

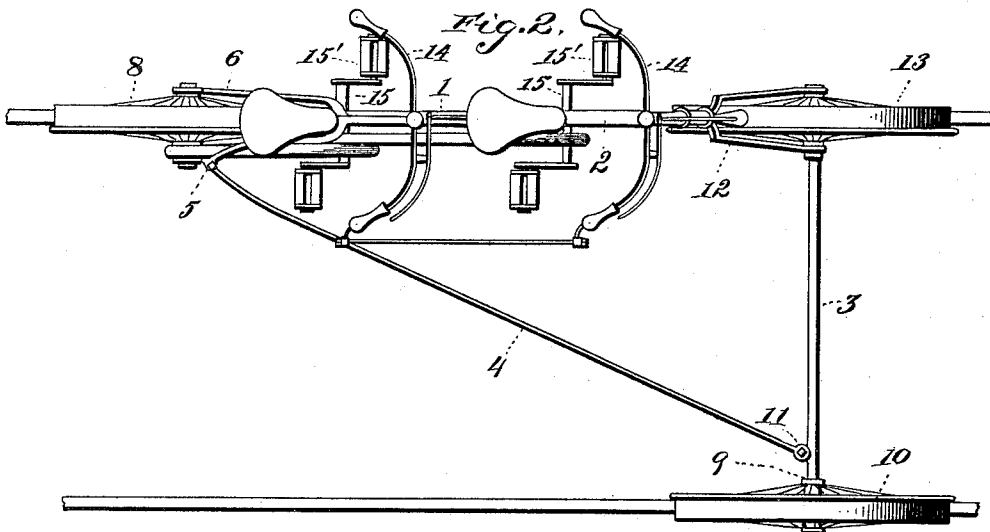
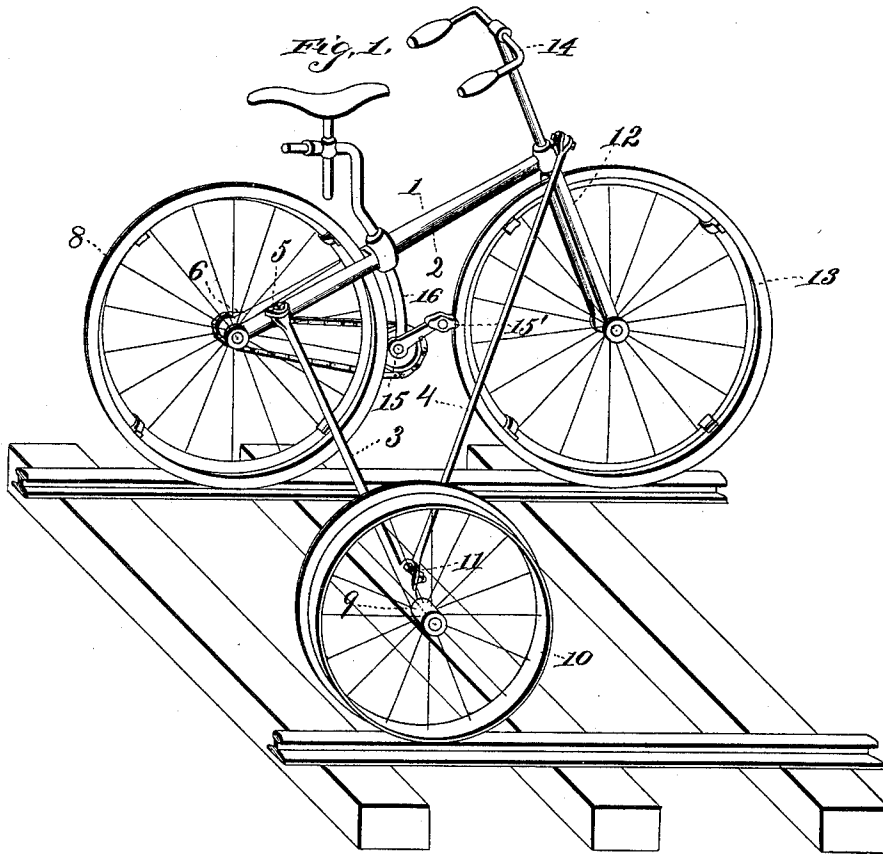
(No Model.)

3 Sheets—Sheet 1.

F. BRADY.
RAILWAY VELOCIPED.

No. 462,908.

Patented Nov. 10, 1891.



WITNESSES:

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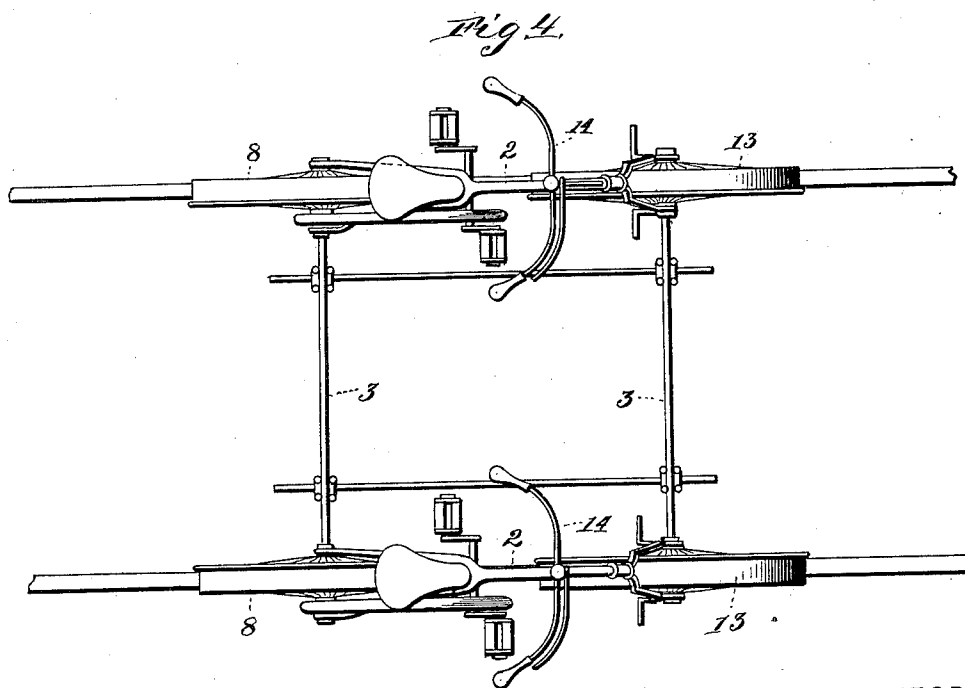
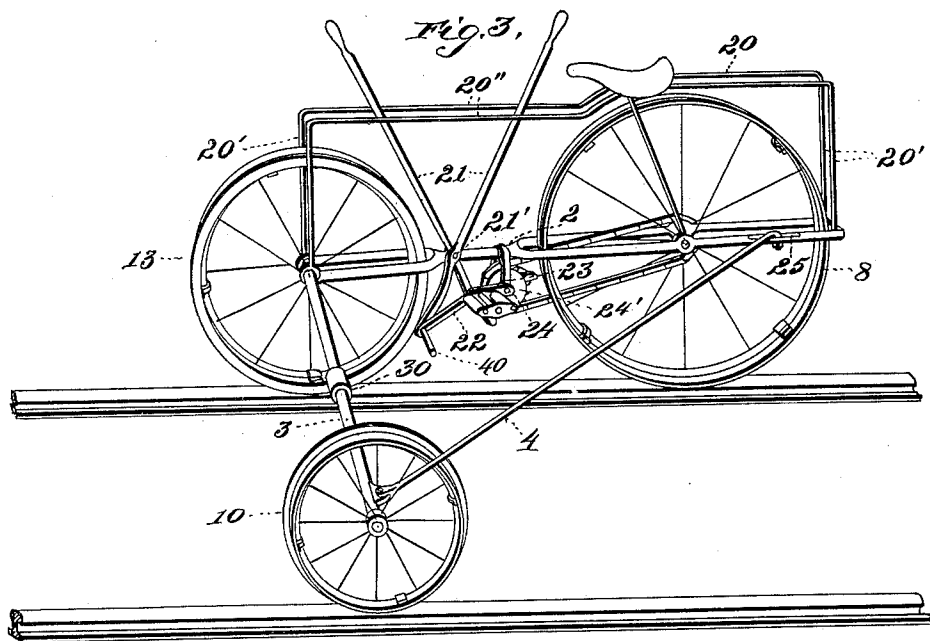
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3 Sheets—Sheet 2.

F. BRADY.
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3 Sheets—Sheet 3.

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Fig. 5.

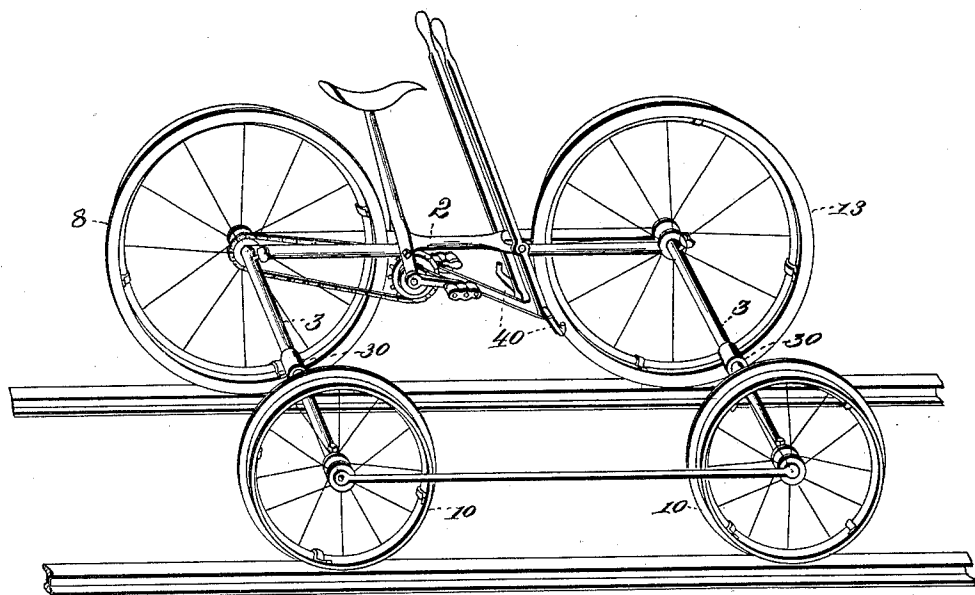


Fig. 6.

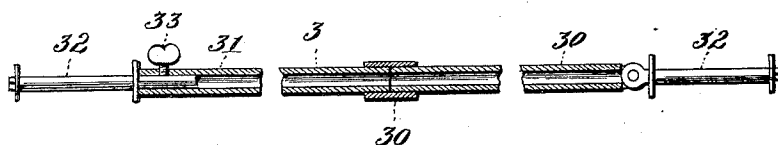
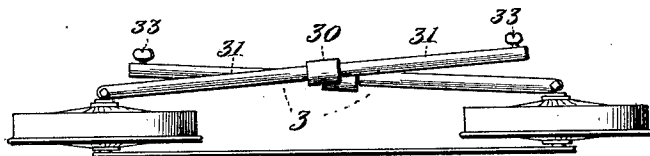


Fig. 7.



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UNITED STATES PATENT OFFICE.

FRANK BRADY, OF DENVER, COLORADO, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO THE AMERICAN RAILWAY TRICYCLE COMPANY, OF PORTLAND, MAINE.

RAILWAY-VELOCIPED.

SPECIFICATION forming part of Letters Patent No. 462,908, dated November 10, 1891.

Application filed October 21, 1889. Serial No. 327,647. (No model.)

To all whom it may concern:

Be it known that I, FRANK BRADY, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful
5 Improvements in Railway-Velocipedes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to
10 which it appertains to make and use the same.

My invention relates to improvements in railway-velocipedes; and the objects of the invention are, first, to provide a machine with a simple, light, and strong frame which shall
15 be capable of a limited play or movement to permit the machine to travel around curves in the track and over switches and crossings without liability of becoming derailed; second, to provide for the easy attachment and
20 removal of the wheels from the frame and to enable the bars of the latter to be readily separated, so that the machine can be compactly packed for transportation, and, third, to provide means for propelling the machine, which
25 can be operated either by foot or hand power, or both.

With these ends in view and such others as pertain to my invention, I provide a railway velocipede or car which consists of a frame of
30 peculiar construction adapted for carrying three or four wheels and which can be operated either by hand or foot power. One form of a frame for a three-wheel machine consists of a longitudinal bar which is forked at its
35 rear end, a horizontal bar arranged at right angles to said longitudinal bar either at its front or rear end, and a diagonal bar having its opposite ends connected, respectively, to the longitudinal and transverse bars, the
40 frame being substantially triangular in outline, looking on the same in plan view. The horizontal bar passes through and is suitably connected to the longitudinal bar of the frame, and at its ends it is formed or provided with spindles, on which are mounted
45 two of the three wheels of the machine. This horizontal bar, as before stated, may be arranged at either the rear or front end of the machine, and when located at the rear the
50 other third wheel is arranged at the front

end of the longitudinal bar, this third wheel being carried by the steering head or fork, which is journaled in the front end of the longitudinal bar of the frame. The horizontal bar of the frame is also made in two or
55 three pieces, which are detachably coupled or secured together by means of sleeves and clamping-screws, and the spindles of the wheels at the end or ends of said horizontal bar can be readily removed or secured in
60 place on the bar, so that the parts can be readily separated or connected together. A four-wheel machine is also constructed on the same principle, although two horizontal bars are employed in this contrivance, one end of
65 each bar being secured to the longitudinal bar of the frame, while the other ends of the horizontal bars are connected by a longitudinal rod, which is jointed to the horizontal bars, whereby the horizontal bars can be detached
70 from the longitudinal bar and the horizontal transverse bars and the longitudinal rod folded compactly together.

The machine can be propelled by the ordinary crank-shaft having the foot-pedals and
75 geared by an intermediate chain to the rear driving-wheel of the machine, so that it can be propelled by foot-power. In lieu of this crank-shaft and gearing, an upright hand-lever can be employed, the lever being ful-
80 crumed near its lower end to the longitudinal bar of the frame and linked to cranks on the axle or shaft of the rear driving-wheel. Both the crank-shaft with its pedals and the upright lever can be employed to adapt the ma-
85 chine to be propelled by combined hand and foot power, the lower end of the lever in this instance being linked to the cranks of the crank-shaft.

To enable others to more readily understand my invention, I will now proceed to a detailed description thereof, in connection with the accompanying drawings, in which—

Figure 1 is a perspective view of a railway-velocipede constructed in accordance with my
95 invention, showing a three-wheel machine with the horizontal bar of the machine at the rear end thereof. Fig. 2 is a plan view of another form of the three-wheel machine, showing the horizontal bar at the front end of the
100

machine. Fig. 3 is a view of a three-wheel machine adapted to be propelled by hand-power. Fig. 4 is a plan view of a four-wheel machine. Fig. 5 is a view of a modified form of the four-wheel machine shown in Fig. 4, and Figs. 6 and 7 are detail views of parts of my improvements.

I will first proceed to describe the three-wheel machine shown in Figs. 1, 2, and 3 of the drawings and afterward the four-wheel machine, as the first-named form of the machine is my preferred construction, although my improvements are equally applicable to the four-wheel machine.

Referring now more particularly to Figs. 1 and 2, 1 designates the frame of the machine or structure, which consists, essentially, of a longitudinal bar 2, a horizontal bar 3, arranged substantially at right angles to the longitudinal bar and connected thereto, and a diagonal bar 4, which is connected to the horizontal transverse bar and to the longitudinal bar, the frame thus formed being substantially triangular in outline. When the horizontal transverse bar 3 is arranged at the rear end of the machine, as in Fig. 1, the inner end of said bar may be connected by a hinge-joint 5 to the rear end of the longitudinal bar, or said inner end of the bar 3 may be passed through the forked rear end 6 of the bar 2 and formed into a spindle, on which the rear driving-wheel 8 of the machine is journaled. The opposite end of the horizontal transverse bar 3 is formed with spindle 9, on which the smaller wheel 10 of the machine is fitted, and to this end of the horizontal transverse bar 3 is connected one end of the diagonal bar 4 by a hinge or joint 11, which is located a short distance from the wheel. In the front end of the longitudinal bar 2 of the machine is journaled a steering-fork 12, which carries at its lower end a wheel 13 and at its upper end the handle or head 14 for turning the steering-fork. The front end of the diagonal bar 4 of the frame is jointed to the front end of the longitudinal bar 2, whereby the frame is permitted to have a limited play or movement by reason of the joints or hinges between its several bars, which is advantageous, as it enables the machine to pass safely over switches and crossings and around curves in the track.

Each wheel of the machine is provided with a flanged tire, preferably of the kind shown in a pending application filed by me August 9, 1889, and bearing Serial No. 320,301.

Instead of arranging the horizontal transverse bar 3 at the rear of the machine, as heretofore described, and illustrated in Fig. 1, said bar 3 may be arranged at the front of the machine, as illustrated in Fig. 2. When so arranged, the ends of the bar 3 are provided with spindles, on which are fitted the wheels 8 and 10, the inner end of said bar being fitted in and secured to the lower forked end of the steering-fork, and the diagonal bar

4 of the frame is connected to the outer end of the bar 3 and the rear end of the bar 2, preferably by the joints or hinges, as shown.

In the form of the three-wheel machines illustrated in Figs. 1 and 2 it is adapted to be propelled by foot-power, for which purposes a crank-shaft 15 is journaled in a depending arm or hanger 16 on the longitudinal bar 2, said shaft being provided with pedals 15' and geared to the rear wheel 8 by a sprocket-chain 75 which passes over suitable wheels secured, respectively, to the crank-shaft and the hub of the rear driving-wheel. In Fig. 3, however, I have illustrated another form of a three-wheel machine especially adapted for propulsion by hand and foot power, which I will now proceed to describe. As in the forms of machines just described, I employ the frame made up or composed of the longitudinal bar, the horizontal transverse bar, and the diagonal rod and the three wheels 8, 10, and 13; but in this machine I also employ an upright seat-supporting frame 20 and a vertical operating-lever 21. The upright frame 20 consists of two pairs of vertical rods 20' and the horizontal rods 20'', one pair of the vertical rods being arranged at the front end of the machine and the other pair at the rear end thereof. The vertical rods are suitably supported on the longitudinal bar of the main frame, and the longitudinal rods 20'' are secured detachably to the vertical rods, so that the frame can be readily taken apart and removed from the machine. The horizontal rods have the seat secured thereto at a point over the rear driving-wheel of the machine, and said rods are braced by inclined rods which are secured to the bar 2 of the main frame. The lever 21 is fulcrumed at a point intermediate of its length, as at 21', to the longitudinal bar 2 of the frame, this fulcrum being located on the frame between the two wheels 8 and 13 on the bar 2, and the lower end of this operating-lever is connected, as by links 22, to the cranks 23 on the ends of the crank-shaft 24, which carries the sprocket-wheel 24', which is geared to a similar sprocket-wheel on the axle or shaft of the rear driving-wheel, the upper end of said lever being provided with handles, whereby it can be conveniently grasped and operated.

In this machine the rear end of the longitudinal bar 2 is extended beyond the axle of the rear driving-wheel 8, and in this extended end is formed a horizontal longitudinal slot 25, in which is fitted a threaded bent arm or rear end of the diagonal bar 4 of the frame; or a bolt may be employed to secure or connect this rod to the bar 2, and the front end of this diagonal rod or bar is connected by a joint or hinge to the outer end of the horizontal transverse bar 3, as shown, said bar 3 being arranged at the front end of the machine. The slotted connection 25 between the rear ends of the bars 2 4 and the joint

between the bars 3 4 of the frame provide the necessary play to the frame to adapt the machine to safely round curves on the track.

To permit the wheels and frame to be readily separated, in order to compactly pack or arrange the parts of the machine for transportation or storage, I have made the horizontal transverse bar 3 of the frame in separable parts or sections, as indicated in Figs. 3 and 6. This bar consists of the central tubular section 30 and two end sections 31, one of which may, however, be made integral with the middle section. These end sections are formed into the spindles 32, on which the wheels of the machine are mounted, and they are clamped or detachably held in the ends of the central tubular section 30 by means of binding-screws 33, or by nutted bolts which pass through aligned openings in the meeting ends of the sections of said bar 3. If desired, the end members, which constitute the wheel-spindles of the sectional bar 3, may be made integral with or secured rigidly to the end of the longitudinal bar 2 of the frame. It is obvious that one or both of the end sections or members of the sectional bar 3 can be readily detached and the diagonal bar 4 disconnected from the bar 2 of the frame, so that the bars and wheels can be compactly arranged for transportation, &c.

A four-wheel velocipede is illustrated in Fig. 4 of the drawings, in which machine I employ the longitudinal bar 2, two transverse bars 3 3, and four wheels, which are mounted as shown. This machine is adapted to carry one or two persons and to be driven by foot-power.

In Fig. 5 I have illustrated a machine having four wheels, in which I employ a frame similar to that shown in Fig. 4, with the exception that the horizontal transverse bars 3 3 are made in sections, as heretofore described, and the machine adapted to be propelled by both hand and foot power. In this form of my machine the crank-shaft is journaled on a hanger depending from the longitudinal bar 2 of the frame, said shaft being geared by an intermediate sprocket-chain to a sprocket on the rear driving-wheel of the machine. The cranks of the shaft are provided with the usual pedals, and they are carried by an ordinary spring-controlled ratchet-drum, that engages or connects with the driving sprocket-wheel when the cranks are depressed by the action of the feet thereon. The foot-power is supplemented by hand-power, which is exerted on the ratchet-drum by a vertical operating-lever which is fulcrumed on the main bar 2 of the machine and has straps connected thereto, which pass around and are connected to the ratchet-drum, as will be readily understood.

In the machines which employ the vertical hand-lever shown in Figs. 3 and 5 I provide coasting-pedals 40, which are fixed to the lower end of the lever and extend laterally

therefrom, so that the occupant of the machine can place or rest his feet thereon when descending grades, &c.

The operation and advantages of my invention will be readily understood from the foregoing description, taken in connection with the drawings.

I am aware that changes in the form, proportion, and arrangement of parts and details of construction can be made without departing from the spirit of my invention, and I would therefore have it understood that I hold myself at liberty to make such modifications as fall within the spirit or scope of my invention.

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

1. In a railway-velocipede, a frame consisting of a single longitudinal bar having a bifurcated or forked end, and the lateral bars rigidly united to opposite ends of said longitudinal bar and to each other, one of said lateral bars being provided at its ends with spindles which are jointed to the bar to adapt the spindles and the wheel thereon to be compactly folded together, and the wheels journaled on the spindles of the lateral bar and in the ends of the longitudinal bar, substantially as described.

2. In a railway-velocipede, a frame consisting of the longitudinal bar and the lateral bars which are suitably united to the longitudinal bar, one of the lateral bars being provided with spindles which are detachably secured to the ends thereof, the steering-wheel journaled in one end of the longitudinal bar, and the driving and third wheels journaled on the spindles of the lateral bar, substantially as described.

3. In a railway-velocipede, the combination of a single longitudinal bar having a forked or bifurcated end, a single driving-wheel journaled in said forked end of the longitudinal bar, the laterally-extending bars, the wheels, and an upright lever fulcrumed on the longitudinal bar between the front and rear wheels thereon and connected directly to the driving-wheel, substantially as described.

4. In a railway-velocipede, the combination of a single longitudinal bar having the bifurcated or forked end, a single driving-wheel journaled in the forked end of said longitudinal bar, a crank-shaft carried by the longitudinal bar and geared directly to the driving-wheel, an upright lever fulcrumed on the longitudinal bar and connected to said crank-shaft, the laterally-extending bars connected to the longitudinal bar and the wheels, substantially as described.

5. In a railway-velocipede, a main frame having a longitudinal bar 2 and an upright seat-supporting frame 20, arranged immediately above said longitudinal bar and having its vertical rods rigidly secured to the longitudinal bar, in combination with the later-

ally-extending bars united to the longitudinal bar, and the wheels journaled in the longitudinal bar and on one of the lateral bars, as and for the purpose described.

- 5 6. In a railway-velocipede, a frame consisting of a longitudinal bar, a horizontal transverse bar, and a diagonal bar jointed to the transverse bar and having a slotted connection with the longitudinal bar, and the wheels

mounted in said frame, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK BRADY.

Witnesses:

CHAS. H. STEEN,
A. H. JENNINGS.