

(No Model.)

3 Sheets—Sheet 1.

C. ZIPERNOWSKY.

ROLLING STOCK FOR TRAMWAYS OR RAILWAYS.

No. 445,583.

Patented Feb. 3, 1891.

fig. 1.

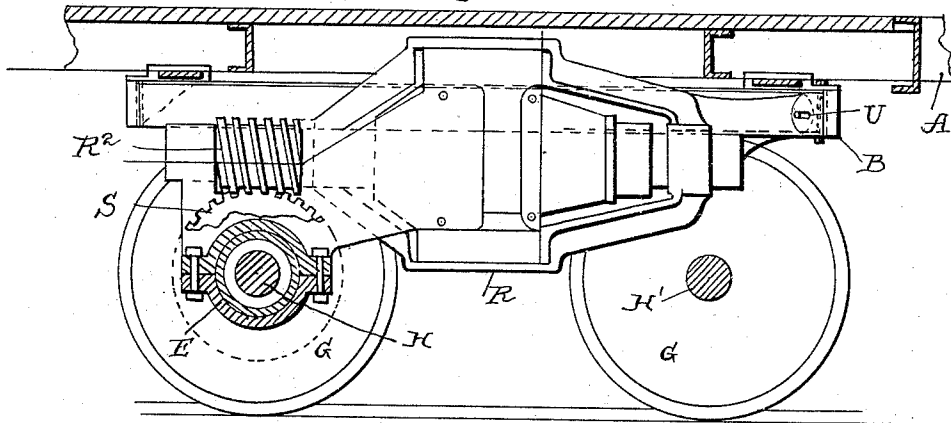
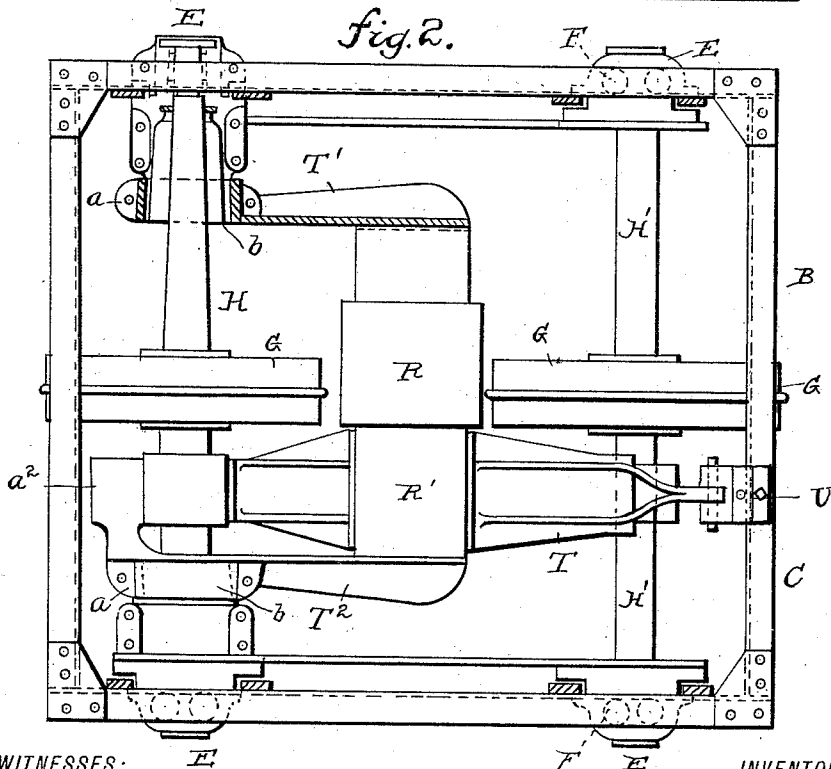


fig. 2.



WITNESSES:

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INVENTOR

Charles Zipernowsky
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(No Model.)

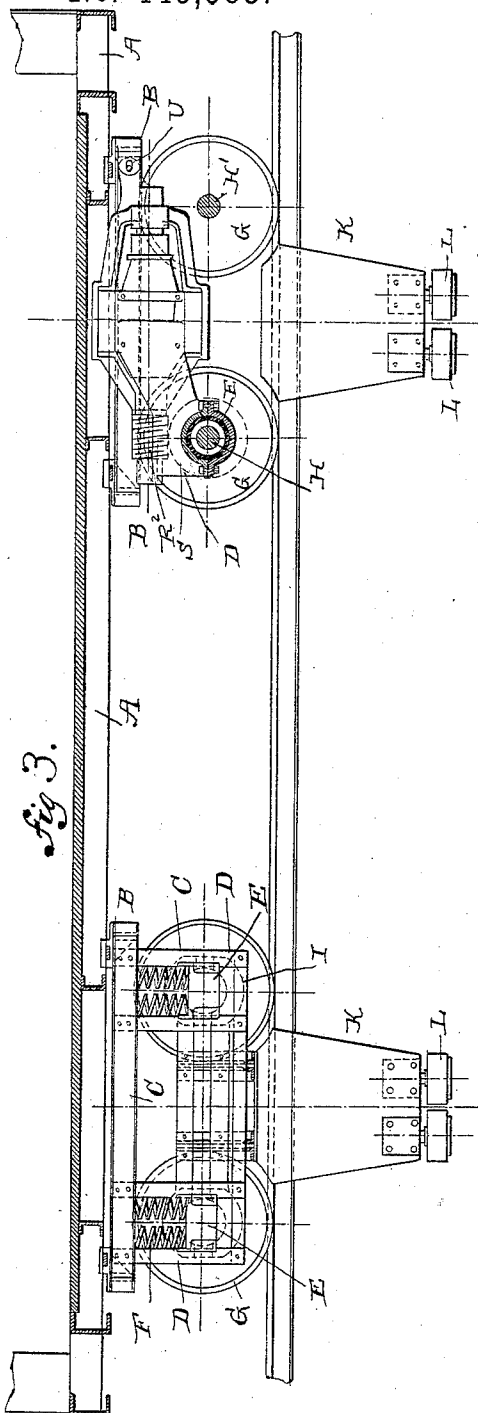
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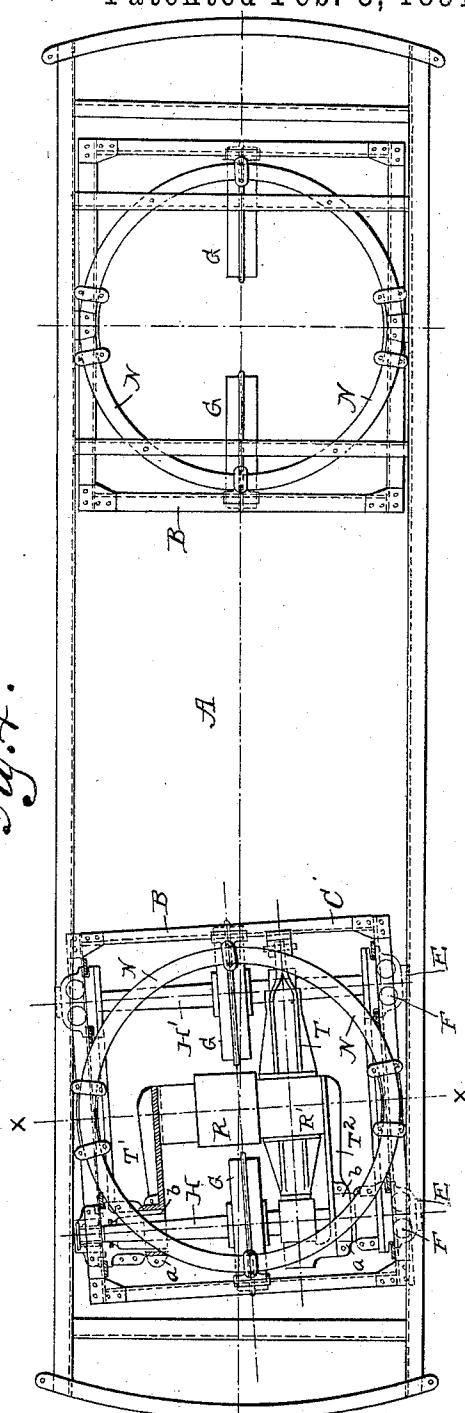
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Fig. 4.



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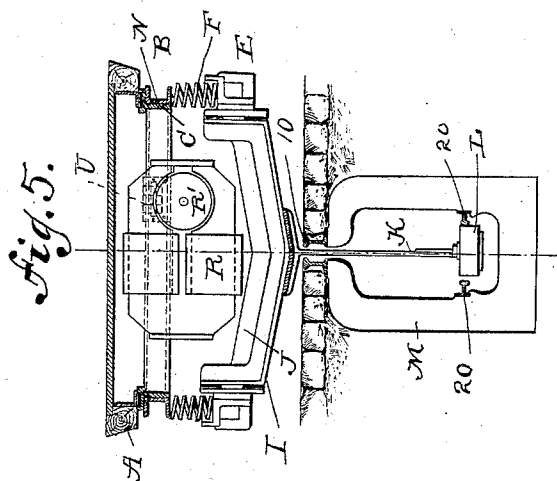
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UNITED STATES PATENT OFFICE.

CHARLES ZIPERNOWSKY, OF BUDA-PESTH, AUSTRIA-HUNGARY.

ROLLING-STOCK FOR TRAMWAYS OR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 445,583, dated February 3, 1891.

Application filed September 22, 1890. Serial No. 365,860. (No model.)

To all whom it may concern:

Be it known that I, CHARLES ZIPERNOWSKY, a subject of the King of Hungary, and residing at Buda-Pesth, Austria-Hungary, have invented new and useful Improvements in Rolling-Stock for Tramways or Railways, of which the following is a specification.

My invention relates to the construction of swinging bogies or trucks for vehicles for railways having vertical tracks, such as were described in United States Letters Patent No. 415,991, granted to me November 26, 1889, and more especially in the case of the propulsion of vehicles by means of electricity to the means employed for obtaining an elastic attachment of the electromotor to the vehicle, so as to enable the energy of the motor to be transmitted to the driving axle or axles independently of the motions of the vehicle supported thereby.

In the accompanying drawings, which illustrate my invention, similar letters of reference indicate like parts.

Figure 1 shows a truck in elevation connected to the body of a vehicle, the left-hand axle, axle-box, and the support for the electromotor being shown in vertical section. Fig. 2 is a plan view showing the method of supporting the motor by the axle-boxes and vehicle-frame. Fig. 3 is a view in elevation of the trucks provided with the attachment to be used with the vertical tracks. Fig. 4 is a plan view of a vehicle so constructed. Fig. 5 is a transverse section on the line $x x$ of Fig. 4.

In the drawings, A indicates the vehicle-frame, and B the bogie-trucks which support the frame, one at each end. The trucks consist of a rectangular frame C and dependent box-frames D, which carry the usual axle-boxes E, over which and between the frame of the vehicle and its boxes are the springs F.

G are the wheels, and H and H' the axles. The wheels are shown located in the axial line of the truck, so as to bear upon the centrally-placed slotted rail 10, Fig. 5, in the manner fully described in my patent, to which I have previously referred.

Connecting the box-frames D are the cross-plates I, which support the transverse angle-frames J, which in turn form a point of at-

tachment for the arms K, Figs. 3 and 5, carrying the guiding-rollers L, which bear upon the rails 20, placed in the channel or subway M below the street-surface.

The trucks constructed as described may be attached to a vehicle-frame by means of any ordinary center bolt or riding-bolster, or by means of a swiveling ring—such as that shown at N—connected to the body of the car by bolts O and to the truck-frame by means of the guides P, which arrangement allows the truck to follow the direction of the track independently of the position of the vehicle-frame.

R represents an electromotor, R' its armature, and R² a worm-gear which overrides and meshes with a toothed gear S, located on the driving-axle H. The electromotor is supported in three arms T T' T². The arms T' and T² are carried forward as extensions of the field-magnet of the motor, and are provided with annular openings a , which surround sleeves b , which project inwardly from the axle-boxes E. The driving-axle passes through the annular openings of the arms T' T². The arm T² is provided with an extension a^2 , which forms one bearing for the end of the armature-shaft of the motor. The arm T is connected to the vehicle or truck frame through the universal joint U.

By means of the construction as described I obtain a fixed relation between the motor and the driving-axle and one which is entirely independent of the motions of the driving-axle in its truck or the truck as regards the body of the car. The motor, it will be noticed, swings concentrically to the driving-axle through a smaller arc without being supported by the axle itself, thus relieving the axle entirely of dead-weight, the support being at one end by the truck-frame and at the other end by the axle-boxes. Consequently by my method of attachment the movement of the motor concentrically to the axle, due to the motion of the vehicle, is so small that lubrication is not required and I am enabled to distribute the weight of the motor between the several axles which support the vehicle.

I have described my invention as applicable to railways with vertical tracks, and also to vehicles provided with bogie-trucks. It is evident, however, that the method of attach-

ing the motor described may be employed on any class of trucks or vehicles adapted for use on any species of roadway.

I claim as my invention—

- 5 1. The combination of a wheeled vehicle and a propelling-electromotor mounted thereon, having its field-magnet sleeved on extensions of the axle-boxes of the driving-axle of said vehicle, substantially as set forth.
- 10 2. The combination of a wheeled vehicle and a propelling-electromotor mounted thereon, the field-magnet of which is sleeved on extensions of the axle-boxes of said vehicle at one end and supported by a movable connection to the body of the vehicle at the other end.
- 15 3. The combination, with a wheeled vehicle elastically supported upon the axles thereof, of an electromotor supported at one end by the vehicle-frame and at the opposite end by one or more of the axle-boxes.
- 20 4. The combination of a wheeled vehicle and a propelling-electromotor mounted thereon, the field-magnet of which is sleeved upon the axle-boxes of the driving-axle of said vehicle, an armature for said motor supported by said field-magnet, and a gearing between the armature-shaft and the driving-axle of the vehicle, substantially as set forth.

5. The combination, with a wheeled vehicle, of a propelling-electromotor centered upon the boxes of the driving-axle thereof, an armature for said motor, provided with a worm-gear, and a toothed gear upon the driving-axle of said vehicle, which meshes with the worm-gear on the armature-shaft.

6. The combination, with a wheeled vehicle, of axle-boxes provided with extensions *b*, a propelling electromotor sleeved thereon, and a pivotal support for said motor directly connected to the vehicle-frame.

7. The combination, with a vehicle-frame, of a bogie-truck therefor, a propelling electromotor suspended in the manner described on said truck, and a dependent arm or arms from said truck carrying bearing-rollers adapted to bear upon the guiding-rails of a vertical railway.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHAS. ZIPERNOWSKY.

Witnesses:

GEO. H. BENJAMIN,
OTTO T. BLATHRY.