March 12, 1940. D. S. BARROWS 2,193,326

JOURNAL BOX SEAL

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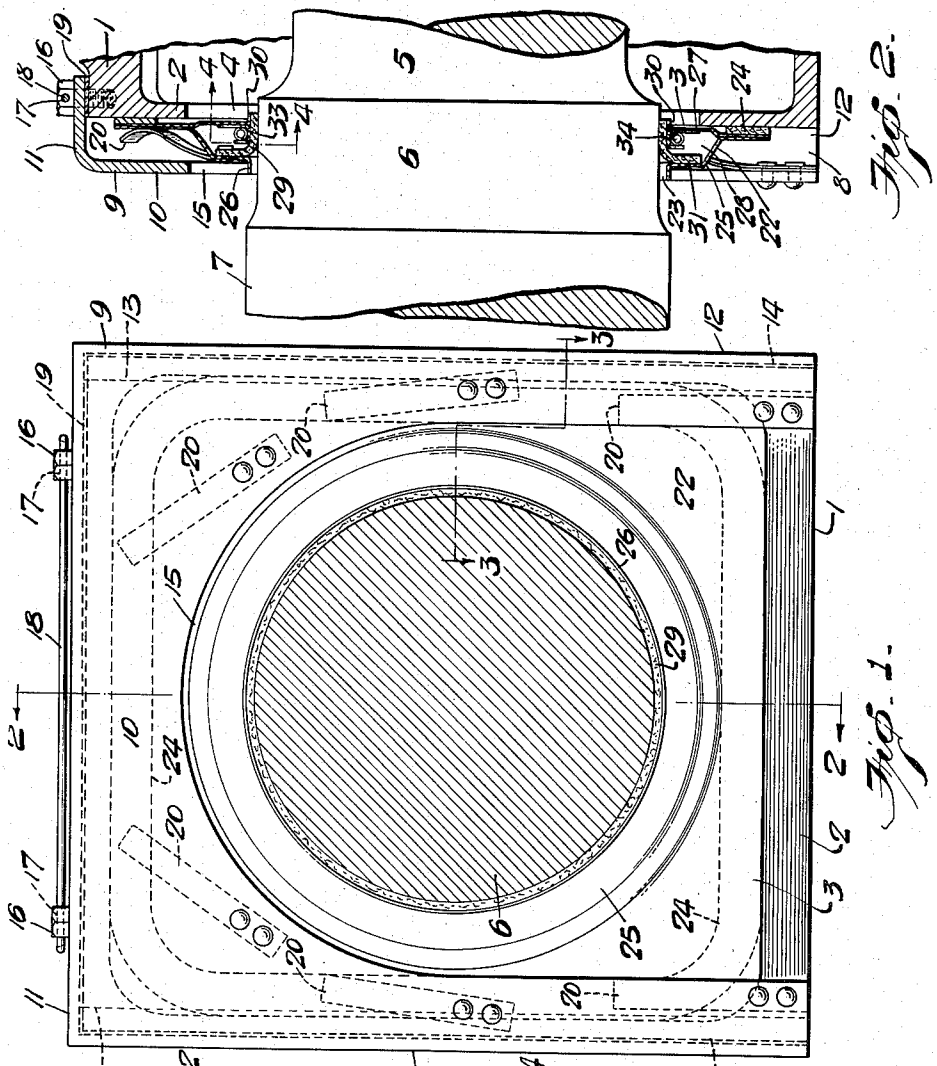


Fig. 2.

Fig. 1.

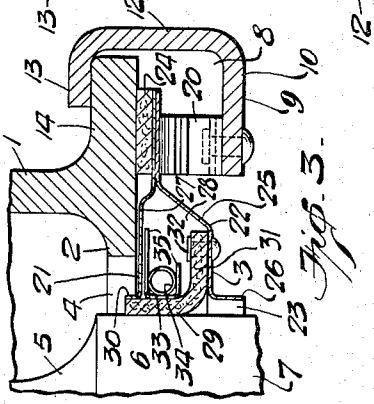


Fig. 3.

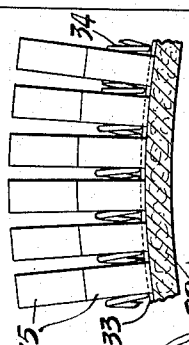


Fig. 4.

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JOURNAL BOX SEAL

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11 Claims. (Cl. 286—6)

The invention relates to a journal box adapted to be used with railway vehicles with specific reference to the dustguard well portion thereof and an associated dustguard.

An object of the invention is to provide a journal box with a machined rear surface to afford a smooth bearing surface for a dustguard and to form a dustguard well by securing to the box in spaced relation to the rear surface thereof a removable wall or plate.

Another object of the invention is to provide a dustguard having a flexible packing means urged resiliently into surface bearing engagement with an associated axle and an additional packing means urged resiliently into engagement with the rear wall of the journal box in order to form a seal and thereby exclude dust or any foreign substance from the interior of the box as well as prevent the escape of the journal lubricating medium from within the box.

Another object of the invention is to provide a dustguard having an axle-receiving aperture defined by oppositely disposed flanges wherein one of said flanges forms a shield to direct dust or water away from a flexible packing circumjacent the axle and the other of said flanges overlies a portion of said packing to assist in retaining the packing in engagement with the axle.

Still another object is to provide a dustguard adapted to be associated with a journal box having a removable plate forming a well portion, the medial portion of said dustguard being of a thickness greater than the distance between the plate and box.

These and other objects will become apparent from the following description and the accompanying drawing which forms a part of the present specification wherein:

Figure 1 is a rear elevational view of a journal box embodying a form of the present invention.

Figure 2 is a transverse sectional view, taken along the lines 2—2 of Figure 1, looking in the direction of the arrows.

Figure 3 is a fragmentary sectional view, taken along the lines 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a fragmentary sectional view, taken along the lines 4—4 of Figure 2, looking in the direction of the arrows.

Referring now in detail to the drawing, wherein like reference characters designate like parts, the journal box 1, the rear portion only of which is illustrated, is of the conventional type, except that the usual integral dustguard well is omitted. Thus the web 2 forming the rear wall of the journal box presents, before assembly with the associated parts, an unobstructed surface which may be machined in order to provide a smooth and true bearing surface for the dustguard, generally designated as 3.

The usual aperture 4 is provided in the rear wall 2 of the box to permit the passage of the bearing portion 5 and for the reception of the dustguard seat portion 6 of the axle 7. The journal box 1 may house the conventional type of bearing (not shown) which may be of either the frictional or roller type.

It is necessary, in the usual type of journal box, wherein spaced flanges forming the dustguard well are an integral part thereof, to remove the journal box from the railway vehicle in order to inspect the dustguard and thereby determine whether it is worn to such a degree that it must be replaced.

In the present invention the dustguard can be entirely exposed and inspected without the removal of the journal box from the vehicle and without removing the dustguard from the dustguard well. The dustguard well 8 of the present invention is preferably formed by the removably secured plate 9 interlockingly engaging flanges on said journal box and having a portion 10 thereof spaced from the rear wall 2 of the journal box. A top flange 11 extends outwardly from the top portion of the plate 9 to overlie a portion of the journal box and thus form a closure for the top of the dustguard well in order to prevent the entrance of foreign substance therein. Flanges 12, which extend along the sides of the plate 9, terminate in re-entrant flanges 13 directed toward the interior of the box to form channelled sides adapted to overlie and embrace outwardly extending ribs or flanges 14 on the sides of the box. An inverted U-shaped aperture 15 is provided in the portion 10 of the plate which facilitates the upward removal of the plate in order to expose the dustguard for inspection.

The plate 9 is preferably secured to the journal box by means of the cap screws 16 extending through the top flange 11 and into the roof portion of the box, said cap screws having aligned apertures 17 adapted to receive a wire 18 in order to prevent them from becoming displaced or loosened. A packing strip 19 is preferably interposed between the top flange 11 and roof of the journal box, thereby preventing water or dust from entering the dustguard well through the juncture formed thereby. The packing 19 also functions as a cushioning means to eliminate chatter or noise which would result in the absence of the packing and the cap screws becoming loose.

Forming a portion of the journal box assembly and located within the dustguard well 8 is the dustguard 3 urged against the rear wall 2 of the journal box by means of a plurality of leaf springs 20 secured to the portion 10 of the removable plate. The dustguard 3 is preferably

formed of an inner plate 21 and an outer plate 22, both of which are apertured as at 23 for the reception of the portion 6 of the axle. The area of the plates 21 and 22 is preferably less than the area of the dustguard well so that the dustguard may move, in a vertical or horizontal direction, relatively to the box.

In order to provide a dust-proof seal between the rear wall 2 of the box and the dustguard, a packing ribbon 24, which may be of felt, leather or any other desired material, is secured to the inner plate 21 along the peripheral edge thereof and urged into bearing engagement with the machined rear wall 2 of the journal box by means of the leaf springs 20. Thus it will be observed that, by reason of the rear wall 2 of the box being machined to present a smooth and true bearing surface for the packing ribbon 24, the relative movement of the dustguard will be considerably freer than it would be had the rear surface not been machined. It will also be observed that a more effective dustproof seal has been provided between the rear wall of the journal box and the packing ribbon as the latter will not be required to fill the crevices formed on the surface of an unmachined or rough casting.

The outer plate 22 of the dustguard is preferably formed with an inner offset or dished portion 25 adjacent the aperture 23, said dished portion terminating in an outwardly extending flange 26 which is in spaced relation to the portion 6 of the axle and defines the aperture 23. It will be observed that the flange 26 preferably extends into the vertical plane of the removable plate 9 thereby presenting a dustguard having a portion thereof of a thickness greater than the depth of the dustguard well or the distance between the removable plate 9 and the wall 2 of the journal box. The flange 26 not only functions as a reinforcing member to strengthen the outer plate along the periphery of the aperture 23 but it also functions as a shield to direct dust or water away from the axle bearing portion of the dustguard.

The inner plate 21 of the dustguard is illustrated with an offset or recessed portion 27 oppositely disposed from the dished portion 25 of the outer plate and thereby forms, together with the dished portion, a housing 28 in the dustguard adjacent the aperture 23. It will, of course, be understood that the recessed portion 27 may be eliminated and thereby permit the inner plate to extend in a single plane. In order to effect an adequate seal, between the dustguard and the axle, against the entrance of dust or foreign substance to the interior of the journal box and further to prevent the loss of the axle lubricant, a flexible sheet of packing 29 is provided circumjacent the portion 6 of the axle, the inner edge portion of which is interposed between the axle and a peripheral flange 30 extending inwardly of the box from the recessed portion 27 of the inner plate. The flange 30 reinforces the inner plate along the edge of the aperture 23 and also forms a means to prevent the free end of the packing 29 from curling away from the axle. The packing 29 has an angularly disposed portion 31, extending within the housing 28, which portion is secured to the dished portion of the outer plate by means of rivets 32 or any other desirable method.

In order to ensure a surface contact between the packing 29 and the portion 6 of the axle, a split ring 33, generally U-shaped in cross section and located within the housing, is preferably urged into bearing relation with the packing 29 by means of the circular coil spring 34. While the drawing illustrates the use of a coil spring 34 with the U-shaped split ring, it is obvious that if the split ring were formed of spring steel the coil spring might be omitted. The ring is provided with intermittently spaced legs 35 extending outwardly therefrom and on opposite sides of the coil spring in order to retain the spring in bearing relation with the ring. The legs 35 adjacent the inner plate may engage the inner plate 21 and thereby retain the ring and spring within the housing as well as limit the lateral movement of the ring with reference to the packing 29.

From the preceding description and the accompanying drawing it will be observed that means have been provided whereby the dustguard may be exposed and inspected without removing the same from the journal box, as well as providing means in the dustguard to shield a greater portion of the axle than that portion which merely extends within the dustguard well proper. It will be further observed that the packing engaging the rear wall of the journal box as well as the packing engaging the axle are urged resiliently into surface engagement with the rear wall and axle respectively, thereby providing an adequate dust-proof and leak-proof seal.

It will be understood that various alterations and modifications may be made to the illustrated structure without departing from the spirit and scope of the appended claims.

I claim:

1. In a journal box having a rear wall, in combination, a plate spaced from the rear wall to form a dustguard well, said plate having a top flange overlying and detachably secured to said journal box and angularly disposed sides interlockingly engaging flanges on said journal box, a U-shaped aperture in said plate, a dustguard received in said dustguard well, said dustguard comprising a plurality of rigidly connected plates having apertures defined by oppositely disposed flanges in spaced relation to an associated axle, one of said flanges extending within the U-shaped aperture and the other of said flanges being positioned in the vertical plane of said rear wall, a dished portion in one of the plates providing a housing within the dustguard adjacent the aperture, a flexible packing secured to the dished portion within the housing having a portion thereof circumjacent the axle, and spring means secured to said plate and acting against said dustguard for urging the latter against said rear wall.

2. In a journal box having a rear wall, in combination, a plate spaced from the rear wall to form a dustguard well, a dustguard within said well, and resilient means secured to the plate adapted to urge the dustguard into dust-proof engagement with the rear wall, said plate having a top flange overlying the journal box and angularly disposed sides interlockingly engaging flanges on said box, packing means interposed between the top flange and box, and means extending through the top flange and packing adapted to removably secure the plate to the box, and an inverted U-shaped aperture in the plate to accommodate an associated axle and facilitate the upward removal of said plate in order to expose the dustguard.

3. In a journal box having a rear wall, in combination, a plate spaced from said rear wall to form a dustguard well, said plate having a top

flange overlying the box and angularly disposed sides interlockingly engaging flanges on said box, and means extending through the top flange adapted to removably secure the plate to the box, said plate having an inverted U-shaped aperture adapted to receive an associated axle and facilitate the upward removal of the plate.

4. A dustguard comprising inner and outer plates having oppositely disposed flanges defining an aperture therein adapted to receive an associated axle, said outer plate having a dished portion providing a housing adjacent the aperture, a flexible packing secured to the dished portion within the housing and having a portion thereof circumjacent the axle and extending beneath one of said flanges, a ring within the housing in surface contact with the packing, spring means seated on said ring for urging the packing into surface engagement with the axle, and means on said ring adapted to engage one of the plates to limit the lateral movement of the ring within the housing.

5. In a dustguard for use with a journal box having a machined rear wall, comprising inner and outer plates having oppositely disposed flanges defining an aperture therein adapted to receive an associated axle, said outer plate having a dished portion providing a housing adjacent said aperture, a flexible packing secured to the dished portion within the housing and having a portion thereof circumjacent the axle and extending beneath one of the flanges, a ring within the housing urged into surface contact with said packing thereby providing a surface contact between the flexible packing and axle, and a packing ribbon secured to the inner plate along the outer edge thereof urged against said machined rear wall.

6. In a journal box having an apertured rear wall, in combination, a plate spaced from the rear wall to form a dustguard well, said plate having a top flange overlying and detachably secured to said journal box and channelled sides interlockingly engaging flanges on said box, a U-shaped aperture in said plate, a dustguard received in said dustguard well, said dustguard comprising a plurality of plates having apertures defined by oppositely disposed flanges in spaced relation to an associated axle, one of said flanges extending within the U-shaped aperture and the other of said flanges extending into said wall aperture, a dished portion in one of the plates providing a housing in the dustguard adjacent the associated aperture, and a flexible packing secured to the dished portion within the housing having a portion thereof circumjacent the axle and extending beneath the other of said flanges, and resilient means associated with said plate and dustguard for urging the latter against said rear wall.

7. A dustguard comprising inner and outer plates each having a flange directed outwardly of said dustguard and defining an aperture, each of said apertures being adapted to receive an associated axle, said outer plate having a dished portion providing a housing adjacent the aperture, a flexible packing secured to the dished portion within the housing having a portion thereof circumjacent the axle and extending beneath one of said flanges, a split ring within the housing in bearing relation with said circumjacent portion to provide surface engagement between said flexible packing and axle, and means associated with said ring for urging the latter toward said axle.

8. In a journal box having an apertured smooth rear wall, in combination, a plate spaced from the rear wall to form a dustguard well, said plate having flanges adjacent its top and side edges, said side edge flanges interlockingly engaging flanges formed on said box, a U-shaped aperture formed in said plate, a dustguard interposed between said plate and the rear wall of said box, said guard comprising a plurality of thin metal sheets apertured to receive the adjacent portion of an axle, and flexible packing means carried by said thin metal sheets and embracing said axle to form a seal between said axle and dustguard well portion of said box, said sheets having oppositely disposed aperture defining flanges extending into said wall aperture and U-shaped aperture respectively.

9. In a journal box having a rear wall, in combination, a removable plate spaced from said rear wall and having side portions thereof interlocking with said box, an axle extending through apertures in said plate and rear wall, a dustguard interposed between said rear wall and plate and having means circumjacent said axle to provide a seal therebetween, packing means secured to said dustguard in spaced relation to said seal and in complete bearing relation with said rear wall, and resilient means interposed between said plate and dustguard for urging said packing means against said rear wall, the aperture in said plate being U-shaped to partially embrace the said axle; said dustguard having oppositely disposed flanges extending into said rear wall and plate apertures forming a protective means for said axle.

10. In a journal box having a rear wall, in combination, a removable plate spaced from said rear wall to form a dustguard well, an associated axle extending through apertures in said wall and plate, a dustguard positioned in said well having a resilient means circumjacent the axle and a packing means in bearing relation with said rear wall to provide seals therebetween, resilient means removably secured to said plate for retaining said packing means against said rear wall, said plate having a top flange overlying the box to form a top closure for said dustguard well, and side portions of said plate interlockingly engaging said box; the aperture in said plate being U-shaped to facilitate the removal of said plate, said dustguard having radial flanges extending into said wall and plate apertures to form a protective means for said axle.

11. A dustguard comprising inner and outer plates, an aperture in each of said plates adapted to accommodate an associated axle, radial flanges on said plates defining said aperture and being spaced from said axle, one of said plates having a packing means attached thereto and adapted to engage the rear wall of an associated journal box, the other of said plates having a dished portion adjacent the included aperture and flange to form a housing, a flexible packing secured within said housing, said flexible packing having a portion thereof circumjacent the axle, and resilient means engaging said flexible packing and adapted to urge said flexible packing into surface engagement with said axle.

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