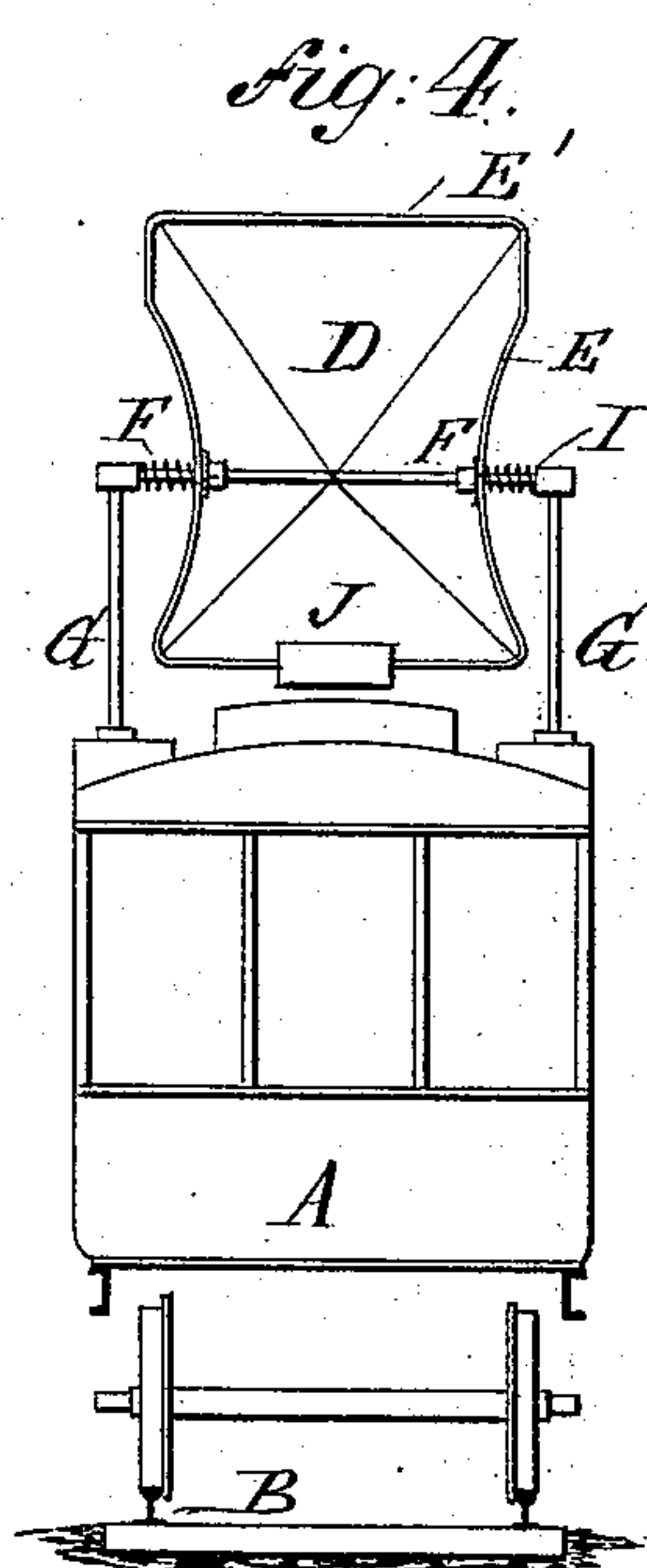
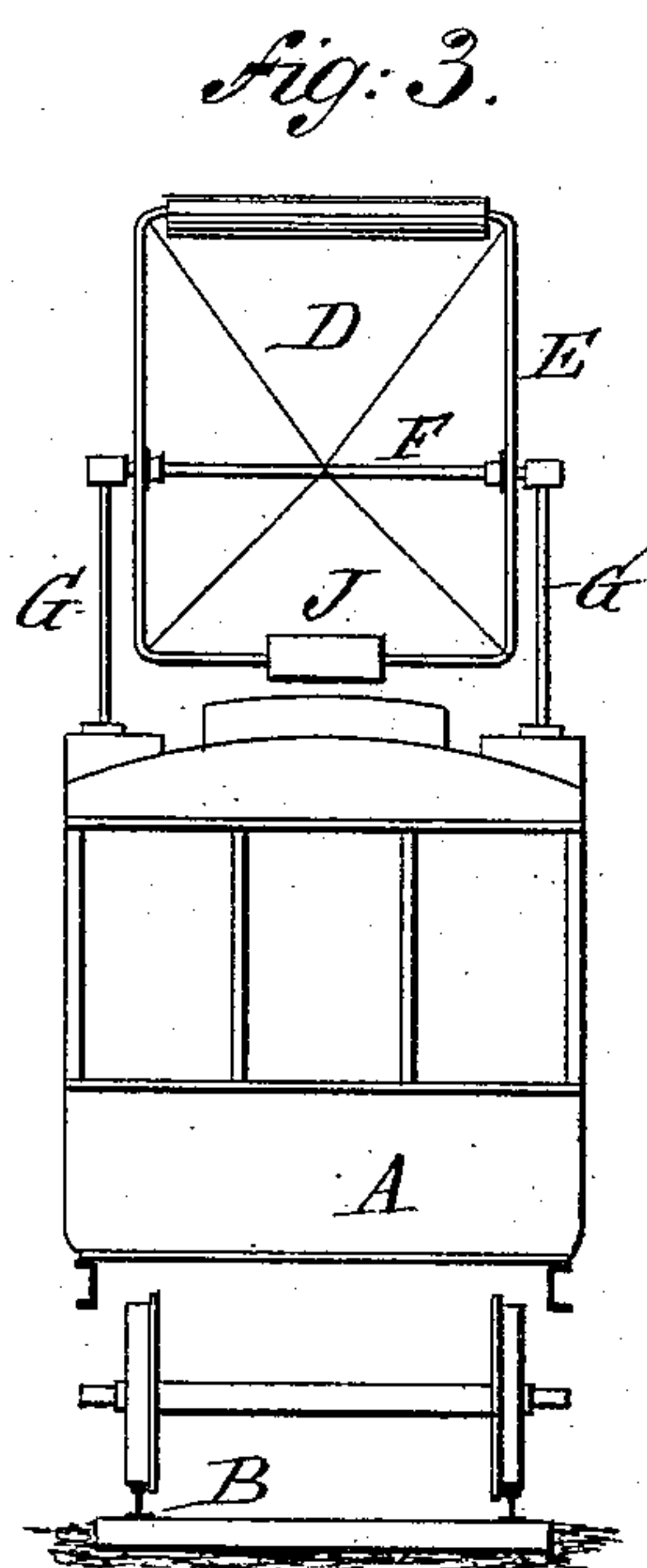
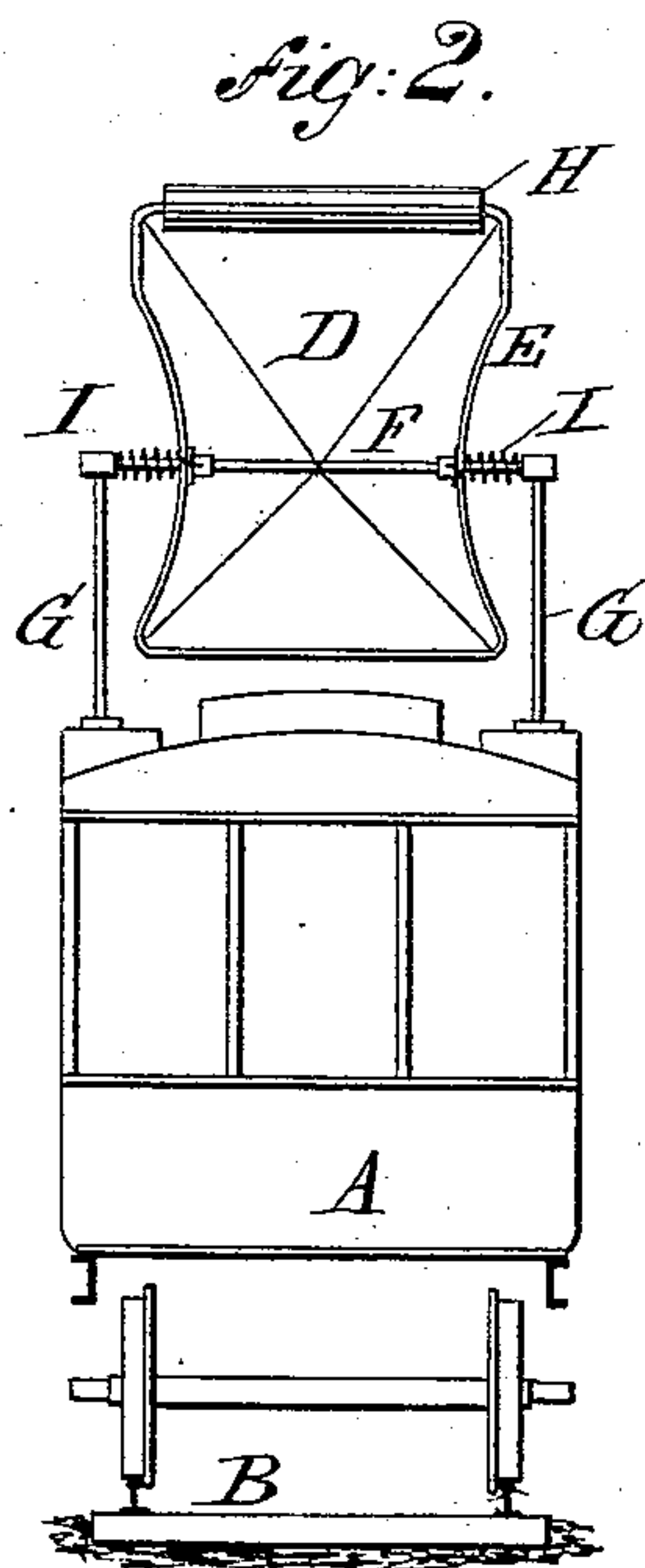
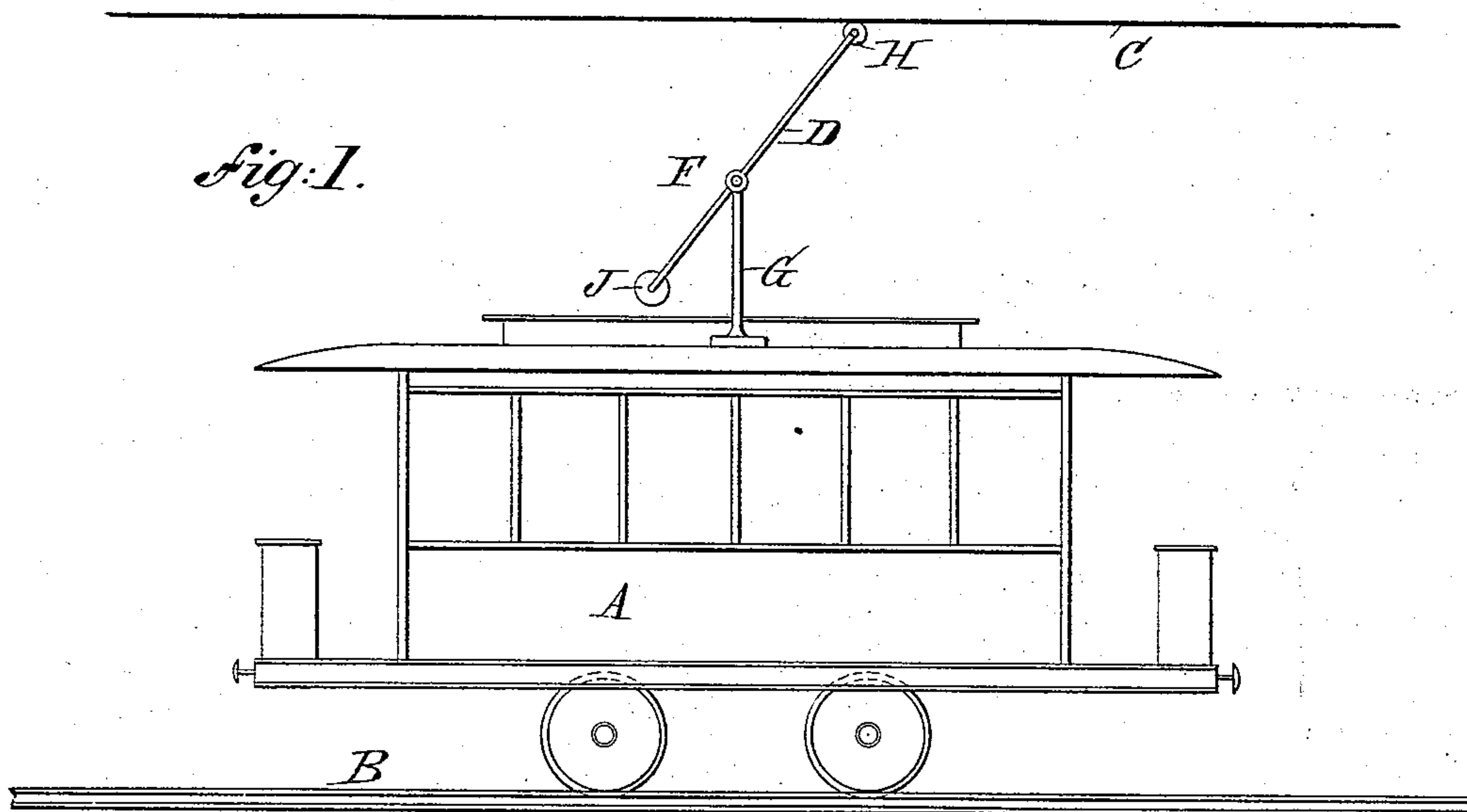


(No Model.)

A. WÖRNER.
ELECTRIC RAILWAY TROLLEY.

No. 487,813.

Patented Dec. 13, 1892.



WITNESSES:
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ELECTRIC-RAILWAY TROLLEY.

SPECIFICATION forming part of Letters Patent No. 487,813, dated December 13, 1892.

Application filed February 3, 1892. Serial No. 420,169. (No model.) Patented in France August 11, 1890, No. 207,555; in Germany October 4, 1890, No. 53,783, and in England May 8, 1891, No. 10,743.

To all whom it may concern:

Be it known that I, ADOLF WÖRNER, a subject of the Emperor of Germany, residing at Buda-Pesth, in the Kingdom of Hungary, have invented new and useful Improvements in Electric Railways, (for which I have obtained Letters Patent in Germany on October 4, 1890, No. 53,783; in France on August 11, 1890, Patent No. 207,555, and in Great Britain on May 8, 1891, No. 10,743, of which the following is a specification.

My improvement relates to the means employed for making the electrical connection between the conductor or conductors conveying the electric energy suspended above the track of a tramway-line and a movable electromotor on the line.

My invention consists in providing a contact device of such shape and so mounting it upon the car that contact will be maintained with a conductor displaced laterally or suspended in any position above the car and without exerting any pressure upon the conductor.

My invention further relates to a contact device which will maintain contact with the conductor, irrespective of the direction of motion of the car and without the necessity of adjustment by hand when the direction of the car is changed.

The contact devices usually employed in electric railways consist of a pivotally-mounted arm, carrying a small wheel, the wheel having a grooved surface. The objection to this form of device has arisen from two causes: First, as the rim of the grooved wheel moves faster than that portion of the wheel bearing upwardly upon the line conductor, the conductor is at all times subjected to a transverse rubbing action of the rim of the wheel, which tends to rapidly destroy the conductor; second, where electric railways are built through country roads the line conductor is apt to be displaced by wind-storms, &c., in which case the contact-wheel, mounted on an arm which has but a small lateral movement, cannot follow the course of the displaced conductor, or if it does it exerts a considerable lateral pressure thereon, thereby tending to break the conductor. With my

improved device I provide means for maintaining the contact so long as the conductor is suspended above the car.

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

Figure 1 is an elevation of a tram-car supposed to be provided with the usual electromotor and on the top of the car is mounted my improved contact device. Figs. 2, 3, and 4 are end sections showing, respectively, Fig. 2, the contact device provided with a friction-roll and springs for maintaining it in apposition to the conductor; Fig. 3, the contact device provided with a friction-roll and a weight for maintaining it in apposition to the conductor; Fig. 4, the contact device adapted for a rubbing contact and provided with springs and a weight for maintaining it in apposition to the conductor.

In the drawings, A indicates a tram-car of the usual construction and is supposed to be provided with an electromotor; B, one of the bearing-rails upon the street-surface; C, line conductor from the source of electric energy, and D, contact device mounted upon the car A. The contact device D consists of a rectangular metallic frame E, mounted upon a horizontal axis F at about its center, the ends of which are pivoted in the standards G G on each side of the top of the car.

H is a metallic sleeve formed over the top of the framework E and which will revolve when brought in contact with the line-wire C. In some cases I prefer to use a rubbing contact, as shown at E', Fig. 4.

In order to maintain the top of the contact device in contact with the conductor C, either the helical springs I or the weight J, or both the springs I and the weight J, may be employed, as shown in Fig. 4. The springs I also serve the purpose as conductors for the current collected by the contact device. The springs are fastened at one end to the frame of the contact device and at the other end to the standards G G, and are so coiled as by their resiliency to force the contact-sleeve H or surface E' of the contact device against the conductor C, irrespective of the direction of motion of the car.

In arranging my improved device upon the top of a tram-car I so locate the pivotal axis F of the frame that the frame may automatically assume a vertical position and alter its position to accommodate itself to a change in the direction of motion of the car and without the bottom part of the frame touching the top of the car.

I do not limit myself to the shape of the contact device as shown and described in this application nor to the means employed for maintaining the upper surface of the contact device in apposition with the line conductor, as many changes may be made therein, or instrumentalities employed without in any wise departing from the intent of my invention.

I am aware that a contact device has heretofore been constructed, consisting of a metallic frame pivoted at one end to the body of the car and given an upward movement by means of a spring or weights, and such I do not claim, broadly, as my invention.

Having thus described my invention, I claim—

1. In an electric railway, the combination, with a moving vehicle having an electromotor mounted thereon, of an electric conductor situated above the vehicle, a contact device consisting of a metallic frame provided with a revolving sleeve which covers the upper surface of said frame, said frame pivoted at about its center in suitable supports, on the top of said vehicle and adapted to make an upwardly-yielding and laterally-sliding contact through said sleeve with said conductor, and means for maintaining said contact device in apposition with said conductor, irrespective of the direction of motion of said vehicle.

2. An upward-pressure contact for electric railways, comprising the combination of a metallic frame pivoted at about its center, pivotal supports for said frame connected to but extending above the body of the vehicle, and springs for imparting an upward movement to the upper portion of said frame.

3. An upward-pressure contact for electric railways, comprising the combination of a metallic frame pivoted at about its center, pivotal supports for said frame connected to but extending above the body of the vehicle, and means, such as described, whereby the angular inclination of the contact-frame relative to the body of the vehicle may be automatically altered by change of direction of the motion of the vehicle without disturbing the contact between it and the conductor, upon which it bears.

4. An upward-pressure contact for electric railways, comprising the combination of a metallic frame, pivotal supports for the frame connected to but extending above the body of the vehicle and supporting said frame above its center of gravity, whereby upward movement will be given to the upper portion of said frame and contact preserved between it and the conductor upon which it bears, irrespective of the direction of motion of the vehicle upon which it is placed.

5. An upward-pressure contact for electric railways, comprising the combination of a swinging metallic frame, a revolving sleeve covering the upper portion of said frame, pivotal supports for the frame, which carry it so far above the top of the vehicle that its lower portion may swing clear of the top of said vehicle when the angular inclination of the frame is altered by a change of direction in the motion of the vehicle, and a device which will maintain the said contact-device in apposition with said conductor, irrespective of the direction of motion of the vehicle upon which it is placed.

In testimony whereof I have this 20th day of November, 1891, signed my name to this specification in the presence of two subscribing witnesses.

ADOLF WÖRNER.

Witnesses:

GEO. H. BENJAMIN,
C. M. LAMBERT.