W. EPPELSHEIMER.

Wire-Rope Railway-Tube.

No. 199,901. Patented Feb. 5, 1878.

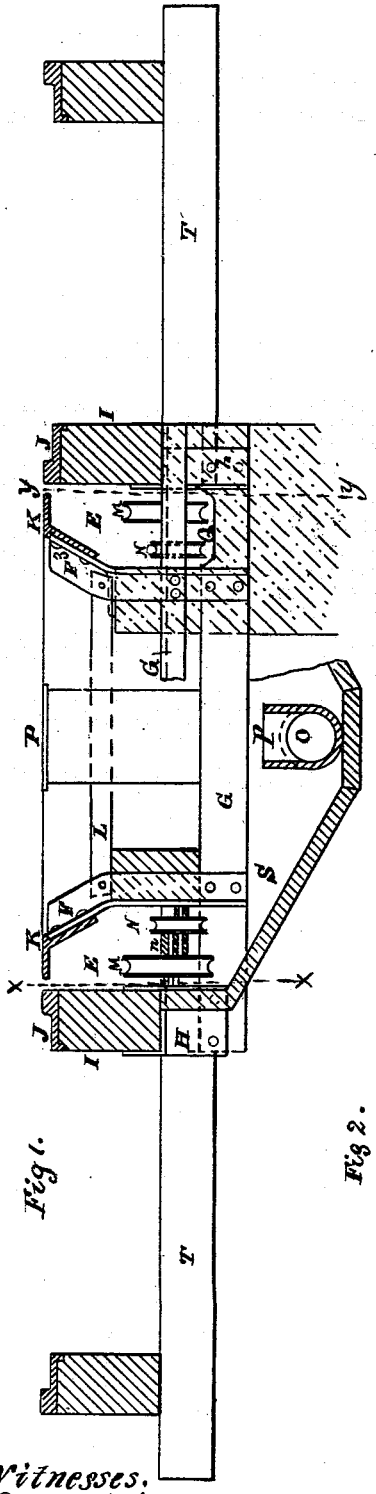

Fig 1.

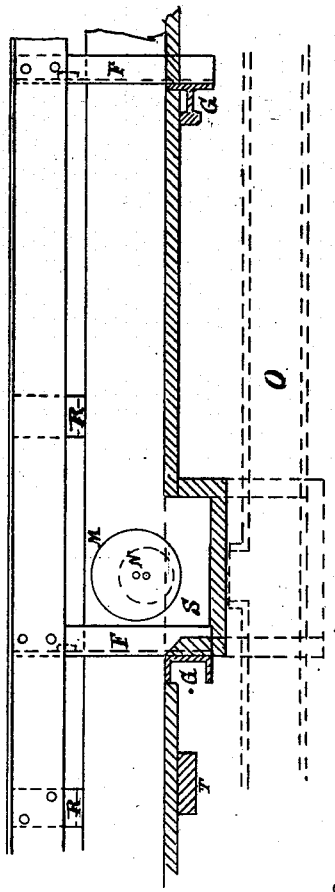

Fig 2.

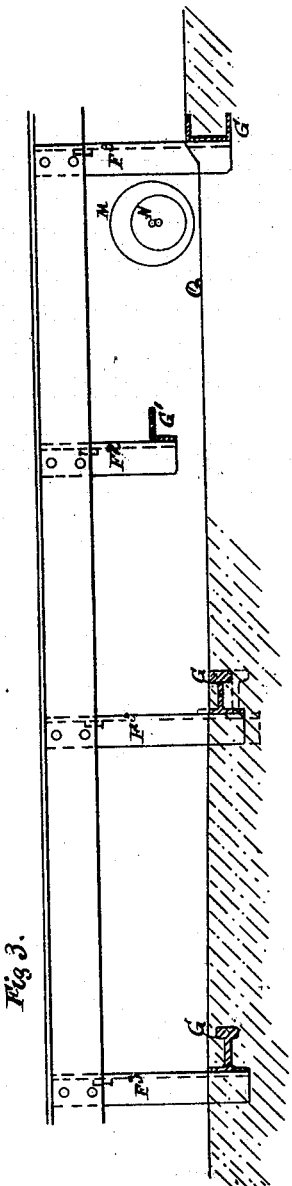

Fig 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM EPPELSHEIMER, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN WIRE-ROPE RAILWAY-TUBES.

Specification forming part of Letters Patent No. **199,901**, 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 and in the State of California, have invented certain new and useful Improvement 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 moves.

The object of my invention is to construct a tube outside of the track, and preferably between the said track, which is in most cases the center of the street. By laying the tube outside of the track nothing will interrupt the traffic during reconstruction of such roads.

My invention consists, mainly, in using one sill for the two tubes, besides connecting the uprights or ribs of the tube together by a brace-rod, so that any lateral or side strain on one of the uprights is transmitted to the opposite one.

My invention consists, further, in placing additional rope-carrying pulleys into the tube, to receive a reserve rope, to be put in motion if anything happens to the regular propelling-rope. I also make the uprights or ribs of different lengths, for a better construction. The tubes for this propelling system have been placed hitherto between the rails.

Referring to the accompanying drawing, Figure 1 is a cross-section of the tubes and the track. Fig. 2 is a longitudinal section through *x x* of the same, and Fig. 3 is a longitudinal section through *y y* of the same.

E E are the tubes, in which are placed the rollers on which the propelling-rope moves. The rope moves in one tube in the opposite direction to which it moves in the other tube.

F F F^3 F^3 are the uprights or ribs of the tube. The two standing opposite each other are always fastened to the same sill G. The uprights F F F^3 F^3 have on their top side the oblique angle-iron beams K, which form, with the rail J, the slots on lines *x* and *y*, through which the car is connected to the moving-rope.

Fig. 3 shows the upright F^2 shorter than the other. The purpose will be hereinafter explained. To increase the strength of the uprights against lateral strain, the two uprights, being fastened to the same sill, have a connection on the top by a bar, L.

The rails J are fastened in any suitable manner to the stringers I I, and these latter are secured to the sills G by means of cast-iron shoes H or wrought-iron bars *h*. The ordinary ties T give additional strength to the stringers.

The size of the rollers M, which carry the propelling-rope, is usually such that the griping apparatus has sufficient clearance to pass between the upper side of the roller and the horizontal flange of the angle-iron, and its lower side clears the gutter sufficiently to allow the latter to carry away the water and mud which pass through the slot. The gutter is usually above the sills G.

If it is desired to make these pulleys larger than the size of the tube allows, or to decrease the height of the tube, to reduce the construction expenses, and enable a better chance of cleaning the tube out, in such cases I use the construction shown in Fig. 1, left-hand side, and section, Fig. 2.

S is a pocket formed for the pulleys M or N in the gutter, and connected with a sewer-pipe, O. The latter is running between the tubes the entire length of track, and is connected to the street-sewer where convenient. Above the inlet-opening of the pocket S in the sewer-pipe O are hand-holes P, which allow cleaning of the pocket S and sewer-pipe O.

At the right-hand side of Fig. 1 and in Fig. 3, I have shown a construction whereby the tubes are accommodated to the varying inclinations or grade of the street. The sill G′, next to the guide-wheels, but below it with reference to the grade of the street, is placed higher—that is, its upright F^2 is shorter; but the sill is sufficiently below the upper edge of the guide-wheels to prevent the rope from touching it. If the fall in the street is very small, the next sill should be put as much lower than the regular level as to get sufficient fall, by running the gutter below the first sill and above the next, and those which follow, until the next pulleys are reached.

The gutter may be connected with the sewer-pipe between each set of pulleys, or at any suitable points, as may be desired.

The pulleys N are for reserve rope, which I put in the tube. In case anything may happen to the regular rope, the reserve rope will be taken up by the gripers, and the damaged rope thrown from the pulleys M to the bearings *n*, and the reserve rope put in rollers M. Afterward the damaged rope, after being repaired, may be used as reserve rope, and placed in pulleys N.

The auxiliary pulleys N may be placed on the same shafts or spindles as the main pulleys M, or upon independent shafts; but in either case I prefer to have them supported in the same brackets, to lessen the cost.

As the slots *x* and *y*, with respect to the rope attachment, are on the side of the vehicle, the traction force has a side strain on the vehicle, and has a tendency to put it out of the track. The flanges of the wheel counterbalance a part of this side strain. I may overcome the danger of getting the vehicle out of the track by putting a guide or guide-wheel from the vehicle into the slot.

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 combination of the sill G and the uprights F F F^3 F^3, fastened to it, for the purposes herein set forth.

2. In a wire-rope railway, the two tubes containing the ropes and pulleys, in combination with a common sill, G, for the purposes herein herein set forth.

3. The combination of the uprights F F^3, sill G, and bar L, as and for the purposes set forth.

4. In a wire-rope railway, the arrangement of the tube containing the rope outside of the track, for the purposes herein set forth.

5. In a wire-rope railway, the combination, with the sills, of a series of uprights of varying length, supporting the rope-carrying tubes, for the purpose of accommodating the railway to the fall of the street, as herein set forth.

6. In a wire-rope railway, a gutter arranged to run under certain of the sills and above certain other sills, 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.