Feb. 7, 1950 P. F. NARDULLI 2,497,056

DUST GUARD FOR RAILWAY JOURNAL BOXES

Filed Sept. 27, 1944

Fig. 1

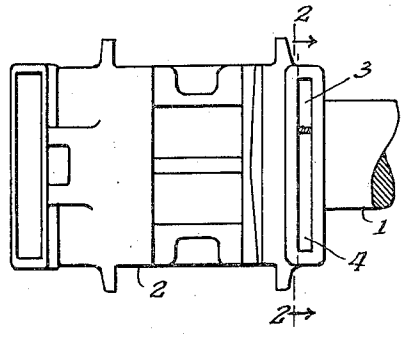


Fig. 2

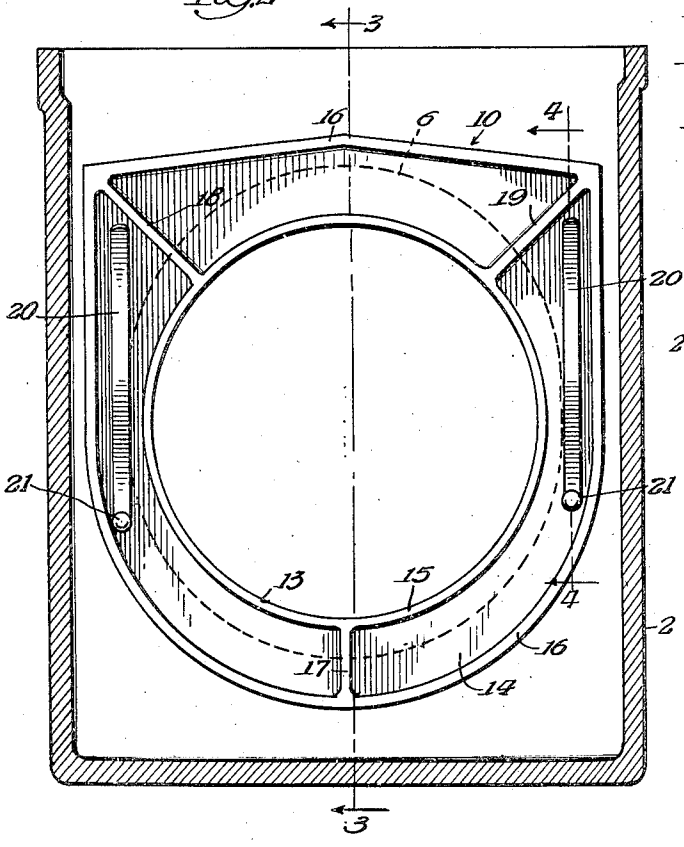
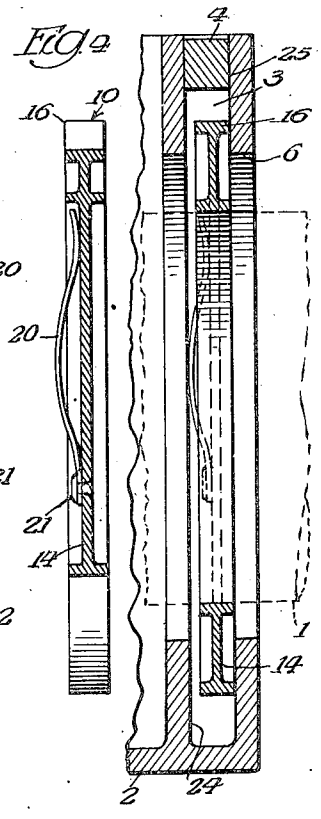


Fig. 3



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Patented Feb. 7, 1950

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UNITED STATES PATENT OFFICE

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DUST GUARD FOR RAILWAY JOURNAL BOXES

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Application September 27, 1944, Serial No. 556,059

1 Claim. (Cl. 286—6)

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This invention relates to dust guards for railway car journal boxes.

In a standard form of railway car the axle is rotatable with the wheels and supports the car through a journal box at the end of the axle. At one end of the journal box there is an oversized opening into which the end of the axle extends. In order to prevent or reduce the entrance of dust into the journal box through the space between the axle and the axle-receiving opening in the journal box there is provided a dust guard. The dust guard surrounds the axle with a minimum amount of clearance and is slidable in the journal box as the axle and journal box move with respect to one another.

It is one of the objects of the present invention to provide an improved dust guard which can be used on present day conventional journal boxes, which dust guard will be very light in weight and will exert a minimum pressure on the axle. It is a further object of the present invention to provide a dust guard of the above mentioned character which is so constructed that the force exerted by the dust guard on the axle will be spread over a large area, thereby avoiding any possibility of the dust guard cutting into the axle.

In the usual type of railway car journal box there is provided a dust guard-receiving groove terminating in a dust well at the bottom. Since the dust guard must have freedom of up and down movement in the groove the groove is necessarily made oversized for the thickness of the dust guard to allow such freedom of up and down movement. This frequently results in vibration or rattling of the dust guard in a direction axially of the axle, which becomes accentuated as wear takes place reducing the thickness of the dust guard. It is one of the objects of the present invention to provide a construction wherein the dust guard is held against rattling or vibration even though clearance is provided in the dust guard-receiving groove to permit freedom of limited up and down or side movement of the dust guard, and even though an appreciable amount of wear on the dust guard may have taken place. This is accomplished, in the preferred embodiment of the present invention, by providing spring means for constantly urging the dust guard to its limiting position in a direction axially of the railway car axle.

In accordance with the preferred embodiment of the present invention the dust guard comprises a very thin plate. The plate is made very thin in order to reduce to a minimum its weight.

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Because of the thinness of the dust guard plate there is provided means for preventing wear on the dust guard plate as the plate moves its limited amount while in use. This wear-preventing means comprises a flange extending around the entire periphery of the thin plate. It is the flange which rubs against the journal box as the dust guard is moved up and down or sideways in the box, thus relieving the thin dust plate of all wear.

In order to prevent the thin dust plate from cutting into the axle the plate is provided with a flange around its entire axle-receiving opening, which flange increases the bearing area between the dust guard and the axle, thus reducing the unit pressure of the dust guard on the axle and preventing cutting of the axle.

Since the dust guard plate is spring pressed to its limiting position in the journal box the force which moves the dust guard up and down in its very small motion within the journal box must be transmitted to the outer peripheral flange where the resistance to motion takes place due to the friction between the outer peripheral flange and the journal box. In accordance with the present invention there is provided special means for relieving the thin dust guard plate of some of the stress incident to this movement so that the thickness of the dust guard plate can be reduced. This result is accomplished by providing stiffening ribs between the inner and outer flanges of the dust guard, which stiffening ribs relieve the stresses in the thin dust guard plate as the plate moves up and down in the axle-receiving section of the journal box.

The attainment of the above and further objects of the present invention will be apparent from the following specification taken in conjunction with the accompanying drawing forming a part thereof.

In the drawing:

Figure 1 is a top view of the end of a railway car axle and a journal box thereon;

Figure 2 is an enlarged sectional view taken along the line 2—2 of Figure 1 and looking in the direction of the arrows;

Figure 3 is a sectional view taken along the line 3—3 of Figure 2 and looking in the direction of the arrows; and

Figure 4 is a sectional view taken along the line 4—4 of Figure 2.

Reference may now be had more particularly to the drawing wherein like reference numerals designate like parts throughout. At 1 there is shown a portion of a railway car axle the end of which extends into a journal box 2 of the

usual construction. The journal box has a slot 3 for receiving a dust guard. The dust guard is lowered into the slot and then the top of the slot is closed by a closure plate or key 4 before the journal box is mounted on the axle, as is well known in the art.

The journal box has an axle-receiving opening 6 through which the axle 1 extends. The opening is of a size appreciably larger than the diameter of the axle to allow for a certain limited amount of up and down movement of the journal box with respect to the axle, and especially to allow relative movement between the journal box and the axle as wear takes place on the bearing shoes within the journal box, as is well known in the art. The dust guard of the present invention is indicated by the reference numeral 10 and comprises an aluminum casting. The dust guard has a central circular opening 13 for receiving the axle, said opening being of a diameter only very slightly in excess of the diameter of the axle, merely to allow sufficient clearance between the axle and the dust guard as the axle rotates. This clearance may be of the order of $\frac{1}{32}$ of an inch. The dust guard comprises a very thin metal plate 14 having an integral flange 15 around the entire periphery of the opening 13. This flange increases the bearing area between the dust guard and the axle. In addition, the thin plate 14 has a flange 16 around its outer periphery. It also has similar strengthening ribs 17, 18 and 19 between the flanges 15 and 16. The entire structure including the thin plate 14 and the flanges 15 through 19 constitute one integral casting.

A pair of steel leaf clock springs 20—20 are secured on the same face of the thin plate 14 on opposite sides of the axle-receiving opening 13. Each spring is secured to the plate 14 at one end of the leaf spring in any desired manner as, for instance, by a rivet 21, and at its opposite end bears against but is not joined to the plate 14.

As may be seen from Figure 3, the journal box slot 3 for receiving the dust guard is of a width slightly in excess of the thickness of the flange 16. The axle-receiving opening 6 in the journal box is of appreciably greater diameter than the axle-receiving opening 13 in the dust guard but of a sufficiently small diameter that the outer flange 16 of the dust guard does not come over the opening 6 in the journal box. The springs 20 bear against the interior wall or annulus 24 on the inside of the journal box, as may be seen from Figure 3, and thus constantly maintain the dust guard in its extreme right hand position as seen in Figure 3. The springs 20 maintain a sufficient pressure of the dust guard against the inner surface of the wall 25 of the journal box to prevent any rattling or vibration of the journal box but to permit a limited up and down movement of the dust guard as the journal and axle move vertically (or horizontally) with respect to one another in the limited permissible amount of movement usual in such constructions. Since it is the flanges 15 and 16 of the dust guard which bear and rub against the journal box as the dust guard moves in the journal box, it is apparent that the flanges relieve the thin plate 14 of the dust guard of any wear that would otherwise take place if the plate 14 were to rub directly against a surface of the journal box. Furthermore, the flanges 17, 18 and 19 serve to transmit any forces from the flange 15 to the flange 16 and thus reduce the strain on the thin metal section 14 as the dust guard is moved. This therefore permits

the provision of a very thin plate 14. Although the plate 14 is made very thin it cannot cut into the axle 1 because of the large bearing area between the dust guard and the axle provided by the flange 15.

The dust guard may be used without the springs 20—20 as are standard dust guards. When that is the case the flanges 15—16 bear sometimes on the surface 25 and sometimes on the surface 26 of the journal box. In either case the flanges protect the thin plate 14 from wear because the flanges extend from both faces of the plate 14.

From the above description it is apparent that by the present invention there is provided a dust guard which is not only economical of construction but is also very light in weight, durable and not subject to rattling or vibration within the journal box regardless of the amount of wear that may take place between the dust guard and the journal box.

In compliance with the requirements of the patent statutes I have here shown and described a preferred embodiment of my invention. It is, however, to be understood that the invention is not limited to the precise construction here shown, the same being merely illustrative of the principles of the invention. What is considered new and desired to be secured by Letters Patent is:

A dust guard for a railway axle journal box having an axle-receiving opening and a dust guard-receiving section surrounding said opening, said dust guard comprising a thin metal plate also having an axle-receiving opening and having a flange surrounding its axle-receiving opening to provide increased bearing area between the dust guard and an axle when an axle is extended through said openings, said dust guard also having a flange around the outer periphery thereof, the edge of the outer flange being adapted to bear against the journal box for taking the wear on the dust guard as the same moves back and forth in the journal box, the flanges extending both forwardly and rearwardly of the plate so that opposite edges of the flanges protect the opposite surfaces of the thin plate against contacting with and wearing on the journal box, stiffening ribs between the inner and outer flanges of the dust guard for relieving the stresses in the thin plate as the plate moves up and down in the axle-receiving section of the journal box, and leaf spring means secured to one face of the guard and located between the flanges and having a part thereof projecting from the metal plate an amount in excess of the width of the flanges.

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