

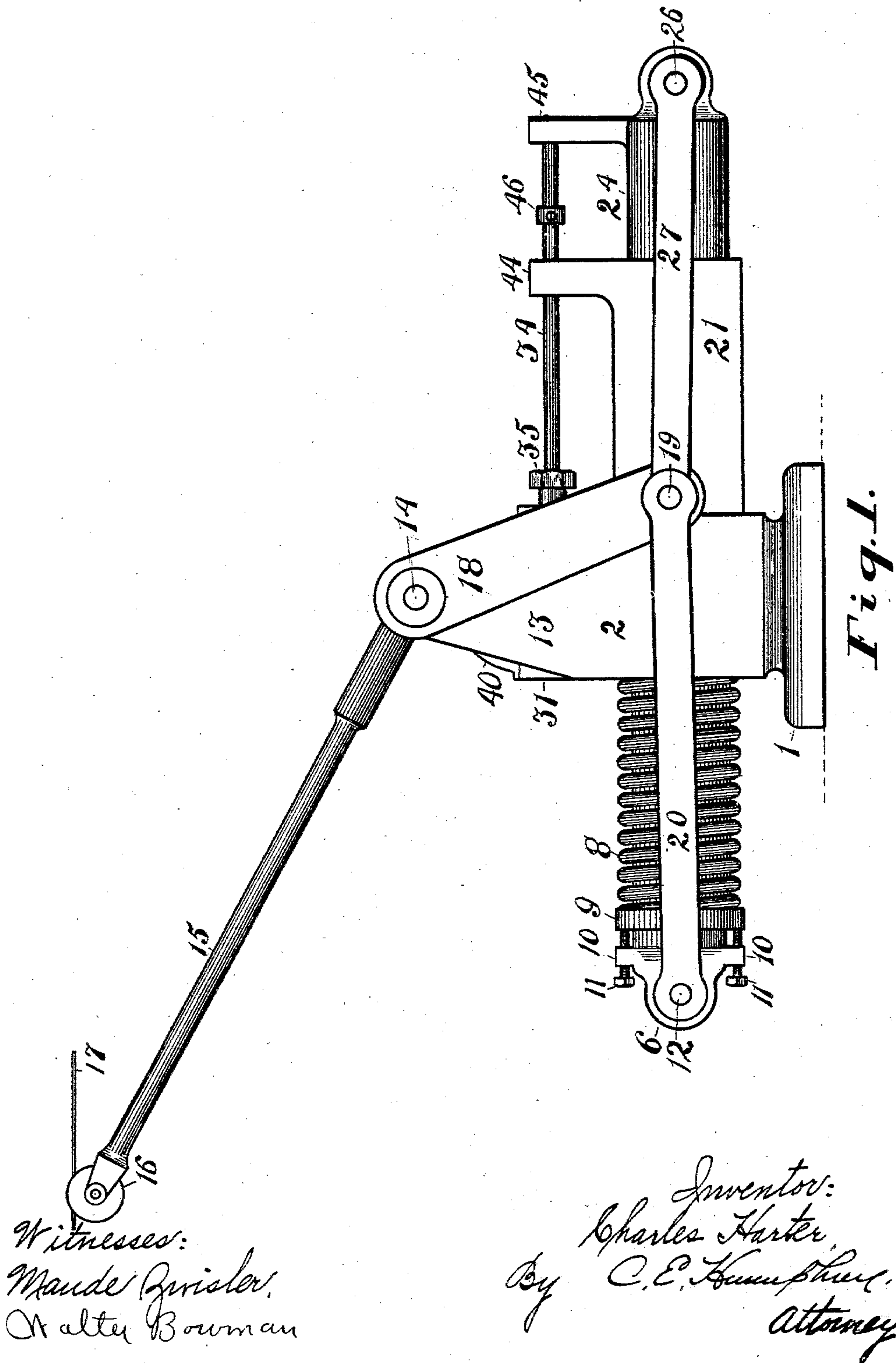
No. 740,272.

PATENTED SEPT. 29, 1903.

C. HARTER.
TROLLEY POLE CONTROLLER.
APPLICATION FILED JULY 9, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



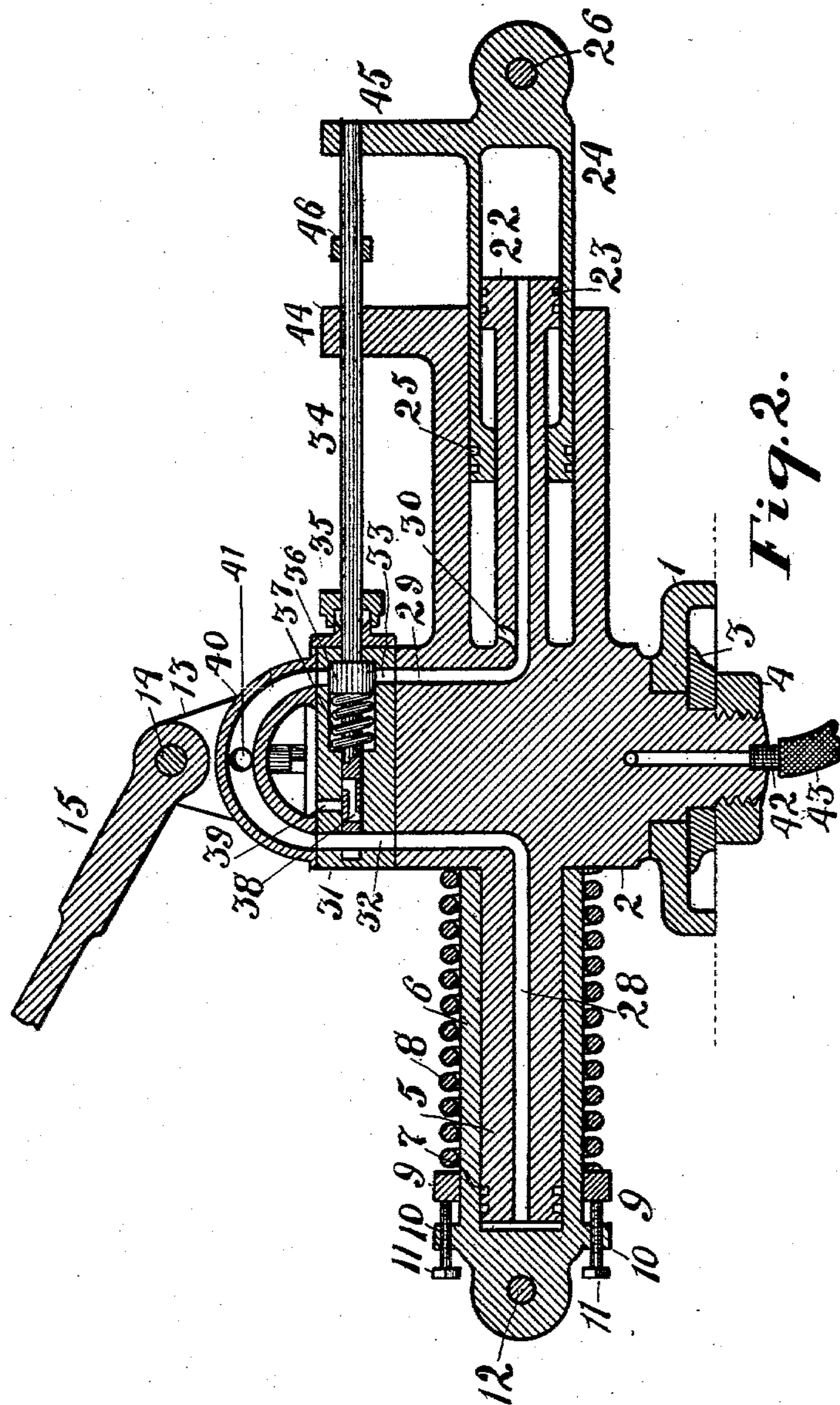
No. 740,272.

PATENTED SEPT. 29, 1903.

C. HARTER.
TROLLEY POLE CONTROLLER.
APPLICATION FILED JULY 9, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



Witnesses:
Maudie Gwisler.
Walter Bowman

Inventor:
Charles Harter.
By C. E. Humphrey.
Attorney.

No. 740,272.

PATENTED SEPT. 29, 1903.

C. HARTER.
TROLLEY POLE CONTROLLER.
APPLICATION FILED JULY 9, 1903.

NO MODEL.

3 SHEETS—SHEET 3.

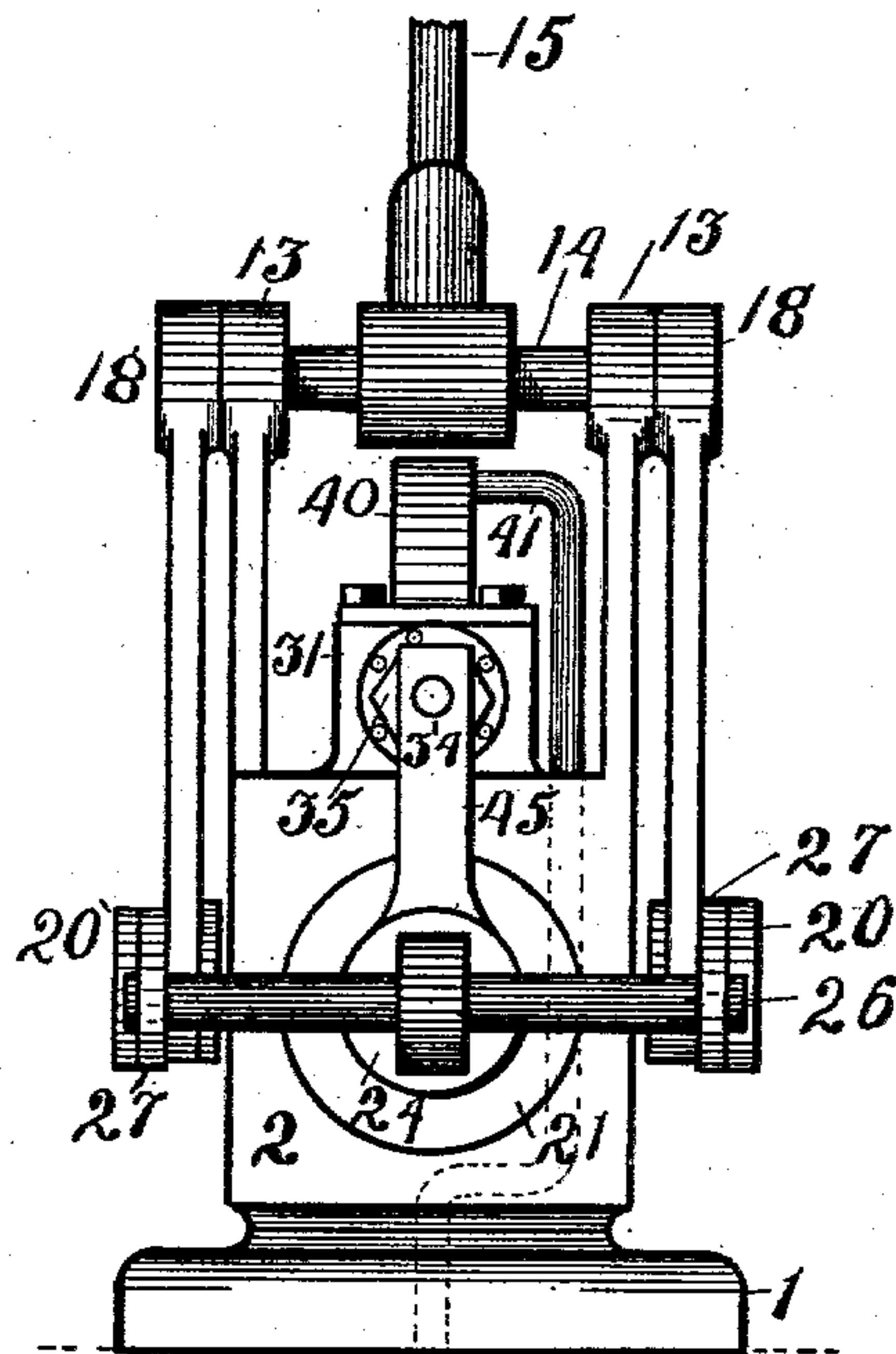


Fig. 3.

Witnesses:
Maude Bywisler
Mallet Bowman

Inventor:
Charles Harter,
By C. E. Humphrey
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES HARTER, OF SOUTH PASADENA, CALIFORNIA.

TROLLEY-POLE CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 740,272, dated September 29, 1903.

Application filed July 9, 1903. Serial No. 164,826. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HARTER, a citizen of the United States, residing at South Pasadena, in the county of Los Angeles and State of California, have invented a certain new and useful Improvement in Trolley-Pole Controllers, of which the following is a complete specification.

My invention relates to a device for controlling the position of trolley-poles used to convey an electric current from an overhead-trolley system to the propelling mechanism of an electric car.

The objects of my invention are to provide a trolley-pole holder and controller in which compressed air is used for firmly forcing the trolley against the overhead wire and retaining it there and also to provide a cushioning device to prevent the sudden upward jerk of the pole when for some cause or other the trolley becomes disconnected with the wire, with a view to preventing the tearing down of the supporting-wires of the trolley-wire and damage to the pole and the working mechanism of the car.

A further object is to place such a pressure upon the pole that the contact of the trolley sustained by the pole shall be as perfect as possible at all times and yet capable of yielding when necessary at various points on the lines and to safeguard this device with additional mechanism controlled by an air-cushion to prevent the too sudden operation of the first-described mechanism.

To the accomplishment of the aforesaid objects my invention consists in the peculiar and novel construction, arrangement, and combination of the various parts hereinafter described and then specifically claimed, reference being had to the accompanying drawings, forming a part of this specification.

In the drawings, in which similar reference-numerals indicate like parts in the different figures, Figure 1 is a side elevation of my improved device; Fig. 2, a vertical longitudinal section of the same, and Fig. 3 a front elevation looking from the right of Fig. 1.

In the drawings the dotted horizontal lines indicate the normal top of the roof of an electric car whose motive power is electricity, and a further description of the car is deemed unnecessary in connection with this device.

1 is a base or turn-table resting on the top of the car and having a central orifice through which projects the lower end of the main body 2 of this controller. Immediately above the base or turn-table 1 is a shoulder in the body 2, which rests on the upper face of the base 1. Through the opening in the base 1 depends a cylindrical portion of the top 2, which nicely fits into this opening, and below that is a further depending portion surrounded by a collar 3, which serves to steady the body portion, and below this is a nut 4, which is threaded to engage proper threads on the lower projecting end of the body 2, by which means the position of the body portion 2 with reference to the car is readily determined and when so determined it is locked in place by the nut 4.

From one side of the body 2 projects an integral cylinder 5, over which fits a hollow cylinder 6. This cylinder 6 is at all times capable of sliding longitudinally on the cylinder 5, and the contact between the two is made air-tight by packing-rings 7, seated in the cylinder 5.

Surrounding the main portion of the cylinder 6 is a coiled spring 8, located between the body portion 2 and a slidable collar 9 on the cylinder 6. Projecting from each side of the outer end of the cylinder 6 are lugs 10, through which pass adjusting-screws 11, whose free ends are adapted to engage the collar 9 and determine the amount of compression which is deemed necessary upon the spring 8. Transversely through the outer front end of the cylinder 6 extends a horizontal bolt 12 for a purpose to be stated. Mounted on top of the body portion 2 are two upright brackets 13, and between their upper ends is a horizontal shaft 14, in the central portion of which and tightly mounted thereon is a trolley-pole 15, on the outer end of which is mounted the trolley 16, arranged to run on the under face of the wire 17.

Fastened tightly on the outer ends of the shaft 14 and extended substantially downward at an obtuse angle with the line of the trolley-pole 15 are two arms 18, having projecting outwardly from their lower ends studs 19. Two links 20 connect the studs 19 with the outer ends of the transverse shaft 12, so that any movement of the cylinder 6 on the

cylinder 5 will be transmitted to the trolley-pole and the mechanism just described.

On the other side of the body 2 and in alignment with the cylinder 5 is a cylindrically-bored integral extension 21. Centrally in the opening in the extension 21 and integral with the body 2 is located a stationary piston 22, having its main portion considerably smaller in diameter than its head or outer end, which is also provided with packing-rings 23. Surrounding the piston 22 and slidable in the opening in the extension 21 is a hollow cylinder 24, having on its inner end packing-rings 25 to form a tight joint with the interior of the extension in which it slides.

The packing-rings 23 are adapted to form tight joints with the interior of the hollow cylinder 24. On the outer front end of the cylinder 24 is a transverse opening through which extends a shaft 26, similar to the shaft 12 in the other cylinder. The two outer ends of the shaft 26 are connected by links 27 with the studs 19 on the rocking arms 18.

Centrally through the cylinder 5 and extending into the body 2 and then upward is a cored opening or duct 28, which terminates at the top of the body portion 2 at one end and is open at the other end into the hollow of the cylinder 6 beyond the end of the cylinder 5.

A somewhat-similar duct or opening 29 extends from the top of the body 2 downward through its main portion and out through the piston 22 and opening into the hollow in the cylinder 24 with a branch opening 30, leading into the hollow portion of the extension 21, to be described later. Mounted on top of the body portion 2 is a valve-chest 31, having extending vertically through it openings 32 33, adapted to register and accurately meet the top of the openings 28 29. Transversely through this valve-chest is an opening for a valve-stem 34. The entrance of this valve-stem into this valve-chest is closed by a packing-gland 35. That portion of the opening for the reception of the valve-stem 34 where it intercepts the opening 33 is enlarged sufficiently to receive a coiled spring 37, whose office is to press against the collar and the end of the enlarged opening with a view of normally keeping the collar 36 across the opening 33, thereby keeping it closed. While in this position the valve-stem 34 terminates before it extends into the opening 32, and hence this opening 32 is normally open. Through the valve-stem, near its end and within the body of the valve-chest 31, is an offset opening 38 of such configuration that when the valve-stem is thrown to the left the lower end of this offset opening coincides or registers with the opening 32 and its upper end will register with an exhaust-port 39 in the valve-chest 31.

On top of the valve-chest 31 is a semicircular hollow chamber 40, having the hollow portion adapted to accurately register with the openings 32 33. Entering this hollow

portion in the chamber 40 is an inlet-pipe 41, which extends horizontally for a short distance and then downwardly (see Fig. 3) and then connects with a cored opening in the body portion 2, and this cored opening extends downwardly and then horizontally and then downwardly and passes through and out of the central bottom portion of the body 2. At the termination of this opening is inserted a nipple 42, on the outer end of which is placed a pipe 43, connected with a source of supply of compressed air or similar fluid to be used as a motive power for operating the previously-described mechanism. The valve-stem 34 outside of the valve-chest 31 is steadied by being slidably mounted in a bracket 44, rising from the extension 21. Rising from the cylinder 24 is a tappet 45, perforated at the top to inclose the valve-stem 34 and freely slidable along its surface. Between the bracket 44 and the tappet 45 is an adjustable collar 46, fastened on the valve-stem by means of a set-screw or any similar or preferred means.

The operation of the device is as follows: In starting this device it will be presumed that the mechanism is in the position shown in all the drawings, with the trolley pressing against the under side of the wire 17. Air under pressure is then applied through the pipe 43, which passes up through the opening in the body 42 and pipe 41 into the chamber 40 and down through the opening 32 into the opening 28 and out into the hollow portion of the cylinder 6, which under the pressure is gradually forced outward, thus drawing, by means of the links 20, the rocking arms 18 toward a vertical position and increasing the pressure of the trolley on the wire 17. Previous to the application of the air for pressing the trolley and trolley-pole upward the coiled spring 8 serves to furnish sufficient force to lightly press the trolley against the wire, thereby preventing its falling onto the car-body. If for any reason it happens that the trolley leaves the wire, the tendency of the pole 15 will be to assume a substantially vertical position due to the pressure of air in the cylinder 6; but as the pole rises toward a vertical position the arms 18 draw in the cylinder 24, which moves far enough to cause the tappet 45 to encounter the collar 46 on the valve-stem 34, which thereby presses in the valve-stem 34, overcoming the force of the spring 37, and moves the collar 36 away from the opening 33, which allows the air under pressure to enter through the tube-like openings 29 30 into the hollows of the extension 21 and the cylinder 24, thereby affording an effectual resistance to the inward movement of the cylinder 24 and further vertical movement of the trolley-pole. At the same time that the opening 33 is uncovered by the removal of the collar 36 the offset opening 38 registers with the opening 32, and thereby connects it with the exhaust-port 39, which allows the compressed air in

the cylinder 6 to escape by means of the tube-like opening 28, and thus the pressure in the cylinder 6 is reduced to nothing and at the same time affording an extremely high pressure in the extension 21 and the cylinder 24.

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

1. A trolley-pole controller consisting of oppositely-disposed cylinders operable by means of a compressed fluid, means connecting said cylinders to cause them to move in unison, means whereby said trolley-pole is connected to the connecting means between said cylinders, and means to cause the movements of said trolley-pole to automatically shunt the compressed fluid into either cylinder.

2. A controller for trolley-poles comprising two oppositely-disposed cylinders capable of being operated by a fluid under pressure and means automatically controlled by the movements of the trolley to shunt said fluid into either cylinder.

3. A trolley-pole controller consisting of a swiveled body portion, cylinders extending from either side of said body portion capable of being actuated by a compressed fluid, means connecting said cylinders with each other and with mechanism connected with said trolley-pole, and means to cause the movement of the trolley-pole to automatically shunt a compressed fluid into either cylinder.

4. In a trolley-pole controller the combination with a swiveled body portion of a stem extending from one side thereof, a cylinder to inclose said stem, mechanism connecting said cylinder and trolley-pole, and means to conduct a fluid under pressure into said cylinder, said last-named means arranged to be controlled by the movements of said trolley-pole.

5. The combination in a trolley-pole controller of a swiveled body portion, a trolley-pole pivotally mounted on said body portion, a projecting stem from said body portion, said stem being pierced to permit the transmission therethrough of a compressed fluid, a cylinder slidable on said stem, means connecting said cylinder with the pivot of said trolley-pole and means to admit compressed fluid into said cylinder, said last-named means being automatically controlled by the movements of said trolley-pole.

6. The combination in a trolley-pole controller of a swiveled body portion, a stem extending therethrough in one direction, said stem being hollow to permit the transmission of a compressed fluid therethrough, a cylinder to inclose a slide on said stem, means to admit air through said stem into the hollow of said cylinder, a spring inclosing said cyl-

inder with a normal tendency to force said cylinder away from said body portion and means mounted on said cylinder to regulate the tension of said spring.

7. The combination in a trolley-pole controller of a swiveled body portion of a hollow extension projecting from said body-piece, a hollow cylinder adapted to slide therein, means to introduce air into the interior of the hollow cylinder, and means mounted on said hollow cylinder to control the admission of air to said cylinder.

8. The combination in a trolley-pole controller of a swiveled body portion, of a hollow extension therefrom, a hollow cylinder slidable in said extension, a hollow piston integral with said body portion to enter said hollow cylinder, means to introduce air into said extension and hollow cylinder and means controlled by the movement of said cylinder to admit a fluid into said cylinder and extension.

9. In a trolley-pole controller the combination with a swiveled body portion, slidable cylinders projecting from either side thereof capable of being operated by a compressed fluid, openings from said body portion to said cylinders, a valve-chest on said body-piece, a valve and valve-stem slidable in said valve-chest and means operated by the movements of said cylinders to control the entrance and exhaust of said fluid into either of said cylinders.

10. The combination in a trolley-pole controller of a swiveled body-piece, a trolley-pole pivotally connected with said body portion, oppositely-disposed cylinders connected with said body portion, said cylinders being capable of being operated by a compressed fluid, means to connect said cylinders together and to the pivot of said trolley-pole, a valve-chest mounted on said body-piece, a valve and valve-stem mounted in said valve-chest and means to automatically cause the movement of said trolley-pole to shunt the compressed fluid into either of said cylinders.

11. A device of the class designated comprising two oppositely-disposed mechanisms capable of being operated by an elastic fluid, means connecting said mechanisms together and the trolley-pole mechanism and means automatically operated by the movements of the trolley-pole to shunt said elastic fluid into either of said mechanisms.

In testimony that I claim the above I hereunto set my hand in the presence of two subscribing witnesses.

CHARLES HARTER.

In presence of—

C. W. FISHBURN,
A. A. LAWYER.