

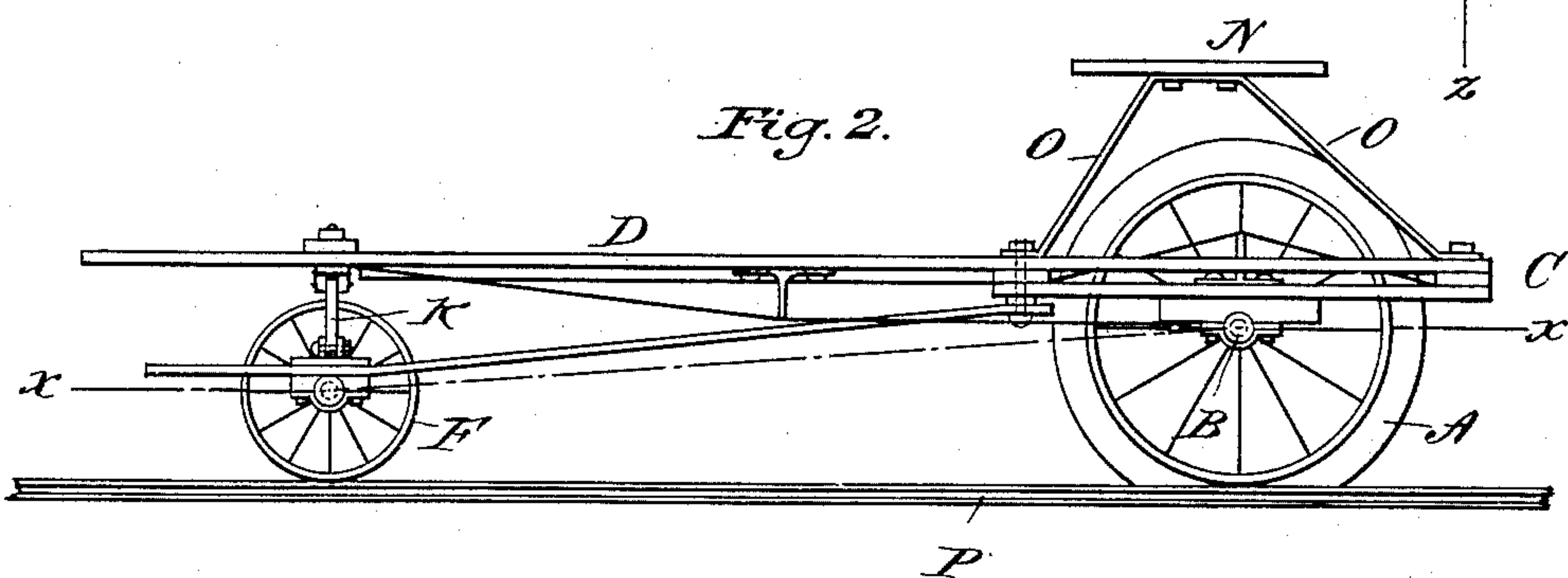
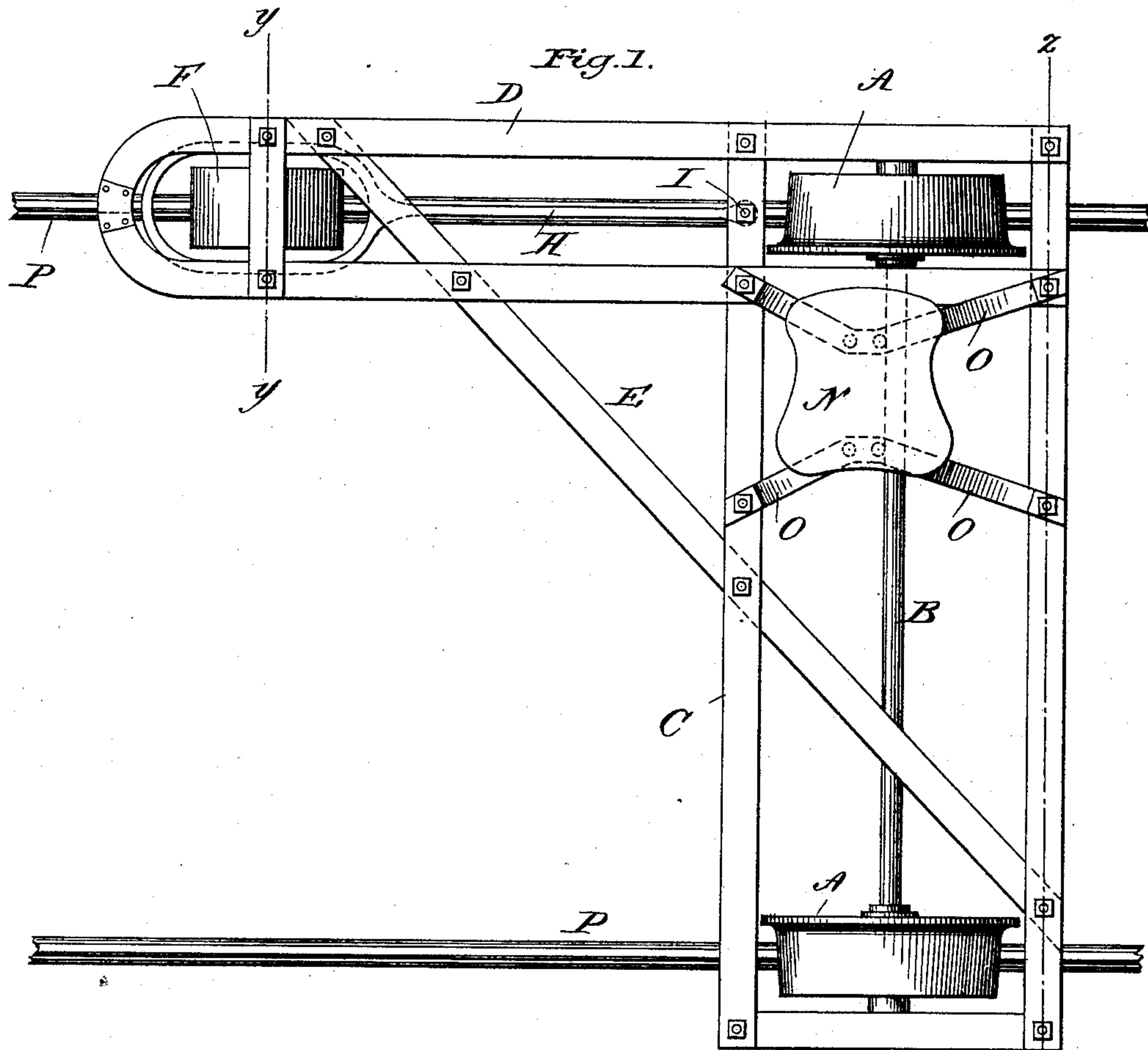
(No Model.)

2 Sheets—Sheet 1.

W. HAYES.  
RAILWAY TRICYCLE.

No. 354,318.

Patented Dec. 14, 1886.



WITNESSES:

*John A. Ellis.*

*A. E. Brinkerhoff*

INVENTOR:

*W. Hayes.*

BY *Munn & Co.*

ATTORNEYS.

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Fig. 3.

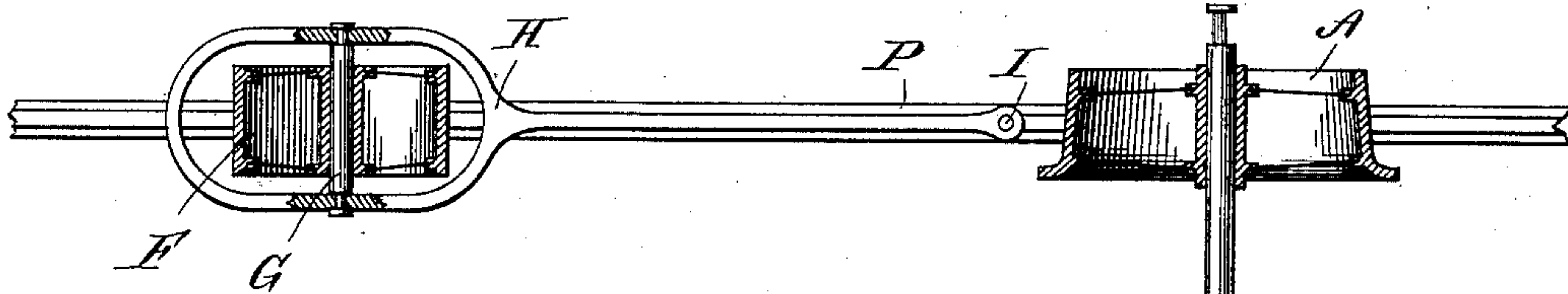


Fig. 4.

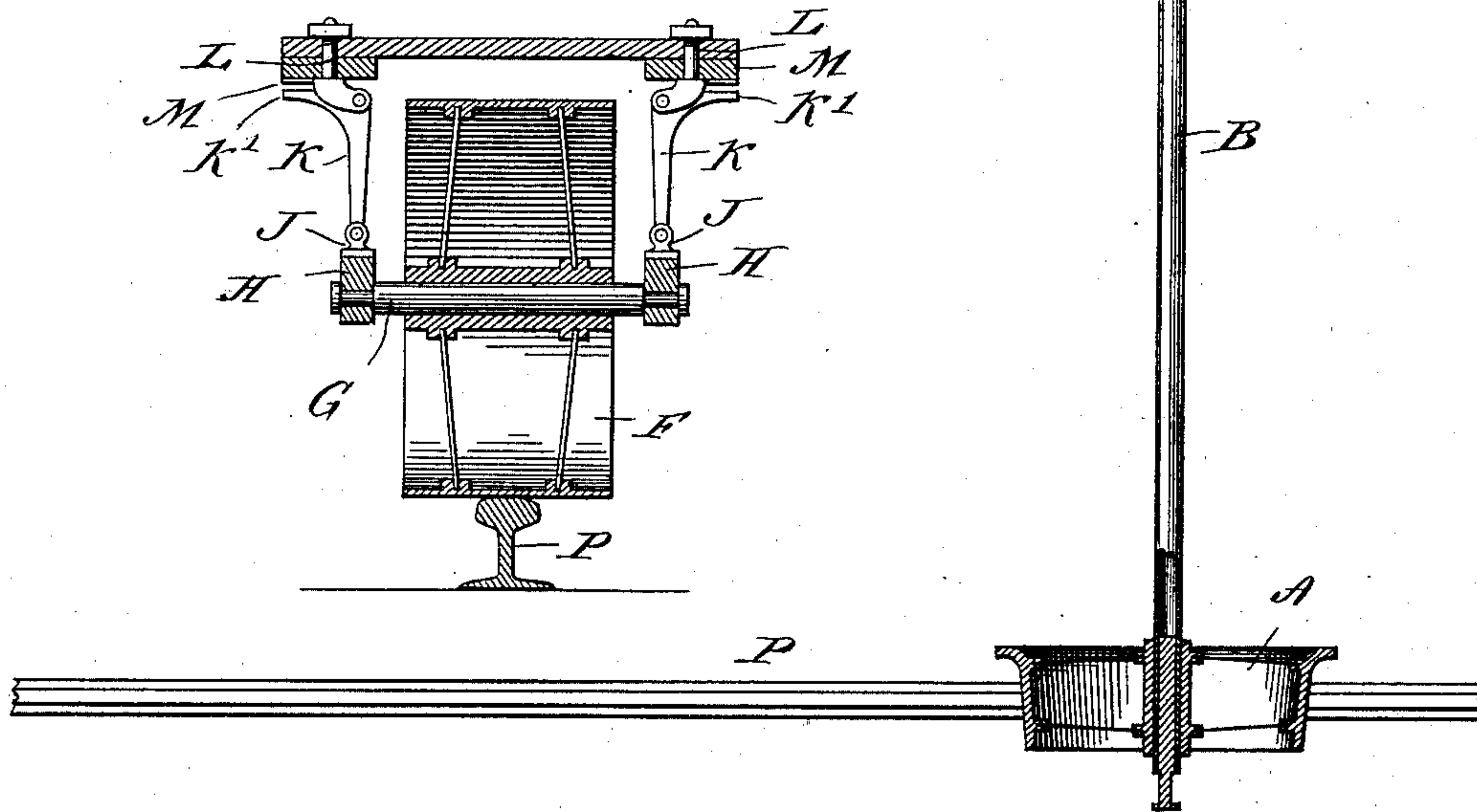
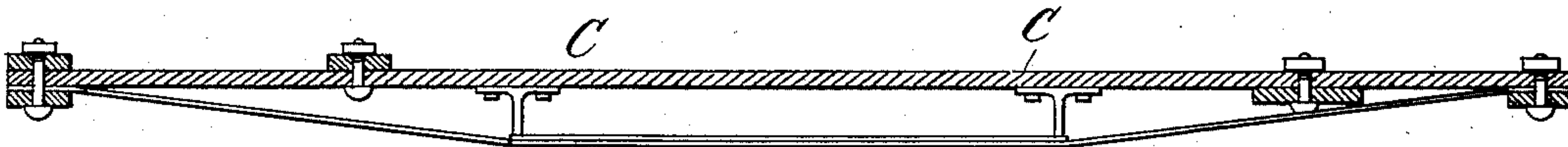


Fig. 5.



WITNESSES:

*John A. Ellis.*  
*A. C. Brinkerhoff.*

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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

WILLIAM HAYES, OF LOS ANGELES, CALIFORNIA.

## RAILWAY-TRICYCLE.

SPECIFICATION forming part of Letters Patent No. 354,318, dated December 14, 1886.

Application filed July 26, 1886. Serial No. 209,114. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM HAYES, of Los Angeles, in the county of Los Angeles and State of California, have invented a new and Improved Railway-Tricycle, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved railway-tricycle, in which the friction of the flanges of the wheels against the rails on curves as well as on straight tracks is avoided.

The invention consists of a trailing-wheel which is free to swing within certain limits, and is without flanges, and of a seat placed at right angles to the main wheels.

The invention also consists of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improvement. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional plan view of the same on the line  $xx$  of Fig. 2. Fig. 4 is a vertical cross section of the trailing-wheel on the line  $yy$ , Fig. 1, and Fig. 5 is a sectional elevation of part of the frame on the line  $zz$  of Fig. 1.

Heretofore railway-tricycles and railway hand-cars depended on the flanges of their wheels to act as guides on the track, and the flanges necessarily rubbed against the rails, thereby causing considerable friction.

In my improved tricycle I provide the main driving-wheels with light flanges and increase the tread, but preserve the inside wheel-gage, and I make the follower or trailing wheel without flanges and free to swing within certain limits, so as to permit the main wheels to govern themselves in the track and prevent friction of the flanges on the rails.

The main wheels A, constructed as above described, are attached to the main axle B, which rotates in suitable bearings secured to the main frame C, from which extends a frame, D, supported at its outer end by the follower or trailing wheel F, constructed as above described. The frames C and D are strengthened by a brace, E.

The follower or trailing wheel F is attached

to an axle, G, which turns in bearings secured to a forked arm, H, pivoted at I to the main frame C. To each side of the arm H is attached, directly above the axle G of the trailing-wheel F, a keeper, J, to each of which keepers is pivoted an arm, K, pivoted at its upper end to an eyebolt, L, turning in the outer end of the frame D. Each arm K is provided with an angular arm, K', which extends under a plate, M, secured to the under side of the frame D.

The seat N is fastened by suitable braces, O, to the main frame C, and is placed in such a position that the rider faces at right angles to the track, instead of facing the air-current, whereby he presents less surface to the wind, and consequently reduces the resistance, and he is also enabled to keep a lookout in both directions with equal facility.

It will be seen that the main wheels A have considerable play on the rails P, whereby the frames C and D receive a vibratory motion when the tricycle is moving; but the follower or trailing wheel F is not affected by this vibrating of the frames C and D, as the pivoted arm I, in connection with the turning of the bolts L and the connecting-arms K, permits the trailing-wheel to remain in its assumed position on the rails P, and it is not dragged across the rails by any vibrations of the frames C and D. It will also be seen that the trailing-wheel F will not prevent the main wheels A from passing properly over a curve, as the trailing-wheel is without flanges and is free to swing within certain limits on the rails. It will be understood that as the trailing-wheel F does not affect the main wheels A when passing over curves the flanges of the main wheels A cannot rub against the rails P. Thus any undue friction is avoided.

In the drawings I do not show any means for propelling the tricycle, as any approved device for propulsion can be applied. I also do not confine myself to any particular construction or combination of parts which allow the frame and the entire body of the tricycle to vibrate over the trailing-wheel without dragging said trailing-wheel across the rail.

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

1. In a railway-tricycle, the combination of

the main wheels provided with flanges with a trailing-wheel having a cylindrical rim, substantially as shown and described.

2. In a railway-tricycle, the combination,  
5 with the main driving-wheels, each having a flange, of a trailing-wheel having a cylindrical rim and mounted on a pivoted frame, substantially as shown and described.

3. In a railway-tricycle, the main driving-  
10 wheels, each having a flange and both being attached to an axle, and a frame on which the said axle is mounted, in combination with a trailing-wheel, and an arm carrying said trailing-wheel and pivoted to the main frame, sub-  
15 stantially as shown and described.

4. In a railway-tricycle, the main frame C, the extension-frame D, and the driving-wheels A, each having a flange, and both mounted on

the said frame C, in combination with the trailing-wheel F, the pivoted forked arm H, the  
20 arms K, and the eyebolts L, turning in the said frame D, substantially as shown and described.

5. In a railway-tricycle, the frames C and D and the plates M, in combination with the  
25 forked arm H, pivoted to the main frame C, the trailing-wheel F, mounted on the said arm H, the keepers J, attached to the said arm H, the eyebolts L, turning in the frame D, and the connecting-arms K, having the projections K',  
30 and each connecting an eyebolt, L, with a keeper, J, substantially as shown and described.

WILLIAM HAYES.

Witnesses:

EL HAMMOND,  
N. P. CAMPBELL.