

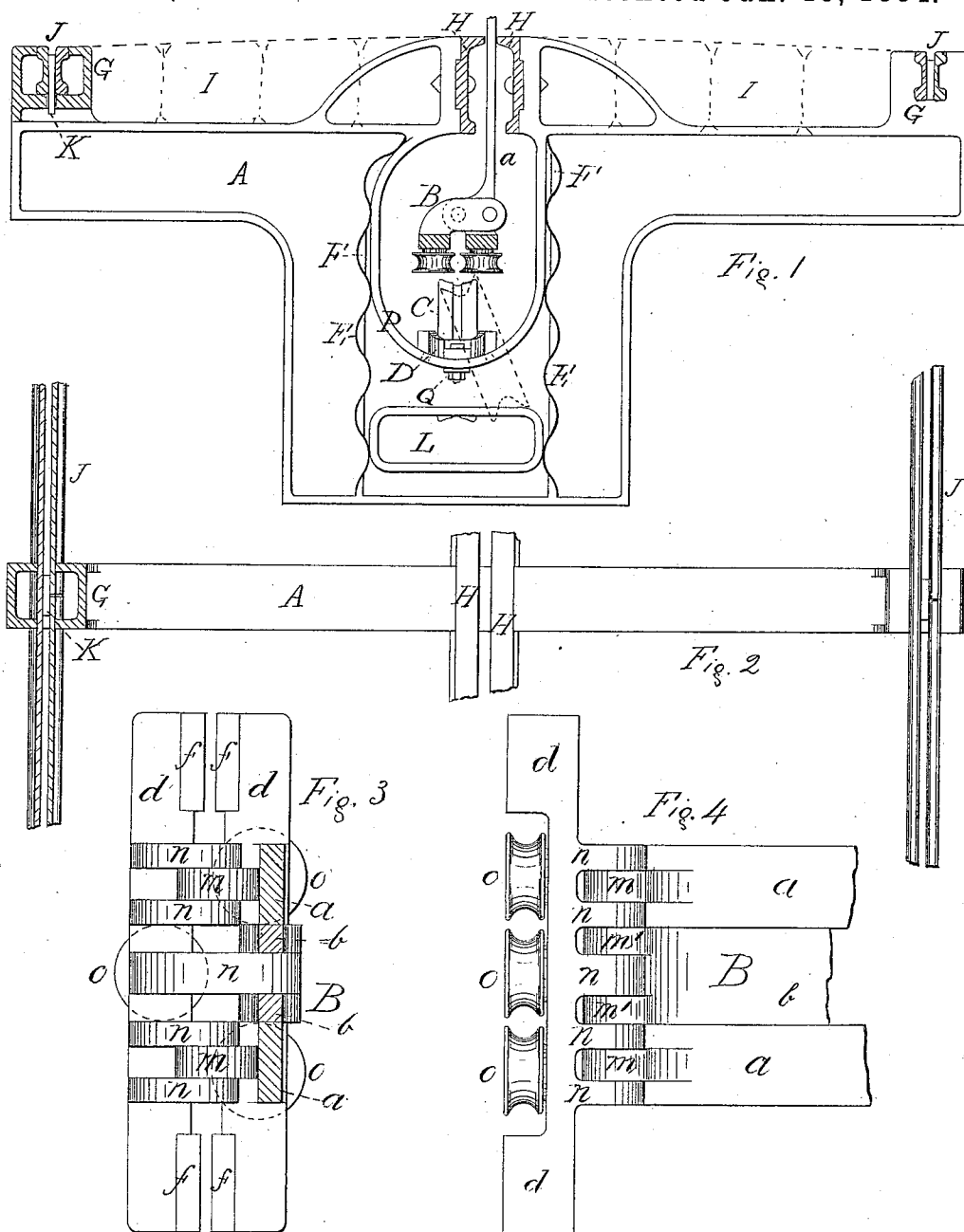
(No Model.)

2 Sheets—Sheet 1.

W. W. HANSCOM.  
CABLE RAILWAY PROPULSION.

No. 291,898.

Patented Jan. 15, 1884.



Witnesses  
Geo. O. Hanscom  
Abbie F. Hanscom.

Inventor  
William Wallace Hanscom

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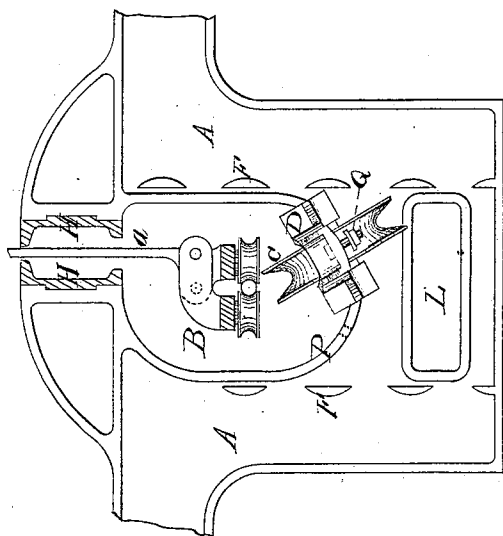


Fig. 7

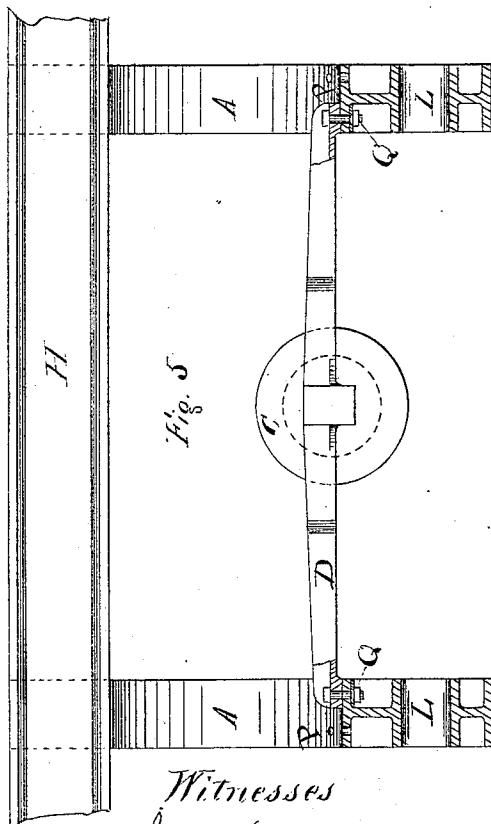


Fig. 5

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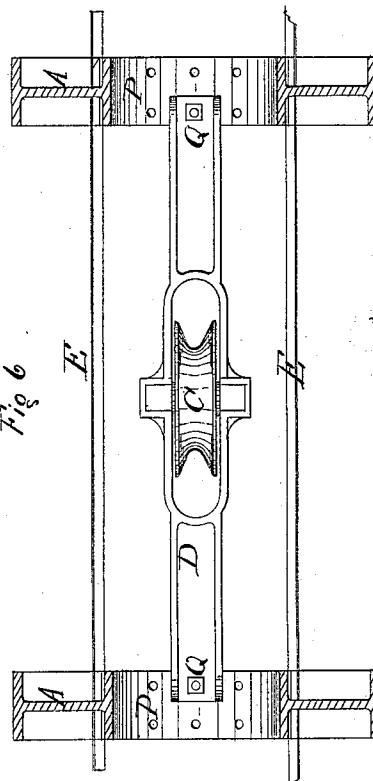


Fig. 6

Inventor  
William Wallace Hanscom

# UNITED STATES PATENT OFFICE.

WILLIAM WALLACE HANSCOM, OF SAN FRANCISCO, CALIFORNIA.

## CABLE-RAILWAY PROPULSION.

SPECIFICATION forming part of Letters Patent No. 291,598, dated January 15, 1884.

Application filed September 19, 1883. (No model.) Patented in England August 16, 1882, No. 3,927, and November 29, 1882, No. 5,690.

*To all whom it may concern:*

Be it known that I, WILLIAM W. HANSCOM, of the city and county of San Francisco, State of California, have invented an Improvement in the Propulsion of Cars or Trains on Cable-Railways; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to a mode of constructing and operating the permanent way and gripping apparatus and mounting the traveling cable and carrier-sheaves therefor in a rail or tram way operated by a stationary power through an endless cable; and it consists in the construction of the frame for the tube and arrangements thereon for supporting the carrier-sheaves, so that they may be adjusted to suit the direction which the cable may move in, and also for any curve which may be necessary in laying the railway through sinuous streets or roads; also, in the construction of the gripping apparatus to operate in conjunction with the adjustable sheaves.

In the accompanying drawings, illustrating my invention, Figure 1 represents an elevation of one of the frames composing the tube, having a vertical section through the irons forming the slot, the rails, and through one of the chairs which support the rails. Fig. 2 is a plan view of the same, showing a horizontal section through one of the chairs and the rails which it supports. Figs. 3 and 4 are enlarged views of the grip which operates with the carrier-sheaves and frame for carrying them, Fig. 5 being a longitudinal vertical section, Fig. 6 being a longitudinal sectional plan, and Fig. 7 a cross-section, showing an end view of the frame D and carrier-sheave C in an inclined position for a curved portion of the road, the positions in Figs. 5 and 6 being vertical for a straight part of the road, it being obvious that the sheave may be inclined in either direction to suit the direction in which the curved road extends.

Similar parts are referred to by similar letters in both sheets.

In the present method and construction of passing curves with the usual construction and arrangement of propelling apparatus, it becomes necessary to place, at intervals along

the curved portion of the road, sheaves whose axes are vertical, that the cable may be retained in a proper horizontal position, and if the road is sinuous, or has curves in both directions laterally, these side sheaves are necessary for both sides of the rope-tube, and the rope or cable must necessarily cross from one side of the tube to the other in passing curves in both directions, thereby exposing the cable to whatever dirt may drop down upon it through the slot. Where roads are constructed with a single line of track, and both parts of the cable lie in the same tube, it would be impossible to use these side pulleys for both ropes, as the grip would necessarily lift the rope above them in passing curves, and this I obviate by having a grip which is open at the bottom for the admission and release of the cable, in connection with a deeper-grooved carrier-sheave, when the roads become curved, the action being to raise the cable such a slight distance above the edge of the pulley that the cable will drop back into its carrier-sheave before the grip passes away from it far enough to allow the cable to fall without the groove of the sheave.

A is the frame of the tube, made of cast-iron, and which is cast in one with it, the extensions forming sleepers, on which are the chairs G, so formed that the rails J J, when dropped into them, can be firmly secured by inserting the wedge K, thereby dispensing with bolts, and the rail being made in two parts, the joints are arranged so that they come opposite the center of another rail, thus forming practically a continuous rail, and avoid the shock or jar usually occurring in passing over the joints. By this construction of rail and chair the frame can easily be placed radially with any curve without any necessity of drilling or punching holes in rails, as when they are bolted to the chairs, and any degree of exactness desired may be obtained in so placing the frames that when the frames D, which support the axes of the carrier-sheaves, are set in their places the proper direction for the sheave to be in for the guidance of the cable will be obtained. The carrier-sheaves C, when required for curves, will have a slightly deeper groove, and be inclined, as shown by the dotted line, and the frame D will be oscillated along the curved

slot, and secured by the bolts designed for this purpose, holes being cast at intervals in the flange in the making of the frames, so that the frames A may be placed indiscriminately anywhere along the line of road, whether it may be straight or curved, and the carrier-sheave can be put in its place without further machine-work.

E E are corrugated sheets of iron extending from one frame to another, and supported by the lugs or stops F F. An opening, L, is made through the web of the frame, to allow water to run through the tube.

P is the semicircular portion of the frame, having holes at intervals through the flange, for bolting the frame D by means of the bolt Q. The channel-irons H H, forming the slot, are riveted to the flanges of the frame. The dotted lines I I indicate the line of the surface of the pavement, it being somewhat higher near the slot than at the rails, so that any water may run away from the slot.

B is the grip, with its shank *a*, shown in a larger scale in Figs. 3 and 4, where *a a* is the shank, with the lugs *m m* and jaws *d d*, one of which is movable, being hinged to the shank by the lugs *n n n n*, the center lug extending to and being clasped by the two lugs *m' m'* of the slide *b*.

O O O are the rollers for holding and guiding the cable when not gripped by the dies *f f f*, which are removably fastened to the jaws *d d*, so as to be renewed when worn. Ordinarily rollers for guiding the rope are arranged with springs to yield when the jaws of the grip are pressed so as to nip the cable; but in this case the rollers are arranged to pass by one another, and the flexibility of the cable will yield sufficiently to allow the jaws to come together and firmly hold the rope.

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

1. The frame A, with the lugs F, opening L, and the extensions, with the chairs G and rails J J and wedges K K, in combination with the grip B, carrying-sheave C, and frame D, sub-

stantially as described, and for the purpose set forth.

2. In a cable-railway, the frame A, having the opening L and the curved surface P, with bolt-holes in the flanges, and adapted for receiving the end of an angularly-adjustable frame, D, containing a carrier-sheave, C, substantially as and for the purpose set forth.

3. The frame A, having the opening L and the curved surface P, with bolt-holes in the flanges adapted to receive the end of an adjustable frame, in combination with the angularly-adjustable frame D, bolt Q, and carrier-sheave C, for the purpose of inclining the carrier-sheave where the road is curved, substantially as shown and described.

4. The frame A, carrying the adjustable sheave C, in combination with the grip B, substantially as and for the purpose specified.

5. The grip B, with its rollers O O O, jaws *d d*, and lugs *n n n n*, having a bottom opening of the jaws, substantially as described.

6. In a cable-railway having an underground slotted tube, the grip B, having its opening for the reception and discharge of the rope at the bottom, and having its jaws operated by a vertically-moving slide, *a*, through the slot of the tube, in combination with one or more adjustable inclined sheaves, C, and one or more traveling endless ropes, substantially as described and set forth.

7. The grip B, in combination with the angular adjustable sheave C and frame D, substantially as described, and for the purpose set forth.

8. The frame A, having the lugs F F, in combination with the corrugated-iron plates E E, substantially as described.

9. The construction and arrangement of the rails J J, in combination with the chairs G G and wedges K K, substantially as and for the purpose set forth.

WILLIAM WALLACE HANSCOM.

Witnesses:

JNO. O. HANSCOM,  
ABBIE P. HANSCOM.