising right and left stops constituting a pair, separately insertable into the dust guard channel of the conventional journal box, and integrally united to one another and to the journal box.

Another object of the invention is to provide a stabilizer consisting of right and left stops, as described, having relatively wide impact portions adapted to be positioned at opposite sides of the dust guard seat of the journal, projecting into the aperture which the dust guard channel surrounds so as to narrow the horizontal diameter of said aperture, and having integral arcuate portions shaped to follow substantially the curvature of the lower part of the dust guard channel, adapted to be received therein, said stops being adapted to be integrally welded to the journal box so as to become a part thereof.

Other objects of the invention will appear as the following description of a practical embodiment thereof proceeds.

In the drawing which accompanies and forms a part of the following specification, and throughout the figures of which the same reference characters have been used to denote identical parts:

Figure 1 is a perspective view of a conventional journal box embodying the principles of the invention;

Figure 2 is a horizontal section through the journal box of Figure 1, showing that part of the journal or axle which is within the journal box;

Figure 3 is a cross-section taken along the line 3—3 of Figure 2;

Figure 4 is a cross-section taken along the line 4—4 of Figure 2;

Figure 5 is a perspective view of the stabilizer of the present invention, consisting of the pair of right and left stops welded together.

Referring now to the drawing, the numeral 1 represents a journal box of conventional type having at the rear an end wall 2 formed with an aperture 3 (see Figure 3), which is of larger diameter than the dust guard seat 4 of the axle and generally oval along a vertical axis, as shown, to provide room for jacking up the car body for placing the bearing 5 upon the journal 15 and the wedge 6 which overlies the bearing, all of which parts are well known to one working in the art.

The journal box is provided with an interior flange 7 in a plane parallel to said end wall and adjacent thereto, defining with said end wall a dust guard channel 8. The top of the journal box has a slot 9 overlying the dust guard channel and giving access thereto. The dust guard 10 may be of wood. It is slidable through the slot 9

and seats within the upper parts of the channel 8 on opposite sides of the journal. It has an arcuate recess 11 in its under side, which closely fits about the upper arc of the dust guard seat 4. The car wheel not shown, is fixed to the axle adjacent the dust guard seat and the purpose of the dust guard is to seal the journal box against entrance of dust, etc., thrown up by the wheel or carried by the draft beneath the car.

The lateral walls of that part of the journal box which extends outwardly from the dust guard channel is formed with one or more pairs of corresponding lugs 12 and 13. The number of pairs depends upon the type of bearing employed. In the illustrated example the bearing has only one complementary pair of lugs 14, which engage one pair of the lugs 12 and 13, the purpose being to position the bearing with respect to movement toward the dust guard seat. Its movement in the opposite direction is limited by the forged head 16 at the outer end of the axle.

The end portions of the babbitt 17 which lines the bearing follow a curvature which is slightly greater than that of the journal 15 so that a wedge shaped pocket 18 is formed between the journal and the babbitt at each side of the bearing. Whichever pocket is at the leading end, relative to the direction of rotation of the journal, scoops the film of oil from the surface of the journal and directs it into the interfacial joint between the bearing and journal.

Thus far the specification has described the conventional journal box in which the bearing may be said to float upon the journal, since it freely rests upon the journal, being held in place solely by the weight of the car body including the truck, a fragmentary part of which is shown at 18 in Figure 1. When there is a difference in the inertia between the axle and the journal box, as when the train starts or stops, or when it is used to move impactively against the free car to give it momentum to coast onto a side track (known in railroading as "humping"), there is translatory movement of the axle including the journal, relative to the journal box, so that the bearing 5 is hammered into the lugs 12 and 13 at one side or the other according to the direction of impact. Repeated hammering distorts the bearing, reducing the curvature of the bearing surface adjacent the sides so that eventually the side edges of the babbitt come into contact with the surface of the journal, causing whichever of the edges is at the leading side to scrape the oil off of the surface of the journal and prevent it reaching the load bearing interface. The bearing, therefore, runs dry, heat is generated, and the babbitt may melt and run out.

Not only does the bearing hammer destructively against the lugs 12 and 13 under the conditions specified, but when the inertia of the bearing is stopped by its contact with the lugs, there is still an inertia differential between the bearing and the overlying wedge so that the latter cams up on the inclined upper face 19 of the bearing, forcing the journal box up toward the axle, thereby compressing the waste which is beneath the axle in the journal box, creating a frictional pressure that may, under rotation of the axle, displace the waste so that it is forced upward against the bearing which is hot from insufficient lubrication, and ignites the waste, causing a "hot box."

The expense of re-shaping, re-babbitting or replacing bearings, as well as the risk and damage incident to a "hot box" has long plagued the railroad industry in the use of the conventional journal box, and much ingenuity has been exercised in the attempt to minimize the shortcomings of the conventional arrangement.

In general, efforts to improve the journal box have been directed to the lateral narrowing of the aperture in

the rear wall of the journal box so as to reduce and limit the range of translatory relative movement of the axle to the extent to which the bearing will not make lateral contact with the interior side lugs of the journal box, or with any other part of the journal box. To this end it has been proposed to insert metal stops in the dust guard itself at opposite sides of the dust guard seat embracing recess, positioned to intersect the horizontal diameter of the dust guard seat, but such proposals underestimate the impact force to which the dust guard would be subjected, and potential breakage of the dust guard makes this expedient impractical. Another idea is to position a pair of stops loosely, that is to say, unattached in the dust guard channel with impact receiving heads in limiting position with respect to translatory movement of the axle. These devices are readily displaced under stress and have not proved a satisfactory solution to the problem.

According to the present invention, a pair of stops **20** and **21** is provided, each stop comprising a stout rib **22**, said ribs together conforming to the shape of the dust guard channel, each rib extending from the middle point in the bottom arc of said channel and continuing upward to a point beyond the horizontal diametrical plane of the dust guard seat.

The upper points of the ribs **22** are expanded laterally to form heads **23** which overlie at least in part the edges of the dust guard channel **8**. The stops **20** and **21** are inserted separately in the dust guard channel, since this is the only way that they can be got in, after which the ribs **22** are welded together at their abutting ends, as indicated by the numeral **24**, and said ribs are then welded to both of the side walls of said channel, the line of weld preferably being continuous throughout the length of the ribs and preferably on both sides, so that the stops become a firmly bonded integral part of the journal box structure.

Preferably, the depth dimension of the ribs **22** is such that when they are welded in place, the bight of the correlated ribs extends above the corresponding bounding edge of the aperture **3**, so as to form a dam higher than the lower edge of said aperture, making it possible to maintain the oil level in the bottom of the journal box higher than it would be in the absence of the present improvement.

The heads **23** do not necessarily lie against the underlying edges of the side walls of the dust guard journal, but may be offset toward the dust guard seat a sufficient distance to provide the desired minimum lateral clearance between said dust guard seat and said heads. A certain amount of lateral clearance is recognized as being essential in permitting lost motion between the trucks and axles, enabling the locomotive to pick up the load of the train of cars progressively.

The stabilizers of the present invention may be built into journal boxes at the time of their manufacture, but they are particularly applicable for use in the modification of journal boxes now in being.

While the foregoing specification describes a practical embodiment of the invention, it will be understood by

those skilled in the art that the specific details of construction and arrangement of parts, as illustrated and described, are by way of example and not to be construed as necessarily restricting the scope of the invention.

What is claimed is:

1. Stabilizer for limiting horizontal translatory movement of an axle in a journal box of the type in which the axle is formed with a journal and a dust guard seat adjacent said journal, and said journal box having a rear end wall with an aperture larger than the diameter of said dust guard seat, through which said axle extends, and having an interior flange adjacent said end wall in a plane parallel thereto defining therewith a dust guard channel in the zone of said dust guard seat, said stabilizer comprising a pair of stops adapted to be inserted in said channel, having curvilinear ribs conforming substantially to the curvature of said channel, said ribs being adapted to be brought together at their lower ends within said channel beneath said dust guard seat, and welded unitarily, in situ, and adapted to be welded to said journal box, said stops having heads at their upper ends positioned so as to overlie the sides of said channel and to lie in the path of horizontal translatory movement of said dust guard seat to be engaged thereby, when said stops are in position in said journal box.

2. In combination, an axle formed with a journal and a dust guard seat adjacent said journal, and a journal box having a rear end wall with an aperture therein larger than the diameter of said dust guard seat, through which said axle extends, said journal box having an interior flange spaced from said end wall and lying in a plane parallel thereto defining therewith a dust guard channel in the zone of said dust guard seat, a stabilizer comprising a pair of stops adapted to be inserted separately into said channel at opposite sides of said dust guard seat having curvilinear rib portions conforming substantially to the curvature of said channel, said ribs being in mutual engagement at their lower ends and being welded together at said ends and to said journal box, said stops having heads at their upper ends positioned so as to overlie the sides of said channel and to lie in the path of horizontal translatory movement of said dust guard seat, when said stops are in fixed position in said journal box.

3. Stabilizer for limiting horizontal translatory movement of an axle in a journal box, as claimed in claim 2, the depth dimension of said ribs being such that, their concave faces extend beyond the sides of said channel, said ribs being welded at least to one of the side walls of said channel continuously throughout the length of said ribs, the latter forming a dam to increase the height of the oil reservoir constituted by the lower portion of said journal box.

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