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DAVIS H. DOTTERER.

Journal Box.

No. 118,701.

Patented Sep. 5, 1871.

Fig. 1.

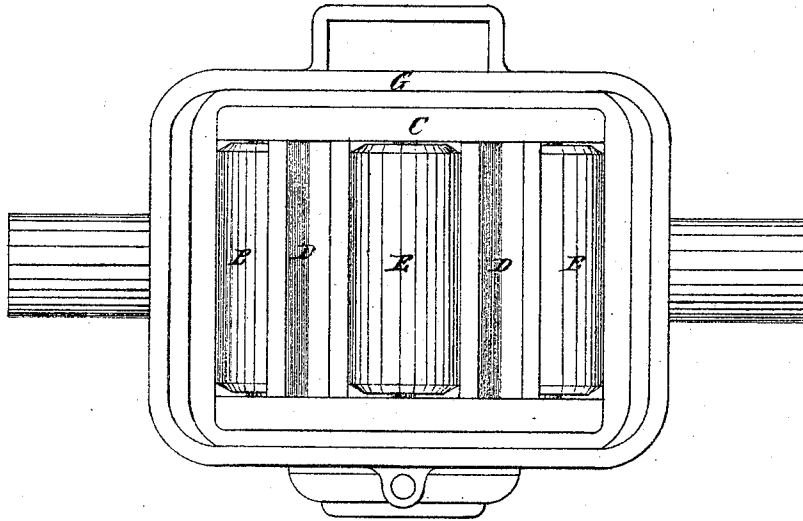
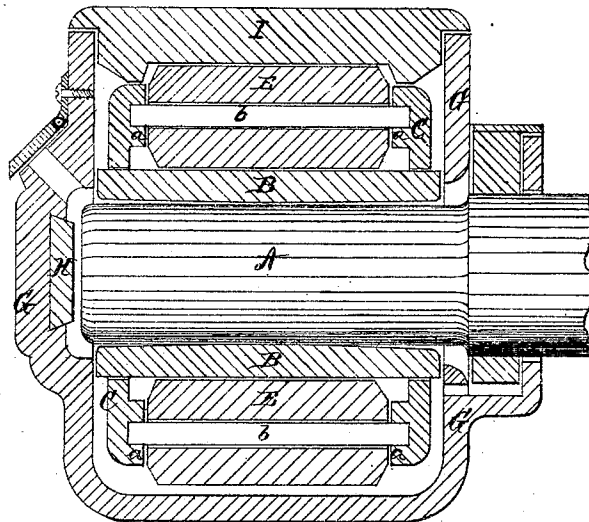


Fig. 2.



Witnesses.

Chas. L. Evert,
John Hutchinson

Inventor.

Davis H. Dotterer,
per
Alexander Mason

attys.

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Fig. 3.

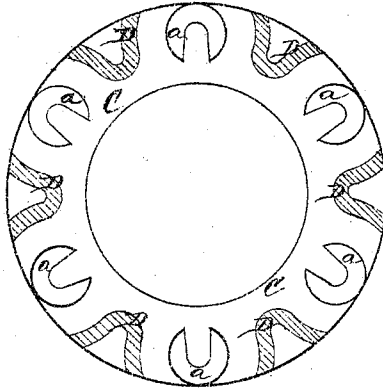
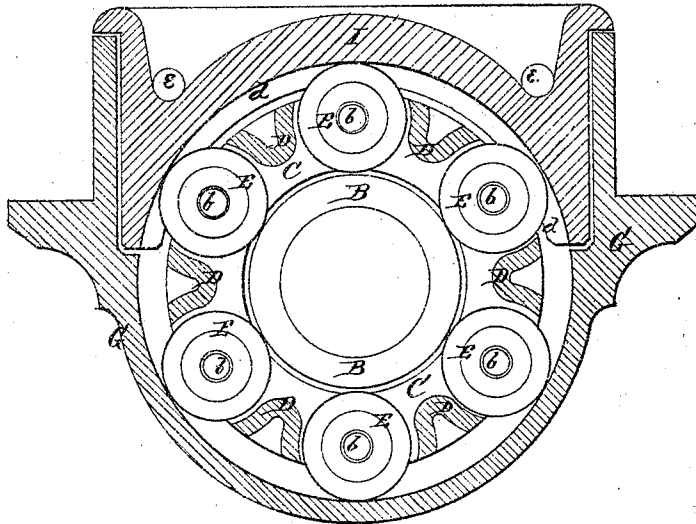


Fig. 4.



Witnesses.

E. L. Evert,
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Inventor.

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Alexander Mason

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UNITED STATES PATENT OFFICE.

DAVIS H. DOTTERER, OF PHILADELPHIA, PA., ASSIGNOR TO HIMSELF, M. S. GILBERT, AND MELFORD D. BUCHANAN, OF CHICAGO, ILL.

IMPROVEMENT IN CAR-AXLE BOXES.

Specification forming part of Letters Patent No. 118,701, dated September 5, 1871.

To all whom it may concern:

Be it known that I, DAVIS H. DOTTERER, of Philadelphia, in the county of Philadelphia and in the State of Pennsylvania, have invented certain new and useful improvements in Journal-Boxes; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked thereon making a part of this specification.

The nature of my invention consists in the construction and arrangement of a traveling-roller journal-box for railroad cars, trucks, &c., as will be hereinafter more fully set forth.

In order to enable others skilled in the art to which my invention appertains to make and use the same, I will now proceed to describe its construction and operation, referring to the annexed drawing, in which—

Figure 1 is a plan view of my journal-box with the lid or cover removed. Fig. 2 is a longitudinal vertical section of the entire journal-box, showing the journal inserted in the same. Fig. 3 is a transverse vertical section of the cage in which the rollers are placed, and Fig. 4 is transverse vertical section of the entire journal-box.

A represents the journal of the car-axle, around which is placed a loose cast-iron chilled thimble or sleeve, B. This thimble or sleeve passes through a cast-iron cage composed of two annular rims C C, connected by means of V-shaped cross-bars D D, forming chambers or pockets for receiving rollers E E. The entire cage—that is, the rims C C and cross-bars D D—are cast in one piece and the bars are made V-shaped, as their peculiar shape admits of their being grooved out without lessening their lateral strength. On the inner side of the rims C C, in the spaces between the cross-bars D D, are cast projections *a*, with grooves opening toward the center, for the insertion of pins *b b*, upon which the rollers E E are hung and revolve. The pins *b b* are made of steel, while the rollers E E are made of hard cast metal, chilled. The rollers being cast with hard metal and chilled, are so hard as to prevent their being drilled in the ordinary way. To overcome this difficulty I place a brass plug in the center of the chill and run the hard iron around it. The plug is a trifle larger than the hole to be drilled, so as to prevent the drill coming in contact with the iron. The pins *b b* are

not indispensable to the proper working of the box; the cage, being so constructed that the outer rims C C fit snug on the chilled thimble B, prevents it from twisting. This, in connection with the roller-chambers formed by the V-shaped cross-bars D D, keep the rollers in their proper working position, without the aid of the pins. The cage is carried and kept in true working position by the thimble, without any regard to the pins, which are only intended to act as a safety arrangement in case of the breakage of one or more of the cross-bars D.

It will be noticed that the rollers are put in position from the inside of the cage, and kept in their places by the insertion of the thimble and the circular V-shape of the cross-bars. The greatest objection of all anti-friction roller-boxes consists in no provision being made to keep the rollers in a true line with the axle and concave, without which they are certain at some time to get out of line and cut their bearings.

The entire cage, with rollers and sleeve or thimble, is placed within the case or box G, and the journal passed into the same through the sleeve. At the end of the journal, in the inner side of the box, is a cast-iron chilled thrust-plate, H. This plate is placed in the mold, and soft iron run around it when the box is cast. The box or case G is covered by a cast-iron chilled concave, I, of the peculiar shape shown in Fig. 4, and fastened by means of two bolts, *e e*, passing through. These bolts, having a head at one end and keyed at the other, form a simple yet effectual mode of securing the cover to the case. The roller-cage being cast in one piece, the two rims being connected by the V-shaped cross-bars forming chambers between them, insures at all times and under all circumstances a perfect uniform line of bearing both on the thimble and concave.

It will be noticed that the rollers are guided by the cage, and will always remain on a true line with the axle and concave, even if the cage should move laterally on the thimble. A boss may be cast on the outside of the rims C C, so that if the cage should move laterally the friction would be less on the sides of the box, and also prevent any part of the rollers from getting off the thimble and concave.

The loose cast-iron chilled thimble effectually protects the journal from wear, carrying the cage

and rollers, and, fitting snugly endwise in the case, prevents the cage and rollers from being disturbed in their operation by the end thrust of the axle. It also possesses the additional merit of using any diameter of journal that it is capable of receiving without any detriment to the perfect working of the cage and rollers. This is a great advantage of being able to use journals that are cut by use and of different diameter, and not fit to use in the ordinary way. Another very important advantage is the small cost at which they can be furnished, in connection with the simplicity of construction, using no screw-bolts, and the known durability of rolling chilled cast-iron surfaces; also, their complete adaptation to all kinds of cars and trucks, including every variety of shafting without waste of lubrication.

For shafting or long journals of any kind I intend to make the cage with a central rim supported by the thimble, and the rollers placed jagged on each side of said rim. This is the only plan by which this principle can be applied successfully to long bearings, owing to the difficulty and expense of obtaining a true uniform bearing lengthwise with long single rollers, aside from their liability to break and get out of line.

The thimble or sleeve B may be made of wrought-iron or other metal, as well as of cast-iron, and I do not confine myself to cast-iron alone as the material of which said thimble is to be made.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a metallic cage, having two rims or heads connected together by cross-bars, whether cast in one piece or otherwise formed, a series of friction-rollers arranged between said bars, and a metallic sleeve extending under and supporting the cage and surrounding an axle, all substantially as and for the purposes set forth.

2. The cage herein described cast in one piece, and consisting of the rims C C, with downwardly-projecting flanges bearing on the sleeve B, V-shaped connecting-bars D D, and grooved projections *a a*, forming chambers or pockets for receiving and guiding the rollers E E, with their stationary or loose journals *b b*, substantially as set forth.

3. In combination with the cage C D cast in one piece, the metallic sleeve or thimble B, disconnected, and extending under and supporting the cage, and slipping loosely over the journal, substantially as and for the purposes herein set forth.

4. The combination of the loose thimble B, the cage C D, as described, and the rollers E E, all acting and operating on the journal A and within the case G, with its thrust-plate H and concave I, all constructed and arranged substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of January, 1871.

D. H. DOTTERER.

Witnesses:

A. N. MARR,
C. L. EVERT.