

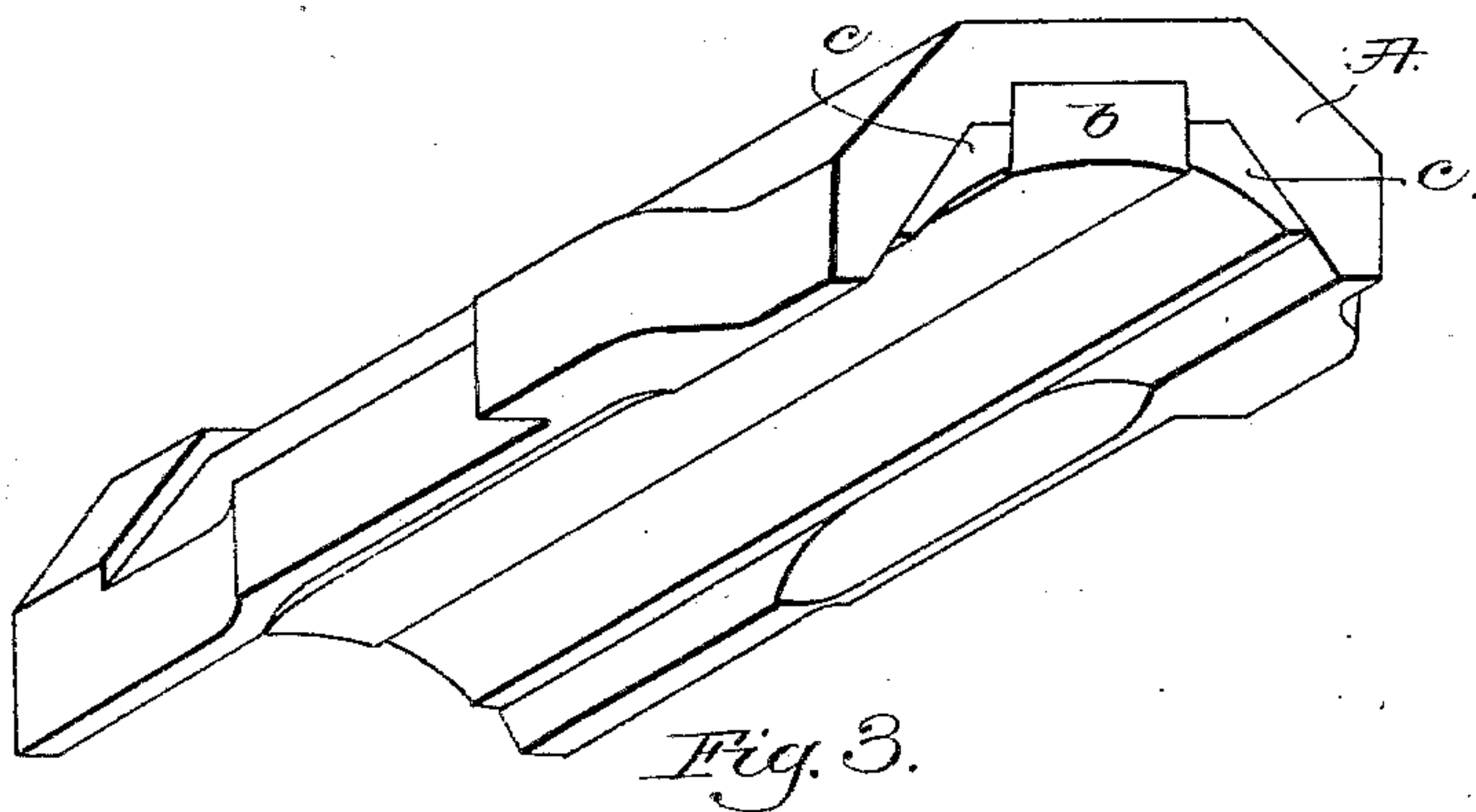
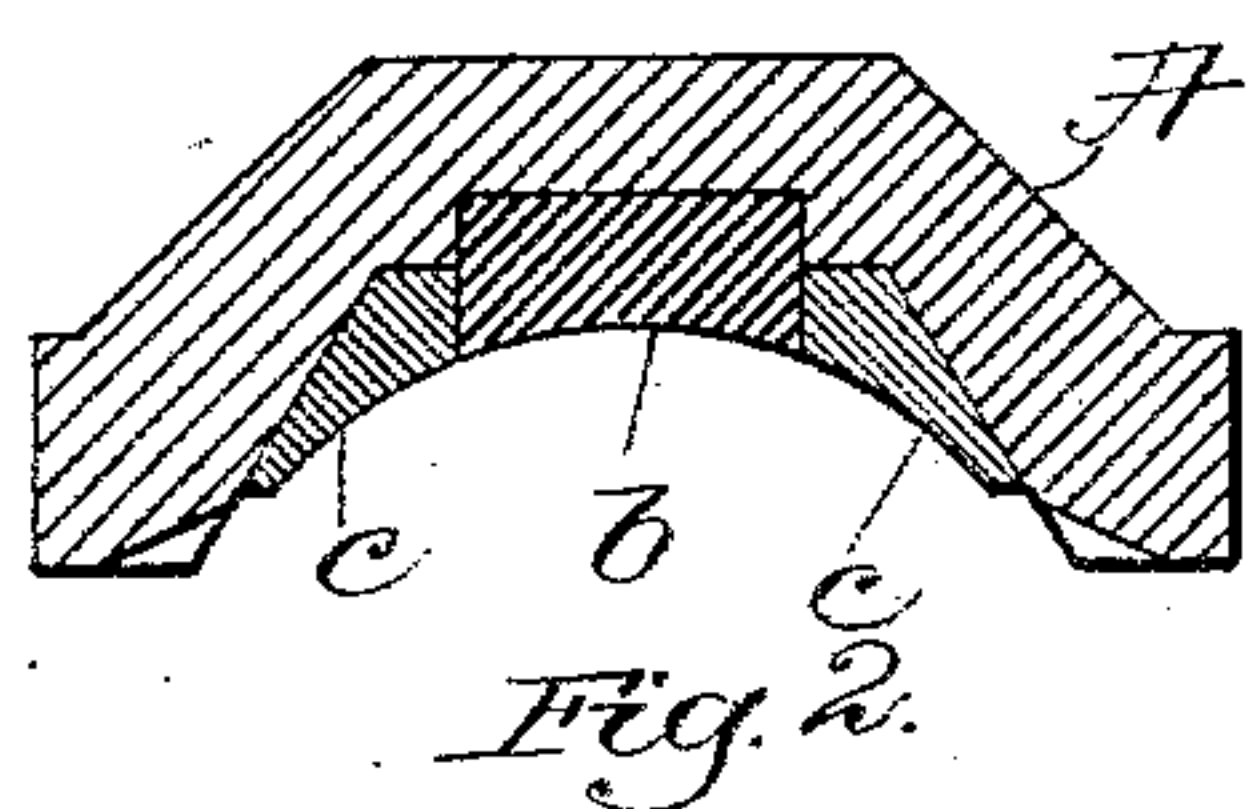
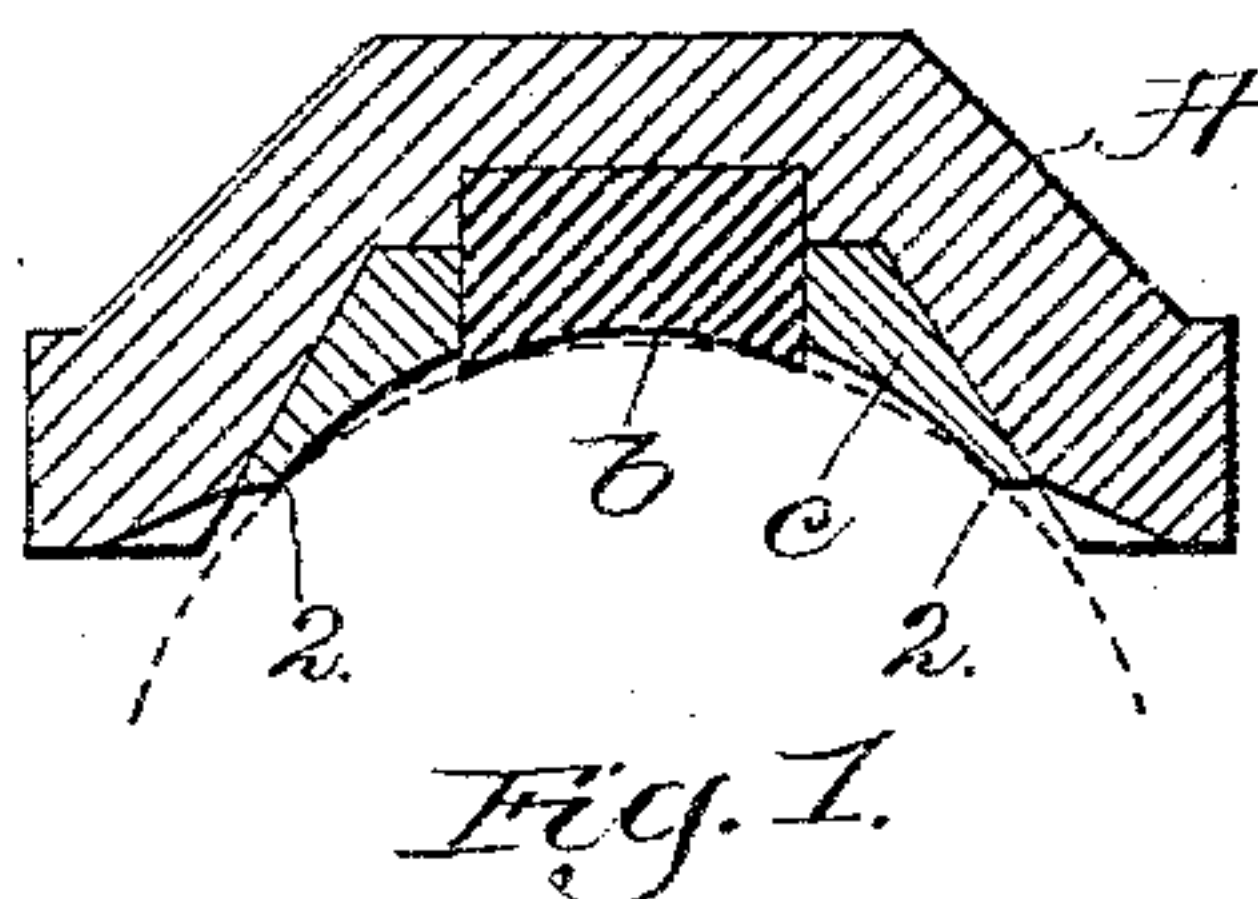
(No Model.)

W. A. HARDY.

CAR AXLE BOX.

No. 300,362.

Patented June 17, 1884.



Witnesses.
John F. C. Prinkert
Henry Marsh.

Inventor:
William A. Hardy.
By Crosby & Gregory attys.

UNITED STATES PATENT OFFICE.

WILLIAM A. HARDY, OF FITCHBURG, MASSACHUSETTS.

CAR-AXLE BOX.

SPECIFICATION forming part of Letters Patent No. 300,362, dated June 17, 1884.

Application filed March 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. HARDY, of Fitchburg, county of Worcester, State of Massachusetts, have invented an Improvement in Car-Axle Boxes, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to bearing-boxes of the class used in connection with the journals of railway-car axles supporting the weight of the car. Heretofore these boxes have usually consisted of a casing of iron or composition having the requisite strength, provided with a lining of Babbitt metal or other composition or material of a softer and more lubricating nature. In providing new boxes for journals that have been already run and have worn out one or more boxes, it is difficult and often impossible to get a box the bearing-surface of which corresponds to that of the journal, owing to the different sizes of the journals resulting from differences in original construction or from wear, and when a box having a bearing-surface of too great curvature happens to be used the journal will wedge into it, either breaking the box or binding so as to cause the bearing to heat, and often causing serious damage.

The object of my invention is to obviate this objection and provide a bearing that will operate without causing damage with journals varying in size, so that a new box may be safely substituted, and will run without undue friction or heating.

In carrying out my invention I provide the usual cast-metal box or casing at its middle with a bearing-piece, preferably of soft metal, extending along the box from end to end, and having its bearing-surface raised or projecting beyond the bearing-surfaces at the sides of it, so that it will come to a bearing on the journal whether the diameter of the latter is somewhat larger or smaller than the average or normal size, and as the box wears away it will in time conform to the journal over its entire surface. This raised central bearing will preferably be employed in a cast-metal box or casing in connection with a lining metal at each side of the said soft-metal bearing-piece, the said side pieces being preferably harder than the raised

central bearing-piece and conforming in curvature to a journal of normal or average size.

Figure 1 in cross-section represents an axle-box embodying my invention when first made and ready for use. Fig. 2 represents a like section of the box, the raised bearing-piece having been sufficiently worn to bring the axle arm or journal in contact with the side pieces, thus giving the full bearing-surface to the box; and Fig. 3 is a perspective view of one of my improved boxes before the same has been used and worn.

The cast-metal box, shell, or casing A, of usual length and shape, is provided at its center from end to end with a bearing-piece, *b*, concaved at its face to rest against the journal or arm of a car-axle of usual size and construction, the said central bearing-piece being preferably composed of a metal or alloy softer than the lining metal usually employed. The case or shell provided with the central bearing-piece extended from end to end at its middle will preferably have a harder lining metal to occupy a position at its sides, as at *c c*, and the central bearing-piece, *b*, has its bearing-surface raised or projecting from that of the side pieces, *c*, so that when the box is first applied to a journal the latter will run only on the long soft-metal bearing-piece *b*, thus obviating the danger of binding resulting from the wedging action of a journal too large in diameter for the box. The said long soft-metal bearing-piece *b* will gradually wear down until the journal comes also to a bearing on the side portions, *c*, composed of harder metal than that employed for the bearing-piece *b*, as represented in Fig. 2, wherein the pieces or parts *b* and *c* have the relation each to the other of a bearing which has been run for a considerable length of time, so that the journal has a full bearing on the parts *b* and *c*, which are fitted by wear accurately to it, and will remain so until wholly worn away or until the journal comes in contact with the metal of the casing. The raised or projecting central bearing-piece has a concaved face, and is broad enough to afford a suitable bearing when the journal is running upon the said central piece alone, as it always does when a new box is first applied to the journal.

The dotted circle in Fig. 1 shows a journal

that would be much too large for a box of the dimensions shown when constructed in the usual manner.

It will be seen that if the central bearing-piece did not project, the whole weight on the box would be sustained at the points 2, and would either wedge the sides apart, breaking the box in the middle, or would cause such great pressure at the points 2 that the journal would soon heat and it or the box be seriously injured or destroyed. When, however, the projecting central bearing-piece is used, it receives the weight, and the length of the arc spanned by it is so small that the variation of curvature from that of the journal is not sufficient to produce a detrimental wedging action, and, moreover, it is so soft that it almost immediately conforms to the journal by the pressure upon it, and when thus conformed it sustains the greater part of the weight, so that the side pieces, *c*, come to a bearing at 2 on the journal with moderate pressure, and gradually wear away simultaneously with the central piece until the whole box comes to a uniform bearing, as shown in Fig. 2, this having been accomplished without undue friction.

Although the bearing-piece *b* constitutes the sole bearing in a new box, this is not its only

function, as the said piece is of sufficient thickness, measured vertically, to constitute a portion of the permanent bearing of the journal, and I have found in actual practice that a bearing composed of the materials *b* and *c*, of different hardness, is much better than a bearing of one homogeneous material.

I claim—

1. In a journal-bearing, the box and casing having a central bearing-piece and side bearing-pieces all of lining material, the central piece being of softer material than the side pieces, substantially as described.

2. In a journal-bearing, the box or casing having a central bearing-piece and side pieces of lining material, the said central bearing-piece having its bearing-surface raised or projecting beyond that of the side pieces, and constituting the sole bearing when the box is first applied to the journal, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. A. HARDY.

Witnesses:

JOS. P. LIVERMORE,
W. H. SIGSTON.