W. E. WILCOX.

CAR AXLE-BOX.

No. 191,820. Patented June 12, 1877.

Fig. 1.

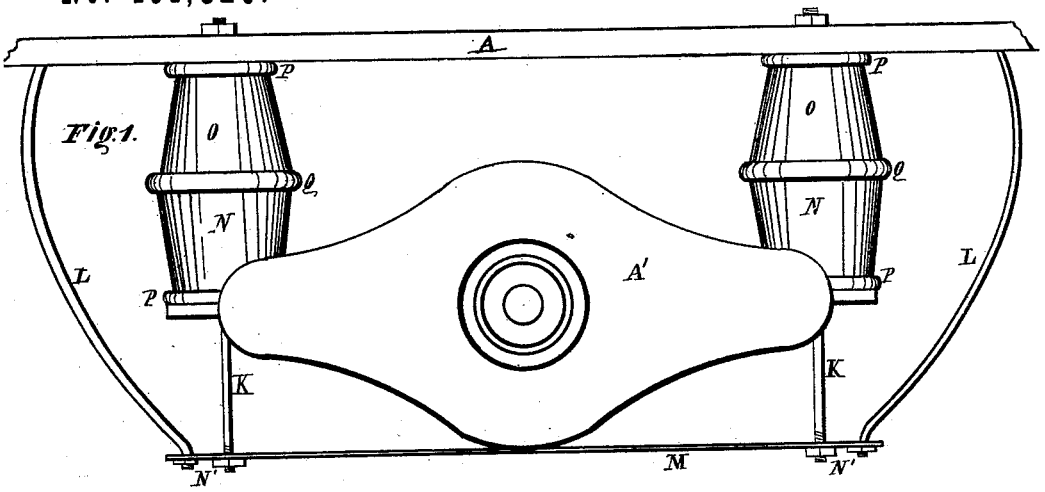


Fig. 2.

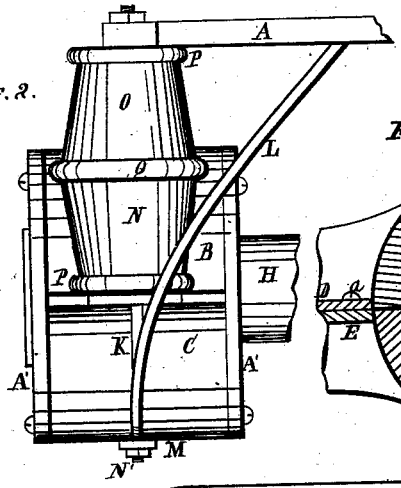


Fig. 4

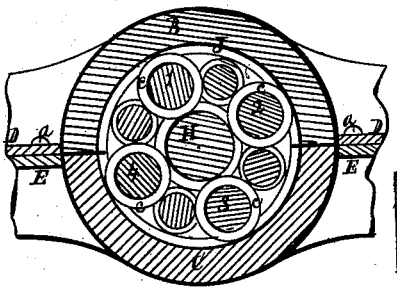


Fig. 5.

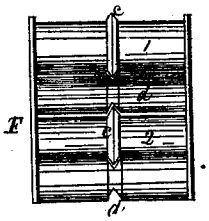


Fig. 7.

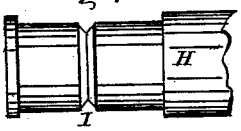


Fig. 3.

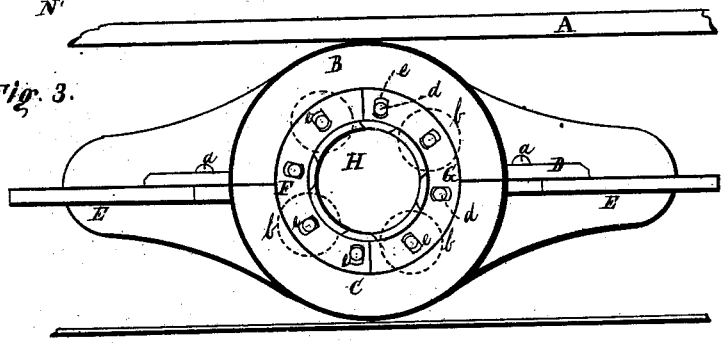
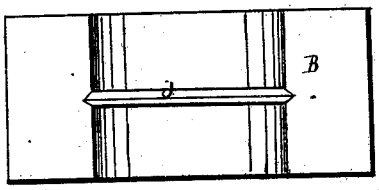


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM E. WILCOX, OF CLEVELAND, OHIO.

IMPROVEMENT IN CAR-AXLE BOXES.

Specification forming part of Letters Patent No. **191,820**, dated June 12, 1877; application filed April 6, 1877.

To all whom it may concern:

Be it known that I, WM. E. WILCOX, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented new and useful Improvements in Railway-Car Axle-Boxes, of which the following is a description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of the axle-box and housing. Fig. 2 is an end view of the axle and housing. Figs. 3, 4, 5, 6, and 7 are detached sections, to which reference will be made.

Like letters of reference refer to like parts in the several views.

The nature of this invention relates to an axle-box for railway-cars. Said box consists of a system of anti-friction rollers, arranged within the shell of the box around the journal of the axle, and in which it has its bearing. Certain of said rollers are provided with a collar, so arranged as to run in corresponding grooves in the associated rollers. The collars also run in a peripheral groove formed in the upper and lower sections of the axle-box, and also in a groove around the axle, the purpose of which and the construction of the same are substantially as follows, it being an improvement of a journal-box for which a patent was granted to me June 22, 1869.

In Fig. 1, A represents a section of the sill of a car or truck, to which the axle-box is secured. Said box consists of two sections, B and C, connected to each other by wings or plates D E and bolts *a*. 1, 2, 3, and 4 (also indicated by the dotted lines *b* in Fig. 3) are rollers, each of which is provided with a collar, *c*. 5, 6, 7, and 8 are also rollers, in each one of which is a groove, *d*, Fig. 5. The arrangement of the rollers in respect to each other is such that the collars *c* of the one set of rollers run in the grooves of the other, as shown in Figs. 4 and 5—that is to say, each alternate roller of the group is provided with a collar, and which runs in the grooves of the intermediate rollers associated therewith. Said rollers are pivoted in semicircles or segments F G, Fig. 3, which, together, form a flat ring, one at each end of the rollers, as seen in Fig. 5. It will be seen in said figure that the segment F embraces four rollers, two of which are grooved, and two have collars. Segment G has the same number and arrangement of rollers. The diameter of the two segments of rollers is such as to fit into the bore of the axle-box, and the rollers are of a length equal to the length of the journal of the axle. The group of rollers thus arranged in the segments do not touch each other. There being a space between one roller and the next in order, hence there is no contact of the rollers, excepting the collars of the one in the grooves of the others, and that only in the event of lateral pressure exerted upon them.

The pivots *d* of the rollers are held in slots *e* of the segments, as shown in Fig. 3; hence, the rollers have a free radial movement, for a purpose presently shown. H is the axle, around the journal of which is a groove, I, Fig. 7, in which the collars of the rollers run, as shown in Fig. 4. Around the inside of the journal-box is cut a similar groove, J, Fig. 6. Said figure represents an inside view of section B of the journal-box.

From the above description of the axle-box it will be obvious that when the journal is in the box it will be surrounded by the rollers, and between which it revolves, and at the same time the system of rollers revolve around the axle, and also on their own axis. During this revolution of the axle and rollers, the collars *c* of the rollers 1, 2, 3, and 4 run in the grooves of the intermediate rollers grouped therewith, and at the same time the collars run in the groove in the journal and in the peripheral groove J of the journal-box.

It will be obvious that, in consequence of the intervolving relation of the collars and the several grooves specified, there can be but little lateral movement of the journal in its box. Hence, there will be little wearing of the shoulders of the journal and ends of the box to produce looseness and end-chasing of the axle or journals thereof.

The face of the rollers run upon the face of the axle-box, and also upon the face of the journal. Inasmuch as the rollers have a radial privilege of movement, they will at all times be in contact with the journal and the journal-box. The pivots whereby the rollers are attached to the rings or segments thereof serve only to hold the rollers apart, so that they may not run upon each other. The pivots do not

support the weight of the axle, that being borne directly by the rollers in their revolving contact with the journal-box.

The application of the journal-box to the car or truck will be understood by Fig. 1, in which, as above said, A represents the sill of a car, from which is suspended the journal-box, by the bolts K K and braces L L, made fast to a bar, M, underneath the axle-box. N and O are the springs. Said springs are of rubber, the smaller ends of which are prevented from spreading by caps P, in which they are inserted. The larger ends of the springs are also inserted in caps, consisting of a disk, Q, having a recess in either side for the admission of the springs. The springs stand upon the wings or plates E, and which are thereto secured by the caps P. The bolt-holes in the springs pass through a boss. Said boss is let into the wing, and the cap is thereby retained in place for an upright position of the springs. The hole in the spring is larger than the bolt, to allow a lateral movement to the body of the car. The ends of the journal-box are covered by plates A′, which protect the rollers and journal from dirt, dust, &c. The plates also serve to hold the sections of the box together.

To prevent the rings from leaving the pivots of the rollers, the ends of the pivots may be riveted down, forming a head outside of the rings.

Access is had to the inside of the journal-box by removing the cap or section C thereof. This may be done by taking out the bolts *a*, and by the removal of the bar M by detaching the nuts N′ from the bolts and braces K and L. In this way the axle can be taken out of the boxes without removing the entire box.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the grooved and collared rollers herein described, grooved axle-journal H, and grooved journal-box, as and for the purpose set forth.

2. The combination of the grooved and collared rollers herein described, radially-slotted rings, grooved axle-journal H, and grooved journal-box, all constructed and arranged to operate substantially as herein set forth.

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Witnesses:
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