(No Model.) 3 Sheets—Sheet 1.

H. S. PRUYN.

ELEVATED RAILWAY CAR.

No. 494,081. Patented Mar. 21, 1893.

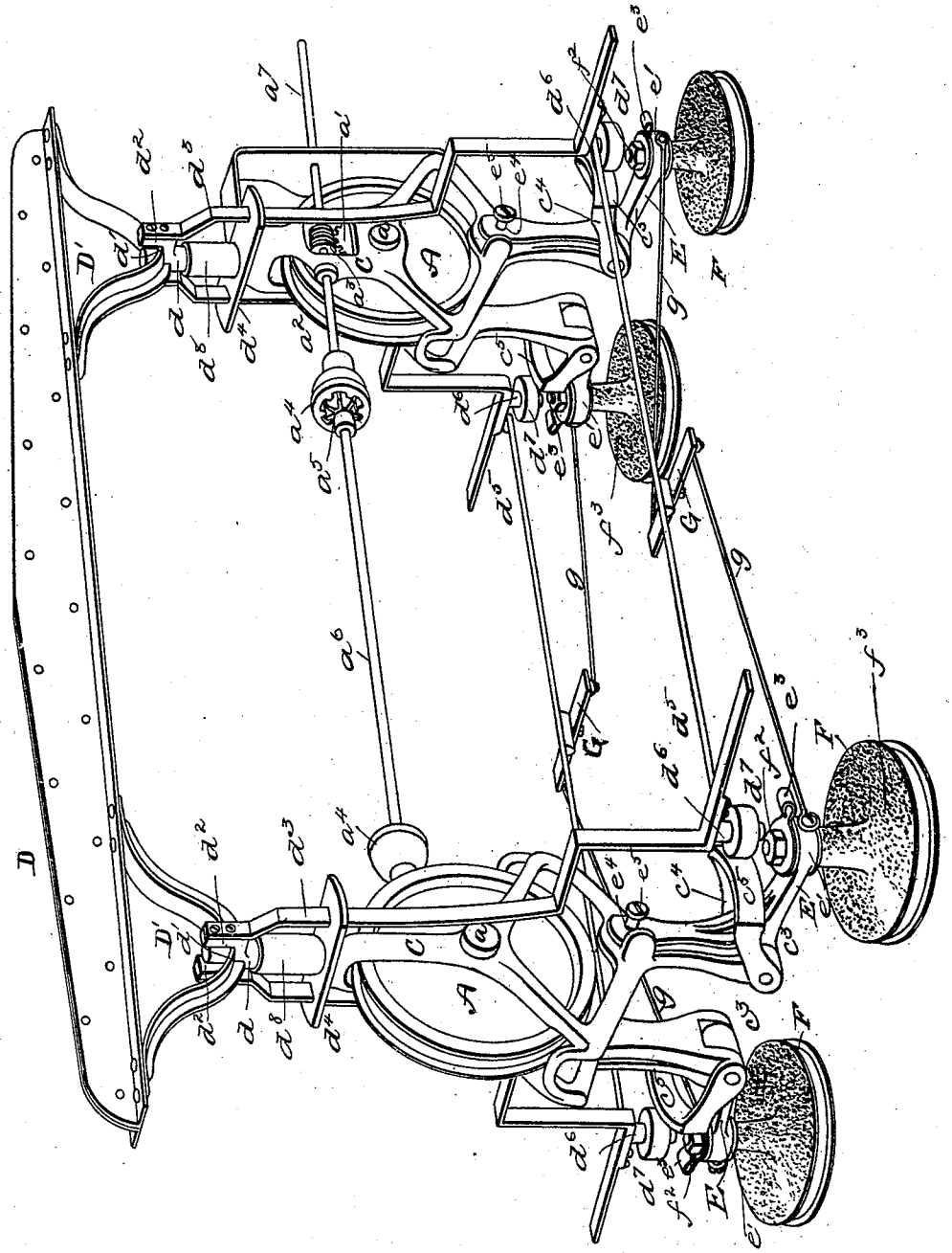

Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

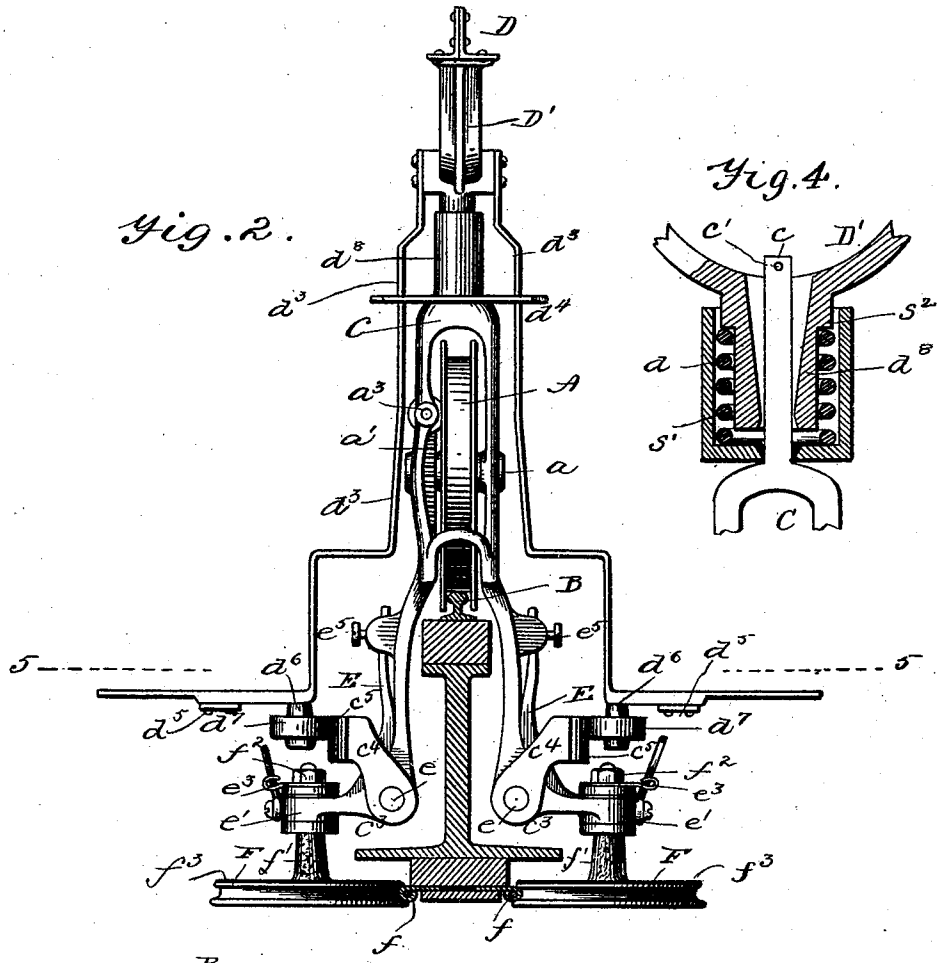
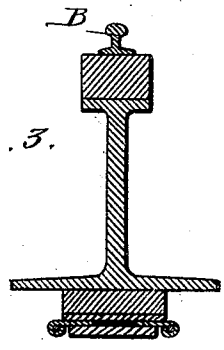


Fig. 4.

Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 5.

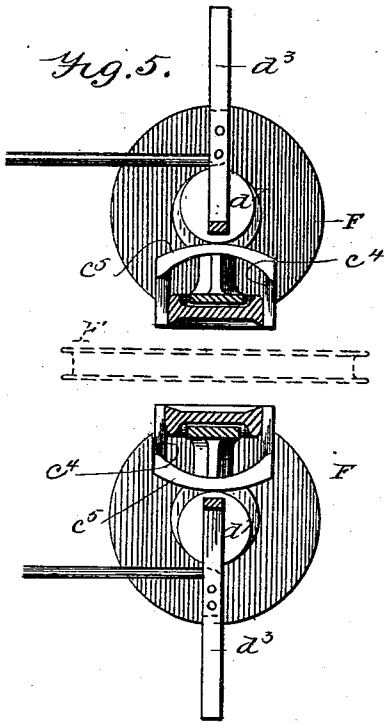


Fig. 6.

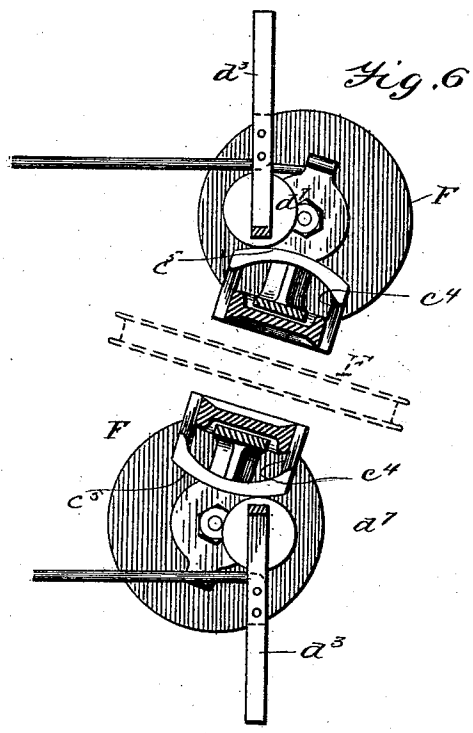


Fig. 4.

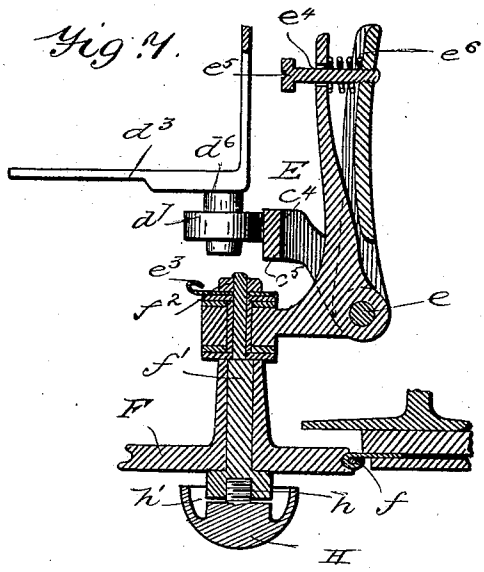
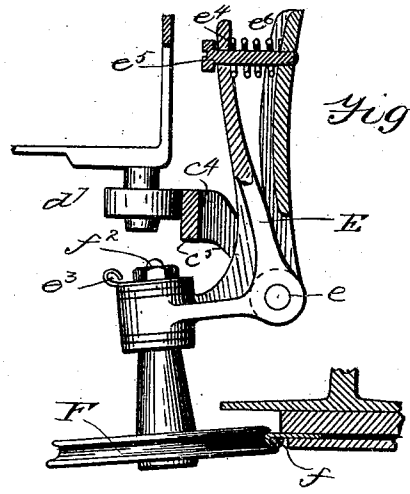


Fig. 8.



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UNITED STATES PATENT OFFICE.

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ELEVATED-RAILWAY CAR.

SPECIFICATION forming part of Letters Patent No. 494,081, dated March 21, 1893.

Application filed January 30, 1891. Serial No. 379,635. (No model.)

To all whom it may concern:

Be it known that I, HENRY S. PRUYN, a citizen of the United States, residing at Hoosick Falls, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Elevated-Railway Cars, of which the following is a specification.

My invention relates to the construction of the frame work of car bodies and trucks for one rail elevated railways, to the connections between a motor (preferably an electric one) carried by the car and the traction wheels, and to means for yieldingly supporting side guiding wheels and current collectors.

The object of my invention is to provide a light and strong car frame for this class of elevated railways and improved means for holding and guiding the car laterally and allowing it to easily pass over short curves without interfering with the power connections from the motor to the traction and guide wheels.

My invention consists in the construction and combination of parts as hereinafter described and claimed.

In the accompanying drawings; Figure 1 is a perspective view of my invention complete, the outer or inclosing car structure or body being omitted. Fig. 2 is an end view, with a portion of the track in section. Fig. 3 is a section of a preferred form of rail or track. Fig. 4 is a sectional detail of the swivel and spring support. Fig. 5 is a detail section on line 5—5 of Fig. 2, showing one end of the frame and a pair of lateral guiding wheels in their position when moving over a straight piece of track. Fig. 6 is a similar view, but showing the wheels and connections in their position when moving over a rather abrupt curve. Fig. 7 is a vertical sectional detail showing one of the lateral guiding wheels and its yielding hanger; and Fig. 8 is a side elevation, partly in section, showing the same parts, but in a slightly different position as hereinafter described.

At A, A, are shown flanged traction wheels adapted to run on a rail as at B; each wheel A has bearings a in a frame C which is swiveled to a truss D in the manner hereinafter described.

The truss D as shown in Figs. 1 and 2 consists of two L-shaped bars having their vertical portions riveted together, and having a bracket D′ at each end bolted to, and depending from, the flanges; each bracket at its central and lower portion, has a downwardly projecting boss or hub d, and two laterally projecting shoulders d^2, and to each of these shoulders is secured a step shaped metallic bar d^3 the lower horizontal portions of which bars may support the foot boards or floor of the car, the upper horizontal portions the seats and the upper vertical portions the backs for the seats. These bars at each end are connected by cross strips or braces d^4 and the two on each side are connected by rods d^5. Underneath the lower angle, each bar d^3 is provided with a vertical stud d^6 carrying a roller d^7 for a purpose presently to be described. The cross braces d^4 have upwardly projecting sleeves d^8 and the step bars d^3 are free to have vertical movement in the said cross braces, and the bosses d are free to move vertically to a limited extent, in the sleeve d^8.

The frame C has an upwardly projecting pintle c passing through and above hub d on bracket D′ and is provided with a stop pin c' to prevent the lifting or "jumping" of the bracket off from said pintle c. The opening in the hub through which the pintle passes is conical, being wider at the top. This is to allow the bracket D and the parts connected with it to swing or move independent of the frames C. Spiral springs s' which rest on the bottom of the sleeves d^8 and against the shoulders s^2 on the brackets D′ support the car body.

The frames C are bifurcated as shown, and extend below the bearings a and at each lower end are provided with jaws c^3 and integral upwardly and outwardly projecting arms c^4 united at their outer ends by a curved face plate c^5 adapted to ride against the roller d^7 under all conditions of load when the frame C turns in its swivel bearing on passing around a curve.

The center of the curve of face plate c^5 is concentric with the pivotal or swiveled center of the truck or frame C; by this construction, the trucks or frames C receive all lateral

thrust due to weight on the bars d^3 in any position of said frames.

Each jaw c^3 is provided with a fulcrum pin e on which is hung an elbow arm E, on the lower outer end of which is a vertical bushed bearing e' for the axles f' of a lateral guide wheel and current collector F which is adapted to engage a combined side rail and conductor f supported by an elevated structure substantially such as shown in another application filed by me.

The bushing e^2 of the bearing e' is of insulating material, and at the top of the axle f' is a metallic clip e^3 held between a nut f^2 and the top of the bearing; this clip is to convey the electric current from the axle of the guide wheel and collector to a wire (not shown) which may connect with any preferred form of motor, when the system is an electric one.

The upper surface of each wheel F is provided with a disk f^3 of insulating material to avoid short circuiting through other portions of the elevated structure.

The upper end of arm E has a hole e^4 through which passes a bolt e^5 secured to frame C, and a spring e^6 is confined between the said arm and frame to insure the yielding and constant contact of wheel F with rail and conductor f in any vibrating or swinging of the car. Figs. 7 and 8 illustrate this fully.

Figs. 5 and 6 show the different positions of the wheels when the car is passing over a straight or curved track. In order to insure an equal turning or swiveling of the two frames C and their wheels A and F, F, when passing along a curved section of track, a lever G is pivoted about centrally to each rod d^5 and rods g connect opposite ends of said levers with the outer ends of the elbow arms E. On the axle of each of the traction wheels A, A, is a gear a' firmly secured to it, and in each frame C a shaft section a^2 has bearings and is provided with a worm a^3 meshing with the said gear. On the inner end of each shaft section a^2 is an integrally toothed cup shaped pinion a^4 which receives a pin on a^5 on the end of the intermediate shaft section a^6. A motor, as an electric motor, is to be connected directly to the forwardly projecting shaft portion a^7, or it might, if preferred, be connected to the intermediate section a^6. The object of providing the shaft in sections and with universal geared joints at a^4 and a^5 is to permit of the swiveling of the frames C without interfering with the power connections between the motor and the traction wheels. As indicated in Fig. 1, the pinion on the axle of one wheel A is on one side thereof, and the pinion of the other (not appearing in said figure) is on the other side; the object of this is to preserve an equal distance between the worms and gears at the two ends of the car when traversing a curve and the frames C are swiveled.

As shown in Fig. 7, I propose to extend the axles f' of the guide wheels below the lower surface of the said wheels and secure thereto, as by a screw shank h, a circular oil drip cup H having an annular groove or channel h' as a receptacle for oil that may work down from the bearings of the guide wheels.

The object of the peculiar sockets in the heads of frames C is to increase the traction power when going up an incline. The upper part of the car falls back slightly, bending at the sockets and thereby throws the flanges of the wheels F against the track thereby clamping it and establishing a grip. These wheels therefore not only act as guides and collectors, but aid in climbing inclines.

Elbow E is hung at a point just above the conductor so that the pull is in line with the conductor and the car cannot jump the track. The spring sockets also allow the truck frames C to swing in a vertical plane when the car runs into a hollow or over the crown of a hill.

Having thus described my invention, I claim—

1. In a railway car, the combination with a truss or frame carrying depending bars for supporting the floor and seats, of a frame or truck at each end of said truss and having a swivel connection therewith and each carrying a traction wheel, substantially as described.

2. In a railway car, the combination with a truss carrying means for supporting the car body, of a swiveled truck at each end of the truss and having a traction wheel, and a spring cushion interposed between the truck and truss, substantially as described.

3. In a railway car, the combination with a truss and two trucks swiveled to it, and each carrying a traction wheel of gears on the axles of said wheels, worm shafts meshing with the gears and an intermediate shaft having flexible joint connections with the worm shafts.

4. In a railway car, the combination with a truss and depending bars therefrom on each side for supporting the car body, of swiveled trucks between said bars and carrying traction wheels substantially as described.

5. In a railway car a truss having two bifurcated trucks swiveled to it and carrying traction wheels in bearings between the arms of said trucks, substantially as described.

6. In a railway car, the combination with a truss having two bifurcated trucks swiveled to it and carrying traction wheels, of lateral guide wheels also carried by said trucks, as and for the purpose set forth.

7. In a railway car, the combination with a truss having two bifurcated trucks swiveled to it and carrying traction wheels, of lateral guide wheels mounted in vertical bearings yieldingly connected to said trucks.

8. In a railway car, the combination with a truss having two bifurcated trucks swiveled to it and carrying traction wheels on bearings between the arms of said trucks, of bearings pivotally connected to said arms, guide

wheels mounted in said bearings and springs for forcing said bearings in one direction, substantially as described.

9. In a railway car, the combination with the traction wheels and frame thereof, of guide wheels mounted in substantially vertical bearings, and having their upper surfaces provided with an insulating covering, substantially as described.

10. In a railway car, the combination with two traction wheel trucks pivotally connected to a uniting frame or truss of lateral guide wheels carried by said trucks, a lever pivoted to the car frame between the guide wheels on one side of the car, and bars connecting the opposite ends of said lever with lateral arms extending from said trucks.

11. In a railway car, the combination with two traction wheel trucks pivotally connected to a uniting frame or truss, and having outwardly projecting face plates, of a body frame depending from the truss on each side of the trucks and having stops to rest against said face plates.

12. In a railway car, the combination with two traction wheel trucks pivotally connected to a uniting frame or truss and having outwardly projecting curved face plates, of a body frame depending from the truss on each side of the trucks and having rollers engaging said face plates, substantially as described.

13. In a railway car, the combination with two traction wheel trucks pivotally connected to a uniting frame or truss, of gears on the axles of the traction wheels, shaft sections a^2 having worms a^3, the gears and worms being on opposite sides of the two traction wheels, an intermediate shaft section, and universal joint connections between it and the end sections a^2.

14. The combination with the pivoted trucks C having traction wheels and gears A, a', of the worm shafts having internally toothed pinions a^4 and the shaft a^6 having pinions a^5 entering and engaging pinions a^4, substantially as described.

15. The combination with the truss D having brackets D′ provided with bosses d and bearings d', of the trucks C having pintles c fitting said bearings, and coiled springs c^2 surrounding the pintles below the said bosses, substantially as described.

16. The combination with the truss D having brackets D′ provided with bosses d, bearings d', shoulders d^2 and step bars d^3, of the cross braces d^4 having sleeves d^8 receiving the bosses d, the trucks C having pintles c and stop pins c' and springs c^2 inclosed within sleeves d^8 substantially as described.

17. The combination with the bifurcated trucks C having wheels and jaws c^3, of elbow arms E pivoted on pins e in said jaws, and carrying wheels F at their lower ends, and springs e^6 between their upper ends and the sides of the trucks, substantially as described.

18. The combination with the arms E having insulating bearings, of the wheels F provided with axles fitted to said bearings and having metallic clips e^3, substantially as described.

19. The combination with the car frame carrying guide wheels F of the oil drip cups H secured to their lower surfaces and having annular oil receptacles h', substantially as described.

20. In a railway car, a truck provided with an upper vertical wheel and a lower horizontal wheel, the two wheels adapted to run respectively on upper and lower rails, and the lower wheels provided with horizontal flanges embracing the rail, in combination with the car body pivoted to said truck by a joint located above the upper wheel and constructed to permit movement of the parts in a vertical plane and in the direction of the rails or road bed.

21. In a vehicle, the combination with two independently pivoted trucks, of a system of levers connecting them, whereby the wheels connected with the respective trucks on the same side of the vehicle will act upon each other to cause a movement toward or away from each other, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HENRY S. PRUYN.

Witnesses:
FRANK S. OBER,
WM. A. ROSENBAUM.