Feb. 3, 1953 E. E. LINDENBEIN 2,627,419

ANIMAL SIMULATING TOY VEHICLE AND EXERCISER

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Fig. 1.

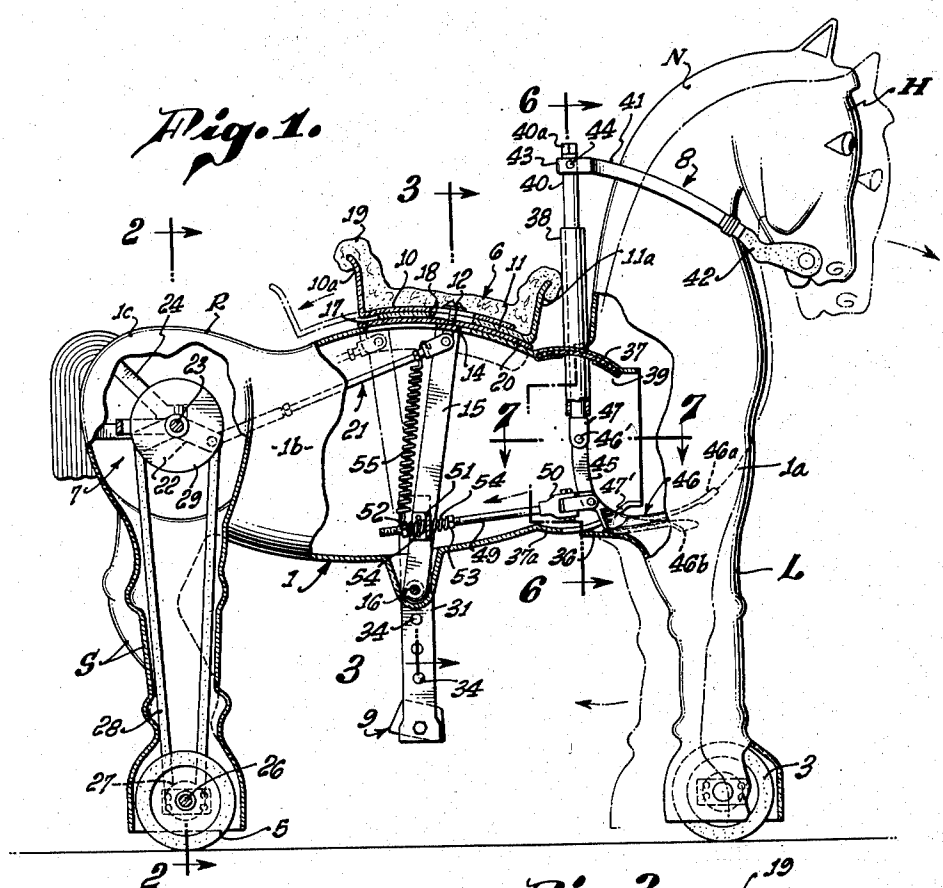


Fig. 2.

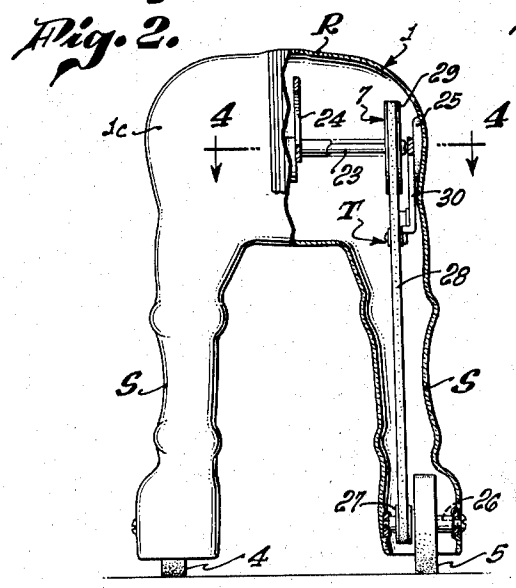
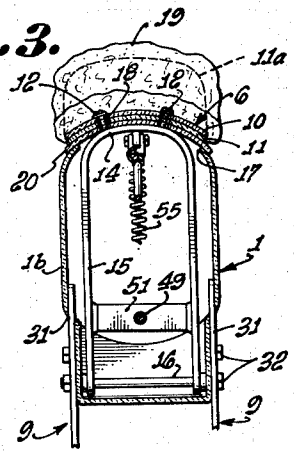


Fig. 3.



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Fig. 4.

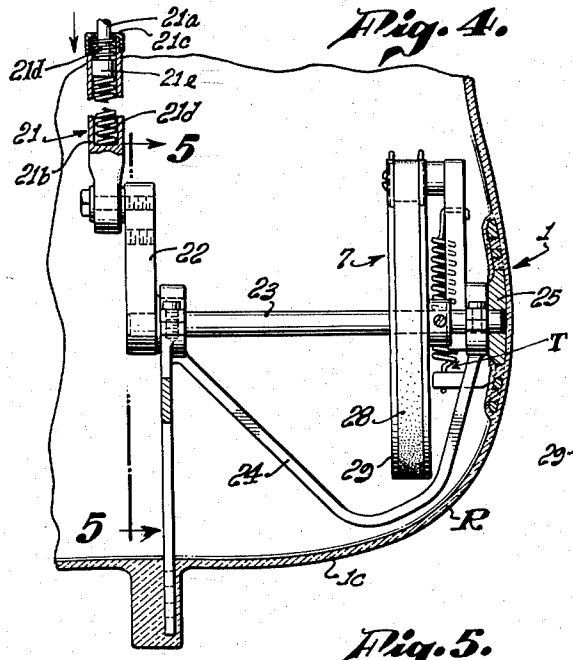


Fig. 10.

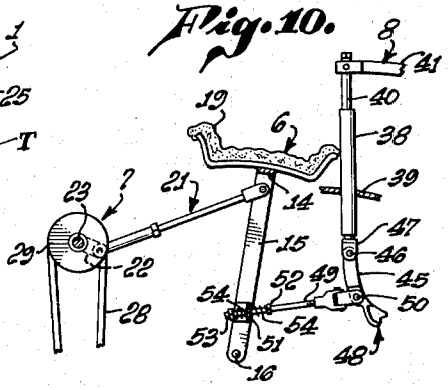


Fig. 5.

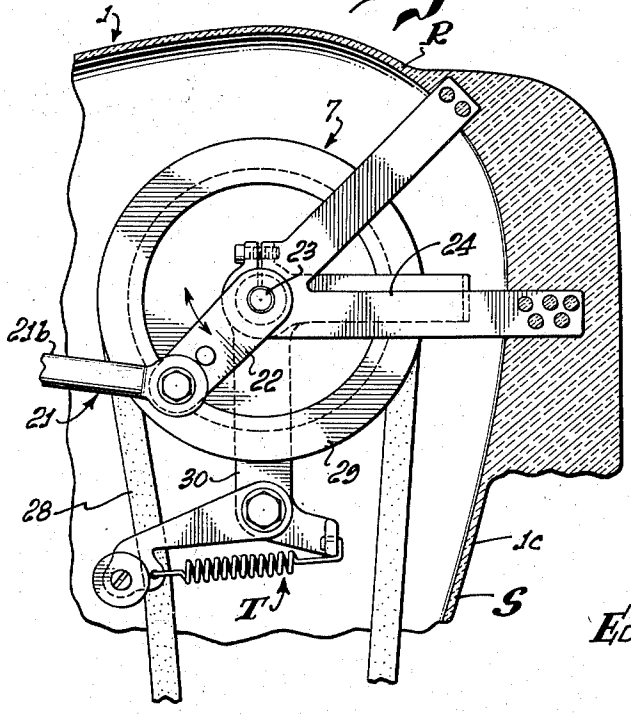
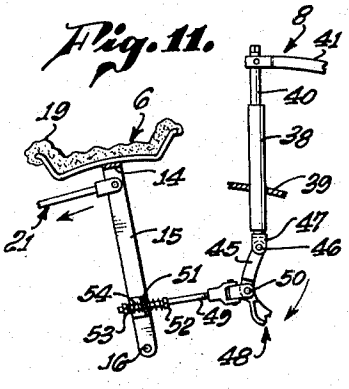


Fig. 11.



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Fig. 6.

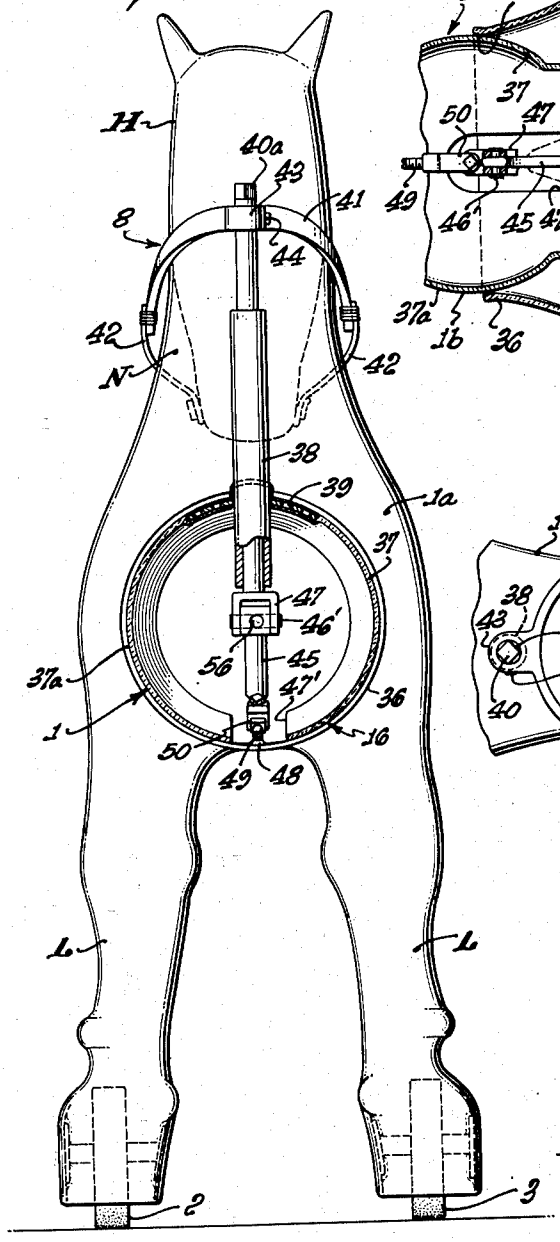


Fig. 7.

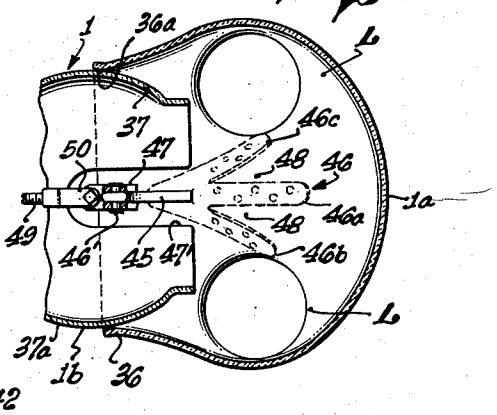


Fig. 8.

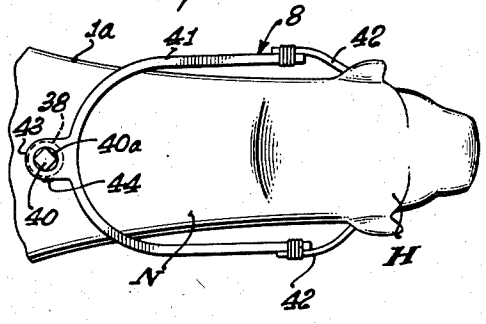
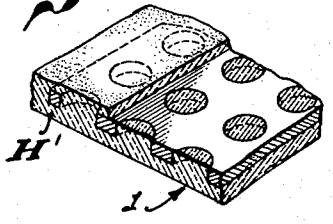


Fig. 9.



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2,627,419

ANIMAL SIMULATING TOY VEHICLE AND EXERCISER

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Application November 10, 1950, Serial No. 194,992

11 Claims. (Cl. 280—1.203)

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It is an object of this invention to provide an improved rider-propelled vehicle wherein the movements of the body of the rider seated astride the vehicle, as necessary to propel it are such that beneficial exercise of the rider's limbs and body is effected, together with the amusing effect of riding a quadruped, for example a horse.

It is another object of this invention to provide a toy vehicle and exerciser of the character described having an improved propulsion means.

It is another object hereof to provide a riding vehicle such as described having an improved steering means.

It is another object hereof to provide a riding vehicle in which the body thereof simulates a horse or other quadruped and is articulated and movable in a life-like manner responsive to the propulsion means for the vehicle.

It is a further object hereof to provide a riding vehicle such as described wherein the propulsion means and other operating parts for the most part are concealed in the body of the vehicle in a particularly effective manner and so as to reinforce the vehicle.

It is an additional object of the invention to provide a toy vehicle exerciser such as described which readily lends itself to use of the newer moldable plastic materials in forming the body thereof, whereby the device may be economically produced as a strong and durable unit of desirable light weight and readily made to simulate a horse or other animal.

It is another object of this invention to provide a toy vehicle and exerciser such as described having means whereby the body optionally may be made rigid or articulate to suit the particular rider or kind of exercise desired.

This invention possesses many other advantages and has other objects which may be made more easily apparent from a consideration of one embodiment of the invention. For this purpose there is shown a form in the drawings accompanying and forming part of the present specification. This form will now be described in detail, illustrating the general principles of the invention; but it is to be understood that this detailed description is not to be taken in a limiting sense since the scope of the invention is best defined by the appended claims.

Referring to the drawings:

Fig. 1 is a part sectional, part elevational view of a toy vehicle and exerciser embodying the present invention;

Fig. 2 is a rear elevation of the vehicle partly in vertical section, the sectioned part being

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taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary vertical sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is an enlarged fragmentary horizontal sectional view taken on the line 4—4 of Fig. 2;

Fig. 5 is a fragmentary sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is an enlarged vertical sectional view taken on the line 6—6 of Fig. 1;

Fig. 7 is an enlarged fragmentary horizontal sectional view taken on the line 7—7 of Fig. 1;

Fig. 8 is a fragmentary top plan view of the head or forward end of the vehicle;

Fig. 9 is a fragmentary perspective view partly in section illustrating a detail of the construction of the vehicle;

Fig. 10 is a diagrammatic view of the actuating means shown in one extreme position; and

Fig. 11 is a view similar to Fig. 10, showing the actuating means in its other extreme position.

In accordance with this invention the toy vehicle and exerciser includes a sectional elongated body 1 supported on front wheels 2 and 3 and similar rear wheels 4 and 5. The forward or front section 1*a* of the body 1 is supported by the front wheels and is movable about a vertical axis relative to the main section 1*b* in order to turn the front wheels for steering the vehicle.

On the section 1*b* of the body is a seat 6 mounted so that it may be moved by the rider and which constitutes a part of the actuating or driving means 7 for driving the rear wheel 5 on the rear portion 1*c* of the body section 1*b*, to propel the vehicle.

A combined hand gripping and steering means 8 is operable on the body for turning the front section 1*a* and steering the vehicle. This gripping and steering means and foot rests 9 supported by the body beneath the seat, enable the rider to exert force for moving the seat back and forth to propel the vehicle.

The body 1 is hollow and encloses and conceals all of the actuating mechanism except the seat 6 and certain portions of the hand gripping and steering means. This construction therefore, readily lends itself to a body formation simulating a quadruped, for example a horse. Thus, as here shown, the front section 1*a* is formed to simulate the head H, part of the neck N and the forelegs L of a horse, while the main section 1*b* simulates the horse's body and the rear portion 1*c* represents the rump R and rear legs S. I have found that the body may be economically made of light weight plastic material, cast or molded in two hollow parts, namely the section 1*b* and rear por-

tion 1c as one part and the front section 1a as the other part, these two parts being joined as will be hereinafter fully described. However, the body may be made of metal or any other suitable material which is formable to provide the construction and characteristics as here shown.

The seat 6 simulates a saddle and comprises a pair of similar overlapping plates 10 and 11 having upwardly turned outer ends 10a and 11a and secured by means of screws 12 to the top portion 14 of an inverted U-shaped lever 15 fulcrumed at 16 within the mid-portion 1b of the body 1. The top portion 14 of the lever 15 extends into an opening 17 in the top of the section 1b and is movable therein in a fore and aft direction as the seat 6 is correspondingly moved. The screws 12 extend through slots 18 in the plates 10 and 11 and upon being loosened provide for adjustment of the plates to vary the size of the seat 6. Suitable cushioning material 19 may be employed as here shown as a covering for the plates 10 and 11 and the upturned ends 10a and 11a thereof. The plates 10 and 11 are curved both longitudinally and transversely of the section 1b of the body 1 inasmuch as that part of the section 1b over which the seat 6 is movable forwardly and rearwardly in an arcuate path, is correspondingly curved. A wear plate 20 lines the underside of the lower plate 11 of the seat 6 and is slidable over the opening 17 on the top part of the section 1b, being curved to correspond to the curvature of plate 11 and said top part.

As the rider sitting astride the seat 6 exerts forces for reciprocating it, the lever 15 will be rocked and through a link 21 and crank arm 22 will rotate a shaft 23 at the rear portion of the interior of the body section 1b. This shaft, as shown in Figs. 2, 4 and 5, is suitably journalled in an angular bracket 24 and in a bearing member 25 which are fastened within the rear part of the body portion 1b. As here shown, the bracket 24 and member 25 are keyed to or partly embedded in the plastic material forming the body as shown at H' in Fig. 9, having been molded in keyed relation thereto, although they may be secured in place by any other suitable means.

The shaft 23 operates a drive means for but one of the rear wheels in order that the desired differential action of the two rear wheels will be had in turning curves. Consequently, as here shown the rear wheel 5 is mounted to turn on an axle 26 in one of the hollow rear legs S and has a driven pulley 27 fixed to one side thereof so as to turn with the wheel around the axle. This pulley is driven by means of a belt 28 operated by a drive pulley 29 mounted on and driven by the shaft 23. The drive pulley is of greater diameter than the driven pulley to provide the desired driving ratio for the wheel 5 effectively to propel the vehicle.

As shown in Fig. 4, the link 21 comprises a section 21a slidable in a tubular section 21b and through a screw cap 21c on the section 21b. Compression springs 21d are mounted in the tubular section 21b and abut opposite ends of a head 21e on the section 21a to absorb the thrusts of the latter in the operation of propelling the vehicle. On the forward movement of the link 21 the front spring 21d resists movement of the head 21e and on the rearward movement of head 21e the rear spring 21d resists movement of the head. Thus, the seat 6 is cushioned in its back and forth movement in propelling the vehicle.

Mounted on an arm 30 which is downwardly directed from the bracket 24 and shaft 23, as shown in Figs. 4 and 5, is a suitable spring loaded belt tightening unit T.

The foot rests 9 simulate stirrups and enable the rider to have a good purchase thereon with the feet in exerting the forces on the seat 6 necessary to reciprocate it and propel the vehicle. These foot rests extend laterally outwardly from the lower ends of like bars 31 secured as shown in Fig. 3, by means of screw or similar fastenings 32 to opposite sides of the body section 1b. Fastenings 32 hold the rests 9 in place and with the series of holes 34 in the bars 31 (see Fig. 1) make it possible to mount the rests at different heights to suit the particular rider.

The front section 1a is provided with a rearwardly projecting tubular portion 36 into which the tubular front end 37 of the body section 1b is extended as shown in Figs. 1, 6 and 7. The end 37 of section 1b has a spherical bearing surface 37a contacting a circular bearing surface 36a on the tubular portion 36 whereby the front section 1a may be turned for steering and may be rocked as about a horizontal axis.

The hand gripping and steering means 9 serves as a means for holding the body sections 1a and 1b in assembled relation as it includes connected and relatively movable parts rigidly fixed to the two body sections. Thus, the body section 1b has a tubular post 38 rigidly fixed thereto by means of an anchor plate 39 mounted interiorly of the end 37 and fixed thereto by being embedded therein in the manner indicated in Fig. 9, or otherwise as desired, provided the post is rigidly held in place and extends above the end portion 37 rearwardly of the tubular portion 36, as well as downwardly into said end portion as shown in Figs. 1 and 6.

A steering shaft 40 is rotatably mounted in the tubular post 38 and supports at its upper end a rigid U-shaped handle bar 41 which embraces the neck portion N and is connected to the head H by means of flexible elements 42. This handle bar and the flexible elements 42 simulate driving reins, the bar providing convenient grips for the hands of the rider and facilitating the turning of the front section 1a for steering the vehicle. The bar 41 is provided with a rearwardly extending apertured ear 43 mounted on the shaft 40 and secured thereon by means of a set screw 44 whereby the bar may be vertically adjusted to suit the particular rider. The upper end of the shaft 40 is squared as at 40a to facilitate turning thereof by means other than the bar 41 for the purpose which will be hereinafter described.

The main connecting means holding the body sections 1a and 1b in assembled relation comprises an arm 45 pivoted on a horizontal axis by means of a pivot pin 46' inserted into the bifurcated lower end 47 of the shaft 40. This arm is extended downwardly and forwardly, and is rigidly joined to a bracket 46 consisting of a perforated middle arm 46a and two similar arms 46b and 46c extending divergently from opposite sides of the arm 46a as shown in Figs. 1 and 7.

The bracket 46 extends downwardly through a slot 47' in the lower side of the tubular end portion 37, then forwardly into the front section 1a of the vehicle body 1, and lies upon the surface 48 between the leg portions L as best shown in Fig. 7, being rigidly secured thereto in any suitable manner, for example by being keyed or embedded as indicated in Fig. 9. With the bracket 46 rigidly fixed to the surface 48 interiorly of the front section 1a, and pivoted through the arm 45 to the shaft 40, the front section 1a of the

body 1 is securely connected with the body section 1b and at the same time is movable relative thereto for steering and animation movement purposes. The bracket 46 and the connection thereof through the arm 45 with the shaft 40 also maintains the front section 1a in upright position.

As a means for effecting a fore and aft rocking of the front section 1a of the body about the horizontal axis provided where the body sections 1a and 1b are telescopically connected, a link 49 is connected between the lever 15 and the arm 45. Thus, as the lever is moved to propel the vehicle the front section 1a will be rocked in a fore and aft direction to simulate movement of a horse while being ridden. The link 49 as shown in Fig. 1, has a universal joint connection 50 at its forward end with the lower end of the arm 45 and adjacent its rear end is slidably supported in an apertured cross member 51 mounted on the lever 15 close to the fulcrum of the lever. Adjustable stop nuts 52 and 53 are mounted on the link 49 on opposite sides of the cross member 51 and maintain compression springs 54 between them and said cross member whereby the link is resiliently driven responsive to rocking of the lever 15. The extent of movement of the link and consequent rocking movement of the front portion 1a is controlled by adjusting the nuts 52 and 53. A tensioned retractile spring 55 is connected with the link 21 and the cross member 51 on the lever 15 as shown in Figs. 1 and 3 and operates to prevent the driving mechanism from coming to rest on dead center.

As a means for rendering the rocking mechanism inoperative so that the only movement permitted the front portion 1a is about a vertical axis for steering the vehicle, the upper end of the arm 45 is provided with a transverse opening 56 extending as shown in Fig. 6 at right angles to the pivot pin as mounted in Fig. 6. Thus, when it is desired to render the rocking means inoperative, the set screw 44 for the handle bar 41 is loosened and the pivot pin 46' is removed, after which a suitable tool not shown may be applied to the end 40a of the shaft 40 and the shaft turned through 90 degrees to align the pivot pin holes in the bifurcated end 47 with the opening 56 in the arm 45. The pin 46' is now inserted to extend through the end 47 and opening 56 whereby the arm 45 and bracket 46 form a rigid connection between shaft 40 and the front portion 1a. The nuts 52 and 53 are adjusted so that no appreciable movement of the link 49 will take place when the lever 15 is rocked while the arm 45 is connected as above stated.

It should be noted that various muscles of the body, arms and legs are brought into play when the rider moves his body to reciprocate the seat 6 in propelling the vehicle, thereby providing beneficial exercise for all parts of the body and limbs of the rider.

The opening 17 in the top of the body portion 1b, the open lower ends of the legs L and S, and the open tubular end 37 of the body portion 1b make it possible to assemble the operating mechanism in the body 1. However, it is obvious that the body 1 may be made in sections if desired to facilitate the assembly of the apparatus, after which the sections may be joined together in any suitable manner.

I claim:

1. In a toy vehicle and exerciser, a body, wheels supporting said body, a seat, means mounting said seat in sliding contact with the body for movement forwardly and rearwardly thereon in a path following the contour of the body including a lever fulcrumed on said body and fixed at one end to said seat, means on the body against which the feet of a rider seated astride the seat may be engaged, hand gripping means on the body forwardly and above the seat, and means for driving one of said wheels responsive to movement of said lever as effected by said movement of said seat.

2. In a toy vehicle, an elongated sectional body having a wheel supported main section and a wheel supported front section, a post fixed to and extending upwardly from said main section, and means forming a telescopic connection of said sections affording the turning of said front section about the axis of said post for steering the vehicle including a shaft rotatably supported by said post, said front section extending above and below said telescopic connection, means forming a connection between the said shaft and an intermediate portion of said front section and means forming another connection between said shaft and the portion of said front section above said telescopic connection including a handle bar fixed on said shaft and extending forwardly and embracing opposite sides of said front sections.

3. In a toy vehicle, an elongated sectional body having a wheel supported main section and a wheel supported front section, a tubular post fixed to and extending upwardly from said main section, and means forming a telescopic connection of said sections affording the turning of said front section about the axis of said post for steering the vehicle including a shaft rotatable on said post, said front section extending above and below said telescopic connection, means forming a connection between the said shaft and an intermediate portion of said front section and means forming another connection between said shaft and the portion of said front section above said telescopic connection, including a handle bar fixed on and extending forwardly of said shaft embracing opposite sides of said front section, and flexible elements connecting said handle bar with said front section.

4. In a toy vehicle, an elongated sectional body having a wheel supported front section and a wheel-supported main section, and means forming a connection between said sections affording the turning of the front section about a vertical axis for steering the vehicle and about a horizontal axis in a rocking motion, including a rotary upright shaft mounted on said main section and extending above and below the upper surface thereof, means forming a telescopic joint between said sections forwardly of said shaft, means forming a connection between the upper end of said shaft and front section including a rigid bar fixed between its ends on said shaft and extending forwardly along opposite sides of the front section, an arm pivoted at one end to the lower end of said shaft to swing forwardly and rearwardly of the body, and means rigidly connecting the other end of said arm with said front section.

5. In a toy vehicle, an elongated sectional body having a wheel supported front section and a wheel-supported main section, means forming a connection between said sections affording the turning of the front section about a vertical axis for steering the vehicle and about a horizontal axis in a rocking motion, including a rotary upright shaft mounted on said main section and extending above and below the upper surface

thereof, means forming a telescopic joint between said sections forwardly of said shaft, means forming a connection between the upper end of said shaft and the front section including a rigid bar fixed between its ends on said shaft and extending forwardly along opposite sides of the front section; an arm pivoted at one end to the lower end of said shaft to swing forwardly and rearwardly of the body, and means rigidly connecting the other end of said arm with said front section, driving means on the body for driving one of the wheels, means movable by a person seated on the body for operating the driving means, and means operable responsive to the driving means for moving said arm and rocking said front section.

6. In a toy vehicle, an elongated sectional body having a wheel supported front section and a wheel-supported main section, means forming a connection between said sections affording the turning of the front section about a vertical axis for steering the vehicle and about a horizontal axis in a rocking motion, including a rotary upright shaft mounted on said main section and extending about and below the upper surface thereof, means forming a telescopic joint between said sections forwardly of said shaft, means forming a connection between the upper end of said shaft and front section including a rigid bar fixed between its ends on said shaft and extending forwardly along opposite sides of the front section; an arm rigidly connected at one end with the front section, and means optionally operable to pivotally connect the arm with said shaft for rocking movement forwardly and rearwardly of the body and for connecting the arm to the shaft to prevent such rocking movement of the arm.

7. In a toy vehicle and exerciser, a sectional body having a hollow main section and a hollow front section, said main section having a curved portion, wheels supporting said sections, cooperative hollow portions on said section in telescopic bearing engagement connecting said sections for relative movement, a seat slidable forwardly and rearwardly on said curved portion of the main section adapted to be so moved by an occupant thereof, means within the main section operable responsive to movement of said seat for driving one of the wheels supporting the main section, and steering means connecting said sections for movement of the front section about a vertical axis, including a handle bar carried by the main section and means connected with the handle bar and extending through said cooperative telescopic portions and fixed within said front section.

8. In a toy vehicle and exerciser, a sectional body having a hollow main section and a front section, wheels supporting said sections, means connecting said sections for relative movement, a seat slidable on the exterior of the main section, said main section having an opening therein over which said seat is slidable, a lever fulcrumed with the main section and extending into said opening, means fixing said seat to said lever, and a driving means in said main section for driving one of said wheels, including a shaft, a crank arm thereon, means operatively connecting said shaft with said one wheel, and a link connecting said crank arm with said lever.

9. In a toy vehicle and exerciser, a sectional body having a hollow main section and a front section, wheels supporting said sections, means connecting said sections for relative movement, a seat slidable on the exterior of the main section, said main section having an opening therein over which said seat is slidable, a lever fulcrumed with the main section and extending into said opening, means fixing said seat to said lever, and a driving means in said main section for driving one of said wheels, including a shaft, a crank arm thereon, means operatively connecting said shaft with said one wheel, and a link connecting said crank arm with said lever, and a compression spring associated with said link for cushioning the driving of the link in one direction.

10. In a toy vehicle and exerciser, a sectional body having a hollow main section and a front section, wheels supporting said sections, means connecting said sections for relative movement, a seat slidable on the exterior of the main section, said main section having an opening therein over which said seat is slidable, a lever fulcrumed with the main section and extending into said opening, means fixing said seat to said lever, and a driving means in said main section for driving one of said wheels, including a shaft, a crank arm thereon, means operatively connecting said shaft with said one wheel, and a link connecting said crank arm with said lever, and means for moving said front section relative to said main section responsive to movement of said lever.

11. In a toy vehicle and exerciser, a sectional body having a hollow main section and a front section, wheels supporting said sections, means connecting said sections for relative movement, a seat slidable on the exterior of the main section, said main section having an opening therein over which said seat is slidable, a lever fulcrumed with the main section and extending into said opening, means fixing said seat to said lever, and a driving means in said main section for driving one of said wheels, including a shaft, a crank arm thereon, means operatively connecting said shaft with said one wheel, and a link connecting said crank arm with said lever, and means for moving said front section relative to said main section responsive to movement of said lever, including a member fixed to said front section and extending into said main section, means pivotally mounting said member within said main section and a link connecting said lever with said member.

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