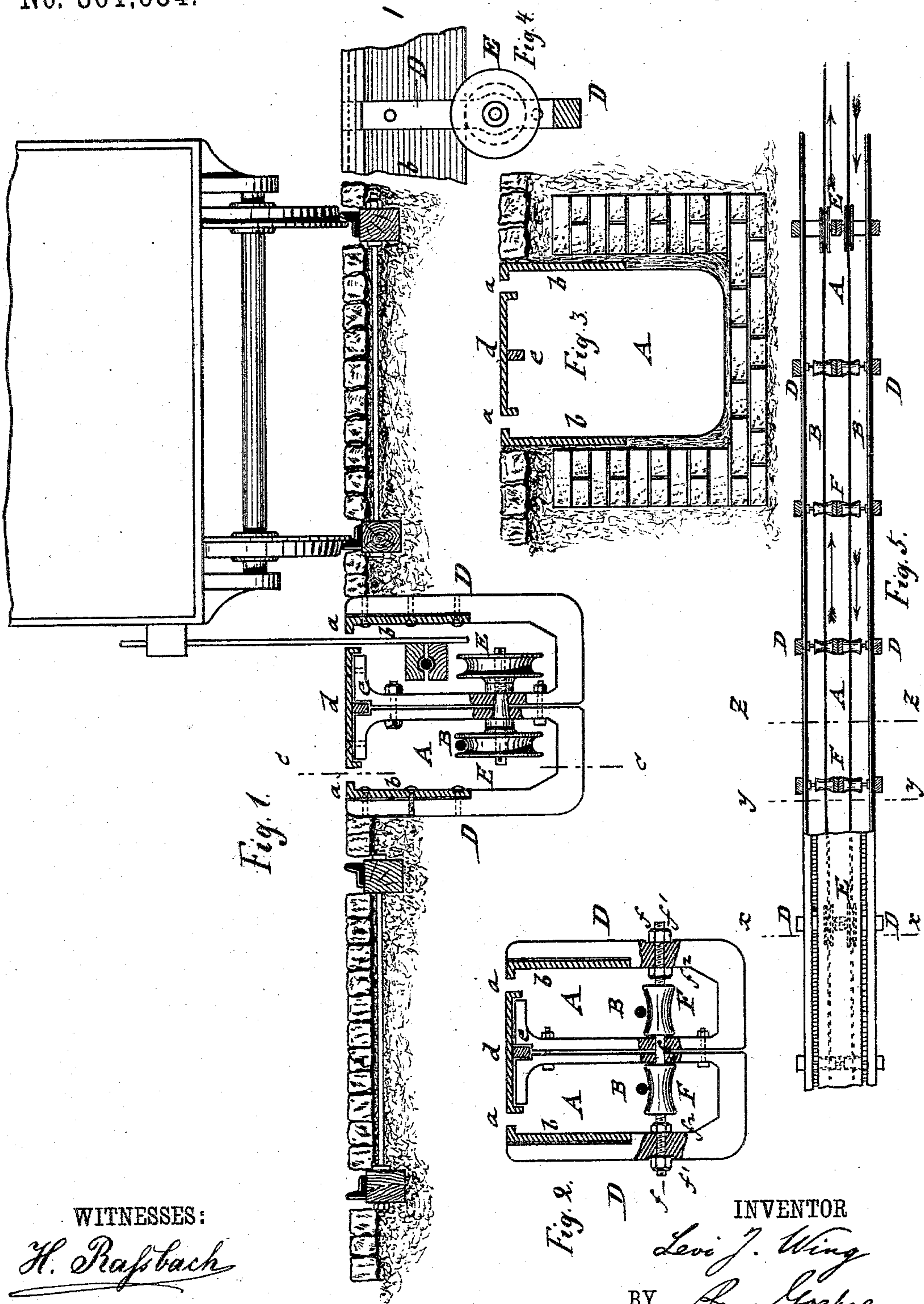


(No Model.)

L. J. WING.  
ENDLESS CABLE RAILWAY.

No. 301,654.

Patented July 8, 1884.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

LEVI J. WING, OF BROOKLYN, NEW YORK.

## ENDLESS-CABLE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 301,654, dated July 8, 1884.

Application filed July 24, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, LEVI J. WING, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful  
5 Improvements in Endless-Cable Railways, of which the following is a specification.

This invention has reference to certain improvements in endless-cable railways, whereby the construction of the same is considerably simplified and rendered less expensive, so  
10 as to be adapted in a higher measure for city railways than the systems of cable railways heretofore in use; and the invention consists of a double tunnel for endless-cable railways,  
15 constructed of double yokes connected at their adjoining legs, and of top and side plates that form longitudinal slots for the gripping attachment. The tunnel-supporting yokes carry at suitable intervals sheaves or pulleys for  
20 guiding and carrying the cable. The intermediate yokes carry idlers or rollers to catch and support the cable in case it drops from the larger sheaves. The tunnel itself is constructed of side and top plates supported by  
25 a double yoke and a longitudinal center bar, the yoke being transversely braced and stiffened at suitable intervals by screw-rods, which also form the shafts of the rollers or idlers.

In the accompanying drawings, Figure 1  
30 represents a vertical transverse section through the tracks of a street-railway, showing a double tunnel arranged between the tracks, and shown in section on line *x x*, Fig. 5. Figs. 2 and 3 are vertical transverse sections of the double  
35 tunnel on lines *y y* and *z z*, Fig. 5. Fig. 4 is a detail longitudinal section on line *c c*, Fig. 1, showing the cable-carrying pulley in side elevation; and Fig. 5 is a plan view of the tunnel with the top plate partly broken away.

40 Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a double tunnel, which is placed midway between the tracks of a street-railway. The  
45 double tunnel is provided with two longitudinal slots, *a*, through which the supporting bars of the gripping attachment of the cars pass downward into the interior of the tunnel. In the double tunnel is arranged the endless  
50 cable B, which moves in opposite directions in the sections of the tunnel, it being propelled in the usual manner in cable-railways

by a stationary steam-engine. The gripping attachment on the cars takes hold of the cable in the usual manner, it being applied to the  
55 side of the car instead of to the center, as heretofore. A double tunnel arranged in this manner between the tracks has the advantage that it does not break up the pavement between the tracks nor interfere with the horses,  
60 and that its surface can be slightly raised and rounded off, so as to shed the rain and snow without interfering with the crossing of vehicles.

The tunnel A is constructed of cast or wrought  
65 iron supports D, of U shape, which are bolted together at their inner adjoining legs or sides, so as to form a double yoke, D D. The outer legs of these yokes support the side plates, *b b*, which are bolted thereto, while the adjoining  
70 inner legs support the top plate, *d*, and a longitudinal bar, *e*, in adjoining recesses of the inner legs, as appears clearly in Figs. 1 and 2. The side walls and bottom of the tunnel A  
75 intermediately between the double yokes are made of brick-work covered with a layer of cement, or in any other approved manner. The top plate, *d*, rests upon the longitudinal  
80 bar *e*, and is bolted to the top parts of the inner legs of the yokes D D. It is made with both edges turned down in shape of a channel-bar, to strengthen the plate, and at the  
85 same time lap over the top parts of the inner legs of the double yokes D D, whereby these legs are firmly held together. The edges of the top plate, *d*, also form, with the rectangularly-bent upper edges of the side plates, *b b*,  
90 the longitudinal slots for the bars of the grippers. One yoke in every four or five yokes supports on a common shaft secured to the inner legs of the yoke two carrying sheaves  
95 or pulleys, E, for carrying and guiding the cable B. The intermediate yokes D D are braced laterally by transverse screw-bolts *f*, which also serve as shafts for the idlers or  
100 rollers F, of less diameter than the sheaves E, but of greater length laterally. The idlers F serve to catch and support the cable whenever the same is dropped from the carrying sheaves. The sheaves or idlers carry and guide the moving cable B in opposite directions in the double tunnel A. The transverse screw-rods  
105 *f f* are secured rigidly to the yokes by means of screw-nuts *f'*, applied to the outer ends of



the rods, and by interior jam-nuts,  $f^2$ , as shown in Fig. 2. The idlers F, which turn on the screw-rods  $f$ , are made of wood or any other material, and serve to keep the cable clear of the bottom of the tunnel, so as to prevent wear of the same. The tunnel is connected in the usual manner by drain-pipes at proper intervals with the sewers for carrying off the water collected therein. The double yokes are set at proper distances from each other into the brick, stone, or cement work of the tunnel, so as to form the ribs of the same.

The tunnel can be built entirely of cast-iron, wrought-iron, wood, or other suitable material, and of any suitable cross-section, though for most purposes the construction shown in the drawings—partly of iron and partly of brick, stone, cement, &c.—is preferable for general use on the score of economy and durability.

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

1. A double tunnel for endless-cable railways, consisting of double yokes connected at their adjoining legs, top and side plates forming longitudinal slots for the gripping attach-

ment, interior rollers or idlers placed on transverse brace-bolts, and carrying sheaves or pulleys which alternate at certain intervals with the idlers or rollers, substantially as specified.

2. A double tunnel for endless-cable railways, composed of top and side plates supported by double yokes which are connected together and braced by transverse bolts, which also form the shafts of the rollers or idlers, substantially as specified.

3. A double tunnel for endless-cable railways, composed of double yokes connected together, a longitudinal center bar, top and side plates attached to the yokes, and transverse brace-rods, said top and side plates forming the longitudinal slots for the grippers, substantially as specified.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

LEVI J. WING.

Witnesses:

PAUL GOEPEL,  
CARL KARP.