Nov. 28, 1961 L. E. HOYER 3,010,741

DUST GUARD SEALS

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FIG. 1

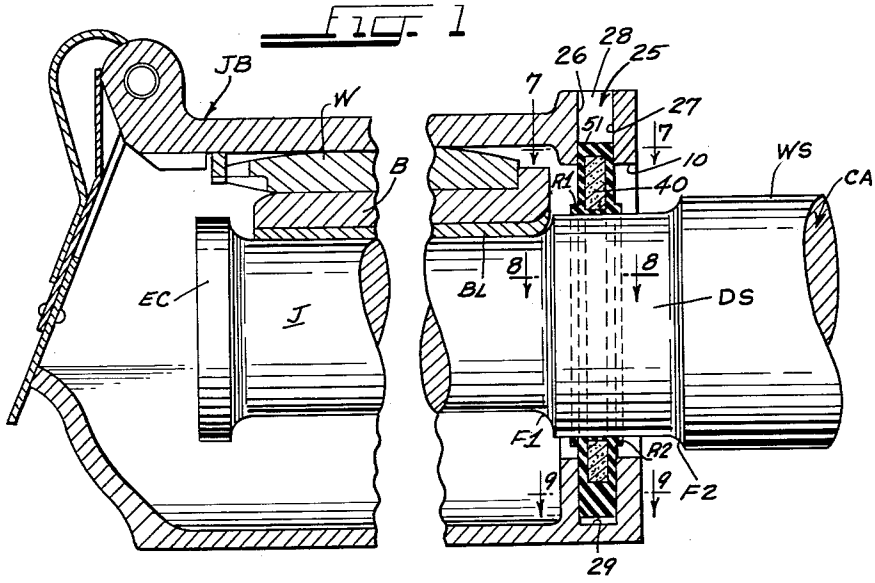


FIG. 10

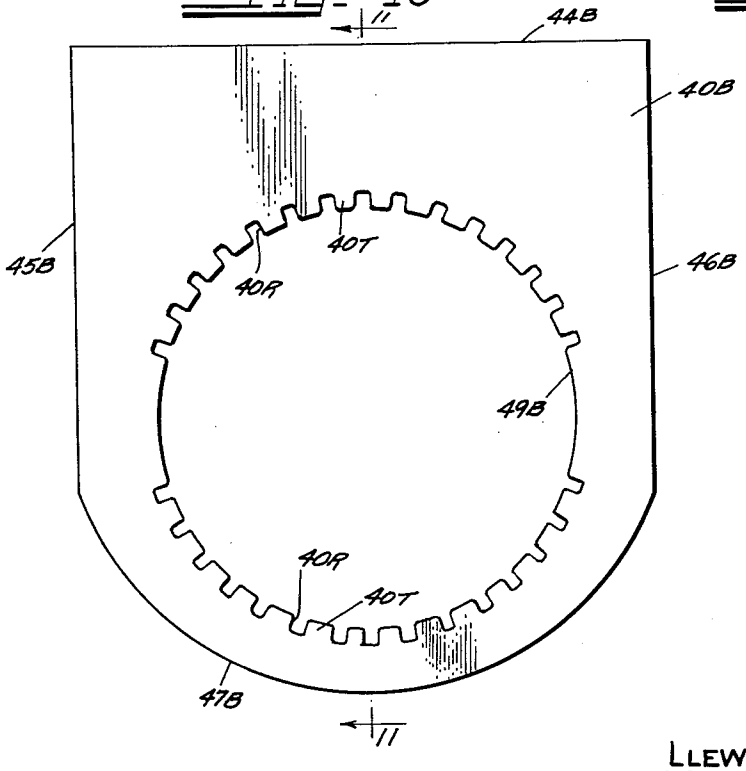
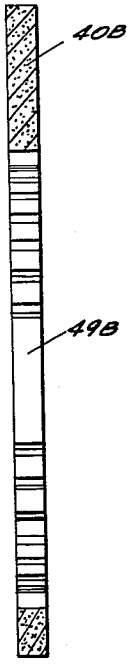


FIG. 11



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FIG. 4

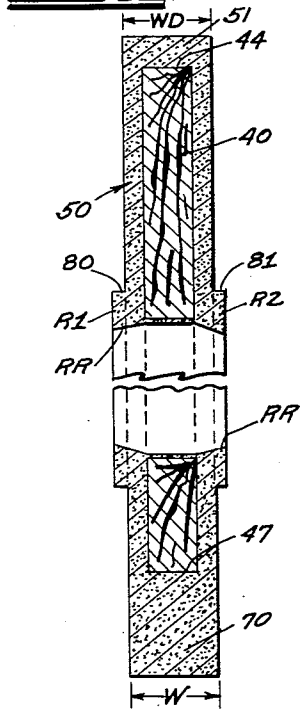


FIG. 2

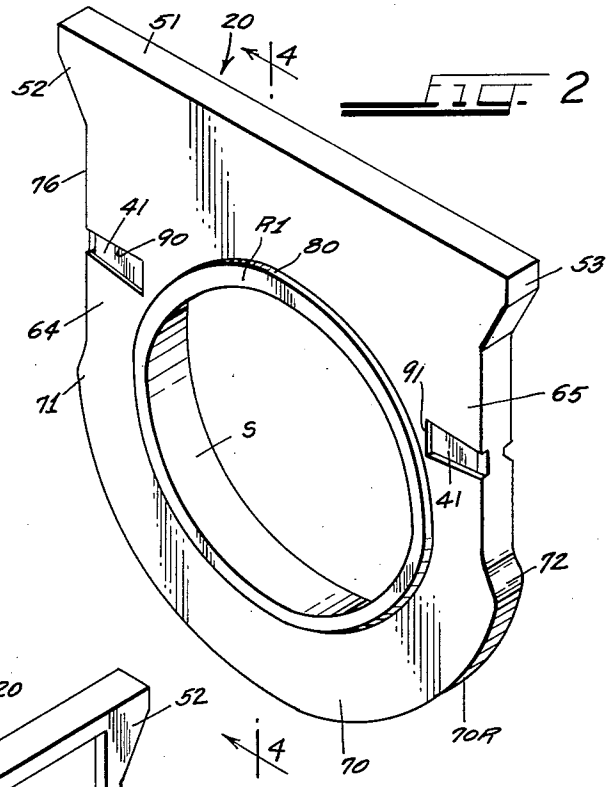
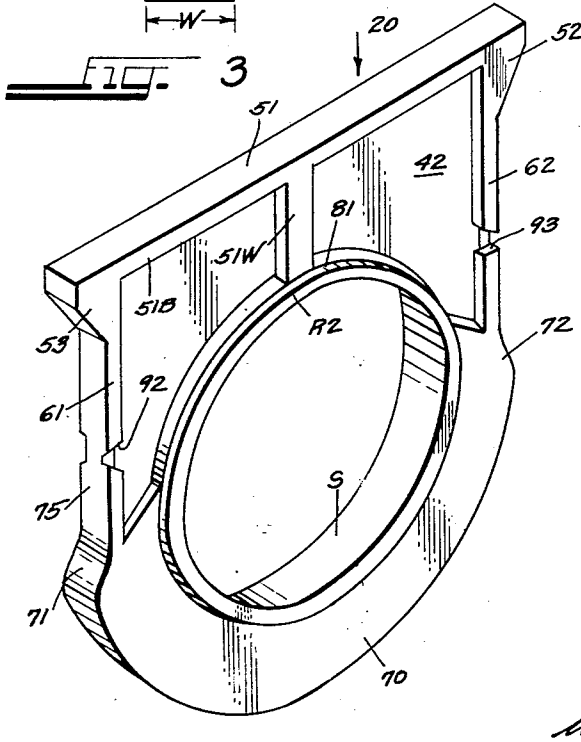


FIG. 3



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FIG. 5

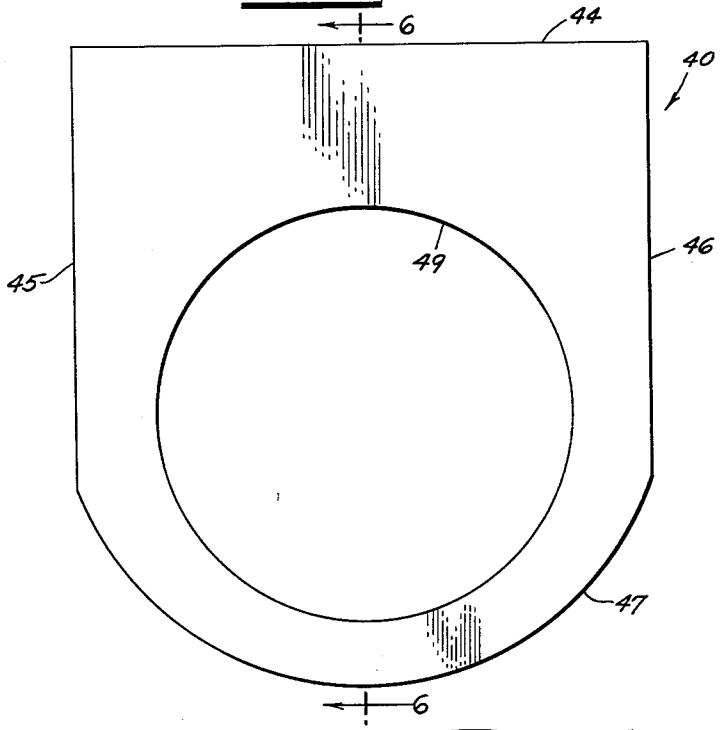


FIG. 6

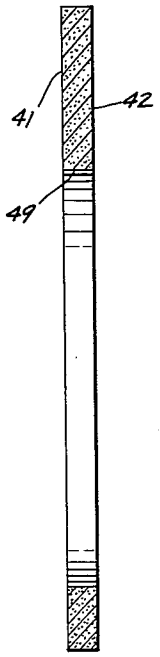


FIG. 7

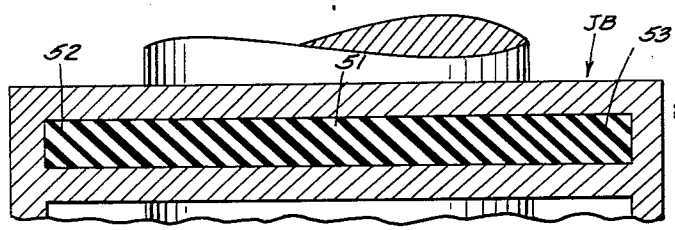


FIG. 8

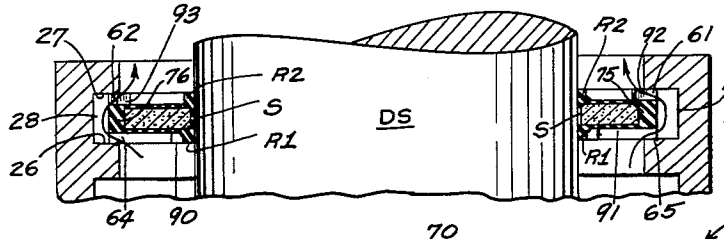
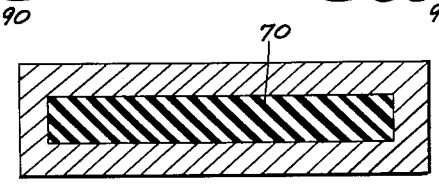


FIG. 9



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FIG. 12

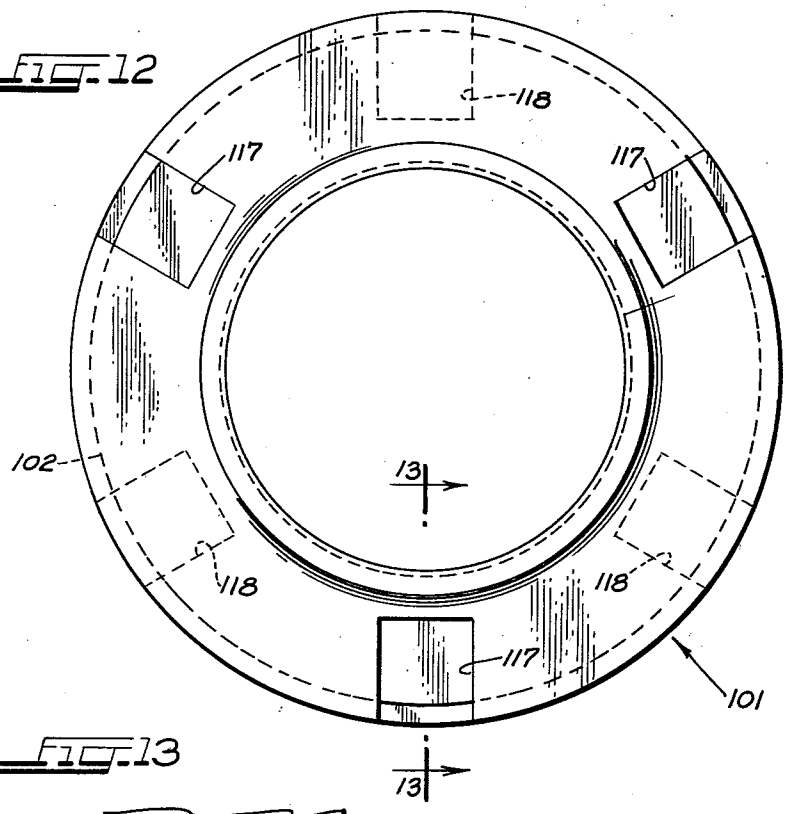


FIG. 13

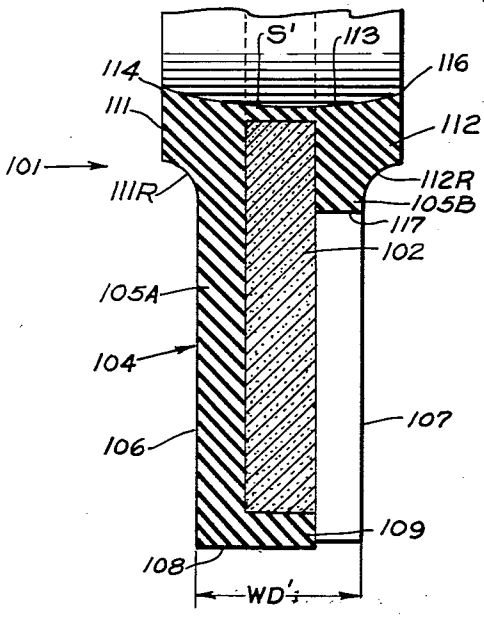
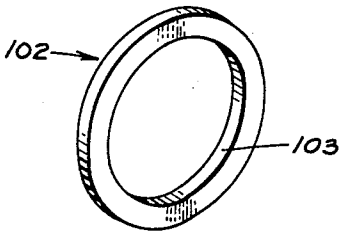


FIG. 14



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DUST GUARD SEALS

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Filed Aug. 31, 1959, Ser. No. 837,286
6 Claims. (Cl. 286—6)

This invention relates to a dust guard seal for the journal box of a railroad car, and this application is a continuation-in-part of application Serial No. 724,445, filed March 27, 1958.

One of the more significant factors having an important relation to the proper lubrication of journal of a railroad car and its bearing is the so-called dust guard seal which is so mounted in the journal box of the car as to surround the dust guard seat or diameter of the car axle. Thus, the dust guard seal ideally should be of such nature as to prevent loss of lubrication from the journal box and entrance of dust and like foreign matter in to the journal box from the exterior thereof. Moreover, and in keeping with the ideal nature of the seal, the seal should be of such nature as to be resistant to breakage or rupture in those instances where the journal exerts a substantial side thrust against the seal; and the seal should be capable of preventing seepage of lubricant from the journal on to and beyond the dust guard diameter of the car axle.

The primary object of the present invention is to construct a dust guard seal for the journal box of a railroad car which embodies the foregoing ideal attributes and characteristics, and additionally, to so construct the seal as to account for venting of the interior of the journal box while effectively sealing off not only the dust guard diameter of the car axle but also the dust guard slot in a standard railway journal box in which the seal of the present invention is adapted to be mounted.

The reason for venting the journal box is to prevent establishment therein of pressure caused by in-and-out motion of the journal acting as a pump tending to force lubricant out of the journal box.

Another object of the present invention is to enable the foregoing to be embodied in a relatively inexpensive dust guard seal for the journal box of a railroad car such that the seal of the present invention is unitary in form and embodies but two essential parts, namely, a rigid plate and a resilient retainer. Another object of the present invention is to guard the opening in the seal through which the journal is passed by 360° rings which are formed on both sides of the seal, thereby serving to prevent lubricant from the interior of the journal box, or water from the exterior box, from collecting or seeping under the seal where it contacts the dust guard diameter of the car axle. This is of particular importance during violent motion of the journal box which causes lubricant to be splashed on to the dust guard diameter of the car axle, or at times when the journal box is inverted as for instance in a hopper car, and during inclement rainy weather.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, shows preferred embodiments of the present invention and the principles thereof and what I now consider to be the best mode in which I have contemplated applying those principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing

from the present invention and the purview of the appended claims.

In the drawings:

FIG. 1 is a sectional view of a journal box and an associated car axle and showing the seal of the present invention mounted in its operative position;

FIGS. 2 and 3 are, respectively, perspective views showing the seal of the present invention;

FIG. 4 is a sectional view taken substantially on the line 4—4 of FIG. 2;

FIG. 5 is an elevation of a plate which may be embodied in the seal of the present invention;

FIG. 6 is a sectional view taken substantially on the line 6—6 of FIG. 5;

FIGS. 7, 8, and 9 are detail sectional views taken substantially on the lines 7—7, 8—8, and 9—9 of FIG. 1;

FIG. 10 is a plan view of a modified form of insert plate;

FIG. 11 is a sectional view taken on the line 11—11 of FIG. 10;

FIG. 12 is a plan view of another embodiment of a seal constructed in accordance with the present invention;

FIG. 13 is an enlarged fragmentary sectional view taken in the direction of the arrows 13—13 in FIG. 12; and

FIG. 14 is a perspective view of another embodiment of an insert plate.

FIG. 1 of the drawing shows standard railroad journal box and car axle structure. Thus, there is shown the axle CA of a railroad car having the reduced journal portion J thereof extended through the opening 10 on the wheel side of the journal box JB. The journal J within the journal box engages the lining BL of a conventional segment bearing B, and the bearing B is held in place between the end collar EC of the journal and the fillet surface F1 by a conventional wedge W. The car axle is formed with a dust guard seat or so-called dust guard diameter DS which extends from the fillet surface F1 to a second fillet surface F2, and the fillet surface F2 merges with the wheel seat diameter WS of the car axle. Normally, lubricant in the form of oil is provided in the portion of the journal box below the journal J to a depth of several inches, and a lubricator of one form or another is mounted in the bottom of the journal box so as to contact the lower periphery of the journal J to relay such lubricant thereto for lubricating the journal and the bearing lining.

The foregoing represents standard or approved structure, and the present invention relates to a dust guard seal 20, FIGS. 2 and 3, which is mounted in the dust guard slot 25 of the journal box as shown in FIG. 1 of the drawing. The dust guard slot 25 is of standard form, being U-shaped in outline and being defined by front and rear walls 26 and 27 and side walls 28, FIGS. 1 and 8. The dust guard slot 25 is open at the top of the journal box but is closed at the bottom by a bottom wall 29, FIG. 1. The front and side walls 26 and 27 of the dust guard slot are continuous across the top and across the bottom of the journal box. At the sides of the journal box, the dust guard slot communicates with the opening 10 through which the journal is passed. The opening 10 through which the journal is passed is relatively large in nature as shown in FIG. 1 so as to accommodate vertical motions of the journal relative to the journal box and to facilitate assembly of the parts among other things. Thus, the opening 10 is of much larger diameter than the diameter of the dust guard seat DS of the car axle, and hence in order to seal up the portion of the opening 10 not occupied by the part DS of the car axle, the dust guard seal 20 of the present invention is

adapted not only to seal off such portion of the opening **10** so that there will be no loss of lubricant from the journal box or entrance therein of foreign matter from the wheel side of the car axle, but is also adapted to effectively seal off the dust guard slot itself enabling the interior of the journal box to be advantageously vented. Moreover, the seal of the present invention is so constructed as to substantially prevent lubricant from being splashed on to the portion of the car axle surrounded and engaged by the seal and is further constructed to allow all motions to the journal without damage to the seal.

The details of the seal of the present invention are best shown in FIGS. 2 to 4 of the drawings, the seal including a rigid insert plate **40** of plywood or the like, although other materials could be used advantageously as will be explained. Details of the plate **40** are shown in FIGS. 5 and 6, and it will be observed that the plate **40** includes opposed front and rear faces **41** and **42**, but this is merely for reference inasmuch as both sides of the plate **40** are symmetrical. The insert plate **40** is defined by an upper straight horizontal wall **44** and vertical outer vertical walls **45** and **46** which are joined at their lower ends by a rounded lower wall **47**. A relatively large opening **49** is formed at the medial area of the insert plate **40**, and this opening **49** is but slightly larger in diameter than the diameter of the portion DS of the car axle CA.

A resilient retainer of a construction to be explained in detail hereinbelow is secured to the plate **40**, and the retainer is of such nature and construction as to frictionally engage the front and rear walls **26** and **27** of the dust guard slot so as to maintain the dust guard seal of the present invention in what can be termed a normal position. However, the dust guard seal of the present invention is capable of shifting depending upon the motion of the car axle. The retainer is constructed to allow this to occur without damage to the seal, and even under such circumstances the retainer is effective to seal off the dust guard slot as well as the dust guard diameter DS of the car axle. It will be realized that the retainer thus acts in part as a seal and that the solid portions of the plate **40** primarily closes off the portion of the opening **10** in the journal box not occupied by the portion DS of the car axle.

In achieving the foregoing, the rigid plate **40** at least about all the margins and the aforementioned walls thereof is enveloped in a sheath of resilient oil-resistant synthetic plastic such as neoprene or polyurethane foam or the like **50**, FIG. 4, representing the retainer means. Referring to FIGS. 2 to 4, the retainer means **50** includes an elongated top seal **51** which extends parallel to the top wall **44** of the insert plate **40**, and the top seal is extended outwardly of the outer vertical walls **45** and **46** of the plate **40** so as to provide outwardly extending ears **52** and **53**.

The extent to which the ears **52** and **53** extend outwardly of the outer vertical walls of the plate **40** is determined for the most part by the length of the top opening in the dust guard slot in the journal box. Thus, referring to FIG. 7, the top seal **50** of the dust guard seal is so dimensioned as to completely fill the top of the dust guard slot in the journal box, so that when the dust guard seal of the present invention is inserted into the dust guard slot as shown in FIGS. 1 and 7, the top of the dust guard slot is completely sealed off against the entrance of foreign matter. The ears **52** and **53**, in this connection, can be made slightly over-size, since the resilient nature of the material **50** allows for compression thereof.

Under the present invention, the retainer afforded by the material **50** is continuous not only along and in respect of the top wall and top margins of the plate **40** but is also continuous along and about the margins of the front and rear sides of the plate **40** as well as the vertical and bottom walls thereof as can be readily seen in FIGS. 2 and 3. In this connection, it should be pointed out that the side of the seal as viewed in FIG. 2 is the inner or front side which will face inwardly of the journal box, while the side of the seal shown in FIG. 3 is the rear or outer side which will face in the direction of the car wheel. Thus, referring to FIGS. 3 and 8, the retainer includes two narrow or marginal parallel rear side sections **61** and **62** which are joined integrally to the top wall seal **51**, and these rear side sections extend downwardly toward the rounded bottom of the plate **40**. The portion of the retainer on the front side of the plate **40** includes front side sections **64** and **65**, FIGS. 2 and 8, and as shown particularly in FIG. 8, the rear seal sections **61** and **62** of the retainer engage the rear wall **27** of the dust guard slot, while the front seal sections engage the front wall of the journal box when the seal **20** is positioned in the journal box.

As shown in FIG. 4, the retainer **50** has a width WD which is slightly larger than the width of the dust guard slot between the front and rear walls **26** and **27** thereof, such that when the seal of the present invention is positioned in the dust guard slot the side seal sections **61** and **62**, **64** and **65** resiliently engage and seal the front and rear walls of the dust guard slot as mentioned above. Referring to FIG. 3, it will be observed that the top seal **51** has a strip **51B** which projects from the rear face **42** of the plate **40**, and this strip **51B** is the part on the rear top of the retainer which will engage the rear wall **27** at the top of the dust guard slot as can be appreciated from FIG. 7.

It is important to protect the plate **40** from being damaged due to motion of the car axle. In this connection, it was mentioned above that the ears **52** and **53** which project outwardly of the top seal **51** and which are formed integral therewith project well outwardly of the seal side sections as **61** and **62**, FIG. 3, and **64** and **65**, FIG. 2. It should also be pointed out in this same connection that the retainer **50** is formed with a bottom seal **70** of expansive area. The entire retainer is an integrally molded part as will be described, and the bottom seal **70** projects well below the rounded bottom wall of the plate **40** and includes a rounded lower wall **70R** which is complemental to the rounded bottom of the dust guard slot. Additionally, the bottom seal **70** has a larger radius of curvature than does the bottom wall of the plate **40**, and consequently the bottom seal **70** has projecting ears **71** and **72**, FIGS. 2 and 3, which extend outwardly of the vertical walls **75** and **76** of the retainer which join the aforementioned ears of the bottom seal to the aforementioned ears of the top seal as best shown in FIGS. 2 and 3. The vertical walls **75** and **76** of the seal (see FIG. 8) have an appreciable thickness, and hence it will be seen that all of the peripheral walls of the plate **40** are sheathed and protected by the resilient body of the retainer **50**, and in this manner the peripheral walls of the plate **40** are protected against damage in the event that the car axle should throw the dust guard seal of the present invention against the bottom wall or a side wall **28** of the dust guard slot of the journal box.

As shown in FIGS. 2 and 3, the bottom seal **70** is symmetrical on both sides of the plate **40**, and the retainer **50**, except for recesses to be described, is continuous about the entire area of the inner side of the plate **40** shown in FIG. 2. On the other hand, the retainer **50** is discontinuous at the upper section of the rear side **42** of the plate **40** as shown in FIG. 3. Such discontinuity is primarily for reasons of economy, and where the savings does not represent an appreciable item the rear side or face of the retainer **50** can be continuous as the front side. This is particularly advantageous where it is desired to have a dust guard seal which is fully reversible.

The retainer **50** is formed with journal seal and drain rings on both sides of the plate **40**, and these rings are identified at R1 and R2 in the drawings. The rings R1 and R2 are of continuous 360° annular form and as best

shown in FIG. 1, project axially of the opening in the dust guard seal 20 through which the journal is passed. Each ring R1 and R2 is identical in dimension and configuration, and each ring R1 and R2 is constructed to have an outer annular wall, 80 and 81 respectively, which projects normal to the respective plane of the related face 41 or 42 of the plate 40. Thus, in the event that oil is splashed about the journal box tending to settle on the dust guard seat of the car axle adjacent the seal 20, this oil will be shed away from the dust guard seat of the car axle upon splashing on the wall 80 of the ring R1 and will drain down along the wall 80 back into the oil reservoir of the journal box, noting that the bottom of the dust guard slot is tightly sealed as shown in FIG. 1. Likewise, during inclement rainy weather the wall 81 of the ring R2 facing the wheel side of the car axle will shed water when the water contacts the wall 81. Where the seal of the present invention is incorporated in the journal box of a hopper car which is emptied by inverting the car, the wall 80 of the ring R1 is highly effective in sealing the journal.

Referring to FIG. 4 of the drawings, it will be observed that each ring R1 and R2 is formed with a sharp lip or rib RR presenting a continuous 360° seal edge about the inner diameter of the related ring R1 or R2. Such edges are at the outer ends of the rings R1 and R2 and are of smaller diameter than the diameter of the portion DS of the car axle, and hence when the rings R1 and R2 engage the car axle as shown in FIG. 1 the rings in effect are distorted about their inner diameters and their effective length is increased. Preferably each such lip as RR is formed by tapering the inner wall of each ring R1 and R2 from a larger diameter at the inner axial end of the ring to a smaller diameter at the outer axial end of the ring.

In and out motion of the journal relative to the journal box has a pumping action such as to create substantial pressures within the journal box which sometimes tends to actually force oil out of the journal box in the directions of the dust guard slot. This particular problem is overcome under the present invention by forming vents in the retainer portion of the dust guard seal, and these vents communicate with unoccupied portions of the dust guard slot. Referring to FIGS. 2, 3, and 8 of the drawings, a pair of recesses 90 and 91 are formed to extend inwardly from the outermost edges of the seal sections 64 and 65. Likewise, a pair of recesses 92 and 93 are formed in the seal sections 61 and 62 to extend from the outermost edges thereof. As was mentioned above, the ears 52 and 53 on the top seal 51, and the ears 71 and 72 on the bottom seal 70, extend outwardly of the seal side sections as 61 and 64. As a matter of fact, these ears sealably engage the side walls 28 of the dust guard slot, and accordingly the opposed ones of above described recesses, when the dust guard seal is installed in position, are in communication with each other by virtue of the vertical walls 75 and 76 of the seal and retainer member being spaced from the side walls 28 of the dust guard slot as shown in FIG. 8. Accordingly, the interior of the journal box is adapted to be vented, and such venting is indicated by the tortuous arrows in FIG. 8 which indicate that air in the journal box is being forced out through the recesses 90 and 91, around the adjacent portions of the vertical walls 75 and 76 of the retainer spaced from the vertical walls 28 of the dust guard slot, and out the recesses 92 and 93 at the back of the dust guard seal 20 facing the wheel of the car. In the event that the rear or outer side of the retainer 50 is continuous, then the recesses formed in the outer side thereof will be identical to the recesses 90 and 91.

In manufacturing the dust guard seal 20, the plate 40 is positioned in a mold which is cored to account for the discontinuous areas void of retainer material 50 at the rear side of the plate 40, and the mold is also cored to form the various parts and recesses of the retainer 50 described above. It should also be pointed out that a core will be arranged within the opening 49 in the plate 40 while affording a narrow annular space between this core and the diameter of the opening 49 so that the foam material placed in the mold and subjected to curing will flow from one side of the plate 40 to the other, producing a slight skin S of material 50 about the diameter of the opening 49 as shown in FIGS. 2, 3, and 8. After the mold has thus been properly cored, the raw or uncured synthetic material of which the retainer 50 is composed is then introduced into the mold to fill the same whereupon the synthetic material is cured to its final state of composition, and this of course produces an integral bond between the plate 40 and the retainer and seal means 50. As mentioned above, a wide variety of synthetics can be used as the essential composition for the seal and retainer material, and while the plate 40 has been disclosed as being of plywood such can be advantageously substituted by hard rubber.

The insert plate to which the resilient retainer and seal member of oil resistant material is bonded can also be composed of so-called pressed or molded wood, and a plate of this kind is illustrated at 40B in FIGS. 10 and 11. With but one difference to be mentioned, the plate 40B is identical in dimension and configuration to the plate 40, and thus includes a flat upper wall 44B, depending vertical walls 45B and 46B, and a rounded lower wall 47B. The plate 40B is of course formed with a relatively large opening in the medial area thereof identified as 49B in FIGS. 10 and 11. One advantage of a molded insert plate as 40B is that the opening 49B can be serrated to provide teeth 40T separated by recesses 40R. Thus, when the retainer and seal means is to be molded integral with the plate 40B, the synthetic material will flow through the recesses 40R from one side of the plate 40B to the other, and this will eliminate the thin skin S about the opening in the insert plate through which the car journal is passed. Additionally, the teeth 40T will serve as a positive lock between the insert plate and the retainer molded thereto. It will be appreciated that if hard rubber is used for the insert plate of the dust guard seal of the present invention, such can be vulcanized in a cored mold to provide teeth and recesses as 40T and 40R.

In some instances it may be desired to utilize sealing structure, separate and distinct from the dust guard seal, for sealing the top of the dust guard slot. In such a case it is not necessary for the dust guard seal to incorporate a top seal like the seal 51 as illustrated in FIG. 2. In FIGS. 12 and 13 there is illustrated a dust guard seal constructed in accordance with this invention which is adapted to be utilized with separate seal structure which is present at the top of the dust guard slot.

In FIGS. 12 and 13 a dust guard seal is indicated generally by the reference numeral 101 and includes an insert plate 102 which is indicated by the phantom outlines in FIG. 12 and shown in section in FIG. 13. The insert plate 102 is also illustrated apart from any other dust guard seal structure in the perspective view of FIG. 14. Inasmuch as the dust guard seal 101 is not required to have a top seal structure like that illustrated in FIG. 2, the insert plate 102 does not include any vertical or horizontally extending walls like those afforded by the insert plates heretofore illustrated and described. Instead, the insert plate 102 is of an annular construction and includes a centrally located opening 103 which extends axially between the opposite vertical faces of the plate. The opening 103 is of slightly larger diameter than the diameter of the dust guard seat on the car axle so as to be freely positionable thereon.

The dust guard seal 101 also includes a resilient retainer ring 104 for maintaining the dust guard seal in position within the dust guard slot and this retainer ring envelopes the insert plate 102 in a manner such as to cover not only the opposite faces of the insert plate but also the inner and outer peripheral surfaces of the insert

plate. The resilient retainer ring 104 may preferably comprise a plastic foam material, as described hereinabove, which is securely bonded to the insert plate to form a unitary dust guard seal member. As viewed in FIG. 13, the resilient retainer ring comprises two vertically extending side sections 105A and 105B having respective faces 106 and 107 which extend parallel to the corresponding faces of the insert plate. The retainer ring also includes an outer cylindrical surface 108 which is spaced radially outwardly from the outer periphery of the insert plate a slight amount so as to afford a cushion of resilient material 109 around the entire outer periphery of the insert plate, and this cushion is integrally joined with the side sections of the retainer ring. The resilient retainer ring also includes journal seal and drain rings 111 and 112 which project axially outwardly from the corresponding faces 106 and 107 at the radial innermost portions of the resilient retainer ring. These drain rings are formed integral with the rest of the retainer ring 104, as viewed in FIG. 13, and the vertically extending faces of the drain rings are smoothly joined with the faces 106 and 107 by concavely curved surfaces 111R and 112R.

The resilient retainer ring part of the dust guard seal 101 is formed with an inner peripheral surface 113, which as viewed the section view of FIG. 13, is concavely curved so as to afford rather sharp lips 114 and 116 at the radial innermost ends of the drain rings 111 and 112. The inner diameter of these lips 114 and 116 is slightly less than the external diameter of the dust guard seat of the car axle so that the dust guard seal clasps the cylindrical surface of the dust guard seat in a manner to prevent the entry of dust or other foreign matter into the journal box between the inner periphery of the dust guard seal and the dust guard seat of the car axle. These flexible lips also act as a seal to prevent any oil thrown up on the dust guard seal from escaping through the central opening 103. As in the embodiment of the dust guard seal illustrated in FIG. 2, the dust guard seal 101 includes a relatively thin skin of material S' which is integral with the side sections and bonded to the inner periphery of the insert plate 102.

The face 107 of the dust guard seal includes three equally spaced and radially extending recesses 117. Thus, as viewed in FIG. 12 the centers of the recesses 117 are spaced substantially 120° apart. Similarly the face 106 of the dust guard seal includes three equally spaced recesses 118 which are shown in phantom outline in FIG. 12. The centers of the recesses 118 are also spaced substantially 120° apart, but the disposition of the recesses 118 in the face 106 is such that each recess 118 is disposed medially between two recesses 117 in the face 107. Each of the recesses 117 and 118 is of a generally rectangular configuration and projects radially from a portion of the dust guard seal which is just outward of a drain ring. Each of the recesses extends to and opens in the outer peripheral surface 108.

The staggered arrangement of the recesses 117 and 118 on the opposite surfaces of the dust guard seal enables a journal box with which the dust guard seal is associated to be vented in a novel and effective manner. Thus, with the dust guard seal 101 in position within a dust guard slot like the slot illustrated in FIG. 8, and with a separate seal structure as mentioned hereinabove positioned to seal off the top of the dust guard slot, at least one pair of the staggered recesses 117 and 118 is always effective to communicate the interior of the journal box with the ambient atmosphere through the space defined between the outer periphery of the dust guard seal and the side walls of the dust guard slot. The baffling action thus provided by the tortuous flow path is quite effective to prevent the entry of dust or other foreign matter from the ambient atmosphere to the interior of the journal box. Because of the staggered arrangement of the recesses on the opposite faces of the dust guard seal, the angular disposition of the dust guard seal with respect to the dust guard seat is not critical. Therefore, no positioning lugs or other devices are required to initially position or thereafter retain the dust guard seal in a fixed angular location with respect to the dust guard seat.

It should be noted that the width WD' of the dust guard seal, as indicated by the arrows in FIG. 13, is somewhat greater than the width of the dust guard slot so that the dust guard seal is slightly compressed into sealing relation with the sides of the dust guard seat to prevent any flow of air past the dust guard, except that which is permitted by the venting recesses 117 and 118.

Additionally, it should be noted that the dust guard seal 101 is reversible and hence may be positioned so as to have either the face 106 or 107 presented to the interior of the journal box.

The insert plate 102 can be constructed of wood, rubber, or other suitable material like the other embodiments of the insert plates heretofore described. Preferably, however, the insert plate 102 is constructed of composition material to take advantage of the resulting economy of manufacture. Thus, the insert plate may comprise strips of fibrous material, such as cloth, bonded together by a resin-type binder material. This construction of the insert plate can also be utilized for the insert plates heretofore described.

It will be seen from the foregoing that under the one embodiment of the present invention I have constructed a dust guard seal for the dust guard slot of a railroad journal box which accounts for an effective substantially continuous sealing of the dust guard slot about the entire periphery thereof, but this is accomplished in such a way as to account for venting of the interior of the journal box. Also in accordance with this invention I have constructed a dust guard seal which is adapted to be used with separate sealing structure at the top of the dust guard slot and which includes staggered recesses in the opposite faces of the dust guard seal to enable the dust guard seal to vent the journal box regardless of the angular disposition of the dust guard on the dust guard seat of the axle of the railroad car. Additionally, in all embodiments of the dust guard seal the rigid part of the dust guard seal, namely, the insert plate is protected at the bottom and the sides thereof against crushing or fracture. The opening in the insert plate through which the journal of the car is passed is substantially the diameter of the dust guard seat portion of the journal, and moreover, except for the thin skin S, the wall of the plate 40 surrounding the opening 49 is rigid. Hence, when the journal shifts in a horizontal or vertical plane, the dust guard seal 20 will conform to and follow the movements of the journal and there will be no distortion of the opening in the insert plate through which the journal is passed, noting that the thickness of the skin S is but a sixteenth of an inch or so.

Hence while I have illustrated and described preferred embodiments of my invention, it is to be understood that these are capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. A unitary dust guard seal for the journal and the journal box of a railroad car and comprising, a rigid insert plate generally of U-shape so as to have a substantially straight top wall, substantially straight parallel outer walls extending downwardly from said top wall and a rounded lower wall joining said outer walls, said plate being formed with a substantially round opening in the medial portion thereof accurately centered between said outer walls and through which the journal of a railroad car is adapted to be passed, said plate being provided with retainer and seal means for maintaining the position of the seal in the journal box and said retainer and seal means being in the form of two opposed side sections of oil-resistant resilient

material extended continuously about at least the marginal peripheral areas of the two opposed sides of said plate, each of said sections of the retainer and seal means having a pair of recesses extended inwardly from the free outer edges thereof at selected locations on said sections corresponding to the outer walls of said plate, said retainer and seal means also including cushion portions extended below the rounded lower wall of said plate and outwardly beyond the outer walls of said plate, said retainer and seal means also including an elongated top seal disposed above the top wall of said plate, said top seal having ends extending outwardly of the cushion portions of the retainer corresponding to the outer walls of said plate, said retainer and seal means, with the exception of such recesses therein, extending entirely about and covering one side of said plate in a continuous fashion and being formed with a 360° seal and drain ring extended entirely about and projecting axially of said opening at said one side of said plate, and said retainer and seal means on the opposite side of said plate being formed with another 360° seal and drain ring extended entirely about and projecting axially of said opening at said opposite side of said plate.

2. In the journal box of a railroad car having the journal portion of a railroad car axle disposed therein, and said journal box having a dust guard slot about the dust guard seat of the car axle, a unitary dust guard seal mounted in the dust guard slot of the journal box of the railroad car and comprising, a rigid insert plate formed with an opening in the medial portion thereof through which the journal of the railroad car is passed, said plate being provided with retainer means for maintaining the position of the seal in the journal box and said retainer means being in the form of two opposed side sections of resilient material extended about at least the marginal peripheral areas of the two opposed sides of said plate, each of said side sections resiliently and sealably engaging the front and rear walls of the dust guard slot and each of said side sections having vent recesses extended inwardly from the free outer edges thereof at selected locations on said sections, each of said sections where said vent recesses are formed being normally spaced inwardly of the corresponding area of the side wall of the dust guard slot, said retainer means also including an elongated top seal disposed above the top wall of said plate, said top seal having ends extending outwardly of the portions of the retainer corresponding to the outer walls of said plate, and said plate having a 360° seal and drain ring extended about the opening therein and projecting axially of said opening from at least one of the opposed sides of said plate, said seal and drain ring sealably engaging the circumference of the dust guard seat of the car axle.

3. In the journal box of a railroad car having the journal portion of a railroad car axle disposed therein, and said journal box having a dust guard slot about the dust guard seat of the car axle, a unitary dust guard seal mounted in the dust guard slot of the journal box of the railroad car and comprising a rigid insert plate generally of U-shape so as to have front and rear sides, a substantially straight top wall, substantially straight parallel outer walls extending downwardly from said top wall and a rounded lower wall joining said outer walls, said plate being formed with an opening in the medial portion thereof accurately centered between said outer walls and through which the journal of a railroad car is adapted to be passed, said plate being provided with retainer and seal means for maintaining the position of the seal in the journal box and said retainer and seal means being in the form of two opposed side sections of oil-resistant resilient material extended continuously about at least the marginal peripheral areas of the two opposed sides of said plate, each of said side sections of the retainer and seal means resiliently and sealably engaging respectively the front and rear walls of the dust guard slot and each of said side sections having a vent recess extended inwardly from the free outer edge thereof at selected locations on said sections corresponding to the outer walls of said plate, each of said side sections where said vent recesses are formed being normally spaced inwardly of the corresponding area of the side wall of the dust guard slot, said retainer and seal means including a cushion portion extended below the rounded lower wall of said plate and disposed in the bottom of the dust guard slot to seal the bottom of the dust guard slot and protect the rounded bottom wall of said plate, said retainer and seal means also including an elongated top seal projected above the top wall of said plate and sealably closing off the top of the dust guard slot, said top seal and said cushion portion of the retainer and seal means extending outwardly of the free outer edges of said side sections of said retainer and seal means, and said retainer and seal means including a 360° seal and drain ring extended entirely about and projecting axially of said opening at one side of said plate, said seal and drain ring sealably engaging the circumference of the dust guard seat of the car axle.

4. A dust guard seal according to claim 3 wherein the retainer and seal means includes a second 360° seal and drain ring extending entirely about and projecting axially of said opening at the outer side of said plate, and wherein each of said rings is formed with a continuous 360° sharp lip about the inner diameter thereof.

5. A dust guard seal for the journal box of a railroad car and comprising a rigid insert plate having a substantially annular outer periphery and formed with a substantially annular opening in the medial portion thereof for mounting the dust guard seal on a dust guard seat of a railroad car axle, said plate being provided with retainer means for maintaining the position of the seal in a dust guard slot of the journal box and said retainer means being in the form of two annular opposed sections of resilient material extended about at least the marginal peripheral areas of the two opposed faces of said plate so as to be complemental to the marginal peripheral areas of the two opposed faces of said plate, said retainer sections having recesses extended inwardly from outer peripheral edges thereof at equidistantly positioned locations on each of said sections, the recesses in one section being disposed in staggered relation to the recesses in an opposite section for venting the interior of the journal box through the dust guard slot to ambient atmosphere regardless of the angular disposition of the dust guard seal on the dust guard seat, and said plate having 360° rings extended about the opening therein and projecting axially of said opening from the opposed faces of said plate.

6. A dust guard seal as defined in claim 5 wherein a recess in one section is disposed medially of two recesses in an opposite section, and wherein the material that affords the retainer is used to line the opening in said plate and is shaped therein to afford a pair of flexible axially spaced substantially linear lips effective to clasp the dust guard seat of the car axle.

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