

March 5, 1963

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3,080,165

CONTROLLED SPRING SUSPENSION FOR RIDING DEVICE

Filed July 5, 1960

5 Sheets-Sheet 1

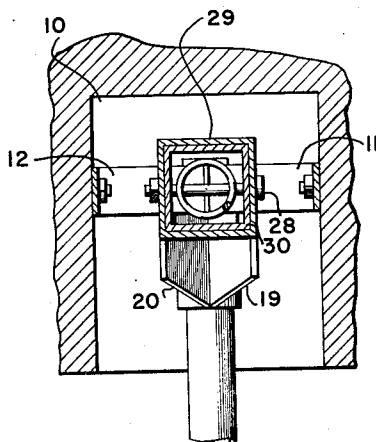
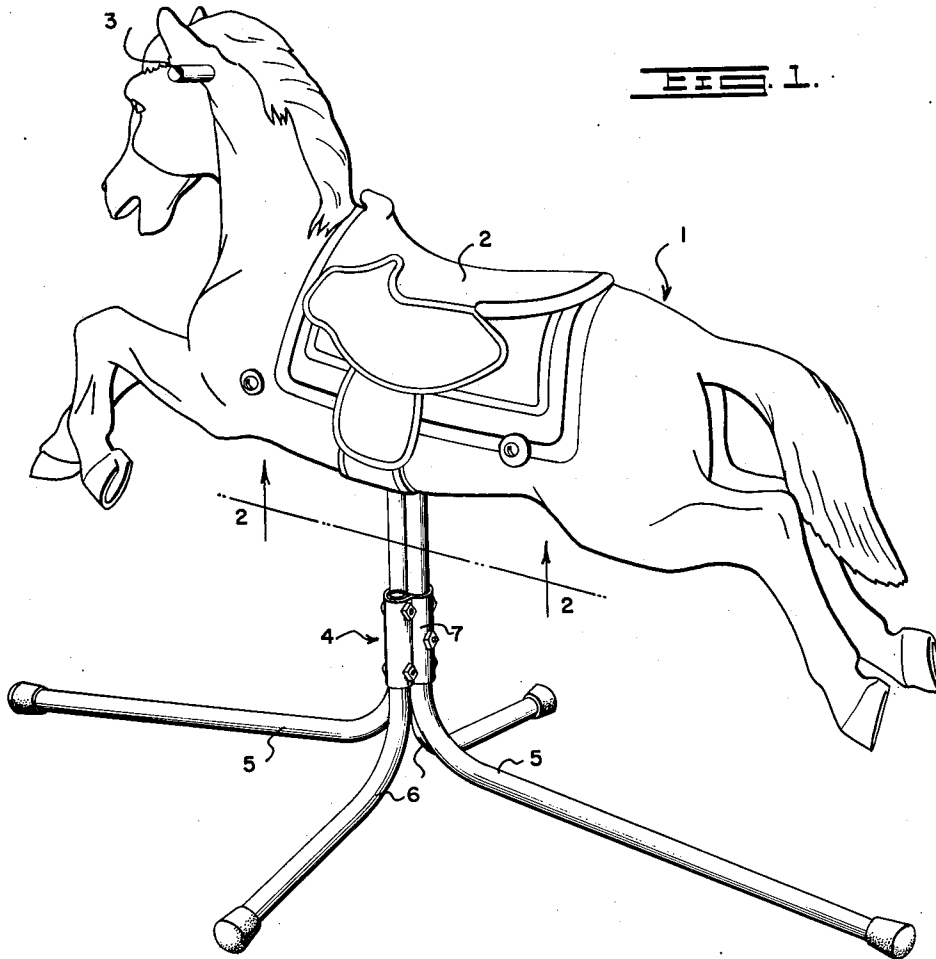


FIG. 4.

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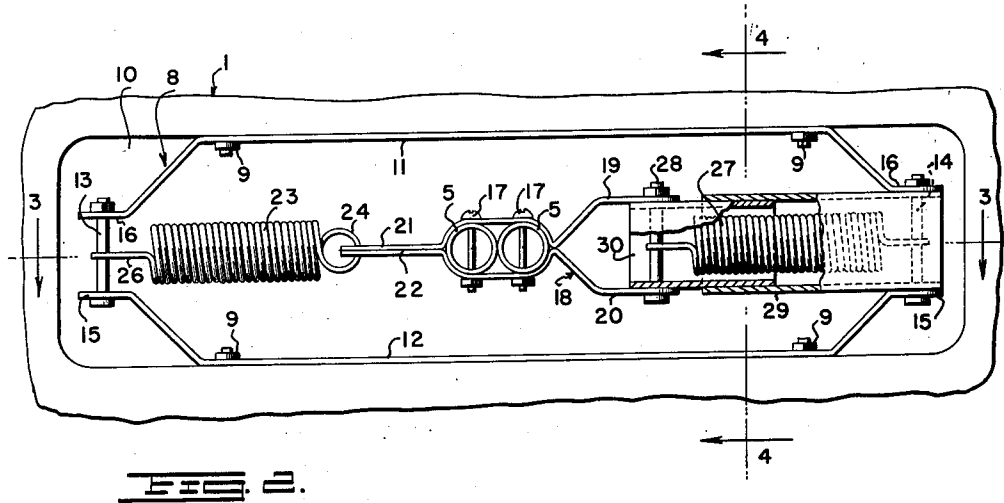


FIG. 2.

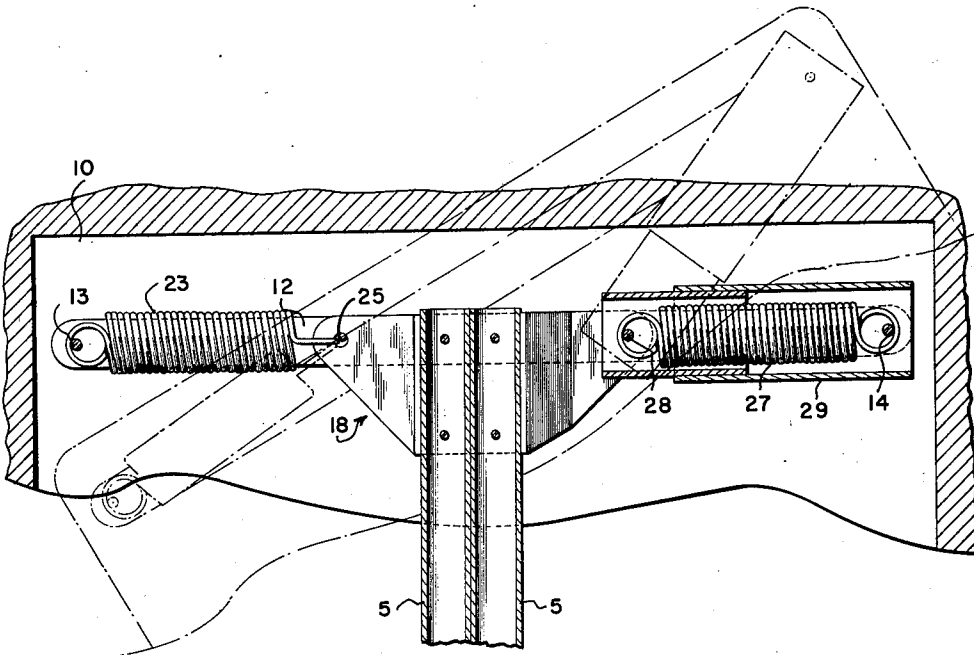


FIG. 3.

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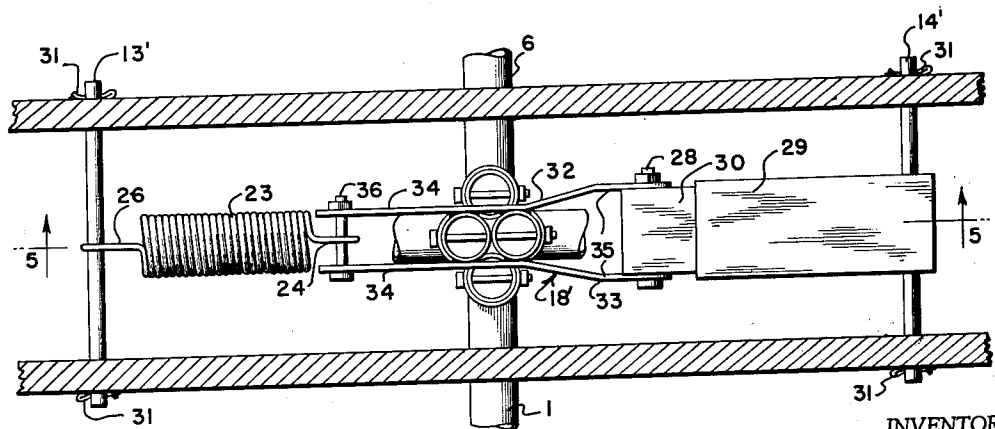
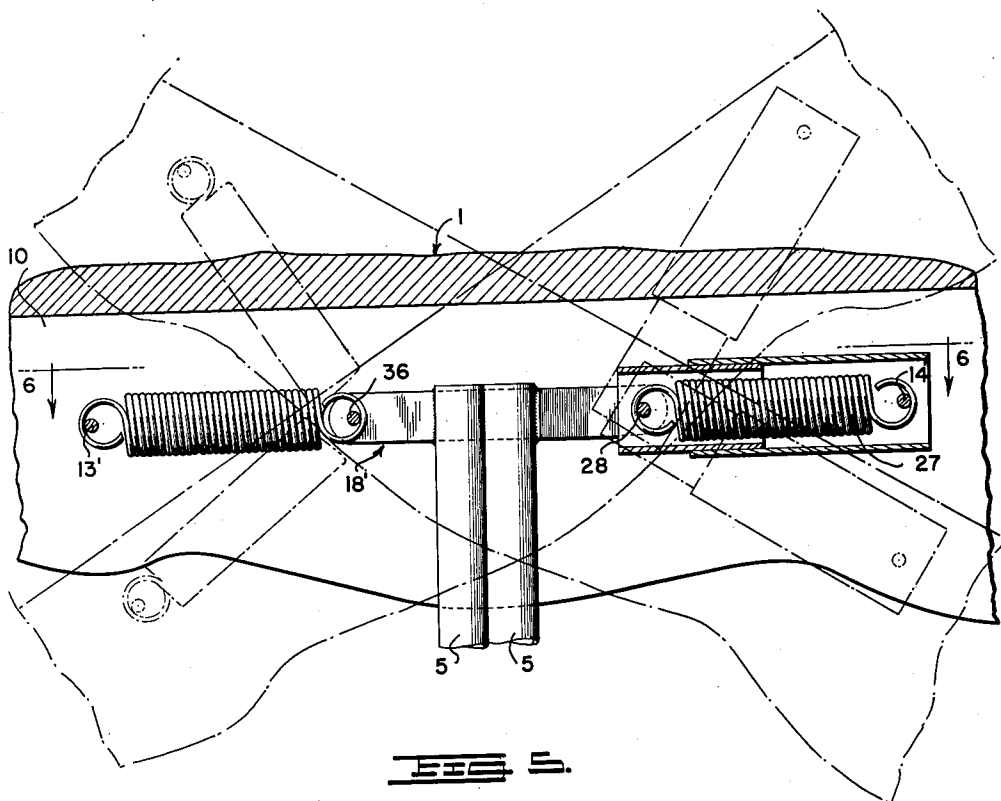
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CONTROLLED SPRING SUSPENSION FOR RIDING DEVICE

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5 Sheets-Sheet 3



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FIG. 6.

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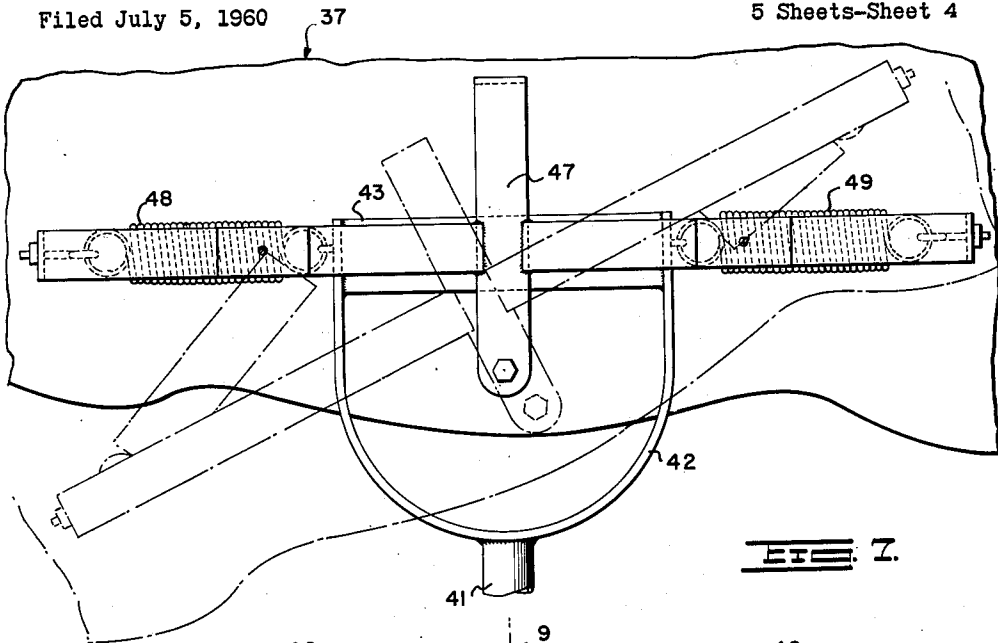


FIG. 7.

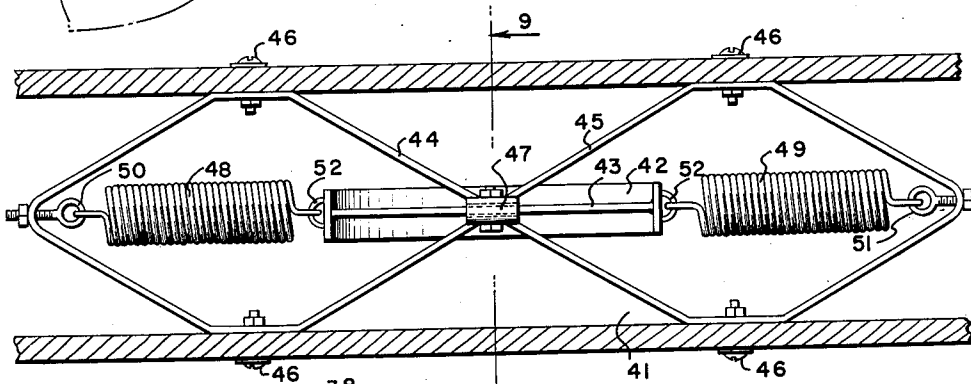


FIG. 8.

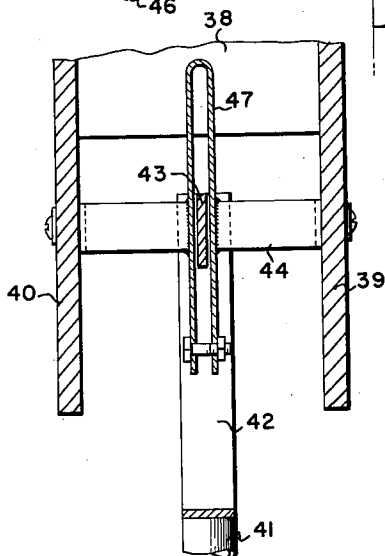


FIG. 9.

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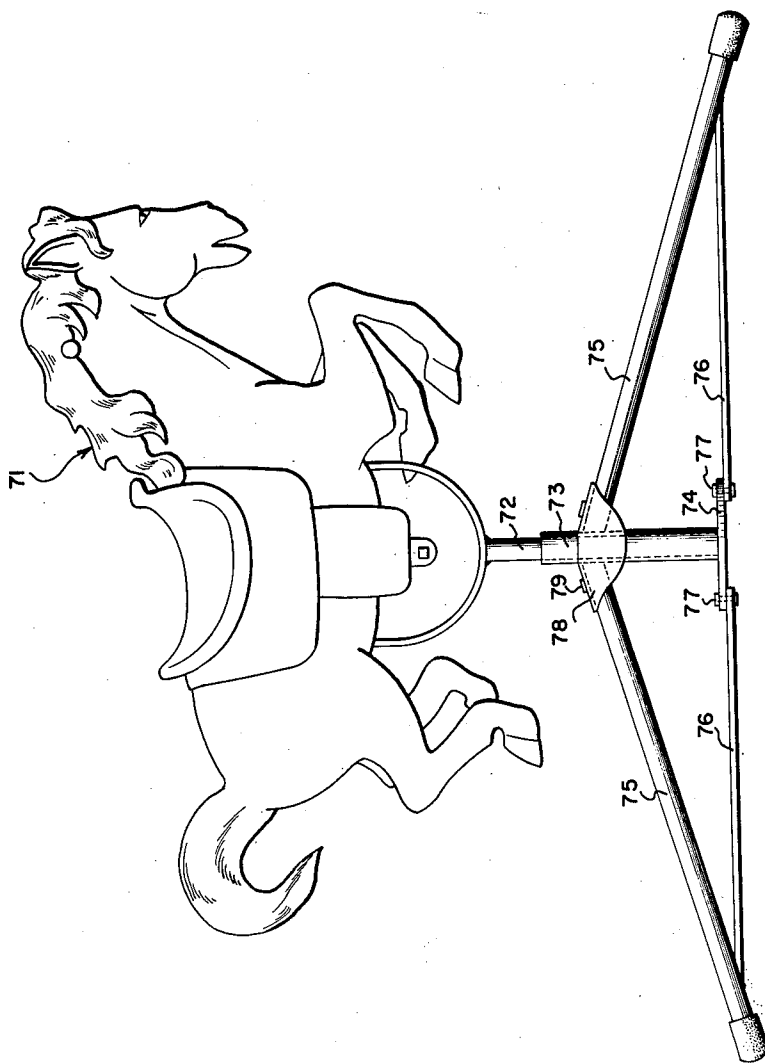
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CONTROLLED SPRING SUSPENSION FOR RIDING DEVICE

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5 Sheets-Sheet 5



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3,080,165 CONTROLLED SPRING SUSPENSION FOR RIDING DEVICE

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13 Claims. (Cl. 272—52)

The present invention relates in general to spring mounted riding devices such as toy hobby horses, jumping chairs or seats and other devices of a similar character wherein the rider may obtain a rocking or forward and backward oscillatory motion along with a bouncing movement to either simulate the actual motion of a live animal or obtain exercise beneficial to physical development. Such devices are used almost exclusively by small children or physically undeveloped persons, and in the past, harmful mishaps have occurred by reason of the prior art devices of this nature being either laterally unstable or uncontrollable by the person riding them.

Another shortcoming of the devices available in the prior art is the fact that the seat portion is usually surrounded by a complicated frame or suspension structure, oftentimes involving upright post members and even moving hinged parts located in a position where bodily injury might result to the rider in case of a fall.

It is contemplated that the present invention will eliminate the possibility of bodily injury to the rider by presenting a sturdily but simply constructed base portion dispensing with material obstructions in the area immediately surrounding the riding device, while at the same time providing for a greater degree of control and safety for the rider.

This invention thus has for its primary object the presentation of novel and useful improvements in spring suspended riding devices such as toy animals, jumping chairs, seats, or other controlled spring suspension devices.

Another object of the present invention is to provide a device completely spring suspended and capable of backward and forward oscillatory rocking motion free from lateral tilting.

A further object of this invention is the provision of a riding device completely spring suspended and capable of backward and forward oscillatory rocking motion which is free from lateral tilting while allowing for vertical bouncing motion to simulate the sensation of riding a live animal.

A further object of this invention is to present an improved controlled spring suspension unit which is compact, novel and efficient and of such a character to be capable of mounting within the toy animal or riding seat to be concealed thereby.

A still further object of a modified form of this invention is to provide a spring suspended device of the type characterized wherein the rider is able to pivot the rocking device to turn it to face in any desired direction while riding.

The means by which the foregoing objects and other advantages, which will be apparent to those skilled in the art, are accomplished are set forth in the following specification and claims and are illustrated in the accompanying drawings dealing with the preferred embodiment and several modifications thereof. Reference is made now to the accompanying drawings in which:

FIG. 1 is a perspective view of the overall device according to the preferred embodiment of the invention;

FIG. 2 is a fragmentary, bottom plan view of the invention taken along lines 2—2 of FIGURE 1 with certain parts of the rear telescoping spring assembly broken

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away to more clearly show the details of construction;

FIG. 3 is a sectional view taken substantially along lines 3—3 of FIGURE 2, wherein the front and rear springs are shown in elevation and the forward tilted position of the rocking device is shown by the broken lines;

FIG. 4 is an end sectional view taken along lines 4—4 of FIGURE 2;

FIG. 5 is a sectional view taken along lines 5—5 of FIGURE 6 showing the front and rear spring members and the supporting post member of a modified form of the spring mounting in elevation. The forwardly and rearwardly tilted positions of the riding device are shown by the broken lines of FIG. 5;

FIG. 6 is a partially sectioned top plan view of the spring suspension unit taken along lines 6—6 of FIGURE 5;

FIG. 7 is a side elevation view of a modified form of the spring suspension unit shown in FIGS. 2 to 6 mounted within the body portion of the riding device. The broken line portion of FIG. 7 illustrates the forwardly tilted position of the riding device;

FIG. 8 is a partially sectioned top plan view of the modified form of the spring suspension unit shown in FIGURE 7;

FIG. 9 is a sectional view taken along lines 9—9 of FIGURE 8.

FIG. 10 is a side elevation view of a modified construction of the base supporting unit suitable for use with the form of the device wherein the spring suspension unit is located within the body portion of the riding device.

Referring now to the drawings, wherein like reference numerals are used to indicate identical parts in the various views, the preferred embodiment of the present invention, shown in FIGS. 1 to 4, comprises a body 1 preferably in the form of any of the well known types of toy hobby horses including a saddle or seat member 2 upon which the rider sits and hand-gripping devices extending laterally beyond both sides of the horses head, one of which is illustrated at 3, FIGURE 1. The body 1 is supported upon base assembly 4 by a controlled spring suspension unit presently to be described. The base assembly 4 is made up of longitudinally extending tubular leg members 5 which have bent up vertical portions extending into the body of the hobby horse from the bottom side and laterally extending short tubular members 6 having vertically extending bent up portions which extend as far as the clamp 7 which is used to clamp the four tubular leg members together in a well known manner. The controlled spring suspension unit which rockably supports the body 1 upon the base assembly and legs 5 of the preferred embodiment is illustrated in FIGS. 2 to 4, and comprises an attaching frame structure indicated generally by the reference numeral 8, FIG. 2, which is securely bolted to the body 1 by the four bolt members 9 located in the inner walls of a cavity 10 formed in the bottom of the body 1, said cavity 10 being designed to receive, contain, and conceal the entire controlled spring suspension unit. The attaching frame assembly 8 is made up of the separate identical side members 11 and 12 and the attaching bolts 13 and 14 which join the adjacent front and rear end portions of the side members through appropriate parallel tab portions 15 and 16 respectively of the side members 12 and 11. Rigidly bolted to upstanding leg members 5 by bolt means 17 is a spring anchoring strap 18 formed of two identical side members which terminate in rearwardly extending bifurcated jaw members 19 and 20 and in a forwardly extending wafered anchoring bracket 21, 22 to which is attached a helical tension spring 23 having a hooked end 24 passing through the hole 25 in the

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anchoring bracket. The forward end of the spring 23 is attached to the bolt 13 of the frame 8 by means of a hook 26 formed on the forward end of the spring. A rear helical tension spring 27 is mounted between the bolt 14 of the attaching frame 8 and a bolt 28 extending between the jaws 19 and 20 of the anchoring strap. As clearly shown in FIGURES 2 to 4, the helical springs 23 and 27 are disposed in the same horizontal plane and are in substantial alignment when the horse body is in its unactuated condition, i.e., no substantial load being supported by the tension springs. Upon actuation of the horse body, the springs move out of alignment as illustrated by the dotted line positions in FIGURE 3. Surrounding the rear helical tension spring is a telescoping guide means composed of outside tube member 29 pivoted on the bolt 14 and extending between the spaced tab members 15 and 16 and a forward internal tube member 30 pivoted on the bolt 28 and extending between the jaw members 19 and 20 of the anchoring strap. As seen most clearly in FIGURE 4, the telescoping members 29 and 30 are rectangular in cross section and provide a snugly fitting telescopic unit which is prevented from pivoting about a longitudinal horizontal axis by virtue of the two point contact of both of its members with the respective horizontally rigid pivot bolts 14 and 28. In actual practice, it is not contemplated that any lubrication between the sliding portions of the telescoping guide unit will be necessary, but if such does become desirable, a form of lubricant such as graphite which will not tend to drain from the sliding surfaces may be used.

In FIGS. 5 and 6 a somewhat modified form of the attaching frame means shown in FIGURES 2 to 4 is illustrated wherein the side frame members 11 and 12 of FIGURE 2 are eliminated and the horizontally disposed rigid transverse pivot rods 13' and 14' extend completely across the cavity 10 and are anchored in the walls of the body 1 and retained therein by any suitable means such as cotter pins 31. The anchor strap 18' of FIGS. 5 and 6 differs from the strap 18 of FIGS. 2 to 4 in that its side members 32 and 33 are unconnected narrow metal bands welded directly to the upright leg members 5 and have parallel transversely spaced forward arms 34 and transversely spaced diverging rear arms 35 with parallel end portions to receive the horizontal transverse pivot bolt 23 of the telescoping unit described in the preferred embodiment. The forward arms 34 of the bands 32 and 33 receive the horizontal transverse bolt 36 to which is attached the hook member 24 of the tension spring 23, the other end of said spring having a hook portion 26 attached to the transverse rod 13'. The telescoping guide unit 29, 30 along with its horizontal transverse pivot bolt 28 and the enclosed rear tension spring 27 is identical to that shown in FIGS. 2 to 4, the rear section 29 being pivoted on the horizontal transverse pivot rod 14' similar to the pivot bolt 14 of FIGS. 2 to 4. It will also be noted that the helical tension springs of the embodiment of FIGURES 5 and 6 are disposed in a horizontal plane and are in substantial axial alignment as described in connection with the embodiment of FIGURES 2 to 4, when the device is in its unactuated condition.

In the above described preferred embodiment and the modification thereof, the youthful rider mounts the seat or saddle 2 of the hobby horse, grasps the hand grips 3 and by alternately throwing his body weight forwardly and rearwardly, causes the hobby horse body to rock forwardly and rearwardly in response to his motions and by reason of the spring suspension between the hobby horse body and the anchoring strap carried by the upright leg members obtains a compound bouncing and fore-to-aft oscillatory rocking motion. The action of the telescoping guide unit 29, 30 and the front and rear springs 23 and 27 respectively, is illustrated in FIGS. 3 and 5 which show the double pivoting and telescop-

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ing action of the guide unit both during rearward and forward tilting. The body unit, however, is prevented from tilting or listing to either side by virtue of the rectangular cross section of the telescoping unit and the two point pivotal contact with the horizontal, rigid transverse pivots.

FIGS. 7 to 9 show a further embodiment of the spring suspension mechanism according to the present invention wherein the body of the riding device is indicated generally by the numeral 37, said body including a central solid portion 38 with a cut-out portion suitable for receiving the spring suspension unit. Said body also has side members 39 and 40 which extend downwardly below the central portion to conceal the suspension unit and to provide a rigid mounting therefor. An upright post member 41 is designed to support the suspension unit and the riding device and may be in turn supported by any suitable and stable base structure. Mounted on the upper end of the post 41 appears a U-shaped support member 42 having the end portions of its legs connected by brace member 43. A symmetrical support frame comprising identical sections 44 and 45, rigidly fastened to the body side members by bolts 46 and connected by a centrally located inverted U-shaped guide loop 47, is best illustrated in FIGS. 8 and 9. The supporting frame is disposed in a horizontal plane and guide loop 47 straddles the cross brace 43 to allow for relative movement between the loop 47 and the brace 43. Forwardly and rearwardly disposed control springs 48 and 49 respectively are connected between the front end and the rear end of the supporting frame and the legs of the U-shaped support 42 by means of adjustable eye bolts 50 and 51 and appropriate loops 52 carried by the member 42. The springs 48 and 49 are seen to be in substantial alignment and are disposed in the same horizontal plane as the supporting frame members 44 and 45, when the device is in its unactuated condition as shown by the solid line portions in FIGURE 7. The pivoting action of the modified spring suspension is similar to that described in the preferred embodiment and is shown by the broken line portions of FIGURE 7 with the inverted U-shaped guide loop 47 coaxing with the brace 43 which passes therethrough to prevent lateral tilting or listing during the rocking motion.

FIGURE 10 illustrates a still further modification of the base or supporting structure suitable for use with any one of the described spring suspension units which are located within the body of the hobby horse. The base coacts with the spring suspension device of the present invention to permit the rider to pivot the rocking device to face in any desired direction while riding. Only the essential details of the base construction will be described in connection with FIGURE 10, since any form of spring suspended rocking device having a body 71 and a vertically extending pedestal 72, preferably in form of cylindrical tube, may be mounted in the novel base structure. The base structure itself comprises a vertical tube 73, having the bottom end thereof closed by plate 74, which acts as a bearing and support for the pedestal 72 rotatably mounted therein. The tubular bearing 73 may be supported in its vertical position by means of legs 75 welded or attached thereto by any suitable means. The legs extend radially outwardly from the tube and are inclined downwardly to the supporting surface of the floor. The tubular bearing 73 terminates short of the supporting surface and has brace members 76 connected to its bottom plate by bolts 77. Said braces 76 extending radially outwardly from the tube and are rigidly connected to the legs 75 to thereby form a truss structure. The legs 75 are held in their predetermined radial positions by means of a preformed bracing plate 78 surrounding the tubular bearing 73 and secured to the legs by bolts 79.

In operation the rider may cause the entire hobby horse body 71 to pivot in a horizontal plane in either

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direction within a 360° arc by throwing his body weight slightly to one side or the other as he rocks forwardly or rearwardly. The turning movement of the hobby horse body will be in small increments accompanying each fore or aft rocking motion, by virtue of the side thrust imparted to the body 71 as the rider's weight is thrown forwardly or rearwardly past a dead-center position and to one side thereof. It will be understood, however, that no sidewise tilting or listing of the hobby horse body will accompany the turning movement since such is prevented by the novel telescoping spring guide unit previously described. Hence, the turning motion of the hobby horse body will not tend to unbalance the rider and unseat him from the saddle portion. It will also be noted that the foregoing body control by the rider will further enhance the value of the rocking device as a means to practice muscular coordination of the physically undeveloped rider.

It will be readily apparent to those skilled in the art that the present invention provides a novel and useful improvement in controlled spring suspension units for riding devices of the character described. The arrangement and types of structural components utilized within this invention may be subject to numerous modifications well within the purview of this inventor who intends only to be limited to a liberal interpretation of the specification and appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a rider actuated rocking device having a stationary base assembly and a seat rockably supported thereon, said seat having a hollow body with front and rear portions, a resilient suspension unit connecting said seat to said base assembly and comprising, bracket means mounted on said base assembly, rigid attaching means connected to the front and rear portions of said hollow body, first resilient means mounted between said bracket means and said attaching means at the front portion of said body, second resilient means mounted between said bracket means and said attaching means at the rear portion of said body, said first and second resilient means extending in a fore and aft direction in a substantially horizontal plane and within the over-all length of the seat portion when the seat is in an unactuated position, torque restraining means acting between said bracket means and said attaching means to confine the relative movement between the seat and the bracket means to a substantially vertical plane passing through the longitudinal axis of the seat, and said resilient suspension unit including said bracket means, said attaching means, said first and second resilient means and said torque restraining means being located within the body of said seat whereby the resilient suspension unit is substantially concealed by said seat.

2. The combination according to claim 1 wherein said bracket means comprises a single bracket member located between the front and rear portions of said body, said first resilient means comprises a single resilient member connected to said attaching means at the front portion of said body and extending inwardly and connected to said bracket member and said second resilient means comprises a single resilient member connected to said attaching means at the rear portion of said body and extending inwardly and connected to said bracket member.

3. The combination according to claim 1 wherein said bracket means comprises a strap formed of two side members rigidly fixed to said base assembly, said side members having parallel transversely spaced forward arms and transversely spaced diverging rear arms with parallel end portions being connected to said torque restraining means, said transversely spaced forward arms of the side members being connected to said first resilient means.

4. The combination according to claim 2 wherein said first and second resilient members constitute the sole means of support between said seat and said base assembly.

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5. The combination according to claim 2 wherein said first and second resilient members are substantially axially aligned when the rocking device is in its unactuated position.

5. The combination according to claim 1 wherein said bracket means comprises a support structure having longitudinally spaced legs extending vertically with a brace connected therebetween, said brace having a flat vertical face on either side thereof, and said torque restraining means comprising a guide having vertically extending legs, said guide being fixed to said front and rear attaching means and having the legs thereof straddling the flat vertical faces of the brace.

7. The combination according to claim 1 wherein said bracket means comprises a U-shaped support having longitudinally spaced legs extending vertically with a brace connected therebetween, said brace having a flat vertical face on either side thereof, and said attaching means being further characterized as having forward and rearward adjustable means for connecting said first and second resilient means thereto, and said torque restraining means comprising an inverted U-shaped vertical guide loop connected to the attaching means, the legs of which are joined at their lower ends, said legs of the guide loop straddling the flat vertical faces of the brace.

8. In a rider actuated rocking device including a stationary base assembly and a seat rockably supported thereon, a resilient suspension unit connecting said seat to said base assembly and comprising, a fore-to-aft extending bracket secured to said base assembly, means on the forward and rearward ends of said bracket providing horizontal transverse pivot axes, one of said axes comprising a rigid transverse bolt, an attaching frame connected to said seat and comprising forward and rearward transverse pivot rods located forwardly and rearwardly of said transverse pivot axes of said bracket, a first resilient member pivotally connected to said forward pivot rod and said bracket, a second resilient member pivotally connected between said rearward pivot rod and said bracket, and a torque restraining means comprising a telescoping unit surrounding one of said resilient members and having a two point pivotal connection with one of said pivot rods and with said transverse bolt, whereby the one of said resilient members is permitted to flex and the relative movement between the attaching frame and the bracket is confined to a substantially vertical plane passing through the longitudinal axis of the seat.

9. The combination according to claim 8 wherein said bracket comprises a strap formed of two identical side members rigidly fixed to said base assembly and which terminate in rearwardly extending bifurcated jaws and a forwardly extending wafered portion, said transverse bolt being mounted between said jaws and said forward portion having a hole therein to provide a pivotal attachment for one of said first or second resilient members.

10. In a rider actuated device including a base and a seat rockably supported thereon, a resilient suspension unit connecting said seat to said base and comprising, a bracket secured to said base, means defining forward and rearward pivot axes on said bracket, an attaching frame connected to said seat and comprising forward and rearward pivot means located forwardly and rearwardly of the pivotal axes of said bracket, resilient members connected between said forward pivot axis and said forward pivot means and between said rearward pivot axis and said rearward pivot means, and a torque restraining means comprising a telescoping unit surrounding one of said resilient members and having a two point pivotal connection with one of said pivot axes and pivot means, whereby the one of said resilient members is permitted to flex and the relative movement between the attaching frame and the bracket is confined to a substantially vertical plane passing through the longitudinal axis of the seat.

11. The combination according to claim 10 wherein said bracket comprises a strap formed of two side mem-

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bers fixed to said base and which terminates in rearwardly extending bifurcated jaws and a forwardly extending wafered portion, one of said means defining a pivot axis being mounted between said jaws and the other of said means defining a pivot axis comprising an opening in said forward portion for attachment of one of said resilient members.

12. The combination according to claim 1 and further including a vertically disposed cylindrical post connected to said bracket means and said base assembly comprising a vertical tubular bearing sleeve, leg means to hold said tubular bearing in its vertical position, and means covering the bottom of the tubular bearing sleeve, said post being insertable within the tubular bearing sleeve, whereby the post may pivot about its vertical axis within the sleeve to permit the riding seat to be turned to face in any direction.

13. A torque prevention unit for a riding device having a body and a support assembly with spring suspension means mounted therebetween, said torque prevention unit comprising rigid horizontally spaced transverse pivot rods carried by said body and support assembly and a tele-

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scoping unit associated with said spring suspension means and pivot rods, said telescoping unit having non-circular cross-sectioned internal and external telescoping members extending between and connected at their free ends to the pivot rods carried by said body and support, said spring suspension means extending between and connected to the pivot rods carried by said body and support.

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