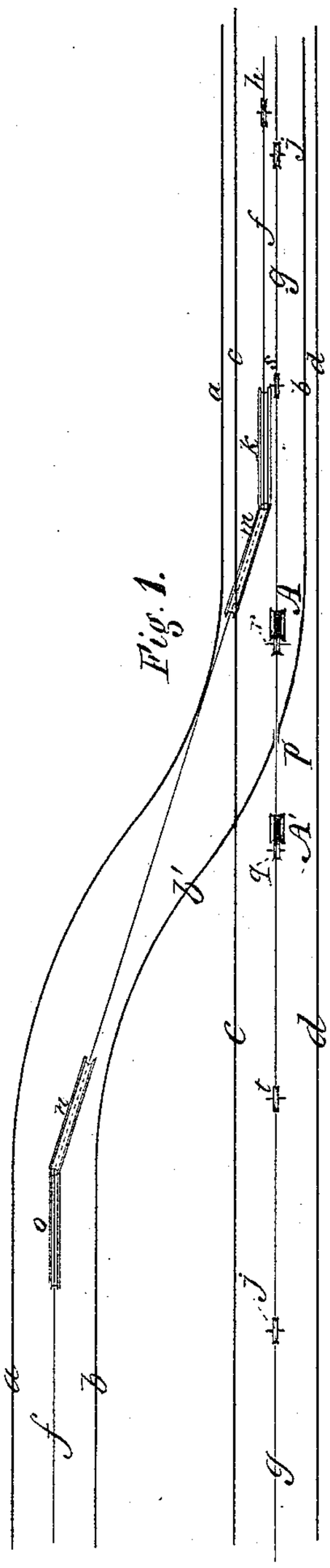
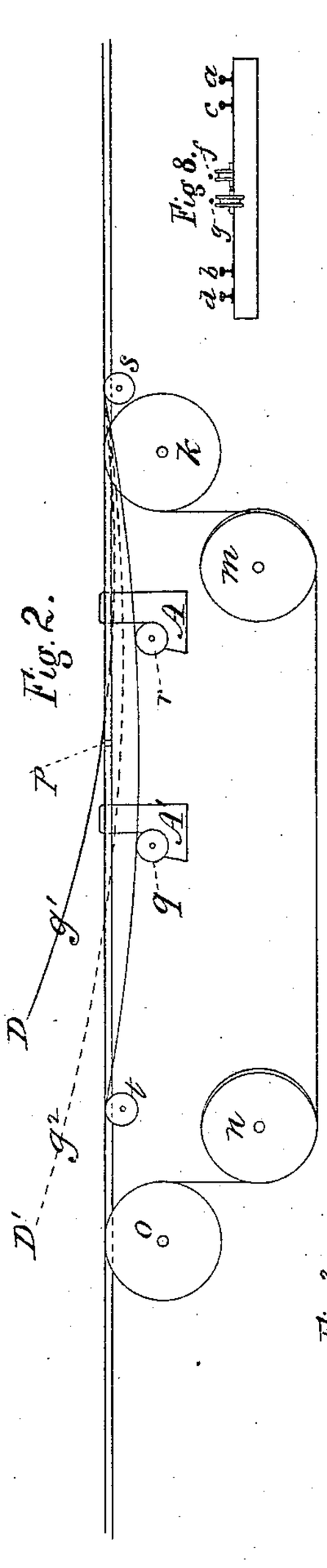
(No Model.)

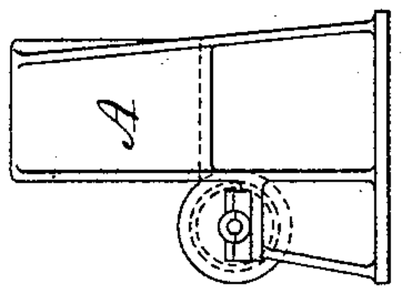
C. E. EMERY.

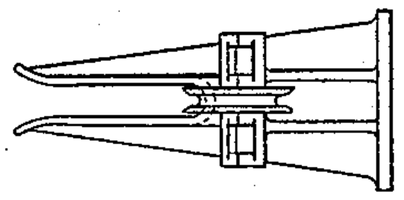
CABLE SUBURBAN RAILWAY.

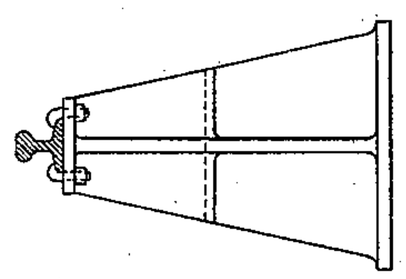
No. 430,179. Patented June 17, 1890.

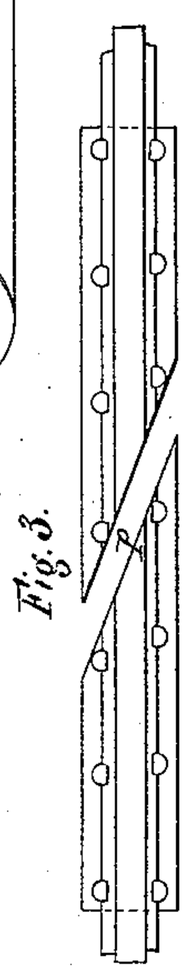


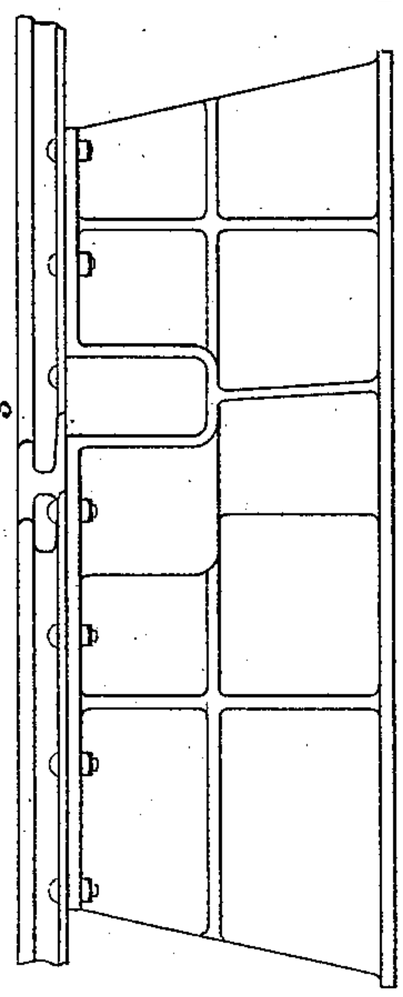












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UNITED STATES PATENT OFFICE.

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CABLE SUBURBAN RAILWAY.

SPECIFICATION forming part of Letters Patent No. 430,179, dated June 17, 1890.

Application filed May 19, 1888. Renewed April 19, 1890. Serial No. 348,591. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. EMERY, of Brooklyn, Kings county, New York, (office New York city,) have invented certain new and useful Improvements in Cable Suburban Railways; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

This invention relates to an adaptation of a cable haulage system to the system of multiple starting-points adapted for suburban roads set forth in another application, although portions of the invention are adapted for other purposes. The particular adaptation is for grips located above the line of the rails, so that the cars may be run over ordinary switches and frogs the same as the cars of ordinary railroads without any part projecting below the level of the rails, though portions of the invention may be used for depressed gripes.

To accomplish the purposes intended multiple cables are employed in connection with the multiple gauntleted tracks, each cable supported on the center line of each of the gauntleted tracks, or in such relation thereto that each cable will be particularly adapted for engaging with the grips on the cars on the corresponding track. Special guide-frames are employed for guiding the cable into a slit in the curved rail which connects a pair of the gauntleted rails with the turn-out.

In the drawings, Figure 1 is a plan view of the rails of the main line and of a turn-out gauntleting therewith, also the general arrangement of the diverting and supporting sheaves necessary to complete the operation. Fig. 2 is a diagram representing the principal features of Fig. 1 in elevation. Fig. 3 is a plan view of a slit cut through a pair of rails for the passage of a cable. Fig. 4 is a longitudinal elevation of a yoke securing such rails together so as to leave a channel for the passage of a rope below the level of the rails. Fig. 5 is an end elevation of Fig. 4, with the rail in section. Fig. 6 is an end elevation, and Fig. 7 a side elevation, of a guide-frame with supporting-sheave. Fig. 8 is a cross-section, on a larger scale than Fig. 1, of gauntleted tracks, showing the rails in section and the supporting-sheaves for the cables.

In the drawings, *a* and *b* represent the rails of a turn-out gauntleted at the right with the rails *c* and *d* of the main line. The cable of the turn-out is designated *f*, and that of the main line *g*.

h represents a supporting-sheave on the line of the turn-out cable, and *j s r q t j* similar sheaves on the line of the main cable. It is proposed as a general rule that the cables be supported at about the level of the rails. With the arrangement shown the cars to or from the turn-out would in general drop the cable just before they reach the reverse curve connecting the turn-out with the main line and then pick up the cable again after the reverse curve is passed.

Neither the grips nor the arrangement for gripping the cable are shown on the plans; but devices in general use would be employed for the purpose—such, for instance, as those in use on the Brooklyn bridge. (Shown and described in my application, Serial No. 276,388, filed June 7, 1888.)

In Figs. 1 and 2 the cable *f* of the turn-out is shown passing from the gauntleted tracks over the sheave *k*, thence under diagonally-arranged sheaves *m* and *n*, thence upward and over a sheave *o*, which directs the cable in the center of the rails *a b* of the turn-out. The cable *g* of the main line, however, runs in a straight line between the rails *c* and *d*, passing through a diagonal slit in curved rail *b'* of the turn-out. The cable is given a tendency to enter such slit and lie below the level of the rails by lowering the supporting-sheaves in a vertical curve for a distance either side of the slit *p*, so that the cable by its weight will, notwithstanding its tension, keep below the rail-level and not be injured by the wheels of cars passing to the turn-out.

In the drawings, *q* and *r* are intended to represent guide-sheaves for the main-line cable *g*, placed below ordinary track-level. At a little distance along the track each way from the slit *p* are arranged guide-frames A A', as shown in the details, Figs. 6 and 7. These guide-frames are constructed with two parallel jaws with their upper edges inclined outward, leaving a central space a little wider

than the diameter of the cable, which space for each frame, as shown in Fig. 1, is arranged on the line of the cable. The inclined edges of the jaws of the frame are preferably arranged a little above the line of the rails, but of course sufficiently below the grips to avoid interference therewith. These guide-frames may for simplicity of construction carry the depressed supporting-sheaves *q* and *r*, although this is not essential so long as similar sheaves are arranged near to guide the cable between the jaws of guide-frames.

The guide-frames A A′ are to be arranged along the line of the cable far enough away from the rail *b′* of the crossing to prevent interference with the flanges and treads of the car-wheels, and at such distance proportioned to the weight and tension of the cable as to secure operation as follows: When no train is passing, the cable will by its own weight sag down upon the supporting-rollers *q* and *r;* but as a train moves over the grip above the rails necessarily the cable will be lifted out of the guide-frames A A′ and slit *p*, but will settle down again after the passage is made. If it be supposed that a train is moving from the right toward the left in Fig. 2, and that the cable is attached to the grip at or near the point D, and its weight is unsupported from that point to the supporting-roller *s*, the cable at a little distance to the left of the supporting-roller *s* will sag below the level of such roller before rising to the grip and in so doing enter the flaring jaws of the guide-frame A, which will stop all lateral shake of the cable and center and guide it, so that the inclined portion *g′* at the left leading to the grip will enter the slit *p*. As the car moves on to the left the cable will enter also the other guide-frame A′ and the cable take the position shown by the dotted line g^2. For motion in the other direction the curve would rise from left to right and first enter the guide-frame A′ and be guided thereby into the slit and afterward enter the guide-frame A. For motion in one direction only one guide-frame is required.

In operation it is expected that the train going to or from the turn-out will approach the reverse curve at sufficient speed to run a little more than the length of such curve, when the cable may be dropped and picked up again after passing the curve. Auxiliary cables, locomotives, or other power may be employed to operate the cars on the turn-outs and run them over the reverse curves to the main line or for the latter purpose simply. In the former case the cable for the cars over the turn-out may be led out of the way in any convenient manner at the station and be simply kept above the road-bed on the main line and used to propel the trains between stations. Evidently the number of parallel turn-outs may be multiplied and each track gauntleted on the main line with the other tracks, and the number of cables can be multiplied to suit the number of independent gauntleted tracks.

The advantages of having an independent cable for each of the gauntleted tracks are, first, that the same cars may be run over either set of rails and yet the grips be in proper position to engage with the cable intended for operation in connection with such rails. Another advantage is that smaller cables can be used, as all the cars connecting to each turn-out take a separate cable, which is accomplished without any lateral adjustment of the grips on the cars, for the reason that the cable and supporting-sheaves of each turn-out track gauntleted with the main line are moved as much laterally as the rails themselves. The same details of construction are also applicable for a terminal station, in which case, however, two cables *f* and *g* would run in opposite directions and could be the direct and return branches of the same cable. The trains would be brought in from left to right, for instance, by cable *g* over rails *c* and *d*, then switched at the right to rails *a* and *b*, and return by cable *f*. More simply, the tracks to the right could be made ascending from left to right and the train propelled up the grade by the cable *g*, when by turning a switch the cars could be run back on the return-track by gravity, in which case the cable *f* at the right could be kept out of the way and only be brought up on the return-track at the left.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with a supporting-roller, a guide-frame A, provided with double jaws with beveled tops, such jaws connected together at the bottom and provided with suitable flanges for attachment to the road-bed.

2. In combination with a slit in a turn-out for the passage of a cable, one or more guide-frames A, each provided with double jaws with beveled tops and with suitable flanges for attachment to the road-bed.

3. A guide-frame A, consisting of two jaws with upper edges flared outward and provided with suitable flanges for attachment to the road-bed, and with an attachment for carrying a supporting-sheave, substantially as and for the purposes specified.

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Witnesses:
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