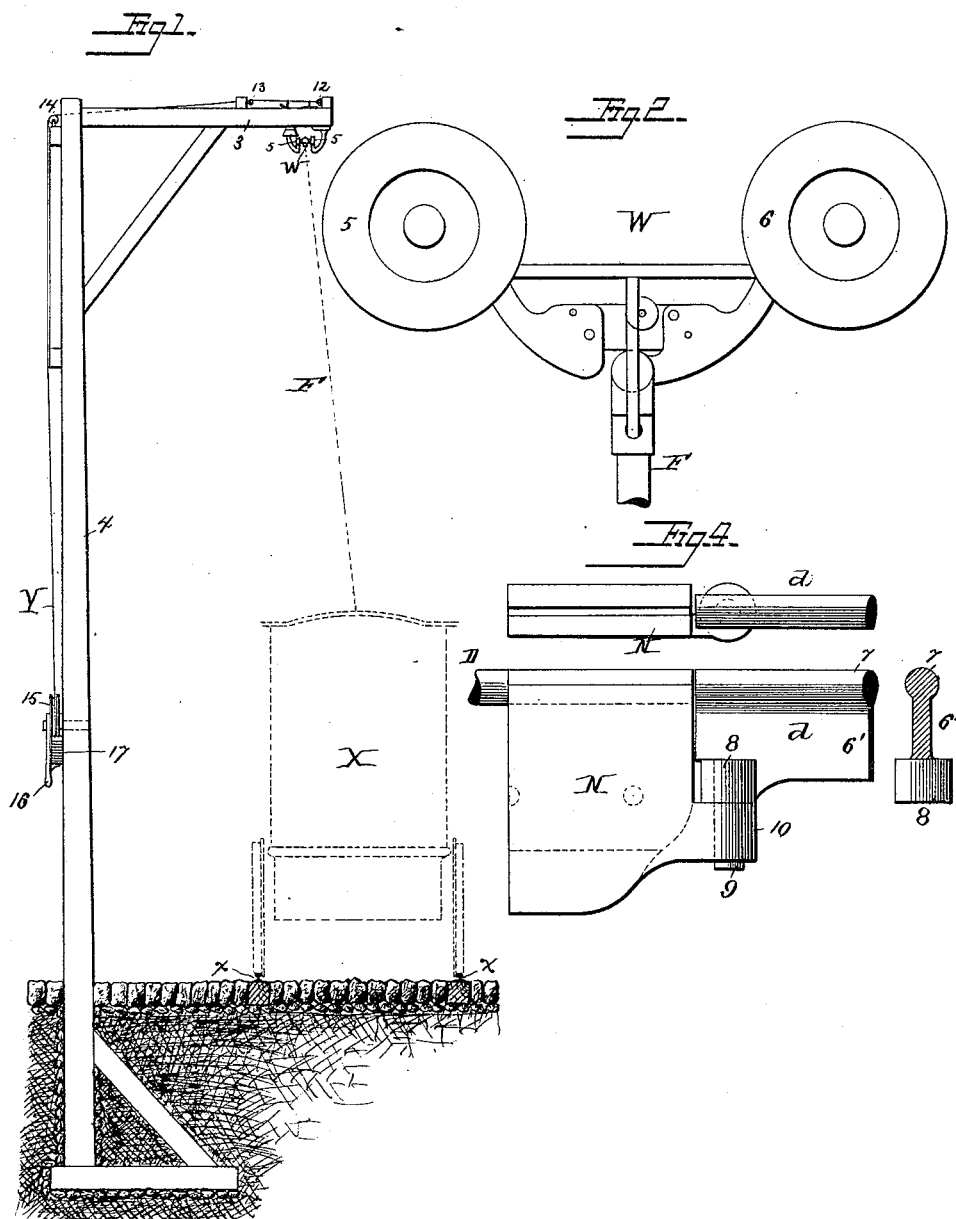


2 Sheets—Sheet 1.

No. 385,915.

Patented July 10, 1888.



Witnesses.  
 E. B. Campbell.  
 Wm. A. Harris.

Inventor,  
Leo Daff,  
By his Attorneys,  
Foster & Freeman.

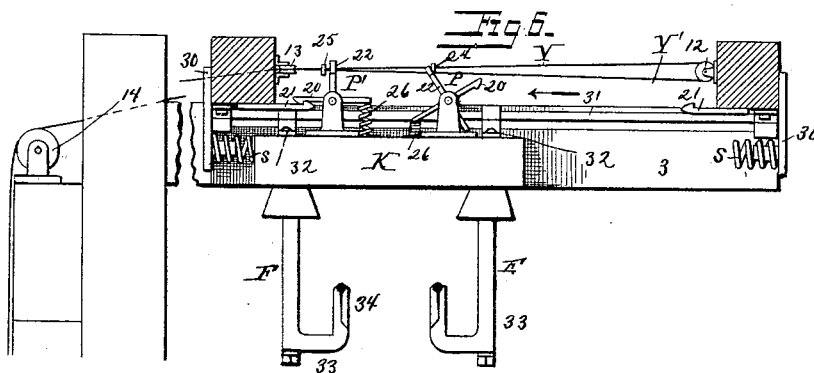
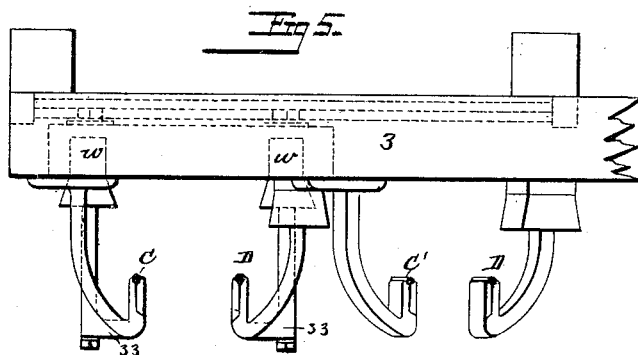
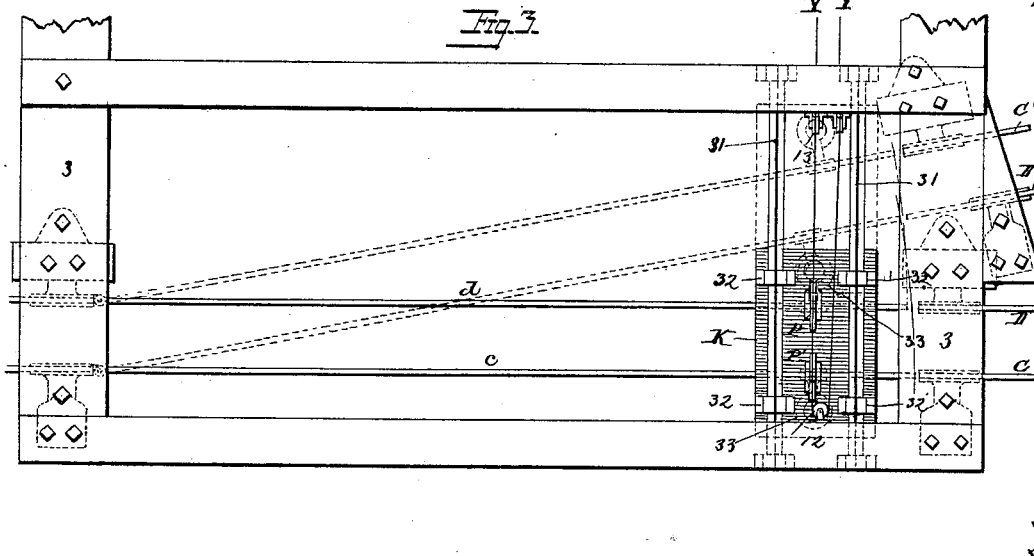
(No Model.)

2 Sheets—Sheet 2.

L. DAFT.  
ELECTRIC CONDUCTOR.

No. 385,915.

Patented July 10, 1888.



Witnesses.

E. B. Campbell.

Wm A. Harris

Inventor,  
Leo Dabz.

By his Attorneys

Foster and Freeman.

# UNITED STATES PATENT OFFICE.

LEO DAFT, OF PLAINFIELD, NEW JERSEY.

## ELECTRIC CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 385,915, dated July 10, 1888.

Application filed December 29, 1886. Serial No. 222,833. (No model.)

*To all whom it may concern:*

Be it known that I, LEO DAFT, a subject of the Queen of Great Britain, and resident of Plainfield, Union county, State of New Jersey, have invented certain new and useful Improvements in Electric Conductors, of which the following is a specification.

My invention relates to that class of electrical conductors which are supported in elevated positions above a surface roadway, either an ordinary road or a tramway or a railway, for the purpose of guiding trolleys or travelers, through which the current passes from the conductors to a flexible conductor extending to motors upon cars or vehicles traveling upon the surface way; and my invention consists in means whereby said trolleys may be conducted from the main way to branch ways in accordance with the movements of the vehicles, and whereby the trolleys may be switched, as desired, by devices accessible from the surface road, all as set forth hereinafter, and as illustrated in the accompanying drawings, in which—

Figure 1 is an elevation showing the support for the overhead conductors and switch-actuating appliances; Fig. 2, a side view of one of the trolleys; Fig. 3, a plan view of the switch portion of the track and switch operating appliances; Fig. 4, a detached view of the switch-rail joint; Fig. 5, a section on the line 1 2, Fig. 3; Fig. 6, an enlarged view of the switch-rail carrier and support.

In the particular construction of electrical conductors shown in the drawings it consists of two parallel rails or rods, C D, supported upon the transverse bars 3 of standards 4, or in any suitable manner overhead. The particular construction of the supports, however, and the manner of holding the rails in position along the main portion of the track may be varied as found convenient, and constitutes no part of this application for Letters Patent.

Upon the conductor or conductors moves a trolley or carriage, W, which is provided with two pairs of wheels, 5 5 6 6, each deeply grooved, so that when the trolley rests upon the conductor there will be no chance of the same being derailed, and the wheels are in electrical connection with the frame of the trolley, to which a flexible conductor, F, is connected, the said flexible conductor being adapted for electrical attachment with the motor upon the tram car or carriage X, which

travels upon the tram-rails *xx* in the street or roadway below and parallel with the conductors.

At those points where the car must leave the main tram-track and pass onto a branch, I provide above and parallel with the branch tram-track a branch conductor-track consisting of conductor-rails C' D', supported overhead in a like manner as the main rails, and in the line of the main rails I place a switch-section consisting of two rails, *c d*, constituting switch-rails, each hinged or pivoted at one end or otherwise flexibly connected with a stationary section of the main track and free to move laterally to the opposite end, so as to be brought in line with the rails of the other section of the main track or of the branch track, accordingly as the trolley must travel straight on with the car upon the main tramway or pass onto the branch tramway.

The manner in which the pivoted connection of each switch-rail with the main rail is made is best illustrated in Figs. 3 and 4, in which N represents a metallic chair or part of a bracket recessed to receive the end of the main rail C or D, which projects above its support and terminates adjacent to the point where the switch-rail *c* or *d* is pivoted. The said switch-rail has a web, 6', extending at the upper end into a cylindrical tread, 7, and at the lower edge and end of the web is a socketed enlargement, 8, threaded to receive the threaded end of a bolt or pintle, 9, which fits nicely a vertical socket in a lug, 10, projecting from the bracket or support N. When the parts are in position, as shown in Fig. 4, the bolt 9 holds the switch-rail in its vertical position, permitting it to swing freely to one side or the other, as is required, to bring the opposite end of the rail into coincidence with either the end of the rail of the main portion or that of the branch portion of the conducting-track.

In order to swing the free ends of the switch-rails properly from one side to the other and retain them in either position without danger of displacement, and to effect the proper sliding and locking of the switch-rails from a point below the overhead support, I connect the movable ends of the switch-rails with a slide, K, moved upon suitable guides, and with operating-cords Y Y' extending from opposite ends of the said slide around guide-pulleys 12, 13, and 14 to a drum or lever, 15, provided with an operating-handle, 16, and turning

upon a pivot or support upon the post in a position to be readily operated by a person standing in the street. If desired, the operating-arm 16 may be locked to a suitable rack, 5 17, in such manner as only to be operated by those authorized to adjust the switch-rails.

The locking of the slide K is effected by means of two pivoted spring-actuated catch-levers, P P', each having a catch-arm, 20, 10 which engages with a catch, 21, at one end of the travel of the slide, and the vertical arm 22, perforated for the passage of the cord Y, which has upon it two stops, 24 25.

The stops 24 or 25 are arranged so that 15 when the cord is pulled in the direction of the arrow, Fig. 6, to carry the slide K and the switch-rails supported thereby to the left, the stop 24 will contact with the arm 22 and swing back the catch-lever P to disconnect it from the catch 21, after which the continued movements of the cord will carry the slide to the left until the catch of the lever P' engages with the adjacent catch, 21. Upon a reverse movement of the cord the stop 24 will be carried away from the lever P and the stop 25 20 will contact with and tilt the lever P', so as to disengage this lever from the adjacent and stationary catch, after which the slide will move in the opposite direction.

A spring, 26, acts upon each lever P P', so as to insure its engagement with the catch, the corresponding ends of the catches being beveled, so that each moving catch will slide over the stationary catch until the shoulders engage. In order to prevent detrimental shocks as the slide K is quickly carried to one position or the other, I interpose a spring, s, between each end of the slide and the suitable bearing—as, for instance, a supporting-bar, 30, which holds the spring. The latter, however, may be carried by the slide. 35

Any suitable guide for the slide may be employed. I have shown in the drawings two guide-rods, 31 31, supported by the bars 3, or otherwise, receiving brackets 32 on the slide, which thus moves back and forth upon the bars. 45

As each end of each switch-rail has a separate pivot, I connect each of the said switch-rails with the slide by means of a movable connection which will accommodate itself to the different positions of the slide and rail. Thus a bracket, F, is pivotally secured at w to the slide, so as to turn upon said pivot, 50 and is provided with an arm, 33, terminating in a cross-head, 34, which has a longitudinal opening or groove for the passage of the switch-rail. When the slide is in the position shown in full lines, Fig. 3, each bracket is at right angles to the line of the main rails; but as the slide is moved toward the position shown in dotted lines each bracket swings, maintaining its right-angled position to the switch-rail which it supports, which switch-rail slides through the socket in the bracket, 55 so that it is supported thereby in whatever position it takes so firmly that it cannot pos-

sibly change its position under any action of the trolley. If desired, the guide for the slide K may be curved to correspond to the curve 70 upon which the ends of the switch-rails travel, and although I have described certain effective means, as the operating-cord, for shifting the slide, I do not limit myself to these means, as others may be employed—as, 75 for instance, a system of levers or other devices.

It will of course be understood that the main branch and switch rails are suitably insulated from the supports, so that there is no 80 electrical connection of the rails at any point with said supports.

I have referred to the overhead conductor as consisting of two parallel rails; but it will be evident that a single switch-rail may be 85 used in connection with the conductor, consisting of a single rail, a traveler or trolley being adapted to the character of conductor employed. I have shown the supporting-brackets F as consisting of pendent rods turned 90 up at the ends and socketed to receive the conductors, so as to present an unbroken upper tread, thus avoiding any obstruction or interference with the trolley at the points where the conductors are supported; but supports 95 may be made in any suitable manner.

Without limiting myself to the precise construction and arrangements of the parts shown, I claim—

1. The combination, with the main and 100 branch and switch rails, of a slide supporting the movable ends of the switch-rails, provided with catches for engaging with stationary shoulders, a slide-actuating device adjacent to the surface road, and connections between 105 the latter and the catches, substantially as set forth.

2. The combination, with the slide carrying the movable switch-rails, of two catch-levers, stationary catches upon the overhead 110 support adapted to engage with said levers, and a cord passing through openings in arms of the said levers and provided with stops, substantially as set forth.

3. The combination, with the main, branch, 115 and switch rails of an overhead conductor, of a slide provided with pivoted hangers supporting the ends of the switch rails, substantially as described.

4. The combination of the slide, switch-rails, and pivoted hangers, provided with arms having sockets for the reception of the switch-rails, substantially as set forth. 120

5. The combination of the slide supporting the switch-rails, locking devices, slide-actuating mechanism, and buffers, substantially as described. 125

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEO DAFT.

Witnesses:

JOHN N. BRUNS,  
FRED H. REED.