No. 609,780. Patented Aug. 30, 1898.

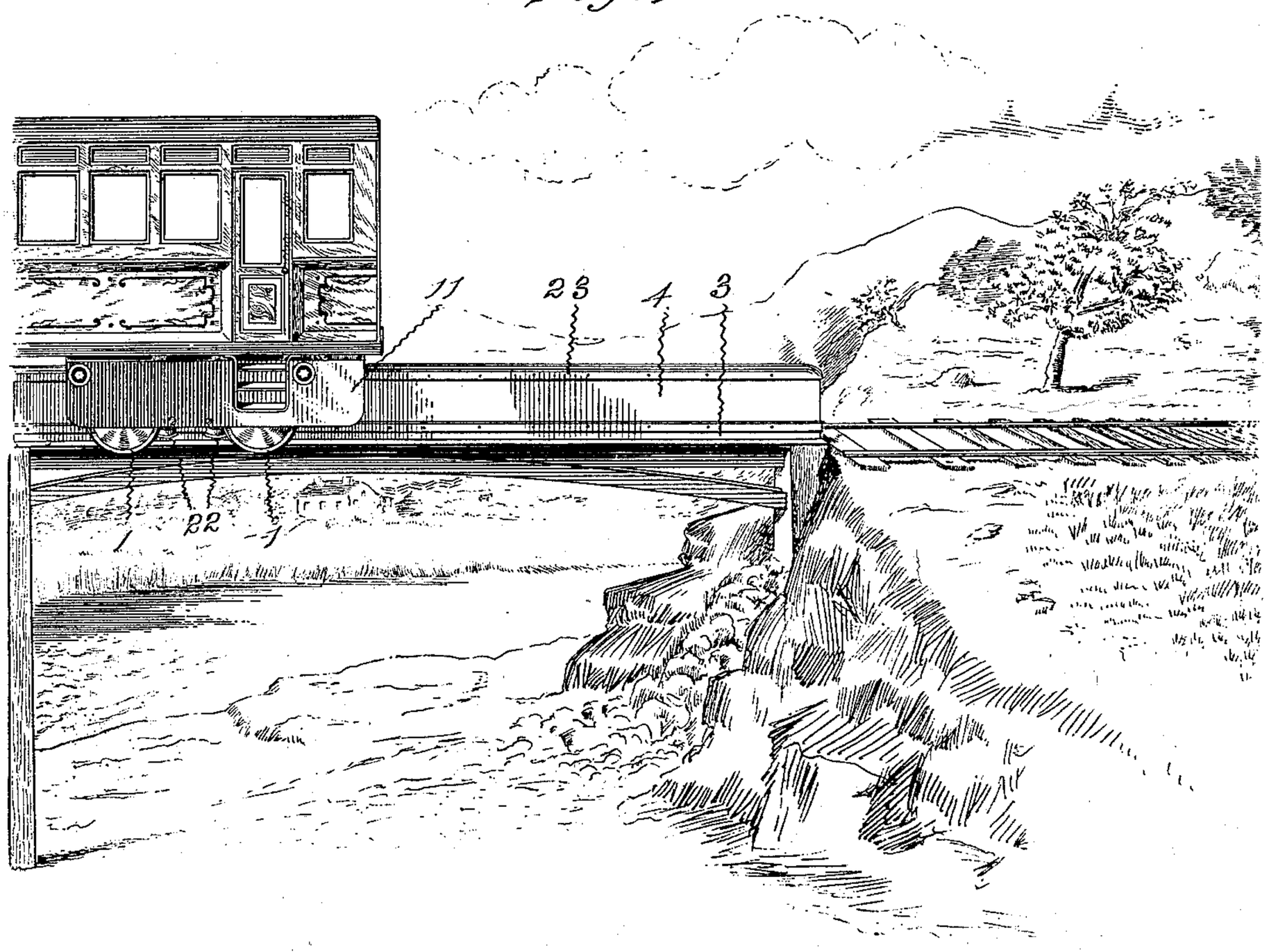
# G. J. CAPEWELL.

## RAILWAY CAR TRUCK.

(Application filed Dec. 22, 1897.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1

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## RAILWAY CAR TRUCK.

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(No Model.) 3 Sheets—Sheet 2.

Fig. 2

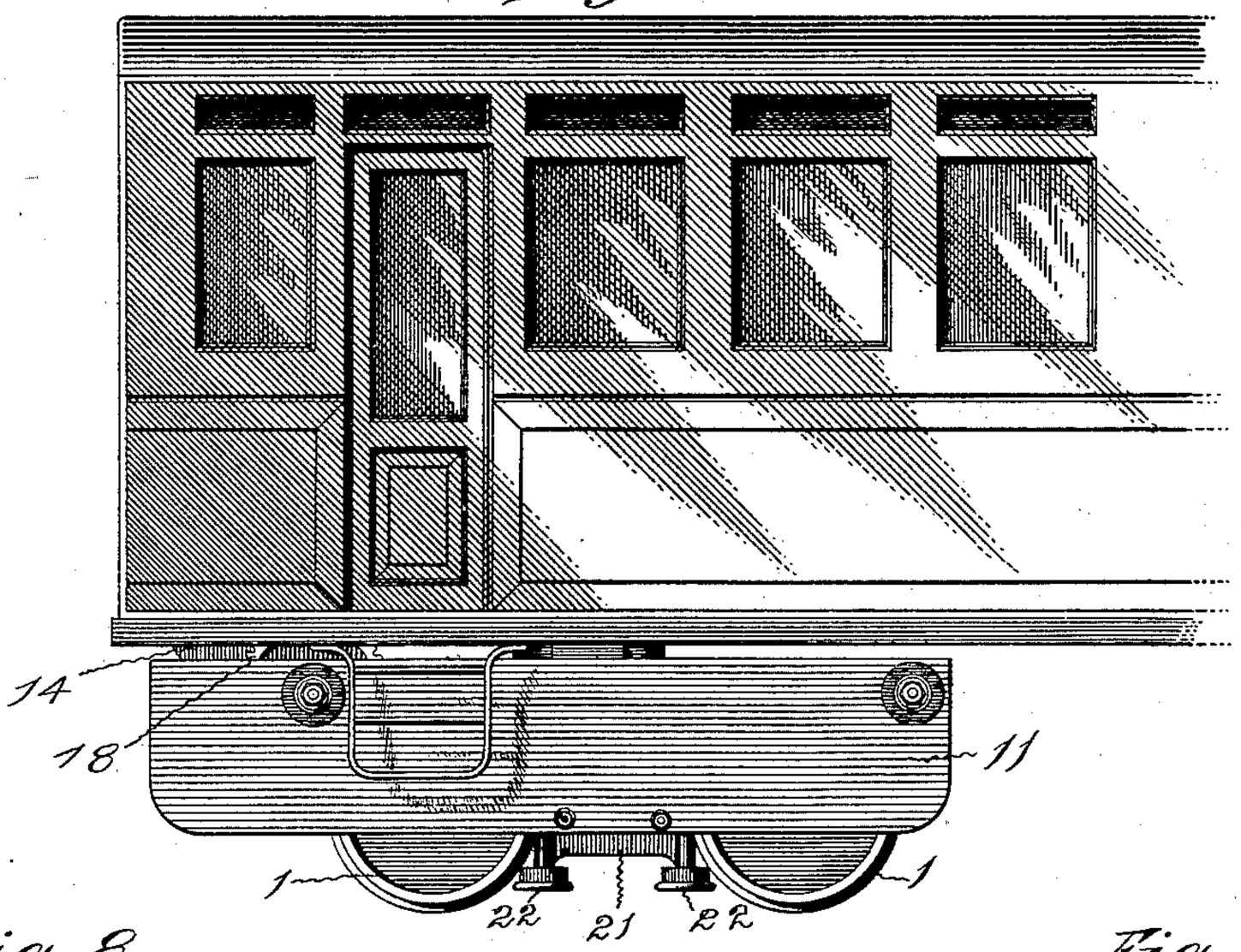



Fig. 8

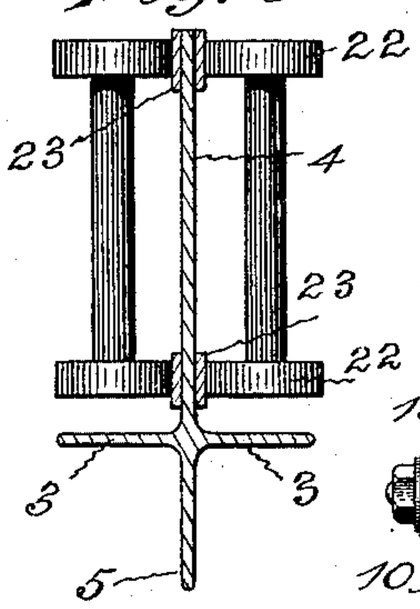



Fig. 5

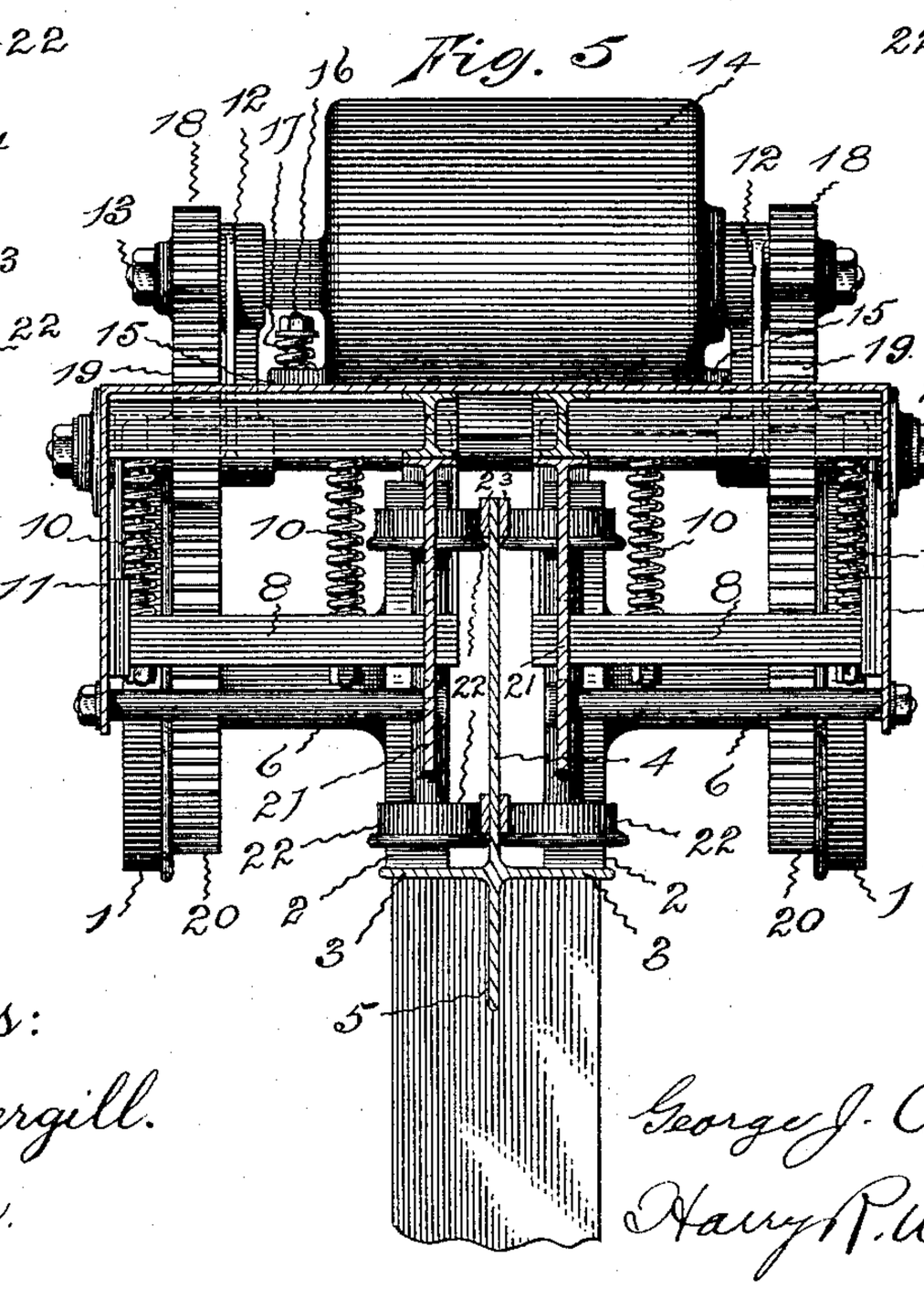
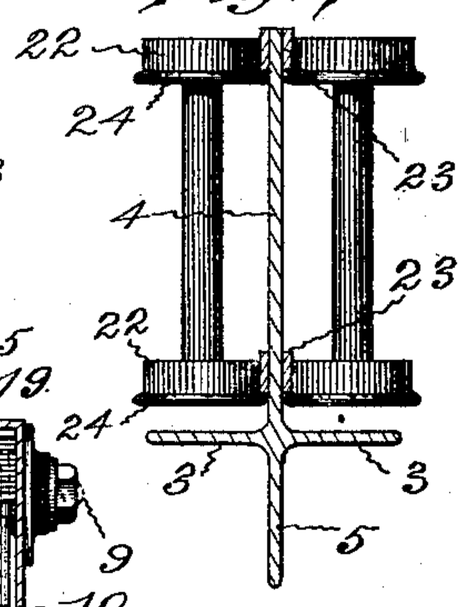



Fig. 7

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## RAILWAY CAR TRUCK.

(Application filed Dec. 22, 1897.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 3

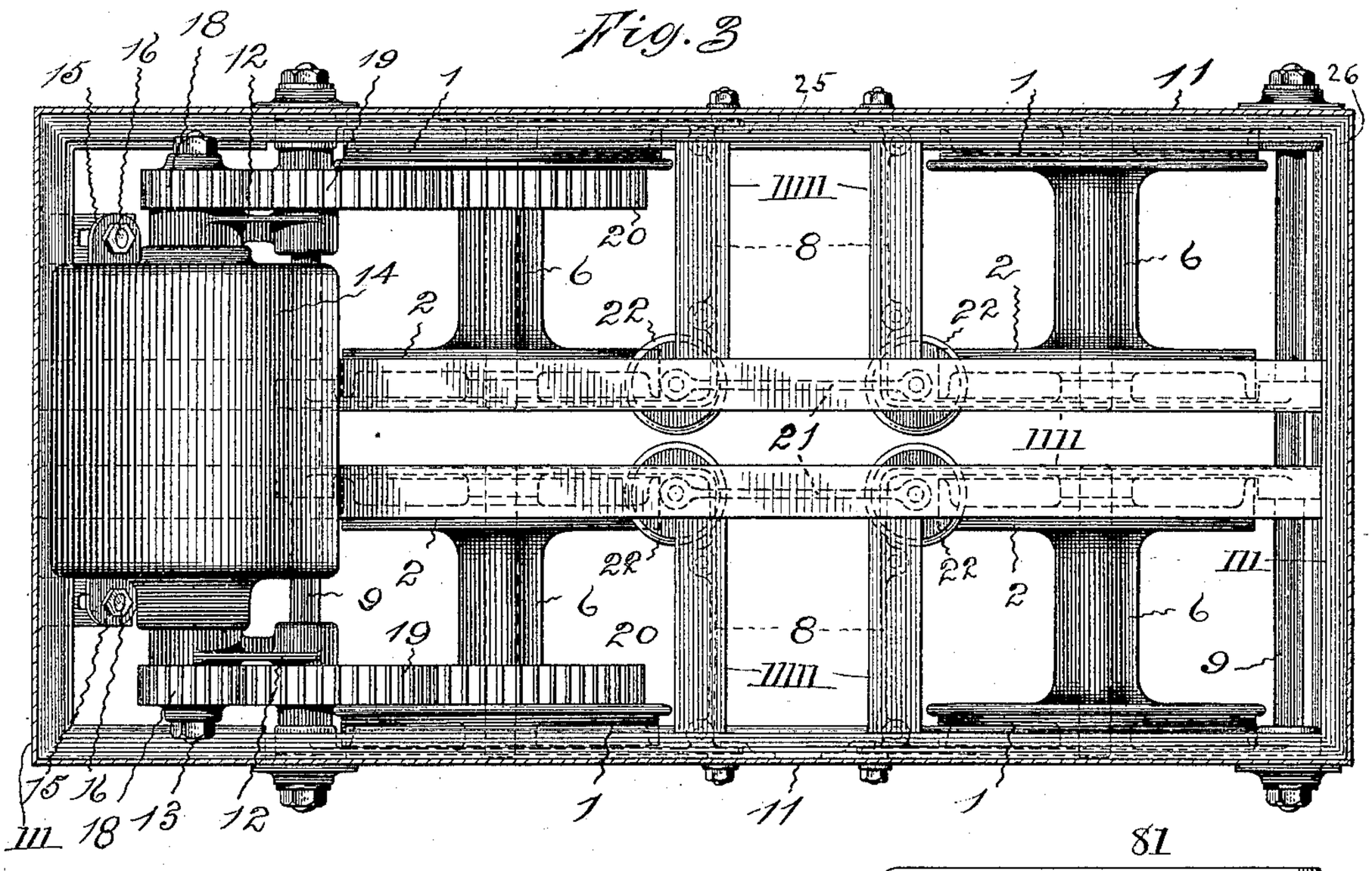


Fig. 6




Fig. 4




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# UNITED STATES PATENT OFFICE.

GEORGE J. CAPEWELL, OF HARTFORD, CONNECTICUT.

## RAILWAY-CAR TRUCK.

SPECIFICATION forming part of Letters Patent No. 609,780, dated August 30, 1898.

Application filed December 22, 1897. Serial No. 662,985. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE J. CAPEWELL, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Railway-Car Trucks, of which the following is a specification.

This invention relates to those trucks for railway-cars which are constructed to travel on the ordinary standard-gage track and also on a narrow-gage or central-rail track.

The object of this invention is to provide a comparatively simple, inexpensive, and durable truck which will run smoothly, noiselessly, and rapidly without danger of becoming derailed either on an ordinary standard-gage track or on a narrow-gage or central-rail track and which will run from one track to the other without jar and without checking the speed of the truck.

The embodiment of the invention illustrated by the drawings has ordinary flanged wheels arranged at the usual distances apart for traveling on the common two-rail track, flat-tread wheels arranged on the same axles as the flanged wheels, but nearer the center, so that they will run on a central-rail track, yokes borne by the wheels and supporting the truck-frame, a motor, with driving connections between the motor and the driving-wheels, and retaining-wheels arranged to run on both sides of the center rail to keep the truck in position when traveling on the central-rail track, as more particularly hereinafter described, and pointed out in the claims.

Of the views, Figure 1 shows a portion of a railway-car provided with the improved truck and illustrates one of the objects of constructing a truck that can run on either an ordinary two-rail track or a central-rail track. Fig. 2 is a larger view of one end of the car, showing the truck in side elevation. Fig. 3 shows a plan of the truck, the top of the frame being removed to better expose the mechanism. Fig. 4 is a side elevation of the same with the side of the frame broken away to expose the mechanism. Fig. 5 is a vertical section taken on the plane indicated by the line X X of Fig. 4. Fig. 6 is a detail plan of one of the wheel-yokes. Fig. 7 is a detail view illustrating the cross-sectional shape of the central track provided for this truck and showing the positions of the retaining-wheels, and Fig. 8 is a similar view showing retaining-wheels of different form.

The flanged wheels 1 are formed in any common manner and are arranged the usual distances apart for running on an ordinary two-rail track. The flat-tread wheels 2 are arranged near the center, so as to run on the flat faces of the central rail. The central rail shown has outwardly-extending webs 3, an upwardly-extending web 4, and a downwardly-extending web 5. The wheels 1 and 2 may be connected in pairs by hubs 6, between which and their axles 7 there may be arranged any common form of roller or other antifriction bearings.

The axles upon which the wheels turn are connected with and support yokes 8. Each of the yokes shown is formed of thin metal, with two sides 81 and an end 82, that ties the sides together, and each yoke at one end supports a bar 9, that extends transversely of the truck, and at the other end supports cushioning-springs 10. The sides of the yokes are so formed that the portions that are joined by the pivot-bars are higher than the end portions, and the sides are provided with hubs 83 to insure sufficient strength for the connection of the axles and bars.

The truck-frame is supported by the bars 9, that join the higher ends of the yokes, and by springs 10 at the lower ends of the yokes. The truck-frame illustrated in the views is a rectangular oblong frame formed of wide vertically-arranged sheet-metal side plates 11, that extend from end to end, and of vertically-arranged sheet-metal end plates 111, that are not quite as wide as the side plates. The side plates are shown as stiffened by securing along their inner faces, near the upper edges, channel-beams 25, and the end plates are stiffened by similarly-arranged channel-beams 26. Extending longitudinally of the truck-frame, each side of the middle, with a space between them from end to end, are tie-beams 1111. These are preferably I-beams, and at one end they are secured to the channel-beams 25, and at the other ends they are secured to the end plates 3, some distance below the upper edge. These tie-beams extend along in the plane of the upper edge of the frame for nearly their entire length,

but near one end incline downwardly, so as to pass under the motor. Extending transversely of the frame, each side of the middle, from each of the tie-beams to the channel-beams that stiffen the side plates of the truck-frame, are secured brace-beams 11111. The inside ends of these cross-braces, which are I-beams, are secured to the longitudinal tie-beams, while the outer ends are secured to the channel-beams at the upper edge of the truck-frame side plates. These braces are secured together by bolts or rivets in the manner usual with structural work of this nature, and over the top there is placed a cover-plate 27.

The bars 9 are connected with the side wall-plates of the frame and the springs with transverse tie-beams. The weight of the truck-frame or the car built upon the truck-frame tends to force the bars 9 downwardly, and this is resisted by the wheels upon the track and the springs 10 until an equilibrium is established by the compressional resistance of the springs. When there is any roughness or unevenness in the track, no motion or jar is transmitted to the truck-frame and car, as the yokes can oscillate independently on the bars 9 and allow the wheels to separately move up and down and conform to the contour of the track, the springs cushioning and absorbing all jar and vibration.

Near one end of the truck, supported by one of the bars 9, are arms 12, that support a shaft 13, upon which is mounted the armature of an electric motor 14. Projecting from the walls of the motor-case are lugs 15. Through these lugs extend rods 16, that are connected with the frame and that carry springs 17. As the arms 12 are free to rock on the bar 9, the motor is free to oscillate, except as controlled by these springs 17, which cushion any movement of the motor and absorb all jar and vibration.

Mounted on the armature-shaft are pinions 18, and these mesh with gears 19, that are borne by the bar 9 and that mesh with gears 20, connected with the hub 6 of the flanged and flat-tread wheels 1 and 2, that are employed as drivers.

Held by vertically-extending webs 21, secured to the truck-frame, are vertically-arranged bearings 211, of any convenient construction. These bearings support four pairs of wheels 22, that are adapted to run against the side faces of the upwardly-extending web 4 of the central rail, or strips 23, secured thereto, when the flat-tread wheels are traveling on the outwardly-extending webs 3 of the central rail. These wheels will retain the flat-tread wheels in place and prevent the truck from tipping off. They may be provided with flanges 24, that will engage the edges of the strips 23 to prevent the truck from jumping up and off from the central rail, if such is deemed necessary; but this is not essential, for it is thought that under no circumstances could the truck become raised sufficiently to overcome the central upwardly-projecting web.

The flanged wheels 1 as arranged permit this truck to travel upon an ordinary standard-gage two-rail track, to run over the switches in common use, and to take the ordinary turnouts, so that a car provided with these trucks can run on the railways in existence at the present time. The flat-tread wheels 2 allow these trucks to travel upon a central-rail track, which may be supported above the surface upon a single line of timbers, piles, or ornamental columns that will not occupy much space and that will not appreciably obstruct light and that can be reared for a comparatively small cost, so that cars having these trucks can be run from a common two-rail track to this central-rail track and back again, according as the circumstances seem to warrant the building of the road or as advantage is taken of existing roads.

The providing of cars with these trucks having the two forms of wheels enables the building of elevated roads for urban transportation upon which considerable speed can be made safely where previously it has been impossible in view of the narrowness of streets and the congested condition of business, for the central-track structure will not occupy the amount of space, will not cut off the amount of light, and will not cost as much to rear as the ordinary elevated structure for two-rail tracks. It also enables the building of a railway for suburban transportation where rapid transit is desired and it is necessary to eliminate grade-crossings and rear a cheap structure which will be artistic and safe for the passengers, for pedestrians, and for domestic animals. In rural localities, across farms, over streams and swamps, and across prairies and deserts a cheap structure can be reared above the reach of animals and the level of floods, snow, and sand-drifts, having the central-rail track, upon which high speed can be safely made. Where the circumstances justify, the ordinary two-rail track may be employed.

These trucks run very smoothly, for each wheel has an independent movement and the truck-frame is supported upon them evenly. There is no jar or vibration transmitted to the car, and the motor rides comparatively free from shake.

The trucks will readily pass from one track to the other, and thus the ordinary tracks may be used where they conveniently can, and connections, extensions, or additions can be built employing the central rail mentioned in this case.

I claim as my invention—

1. A railway-car truck having wheels adapted to travel on a standard-gage two-rail track, wheels adapted to travel on a central-rail track, a truck-frame supported by the wheels, and side-bearing retaining-wheels supported by the truck-frame, substantially as specified.

2. A railway-car truck having wheels adapted to travel on a standard-gage two-rail track, wheels adapted to travel on a central-rail track, yokes supported by said wheels, and a truck-frame supported by the yokes, substantially as specified.

3. A railway-car truck having wheels adapted to travel on a standard-gage two-rail track, wheels adapted to travel on a central-rail track, yokes supported by said wheels, a truck-frame supported by the yokes, and retaining-wheels for keeping the central-track wheels in position, substantially as specified.

4. A railway-car truck having wheels adapted to travel on a standard-gage two-rail track, wheels adapted to travel on a central-rail track, yokes supported by said wheels, a truck-frame supported by the yokes, and retaining-wheels supported by the truck-frame, substantially as specified.

5. A railway-car truck having wheels adapted to travel on a standard-gage two-rail track, wheels adapted to travel on a central-rail track, with connections between the side and central wheels, yokes supported by both side and central wheels, and a truck-frame supported by the yokes, substantially as specified.

6. A railway-car truck having wheels adapted to travel on a standard-gage two-rail track, wheels adapted to travel on a central-rail track, yokes, each of which is supported by one outside and one central wheel, and a truck-frame supported by the yokes, substantially as specified.

7. A railway-car truck having wheels adapted to travel on a standard-gage two-rail track, wheels adapted to travel on a central-rail track, yokes supported by said wheels, a truck-frame supported by said yokes, a motor borne by the truck-frame, and connections between the motor and the driving-wheels, substantially as specified.

8. A railway-car truck having wheels adapted to travel on a standard-gage two-rail track, wheels adapted to travel on a central-rail track, yokes supported by said wheels, bars and springs supported by said yokes, a truck-frame supported by said bars and springs, a motor supported by one of said bars, and connections between the motor and the driving-wheels, substantially as specified.

9. A railway-car truck having wheels adapted to travel on a standard-gage two-rail track, wheels adapted to travel on a central-rail track, yokes supported by said wheels, bars and springs supported by said yokes, a truck-frame supported by said bars and springs, a motor supported by one of said bars and by springs, connections between the motor and the driving-wheels, and retaining-wheels supported by the truck-frame, substantially as specified.

10. A railway-car truck having wheels adapted to travel on a standard-gage two-rail track, wheels adapted to travel on a central-rail track, yokes supported by the wheels which are being made use of, and a truck-frame pivotally connected with the outer ends of the yokes and connected by springs with the inner ends of the yokes, substantially as specified.

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