

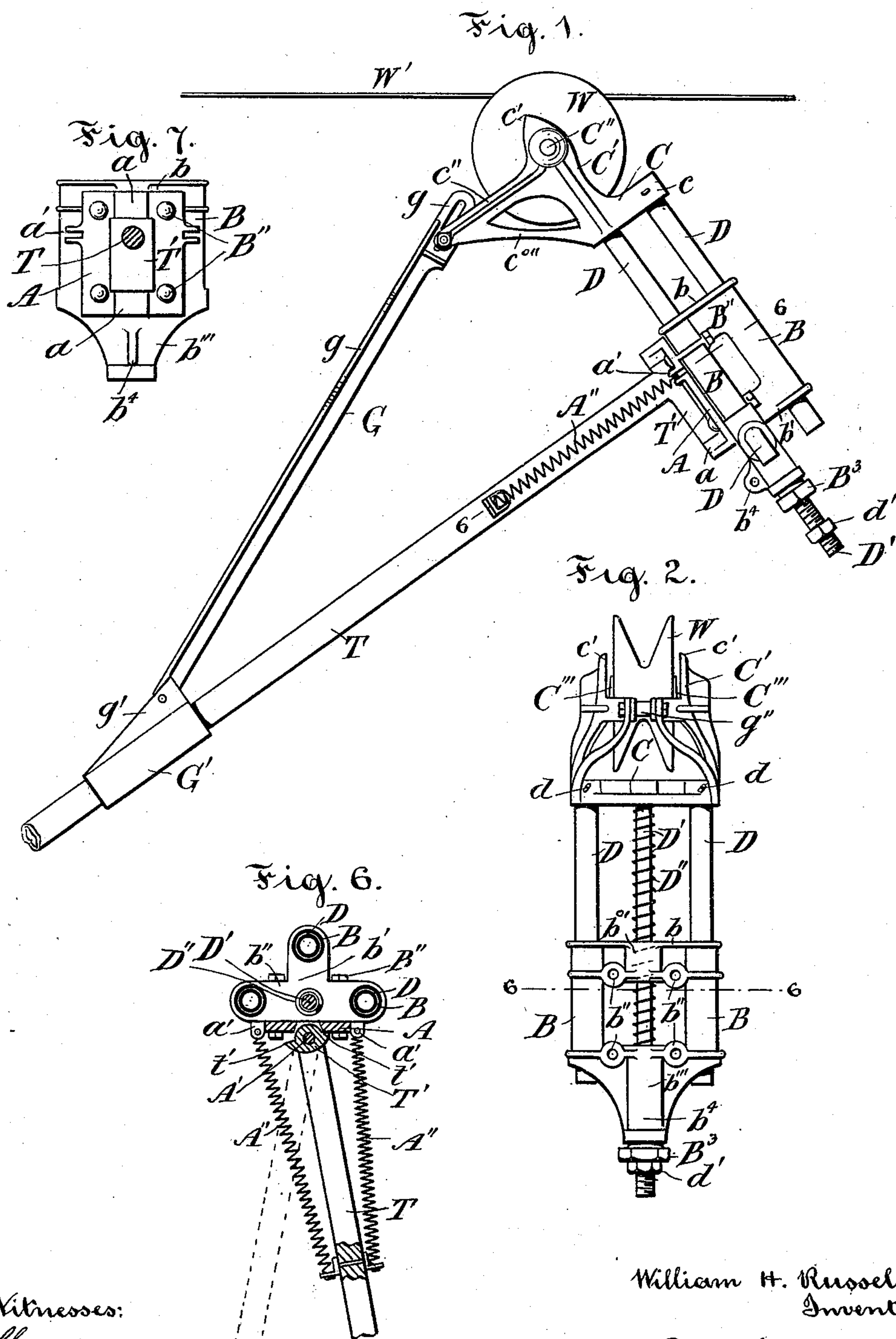
(No Model.)

2 Sheets—Sheet 1.

W. H. RUSSELL.
ELECTRIC CAR TROLLEY.

No. 599,868.

Patented Mar. 1, 1898.



Witnesses:
Chas. Raley.
B. Harvey.

William H. Russell
Inventor
by A. Harvey
his Attorney.

(No Model.)

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Fig. 3.

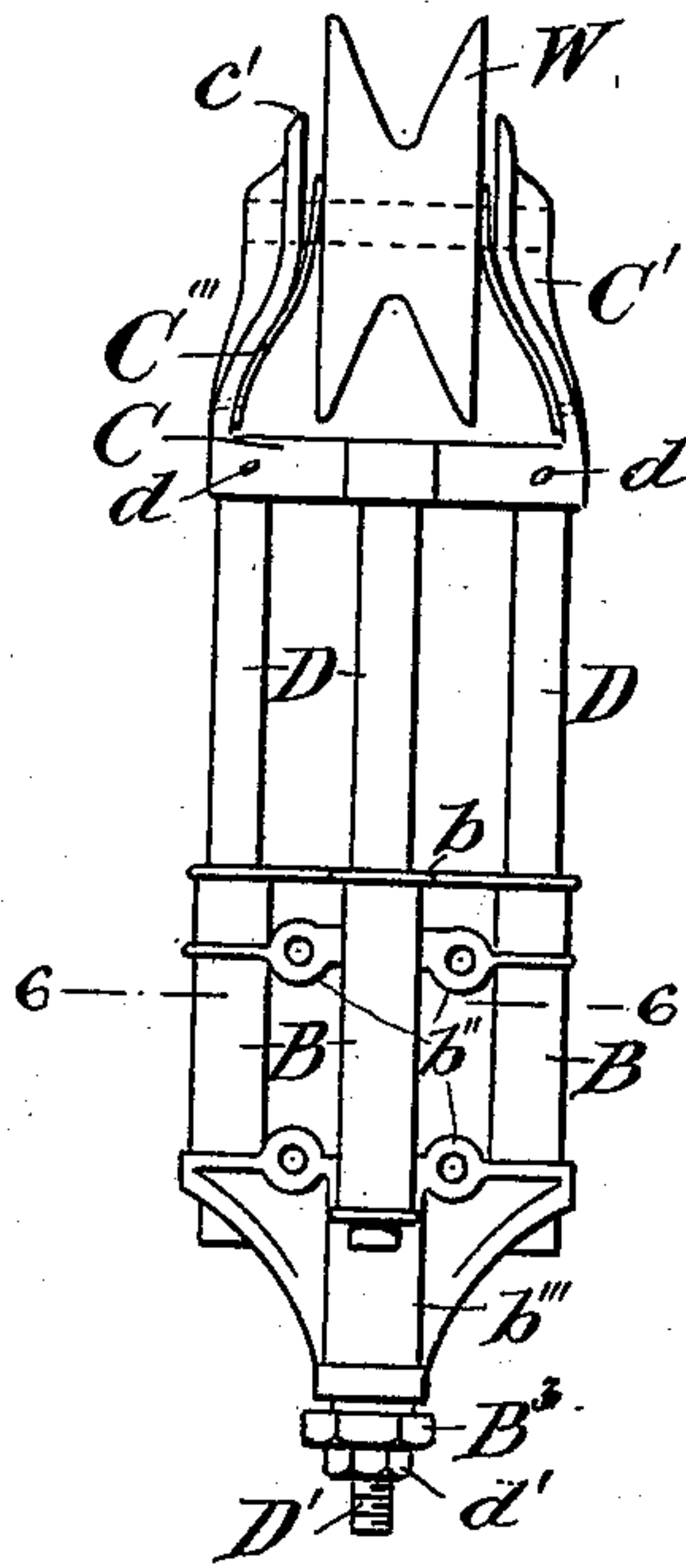


Fig. 4.

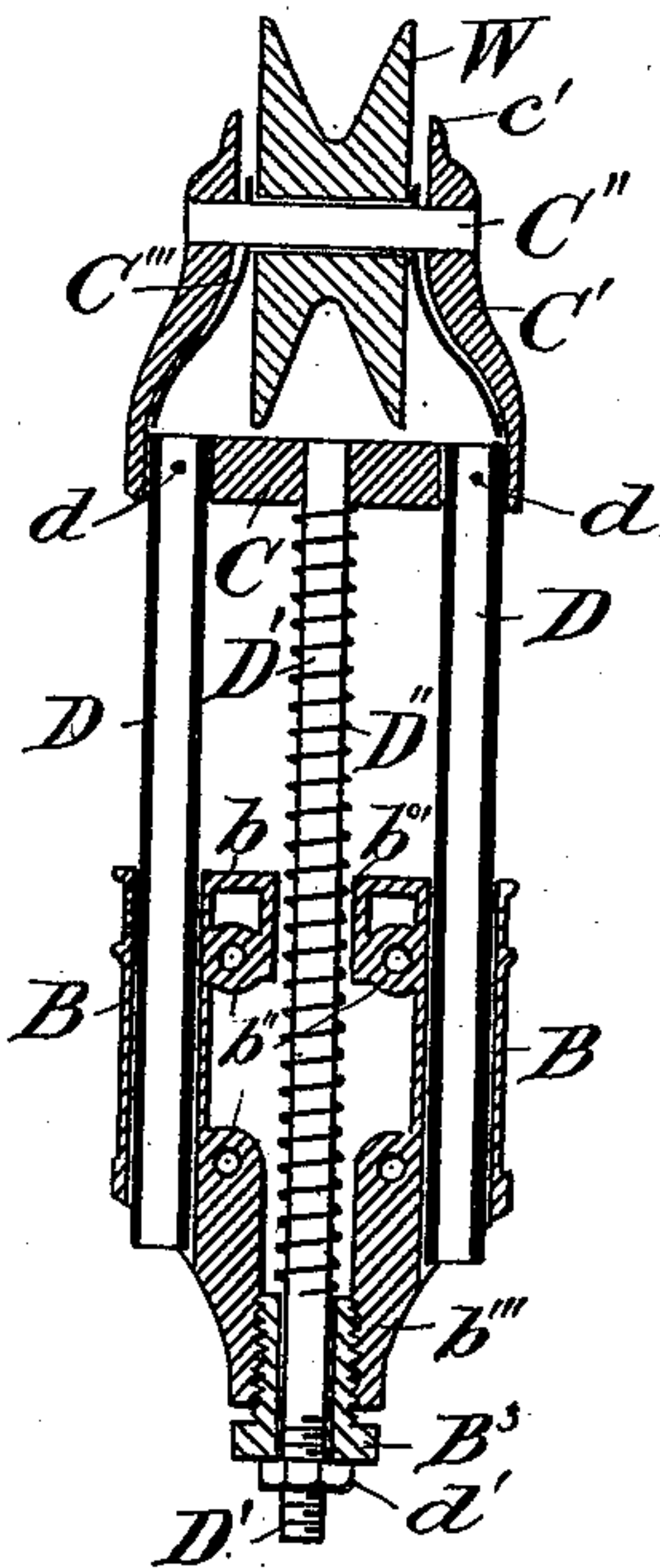


Fig. 5.

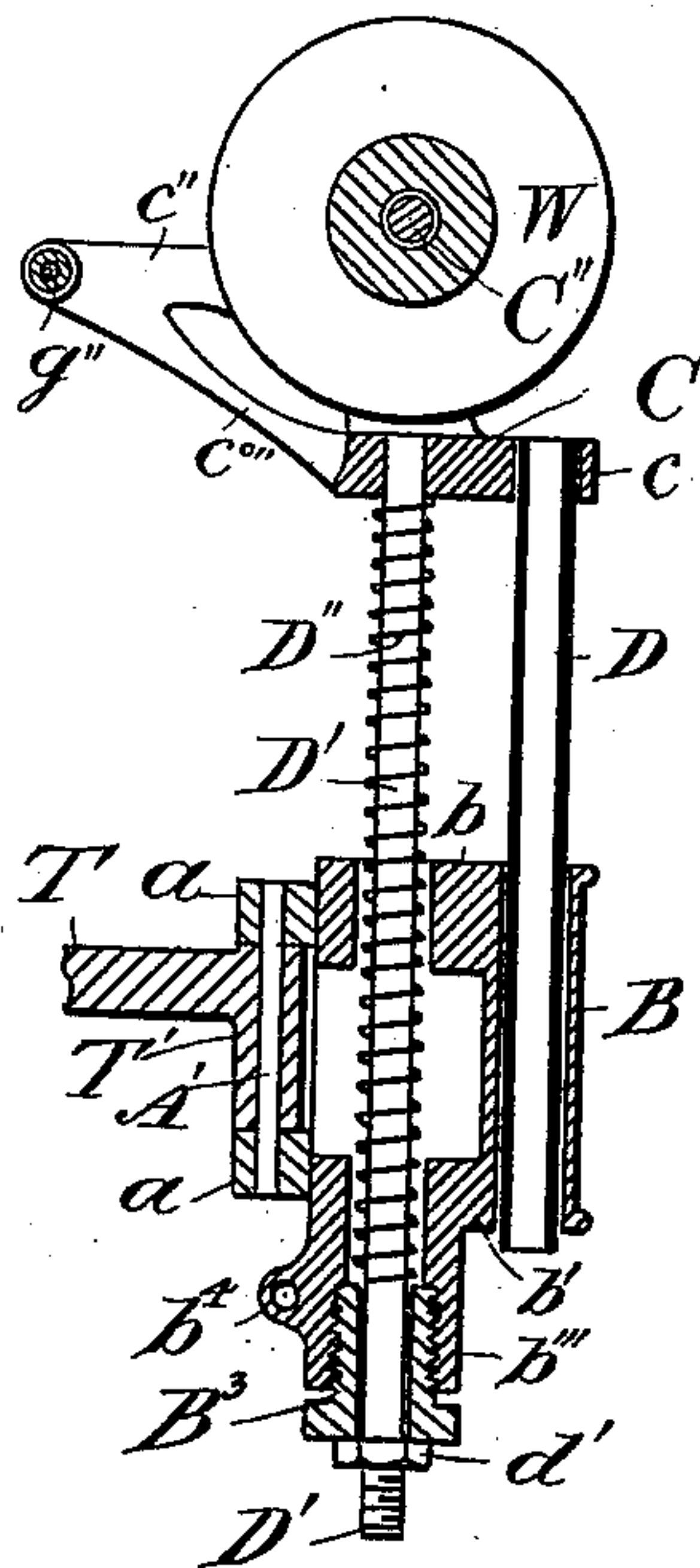
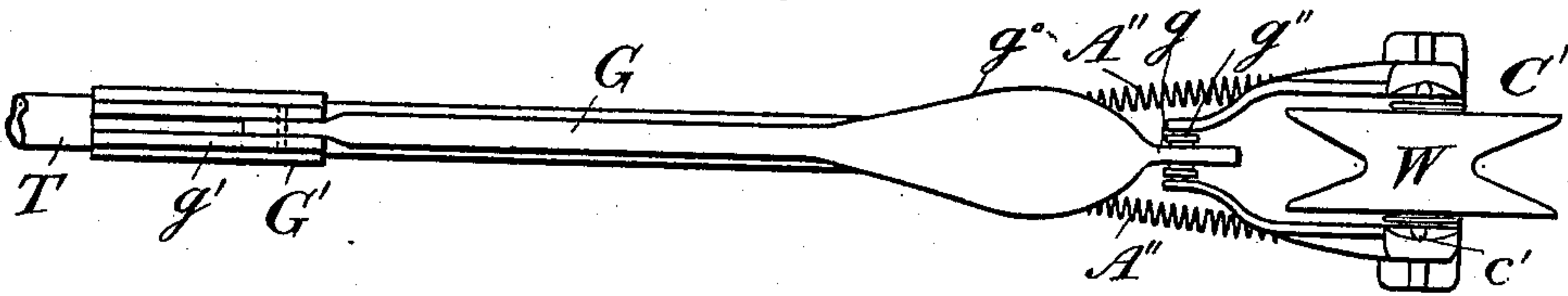


Fig. 8.



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UNITED STATES PATENT OFFICE.

WILLIAM H. RUSSELL, OF NEWCASTLE, CANADA.

ELECTRIC-CAR TROLLEY.

SPECIFICATION forming part of Letters Patent No. 599,868, dated March 1, 1898.

Application filed April 18, 1896. Serial No. 588,083. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. RUSSELL, of Newcastle, in the Province of New Brunswick, in the Dominion of Canada, have invented certain new and useful Improvements in Electric-Car Trolleys; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part hereof.

My invention, which will be hereinafter fully set forth and claimed, relates to trolley-wheels for overhead wires for electric cars.

The object of my invention is a trolley-wheel carrier or bearing that shall make the wheel less liable to be thrown off the trolley-wire.

Figure 1 is a side elevation of my improved trolley, shown on the trolley arm or pole. Fig. 2 is a front view of the same without the trolley arm or pole. Fig. 3 is a rear view of the same. Fig. 4 is a transverse vertical section of the same through the center parallel to Fig. 2. Fig. 5 is a longitudinal vertical section of the same through the center and parallel to Fig. 1. Fig. 6 is a transverse horizontal section of the same on line 6 6, Figs. 1, 2, and 3, showing hinge attachment of pole turned to one side. Fig. 7 is a front view of the hinge attachment of the trolley arm or pole, and Fig. 8 is a top view of the guard approximately parallel to the trolley arm or pole.

The trolley-wheel W, running on the trolley-wire W', is journaled by an axle C'' in a wheel-fork consisting of a cross-head C and inwardly-inclined tines C', projecting a little above the journal and each terminating in a point c' close to the side of the wheel, as shown in Figs. 1, 2, 3, and 4. The cross-head C is made somewhat longer than the actual needs of the trolley-wheel W require in order to obtain a broader base for the parallel downward-projecting guide-rods D, (shown as tubes in the drawings,) which are secured in hubs at the ends of it, snugly held in the bores of said hubs and secured by pins d. Another similar rod, parallel to the other two, is similarly secured in a lug c, projecting rearwardly from the center of the cross-head, so that the centers of the three guide-rods D form the points or angles of a triangle, the base of which passes through the front rods. In said baseline, midway between the two front rods, is

further secured in a suitable hub in the cross-head a thinner rod D', upon which is wound a coiled spring D'', tending to resist compression.

A bearing block or frame consisting of three long tubular bearings B, one for each guide-rod, rigidly connected, is adapted to carry said wheel-fork slidingly and to be secured to the trolley pole or arm T. The bearings B, bored to allow the guide-rods D to slide in them freely, are preferably cast in one piece, having suitable end pieces b and b' at the upper and lower ends, which are provided with perforated hubs b'', adapted to hold the bolts B'', securing the pole attachment. The upper end b is also provided with a hub b⁰, having an ample perforation for the free play of the central rod D' and spring D'' therein, forming a spring-barrel. The lower end is formed with a central tailpiece b''', having an ample perforation in its upper end for the free passage of the spring and a tubular nut B³ at the lower end, which forms a free bearing for the said rod and an abutment for the spring D''. The rod D' projects below and is provided with a nut d' or other stop to prevent it leaving its bearing, and thus preventing the wheel-fork and bearing-block parting company. A perforated lug b⁴ is provided on the tailpiece for the attachment of the trolley cord or line.

The trolley arm or pole T is connected to said bearing-block by a hinge-joint. This consists of an upright hub T' at the end of the pole, approximately at a right angle to it and having a projection t' at each side to limit the range of its swing on the hinge-plate A. This latter is a plate bolted to the block B b b' b'' by bolts B'' and is provided with two eyed lugs a, between which the ends of the hub T' are fitted and connected by a hinge-pin A'. To balance the hinge-plate A on the arm or pole T and to insure electric contact between the two, a spring A'' connects the two at each side, extending from a lug a' on the edge of the plate to the arm or pole a short distance from the hub T', as shown in Figs. 1, 6, 7, and 8.

To avoid the angle between the trolley-arm T and wheel-fork C' with rods D, which would form a hook against an overhead cross-wire on the road if the wheel left the trolley-wire,

I provide a guard or bridging-piece G. (Shown in Figs. 1 and 8.) One end of this is pivoted in a sloping lug g' of a sleeve G' , clipped upon the arm or pole at a suitable distance from the upper end, and the other end g is slotted and engages a pin or roller g'' , held in the ends of a pair of arms c'' , projecting forward from the tines C' a little below the center of the trolley-axle C'' and supported by braces c''' . The guard G thus practically forms a continuous line from the arm or pole to the top of the trolley-wheel. Below the slotted end the upper flange of the guard G is swelled out laterally, as shown at g^0 , tending to deflect the apparatus sidewise in striking the trolley-wire or similar object.

Contact-springs C^3 are secured to the inner faces of the wheel-fork, their ends bearing on the sides of the trolley-wheel to insure electrical contact between the wheel and its fork.

I prefer to cast the wheel-fork and bearing-block each with its attaching parts in aluminium as being very light. The rods, hinge-plate, and guard may be of the same material.

It will be seen that the yielding connection between the trolley-wheel and trolley-arm tends to smooth running and preventing the wheel leaving the trolley-wire, the spring D'' giving the necessary tension. The sliding connection of the wheel-fork on the trolley-pole end block or bearing is materially improved by the adoption of the triangular form of the guide-rod disposition. The hinge-joint between the pole end and the bearing-block benefits the operation of the trolley-wheel when passing around curves.

I claim as my invention—

1. The combination with a trolley arm or pole of a block or frame connected thereto, to be movable laterally therewith, parallel tubular bearings rigidly connected by ends, a wheel-fork consisting of a cross-head having upwardly-projecting tines adapted to have the trolley-wheel journaled therein and downwardly-projecting guide-rods adapted to engage and slide in the tubular bearings above referred to, a centrally-disposed rod secured to said cross-head parallel to said guide-rods passing free through said block or frame and having a collar or stop at the projecting end, a spring upon said rod adapted to keep the

wheel-fork and bearing-block apart, a trolley-wheel in said wheel-fork, a hinge-plate rigidly secured to said frame or bearing-block having eyed lugs adapted to receive an upright hub, a hub at the end of the trolley arm or pole pivoted in the lugs of said hinge-plate, side springs connecting said plate and pole, forwardly-projecting arms on the tines of the wheel-fork and having a cross connection, a sleeve on the trolley-arm having a lug to receive the end of a bar pivotally and a bar pivoted to said sleeve at one end and provided with a slot at the other end engaging the cross connection in the ends of the arms projecting from the wheel-fork and provided with a lateral swell at each side and forming a guard or bridging-piece over the triangular space between said trolley-arm and trolley-wheel, substantially as set forth.

2. The combination with a trolley arm or pole of a base secured to the end of such arm or pole to move laterally relative thereto, a trolley-wire contact-piece mounted on a frame on such base to move vertically relative thereto, a projection on the frame of such contact-piece, a rod or guard pivoted to the trolley arm or pole at one end of such trolley-guard and at the other end thereof extensibly connected to the projection on the frame of the contact-piece, such rod or guard having lateral swells adjacent to the end thereof which is secured to the projection; substantially as described.

3. The combination with a trolley arm or pole, of an upright hub at the end of it provided with side stops, a hinge-plate having lugs to which said hub is pivoted, side springs connecting the arm or pole a short distance from the end with the edges of the hinge-plate and a bearing block or frame of tubular bearings to which said hinge-plate is secured and a trolley-wire contact-piece mounted on such bearing-block, substantially as set forth.

In testimony whereof I have signed in the presence of the undersigned witnesses.

WM. H. RUSSELL.

Witnesses:

WM. MILLAR,
CLIFTON MILLAR.