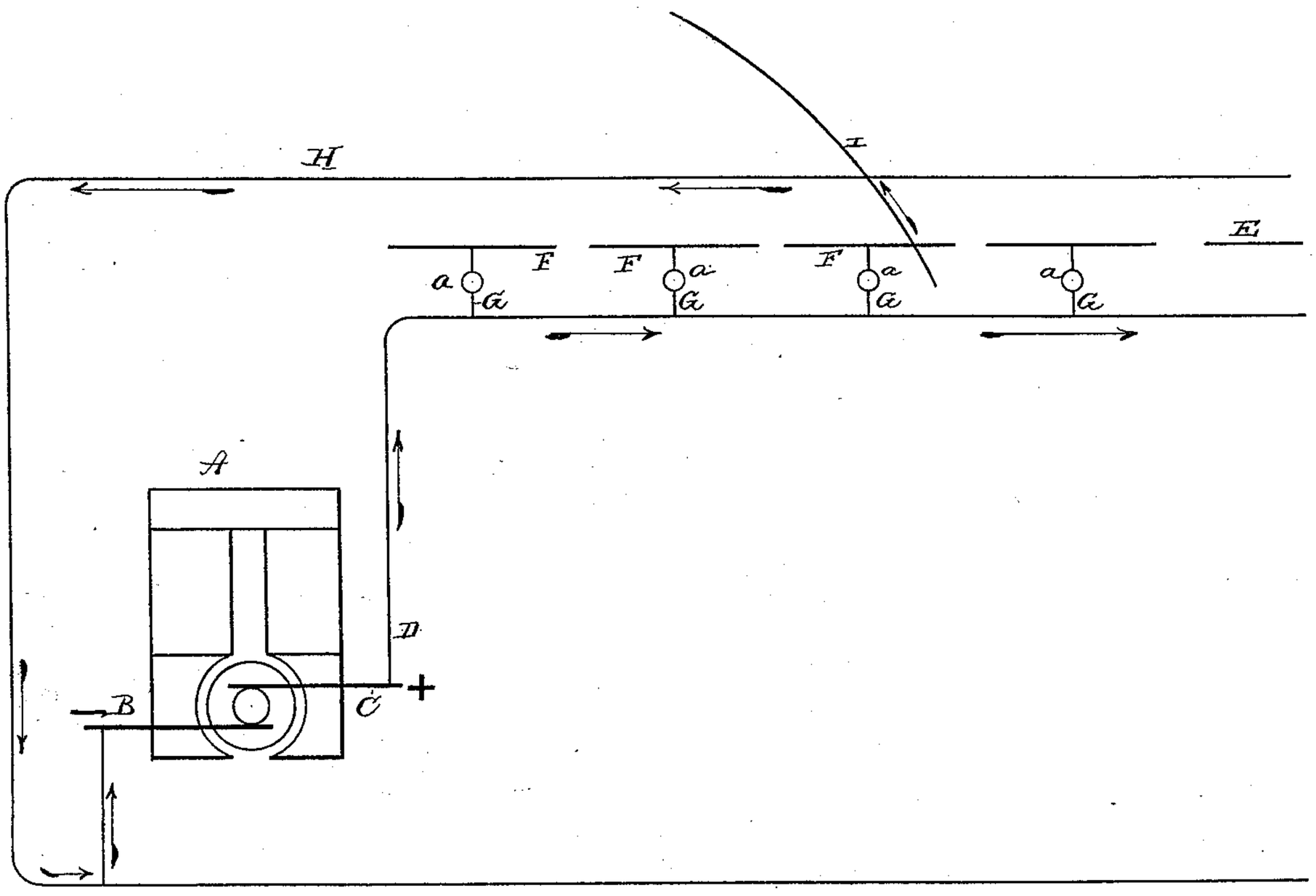
(No Model.)

S. H. SHORT.

ELECTRIC RAILWAY.

No. 422,645. Patented Mar. 4, 1890.



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UNITED STATES PATENT OFFICE.

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ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 422,645, dated March 4, 1890.

Application filed January 6, 1890. Serial No. 336,005. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY H. SHORT, a citizen of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Electric 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 an improvement in electric railways, the object being to provide means for automatically switching out of operation a section of the conductors which might be accidentally or maliciously short-circuited, and thus insure the operation of the remaining portion of the road.

With this end in view the invention consists in certain features of construction and arrangement of parts, as will be hereinafter described, and pointed out in the claims.

The accompanying drawing is a diagrammatic representation of one embodiment of my invention.

A represents a dynamo-electric machine, with its negative terminal B connected to earth and its positive terminal C connected to a feeder D, which latter serves to carry current to the different sections of the road.

E represents a trolley line or conductor, which is subdivided into any desired number of insulated sections F. Each one of the insulated sections F is connected to the feeder D by a conductor G, in which is included a fuse *a*. Adjacent to the sectional trolley-line is located a guard-wire H, which is connected to the ground or to the negative terminal of the dynamo. The trolleys engage the sectional trolley-line E, from which the current is received and conducted to the motors, and from thence the current goes to ground, or it may be returned by a separate return-conductor, if desired. Each one of the fuses *a* is so constructed that it will transmit from the feeder to the section of the trolley-line an amount of current sufficient to propel the motor; but should an abnormal amount of current pass through any one of the conductors G it would operate to blow out the fuse *a* and render that particular trolley-line section inoperative and dead.

In the event that a foreign wire I should accidentally fall across one of the trolley sectional conductors F and the guard-wire it would form a short circuit, through which such an amount of current might flow as to seriously interfere with the operation of the motors on the line beyond such short circuit, unless some provision were made for obviating such action. If a short circuit were formed at I, an abnormal amount of current would flow through the conductor F and fuse *a* and operate to blow out the latter, and thus render inoperative this particular trolley-section, while maintaining the other sections intact.

Instead of employing a fuse, I may use an electro-magnet in each one of the circuits F, and so construct the electro-magnet that on the passage of an abnormally-strong current through the circuit F it will open the circuit and maintain it open until the current therein has been reduced to its normal quantity, which might be effected by a removal of the wire forming a short circuit, and then automatically close the circuit.

The several conductors may be suspended from poles, or they may be located in conduits.

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

1. The combination, with a trolley line or conductor composed of insulated sections, a feeder, and circuits connecting the feeder and the several sections of the trolley-line, of a guard line or conductor and devices for open-circuiting a trolley-line section on the passage of an abnormal quantity of current thereto, substantially as set forth.

2. The combination, with a dynamo-electric machine and a feeding-conductor connected therewith, of a sectional trolley-line, conductors connecting the feeder and the insulated sections of the trolley-line, a guard-line located adjacent to the trolley-line, and safety-fuses included in the conductors between the feeder and trolley-line sections, substantially as set forth.

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

SIDNEY H. SHORT.

Witnesses:
A. B. CALHOUN,
JOHN C. DOLPH.