

(No Model.)

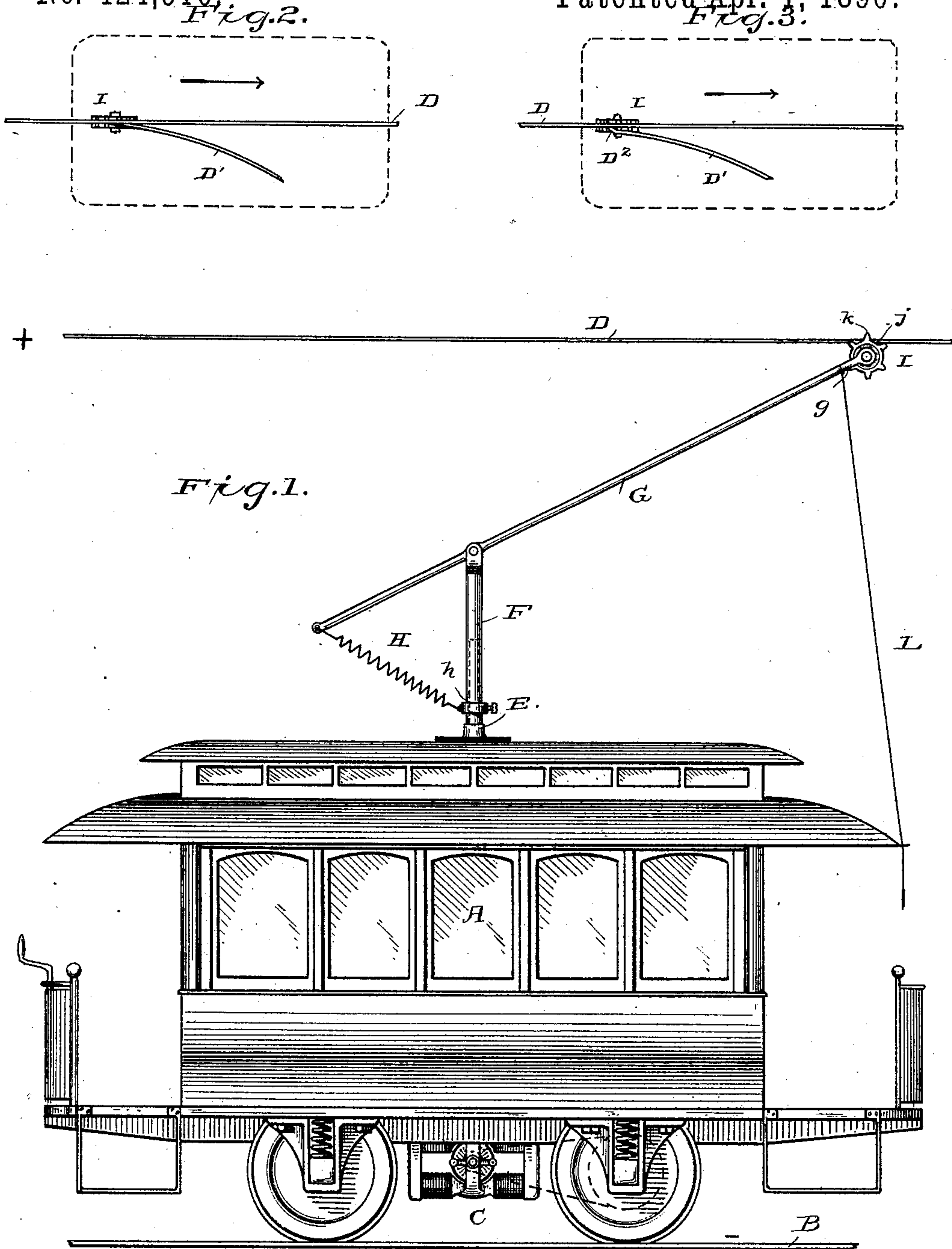
2 Sheets—Sheet 1.

C. J. VAN DEPOELE.

CONTACT DEVICE AND SWITCH FOR ELECTRIC RAILWAYS.

No. 424,910.

Patented Apr. 1, 1890.



Witnesses

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Fig. 4.

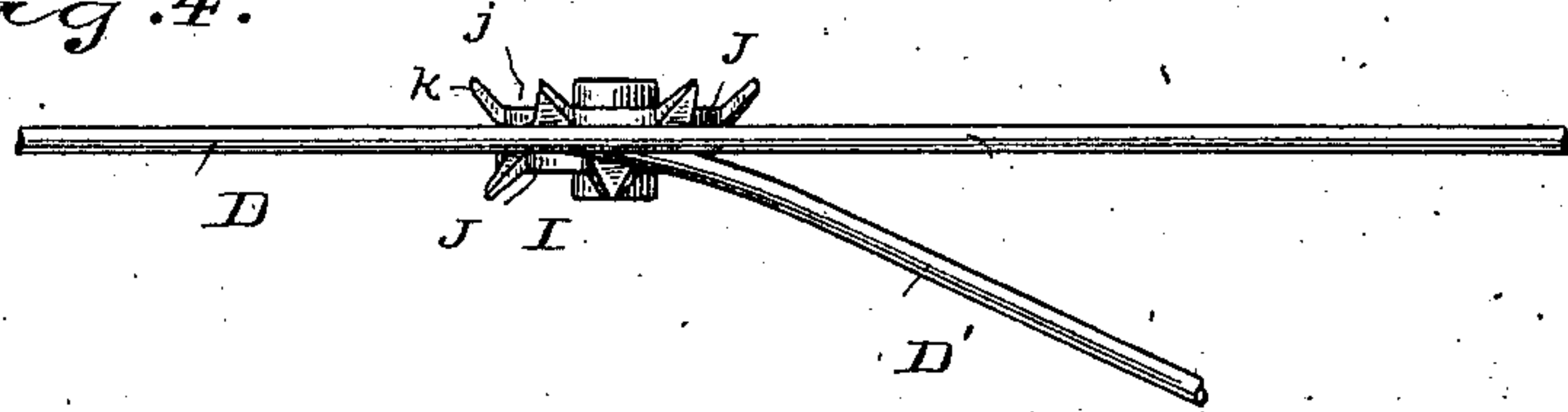


Fig. 5.

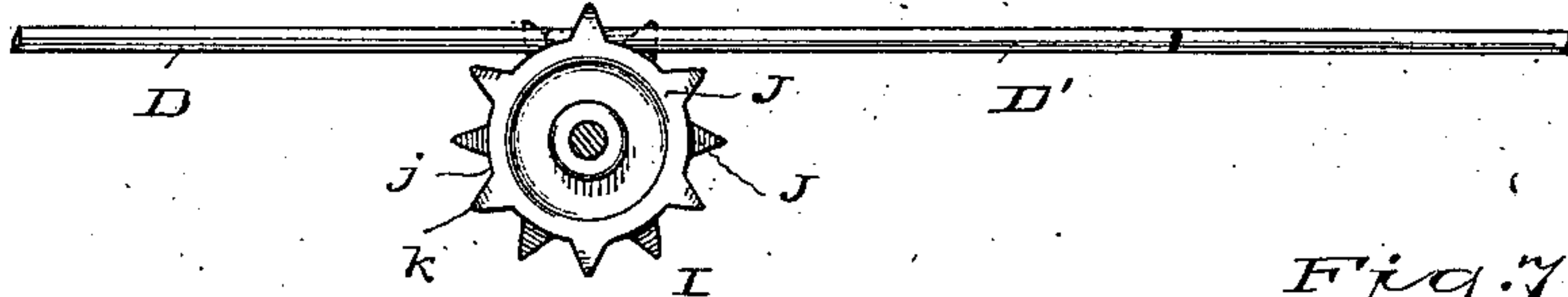


Fig. 6.

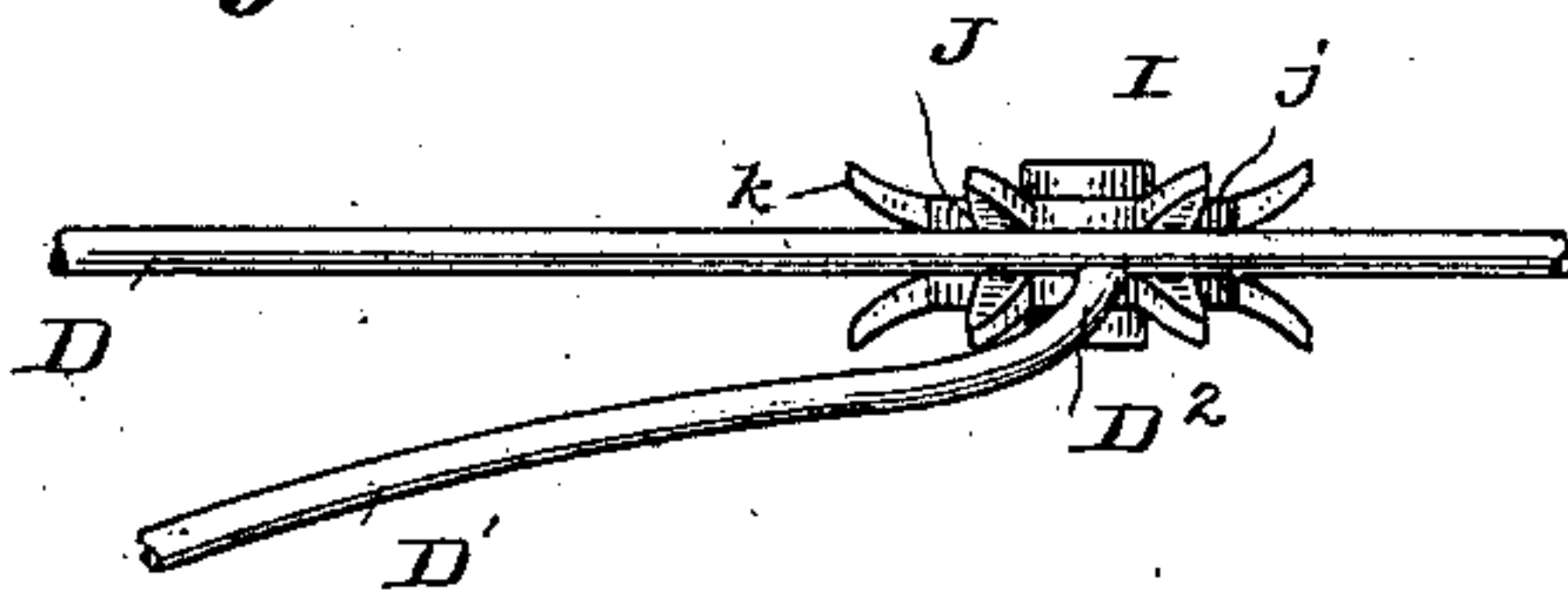


Fig. 7.

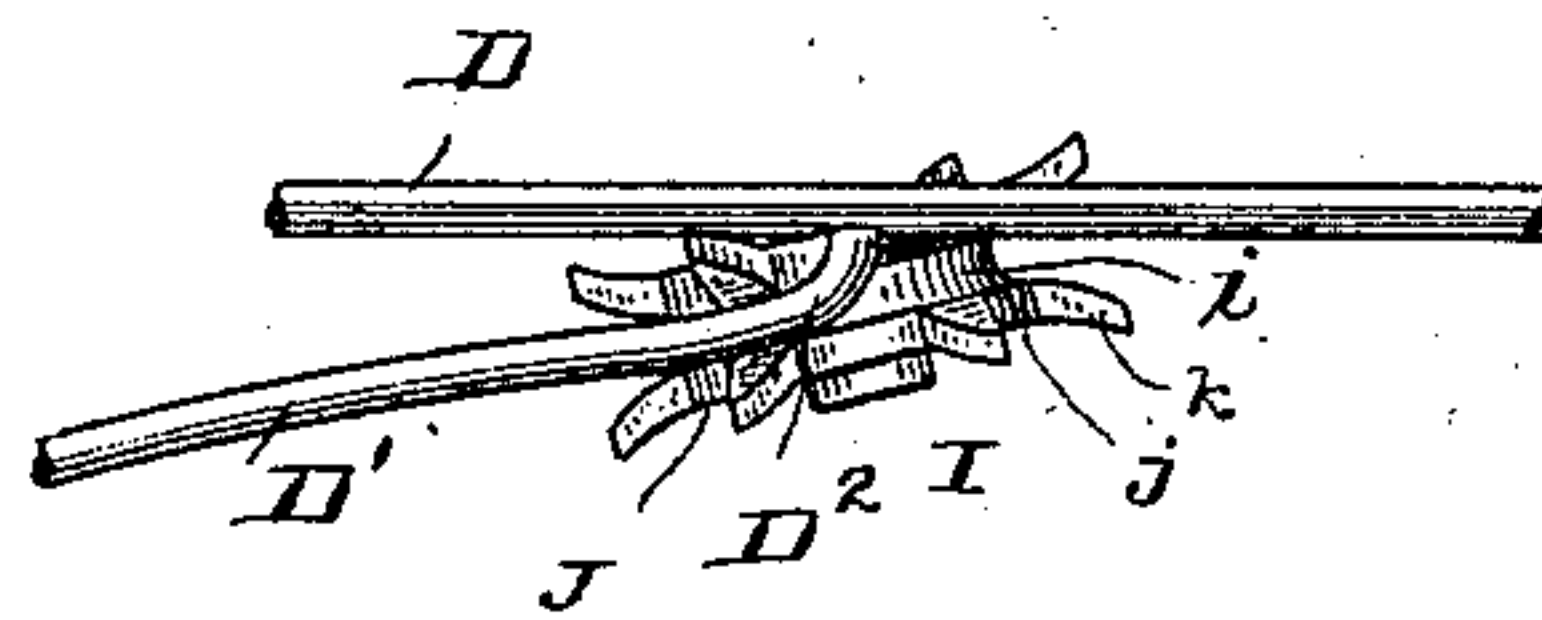


Fig. 8.

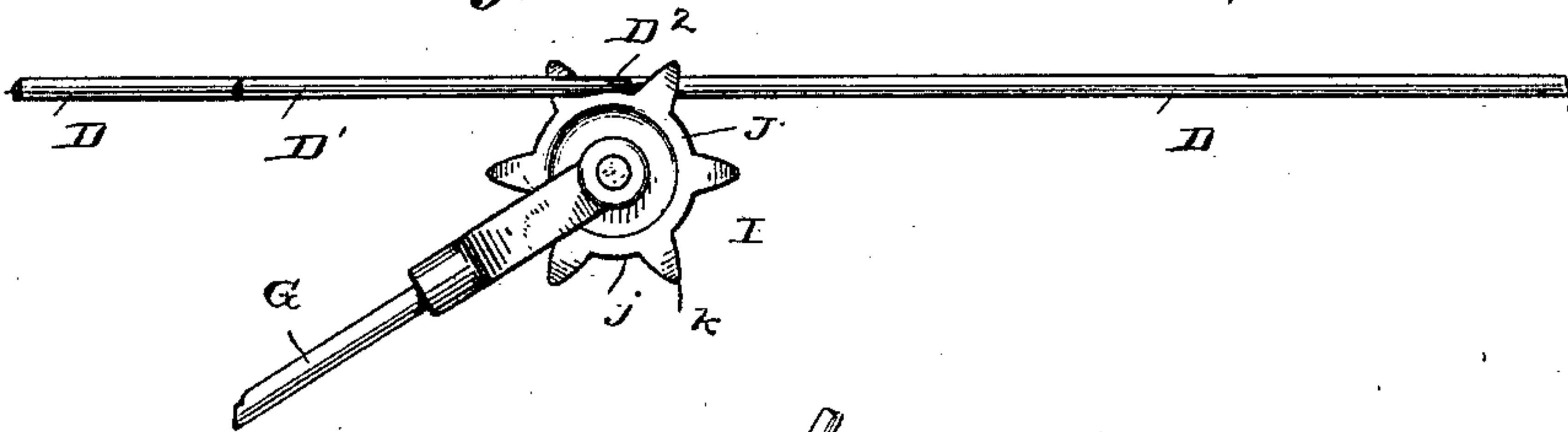
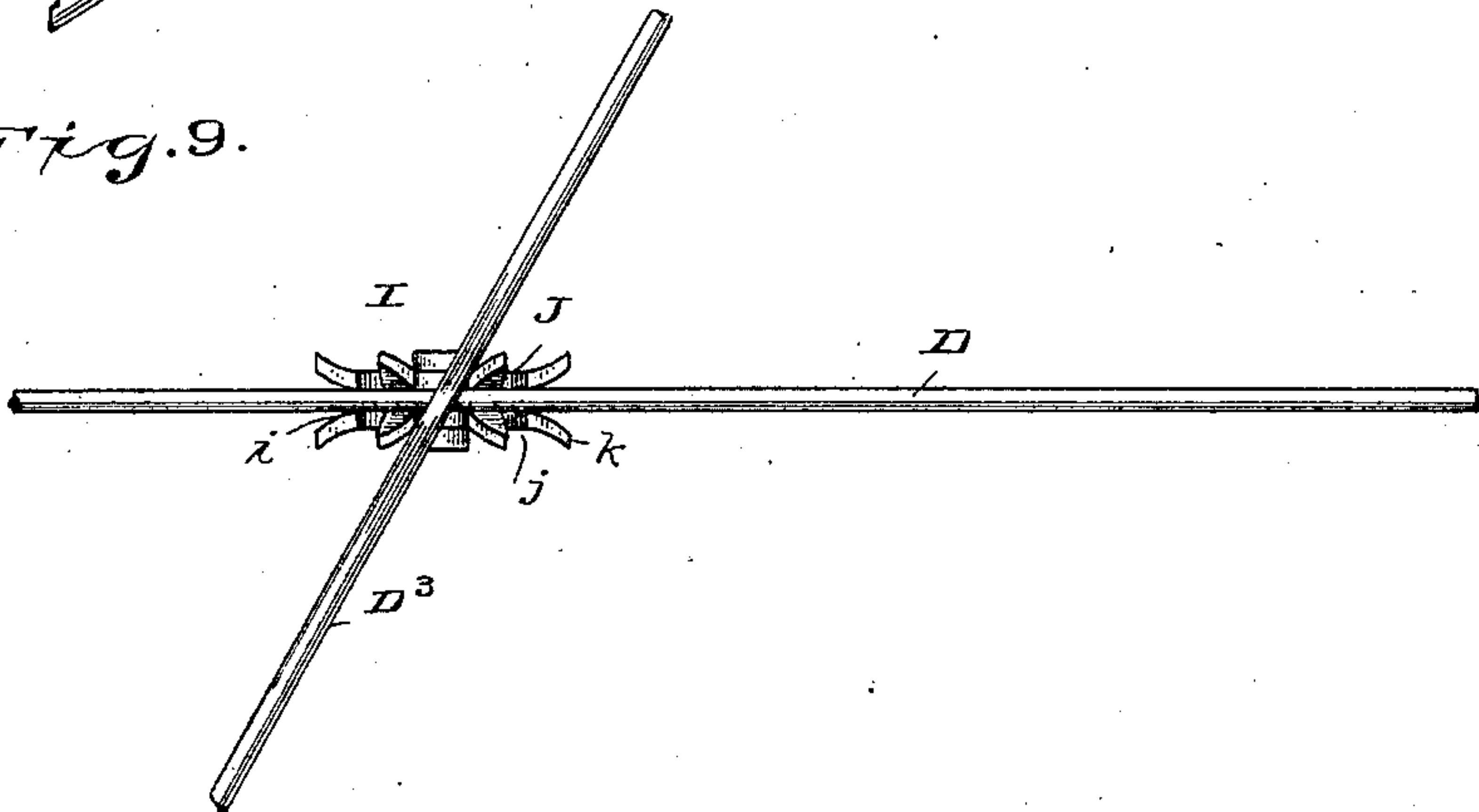


Fig. 9.



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UNITED STATES PATENT OFFICE.

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CONTACT DEVICE AND SWITCH FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 424,910, dated April 1, 1890.

Original application filed March 12, 1887, Serial No. 230,649. Divided and this application filed March 21, 1889. Serial No. 304,196. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. VAN DEPOELE, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Contact Devices and Switches for Electric Railways, of which the following is a description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention relates to electric railways of the type in which the current for the motor or motors upon the vehicles to be propelled is supplied from a conductor or conductors suspended above the line of travel; and it relates more particularly to devices for establishing and maintaining a traveling connection between the vehicle and its supply-conductor, and for switching the said contact device from one overhead conductor to another at turn-outs or where branching roads or conductors extend from the main line.

In a prior application filed by me March 12, 1887, Serial No. 230,649, two different styles of contact devices and switches therefor were shown, and the present case is a division of said prior application. In the present instance, by the use of a particular form of contact device held in contact with the under side of the suspended conductor by means similar to those described with reference to the contact devices used in connection with switch boxes or plates connected to the conductor, I am enabled to dispense with all such additional devices for switching the contact from a main to a branch conductor, and vice versa. By simply uniting the said main and branch conductors laterally the contact device is caused to automatically follow the desired path.

The construction, arrangement, and operation of my invention will be fully hereinafter described, and referred to in the appended claims.

In the drawings, Figure 1 is a view in elevation showing an electric railway-car and overhead conductor arranged and equipped according to my invention. Fig. 2 is a plan view, on a reduced scale, showing the position of the contact device and car in passing a turn out. Fig. 3 is a view similar to Fig. 2, but showing a

slightly-different arrangement of the conductors. Fig. 4 is a detail plan view showing the contact devices and conductors seen in Fig. 2, on an enlarged scale. Fig. 5 is a side elevation of the devices seen in Fig. 4, and on same scale. Figs. 6 and 7 are detail plan views of the switches seen in Fig. 3, on an enlarged scale. Fig. 8 is a side elevation of the devices illustrated in Fig. 6. Fig. 9 is a detail plan view showing the contact devices in the act of passing crossing conductors.

As indicated in the drawings, A is a car or other vehicle which, as shown, moves upon rails B. The car A is provided with an electro-dynamic motor C, which may be of any desired form and located wherever preferred, and connected with the carrying-wheels of the vehicle in any desired manner. These details, however, form no part of the invention.

The rails B may be connected to form one side of a circuit-connection being made from the negative post of the motor through the wheels to said track. When this is the case, but a single main supply-conductor will be required, which is indicated at D as being suspended twenty feet more or less above the track.

Upon the top of the car A is secured a post or spindle E, which should be properly insulated from the metallic roof of the car. Upon the post E is placed a tubular stem F, which is bifurcated at its upper extremity and has hinged to it at that point an arm G, the said arm being therefore hinged and pivoted upon the post E. The lower end of the arm G is provided with a tension spring or springs H connected to an adjustable collar *h* upon the tubular shank F. The action of the spring H upon the lower end of the arm G is to press the outer end of said arm upward. The outer extremity *g* of the arm G is bifurcated, and between the bifurcated extremities is mounted a grooved star-wheel I. The wheel I is of good conducting metal and may vary considerably in size, and it is provided with a peripheral groove *i*, preferably made deeper than the thickness of the conductor D, so that when the conductor D is in the groove *i* of the contact-wheel the edges thereof will project above the plane of the conductor.

The outer portion of the flanges J J of the contact-wheel I are notched or formed with openings *j* therein, so as to form projections or teeth K upon each flange, the points of
 5 said teeth K projecting somewhat above the conductor. The wheel I is shown as having the teeth K arranged in alternation on opposite flanges; but the teeth may also be arranged oppositely, as indicated in Figs. 6 to
 10 9. In ordinary use upon straight track the teeth K will not affect the operation of the traveling contact in any way.

The post E and the support of the arm G is desirably located at about the center of the
 15 top of the vehicle for the obvious purpose of enabling the contact-arm and wheel to be reversed when it is desired that the vehicle should move in the opposite direction. To facilitate the reversal of the contact devices
 20 a rope L may be attached at or near the end *g* of the contact-arm, by pulling upon which the outer end of the arm G will be lowered, when it can readily be pulled around into reverse position and then released to rise into
 25 engagement with the conductor.

At switches, turn-outs, or wherever the tracks of the roadway branch or diverge, instead of providing switch-boxes, plates, or similar devices to direct the contact-wheel
 30 from one conductor to another, I simply unite the branch conductor D' to the side of the main conductor D, leading it thence in the desired direction. Branching conductors of this nature are indicated in Figs. 2 to 8.
 35 The necessary length of the arm G causes it to hold the contact device up against the under side of the conductor in a position in rear of the front wheels of the car and in some instances in rear of both sets of wheels,
 40 as here indicated. In either position the car will take or pass the switches in the track and either remain on the straight track or follow the branch or turn-out before the contact-wheel I reaches the point where the
 45 branch conductor is attached to the main and will therefore have its direction determined before reaching that point.

According to the direction of the contact-wheel, it will, on meeting the point of union
 50 between the main and branch conductors, either lap the outside of the branch and pass from the main to the branch, or its points extend in between the branch and the main and so pass without raising the conductors or being
 55 itself depressed to any material extent and without any danger of being detached from its operative position.

In Fig. 2 a car is indicated in dotted lines as advancing in the direction of the straight
 60 track. The contact-wheel I is shown as just passing the point of union between main and branch conductors and said contact-wheel passes without interruption or difficulty, for the reason that the branch conductor falls
 65 naturally into one of the notches *j* as the wheel passes that point, as clearly illustrated in Fig. 4.

Fig. 3 shows an arrangement similar to Fig. 2, but with this difference, that the crotch or
 70 point of union between main and branch conductors is made wider or more open, forming a short bend D² in the branch conductor. This will not affect the passing of the contact-wheel from the main to the branch, as indicated in Fig. 7, and may under some cir-
 75 cumstances facilitate the passage thereof along the straight track at switching points.

In Fig. 7 the contact-wheel is indicated as passing upon a branch track. In this in-
 80 stance the contact-wheel will leave the main and switch from one conductor to the other, the main conductor falling into one of the notches *j* as the direction of the vehicle changes, the point K inserting itself in the
 85 crotch between the two conductors and thereby preventing lateral displacement.

As set forth in a prior application filed June 22, 1885, Serial No. 169,410, switches, as
 here shown and described, can be used in connection with a grooved contact-wheel, the
 90 wheel raising the conductors at the point of union, after passing which the direction thereof will be such that the contact-wheel will be in position to receive the desired con-
 95 ductor. By the use of a notched or star wheel, however, the raising of the conductors, with the attendant dangers of sparking or derailment of the contact device is practically
 100 done away with and the contact-wheel enabled to pass smoothly along the desired path.

In Fig 9 the notched wheel is seen in position to pass a crossing conductor D³.

I do not limit myself to any particular form or size of contact-wheel or number, depth, or
 105 disposition of the notches in the edges of the flanges thereof, since the same may be modified in many ways without departing from the invention.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In electric railways, the combination of a main conductor, a branch conductor united to and extending therefrom, and a self-switching contact device comprising a grooved wheel
 115 provided with notched edges, substantially as described.

2. In electric railways, the combination of a main conductor, a branch conductor united thereto, and a self-switching contact comprising
 120 a grooved wheel for engaging the conductor and provided with notched edges, the notches being adapted to enter between the main and branch conductors, substantially as described.

3. In an electric railway, a suspended conductor and a contact device therefor, comprising a contact-wheel formed with a groove therein to receive the conductor, and having
 125 its edges formed with alternate points and depressions, the depressions being wider than the diameter of the conductor, substantially as described.

4. In an electric railway, the combination,

with a pivoted arm, of a contact-wheel formed with a deep groove to receive a conductor and with notched edges, substantially as described.

5 In an electric railway, the combination of a suspended conductor, a vehicle moving along the line of the conductor, branch tracks and conductors, the branch and main conductors being permanently united, and a contact device carried by the vehicle and pressed
10 upwardly against the conductor or conductors and comprising a contact-wheel formed with a deep groove to receive the conductor and with notched edges, substantially as described.

15 6. In electric railways, the combination of permanently-united main and branch suspended conductors, main and branch tracks below the conductors, a vehicle moving upon one or other of said tracks and provided with
20 an upwardly - extending contact device located in rear of its front wheels and comprising a contact-wheel engaging the under side of the conductor and formed with a groove to receive said conductor and with notched

edges, the notches being adapted to enter between the main and branch conductors and to receive one or other of the conductors, substantially as described. 25

7. In electric railways, the combination of main and branch suspended conductors, the branch being permanently united to and extending laterally from the main, a moving vehicle, and a traveling contact carried by the vehicle and pressed upwardly against the under side of the main or branch conductor
35 and comprising a contact-wheel formed with a groove to receive the conductor and with notched edges, the points between the notches being adapted to intersect the points of union between the conductors and the notches to
40 receive one or other of the conductors in passing, substantially as described.

In testimony whereof I hereto affix my signature in presence of two witnesses.

CHARLES J. VAN DEPOELE.

Witnesses:

J. W. GIBBONEY,
GUSTAV HELLEBUCK.