(No Model.) 2 Sheets—Sheet 1.

J. H. PENDLETON.

CABLE RAILWAY.

No. 387,995. Patented Aug. 14, 1888.

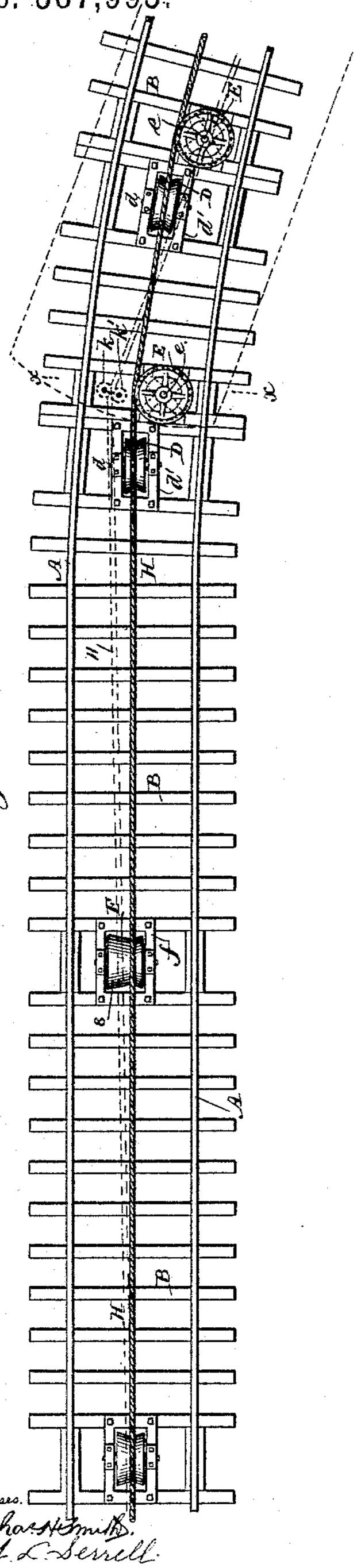


Fig. 1.

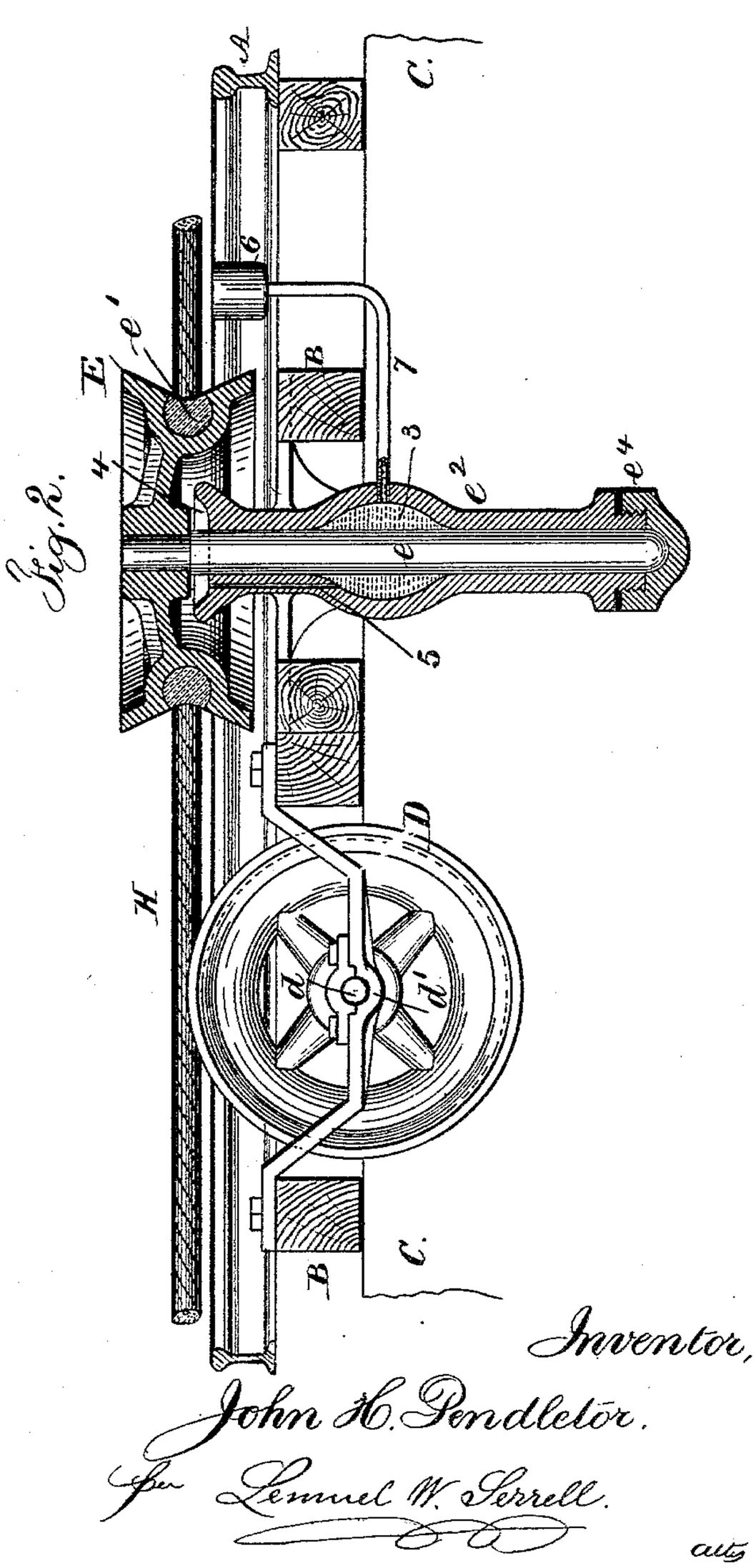


Fig. 2.

Witnesses.
Chas. H. Smith.
H. L. Serrell.

Inventor,
John H. Pendleton.
per Lemuel W. Serrell.
Attys

(No Model.) 2 Sheets—Sheet 2.

J. H. PENDLETON.

CABLE RAILWAY.

No. 387,995. Patented Aug. 14, 1888.

Fig. 4.

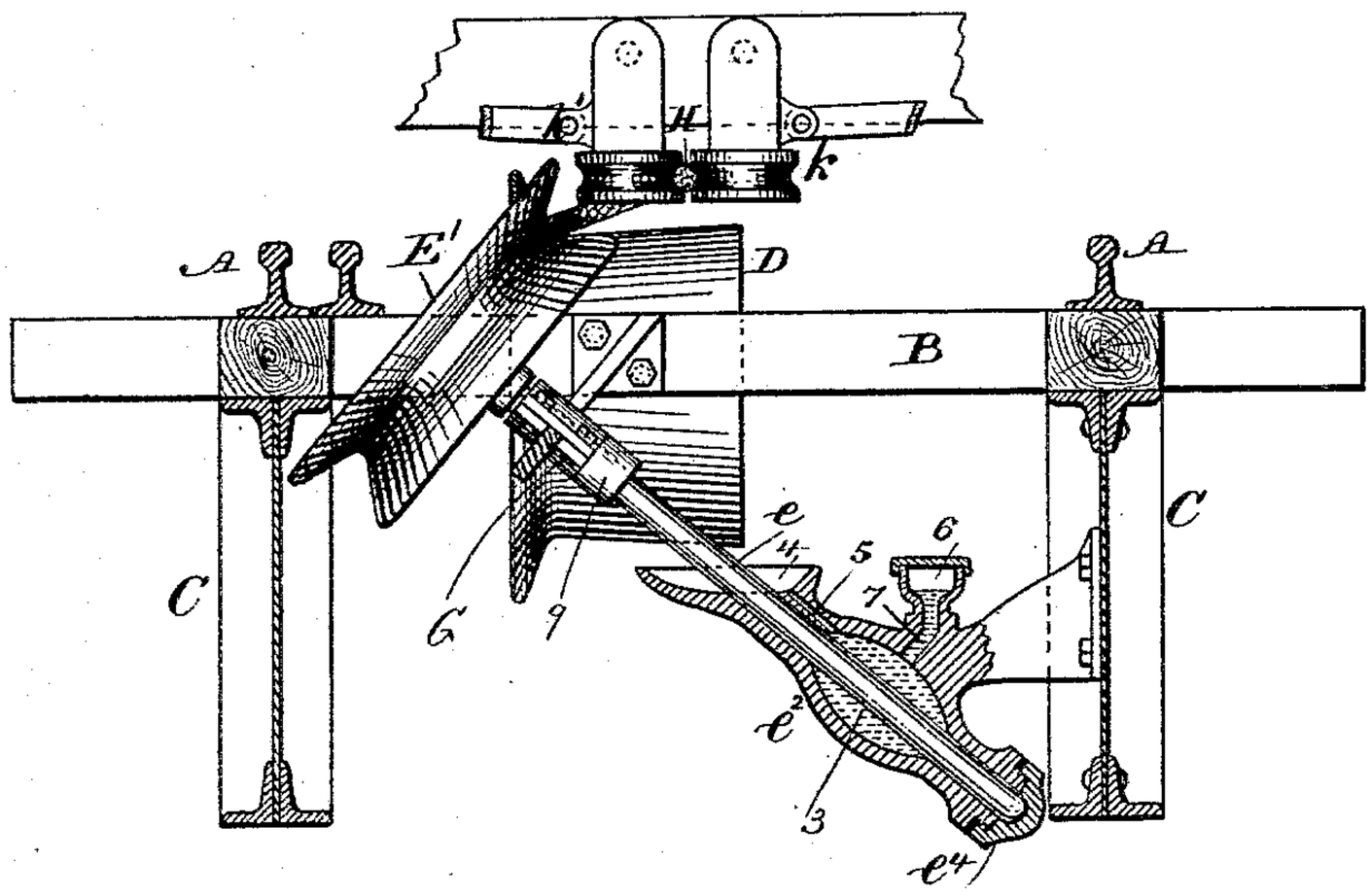
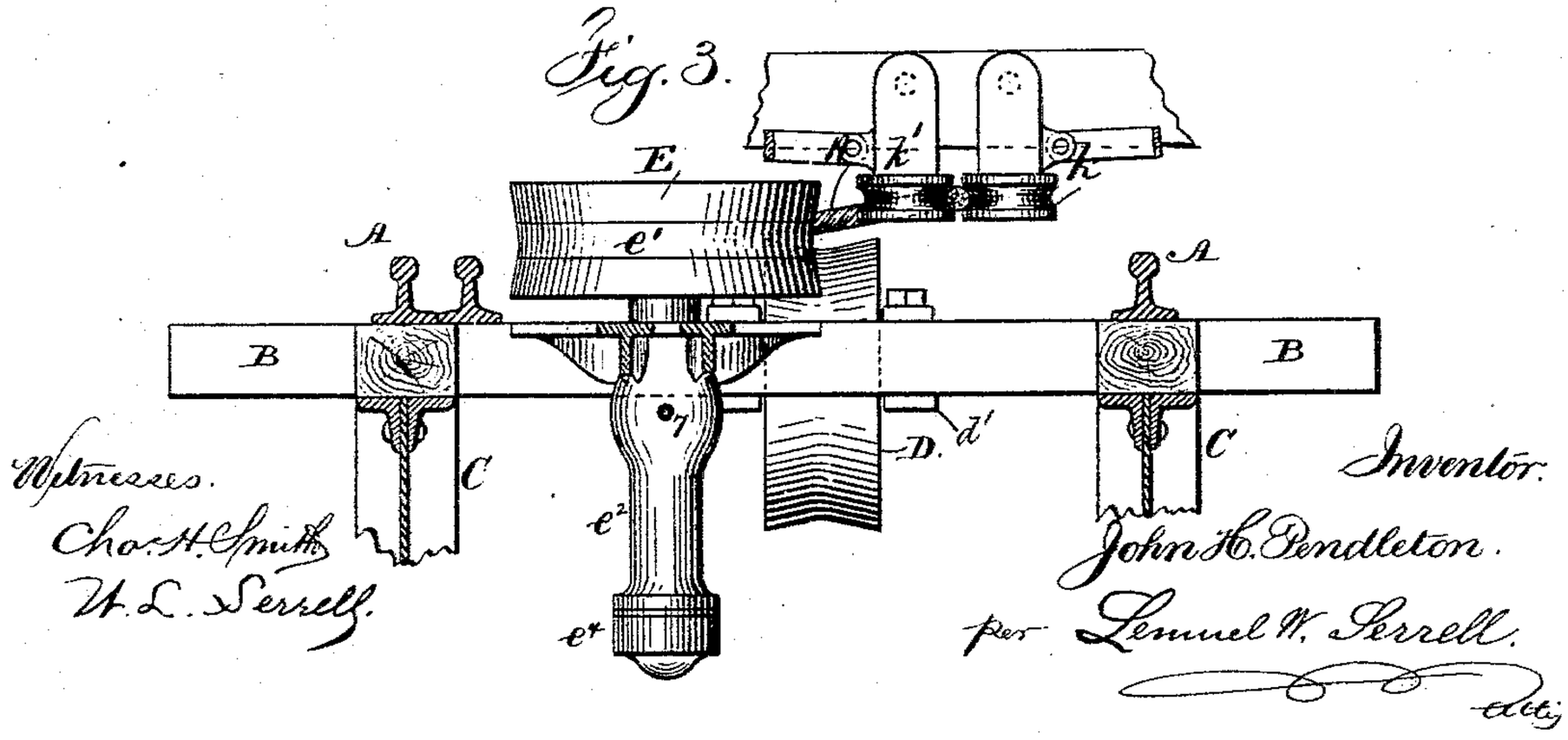


Fig. 3.



Witnesses.
Chas. H. Smith
H. L. Serrell.

Inventor.
John H. Pendleton.
per Lemuel 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. 387,995, dated August 14, 1888.

Application filed April 13, 1887. Renewed June 13, 1888. Serial No. 276,935. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. PENDLETON, of 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.

This improvement is made with special reference to guiding the cable as the same passes around a curve, and for allowing the cable as raised by the grip of the car to move without the gripping or guiding devices on the car coming into contact with the guide-rollers that remain in fixed positions upon the track.

In the drawings, Figure 1 is a plan of my improvement applied at the junction of a straight and curved track. Fig. 2 is an elevation of one of the guide-rollers upon a horizontal axis and a section of the bearing and the guide-wheel upon the vertical shaft. Fig. 3 is a cross-section of the track and elevation of the wheels at the line $x\,x$, Fig. 1; and Fig. 4 is an elevation of the wheels adapted to curves having a long radius, Figs. 2, 3, and 4 being in larger size.

My present invention is especially adapted to bridges and elevated-railroad structures in which the traction-cable is above the cross-ties and between the rails.

The rails A are represented as supported by the cross-ties B, and C represents a portion of the elevated-railroad structure.

The wheels D are of ordinary character, such wheels standing vertical upon a horizontal shaft, d, in bearings d'.

The horizontal wheels E are upon vertical shafts e, and the faces of these wheels are conical, the inclination being toward the center, where there is a peripheral groove filled with gutta-percha or equivalent material, e', similar to that shown in my Patent No. 341,501. The vertical bearing e^2 is tubular, and it receives the shaft e of the pulley E. This bearing is supported by suitable flanges and brackets to the cross-ties or other portions of the structure, and this tubular bearing is cup-shaped at the top, and there is an oil-chamber, 3, at the upper end and a channel, 5, connecting the cup 4 to the chamber 3; and 6 is an oil-cup, from which a pipe, 7, leads to the oil-chamber 3, so that the chamber 3 can be filled from time to time without stopping the wheel E, and the top of this oil-cup 6 is to be lower than the edge of the cup 4, so that oil cannot be overflowed at the cup 4, and the cup 6 will indicate the height of oil in the tubular bearing e^2. The step e^4 is screwed upon the lower end of the vertical bearing e^2, and it can be unscrewed and removed and another substituted should the parts become worn. One of these wheels E is to be placed adjacent to one of the wheels D at the commencement of each curve, and also in pairs at suitable distances apart all around the curve. The wheels D support the weight of the cable H, and the wheels E receive the lateral thrust due to the change of direction of the cable in passing around the curve, and the wheels E are between the center line of the track and the inner rail of the curve, and the guide-rollers $k\,k'$, which are upon the car near the ends thereof, are similar to those set forth in my application, Serial No. 218,031, and they guide the cable and raise it slightly off of the wheels D, and in going around a curve these guide-rollers $k\,k'$ are between the center line of the track and the outer rail of the curve; hence they do not come in contact with the horizontal wheels E, as illustrated by full lines in Fig. 3 and by dotted lines in Fig. 1; but the cable as it hangs down after a car has passed rests upon the wheel D, and it draws against the central filling, e', between the conical surfaces of the wheels E, thereby insuring the proper travel of the cable in passing around the curve.

There is a wheel, F, upon a horizontal axis supported in bearings f from the cross-ties B. This wheel F is somewhat similar to the wheel D; but it is broader upon its face, and there is a long conical surface, 8, extending from the middle of the track toward the outer rail at the end of the curve. The object of this is to receive and guide the cable after the cable has been carried bodily toward the outer rail by the guide-rollers on the car as it enters or leaves the curve of the track, so that the cable is sure to descend upon this conical surface 8 as the car passes along.

The device shown in Fig. 4 is to be used when the curve is very slight, the radius thereof being long. In this case the guide-rollers $k\,k'$, that are upon the platform of the car, will travel near the middle of the track, in-

stead of being swung considerably to one side, as illustrated in Figs. 1 and 3; hence there will not be sufficient room for the reception of the horizontal guide-roller E. I obviate this difficulty by using a grooved guide-roller upon an inclined axis, *e*, as seen at E′, Fig. 4, and the parts of the bearing for the shaft are the same as before described, except that the cup 4 at the upper end is at an inclination. The bearing G immediately beneath the grooved wheel E′, is of any desired character, and there is a collar, 9, firmly fastened upon the shaft *e*, immediately below the bearing G, to prevent the shaft *e* being drawn out of its bearings.

The grooved wheel E′ supports the cable as it travels along between the slightly-curved tracks, because the upper flange of said grooved wheel is at a slight inclination passing over the cable; hence the lateral strain of the cable against this flange draws the cable down to the bottom of the groove and prevents said cable slipping out from this groove, and the wheel E′, being at an inclination, can be as large as the wheel E, and at the same time be out of the way of the guide-rollers and comparatively close to the inner rail of the curved track.

By these improvements I am able to properly guide the traction-cable upon the curved portions of the railway structure, whether those curved portions are short or long radii.

I claim as my invention—

1. The combination, with the track, the traction-cable, the car, and the guide-wheels *k* *k′* near the end of the car, of the wheels between the center and the inner rail of the curved track, against which the cable travels in passing the curve, and adjacent wheels to support the weight of the cable, substantially as specified.

2. The combination, with the guide-wheel having inclined or conical faces for the traction-cable, of the tubular bearing e^2, having an oil-chamber, 3, cup 4, and channel 5, and the oil-supply cup 6 and pipe 7, substantially as set forth.

3. The combination, with the railroad structure and traction-cable, of the guide-wheel F, having a long conical surface at the side of the wheel toward the outer rail of the track at the commencement of a curve, substantially as and for the purposes set forth.

4. The combination, with the guide-wheel D upon a horizontal axis, and having the long conical surface, of the grooved guide-wheel E′, the inclined axis for the same, the bearing G, and the collar 9, substantially as and for the purposes set forth.

Signed by me this 4th day of April, 1887.

J. H. PENDLETON.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.