

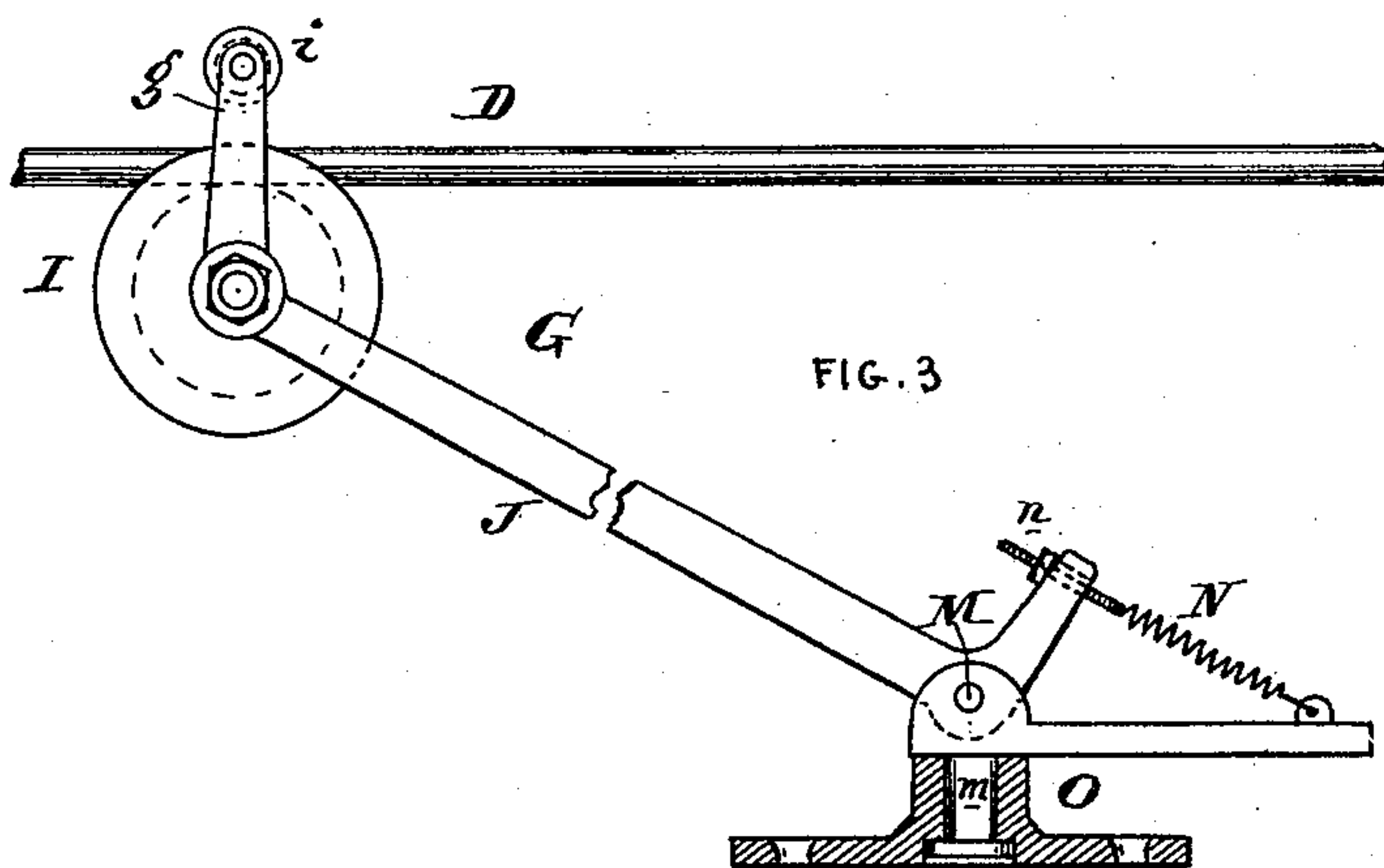
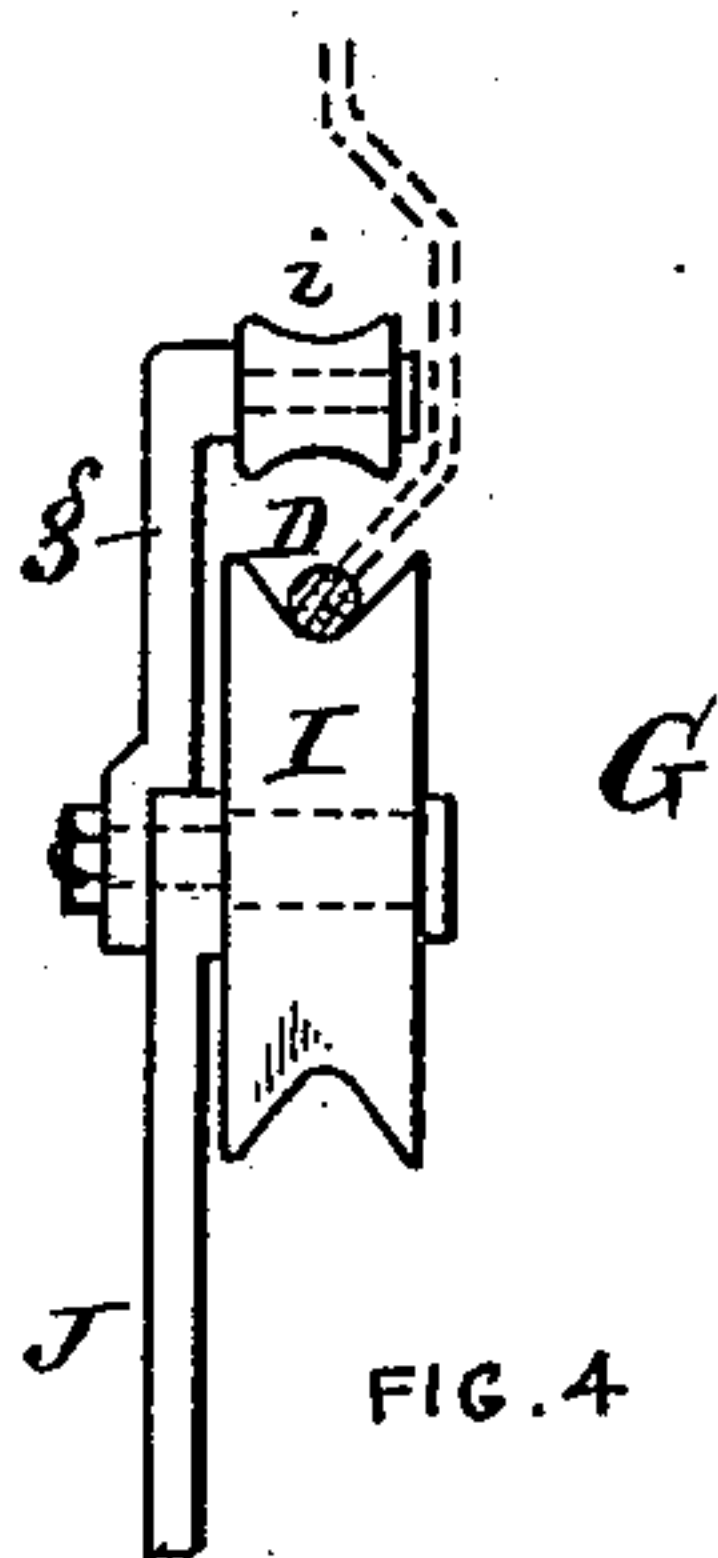
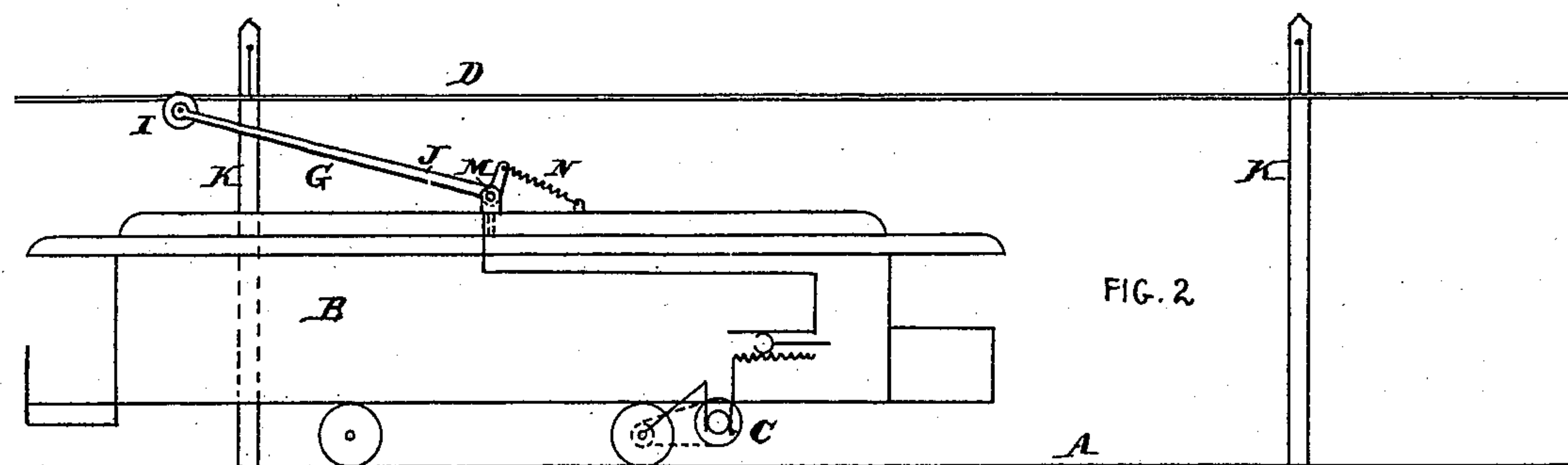
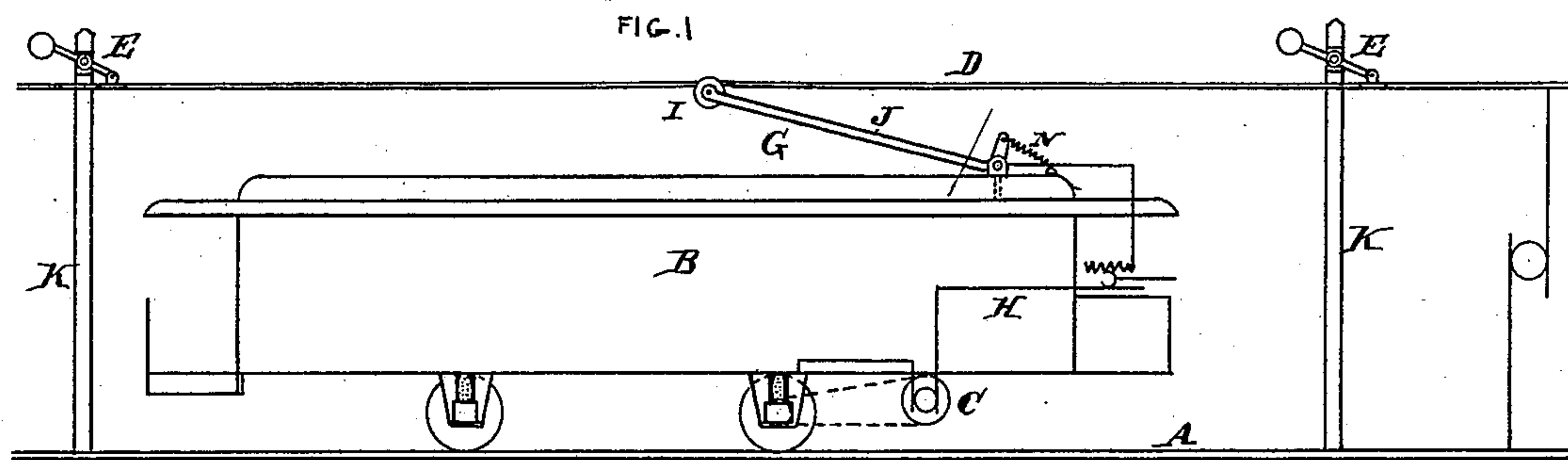
(No Model.)

R. M. HUNTER.

CURRENT COLLECTING DEVICE FOR ELECTRIC RAILWAYS.

No. 400,916.

Patented Apr. 9, 1889.



Attest

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RUDOLPH M. HUNTER, OF PHILADELPHIA, PENNSYLVANIA.

CURRENT-COLLECTING DEVICE FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 400,916, dated April 9, 1889.

Original application filed November 8, 1888, Serial No. 290,302. Divided and this application filed December 13, 1888. Serial No. 293,485. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH M. HUNTER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Current-Collecting Devices for Electric Railways, (Case 75,) of which the following is a specification.

My invention has reference to electric railways; and it consists in certain improvements set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

This application (Case 75) is a division of my application, Serial No. 290,302, filed November 8, 1888.

This invention relates to electric railways, and with particular reference to the means for supplying electric current to a traveling electrically-propelled vehicle from a suspended conductor, preferably arranged above the car or at a higher elevation than the roof of the car, so as to be out of reach of persons on the sidewalk or roadway.

My invention consists of certain improvements set out in the specification, and particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of an electric railway embodying my improvements with the suspended conductor counterbalanced. Fig. 2 is a similar view with the conductor not counterbalanced. Fig. 3 is an enlarged side elevation of the collector shown in Fig. 4; and Fig. 4 is a cross-section of the conductor, and shows an end view of the collector in Fig. 3.

Referring to the different figures of the drawings, A is the railway, which may be the return-conductor, if desired, when but a single overhead conductor is used.

B is the electrically-propelled vehicle or car.

C is the electric motor thereon, and H the motor-circuit on the car.

G is the current-collecting device on the car.

K are the supporting-posts, arranged along the railway, and D is the suspended conductor.

Now, referring to Fig. 1 specifically, we find that the conductor D is supported by counterbalancing-levers E, so that it can rise and fall or float. The collector G on the car B

consists of a grooved wheel, I, located under the conductor D and receiving the same in its groove, and through the weight of the conductor insuring a good electrical and guiding contact. This wheel I is supported in an arm or frame, J, attached to the car or vehicle and moving with it. The wheel I is carried along under the conductor D, and at all times makes a close upward contact with it. The current received by wheel I is conveyed to the motor-circuit H and by it to the motor C.

In Fig. 2 we have the conductor D supported in any suitable manner—as, for instance, simply suspended without counterbalancing.

By employing a suspended flexible conductor above the collector it is free to rest in the groove of the collector-wheel at all times, and permits the said collector-wheel, when necessary, to rise and fall with its supporting-arm, the latter being moved through the action of its spring.

The collectors are shown as consisting of the grooved collector-roller I, journaled on the free end of the arm J, pivoted to the car at M, and said arm is provided with a spring, N, for causing the roller I to press upward against the under side of the conductor D, receiving part of its weight and compensating for any variations in its height. The collector-wheel I and its support J are free to rotate on a vertical axis, *m*, in the plate or bracket O on the car-body. This will allow of lateral play to the collector as well as vertical play, and the grooved roller will insure the collector vibrating laterally to follow the lateral excessive variations in the conductor, and also allow of reversing the collector for propelling the car in the opposite direction. If desired, the arm J may be extended above the conductor, as at *g*, Figs. 3 and 4, and a small roller or projection, *i*, may be used to prevent the roller I accidentally leaving the conductor when running fast or passing switches, &c. Normally this roller or projection *i* would not touch the conductor. The tension of the spring N may be adjusted by a nut, *n*, to vary the upward pressure of the roller I against the conductor D. In these constructions, which show a type of my invention, there is a roller contact or collector carried by the car and pressing against the

under side of the conductor, so that the conductor has not to support the weight of the collector. It will be further observed that the conductor D may be supported from above, as in the case of Figs. 1 and 4, which is very advantageous in crossings and switches, and where considerable difficulty is now experienced when the collector has to extend past the conductor, so as to make contact with its side most distant from the car or the collector-connection with the car.

In this invention the collector-support and collector *per se* are between the conductor and car, as shown in Figs. 1, 2, and 3.

The collector-support may be positively hinged on a transverse axis to the car-body directly or indirectly, and the spring acts to cause the grooved collector-wheel to follow the conductor by the rotary vibration of its support.

The suspended conductor is preferably at a higher level than either the vehicle or collector, and the conductor should also be like a rod, cable, or wire—that is to say, circular in cross-section—and fit down into the groove of the collector wheel or roller, and thereby be guided by the wheel, and the wheel and collector as a whole is guided by the conductor.

In Figs. 1, 2, and 3 it is seen that the collector-wheel is supported by a rearwardly-extending arm, the free end of which is movable to or from the conductor, and in Fig. 3 is shown the vertical axis whereby the free end of the arm may move laterally.

The counterbalancing of the conductor is not broadly claimed in this application, as it forms subject-matter of other applications, being claimed in my application, Serial No. 214,309, filed September 23, 1886, and in a division thereof, Serial No. 239,930, of 1887.

Any matters shown in this application but not claimed therein form subject-matter of my applications hereinbefore mentioned and my application, Serial No. 239,930, of June 1, 1887.

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

1. The combination of a flexible suspended conductor of circular cross-section, supports therefor at intervals in its length, a traveling vehicle, a grooved collector-wheel located be-

low said conductor, and in the groove of which the conductor is received and guided against lateral displacement, and a support for said grooved collector-wheel hinged to the vehicle on a transverse axis.

2. The combination of a flexible suspended conductor of circular cross-section, supports therefor at intervals in its length, a traveling vehicle, a grooved collector-wheel located below said conductor, and in the groove of which the conductor is received and guided against lateral displacement, a support for said grooved collector-wheel hinged to the vehicle on a transverse axis, and a spring acting on said support to press the wheel against the under surface of the conductor.

3. The combination of a flexible suspended conductor of circular cross-section, supports therefor at intervals in its length, a traveling vehicle, a grooved collector-wheel located below said conductor, and in the groove of which the conductor is received and guided against lateral displacement, and a pivoted spring-support for said grooved collector-wheel.

4. In an electric railway, a suspended conductor free to rise and fall, in combination with a traveling electrically-propelled vehicle, an upwardly-extending pivoted collector having a collecting-wheel running upon the under side of the conductor, and a spring to press the collector-wheel up against the conductor, whereby the collector-wheel and conductor both rise and fall to accommodate themselves to each other and maintain a constant contact.

5. In an electric railway, a flexible suspended conductor, in combination with a traveling electrically-propelled vehicle, an upwardly-extending pivoted collector having a collecting-wheel running upon the under side of the conductor, a spring to press the collector-wheel up against the conductor, whereby the collector-wheel and conductor both rise and fall to accommodate themselves to each other and maintain a constant contact, and means to adjust the tension of the spring.

In testimony of which invention I hereunto set my hand.

RUDOLPH M. HUNTER.

Witnesses:

E. M. BRECKINREED,
ERNEST HOWARD HUNTER.