May 26, 1959 G. S. ROGERS 2,888,279

RAILWAY JOURNAL BOX SEAL

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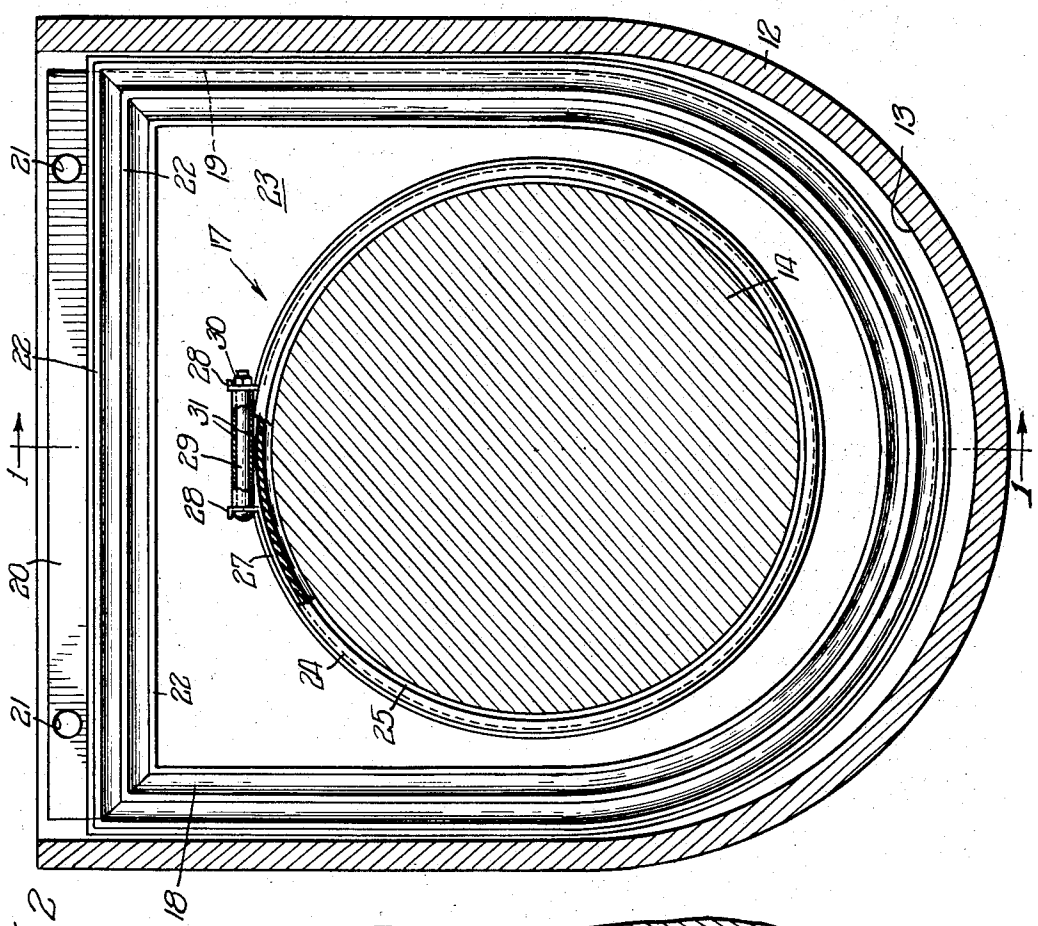


Fig. 2

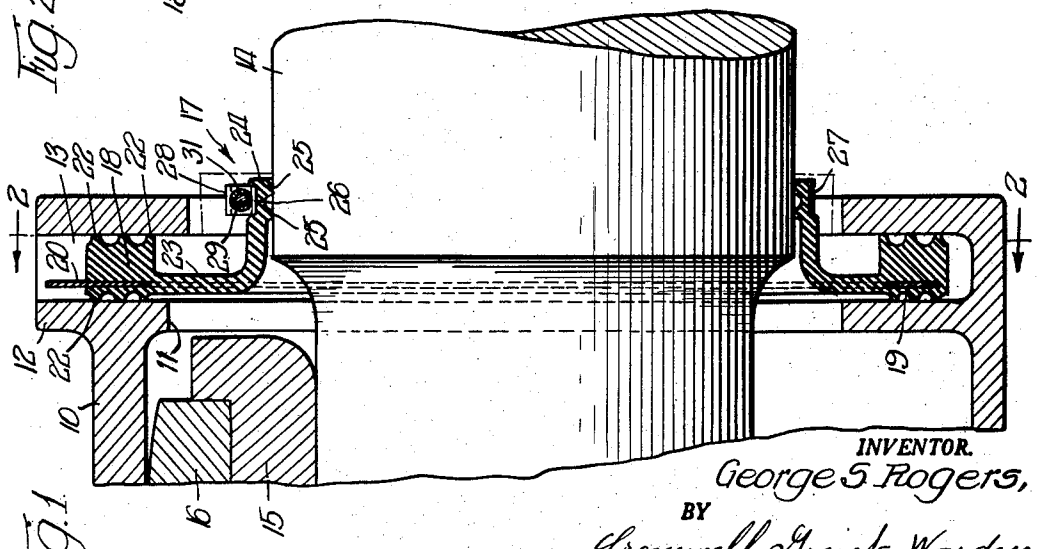


Fig. 1

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RAILWAY JOURNAL BOX SEAL

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1 Claim. (Cl. 286—5)

The present invention relates generally to an improved oil seal for use in a railway car journal box to retain lubricant within the journal box while at the same time prohibiting the entry thereinto of foreign material such as dirt.

The principal object of the present invention is the provision of an improved oil seal for mounting in the dust-guard slot of a conventional journal box, which seal may be readily installed or removed from the slot and which further is provided with adjustment means associated with its journal sealing portion capable of controlling the extent of sealing engagement maintained thereby.

Still another object is the provision of an oil seal of the type above described having adjustable means associated with its journal sealing portion to make the latter effective with re-worked journals as well as new journals.

Other objects not specifically set forth will become apparent from the following detailed description of the oil seal of the present invention made in conjunction with the accompanying drawing wherein:

Fig. 1 is a fragmentary vertical section taken along line 1—1 of Fig. 2 of a known type of journal box and associated journal having the improved oil seal of the present invention mounted therein; and

Fig. 2 is a front elevation in partial section of the journal box of Fig. 1 taken along line 2—2 of Fig. 1.

A journal box 10 of known design is shown as including an end opening 11 of oblong shape being provided with an outwardly directed flange portion 12 which defines an inwardly opening dust-guard slot 13 of U-shape cross section. The top horizontal segment of the dust-guard slot 13 is provided with an upwardly directed opening as well for access thereinto. Through the opening 11 of the journal box 10 is inserted a journal 14 of known design of a diameter appreciably less than that of the opening 11 to allow radial movement thereof within the opening. The journal box 10 is further provided with a wedge plate 15 and a bearing plate 16 which cooperate between the journal box 10 and the journal 14 in a known manner to retain the latter therein.

An oil seal 17 formed from resilient material such as high grade synthetic rubber is illustrated as having a body portion 18 which is of substantial mass and rectangular shape extending circumferentially continuously within the dust-guard slot 13. The body portion 18 substantially fills the dust-guard slot 13 and is provided with two side walls and an integral bottom of U-shaped outline, the side walls being closed at the top with a horizontally extending top portion. It is further internally supported by an imbedded metal plate 19 which, in turn, is provided with an upwardly extending exposed horizontal band 20 having spaced holes 21 therein. The plate 19 is preferably of adequate width throughout to generally conform to the width of the body portion 18 and in this respect provides the resilient material of the body portion 18 with a required amount of rigidity to allow the seal 17 to be easily installed and removed. The

band 20 is provided as a means for grasping the seal for removal from the slot 13 and the holes 21 are preferably widely spaced to be engaged by a hook or the like in carrying out such a removal.

The body portion 18 is further provided with radially extending circumferentially continuous, spaced lips 22 on opposite side walls thereof. The lips 22 are defined by intermediate grooves and extend into sealing engagement with the opposed inner surfaces of the side walls of the slot 13.

Extending radially inwardly from the inner surface of the body portion 18 and integral therewith is a connecting web 23. This web is circumferentially continuous and supports centrally thereof an integral journal sealing portion 24 which is intended to be positioned in a direction radially outwardly of the journal box 10 about the outer periphery of the journal 14 in sealing engagement therewith. As a result, the connecting web 23 is flexed at substantially right angles to its axis thereby providing a sufficient quantity of connecting web material to allow for the radial movement of the journal 14 within the opening 11. The connecting web 23 is relatively thin and highly flexible and allows the journal 14 to move without restriction in any direction in its usual manner while at the same time enabling the journal sealing portion 24 to remain in effective sealing engagement with the outer periphery of the journal 14 thereby keeping the oil in the journal box 10 and eliminating the introduction of dust, dirt and water thereinto.

The journal sealing portion 24 is provided with circumferentially continuous, inwardly directed, spaced sealing lips 25 which engage the outer periphery of the journal 14. The top surface of the sealing portion 24 is provided with an inwardly directed, circumferentially continuous groove 26 for receiving a clamp ring 27. This ring is provided with spaced ends defined by upwardly extending lugs 28 which receive therethrough a clamp screw 29 threaded at one end thereof into a shake-proof nut 30. Intermediate the lugs 28 is positioned a sleeve spacer 31 preferably of a non-corrosive nature such as fiber or non-ferrous material, which spacer limits the tightening of the clamp ring 27 about the sealing portion 24 thereby limiting the sealing pressure applied against the outer periphery of the journal 14.

The use of the clamp ring 27 allows the sealing pressure maintained between the lips 25 and the journal 14 to be regulated to any desired extent and upon proper regulation insures uniform contact between the lips 25 and that portion of the journal 14 in sealing engagement therewith. Continued maintenance of desired sealing engagement pressure is assured by providing the clamp screw 29 with the shake-proof nut 30. The provision of the spacer 31 prohibits the clamp ring 27 from being tightened to an extent that the sealing portion 24 becomes frozen on the journal 14.

The clamp ring 27 has an additional important function. During the course of continued operation of railway cars it is often necessary to re-work the journals which results in a slight reduction in their outside diameters. The seal 17 is capable of use not only with new journals but also with re-worked journals as the clamp ring 27 may be tightened to an extent that the lips 25 will be brought into proper sealing engagement with a re-worked surface of a journal. Under such circumstances it is merely necessary to utilize a spacer 31 of reduced length to allow the lugs 28 to be brought together by the clamp screw 29 and nut 30 to an extent that proper sealing engagement between the lips 25 and the re-worked journal 14 is accomplished. For this purpose a number of spacers of difierent lengths may be kept on hand. It has been found preferable to insulate

the outer surface of the clamp ring **27** as well as the clamp screw **29** and the nut **30** in any suitable manner, such as with a phosphate coating, to prevent any possibility of sparking should the ring **27** or its associated parts come into moving contact with steel parts.

From the foregoing it can be readily seen that the railway journal box oil seal of the present invention exhibits many desirable features. For example, the positioning of the sealing portion **24** radially outwardly of the opening **11** makes the seal highly accessible for adjustment. During the use of the seal **17**, the effectiveness of the sealing portion **24** may be continuously regulated by appropriate adjustment of the clamp ring **27** and such may be accomplished without requiring the disassembling of any portion of the total unit. To remove the journal **14** from the journal box **10** as far as the seal **17** is concerned, it is necessary merely to loosen the clamp ring **27** which may be easily done due to the accessibility of the clamp screw **29**.

Obviously many modifications and variations of the invention as hereinbefore set forth may be made without departing from the spirit and scope thereof, and therefore only such limitations should be imposed as are indicated in the appended claim.

I claim:

In a journal box having a journal extending thereinto through an opening in an end thereof, said opening surrounded by an inwardly opening dust-guard slot extending radially outwardly with respect thereto and closed along the sides and bottom thereof while being provided along the top thereof with an upwardly directed opening, the provision of an oil seal formed from resilient material having a circumferentially continuous body portion mounted within said slot, said body portion having continuous lips on either side thereof in sealing engagement with the opposed inner surfaces of the side walls of said slot, an embedded rigidifying support in said body portion having a seal removal engaging portion extending upwardly therefrom into the upwardly directed opening of said slot, a journal sealing portion positioned centrally of said body portion and axially offset relative thereto while being provided with a continuous lip on the inner surface thereof in sealing engagement with the outer periphery of said journal, a ring clamp carried by the outer surface of said journal sealing portion to adjust the sealing engagement between said portion and said journal, said clamp including an interrupted ring member having spaced ends defined by radially outwardly directed lugs receiving therethrough a clamp screw fastener, said fastener including adjustment means for loosening and tightening said ring member, a tightening limiting sleeve received about said fastener intermediate said lugs and arranged for abutment therewith upon tightening of said ring member to limit further tightening thereof, a groove in the outer surface of said sealing portion to receive and retain said ring clamp in contact therewith, and a circumferentially continuous connecting web integral with said body portion and said sealing portion to allow relative movement therebetween, said connecting web including a radially extending portion directly integral with said body portion and an axially extending portion intermediate said radially extending portion and said sealing portion, the axially extending portion of said connecting web being of sufficient axial length to position said sealing portion in axially offset relation to said body portion and hold the same in outwardly projecting relation relative to said opening to locate said ring clamp in readily accessible relation outwardly of said journal box.

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