

No. 639,880.

Patented Dec. 26, 1899.

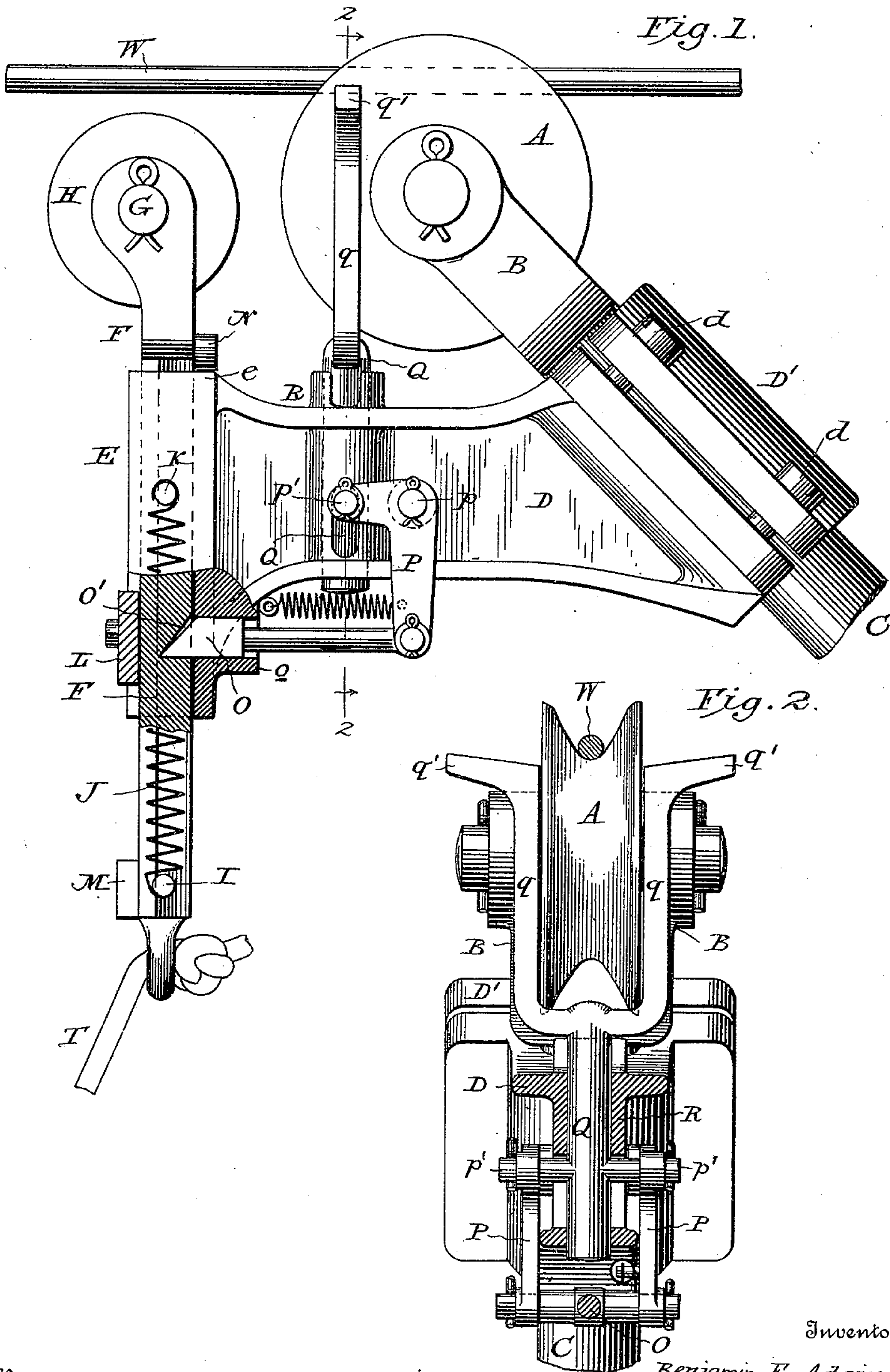
B. F. ADAIR.

TROLLEY.

(Application filed Oct. 16, 1899.)

(No Model.)

2 Sheets—Sheet 1



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by

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Fig. 3.

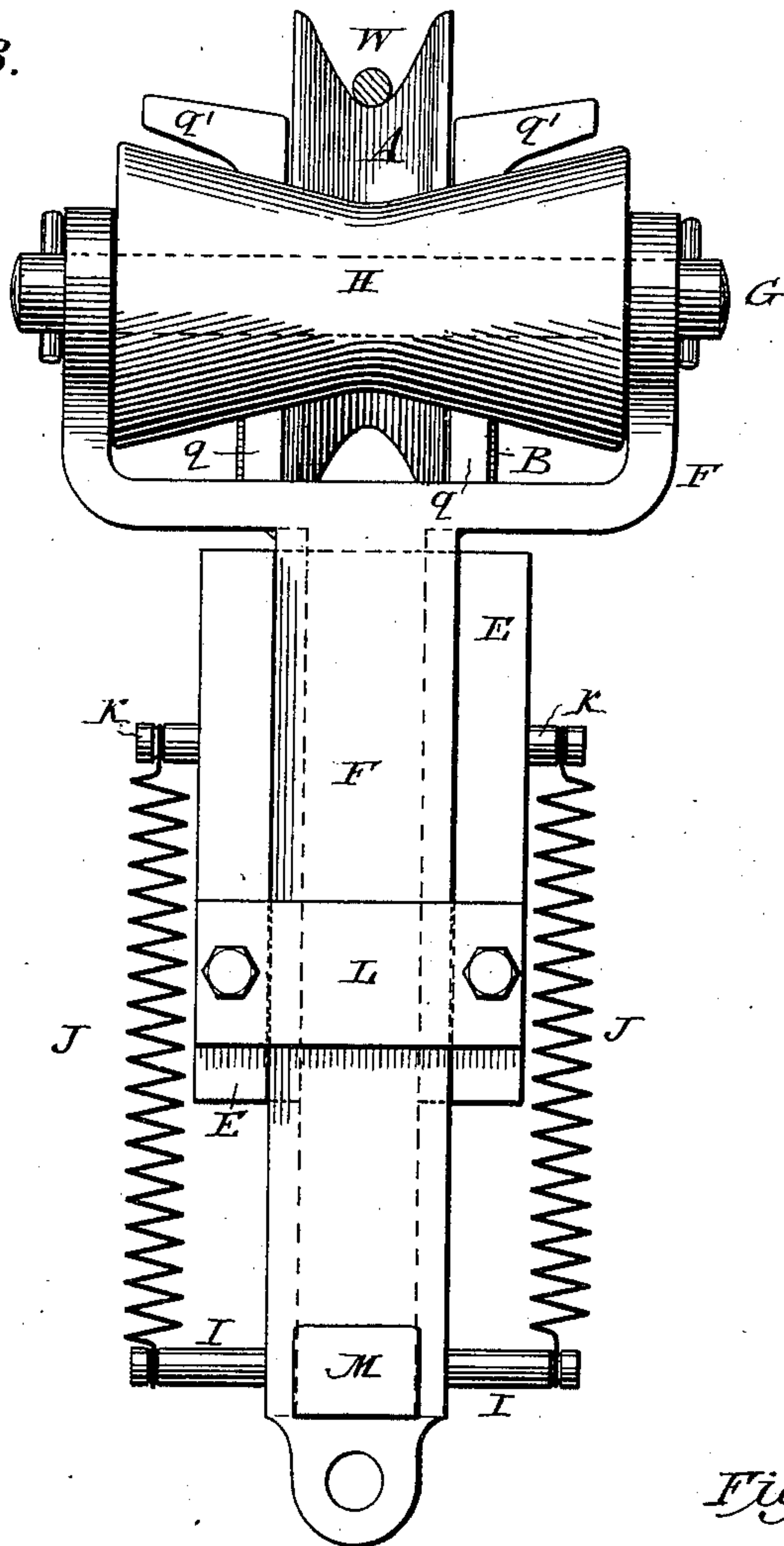
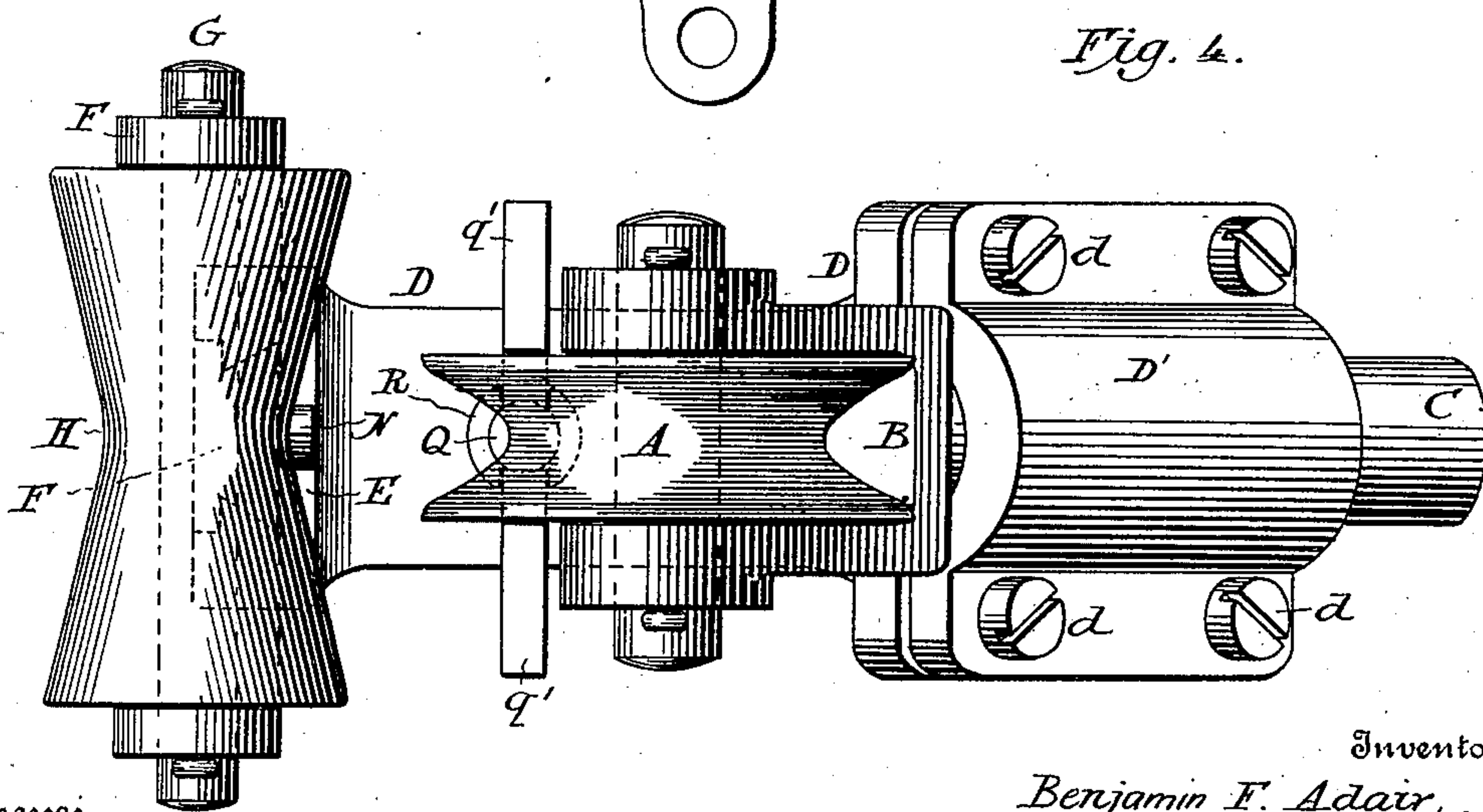


Fig. 4.



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UNITED STATES PATENT OFFICE.

BENJAMIN FRANKLIN ADAIR, OF WILMINGTON, DELAWARE.

TROLLEY.

SPECIFICATION forming part of Letters Patent No. 639,880, dated December 26, 1899.

Application filed October 18, 1899. Serial No. 733,760. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN FRANKLIN ADAIR, a citizen of the United States, residing at Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Trolleys for Electric Railways, of which the following is a specification.

My invention relates to overhead trolleys, the object being to provide the ordinary trolley with an attachment which when the trolley jumps the wire will automatically take its place and receive and transmit the current to the motor without material interruption.

Ordinarily a single trolley is used without any means for automatically restoring it or taking its place, it being customary for the motorman or conductor to manipulate the rope to restore the trolley each time that it is displaced. I have devised simple and efficient means for automatically throwing into operation a substitute for the trolley each time that it becomes disengaged from the conductor. The trolley proper is mounted on the end of a pole of usual construction, and to this pole is attached a bracket in which slides vertically a frame carrying a grooved roller adapted at times to engage the conductor. The roller-carrying frame is normally held away from the conductor by means of a latch. This latch is connected with a plunger, which is provided with arms arranged on opposite sides of the trolley and adapted to receive the wire when it leaves the groove of the trolley. When the wire strikes one of these arms, the plunger is depressed, the latch withdraws, and the roller-carrying frame is released, causing the grooved roller to engage the wire and take the place of the trolley, transmitting the current in the same manner that the trolley did.

My improvements are illustrated in the accompanying drawings, in which—

Figure 1 shows a side elevation of my improved trolley mechanism, some of the parts being broken away the better to illustrate other parts. Fig. 2 shows a transverse section on the line 2 2 of Fig. 1, looking in the direction of the arrows. Fig. 3 shows a rear elevation of the same, and Fig. 4 shows a plan view.

The trolley-wheel A is journaled in a bifurcated casting B, secured to the upper end of

the pole C. A bracket D is attached to the pole C, just below the casting B, by means of a cap D' and bolts d. This bracket is provided at its rear end with a dovetailed slide E, in which reciprocates vertically a roller-carrying frame F. This frame is dovetailed, as indicated in Fig. 4, fitting the dovetails of the slide. At its upper end the frame is bifurcated, and at the upper ends of the arms of the bifurcation is journaled the shaft or axle G of the roller H. The roller is grooved, as shown, and is considerably wider than the trolley A, as indicated in Fig. 3. At its lower end the frame F is provided with arms or studs I, to which are secured springs J, that are attached at their upper ends to studs or arms K, secured to the slide E. These springs tend to raise the roller-carrying frame to cause the roller H to engage the wire or conductor W. A cross-piece L is secured to the slide and serves to more securely hold the roller-carrying frame in place and assists in guiding it. At its lower end the frame F is provided with a stop-block M, which serves to limit the upward movement of the roller-carrying frame, as the block will strike against the cross-piece L should the roller-carrying frame tend to rise too far.

The downward movement of the frame F is limited by a stop-block N, secured to the frame just below the roller H and adapted to strike against the slide E at e. A latch O is arranged within a housing o in the bracket D and is adapted to slide back and forth therein transversely with reference to the frame F. The rear end of the latch is beveled and is adapted to move into and out of a triangular recess O' in the front side of the frame F. The front end of the latch is pin-jointed to the lower front end of a bell-crank lever P, pivoted at p to the bracket D and pin-jointed at p' to a plunger Q, arranged to reciprocate vertically in a housing R in the bracket. This plunger is bifurcated at its upper end, the two arms q being arranged on opposite sides of the trolley A, and at their upper ends the arms are provided with laterally-projecting heads q'.

Normally the different parts of the mechanism are in the position shown in Fig. 1. The latch engages the frame F and holds the roller H away from the conductor, and the wire W occupies its usual place in the groove of the

trolley H; but should the trolley jump the wire the wire would strike one of the arms q' , and the pressure of the wire on the plunger would cause it to descend and withdraw the latch from the recess O' in the frame F. The frame being thus released will carry the roller H upward and bring it into engagement with the wire W and receive the current and transmit it to the motor in place of the trolley A.

The latch is normally drawn toward the frame F by means of a spiral spring S. To the lower end of the frame F is secured a rope T, by means of which the trolley may be operated in the usual way to remove it from the wire or to place it thereon, and this rope also serves to operate the roller-carrying frame F.

It will be observed that when the latch O engages the frame the rope may be manipulated to operate the trolley in the usual manner without interfering with the relative position of the roller H. The stop-block N prevents the frame F from being pulled down below the position it occupies when engaged by the latch; but when the latch is out of engagement with the frame, as when the roller H is in engagement with the wire W, the rope T serves the double purpose of lowering the frame F to withdraw the roller from the wire and also to adjust the trolley. When the trolley is operating in the usual way, the roller H is located some distance below the wire W and will not interfere with cross-wires. In like manner when the roller H is in engagement with the wire or conductor W the trolley A will be located below the wire W and out of the way of cross-wires, the frame F being arranged to move the proper distance for this purpose.

I find that usually the arms q' will catch the wire when the trolley becomes disengaged therefrom, so that ordinarily the roller H will be brought into operation to replace the trolley; but should the trolley suddenly become disengaged and move laterally a considerable distance away from the wire, so that the plunger should not operate to bring the roller H into position, the mechanism may be very quickly brought into position by means of the rope T, either to replace the trolley under the wire or to cause one of the arms of the plunger to engage the wire and bring the roller H into operation.

I claim as my invention—

1. The combination of a trolley, a roller, a roller-carrying frame, means for moving the frame toward the line-wire, a latch for normally holding the frame in such position as to hold the roller away from the line-wire, and mechanism for releasing the latch.

2. The combination of a trolley, a roller-carrying frame, a spring for moving this frame in one direction, a latch for holding the frame against the force of the spring and means for withdrawing the latch.

3. The combination of a trolley, a roller-carrying frame, a spring for moving the frame in one direction, a latch for holding the frame against the force of the spring, a plunger operated by the wire and connections between the plunger and the latch.

4. The combination of a trolley, a trolley-pole to which it is attached, a bracket secured to the pole, a slide on the bracket, a roller-carrying frame fitted to move in the slide, a spring for moving the slide in one direction, a latch for holding the frame against the force of the spring, and a plunger connected with the latch and operated by the wire.

5. The combination of a trolley, a trolley-pole to which it is attached, a bracket secured to the pole, a slide on the bracket, a roller-carrying frame fitted to move vertically in the slide, stops for limiting the movement of the frame in the slide, a latch engaging the slide, a plunger having a bifurcated upper end, and connections between the plunger and the latch.

6. The combination of a trolley, a trolley-pole to which it is attached, a roller-carrying frame, means for moving the frame in one direction, a latch for holding the roller-carrying frame to hold the roller below the wire when the trolley is engaged therewith, means for operating the latch and devices for limiting the movement of the roller-carrying frame so placed that when the roller is in engagement with the wire the trolley will be located below the wire or main conductor and out of the path of the cross-wires.

7. The combination of a trolley, a trolley-pole to which it is attached, a bracket secured to the trolley-pole, a roller-carrying frame, mounted to slide vertically in the bracket, a spring for moving the roller-carrying frame upward, a latch for holding the frame against the force of the spring, means for operating the latch, and a rope secured to the lower end of the roller-carrying frame to draw the frame downward into engagement with the latch and to also move the trolley-pole into and out of engagement with the wire.

In testimony whereof I have hereunto subscribed my name.

BENJAMIN FRANKLIN ADAIR.

Witnesses:

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SAMUEL C. HARKINS.