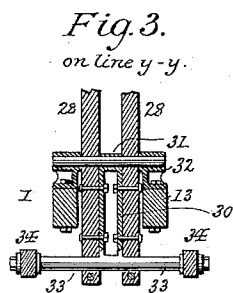
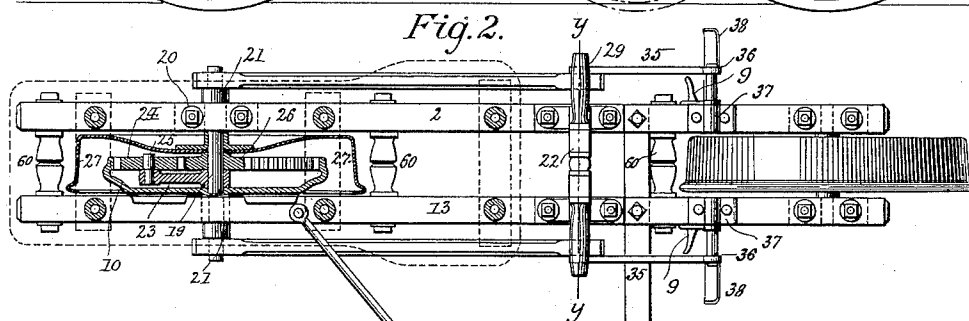
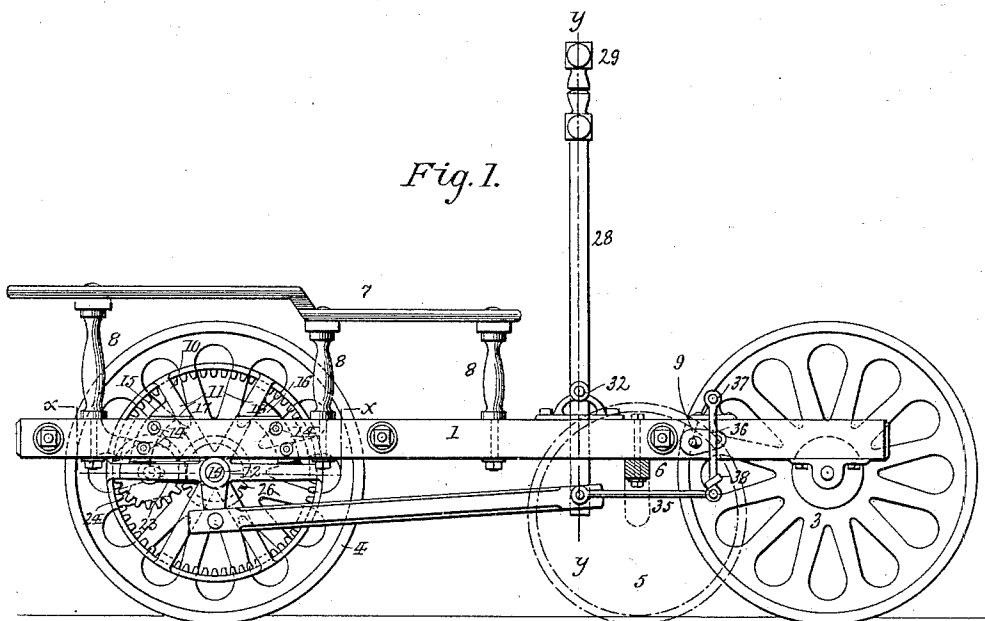


(No Model.)

H. F. MANN.
RAILROAD VELOCIPEDÉ.

No. 468,673.

Patented Feb. 9, 1892.



Witnesses
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HENRY F. MANN, OF ALLEGHENY, PENNSYLVANIA.

RAILROAD-VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 468,673, dated February 9, 1892.

Application filed September 4, 1891. Serial No. 404,763. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. MANN, of Allegheny, county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Railroad-Velocipedes, of which the following is a specification.

This invention relates to improvements in railroad-velocipedes or hand-cars, and has reference more particularly to the driving mechanism for the same.

The object of the invention is to produce a driving-gear operated by a hand-lever or by equivalent means which will occupy little space, and through the medium of which the power exerted may be most advantageously applied to propel the car.

To this end the invention consists of a driving-gear composed of a stationary internally-toothed frame, a gear-wheel carried by an arm fixed to a rotary shaft connected to the operating-lever, said gear-wheel meshing with the stationary frame and also a pinion fixed to the driving-wheel of the car.

The invention also consists in an improved manner of mounting the operating-lever so that it may be connected to the driving-gear on both sides of the car.

It further consists in the details of construction and combinations of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 represents a side elevation of a railroad-velocipede with my invention embodied therein. Fig. 2 is a top plan view of the same, with portions in section, on the line *xx* of Fig. 1. Fig. 3 is a transverse vertical section of the same on the line *yy*.

Referring to the drawings, 1 represents the frame of the car, which may be of any form adapted to sustain the operative parts hereinafter described. As here represented, the frame consists of two horizontal bars 2 and 13, between which are secured at intervals cross-pieces 60. The frame is sustained by the front wheel 3 and rear driving-wheel 4, mounted in suitable bearings therein, and by a guide-wheel 5, journaled in suitable bearings on the outer end of a transverse arm 6, having its inner end bolted or otherwise attached to the frame. Over the rear wheel the

frame is provided with a seat 7, sustained by standards 8, bolted to the bars. Rests 9, attached to the outer sides of the frame, are provided for the operator's feet.

The foregoing parts may be of any suitable construction and in themselves form no part of the present invention, except in so far as hereinafter indicated.

Referring to the driving-gear, 10 represents an internally-toothed frame formed with radial arms 11, extending from a central hub 12. This frame is located between the two bars 2 and 13 at the rear of the car, and is attached to the bar 13 by means of bolts 14, extending through it and through plates 15 and 16, formed on the frame between the radial arms. These plates are provided with lateral ears 17 and 18, between which the bars extend. The hub 12 extends outward from the toothed frame and forms one bearing for the shaft 19. This shaft extends horizontally across the car below the bars and is mounted in another bearing 20, bolted to the under side of the bar 2. At its ends the shaft is provided with crank-arms 21, to which an operating-lever is connected, as hereinafter more fully described. An arm 23 is connected to the shaft 19 and carries at its outer end a gear-wheel 24, mounted loosely on a stud 25 projecting from the arm. The gear-wheel 24 is so arranged that it meshes with the teeth on the frame 6, and with a central pinion 26, fixed to the hub of the driving-wheel 4. This wheel, as shown, is mounted loosely on the shaft 19 and is provided with the annular laterally-extending tread 27, which incloses the gearing, as more fully described hereinafter.

From the foregoing description it will be seen that if the shaft 19 is revolved the gear-wheel carried by arm 23 thereon will be rotated owing to its engagement with the toothed frame and will impart a rotary motion to the central pinion 26 and the driving-wheel to which said pinion is attached. Owing to this arrangement of the gearing the driving-wheel will be caused to revolve upon the driving-shaft at a speed due to and resulting from the proportionate number of teeth in the toothed frame and the central pinion attached to the hub of the driving-

wheel, and also one additional revolution of the driving-wheel due to each revolution of the arm carrying the gear-wheel and attached to the driving-shaft. It is to be noted that
 5 the central crank-shaft not only carries the arm on which the gear-wheel for driving the central pinion is journaled, but serves in addition as the axis for the driving-wheel. This I deem of importance, inasmuch as it enables
 10 me to effect a compact and neat arrangement of the gearing entirely within the tread of the driving-wheel, as plainly shown, thereby permitting the pitmen from the operating-lever to be carried all the way back to the axis of
 15 the driving-wheel, thus avoiding the necessity of a train of gearing extending beyond the driving-wheel, as has been the practice heretofore.

The operating-lever 22 referred to consists
 20 of two upright bars 28, connected at their upper ends by a cross-piece 29, forming a handle, and bolted at their lower ends to the frame 30. This frame is provided at its upper end with a horizontal shaft 31, seated in bearings
 25 32, bolted to the upper sides of the bars between the front and rear wheels. At its lower end the frame is provided with outwardly-projecting studs 33, upon which the forward ends of pitmen 34 are loosely mounted, the
 30 rear ends of which are pivoted upon the crank-arms 21. The frame 30 is of such form and the upright bars are so applied thereto that the frame and bars extend between the bars 2 and 13, as shown in Fig. 3.

To enable the operator to use his feet to assist in the propulsion of the car, I extend
 35 from the studs 33, pitmen 35, and pivot their forward ends to the lower ends of links 36, journaled at their upper ends in bearings 37
 40 on the frame. The links are provided near their lower ends with foot-pieces 38, as shown.

While I have described the machine as being operated by the connections extending
 45 on both sides of the same, it is to be understood that it may be driven by one set of connections only and that the devices for driving it with the feet may be entirely omitted.

Having thus described my invention, what I claim is—

50 1. The combination, with the main frame of the driving-wheel journaled therein, the pinion fixed to said wheel, the internally-toothed stationary frame, the driving-shaft, the arm carried thereby, and the gear-wheel
 55 carried by the arm, said gear-wheel adapted to engage the toothed frame, and the pinion on the driving-wheel, substantially as described.

2. The combination, with the main frame,
 60 of the driving-wheel, the driving-shaft on which said wheel is mounted to revolve, the central pinion fixed to the wheel, the internally-toothed frame, the arm mounted on the driving-shaft, and the gear-wheel on said arm,
 65 arranged to engage the toothed frame and the central pinion.

3. The combination, with the main frame and the internally-toothed frame fixed thereto and provided with a hub, of the driving-shaft journaled at one end in said hub and at its
 70 opposite end in a bearing on the frame.

4. The combination, with the driving-wheel provided with the laterally-extending tread, of the driving-gear located within said tread.

5. The combination, with the driving-shaft,
 75 of the driving-wheel provided with the hub mounted to turn loosely on said shaft, the internally-toothed frame fixed to the main frame of the car and provided with a hub in which the driving-shaft is mounted, the pinion fixed to the hub of the driving-wheel, the
 80 arm fixed on the driving-shaft between the two hubs, and the gear-wheel carried by the arm.

6. The combination, with the main frame,
 85 of the frame 30, journaled at its upper end thereon and provided at its lower end with studs 33, the upright bars secured to said frame 30, and suitable connections between the studs and the operative parts of the ma-
 90 chine.

7. The combination, in a railroad-veloci-
 pede, with the bars 2 and 13, of the intermediate frame 30, journaled at its upper end
 95 thereon and provided at its lower end with the laterally-projecting studs, the upright bars extending between the bars 2 and 13 and connected to the sides of the frame, and suitable connections between the studs and
 100 the operative parts of the machine.

8. In combination with the main frame and its front and guide wheels, the rear driving-wheel provided with the laterally-extending
 105 tread, the driving-gear located within said tread, its crank-shaft, the operating-lever mounted on the frame, and suitable connections between the operating-lever and the crank-shaft.

9. In a railroad-velocipede, the combination
 110 of the central cranked driving-shaft, the driving-wheel mounted loosely thereon and provided with the laterally-extending tread and pinion, the stationary toothed frame, the gear-wheel carried by the arm secured to the driving-shaft and meshing with the toothed frame
 115 and pinion, said parts being located within the tread of the driving-wheel, the operating-lever, and the pitman connecting the lower end of the operating-lever with the crank-shaft.

10. The combination of the driving-shaft
 120 and its crank, the driving-wheel mounted loosely to revolve on said shaft, the driving-gear operated by the driving-shaft, the operating-lever, and the pitman connecting the
 125 operating-lever with the crank on the driving-shaft, substantially as described, whereby the pitman serves as the sole connection from the operating-lever to the axis of the driving-wheel.

11. The combination of the internal gear
 130 rigidly attached to the frame of the car, the

arm, the gear-wheel loosely journaled on its
outer end, said arm being rigidly secured to
the driving-shaft, the crank on the end of the
driving-shaft, the operating-lever, and the
5 pitmen connecting the lower end of the oper-
ating-lever directly with the crank on the driv-
ing-shaft, as and for the purpose described.

In testimony whereof I hereunto set my
hand, this 28th day of August, 1891, in the
presence of two attesting witnesses.

HENRY F. MANN.

Witnesses:

W. R. KENNEDY,
FABIUS S. ELMORE.