

(No Model.)

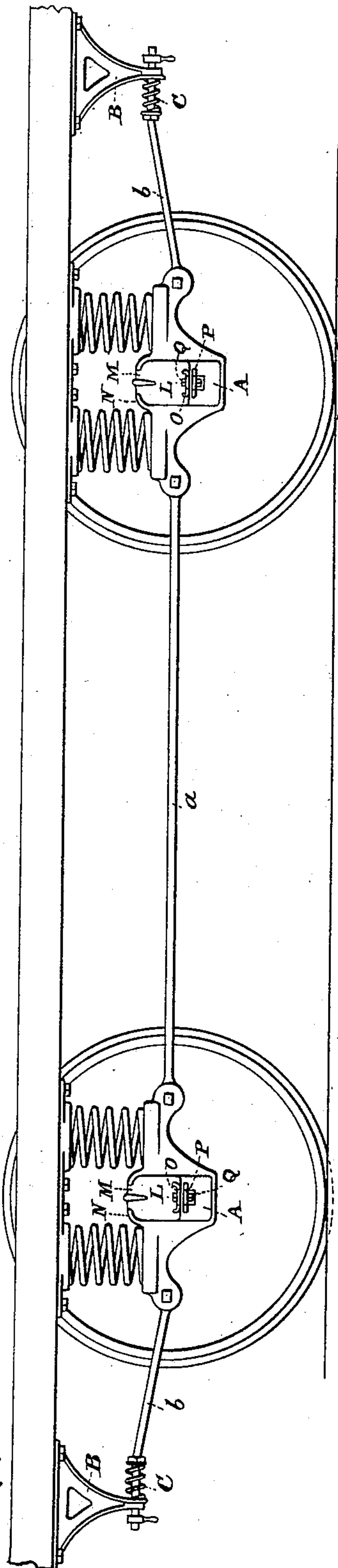
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M. G. HUBBARD.  
CAR TRUCK.

No. 407,402.

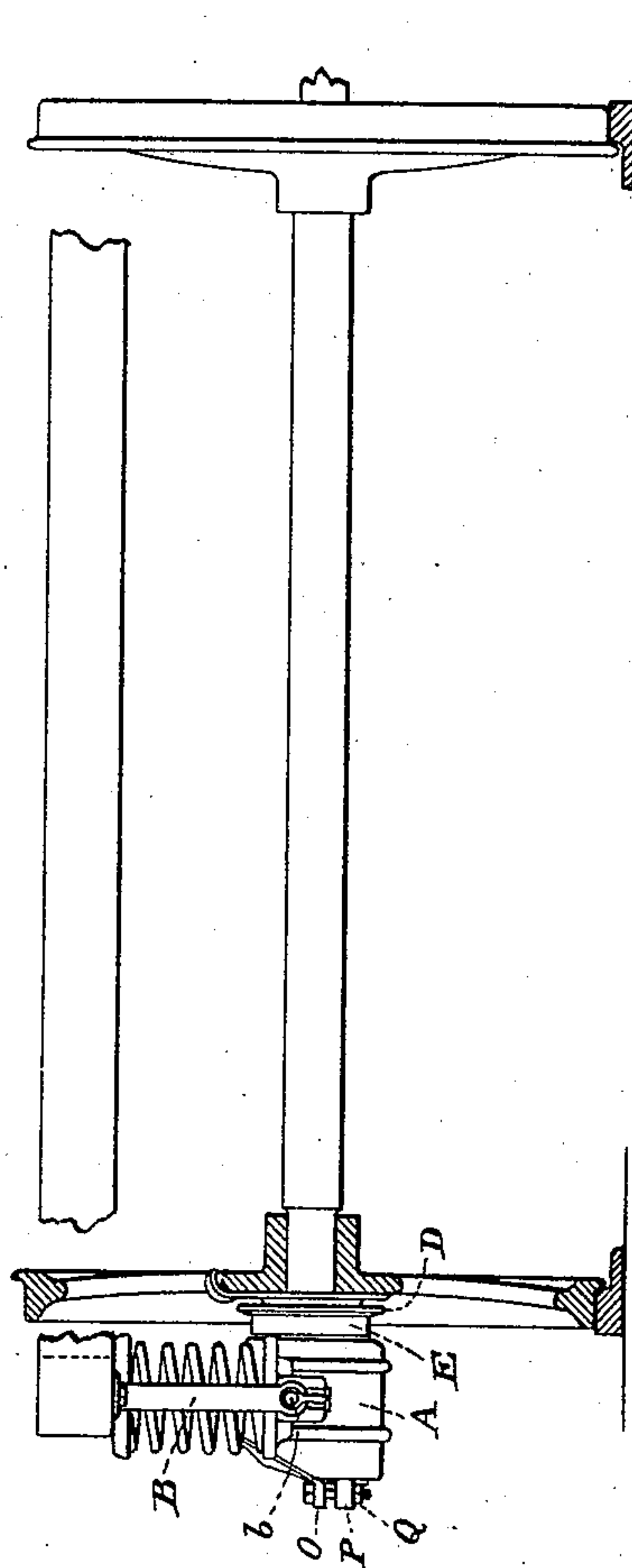
Patented July 23, 1889.

FIG. 1.



Attest:  
G. T. Smallwood,  
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FIG. 2.



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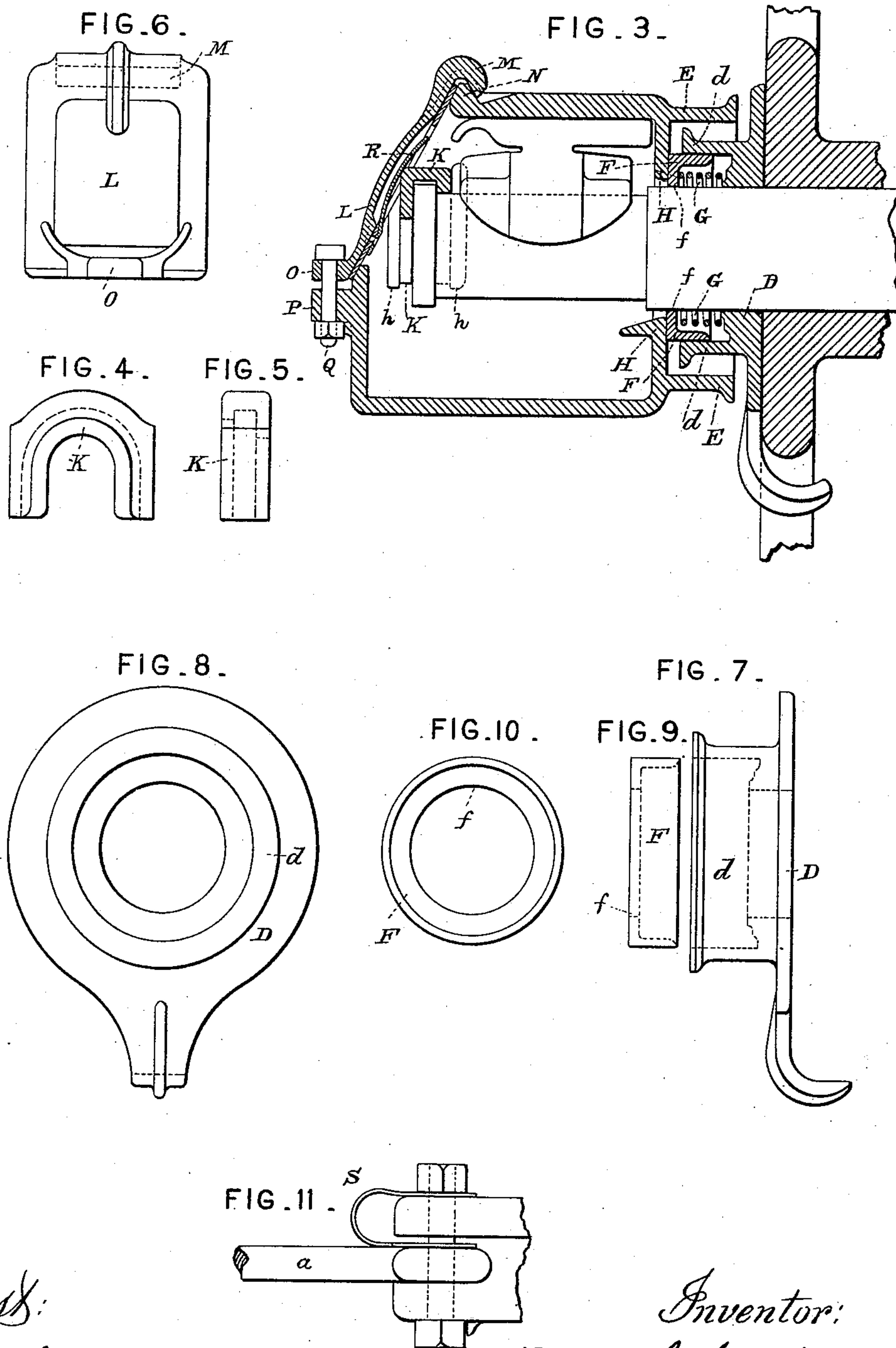
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# UNITED STATES PATENT OFFICE.

MOSES G. HUBBARD, OF PHILADELPHIA, PENNSYLVANIA.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 407,402, dated July 23, 1889.

Application filed September 22, 1888. Serial No. 286,116. (No model.)

*To all whom it may concern.*

Be it known that I, MOSES G. HUBBARD, of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Car-Trucks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention consists in an improved car-axle gear, and is intended to render the journal-bearings self-adjusting to the axle-journal and diminish their frictional resistance, and also to combine therewith a flexible elastic attachment of the wheels to the car or truck.

My invention relates, first, to the construction and arrangement of the attachment of the journal-bearings to the car or truck, so that the car will have an attachment to the wheels which is elastic in every direction, and which will permit the perfect self-adjustment of the axle-journal boxes to the axle-journals.

It further relates to the simplification of the car-axle gear, the improvement of the riding of the car, and increased durability of the same by dispensing with the side and longitudinal braces and the posts or pedestals heretofore used.

It further relates to the construction of a self-adjusting dust and dirt proof attachment of the journal-box to the axle.

It further relates to the construction and arrangement of the dust and dirt proof attachment, so that it can be applied to any ordinary wheel and any ordinary axle.

It further relates to the construction of an end-thrust key for receiving the end-thrust of the axle and keeping the journal-box in proper position on the axle, and which can be applied to any ordinary axle.

It further relates to the construction and attachment of the end plate or cap to the journal-box; and it further relates to the combination of the connecting-rod joints with a spring for keeping both the rods and joint-bolts tight, and thus preventing rattle and wear.

Figure 1 is a side elevation of a portion of a side sill of a car or truck mounted on my flexible or elastic car-gear. Fig. 2 is an end

view of same. Fig. 3 is a section of the journal-box and dirt-proof attachment and end-thrust key complete or in their relative positions on the axle, and showing the attachment of the end plate to the journal-box. Figs. 4 and 5 are detached views of the end-thrust key. Fig. 6 is a detached view of the end plate or journal-box, and Fig. 7 is a detached side view of the wheel dirt-ring. Fig. 8 is a detached end view of the same. Fig. 9 is a detached side view of the plunger-washer, and Fig. 10 is an end view of the same. Fig. 11 is a detached view of the connecting-bolt and draft-link joints and spring for keeping them tight and preventing their rattling and wear.

One of the objectionable features of the present styles of car-axle gear is the twisting strain to which the side sills of the car are subjected by the end-thrust of the axles acting upon the posts or pedestals, and which is particularly severe in all curves. To obviate this I make my springs of sufficient base in proportion to their height and of sufficient strength to support the car in every direction, and use no posts or pedestals or side supports of any kind. As the car simply rests upon the springs, the side sills cannot be twisted, and as the car is by this means made elastic laterally as well as vertically the side concussions, which are so destructive to the car and so disagreeable to the passengers, are thus prevented. (See Figs. 1 and 2 of the accompanying drawings.) To get the full force of the brakes upon the wheels, I connect the journal-boxes A by the bar *a*, Fig. 1, which is pivoted at its ends to the journal-boxes to preserve their freedom, and to prevent the possibility of accident from running into obstructions or from the car running off the track I attach brackets B to the car or truck sills at or near their ends, and connect these brackets to the journal-boxes by the draft-links *b b*, which are pivoted to the journal-boxes at one end and are attached to or connected with the brackets B at the other end by the springs C C, Fig. 1, in order to make the attachment of the car to the wheels elastic endwise as well as vertically and laterally, thus making a perfectly flexible or elastic attachment of the car-wheels, which permits the perfect self-adjustment of the



axle journal-boxes to the positions of the axles, and this makes the car run easily and curve easily.

By locating the draft-link springs C C on the draft-links *b b* between the brackets B B and the journal-boxes A A, Fig. 1, on four-wheeled street-cars, they serve the purposes above described, and also help to sustain the heavy loads which are frequently carried on the platforms of these cars.

The wheel dirt-ring D, Figs. 3, 7, and 8, may be arranged to be slipped on the axle and revolve therewith, and in the accompanying drawings is shown with a projecting arm to engage the spokes of the wheel to insure its revolution therewith, (but this may be accomplished in any desirable manner—as, for instance, keying it to the axle,) and has a hub or extension *d*, which extends into the journal-box dirt-ring E, Fig. 3, and has a rib or flange formed on or near its end. The journal-box dirt-ring E also has a flange formed on or near its end, the object of which is to cause most of the muddy water to run off and also to exclude most of the dust; but any dust or water which may pass these obstructions is effectually prevented from entering the journal-box by a plunger-washer F, Figs. 3, 9, and 10, which forms an expanding connection between the journal-box and wheel-ring D.

The hub or extension *d* of the dirt-ring D is bored out, and the plunger-washer F, which is formed like a cup, is bored at *f* to fit the axle, and the outside is turned to fit the bore of the portion *d* of the wheel dirt-ring D, in which it slides or telescopes; and inside of this plunger-washer F and dirt-ring D, and encircling the axle, is a spiral spring G, arranged to force the two apart and press the dirt-ring D against the wheel and the plunger-washer F against the flange H of the journal-box. This forms an expanding joint which always keeps itself tight and prevents dust or water from entering the journal-box and the oil from leaving it. This is necessary because the journal-boxes will always have from one-sixteenth to one-eighth of an inch end-play on the axle, and because the wheels vary from one-eighth to one-fourth of an inch in their position on the axle. Thus when replacing a worn-out wheel with a new pair of wheels and axles there might be a variation of from one-fourth to three-eighths of an inch, and this is one of the principal causes of the failure of the ordinary so-called dirt-proof car-gears.

The end-thrust key K, which holds the journal-box in position endwise of the axle, (shown in Figs. 3, 4, and 5,) is constructed to fit any ordinary axle, and in Fig. 3 it is shown in section attached to or mounted on the ordinary button-axle. The ribs *h h* in the journal-box locate the position of the key K therein. The advantage of this end-thrust key is that a railroad company can by this means retain the standard axle they have and avoid the expense of new ones, and I am thereby enabled

to furnish a railroad with the best possible axle-gear at a greatly-reduced expense.

The end plates or journal-box caps must be kept tight in order to keep the dirt out and the oil in, and the best way to do this is to bolt them on; but the bolts in all other box-caps are constantly working loose. To prevent this and at the same time make a convenient mode of attachment and detachment, I construct the end plate L, Figs. 3 and 6, with a projecting hook-shaped lip M at the top, formed at an angle to the face of the plate, and on the top of the journal-box A, I form a rib N, having its rear face at an angle to the face of the journal-box against which the end plate L rests. On the bottom of the end plate I form an ear or projection O, and I also form a corresponding ear P on the journal-box. These ears O and P have each a bolt-hole, through which is passed a bolt Q. Just below and formed with the ear P is a projection, which holds the nut of the bolt Q from turning. To attach the end plate L, hook the lip M over the rib N and put the bolt Q through the ears O and P and screw the bolt into the nut. The pressure of the bolt Q will force the plate tight against the face of the box at the upper end by the action of the angles of the lip M and rib N, and as the bolt is vertical and the plate L at an angle the lower end will also be drawn tight against the face of the journal-box. The bolt Q being vertical and the nut held from turning, in order to work loose the bolt must lift itself, and I find that its own weight keeps it always tight. To prevent the possibility of the end-thrust key rattling, I arrange a spring to press against it and keep it still, and in this case I have shown it at R, Fig. 3, attached to the end plate L. To prevent the rattling and wear of the pivoted ends of the connecting-bars *a* and draft-links *b b*, I form a spring S, of thin flat steel, in the shape of a letter U, Fig. 11, with a hole for the joint-bolt in the end of each leg of the spring. One leg of this spring presses against the eye of the connecting-bar or draft-link, and against the other leg is screwed the nut of the bolt, which keeps the bolt and pivot-bolt tight and prevents rattling and wear.

Having now described my invention, I claim as new—

1. The combination of the car or truck frame, the springs arranged to support the car vertically and laterally without the aid of posts, pedestals, or side supports, and the journal-boxes, substantially as described, whereby side or lateral concussions are prevented, substantially as specified.

2. The combination of the car or truck frame, the springs arranged to support the car vertically and laterally without the aid of side supports of any kind, the journal-boxes, and the pivoted connecting-bars, substantially as set forth.

3. The combination of the springs, the journal-boxes, the pivoted connecting-bars, and the elastic draft-links, whereby a flexible and



elastic attachment of the car to the wheels is obtained, substantially as specified.

4. The combination of the springs, the journal-boxes, the pivoted connecting-bars, the pivoted draft-links, the draft-link brackets, and the draft-link springs located between the journal-boxes and said brackets, substantially as described.

5. The combination of the car or truck, having the draft-links pivoted thereto and to the free or vertically and laterally vibrating journal-boxes, with the springs, and wheels and boxes, whereby the springs are held free to vibrate both laterally and vertically and the axles are held at right angles to the car or truck, substantially as and for the purpose specified.

6. A car-axle and journal-box having a flanged outer dirt-ring, in combination with an elastic expanding or telescoping dirt-ring projecting from the car-wheel, whereby all dirt and water are excluded from said journal-box, substantially as and for the purpose set forth.

7. The combination of the car-wheel, the car-axle, and a journal-box having a flanged outer dirt-ring, with a flanged expanding or telescoping wheel dirt-ring having a spring arranged to press the end of the expanding or telescoping portion against the journal-box, substantially as and for the purposes specified.

8. A wheel dirt-ring provided with an extended arm to press between and engage the spokes of the car-wheel, in combination with the car wheel and axle, substantially as and for the purposes described.

9. An expanding or elastic wheel dirt-ring having an annular flange or collar at or near one end, in combination with a journal-box dirt-ring having an annular flange or collar at or near its inner end to prevent dirt from dropping over it upon the wheel dirt-ring, for the purposes substantially as set forth.

10. The combination of a journal-box hav-

ing a flanged outer dirt-ring with a car-wheel having a flanged expanding or telescoping inner dirt-ring composed of the ring and its inclosed plunger, washer, and spring, substantially as and for the purposes described.

11. The combination of the journal-box and the ordinary button-axle journal with a recessed end-thrust key made to embrace one-half or more of the axle-button and to extend down over the end of the axle, whereby increased end-thrust wearing-surface is obtained, substantially as described.

12. An end plate for a journal-box, having an extending lip at its upper end formed at an angle therewith, in combination with a journal-box provided with an angular rib or flange to fit under said lip, and the vertical bolt, whereby the whole plate is drawn toward the journal-box by the combined action of said angular lip and rib and tightening the one bolt, substantially as and for the purposes set forth.

13. The combination of an end plate, having the angular attachment at its upper end and the vertical bolt at its lower end, with a journal-box provided with a lug or stop to prevent the nut of said bolt from turning, whereby the nut is held securely and the bolt is made to remain in position by gravitation, substantially as and for the purposes described.

14. The combination of the pivoted joints, the joint-bolt, and the U-shaped springs, whereby the pivoted joints of the draft-links and connecting-bars and the joint-bolts are kept tight, substantially as and for the purposes specified.

In testimony whereof I have hereunto set my hand this 19th day of September, A. D. 1888.

MOSES G. HUBBARD.

Witnesses:

JOHN M. WEBBER,  
J. C. MOORE.