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1290 (No Model.)

H. E. SWIFT.

ELECTRIC RAILWAY.

No. 438,564. Patented Oct. 14, 1890.

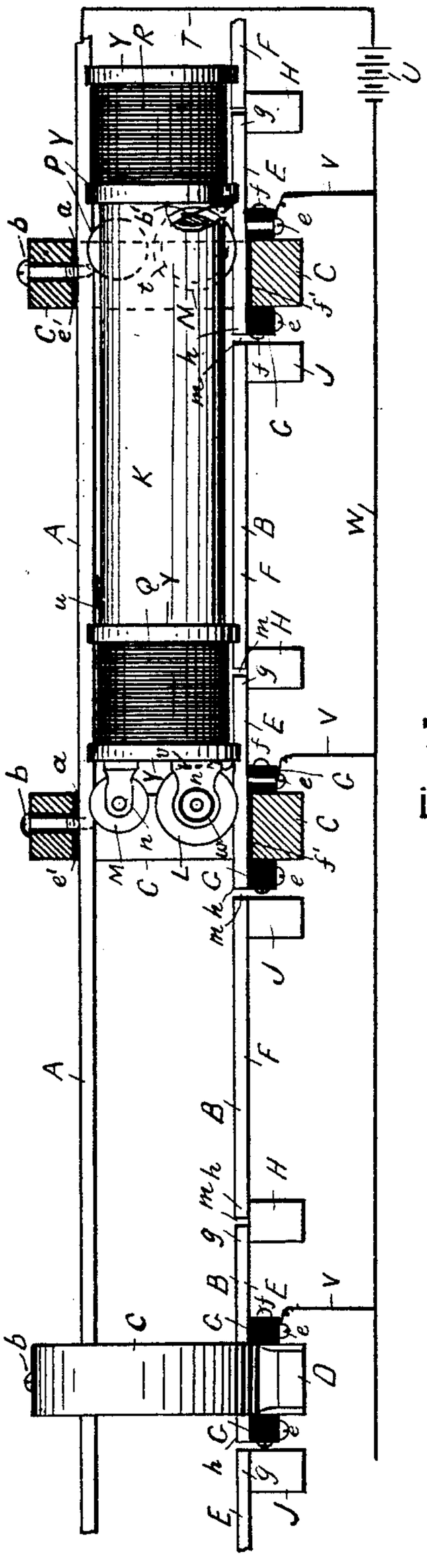

Fig. 1.

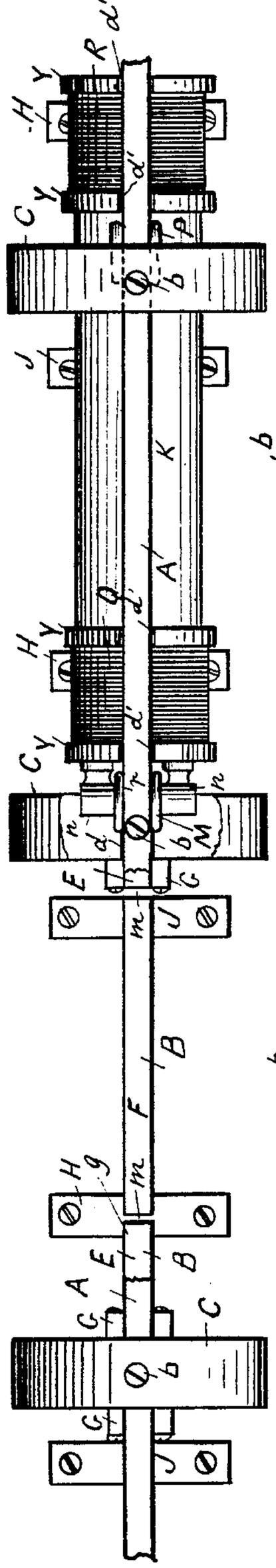

Fig. 2.

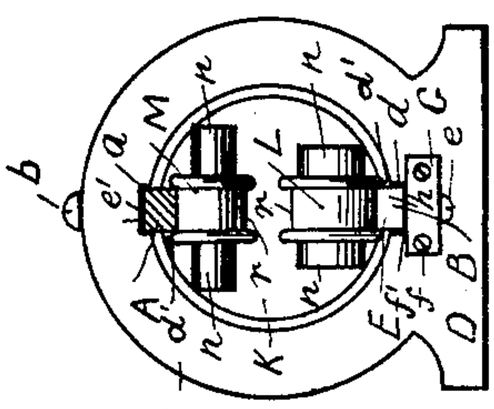

Fig. 4.

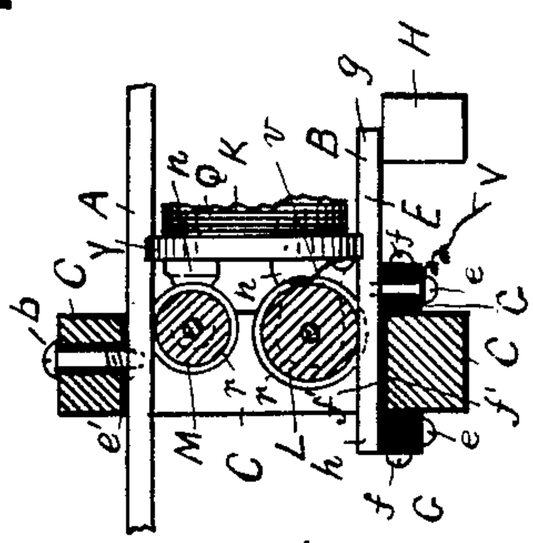

Fig. 3.

WITNESSES

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ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 438,564, dated October 14, 1890.

Application filed May 15, 1890. Serial No. 351,972. (No model.)

To all whom it may concern:

Be it known that I, HORACE E. SWIFT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Electric Railways, of which the following is a full, clear, and exact description.

This invention consists of an electric railway for the transportation of cash, mail-matter, parcels, and merchandise of various kinds constructed and arranged for operation all substantially as hereinafter fully described, reference being had to the accompanying sheet of drawings, in which is illustrated an electric railway constructed in accordance with this invention.

Figures 1 and 2 are respectively plan and side views of the electric railway with the carrier or carriage in place thereon and some of the parts broken out. Fig. 3 is a detail central longitudinal section, and Fig. 4 is a detail cross-section.

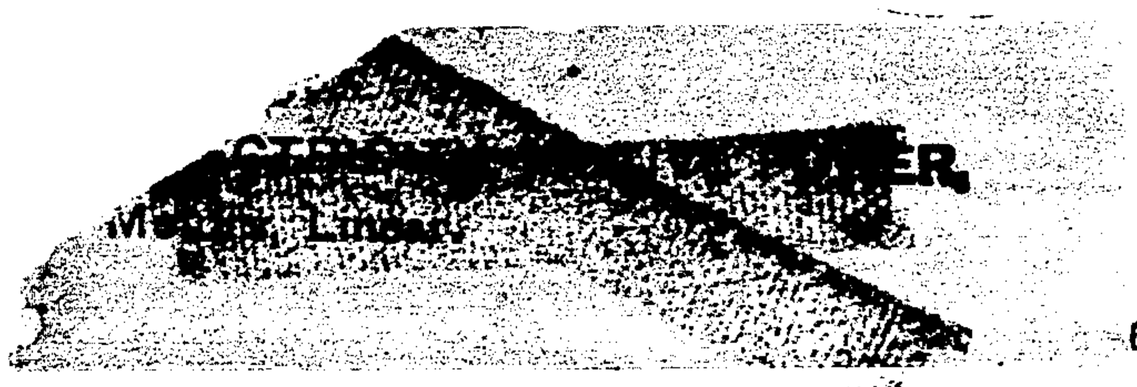
In the drawings, A and B represent two rails, of any suitable metal or material, one A above the other B and in the same vertical plane, the upper one A, which is a continuous one, being supported at regular intervals by metallic rings C, arranged at right angles thereto, the rail fitting in a groove *a* on the inner side of the upper part of each ring and secured thereto by a screw *b*, and each ring having a base D, adapted to rest on and be secured to the road-bed or other support in any suitable manner.

The lower rail B is made in alternate sections E and F, each section E being disposed in a groove *d* in the inner side of the lower part of its respective ring C, secured by a screw *e* to blocks G—one each side of the ring—which blocks are secured by screws *f* to the side of the ring for the end *g* of the rail to extend farther from the ring at one side than the other end *h*, it resting and being supported on a block H, as shown. Between the ring-sections E in the same longitudinal line and horizontal plane are the other sections F, each supported by one end on the block H and by its other end on a block J, each of these sections F being of a length to fit in between its two contiguous sections E, but short enough to leave a space between the ends of the sections, as shown at *m*, so that there will be no metallic or electric connection between the several sections making the lower rail.

K is the carrier or carriage, and it consists in substance of a tube, in the chamber of which the articles to be transported are placed, the carrier being provided with an opening and means for opening and closing it, all substantially as usual in such carriers and not needing to be herein more particularly described and shown, it being no part of the present invention, as any suitable carrier can be used, as desired. Turning in supports *n*, at the front end of the carrier, are two wheels L and M, one M above the other L in the same vertical plane and the same vertical line with the central longitudinal axis of the carrier, the wheel L running on the lower rail and the wheel M against the under side of the upper rail, each wheel having a circumferential groove *r* to fit its respective rail. At the other end of the carrier are two other wheels N and P in the same vertical plane and longitudinal line as the front wheels, each having a circumferential groove *t* to fit and run upon its respective rail in the same manner as the front wheels.

The lower wheels of the carrier are made larger than the upper, as running on the lower rails they have to sustain the weight of the carrier and its contents, the upper wheels serving more particularly as guiding-wheels. Secured to or made on the carrier in any suitable manner—one at each end and back of each set of wheels—are respectively electro-magnets Q and R, constructed in the usual manner.

The rails are connected with an electric battery or dynamo-machine U in the following manner: The upper rail is connected by a wire T with one pole of the battery or dynamo-machine, and each section E of the lower rail is connected by a separate wire V with the main or line wire W, leading to and connected with the other pole of the battery or dynamo-machine, as shown more particularly in Fig. 1.



SEARCH ROOM

One end of the wire of the magnet Q at the front of the carrier is connected to a metallic spring *u*, secured to the carrier and bearing by its free end on the under side of the upper rail, and the other end of the magnet-wire is connected to a metallic spring *v*, (shown in Fig. 3,) secured to the carrier and bearing by its free end in the circumferential groove *r* of the lower-wheel L, which is insulated by a thimble *w*, of rubber or any suitable insulating material, from its support *n* of the carrier. One end of the wire of the rear or other magnet R is connected to a metallic spring secured to the carrier and bearing by its free end on the under side of the upper rail in a similar manner to the front magnet, but not shown in the drawings, the other end of the wire connecting with a metallic spring *b'*, secured to the carrier and bearing by its free end in the circumferential groove *t* of the wheel N, which wheel is insulated from its support by a thimble *w* in a similar manner to the front wheel. The plates or heads Y of the two magnets are grooved across their thickness, as at *d'*, on their upper and lower sides to fit the rails, which prevents any lateral sway of the carrier.

The supporting-rings C not only serve as supports for the rails, but are also the armatures for the electro-magnets, and are of such internal diameters that the carrier can freely pass through them as it travels along the rails.

The upper rail is insulated from its supporting-rings by rubber *e'*, or any suitable insulating material, lining the grooves and socket, through which the securing-screws *b* pass, and each section E of the lower rail is insulated from its supporting-ring by rubber *f'*, or any suitable insulating material, lining the grooves in a similar manner to the upper rail, the blocks G being made of insulating material or insulated from the ring and rail-section in any suitable manner, the other sections F of the lower rail being insulated from their supporting-blocks or the ground in any suitable manner, all parts being properly insulated from their supports and the ground for the proper working of the electric current in the operation of the apparatus.

In the operation of the apparatus the main-line wires T W being connected to the electric battery or dynamo-machine in the usual manner and the electric current established, the current travels along the main wire T to the upper rail, and with a carrier placed in position on the rails, having a magnet Q, arranged as described, the instant the forward wheel L runs on an electrically-connected section E of the lower rail the electric circuit is completed, the electric current traveling from the upper rail through the spring *u* to the coil-wire of the magnet Q, to the spring *v*, to the wheel L, and to the section E of the rail, on which the wheel then rests, and through its wire V and the other wire W to the battery or dynamo-machine, magnetizing the magnet Q, which then being near a ring-armature C the armature is attracted to the magnet; but as the armature is fixed and cannot move the magnet is drawn toward the armature with the carrier, and from the momentum imparted to it by the magnetic attraction the carrier passes through the first ring along the insulated or non-electrically-connected section F of the rail to the next or second electrically-connected section E, and running onto it the electric circuit is made, as before, for the first electrically-connected section passed over, which moves the carrier along the rails to the next or third electrically-connected section, when the electric circuit is made as before and the carrier moved along as before, and so on through each succeeding electrically-connected rail-section until it reaches its destination or terminus, so that with a series of electrically-connected sections and insulated or non-electrically-connected sections arranged on the lower rail, as described, as the carrier approaches and reaches the several electrically-connected sections one after another it will be given a continuous movement along the rails with a speed according to the number and power of the magnets. As the carrier passes from the electrically-connected section onto insulated or non-electrically-connected section of the lower rail, the electric circuit is broken; but it is again made as the carrier passes on to the next electrically-connected section, thus alternately making and breaking the electric circuit.

The carrier shown in the drawings has two electro-magnets, which from their relative positions thereon and the relative distances of the electrically-connected sections of the lower rail from one another act together, as both are on an electrically-connected section at the same time; but where two electro-magnets are used they can be so located on the carrier in relation to its length and the distances the electrically-connected sections are apart and the positions of the armatures as to act alternately or one after the other, or just as or just before one or the other leaves an electrically-connected section, but only one magnet need be used; or, if desired, more than two can be used, according to the power and speed required and the weight of the carrier and its contents.

If desired, the rails can be supported independently of the armatures; but it is preferable to combine the two, being cheaper and more practical; also, the manner of making the electric circuit through the carrier from one rail to the other can be arranged in any suitable manner other than as herein particularly described and shown; also, the construction and arrangement of the rails can be reversed—that is, the lower rail can be continuous and the upper rail made with the electrically-connected and insulated or non-electrically-connected sections; but it is preferable to construct and arrange the rails as herein described; also, in lieu of using the upper rail for the current, an independent wire can r

alongside of the rail and at proper intervals arranged to make the circuit through the carrier.

Having thus described my invention, what I claim is—

1. In an electric railway, the combination, with two rails, one of which is made in sections alternately electrically connected, and a carrier provided with one or more electro-magnets and adapted to travel on said rails, of supports for said rails suitably insulated therefrom and making the armatures.

2. In an electric railway, the combination, with two rails, one of which is made in sections alternately electrically connected and the other electrically connected throughout its length, and a carrier provided with one or more electro-magnets and adapted to travel on said rails, of supports for said rails suitably insulated therefrom and making the armatures.

3. In an electric railway, the combination, with two rails, one of which is made in sections alternately electrically connected and the other electrically connected throughout its length, and supports for said rails, suitably insulated therefrom and making the armatures, of a carrier provided with one or more electro-magnets and suitably constructed and arranged to travel on said rails and make electric connection between said electric continuous rail and the electrically-connected sections of the other rail.

4. In an electric railway, a carrier for an electric railway, provided with an electro-magnet and wheels to travel on the rails of the railway, and two springs, one to bear upon one of said rails and the other to bear on one of the wheels, said springs being electrically connected with the magnet, for the purpose specified.

5. In an electric railway, the combination, with two rails, one of which is made in sections alternately electrically connected, and a carrier provided with one or more electro-magnets and adapted to travel on said rails, of armatures located in proper position near said rails, for the purpose specified.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

HORACE E. SWIFT.

Witnesses:
EDWIN W. BROWN,
F. B. WENTWORTH.