A. A. FREEMAN.
Car-Axle Box.

No. 200,385. Patented Feb. 19, 1878.

Fig 1

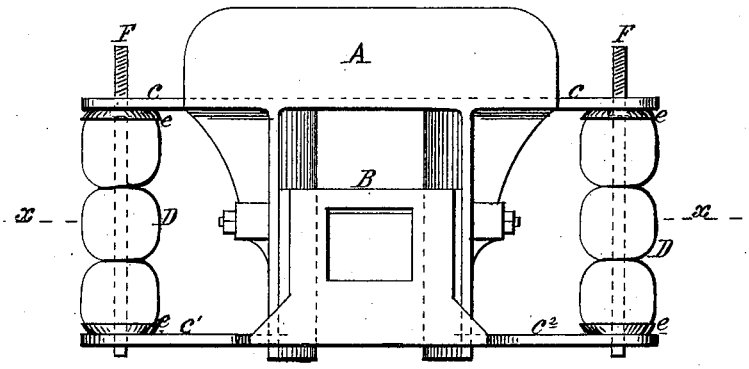


Fig 2

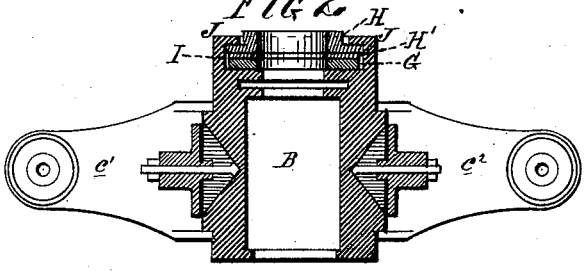


Fig 3

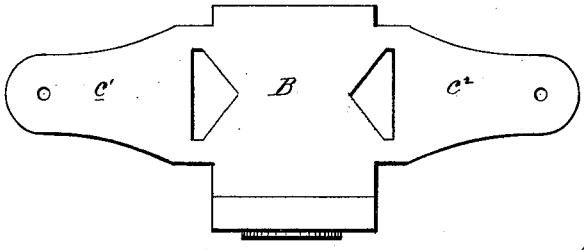


Fig 7

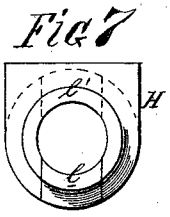


Fig 5

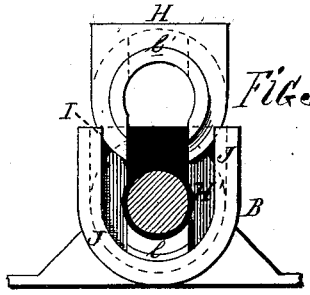


Fig 4

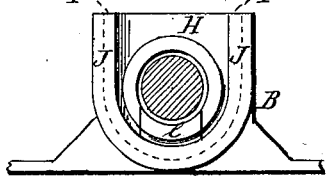
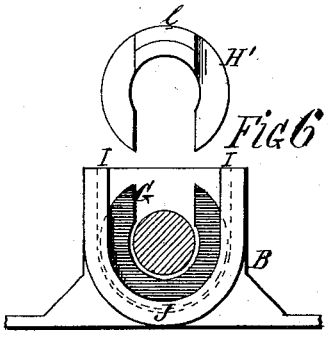


Fig 6



Witnesses.
Chas. E. Freeman
per H. Scott Jr.

Inventor.
Albert A. Freeman
By Isaac P. Oakford.
his attorney.

UNITED STATES PATENT OFFICE.

ALBERT A. FREEMAN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN H. SCOTT, JR., OF SAME PLACE.

IMPROVEMENT IN CAR-AXLE BOXES.

Specification forming part of Letters Patent No. **200,385**, dated February 19, 1878; application filed November 13, 1877.

To all whom it may concern:

Be it known that I, ALBERT A. FREEMAN, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Car-Axle Boxes, which improvement is fully set forth in the following specification and accompanying drawing, in which—

Figure 1 is a front elevation of my improvement in car-axle boxes. Fig. 2 is a horizontal section on the line *x x* of Fig. 1. Fig. 3 is a plan view of the under side of the axle-box, showing the flanges or wings for supporting the springs, and triangular openings for the legs of the hanger to pass through. Figs 4, 5, 6 and 7 are end views of the axle-box, showing a cushion arranged to receive the lateral thrust of the axles.

In the Letters Patent granted to me under date of April 2, 1867, the gum spring placed between the legs of the hanger is shown and described as resting directly upon the axle-box. The spring interposed in this position elevates the body of the car an inconvenient distance above the surface of the ground for stepping on or off the platform.

My present invention is intended to obviate this, and to accomplish it I employ V-shaped guides to maintain the axle-box in proper position, similar to the guides shown in my former patent; but in this instance the guides extend above the axle-box close up to the flange of the hanger, and are used in combination with two gum or spiral springs, placed on each side of the box, and resting upon flanges or wings projecting on the lower side of the same.

My invention also consists in applying a gum-elastic cushion between the inner side of the axle-boxes and the hub of each wheel, in order to compensate for the lateral thrust of the axles in turning curves.

The legs of the hanger A are furnished with V-shaped guides, which extend their full length and occupy corresponding depressions in the sides of the box B, similar to my former invention, except that in the present case the guides extend farther up, while in the former case they were located at the lower part of the legs, and the gum spring placed over the box. By extending the guides on the upper part of the legs and removing the spring from over the axle-box, the hangers, with the body of the car, may be lowered on the axles, and thus reduce the height between the surface of the ground and the platform of the car.

In order to use two springs to each axle-box, and thereby adapt my invention to cars of different construction, and also to enable the car to ride easier, I increase the length of the flange *c*, Fig. 1, of the hanger, upon which the sill of the car rests, and provide the lower part of the box B with flanges or wings c^1 c^2, which extend a suitable distance from the sides of the box, and support on their outer ends the gum or spiral springs D D. These springs, which are located, as shown, between the flange *c* of the hanger and the flanges c^1 and c^2 on the box, have their upper and lower ends inserted in concave disks *e e*, cast on the flanges, to prevent their shifting. The flanges or wing c^1 and c^2 are also provided with triangular openings, O and O′, through which the legs of the hanger project, so as to permit a brace or stay to be attached thereto. Rods F F, secured to the sill of the car and passing through the center of the springs, with their ends projecting loosely through the flanges c^1 and c^2, are also employed to maintain the springs in vertical position as the car-body rises and falls.

The cushion, to receive the lateral thrust of the axles, consists of a gum ring, G, Figs. 2 and 6, placed on the exterior of each box, on the end nearest the wheel, the wear of the same being prevented by means of a covering-plate, H, Figs. 2, 4, 5, and 7, which passes over the axle, and is furnished with a circular boss on the outside for the hub of the wheel to bear against. This plate and the gum ring are retained within a groove or channel, I, which is formed by casting an angular flange or rim, J, on the box, which extends from the opposite corners of the same down in a semi-circular form at the bottom, leaving the upper ends of the groove open to admit the plate and ring.

In the drawings, Figs. 5 and 6, the plate H and gum ring G are shown with sections removed, so as to pass freely over the axle when the same is in position, with the journal resting in the box. The said plate H has a circu-

lar recess formed on the back, in which is placed an annular plate, H′. This plate is provided with a lug, *l*, which fills the vacant space in plate H, and forms a continuation of the circular boss, as shown in Fig. 7. A section is also removed from the plate H′, as shown in Fig. 6, to permit the same to pass over the axle, the open space being occupied by a lug, *l′*, cast on the back part of the plate H, in such a manner that when the two plates are brought together the lugs *l* and *l′* will occupy the respective spaces, and present an even surface on the back and front of the covering-plate.

When it is desired to introduce the cushion without removing the axle from the box, the gum ring is inserted from the top of the box in the groove I, with the open space projecting downward, in which position it is slipped over the axle and turned sufficiently to cause the open space to project upward, as shown in Fig. 6. The plate H′ is then similarly introduced and turned to bring the lug *l′* underneath the axle, as shown in Figs. 4 and 5. The plate H, which may be removed at any time it becomes worn, is then inserted in the groove, as shown in Fig. 5, and pressed down in the position shown in Fig. 4, with the lug *l′* fitting in the open space.

It will be observed that the groove or channel I is made with vertical parallel sides, terminating in a semicircular form at the bottom, to accommodate the gum ring G, and to prevent the plate H, which fits the groove, from turning.

What I claim as my invention is—

1. The combination of the hanger A, box B, flanges or wings c^1 and c^2, and triangular openings O and O′, for the legs of the hanger to pass through, substantially in the manner shown and described.

2. In combination with the groove or channel I, formed on the end of the box, the gum ring G, plates H and H′, and lugs *l* and *l′*, constructed substantially as described, and adapted to pass over the axles, to compensate for the lateral thrust of the axles and end wear of the box.

3. The combination of the hanger A, provided with V-shaped guides and flange *c*, with the box B, flanges or wings c^1 and c^2, springs D and D′, groove or channel, I, gum ring G, and plates H and H′, substantially in the manner and for the purpose shown and described.

ALBERT A. FREEMAN.

Witnesses:
ISAAC R. OAKFORD,
JNO. H. SCOTT.