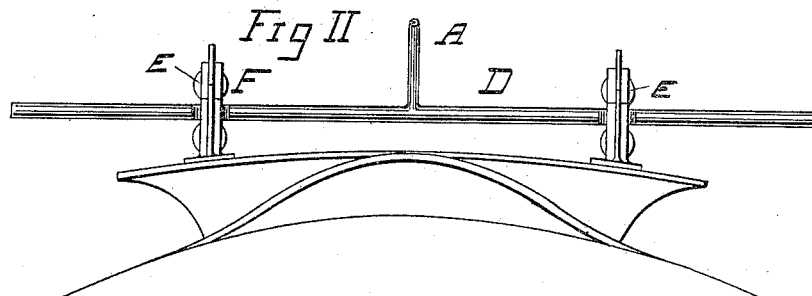
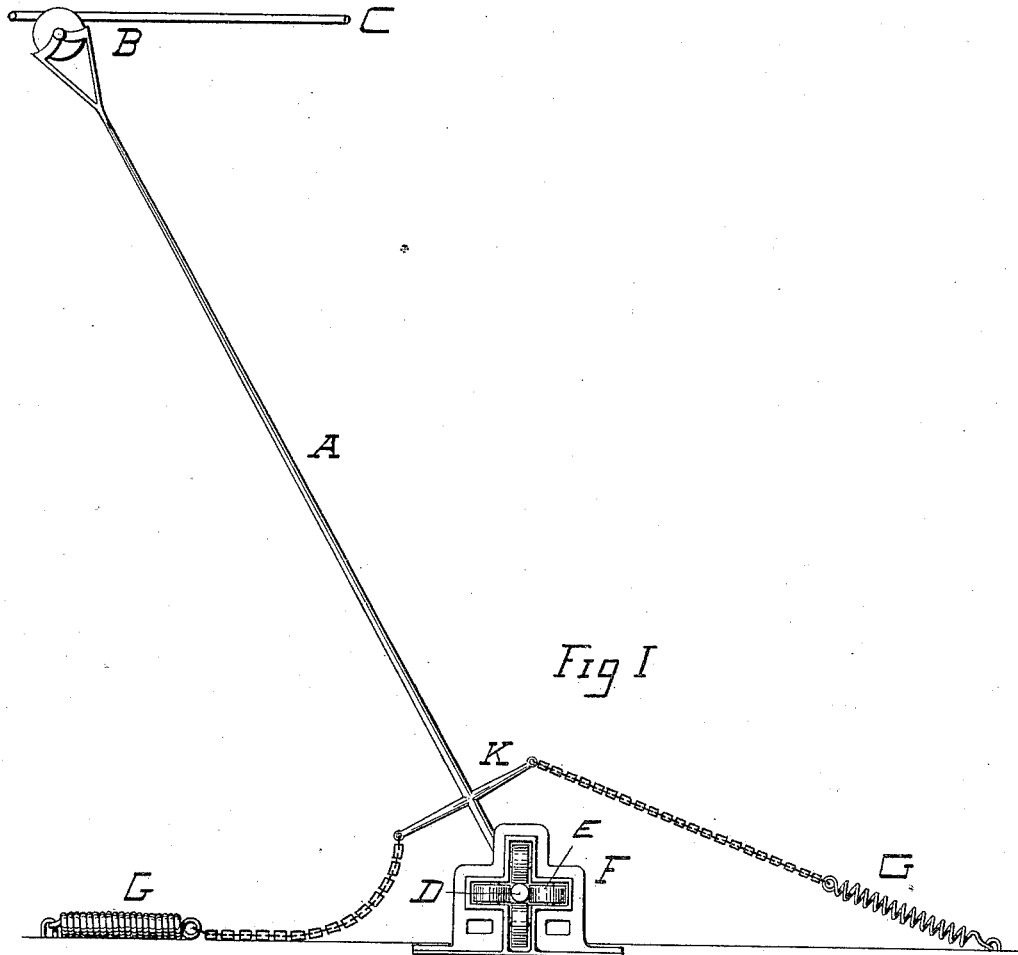


(No Model.)

F. O. BLACKWELL.
ELECTRIC RAILWAY CONTACT.

No. 417,974.

Patented Dec. 24, 1889.



WITNESSES

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UNITED STATES PATENT OFFICE.

FRANCIS O. BLACKWELL, OF NEW YORK, N. Y.

ELECTRIC-RAILWAY CONTACT.

SPECIFICATION forming part of Letters Patent No. 417,974, dated December 24, 1889.

Application filed July 5, 1889. Serial No. 316,550. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS O. BLACKWELL, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric-Railway Contacts, of which the following is a specification.

My invention relates to contact devices for electric railways, especially those in which a suspended supply-wire above the roadway is employed. It is illustrated in the accompanying drawings, in which—

Figure I is a side elevation of the contact device. Fig. II is an end elevation of the lower part of the contact device where it is attached to the car.

The invention consists in providing a rod or arm extending upwardly from the car with a transverse slide at its lower end, permitting it to move from side to side of the car as the irregularities in the supply-wire may necessitate, in combination with other features of construction, as related in the claims hereinafter made.

In the drawings, A is a long trailing rod or arm extending rearwardly from its point of support upon the vehicle and having at its outer end a contact-wheel B, adapted to ride along the supply-wire C, suspended above the roadway in any suitable manner. The rod A at its lower end is provided with a transverse piece D, which has a bearing formed by two sets of embracing-rollers E, each set comprising four rollers journaled in a frame F and bearing vertically and horizontally against the part D, as shown. The transverse extension D is of considerable length, so that a long base is afforded for the lateral movement of the contact device as it follows the sinuosities in the supply-wire C. The contact-arm A is held in position against the wire C in either direction of progress by means of a spring G, fastened at some distance from the base of the contact-arm, and provided with a chain or other connection having freedom of movement laterally, so that while the transverse movement of the contact device may take place freely the action of the spring holding the

contact device to its work is not interrupted. The spring G is attached to a short cross-piece K on the rod A.

By the construction above described it will be observed that the bearings form a guide, along which the contact-arm is free to move transversely, and that, too, without hindrance from the springs G G, while on the other hand the springs tend constantly to swing the arm around the transverse bearing as a center, thereby holding it up in engagement with the conductor.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a suspended line-conductor and an electrically-propelled vehicle, of an intermediate contact device consisting of an arm movable about a center, with a guide therefor permitting freedom of transverse movement, and a spring actuating the said arm about its center of movement and holding it in operative connection with the line-conductor.

2. In an electric railway, the combination, with the suspended line-conductor, of an electrically-propelled vehicle, an intermediate contact device consisting of a contact-arm movable about a center, a guide therefor permitting freedom of transverse movement at the base of the said arm, and a spring independent of the said guide, attached at one end to said arm and at the other end to a fixed part of the vehicle, substantially as described.

3. The combination of contact-arm A, transverse extension D, and bearings on the vehicle, in which the arm D moves laterally, and a spring, actuating arm A about a center, substantially as described.

4. The combination of contact-arm A, a guide therefor at its base permitting freedom of transverse movement, and a spring G, extending from said arm to a fixed part of the vehicle and partaking of the lateral movement of the contact-arm.

5. The combination, with the suspended line-conductor and an electrically-propelled vehicle, of an intermediate contact device consisting of an arm movable about a center, an actuating-spring therefor, and a guide

provided with rollers and permitting freedom of transverse movement to the contact-arm, substantially as described.

5 6. The combination, with a suspended line-conductor and an electrically-propelled vehicle, of an intermediate contact device movable about a center and bearing upon the under side of the supply-conductor, a spring holding the contact device upwardly against
10 the conductor, and a guide at the base of the contact-arm, permitting freedom of transverse movement, whereby it may correspond to the sinuosities of the supply-wire.

7. The combination, in an electric railway,
15 of an electrically-propelled vehicle and the contact-arm A, for engagement with a line-conductor, having the transverse extension D, with the friction-rollers bearing both vertically and horizontally on the said extension.
20

8. The combination, in an electric railway, of an electrically-propelled vehicle with the contact-arm A, for engagement with a line-

conductor, having the transverse extension D and a bearing for each end of the extension
25 D, permitting the arm a transverse sliding movement relatively to the vehicle.

9. The combination, in an electric railway, of a suspended line-conductor with an electrically-propelled vehicle, a swinging contact-
30 arm for engagement with the line-conductor, and a guide permitting free transverse movement of the contact-arm, as described.

10. The combination, in an electric railway, of a suspended line-conductor with an electrically-propelled vehicle, a trailing rear-
35 wardly-extending contact-arm mounted so as to swing about a transverse axis, a guide permitting free transverse movement to the contact-arm, and a spring for maintaining the
40 traveling engagement with the conductor, as described.

FRANCIS O. BLACKWELL.

Witnesses:

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