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Patented July 2, 1901.

H. G. NICHOLSON.

FROG FOR USE IN CONNECTION WITH OVERHEAD CONDUCTORS OF ELECTRICAL
TRAMWAYS OR RAILWAYS.

(Application filed Apr. 12, 1901.)

(No Model.)

2 Sheets—Sheet 1.

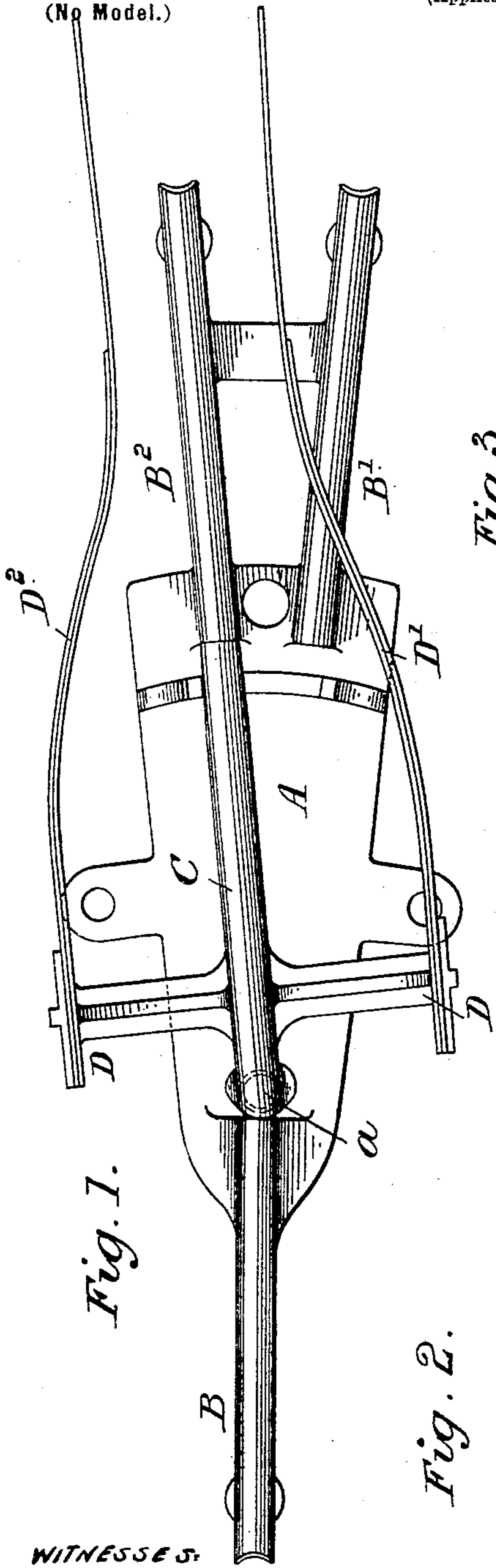


Fig. 1.

Fig. 3.

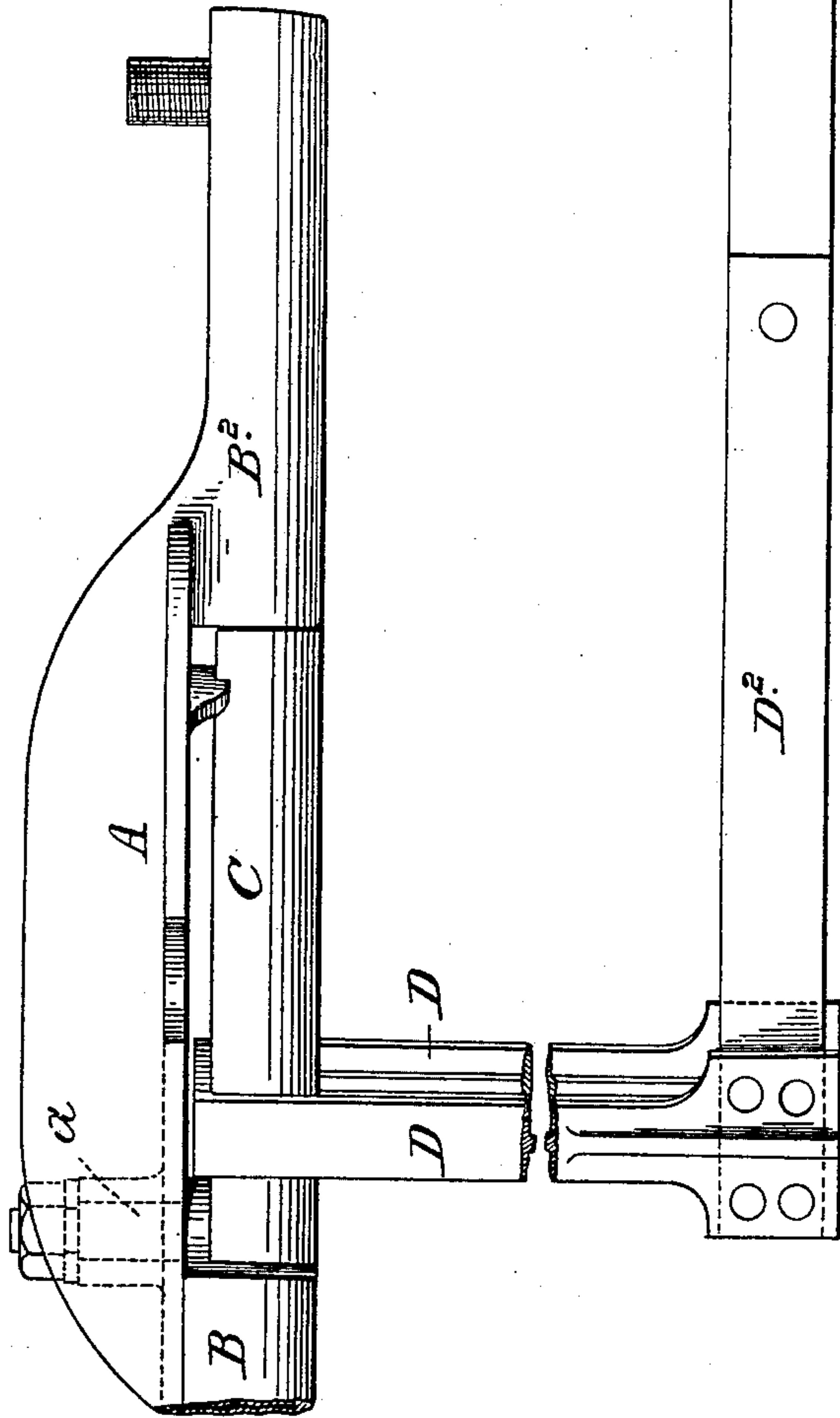
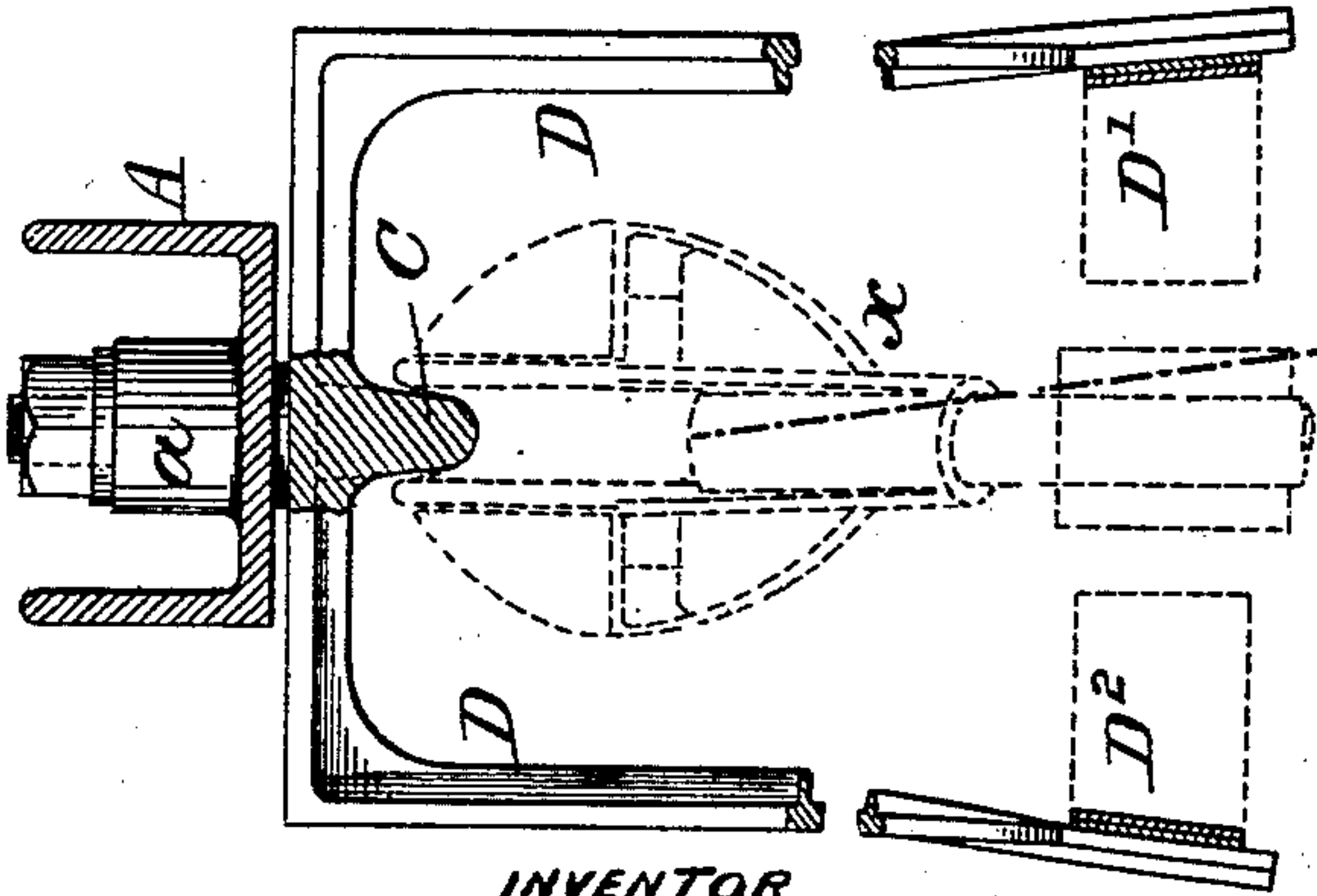


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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FROG FOR USE IN CONNECTION WITH OVERHEAD CONDUCTORS OF ELECTRICAL TRAMWAYS OR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 677,463, dated July 2, 1901.

Application filed April 12, 1901. Serial No. 55,506. (No model.)

To all whom it may concern:

Be it known that I, HUGH GODFREY NICHOLSON, a subject of the King of Great Britain and Ireland, residing at Bellevue, county Cork, Ireland, have invented certain new and useful Improvements in Frogs to be Used in Connection with Overhead Conductors of Electrical Tramways or Railways; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to frogs which are used in connection with overhead conductors of electrical tramways or railways; and it has for its object to provide a frog in which a movable point-tongue or switch is adjusted by or from the trolley pole or arm, so as to bring the said point-tongue or switch into position to coincide with the line or conductor on which the trolley-wheel is to travel as the said trolley-wheel approaches the said point-tongue or switch.

Figure 1 of the accompanying drawings represents in plan of under side, Fig. 2 in cross-section, and Fig. 3 in elevation, a frog made in accordance with my invention. Fig. 4 represents in plan of under side, and Fig. 5 in elevation, partly in section, a modification; and Fig. 6 is a detail, as hereinafter described.

Referring first to Figs. 1, 2, and 3, A is a casting or base carrying the ends of the lines or conductors B B' B². At the end of the line or conductor B from which the trolley-wheel runs I pivot at *a* a point-tongue or switch C, which can be turned to coincide with either of the lines or conductors B' B² onto which the trolley-wheel is to proceed. Secured to this movable point-tongue or switch C are arms D, extending downward at some little distance apart and provided at their lower ends with pieces D' D², extending longitudinally, between which pieces the trolley head or pole or some part connected therewith passes, so that just before the trolley-wheel reaches the movable point-tongue or switch C one or the other of the said longitudinally-extended pieces D' D² is so acted upon as to cause the point-tongue or switch C to be set to one or the other line or conductor, (B' or B²), according to the direction of the sidewise pull of the vehicle. The said longitudinally-

extended pieces D' D² are preferably capable of yielding sidewise, for example, by making them of spring metal, so that the point-tongue or switch C is held securely over and injurious strain upon the parts is prevented. In Fig. 2 I have indicated at *x* the upper end of the trolley-pole carrying the trolley-wheel which runs on the lines or conductors, showing how it acts on the pieces D' D², so as to shift the point-tongue or switch C before the trolley reaches it.

I have described the point-tongue or switch of the frog so arranged to be operated in both directions by the trolley head or pole or some part connected therewith; but, if desired, the point-tongue or switch may be made so as to be kept normally in one position by the action of a spring or weight, for example, and be operated by the trolley head or pole or some part connected therewith only in one direction to bring it from its normal position. I will describe such a modification with reference to Figs. 4, 5, and 6 of the accompanying drawings. The casting or base A carries the ends B, B', and B² of the lines or conductors, each of which, as in the previous case, forms a continuation of the lines or conductors along which the trolley-wheels run. Pivoted at *a* to the casting or base A is a point-tongue or switch C, from the side of which projects a bracket D, carrying a boss or sleeve *d*, in which is mounted a spindle *d'*, which extends downward and is provided with a longitudinally-extending piece D², preferably of spring metal, as in the previous case. Normally the movable point-tongue or switch C is held by a spring E in such a position as to connect the lines or conductors B and B', this corresponding to the main track along which the vehicles are to normally run, as indicated by the arrow in Fig. 4. When the vehicle passes onto the branch track (corresponding with the line or conductor B²) by being shunted by the usual points on the road, the side pressure of the pole or trolley-head or part in connection therewith acts upon the extension D² and turns the point-tongue or switch C on its center *a* in opposition to the spring E, curved slots *a*² being provided in the casting or base A and in a cover A² to permit of this movement, so that the said movable point-tongue or switch C

coincides with the lines or conductors B and B², and the trolley-wheel passes onto the line or conductor B², which may lead, for example, to the yard where the vehicles are kept when not in use. The end of the extension-piece D² is curved out at its end, as shown, so that when the vehicle is backed onto the main track the pole or trolley-head or part in connection therewith acts on the said part D² and adjusts the point-tongue or switch to allow the trolley-wheel to pass onto the main line or conductor. When the pole or trolley-head or part connected therewith has passed beyond the extension D², the spiral spring E returns the point-tongue or switch C to its normal position.

In order to prevent the point-tongue or switch tending to return to its normal position before the trolley-wheel has left it, I may attach to the said point-tongue or switch a depending arm F, with an extension f, (preferably capable of yielding sidewise under undue strain,) against which the trolley-wheel bears to retain the point-tongue or switch in position till the trolley-wheel has left it.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is—

1. A frog for use with overhead conductors of electrical tramways or railways the said frog consisting of a movable point-tongue or switch having secured to it an arm or arms with a piece or pieces extending longitudinally therefrom and arranged to be acted upon by the trolley-head (or trolley-pole or some part connected therewith) so that the point-tongue or switch is thereby set in proper position by the trolley-head (or the like) as the trolley-wheel approaches the point-tongue or switch substantially as hereinbefore described.

2. A frog for overhead conductors of electric railways having a movable point-tongue, arms projecting downwardly therefrom, and horizontal arms carried at the ends of the downwardly-projecting arms and adapted to be operated by the trolley-pole to move the point-tongue to the position desired and hold it there until the trolley-wheel has left the point-tongue.

3. A frog for overhead conductors of electric railways having a movable point-tongue, spring means to keep it normally in one position and means secured to the tongue adapted to be operated by the trolley of the car to move said tongue from its normal spring-controlled position to that desired, substantially as described.

4. A frog for overhead conductors of electric railways, having a movable point-tongue, spring means to normally hold the tongue in a certain position, a downwardly-projecting arm secured to the tongue, a horizontal arm at the lower end thereof, adapted to be operated by the trolley of the car to move the tongue from its normal spring-controlled position to that desired, substantially as described.

5. A frog for overhead conductors of electric railways, having a movable point-tongue, a downwardly-projecting arm to the tongue, horizontal arms carried at the lower end thereof, a second shorter downwardly-projecting arm secured to the point-tongue and also carrying a horizontal arm at its lower end, substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

HUGH GODFREY NICHOLSON.

Witnesses:

WILLIAM GERALD REYNOLDS,
HENRY DENIS HOSKINS.