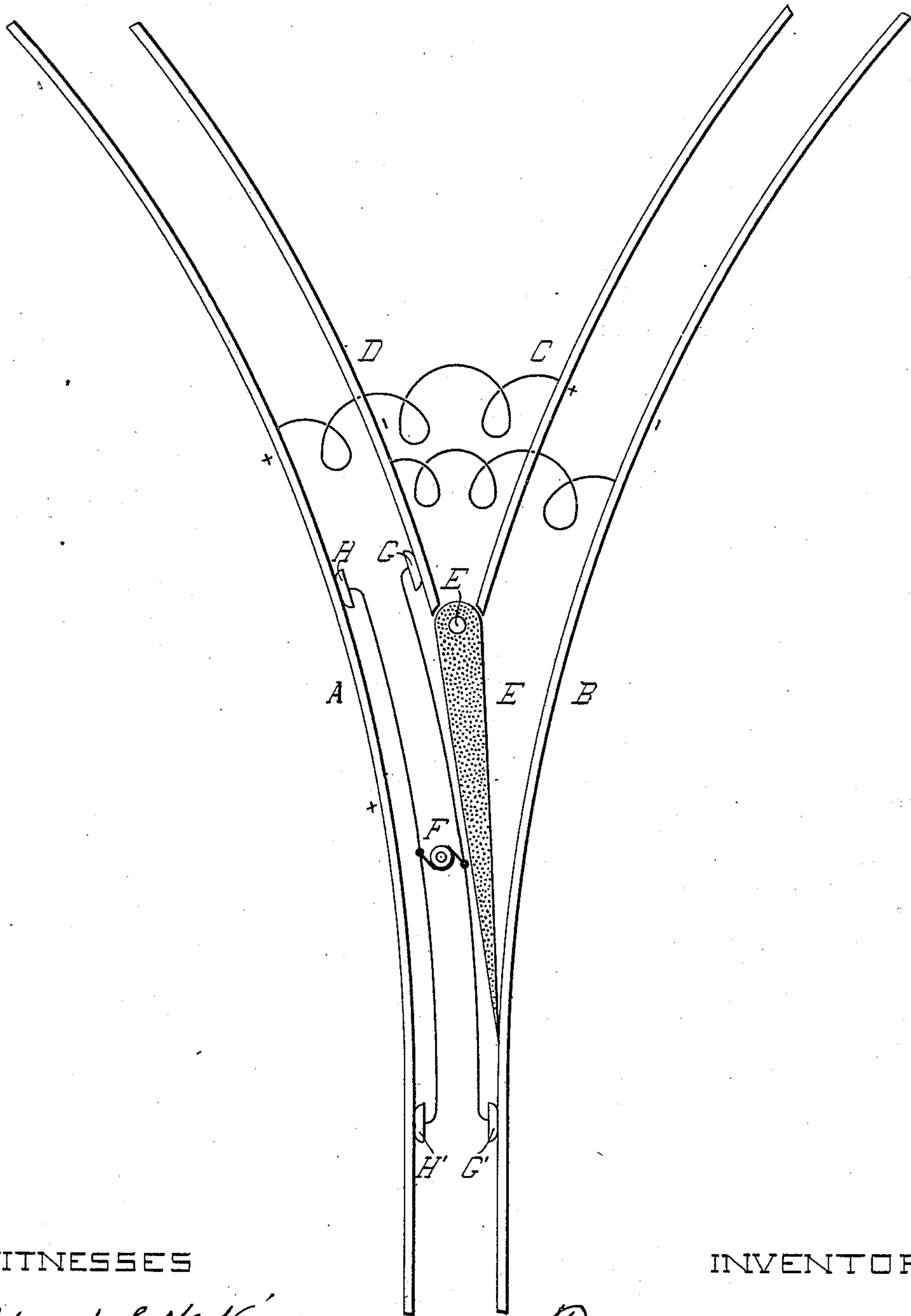


(No Model.)

F. O. BLACKWELL.  
ELECTRIC RAILWAY SWITCH.

No. 406,420.

Patented July 9, 1889.



WITNESSES

Edward S. McKinney.  
Julien M. Elliot.

INVENTOR

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Atty.

# UNITED STATES PATENT OFFICE.

FRANCIS O. BLACKWELL, OF NEW YORK, N. Y.

## ELECTRIC-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 406,420, dated July 9, 1889.

Application filed November 23, 1888. Serial No. 291,648. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS O. BLACKWELL, a citizen of the United States, residing at New York city, in the county of New York, State of New York, have invented certain new and useful Improvements in Electric - Railway Switches, of which the following is a specification.

My invention relates to switches for electric railways; and it consists in a combination of fixed main and branch conductors with a movable switch-point which is out of circuit with the said fixed conductors, but acts as a mechanical guide for the traveling current-collector.

It also consists in the combination of a switch-point, such as above described, with an electrically-propelled car provided with contacts which bridge the switch-point, whereby when the car passes the switch the forward contact will pass over the switch and contact with the fixed conductor beyond before the rear contact reaches the switch.

By means of this invention the motor-circuit is never broken when the car passes a short break in the line. If no switch-point at all is provided—as certain patented devices contemplate—there is danger that the plow, when approaching a point-switch such as herein shown, will not be properly deflected to the branch track, but that it will strike the frog and be broken. On the other hand, if the switch is relied upon as part of the motor-circuit, there is great danger that it will not be fully moved over so as to contact with the conductor, or that the switch-rail will become grounded and leakage of current ensue.

By my device the objections to both of the different above-described constructions are removed.

My invention is illustrated in the accompanying drawing, which represents a plan view of the conductors and indicates conventionally a car passing a switch.

A B are the two fixed conductors of the main line, which, prolonged beyond the switch, form the outside conductors of the two branch lines.

C D are the two fixed inner branch-line conductors, and E is the movable switch-

point pivoted at the frog where C and D meet. It will be readily understood that this arrangement is adapted either for the surface, conduit, or overhead systems, and I therefore do not confine myself to any particular one of them. The switch-point E, I preferably make of some non-conducting material, though the same purpose would be fulfilled if it be made of metal and means provided for keeping it out of circuit when thrown over against the main conductors.

F illustrates a motor upon a traveling car, and G G' represent the collector having contact-surfaces separated from one another a distance greater than the length of the switch-point and connected to one terminal of the motor. H H' are a similar set of contacts forming the return-circuit.

Reference may be here made to the patent of W. H. Knight, March 16, 1886, No. 338,082, which shows that a single long collector and two shorter collectors electrically connected are known equivalents in the art, and I make use of either construction, as desired. It should also be observed that if we suppose the switch-point E to be made of such material as to form a part of the circuit, and therefore similar to the construction presented in the patent of E. M. Bentley, March 16, 1886, No. 338,022, still my combination of the switch and the two contacts bridging the same would be a useful one, as it would remove all chance of a break in the motor-circuit by reason of failure of the switch-point to contact properly with the main conductor.

What I claim as my invention is—

1. The combination of the fixed main and branch conductors and a movable switch-point forming no part of the electric circuit, for directing the collector upon either branch, with a traveling vehicle, a propelling electric motor therefor, and a contact device in circuit with the motor, which bridges the switch-point, making contact with one fixed conductor before breaking contact with the other, substantially as described.

2. The combination of the fixed main and branch conductors and the movable switch-point with a traveling vehicle, a propelling electric motor therefor, and a contact device in circuit with the motor, bridging the switch-



point and adapted to contact with the fixed conductors on either side of the switch-point, substantially as described.

3. The combination of the conductors A B and C D for main and branch tracks and the movable switch-point E, forming no part of the electric circuit, with a traveling electrically-propelled vehicle and a contact device which bridges the switch-point.

10 4. The combination, in an electric railway, of the fixed main and branch conductors and the intermediate movable switch-point out of circuit with the said fixed conductor, to form a mechanical guide for the traveling current-  
15 collector.

5. The combination, in an electric railway, of the two main conductors, which extend beyond the switch to form the outer conductors of said branch tracks, with the two inner conductors of said branch tracks and the movable switch-point E, out of circuit with the conductors, but extending from the main to the branch conductors, to form a mechanical guide for the traveling current-collector.

FRANCIS O. BLACKWELL.

Witnesses:

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