(No Model.) 3 Sheets—Sheet 1.

W. M. THOMAS.

ELECTRICAL RAILWAY AND LOCOMOTIVE.

No. 288,513. Patented Nov. 13, 1883.

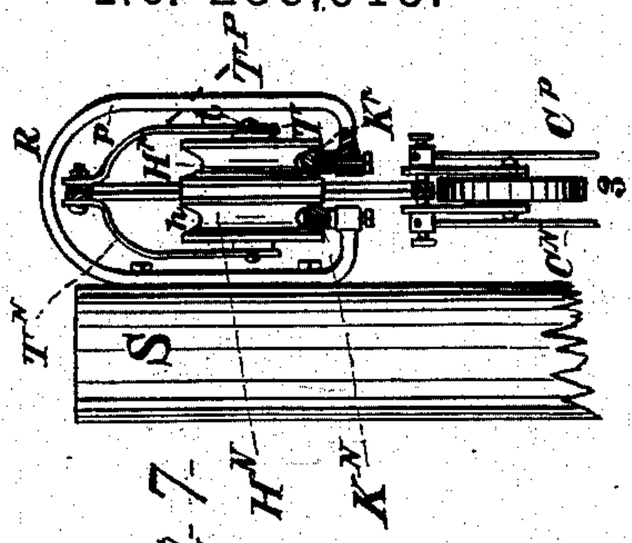

Fig. 7.

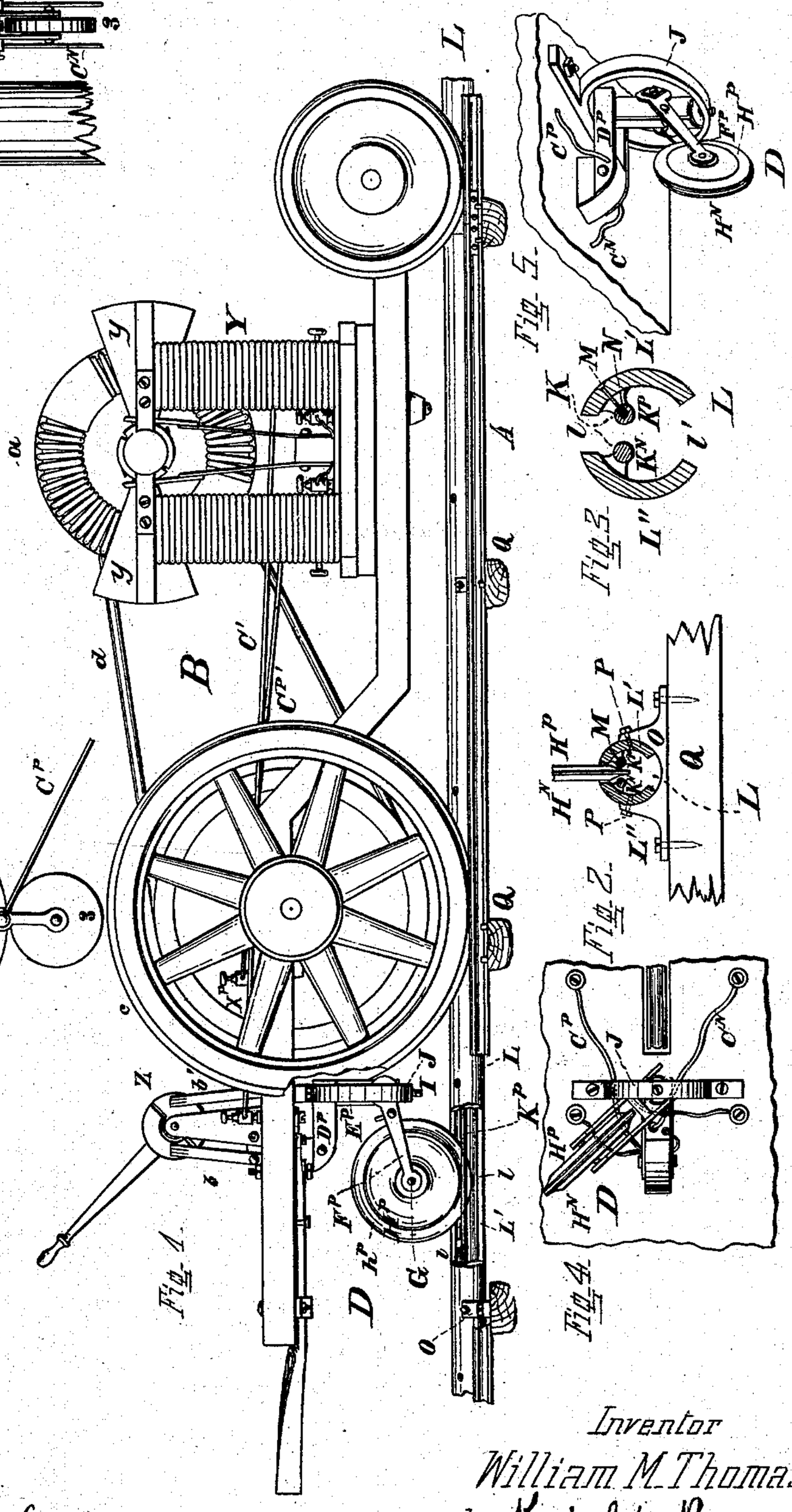

Fig. 1.

Fig. 5.

Fig. 3.

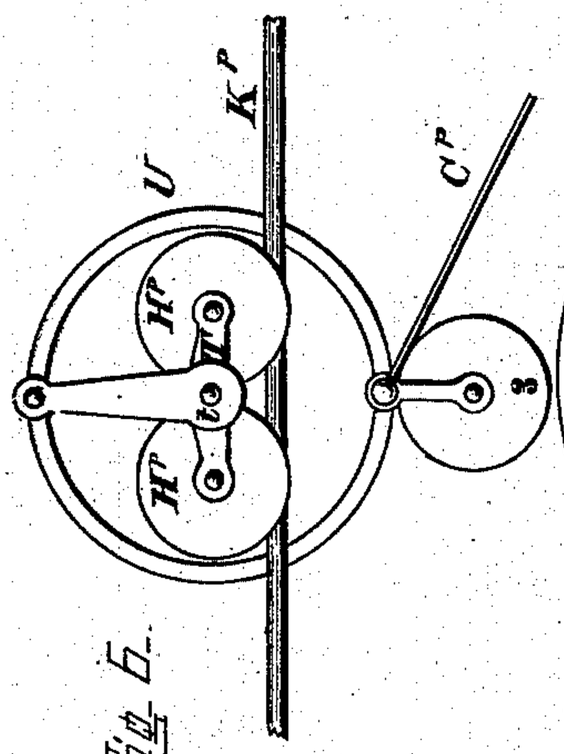

Fig. 6.

Fig. 4.

Fig. 2.

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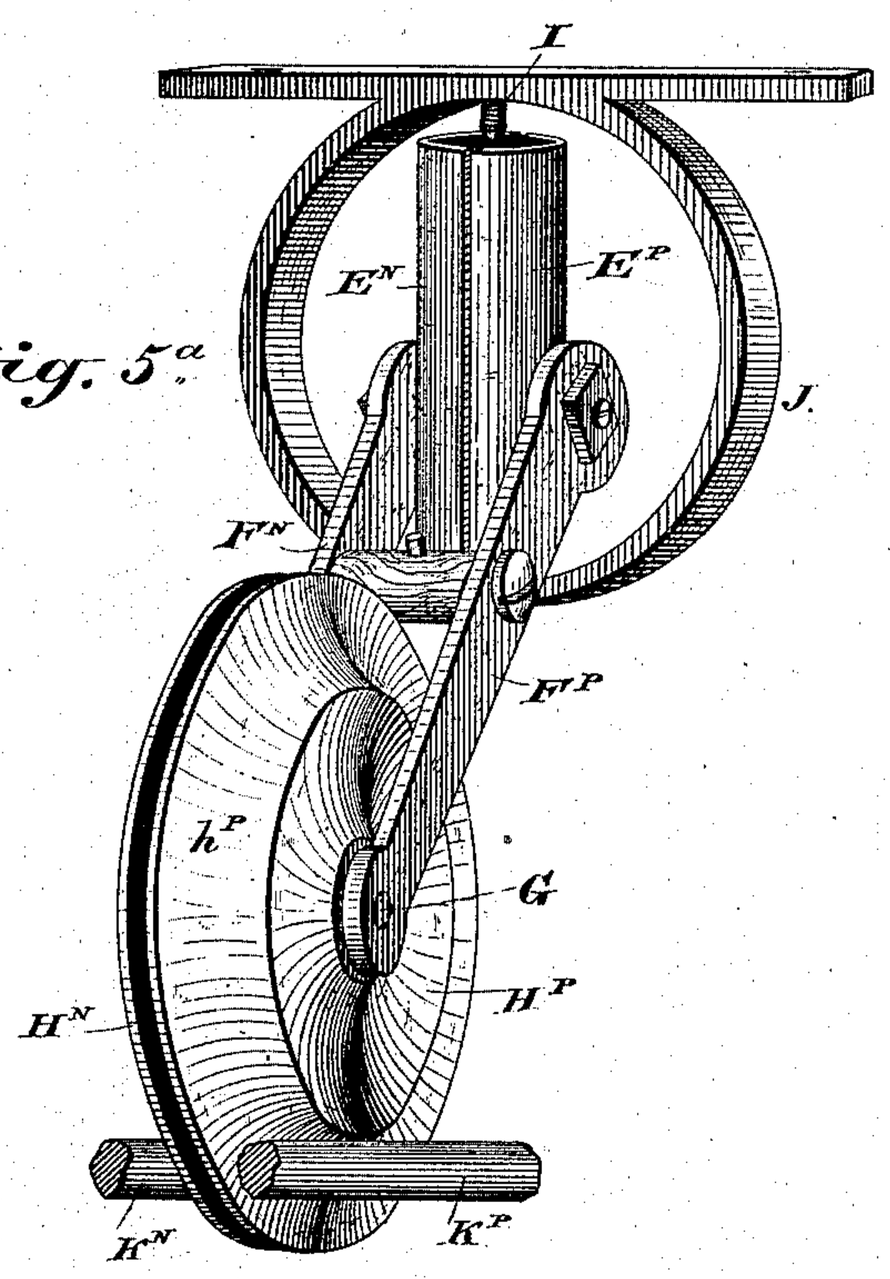
Fig. 5ª.



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(No Model.) 3 Sheets—Sheet 3.

W. M. THOMAS.

ELECTRICAL RAILWAY AND LOCOMOTIVE.

No. 288,513. Patented Nov. 13, 1883.

Fig. 8.

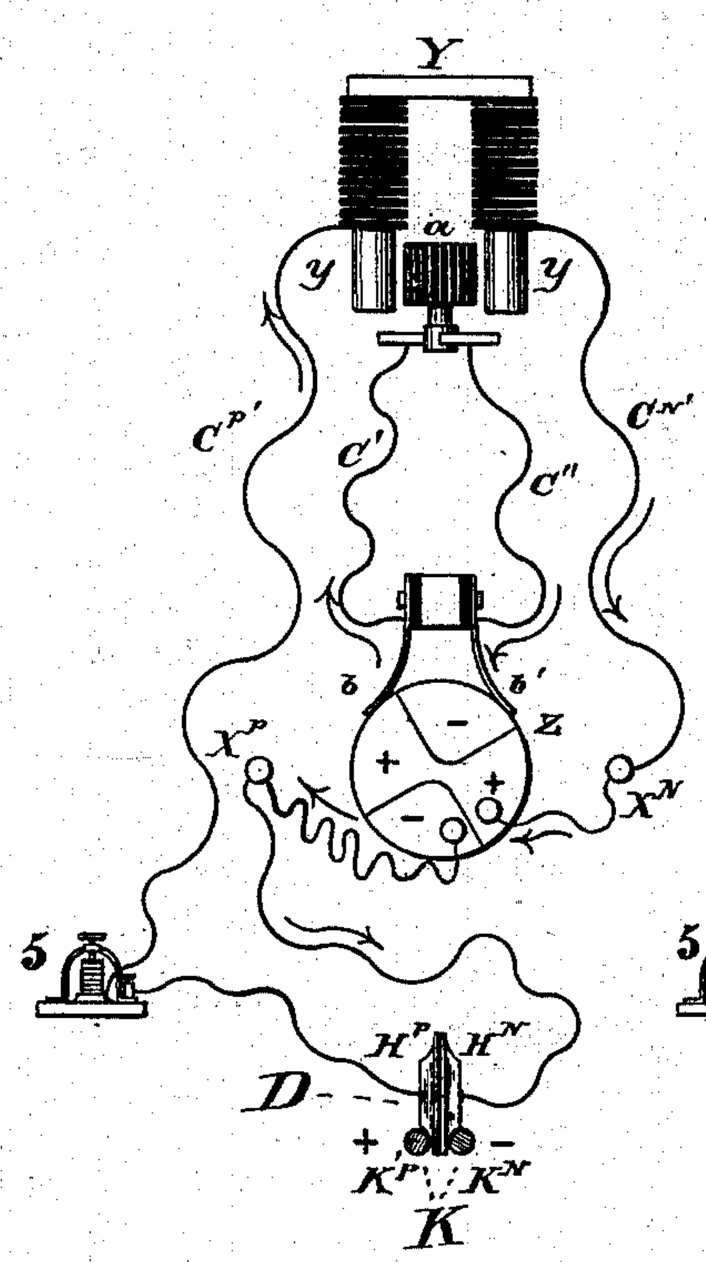
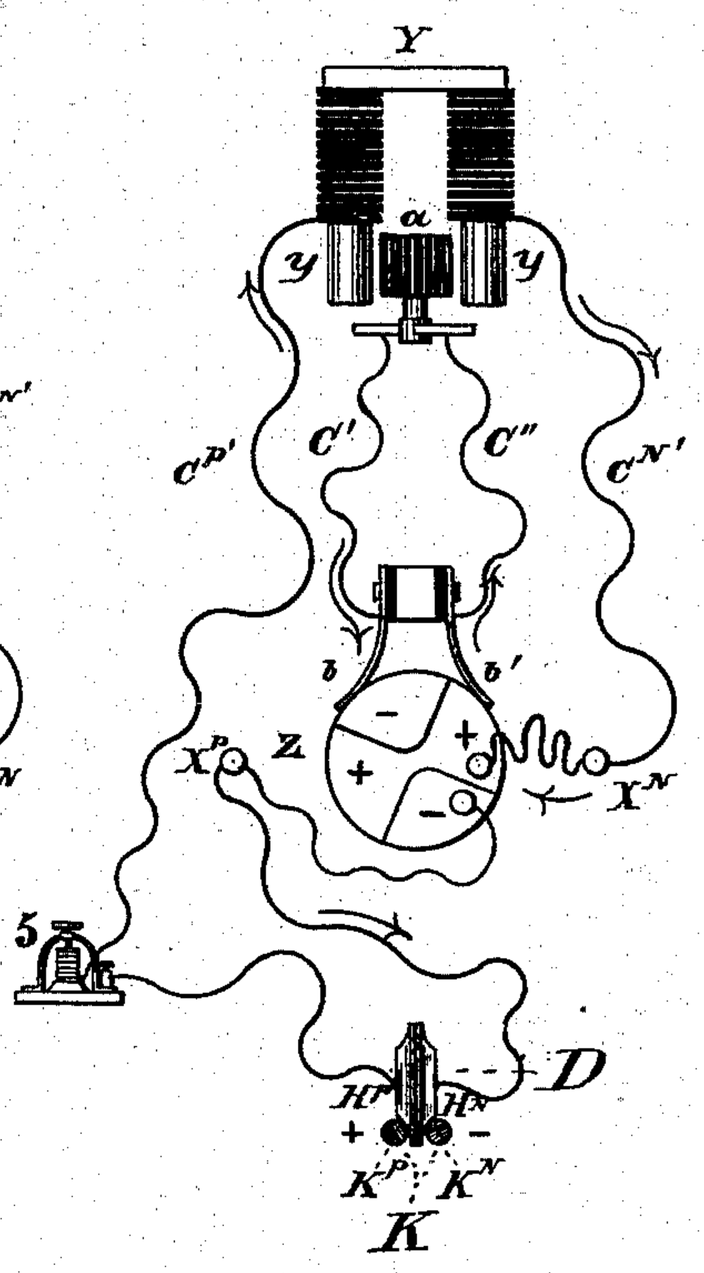


Fig. 9.



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UNITED STATES PATENT OFFICE.

WILLIAM M. THOMAS, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO SAMUEL W. SKINNER, OF SAME PLACE.

ELECTRIC RAILWAY AND LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 288,513, dated November 13, 1883.

Application filed November 6, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. THOMAS, of Cincinnati, Hamilton county, Ohio, have invented new and useful Improvements in Electric Locomotives, of which the following is a specification.

My invention relates to certain improvements in devices for placing an electro-locomotive in communication with a stationary generator, and for controlling the speed and direction of travel of such locomotive.

In the accompanying drawings, Figure 1 is a side elevation of electro-motive machinery embodying my improvements, a portion of the electric-conductor housing being broken away. Fig. 2 is a transverse section of the conductor to a larger scale, together with a portion of the running conductor. Fig. 3 is a still larger transverse section of the electric conductor and housing. Fig. 4 is an under side view, and Fig. 5 is a perspective view, of my running or rolling conductor. Fig. 5ª is a detail view of the running conductor. Figs. 6 and 7 are respectively a side and an end elevation of that form of my electric conductor which is located above the locomotive. Figs. 8 and 9 are diagrammatic representations to illustrate my mode of connecting the electro-locomotive with the conductor, and my means for control of the speed and direction of travel.

A may represent a common tramway or railway.

B represents my electro-locomotive, whose electro-magnetic motor Y comprises one or more field-magnets, *y*, and revolving armatures *a*, of the represented or any customary or suitable form.

Wires C^P C^N from the electro-locomotive communicate with a peculiarly-constructed caster, D, called the "duplex runner," in which springs D^P D^N press, respectively, upon two insulated segments, E^P E^N, which constitute the shank of my said runner. Pivoted to the respective segments are two cheeks, F^P F^N, held apart by brace *f*, of insulating material, and which constitute the journal-bearing of the axle G of my runner-wheel, composed of two similar disks, H^P H^N, with chamfered edges h^P h^N, and being insulated from each other and from the axle.

The above-described runner D is capable of both horizontal rotation and vertical oscillation about a perpendicular stud, I. A circular yoke, J, that depends rigidly from the locomotive-bed, surrounds and supports the lower end of stud I.

It will be seen that when the runner is deflected to one or the other side of a line parallel with the track the cheeks F^N F^P are forced up the inclined sides of the yoke J, whence the gravity of the runner itself will impart to it a constant tendency to resume a position of parallelism with the track.

The runner rests by its chamfered surfaces h^P h^N on my electric conductor K, which consists of two continuous rods or wires, K^P K^N, that constitute the conduits of the outgoing and returning currents respectively, and are, with that object, in electrical communication with the positive and negative sides, respectively, of whatever generator of current is employed. Said wires K^P K^N are supported in housing L, composed of two plates, L′ L″, in form of annular segments, to which said wires are fastened at proper intervals by means of bolts M, that screw into vulcanite or other insulating-thimbles, N, which thimbles either screw into the wires, as shown, or upon projections therefrom. The plates L′ L″ are separated at top by an opening, *l*, which permits the traverse of the runner-wheel, and below by an opening, *l′*, for escape of water and other intruding matters.

The housing L is supported at proper distances, and the plates L′ L″ and conductor-wire K^P K^N are held the proper distance apart by steps or chairs O, to which said plates are secured by bolts P. These chairs are spiked or bolted to the cross-ties Q of the railway-track.

While preferably located under ground, or on the surface of the ground, as above described, such a system of conductors may be arranged overhead, as shown in Figs. 6 and 7, in which the conductor-wires K^P K^N are shown supported in a yoke, R, attached to post S. In this overhead form the runner

consists of two wheels, of which each is composed of two insulated disks, H^P H^N, each disk being circumferentially scored or channeled, as at *h*, and each wheel journaled, respectively, in frames T^P T^N, that are insulated from one another and constitute portions of the electric circuit. The runner-wheels are retained in their proper position above the track by a counter-balance, 3, made fast to the bottom of the yoke U.

Figs. 8 and 9 are diagrammatic representations in which the electrical elements of the locomotive are, for convenience of illustration, disposed in a single vertical plane transverse to the direction of travel. As illustrated in this diagram, wire K^P, connected with the positive pole of the generator, has electrical connection by disk H^P, through the several parts of the hanger previously described, and wire $C^{P'}$, with the field-magnets of the motor Y. Thence the circuit is through wire $C^{N'}$ to binding-post X^N, and thence to the + post of switch Z, whence-brushes *b b'* and wires C' C'' connect with the commutator-brushes of the motor. Returning, the circuit is through — binding-post of the switch to post X^P, and thence to the opposite side of the hanger and the insulated disk H^N to the wire K^N, connected with the negative pole of the generator. The brush-connections *b b'*, Figs. 1, 8, and 9, directing the current in one or the other direction through the armature *a*, determine its direction of rotation, and, consequently, the direction of travel, or suspend motion altogether, according to the position given to the switch, in the usual manner of working electrical switches.

To enable regulation of the speed of the locomotive, there is interposed in one of the field-wires a rheostat, 5, of the represented or any suitable construction.

The armature *a* is mechanically connected with the running-gear *c* of the electro-locomotive by a belt, *d*, or other suitable mechanical transmitter.

It is apparent that the above-described electrical conductor, whether overhead or underground, is exempt from liability either to receive injury from or to impart injury to extraneous objects.

I claim herein as new and of my invention—

1. An electrical conductor composed of two parallel wires respectively in communication with the opposite poles of a generator of electric currents, and having insulated attachment within housing L, having openings *l* and *l'*, as and for the objects designated.

2. The rolling conductor, whose wheel is composed of two parallel metallic disks with an interposed washer of vulcanite or other non-conducting material, the respective disks having contact with the respective tracks of the outgoing and returning generator-currents on the one hand and with the carriers of the ingoing and returning motor-currents on the other hand, substantially as set forth.

3. In an electro-locomotive for use with two parallel wires, K^P K^N, for the outgoing and returning currents, respectively, the rolling conductor consisting of members as follows—to wit, springs D^P D^N, having electrical communication with the field-magnet, segments E^P E^N, stud I, cheeks F^P F^N, axle G, and insulated chamfered disks H^P H^N.

4. In combination with the rolling conductor D, the rigid yoke J, having inclined faces adapted to impart to the runner a tendency to parallelism with the track, as set forth.

In testimony of which invention I hereunto set my hand.

WILLIAM M. THOMAS.

Attest:

GEO. H. KNIGHT,

SAML. S. CARPENTER.