(No Model.) 2 Sheets—Sheet 1.

A. PHILIPSBORN & M. SCHIEMANN.

ELECTRIC LOCOMOTIVE.

No. 490,307. Patented Jan. 24, 1893.

Fig. 2.

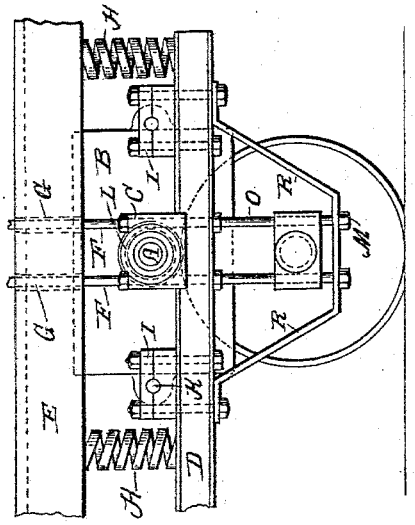


Fig. 4.

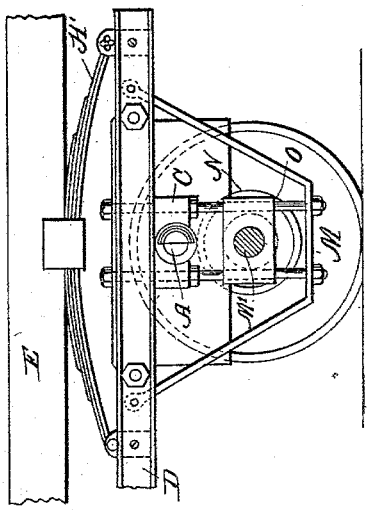


Fig. 1.

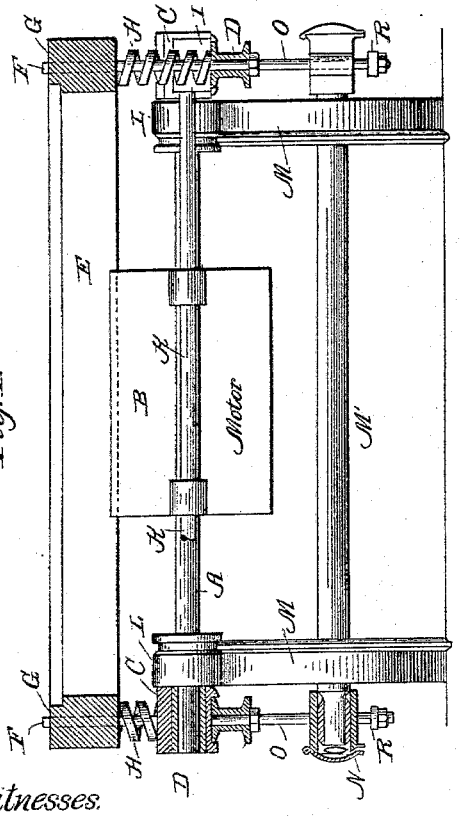
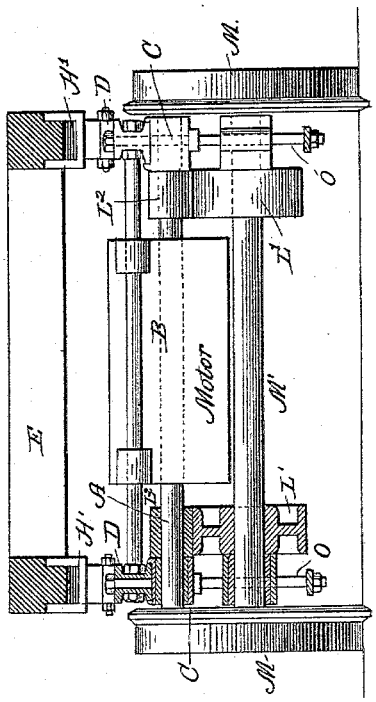


Fig. 3.



Witnesses.
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 6.

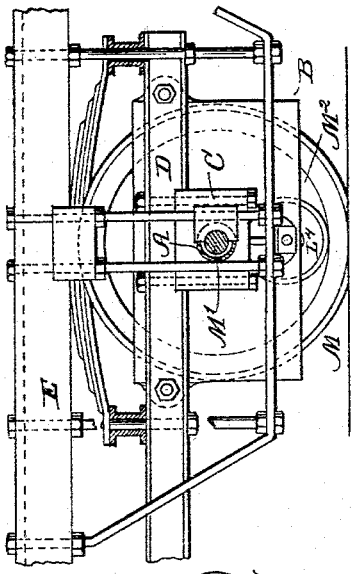


Fig. 8.

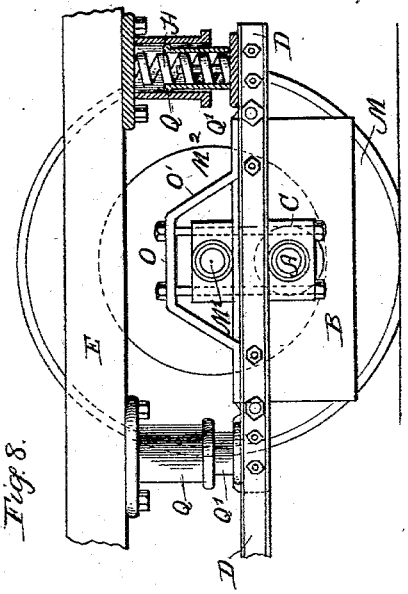


Fig. 5.

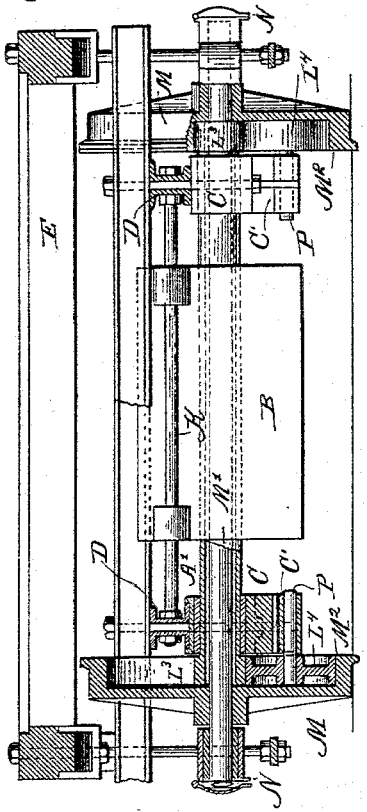
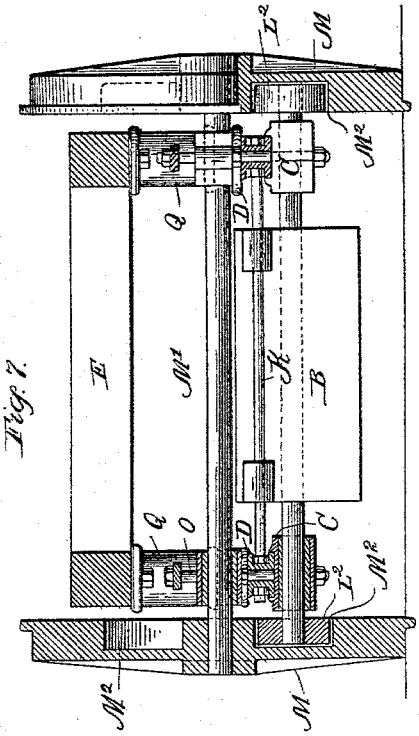


Fig. 7.



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UNITED STATES PATENT OFFICE.

ALEXANDER PHILIPSBORN AND MAX SCHIEMANN, OF BERLIN, GERMANY, ASSIGNORS TO SIEMENS & HALSKE, OF SAME PLACE.

ELECTRIC LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 490,307, dated January 24, 1893.

Application filed April 14, 1892. Serial No. 429,230. (No model.)

To all whom it may concern:

Be it known that we, ALEXANDER PHILIPSBORN and MAX SCHIEMANN, subjects of the King of Prussia, residing at the city of Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Transmitting Devices Acting by Friction for Electrically-Operated Vehicles; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to electro-motive cars wherein the traction wheels are frictionally driven by the motor.

This invention consists of a construction whereby the weight of both the motor and car body is utilized to increase the frictional engagement of the driving and driven parts. The traction wheels and motor are movable relative to the body of the car so that the frictional relation of the motor and traction wheels will not be disturbed by shocks or jars.

Referring to the accompanying drawings in which similar letters of reference indicate corresponding parts throughout: Figure 1, is a cross sectional elevation of an electro-motive car showing the application of our invention; Fig. 2, a side elevation of Fig. 1. Fig. 3, is a cross sectional elevation showing a modification; Fig. 4, a side elevation of Fig. 3; Fig. 5, a cross sectional elevation showing another modification; Fig. 6, a side elevation of Fig. 5; Fig. 7, a cross sectional elevation showing a further modification; and Fig. 8, a side elevation of Fig. 7, partly in section.

M, M, in the several figures represent the traction wheels of the truck; M′, the axle fixed to the said wheels in the usual manner.

N, are the journal boxes of the car axles which in the practice of our invention functionally serve to keep the wheels in the right horizontal position in reference to the car and the mechanism but do not support any weight whatever.

D, in the several views is the motor supporting frame which, through interposed springs H, H, in Figs. 1 and 2 or H′ Fig. 4, supports the body of the car; the bed sill E of which is represented; and the said motor frame D bears upon the truck wheels through the interposed medium of the frictional driving mechanism.

The frictional driving mechanism is herein illustrated under various modifications. The construction in Figs. 1 and 2 consists in friction rollers L, L, placed vertically above and upon the traction wheels M, M; the shaft A of the electro-motor bearing the said friction wheels and receiving the weight of the car and frame D, through the journals C, C, which are bolted by means of the screw threaded rods F, to the frame D. The motor B, is secured to the frame D by means of cross rods K, K, supported in bearings I, I, also bolted to the frame D. The rods F extend vertically through the bed sill E of the car; the same being permitted to have vertical play in the tubes or guides G, G, therein. The function of the upper extremities of the rods F, thus guided is to prevent the horizontal displacement of the car body upon the truck. The lower extremities O of the rods F, are supported in the yoke R, depending from the frame D, and the journal box N, being freely movable in a vertical direction thereon, is prevented thereby from horizontal displacement. The frictional driving wheels L, L, are circumferentially grooved as illustrated in Fig. 1, for the purpose of fitting the flange of the traction wheels so as to prevent lateral vibration of the parts with reference to one another.

In Figs. 3 and 4 independent wheels L′ are attached to the axle M′ of the traction wheels M, for the purpose of receiving the frictional application of motive power. Upon the wheels L′, L′, rest the frictional driving wheels L^2 L^2 of the motor; the shaft A of the motor receiving the weight of the car and motor frame D, through the journal boxes C, C, as before. The said boxes in this instance, however, are located beneath the frame D, in lieu of above the same. The journal boxes N of the car

axles, as also the said journal boxes C, of the motor are located within and between the traction wheels M, in lieu of being exterior thereto, and the journal box N is kept in its proper position by the guide rods O, in a similar manner as before described. The character of the spring H′, illustrated in Figs. 3 and 4 is adapted to itself retain the car E, and motor frame D, from horizontal displacement; the guide rods F therefore being dispensed with.

In Figs. 5 and 6, the axle A′ of the motor is arranged concentrically with the car axle M′, rotating independently at a greater speed of revolution. The motor shaft A′ is supported in journal boxes C, upon which the motor frame D, and the car E, rest through interposed springs. The journal boxes C located within and between the traction wheels M, M, bear gudgeons P, on the extremities of which transmission friction wheels L^4, are supported, so as to run upon the internal friction rims M^2, of the traction wheels M, and the friction wheels for the motor consist in collars L^3, welded or attached to the extremities of the tubular shaft A′, resting on the said transmitting wheels L^4, as illustrated in Fig. 5. The weight of the car, according to the construction thus described, rests upon the journal boxes C, C, and the tubular axle A′, and is received by the tires of the traction wheels M, M, through the interposed transmitting wheel L^4, that supports the ends of the said tubular axle A′ of the motor.

In Figs. 7 and 8, the power of the motor is also transmitted to the traction wheels M, M, upon an internal friction rim M^2, upon which the frictional driving wheels L^2 rest, supporting the weight of the car. The motor and its shaft A are however, in this instance located apart from and beneath the car axle M′; the motor shaft being supported in the journal boxes C, C, on which the motor frame D rests, in the manner pointed out with reference to the foregoing construction. The journal boxes of the car axle M′ are in this instance above the motor frame D, and supported on guides O in the yoke O′, so as to be horizontally retained in their proper relative positions with the other parts. The journal boxes L′ are free from the rods O, and the weight of the car E, and motor frame D, thereby rests solely upon the frictional driving mechanism. The spiral springs H, interposed between the bed sill E of the car and the motor frame D, are contained in telescoping supports Q, that are adapted to retain the parts from horizontal displacement with reference to one another in a similar manner as do the rods F, serve in Figs. 1 and 2.

It will be observed that in the construction set forth in Figs. 7 and 8, a very large diameter of traction wheel is admissible which is deemed sometimes desirable.

In the operation of the mechanism constructed as herein set forth, the whole weight of the motor, the car body, and load thereon is utilized to promote the adhesion or bite of the frictional power transmitting wheels upon one another, so that slip is insured against, and the transmission rendered practically as positive as would be the case in the instance of the usual tooth gear wheels. However, within the meaning of our invention any load or weight or pressure other than that indicated may be employed to maintain the power transmitting contact of the wheels.

Having thus fully described our invention, what we claim and desire to secure by Letters Patent is:—

1. The combination, in an electro locomotive car, of the traction wheels, a truck frame and electro-motor supported by the same and movable relative to the traction wheels, means for frictionally transmitting power from the motor shaft to said traction wheels, and a car body exerting its weight upon the transmission means and elastically supported upon said track frame to vibrate independent of the motor and traction wheels.

2. The combination in an electro-locomotive car, of the traction wheels, axle boxes therefor guided so as to be capable of vertical motion, a truck frame and electro motor supported by the same and movable relative to the traction wheels, means for frictionally transmitting power from the motor shaft to said traction wheels, and a car body exerting its weight upon the transmission means and elastically supported upon said truck frame, the arrangement being such that the traction wheels, motor, and car body may conjointly vibrate or the said wheels and motor vibrate relative to the body, so as to preserve the frictional engagement, substantially as set forth.

3. The combination in an electro locomotive car of the traction wheels, a truck frame and an electro motor supported by the same and movable relative to the traction wheels, means for frictionally transmitting power from the motor shaft to said traction wheels, a car body exerting its weight upon the transmission means and springs interposed between said truck frame and car body to permit the latter to vibrate independent of the motor and traction wheels, substantially as set forth.

4. In an electro-motive car the combination of the traction wheels having internal rims, an electro-motor, a suitable carrying frame supporting the motor and the car, a tubular shaft for the motor concentric with and surrounding the car axle, journal boxes for the said shaft located between the traction wheels supporting the carrying frame, frictional power transmitting wheels on the extremities of said motor shaft, and a transmitting wheel interposed in vertical line between the said wheels on the motor shaft and the internal rims of the traction wheels.

5. In an electro-motive car the combination of the traction wheels having internal rims, an electro-motor, a suitable carrying frame supporting the motor and the car, a tubular shaft for the motor concentric with and surrounding the car axle, journal boxes for the said shaft located between the traction wheels supporting the carrying frame, frictional power transmitting wheels on the extremities of said motor shaft, and a transmitting wheel interposed in vertical line between the said wheels on the motor shaft and the internal rims of the traction wheels.

In testimony whereof we have affixed our signatures in presence of two witnesses.

ALEXANDER PHILIPSBORN.
MAX SCHIEMANN.

Witnesses:
MAX PIEPER,
MAX WAGNER.