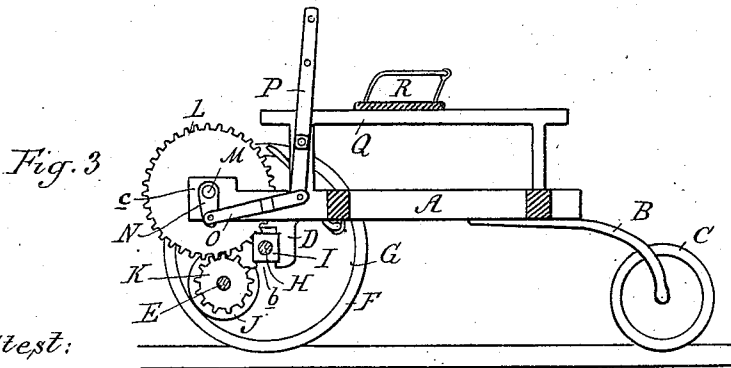
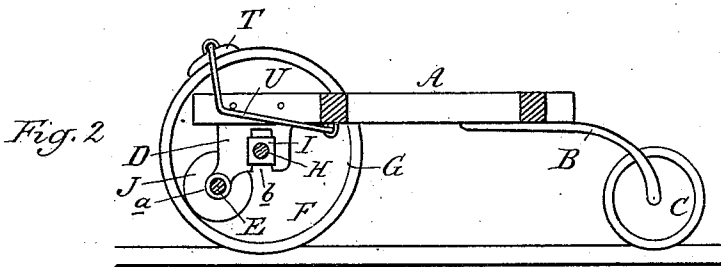
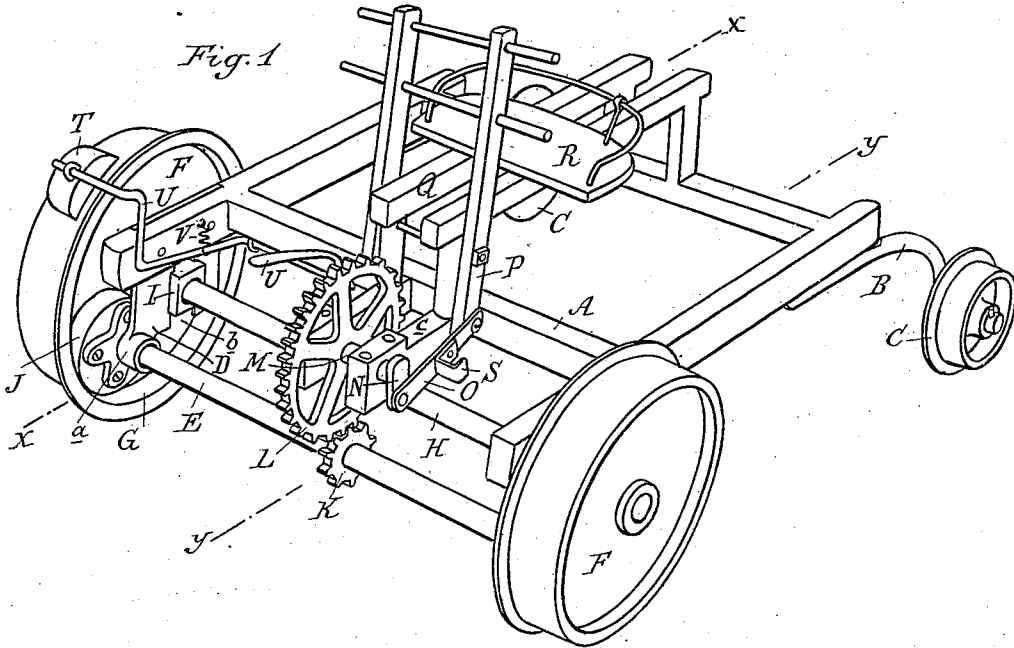


(No Model.)

C. H. COPP.  
RAILWAY VELOCIPEDE.

No. 312,332.

Patented Feb. 17, 1885.



Attest:

A. Barthel  
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Inventor:

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# UNITED STATES PATENT OFFICE.

CHARLES H. COPP, OF CLYDE, MICHIGAN, ASSIGNOR TO THE MARKS  
AUTOMATIC CAR COUPLER COMPANY, OF CLEVELAND, OHIO.

## RAILWAY-VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 312,332, dated February 17, 1885.

Application filed December 10, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. COPP, of Clyde, in the county of Oakland and State of Michigan, have invented new and useful Improvements in Railway-Velocipedes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in the construction of railway-velocipedes; and the invention consists in the peculiar construction and application of the driving mechanism, whereby a rotary motion is imparted to the drive-shaft, the same being assisted by the weight of the operator or operators; in the peculiar construction and arrangement of the frame for relieving the axle of the traction-wheels from all weight which, through the driving mechanism, is imposed directly upon the wheels, and in the peculiar construction, arrangement, and combination of the various parts, all as more fully hereinafter set forth.

Figure 1 is a perspective view of my improved device. Fig. 2 is a vertical longitudinal section on the line *xx*, and Fig. 3 is a similar view on the line *yy*, both sections being taken from Fig. 1.

In the accompanying drawings, which form a part of this specification, A represents a suitable frame-work, to the rear corners of which are secured proper brackets B, upon which are journaled the rear bearing-wheels, C. The forward corners of the frame A are provided with the hangers D, in the lower ends of which are formed the bearings *a*, in which the drive-shaft E is journaled.

F represents the traction-wheels, which are provided with the tread and flange usual in car-wheels, while their inner sides are recessed and have formed in them the inner annular tread or face, G. These wheels F are rigidly secured upon the outer ends of the axle H, journaled in boxes I, which have a free vertical play in open slots *b* in the hangers D.

J are rolling friction-wheels rigidly secured upon the outer ends of the drive-shaft E, and

are designed to rotate in frictional contact upon the inner tread or face, G, of the traction-wheels.

K is a pinion secured upon the drive-shaft E at or about its longitudinal center, and this pinion meshes with a larger geared wheel, L, upon a short counter-shaft, M, properly journaled in boxes on the timbers *c* of the frame. The outer ends of the shaft M are provided with crank-arms N, which are connected by means of the rods or bars O to the lower ends of the operating hand-levers P, fulcrumed to the seat-frame Q, upon which the seat R is secured, and each of the crank-rods O is provided with a foot-rest, S.

T is a brake-shoe secured upon the outer end or arm of the brake-rod U, the opposite end of which is brought within easy reach of the foot of the operator. This brake-rod is pivotally secured to the frame A, as shown, and is provided with a spring, V, to keep the brake-shoe in an elevated position, free from the tread of the wheel, except when it is depressed by the operator. It will be noticed that the drive-shaft E is located in front of and below the plane of the axle H, bringing the point of contact between the wheels J and the inner tread of the traction-wheels F at about forty-five degrees in advance of the vertical axial center of the axle H. Bearing this in mind, together with the fact that the weight of the frame and operators rests directly upon the shaft E and not upon the axle, which has a free vertical movement in the hangers, the operation is as follows: The operator, seated upon the seat R, straddles the levers P, his feet resting upon the foot-rests S, while he grasps the upper ends of the levers (which may be provided with a connecting-handle) with his hands. By now communicating an oscillating movement to the levers a rotary motion is transmitted to the shaft E through the medium of the gear above described. This necessarily rotates the friction-wheels J, which are brought into close contact with interior tread, G, of the traction-wheels, and which would have a tendency to ride up such tread or face G were it not for the fact that their position is a fixed one; hence the

effect is to draw down and push forward upon  
 such tread, compelling the traction-wheels to  
 rotate and cause the device to advance. The  
 weight of the operator and the power applied  
 5 to the operating-levers are both communicated  
 to the driving-wheels J, which remain con-  
 stantly above the tread of the traction-wheels  
 and in advance of their center of gravity, and  
 hence if the weight be increased by more than  
 10 one operator a less force is required to be ap-  
 plied to the levers—in fact, but little more  
 than would be necessary to keep the parts in  
 motion after the device has been started. In  
 starting, the operator may use both hands and  
 15 feet for this purpose, pushing with the feet  
 while pulling with the hands. To check or  
 stop the forward movement the operator de-  
 presses the brake-rod with his foot, which  
 brings the brake-shoe in contact with the  
 20 tread of the traction-wheel, with the usual ef-  
 fect obtained by such appliances.

While I have described and shown a rail-  
 way-velocipede, I do not desire to be confined  
 thereto in the application of my driving mech-  
 25 anism, as it is evident that there are various  
 devices to which it may be applied without  
 departing from the spirit of my invention.

What I claim as my invention is—

1. In a wheel-vehicle, a traction-wheel pro-  
 30 vided with an internal annular tread, in com-  
 bination with a rolling friction-wheel secured  
 to a shaft journaled below and in advance of  
 the drive-shaft and adapted to be brought  
 into frictional contact with said internal tread,  
 35 and means for imparting a rotating motion to  
 said frictional wheels, substantially as and for  
 the purposes described.

2. In a railway-velocipede, the traction-

wheels of which are provided with an interior  
 annular tread or face, the axle having a free 40  
 vertical movement, in combination with roll-  
 ing friction-wheels adapted to engage in fric-  
 tional contact with the said interior treads of  
 said traction-wheels, and located in advance of  
 the vertical axial center of the traction-wheel 45  
 and above said interior thereof, substantially  
 as and for the purposes set forth.

3. A railway-velocipede wherein the weight  
 of the frame and operator is carried upon a  
 drive-shaft journaled below and in advance of 50  
 the main drive-shaft, and having secured to its  
 ends friction-wheels which travel upon inter-  
 nal treads in the traction-wheels, substan-  
 tially as and for the purposes specified.

4. In a railway-velocipede, the combination 55  
 of the frame A, bearing-wheels C, hangers  
 D, drive-shaft E, traction-wheels F, provided  
 with internal treads, G, axle H, boxes I, roll-  
 ing friction-wheels J, and the means for im-  
 parting a rotary motion to the shaft E, when 60  
 constructed, arranged, and operating substan-  
 tially in the manner and for the purposes de-  
 scribed.

5. In a railway-velocipede, the combination  
 of the frame A, bearing-wheels C, hangers D, 65  
 drive-shaft E, traction-wheels F, axle H, boxes  
 I, friction-wheels J, pinion K, gear-wheel L,  
 shaft M, crank-arms N, rods O, levers P, seat  
 R, and brake T, when constructed, arranged,  
 and operating substantially in the manner and 70  
 for the purposes specified.

CHARLES H. COPP.

Witnesses:

H. S. SPRAGUE,  
 E. SCULLY.