

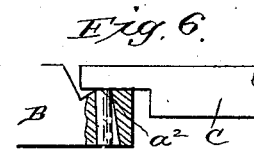
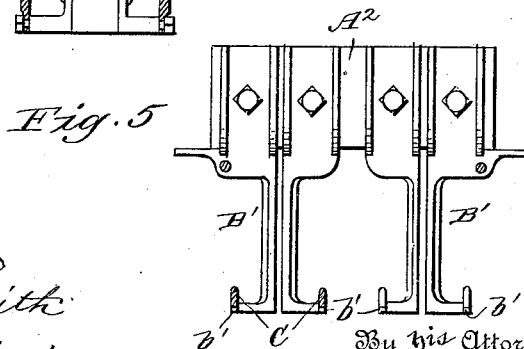
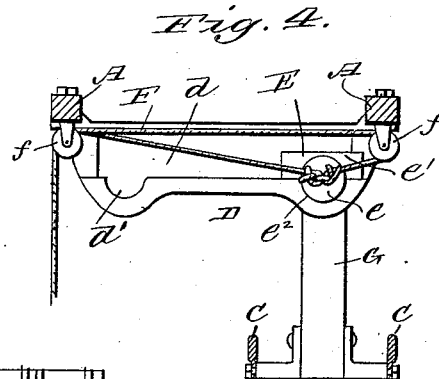
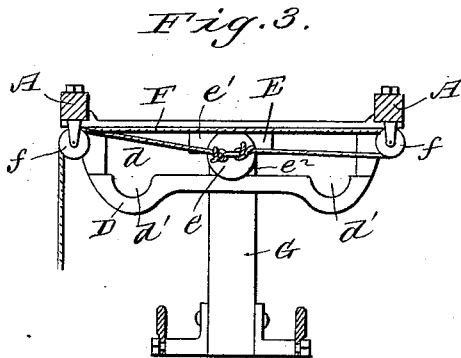
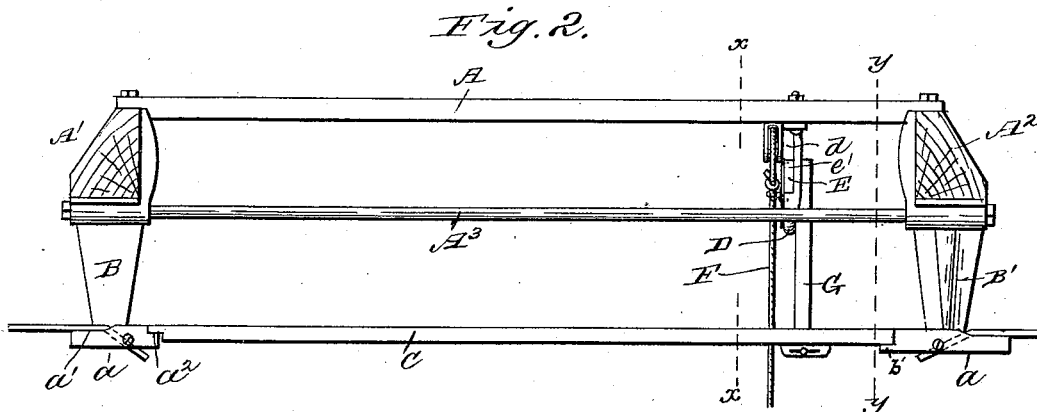
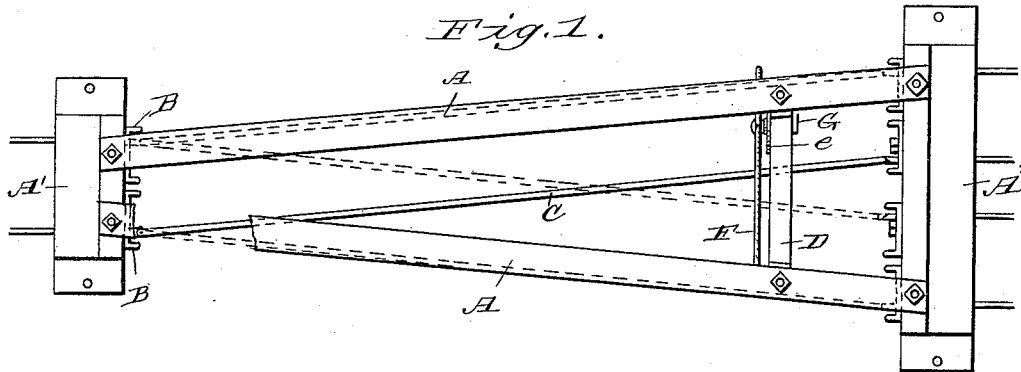
(No Model.)

F. WHEELER.

SWITCH FOR SYSTEMS OF ELECTRIC LOCOMOTION.

No. 421,535.

Patented Feb. 18, 1890.



Witnesses

E. D. Smith
J. M. Maister

By his Attorneys

Arthur W. Harrison.

Inventor
Frank Wheeler

UNITED STATES PATENT OFFICE.

FRANK WHEELER, OF MERIDEN, CONNECTICUT.

SWITCH FOR SYSTEMS OF ELECTRIC LOCOMOTION.

SPECIFICATION forming part of Letters Patent No. 421,535, dated February 18, 1890.

Application filed June 19, 1889. Serial No. 314,814. (No model.)

To all whom it may concern:

Be it known that I, FRANK WHEELER, of Meriden, in the county of New Haven and State of Connecticut, have invented new and useful Improvements in Switches for Systems of Electric Locomotion; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in switches for systems of electric locomotion in which two overhead wires are used to conduct the current and form tracks for the trolley. In switches as heretofore constructed for such systems it has been found difficult to avoid short-circuiting when the switch is shifted; and the object of my invention is to overcome this objection, and also to provide a switch which, when shifted to either one of the two branch tracks, will remain in that position without being mechanically secured therein.

To this end my invention consists in a rising-and-falling or vertically-movable and laterally-adjustable switch-track; and my invention also consists in the construction and combination of parts, as hereinafter described and claimed.

In the drawings which accompany and form a part of this specification, Figure 1 is a plan view of my switch complete, a portion of the frame being broken out. Fig. 2 is a side elevation of the same. Fig. 3 is a cross-section on line *x x* of Fig. 2, showing the switch-block and hanger in elevated or intermediate position. Fig. 4 is a similar view showing the switch block and hanger in lower or fixed position. Fig. 5 is a cross-section on line *y y* of Fig. 2, looking toward the hangers. Fig. 6 is an enlarged detail view, hereinafter referred to.

Similar letters of reference indicate similar parts throughout the several views.

The switch-frame is in the form of an acute triangle, and consists of the two longitudinally-diverging bars *A A*, the short end bar *A'*, the longer end bar *A²*, and the brace-rods *A³*. To the short bar is suitably secured a

pair of hangers *B*, having their lower ends turned outwardly from each other to form feet *a*, and to these feet of the hangers the trolley track-wires are secured. As shown, each foot at about its middle has a hole which receives the end of the track-wire, where it may be secured by a screw or other suitable means, and the foot is cut away under the horizontal portion of the wire at *a'*, so that the top of the wire will be level with the rest of the foot. Each foot at the end toward the center of the switch is also cut away and provided with a hole at *a²* to receive the downwardly-turned end of one of the switch-tracks *C*, as shown in Fig. 6 and in the cut-away portion of Fig. 1.

The two switch-tracks *C* are supported near their moving ends by the switch-hanger *G*. The longer frame-bar *A²* has two pairs of hangers *B'*, similar to but lighter than the hangers *B*. The feet of hangers *B'* are cut away under the wires of the double track, as are the feet of hangers *B* under the wires of the single track at the other or narrow end of the frame, and the double-track wires have their ends secured in the same manner as the ends of the single-track wires. By this construction of frame the long bars *A* support the thrusting strain of the weight, due to the end bars being held together by the brace-rods *A³*.

To the bars *A*, near the wider end of the frame, is secured a horizontal casting or guide *D*, having a slot *d*, with a depression or recess *d'* at each end of the slot. This slot is for the friction-roller *e* of the shifting-block *E* to ride in. The shifting-block has a horizontal piece *e'*, with parallel sides, the upper side of which rides against the upper face of the slot *d* when passing from one end of the guide to the other, and the lower side of which rests on the bottom of the slot *d* when the shifting-block reaches the end of the guide, and the roller *e* drops into either one of the recesses *d'*. The shifting-block carries on the axis of the roller an annular flange *e²*, which slides along the face of the casting, and carries also a hook or ring for attachment of the shifting-cord *F*. Sheaves *f* for the cord *F* are provided on the bars *A*. The shifting-block carries the switch-track hanger *G*, which sup-

ports the switch-tracks C, which hanger passes down on the side of the guide or casting opposite from flange e^2 .

In operation it will be seen that when the switch-tracks are to be shifted the cord F draws block E so as to lift roller e out of its recess, thus lifting the tracks high enough to avoid short-circuiting, and then the block moves to the end of the casting and roller e drops into the other recess, thus securing the track in that position with its ends in contact with the hanger-feet without other fastening means.

Instead of providing the casting with a slot of the form shown, said slot might be in the form of an arch or curve, and the arch or curve might be reversed in form. In other words, the switch-tracks might be arranged to move under the ends of the feet of hangers B', instead of over them; but in this construction there would be the necessity of firmly holding the switch-block when at one end of the casting. By thus constructing a rising-and-falling as well as laterally-movable switch-track I not only avoid short-circuiting, but also am able to have a close meeting between the ends of the switch-tracks and the feet of the hangers, which connect with the branch tracks without interference when shifting.

It is to be understood that while the form of hangers shown herein is for a trolley such as shown in my patent, No. 401,616, April 16, 1889, the switch may have other forms of hangers for other forms of trolleys.

In Fig. 5 I show the form of hangers preferably employed. The same form and construction of hangers may be employed throughout the system to support at suitable intervals the wire conductors or trolley-tracks. For such purpose they will be made much lighter than is necessary in a switch, since in such case they have only the weight of the wires to support, while in the switch the tension of the wires would have a tendency to break off the hangers; and also for such purpose the feet are provided with any suitable clips to hold the wire instead of being cut away and provided with holes, as shown, in the switch.

In Figs. 2 and 5 it will be seen that the hanger-feet are provided with shoulders or seats b' , on which the ends of the switch-track rest when in position for use; but these seats are not indispensable.

The switch-hanger is a vertically-arranged piece of wood connected rigidly to the shifting-block and having at its lower end outwardly-projecting arms having pins which enter short slots in lugs projecting from the lower side of the switch-tracks. The wood hanger forms a perfect insulator, and the pin-and-slot connection allows for the arc motion described by the tracks.

It is to be understood that my invention relates only to double conductors or switch-tracks, as in the case of a single conductor or track there is no danger of short-circuiting when the switch is moved.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a switch for systems of electric locomotion, the combination, with the frame thereof, of a vertically-movable and laterally-adjustable double switch-track, substantially as described.

2. In a switch, the combination, with the frame having single-track hangers at one end and a plurality of track-hangers at the other end, of a double swinging switch-track having its adjustable end vertically and laterally movable, substantially as described.

3. In combination with a switch-frame, a hanger having a portion of its foot cut away and a hole at the inner end of the cut-away portion for the reception of an electric wire, and means for clamping the end of the wire, substantially as described.

4. In combination with a switch frame and track, the guide D, having the horizontal slot d and the two recesses d' , and the shifting-block E, carrying switch-track hanger G, and means for operating the shifting-block, substantially as described.

5. In a switch for systems of electric locomotion having two conductors, a hanger consisting of a block of wood connected at its upper end to the shifting-block and having at its lower end an outwardly-projecting arm on each side for connection with the two switch-tracks or conductors, substantially as described.

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

FRANK WHEELER.

Witnesses:

GEO. H. BOWKIN,
E. T. BOWERS.