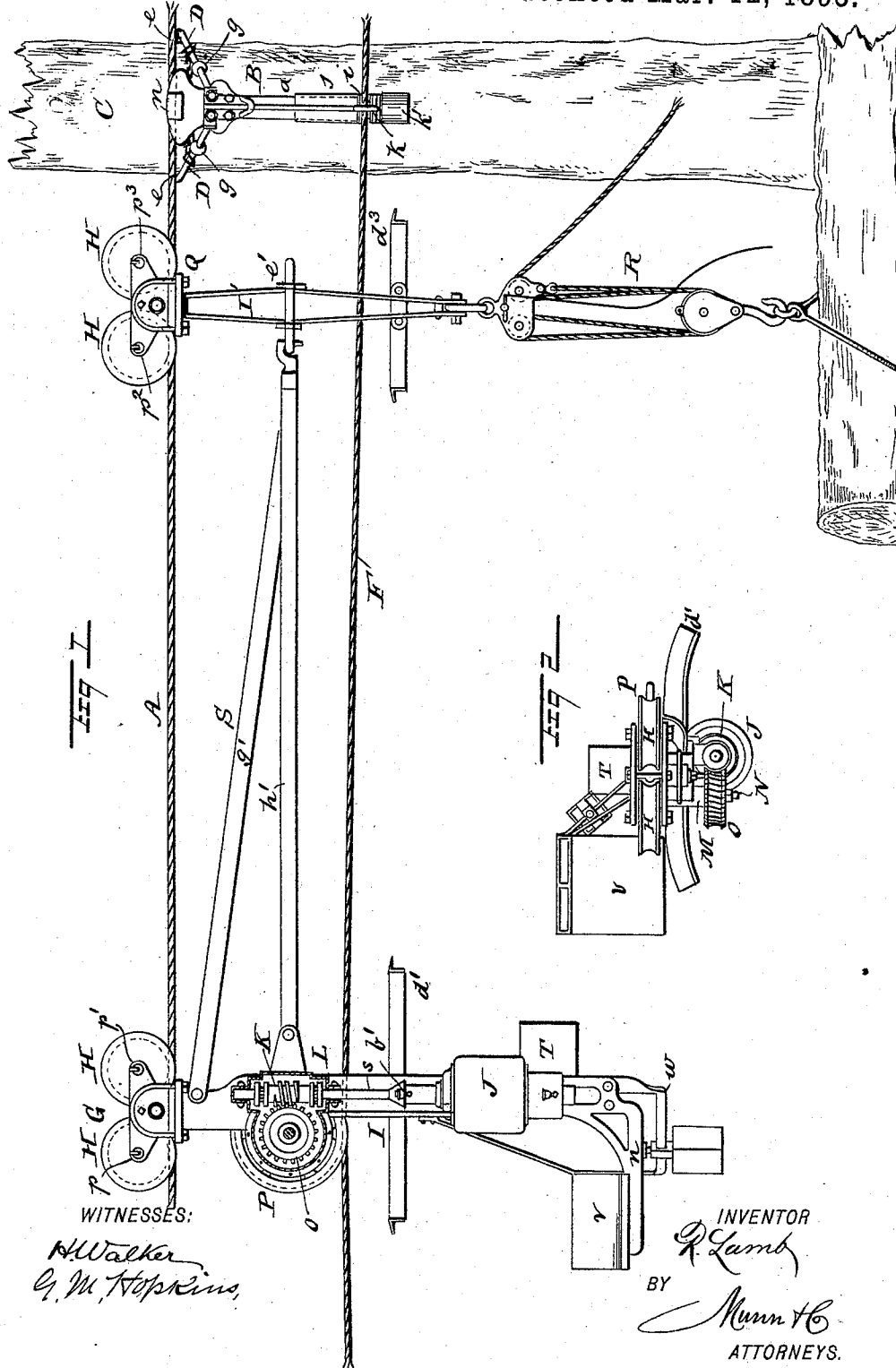


4 Sheets—Sheet 1.

No. 535,703.

Patented Mar. 12, 1895.



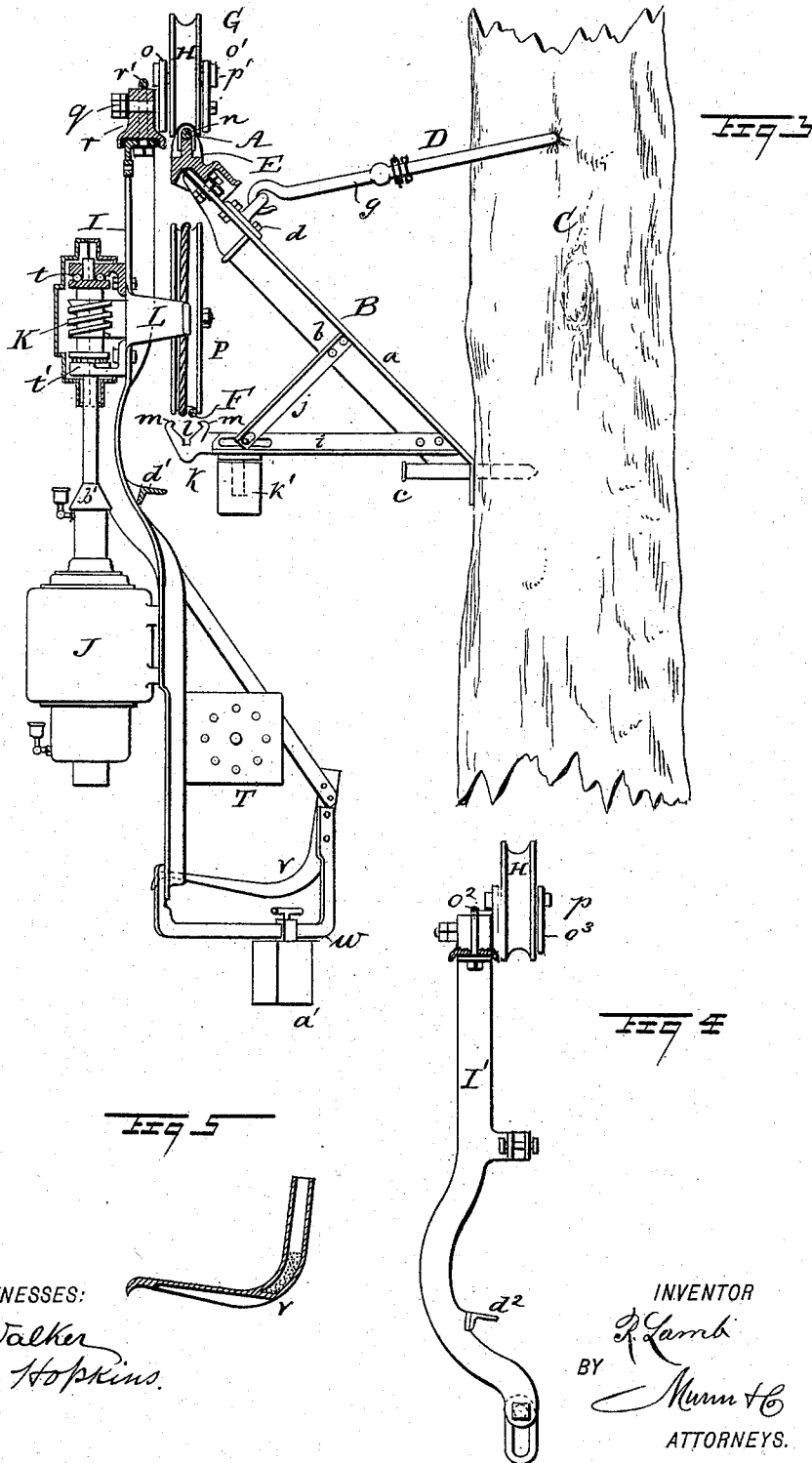
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R. LAMB.
ELECTRIC CABLE WAY.

No. 535,703.

Patented Mar. 12, 1895.



WITNESSES:
H. Walker
G. M. Hopkins.

INVENTOR
R. Lamb
BY *Munn & Co*
ATTORNEYS.

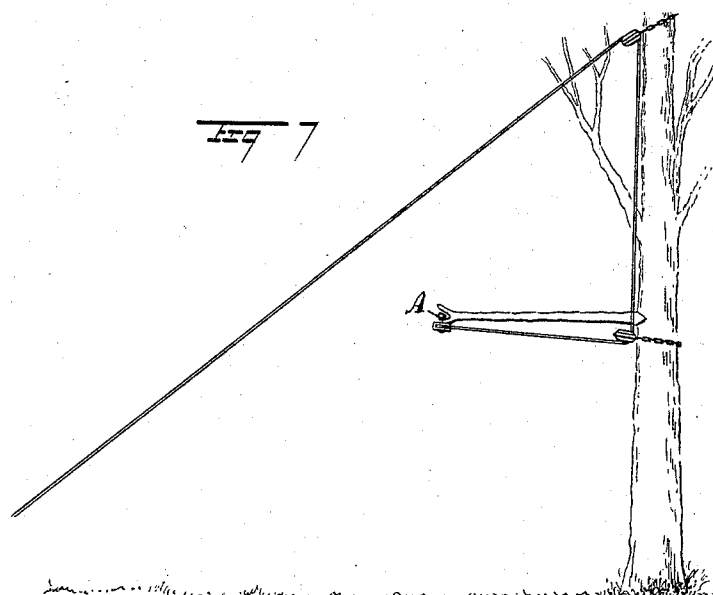
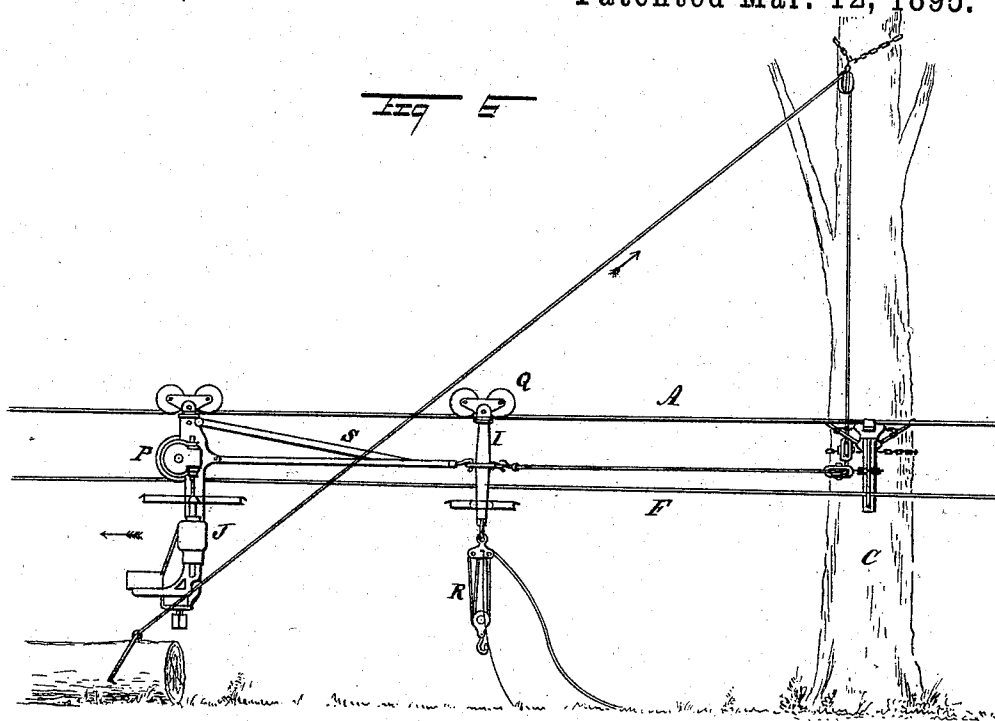
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R. LAMB.
ELECTRIC CABLE WAY.

No. 535,703.

Patented Mar. 12, 1895.



WITNESSES:

H. Walker
G. M. Hopkins,

INVENTOR

INVENTOR
P. Lamb
BY Munn & Co

ATTORNEYS.

(No Model.)

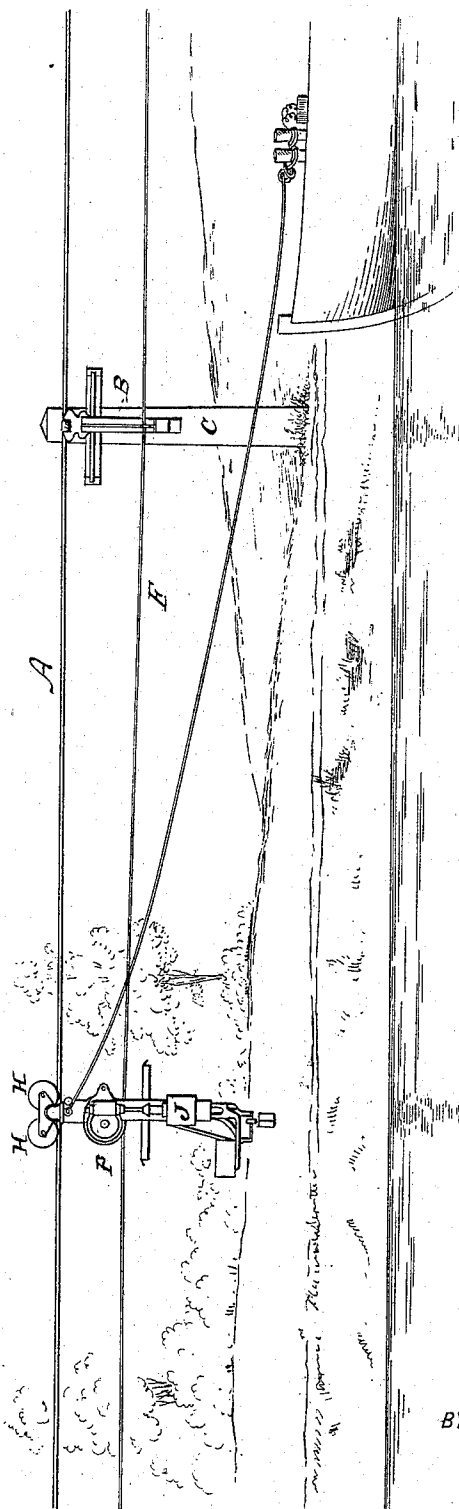
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R. LAMB.
ELECTRIC CABLE WAY.

No. 535,703.

Patented Mar. 12, 1895.

Fig. 5



WITNESSES:

H. Walker
G. M. Hopkins,

INVENTOR

R. Lamb

BY

Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

RICHARD LAMB, OF NEW YORK, N. Y.

ELECTRIC CABLEWAY.

SPECIFICATION forming part of Letters Patent No. 535,703, dated March 12, 1895.

Application filed July 19, 1894. Serial No. 518,000. (No model.)

To all whom it may concern:

Be it known that I, RICHARD LAMB, of New York city, in the county and State of New York, have invented a new and Improved
5 Electric Cableway, of which the following is a specification, reference being had to the annexed drawings, forming a part thereof, in which—

Figure 1 is a side elevation, partly in section, of my improved apparatus for handling logs by means of electricity as a motive power. Fig. 2 is a plan view of the locomotive without the gear covering. Fig. 3 is a side elevation of the same, partly in section. Fig. 4 is
15 a side elevation of the log-carrying trolley. Fig. 5 is a detail transverse section of the seat for the motorman and pocket for ballast. Fig. 6 is a side elevation showing auxiliary apparatus adapted for hauling logs to the place of
20 loading. Fig. 7 is a transverse section showing the application of the auxiliary hauling apparatus to the cable between supports. Fig. 8 is a detail view of clamps applied to the supporting cable for holding a strut; and
25 Fig. 9 is a side elevation of my improved apparatus applied to the propulsion of canal boats.

Similar letters of reference indicate corresponding parts in all the views.

30 The object of my invention is to provide simple and effective mechanism for conveying logs from the interior of a forest, for conveying other heavy bodies, for the propulsion of canal boats, and similar work.

35 My invention consists in supporting a car, carrying a motor, on a cable, and in providing means independent of the weight of the apparatus for causing tractional friction between the car and hauling cable to haul the
40 car on the supporting cable.

It also consists in the combination with the propelling trolley or locomotive, of a log-carrying trolley placed on the supporting cable and connected with the locomotive.

45 It also consists in the combination with the locomotive, of a counterweight or balance for trimming the locomotive so that it will maintain a practically vertical position.

50 It also further consists in the combination with the locomotive, of a seat for the motorman, all as will be hereinafter more fully described.

My present invention embodies some of the features found in my application for Letters Patent of the United States, for a logging system, filed December 16, 1893, Serial
55 No. 493,852, but I do not claim these features except in so far as they enter into new combinations.

The bearing cable A, which supports the log carrying trolley and the locomotive, extends over brackets B, attached to trees or posts C. The bracket B, in the present case, is formed of a T-iron bar *a* having the web *b* cut away at the lower end of the bracket, the
60 body of the bar being bent at an angle of forty-five degrees, and slotted to receive the spike *c*, which is driven into the post C. To the upper surface of the T-iron bar, near its upper end, is attached an eye-plate *d*.
70

Two braces D, each having a pointed hook *e* on one end and an eye *f* on the opposite end, are connected with the eye-plate *d*, and the hooked ends of the braces are driven into the tree or post C. Near the mid-length of each
75 brace is formed an enlargement *g*, and a chain *h* passes around the braces above the enlargement, and its ends are fastened together so that when the chain is twisted, the braces D will be drawn toward each other, and the
80 hooked ends of the braces will be securely held in their places in the tree or post C.

To the upper end of the T-iron bar *a* is attached a saddle E, for supporting the bearing cable A. The saddle E is provided with a recess for receiving the end of the bar *a*, and another recess for receiving the heads of the bolts by which the saddle is secured to the T-iron bar. The saddle, and the bolts by which it is secured in place, are insulated electrically
85 from the bar *a*, and are constructed to shed rain. The saddle E is made concave in a transverse direction and convex in a longitudinal direction, to adapt it for receiving the cable A.
90

To the lower part of the bar *a* is attached a horizontal bar *i*, which is supported at its outer end by a brace *j*, attached thereto and extending upward to the bar *a*, to which it is secured. The bar *i* has at its free end a casting
100 *k*, having a V-shaped notch *l* for receiving the traction cable F, which normally rests in a recess formed in the casting *k*, at the bottom of the notch. At the mouth of the V-shaped

notch the casting *k* is provided with projections *m*, which extend inwardly toward each other and serve to prevent the traction cable from accidentally leaving its support.

5 The bearing cable A is clamped on the saddle E by a clip *n*, and upon the cable A is placed a trolley G, formed of the plates *o o'*, connected by studs *p p'*, upon which are placed the grooved wheels H, which ride upon
10 the cable A. On a stud *q* which extends through the plates *o o'* is suspended a bar I, the said bar being provided at its upper end with a heavy arm *r* for receiving the stud *q*, the said arm *r* being secured to the bar I, by
15 means of a U-bolt *r'*, which extends over, and embraces the said arm, with its ends extending downwardly through the flange at the upper end of the bar I. The lower end of the arm *r* has a downwardly curved flange which
20 extends beyond the sides of the bar I, and is curved downwardly to protect the joint between the arm and bar from rain and dust, and between the arm *r* and the bar I, is placed suitable insulating material, and the ends of
25 the U-shaped bolt *r'* and the nuts thereon are insulated from the bar I.

The bar I, extends downwardly, and at a point opposite the traction cable F, is bowed
30 outwardly, and the lower end of the said bar is offset so that it hangs nearly in line with the cables A, F. To the bar I is secured an electric motor J, of any approved construction, and the armature shaft *s* of the electric motor extends upwardly and is provided with
35 a worm K, which is preferably of the kind known as the "Glen Cove," which revolves between thrust blocks *t t'*, between which and the ends of the worm are placed steel balls forming ball bearings above and below the
40 screw.

The thrust blocks *t t'* are attached to the web of the hanging bar I, and to the said bar I is secured a casting L, used to bring the point of application of the pulling or connecting
45 rod *h'* directly under the cable A. The casting L is provided with a sleeve M, in which is journaled a shaft N. Upon the front or outer end of the shaft N is secured a worm wheel O, which is engaged by the worm K,
50 and upon the inner end of the said shaft is secured a sheave P, around which the cable F is wrapped. The sheave P is preferably elliptically grooved, and the worm wheel and worm are inclosed in a casing containing oil,
55 so that the worm gearing is constantly and thoroughly lubricated, while at the same time dust is excluded.

To the lower end of the bar I, is attached a bracket *u* which supports the seat *v* for the
60 motorman. The back of the seat *v* is made hollow, as shown in Fig. 5, for the reception of the weight or ballast for counterbalancing the motor J, and causing the bar I to hang vertically. An arm *w*, secured to the lower
65 end of the bar I, extends diagonally to the rear of the seat *v*, and from the said bar is

suspended a weight *a'*, which may be moved back and forth to counterbalance the motor J.

The main parts of the motor J are preferably inclosed, and the armature shaft *s* of
70 the said motor carries an inverted hollow cone *b'*, which extends over the journal box of the motor and is designed for excluding oil from the worm gear, and also rain and dust.

The seat *v* is supported at the front by connection with the bar I, and the back of the
75 seat is sustained by a brace *c'*, attached to the seat back and to the bar I, near the bend therein, as shown. To the bar I, is attached a horizontal bar *d'*, which is curved out-
80 wardly, as shown in Fig. 2. This bar serves as a guard to prevent the motor from accidentally striking a tree or the bracket in passing over the bracket, a vertical roller *k'* being
85 suspended from the bar *i*, for engaging the said bar *d'*.

On the supporting cable A, a short distance from the locomotive, is placed a log-carrying
trolley Q, similar in construction to the trolley G, having plates *o², o³*, studs *p², p³*,
90 grooved wheels H', and the bar I', extending downwardly and curved outwardly opposite the traction cable F. The lower end of the bar I' is provided with a link for receiving
95 the locking tackle block R, by means of which the log or other load is lifted and sustained. The trunnion *r³* is electrically insulated from the bar I'.

To the bar I', at or near its mid-length, is attached a bar *e'*, having eyes on opposite
100 ends for receiving the hooks *f'*. The bar *e'* is arranged to admit of its revolving on the end of the connector S which connects the locomotive with the log-carrying trolley. The
105 connector S, in the present case, is formed of two bars *g', h'*, connected together at the hook *f'*, the bar *g'* being attached at the opposite end to the bar I of the locomotive, near the
110 upper end thereof, and the bar *h'* being connected with the casting L opposite the sheave P. Instead of using the connecting bars *g', h'*, I may dispense with the bar *g'* and use
115 only the bar *h'*. The log-carrying trolley Q is furnished with a curved guard bar *d²* like the bar *d'* carried by the locomotive.

The motor of the locomotive is provided with a starting box and reversing switch T, both of which are of the usual construction.

The current which drives the motor J arrives by the cable A, passes through the trolley
120 and an insulated conductor to the motor, and returns by the bar I, sheave P, and traction cable F, which is preferably grounded. When the motor is in operation, the sheave
125 P, by engagement with the cable F, winds up and at the same time pays out the said cable, and draws along the log-carrying trolley Q, and the log supported by it.

When the log is at some distance from the cable A, I arrange an auxiliary cable U, for
130 the purpose of conveying the log to the vicinity of the cable A. For this purpose I carry

the auxiliary cable around a horizontal snatch block *W*, to a second block at the post or tree C, thence upward to a snatch block secured to the post or tree some distance above the cable A, thence to the log to be drawn forward, as shown in Fig. 6. In this case the forward movement of the locomotive and log-carrying trolley carries the cable U forward and thus draws the log toward the cable A.

In Fig. 7, I have shown a method of doing the same thing at any point between the supports of the cable A, by employing a strut abutting against a tree or other solid object at one end, and embracing the cable at the other end.

In Fig. 9, I have shown the application of my improved system to the propulsion of canal boats. The cables A, F, are arranged along the side of the canal, and the locomotive is placed on the cable A and made to engage the cable F, as in the other case. The log-carrying trolley is of course dispensed with, and a cable or tow line which leads from the locomotive to the boat, carries conductors which are readily connected with a resistance box and reversing switch at the end which terminates on the boat. The locomotives are not to pass each other, but when boats passing in opposite directions, meet, the boatmen exchange locomotives by exchanging tow lines, the wires in which are then connected to rheostats on the boats, the motors are reversed, and the boats proceed as before.

In lieu of carrying the conductors through the tow line, the resistance box and reversing switch may be carried by the locomotive, and the motorman may ride with the locomotive as in the case of the logging system.

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

1. In a cable way, the combination of a supporting cable, a car supported on said cable, a motor carried by the car, a hauling cable anchored at both ends, and means independent of the weight of the apparatus for causing tractional friction between the car and the hauling cable to haul the car on the supporting cable, substantially as described.

2. In a cable way, the combination of a supporting cable, a car supported on and suspended from said cable, a motor carried by the car, a wheel revolved by the motor, a hauling cable anchored at its ends, and means independent of the weight of the apparatus for causing tractional friction between the

wheel and hauling cable to haul the car on the supporting cable, substantially as described.

3. The combination, with an electric locomotive suspended from a supporting cable, of an adjustable ballast, substantially as specified.

4. The combination with a traction cable, of a supporting column, a cable supporting bracket attached to the column and furnished with a V-shaped notch and having projections extending inwardly over the V-shaped notch, substantially as shown and described.

5. In an electric cable way, the combination of a supporting cable forming one branch of the electric circuit, a car supported and suspended from the said cable, an electric motor carried by the car and insulated from the cable, a wheel revolved by the motor, a hauling cable anchored at its ends and engaged about the wheel, said hauling cable forming the other branch of the electric circuit, and means independent of the weight of the apparatus for causing tractional friction with the hauling cable to haul the car over the supporting cable, substantially as described.

6. The combination of a supporting cable, a suspended locomotive, a traction cable, engaged by the locomotive, an auxiliary cable, and snatch blocks for changing the direction of the auxiliary cable, substantially as specified.

7. In an electric cable way, the combination of a cable, a car supported and suspended from the cable, a motor carried by the car, a wheel operated by the motor, a hauling cable anchored at its ends and engaged about the wheel, means independent of the weight of the apparatus for causing tractional friction with the hauling cable to haul the motor on the supporting cable, and a tow line connected with the car and attached to a boat, said tow line carrying electrical conductors, substantially as described.

8. In a cable way, the combination of a cable, a car supported and suspended from the said cable, a motor carried by the car, a sheave revolved by the motor, and a hauling cable passed one or more times around the sheave and having its ends anchored, substantially as described.

RICHARD LAMB.

Witnesses:

JNO. M. RITTER,
F. W. HANAFORD.