Aug. 19, 1952 H. H. WHEATON 2,607,590

ROCKING SUPPORT

Filed Oct. 28, 1949 2 SHEETS—SHEET 1

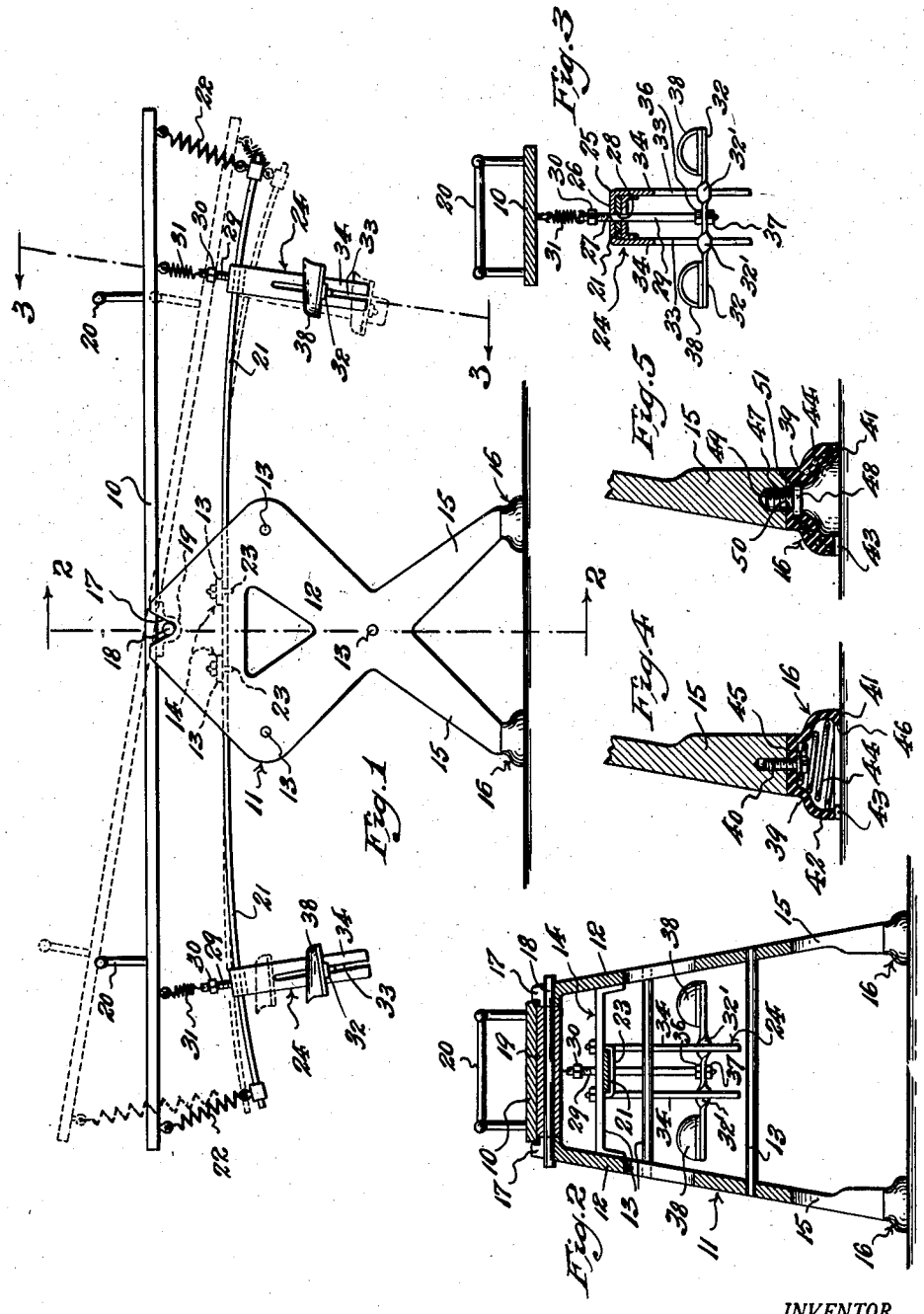


Fig. 1

Fig. 3

Fig. 5

Fig. 4

Fig. 2

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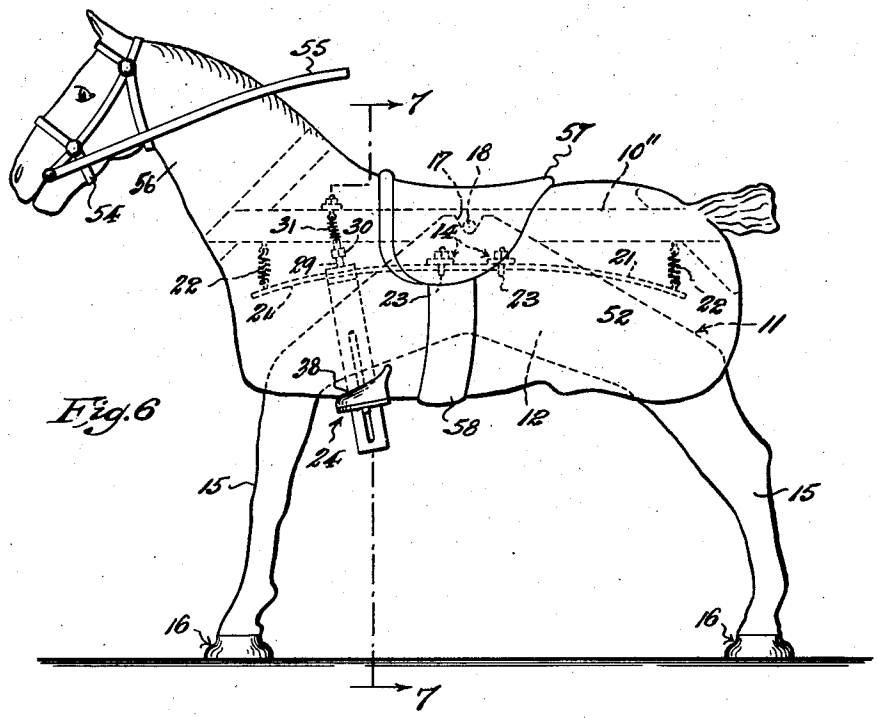


Fig. 6

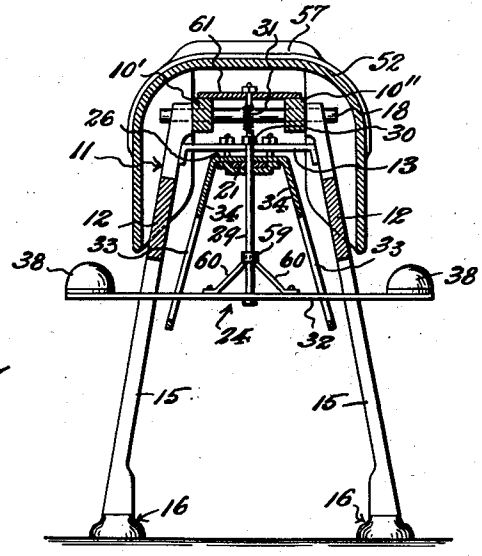


Fig. 7

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ROCKING SUPPORT

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8 Claims. (Cl. 272—53.1)

1

The invention relates to amusement and exercising devices of the seesaw, hobby horse, or other rocking or oscillatory type.

This invention has for an object to provide an improved amusement or exercising device which not only oscillates or pitches in the well known manner about a transverse pivotal axis or fulcrum, but also is capable of other motions and riding effects that combine to increase the pleasure and physical benefits to be derived from its use by children.

Other objects are to provide in a seesaw device, such as is used by two children, means for producing certain specific motions and riding effects that simulate the action of a horse when moving with some characteristic gait, such as the trot or canter, and in another embodiment of the invention, to utilize the improved seesaw construction as the skeletal basis of a hobby horse to be ridden by one person.

Another object of the invention is to provide the legs of the supporting structure of the device, in either of the optional embodiments of said device, with novel resilient footing means which are yieldable to vertical vibratory movements of the device; and a still further object is to provide the yieldable footing means in such form that they do not need to be fixedly attached to the floor or other supporting surface, but will serve by suction cup-like action to prevent substantial horizontal displacement of the device during operation thereof.

A still further object is the provision, for use with either embodiment of the invention, of novel stirrup means having length adjustment means incorporated therein.

Illustrative embodiments of the invention are shown in the accompanying drawings, in which:

Fig. 1 is a side elevation of a seesaw device of the two rider type constructed in accordance with the invention, showing in solid lines the seating member in a state of equilibrium, and in broken lines the disposition of movable parts during oscillation or pitching movement of the seating member;

Fig. 2 is a transverse sectional view of line 2—2 of Fig. 1;

Fig. 3 is a transverse sectional view of the stirrup means taken on line 3—3 of Fig. 1;

Fig. 4 is a vertical longitudinal sectional view, on an enlarged scale, of one of the footing means, showing one form thereof;

Fig. 5 is a view similar to that of Fig. 4, but showing another form of footing means;

Fig. 6 is a side elevational view of the seesaw

2

device of the one rider or hobby horse type; and

Fig. 7 is a transverse vertical section, taken on line 7—7 in Fig. 6.

Referring now to the drawings, in which like characters of reference indicate corresponding parts in the several views, the embodiment of the invention as a seesaw device for use by two riders in the well known manner is illustrated in Figs. 1 to 3 inclusive. In this embodiment, the seating member 10 is pivotally mounted in the usual manner on supporting structure 11.

Obviously, supporting structure 11 may take any one of various forms, a simple form of which is shown by way of illustration in Figs. 1 and 2. In the form shown, supporting structure 11 includes a pair of substantially identical side members 12 that may conveniently be made of suitable material by well known manufacturing processes. Side members 12 are spaced apart and preferably inclined downwardly outward to afford adequate stability during the most violent riding motions. In this relative position, side members 12 are secured together preferably by a plurality of suitably distributed cross members 13, at least two of which, below the top of side members 12, are positioned at the same level to provide a horizontal bench 14 for a purpose which will presently appear.

Each side member 12 of the supporting structure 11 includes a pair of longitudinally diverging legs 15. Each leg is provided with footing means 16 for direct floor contact which will be described in detail later herein.

Although there are various ways in which seating member 10 may be pivotally mounted on supporting structure 11, it has been found convenient to do this by providing transversely aligned notches 17 at the tops of side members 12 of said supporting structure, and then resting in said notches 17 the ends of a trunnion member 18 that is rigidly secured to seating member 10 at the center of gravity thereof by suitable means, such as socket member 19.

It being customary for riders of a seesaw device to sit astride the opposite ends of its seating member facing each other, handle bars 20 have been provided on the seating member in suitably disposed relation to the ends thereof, in order that they may be grasped by the respective riders for aid in maintaining their seats and as means by which assisting actuating impulses may be imparted manually to the seating member 10.

As described up to this point, the seesaw device is adapted to function as do ordinary seesaws or

"teeter-boards," as they are sometimes called. In ordinary seesaw devices, the seating member is free to oscillate without any restraint except that which may be imposed by the riders or by impact of either end of said seating member with the floor or ground. Therefore, in order to avoid severe shock at the limits of movement of the seating member, it is necessary for the riders to touch the floor or ground with their feet. In my improved seesaw device, tensioning means has been introduced to damp or shock-absorb the oscillating movement of the seating member 10 to the extent that the riders will be fully and safely supported throughout the complete cycle of oscillating movement. All motion is smooth and cushioned during reversal without any necessity for foot action by the riders.

The tensioning means may take any one of several forms, but it is preferred to use the simple structural embodiment disclosed in the drawings. As shown particularly in Figs. 1 and 2, the tensioning means for seating member 10 comprises a stiff mainspring 21 and comparatively weak coupling springs 22 that extend between said mainspring and the respective end portions of seating member 10 at suitable distances from the pivotal axis of the latter. Main spring 21, in the preferred form shown, is a long flat resilient bar or leaf spring that extends longitudinally beneath and spaced below the seating member 10 and is centrally supported by bench 14. Suitable means, such as U-shaped clamps 23, are used to clamp the central part of main spring 21 fixedly to the respective cross members 13 that form bench 14. Adequate clearance for the end portions of seating member 10, and the most effective tensioning results therefor, are obtained by constructing main spring 21 so that its end portions curve downwardly. Each coupling spring 22 is preferably in the form of a helical pull spring, and has its opposite ends attached in suitable manner respectively to the adjacent end portions of main spring 21 and seating member 10. The length of each coupling spring 22 should be such that both said coupling springs will be axially distended and under some tension, in assembled relation to main spring 21 and seating member, when said seating member is in a state of horizontal equilibrium. The precise functioning of the tensioning means for seating member 10 will be subsequently described.

In order to afford maximum security for riders of the seesaw device, handle bars 20 are supplemented by stirrup means 24 which are located in appropriate positions below said handle bars and in dependent relation to seating member 10. Just as the handle bars 20 simulate bridle reins for horseback riding, so do the stirrup means 24 simulate saddle stirrups. Both are designed to make operational use of the seesaw device as much like horseback riding as possible.

Although great variation in the physical structure of the stirrup means 24 is permissible within the scope of the invention, it is preferred to construct the stirrup means 24 in the manner shown in Figs. 1 to 3 inclusive. In accordance with this preferred embodiment, a substantially U-shaped stirrup frame 25 is fixed in inverted position to each end portion of main spring 21, which latter is straddled by said stirrup frame 25 with the flattened apical portion 26 thereof resting directly upon main spring 21. Apical portion 26 of stirrup frame 25 is provided with a smooth surfaced vertical hole 27 that is adapted to register with a similar hole 28 in main spring 21 at the desired location for slidable reception of a stirrup hanger member 29, which preferably is in the form of a metallic rod of suitable cross-section, and which is capable of longitudinal movement relative to the stirrup frame 25 and main spring member 21, thus corresponding in function to the "stirrup leather" of a riding saddle. Hanger member 29 is screwthreaded at both ends and has a stop member 30 in the form of a nut adjustably engaged with the upper end portion thereof to limit downward longitudinal movement of said hanger member 29 relative to the stirrup frame 25. Through contact of stop member 30 with the apical portion 26 of stirrup frame 25, said mainspring is adapted to serve as primary resilient suspension means for stirrup hanger member 29. In order to provide auxiliary resilient suspension means for stirrup hanger member 29 which will be of less strength than the said primary resilient suspension means, a helical pull spring 31 is interposed between the upper end of stirrup hanger member 29 and the adjacent end portion of seating member 10 and is connected between said stirrup hanger member 29 and the seating member 10 by suitable means. To complete the stirrup means 24, a horizontal stirrup bar 32 is mounted for vertical sliding movement in longitudinal guide slots 33 provided in side portions 34 of stirrup frame 25 and is centrally apertured for reception of the lower end of the stirrup hanger member 29, which is secured fixedly to said stirrup bar 32 by opposed nuts 36 and 37. Stirrup bar 32 has stirrups 38, which may be of any conventional form, provided at the outer ends thereof. For use in connection with the seesaw device, wherein the usual two riders will be seated on the elongated and narrow seating member 10 at locations fairly remote from the supporting structure 11, so that said supporting structure will not be straddled by the riders, each stirrup bar 32 may be comparatively short. Therefore, it is practicable to make stirrup bar 32 from a short length of strap metal. In order to increase the rigidity of stirrup bar 32, reduce the width of guide slots 33, and provide with bearing portions 32' for true bearing contact with the edges of said guide slots, stirrup bar 32 may be twisted in the manner shown. Because of the twisted form of stirrup bar 32, the lower ends of guide slots open through the lower extremities of side portions 34 of stirrup frame 25, in order to permit assembly and disassembly.

Reverting now to the footing means 16 for supporting structure 11, two alternative forms thereof are illustrated in Figs. 4 and 5 respectively. One form appears in Fig. 4, wherein reference character 39 designates the principal element, or hoof, which is attached to the lower end of each leg 15 by suitable means, such as attaching bolt 40. Hoof 39 is in the form of an inverted cup the sole rim 41 of which is adapted to bear directly upon the floor or other surface. Hoof 39 preferably is made of flexible, resilient material, such as soft rubber or the like. One reason for making hoof 39 of soft rubber or the like is to afford resiliency which will tend to support the entire seesaw device and its riders for vertical vibratory or bouncing movement, and another reason is to provide suction cup adherence to the floor or other supporting surface under certain conditions of operation. If sole rim 41 were absolutely flat with all points thereof lying in the same plane, suction cup action would occur after the first vertical bounce of riding

motion, regardless of amplitude, due to forcible evacuation of air from the interior of hoof 39 between sole rim 41 and the floor, during the downward compression of side walls 42 of said hoof, and subsequent maintenance of an airtight joint all around the sole rim 41. This suction cup action is desirable as a means for preventing the seesaw device from moving away from the position chosen for operative use, but has the disadvantage that it interferes with intentional displacement, as in the return of the device to a place of storage after its operative use has ceased for the time being. It having been found that accidental horizontal displacement or shifting occurs only during excessive bouncing caused by violent actuating impulses applied to the seating member 10 by the riders, provision has been made avoiding suction cup action during normal bouncing of small amplitude. At the front portion of each hoof 39 an upward offset or cutaway gap 43 is formed in sole rim 41. This offset 43 should be of just sufficient depth to maintain the front portion of sole rim 41 elevated from the floor during limited bouncing movements that are not severe enough to cause the undesirable horizontal shift or displacement. Under such conditions, an atmospheric vent will be provided and no suction cup action can take place during vibratory movements of limited amplitude.

While the softness and flexibility of the material of which hoof 39 is made is favorable to the suction cup action, the inherent resiliency is sufficient only to tend to support the weight of the seesaw device and its riders, as has already been stated. In order to afford added resilient strength and stronger elastic reaction and thus enable the footing means 16 not only to afford adequate support under all operating conditions, but also to contribute to desired vibratory bouncing movement, a helical reinforcing spring 44 has been fitted inside each hoof 39 in interposed relation to the top wall 45 thereof and an internal flange 46 formed on sole rim 41. Reinforcing spring 44 preferably conforms in shape to the side walls 42 so that it cannot become dislodged from confinement within the hoof interior.

The modified form of footing means shown in Fig. 5 differs from the embodiment just described in two respects. In the first place, reinforcing spring 44 is imbedded in the side walls 42 of hoof 39 instead of being nested therein. Secondly, the attaching means has been altered to permit some regulation of the resiliency of the top wall 45 of hoof 39. To this end the screw plug 47 has been substituted for bolt 40 of the Fig. 4 embodiment. Screw plug 47, which has an enlarged head 48, is adapted to be screwed into threaded hole 49 provided in the lower end of each leg 15 of supporting structure 11. A circular aperture 50 is provided in top wall 45 of hoof 39. This aperture 50 is the same in diameter as the shank portion of screw plug 47, except for a medial annular groove 51 that is adapted to receive the head 48 of screw plug 47 when forcibly inserted therein by expansion of the soft rubber walls of aperture 50. When screw plug 47 is screwed more or less tightly into threaded hole 49 in leg 15, head 48 of said screw plug will compress to desired degree, the portion of top wall 45 interposed between head 48 and the lower end of leg 15 and thereby harden or soften the said portion of top wall 45 so as to reduce or increase the "give" or amplitude of resilient vertical motion thereof during operation of the seesaw device. Advantage may be taken of the regulating means just described to make delicate adjustment of the degree of resiliency of the footing means 16 in relation one to another, and thereby determine the amplitude of normal bouncing of respective footing means within limits of which suction cup action of the hoofs 39 will not occur.

Referring now to Figs. 6 and 7, it will be seen that the hobby horse embodiment of the invention is an outgrowth of the seesaw device, the incased portion of which is outlined in broken lines. Practically the only modification of the supporting structure 11 required has been moderate horizontal elongation of the upper portion thereof and the substitution of legs 15 which more realistically simulate a horse's legs. The seating member comprises two spaced side-by-side frame bars 10' and 10'', shortened to fit inside and support a simulated horse body 52. After body 52 has been rigidly affixed to the frame bars, the said seating member is thus given the form and appearance of a horse body, so that the term "seating member" applies to both the relatively long seating member 10 of the seesaw device of Fig. 1, which accommodates two riders, and to the shorter and more massive hobby horse body 52 which accommodates one rider. Main spring 21 of the tensioning means for seating member constituted by the horse body 52 has been shortened for correspondence to the length of the frame-bars 10' and 10'' thereof. For the realistic effect, a bridle 54 and reins 55 have been applied to the horse head appendage 56 of body 52. Reins 55 replace handle bars 20 of the seesaw device of Fig. 1, and likewise serve as means for preserving rider balance and to assist in imparting actuating impulses to the hobby horse body. A saddle 57 and its girth 58 preferably are formed integral with body 52 in the appropriate location. The pivotal connection between hobby horse seating member and the supporting structure 11 thereof, is constituted by trunnion member 18 which is supported by and across the frame-bars 10' and 10'' so as to be journaled in notches 17 of the supporting structure, and should be located directly beneath saddle 57. The single stirrup means 24 is positioned appropriately almost directly below the forward part of saddle 57 and yet far enough forward to obtain the resilient suspension effect of main spring 21, to the forward end portion of which it is attached. As shown in Fig. 7, it has been necessary to modify the stirrup means 24 slightly in order to make allowances for the increased width of the seating means as constituted by horse body 52. The stirrups 38 must be sufficiently far apart to project laterally outward from the sides of horse body 52 to external position wherein they are accessible to the feet of the rider, therefore, stirrup bar 32 has been given the required length to such end. In order to strengthen stirrup bar 32 in its elongated condition, a socket member 59 has been mounted above the said stirrup bar for reception of hanger member 29 at a point vertically spaced from the point of attachment of said hanger member to stirrup bar 32. Socket member 59 has downwardly diverging bracing legs 60 that are affixed in suitable manner to stirrup bar 32. Side portions 34 of stirrup frame 25 have been caused to diverge so as to afford clearance for the bracing legs 60 of socket member 59, and also to insure against oscillation of stirrup bar 32 on hanger member 29 as a pivot when excessive forward pressure happens to be exerted on one of the stirrups 38. In this embodiment of the stirrup means, it has been necessary to meet the

change in construction of seating member, so suspension spring 31 is now coupled to said seating member through the medium of plate 61 that bridges the frame bars 10' and 10'' and which is fixedly secured in any suitable manner so said frame bars.

Preparatory to use of either the ordinary seesaw embodiment of the invention or the hobby horse embodiment, stirrup means 24 should be adjusted to accommodate the leg length of each rider. This may be done very easily by screwing stop member 30 downward to reduce downward movement of hanger member 29, and thus to shorten the effective stirrup length or upward to increase downward movement of hanger member 29, and thus to lengthen the effective stirrup length. Furthermore, if a cantering gait is to be attempted, by actuating impulses to be described later herein, the screw plugs 47 of the left hind and right front hooves 39, respectively, should be loosened in order to afford greater "give" to these hooves.

The operation of the seesaw device should be readily understood upon further reference to Figs. 1 to 5. Without riders, seating member is maintained in the level position shown in full lines in Fig. 1 due to its gravitationally balanced condition and to the added stabilizing influence of the tensioning means represented by main spring 21 and coupling springs 22. When two riders desire to mount seating member 10, all each has to do is to stand at the left of his selected end of the seating member, grasp the corresponding handle bar 20 with the left hand, place the left foot in stirrup 38 on the near side, and then mount seating member 10 in the same manner that a horse is mounted. It is advisable that both riders mount at the same instant so that their weights will balance each other. However, with the tensioning means for seating member 10 tending to resist movement of the latter, mounting is much easier than in the case of a freely movable seating member of a seesaw of ordinary type.

As in the use of any seesaw device, the riders have to coordinate their actuating movements, but the nature and degree of force of such movements is quite different in the operation of the instant seesaw device. It has already been stated that no ground kicking is required. When one rider leans backward at the same time that the other rider leans forward, seating member 10 will respond quickly by pitching in the direction of the backwardly leaning rider, due to the comparatively weak resistance to such movement offered by the coupling spring 22 that is placed under tensional strain. Assuming that the rider on the right end of seating member 10 in Fig. 1 has leaned backward (to the right) and the other rider has leaned forward (to the right also), coupling spring 22 at the right end of seating member 10, being already under static tension, will contract as the seating member pitches to the right. The other coupling spring 22, on the contrary, will be stretched by the lifting motion of the left end of seating member. Further pitching movement of seating member 10 toward the right, as impelled by momentum of the riders' bodies and possible added muscular exertions and weight shifting on their part, will bring main spring 21 into play. The resulting upward bending of the left end portion of main spring 21 and the indirectly proportioned stretching and contraction of the left and right coupling springs 22 respectively are represented in broken lines in Fig. 1. The stronger resilience of main spring 21 will resist accelerated pitching movement of seating member 10 and eventually will retard this movement with a soft cushioning effect, which will be followed by positive recoiling reaction that will lift the rider on the right end of seating member 10 and start the seating member 10 on pitching movement in the reverse direction (toward the left) with little or no assistance on the part of the riders. From then on, continued seesaw motion may be maintained with minimum exertion. The pitching motion will be smooth and characterized by the inertia of the seating member 10 that is caused to a great degree by the influence of the tensioning means. The effect of this inertia on the riders will be quite similar to the effect produced by the inertia of a horse's body mass and muscular exertions during actual horseback riding. Consequently, the riders of my seesaw device will have to keep their seats by consciously balancing themselves in anticipation of the forceful reactions of the seating member 10 and its tensioning means.

In further simulation of the realistic movements and forces of horseback riding, the action of resilient footing means 16 will be brought into play by the riders. By rising in their stirrups and regaining their seats repeatedly in proper rhythm, as in "posting" in actual equitation, the supporting structure 11 and surmounting seating member 10 as a unit may be caused to move with up and down vibratory motion, and thus to jog or bounce up and down in simulation of the trotting gait of a horse. As a variation of this motion, by alternately leaning slightly to the right and left in opposite direction, the riders may cause the seesaw device as a unit to sway in unison with the other motions and thereby assume a simulated cantering gait, wherein the horse's feet tread the ground as follows: (1) left hind foot; (2) both right hind foot and left front foot; (3) right front foot; and then the reverse (4) both right hind foot and left front foot; (5) left hind foot. This alternate right and left swaying movement of the canter is repeated continuously and is a very pleasant riding gait.

In the use of the hobby horse embodiment disclosed in Figs. 6 and 7, the ultimate in simulation of actual horseback riding may be achieved. In this instance, of course, there will be a single rider. Due to his position directly above the pivotal axis of the seating member, which now includes the horse body 52 as a unitary part thereof, the rider can induce pitching motion quite easily by proper use of reins 55 and by forward and back leaning of body. Due to the resilient footing means, the pitching motion is accompanied by vertical vibratory movements, whereby the rider can induce the hobby horse to simulate trot and canter movements in a most realistic manner. The opportunities for development of muscular coordination and proper riding technique will be proportionately increased in use of this hobby horse embodiment of the invention.

Having now described my invention, I claim:

1. A device of the kind described comprising a supporting structure, a seating member pivotally mounted on said supporting structure for oscillatory movements in vertical plane, a spring bar spaced beneath and substantially coextensive with said seating member with its mid-portion affixed to the supporting structure, pull-springs interconnecting free end portions of the spring bar with corresponding free end portions of the seating member, stirrup means dependent from

the seating member and spring bar, said supporting structure having longitudinally spaced leg members at its respective sides, and said leg members terminating in resilient footing means which are yieldable to limited sway and up and down vibratory movements of the supporting structure during oscillatory movements of the seating member, each footing means comprising an inverted cup-shaped body of resilient material secured by its top wall to the end of a leg member with its mouth rim adapted to contact the surface upon which the supporting structure stands, a reenforcing helical compression spring within said body, and said mouth rim having a cutaway portion normally out of contact with said surface to provide an air vent in communication with the body interior, whereby to prevent suction cup action by the body during up and down vibratory movements of the supporting structure within normal amplitude limits.

2. In a device of the kind described as defined in claim 1 wherein the stirrup means includes a stirrup frame affixed to and dependent from the spring bar, a transverse stirrup bar vertically slidable in said frame, stirrup members carried by the oppositely extending end portions of said stirrup bar, a hanger member for support of the stirrup bar, said hanger member being vertically movable in said frame, means to yieldably suspend said hanger member from the seating member, and adjustable stop means to limit downward movement of the hanger member.

3. A device of the kind described comprising a supporting structure formed by laterally spaced side members each having longitudinally diverging leg members to provide the supporting structure with a four point footing, a seating member pivotally mounted on said supporting structure for oscillatory movements in vertical plane, resilient tensioning means connected between the supporting structure and opposite end portions of the seating member, whereby oscillatory movements of the seating member will be retarded as extremes of amplitude thereof are approached, and said leg members of the supporting structure terminating in resilient footing means which are yieldable to limited sway and up and down vibratory movements of the supporting structure during oscillatory movements of the seating member, each footing means comprising an inverted cup-shaped body of resilient material secured by its top wall to the end of a leg member with its mouth rim adapted to contact the surface upon which the supporting structure stands.

4. A device of the kind described comprising a supporting structure formed by laterally spaced side members each having longitudinally diverging leg members to provide the supporting structure with a four point footing, a seating member pivotally mounted on said supporting structure for oscillatory movements in vertical plane, resilient tensioning means connected between the supporting structure and opposite end portions of the seating member, whereby oscillatory movements of the seating member will be retarded as extremes of amplitude thereof are approached, and said leg members of the supporting structure terminating in resilient footing means which are yieldable to limited sway and up and down vibratory movements of the supporting structure during oscillatory movements of the seating member, each footing means comprising an inverted cup-shaped body of resilient material secured by its top wall to the end of a leg member with its mouth rim adapted to contact the surface upon which the supporting structure stands, said mouth rim having a cutaway portion normally out of contact with said surface to provide an air vent in communication with the body interior, whereby to prevent suction cup action by the body during up and down vibratory movements of the supporting structure within normal amplitude limits.

5. A device of the kind described comprising a supporting structure formed by laterally spaced side members each having longitudinally diverging leg members to provide the supporting structure with a four point footing, a seating member pivotally mounted on said supporting structure for oscillatory movements in vertical plane, resilient tensioning means connected between the supporting structure and opposite end portions of the seating member, whereby oscillatory movements of the seating member will be retarded as extremes of amplitude thereof are approached, and said leg members of the supporting structure terminating in resilient footing means which are yieldable to limited sway and up and down vibratory movements of the supporting structure during oscillatory movements of the seating member, each footing means comprising an inverted cup-shaped body of resilient material secured by its top wall to the end of a leg member with its mouth rim adapted to contact the surface upon which the supporting structure stands, and a reenforcing helical compression spring within said body.

6. A device of the kind described comprising a supporting structure formed by laterally spaced side members each having longitudinally diverging leg members to provide the supporting structure with a four point footing, a seating member pivotally mounted on said supporting structure for oscillatory movements in vertical plane, resilient tensioning means connected between the supporting structure and opposite end portions of the seating member, whereby oscillatory movements of the seating member will be retarded as extremes of amplitude thereof are approached, and said leg members of the supporting structure terminating in resilient footing means which are yieldable to limited sway and up and down vibratory movements of the supporting structure during oscillatory movements of the seating member, each footing means comprising an inverted cup-shaped body of resilient material secured by its top wall to the end of a leg member with its mouth rim adapted to contact the surface upon which the supporting structure stands, a reenforcing helical compression spring within said body, said mouth rim having a cutaway portion normally out of contact with said surface to provide an air vent in communication with the body interior, whereby to prevent suction cup action by the body during up and down vibratory movements of the supporting structure within normal amplitude limits, and a reenforcing helical compression spring within said body.

7. A device of the kind described comprising a supporting structure formed by laterally spaced side members each having longitudinally diverging leg members to provide the supporting structure with a four foot point footing, a seating member pivotally mounted on said supporting structure for oscillatory movements in vertical plane, resilient tensioning means connected be-

tween the supporting structure and opposite end portions of the seating member, whereby oscillatory movements of the seating member will be retarded as extremes of amplitude thereof are approached, and said leg members of the supporting structure terminating in resilient footing means which are yieldable to limited sway and up and down vibratory movements of the supporting structure during oscillatory movements of the seating member, each footing means comprising an inverted cup-shaped body of resilient material, and adjustable means cooperative with the top wall of each body to fasten the same to a leg member and to predetermine the compression of its top wall, whereby to permit regulation of the resilient reaction of the footing means of respective leg members in relation one to another.

8. A device of the kind described comprising a supporting structure formed by laterally spaced side members each having longitudinally diverging leg members to provide the supporting structure with a four point footing, a seating member pivotally mounted on said supporting structure for oscillatory movements in vertical plane, resilient tensioning means connected between the supporting structure and opposite end portions of the seating member, whereby oscillatory movements of the seating member will be retarded as extremes of amplitude thereof are approached, and said leg members of the supporting structure terminating in resilient footing means which are yieldable to limited sway and up and down vibratory movements of the supporting structure during oscillatory movements of the seating member, each footing means comprising an inverted cup-shaped body of resilient material, adjustable means cooperative with the top wall of each body both to fasten the same to a leg member and to predetermine the compression of its top wall, whereby to permit regulation of the resilient reaction of the footing means of the respective leg members in relation one to another, a reenforcing helical compression spring within each body, the mouth rim of each body being adapted to contact the surface upon which the supporting structure stands, and each mouth rim having a cutaway portion normally out of contact with said surface to provide an air vent in communication with the body interior, whereby to prevent suction cup action by the body during up and down vibratory movements of the supporting structure within normal amplitude limits.

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