

(No Model.)

2 Sheets—Sheet 1.

T. J. LOVEGROVE.

CABLE RAILWAY.

No. 353,321.

Patented Nov. 30, 1886.

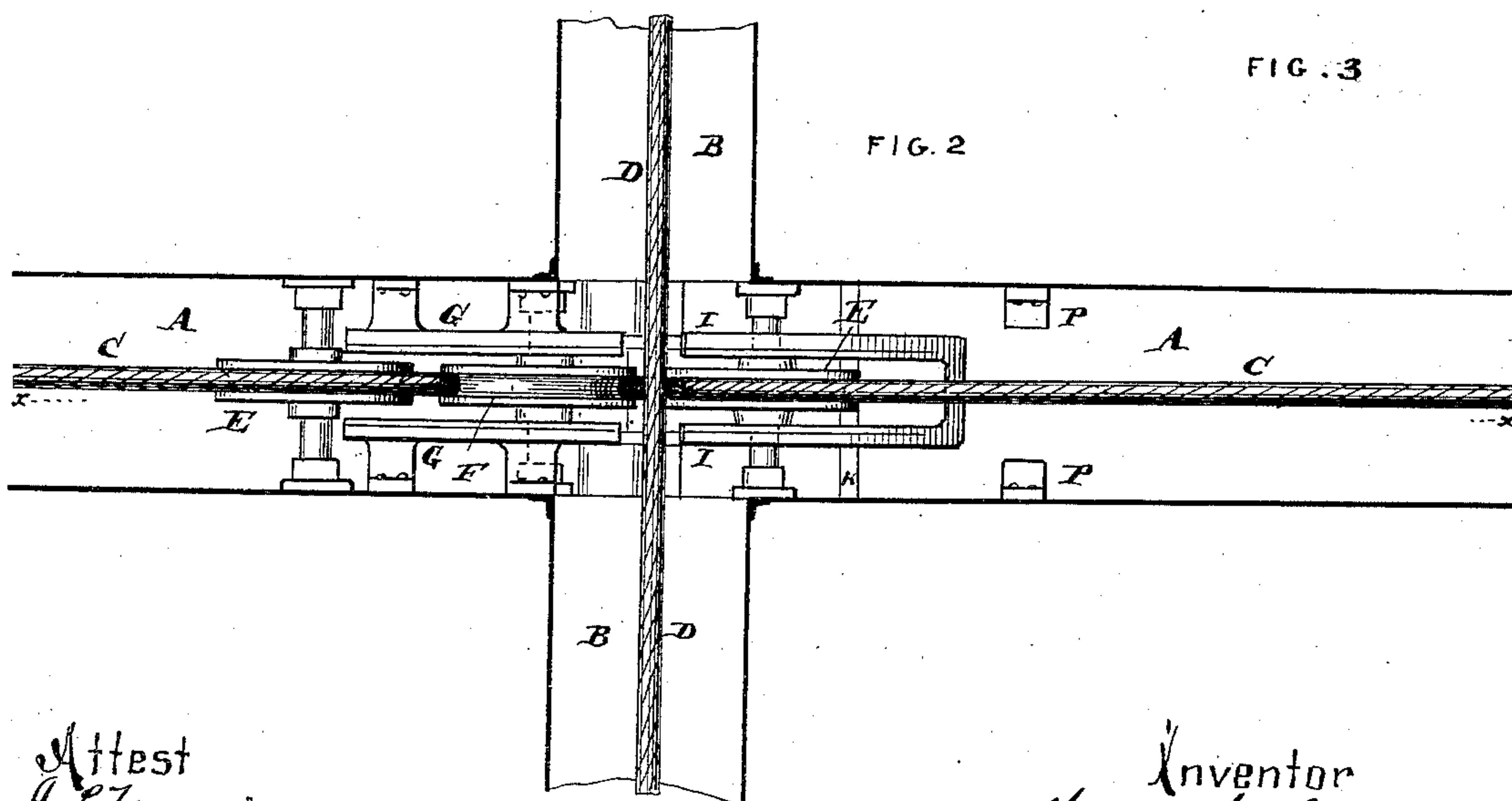
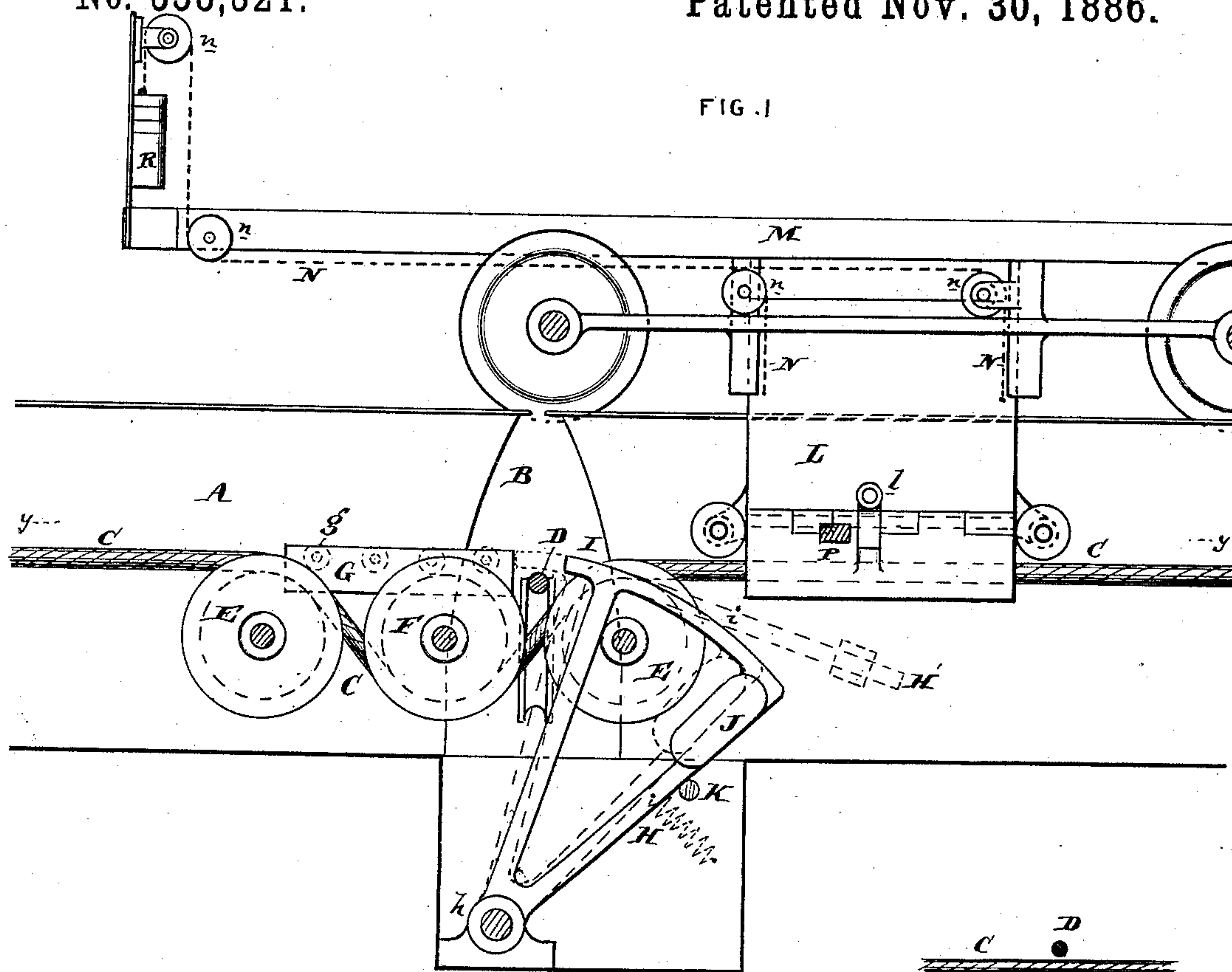


FIG. 3

Attest
J. L. Maguire
E. M. Breckinridge

Inventor
Thomas J. Lovegrove
By *[Signature]*

(No Model.)

2 Sheets—Sheet 2.

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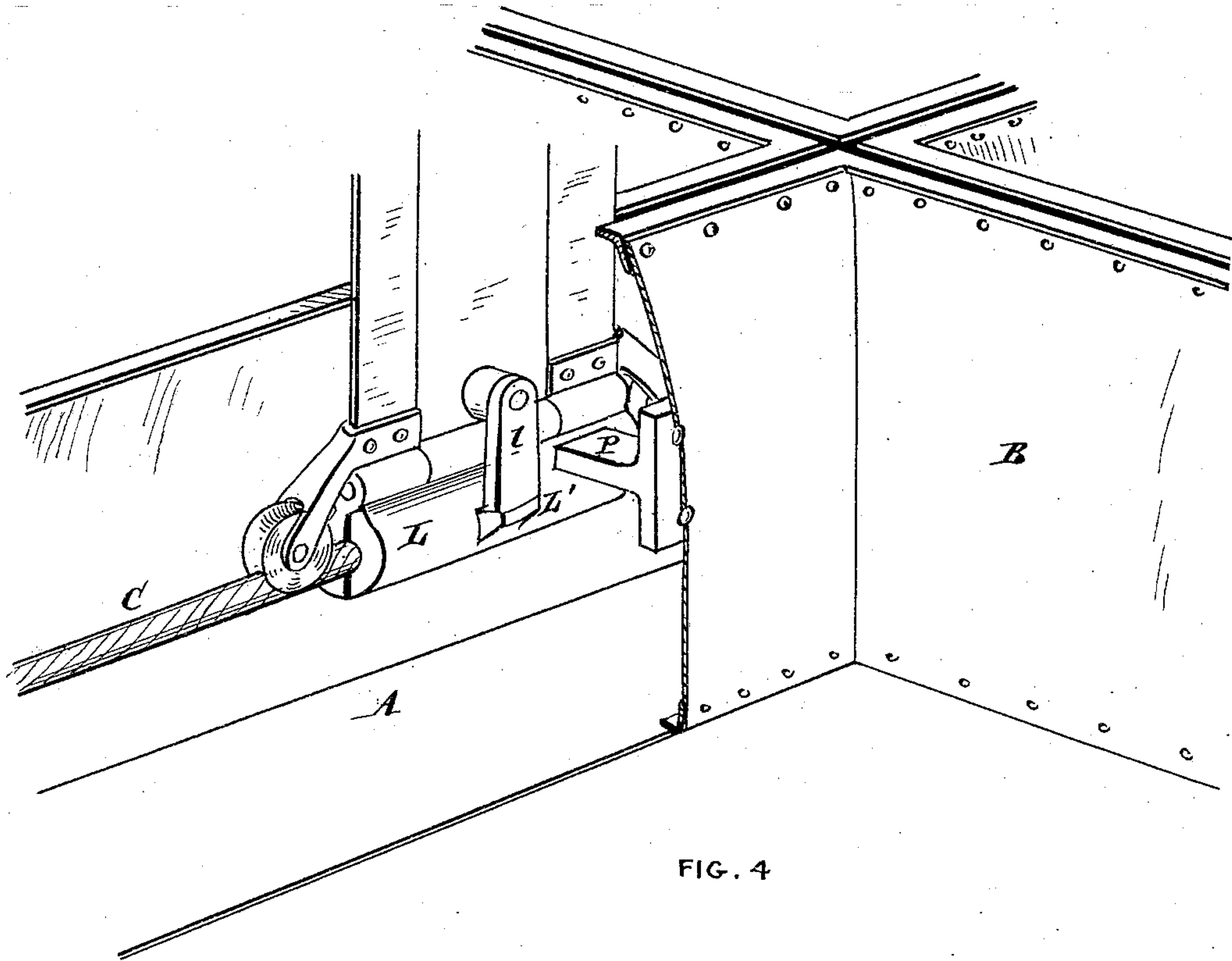


FIG. 4

Attest

E. M. Derrmott
E. M. Derrmott.

Inventor

Thomas J. Lovegrove
By *[Signature]*
[Signature]

UNITED STATES PATENT OFFICE.

THOMAS J. LOVEGROVE, OF PHILADELPHIA, PENNSYLVANIA.

CABLE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 353,321, dated November 30, 1886.

Application filed March 4, 1886. Serial No. 193,973. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. LOVEGROVE, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Cable Railways, of which the following is a specification.

My invention has reference to crossings for cable railways; and it consists in certain improvements, all of which are fully set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

The object of my invention is to provide suitable mechanism by which two cables may cross, and the cars may be propelled over said cross-cable without difficulty.

In carrying out my invention I provide a car with a counterbalanced grip, and which, after freeing the cable automatically, rides upon a movable bridge which spans the cross-cable and causes the grip to pass up over the said cross-cable to be delivered upon a guide, from which the momentum of the car carries it and delivers it once more to its cable upon its opposite side of the cross-cable. In place of the entire grip being floated, simply the jaws thereof may be capable of the free vertical movement.

In the drawings, Figure 1 is a sectional elevation of a cable-railway crossing embodying my improvements on line *x x*, Fig. 2. Fig. 2 is a sectional plan view of same on line *y y*, Fig. 1; and Fig. 3 is a modified view of crossing cables. Fig. 4 is a perspective view, showing how the grip is unlatched automatically before crossing a cable.

A and B represent the crossing conduit of a cable railway, and C and D represent the crossing cable thereof. One of these cables is preferably depressed by a guide-pulley, F, into a bend over the pulleys E, so as to carry it sufficiently below the cable D that the grip on the said cable D may have an unobstructed passage through its conduit.

G are guides, which may be formed like two rails secured to the side of the conduit, or may be provided with small anti-friction rollers or wheels *g*.

H is a bridge pivoted at *h*, having its guide-face *i* preferably curved, and furnished with the extension I, which, when the bridge is

forced up toward the guide-rails G, spans the cable D, and forms a continuous track for the grip L to slide over. This bridge H is counterbalanced at J, so as normally to bring it back against the stop K, so as to leave a clear passage for the grips attached to the cable D. In place of counter-balance J springs may be used, and the pivoted bridge may be made in the form of a slide, (indicated in dotted lines at H',) if so desired.

The grip L may be made in any manner desired, one form of which is shown in Letters Patent granted to myself and William G. Huey, dated January 5, 1886, No. 333,633. The jaws of the grip are automatically tripped by the stops P striking the pivoted dogs *l* on the grip, which when struck out from over the lugs L' on said jaws free the jaws, allowing the cable to be dropped. This trip is set out in detail in the above patent, granted to me jointly with William G. Huey, but may be modified in various ways to suit grips of different makes. These stops P are arranged in the conduit close to the bridge H, and are adapted to free the grip jaws just before the grip rides upon the bridge, thereby acting automatically to release the cable.

The grip is supported to the car in any suitable manner; provision being made, however, for vertical movement of the grip. As shown, the grip is suspended by chains in passing around guide-rollers *n*, and is counterbalanced by weights R. By pulling upon the chain N the driver may raise or lower the grip, as desired.

When the grip strikes the bridge H, it causes the latter to move to the position indicated by dotted lines and span the cable D. The momentum of the car now carries the grip over the bridge and guide-rails G, and when it passes beyond the pulley E it falls to a gripping position with reference to the cable C, and may approach to instantly clamp or grip the cable. It is preferable to so counterbalance the grip that it tends to fall to a gripping position if left to itself, but so that very little power is required to elevate or raise it in passing over the cable D.

It is evident that the cables C and D may cross, as shown in Fig. 3, and each may be provided with a cross-bridge, so that cars run-

ning in connection with both cables drop said cables in passing over said crossing, or the car in connection with the cable D might raise its cable to such a degree as to pass over the cross-cable C. In either of these instances the pulleys E F could be dispensed with.

While I prefer the construction shown, I do not limit myself to the details thereof, as they may be modified in various ways without departing from my invention.

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

1. In a cable railway, the combination of two crossing cables and a movable segmental pivoted bridge having the arc thereof adapted to span one of the cables and in line with the other, but normally drawn back clear of the cable it is designed to span, substantially as and for the purpose specified.

2. In a cable railway, the combination of two crossing cables and a movable bridge pivoted at a point directly below the cables, whereby its movement at its bridging portion is horizontal, adapted to span one of the cables, and in the horizontal plane of the other, but normally drawn back clear of the cable it is designed to span, a spring or weight to positively draw said bridge back, and a stop to limit its backward movement, substantially as and for the purpose specified.

3. In a cable railway, the combination of two crossing cables and a movable bridge adapted to span one of the cables and in line with the other, but normally drawn back clear of the cable it is designed to span, and stops to limit its backward and forward movements, substantially as and for the purpose specified.

4. In a cable railway, the combination of two crossing cables and a movable segmental pivoted bridge adapted to span one of the cables and in line with the other, but normally drawn back clear of the cable it is designed to span, a car, and movable grip supported by said car, substantially as and for the purpose specified.

5. In a cable railway, the combination of two crossing cables and a movable bridge adapted to span one of the cables and in line with the other, but normally drawn back clear of the cable it is designed to span, a car, depressing guide-pulleys for one of the cables, and a movable and counterbalanced grip supported by

said car, substantially as and for the purpose specified.

6. In a cable railway, the combination of two crossing cables and a movable bridge adapted to span one of the cables and in line with the other, but normally drawn back clear of the cable it is designed to span, a car, and a movable grip supported by said car, and suitable devices, substantially as set forth, to automatically free the cable from the grip just before it reaches the movable bridge, substantially as and for the purpose specified.

7. In a cable railway, the combination of two crossing cables with a movable bridge arranged upon one side of the upper cable and adapted to span it, and stationary guide or rails upon the other side of the upper cable, the said bridge and guide being in line with the lower cable, and the bridge being adapted to approach the guide to bridge the upper cable, substantially as and for the purpose specified.

8. The combination of crossing cables C and D, rollers E F, for the under cable, the stationary guides or rails G, and the pivoted or movable bridge H, substantially as and for the purpose specified.

9. The combination of crossing cables C and D, rollers E F, for the under cable, the stationary guides or rails G, and the pivoted or movable bridge H, having counter-balance or springs, substantially as and for the purpose specified.

10. The combination of crossing cables C and D, rollers E F, for the under cable, the stationary guides or rails G, having rollers g, and the pivoted or movable bridge H, substantially as and for the purpose specified.

11. The combination of crossing cables C and D, rollers E F, for the under cable, the stationary guides or rails G, and the pivoted or movable bridge H, car M, having vertically-movable grip L, and stationary tripping lugs or stops in the conduit close to the bridge and adapted to act upon the grip to free the cable, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

THOMAS J. LOVEGROVE.

Witnesses:

WM. S. DIVINE,
W. R. HUNT.