(No Model.)

2 Sheets—Sheet 1.

C. YINGST.

HAND PROPELLED VEHICLE.

No. 399,110. Patented Mar. 5, 1889.

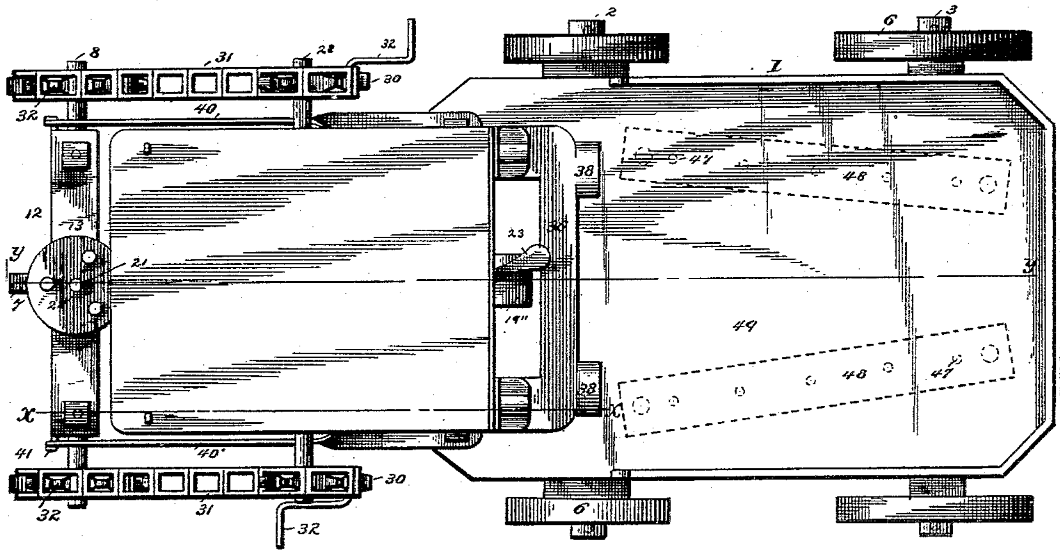

Fig. 1.

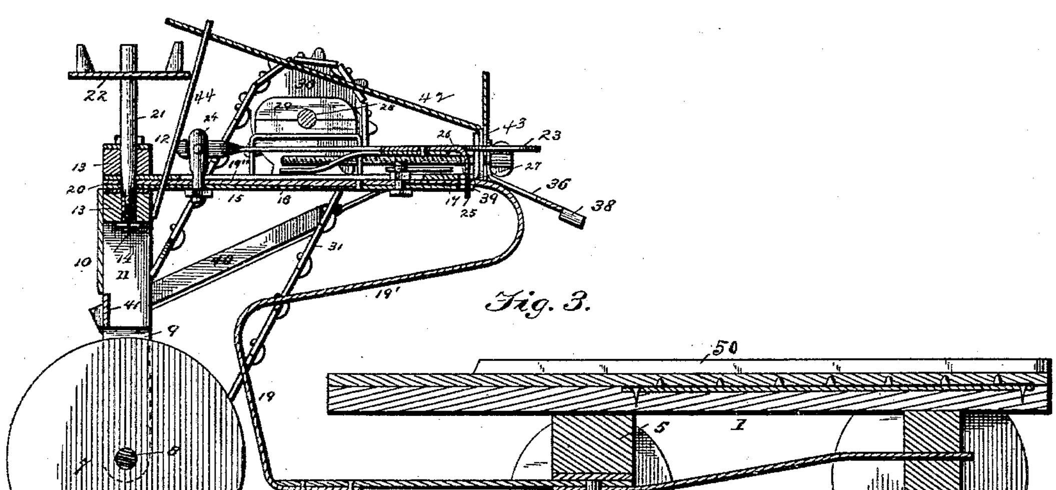

Fig. 3.

Witnesses:

[signature]

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Attorneys.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

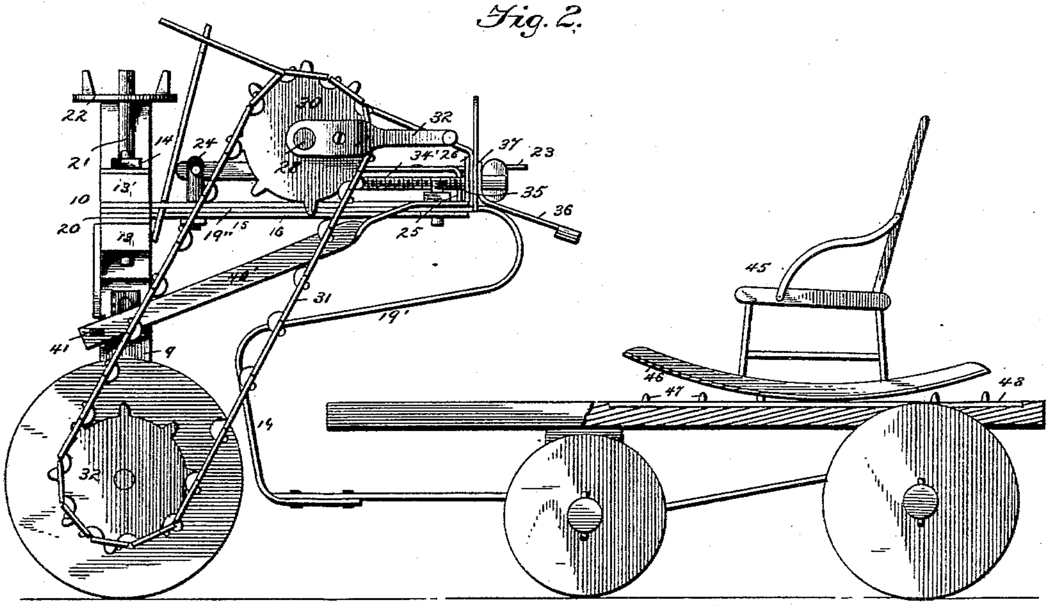
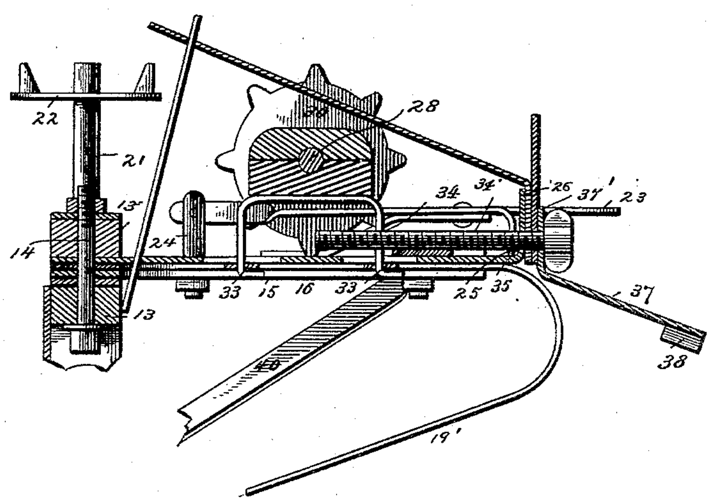


Fig. 4.



Witnesses:

[signature]

Arthur L. Bryant

Inventor:

Cyrus Yingst,

By. Edson Bros.

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UNITED STATES PATENT OFFICE.

CYRUS YINGST, OF ANNVILLE, PENNSYLVANIA.

HAND-PROPELLED VEHICLE.

SPECIFICATION forming part of Letters Patent No. 399,110, dated March 5, 1889.

Application filed January 2, 1889. Serial No. 295,172. (No model.)

To all whom it may concern:

Be it known that I, CYRUS YINGST, a citizen of the United States, and a resident of Annville, in the county of Lebanon and State of Pennsylvania, have invented certain new and useful Improvements in Hand-Propelled Vehicles; 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 which it appertains to make and use the same.

My invention relates to a hand-propelled vehicle especially adapted for use by invalids within the house or in the open air on a piazza or sidewalk; and it has for its objects, first, to provide means whereby the occupant can propel the vehicle with very little labor and exertion; second, to adapt the vehicle to be guided or steered either by hand or the knees; third, to provide a table for holding a book in convenient position for the occupant to read without supporting the book, or the table may be used to support other articles within convenient reach of the occupant, and it also partly conceals the mechanisms for steering the machine and for taking up the slack in the sprocket-chains; fourth, to provide the bed of the vehicle with means for holding against lateral displacement either a removable platform or a rocking-chair, and, finally, to improve the vehicle in minor details of construction, and thus simplify and make the same more durable.

With these ends in view my invention consists of the combination of devices and peculiar construction and arrangement of parts, as will be hereinafter fully described and claimed.

To enable others to understand my invention, I will now proceed to describe the same in connection with the accompanying drawings, in which—

Figure 1 is a top plan view of my improved vehicle, showing the removable platform connected to the bed. Fig. 2 is a side elevation with the rocking-chair in position on the bed. Fig. 3 is a vertical longitudinal sectional view on the line *y y* of Fig. 1. Fig. 4 is a vertical sectional view through the supplemental frame on the line *x x* of Fig. 1.

Like letters of reference denote corresponding parts in all the figures.

In the embodiment of my invention I employ a horizontal bed, 1, of suitable dimensions and mount the same upon front and rear axles, 2 and 3, respectively, the rear axle being fixed or permanently secured to the bed, while the front axle is pivotally connected by a vertical king-bolt, 4, to a bolster, 5, which is fixed to the under side of the bed at the front end thereof, each of the axles 2 3 having a pair of wheels, 6, fitted thereon.

7 designates a front steering-wheel, which is located in advance of the bed and its wheels, and this steering-wheel is secured on a horizontal shaft, 8, which is journaled in the lower extremities of two parallel members or plates, 9, of a vertical fork, 10. The upper ends of the members 9 of the fork are permanently secured to the upper member, 11, thereof by means of bolts, as shown, and to the upper end of the fork 10 is secured a horizontal cross-head, 12. This cross-head consists of two horizontal bars, 13 13′, which are bolted together by vertical bolts 14, and between the opposing faces of these bars 13 13′ are interposed the ends of the sides 15 of a supplemental frame, 16, which is arranged in a horizontal position in rear of the cross-head 12. This supplemental frame 16 consists of the two parallel sides 15 and front and rear cross bars or arms 17, which unite the rear and front ends of the sides 15, and the front end of this supplemental frame is rigidly united to the cross-head 12 and the vertical fork 10 by means of the vertical bolts 14, which pass through said front ends of the sides 15 of the frame 16 and the bars 13 13′ of the cross-head, whereby the supplemental frame is caused to move or turn with the cross-head and the fork.

The front axle, 2, of the vehicle is connected with the vertical fork by means of a plate, 18, and a vertical hanger, 19, said plate and hanger being made, preferably, of steel. The plate is secured rigidly to the front axle, between the wheels thereof, and has its front edge beveled, as shown, and the hanger joins this front edge of the plate at the apex thereof. The hanger extends upwardly in a vertical line from the plate for a short distance, then inclines rearwardly, as at 19′, until it clears the rear edge of the supplemental frame 16, and is then bent into a horizontal arm, 19″, which extends forwardly toward the cross-head and beneath the middle

of the frame, the rear cross bar or arm 17 of said frame 16 resting on the horizontal arm 19″ of the hanger to assist in supporting the rear end of the supplemental frame. A slot or space, 20, is formed between the opposing faces of the bars 13 13′ of the cross-head, and in the middle of this slot is fitted the extreme forward end of the arm 19″ of the hanger 18. This hanger 18 is pivotally connected to the cross-head and vertical fork by means of a vertical king-bolt, 21, that is fixed to the lower member, 13, of the cross-head and passes through the forward end of the arm 19″ and the upper member, 13′, of said cross-head, the king-bolt being extended through and above the member 13′ for a short distance and having secured to its upper extremity a horizontal lamp-support, 22.

It will be observed that the hanger and the front axle can move or swing on the king-bolt 21 independently of any movement of the supplemental frame, the cross-head, and the vertical fork; but I have provided means for locking the hanger and supplemental frame together at different angles, as may be required in traveling in a straight line or describing an arc of a circle. This locking means consists of a latch, 23, which is arranged between the sides 15 of the supplemental frame and above the horizontal arm of the hanger, and the forward end of the latch is pivoted to a short fixed post, 24, secured to the front end of the hanger immediately in rear of the cross-head, as shown in Fig. 3. This latch is capable of vertical movement or play, and at its rear end it has a depending tooth or prong, 25, that is adapted to enter either of a series of notches, 26, preferably three in number, and spaced equidistant in the rear edge of the cross-bar 17 of the supplemental frame, a vertical aperture, 27, being formed in the horizontal arm of the hanger in position for either of the notches 26 to align therewith.

When it is desired to steer the machine in a straight line, the supplemental frame is adjusted to cause the middle notch to align with the aperture 27, and the prong of the latch is adjusted to lock the supplemental frame to the hanger, whereby the hanger and front axle are caused to turn with the supplemental frame, the cross-head, and the vertical fork, and thus follow the steering-wheel. When it is desired to turn either to the right or left, or to describe an arc of a circle, the latch is lifted out of the aperture 27, and the supplemental frame, the cross-head fork, and steering-wheel turned to the desired direction until the proper notch, 26, of the frame aligns with the aperture 27, when the latch is lowered to cause the prong thereof to enter the aligned notch and aperture, and thus lock the supplemental frame to the hanger.

A horizontal power-shaft, 28, is mounted in bearings 29, supported on the supplemental frame 16, and the ends of this power-shaft are extended beyond the ends of the supplemental frame and provided with sprocket-wheels 30, over which pass sprocket-chains 31, that run to similar sprocket-wheels, 32, fixed on the extended ends of the shaft 8 of the front steering-wheel. To the exposed lateral faces of the sprocket-wheels 31 are fixed crank-handles 32, by means of which the occupant of the vehicle can operate the power-shaft, the motion of which is transmitted by the chains to the shaft 8 of the front steering-wheel to propel the vehicle.

In order to permit the slack in the sprocket-chains to be readily taken up and thus maintain the proper tension in the same, I have provided means whereby the distance between the power-shaft and the shaft 8 can be varied. To accomplish this end, the bearings 29 are connected to the sides of the supplemental frame by a pin-and-slot connection, 33, to adapt said bearings to be moved longitudinally on the frame, and these bearings have threaded openings 34 in their rear sides, in which work the forward ends of adjusting-screws 34′, the rear ends of which are passed through slots 35, formed in vertical lugs 36 on the rear end of the supplemental frame, at the sides thereof. It will be observed that the shaft 28 can be drawn away from the horizontal shaft 8 and toward the rear of the supplemental frame by merely turning the adjusting-screws in the proper directions, and that the slack in the sprocket-chains can thereby be readily taken up. I have also provided means for steering the machine by the knees of the occupant when the hands are engaged in propelling the vehicle. This mechanism consists of a horizontal plate, 37, arranged at the rear of the supplemental frame and immediately above the bed of the vehicle, and this plate is attached by lugs 37′ to the rear of the supplemental frame, and at each end it has a socket or clasp, 38, adapted to receive the knees of the occupant while seated on the bed.

When it is desired to steer with the knees, the latch is lifted up and the prong thereof placed in a recess, 39, formed in the rear bar 17 of the supplemental frame, so that said latch will not enter either of the notches or vertical aperture of the hanger, and the supplemental frame, the cross-head, vertical fork, and steering-wheel can then be moved in either direction at the will of the attendant or occupant.

40 40′ designate inclined braces, which are secured to the rear end of the supplemental frame, at the sides thereof, and the lower front ends of the braces are secured to the ends of a horizontal bar, 41, which is fixed to the vertical fork, at right angles thereto, whereby the inclined braces serve to brace and strengthen the supplemental frame.

42 is the table, which is arranged in a horizontally-inclined position above the supplemental frame and the devices supported thereon, the front edge of the table terminating in rear of the lamp-holder. The rear end of the table has depending lugs 43, through

which are passed the rear ends of the adjusting-screws, which thus serve to support the rear end of the table, while at the same time they are capable of turning freely in said lugs, and the front end of the table is supported by means of vertical standards 44, which are fixed to the sides of the supplemental frame at the front end thereof. This table serves to support a book in a convenient position to enable the occupant to read the same, and other articles can be placed thereon within convenient reach of the occupant, which is very desirable.

45 designates an easy or rocking chair, the rockers of which are provided with metallic plates 46, in which are formed a series of perforations, which receive a series of studs, 47, fixed to metallic plates 48, that are secured to the horizontal bed 1 of the vehicle. By means of these apertured and studded plates 46 48 the chair can be rocked or oscillated on the bed 1 when the vehicle is in motion without danger of lateral displacement. The rocking-chair can be replaced by a horizontal platform, 49, which has a series of openings in its lower sides to receive the studs and a railing or ledge, 50, around its upper edge to prevent displacement of the contents of the platform.

The operation of my invention will be readily understood by those skilled in the art from the foregoing description, taken in connection with the drawings.

I would have it understood that I do not confine myself to the exact details of construction and form and proportion of parts herein shown and described as an embodiment of my invention, as I am aware that changes therein can be made without departing from the spirit or sacrificing the advantages 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 hand-propelled vehicle, the combination of a vertical fork carrying a steering-wheel, a supplemental frame secured rigidly to the fork, a hanger pivotally connected to the fork and rigidly connected to a pivoted front axle, a bed, devices for detachably locking the supplemental frame to the hanger, and a driving-shaft journaled in the supplemental frame and connected to the axle of the steering-wheel, substantially as and for the purpose described.

2. In a hand-propelled vehicle, the combination of a bed having a pivoted front axle, a vertical fork having a rigid cross-head at its upper end and a steering-wheel journaled in its lower end, a supplemental frame rigidly secured to the cross-head, a hanger secured at one end to the front axle of the bed and having a horizontal arm arranged beneath the supplemental frame and pivoted to the cross-head, a device for adjustably and detachably locking the supplemental frame to the arm of the hanger, and a power-shaft journaled in the supplemental frame and gearing to the axle of the steering-wheel, substantially as and for the purpose described.

3. In a hand-propelled vehicle, the combination of a bed having a pivoted front axle, a vertical fork carrying a steering-wheel, a cross-head rigidly secured to the upper end of the fork, a hanger rigidly secured to the front axle of the bed and having a horizontal perforated arm pivoted to the cross-head, a supplemental frame rigidly secured to the cross-head and provided with a notched rear bar, which rests on the horizontal arm of the hanger, a latch pivoted to the arm of the hanger and having a prong adapted to enter one of the notches and the aperture of the supplemental frame and hanger-arm, respectively, and a power-shaft journaled in the supplemental frame and geared to the shaft of the steering-wheel, substantially as and for the purpose described.

4. In a hand-propelled vehicle, the combination of a bed having a front axle, a vertical fork carrying a steering-wheel and a cross-head, a hanger pivoted to the cross-head and rigidly secured to the front axle, a supplemental frame secured to the cross-head, a horizontal plate secured to the rear end of the supplemental frame and having the sockets for the reception of the knees of the occupant of the vehicle, and a locking device for detachably connecting said supplemental frame to the hanger, substantially as and for the purpose described.

5. In a hand-propelled vehicle, the combination of a bed having a pivoted front axle, a vertical fork carrying a cross-head, a steering-wheel rotatively mounted in the lower end of the fork and having gear-wheels provided on its extended ends, a supplemental frame rigidly secured to the cross-head, a transverse bar secured to the fork above the axle of the steering-wheel, inclined braces secured to the ends of said transverse bar and the rear end of the frame, a power-shaft journaled in the supplemental frame and having gear-wheels at its ends, which are connected with the similar wheels on the shaft of the steering-wheel by intermediate chains, and a hanger rigidly secured to the front axle and pivoted to the cross-head, substantially as and for the purpose described.

6. In a hand-propelled vehicle, the combination, with an adjustable swinging frame carrying the driving mechanism, of a table arranged above said frame and the devices supported thereon, and vertical standards secured to the swinging frame and the front end of the table for supporting the latter in an inclined position.

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

CYRUS YINGST.

Witnesses:
A. C. YINGST,
J. H. ULRICH.