(No Model.) 4 Sheets—Sheet 1.

A. DICKINSON.

ELECTRIC RAILWAY TROLLEY.

No. 491,988. Patented Feb. 21, 1893.

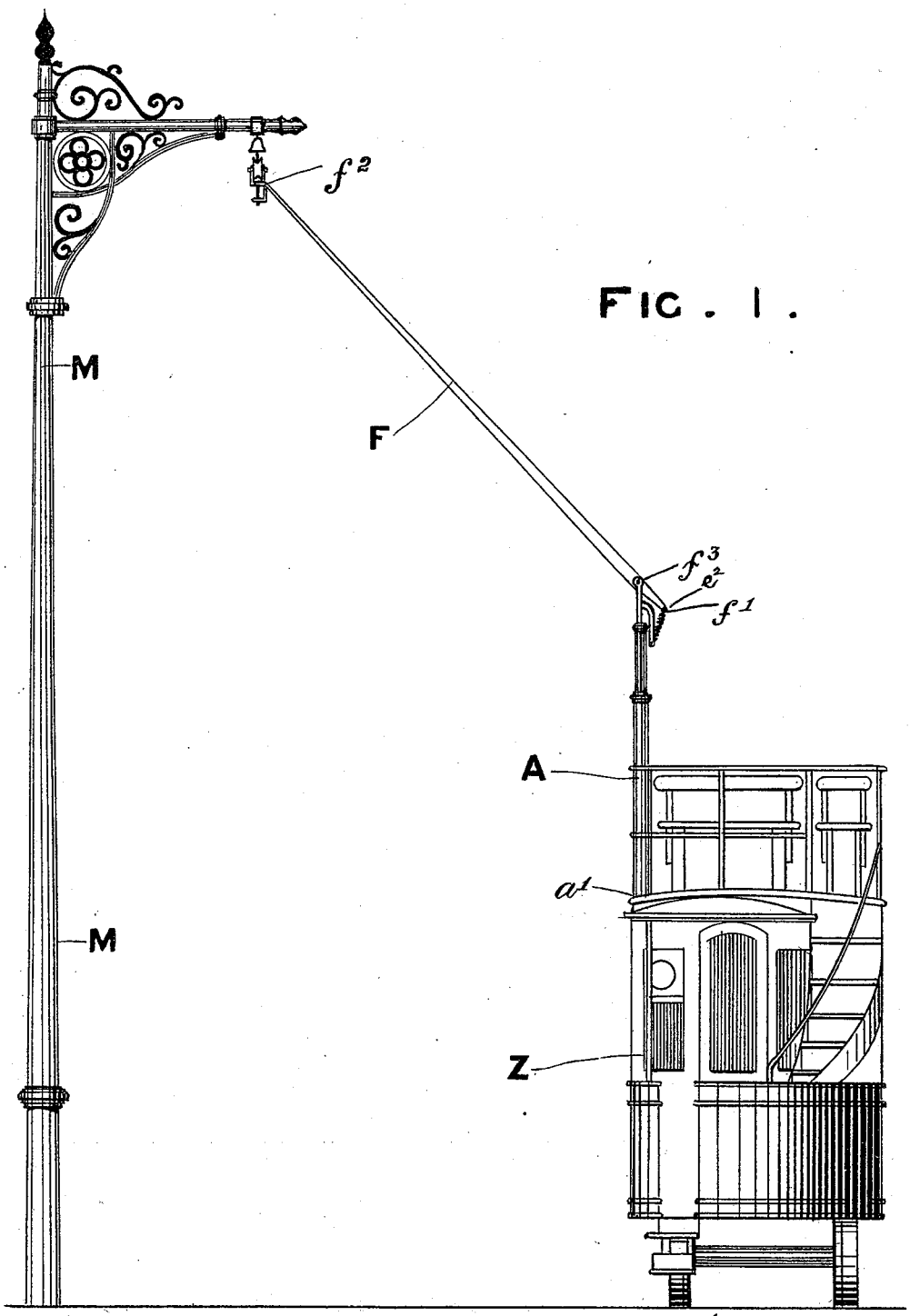

FIG. 1.

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by Wm H. Babcock
Atty.

(No Model.) 4 Sheets—Sheet 2.

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ELECTRIC RAILWAY TROLLEY.

No. 491,988. Patented Feb. 21, 1893.

FIG. 2.

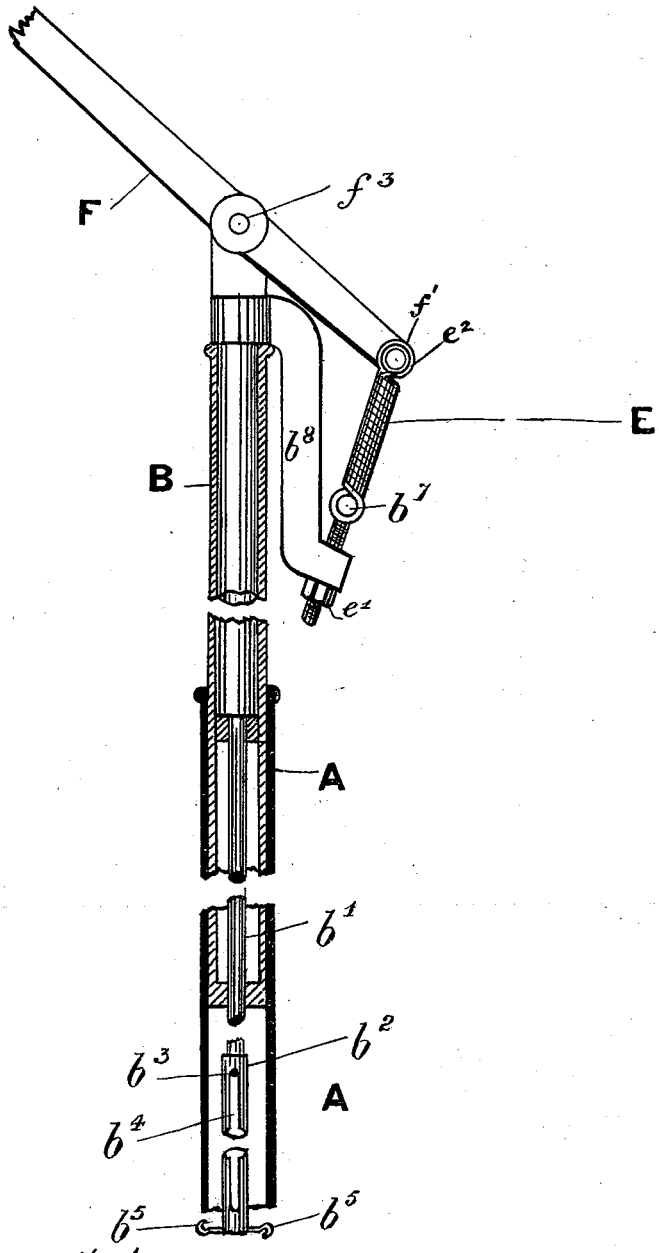
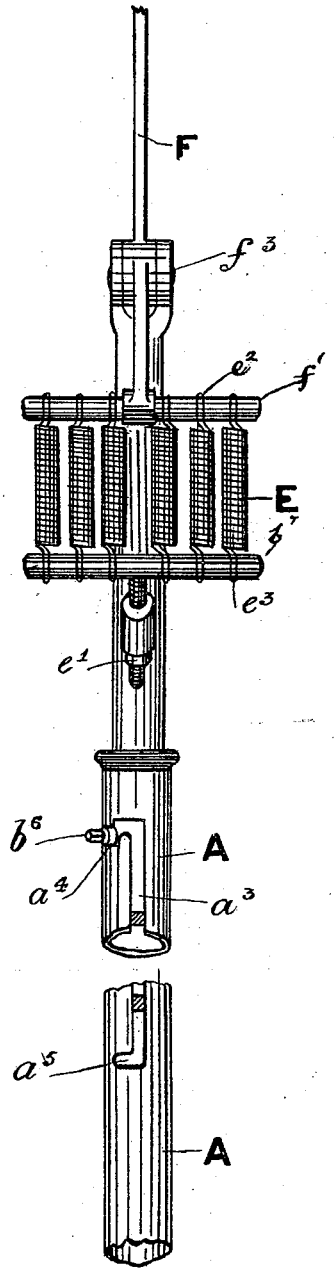


FIG. 3.



Witnesses
W. Harvey Murray.
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(No Model.) 4 Sheets—Sheet 3.

A. DICKINSON.

ELECTRIC RAILWAY TROLLEY.

No. 491,988. Patented Feb. 21, 1893.

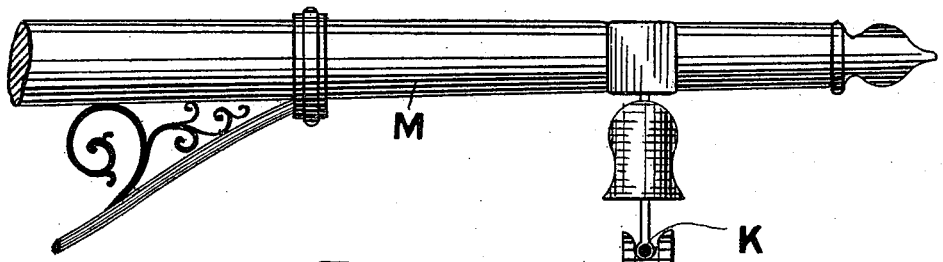


FIG. 4

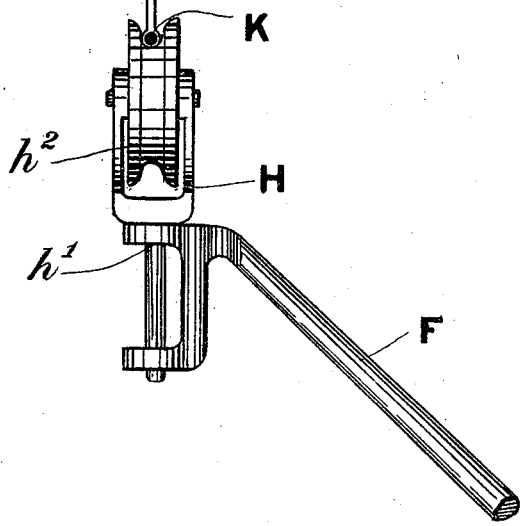


FIG. 5.

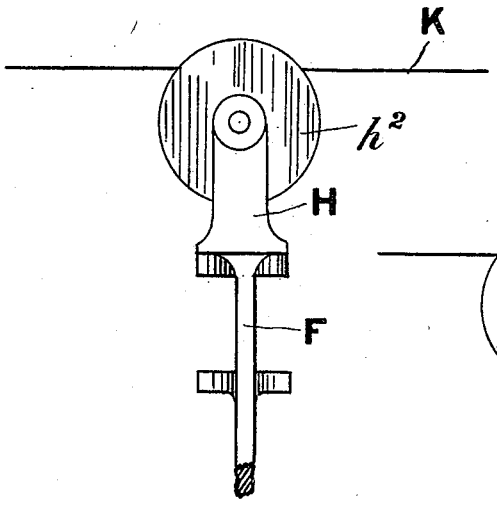
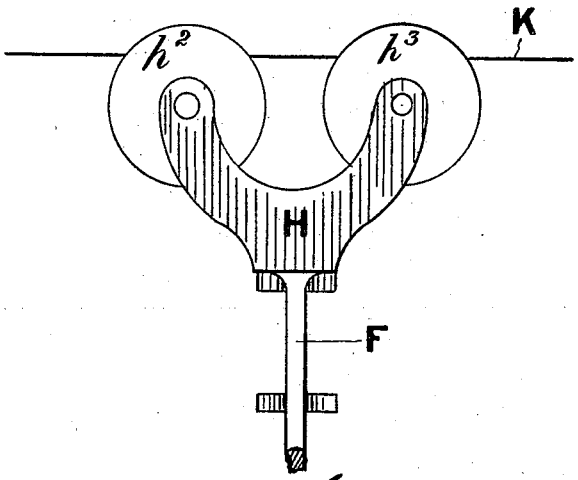


FIG. 6.



Witnesses
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(No Model.) 4 Sheets—Sheet 4.

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ELECTRIC RAILWAY TROLLEY.

No. 491,988. Patented Feb. 21, 1893.

FIG. 8.

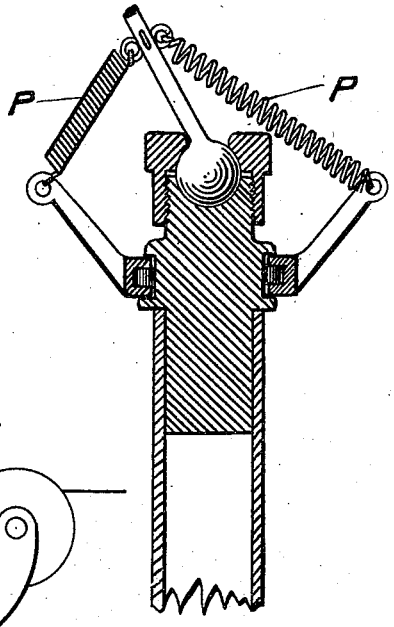


FIG. 9.

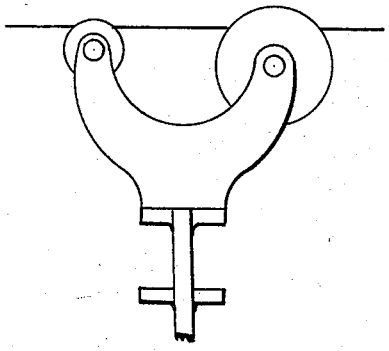


FIG. 7.

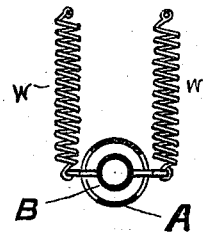


FIG. 10

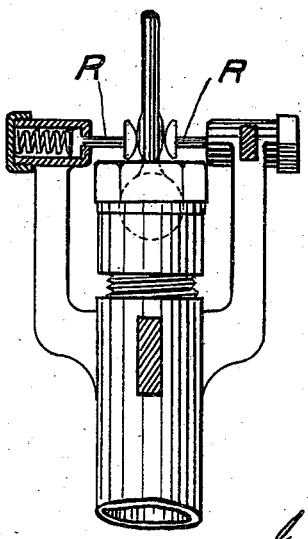
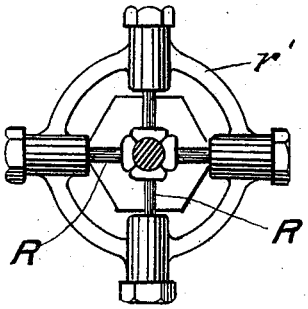


FIG. 11.



Witnesses
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C. N. Muzzy.

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Atty.

UNITED STATES PATENT OFFICE.

ALFRED DICKINSON, OF DARLASTON, ENGLAND.

ELECTRIC-RAILWAY TROLLEY.

SPECIFICATION forming part of Letters Patent No. 491,988, dated February 21, 1893.

Application filed February 9, 1892. Serial No. 420,863. (No model.) Patented in England March 28, 1891, No. 5,461.

To all whom it may concern:

Be it known that I, ALFRED DICKINSON, engineer, a subject of the Queen of Great Britain, residing at Tramway Depot, Darlaston, in the county of Stafford, England, have invented certain new and useful Improvements in Trolley-Supporting Poles or Arms and Trolleys for the Overhead System of Electric Traction, of which the following is a specification.

This invention has been patented in England No. 5,461, dated March 28, 1891.

This invention relates to trolleys and their supporting arms arranged to turn radially in any direction, and consists mainly in a telescopic extensible upright in combination with such an arm mounted thereon, springs attached to said arm and upright and a trolley carried by the said arm, substantially as hereinafter described.

Figure 1., is an elevation showing the connections between the side poles, feed wire and car. Fig. 2., is a sectional side elevation through the arm. Fig. 3., is a front elevation of the arm. Fig. 4., is an enlarged side view of the trolley showing its connection with the feed wire and supporting pole. Fig. 5., is a front view of the trolley. Fig. 6., is a similar elevation to Fig. 5 but showing a modification in the trolley. Fig. 7 is a sectional plan, through the upright A taken a little above the hooks b^5 illustrating the spring for controlling the rod B; Fig. 8 is a vertical cross section showing a modification of the ball and socket joint; Fig. 9 shows a modification in the trolley. Fig. 10 is a vertical cross section showing a further modification in the means for controlling the arm; Fig. 11 is a plan of the same.

In carrying my invention into effect the arm F which may be formed of metal or other approved material, is pivotally attached near one end to a movable rod B fitting within the upright A and is provided with a ball and socket joint as shown at Fig. 9 or its equivalent so as to allow the head f^2 of the arm to radiate in any direction this being effected in the present illustration by means of the said fixed socketed upright A having the internal revolving rod B with the continuation b' which passes down and enters the socket b^2, working in the slot b^4 of the socket the radiation of the head of the arm being controlled and adjusted by means of springs w, Fig. 8 attached to the hooks b^5 near the foot of the arm. By this means the upright A of the arm is made collapsible so as to enable the cars to more readily enter the sheds the slot a^3 being formed in the outer casing A in which the stud b^6 works the slot being provided with the locking head a^4 for supporting the stud b^6 when the arm is up the stud falling to the bottom a^5 of the slot when the arm is down.

The means for allowing the radiation of the arm in any direction may be varied as I may effect it by means of a ball and socket joint the radiation being controlled and adjusted by means of springs P attached to and near the foot of the arm the springs being secured to a loose collar p' working on the pedestal of the ball socket or in other suitable manner. The radiation of the arm may be further controlled by means of adjustable buffer springs R which may be secured in any desired position to a frame r' attached to the penestal of the ball socket. The arm is pivoted to the upright A at f^3 and controlled vertically by the springs E of which there may be any number, the one end e^2 of the springs being attached to the cross bar f' on the arm while the other end e^3 is attached to the cross bar b^7 which is operated in the bracket b^8 by the nut e' so as to adjust the strength of the springs E.

To the point or head f^2 of the arm F the trolley or collector H is hinged or pivoted as at h' so as to have lateral play in any direction.

I may have two trolley wheels h^2 and h^3 as shown by Fig. 7, and one wheel may be smaller than the other if so desired.

What I claim, then, is—

1. A standard consisting of a fixed and longitudinally slotted lower part and an upper part moving up and down telescopically therein the said upper part being provided with a stud which slides in the slot of the said lower part and may be turned into lateral branches thereof, in combination with an arm attached at or near one end to the upper part of the said standard, springs connecting the said standard to the said arm and a trolley pivoted on the other end of the said arm substantially as and for the purpose set forth.

2. In combination with a telescopic standard vertically extensible for use an arm F pivoted to the upper part of the said standard, a bracket b^8 fixed to the said upper part of the standard, cross-bars f' and b^7, springs E connected at their opposite ends to the said rods and a trolley carried by the other end of the said arm substantially as set forth.

In testimony that I claim the foregoing as my own I affix my name in the presence of two witnesses.

ALFRED DICKINSON.

Witnesses:
LEWIS WM. GOOLD,
WILLIAM SMITH.