(No Model.) 2 Sheets—Sheet 1.

J. WEIS.

ELECTRICALLY DRIVEN CAR.

No. 387,610. Patented Aug. 7, 1888.

Fig. 1.

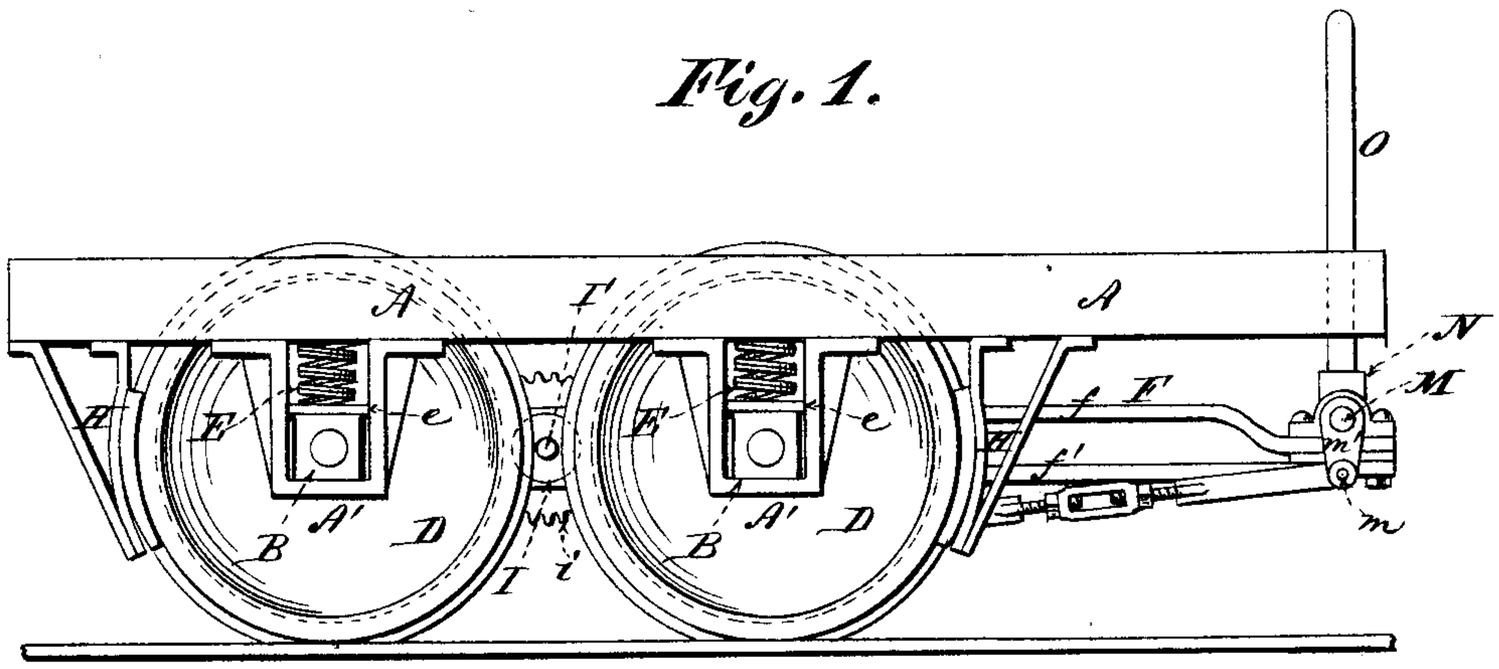
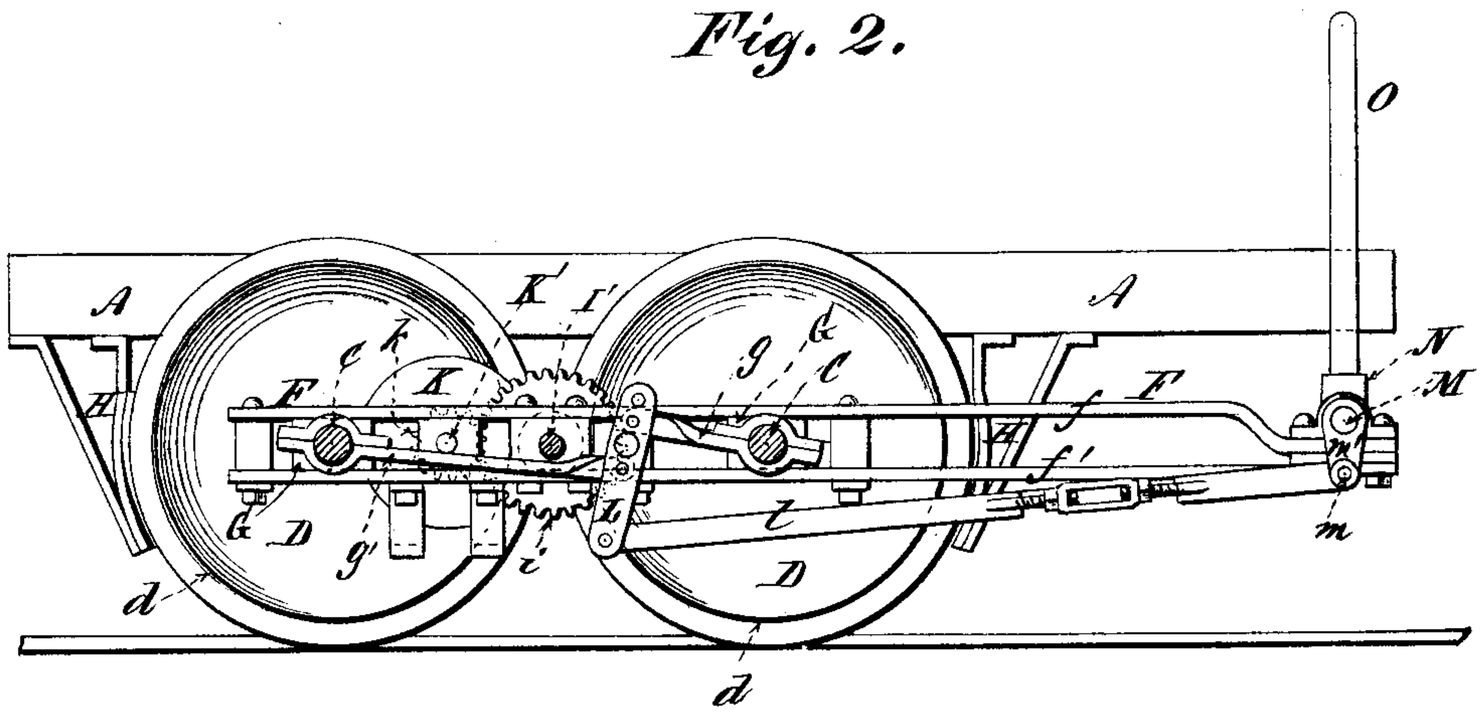


Fig. 2.



Witnesses:
Leo. W. Fliatt
D. W. Gardner

Inventor:
Joseph Weis,
Per Edw. E. Lucinky,
Atty.

(No Model.) 2 Sheets—Sheet 2.

J. WEIS.

ELECTRICALLY DRIVEN CAR.

No. 387,610. Patented Aug. 7, 1888.

Fig. 4.

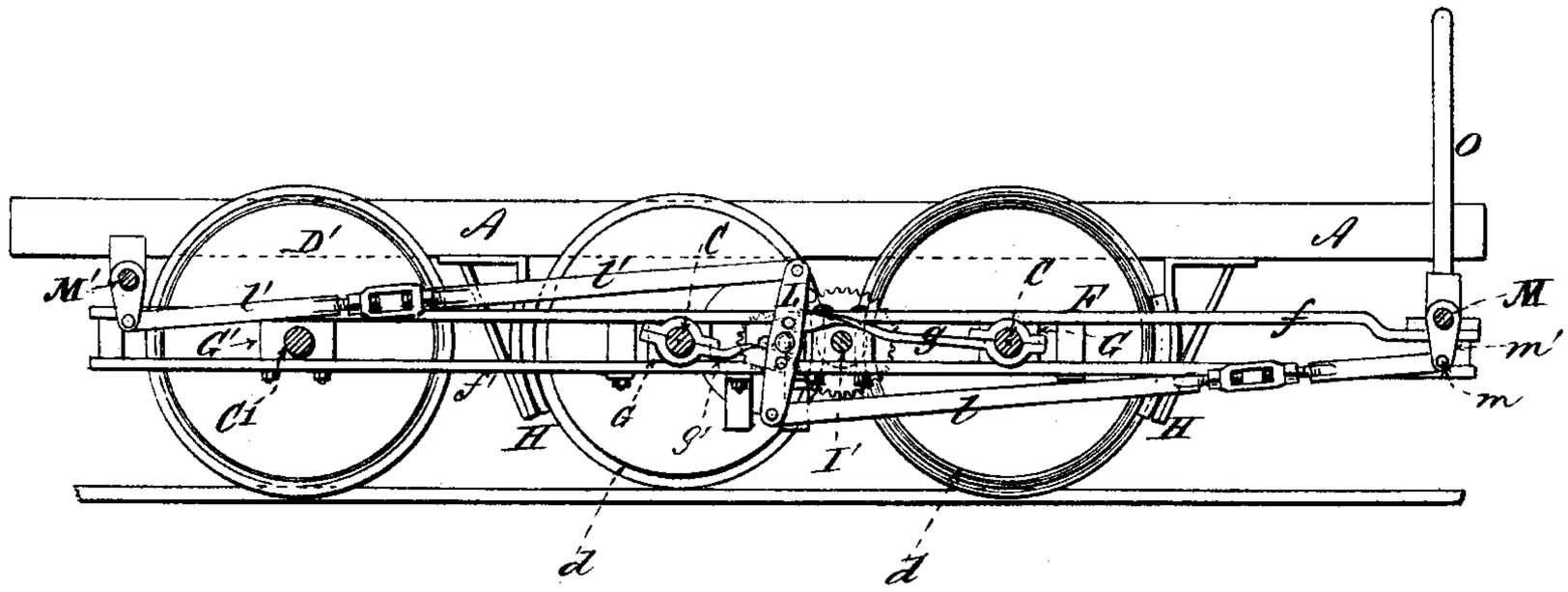
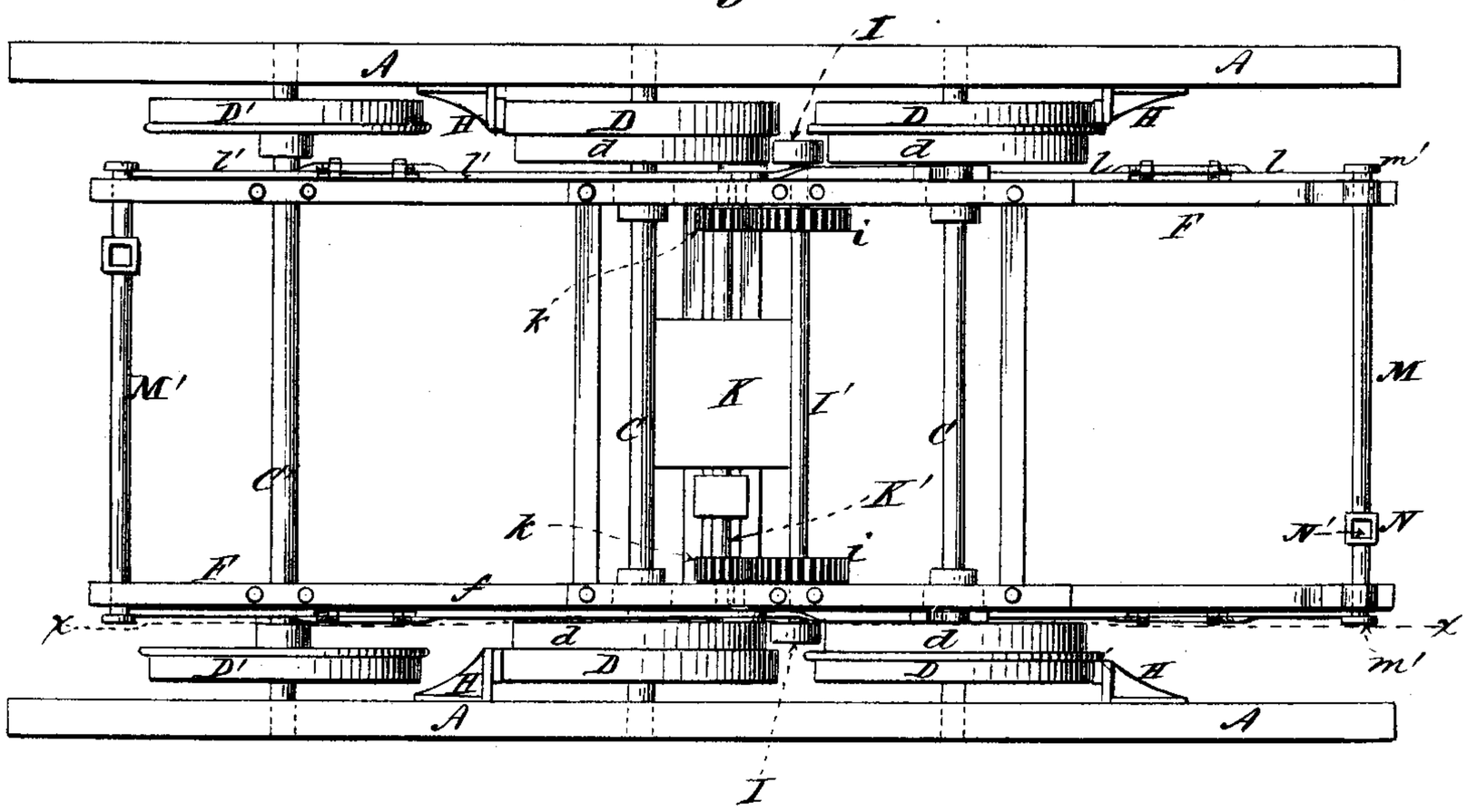


Fig. 3.



Witnesses:
Geo. H. Miatt
D. W. Gardner

Inventor:
Joseph Weis.
Per Edw. E. Quinby.
Atty.

UNITED STATES PATENT OFFICE.

JOSEPH WEIS, OF JERSEY CITY, NEW JERSEY.

ELECTRICALLY-DRIVEN CAR.

SPECIFICATION forming part of Letters Patent No. 387,610, dated August 7, 1888.

Application filed July 19, 1887. Serial No. 244,707. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH WEIS, of Jersey City, New Jersey, have invented certain Improvements in Electrically-Driven Cars, of which the following is a specification.

These improvements, which are applicable to cars driven by an electric motor, irrespective of the source from which the current to operate the motor is supplied, relate generally to a motor-supporting frame carried directly upon the axles of the driving-wheels; a main car-frame supported on springs, which in their turn are supported upon laterally-movable boxes in which the axles of the driving-wheels are respectively journaled; a motor for rotating a counter-shaft provided at one or both ends with a suitable spur or friction wheel or wheels adapted to respectively engage the driving-wheels; stationary brakes arranged in the vertical planes of the driving-wheels, respectively; manually-operative starting and stopping apparatus, embracing means for moving the driving-wheels at each side of the car toward each other and thereby bringing them into engagement with the said spur-wheel or spur-wheels, or for moving the driving-wheels away from each other and thereby disengaging them from the said spur wheel or wheels, and bringing their peripheries into contact with the said stationary brakes.

In the accompanying drawings the improvements are shown as applied, first, to a comparatively small car supported upon the driving-wheels, and in which provision is made for operating the stopping and starting mechanism from one end of the car only, and, secondly, to a larger car provided at both ends with means for operating the stopping and starting mechanism.

The drawings are as follows: Figure 1 is a side elevation of the driving-wheels of a small car and one of the floor-girders of the car, showing the manner of supporting the same upon the laterally-adjustable boxes in which the driving-wheels are journaled. Fig. 2 is a longitudinal vertical section of the small car illustrated in Fig. 1, showing in elevation the motor-supporting frame and the manually-operative lever system for moving the driving-wheels toward or away from each other. Figs. 3 and 4 illustrate the application of the improvements to a larger car provided at both ends with means for manually operating the stopping and starting mechanism. Fig. 3 is a top view showing the side floor-girders and the motor-frame carried directly upon the axles of the driving-wheels and the axle of two car-supporting wheels. Fig. 4 is a longitudinal vertical section taken through the line *x x* on Fig. 3, showing the lever system for operating the stopping and starting mechanism from either end of the car.

No attempt is made in the drawings to show the body of the car, it being deemed sufficient to show the longitudinal girders upon which the body of the car is erected. These girders A A may be taken to indicate the floor and platforms of the car. They are provided with the usual downwardly-projecting box-frames, A′, for containing, respectively, the boxes B B, &c., in which the axles C C of the driving-wheels D and the axle C′ of the car-supporting wheels D′ are respectively journaled.

Springs E E, &c., bear, respectively, at their upper ends against the girders A A and at their lower ends against the plates *e e*, &c., resting upon the tops of the boxes B B, &c., respectively. The boxes are made sufficiently narrow, as shown in Fig. 1, to give them the required range of movement in the box-frames. The motor-frame F is carried directly upon the axles of the driving and car-supporting wheels by means of boxes G G, &c., in which the axles of the driving-wheels are journaled, and which are adapted to slide to and fro between the upper and lower horizontal members of the side trusses, *f f′*, of the motor-frame. Two stationary brakes, H H, project downward from the girder A on each side of the car in position to impinge upon the peripheries of the driving-wheels when the latter are moved away from each other.

The driving-wheels are preferably each provided with a laterally-projecting annular flange, *d*, and when the driving-wheels are forced toward each other their faces, or the faces of their flanges *d*, as the case may be, are pressed against the peripheries of the friction-wheels I I, mounted upon the opposite ends, respectively, of the transverse counter-shaft I′, journaled in boxes affixed to the motor-supporting frame. The counter-shaft I is rotated by power derived from an electric motor, K, preferably transmitted through slow-

ing-down gear, in order that the motor may be rotated at high speed.

It is not deemed necessary to show or describe the motor in detail, as the construction of electric motors is well understood, and because it is immaterial what form of motor is employed, so long as its capacity is sufficient to afford the power required for driving the car.

As electric motors ordinarily operate with greater efficiency when they are allowed to rotate with great rapidity, the motor-shaft K′ is provided at one or both ends with a small spur-wheel or spur-wheels, *k*, respectively, for engaging the larger pinion or pinions, *i i*, affixed to the counter-shaft I′. The driving-wheels are moved toward and from each other by means of lever systems arranged, respectively, on the outer sides of the motor-frame. As the two lever systems on the opposite sides are alike, a description of one will answer as a description of the other. As shown in Figs. 2 and 4, the sliding boxes G G are connected, respectively, by the pitmen *g g′* with pivots inserted, respectively, above and below the axis of the rocker L, which is pivotally affixed to the side truss of the motor-frame.

In the organization shown in Fig. 2, in which the stopping and starting mechanism is capable of operation from one end of the car only, one end of the rocker L is connected by means of the pitman *l* with the crank-pin *m* of the crank-arm *m′*, affixed to the transverse rock-shaft M, which is mounted in fixed bearings in the end of the motor-frame.

A crank-arm, N, affixed to and projecting upwardly from the rock-shaft M, is provided with a radial recess, N, which serves as a socket for the reception of the end of the stopping and starting bar O, which, when inserted in the recess N, projects upward through a suitable opening in the platform.

In the organization shown in Fig. 4 means are provided for operating the stopping and starting mechanism from both ends of the car. In this case, if necessary by reason of the length of the car, the two additional wheels, *d′*, are provided, the axle of which is journaled in non-adjustable boxes carried in frames affixed to and projecting downward from the girders in the ordinary manner; and similarly the motor-frame may be supported near one end upon boxes G′, which are permanently affixed to the side trusses of the motor-frame.

To operate the stopping and starting mechanism from either end of the car, both ends are provided with rock-shafts linked to the rocker L, as illustrated in Fig. 4, in which, as will be seen, while the lower end of the rocker L is connected by means of the pitman L′, &c., with the rock-shaft M at one end of the car, the upper end of the rocker L is connected by means of the pitman *l* with the rock-shaft M′ at the opposite end of the car.

One object in connecting the rock-shafts M and M′, respectively, with opposite ends of the rocker L is to prevent confusion in operating the starting and stopping bar O at the opposite ends of the car.

It will be perceived that the arrangement is such that when the bar O, having been inserted in its socket at either end of the car, is pushed outwardly therefrom, the driving-wheels are moved toward each other and carried into engagement with friction-wheels I; and similarly, when the hand-lever O, having been inserted in its socket at either end of the car, is pulled inwardly, the driving-wheels are separated from each other, disengaged from the friction-wheels, and carried against the stationary brakes H.

It will be perceived that the motor and the lever system for throwing the driving-wheels of the car into or out of contact with the spur-wheel or friction-wheel, which delivers the power from the motor or into or out of contact with the brakes, as the case may be, are mounted upon a frame (the motor-frame F) which is supported directly upon the axles of the car-wheels, and is thus wholly independent of the platform or body of the car. As the platform or body of the car is carried by means of springs in the usual manner on the outer ends of the axles of the car-wheels, its movements up or down are not communicated to the motor-frame; hence the lever system is prevented from being rocked out of position by the jolting movements of the car-body.

What is claimed as the invention is—

1. In an electrically-driven car, a motor-supporting frame mounted directly upon the axles of the car-wheels or driving-wheels and carrying a manually-operative lever system, in combination with car-wheels or driving-wheels having their axles journaled in laterally-movable boxes, for the purpose of enabling the said wheels to be moved by means of said manually-operative lever system into or out of engagement with the spur-wheel or friction which transmits from the motor the power to rotate the said car-wheels or driving-wheels.

2. In an electrically-driven car, two pairs of driving-wheels having their axles journaled in laterally-movable boxes, and stationary brakes arranged in the vertical planes of the driving-wheels, as shown, in combination with a manually-operative lever system for moving the said pairs of driving-wheels away from or toward each other, and thereby forcing their faces into or out of contact with said stationary brakes.

3. In an electrically-driven car, two pairs of driving-wheels having their axles journaled in laterally-movable boxes, and an electrically-rotatable shaft carrying at or near its ends spur-wheels or friction-wheels, which are respectively interposed between the driving-wheels, in combination with stationary brakes arranged in the vertical planes of the driving-wheels, as shown, and a manually-operative lever system for moving the said pairs of driving-wheels away from or toward each other, as and for the purposes set forth.

4. A car-body carried by means of springs upon driving-wheel axles journaled in laterally-movable boxes, in combination with a motor-supporting frame independently mounted upon the driving-wheel axles, and having affixed upon it a manually-operative lever system for moving the driving-wheels toward or away from each other, as and for the purpose set forth.

5. The driving-wheel D, provided with the laterally-projecting annular flange *d*, in combination with the electrically-rotatable friction-wheels I, substantially as set forth.

JOSEPH WEIS.

Witnesses:
JOHN FLIEGAUF,
JOHN V. BURKE.