July 11, 1933. C. C. DIBBLE 1,917,510

JOURNAL BOX

Filed Jan. 13, 1930 3 Sheets-Sheet 1

Fig: 1

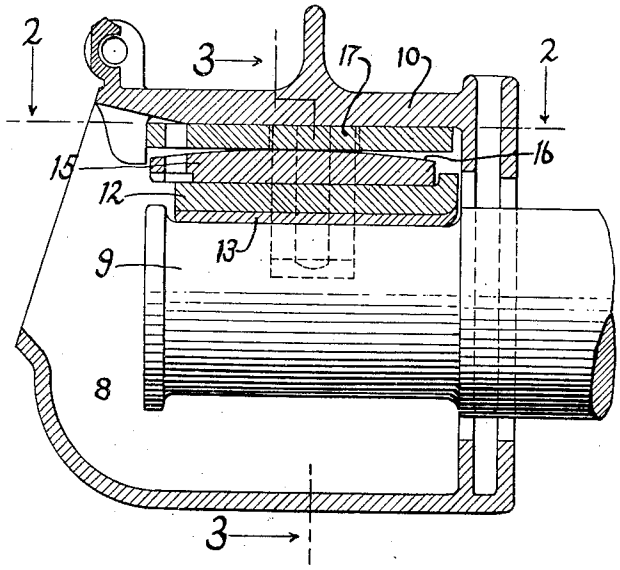
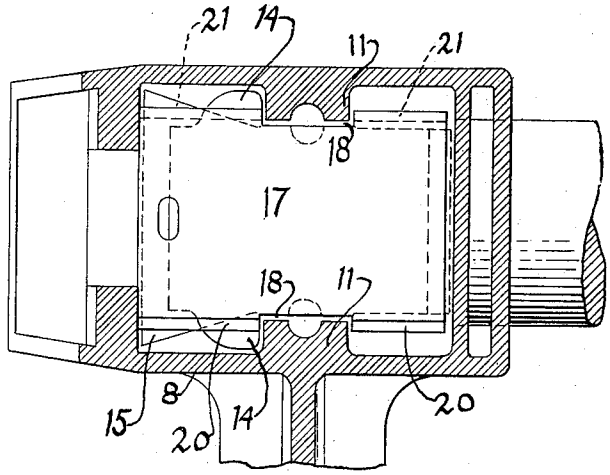


Fig: 2



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Fig: 3

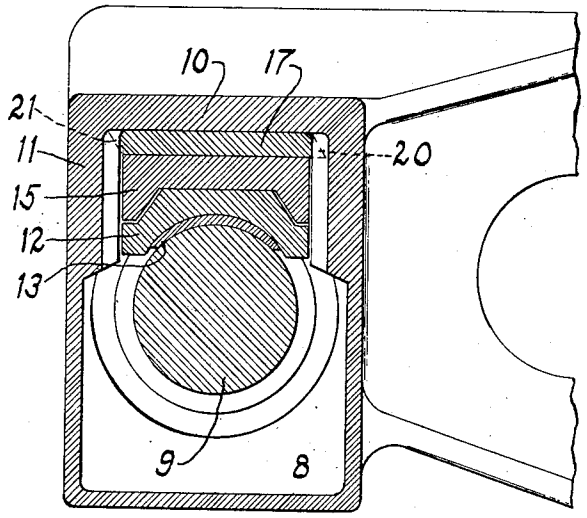
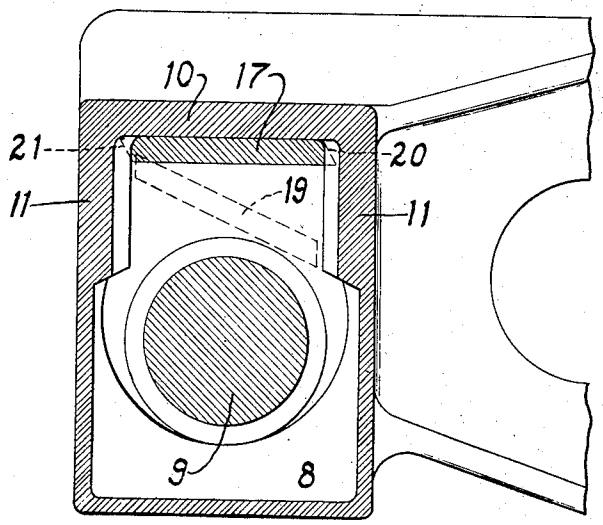


Fig: 4



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Fig: 5

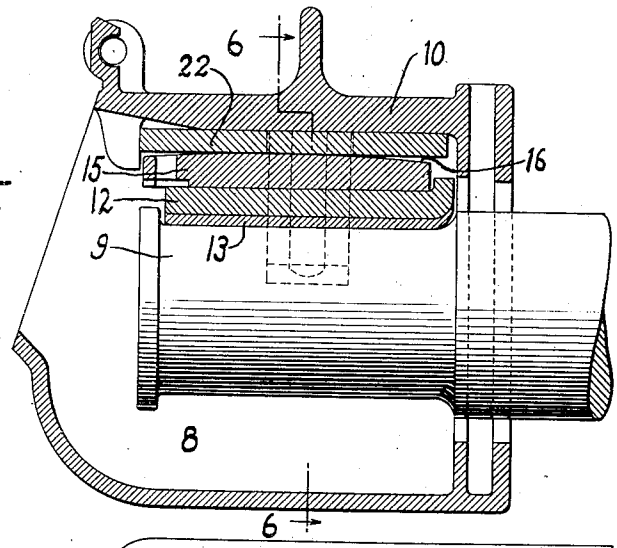


Fig: 6

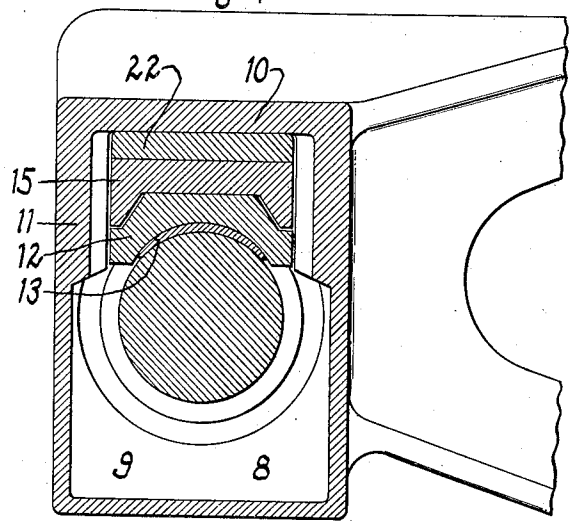
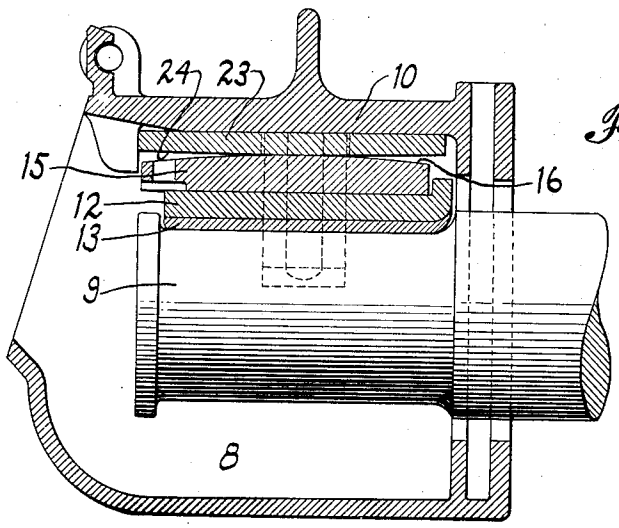


Fig: 7



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UNITED STATES PATENT OFFICE

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JOURNAL BOX

Application filed January 13, 1930. Serial No. 420,318.

This invention relates to journal boxes and particularly to such boxes as are employed to house the journals of railway vehicle axles. The nature, objects and advantages can best be understood from a consideration of the following discussion:

The substantially standard form of journal box at present in use comprises a box structure on which the weight of the vehicle rests, a crown bearing or brass saddled on the axle journal itself and a member interposed between the bearing brass and the inside of the top of the box structure. This member, usually termed "a journal box wedge" or "a bearing backing member" is normally provided with an upper surface which is curved longitudinally of the axle or its journal. The curved surface contacts with the inside surface at the top of the box and serves to maintain an even pressure over the entire contacting area of the crown brass and the journal by rocking slightly when unevenness or irregularities of the railway tracks are encountered. The "rocking" movement is better adapted to accommodate for irregularities than any type of sliding movement such, for example, as would be afforded by complementary concave and convex surfaces on the wedge and top of the box.

Constant use causes the upper surface of the wedge member to become flattened and the inside surface at the top of the box structure to become concave. This condition is probably brought about either by wear of the parts or by compression of the metal of which the parts are made, or possibly by both. When their original surfaces have become altered by use it is obvious that the proper line contact between the wedge and the top of the box is destroyed with the result that the parts no longer accommodate themselves to irregularities in track conditions by "rocking" and, therefore, the load of the vehicle is irregularly and unevenly transmitted to the axle journal. Heretofore, when this condition arose a new wedge was inserted in place of the old one but such replacement, at best, only partially rectified the condition and in badly worn boxes was of no avail whatever. Thus, a box which had become badly worn either was used in such bad condition or was discarded or scrapped before it had been employed long enough to cause any appreciable wear to any other of its parts.

It has also been suggested that to make the top of the box structure thicker or to harden the top of the box, as by heat treatment, would prevent its inside surface from becoming concaved from use. However, regardless of whether the surfaces are destroyed by compression or wear, neither the expedient of heat treatment nor of making boxes with thicker top walls would remedy the situation. The former could not be employed because such treatment could not be confined to any particular surface of the box structure and if extended to other parts would be detrimental to their performance in service. Furthermore, heat treatment, at best, would only reduce the rate at which wear would accumulate and would not eliminate such wear. Finally, making the top wall of the box structure thicker would be of no avail in view of the fact that neither the compressibility nor the wearing qualities of the metal would be affected.

With a view to overcoming the above noted difficulties my invention contemplates the interposition of a readily renewable wear member or plate between the upper surface of the wedge member and the top of the box structure.

Three forms of such a construction are illustrated in the accompanying drawings in which

Fig. 1 is a longitudinal vertical section through an axle or journal box embodying my improvements in the preferred form;

Fig. 2 is a horizontal sectional view taken as indicated by the line 2—2 of Fig. 1;

Fig. 3 is a sectional view taken substantially as indicated by the line 3—3 of Fig. 1;

Fig. 4 is a view similar to Fig. 3 with certain of the bearing parts removed;

Fig. 5 is a view similar to Fig. 1 of a somewhat modified form of construction;

Fig. 6 is a sectional view taken as indicated by the line 6—6 of Fig. 5; and

Fig. 7 is a view similar to Figs. 1 and 5, illustrating a further modification.

Referring first to Figs. 1 to 4 inclusive, the reference character 8 indicates the journal box structure in general surrounding the journal 9 and adapted to transmit weight or load of the vehicle from the top 10 thereof to the journal 9 through the interposed members to be described hereinafter. The journal box is also shown as being provided with the usual bearing lugs or stop means indicated at 11.

The bearing structure includes the bearing member 12 which may be provided with a lining 13 as well as ears or lugs 14 adjacent the bearing stop means 11 of the box structure (see Fig. 2). Above the bearing 12 is a "wedge" or backing member 15 provided with an upper surface curved or arched longitudinally of the journal, as indicated at 16 (see Fig. 1).

Instead of mounting the "wedge" member 15 to rock directly on the inner side of the top 10 of the box structure, as is the usual practice, the present invention contemplates the interposition of a readily renewable plate or wear member 17 between the upper curved surface 16 of the "wedge" member and the top of the box structure. This element 17, furthermore, is preferably constructed so as to be invertible or reversible, to which end it is provided with parallel sides in order that a flat surface may be presented to and contact with the surface 16 of the backing member regardless of the position in which the invertible plate is inserted.

Still further, in order to retain the plate 17 in its operative position, it is preferably provided with recesses 18 in the edges thereof which are adapted to fit around or engage the lugs 11 of the box structure.

The manner in which the plate 17 may be inverted or replaced will be apparent from the following outlined procedure with reference to Fig. 4:

The box structure 8 is first jacked up in any suitable manner with respect to the journal 9 in order to permit removal of the bearing 12 and the backing member 15 in the usual manner. After removal of the members 12 and 15, the plate 17 may be displaced or moved to the position indicated in dotted lines at 19 in Fig. 4 after which it may be withdrawn from the box endwise, it being understood that the edges of the plate 17 are oppositely bevelled or angled as at 20 and 21 in order to permit disengagement from the bearing stop means 11. The edges of the plate 17 are bevelled in the particular manner indicated to permit the plate to be secured in the box as well as to be removed therefrom with either side thereof turned downwardly.

In this connection, attention is called to the fact that this arrangement of parts permits inversion or replacement of the plate 17 without removing the vehicle load from the journal box and at the same time ensures that the plate will remain in its proper position during operation when the vehicle is in use.

Still further, the ready removability of the plate 17 affords an opportunity to examine the surfaces thereof whenever the bearing or the "wedge" is removed for examination or replacement.

In the modification of Figures 5 and 6, the renewable plate indicated by the reference character 22, in this instance, is made narrow enough to fit between the usual bearing stop means 11 throughout its entire length. That is, in this form, the plate is not provided with oppositely bevelled and recessed edges, as in Figs. 1 to 4, but is sufficiently small in overall width to pass between the lugs 11 of the box structure even when in a horizontal position.

The modification of Fig. 7 involves a renewable plate member 23 having a lower convexly curved surface 24 adapted to contact with and rock on the upper surface 16 of the wedge member 15.

It is obvious that still further modifications of the construction could be made without departing from the spirit of the invention, which is, in its most important aspect, the provision of a readily renewable wear plate or member between the usual journal box "wedge" and the top of the journal box structure, the same serving to completely eliminate certain disadvantages and difficulties at present encountered in the upkeep of railway journal boxes.

As an example of the modification which might be made, a construction might be built up including a wedge member having a flat upper surface on which a renewable member having a curved surface was mounted.

The present application is a continuation in part of application Serial No. 324,126, filed December 6, 1928.

What I claim is:—

1. In combination with a journal box construction having stop or lug means at the sides thereof, a journal bearing, a backing member above the bearing and a renewable plate member positioned between the backing member and the top of the box structure and having recesses in the edges thereof adapted to engage said lug means to prevent displacement of the plate member, said plate member also being provided with oppositely bevelled edges to permit removal thereof from the box, after removal of the bearing and backing member, by a substantially angular displacement and a longitudinal movement.

2. A journal box construction for a railway vehicle journal including an open ended box structure surrounding the journal with a

top wall above the journal having a flat and imperforate inside surface extended substantially to the outer edge of the bearing portion thereof, a bearing in the box saddled on the journal, a bearing backing member above the bearing having an upper surface convexly curved in a direction axially of the journal and being substantially without curvature in a direction transverse the journal, a readily renewable wear plate interposed between said bearing backing member and the top wall of the box, the said plate being retained in its normal operative position in the box structure by weight of the vehicle imposed on the journal from the box structure, the renewable wear plate having parallel surfaces which are substantially flat and imperforate at least in an extended central region thereof, and stop means on the box structure positioned to abut against said plate and adapted to provide against displacement of the plate axially of the journal when said plate is held in its normal operative position by virtue of the transmission of weight from the box to the journal, whereby when irregular track conditions and the like are encountered, angular displacements of the journal and the box are accommodated by a line contact rolling movement between said bearing backing member and said plate, and whereby, in order to renew or maintain said line contact, said plate may be removed and replaced through the open end of the box structure upon relative vertical displacement of the box structure and the journal to remove the weight of the vehicle from the journal.

3. A journal box construction for a railway vehicle journal including an open ended box structure surrounding the journal with a top wall above the journal having a flat and imperforate inside surface extended substantially to the outer edge of the bearing portion thereof, a bearing in the box saddled on the journal, a bearing backing member above the bearing having an upper surface convexly curved in a direction axially of the journal and being substantially without curvature in a direction transverse the journal, a readily renewable wear plate interposed between said bearing backing member and the top wall of the box, the said plate being retained in its normal operative position in the box structure by weight of the vehicle imposed on the journal from the box structure, the renewable wear plate having parallel surfaces which are substantially flat and imperforate at least in an extended central region thereof, and a stop member in the box structure positioned to cooperate with the bearing backing member and with said plate and adapted to provide against displacement thereof axially of the journal when said member and said plate are held in their normal operative positions by virtue of the transmission of weight from the box to the journal, whereby, when irregular track conditions and the like are encountered, angular displacements of the journal and the box are accommodated by a line contact rolling movement between said bearing backing member and said plate, and whereby, in order to renew or maintain said line contact, said plate may be removed and replaced through the open end of the box structure upon relative vertical displacement of the box structure and the journal to remove the weight of the vehicle from the journal.

In testimony whereof I have hereunto signed my name.

CLYDE C. DIBBLE.