March 28, 1939. D. S. BARROWS 2,152,580

JOURNAL BOX SEAL

Filed April 2, 1935

Fig. 1.

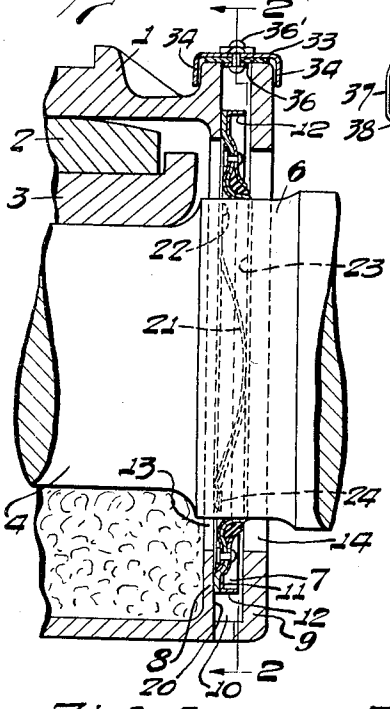


Fig. 2.

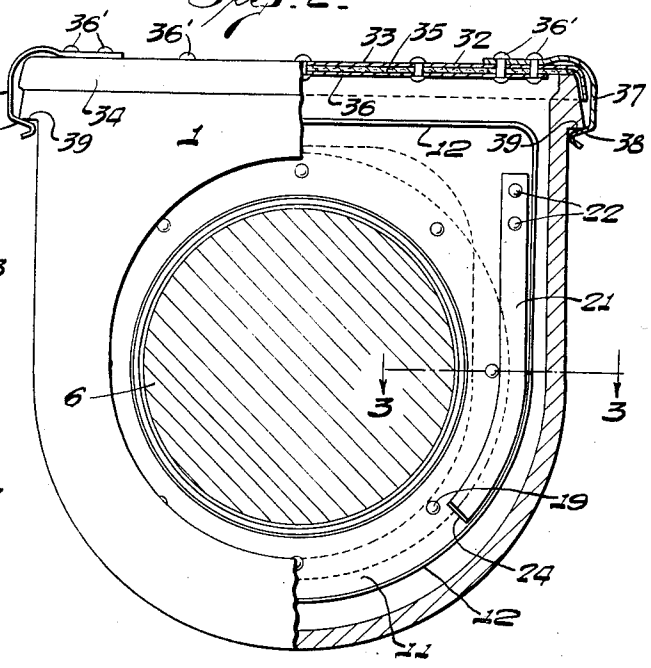


Fig. 4.

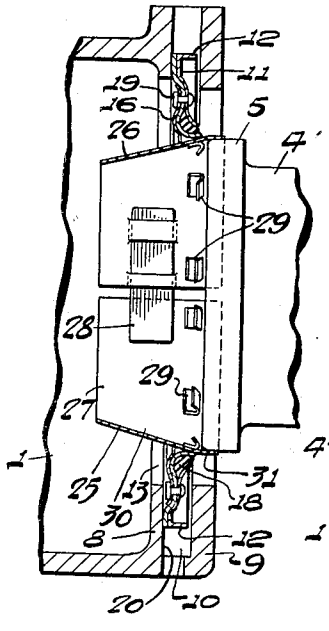


Fig. 5.

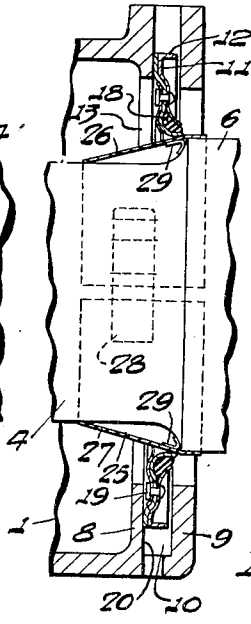
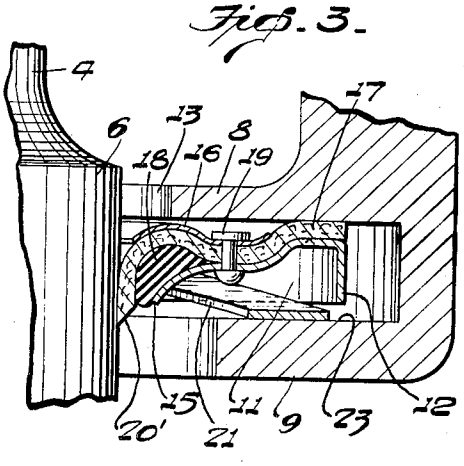


Fig. 3.



Inventor

Donald S. Barrows

By Ernest S. Mechlin Attorney

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2,152,580

UNITED STATES PATENT OFFICE

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JOURNAL BOX SEAL

Donald S. Barrows, Rochester, N. Y., assignor to The Symington-Gould Corporation, Rochester, N. Y., a corporation of Maryland

Application April 2, 1935, Serial No. 14,354

6 Claims. (Cl. 286—6)

This invention relates to railway vehicle journal boxes and, more particularly, to dustguards therefor, a collapsible assembly to facilitate application of such dustguards, and a cap for the dustguard well.

The principal object of my invention, generally considered, is the provision of a dustguard so constructed that it will automatically take up wear of the packing surrounding the associated axle and efficiently seal the associated box against the entrance of dust and foreign material, and minimize loss of oil therefrom.

Another object of my invention is the provision of a dustguard having a, preferably leather, packing member and associated resilient ring, preferably formed of rubber, associated with a metal plate and held thereagainst by a properly curved metal ring, said plate having springs secured thereto, so that the packing is not only pressed against the associated axle, but another portion of said packing is pressed against a wall of the dustguard well for sealing the journal box.

A further object of my invention is the provision of a collapsible assembly adapted to form a hollow cone for fitting the journal collar and that portion of the axle enlarged at the inner end of the journal, in order to facilitate application of a dustguard thereon.

A still further object of my invention is the provision of a cap for a dustguard well, comprising a flanged metal plate with packing secured to the inner face thereof and spring clips secured to the ends of said cap for holding the same in place over the dustguard well.

Other objects and advantages of the invention, relating to the particular arrangement and construction of the various parts, will become apparent as the description proceeds.

Referring to the drawing illustrating my invention, the scope whereof is defined by the appended claims:

Figure 1 is a fragmentary longitudinal sectional view of a journal box, showing a fragmentary portion of an axle in place therein, one embodiment of my dustguard and dustguard well cap being shown in section.

Figure 2 is a partial rear elevational view of the journal box shown in Figure 1, and a partial transverse sectional view on the line 2—2 of Figure 1, looking in the direction of the arrows, the enclosed dustguard being partially shown in elevation.

Figure 3 is a fragmentary horizontal sectional view on an enlarged scale on the line 3—3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a sectional view corresponding to Figure 1, but showing the use of the collapsible assembly fixture when the journal is just being inserted in the dustguard.

Figure 5 is a view corresponding to Figure 4, but showing the collapsible assembly fixture transferred from the journal collar to the inner end of the journal, where it expands to the portion of the axle beyond the journal in order to facilitate getting that enlarged portion of the axle into the dustguard.

Referring to the drawing in detail, like parts being designated by like reference characters, there is shown a fragmentary portion of a railway vehicle journal box 1, which may be of conventional construction, and only the inner or dustguard well portion is illustrated. Said journal box may receive a conventional form of wedge 2 and brass 3 forming a bearing for the journal 4, only a portion of which is illustrated, said journal 4, however, being preferably of conventional construction and having a collar 5 on its outer end, as shown in Figure 4, the inner portion of said journal expanding to an axle portion of enlarged diameter forming a dustguard seat, as indicated at 6, which portion carries a dustguard 7.

The journal box 1, as is customary, has a double rear wall, comprising an inner or front web or flange portion 8 and an outer or rear web or flange portion 9, forming a dustguard well 10 therebetween, said well receiving the dustguard 7 which, in the present embodiment, is constructed as follows:

I desirably take a metal plate 11 and provide flanges 12 around the outer periphery thereof, said flanges serving to stiffen the plate, and giving it an outline but slightly smaller than that of the dustguard well, so as to cover the apertures 13 and 14 in the webs 8 and 9, respectively, which receive the dustguard seat portion 6 of the axle. The plate 11 has a generally circular opening 15 for receiving the dustgard seat portion of the axle, the inner edge portion of said plate 11 around said opening 15 being desirably curved, as shown most clearly in Figure 3, so as to provide an annular pocket of varying width to receive the packing members, which will now be described.

Secured to the plate 11, and desirably made to curve, as shown in Figure 3, by a correspondingly curved sheet metal ring 16, is a, preferably leather, packing member or diaphragm 17 and an associated resilient, preferably rubber, ring 18. These packing members 17 and 18 are desirably

secured to the plate 11 and ring 16 by rivets 19, which extend through the plate 11 and ring 16, holding the diaphragm 17 therebetween and the rubber ring 18 between the inner edge portion of the diaphragm and the inner edge portion of the plate 11, said rubber ring 18 being desirably molded to conform with the curved space provided between the associated parts. The leather diaphragm 17 is flexible and adapted to hug the dust-guard seat portion 6 of the axle, being maintained in contact therewith by the rubber ring 18, which, however, does not act as a contracting spring, which would force the packing to fit a greatly undersized dustguard seat. The, preferably feathered or bevelled edge portion 20' of the leather diaphragm desirably projects outward or away from the associated box, thereby facilitating removal of the axle therefrom, but making it desirable to use a special device for facilitating assembly of the axle therewith.

In order to tightly hold the outer edge portions of the leather diaphragm 17 in engagement with the rear, preferably machined or finished, surface 20 of the inner or front wall 8 of the dustguard well 10, I provide springs 21, the upper ends of which are desirably secured to the plate 11 by means of rivets 22, and the intermediate portions of which are bowed rearwardly, as shown most clearly in Figure 1, so as to press against the front face 23, which may be left rough, of the rear wall 9 of the dustguard well 10, as illustrated in Figure 3. The lower portion of each spring 21 is desirably curved, as shown most clearly in Figure 2, so as to conform with the general outline of the plate 11, the lower ends of said springs 21 being desirably bent outwardly, as indicated at 24, so as to provide smooth wearing surfaces engaging the plate 11.

In Figures 4 and 5, I disclose a collapsible device 25 for facilitating the assembly of the axle with the dustguard 7. This device desirably comprises a pair of, preferably sheet metal, complementary members 26 and 27 which, when assembled, as shown in Figures 4 and 5, form a hollow, substantially frusto-conical, tool. The relative positions of the parts are desirably maintained by tongues 28 extending from one of the members 26 to lie inside of the other member 27 and prevent lateral shifting therebetween. The desired relative longitudinal position may be maintained by clips 29 on the members 26 and 27 secured thereto in any desired manner, as by means of spot welding, which clips are adapted to engage the outer face of the collar 5 on the journal, or the outer surface of the expanded portion at the inner end of the journal 4, to prevent the assembly device 25 from slipping longitudinally along the axle. It will be noted that when the members 26 and 27 are assembled, a frusto-conical portion 30 is provided outwardly of the clips 29, and a short cylindrical portion 31 is formed inwardly of said clips, said cylindrical portion fitting the collar 5 or dustguard seat portion 6 of the axle to which applied, and the frusto-conical portion 30 providing a gradually expanding surface, on which the inner edge portion of the diaphragm 17 will slide to the expanded position in engagement with the dustguard seat portion 6 of the axle, as shown in Figure 1. It is, of course, understood that, after the dustguard is slipped over the collar 5, using the assembly device as illustrated in Figure 4, the device 25 is then transferred from the collar 5 to the dustguard seat portion 6 of the axle, as shown in Figure 5.

The dustguard well cap 32, illustrated in Figures 1 and 2, desirably comprises a piece of sheet metal 33 with the edge portions flanged downwardly, as indicated at 34, to overlie the upstanding top portions of the webs 8 and 9 defining the dustguard well 10. Secured to the inner face of the plate 33 between the flanges 34 is a packing strip 35 of leather or fibrous material, said strip desirably spanning the distance between the webs 8 and 9, as illustrated in Figure 1, and held in place by a, desirably metal, strip 36 narrower than the width of the dustguard well or the distance between the webs 8 and 9, as illustrated in Figure 1, and secured to the plate 33 by a plurality of rivets 36'. The outermost of said rivets 36' desirably serve to also secure spring clips 37 to the cap 32, said clips 37 having inwardly curved lower portions 38 adapted to resiliently lock over downwardly facing shoulder portions 39 on the journal box 1, as shown most clearly in Figure 2.

From the foregoing disclosure, it will be seen that I have devised a novel form of dustguard, comprising a one-piece rubber ring sufficiently resilient to allow for momentary yield, but strong enough to hold the leather packing tightly against the axle. Said dustguard also has resilient means for holding the outer peripheral portion of the same leather packing tightly against the front wall of the dustguard well, thereby effectively sealing the space between the axle and journal box. I have also devised a collapsible assembly fixture to facilitate application of the dustguard to the dustguard seat of the associated axle, said fixture being readily applicable to and detachable from the axle, and adapted to serve as a durable application tool. I have also provided a cover or cap for the dustguard well, which is readily applied by snapping to the position illustrated in Figure 2, said cap embodying packing means which is held in tight engagement with the upper face of the journal box around the top opening to the dustguard well.

Although a preferred embodiment of my invention has been illustrated, it will be understood that modifications may be made within the spirit and scope of the appended claims. For example, the clips 29 may be formed as integral parts of the members 26 and 27, by cutting and bending portions to form tabs extending inwardly therefrom.

I claim:

1. A dustguard, comprising a metal plate apertured to receive the dustguard seat portion of an associated axle, with the outer edge portions of said plate flanged and the inner edge portions curved rearwardly, a rubber ring molded to correspond with said curved inner edge portions and engaging the front surface thereof, a leather diaphragm engaging the front surfaces of said plate and rubber ring, and a metal ring engaging the front surface of said diaphragm and secured to said plate, said metal ring being concavely curved toward said diaphragm to hold it in nesting engagement with said rubber ring with the inner edge portion of said diaphragm pointed rearwardly.

2. A dustguard for use with an axle and a journal box having spaced webs providing front and rear end walls defining a well and apertured to receive the dustguard seat portion of said axle, comprising a metal plate apertured to receive said dustguard seat portion with the outer edge portions of said plate flanged and the inner edge portions curved rearwardly, a

rubber ring molded to correspond with said curved inner edge portions and engaging the front surface thereof, a leather diaphragm engaging the front surfaces of said plate and rubber ring, a metal ring engaging the front surface of said diaphragm and secured to said plate by rivets passing through said diaphragm, said ring being concavely curved toward said diaphragm to hold it in nesting engagement with said rubber ring, with the inner edge portion of said diaphragm pointing rearwardly, and springs secured to the rear face of said plate for acting on the rear wall of said well and holding the outer peripheral portion of said diaphragm in engagement with the front wall thereof.

3. In combination with a journal box having a dustguard well defined by spaced rear end web portions, a dustguard received in said well and comprising a metal plate apertured to receive an associated axle, a flexible sheet of packing secured to said plate and engaging one of the web portions, said sheet being provided with a flange adapted to lie in fluid-tight engagement with said axle, a solid resilient ring fitting over said flange for holding it in tight engagement with said axle, and a metal ring engaging said sheet of packing and secured to said plate.

4. In combination with a journal box having spaced apertured webs forming front and rear walls of a dustguard well, a dustguard disposed in said well, said dustguard comprising an apertured metal plate, an axle received in said aperture, said plate having the outer edge portions flanged to correspond substantially with the width of said well, the inner edge portions of said plate around said aperture being curved rearwardly of said box, a rubber ring molded to correspond with said curved inner edge portions and engaging the front surface of said plate, a leather diaphragm engaging the front surfaces of said plate and rubber ring with its outer portions normally engaging the front wall of said well, a metal ring engaging the front surface of said diaphragm and secured to said plate by rivets passing through said diaphragm, said ring being concavely curved toward said diaphragm to hold it in nesting engagement with said rubber ring, with the inner edge portion of said diaphragm pointed rearwardly and lying in engagement with said axle, and springs secured to the rear face of said plate and acting on the rear wall of said well for holding the outer peripheral portion of said diaphragm in engagement with the front wall of said well.

5. A dustguard for use with a railway vehicle journal box having spaced webs defining a well, comprising a metal plate apertured to receive the dustguard engaging portion of an axle, a flexible sheet of packing engaging a front surface of said plate and one of said webs, said sheet of packing being secured to said plate in fixed relation thereto and provided with a flange forming an axle-receiving aperture, and a solid resilient ring engaging the front surface of said plate and fitting over said flanged portion of the sheet of packing for holding it in tight engagement with an associated axle.

6. A dustguard for use with a railway vehicle journal box having spaced webs defining a well, comprising a plate apertured to receive the dustguard engaging portion of an axle, a sheet of leather secured to one face of the plate and engaging one of said webs, said sheet having an aperture defined by a flange adapted to lie in contact with said axle portion, and a molded rubber ring interposed between said sheet of leather and plate, said ring encircling said flange for maintaining the desired contact thereof with said axle portion.

DONALD S. BARROWS.