March 31, 1942. W. BLACKMORE 2,278,362

JOURNAL BOX

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Fig. 1.

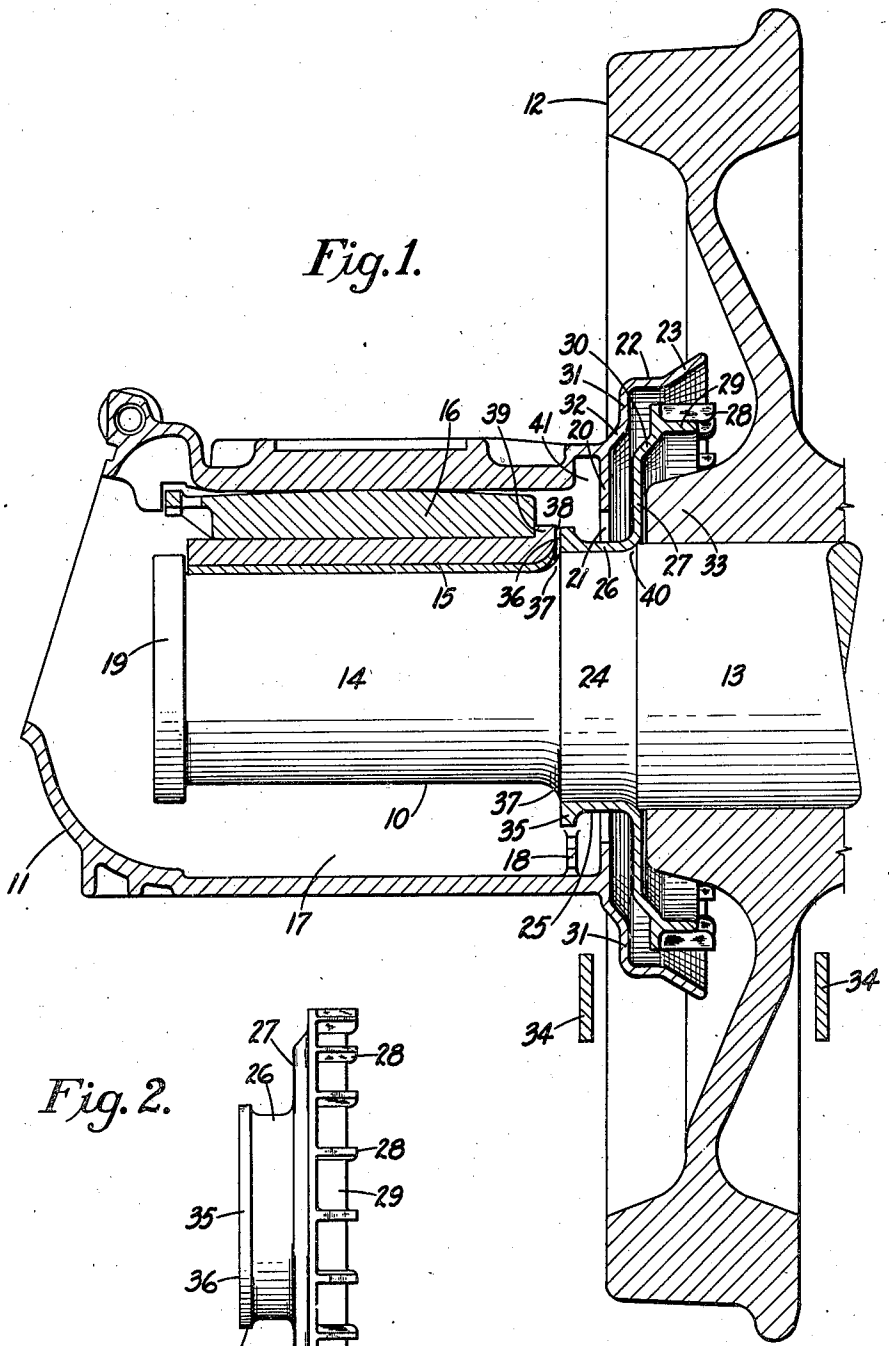


Fig. 2.

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JOURNAL BOX

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Application June 17, 1939, Serial No. 279,720

2 Claims. (Cl. 308—41)

This invention relates to a novel dust guard and thrust ring for journal boxes and more particularly embodies certain improvements over the dust guard shown in my copending application Serial No. 89,288, filed July 7, 1936, now Patent No. 2,227,922.

My present invention includes a dust guard rotatable with the car journal to effectively prevent entry of foreign matter into the rear of the box and a thrust ring integral with the guard and adjacent the end of the journal bearing or brass to take up thrusts therefrom. Ordinarily the fillet on the journal provides the sole lateral thrust receiving surface for the inner end of the brass so that at times that end of the bearing is subjected to excessive stresses. The shoulder at the inner end of the brass will be under combined bending and shearing stresses which may ultimately result in failure thereof. The present invention provides a thrust ring which supplements the fillet on the journal to provide a thrust surface of substantial area which greatly decreases the unit pressure against the end of the bearing and minimizes the possibility of failure of the bearing end flange. Other features and advantages of my invention will be apparent from the following description taken in conjunction with the drawing, in which:

Figure 1 is a vertical sectional view through a journal box embodying my invention; and

Figure 2 is a side elevational view of the combined dust guard and thrust ring.

Referring to the drawing, there is shown a journal 10 extending into a journal box 11 and having the usual wheel 12 pressed over the portion 13 thereof. Between the under surface of the top of the box and portion 14 of the journal are positioned a journal bearing or brass 15 and a wedge 16 such as are ordinarily used.

The end of the journal is provided with a collar 19. The lower section 17 of the box is packed with oil-soaked waste in the usual manner, and at the rearward end there is provided an upstanding rib 18 adapted to prevent the waste from working its way out of the box. The inner end of the box is formed with a rear wall 20 having an opening 21 for the journal. Extending rearwardly from wall 20 is a housing 22 which is substantially circular in cross-section and formed at its open end with an outwardly flaring portion 23. Mounted on journal portion 24 is a combined dust guard and ring member 25. This member is secured to the journal by means of cylindrical portion 26 which is shrunk or otherwise fastened on to the journal. Extending from portion 26 into housing 22 is the dust guard or fan portion of member 25 comprising an annular web 27, fan elements 28 and cylindrical rib 29. Web 27, which extends from portion 26, is spaced from wall 20 and is offset rearwardly at 30 to correspond generally to the contour of wall 20 and vertical wall 31 of the housing which is offset from wall 20 at 32. Elements 28 extend rearwardly from the outer end of web 27 and are reinforced by cylindrical rib 29 which extends rearwardly from the web and overlies hub 33 of the wheel. It will be noted that housing 22 also overlies the wheel hub. Upon rotation of the journal, elements 28 produce a circulation of air within housing 22 (as described in my copending application aforementioned) which precludes entry of foreign matter into the box. Vertical wall 31 of the housing is shown offset from rear wall 20 to clear the brake rigging tension bars 34. This wall, however, may be in line with wall 20 where the brake rigging construction permits, and accordingly the web 27 of the fan will lie in a single plane. The operation of the fan is the same in either case.

Member 25 is formed with a collar or thrust ring 35 at the outer end of portion 26 having its thrust surface 36 adjacent fillet portion 37 of the journal and opposite the end surface 38 of brass 15. The end portion of the brass adjacent the fillet surface is correspondingly curved. As will be observed, surface 36 supplements fillet surface 37 so that there are provided abutment surfaces adapted to engage substantially the entire end surface 38 of the brass, thus materially reducing the unit pressure thereon. It will also be noted that ring 35 extends into overlapping relation with shoulder 39 of the bearing so that upon a lateral thrust against the ring the shoulder will be placed under a compressive stress, whereas without the ring, upon engagement of the bearing with the fillet, the shoulder is subjected to a combined bending and shearing stress which might result in a failure thereof. In addition, the ring during rotation acts to prevent oil from escaping out the rear of the box. Any excess oil which accumulates on the fillet and thrust surface of the ring will be discharged by centrifugal force into the box. In order that ring 35 will remain positioned with its thrust surface 36 adjacent fillet 37 so as to take up thrusts from the bearing, the journal is provided with a fillet portion 40 joining portions 24 and 13 against which portion 26 of member 25 abuts. Thus, the fillet portion forms a stop which pre-

cludes movement of the ring away from the bearing end, so that surface 36 thereof will always form a continuous surface with fillet 37. As shown in the drawing there is clearance between web 27 and the end of hub 33. However, this clearance may be eliminated if desired and the web made to contact the hub end. The inside diameter of portion 26 must necessarily be at least as great as the diameter of collar 19 to permit mounting of the member upon portion 24 of the journal. As shown in the drawing, the inside diameter of portion 26 is of slightly larger diameter than collar 19.

An important feature of my invention resides in the particular adaptability of the thrust ring for use in connection with the fan type of dust guard. A ring similar to that disclosed in my invention could not be applied to a standard box using the conventional dust guard, since the thrust ring, in order that its thrust surface be adjacent the fillet of the journal, would necessarily be positioned adjacent the guard and upon relative axial movement between the box and journal, the ring would interfere with the guard. Referring to Fig. 1 of the drawing, the dust guard chamber as found in a standard box would be located as at 41, thus showing the actual position of the guard chamber in relation to the journal, as in a conventional box. It is clearly apparent that if the usual dust guard were located in chamber 41, the thrust ring could not be used due to the aforementioned interference between said members.

It will be observed that there is sufficient clearance between web 27 and walls 29 and 31 to provide for the axial movement of the box with respect to the journal which takes place in service. Moreover, the outer extremity of web 27 lies within cylindrical housing 22, and thus remains a constant radial distance from the housing during axial movement of the journal relative to the box in either direction.

While my invention has been shown applied to a waste packed type or journal box, it may be readily applied to a free oiling or similar type of box in which it is desired to seal an end thereof against dirt and dust and provide a large thrust surface for the journal bearing end.

The terms and expressions which I have employed are used as terms of description and not of limitation, and I have no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but recognize that various modifications are possible within the scope of the invention claimed.

What I claim is:

1. In a railway journal box, a journal extending into said box having a bearing portion, a collar at one end of said bearing portion of larger diameter than said bearing portion, said journal being enlarged at the opposite end of said bearing portion to substantially the diameter of said collar, a thrust transmitting fillet joining said bearing portion and said enlarged portion, a bearing member engaging the upper surface only of said bearing portion and having a fillet adapted to engage said thrust transmitting fillet, said bearing member having a lug projecting upwardly from the upper surface thereof, said lug being positioned higher than said bearing fillet, a wedge member between said bearing member and the top of the journal box having an end engageable with said lug, and auxiliary thrust transmitting means comprising an element secured to said enlarged portion of said journal and extending radially outwardly from said thrust transmitting fillet into overlapping relation with said lug and adapted to engage said bearing member to place said lug under compression during lateral movement of said journal in one direction, said element having an inner diameter such as to enable it to be slipped over said collar during assembly with said journal.

2. In a railway journal box having an opening in the rear wall thereof, a journal of lesser diameter than said opening extending through said wall into said box, said box being adapted for vertical and transverse movement relative to said journal, a bearing member supported by said journal, said bearing member having a thrust receiving fillet adjacent said journal and said journal having a corresponding fillet adapted to engage said bearing member fillet, an upwardly extending lug on said bearing member spaced radially from said fillets, a wedge member between said bearing member and the top of said box, said wedge member being adapted to engage said lug to transmit thrusts therebetween, auxiliary thrust transmitting means comprising a sleeve mounted for rotation with said journal passing through said rear wall and of smaller diameter than the opening therein, said sleeve having a flange at one end thereof extending radially from said journal fillet into overlapping relation with said lug, the outer diameter of said flange being less than the opening in said rear wall and said flange having a surface thereon facing said lug and adapted to engage the latter to place said lug under compression between said flange and said wedge member upon lateral movement of said journal in one direction.

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