

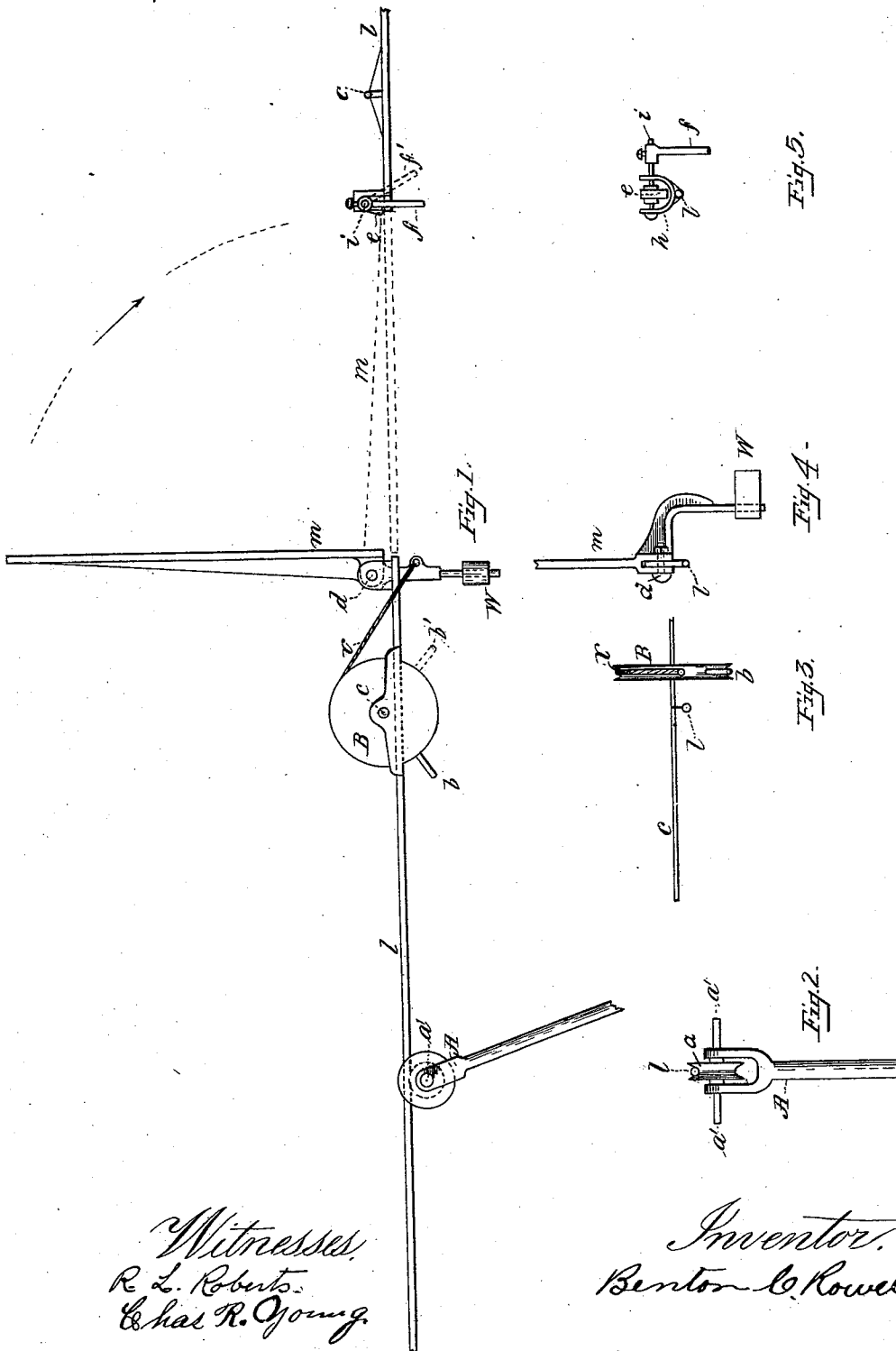
(No Model.)

2 Sheets—Sheet 1.

B. C. ROWELL.
EXTENSIBLE ELECTRICAL CONDUCTOR.

No. 466,427.

Patented Jan. 5, 1892.



Witnesses,
R. L. Roberts.
Chas R. Young.

Inventor.
Benton C. Rowell

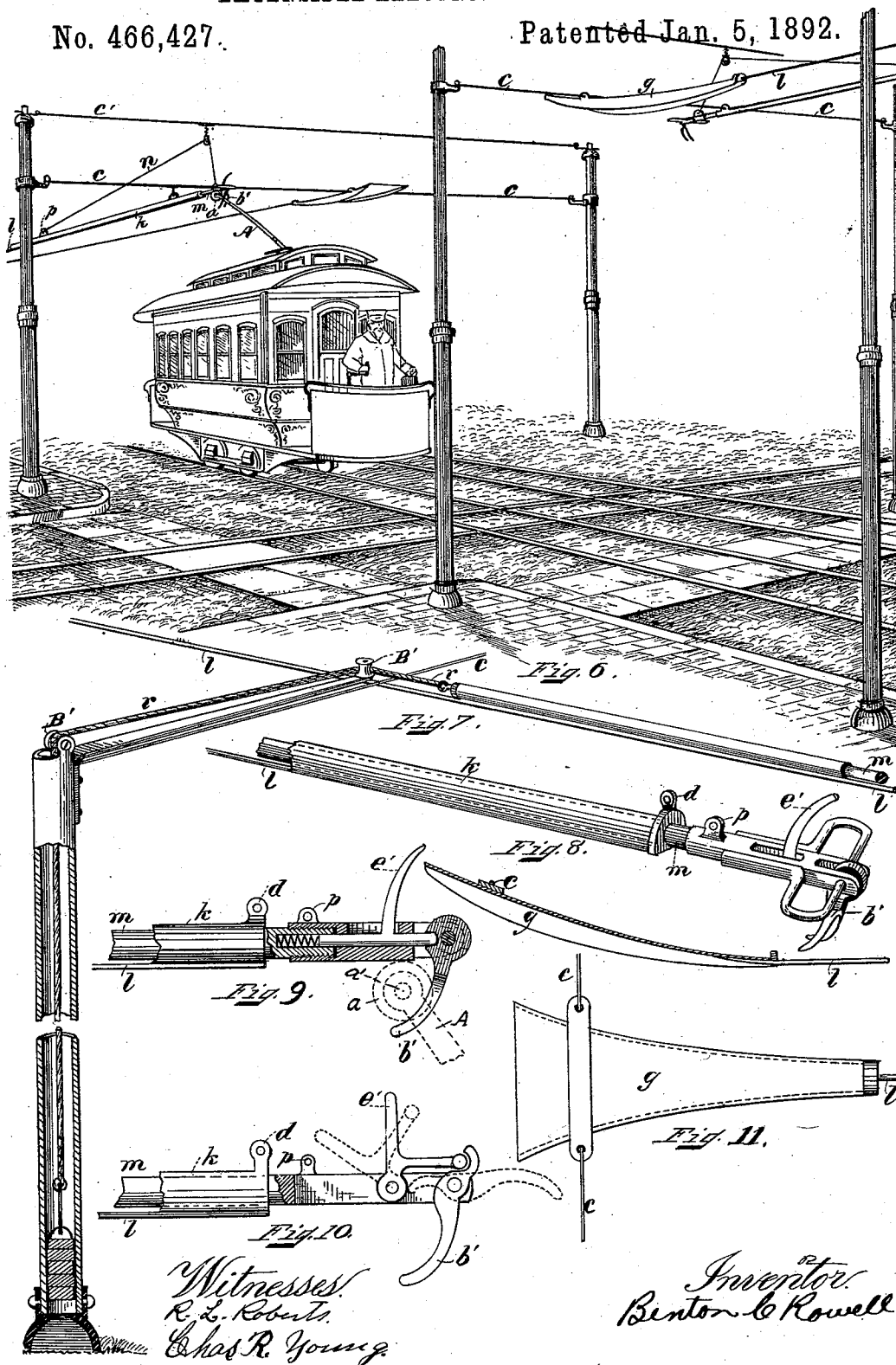
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UNITED STATES PATENT OFFICE.

BENTON C. ROWELL, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO D. HOWARD VINCENT, OF SAME PLACE.

EXTENSIBLE ELECTRICAL CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 466,427, dated January 5, 1892.

Application filed April 13, 1891. Serial No. 388,752. (No model.)

To all whom it may concern:

Be it known that I, BENTON C. ROWELL, of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Extensible Electrical Conductors for Carrying Power-Currents, of which the following is a specification.

My invention relates to extensible electrical conductors, particularly for use in connecting the ends of discontinuous contact-rods or trolley-wires used with electric railways. Heretofore it has been entirely impracticable to continue the trolley-wire of an electrical railway across the tracks of a steam-railway where such crossings occur, and only at great expense and by the use of subaqueous cables has it been accomplished at draw-bridges; and my improvements consist in accomplishing this by an extensible wire or rod suitably attached at one end of the discontinuous trolley-wire or contact-rod, so that it may be drawn out beyond the end thereof or extended across to the opposite end, and a downwardly-projecting finger or clutch connected with the extensible wire or rod to engage with the passing trolley when the overhead wire is used, and an upwardly-projecting finger to engage with the passing contact-wheel when the contact-rail beneath the car is used, and a latch to hold said finger rigid until relieved by a tripping-bar at the other terminal of the trolley-wire; also, in a spring or counter-weight to pull the extensible rod or wire back to its normal position after the said finger or clutch has been released, and, further, in a bar to trip or release the latch from the clutch when the trolley has traversed the space intervening between the two terminals of the discontinuous trolley-wire, and a guide to direct the trolley to its wire as the car moves forward.

In the drawings forming a part of this specification, Figure 1 is a side elevation of a discontinuous trolley-wire, with an extensible rod pivoted at one terminal to connect that with the other terminal and operated by a cord attached to the rod below the trolley-wire and passing over a pulley or cam-lever which is engaged by the passing trolley, and a latch to hold the rod in contact with the opposite

terminal until released by the trolley in passing; Fig. 2, a front view of the trolley with extended axle; Fig. 3, a rear view of the pulley or cam-lever by which the trolley engages and operates the extensible rod. Fig. 4 is a rear view of the lower portion of the extensible rod with a weight to return it to its normal position. Fig. 5 is a front view of the latch to hold the extensible rod in contact with the opposite terminal and the tripping-lever by which it is released. Fig. 6 is a perspective view of an overhead trolley-wire system of an electric railway, illustrating the manner in which the extensible rod is held contiguous to and parallel with the trolley-wire and the finger or clutch engaging with the trolley of the passing car; also, the clutch releasing or tripping bar and guide to direct the trolley to its wire. Fig. 7 illustrates another convenient manner of attaching the counter-weight to the extensible rod or conductor. Fig. 8 is an enlarged perspective view of the end of the extensible electrical conductor with the trolley-clutch and spring-latch. Fig. 9 is a side view of the same parts and the tripping-bar and trolley-guide, with the end of the extensible rod in section and with the fingers engaging with the trolley shown in dotted lines. Fig. 10 is a side view of a modified form of trolley-clutch and retaining-latch; Fig. 11, a top view of the tripping-bar and trolley-guide.

In the several figures of the drawings similar letters indicate corresponding parts of the devices.

A is the trolley-arm, *a* the trolley, and *a'* the trolley-journal.

l is the trolley-wire; *c c*, the trolley-wire supports; *m*, the extensible rod or wire. In Figs. 1 and 4 this rod is pivoted at *d*. In Figs. 8, 9, and 10 the rod is held in a socket *k*, supported at *d*.

The extensible rod *m* may be constructed so as to tilt upon a pivot, as illustrated in Figs. 1 and 4, and with a latch to hold its free end at the opposite terminal of the trolley-wire when in the position shown in dotted lines, or, as illustrated in Figs. 7 to 10, be supported in a guide which will allow it to be pulled out a sufficient distance to span the space between the two terminals. *w* is a counterbal-

ancing-weight to draw the extensible rod back to its normal position after it has been released by the tripping devices. A spring may be used for this purpose in place of the weight.

5 A cord *r* is attached to the extensible rod near the end opposite its free end, and in the construction shown in Figs. 1 and 3 the cord passes over a cam pulley or lever B, upon which the trolley acts directly by means of a
10 finger *b* projecting therefrom, while in the arrangements shown in Figs. 7 and 8 the cord passes over pulleys B', and the trolley-engaging finger *b'* is attached to the extensible rod.

In Figs. 1 and 5, *e* is the latch which holds the
15 end of the rod *m* in contact with one terminal of the trolley-wire when it has been carried across by the action of the moving-trolley. The latch is hung in a yoke *h* upon a pivot *i*, which extends out at one side and has a
20 downwardly-projecting tripping-lever *f*, which will be struck by the projecting journal *a'* of the trolley as it passes and moves to the position shown in dotted lines, thus drawing back the latch *e* and releasing the end of the
25 rod *m*. By means of a screw *s* the lever *f* may be adjusted upon the pivot *i* so as to throw the latch forward to a greater or less degree, as desired, the lever *f* being longer and heavier than the latch.

30 In Figs. 8, 9, and 10 the latch *e'* is shown held in the end of the extensible rod *m*, the latch in this instance being constructed so as to hold the trolley-engaging finger *b'* until the end of the extensible rod has been carried
35 across to the opposite trolley-wire terminal, where the latch is withdrawn or raised by striking a stationary tripping-bar *g*, which is constructed of a flaring shape, wide at the outer end and diminishing in width toward
40 the other end to serve as a guide to direct the trolley to the trolley-wire.

The latches *e'* (shown in Figs. 8 and 9) are held in their normal position by a spring, and in Fig. 10 by the weight of the projecting portion of the latch. After the trolley has left
45 the finger *b'* it will drop to its normal position by the weight of the projecting portion, or to make its return more positive a spring may be used to assist the force of gravity.
50 Where the extensible rod is arranged to be drawn out horizontally by the trolley, as illustrated in Fig. 6, the free end is counterbalanced by means of a cord *n*, running over a pulley *o*, which is attached to a supporting
55 cross-wire, the ends of the cord being fastened to the respective ends of the extensible rod, as at *p p'*, the eye *p'* running in a slot in the upper side of the socket *k*.

I claim—

60 1. In combination with the terminals of a

discontinuous electrical contact-rod or trolley-wire, an extensible electrical conductor supported at one terminal, a projecting finger connected with said conductor and adapted to be operated by a passing car to extend the
65 conductor across the space between the terminals, and a weight or spring to withdraw said conductor from that space when the car has passed, substantially as described.

2. In combination with the respective terminals of a discontinuous trolley-wire of an
70 electrical railway, an extensible electrical conductor provided with a trolley-engaging finger, and a tripping-bar to disengage the finger and trolley, substantially as described. 75

3. In combination with the trolley-wire of an electric railway, an extensible arm or rod supported in a position parallel and contiguous thereto, a projecting finger to engage with
80 the passing trolley, and a weight or spring to hold the extensible arm in its normal position and return it thereto when drawn therefrom by the trolley, substantially as described.

4. In combination with the respective ends of a discontinuous electrical trolley-wire, an
85 extensible electrical conductor provided with a trolley-engaging finger at one terminal, and a disengaging bar and guide to direct the trolley to the wire at the other terminal, substantially as described. 90

5. In combination with the terminal of an electric trolley-wire, a telescopic extensible rod, a trolley-clutch, and a counter-weight or spring to return said rod to its normal position when displaced therefrom by the trolley,
95 substantially as described.

6. In combination with an extensible electrical conductor of a discontinuous trolley-wire, a trolley-clutch, a yielding latch to hold it in operative position, and a disengaging-
100 bar to move the latch and release the clutch, substantially as described.

7. In combination with the terminals of a discontinuous electrical contact-rod of an
105 electric railway, an extensible electrical conductor connected with a clutch which engages the trolley or contact-wheel of a passing car, whereby the extensible conductor is caused to bridge the space between the terminals, a
110 latch to keep the extensible conductor in electrical contact with the trolley while traversing the space between the terminals, and a disengaging device to release said conductor when the trolley has reached the opposite terminal, substantially as described.

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Witnesses:

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