

(No Model.)

H. F. MANN.
RAILROAD VELOCIPEDE.

No. 468,674.

Patented Feb. 9, 1892.

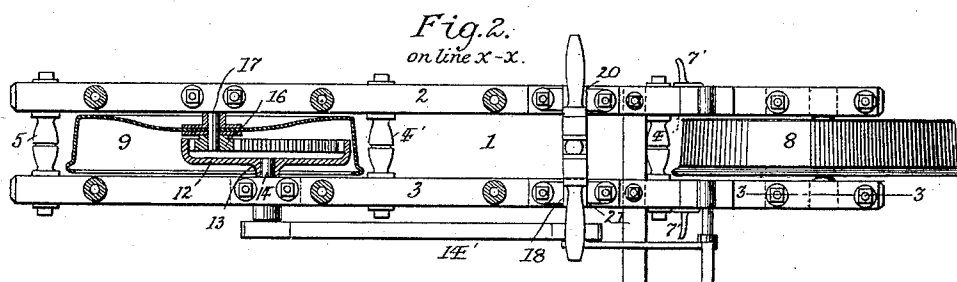
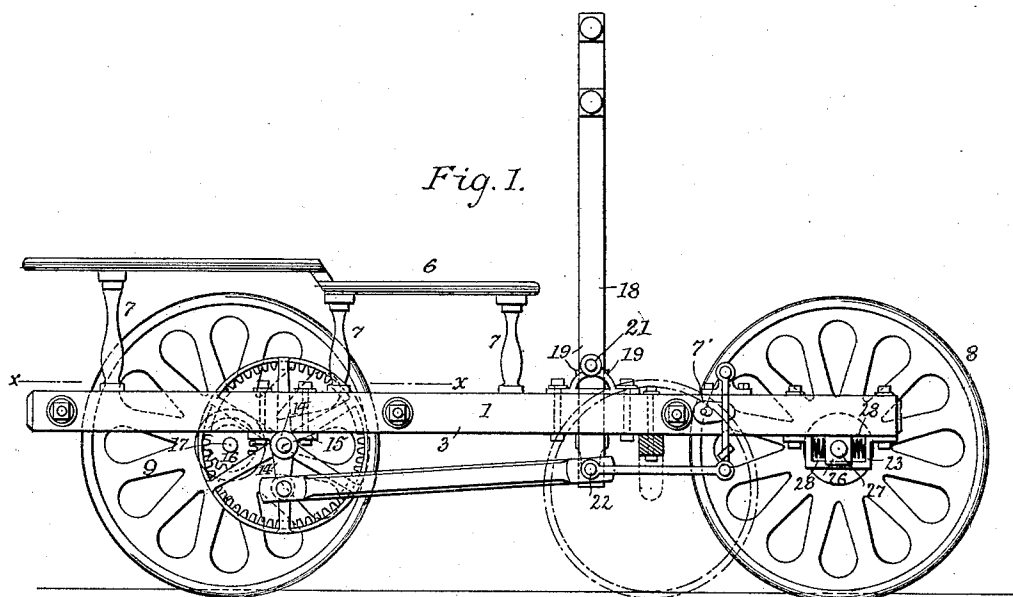


Fig. 4.
on line F-F.

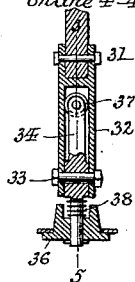
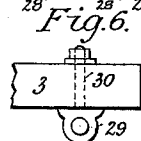
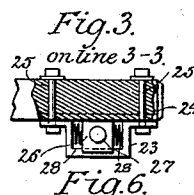
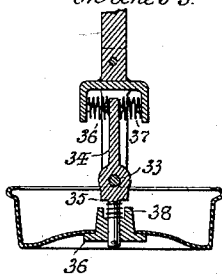


Fig. 5.
on line S-S.



Witnesses

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RAILROAD-VELOCIPED.

SPECIFICATION forming part of Letters Patent No. 468,674, dated February 9, 1892.

Application filed September 4, 1891. Serial No. 404,764. (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.

My invention has reference to railroad-velocipedes or hand-cars, the object being to provide a device of this character which may be easily and rapidly propelled, and which will readily conform to the curves and irregularities in the rails in passing over the same.

With these ends in view the invention consists in an improved driving-gear for a car, in an improved manner of mounting the front and guide wheels, and in the details of construction and combinations of parts hereinafter claimed.

In the accompanying drawings, Figure 1 is a side elevation of a railroad-velocipede with my invention embodied therein. Fig. 2 is a horizontal longitudinal section of the same on the line *xx*. Fig. 3 is a vertical longitudinal section through the forward end of the frame on the line 3 3 of Fig. 2. Fig. 4 is a vertical longitudinal section through the guide-wheel and its carrying-arm on the line 4 4 of Fig. 2. Fig. 5 is a horizontal longitudinal section through the guide-wheel and its carrying-arm on the line 5 5 of Fig. 2. Fig. 6 is a modification.

Referring to the drawings, 1 represents the frame of the car, which may be of any suitable form and material, provided it will sustain the operative parts hereinafter described. In the present instance it consists of two horizontal parallel bars 2 and 3 and cross-pieces 4, 4', and 5, bolted at suitable intervals between them. It is provided at its rear end with an operator's seat 6, sustained thereover by standards 7, rising from the bars, and at its forward end is provided with rests 7' for the operator's feet. This frame is sustained by the front wheel 8, the rear driving-wheel 9, journaled, as more fully described hereinafter, in suitable bearings between said bars, and by the guide-wheel 10, journaled on the outer end of a transverse arm, the inner end of which is suitably secured to the frame.

The foregoing parts may be of any suitable construction and in themselves form no part

of the present invention, except as in so far as hereinafter indicated.

Referring now to the driving mechanism of the car, 12 represents an internally-toothed gear-wheel, which is provided with a hub 13, keyed to a horizontal crank-shaft 14, which latter is mounted in suitable bearings 15 on the under side of the bar 3 and projects inward between the bars, the internal gear-wheel being keyed to its inner end, so that it revolves between the bars, as plainly shown. This internal gear-wheel is arranged to engage a pinion 16, formed on or secured to the hub of the driving-wheel, which latter is mounted to turn loosely on an inwardly-projecting stud 17, suitably secured to the under side of the bar 2. I prefer to form the driving-wheel with an annular laterally-projecting tread, as shown, the internal gear and fixed pinion being so arranged that they are located within the tread, thus insuring a compact and neat arrangement of the parts.

From the crank-shaft 14 a pitman 14' is extended forward to the lower end of an operating-lever 18, secured to a vertical plate 19, the upper end of which is provided with a lateral shaft journaled in bearings 20 and 21 on the upper side of the bars 2 and 3. The lower end of the plate is provided with a lateral stud 22, upon which the forward end of the pitman is journaled.

From the foregoing description it will be seen that if the crank-shaft 14 be revolved by means of the operating-lever and the connecting-pitman the internal gear will be rotated, thereby transmitting motion to the pinion 16, which will cause the driving-wheel to be revolved and thus propel the car.

In order that the front wheel may accommodate itself to the irregularities in the track and readily follow the curves, I propose to mount the same in peculiar bearings, now to be described. These bearings are so arranged that the wheel will either move bodily forward and backward with relation to the frame or assume an angular position. In constructing these bearings I secure to the under side of each of the bars near its forward end a bracket 23, its ends being seated upon a plate 24, and the whole being secured to the bar by bolts 25 passing through the ends of the

bracket and plate. The bracket is so formed that when thus secured in place a space will be left between it and the under side of the bar. This space is adapted to receive a sliding block or box 25, grooved in its upper and lower sides to embrace the plate and bracket. The sliding box is provided with bearings, within which a shaft 27, carrying the front wheel 8, is mounted to revolve. On each side of the block, between it and the side of the bracket, spiral springs 28 are seated and tend to maintain the blocks normally in the center of the bracket, so that the front wheel may travel in a straight line. Under this construction it will be seen that when passing around a curve the wheel may assume a position at an angle to the frame of the car and thus accommodate itself to the curve of the rail, or it may move bodily backward and forward, the springs in either case serving to return it to its normal position when the conditions are such as to permit.

The sliding bearing may be dispensed with on one side of the car and a swiveling bearing employed instead, as shown in Fig. 5. This swiveling bearing consists of the perforated plate 29, through which one end of the shaft carrying the front wheel is passed. The plate is provided with a shank 30, extending upward loosely through the bar 3, so as to turn therein, and is secured by a bolt and washer, or by any other suitable means. Under this arrangement the front wheel may assume an angular position to accommodate itself to the curves in the track, but cannot move bodily, as in the former case.

In order that the guide-wheel 10 may readily follow the irregularities and curves of the track, I propose to mount it in such manner that it may assume an angular position relative to the frame of the car and so that it may move bodily longitudinally of the arm. In accomplishing these ends I secure to the outer end of the guide-wheel carrying-arm, by means of bolts 31, a horizontally-slotted plate 32, within the outer end of which is pivoted on a vertical axis 33 an arm 34. Upon the end of this arm 34 the guide-wheel is mounted to revolve, its hub being seated between a shoulder 35 and a washer 36 thereon. The inner end of the arm is seated between two springs 36' and 37, their outer ends bearing against the inner sides of plates projecting from the side of the arm 11. It will thus be seen that the guide-wheel is yieldingly sustained in such manner that it may rock bodily on a vertical axis, so that in passing around curves it will readily accommodate itself to the rail. I propose to provide, also, for the bodily movement of the wheel transversely of the car and longitudinally of its carrying-arm. In this case the hub of the wheel is recessed, as shown, and a spring 38 is seated in the recess and bears against the shoulder 35 on the arm 34. A space is left between the hub of the wheel and the shoulder, so that the wheel may move to a limited extent longitudinally

of the arm, the spring tending to normally force the wheel outward against its retaining-washer. This feature, it is to be understood, may either be employed in connection with the yieldingly-sustained arm or it may be employed independently thereof. While I have shown and described these details as suitable and preferable for accomplishing the end in view, it is to be understood that other means may be employed, provided they operate in substantially the same manner and accomplish substantially the same results.

Having thus described my invention, what I claim is—

1. In a railroad-velocipede, the combination, with the main frame and its front and guide wheels journaled therein, of the driving-wheel journaled on an inwardly-extending stud, the pinion fixed to said driving-wheel, the internal gear arranged to mesh with said pinion, the shaft carrying the said gear and journaled in bearings on the frame, the crank on the outer end of the shaft, the operating-lever, and the pitman connecting said crank with the operating-lever.

2. In a railroad-velocipede, the combination, with the main frame, of the front wheel mounted in bearings thereon, one of said bearings arranged to move bodily forward and backward and the other arranged to rock on a vertical axis.

3. In a railroad-velocipede, the combination, with the frame and the front and rear wheels, of the guide-wheel and its carrying-arm, said guide-wheel arranged to rock on a vertical axis in relation to the frame longitudinally thereof.

4. In a railroad-velocipede, the combination, with the frame, of the transverse arm and the guide-wheel yieldingly mounted on said arm to rock on a vertical axis.

5. In a railroad-velocipede, the combination, with the horizontally-slotted arm, of the arm 34, pivoted in said slot, the vertical axis, the springs acting on opposite sides of the inner end of the arm, and the guide-wheel mounted on the outer end of the same.

6. In a railroad-velocipede, the combination, with the main frame, of the guide-wheel yieldingly sustained on a vertical axis and arranged to move bodily with relation to the frame transversely thereof.

7. In a railroad-velocipede, the combination, with the frame, of the guide-wheel arranged to move bodily with relation thereto transversely thereof.

8. In a railroad-velocipede, the combination, with the arm 11, of the arm 12, pivoted on a vertical axis thereto, the guide-wheel mounted on said arm to move longitudinally thereof, and the spring acting on the wheel and tending to urge the same outward.

9. The combination, with the frame, of the driving-wheel, the front wheel mounted in movable bearings, and the guide-wheel also mounted in movable bearings.

10. In a railroad-velocipede, the combination,

with the main frame, of the rear driving-wheel, the front wheel mounted in bearings to move forward and backward, and the guide-wheel, said guide-wheel mounted in a vertical axis to rock longitudinally of the frame.

11. In a railroad-velocipede, the combination, with the frame, of the driving-wheel journaled on one side thereof and provided with a driving-pinion, the internal gear-wheel journaled on the opposite side of the frame and arranged to mesh with the pinion on the driving-wheel, and the crank-shaft for driving said internal gear-wheel, substantially as described.

12. The combination, with a railroad-velocipede, of the two frame-bars 2 and 13, the brack-

et secured to the under side of one of said bars, the box mounted to slide within said bracket, the springs acting on said box, the swiveling perforated plate mounted on the other frame-bar, the front wheel, and its axle, said axle mounted to turn at its ends, respectively, in the perforated plate and the sliding box, substantially as 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.