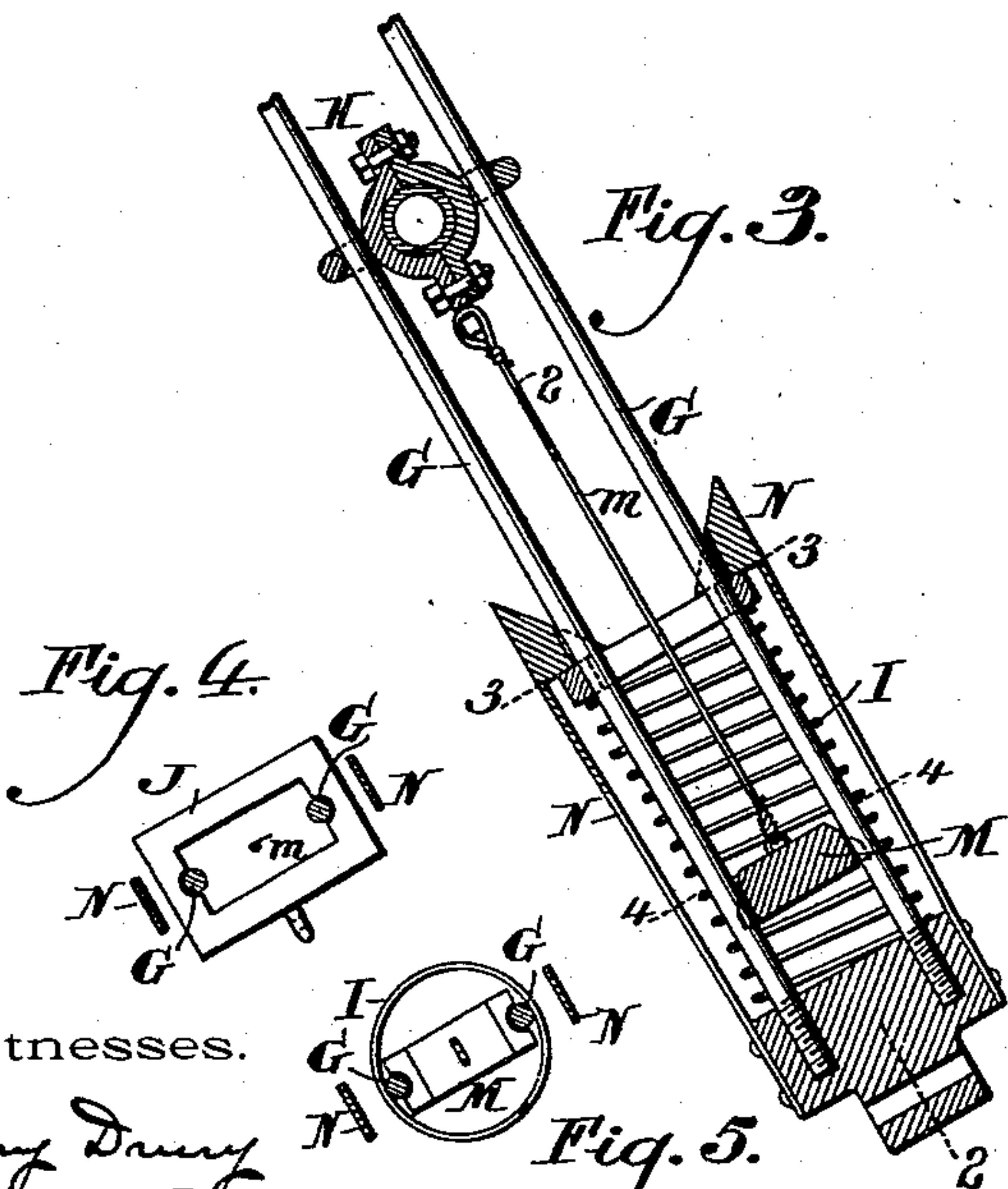
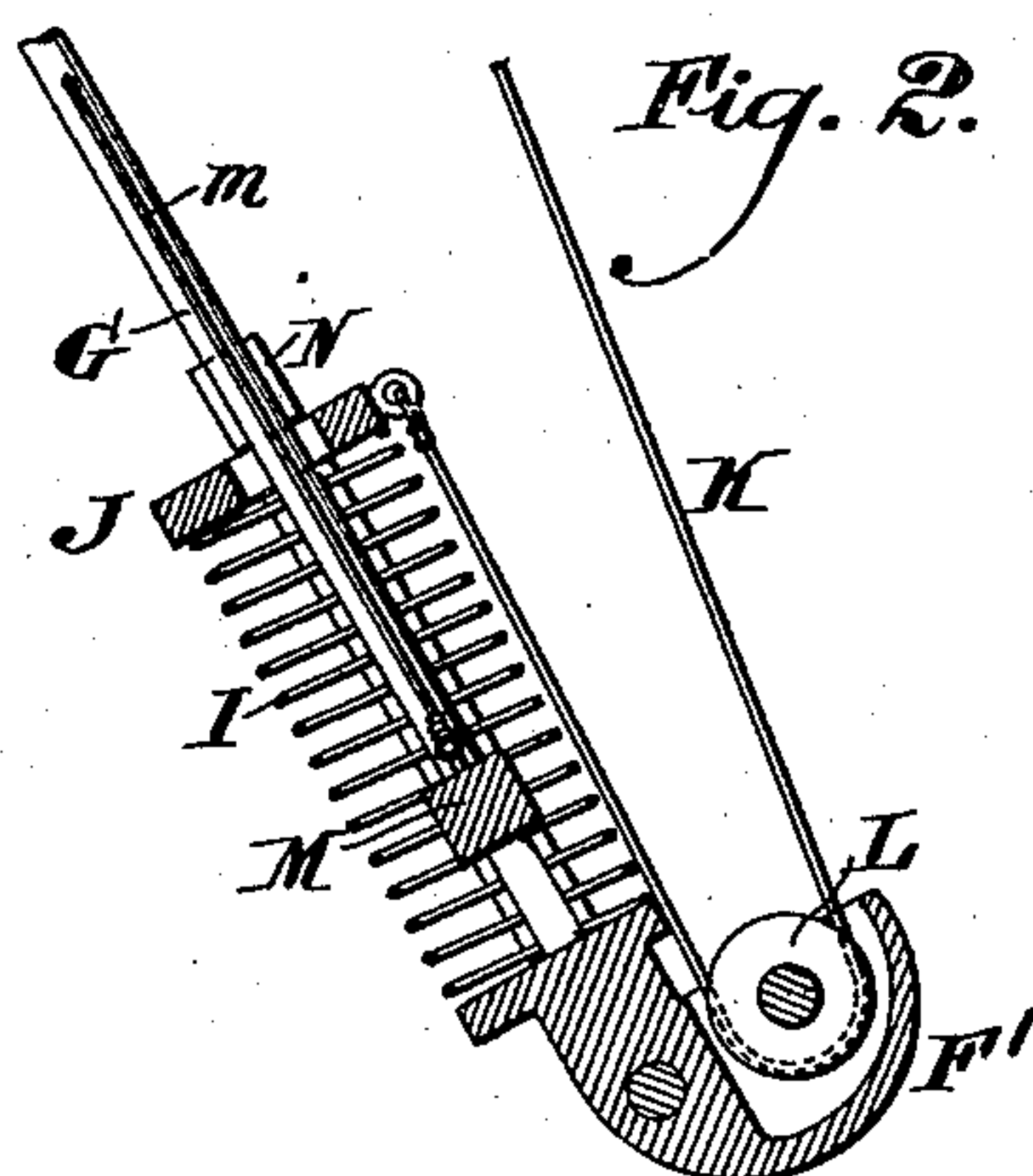
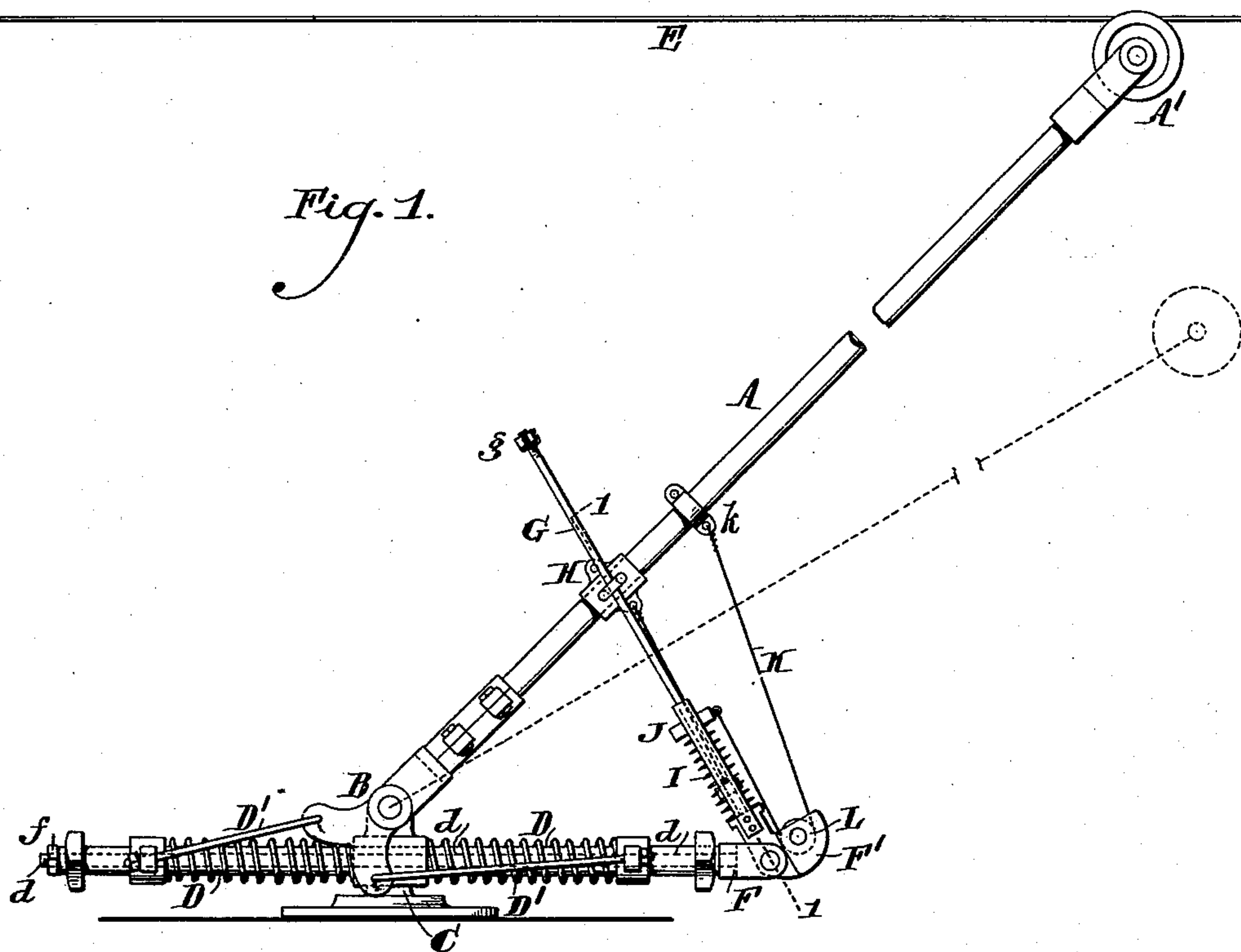


(No Model.)

J. E. HEWES.
TROLLEY FOR ELECTRIC CARS.

No. 567,474.

Patented Sept. 8, 1896.



Witnesses.

Henry Denny
Wm. L. Beaus

Inventor.

James Elliott Esq
by Wm. H. Smith
Attorney.

UNITED STATES PATENT OFFICE.

JAMES ELLICOTT HEWES, OF PHILADELPHIA, PENNSYLVANIA.

TROLLEY FOR ELECTRIC CARS.

SPECIFICATION forming part of Letters Patent No. 567,474, dated September 8, 1896.

Application filed May 7, 1896. Serial No. 590,533. (No model.)

To all whom it may concern:

Be it known that I, JAMES ELLICOTT HEWES, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Trolleys for Electric Cars, of which the following is a specification.

My invention has reference to trolleys for electric cars; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

It has been the customary practice to pivot the arm of the trolley to the car so that it may move freely at its upper end in all directions, and the trolley or contact wheel has been pressed upward against the suspended conductor with considerable force by a large spring or springs acting upon the lower end of the trolley-arm. As the arm is heavy and the leverage of the spring is small, it must be made very powerful, and in case the trolley-wheel jumps the conductor, as it frequently does, this spring causes the arm to fly upward and forward with a strong whip action with consequent injury to the spanner-wires and overhead conductor structure which may be in its path. In some cases the blow is so severe that the trolley has become entangled by its own action and been completely wrenched off the car.

The object of my invention is to provide a trolley construction which will automatically lower the free end of the trolley to a suitable distance below the suspended conductor upon the trolley-wheel jumping the conductor, whereby the trolley is moved out of a position in which it may do damage.

In carrying out my invention I provide the usual trolley structure with an auxiliary spring adapted to pull the trolley-pole backward and downward to a point below the conductor. This spring is maintained out of operation by a suitable latch, which is liberated upon the trolley-pole assuming a vertical position. In operation, therefore, the forward movement of the trolley-pole after the wheel has jumped the conductor liberates the auxiliary spring, and this instantly causes the trolley to be drawn backward and downward to approximately forty-five degrees, so that it is clear of the overhead wires. To re-

set the apparatus the conductor has only to draw the trolley all the way down and then let it go upward and seat itself upon the suspended wire.

My invention will be better understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved trolley. Fig. 2 is a sectional elevation of a portion thereof on line 2 2 of Fig. 3. Fig. 3 is a sectional plan view of same on line 1 1 of Fig. 1. Fig. 4 is a sectional view on line 3 3 of Fig. 3, and Fig. 5 is a sectional view on line 4 4 of Fig. 3.

A is the trolley-pole, and has at its top or free end the grooved contact with the suspended conductor E. This trolley-pole is hinged on a transverse axis B upon a supporting-frame *d*, which is in turn sustained by and movable upon a bed-plate C by a vertical axis. Springs D, carried upon the frame *d* and acting upon the rods D', cause the trolley to be pressed upward against the suspended conductor. This is a well-known type of trolley, and is shown simply as an illustration, as my improvements are applicable to any of the types of trolleys in use.

Through the tubular frame *d*, I pass a rod F, one end of which is provided with a head F' and the other end held in place by a nut *f*. This part may be varied to suit the different types of trolleys to which my attachments may be applied. Extending upward and forward from the head F' are two rods G, which extend through eyes on a collar H, clamped upon the trolley-pole near its lower part. The ends of the rods may be provided with nuts *g*, if desired, to limit the possible forward swinging of the trolley-arm. Encircling the rods G G is a spring I, and guided upon the rods and arranged above the spring is a slide-plate J. A chain or cord K is connected at one end to this plate J, and then passes backward and around a grooved guide-wheel L in the head F', and thence upward and connected with the trolley-pole at *k*. N N are two spring-latches, secured to the head F' and adapted to extend laterally over the edges of the plate J and hold it against being moved by the spring. Working within the guides G G and spring and adapted to pass freely through the aperture in the plate J is a releasing-wedge

M, which is attached to the trolley-pole by a rod *m*. The action of this part is to release the plate J and spring I whenever the trolley jumps the conductor and flies forward. When these parts are released, the spring pushes the plate toward the trolley and pulls upon the chain or cord K, with the result of pulling the trolley-pole backward to approximately forty-five degrees, or in any event below the suspended conductor and cross wires.

When the conductor wishes to reset the trolley he pulls the pole all the way down, so that the releasing-wedge is returned to a position within the spring I, and at the same time the pole presses against the plate J and forces it back and the spring under compression until the parts are reset or locked under the spring-latches N. After resetting the parts, as above described, the releasing of the trolley-cord permits the springs D of the trolley to come into play once more and hold the trolley-wheel to the suspended conductor.

The illustration shows my invention applied to one well-known type of trolley, but it is self-evident that it may be applied to any of the types in general use by simply arranging for the attachment of the part F' to the trolley structure, as found convenient.

While I prefer the construction shown in practice, I do not confine myself thereto, as the details thereof may be modified without departing from my invention.

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

1. The combination in a trolley of a pivoted pole carrying the contact at the free end, a main spring for normally pressing the pole upward, an auxiliary spring acting directly upon the pole at a distance from its pivot adapted to pull the trolley-pole down against the action of the main spring, a connection between the auxiliary spring and trolley-pole at a distance from its pivot whereby the said spring acts upon the pole with great leverage, a latch for holding the auxiliary spring out of action, a latch-releasing device connected to the pole between its pivot and contact and adapted to be actuated when the pole attempts to assume a vertical position, and a common support for the two springs.

2. The combination in a trolley of a pivoted pole carrying the contact at the free end, a main spring for normally pressing the pole upward, an auxiliary spring acting upon the pole at a distance from its pivot adapted to pull the trolley-pole down against the action of the main spring, a connection between the auxiliary spring and trolley-pole between the pivot and contact whereby the said spring acts upon the pole with great leverage, a latch for holding the auxiliary spring out of action, a flexible latch-releasing device actuated by the trolley-pole when it attempts to assume a vertical position, and a frame pivoted to the roof of the car on a vertical axis carrying all of said parts and permitting them to move simultaneously.

3. The combination in a trolley of a pivoted pole carrying the contact at the free end, a main spring for normally pressing the pole upward, an auxiliary spring adapted to pull the trolley-pole down against the action of the main spring, a connection between the auxiliary spring and trolley-pole consisting of a cord or chain connected at one end to the spring and at the other end to the trolley-pole and a guide-pulley about which it passes whereby the spring acts upon the pole to move it in a reverse direction to the action of the spring, a latch for holding the auxiliary spring out of action, and a latch-releasing device actuated by the trolley-pole when it attempts to assume a vertical position.

4. In a trolley the combination of a pole movable on a transverse axis and carrying a contact at its free end, with a main spring to hold the contact against the under side of the suspended conductor, guide-rods G, an auxiliary spring I guided by the guide-rods, a movable plate J also guided by the guide-rods and resting against the auxiliary spring, spring-latches N for holding the plate J against the action of the auxiliary spring, a releasing wedge or part M connected with the trolley-pole for releasing the latches, a guide-wheel L, and a chain or cord extending from the plate J around the wheel L and connecting with the trolley-pole.

5. In a trolley the combination of a pivoted support movable on a vertical axis, a main spring carried upon said support and acting to move the trolley-pole into a vertical position, an auxiliary spring also directly acting upon the trolley-pole to tend to move it down away from the conductor or trolley wire and carried on the same end of the support as the main spring, a latch to hold the auxiliary spring out of action, a connection between the latch and trolley-pole to operate the latch, and a mechanical connection between the trolley-pole and auxiliary spring whereby the pulling down of the pole by the trolley-cord resets the auxiliary spring and trolley.

6. In a trolley, the combination of a pole pivoted on a transverse axis, a main spring to support the pole in operative connection with the suspended trolley-wire, an auxiliary spring directly connected with the pole to pull it away from the trolley-wire, a latch controlled by the trolley-pole to release the auxiliary spring, and a connection from the trolley-pole at a point between its pivot and contact to the auxiliary spring for resetting it under tension when the trolley-pole is pulled down by the trolley-cord.

7. In a trolley, a pivoted pole, a main spring for elevating it, an auxiliary spring held under tension and normally dormant, a latch controlled by the pole for releasing the auxiliary spring, a connection between the auxiliary spring and pole, and means acting through the trolley cord and pole for resetting the auxiliary spring from the ground.

8. In a trolley, a pivoted pole, a main spring

for elevating it, an auxiliary spring held under tension and normally dormant, a latch controlled by the pole for releasing the auxiliary spring, a connection between the auxiliary spring and pole, a pivoted support for the trolley and auxiliary spring to provide lateral motion to the trolley, and means acting through the trolley cord and pole for resetting the auxiliary spring from the ground.

9. In a trolley, a pivoted support, a trolley-pole pivoted to the support on a transverse axis, a main spring to elevate the pole, an auxiliary spring to depress the pole, a movable frame for the auxiliary spring pivoted to the support and having a positive connection

with the trolley-pole above its support, a latch carried by said pivoted frame, a connection between the latch and pole for releasing the latch when the pole rises, a positive connection between the pole and auxiliary spring for pulling the pole downward, and a trolley-cord for pulling down the trolley and resetting the auxiliary spring.

In testimony of which invention I hereunto set my hand.

JAMES ELLICOTT HEWES.

Witnesses:

R. M. HUNTER,
R. M. KELLY.