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W. E. ELLIOTT

3,420,522

SWINGING SEESAW GYM SET

Filed July 2, 1964

Sheet 1 of 2

Fig. 1.

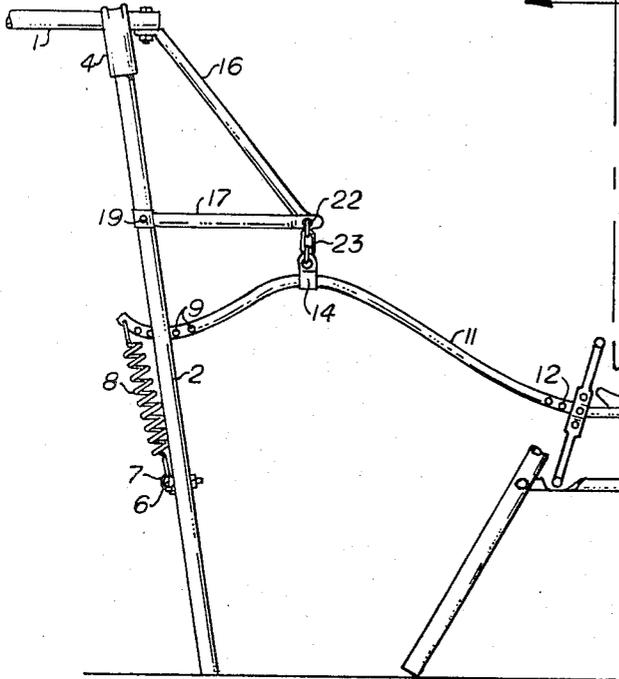


Fig. 2.

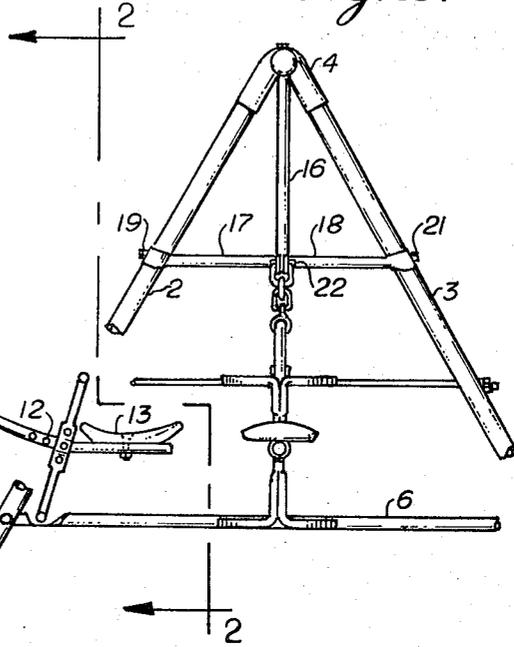


Fig. 4.

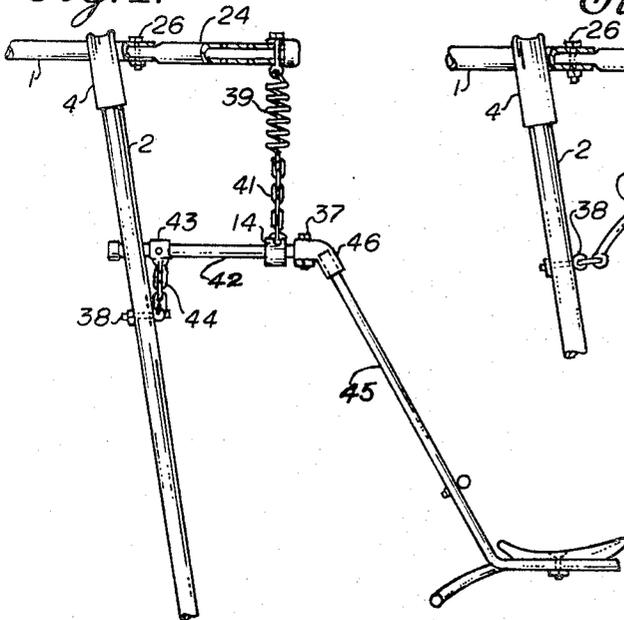
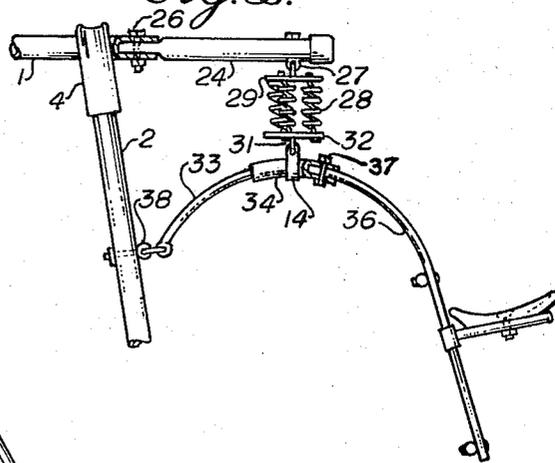


Fig. 3.



INVENTOR.
WILLIAM E. ELLIOTT

BY

William E. Elliott
ATTORNEY

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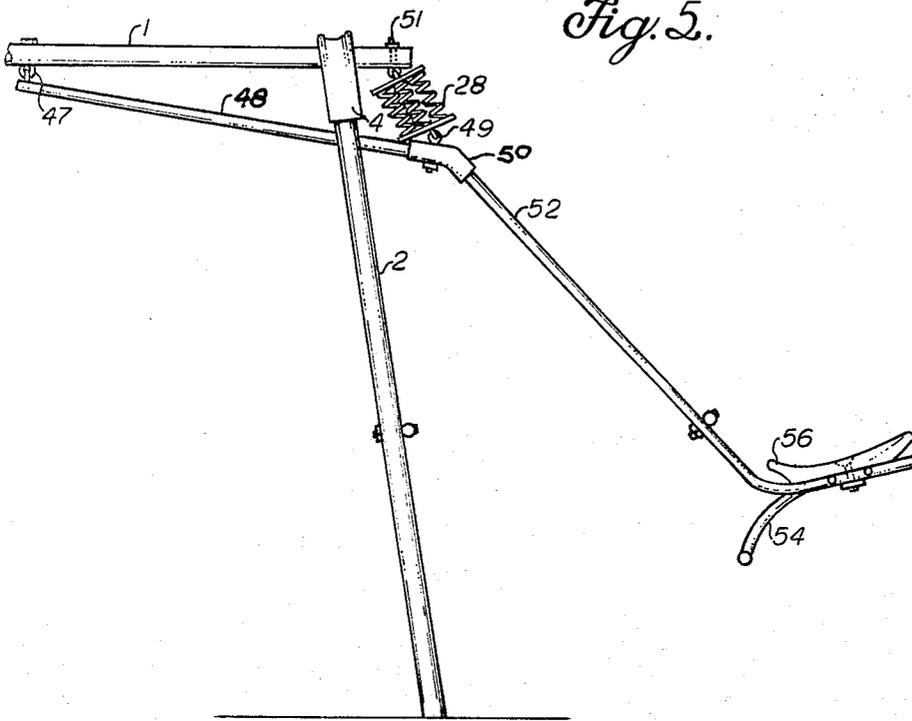


Fig. 5.

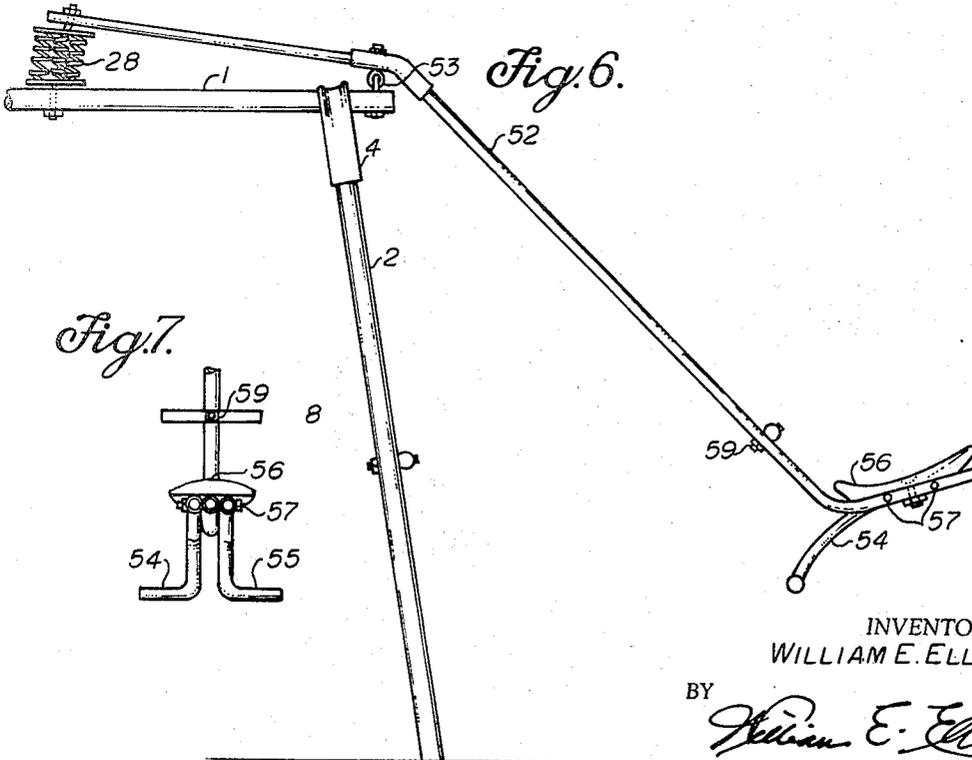


Fig. 6.

Fig. 7.

INVENTOR.
WILLIAM E. ELLIOTT

BY
William E. Elliott
ATTORNEY

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3,420,522

SWINGING SEESAW GYM SET

William E. Elliott, Oakton, Va.

(111 Wm. Classen Drive, San Antonio, Tex. 78232)

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18 Claims

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This invention relates to playground apparatus of the type known as swing sets or gym sets. Such apparatus or set generally includes not only one or two swings but usually a glider for occupancy by one or more children, a play feature that has wide appeal since the to and fro motion may be more easily built up and sustained than in the ordinary single occupancy swing. To support the swings and glider it is standard practice to provide a horizontal support in the form of a steel tube or pipe of sufficient length and stiffness to accommodate the play features spaced therealong, such tube being maintained in place by two or more A frames which extend up from the ground and are rigidly connected to the horizontal tube at the end portions thereof. The side members of the A frames are usually of steel tubing converging to their juncture with the horizontal tube at an angle of 60 degrees, more or less, the planes of the respective A frames inclining slightly toward each other to give increased stability endwise. Additional bracing extending between the horizontal support and the side members is sometimes provided. Customary practice is to provide a horizontal brace bar connected between the respective side members or posts thereby completing each A frame and insuring triangular rigidity, all as is well known in the art.

The inherent strength of the swing set frame as described is such that a properly assembled swing set erected and anchored on level, firm ground is subject to few maintenance problems, the chief of which in the smaller sets being downward deflection of the main, horizontal tube in the event of excessive loading.

The present invention provides an additional play feature in the basic swing set just described by utilizing the swing set frame as a base for a vertically and laterally oscillating, single-occupant seesaw of the spring-counterbalanced type; known in the art as a swinging seesaw.

It is an object of the present invention to provide a swinging seesaw in a swing set without interfering with the use of the principal play features of such set.

Another object of the invention is to utilize the substantial leverage of a swing set to oppose the backward leverage exerted by a vigorously ridden swinging seesaw with consequent major savings in cost, weight and occupied area of the normally required base structure.

Another object of the invention is to provide a swinging seesaw in a swing set, which in use, tends to stabilize the horizontal support of such set by exerting an upward force on said support.

Another object of the invention is to provide a swinging seesaw having optimum proportions and maximum appeal irrespective of previous base limiting dimensions.

A further object of the invention is to provide a swinging seesaw in which the underfoot or rider mounting area is completely unobstructed.

Yet another object of the invention is to provide a swinging seesaw in which the factor of safety inherent in the base is more than adequate regardless of the size of the gym set base utilized.

Another object of the invention is to provide a swinging seesaw in which the counterbalancing springs are substantially above the rider, eliminating a possible hazard to other children who may be in the vicinity of the orbital path of the rider awaiting their turn.

A still further object is to provide a swinging seesaw

which may be easily and cheaply added to swing sets already in use.

Other objects and advantages will be apparent from the description which follows and also from the drawings in which

FIGURE 1 is a front elevation of one end of a standard swing set frame having one form of the invention incorporated therein,

FIGURE 2 is an end elevation of FIGURE 1,

FIGURE 3 is a view similar to FIGURE 1 but showing another form of my invention.

FIGURE 4 is a view similar to FIGURE 1 but showing another form of my invention.

FIGURE 5 is a view similar to FIGURE 1 but showing yet another form of my invention.

FIGURE 6 is a view similar to FIGURE 1 but showing still another form of my invention.

FIGURE 7 is an end elevation of the seat and hand and foot rests of FIGURE 6.

The terms "swinging seesaw" as used herein refer to a spring-counterbalanced, single-occupant device for children as disclosed in Patent 2,457,627 to Emmett C. Bailey, granted Dec. 28, 1948 and wherein the rider is not limited to moving simply up and down but may execute, if he so desires, a variety of movements. More specifically, he may swing from side to side as well as up and down or may describe a path having continually varying horizontal and vertical components of motion. The oscillatory system of which the seat for the rider is a part has a central position of stability when the rider is motionless in the seat. A slight shift of the rider's body however, will start the system into oscillation. The path of the oscillation is determined by the impetus and direction, but most of all by the timing of this shift with the natural period of oscillation of the system. The inexperienced child quickly masters the movement giving the greatest amplitude, rapidity and exhilaration. In this gyration the seat and rider swing down to a low, inwardly inclined or "banked" side position and then spring upward through a central position at least as high as that shown in FIG. 1 and down to an inwardly inclined side position opposite to the first. The motion can be made quite rapid depending upon the vigor of the rider's movements. The "banking" or inward inclination of the seat as the latter moves to either side of its central position (FIG. 1) not only insures against overturning but assures the rider of the inherent stability of the seat regardless of how vigorous his movement becomes. This "banking" action coupled with the lateral freedom of the seat-carrier produces with the weight of the rider a pendulum-like action that may be set into oscillation very easily.

Patent 2,509,796 was granted to Emmett C. Bailey on May 30, 1950 for an improvement over the invention of Patent 2,457,627. One feature of the improvement patent (i.e. more easily set into orbit by the child) was to so proportion and adjust the parts to utilize his discovery "that the device is most sensitive to oscillation and hence gives the most satisfactory ride when the period of the lateral movement of the seat is approximately twice the period of the vertical movement" (column 4, line 6-10). Another feature was the provision of a post type of support for the seat beam which permitted greater side travel. In accomplishing the latter desirable end, however, difficulties in avoiding formidable dimensions in base structure were encountered as stated in column 4, lines 46-52, as follows: "It is preferred, however, to so proportion the base that the rider may swing through a very wide angle, say 150 degrees, without risk of overturning. Thus, it may be found desirable to increase the effective lateral dimensions of the base from that shown in FIG. 1, as by lengthening and increasing the angle between the members 2, 3 or by adding lateral base members extend-

ing horizontally from the flange 6 and normal to the central position of member 10."

The present invention provides a swinging seesaw having both of the desirable features named as well as others inherent in the devices of the named patents but without their disadvantages, and in addition has further features of desirability of its own as will appear hereinafter.

Referring now to FIGURES 1 and 2 there is shown the right end portion of one form of standard swing set frame having upper, horizontal bar 1 and inwardly inclined, converging, supporting posts 2 and 3, the upper ends of which are telescoped into a pre-formed, tubular socket member 4 welded to said bar. Lower, horizontal brace bar 6 having its flattened ends bolted to posts 2 and 3 serves to stabilize posts 2 and 3 as is common in the art. To the midpoint of brace bar 6 I suitably connect as by strap (pipe) 7 surrounding and clamped thereto, counter-balancing spring 8 the upper end of which is connected to one of the spaced apertures 9 adjacent the end of tubular seat-beam 11 having the usual hand and foot support mounted on the opposite end thereof through aperture 12 and with adjacent seat 13 mounted as indicated. Situated about one-third of the distance from the spring end of beam 11 toward seat 13 and surrounding such beam is a sturdy, pipe-strap type clamp 14 adapted to grip beam 11 at various positions therealong for varying the relative leverage of the spring 8 and seat 13. Clamp 14 may be supported from above by inextensible means depending from the end of horizontal beam 1 as a downward extension thereof. Tubular extension 16 bolted at its upper end to the end of bar 1 and maintained centrally and spatially from posts 2 and 3 by tubular braces 17, 18 extending outwardly from the respective posts to which they are bolted at 19 and 21, respectively, may constitute such means. The apertured, converging ends of braces 17 and 18 with the lower end of extension 16 are rigidly united as by bolt 22. Means such as chain links 23 may be provided to connect bolt 22 and clamp 14. The connection to the latter may be at a point spaced even further above beam 11 than is shown in the drawing by employing a clamp having ears of greater vertical extent than is shown, in which case a lower, transverse aperture in clamp 14 could accommodate the clamp bolt while an upper aperture spaced therefrom could accommodate a suitable interconnection to chain links 23. Such provision would assist banking or axial twisting of the seat beam by keeping both chain links 23 and the endwise offset of the inextensible means to a minimum.

It will be understood that FIGURE 1 is merely illustrative of a swing set apparatus adaption of a swinging seat beam supported from above at a point approximately one-third of its length measured from its counterbalanced end and having both ends lower than the point of support. In the case of a horizontal brace bar 6 disposed somewhat higher than shown in FIGURE 1, it may be advisable to locate the inextensible supporting means higher on the swing set or to interchange the positions of the spring 8 and chain links 23, as well as reshaping the seat-carrying portion of the seat beam for easy access. On the other hand, if it is desired to have the forward connection to the seat beam lower than the position of the horizontal brace bar, the latter being half the distance from bar 1 to the ground or less, a screw type anchor may be inserted into the soil entailing little more difficulty than positioning the ground anchor pins used for the posts 2 and 3. In all such arrangements the swinging seesaw and its spaced connections to the beam lie in a vertical plane of symmetry bisecting the angle between posts 2 and 3 (FIG. 2).

In FIGURE 3 there is shown a form of my invention utilizing an extension of horizontal bar 1 as a further simplified overhead support for the swinging seat beam, the latter being of two piece design for ease of packing. Such figure also illustrates the use of an out-of-the-way, overhead spring of multi-unit design. In instances of relatively elevated location of the horizontal, A-frame brace

the construction followed in FIGURE 3 is readily applicable. Herein, a tubular bar extension 24, in length of the order of 20 inches, is end crimped and inserted into the open end of bar 1 and secured by means such as bolt 26 extending therethrough. A double eyebolt 27 extends through extension 24 connecting multi-spring 28 to bar extension 24 by means of a centrally apertured upper disc 29 through which the threaded shank of the lower eyebolt extends. A single eyebolt 31 similarly connects lower disc 32 to clamp 14, the latter being of the same type as is employed in FIGURES 1 and 2. Circumferentially disposed coil springs, preferably six in number are end looped for easy insertion and removable from suitable circumferential apertures in discs 29 and 32 according to the weight of the rider. A curved, tubular seat beam having a front section 33 inserted into a similarly curved coupling 34 and fixed thereto as by welding and a rear, seat-carrying section 36 similarly inserted but fixed as by bolt 37 therein is front end connected to the middle of horizontal brace bar 38 as in the manner of FIGURES 1 and 2.

Here again, the interchangeability, if desired, of the positions of the multi-spring unit 28 and the front end connection of section 33 (or a chain connection, for example) will be evident, particularly for swing sets of low overall height. The vertical offset provided by clamp 14 is desirable to assist banking or twisting of the seat beam as it moves to either side of its central position for the reasons given in the description of FIGURE 1.

In FIGURE 4 I have shown a form of my invention utilizing the horizontal bar extension of FIGURE 3 but characterized by greater compactness for shipment and greater versatility in adjustment for riders of different weights and for variation in the relative periods of the up and down and lateral oscillations. Herein, for purposes of illustration a single spring 39 suitably connects extension 24 through intermediate chain 41 (which is kept as short as possible) to clamp 14 surrounding front seat beam section 42. An adjustable clamp 43 similar to clamp 14 connects extension 42 to the midpoint of horizontal brace 38 through intermediate chain 44 in a manner similar to that previously described. A rearwardly disposed, seat-carrying beam section 45 is inserted into angularly bent coupling 46 and welded thereto, the opposite end of said coupling receiving the rear end of section 42 and securing the same as by bolt 37. Clamps 14 and 43 assist in providing torque about the seat beam to insure optimum banking as earlier described. The overhead spring location of FIGURES 3 and 4, adaptability of the devices to swing sets having an elevated, horizontal brace location and overall compactness for shipment commend the features of these figures to instances where an insertable bar as extension 24 may be used or in instances where the open end of bar 1 is not accessible, a similar bar of greater length may be clamped to the underside of bar 1, for example, and thereby provide an extension. Of course, by suitable prolongation of bar 1 beyond socket member 4 in the course of production of a swing set, an additional separate extension would not be needed. It will be seen that further compactness of overall length of the swinging seesaw gym set of FIGURES 3 and 4 could be achieved by providing a terminal seat beam connection to the left of the horizontal brace 38 thereby shortening extension 24. In extensible means such as indicated at 16, 17 and 18 in FIGURES 1 and 2 disposed to the left rather than the right of posts 2 and 3 but short of interfering with swings or other apparatus depending from horizontal bar 1 could provide such a point of connection, if desired.

In FIGURE 5 of the drawing I have shown a swinging seesaw which utilizes only the upper, horizontal bar 1 of the standard swing set as a support, requiring however, use of a portion of such bar normally employed to support a swing or glider. By connecting the end of front section 48 of the seat beam through a suitably propor-

tioned double eyebolt 47, for example, to horizontal bar 1 inwardly of socket member 4 to provide a pivot and connecting a point on the seat beam spaced therefrom as intermediate coupling 50 to said bar 1 outwardly of socket member 4 through multiple spring assembly 28 and eyebolts 49 and 51, the lower end of the rear beam section 52 inserted and welded into coupling 50 is enabled to move up and down vertically and also oscillate rhythmically in side motion, the latter action being limited only by the angle between the posts 2 and 3. Adjustment for children of various weights is provided through adding or removing individual springs from spring assembly 28. By slightly lengthening bar 1 to the right, eyebolts 47 and 51 may be moved to the right also so as not to interfere with other play features of the gym set.

In FIGURE 6 I have shown an arrangement in which the seat beam 52 is disposed above the horizontal bar 1 by means of a pivot analogous to that of the Bailey improvement patent spura, but shown for convenience as an interconnecting double eyebolt 53, for example, and providing a lateral swing angle which will probably exceed that of FIGURE 5 in most swing sets as commonly provided. The upper spring connection to the end of the seat beam should be slightly offset with respect to the beam axis to produce sufficient torque to twist the beam about its axis upon lateral movement thereof as earlier mentioned.

FIGURE 7 shows in end elevation as viewed from the right of FIGURE 6, a simplified seat mounting useful in the embodiments of FIGURES 4, 5 and 6 and wherein a pair of downwardly and outwardly bent tubing members 54 and 55 serve as foot rests and also to brace the seat 56 which is bolted to the lower, upwardly bent portion of the seat beam, by means of through bolts 57. A simple cross-bar type of hand piece may be conventionally secured to seat beam 52 as by bolt 59.

I do not desire to be limited to the precise forms of my invention illustrated since it will be readily appreciated that component features of one form may be interchanged with features of another form, for example, all with the object and, in fact, the requirement of providing a swinging seesaw as described. The selection of a particular form of the invention will depend chiefly on the design of swing set with which it is to be used. In general, it is preferred to use a form wherein the space bounded by the upper horizontal bar and the oppositely disposed A frames is only slightly encroached upon. Due to endwise space limitations or to the fact that a swing set may already have spaces for two or three swings and the elimination of one nearest an A frame may be more than offset by the substitution of a swinging seesaw, use of the form of the invention shown in FIGURE 5, or even one in which the seat beam is reversed in position from right to left and with or without an extension of the upper, horizontal bar to lessen the extent of the necessary encroachment may be indicated.

Similarly, in FIGURES 1-4, overall length of the swinging seesaw gym set may be reduced and the construction simplified where ground conditions permit by utilizing lower, horizontal bar 6 as the support for the seat beam which may be pivoted above or below as desired, the front end of the seat beam being spring connected or chain-connected as appropriate to a screw type anchor embedded into the soil.

In view of the foregoing, it is desired that the invention be limited only to such forms as may be comprehended within the scope of the subjoined claims.

What is claimed is:

1. A swinging seesaw gym set comprising a frame having an elevated, horizontal bar, a pair of downwardly and outwardly diverging posts rigidly connected to each end of said bar to support the same above the ground, an elongated, swinging seesaw having a portion intermediate its ends connected by first connection means to a point on said frame lying in a vertical plane bisecting the angle

between said diverging posts and a terminal portion thereof connected by second connection means to a point in said plane which is fixed with respect to said frame and is horizontally spaced from said first point, one of said connection means including spring means for counterbalancing a rider-carrying seat mounted on the opposite terminal portion of said seesaw and both said connection means permitting vertical movement and horizontal banking movement of said seat in a path of travel which lies entirely beyond the proximate end of said horizontal bar.

2. The combination of elements included in claim 1 wherein said fixed point lies on said frame.

3. The combination of elements included in claim 1 wherein both said spaced points lie adjacent but beneath said elevated, horizontal bar.

4. The combination of elements included in claim 1 wherein both said spaced points lie adjacent but above said elevated, horizontal bar.

5. The combination of elements included in claim 1 wherein one end of said horizontal bar is extended beyond its junction with said posts to provide said first point on said frame.

6. The combination of elements included in claim 1 and wherein one end of said horizontal bar is extended outwardly and downwardly beyond its junction with said posts to provide said first point on said frame.

7. The combination of elements included in claim 1 wherein said spring means is included in the connection means of said terminal portion.

8. The combination of elements included in claim 1 wherein both said spaced points lie adjacent but above said elevated, horizontal bar and said spring means is included in the connection means of said terminal portion.

9. A swinging seesaw gym set comprising a frame having an elevated, horizontal bar, a pair of downwardly and outwardly diverging posts rigidly connected to each end of said bar to support the same above the ground, a lower, horizontal bar having its end portions connected to the respective posts of each pair to brace the same, an elongated, swinging seesaw having a portion intermediate its ends connected by first connection means to a point on said frame lying in a vertical plane bisecting the angle between said diverging posts and a terminal portion thereof connected by second connection means to a point in said plane which is fixed with respect to said frame and is horizontally spaced from said first point, one of said connection means including spring means for counterbalancing a rider-carrying seat mounted on the opposite terminal portion of said seesaw, and both said connection means permitting vertical movement and horizontal banking movement of said seat in a path of travel which lies entirely beyond the proximate end of said elevated, horizontal bar.

10. The combination of elements included in claim 9 wherein both said spaced points lie adjacent but beneath said elevated, horizontal bar.

11. The combination of elements included in claim 9 wherein both said spaced points lie adjacent but above said elevated, horizontal bar.

12. The combination of elements included in claim 9 and wherein one end of said elevated, horizontal bar is extended beyond its junction with said posts to provide said point on said frame.

13. The combination of elements included in claim 9 and wherein one end of said elevated, horizontal bar is extended beyond its junction with said posts to provide said point on said frame, said lower horizontal bar providing said fixed point.

14. The combination of elements included in claim 9 and wherein one end of said elevated, horizontal bar is extended outwardly and downwardly beyond its junction with said posts to provide said point on said frame.

15. Swinging seesaw apparatus for a swing set having an elevated, horizontal bar, a pair of downwardly and outwardly diverging posts rigidly connected to each end of

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said bar to support the same above the ground, said apparatus comprising rigid, inextensible means disposed in fixed relation to a pair of said posts, and projecting outwardly from the proximate end of said bar, an elongated, swinging seesaw having a portion intermediate its ends connected by first connection means to said inextensible means, second connection means for connecting one terminal portion of said seesaw to a point which is spaced from said first connection means, fixed with respect to said inextensible means and lies in a vertical plane bisecting the angle between the respective diverging posts of each pair, one of said connection means including spring means for counterbalancing the weight of a rider carried by the opposite terminal portion of said seesaw and both said connection means permitting vertical movement and horizontal banking movement of said opposite terminal portion in a path of travel which lies entirely beyond the proximate end of said horizontal bar.

16. The combination of elements included in claim 15 and wherein said rigid, inextensible means projects both outwardly and downwardly from the proximate end of said horizontal bar.

17. Swinging seesaw apparatus for a swing set having an elevated, horizontal bar, a pair of downwardly and outwardly diverging posts rigidly connected to each end of said bar to support the same above the ground, and a lower horizontal bar extending between each pair of posts to brace the same, said apparatus comprising rigid, inextensible means disposed in fixed relation to a pair of said posts for projection outwardly from the proximate end of said elevated bar, an elongated, swinging seesaw having a portion intermediate its ends provided with means

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for connecting said portion to said rigid, inextensible means, means for connecting one terminal portion of said seesaw to the midpoint of said lower horizontal bar proximate to said seesaw, one of said connecting means including spring means for counterbalancing the weight of a rider carried by the opposite terminal portion of said seesaw and both said connecting means permitting vertical movement and horizontal banking movement of said opposite terminal portion in a path of travel which lies entirely beyond the outer end of said rigid, inextensible means.

18. The combination of elements included in claim 17 and wherein said rigid, inextensible means projects both outwardly and downwardly from the proximate end of said elevated bar.

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ANTON O. OECHSLE, *Primary Examiner*.

A. W. KRAMER, *Assistant Examiner*.

U.S. CI. X.R.

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