(No Model.) 4 Sheets—Sheet 1.

J. H. PENDLETON.

CABLE RAILWAY.

No. 436,104. Patented Sept. 9, 1890.

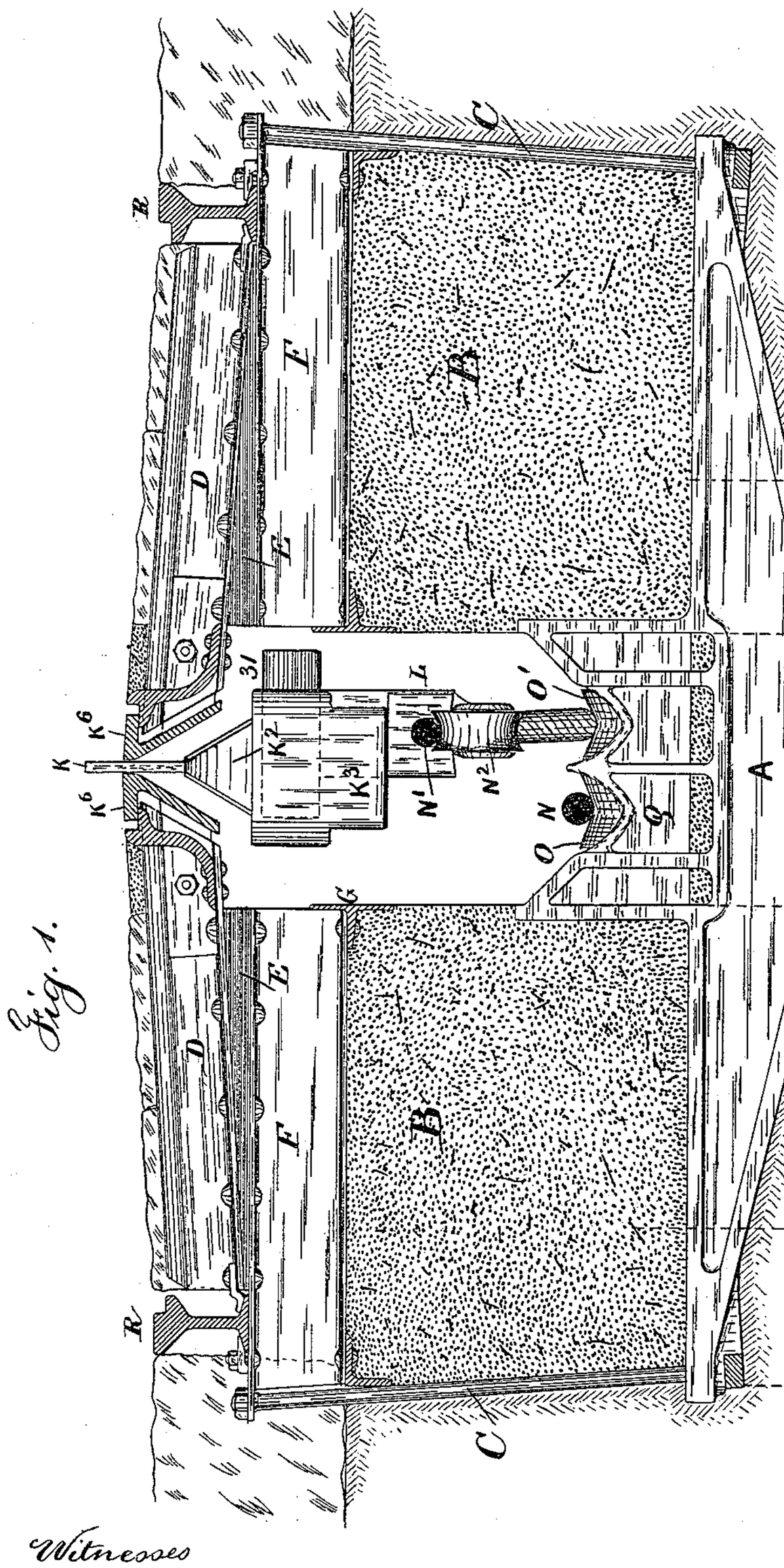


Fig. 1.

Witnesses
Chas. H. Smith
J. Staib

Inventor
John H. Pendleton
per Lemuel W. Serrell
atty

(No Model.) 4 Sheets—Sheet 2.

J. H. PENDLETON.

CABLE RAILWAY.

No. 436,104. Patented Sept. 9, 1890.

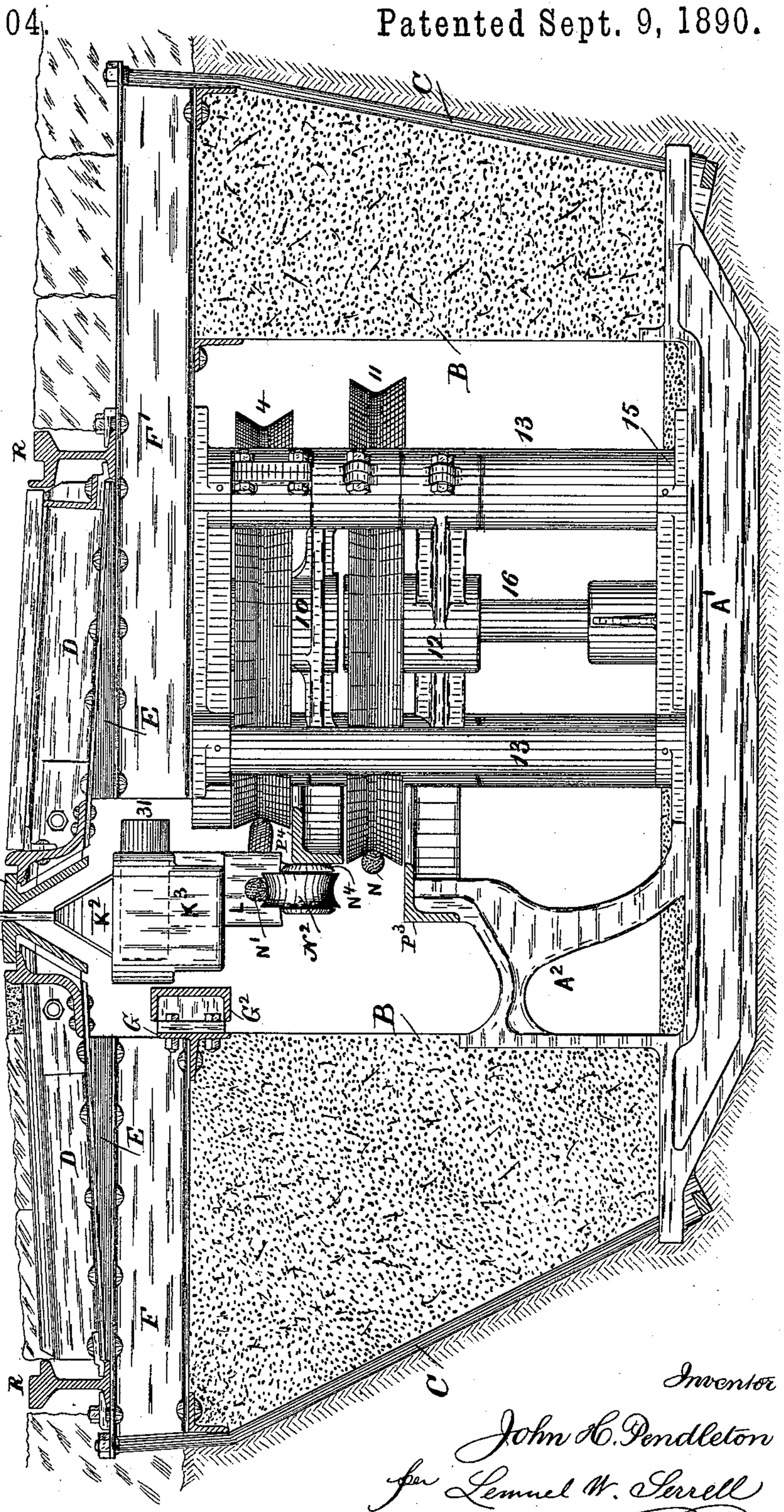


Fig. 2.

Witnesses
Chas. A. Smith
J. Stair

Inventor
John H. Pendleton
per Lemuel W. Serrell
atty

(No Model.) 4 Sheets—Sheet 3.

J. H. PENDLETON.

CABLE RAILWAY.

No. 436,104. Patented Sept. 9, 1890.

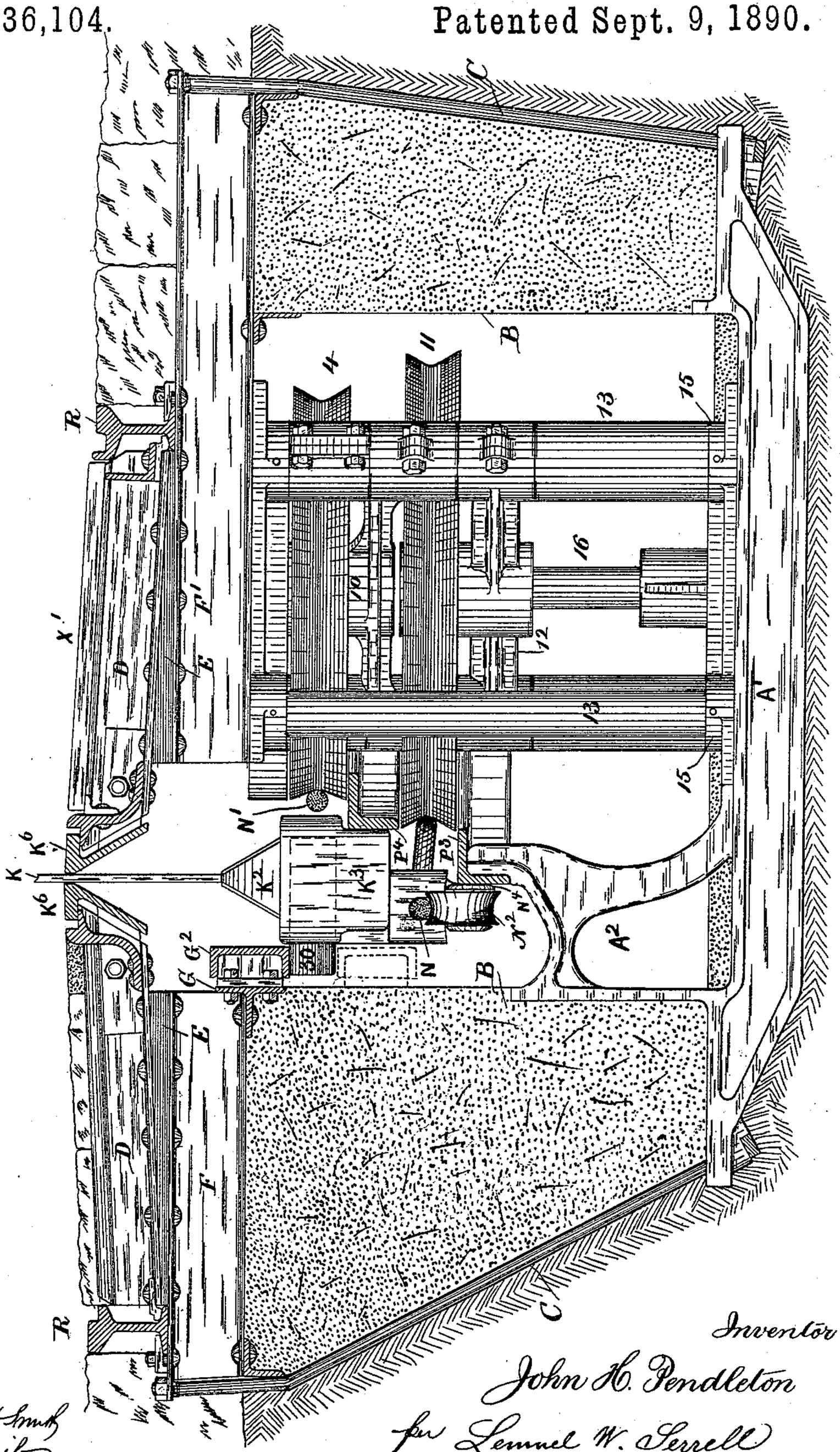


Fig. 3.

Witnesses
Chas. H. Smith
J. Stalb

Inventor
John H. Pendleton
per Lemuel W. Serrell
atty

(No Model.) 4 Sheets—Sheet 4.

J. H. PENDLETON.

CABLE RAILWAY.

No. 436,104. Patented Sept. 9, 1890.

Fig. 4.

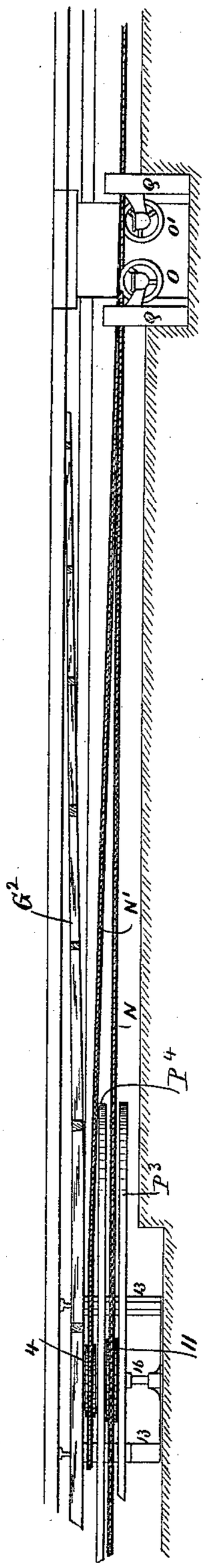
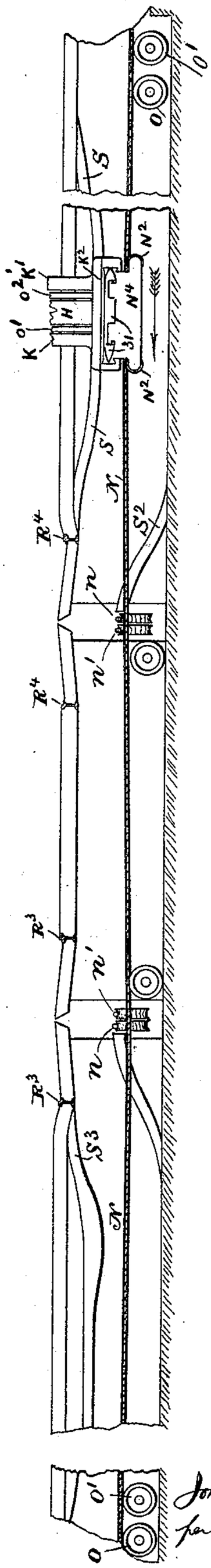


Fig. 5.



Witnesses
Chas. H. Smith
J. Stair

Inventor
John H. Pendleton
per L. W. Serrell
Atty

UNITED STATES PATENT OFFICE.

JOHN H. PENDLETON, OF BROOKLYN, ASSIGNOR TO THE RAPID TRANSIT CABLE COMPANY, OF NEW YORK, N. Y.

CABLE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 436,104, dated September 9, 1890.

Application filed March 27, 1890. Serial No. 345,467. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. PENDLETON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Cable Railways, of which the following is a specification.

In my application, Serial No. 344,324, filed March 18, 1890, I have described a cable railway in which there are two cables running side by side and at the same level upon the straight portion of the track, in order that either cable may be connected by the grip to the car that is to be propelled thereby. Hence one train may be propelled by one cable and another by the other cable, thus dividing the work between the two cables, and in this instance the cable that is upon the outer side of the curved track runs at a lower level than the cable that is at the inner side of the track, the latter being raised and running upon wheels that are of smaller diameter, and in order to keep the grip mechanism in the proper position in relation to the cable such grip mechanism when connected with the cable that comes on the inside of the curve is raised by an upwardly-inclined track and it descends after passing the curve.

In my present improvements the cable which is at the inner side of the curve and runs upon the smaller wheels is at the same level, or nearly so, as the cable and grip mechanism upon the straight track, and the cable which is at the outer side of the curve is depressed so as to pass around upon the wheels of larger diameter, and the grip mechanism is counterpoised so that the tendency of the same is to rise, and when connected with the cable at the outer side of the curve such grip mechanism is forced downwardly by the action of a downwardly-inclined stationary track. I also provide for raising the grip mechanism after it is disconnected from the cable, in order that such grip mechanism may be lifted over the cables that cross above the cable with which the grip had been connected, and such grip is depressed automatically after the car has gone over the crossing, so as to be again in position for gripping the cable.

In the drawings, Figure 1 is a vertical section transversely of the trench upon the straight track. Fig. 2 is a similar view at the commencement of the curved track, showing the grip as connected with an upper and inner cable. Fig. 3 is a similar view showing the grip as connected with the outer and lower cable. Fig. 4 is a longitudinal section in smaller size, illustrating the downward incline for acting upon the grip mechanism; and Fig. 5 is a section of the trench at an intersection with crossing tracks, illustrating the manner in which the respective cables pass by each other.

Reference is hereby made to my application, Serial No. 344,324, filed March 18, 1890, for cable-railway trenches for a general description of the trench, the parts next described corresponding generally to those in the said application.

The buckstays A A′ are below the trench, and upon them rest the concrete filling B at the sides of the trench, and the stay-bolts C extend up to the wrought-iron beams F F′, above which are the wedge-bars E and the deck-beams D, at the ends of which are the slot-rails K^6. The tracks are represented at R and removable plates at X′, which are above the wheels 4 and 11, around which the cables N N′ pass, and these wheels 4 and 11 are supported by the frames and columns 13, that rise above the sockets 15 on the bed, and there are cross-bearers 10 and 12 between the respective columns for supporting the shaft 16 of the wheels. These wheels 4 and 11 and their supports are to be applied around the inner side of the curved track, and upon the straight track there are to be buckstays A and supports or frames Q for the cable-wheels O O′, and a reference is hereby made to the said application for a more full description of these parts.

In my application, Serial No. 344,325, filed March 18, 1890, I have represented a gripping device that is capable of gripping either one of two cables, and this gripping device is counterpoised so that the tendency is to rise when unacted upon by downwardly-inclined bars or rails. I have represented such gripping device as provided with a grip-block N, with rollers or pulleys N^2 at the ends, a frame K^2 K^3, supported by the end plates K K′, and vertical rods O′ O^2, by which the gripping

mechanism is to be actuated, and upon the grip-frame L there are bars 30 and 31, extending longitudinally and tapered at their ends, and one of these bars 31 projects at one side, as shown in Fig. 1, at the time the other bar is drawn in between the frames K^2 K^3, and this other bar 30 projects, as seen in Fig. 3, the bar 31 being within the frame K^2 K^3, the grip mechanism having been shifted laterally from the position shown in Fig. 1, where it is connected with the cable N', to the position shown in Fig. 3, where it is connected with the cable N.

The special features of the present invention are illustrated in Figs. 2 and 3, wherein there is shown a downwardly-inclined track G^2, beneath which the projection 30 passes, and this downwardly-inclined track is represented in Fig. 4, in which its position in relation to the cable N is indicated; but this downwardly-inclined track G^2 is secured to the angle-iron G and iron beams F upon the side of the trench opposite to the wheels 4 and 11, and adjacent to these wheels 4 and 11 are the guide-rails P^3 P^4, which are adjacent to the lower edges of the wheels 4 and 11, respectively, and their ends are curved backwardly at the entrance end of the curve upon the track, and they are fastened to the braces A^2 in the buckstays and to the respective columns and frames supporting the wheels 4 and 11.

Upon reference to Figs. 1 and 2 it will be seen that the grip mechanism is connected with the cable N', and upon the curved portion of the track this cable N' travels upon the same level, or nearly so, as it does when upon the straight track, it being understood that the grip mechanism is sustained at sufficient height above the cable-wheels O O' to lift the cable and travel along with it, and when the grip mechanism arrives at the guide-rail P^4 the side of the grip-block N^4 runs against the rail P^4 with the cable N' in position for passing into the groove of the wheel 4, and when the grip mechanism passes onto a straight line beyond the curve such mechanism remains at its normal level. If, however, the grip mechanism has hold of the cable that comes upon the outer side of the curve, the parts assume the position indicated in Fig. 3—that is to say, the bar 30 passes beneath the downwardly-inclined track G^2, which carries the grip mechanism downwardly and bodily, and by the time such grip mechanism arrives opposite the wheel 11 it has been depressed by the track G^2 until the gripping device which has hold of the cable N is in line with the groove of the wheel 11, and the side of the grip-block N^4 is drawn by the action of the cable against the guide-rail P^3 as the parts travel around the curve, and as soon as the grip mechanism passes by the curve and from beneath the track G^2 the grip mechanism and cable are raised bodily by the counterpoise, so as to be above the cable-wheels O and adapted to pass over such cable-wheels and their supports without coming into contact with them.

If the grip mechanism is connected to the cable N', Fig. 2, and passes around the curve to the right hand adjacent to the wheel 4 and thereafter such grip mechanism is caused to pass around a curve in the opposite direction, there must be sufficient distance between the end of one curve and the commencement of the next curve for a downwardly-inclined track G^2 to act upon the bar 31 to depress the grip mechanism and cable, in order that it may pass around the lower and larger wheel 11 of such curve, the cable N' at that time becoming the outer cable upon the curve and the cable N running against the upper and smaller wheel 4 and becoming the inner cable upon such curve. There will, however, always be room enough for the cables to pass by each other between the compound curves, as they lead from the upper wheel of one curve to the lower wheel at the next curve.

In cases where the mechanism that tends to lift the gripping device and the cable is not sufficiently strong to entirely counterpoise the weight of the cable and the gripping mechanism the bar 30 or 31 may run between two inclined tracks, the lower one being indicated by dotted lines in Fig. 3; but it is usually preferable to sufficiently counterpoise this grip mechanism so it tends always to lift the same when not otherwise acted upon, and this is particularly advantageous in crossing intersecting tracks, as indicated in Fig. 5.

I have shown crossing tracks R^3 R^4, with which the cables n n' are made use of, and as these cables n n' pass over the cable N there will not be any special provision needed at the crossings for the grip mechanism connected with such cables n n'; but with the grip mechanism connected with the cable N it is necessary to disconnect such grip mechanism before reaching the crossing, and the grip mechanism requires to be depressed in order that the grip may be disconnected and so that the grip may not lift the cable N into contact with the cables n n' to cause the same to chafe, and with this object in view I make use of the downwardly-inclined guide-rails S to act upon the grip mechanism after the same passes the cable-wheels O O' and holds such grip mechanism down until it comes into proximity with the crossing, at which moment the attendant disconnects the grip from the cable, and the grip mechanism is raised bodily by its counterpoise so as to pass over the crossing cables n n' to the opposite side of the intersecting tracks, and the upward incline S^2 insures the proper raising of the grip, and after the grip mechanism has passed the intersecting tracks the bar 30 or 31 runs under the depressing inclined guide-bar S^3, which carries the gripping mechanism down sufficiently far for the grip to be hooked under the cable and connected thereto, and this depressing-incline S^3 does not extend to the next set of cable-wheels O O', so that by

the time the car arrives at such cable-wheels the grip mechanism has been raised automatically and sufficiently to pass over such cable-wheels.

The devices shown in Fig. 5 are adapted to the cable and gripping mechanism when traveling in the direction indicated by the arrow, and it is to be understood that the positions of the inclined guide-rails S S^2 S^3 will be the same in relation to the direction of motion upon the adjacent track, so as to accommodate the car passing in opposite direction along such adjacent track.

I claim as my invention—

1. The combination, with the cables and the cable-wheels O O′, for supporting the same within the trench, of the wheels 4 and 11, with which the cables pass in contact at the curved portions of the track, a gripping mechanism adapted to grip either one cable or the other, and a stationary downwardly-inclined track for carrying the grip mechanism and cable downwardly to the cable-wheels 11, substantially as set forth.

2. The combination, with the cables N N′ and cable-wheels 4 and 11, of the stationary downwardly-inclined track G^2 upon the side of the trench opposite to the wheels 4 and 11, the guide-rails P^3 P^4, adjacent to such cable-wheels 4 and 11, and a grip mechanism adapted to gripping either cable and traveling with the same adjacent to one of the guide-rails, substantially as set forth.

3. The combination, with the trench structure, the cable, and the supporting-wheels for such cable, of a vertically-moving grip mechanism and automatic means for counterpoising the grip mechanism and raising the cable, a stationary and downwardly-inclined rail, and a projection upon the grip mechanism to run under the stationary rail and depress such grip mechanism, substantially as specified.

Signed by me this 24th day of March, 1890.

J. H. PENDLETON.

Witnesses:

GEO. T. PINCKNEY,

WILLIAM G. MOTT.