

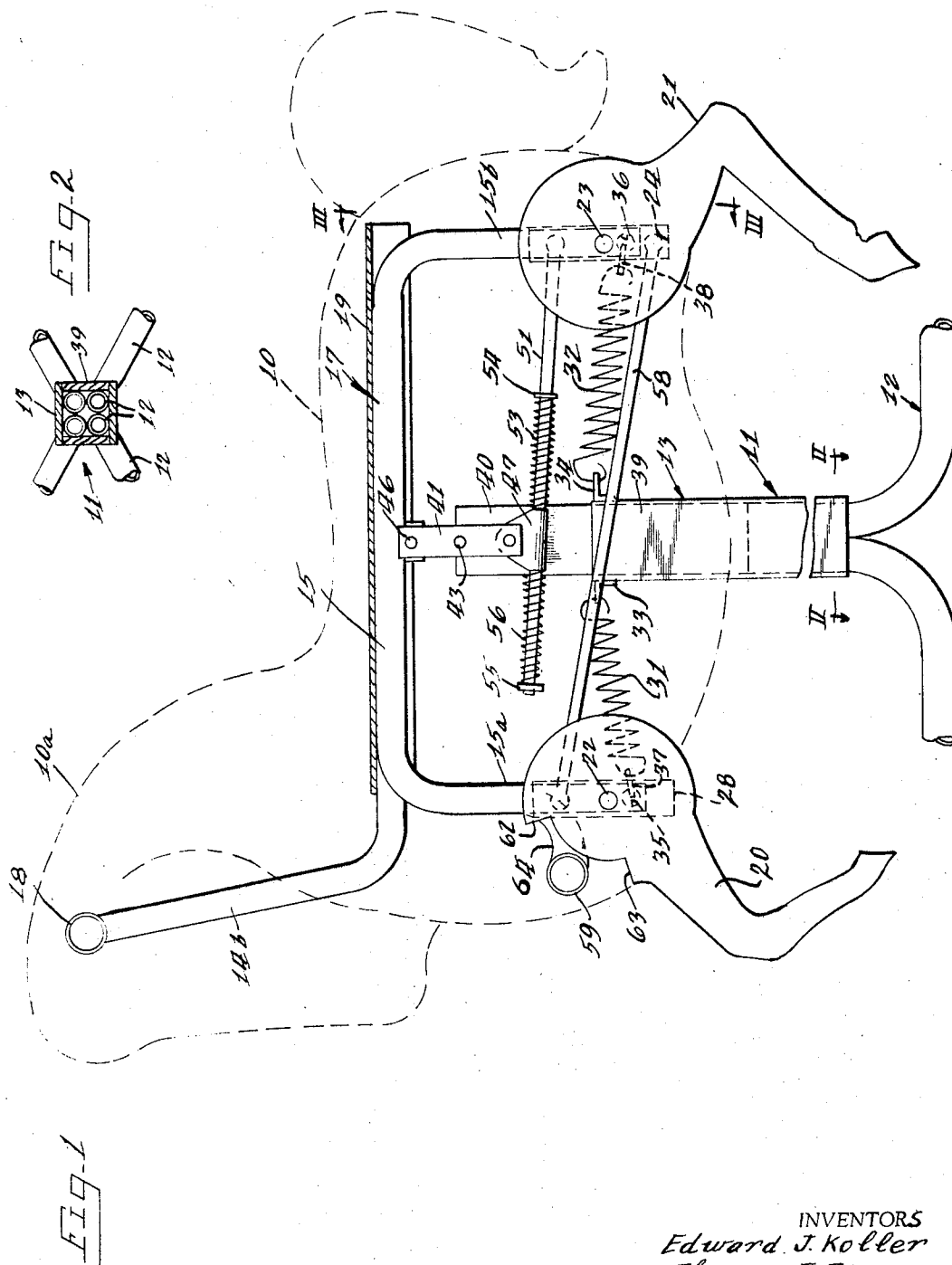
Jan. 21, 1969

E. J. KOLLER ET AL
RESILIENTLY SUPPORTED HOBBYHORSE MOUNTED
ON A PLURAL PIVOTED LINK

3,423,085

Filed Nov. 24, 1961

Sheet 1 of 3



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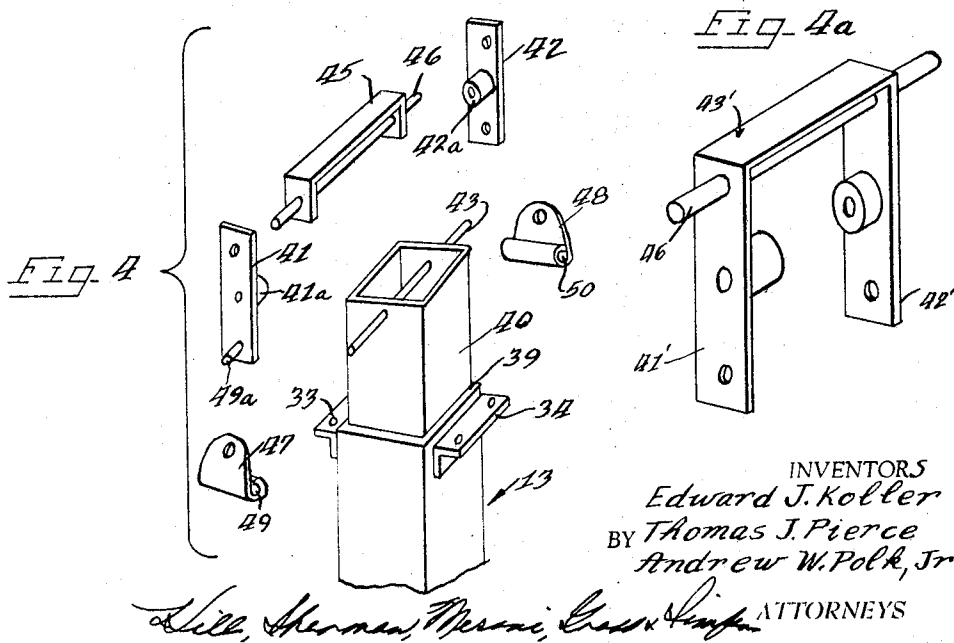
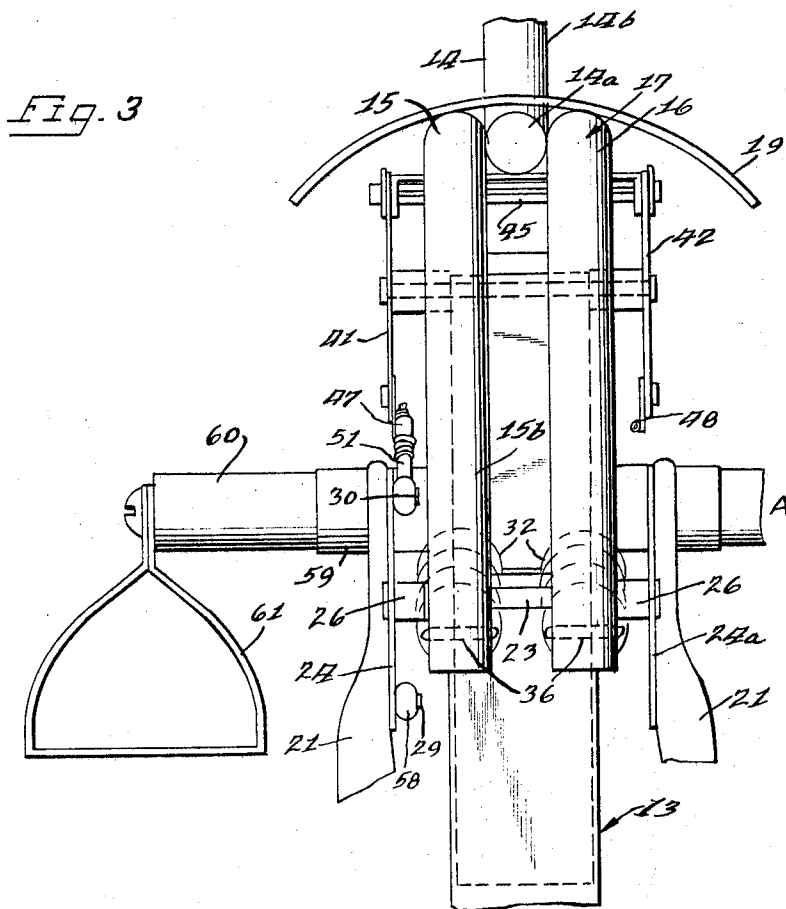
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Fig. 8

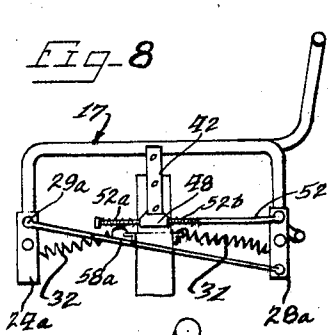


Fig. 5

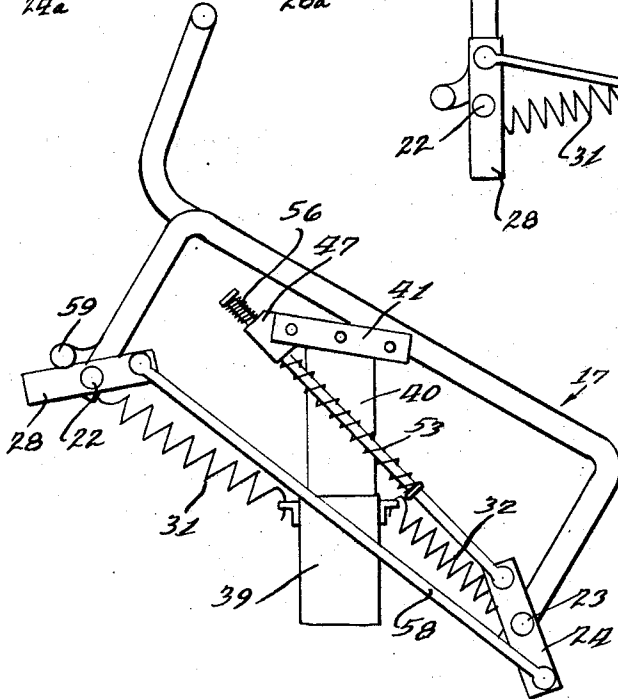
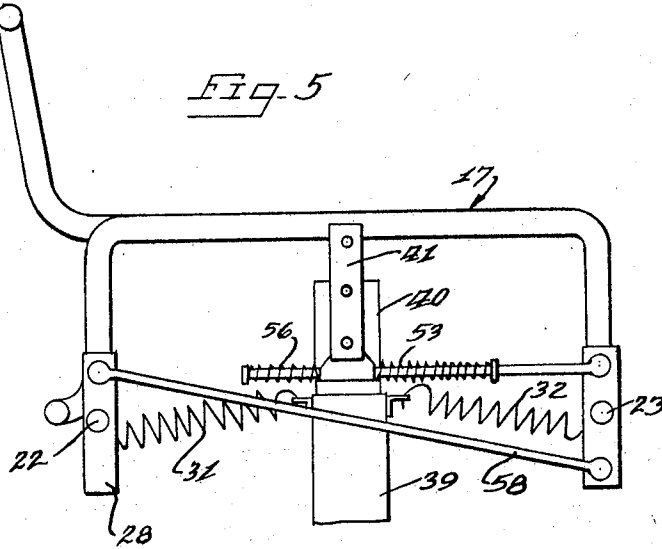
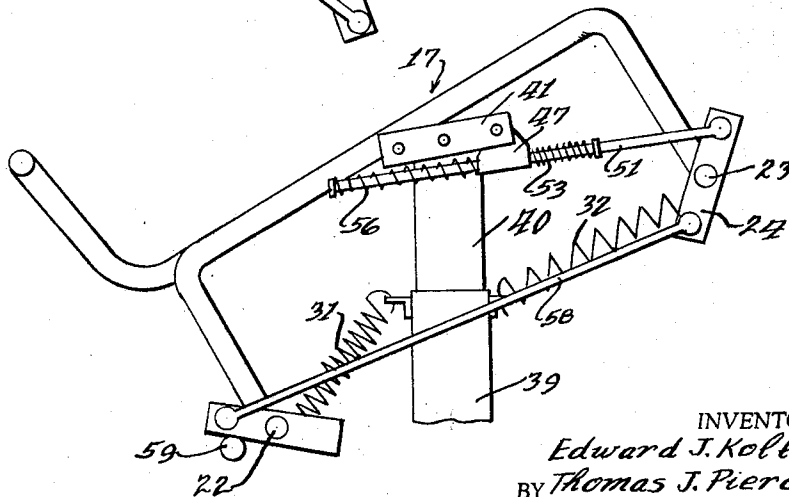


Fig. 6

Fig. 7



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RESILIENTLY SUPPORTED HOBBYHORSE MOUNTED ON A PLURAL PIVOTED LINK

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7 Claims

The present invention relates to improvements in resiliently supported hobbyhorses.

The invention further pertains to an improved support for a riding toy wherein a child rider is seated on the toy body, generally in the form of a horse, in order to experience resilient motion forwardly, rearwardly, upwardly and downwardly. In toys of this type it is advantageous to provide a motion which is pleasant to the child and offers pleasure and obtains a rolling, galloping type motion which simulates the action of an actual live horse. To this end, the present invention features a mechanism which employs legs mounted on the horse body that move relative to the body as the horse moves.

An object of the present invention is to provide an improved support arrangement for a resiliently suspended riding toy wherein the body has a rolling, galloping motion with the center of gravity of the body shifting during riding movement.

A further object of the invention is to provide a riding toy animal with movable legs wherein the legs are driven in movement by an improved operating mechanism during movement of the riding toy body.

A still further object of the invention is to provide in a resilient support for a riding toy, a stabilizing mechanism which prevents unwanted lateral movement of the toy body and prevents unwanted rotation thereof.

Another object of the invention is to provide a spring supported riding toy with movable legs wherein unique apparatus is provided for limiting the movement of the legs.

A still further object of the invention is to provide an improved frame construction for a spring supported riding toy.

Other objects, advantages and features will become more apparent with the teaching of the principles of the invention in connection with the disclosure of the preferred embodiment thereof in the specification, claims and drawings, in which:

FIGURE 1 is a side elevational view shown partly in section, and with the outer body shell shown in broken phantom lines, of a riding toy support mechanism;

FIGURE 2 is a sectional view taken substantially along line II-II of FIGURE 1;

FIGURE 3 is a vertical sectional view, with parts removed or omitted, taken substantially along line III-III of FIGURE 1;

FIGURE 4 is an exploded perspective view of parts of the support for the riding toy;

FIGURE 4a is a perspective view of a modified form of a part shown in FIGURE 4;

FIGURES 5, 6 and 7 are side elevational views of the support mechanism for the riding toy, with parts removed for clarity, shown in a normal unstretched horizontal position in FIGURE 5, shown in a rearwardly tilted position in FIGURE 6, and shown in a forwardly tilted position in FIGURE 7; and

FIGURE 8 is a diagrammatic showing somewhat similar to FIGURES 5 through 7, taken from the opposite side of the frame.

As shown on the drawings: The riding toy is shown in FIGURE 1 as having a body 10 in the form of a toy

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horse. The body is resiliently supported on a stand 11 which has a base portion borne by legs 12 extending laterally outwardly to rest on a supporting floor surface. The stand 11 has an upright portion in the form of a central column 13 which will be described later in further detail.

The body 10 is formed of a material suitable for providing an attractive shape and color and may be formed of a plastic such as vinyl. The plastic body is substantially hollow and formed with a relatively thin outer wall which may be semi-rigid, or may be collapsible and incapable in itself of supporting the weight of a child and is reinforced by an inner supporting frame 17.

The frame 17 includes a shaped center rod 14, FIGURE 3, which has a horizontal portion 14a and an upright portion 14b which extends up into the neck and head 10a of the body 10. At the upper end of the portion 14b is welded a short length of tube 18 with an axis extending horizontally and laterally so as to receive a dowel which extends through the side of the head 10a for aiding in supporting the head and for gripping by the child riding the toy. The body 10 is adapted for riding by a child sitting on its back and the back may be shaped to simulate a saddle.

At each side of the bar 14 are side bars 15 and 16 which are generally U-shaped with the sides of the U pointing downwardly as indicated by the sides 15a and 15b in FIGURE 1. The bars 15 and 16 are suitably secured along their horizontal portions to the horizontal portion 14a of the center bar 14b such as by welding. The bars may be formed of solid stock or preferably are formed of tubular pipe for lightness and strength.

Over the top of the bars is mounted a body reinforcing saddle 19 which is a downwardly turned sheet of material such as sheet metal which supports the plastic body and transfers the weight of the body and rider to the frame 17. The saddle 19 is rigidly secured to the frame such as by welding.

At the front and on each side of the body are pivotally supported legs 20, and legs 21 are mounted at the rear on each side of the body. For this purpose the body may be open on its lower surface with the legs projecting through the openings. Sufficient space is provided for pivotal movement of the legs relative to the body to simulate the movements of the legs of a live horse as it is galloping. The legs are pivotally supported on the frame 17 and for this purpose forward and rear cross rods 22 and 23 extend across the lower ends of the side frame bars 15 and 16.

The legs also may be of plastic and they are shown as being secured to short flat plates with plates 24 and 24a serving the rear legs 21 and plates 28 and 28a serving the front legs 20, FIGURES 1, 3 and 5 through 8. The operating members for the plates are connected to the inner surfaces thereof, but for ease of illustrating they are shown outside of the plates in the schematic views of FIGURES 5 through 8.

As shown in FIGURE 3, the plates 24 are provided with hollow bosses 26 which pivotally support them on the ends of the rod 23. The legs are suitably secured to the plates such as by pins 29 and 30.

Resilient support for the body 10 is afforded by a pair of front springs 31 and a pair of rear springs 32. The springs are wound coil tension springs with hooks at their ends and the springs of each pair are laterally spaced and extend substantially horizontally and are under tension. The inner ends of the front springs 31 are hooked in openings in a bracket 33 secured to the center column 13 of the stand. The forward ends of the springs are hooked in eyelets 37 looped through holes 35 in the lower ends of the side frame members 15 and 16. The forward ends of the rear springs 32 are hooked into openings in a

bracket 34 secured to the center column 13, and the rear ends are hooked into eyelets 38 looped through holes 36 in the lower ends of the downwardly extending rear portions of the side frame members 15 and 16.

A feature of the invention is the provision of the guide arrangement between the stand 11 and the frame 17, which includes a vertical cylinder 39 with a piston 40 slidable therein. The piston and cylinder are shown to be rectangular in shape and thereby cannot have rotation relative to each other. The central column 13 conveniently forms the cylinder by being vertically hollow. The lower open end, FIGURE 2, receives the upwardly bent portions of the legs 12 of the stand which may be welded in place in the cylinder 39, or bolted therein.

The assembly of the cylinder 39 and the piston 40 are connected to the frame by a pair of rocker links 41 and 42. The links are pivotally connected at their mid-point to the piston 40 by a pin 43 extending laterally through the top of the piston 40, and bosses 41a and 42a on the links 41 and 42 are pivotally mounted on the ends of the pin 43, FIGURE 4. FIGURE 4a shows a modified form where links 41' and 42' are in an integral U-shaped piece 43'.

The upper ends of the rocker links 41 and 42 are pivotally connected to the frame, and for this purpose a bracket 45 is suitably secured as by welding to the frame 17 and carries a pin 46 to which the rocker links 41 and 42 are pivotally secured.

At the lower ends of the rocker links are pivotally mounted drive rod swivels 47 and 48 which function to drive the legs at the sides of the horse body. The driving swivels 47 and 48 pivotally connect at the lower ends of the rocker links 41 and 42 by means of pins 49a. The swivels are shaped to form cylindrical sleeves 49 and 50 at their lower ends for slidably receiving leg driving rods 51 and 52. At each side of the swivel 47 are coil compression springs 53 and 56 which are slid over the rods, and the outer ends of the springs drive the rods through washers 54 and 55 locked to the rods. The rod 51 is connected to the rear leg plate 24 by the pin 30, FIGURE 3. Swivel 48 has springs 52a and 52b on each side of the rod 52, FIGURE 8, to drive the legs on the other side of the horse.

The legs on each side of the horse move together and apart, but move in opposite directions on opposite sides of the horse. For this purpose, the leg driving rod 52 extends forwardly to connect to the plate 28a for the front leg.

Operation of the horse is illustrated in FIGURES 5 through 7. Vertical up and down movement of the body and the frame 17 is freely afforded by expansion and contraction of the springs 31 and 32 and the piston 40 will freely slide within the tubular cylinder 39. Movement of the horse will of course be obtained by the child bouncing up and down or rocking back and forth on the body. Lateral stability is afforded in that the horse cannot be tipped laterally sideways with respect to the stand, and is held upright by the rocker links 41 and 42 secured to the top of the piston 40 by the pin 43.

As the child rocks rearwardly, the body and frame shift to the position shown in FIGURE 6. The rocker link 41 tilts rearwardly. The swivel 47 slides forwardly on the leg driving rod 51 and the spring 56 pulls to cause the rear leg plate 24 to move the rear leg 21 to its extreme rear position. The rear leg is connected to the front leg by an interconnecting rod 58 so that the front leg similarly and simultaneously kicks to its extreme forward position. The rod 58 is connected to the front leg plate 28. The rod 58 is connected above the pivotal point 22 for the front leg and below the pivotal point 23 for the rear leg so that the legs simultaneously kick apart or kick together. It will be recognized that the rod could be connected to the same side of the pivot pin for both front and rear legs so that they would simultaneously move forwardly or rearwardly.

At the other side of the horse, FIGURE 8, the leg driving rod 52 is operated by the swivel 48, and the two legs move simultaneously but in a direction opposite to the legs on the side shown in FIGURES 5 through 7. The rod 58a, FIGURE 8, interconnects the legs and extends diagonally from the lower end of the plate 28a for the front leg to the upper end of the plate 24a for the rear leg.

When the child tips the horse forwardly the frame moves to the position of FIGURE 7. The rocker link 41 pivots forwardly, and the swivel 47 pushes on the spring 53 to cause the rod 51 to pivot the rear leg plate 24 and the rear leg forwardly, and to pivot the front leg plate 28 and the front leg rearwardly. On the other side of the horse the front and rear legs move apart. Thus as the child rocks back and forth between the positions of FIGURES 6 and 7, the legs on each side of the horse will alternately move together and move apart in a galloping type of action. It will of course be recognized that by connecting the rods between the legs, and the swivel rods in different arrangements the drive mechanism could be used for obtaining different combinations of movements.

Also, a pleasurable rolling, galloping action is obtained from the horse with its center of gravity shifting back and forth as the rocker links 41 and 42 pivot and the frame shifts between its forward and rearward positions as limited by the rocker link. This can be combined with up and down motions inasmuch as the piston 40 is freely vertically slidable in its tube or cylinder 39.

The arc of pivotal movement of the legs is limited. At the front of the frame is a bracket 64 which may be suitably secured to the downturned front portions of the side frame pieces and project forwardly. At the front of the bracket is a laterally extending tube 59, FIGURES 1 and 3, which receives a cross dowel 60 that projects laterally outwardly from the sides of the horse and supports stirrups 61. The tube 59 also provides a stop for the front leg and is engaged by radial stop surfaces 62 and 63. As will be observed from the drawings, when the front leg is in its rearmost position, the stop surface 62 will engage the tube 59, and when the front leg is in its most forward position, the stop surface 63 will engage the tube 59. The front leg at the other side of the horse has similar stop surfaces. FIGURES 6 and 7 show this action somewhat schematically with the stop tube 59 being shown as positioned to be engaged by the plate 28.

In summary, the riding body 10 is supported on the stand 11 by a pair of forward spring 31 and a pair of rearward springs 32 which are connected between the stand and the frame 17. The frame is connected to a vertically sliding piston 40 which is slidable in a vertical tube 39, and pivotal links 41 and 42 connect the frame to the piston. The lower end of the pivotal links drive leg operating rods 51 and 52 to simultaneously pivot the legs with movement of the horse body as shown in the extreme positions of FIGURES 6 and 7. Free vertical bouncing movement is guidably permitted by the piston sliding in the cylinder. Thus it will be seen that there has been provided a resiliently supported hobbyhorse which meets the objectives and advantages above set forth, and which presents a unique action for a child for bouncing and galloping motion. The construction is formed of relatively simple and few parts, and yet is reliable with the weight being supported by the springs and guidance being provided by simple directly attached elements.

The center post or column with the telescoping piston and cylinder arrangement eliminates side sway of the horse's body and is free to move vertically with its position being determined by the amount of weight applied so as to function equally as well and to accommodate children of different sizes.

The rocker links form a linkage between the piston and the frame which provides for floating action of the frame as well as for the drive motion for the desired leg action. The leg drive rod springs absorb the over-travel of the rocker links, as shown in FIGURES 6 and 7, and the

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leg motion is limited by the tube for the front dowel. The legs are uniquely driven to move together and apart on each side imposing motion to afford a realistic pleasing appearance.

The drawings and specification present a detailed disclosure of the preferred embodiments of the invention, and it is to be understood that the invention is not limited to the specific forms disclosed, but covers all modifications, changes and alternative constructions and methods falling within the scope of the principles taught by the invention.

We claim as our invention:

1. A child's riding toy assembly comprising in combination a riding body, legs pivotally mounted on the body, a stand for supporting the body, means interconnecting the legs for simultaneous pivotal movement, a link pivotally connected at a point between its ends to the stand and pivotally connected to the body at its upper end for pivotal movement about a lateral horizontal axis affording fore and aft movement of the body relative to the stand a limited distance, a rod connected to a leg for driving the interconnected legs, a sliding operator on the rod connected to the lower end of said link, coil springs on the rod at each side of the sliding operator secured at their other ends to the rod, and spring means supporting the body resiliently on the stand.

2. A riding toy assembly comprising a body adapted for riding by a child, a stand having a base portion and a center column for supporting the body, horizontally extending fore and aft springs connected between the column and body for resiliently vertically supporting the body, a rectangular piston received in a rectangular downwardly extending opening in the column, a link mounted pivotally intermediate its ends at the top of the piston, means pivotally connecting the body to the top of the link, legs pivotally supported on the body, means interconnecting the legs for simultaneous movement, a leg driving rod connected to one of the legs, a slider mounted on the rod and pivotally connected to the lower end of said link, and a spring on each side of said slider secured to the rod for resiliently driving the rod with pivotal movement of the link to move the legs.

3. A resiliently supported riding toy comprising a body adapted to be ridden, a stand for supporting the body on a floor surface having a base portion and an upright portion, a vertical link pivotally connected at a point below its upper end to the upright and pivotally connected to the body at its upper end for relative pivotal movement about a horizontal axis affording fore and aft movement of the body relative to the stand for a limited distance as said link pivots, and horizontally extending tension spring means extending forwardly and rearwardly from said upright and connected between the upright and body for affording resilient vertical support.

4. A resilient supported riding toy comprising a body adapted to be ridden, a stand for supporting the body, a vertical link pivotally connected at its upper end at one point to the body, a vertical cylinder and piston assembly shaped to be non-rotatably and slidably telescoped with one end rigidly mounted on the stand and the other end pivotally connected to another point below the upper end of said link with said pivotal connections affording pivotal movement about lateral horizontal axes, and horizontally extending spring means extending forwardly and rearwardly of said rigidly mounted end of the piston and cylinder assembly and connected between said rigidly mounted end and said body resiliently supporting said body on said stand.

5. A resiliently supported riding toy comprising a body adapted to be ridden, a stand for supporting the body,

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a link pivotally connected at one point to the body, a vertical cylinder and piston assembly shaped to be non-rotatably and slidably telescoped with one end rigidly mounted on said stand and the other end pivotally connected to another point on said link with said pivotal connections affording pivotal movement about lateral horizontal axes, and fore and aft horizontal coil tension springs connected between said rigidly mounted end and the body for vertically supporting the body.

6. In a resiliently supported child's riding toy, the combination comprising a riding body, pivotal legs supported on the body, a stand for supporting the body, a link pivotally connected to the stand and to the body for pivotal movement about lateral horizontal axes and affording fore and aft movement of the body relative to the stand a limited distance, a resilient interconnection between said link and said legs for driving the legs in movement relative to the body with movement of the body and permitting movement of the legs against said interconnection independent of said link, and spring means connected between the body and stand for resiliently supporting the body.

7. A riding toy comprising in combination a body in the form of a hollow toy horse, a stand having a base portion with legs extending laterally outwardly to rest on a supporting floor surface with said stand having an upright portion in the form of a central column, said central column including a hollow rectangular cylinder with the legs projecting into the lower end of the hollow cylinder and secured therein, a rectangular piston non-rotatably and slidably mounted in the upper end of said cylinder, a pair of forwardly extending springs and a pair of rearwardly extending springs each connected to said cylinder at one end, inverted U-shaped rods in the horse body with their lower ends connected to the other end of said springs, a downwardly turned sheet of material within the body also secured to the rods, a bar secured to the rods extending up into the head of the body supporting said head, a pair of links pivotally connected at points below their upper ends to the upper end of said piston and pivotally connected at their upper ends to the rods, a front pair of interconnected pivotal legs and a rear pair of interconnected pivotal legs pivotally mounted on the rods, first shaft means interconnecting said front and rear legs, second shaft means connected to said rear legs, a slide connected between the lower end of said links and slidably mounted on said second shaft means, and compression springs fore and aft of said slide secured at their outer ends to said second shaft means for driving the legs.

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