

(No Model.)

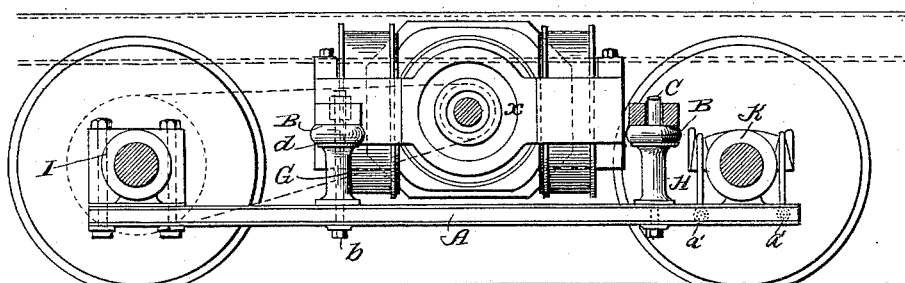
2 Sheets—Sheet 1.

A. PHILIPSBORN.  
ELECTRIC LOCOMOTIVE.

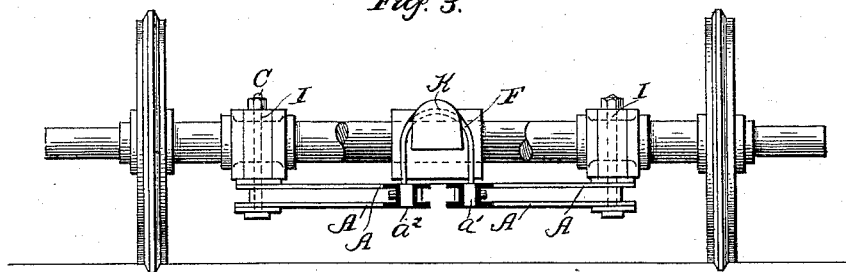
No. 493,943.

Patented Mar. 21, 1893.

*Fig. 1.*



*Fig. 3.*



Witnesses:  
Victor J. Evans.  
L. M. Marble.

Inventor:  
Alexander Philipsborn.

By *Geo H Benjamin*  
Attorney.

(No Model.)

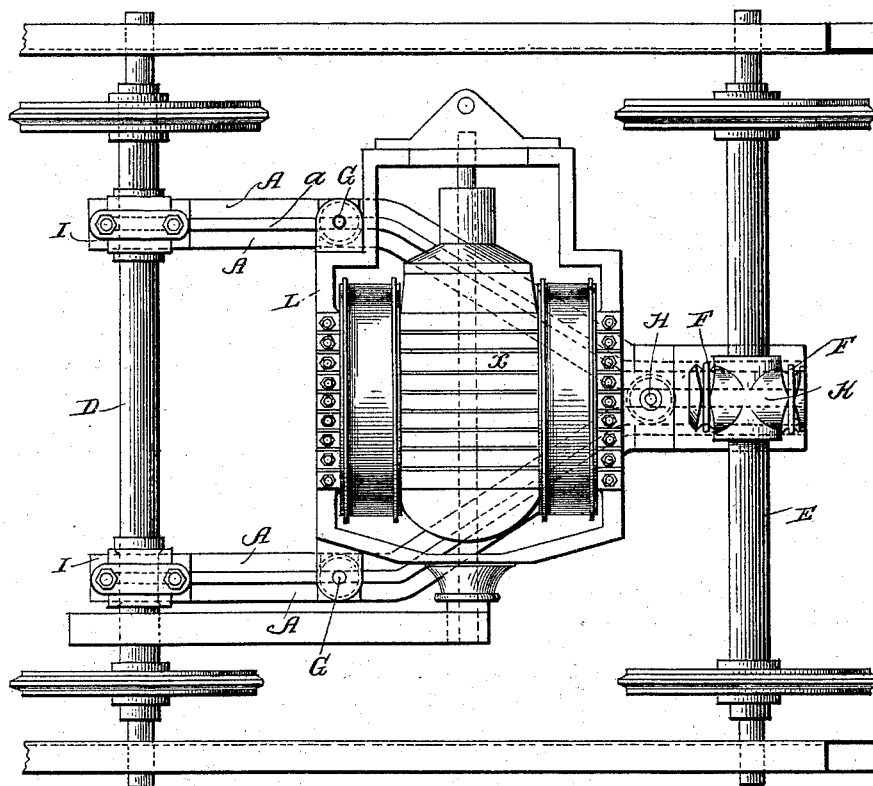
2 Sheets—Sheet 2.

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*Fig. 2.*



Witnesses.

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# UNITED STATES PATENT OFFICE.

ALEXANDER PHILIPSBORN, OF BERLIN, GERMANY, ASSIGNOR TO SIEMENS & HALSKE, OF SAME PLACE.

## ELECTRIC LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 493,943, dated March 21, 1893.

Application filed May 17, 1892. Serial No. 433,386. (No model.) Patented in Germany May 4, 1890, No. 57,654; in Italy August 10, 1890, XXIV, 28,032, LV, 225; in France August 11, 1890, No. 207,555; in Switzerland August 15, 1890, No. 2,581; in Austria-Hungary August 16, 1890, No. 36,992 and No. 63,309; in Belgium August 18, 1890, No. 91,669; in Sweden August 18, 1890, No. 2,744, and in England August 25, 1890, No. 13,359.


*To all whom it may concern:*



Be it known that I, ALEXANDER PHILIPSBORN, a subject of the King of Prussia, residing at the city of Berlin, in the German Empire, have invented certain new and useful Improvements in Electro-Locomotives, (for which I have obtained Letters Patent in Germany, No. 57,654, dated May 4, 1890; in France, No. 207,555, dated August 11, 1890; in Belgium, No. 91,669, dated August 18, 1890; in England, No. 13,359, dated August 25, 1890; in Italy, XXIV, 28,032, LV, 225, dated August 10, 1890; in Sweden, No. 2,744, dated August 18, 1890; in Switzerland, No. 2,581, dated August 15, 1890; and in Austria-Hungary, No. 36,992, Tom. XI, Fol. 3,894, and No. 63,309, Tom. XXIV, Fol. 3,803, dated August 16, 1890,) of which the following is a specification.

This invention relates to electro-locomotives, and consists in the construction hereinafter described and set forth, whereby a simple arrangement is provided in which the motor is properly supported independently of the car body, and is relieved of the vibration sustained by the truck or gearing, and whereby also the car axles are made capable of a relative longitudinal and lateral torsional movement.

The invention further consists in certain novel features contributing to the general efficiency of the construction.

In the accompanying drawings, forming part of the specification, Figure 1 is a side view, partly in section, of so much of an electro-locomotive as is sufficient to show my invention. Fig. 2 is a plan view, and Fig. 3, a front view of the same.

As illustrated, a horizontal tripod frame is formed of bars each comprising two sections A A, the latter being individually of  shape in cross section, and secured together to leave an intervening slot *a*. The said bars, composing the tripod frame, are of angular configuration and are converged at their front,—their rear ends being connected to the rear axle D by means of the hangers I I, depend-

ing rigidly from said axle. Centrally, on the front axle E, a block K is mounted in which said axle E turns. The front and rear portions of the block K are channeled, as shown, each of said channels increasing in width from a central point on the top of the block toward the bottom. A pair of bails or links F F bear in the channels, and terminate at their lower ends in eyes *a' a'*, each of which bears and is bolted between the parallel sides of the  shaped irons forming one of the bars of the frame. The  shape of the sections A A not only insures lightness but durability as well.

By reference to Fig. 2, it will be noted that the sections A A of each frame bar are so relatively secured together that an extended intervening slot is afforded.

Three standards G G and H, are each threaded at the lower end to present a bolt extension *b* adapted to pass through the slot and be clamped by a nut on the underside of the frame bar, to hold the standard rigidly in position. The upper portion *c* is also reduced to engage a vertical perforation therefor in the motor frame L;—each of said perforations containing an insulating bushing.

Rubber cushions B are interposed between the motor frame and shoulder *d* of the standards. In lieu of these rubber cushions, any other suitable character and construction of springs may be employed.

From the foregoing description, it will be readily understood that the link suspension of the motor supporting frame from the front axle will permit the latter to have a limited longitudinal oscillating movement relative to the motor, its supporting frame and the rear axle, and thus are secured several important advantages prominent among which may be noted the fact that the movement imparted to the supporting frame occasioned by the momentum in starting and stopping will result in no strain on the parts. It will also be seen that the form of channels is such that the links can slue therein and permit the front axle to have a lateral torsional move-

ment relative to the rear axle and thus enable the electro-locomotive to readily turn curves.

5 The cushions or springs B B secure for the motor proper a limited cushion movement without objectionably varying the parallelism of the armature shaft with the driven axle, or in any way affecting the proper relation of the gearing.

10 The standards, G G and H, can be adjusted at any point within the frame so as to accommodate motor frames of different or varying dimensions.

15 It will be apparent that the motor frame may be supported by standards at more than three points and that instead of the tripod, a supporting frame of rectangular or other shape may be employed.

I claim—

20 1. The combination in an electro-locomotive, of a motor supporting frame connected at the rear with rigid bearings in which turns the rear axle and having a free swinging connection with the front axle, shouldered standards mounted on said supporting frame, a motor sustained by said standards, and springs interposed between the shoulders of the latter and the motor, substantially as described.

25 2. The combination in an electro-locomotive, of a motor supporting frame and rear

axle, a block in which the front axle turns, and a link connection suspended therefrom and connected to the supporting frame to permit the relative longitudinal movement of the latter in relation to said axle, and the lateral torsional and vertical oscillation of the latter, substantially as described. 35

3. The combination in an electro-locomotive, of a motor supporting frame formed of compound bars, each comprising sections relatively secured to provide an intervening slot at the front portion thereof, the rear and front axles and wheels, a block in which the front axle turns, and a link suspended from said block and having heads seated and bolted in the slots of the frame bars, substantially as described. 45

4. The combination in an electro-locomotive, of a motor supporting frame, rear and front axles and wheels, a block in which the front axle turns and provided with front and rear channels of increasing dimensions, and links seated in channels and connected to the supporting frame, substantially as described. 50

In testimony whereof I have affixed my signature in presence of two witnesses. 55

ALEXANDER PHILIPSBORN.

Witnesses:

MAX. LOHIEMANN,  
MAX WAGNER.