June 5, 1951 E. H. BLATTNER 2,555,565

JOURNAL BOX

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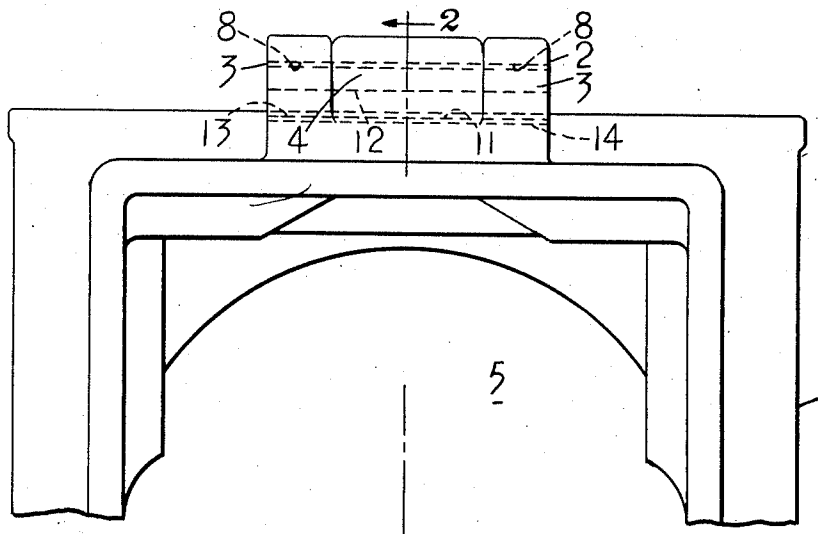


Fig. 1

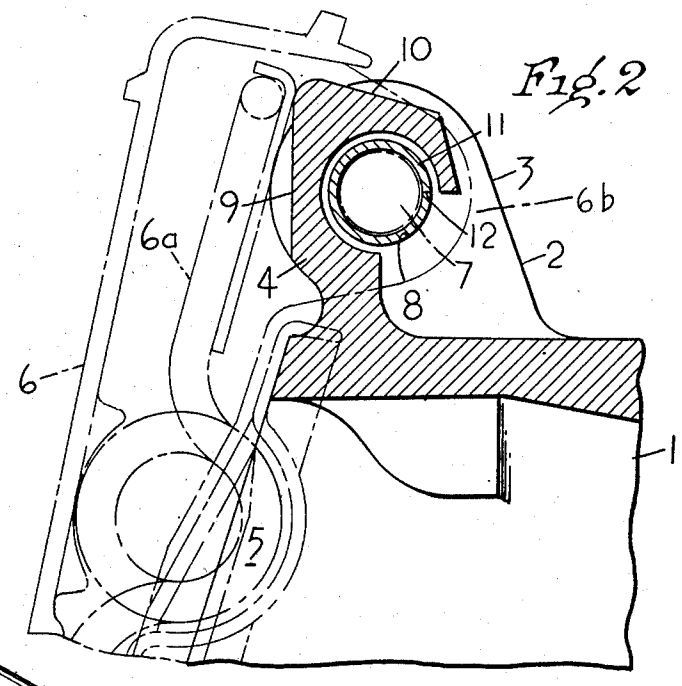


Fig. 2

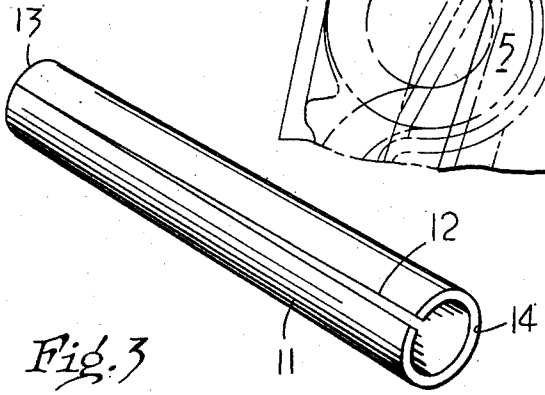


Fig. 3

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8 Claims. (Cl. 308—52)

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The invention pertains to a journal box for a railway vehicle.

An object of the invention is the provision of an improved hinge lug cast integral with the journal box and having associated therewith a bushing, lining an aperture of the hinge lug.

A feature of the invention is the provision of an improved hinge lug associated with a journal box and being provided with a split bushing of cylindrical, tubular formation; the bushing before assembly with the hinge lug being of tapered design with at least one end thereof being equal to or greater in diameter than an aperture of the hinge lug so that upon application of the bushing it will be drawn together as a relatively true cylindrical liner or sleeve.

Another feature of the invention is the provision of a hardened, spring steel bushing in a journal box hinge lug with the bushing being, before assembly with the hinge lug, of slightly different configuration than an aperture of the hinge lug and thus upon assembly with the hinge lug will tend to assume its original shape to expand tightly against the inside of the lug aperture.

The above and numerous other objects and features will become apparent from the succeeding description considered together with the accompanying drawing, wherein:

Figure 1 is a front elevational view of a portion of a journal box for use in a railway truck.

Figure 2 is a vertical sectional view taken along the lines 2—2 of Figure 1 and looking in the direction of the arrows and showing a portion of a journal box lid by diagrammatic lines and assembled with the journal box to more clearly illustrate the invention.

Figure 3 is a perspective view of a bushing or liner removed from the journal box to more clearly illustrate the construction thereof.

Referring now in detail to the various figures of the drawing, wherein like reference characters indicate like parts, the numeral 1 is employed to designate, in a somewhat general manner, a journal box of cast form. The journal box is adapted to house an extremity of an axle (not shown) and be associated with a side frame (not shown) of a railway vehicle (not shown). Upstanding from a roof or top wall of the journal box adjacent to a forward extremity thereof is a hinge lug 2 comprising transversely spaced, hinge ears 3 joined therebetween by a cam, abutment or barrier 4 all of which may or may not be cast integral with the journal box, as desired. The journal box walls define a forward

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access opening 5 through which a lubricating medium and carrier therefor are introduced into the journal box for the proper lubrication of the axle extremity or journal within the journal box. As will be understood, a bearing and brass are also introduced into the journal box through this access opening. It becomes necessary at periodic intervals to inspect, replenish or replace the contents of the journal box and for this reason the access opening therein is covered by a lid 6 shown only in Figure 2 by diagrammatic lines for the purpose of illustration. This lid is most usually of a movable type and accordingly is pivotally connected or secured to the hinge lug through the medium of a pintle or hinge pin 7, the latter of which extends through aligned apertures 8 or openings in the hinge ears and also bridges the space between the hinge ears in the rear of the cam. More specifically the pin 7 also extends through suitable loops 6*b* of the lid to pin connect the lid to the box. It will be noted that the hinge pin 7 is shown only in Figure 2 of the drawing and by diagrammatic lines for the purpose of illustration. As is customary with constructions of this type, the cam 4 presents a forward, substantially vertical face 9 and a top, substantially horizontal face 10. Also of usual construction is the lid in that a lever 6*a* bears at one time against the vertical face to retain the lid in operable position against the journal box thereby covering completely the access opening or by pivoting the lid in a clockwise direction about the pintle 7 the spring lever can be displaced so as to bear against the top face of the cam to retain the lid in an abnormal position elevated or removed from the access opening. This latter position of the lid is assumed only during an inspection of the interior of the journal box or if it becomes necessary to replace or replenish any of the well known contents thereof.

By reason of the particular construction and relationship between the various components above described, the pintle is constantly being urged or pulled forwardly or upwardly toward the lid depending entirely upon the particular disposition of the lid; that is to say, whether the lid is in closed or open position. It has been found in actual practice that after prolonged usage the pintle aperture in each hinge ear loses its original substantially cylindrical configuration and becomes distorted or somewhat elongated or slot-shaped in vertical cross section. The wear causing the above distortion or alteration of the pintle aperture permits the pintle,

which has worn the aperture, to move or shift from its original position to a new location in a direction toward the lid, thus causing the lid to lose its effectiveness when in closed position. It has been found further from observations made under actual working conditions over a period of many years that when it becomes necessary to replace a broken or otherwise ineffective lid and a new lid is assembled with the journal box that the new lid is not effective to bar the entrance of dirt, water or any other impurities from the interior of the journal box if the pintle apertures have become worn beyond a permissible degree. Since therefore the hinge lug is, in almost all cases, a fixed, integral part of the journal box, it is impracticable or prohibitively expensive to remove and replace the hinge lug with the result that heretofore the operators or railroads have recognized this defect and no commercially inexpensive solution for this troublesome defect has ever been forwarded.

It is to be noted further that the pintle apertures are in some instances cored to a size or diameter smaller than the desired apertures and subsequently after casting the journal box the apertures may be reamed or drilled to a proper diameter. In these instances where a journal box is but a single item it is possible to set the journal box in a fixture and ream or drill the apertures to a specific diameter but if the journal box forms an integral part of a side frame it is both inconvenient and unduly expensive to set the side frame in a fixture for reaming or drilling the pintle apertures and, accordingly, where reaming or drilling is desired, this operation in such instances is done by a portable tool. In the latter case it is physically impossible to hold the reaming or drilling tool with any degree of steadiness or firmness to insure reaming or drilling an accurate aperture and, accordingly, the pintle is not retained in a predetermined or fixed position nor does the lid function as intended.

All of the above undesirable conditions have been avoided or circumvented by the introduction of an improved sleeve, bushing or liner 11 in the aligned apertures 8 of the hinge ears. The bushing is split longitudinally thereof as illustrated in Figure 3 particularly and indicated by the reference character 12 and is formed preferably of hardened spring steel or case hardened low carbon steel or any desired composition.

The bushing may be associated with cored apertures or with apertures that have been reamed because the bushing, assembled with a hinge lug, forms a relatively true cylindrical liner presenting an accurately positioned envelope extending around the pintle. Before assembly with the hinge lug the sleeve or bushing is formed as a tapered, slightly frusto-conical member with one end 13 thereof comparable in diameter with the aperture with which it is to be associated. The other end 14 of the bushing is of slightly greater diameter than the end 13 and the hinge lug aperture with the body of the bushing gradually increasing in diameter from the end 13 to the end 14. With the bushing thus formed the end 13 is aligned with an aperture of one of the hinge ears and force is applied to the other end 14 to urge a bushing into the apertures 8 of the hinge ears. When completely assembled the sleeve, bridging the hinge ears, will have its edges contiguous or nearly so and the inherent resiliency of the bushing will maintain it in a fixed operable position. Also the bushing is so applied preferably that the contiguous edges will lie removed from the faces 9 or 10 or in a quadrant opposed to the faces or in other words so positioned that the split is diametrically disposed from one of the faces of the cam. By thus positioning the split or contiguous edges of the sleeve, the pintle or hinge pin will not come in contact with the longitudinal edges which condition appears to be quite desirable. Additional means such as tack welds (not shown) may be employed to lock the bushing in place but this expedient is not, at the present writing, deemed necessary.

A final observation may here be made to the effect that if the bushing becomes worn in service beyond a permissible degree it may, quite easily, be dislodged and replaced by a new bushing without first removing the journal box from the vehicle to thereby renovate the journal box and allow all components thereof to function as intended.

From the above it will be noted that various changes and alterations may be made to the accompanying drawing and described construction without departing from within the spirit of the invention and scope of the appended claims.

I claim:

1. In a cast journal box having an apertured hinge lug, the combination of, a split bushing of resilient material disposed within said aperture and being when removed from the hinge lug a tapered split tube having one outside diameter in excess of the diameter of the aperture in said hinge lug.

2. In a cast journal box having an apertured hinge lug, the combination of, a split bushing of resilient material disposed within said aperture and having its contiguous edges so arranged as to be out of contact with a hinge pin; said bushing before assembly with said hinge lug being a tapered split tube arranged to be forced into the hinge lug aperture.

3. In a cast journal box having an apertured hinge lug, the combination of, a spring steel hardened sleeve disposed within said aperture; said sleeve being split longitudinally thereof and when removed from said aperture being frusto-conical and having at least one end of a diameter greater than said aperture so that upon application the resiliency of said sleeve will retain it in operable position.

4. In a cast journal box having a cored aperture extending through a hinge lug of said journal box, the combination of a bushing formed as a continuous tube; said bushing having a single split extending entirely throughout its length and positioned within said aperture; a part of said bushing when removed from said aperture having an outside diameter greater than a diameter of said aperture.

5. In a cast journal box having apertured hinge ears joined by cam faces, the combination of, a bushing formed as a continuous tube bridging the distance between said hinge ears and extending into the apertures thereof; said bushing having a single split longitudinally thereof and being so positioned that the split is diametrically disposed from one of said faces.

6. In a cast journal box having apertured hinge ears joined by cam faces, the combination of, a bushing formed of hardened resilient steel, said bushing being a continuous tube bridging the distance between said hinge ears and extending into apertures thereof, a split in said bush-

ing longitudinally thereof, and said bushing when removed from said hinge lug being tapered and of a diameter slightly larger than said apertures of said hinge ears.

7. In combination with a journal box having an aperture extending through a hinge lug of said journal box, a bushing formed as a substantially circular shaped tube and having a single split extending entirely throughout its length, said bushing being positioned within said aperture for the receipt of a hinge pin; a part of said bushing when removed from said aperture having an outside diameter greater than a diameter of said aperture.

8. In combination with a journal box having an aperture extending through a hinge lug of a journal box, a bushing formed as a substantially circular shaped tube and having at least one split extending entirely throughout its length; said bushing being positioned within said aperture and arranged to accommodate a hinge pin; a part of said bushing when removed from said aperture having an outside diameter greater than a diameter of said aperture so that said bushing may be applied to said aperture under pressure.

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