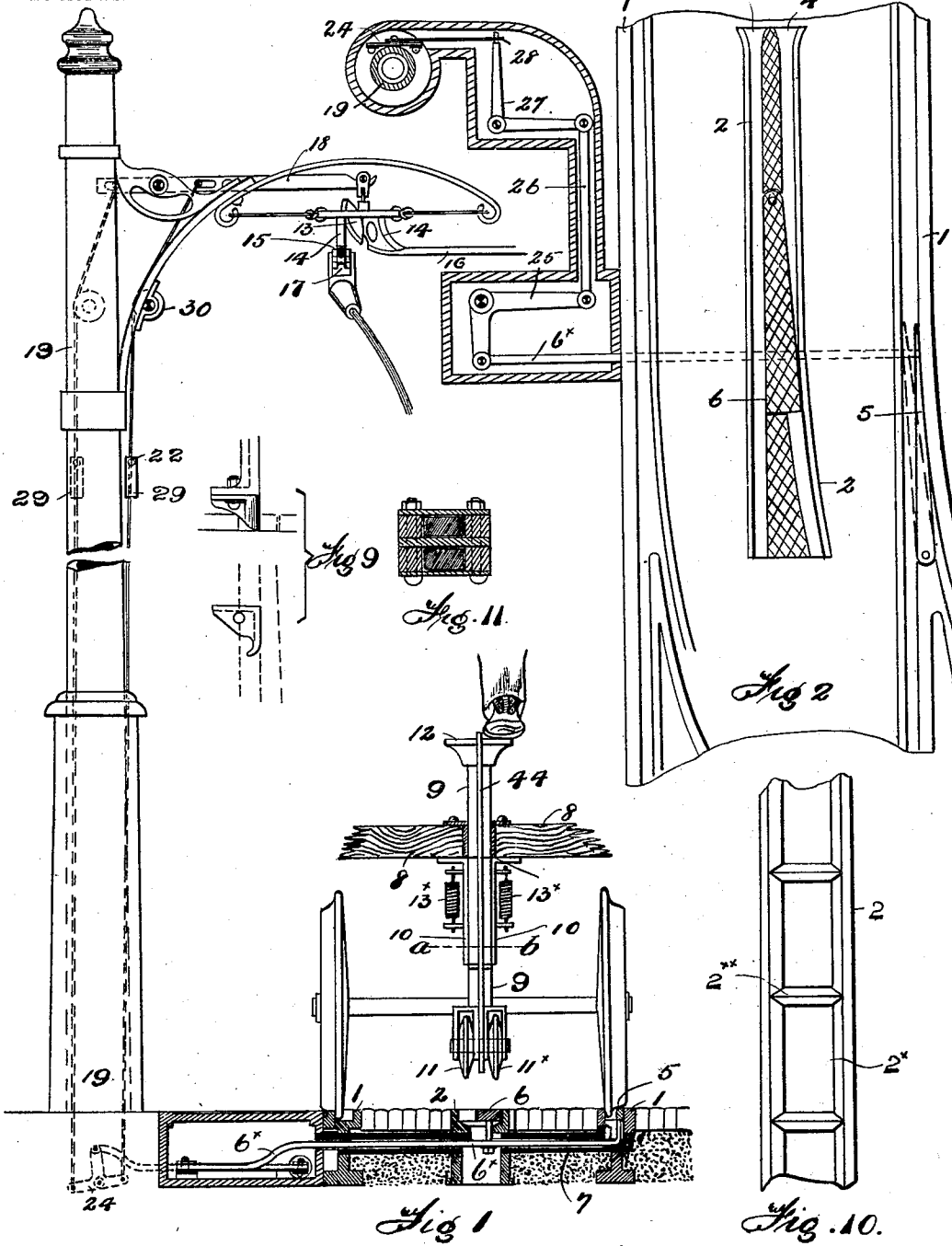


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NO MODEL.

APPLICATION FILED JUNE 9, 1902.

3 SHEETS—SHEET 1.



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INVENTORS:
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No. 723,441.

PATENTED MAR. 24, 1903.

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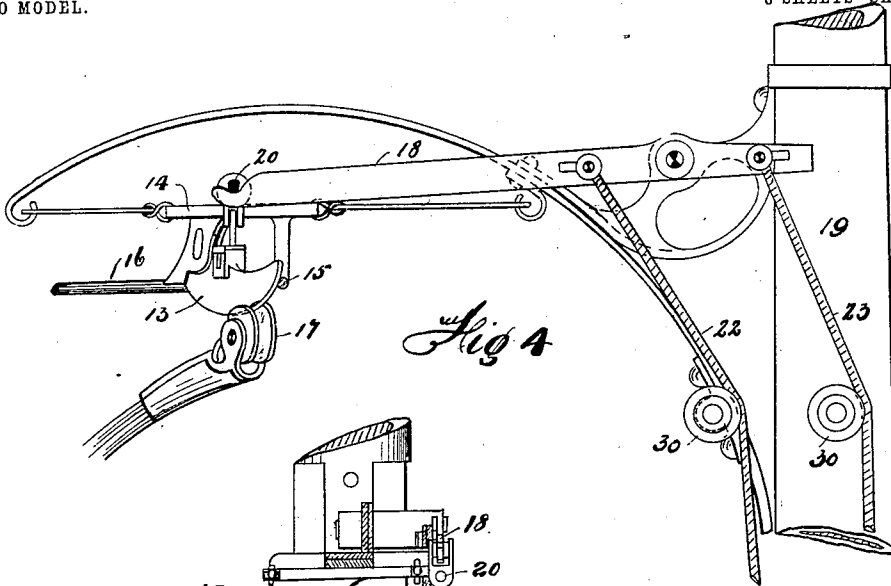


Fig 4

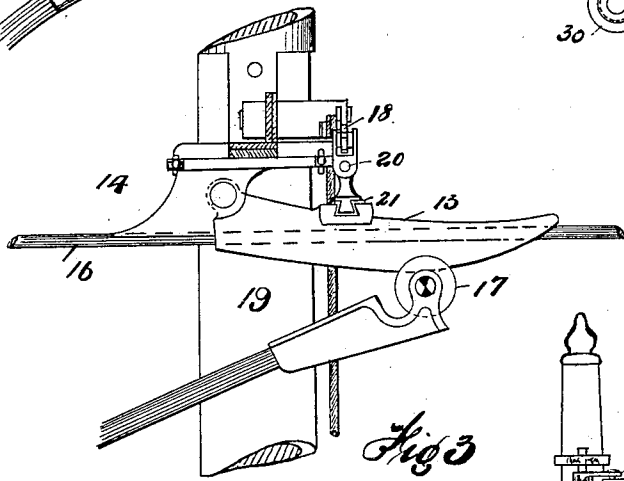


Fig 3

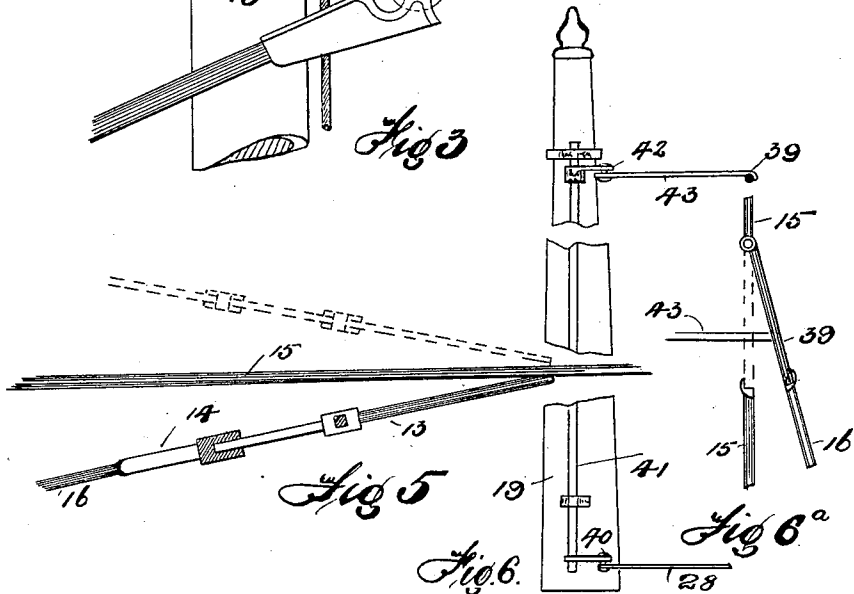


Fig 5

Fig. 6.

Fig 6^a

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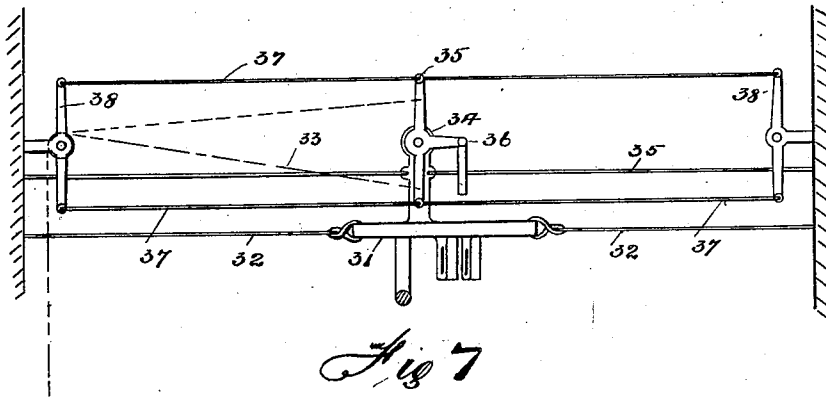


Fig 7

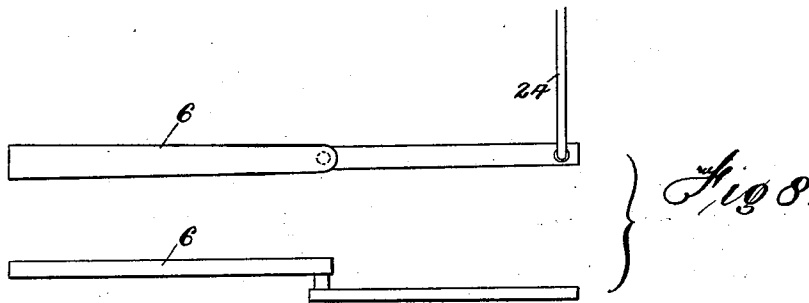


Fig 8

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UNITED STATES PATENT OFFICE.

HENRY COLLINS AND CHARLES WILLIAM COLLINS, OF MANCHESTER, ENGLAND, ASSIGNORS TO ALBERT HENRY COLLINS, OF MANCHESTER, ENGLAND, AND ERNEST WORTH COLLINS, ARTHUR COLLINS, AND SIDNEY HERBERT HYDE, OF SALFORD, MANCHESTER, ENGLAND.

MEANS FOR OPERATING THE POINTS OF OVERHEAD WIRES ON ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 723,441, dated March 24, 1903.

Application filed June 9, 1902. Serial No. 110,807. (No model.)

To all whom it may concern:

Be it known that we, HENRY COLLINS and CHARLES WILLIAM COLLINS, subjects of the King of Great Britain and Ireland, and residents of Salford, Manchester, England, have invented certain new and Improved Means for Operating the Points of the Overhead Wires on Electric Tramways, of which the following is a specification.

10 The "points" of tramways are at present usually operated by boys stationed at the junctions of the rails or by the guard of the tram-car; but owing to the expense and risk to life, on the one hand, and the delays or inconvenience, on the other, the expedients are very unsatisfactory.

15 The object of this invention is to provide means whereby the driver of the tram-car may operate the points from his position on the car and without dismounting, and thus save time, avoid risk to life, and reduce expenses.

20 To permit of our invention being readily understood, we have hereunto appended two sheets of drawings, wherein—

25 Figure 1 illustrates in elevation, and Fig. 2 in plan, an electric tramway, and tram in part, fitted with our invention, the rails and certain parts in Fig. 1 being in section. Figs. 30 3, 4, and 5 illustrate, to a larger scale, further elevations and a plan, in part, of that part of our invention which controls the overhead point. Figs. 6 and 6^a illustrate a modification in elevation and plan. Fig. 7 illustrates 35 the manner in which we may carry out our invention when the overhead wire is supported from posts on the sides of the roadway or from the walls of buildings. Figs. 8 and 9 illustrate modifications. Fig. 10 illustrates a further plan; and Fig. 11 a section of 40 Fig. 1 on line *a b*, to a larger scale.

According to our invention we arrange in the roadway and between the sets or lines of rails 1 a supplementary rail 2, having two 45 grooves 3 4 and several feet in length. At one part such rail comes opposite the point 5 to be operated and at such part is fitted with

a swivel-lever 6, so arranged in relation to the two grooves as to be capable of lying centrally between them or wholly or partially in one or the other. By a suitable link or rod 50 6^x passing say through a tube or casing 7 below the road-level we connect such swivel-lever 6 to the tramway-point 5, and in such manner that with the swivel-lever in one of the 55 grooves of the supplementary rail, the point 5 is on one side of the tramway-groove while with the swivel-lever in the other groove of its rail, the point 5 is on the other side of the groove of its rail. Upon the tram-car 8 and, 60 by preference, immediately below one or both ends of the car, according as the car runs in one or both directions, we arrange a set of rods, bars, or plungers 9 and mount them in suitable guides 10, secured to and strongly 65 stayed to the car underframe. These rods or plungers each carry at their lower extremity a wheel or runner 11 11^x, and at their upper extremity each rod or plunger passes through the floor of the driver's platform and 70 terminates in a foot-plate 12. By means of springs 13^x or balance-weights the said rods are held normally at such a height as to cause the runners to lie a few inches above the 75 ground.

The action of the apparatus in operating the tramway-road point is as follows: As soon as the car comes over the supplementary rail 2 the driver places his foot upon one of the foot-plates 12 and presses it down, thereby 80 lowering the runner or wheel 11 or 11^x of such rod into one of the grooves of the supplementary rail. As the car advances the edge of the said wheel comes against the swivel-lever and pushing past it moves it over into the 85 other groove, thereby causing it to operate in turn upon the tramway-point 5 and open the way for the car in the direction desired. With the other rod and wheel of the same or another tram-car passing over the same rails 90 the wheel takes into the other groove of the supplementary rail and meeting the swivel-lever causes it to return the tramway-point to its original position.

For operating an overhead point as well as the rail-point we employ a curved plate 13, hinged to the part 14, which carries the electric wires 15 16 at the junction of the rails.

5 Such plate forms a continuation or extension of the wire 16 and at its free end lies in close proximity to the wire 15. Normally and when the car is intended to travel straight on the said plate 13 is elevated above the wire 15, as shown in Fig. 1, and leaves a sufficient space for the flange of the trolley-pulley 17 to pass; but when the car requires to travel in the direction of the wire 16 the position of the plate 13 is as shown in Figs. 3 and 4, so that as the pulley 17 meets the plate 13 and travels forward it is immediately lowered by the curved edge of the plate 13 and its flanges caused to dip or pass under the wire 15, and thus with further travel "switch" or transfer the said pulley onto the wire 16. Upon the plate 13 being again raised the next car may proceed in the direction of the wire 15. The means we employ for elevating and depressing the said switch-plate or overheadpoint consists, by preference, of a lever 18, pivoted to the post 19 or an ornamental part thereof, as shown, and connected to the plate 13 by links 20 and a suitable insulation 21. We also employ an arrangement of tension rods or wires 22 23, connected to the lever 18 at opposite sides of its fulcrum and to a three-arm rock-lever 24, pivoted at the base of the pillar 19, by the movements of which the lever 18 is caused to rock on its fulcrum, and thus raise or lower the plate 13. The said lever 18 may obviously be operated by a suitable hand-lever when the overhead point only is used, but in conjunction with the rail-switch-operating devices it is operated by such devices through an extension of the link 6^x, a bell-crank lever 25, a rod 26, a further lever 27, and a further rod or link 28, (see Fig. 2,) all such parts being boxed or cased in as shown or in any other convenient manner. Thus it will be seen that with the swivel-lever 6 operating the switch or point 5 it also serves to operate the overhead switch or point 13.

To compensate for elongation or slackness of the rods or wires 22 23, we provide screwed shackles 29, and to keep the wires as near the post as possible we provide carrier-pulleys 30, fixed or adjustable.

In applying our invention to overhead wires secured to the walls of a building or posts on the sides of the roadway we employ the arrangement shown in Fig. 7, the part 31 being suspended by wires 32 and 33 and carrying a bracket 34, whereon is mounted a lever 35, with side arm 36, connected or linked to the switch-plate 13 in like manner to the lever 18 in Fig. 1. Such lever 35 is connected by tension-wires 37 to further levers 38 on the walls or side posts and in turn is connected by tension-wires to the three-armed lever 24 below the street-pavement, which in turn is operated through suitable connections by the swivel-

lever 6. When not requiring to be operated by the lever 6, the overhead switch may be operated by a cord or wire reaching up to the levers 18 or 38 or otherwise.

While preferring the form of swivel-point shown in Figs. 3 and 4, we may employ an ordinary horizontally-moving point 39, as shown in Figs. 6 and 6^a, in which case the link 28 will operate upon a radius-arm 40 on a vertical rod 41, and such rod will operate upon the point 39 through another radius-arm 42 and link 43.

As a modification of the underground mechanism we may cause the lever 6 to be of the shape shown in Fig. 8, one-half lying below the rail 2 and being connected direct to the lever 24 in lieu of working through the levers 25 and 27; but in this, as in other respects, the apparatus may vary without departing from our invention.

To prevent the driver accidentally placing his foot upon both plunger-plates, we provide a partition 44. To prevent the accumulation of dirt, moisture, &c., in the grooves of the rail 2, we form such rail of the section shown in Fig. 1 with openings 2^x and cross-pieces 2^x, the top surfaces being beveled toward the openings. (See Fig. 10.) For the same reasons the sides of the lever itself are or may be also beveled.

In cases where there is insufficient room directly under the driver's platform for the wheels and plungers we may arrange them farther back and operate them through links.

The rail 2, while it may comprise only sufficient to carry the lever 6, comprises two fixed extensions of the lever, and the floor of the grooves 3 4 opposite such fixed parts slopes upward and at each end of the rail comes level into the roadway, so that the wheels 11 11^x shall readily enter and leave the grooves.

To cushion the impact of the wheels in case they are lowered into contact with the roadway, we may provide each of them with an india-rubber tire.

Instead of wheels we may employ slides or blocks, (see Fig. 9,) and in lieu of taking into the grooves they may simply act on the upper face of a flat plate. The swivel-plate may also be inclosed save for its edges or the part for contact with the wheels or slides, and other and like variations of details may be effected without departing from our invention.

What we claim is—

1. In electric tramways, an overhead switch-plate with curved under face, means for pivotally supporting such plate at the junction of the overhead wires, in combination with a central swiveling road-lever and means intermediate for transmitting the motion of the said lever to the said overhead switch-plate and thereby raising and lowering the same, and means on the tram-car for operating the said road-lever, as set forth.

2. An overhead switch-plate, means for piv-

otally supporting such plate at the junction
of the overhead wires, a lever also pivotally
supported, an insulated link between the
switch-plate and one end of the lever, wires
5 connected respectively to the lever at oppo-
site sides of its fulcrum, and means for oper-
ating and guiding such wires, as set forth.

In witness whereof we have hereunto set
our hands in the presence of two witnesses.

HENRY COLLINS.

CHARLES WILLIAM COLLINS.

Witnesses:

JOHN CAMP,

WILLIAM EASTWOOD.