(No Model.) 2 Sheets—Sheet 1.

J. J. THOMPSON.

MECHANISM FOR PROPELLING RAILWAY VELOCIPEDES AND HAND CARS.

No. 553,083. Patented Jan. 14, 1896.

Fig. 1.

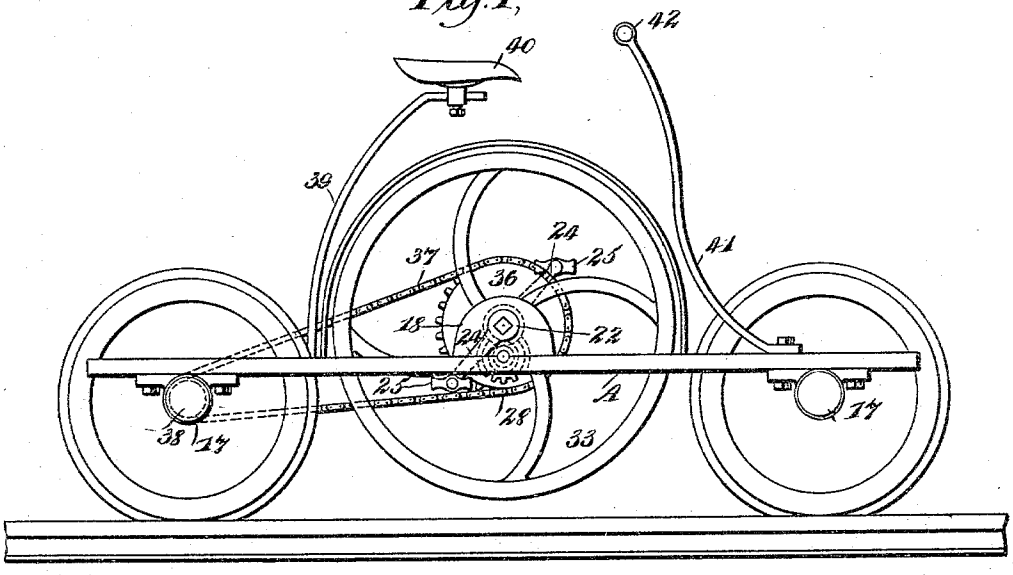
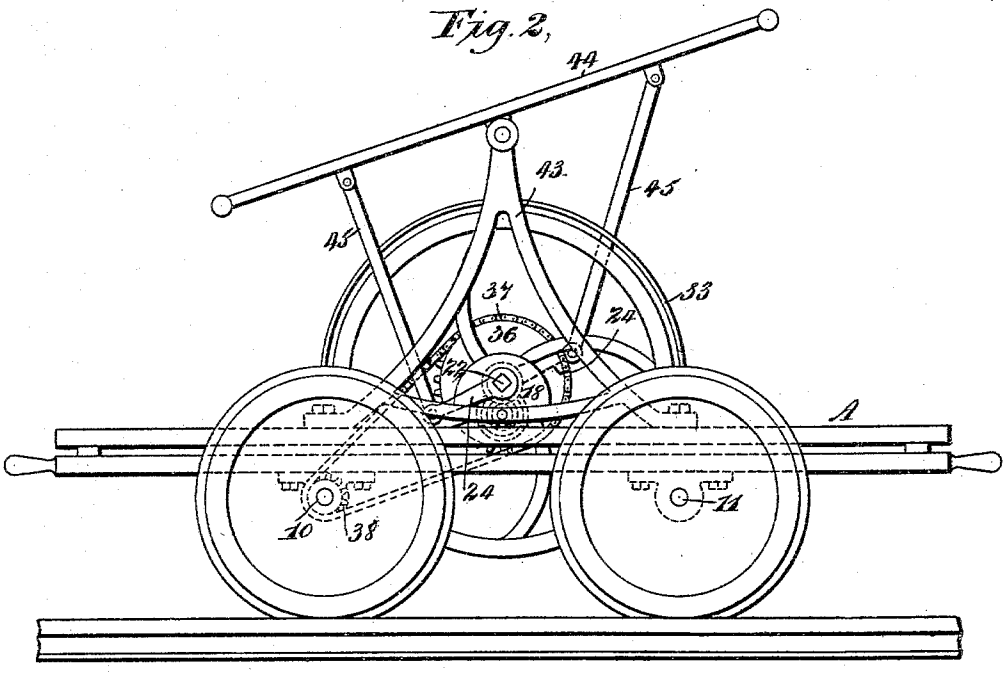


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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MECHANISM FOR PROPELLING RAILWAY VELOCIPEDES AND HAND CARS.

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Fig. 3,

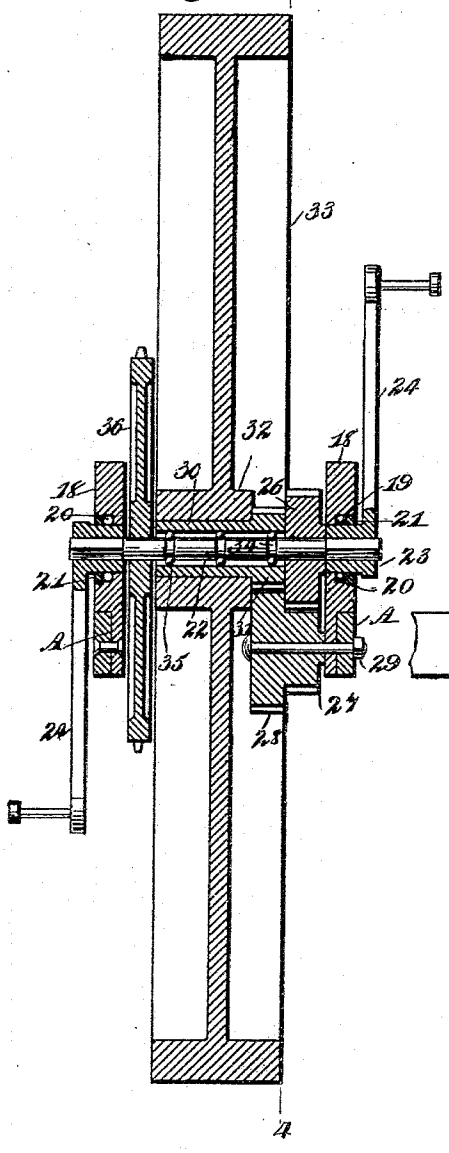


Fig. 4,

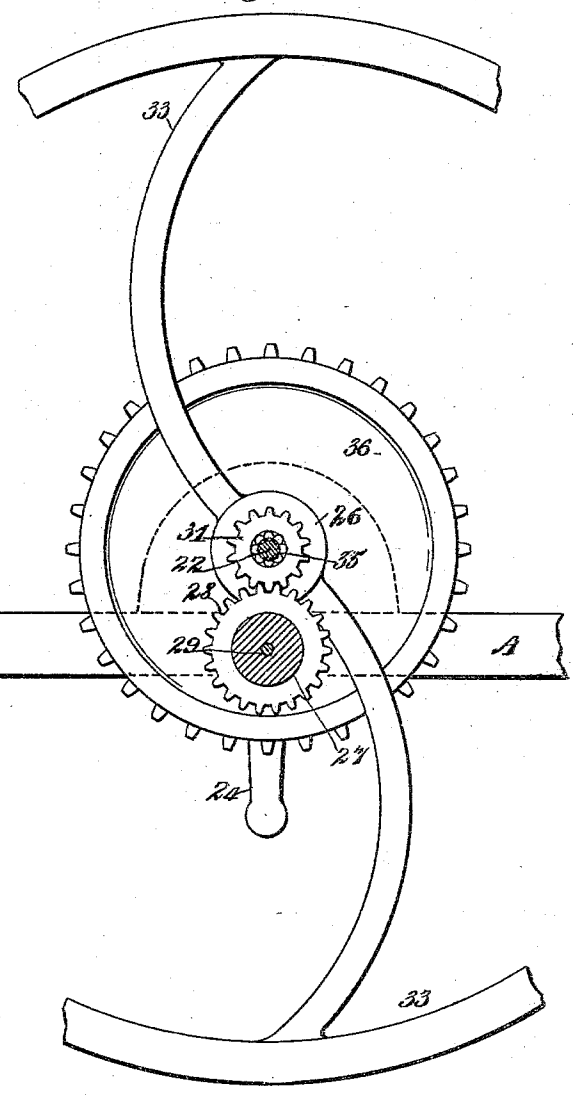


Fig. 5,

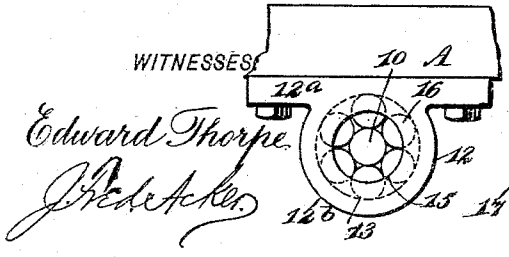
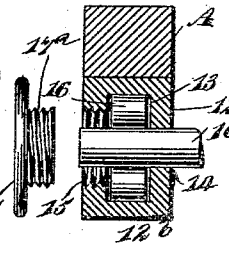


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES JOSEPH THOMPSON, OF JACKSONVILLE, FLORIDA.

MECHANISM FOR PROPELLING RAILWAY-VELOCIPEDES AND HAND-CARS.

SPECIFICATION forming part of Letters Patent No. 553,083, dated January 14, 1896.

Application filed August 1, 1895. Serial No. 557,898. (No model.)

To all whom it may concern:

Be it known that I, JAMES JOSEPH THOMPSON, of Jacksonville, in the county of Duval and State of Florida, have invented a new and Improved Mechanism for Propelling Railway-Velocipedes and Hand-Cars, of which the following is a full, clear, and exact description.

My invention relates to a mechanism for propelling railway-velocipedes and hand-cars; and the object of the invention is to provide a simple, durable, and economic mechanism designed especially to be conveniently used for propelling velocipedes and hand-cars, and the principal object of the invention is to provide a mechanism which can be placed upon any car operated by the revolving of two cranks by foot-power for the velocipede and by a lever for hand-cars, which mechanism when set in motion will have an arrangement of gears, shafts, ball-bearings, and fly-wheels, through the medium of which an easily-running vehicle is provided.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

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

Figure 1 is a side elevation of a velocipede-car illustrating the application of the propelling mechanism thereto. Fig. 2 is a view similar to Fig. 1, illustrating the application of the propelling mechanism to a hand-car. Fig. 3 is a longitudinal section through the car and through the propelling mechanism. Fig. 4 is a section taken substantially on the line 4 4 of Fig. 3. Fig. 5 is an elevation of the outside of one of the axle-boxes, the cap being removed therefrom; and Fig. 6 is a vertical section through the box, the cap being shown removed and in side elevation.

In carrying out the invention the platform A of the car may be of any suitable or approved construction, and the forward and rear axles 10 and 11 are journaled in boxes 12, which consist of an upper straight section 12^a, adapted to be bolted or otherwise secured to the body of the car or other support, and a cylindrical body-section 12^b. The cylindrical body-section is provided with an interior chamber 13 of annular shape, and the body is further provided at its inner end with an aperture or opening 14, leading into the aforesaid chamber, the opening being of slightly-larger diameter than the axle 10, while at the outer side of the body a larger opening 15 is formed, the wall of which is threaded, and this opening also leads into the chamber 13. The axle passes through from one side of the body of the box to the other.

Any desired number of ball or roller bearings 16 is placed in the aforesaid chamber 13 and grouped around the axle, having bearing thereon; and after these ball-bearings are in place a cap 17, provided with a hollow exteriorly-threaded shank 17^a, is screwed into the opening 15 and receives the outer end of the axle. Under this construction the axle is made to run true and with the least possible amount of friction, and the axle and its bearings are protected from dust, sand, &c.

At each side of the central portion of the car-platform A a bracket 18 is constructed, and each of the said brackets is provided in its outer face with a chamber or recess 19, in which balls or rollers 20 are to be contained, the latter being held in place by a cap 21, having an opening therein corresponding practically in diameter to the diameter of the space between opposing balls of the bearing when the balls are in working position. A shaft 22 is passed through the plates 21 in the brackets 18, and the said shaft is squared at each of its ends to receive the hub-section 23 of the crank-arm 24, the hub having a bore of cross-sectional shape corresponding to that of the ends of the shaft; and when the hubs of the cranks are in position on the shaft the ball-bearings 20 are engaged with the peripheral surfaces of the said hubs, the plates 21 serving to hold the balls firmly in position. When the car is of the velocipede type, pedals 25 of any approved construction are carried at the outer extremities of the cranks, as shown in Fig. 1.

Within the framing or platform of the car a gear 26 is firmly secured on the shaft 22, being close to the hub of one of the cranks; and this gear is made to mesh with a pinion 27 located below the shaft and forming a portion of the compound gear consisting of the pinion

27 and a gear 28, the gear 28 being substantially of the same size as the shaft-gear 26, and the said compound gear is held to turn upon a spindle 29, which is secured in the frame or the said platform, as illustrated in Fig. 3.

A hollow shaft 30 is placed around the shaft 22 and abuts against the shaft-gear 26, or practically so. The hollow shaft is provided with a pinion 31 at that end nearest the shaft-gear 26, and the pinion 31 meshes with the gear 28 of the compound gear heretofore alluded to. The hub 32 of a fly or balance wheel 33 is firmly secured upon the tubular shaft, and the tubular shaft is of much larger diameter than the pedal or crank shaft 22, and the said pedal or crank shaft is provided with a series of annular grooves 34, preferably arranged equidistant apart, one of the grooves being about centrally between the ends of the tubular shaft, and a groove is likewise located near each end of the tubular shaft; and in each of these grooves 34 ball or roller bearings 35 are placed, which move freely in these grooves and have bearing against the inner face of the tubular shaft, as illustrated in Fig. 3.

A large sprocket-gear 36 is secured upon the pedal or crank shaft 22 adjacent to the balance-wheel 33 and within the aforesaid frame of the car; and the said sprocket-wheel is connected preferably by means of a chain belt 37 with a sprocket-pinion 38 located upon the rear axle of the car.

When the car is of the velocipede type a seat-standard 39 is secured to the platform or frame of the car, and is carried upward over the balance-wheel, and a seat 40 is adjustably placed on the standard, while a second standard 41 is projected upwardly and rearwardly from the forward portion of the car frame or platform, and is provided with a handle 42 at its upper end, to be grasped by the occupant of the seat 40 when at work.

When the car is of the hand type, a standard 43 is secured about centrally on the platform of the car, and upon the top of the standard a lever 44 is centrally pivoted, having substantially the same action as the ordinary walking-beam, and this lever at each side of its center is connected with the extremities of the cranks 24 by pitmen 45.

It will thus be observed that in the velocipede type of car motion is imparted directly to the shaft 22 by pedals through foot-power, and on the hand-car the same motion is imparted to the shaft by hand-power through a lever and pitmen. The shaft 22, which moves with the cranks 24, gives motion to the gear 26 which is rigidly secured to the said axle; and it will be further observed that by the revolution of the said gear 26 motion is instantly transferred to the pinion 27 and gear 28 forming the compound gear, and that the gear 28 meshing with the gear on the fly-wheel axle will revolve the said fly-wheel, and by means of the antifriction-bearing balls 35 the balance or fly wheel will revolve to such an extent that it will materially assist in the operation of the car by carrying the shaft 22 to which the sprocket-wheel 36 is attached over dead-centers. It is likewise obvious that through the medium of the aforesaid ball-bearings 35, over which the fly or balance wheel 33 revolves and upon which the weight of the said wheel rests, friction is reduced to a minimum. The motion of the car is further facilitated by reason of the roller-bearings in the axle-boxes, and the car is enabled to run smoothly at great velocity.

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

1. In a mechanism for propelling velocipedes, hand cars and like vehicles, a driving shaft, cranks attached to the said driving shaft, ball bearings journaling the cranks, a fly wheel mounted to turn on the crank shaft, ball bearings interposed between the crank shaft and hub of the fly wheel, said bearings being disposed within the said hub in a manner to support its center and ends, and a driving connection between the said crank shaft and an axle of the car, as and for the purpose specified.

2. In a mechanism for propelling velocipedes, hand cars and similar vehicles, a driving shaft, a frame through which the said shaft passes, cranks secured to the ends of the shaft, ball bearings in the said frame, journaling the hubs of the said cranks, a fly wheel mounted upon the crank shaft, ball bearings carried by the said shaft and engaging with the hub of the fly wheel, a gear connection, substantially as described, between the drive shaft and the fly wheel, and a driving connection between the said crank shaft and an axle of the car, as and for the purpose set forth.

3. In a vehicle, the combination with a frame, and driving mechanism, substantially as described, of a journal box comprising a straight upper portion adapted to be secured to the frame, and a cylindrical body portion having an interior chamber and an opening outward from said chamber and through which the wheel axle passes, roller bearing surrounding the axle in the chamber, a track wheel having rigid connection with the axle and a cap having an exteriorly threaded hollow shank engaging in a tapped opening leading into the chamber, the said hollow shank receiving the end of the axle, as and for the purpose specified.

4. In a mechanism for propelling velocipedes and hand cars and like vehicles, a frame, a driving shaft passed through the frame, having its ends squared, cranks secured to the squared ends of the said shaft, ball bearings located within the said frame and engaging with the periphery of the hubs

of the cranks, caps entered into the frame securing the ball bearings in position, a fly wheel loosely mounted upon the crank shaft, being seated on ball bearings carried by the crank shaft, a gear connection between the crank shaft and the hub of the fly wheel, and a driving connection between the said crank shaft and an axle of the car, as and for the purpose specified.

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