J. C. WEAVER.

Running-Gear for Railway-Cars.

No. 209,093. Patented Oct. 15, 1878.

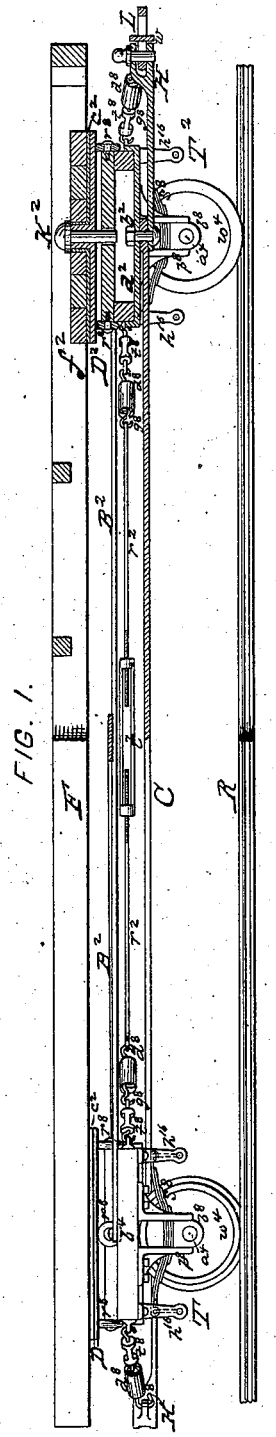

FIG. 1.

FIG. 4.

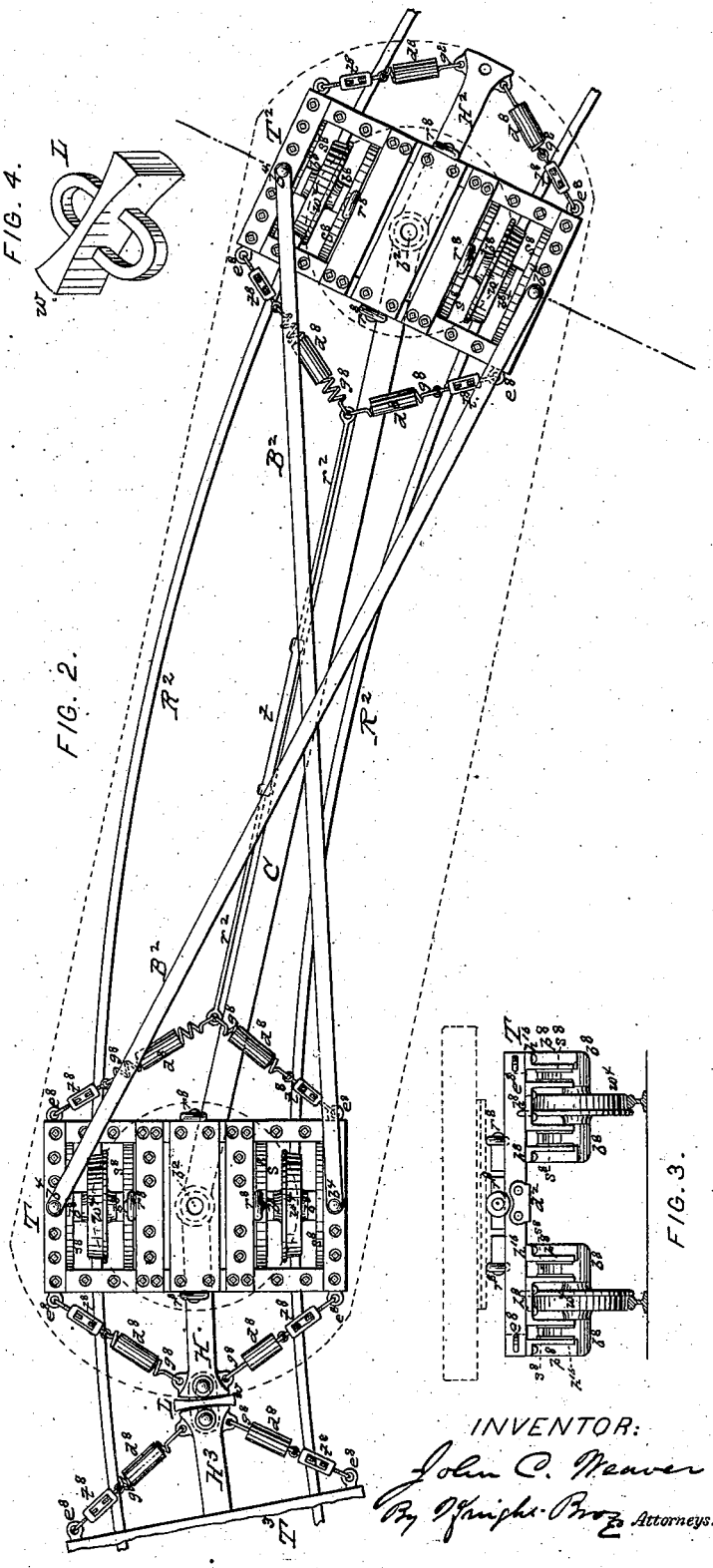

FIG. 2.

FIG. 3.

WITNESSES:

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IMPROVEMENT IN RUNNING-GEAR FOR RAILWAY-CARS.

Specification forming part of Letters Patent No. **209,093**, dated October 15, 1878; application filed September 6, 1878.

To all whom it may concern:

Be it known that I, JOHN C. WEAVER, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Railway Running-Gear, of which the following is a full, clear, and exact specification.

This invention relates, primarily, to the equipment of elevated railways, but is applicable generally to the running-gear of passenger cars or coaches for railway-trains, and also in part to street-cars. Its general objects are the reduction of noise and draft, with provision for speeding around curves with safety, and for running steadily upon straight tracks.

The first part of my said invention consists in the employment of elastic guys or guy-springs, with or without turn-buckles for adjusting the same, for the purpose of keeping the trucks in line with each other and in line with the body on straight portions of the track, and for steadying and directing the trucks in turning curves.

Another part of my said invention consists in the application of sleeves of rubber or its equivalent to said guy-springs, so as to prevent the escape of noise from the latter.

Another part of my said invention consists in the construction of each coupling-link with a peculiar double wedge, which co-operates with the pivoted draw-heads and their guy-springs to properly direct the leading truck of each car upon curves, as hereinafter more fully set forth.

Figure 1 of the accompanying drawing is an elevation and vertical section of the floor-frame and running-gear of a railway-car illustrating this invention. Fig. 2 is a plan view of the trucks and parts attached thereto as they appear upon a curve, the outlines of the parts above being indicated by dotted lines. Fig. 3 is a front (or rear) view of one of the trucks, as shown in Fig. 2. Fig. 4 is a perspective view of one of the coupling-links.

Like letters of reference indicate corresponding parts in the several figures.

Railway cars or coaches intended to receive this new system of running-gear may be of any approved style and construction; but, owing to the construction and arrangement of said running-gear, each car may have a floor-frame, F, much lighter than is now demanded, as the same is relieved of all the strain of direct draft.

A pair of two-wheeled trucks, T T^2, are swiveled beneath said floor-frame near its respective ends, and between them the floor-frame may be stiffened by trusses, in the ordinary manner.

The four wheels w^4 of the two trucks may be of any preferred pattern of sufficient strength to carry the whole weight of the car and its greatest load. Each wheel, to avoid torsion, is provided with an independent axle, a^4, which is mounted in sliding boxes b^8 at its respective ends, the boxes working in pedestals p^8, securely bolted to the truck-frame, and ordinary supporting-springs s^3 are interposed between the said boxes and the truck-frame. In the illustration semi-elliptic steel springs are employed, being connected to the truck-frame at each end by means of suspension-links and wrist-pins, with hanger-brackets h^{16} h^4, the latter drilled to receive a wrist-pin at the lower end of each bracket, and bolted to the truck-frame.

One axle per pair of wheels may, if desired, be substituted, with any preferred system of boxes and supporting-springs, no peculiar construction or arrangement of these parts being essential.

A draft-plate, d^2, is securely bolted to the bottom of each truck, and receives a pivotal bolt, b^2, at the vertical axis of the truck, those of both trucks serving to unite to the trucks and to each other a pair of draw-heads, H H^2, and a connecting draw-bar, C. The line of draft is thus located immediately beneath the truck-frames, and the body-frame is relieved from the strain incident to its use as the medium for drawing other cars. At the same time the motion of the respective trucks upon their vertical axes is unobstructed.

To cause the trucks to direct each other to the desired extent, a pair of diagonal bars, B^2, are attached to the respective trucks by pivotal bolts b^4, which may work in slots in the bars, so as to permit any desired extent of lost motion.

A pair of flat disks, D D^2, are bolted to the

bottom of the body-frame F above the respective trucks, and the top of each truck is provided with four rollers r^3, upon which said disks rest, so as to distribute the weight upon the truck-frames, and to keep the trucks from rocking upon the carrying-wheels w^4 without obstructing the motion of the trucks upon their vertical axes. The rollers r^3 have been made with rubber tires, to prevent noise between them and the said disks when the trucks are turning; but this is not considered essential.

The body-frame is constructed with a backing, f^2, of suitable timbers, to receive each disk, and a cushion, c^2, of rubber or its equivalent, is interposed between each disk and its backing to arrest vibrations. Each disk has a central hub, which projects upward and is surrounded by a sleeve-shaped extension of the disk's cushion, as shown in section in Fig. 1. Ordinary king-bolts K^2 pass downward through said hubs and through the top timbers of the truck-frames, and operate in the ordinary manner, only with reduced strain, owing to the location of the draft-line in the trucks, as aforesaid.

To provide for steadying and guiding the swiveled trucks, each of them is furnished at its corners with eyebolts e^3, to each of which one end of a tension-spring, g^3, is hooked or otherwise attached, said connections of each spring comprising a turn-buckle, t^3, and its ordinary appurtenances. The elastic and adjustable guys thus formed extend obliquely inward, and are attached at their inner ends in pairs to each of the draw-heads H H^2, and to eyes at the ends of connecting-rods r^2, which are united by a long turn-buckle, t, beneath the center of the car, the said turn-buckle t providing for increasing or diminishing the tension of all the springs g^3 simultaneously and with uniformity, while the turn-buckles t^3 provide for correcting the individual springs. Each draw-head has a pair of staple-lugs, to which spring-guys are attached.

Ordinary spiral springs of steel wire or rod are used at g^3, and to prevent noise emanating from them a deadening-sleeve, d^3, of ordinary rubber tubing or its equivalent, is applied to each spring.

To co-operate with the spring-guys which connect the draw-heads to the trucks, said draw-heads are constructed with faces in the shape of curves described from their pivots b^2. Ordinary pin-and-link couplings are employed, and the links L of the said couplings are provided with double wedges w, which work between the faces of a pair of connected draw-heads, as illustrated in Fig. 2, and limit their pivotal motion in either direction without wholly preventing the same. This causes the draw-heads at the adjoining ends of two coupled cars to draw on their guys more strongly, so as to turn the front truck of the rear car properly in entering and leaving curves. A link, L, is shown in Figs. 1 and 2, and on a larger scale in Fig. 4.

A curved track, R^2 R^2, is represented in Fig. 2, and the operation of the respective parts of the improved running-gear is there illustrated, so as to render any further description thereof unnecessary.

The idea of employing only two wheels in each truck is known to be old, and is therefore disclaimed, in itself considered.

I am also aware that an English patent describes "rubber or other non-conductor of sound" applied to cars, but not in the particular combinations herein specified.

Rollers on the trucks, with plates resting upon the same, and diagonal connecting-bars, in themselves considered, are also disclaimed as old.

The following is what I claim as new and of my own invention, and desire to secure by Letters Patent, namely:

1. The combination of a pair of swiveled car-trucks, two pairs of spring-guys exte - ing obliquely inward from the opposite corners of said trucks, and a central connecting rod or rods uniting said guys, substantially as herein shown and described.

2. The combination of a pair of swiveled car-trucks, two pairs of spring-guys extending obliquely inward from the opposite corners of said trucks, a central connecting rod or rods uniting said guys, and a turn-buckle in each guy for correcting its spring, substantially as herein specified.

3. The combination of a pair of swiveled car-trucks, two pairs of spring-guys extending obliquely inward from opposite corners of said trucks, and a central pair of connecting-rods united by a turn-buckle for adjusting all said guys simultaneously and equally, as herein set forth.

4. The combination of a pair of swiveled car-trucks, two pairs of spring-guys extending obliquely inward from the opposite corners of said trucks, and united by a central connecting rod or rods, a pair of draw-heads united to said trucks by vertical pivots, and two pairs of spring-guys extending obliquely from the outer corners of said trucks to the outer ends of said draw-heads, substantially as herein shown and described.

5. The combination of a pair of swiveled car-trucks and two or more pairs of spring-guys attached to the corners of said trucks, said guys having spiral springs with noise-deadening sleeves of rubber or its equivalent, as herein described.

6. A coupling-link having a double wedge, in combination with a pair of pivoted draw-heads having curved faces, and a pair of spring-guys attached to each draw-head, substantially as herein illustrated, for uniting a pair of swiveled trucks under adjoining cars, in the manner set forth.

7. The combination of a pair of swiveled

car-trucks, a pair of draw-heads and a connecting draw-bar, united by pivotal bolts at the vertical axes of said trucks, a pair of spring-guys uniting the outer end of each draw-head to the outer corners of its truck, spring-guys extending inward from the other corners of both trucks, a connecting rod or rods uniting these guys, a coupling-link having a double wedge in contact with the curved face of the leading draw-head, and a pair of diagonal bars uniting the two trucks, substantially as herein shown and described, for guiding and steadying the latter, in the manner specified.

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Witnesses:
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