This invention relates to rider-propelled vehicles and particularly to a toy vehicle adapted to be rocked, propelled and steered by a child while seated thereon.

The invention contemplates the provision of a relatively simple and inexpensive toy vehicle having a movable frame in the general shape of an animal on which the child is seated and which is rocked on the operation of foot levers by the child, the frame when so rocked transmitting propelling force to the front wheel unit of the vehicle, while steering is accomplished manually through connections to the pivotally supported rear wheel unit.

The various objects of the invention will be clear from the description which follows and from the drawings, in which—

Fig. 1 is a top plan view of the vehicle, some parts being broken away to reveal the interior structure.

Fig. 2 is a side elevational view of the vehicle with parts broken away, and showing in dash-dot lines, the uppermost position of the movable animal frame.

Fig. 3 is a fragmentary front elevational view of the propelling connections between the movable frame and the front wheel unit showing in dash-dot lines the uppermost position of said frame and of the connections.

Fig. 4 is a similar view of the foot levers and the connecting rods to the movable frame for rocking said frame.

Fig. 5 is a fragmentary top plan view of the pivoted rear wheel unit and of the steering mechanism thereof, showing in dash-dot lines the positions assumed thereby when the vehicle is steered toward the left.

Fig. 6 is a fragmentary side elevational view of the seat portion of the movable animal frame showing the upper parts of the driving connecting rods and showing in dash-dot lines the uppermost positions assumed by the frame and the rods when the front of the frame is rocked upwardly.

Fig. 7 is a fragmentary vertical sectional view of certain of the steering connections, taken on the line 7—7 of Fig. 5.

Fig. 8 is a bottom plan view of Fig. 7.

In that particular embodiment of the invention illustrated, the child's seat 10 rests on and is supported by the similar, though not necessarily identical vertical side panels 11 and 12 of the movable frame designated generally by the numeral 13.

The panels are preferably arranged in parallel spaced relation and are shaped in the form of a rideable animal such as a horse. The space between the upper parts of the panels is closed by a suitable sheet as 14 of plastic or the like material, said panels being held together in their proper spaced relation at certain points as will appear hereinafter, said sheet 14 bridging the panels and hiding a large part of the interior mechanism.

The frame 13 is pivoted to the fixed frame 15 by means of the bolt 16 passing through the panels 11 and 12, through the spacer blocks 17 and 18 (Figs. 2 and 4) and through the upstanding and upwardly and forwardly inclined frame member 19, which is in the form of a post and is secured at the lower end thereof to the upper surface of the horizontal frame member 20. Said spacer blocks 17 and 18 are secured to the respective panels 11 and 12 and are of insufficient thickness to engage the post 19 to avoid interference with the rocking of the frame 13 about the pivot 16. The upper end surfaces of the blocks also serve as supports for the seat 10.

Means are provided to enable the rider to rock the frame 13 while he remains seated on the seat 10. As shown, said means comprises the foot levers 21 and 22 each bent intermediate the ends thereof. Both of the foot levers are pivoted at the rear ends thereof to the post 19 as by means of the bolt 23. Each of the more widely separated front ends of the levers carries a suitable pedal as 24 projecting transversely of the lever and adapted to be engaged and depressed by a foot of the rider, the lever oscillating upwardly and downwardly when operated and in the opposite direction in which the other lever operates at the moment. That is, when the front end of the lever 21 moves up, the corresponding end of the lever 22 moves down and when the front end of the lever 21 is highest, the front end of the lever 22 is lowest and vice versa.

The levers are constrained to move in opposite directions and alternately up and down and to transmit their motion to the frame 13, thereby to rock said frame about the pivot 16. This is done by the connecting rod 25 pivoted at its lower end to the lever 21 forwardly of the lever pivot 23, as at 26, and pivoted at its upper end to the uppermost position of said frame 13 shown in dash-dot lines in Fig. 2 and 4. A similar connecting rod 28 is pivoted to the lever 22 as at 29 and at its upper end is pivoted to the panel 12 as at 30 rearwardly of the frame pivot 16. It will be seen that as the foot lever 21 is depressed from a high position thereof, it pulls the forward end of the movable frame 13 downwardly through the medium of the rod 25 and pivot 27, thereby rotating said frame 13 in a counter-clockwise direction as viewed in Fig. 2 about the pivot 16. Such rotation raises the pivot 30 of the connecting rod 28 and also raises said rod and the foot lever 22, but the rotating or oscillating nature of the frame in either direction is limited by the wheel rotating means soon to be described. After the lever 21 has been fully depressed by the rider, the other lever 22 is similarly depressed and pulls down the rod 28 and the rear part of the frame 13 thereby continuing the rocking of the frame.

By alternately depressing the foot levers, rocking of the frame 13 is continued as long as desired.

As has been indicated, means are provided to transmit the rocking motion of the frame and to convert such motion to rotary motion of one of the front wheels as 31 of the front wheel unit, said wheel 31 being fixed to and rotating with the wheel shaft 33. The other front wheel 32 is loose on the wheel shaft 33 for differential purposes, as when driving around curves or other steering operations. Said motion-transmitting and converting means comprises the crank 34 formed in the wheel shaft 33 (Figs. 1 and 3), and the connecting bar 35 pivoted at the lower end thereof to the crank and pivoted at its upper end to the frame rod 36 extending between and connecting the panels 11 and 12. A sleeve spacer as 37 on said rod 36 between the bar 35 and the panel 11 and a similar spacer 38 on the other side of the bar between the rod and the panel 12 prevent undue shifting of the bar on the rod and also aid in maintaining the panels in their proper spaced relation.

The shaft 33 is supported for rotation with the axis thereof fixed in a position at right angles to the horizontal member 20 of the fixed frame 15, by means of the Z-shaped bracket 60, one arm of which is secured to one side of the member 20 and the opposite arm of which carries the shaft at a point adjacent the wheel 31. A
similar bracket similarly secured to the other side of the member 20 similarly carries the other end portion of the wheel shaft 33. When the frame 13 is rocked by the operation of the foot levers, the front end of the frame is alternately raised and lowered, thereby raising and lowering the rod 36 and the bar 35 and causing the crank 34, shaft 33 and fixed wheel 31 to rotate and to propel the vehicle along the ground or supporting surface. It will be understood that the foot pedals and levers can be depressed only to the extent permitted by the raising of the crank 34 to its highest point or to the low point.

Steering of the vehicle is accomplished by swinging the rear wheel unit about the central pivot 40 thereof, said pivot passing through the rear end part of the fixed frame member 20. Said unit comprises the inverted U-shaped bracket 41 swingable about the pivot 40 and carrying the rear wheel shaft 2 on which the rear wheels 45 and 44 are loosely mounted. The rider grasps the steering handle 45 at the front of the vehicle and turns the handle in the direction in which he wishes to steer. The connections from the steering handle to the bracket 41 include the L-shaped rod 46 extending downwardly from the handle and having its bearing in and passing through the block 47 (Fig. 1) which is secured to and extends between the panels 11 and 12 at the front of the rocking frame 13 and also serves to hold the panels in the proper spaced relation thereof. To the leg 48 at the lower end of the rod 46, a bracket 47, is pivotally secured the front end of the link rod 50, the rear end of which is pivoted to the arm 51 extending radially from the upper end of the bell-crank lever 52. Said front end and rear end of the link 50 are substantially parallel and about at right angles to the remainder of the link. The front end passes loosely through a hole of somewhat larger diameter than said end in the leg 48, while the rear end of said link similarly passes loosely through a larger hole in the upper arm 51 of the lever 52. Consequently, when the rod 46 moves the frame 13 and the block 47, the front end of the link also moves down so that the link 50 is tilted forwardly and downwardly, this being possible because of the movement of the ends of the link 50 in the relatively large holes into which said ends are loosely inserted. Similarly, the link 50 becomes tilted forwardly and upwardly when the steering rod 46, block 47 and the front end of the frame 13 are raised. The shank connecting the respective upper and lower parallel arms 51 and 53 of the lever 52 is mounted in a substantially upright position in the post 19 and member 20 of the fixed frame for oscillation therewith. The connections between the link 50 and arms 48 and 46, 47 being loose, are therefore such as to permit rocking movement of the link or of either end thereof with the rocking of the movable frame as well as sufficient relative turning movement about the respective axes at the front and rear parallel end portions of the link. At the on end of the fixed frame 13 extending radially from the bell-crank lever 52 is pivoted the front end of the link 54, the rear end of said link being pivoted to the bracket 41 of the rear wheel unit at a point spaced transversely from the pivot 40.

It will be seen that the connections are such that when the handle 45 is turned counterclockwise as viewed in Fig. 5 to steer toward the left, the rear wheel unit is rotated clockwise or in the opposite direction so that the steering is in the required direction. As best seen in Figs. 2 and 5, a suitable stop as 55 is provided to prevent the steering handle from being turned too far in either direction. Said stop is shown as in the form of a half moon member 20 with the ends thereof in the path of, and respectively on opposite sides of, the arm 53 of the bell-crank lever. One end of said arm engages the end of the stop when swung to the limit in one direction and engages the other end of the stop when swung to the limit in the opposite direction to prevent excessive movement thereof.

It will now also be seen that the rocking frame 13 is rocked alternately in opposite directions about the pivot 16 on operation of the foot levers, thereby rotating the wheel crank 34 and propelling the vehicle through some rocking of the frame. By means of the rocking of the frame which seats the driver, a simple, inexpensive but effective rider-propelled toy vehicle results, and the objects of the invention attained in a practical manner.

While a specific form of the invention has been shown and described, certain obvious changes may be made therein without departing from the spirit of the invention defined in the appended claims.

We claim:
1. In a rider-propelled toy vehicle, a fixed frame, a movable frame having a pivot intermediate the ends thereof securing the movable frame to the fixed frame, the movable frame comprising a pair of panels in parallel spaced relation to each other and in the shape of a ridable animal, a seat secured to the movable frame and movable as a unit therewith, means for rocking the movable frame comprising a pivot for rocking the foot levers pivoted at the rear ends thereof to and respectively on opposite side of the fixed frame and operable by the rider alternately downwardly to oscillate respectively in opposite directions simultaneously, the front end of each lever being free, a connecting rod from an intermediate point on one lever to a point on one of the panels in horizontal spaced relation to and on one side of the pivot, and a connecting rod from an intermediate point on the other lever to a different point on the other panel on the other side of the pivot and in horizontal spaced relation thereto, a front wheel unit comprising a crank shaft, means securing the shaft to the fixed frame, a connecting member between the shaft and the movable frame rotating the shaft when the movable frame is rocked by the levers, a rear wheel unit, a pivot mounting said unit to the fixed frame, and means for swinging said unit to steer the vehicle.

2. In a rider-propelled toy vehicle, a fixed frame comprising a horizontal member and an upright post, a rigid movable frame comprising a pair of parallel rigid panels in spaced relation to each other and in the general shape of a ridable animal having a pivot intermediate the ends thereof securing the frames together, a seat secured to the movables frame above the pivot and movable as a unit with the movable frame, means for rocking the movable frame comprising a pair of substantially horizontal foot levers pivoted at the rear ends thereof by a connecting rod to the post, each lever having a free front end operable downwardly by the rider to oscillate vertically in a direction opposite to that in which the other lever oscillates, a connecting rod from one lever to a point of one panel in front of the aforesaid pivot, a second connecting rod from the other lever to a point of the other panel rearwardly of the aforesaid pivot whereby operation of the levers by the rider rocks the movable frame and the seat, a front wheel unit comprising a crank shaft, means securing the shaft to the front end of the fixed frame, a connecting member between the shaft and the rear end of the fixed frame for the rear wheel unit, and means for swinging the rear wheel unit about the last mentioned pivot to steer the vehicle comprising a steering handle, a block fixed to and between the panels, a rod carrying the handle and rotatably secured by the block for movement with the fixed frame, and linkage loosely connecting the rod to the rear wheel unit, the handle block rod and part of the linkage oscillating with the panels.

3. The toy vehicle of claim 2, the linkage comprising a bell-crank lever rotatably supported by the fixed frame between the handle and the pivot for the rear wheel unit,
a link loosely connecting one arm of the bell-crank lever to the handle and a second link connecting the other arm of the bell-crank lever to the rear wheel unit at a point spaced from the pivot of the front wheel.

4. In a rider-propelled toy vehicle, a fixed frame comprising a horizontal member and a post upstanding from the member, a ridable movable frame comprising a rigid panel on each side of the post and means including a seat connecting the panels, a first pivot for the movable frame passing through the post and the panels, rider-operated means supported by the fixed frame and connecting the movable frame for rocking the movable frame comprising a pair of levers on opposite sides of the post respectively, a common second pivot securing the rear ends of the levers to the post, the front ends of the levers being free and depressible alternately by the rider to oscillate the levers simultaneously and respectively in opposite directions, a connecting rod from one lever to a point on one panel in front of the first pivot and a second connecting rod from the other lever to a point on the other panel to the rear of the first pivot, a front wheel unit, means connecting the unit to the panels to propel the vehicle, a rear wheel unit pivoted to the fixed frame, a steering handle pivoted to the movable frame, and means operatively connecting the handle to the rear wheel unit to steer the vehicle on movement of the handle.

5. The toy vehicle of claim 4, the front wheel unit comprising a crank, a wheel shaft carrying the crank, a wheel fixed to the shaft and rotatable therewith, means fixing the unit to the front part of the fixed frame, a connecting member between the crank and the movable frame to convert the rocking movement of the movable frame to rotary movement of the crank, and means connecting the L-shaped member rotatable with the handle, means secured to the panels for supporting the L-shaped member, a substantially upright bell-crank lever supported by the post and having an upper arm above the post and a lower arm below the post, a first link connecting a leg of the L-shaped member to said upper arm and a second link connecting the lower arm to the rear wheel unit.

6. In a rider-propelled toy vehicle, a fixed frame, a relatively movable frame comprising a pair of rigid upright panels in parallel spaced relation, a pivot connecting the frames, a pair of horizontal foot levers pivoted respectively at the rear ends thereof to opposite sides of the fixed frame, rods connecting the respective levers to respective points of the movable frame on opposite sides of the pivot to rock the movable frame about the pivot when the levers are oscillated, the front ends of the levers being free and respectively alternately depressible and being constrained by the rods to oscillate the respective levers simultaneously in opposite directions, a front wheel unit fixed to the fixed frame, means for converting rocking movement of the movable frame to rotary movement of a wheel of the unit to propel the vehicle, and steering means comprising parts carried by and movable with the movable frame and other parts including linkage loosely connected to the first mentioned parts and rotatably supported by the fixed frame.

7. The toy vehicle of claim 6, the front wheel unit comprising a pair of transversely spaced apart wheels, a shaft for the wheels, one of the wheels being fixed to the shaft, a crank on the shaft and means for supporting the shaft, the means for converting the rocking movement of the movable frame to the front wheel unit comprising a connecting member pivoted to the crank and to the rigid panels.

8. In a rider-propelled toy vehicle, a fixed frame comprising a horizontal member and a post upstanding from the rear part of the member, a movable frame comprising a pair of parallel panels each in the shape of a ridable animal and spaced apart a distance greater than the width of the member, and an edge sheet bridging the space between the upper, front and rear edges of the panels, each of the panels comprising relatively fixed and integral head, body and leg portions, a first pivot at the body portion pivoting the frames together for oscillation of the panels as a unit relatively to the post, a seat at the top of the panels, a pair of substantially horizontal foot levers below the panels and having free front ends, one lever being on one side of the post and the other on the other side of the post, a second common pivot for the rear ends of the levers passing through the lower portion of the post, a pedal extending from the front end of each lever, a first connecting rod pivoted to and extending upwardly between the panels from a point on and intermediate the ends of one lever to a first point on one of the panels in horizontal spaced relation to and on one side of the first pivot, a second connecting rod pivoted to and extending upwardly between the panels from a point on and intermediate the ends of the other lever to a second point on the other of the panels in horizontal spaced relation to and on the other side of the first pivot, said levers and connecting rods being adapted to rock the movable frame as a unit about said first pivot, the respective levers being supported only by said second pivot and by one of the connecting rods for oscillation in parallel vertical planes and in opposite directions, a front wheel unit comprising a crank shaft, a third connecting rod between and pivoted to the shaft and to the lower parts of the panels, a rear wheel unit, a third pivot mounting said unit to the horizontal member of the fixed frame and means for swinging the rear wheel unit to steer the vehicle comprising a steering handle, a rod extending downwardly from the handle between the panels and having a bent end portion, a block fixed to and between the panels and rotatably supporting the rod, a bell-cranks lever having a substantially upright portion rotatably mounted in the post and in the member, an upper arm extending from the top of the upright portion above the post and a lower arm extending from the bottom of the upright portion below the member, a link having one end portion thereof passing loosely through the bent end portion of the rod and having the other end portion thereof passing loosely through the upper arm of the bell-crank lever whereby the steering handle, rod and block move with the movable frame, and the link rocks in said upper arm and in said bent end portion of the rod when the movable frame is oscillated, and a second link connecting the lower arm to a point of the rear wheel unit on one side of the third pivot.

9. The toy vehicle of claim 8 and a stop on the under face of the member and in the path of the lower arm limiting the rotation of the bell-crank-lever in both directions.

References Cited in the file of this patent

UNITED STATES PATENTS

936,092 Corcoran Oct. 5, 1909
1,295,759 Hall Feb. 25, 1919
1,507,765 Blaylock Sept. 9, 1924
1,630,192 Madison May 24, 1927

FOREIGN PATENTS

8,147 Great Britain of 1888