W. EPPELSHEIMER.

Tube for Wire-Rope Railways.

No. 199,900. **Patented Feb. 5, 1878.**

Fig 1.

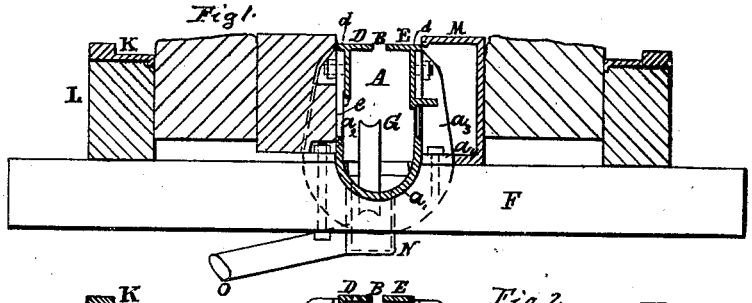


Fig 2.

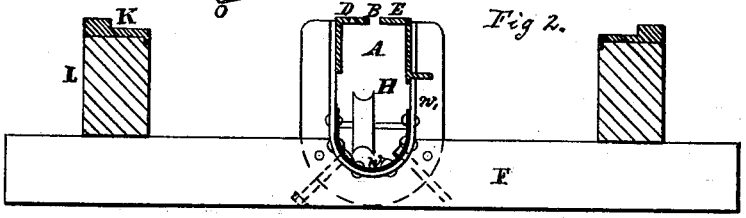
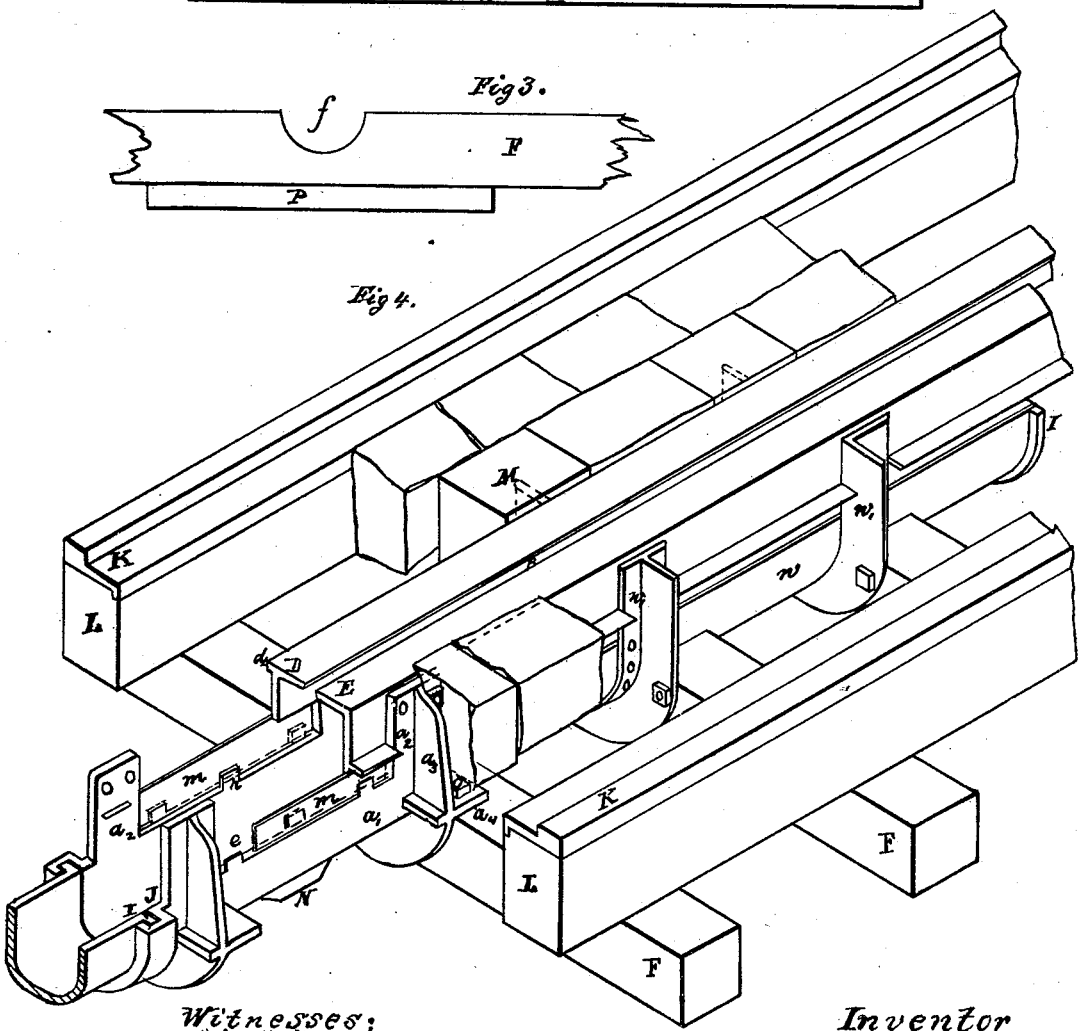


Fig 3.

Fig 4.



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UNITED STATES PATENT OFFICE.

WILLIAM EPPELSHEIMER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN TUBES FOR WIRE-ROPE RAILWAYS.

Specification forming part of Letters Patent No. **199,900**, dated February 5, 1878; application filed September 4, 1877.

To all whom it may concern:

Be it known that I, WILLIAM EPPELSHEIMER, of San Francisco, in the State of California, have invented certain new and useful Improvements in the Construction of the Tube and Track for Wire-Rope Railways; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to an improvement in the construction of the tube or tunnel in which the propelling-rope travels, in the ties which support the tube and the stringers with the rails, and in the paving-blocks, when such are to be used.

The object of my invention is to construct a track, or rather a tube, which enables the wooden ties of the track to run from rail to rail without being cut entirely through (which has been done heretofore) to make room for the tube. This construction is particularly important in transforming existing railroads into this system.

Another object of my invention is to reduce the distance between the rails and the center of the rope, and to utilize the entire space of tube from the upper side of the guide-rollers to the horizontal side or shank of the angle-iron, thus reducing the length of the car attachment, and so adding considerably to the strength of the same.

A tube has been made using cast-iron rings, angle-iron on the top, and a wooden gutter; but as the rings are contracted toward the top, (about five to six inches from the top or surface of the street,) from whence the angle-iron connects, this brings the rope considerably down below the surface of the rails; besides, each tie has to be cut away to make room for the tube.

Referring to the accompanying drawings, Figure 1 is a cross-section of the tube when made of cast-iron. Fig. 2 is a cross-section of the tube when made of wrought-iron. Fig. 3 shows a tie with a recess milled out to receive the tube. Fig. 4 is a perspective view of the track with the tube.

In the drawings, A is the tube, in which is placed the propelling-rope on guide-rollers G or H. The tube is either made of cast-iron or wrought-iron. The rolled beams on the upper side of the tube are of angle-iron D, or of **Z**-iron E, and are, in either case, always of wrought-iron. They form the opening or slot B, through which the car connects with the rope. I prefer to roll on those beams D or E a lip, *d*, on their upper side. The purpose of this lip will be hereinafter explained.

The cast-iron tube shown in Fig. 1 has for its lower part a cast-iron gutter, *a*, running along the entire tube. At suitable distances are upright brackets *a*, running straight up, nearly parallel, to about the surface of the street. The gutter and the brackets are further strengthened by a rib running all around. Where the bracket or gutter is flush with the upper side of the tie F, a flange, a^4, is made to fasten the tube on the tie. On the upper end of the brackets a^2 the angle-iron D, or **Z**-iron E, is fastened by screws or rivets. The gutter *a* is made so low that it forms openings *e* on the sides with the iron beams, through which access is had to the inside of the tube anywhere it may be desired.

These openings *e* may be closed by well-dressed paving-blocks or paving-planks, or by thin strips of wood or iron, *m*, and so preventing the paving-sand from falling into the tube when paving.

The wrought-iron tube shown in Fig. 2 has for its lower part a wrought-iron gutter, *w*, rolled to its proper shape. The ribs or rings *w'* are made of angle or **T** iron, shaped on their lower side to the shape of the gutter, and having straight vertical sides. The rings receive on the top the same kind of rolled beams as stated above. The rings *w'* are strongly riveted to the gutter *w*, and to the rolled beams. The rings *w'* are also strongly fastened to the ties F, as shown in Fig. 2. On the angle-iron D or **Z**-iron E, I preferably roll a small lip, *d*. (Shown in Fig. 1.) This lip rests on top of the brackets a^2 or rings *w'*, and prevents vehicles from striking directly against the brackets a^2 when crossing the track.

The different sections of the tube are connected together simply by a male and female joint I and J, as shown in Fig. 4, and without screws or rivets, as heretofore. The joints between are closed by rubber or pitch, to pre-

vent the water from leaking through the joint, and allowing the tubes to expand and contract. The tube A is placed between the stringers L to the ties F, which latter have recesses *f* worked out to receive the tube. The tube A, fitting in the recess *f*, is screwed to the ties, increasing the strength of both. Should the recess *f* be too deep in the ties F, then a plank, P, may be spiked on its lower side. On the outer ends of the ties F are the stringers L, with the rails K fastened in the usual way.

The stringers with the tube fastened on the ties in the above-described way form a very substantial track. The tube and rails will always keep their respective position to each other. Should one or the other side settle, they will keep their respective position; hence less room has to be made for the griping apparatus in the tube.

If it is desired to have larger pulleys G than the size of the tube allows, they are put in the pockets N, (between the ties,) made in the tube. The pockets are drawn by the pipe O into the sewer.

To guard the ribs a^4 and the brackets against injury, the paving-blocks M may be used. They are made of wood, &c., or, better, of iron or similar material, which admits of making them with the notches, &c., fitted in before they are brought to the ground, where they can be put right on their places. They may be cast hollow up to the top, and filled with gravel to allow the horses, &c., a hold. Between these blocks M and the stringers L may be common pavement or macadam.

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

1. In a wire-rope railway, the rope-carrying tube formed of a tube, *a*, with irons D or E connected thereto by brackets or rings, substantially as herein set forth.

2. The rope-carrying tube A, provided with side openings *e*, for the purposes herein set forth.

3. The combination of the tube A, having side openings *e*, and the paving-blocks M, constructed substantially as and for the purposes herein set forth.

4. The rope-carrying tube, made in sections, connected together by male and female joints I J, said joints being closed by rubber or pitch, substantially as herein set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 25th day of August, 1877.

WILLIAM EPPELSHEIMER.

Witnesses:
E. J. MOLERA,
FRANK GALT.