L. G. WOODS.

JOURNAL BOX.

APPLICATION FILED DEC. 16, 1909.

1,052,546. Patented Feb. 11, 1913.

FIG. 1

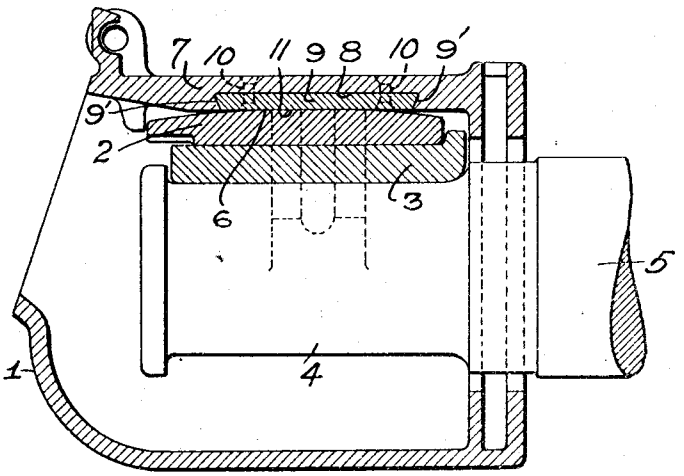


FIG. 2

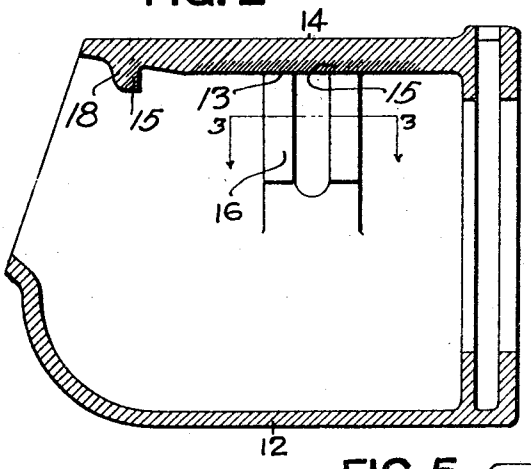


FIG. 4

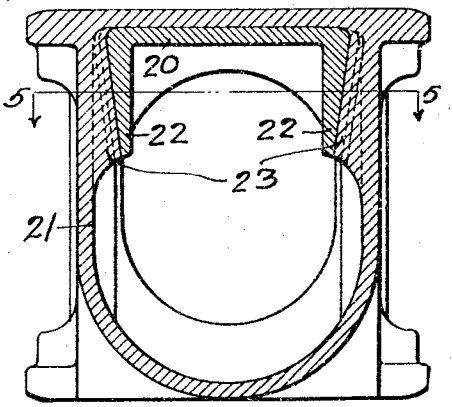


FIG. 5

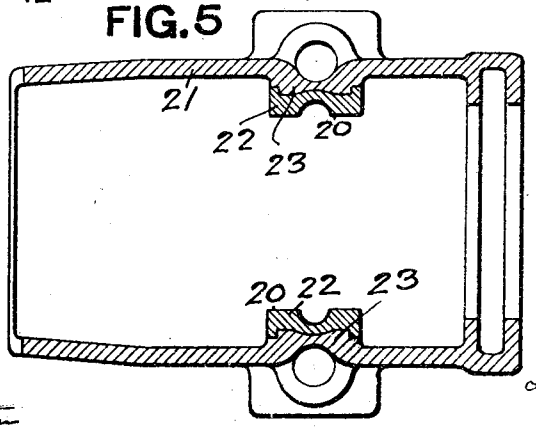
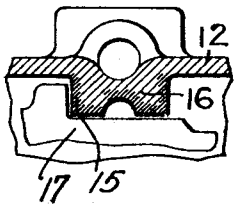


FIG. 3



WITNESSES.

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JOURNAL-BOX.

1,052,546. Specification of Letters Patent. Patented Feb. 11, 1913.

Application filed December 16, 1909. Serial No. 533,436.

To all whom it may concern:

Be it known that I, LEONARD G. WOODS, a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Journal-Boxes; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to journal boxes. Its object is to provide a railroad journal box which can be economically manufactured, and which will at the same time be subject to as little wear as possible on the bearing surfaces, so as to prolong the life of the entire box.

In journal or axle boxes as commercially constructed of cast metal, such as cast iron, steel, or malleable iron, the portions of the box, and especially the top inner surface, which are in contact with the journal-box wedge, are subjected to the greatest stresses and the greatest wear. The wedge, which is inserted between the top portion of the box and the journal bearing, is constructed with a curved top surface. The flat inner face of the journal-box is therefore in contact with this wedge only along a very narrow strip (theoretically a line) transversely of the axle. This is to allow for tilting or tipping longitudinally of the axle, which the side stresses in a moving car and the unevenness of the track produce. In the commercial journal-box as constructed of cast or malleable ferrous metal, the portion of the box top which is in contact with the journal box wedge is subject to great wear, especially with the cars of great capacity such as have now come into general use, and therefore soon loses its plane surface and assumes a concave surface similar to the top surface of the wedge. This has the effect of locking the wedge to the journal bearing and defeats the principal function of the wedge causing uneven pressure on the journal portion of the axle and frequent hot boxes and other disasters.

To these ends my invention consists essentially in a metallic journal box having a top portion of relatively soft metal provided with a hardened wearing surface, in combination with a pressure transmitting or bearing member such as a wedge contacting with the hardened wearing surface of the box, the said surfaces being of different curvatures so that a durable rocking contact is preserved between them.

In the preferred construction embodying the invention the journal box is of wrought or comparatively soft cast metal having a hardened plane or flat wearing surface, and the journal box wedge is of hard steel having its top surface curved and in rocking contact with said wearing surface.

It also consists in certain other improvements of like nature as hereinafter more particularly set forth and claimed.

In the drawings Figure 1 is a vertical longitudinal section of a journal-box showing my invention as applied thereto; Fig. 2 is a vertical longitudinal section of a journal-box illustrating a modification; Fig. 3 is a detail horizontal section on the line 3—3, Fig. 2; Fig. 4 is a vertical transverse section of a journal-box illustrating another modification; and Fig. 5 is a horizontal section on the line 5—5, Fig. 4.

The box 1, illustrated in Fig. 1, is provided with the usual wedge 2 and journal bearing 3 in contact with the journal portion 4 of the axle 5. The wedge has a top surface 6 of curved outline. The box is constructed preferably of comparatively soft metal such as cast iron or steel or malleable iron, and has preferably the top portion 7 integral with the rest of the journal-box. The top portion 7 is provided with the seat 8 in which is inserted the wearing piece 9 of hard metal, the wearing piece 9 being held in place by any suitable means such as the dovetailing 9′ or the rivets 10. It may also be welded or cast with the top portion of the box. The wearing piece 9 extends preferably substantially across the box in the direction transversely thereof, and has a plane or flat wearing surface 11 extending longitudinally of the axle 5 a sufficient distance to provide a surface of contact for the wedge 2 at all positions of lateral tipping of the parts. The wearing strip 9 is preferably of forged, or of surface hardened steel or of any hard metal, as hardness alone is necessary, the stresses from the arch bars being carried through the main top portion of the box 1. By this means I provide a rocking surface of contact between the wedge 2 and wearing strip 9 which is practically permanent, and thereby prevents locking of the top portion 7 and consequent great friction and hot boxes due to the uneven pressure of the journal bearing 3 upon the journal portions 4 of the axle.

Figs. 2 and 3 illustrate a modification in

which the entire wearing surface of the journal boxes 12 is constructed of hardened or chilled metal. The hardened surface may be obtained by case hardening where the box is constructed of steel or malleable iron, or by chilling when the box is constructed of cast iron. Thus the bearing surface 13 of the top portion 14 of the box 12 illustrated in Figs. 2 and 3 has the hardened surface, as indicated at 15 by the section lining. The hardened character of the metal is shown as extending across the wearing surface 13 of the box, and also including the surface of the wedge guides 16 and stop or end lug 18 as indicated in Fig. 3. The wedge 17 is of the usual construction, having a curved top surface, and by this means I provide a hard rocking and wearing surface in contact with the wedge at all points of great wear. If desired, however, only the top portion 14 may be constructed of hardened metal for a space longitudinally of the axle of sufficient extent to provide for all rocking.

In the construction illustrated in Figs. 4 and 5 the hardened wearing surface is obtained by inserting a bearing yoke 20 within the journal-box 21. The yoke 20 is constructed of hard metal, such as a steel forging or casting, and is preferably molded or welded within the softer metal of the box 21. When the box 21 is of cast metal the bearing yoke 20 is conveniently molded within the box 21 during the casting operation so as to be substantially integral with the same. The bearing yoke 20 has the arms 22, which form the pads or wearing surfaces of the guides 23.

What I claim as new and desire to secure by Letters Patent is:

1. A journal box of relatively soft metal having a yoke of harder metal seated in its top and side portions and having a bearing member supported by the axle in contact with said hard metal yoke.

2. A journal box of relatively soft metal provided with a top portion and wedge guides having surfaces of harder metal, and a wedge supported by the axle and in contact with said surfaces.

In testimony whereof, I the said LEONARD G. WOODS have hereunto set my hand.

LEONARD G. WOODS.

Witnesses:
R. J. BROWN,
F. W. KAY.