Dec. 28, 1948. E. C. BAILEY 2,457,627

SWINGING SEESAW

Filed Jan. 10, 1944

Fig. 1.

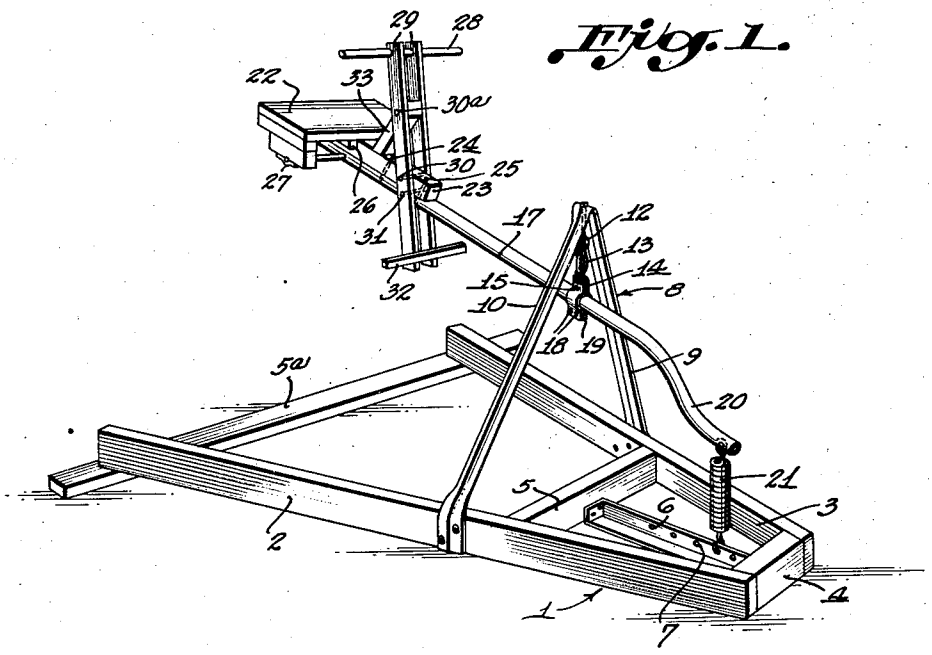
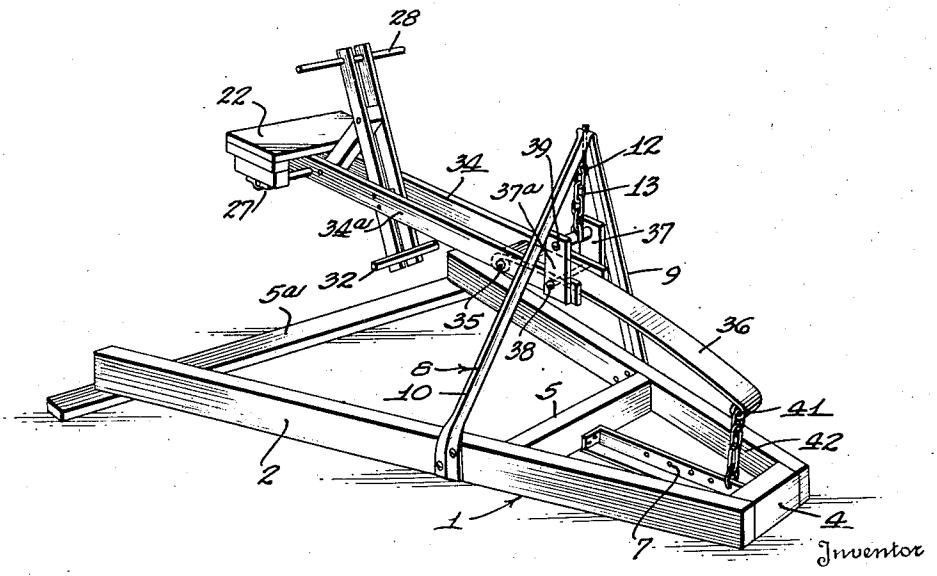



Fig. 2.




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Patented Dec. 28, 1948

2,457,627

# UNITED STATES PATENT OFFICE

2,457,627

## SWINGING SEESAW

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Application January 10, 1944, Serial No. 517,694

12 Claims. (Cl. 272—55)

1

This invention relates to recreational apparatus of the class known as counter-balanced or single-occupant seesaws. As is implied from the name, such devices customarily differ from the ordinary, twin-occupant seesaw in having counter-balancing means in one form or another which takes the place of one of the occupants and enables a single rider to enjoy in large measure the physical and psychological benefits of seesaw exercise.

Such devices include small teeter-boards in which the rider's weight is balanced by a coil spring through a lever of the second class and hobby-horses or "bouncers" in which an upwardly slanting, flat spring is flexed as the rider moves up and down. Although wide variations in individual design are known to the art, such devices as a class appear to have at least one feature in common, viz: the rider moves simply up and down in a vertical plane, although he may vary somewhat the amplitude of his movement. As a result of this limitation, the child soon loses interest in his toy and the older the child, the earlier is this inevitable result. Generally such devices, therefore, are manufactured in sizes suited only to young children and are constructed with only a relatively slight spring adjustment so that the toy must be laid aside as the child grows older.

The primary object of my invention is to provide a swinging seesaw in which the rider is not limited to moving simply up and down but may execute, if he so desires, a variety of movement. 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

2

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.

Another object of the invention is to provide a device of the character described which may be quickly and easily adjusted to riders of various weights.

A further object of the invention is to provide a swinging seesaw which is inherently stable in its stationary or rider-mounting position.

Another object is to provide an exhilarating exercise device for children of all ages which is economical to construct, easy to assemble and which may be operated by even young children without supervision or previous instruction.

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

Figure 1 is a perspective view of one form of my invention, and

Figure 2 is a similar view of another form thereof.

Referring now to Fig. 1 there is shown a base 1 preferably in the outline of a triangle or A frame which comprises longitudinal members 2, 3 suitably united at their forward ends to the bridge piece 4 and reinforced by a transverse member 5, the midpoint of which is connected to the midpoint of bridge piece 4 by a distance piece 6. The latter is provided with a plurality of longitudinally spaced holes 7 for a purpose later to be described.

An upwardly extending frame member 8 having legs 9, 10 of equal length is securely bolted to the longitudinal members 2, 3 at points equidistant from the forward ends of the longitudinal members 2, 3. The apex of the upper frame member 8 is apertured to receive an eyebolt 12 which is secured therein and is connected to the upper

link of a chain 13 depending therefrom. The lowermost link of the chain is connected to a split collar 14 by means of bolt 15 extending therethrough. Any desired spacing means such as washers surrounding bolt 15 on each side of the lowermost chain link may be used to maintain the link centrally of the bolt 15 and collar 14.

An elongated, seat-carrying member 17 is clamped between the curved jaws of the split collar 14 by means of bolts 18 extending through depending ears 19 of collar 14. Bolt 15 is spaced upwardly from the jaws of the collar for a purpose which will be described later. The forward portion of member 17 is downwardly offset at 20 and at its end is pivotally connected to the upper loop of coil tension spring 21. The lower end of spring 21 is hooked through the hole 7 in distance piece 6 which is directly beneath the end of member 17, so that spring 21 extends in a generally vertical direction as shown in Fig. 1.

A seat 22 is supported by an elongated block 23 which is united to the member 17 by vertically extending bolts 24, 25. Battens 26 on each side of the block 23 prevent lateral shifting of the seat 22 on its support and also serve to reinforce the same. Similar blocks at each end of seat 22 have steel straps 27 for tightly clamping the end portions of a metal rod which extends through the member 17. A handle bar 28 is projected through the upper ends of posts 29 which are located on each side of member 17 and block 23 and are fixed thereto by bolts 30, 31, respectively; a foot rest is suitably secured to the lower ends of posts 29. A diagonal brace 33 is united to posts 29 by suitable means indicated at 30 and also to the block 23. It will be obvious that the seat assembly which has been described is merely illustrative of many arrangements which may be utilized.

The operation of my swinging seesaw is as follows: Member 17 is adjusted in the clamp 14 until the former is approximately horizontal when the child is occupying the seat 22 after which the clamping bolts 18 are tightened. The lower loop of spring 21 should be hooked into the hole 6 beneath the end of member 17. The offset portion 20 of member 17 and the substantial spacing of the upper loop of the lowermost chain link above the jaws of collar 14 together with spring 21 are effective to prevent more than slight turning of member 17 about its major axis as the latter moves laterally until stopped by the remote leg 9 of the frame 8 (the axis of rotation actually passes through the lower end of the link indicated at 13 in Fig. 1 since the lowermost link is clamped to move only with the split collar 14) when the child climbs into the seat from the left side of the device as viewed in Fig. 1 by placing his foot on the rest 32 and hand on the bar 28. This feature is very effective for inspiring confidence, particularly with younger riders and adds to the safety of operation at all times since it limits the angle through which the member 17 may rotate in either direction from its normal central position. The motion of the rider may be a simple up and down movement about the lower end of the chain link 13 as a fulcrum, or the rider may start the seat to swinging from side to side about the upper point of suspension at 12. As the member 17 is displaced an increasing distance from its central position (limited by the legs 9 and 10), it rotates slightly but in proportion to the displacement due to the pendulum-like suspension of the fulcrum, together with the extensible, inverted pendulum-like suspension of



the end of member 17 to which the spring is attached, the effect being aided by the offset mounting 15 and downwardly offset portion 20 of member 17. This "banking" action adds stability without lessening the responsiveness of the oscillatory system to the rider's inclinations. It is especially useful in the combined, vertical and horizontal swinging movement, the possibilities of which are soon discovered. In its fullest execution the rider loops vertically through great swings that are continually shifting from side to side and at the same time, rolling first in one direction and then in another as the member 17 partially rotates. The natural "banking" of member 17 and the limits to its lateral displacement assure safety for the rider without imparing his freedom of movement. There will also be a certain amount of forward and backward movement of the seat as the member 17 moves endwise.

In Fig. 2 is illustrated a modified form of my invention in which a flat spring of the automobile type has been substituted for the coil spring. The flat spring is so arranged that advantage may be taken of the resilience throughout its length regardless of the leverage position of the seat-carrying member. This is accomplished through the provision of a pair of spaced members 34, 34*a* between which the spring 36 is extended. The rear eye of spring 36 is pivotally connected to the members 34, 34*a* by means of a bolt 35 extending transversely therethrough while the front eye is suitably connected to a chain adapted to be hooked through apertures 7 of the distance piece.

Two vertical members 37, 37*a* suitably fixed to the forward ends of members 34, 34*a* have a bolt 39 extending through the upper portions thereof and passing through the lowermost link of a chain 13 which is connected to the apex of the upper frame 8 by means of eyebolt 12. Suitable washers or rollers surrounding the bolt 39 may be used to maintain the chain link centrally of the latter. Passing through the united ends of members 34, 34*a* and 37, 37*a* is a bolt 38 on the top of which the spring 36 bears as a fulcrum. With this construction, adjustment for the weight of the rider is made by varying the position of bolt 35 along the members 34, 34*a* through longitudinally spaced holes (not shown) therein, and use of the appropriate hole 7. The downward curve of spring 36 to its lower end 41 together with the substantial spacing of bolt 39 above the generally horizontal plane of the members 34, 34*a*, produces the same stabilizing influence on the seat as the spacing of bolt 15 and the provision of offset portion 20 in Fig. 1. From the foregoing it will be seen that regardless of the particular embodiment of my invention, the seat for the rider as part of an oscillatory system is free to swing from side to side of a central position, "banking" or twisting about its longitudinal center line and toward its normal, central position as it moves farther to either side of the latter. This freedom of action depends not only on the suspension of the seat-carrying member but especially the side component of motion of this member at its front end (i. e. opposite to the seat-carrying end). It has been observed that the lateral freedom of member 17 at its two points of connection to the stationary support results in a scissors-like motion of this member about a generally vertical axis spaced forwardly from the collar 14 when the rider causes vertical and horizontal movement of the seat. The ends of member 17, therefore, move laterally in opposite directions about such axis at the same time that member 17 is

twisting axially to cause the seat to "bank" inwardly toward its normal, central position.

It will be apparent that a wide range of substitute materials may be used for those generally indicated in the drawing and yet retain the advantages of my invention. Also wide variation in the design and arrangement of component parts may be made for the sake of economy and compactness. The seat-carrying member 17, for example, may be made of a single metal strip so heat-treated as to be resilient in its forward portion and relatively unyielding in its rear portion. Conceivably such member might also be made of wood of variable cross-section to function as described. Also the ends of members 2 and 3 may be joined directly instead of through the bridge piece 4 which might then be dispensed with. Since the function of the chain indicated at 13 is to permit pendulum-like swinging of member 17 from side to side about an axis spaced a substantial distance above the member 17, and also forward and backward swinging of this member, it is apparent that other expedients such as a laterally extending bolt and a companion clevis may be substituted for the bolt 15 and lower link of chain 13. An eyebolt linked to the eyebolt 12 and having its lower end threaded into the central opening of the clevis would then be substituted for the remaining links of chain 13. The seat 22 would then be even more stable in its central position than obtains in Fig. 1, since lateral swinging of member 17 would be about the loop portion of eyebolt 12.

What is claimed as new is:

1. A seesaw comprising a support, elongated seat-carrying means, and a plurality of spaced connecting means between said support and said first-named means permitting lateral movement of said seat-carrying means about an axis located between two of said connecting means and extending in the same general direction thereof, one of said means providing inherent resilience for counter-balancing the weight of a rider carried by said first-named means.

2. A seesaw comprising a support, elongated, seat-carrying means, and a plurality of spaced, connecting means between said support and said first-named means permitting partial rotational movement and also lateral movement of said seat-carrying means about an axis located between two of said connecting means and extending in the same general direction thereof, one at least of said connecting means providing inherent resilience for counterbalancing the weight of a rider carried by said first-named means.

3. A seesaw comprising a support, elongated seat-carrying means, and means interconnecting said support and said first-named means at a plurality of spaced points permitting limited rotational movement of said seat carrying means about its longitudinal axis, one of said means providing inherent resilience for counterbalancing the weight of a rider carried by said first-named means.

4. A seesaw comprising a support, elongated seat-carrying means, an inextensible, swinging connection between said support and said means at a point intermediate the ends of the latter and means interconnecting said support and said seat-carrying means at a point spaced from said first point for permitting lateral movement of said seat-carrying means at said spaced point, one of said means providing inherent resilience for counterbalancing the weight of a rider carried by said first-named means.



5. A seesaw comprising a support, elongated, seat-carrying means, an inextensible, swinging connection between said support and said means at a point intermediate the ends of the latter for stabilizing said means in a central position and for permitting lateral movement thereof and means for interconnecting said support and said seat-carrying means at a point spaced from said first point, said last-named means providing inherent resilience for counterbalancing the weight of a rider carried by said seat-carrying means.

6. A seesaw comprising a support, elongated seat-carrying means, a swinging connection between said support and said means intermediate the ends of the latter and means interconnecting said support and a point on said first-named means located below the longitudinal axis of the latter for permitting lateral movement of said seat-carrying means at said point, one of said means providing inherent resilience for counterbalancing the weight of a rider carried by said first-named means.

7. A seesaw of the single occupant type comprising a base, an upper frame secured to said base and an elongated, counterbalanced seat-carrying member suspended from said frame for rocking movement about two horizontal axes normal to each other and having swinging connection with said base whereby oscillation of said member may be initiated and maintained by a rider fully supported by said member.

8. A seesaw comprising a longitudinally disposed base having an upper frame secured thereto, elongated seat-carrying means having a downwardly offset portion at one end thereof, attaching means projecting substantially above the longitudinal axis of said seat-carrying means and rigidly united thereto, a swinging connection between said frame and said attaching means, and means providing inherent resilience and interconnecting said base and said downwardly offset portion for centrally stabilizing said seat-carrying means and for counterbalancing the weight of a rider carried thereby.

9. A seesaw comprising a support including a horizontal base portion, an elongated seat-carrying member, suspension means between said support and said member intermediate the ends of the latter, means connecting said support and one end of said member for permitting lateral movement of said end and twisting of said member about its longitudinal axis, one of said means providing with said support a resilient counterbalance for a rider carried by said seat-carrying member.

10. A swinging seesaw comprising a support, an elongated seat-carrying member, a seat carried thereby and means interconnecting said support and said member at a plurality of points spaced along the latter whereby the seat-carrying portion of the latter may twist axially to and from a normally stationary, central position as it swings to either side of the latter said means including a resilient portion so that said seat-carrying portion may simultaneously oscillate substantially vertically under the weight of a rider carried thereby.

11. A seesaw comprising a base, elongated seat-carrying means, and a plurality of spaced connecting means between said base and said first-named means tending to stabilize said seat-carrying means in a central position and permitting twisting or banking thereof about an axis extending in the direction of its longitudinal axis as the respective ends thereof are moved laterally

in opposite directions from said stabilized, central position by the shifting of a rider seated thereon, at least one of said means providing inherent resilience for counterbalancing the weight of said rider.

12. A seesaw comprising a support, elongated seat-carrying means, resilient means interconnecting said support and one end of said first-named means, and means interconnecting said support and an intermediate portion of said first-named means permitting axial movement of said first-named means and also rocking movement



thereof about two horizontal axes normal to each other.

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