2 Sheets--Sheet 1.

S. N. NORTON.

Improvement in Car-Trucks.

No. 125,981. Patented April 23, 1872.

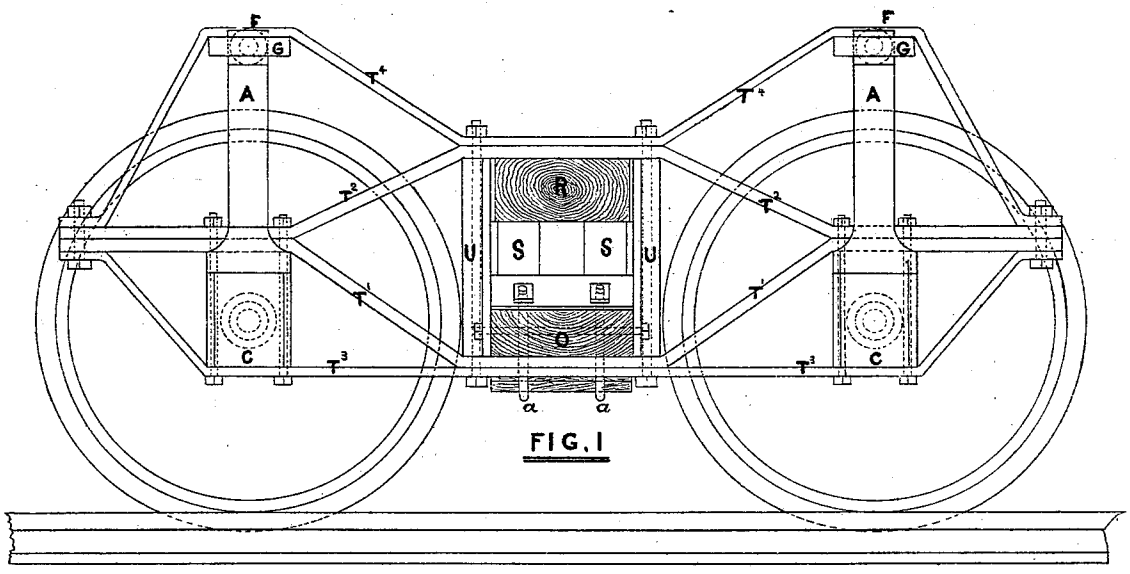

FIG. 1

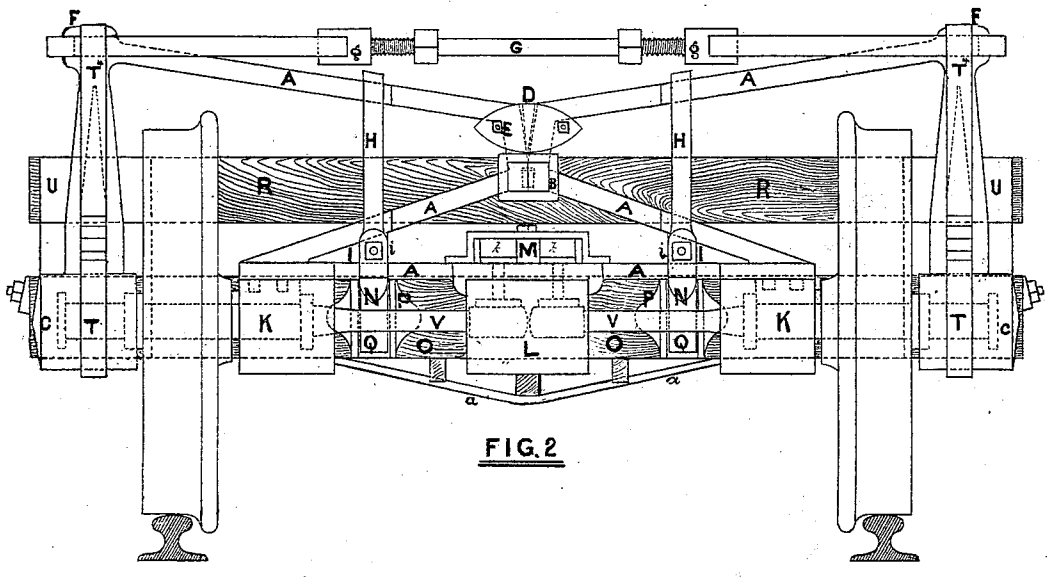

FIG. 2

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FIG 3

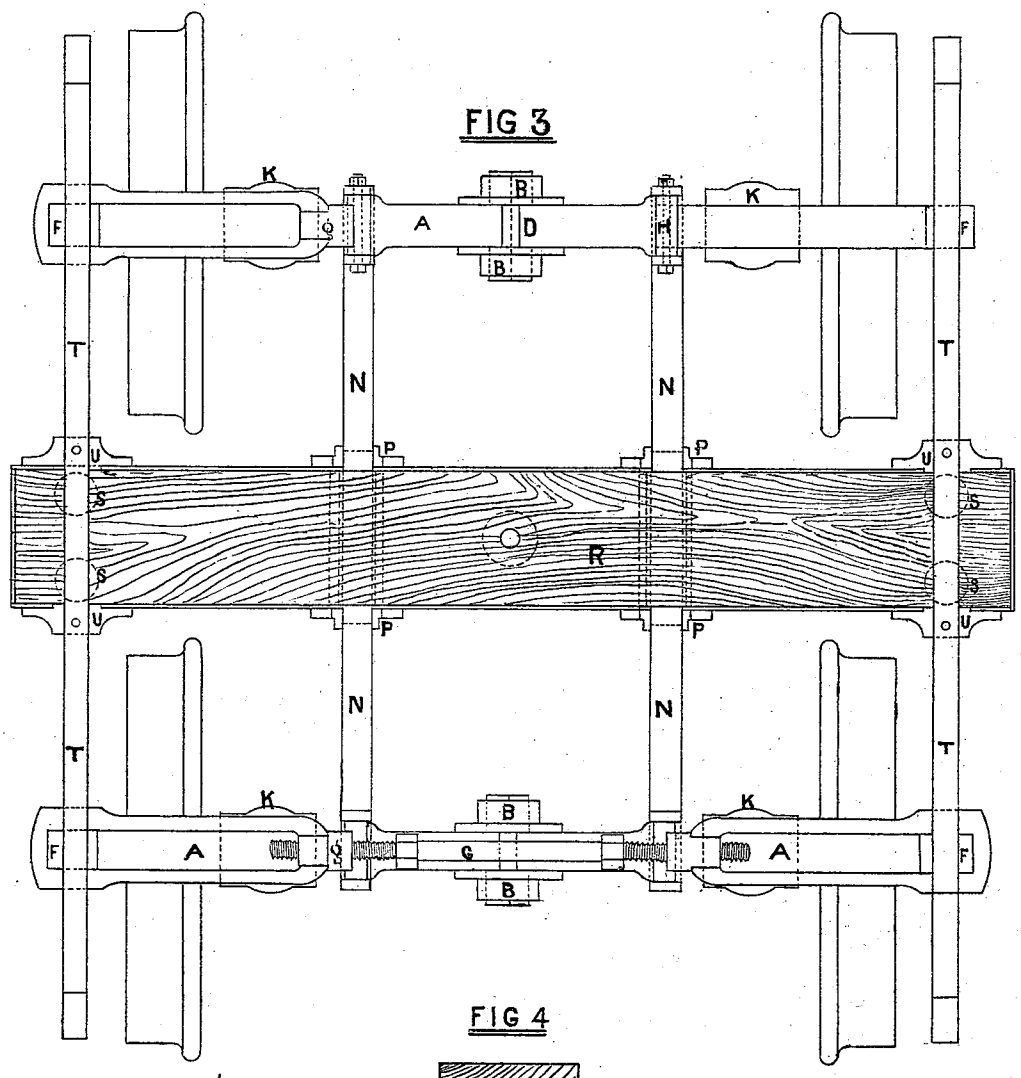
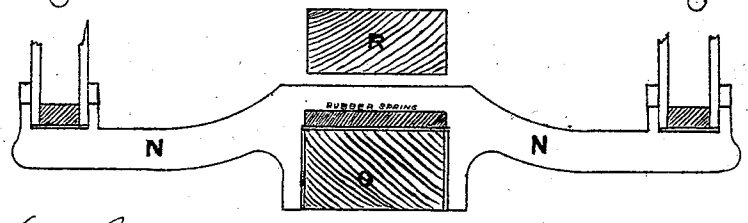


FIG 4



WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL N. NORTON, OF SACRAMENTO, CALIFORNIA.

IMPROVEMENT IN CAR-TRUCKS.

Specification forming part of Letters Patent No. 125,981, dated April 23, 1872.

SPECIFICATION.

I, SAMUEL N. NORTON, of the city and county of Sacramento, State of California, have invented an Improved Railroad Car-Truck, of which the following is a specification:

Nature and Objects of the Invention.

The invention relates to an improved manner of constructing and carrying the wheel-axles, whereby they may be made lighter than ordinarily, though capable of supporting a heavier load, and each wheel will have independent rotation; also, the invention relates to a new mode of constructing the frames of railroad car-trucks, whereby great strength and carrying capacity are obtained with a sufficient flexibility to avoid injury and inconvenience from ordinary concussion, the plan of construction also permitting a more equal distribution of the load upon the wheels and axles, while what is technically termed "dead weight" is relieved therefrom.

Description of Accompanying Drawing.

Figure 1 is a side view of the truck. Fig. 2 is an end view of same. Fig. 3 is a plan, and Fig. 4 is a side view of cross-beams.

General Description.

I construct the transverse ends of the truck-frame, running parallel with and above the axles, of the shape shown in Fig. 2—that is, a flat bar of wrought-iron, A, extends parallel with and above the axle, occupying the space, minus a trifle for clearance, between the hubs of the wheels. This bar, at both ends, then returns upward and back to meet in the center, where the parts are joined by a couple of stout bands, B, passed over spurs produced at the sides of the bar. From this point the bar rises nearly vertically for a few inches, and then returns outward and slightly upward to a point where it drops down vertically; or it may be at a slight angle from the perpendicular, and rests on and is secured to the outer axle-bearings C. The frame should be a continuous solid piece so far, and at the point D a wedge may be inserted between the meeting edges, which may be secured in position by bolts passing through the flanges produced on its sides at the point in the bend of the frame marked E. Where the frame drops down to the outer axle-bearings it will have a triangular shape, forming a loop, through which the ends of the side frames will pass. These vertical ends of the frame may take any form which permits the ends of the side frames to rest upon them. The opposite corners of the frame A, at F, will be braced together by an adjustable tension-rod, G. This rod consists of two links of iron, connected by a rod, having a right-and-left-hand screw cut on the ends, which turn in the sockets *g*. There will be straps H passing over and connecting the upper with the middle arm of the frame, a metal block or wedge being fitted in the angle of the frame at I, through which and the pendent ends of the straps bolts will be passed to complete the connection. These straps H act as braces, and in a manner equalize the strain upon each side of the frame when from any cause the load rests upon but one side. Provision is made upon the lowest horizontal bar of the frame A for the attachment of the axle-bearings K and L, the bar at these points being wider to make room for bolts. The inner bearings K may be of ordinary construction; but the top brass of the journal must not have any lateral play, and to prevent this I make little spurs or projections on the under side of the frame where this brass fits against it, which fit into corresponding recesses in the brass. The brass then fits snug between the collars of the journal, and thereby the axles and the wheels upon them are kept from closing in or spreading apart. (See Fig. 2.) The middle, or what I call my spring-bearing, L, will have stout pins projecting upward from the center of the top brass of each axle-journal through the frame, and there, terminating with a large flat head, will be covered by stout rubber springs *k k*, held in place by a strap bolted to the frame. The arrangement is shown at M, Fig. 2. The object of this spring-bearing is to permit a slight vertical play upon the occurence of sudden concussions, so that the axle may not be bent, which might be the case if the bearing was made rigid. Iron beams N rest their centers on the

wood center beam O, a block of rubber or other elastic substance being interposed between the two beams N and the beam O. These rubber springs are strongly compressed when placed in position, that the ends of the beams may press upward with about the same force that their centers will press downward, minus the weight of the beams themselves. This point is important, for the springs, being at balance points and made active by the compression to which they are submitted, are effective in relieving the axles of "dead" weight. The ends of the iron beams N pass under and connect together the frames A, the same bolts which are used in securing the straps H being also used to secure these beams, the lugs *i i* being provided to receive them. Two vertical spurs, Q Q, depend from each of these beams N, clasping the sides of the center beam O. These spurs will have vertical play in the metal sockets P, which are secured to the sides of the wood center beam. The upper wooden spring-beam R, as is usual, rests on rubber springs placed in the middle and at the ends between it and the beam below. These rubber springs are marked S. The side connection-frames T, Fig. 1, are of common construction, varying nothing in principle from frames now used. Each side frame is composed of a flat iron bar, T^1, which, passing under the lower wood center beam, follows obliquely upward to pass horizontally over and some distance beyond each of the outer axle-bearings. Another bar, T^2, passing over the upper wood spring-beam, follows obliquely downward to pass also horizontally over the outer axle-journals. These two bars T^1 and T^2, as they pass over the outer journals, pass through the loop of the equalizing-frame and rest on the base thereof. A lower flat bar, T^3, extends straight from and is secured to the bottoms of each axle-box, extending its ends upward to meet the other bars, while the last bar of the frame T^4 extends from one end, where the four bars are bolted together, obliquely upward to pass over the top end of the frame A; thence obliquely downward to meet and be secured to the center of the frame; again, passing upward to cross over the second frame A, drops down to be secured to the end of the frame opposite from the starting point. Guide-plates U will be secured to each side at the ends of the lower wood center beam, that between these plates the spring-beam may have vertical but no horizontal play. The lower beam O will have the usual brace-rods *a* extending from end to end, as in Figs. 1 and 2.

My wheel-axles V will differ materially from ordinary axles, and may be thus described: Each wheel will have a separate axle, upon which it will be firmly secured, as ordinarily. Outside this wheel the axle commences with the ordinary journal with collar upon each end, thence the axle passes through the hub of the wheel, and immediately an inner journal is formed, at the further end of which a stout collar is provided, which may be shrunk or pinned on after the axle is passed through the wheel; or, if it be solid with the axle, it must not be larger than the hole of the wheel through which it would then have to pass; thence the axle, which may be now much reduced in size, will extend to the middle distance between the wheels, the extremity terminating in a journal a trifle greater in diameter than the small part of the axle.

There being no strain on the center bearing of these axles, or, more correctly speaking, the end bearing of each separate axle, it would only be waste of metal to make the axles particularly heavy within the inner bearing K; in fact, beyond this point the axle is only continued for the purpose of controlling the true rotation of the wheel and keeping it upright on the rail.

At the joint of the frame A, where the bands B pass over the spurs on the sides and in the center of the two meeting surfaces of the frame, it may be well to provide a recess, which may afterward be filled with a dowel plate or pin, which will serve to keep the frame at this point from twisting sidewise. However, the flanges on the wedge just above this point may answer as well for the purpose.

The joining of the frame by the wedge at D should always be kept well lubricated.

The Operation.

With regard to the frame the load is first received upon the spring-beam R, thence transmitted through the lower wood center beam O to the side frames T, which deliver it to that part of the combined frame marked A, which I call the equalizing-frames, from which it is finally received in proper proportion on all the inner and outer axle-bearings. The weight of the frame itself is first taken by the iron cross-beams N, which, being supported on the compressed rubber springs resting on the beam O, removes the "dead" weight from the axles and braces the combined frame, as before suggested. The axles being separate in the middle the wheels revolve independently; and slipping on the rail is avoided, as when two wheels on a solid axle rounding a sharp curve are required to do.

I am aware of axles having been divided and afterward a coupling being used to make the two parts equivalent to a solid axle; but I do not know of axles having the construction and being accommodated in the frame as I here propose, these axles not being coupled together, but being in all respects independent and separate axles one from the other, and each axle carries its burden on each side of each wheel.

Claims.

1. I claim the frames A with the tension

rods G, constructed and adapted, as shown, to the car-truck.

2. I claim the cross-beams marked N resting on elastic cushions on the center beam O, each end of these beams being secured to the frames A A, as and for the purpose described.

3. I claim the small inner arm of the axle joined with its spring-bearing, as and for the purposes set forth.

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Witnesses:
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R. D. MCCARTHY,
A. S. BENDER.