2 Sheets—Sheet 1.

TULL & NORRIS.

Car-Axle Box.

No. 5,180. Patented July 3, 1847.

Fig. 2.

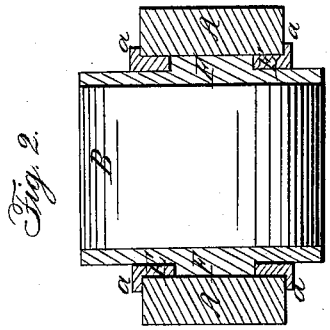
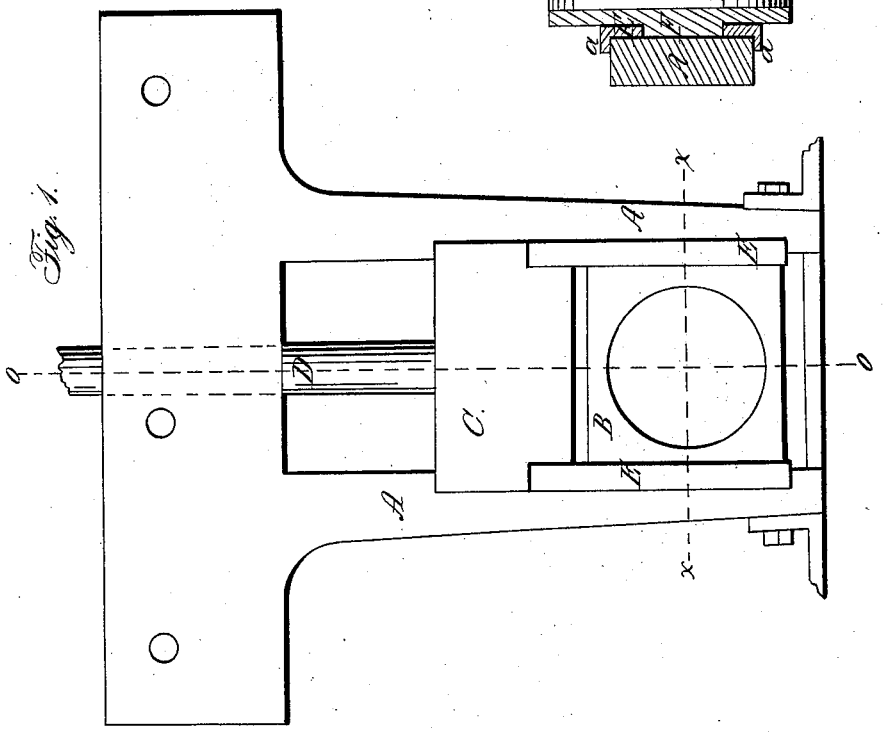


Fig. 1.



2 Sheets—Sheet 2.

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Fig. 5.

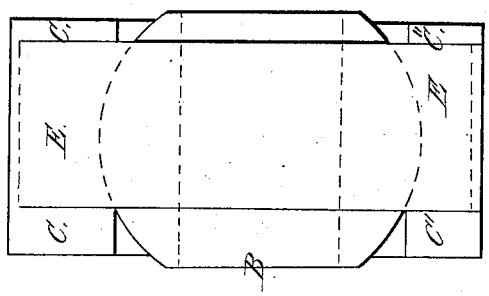


Fig. 4.

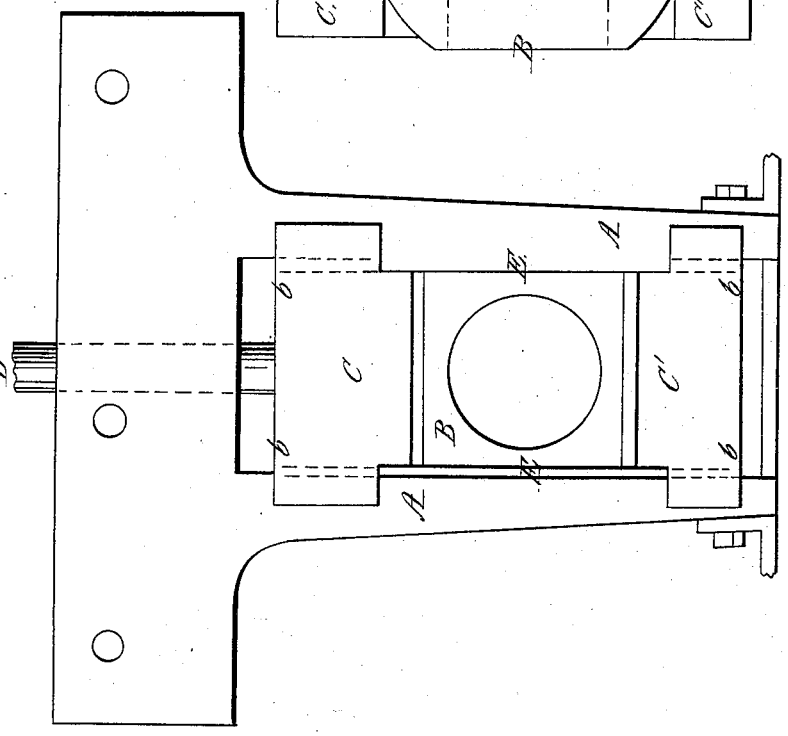
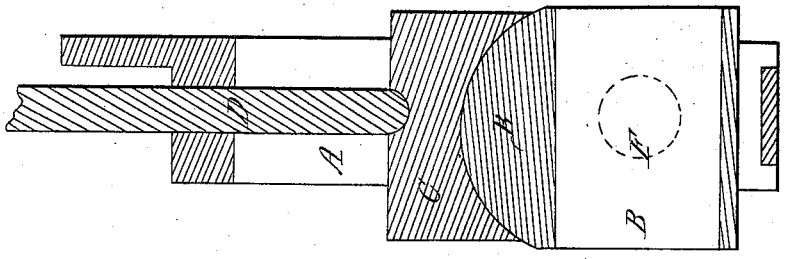


Fig. 3.



UNITED STATES PATENT OFFICE.

JAS. TULL AND S. NORRIS, OF PHILADELPHIA COUNTY, PENNSYLVANIA.

BOX FOR RAILROAD-CAR AXLES.

Specification of Letters Patent No. 5,180, dated July 3, 1847; Antedated January 3, 1847.

To all whom it may concern:

Be it known that we, JAMES TULL and SEPTIMUS NORRIS, of the county of Philadelphia, in the State of Pennsylvania, have made a new and useful Improvement in the manner of forming bearings of journal-boxes in which the axles of locomotives and railroad-carriages of different kinds and the axles of other machinery are intended to run; and we do hereby declare that the following is a full and exact description thereof.

The object of our improvement is to enable the axles and journal boxes of railroad carriages to conform themselves to the vertical motion occasioned by the inequalities in the height of the rails on the opposite sides of the track, by which the axles are continually subjected to deviations from a horizontal position, in a degree dependent upon the amount of such inequality, thereby causing a binding, or cramping, of the journals in their boxes, tending to their destruction, and increasing the resistance by augmenting the friction; and we mean to apply the same device to the shafts of the paddle wheels of steam boats, and to other machinery which is liable to variation in the range of the boxes in which the journals run.

Instead of fitting the ends of the journal boxes to the inner sides of the plumber blocks by forming angles, grooves, tongues or hollows on the inner sides of said plumber blocks; to retain them in place and to allow them to slide up and down therein, we make the ends of the plumber blocks even and flat, so that their faces are perfect planes in this part, and stand parallel to each other; and against these ends we fit plates of metal that are to slide up and down with them within the cheeks of the plumber blocks. These plates of metal are to be of equal thickness, so that when they are in place their faces stand parallel to each other. Between these the journal boxes are fitted in, the outer ends of which as above stated are made perfectly flat and parallel, so as to be in contact with the sliding plates. They are sometimes retained in place by means of short gudgeons that project from the middles of their ends and enter corresponding holes in the sliding plates.

The upper side of the journal boxes is in the form of the segment of a cylinder, and fits into a corresponding hollow in the sliding block that reacts against the bolt that descends from the springs. We sometimes form both the upper and lower sides of the journal box cylindrical, and fit a corresponding sliding block to each of these slides. When the journal boxes are not intended to float up and down within the cheeks of the plumber blocks, the sliding plates will not be required, the journal boxes, with their flat ends, being allowed to fit against the cheeks of the plumber blocks.

In Figure 1, of the accompanying drawing we have given a face view of a plumber block, with a journal box having one cylindrical side contained within it. Fig. 2 is a horizontal section in the line *x x* of Fig. 1. Fig. 3, a vertical section in the line *o*, *o*. Fig. 4, is a face view of a similar apparatus in which the journal box is cylindrical on two of its sides. Fig. 5 is an end view of the said journal box, with one of the slide plates, and two sliding blocks.

In each of these figures where the same parts are represented they are designated by the same letters of reference.

A, A, are the sides or cheeks of the plumber blocks. B are the journal boxes. C (Fig. 1,) is the sliding box against which the journal box bears, and which acts on the bolt D, that descends from the spring in the ordinary manner.

E, E are the sliding plates that pass up and down within the plumber blocks.

F, F, shown in the section (Fig. 2,) are short gudgeons on the ends of the journal box, that are received within corresponding holes in the sliding plates.

In the section Fig. 3, the upper side B^1, of the gudgeon box is represented as in the form of the segment of a cylinder, of which the short gudgeon F (the place of which is shown in dotted lines) is the center; and the sliding box C, is made concave at its lower side to adapt it to the said journal box.

The sliding plates E, E, may have a projecting edge embracing the cheeks of the plumber blocks as shown at *a*, *a*, Fig. 2.

Should it be desired to employ a sliding block on each side of the journal box, this may readily be done in the manner represented in Figs. 4, and 5. In these figures, C^1, is the lower sliding box, which like the upper is hollowed out to receive the lower side of the journal box. When thus made it is not necessary to use a center gudgeon as shown at F, Fig 2; the two concave boxes

holding the journal boxes in their places, but the sliding plates should be attached in any convenient way to the said boxes. In Fig. 4, the dotted lines at *b*, *b*, represent them as clipping over the ends of the boxes. We have represented the journal boxes as undivided, but they may, if preferred, be made in two parts.

Under this arrangement while sufficient vertical play is allowed to the axles, they have not any horizontal play, and vertical planes passing through the axes of the respective pairs of wheels would preserve their parallelism, notwithstanding the vertical vibration of the axles.

Having thus fully described the nature of our improvement in the manner of forming the upper bearings of the journal boxes of locomotive engines, cars, and carriages of various kinds and of the shafts of steam boats, and other machinery that is liable to a like variation in the range of the journal boxes, what we claim as new therein, and desire to secure by Letters Patent is—

The forming the journal boxes cylindrical on their upper, or on their upper and lower sides, and of combining them with the plumber blocks, so as to allow them and the axles of the respective pairs of wheels, when applied to railroad carriages to conform themselves freely to the inequalities of the height of the rails on the opposite sides of the track; the whole combination and arrangement being substantially the same with that herein fully made known.

JAMES TULL.
SEPTIMUS NORRIS.

Witnesses:
JOHN W. STUMPH,
MARTIN LUTZ.