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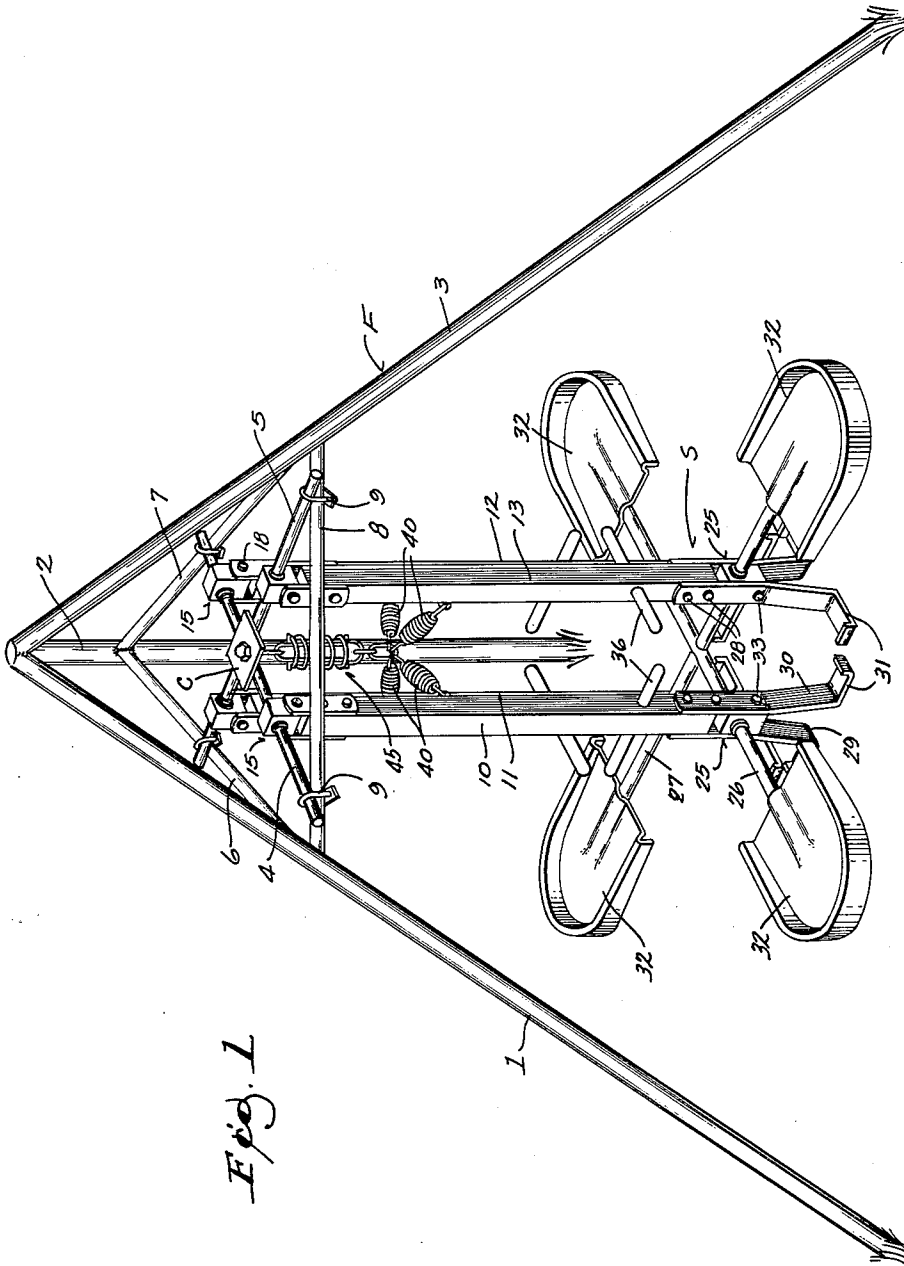
M. J. McGUIRE

3,058,744

SWING

Filed May 2, 1961

3 Sheets-Sheet 1



INVENTOR.
MARTIN J. MCGUIRE

BY

Lieber, Lieber & Nilles
ATTORNEYS

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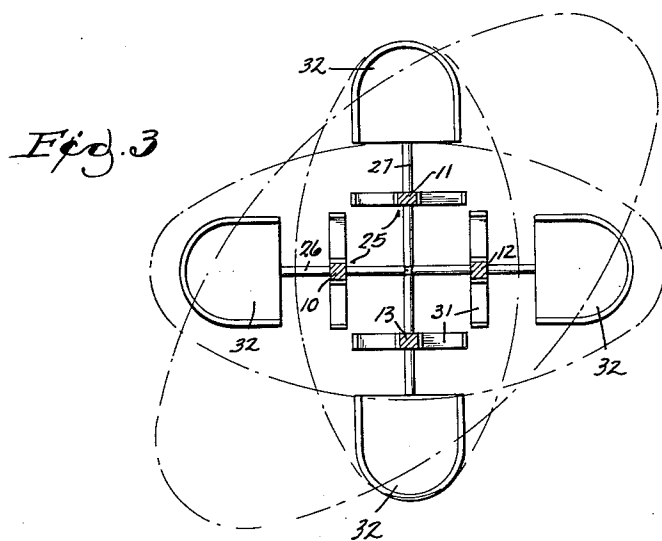
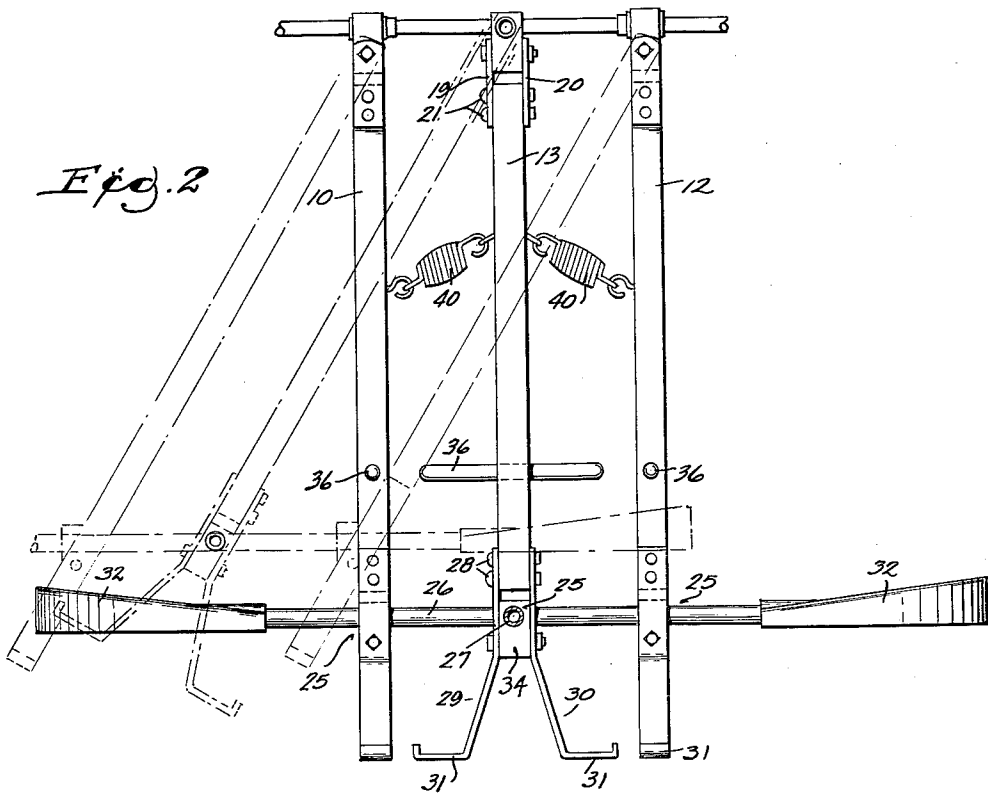
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INVENTOR.
MARTIN J. MCGUIRE
BY
Lieber, Lieber & Nilles
ATTORNEYS

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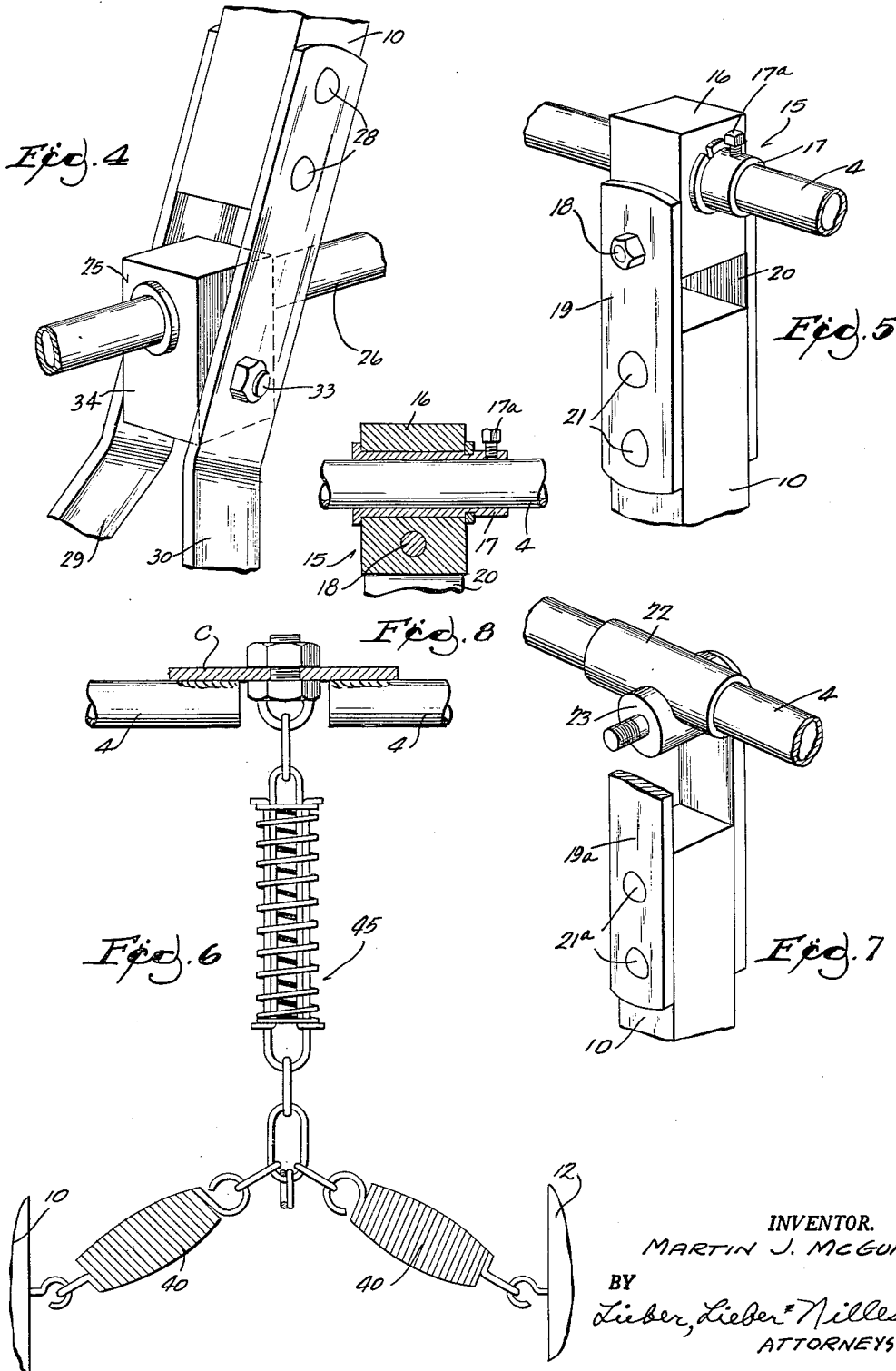
M. J. MCGUIRE

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3 Sheets-Sheet 3



INVENTOR.
MARTIN J. MCGUIRE
BY
Lieber, Lieber & Nilles
ATTORNEYS

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3,058,744

SWING

Martin J. McGuire, Hales Corners, Wis.
(7412 East Green Lake Drive N., Seattle 15, Wash.)
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The present invention relates generally to playground devices and more particularly to an improved swing, cradle, carousel, or the like.

The users of the general type of equipment provided by the present invention are often children and while they desire an interesting and somewhat exciting ride, provision must be made for insuring a safe ride without promoting fear in the users, particularly small children.

Conventional swing-type devices often permit practically unrestricted swinging motion including twisting or spinning about a generally vertical axis and/or tipping or tilting of the seat portion on which the child is seated. Such devices often result in injury to the occupants.

Accordingly, the present invention provides an improved swing-type pleasure device which results in a pleasurable and exciting ride but at the same time one which is safe.

More particularly, the swing-type unit provided by the present invention simultaneously performs several functions:

(1) It permits a wide variety of swinging movements or a combination of them,

(2) Insures that the portion on which the occupants are seated is maintained at a substantially constant attitude relative to the ground, and prevents excessive tilting or tipping thereof, except for a small amount purposely provided for,

(3) Prevents twisting or spinning of the unit about a vertical axis.

The swing-type unit above mentioned provides a unit which can be used by a single rider or simultaneously by a plurality of riders, who can activate the unit to travel in a straight swinging path, a circular swinging path, an elliptical path, or a combination of these movements. Nevertheless, the seat portion is maintained at a substantially constant attitude relative to the ground or assumes only a predetermined slant, all without twisting about a vertical axis.

These and other objects and advantages will appear hereinafter as this disclosure progresses, reference being had to the accompanying drawings, in which:

FIGURE 1 is a perspective view of a swing-type pleasure unit made in accordance with the present invention;

FIGURE 2 is a fragmentary side elevation view of the unit shown in FIGURE 1, and showing a moved position of the unit in broken lines;

FIGURE 3 is a schematic plan view of the unit and indicating in broken lines only some of the various paths of travel the unit may take;

FIGURE 4 is an enlarged perspective view of the dual axis joint between each of the parallel support members and the seat assembly;

FIGURE 5 is an enlarged perspective view of the dual axis joint between the upper end of each of the vertical supports and the main frame;

FIGURE 6 is an enlarged perspective view of the damping mechanism;

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FIGURE 7 is a perspective view of a modified type of dual axis joint useable with the present invention, and FIGURE 8 is a vertical, sectional view through the joint shown in FIGURE 5.

Referring in greater detail to the drawings, the main frame F has been indicated as being of the tripod type, but other forms of support frames could be used, such as those of rectangular or square shape and having a different number of legs. In the illustration shown, however, the legs 1, 2, and 3 are rigidly joined together, as by welding, at the top where they form an apex of the frame. The lower ends of these legs may be anchored in the ground, or in inclement weather, may rest on the floor in a sheltered area, as the unit is easily portable.

The main frame also includes a pair of horizontally disposed and mutually perpendicular rods 4 and 5 which are rigidly secured to the cross braces 6, 7, and 8 of the main frame in any suitable manner, as by the U-bolt clamps 9. Members 4 and 5 may be rigidly secured together at their juncture, as by welding, to a central plate C to furthermore form a rigid frame.

Extending downwardly from the members 4 and 5 are the four vertical members 10, 11, 12, and 13 which are arranged in substantial parallelism to one another. That is to say, there are two pairs of substantially parallel and vertical members, one pair being mounted at its upper end on member 4 and the other pair being mounted at its upper end on member 5. Thus, the pairs of support members are mounted on two mutually perpendicular and horizontal axes 4 and 5. These members may be adjusted along their axes 4 and 5 so as not to be in precise parallelism with one another, for purposes that will appear later.

The members 10-13 are each mounted to their respective axes by means of a dual axis joint 15. This joint may be of any suitable type which provides for swinging movement in two directions at right angles to one another. Joint 15 has been shown in FIGURES 1 and 5 as comprised of a block 16 having a sleeve 17 therethrough by means of which it is oscillatingly and slidably mounted on member or axis 4, thus forming one pivot axis. The vertical member 10 is also pivoted in block 16 by the bolt means 18 which extends through the block and between straps 19 and 20 fixed by bolts 21 to the upper end of member 10. In this manner, each of the vertical members are mounted on their respective axes 4 and 5 for swinging thereon and for adjustment therealong to vary the spacing between the top ends of the members of each pair.

FIGURE 7 shows a modified type of joint wherein the short tubular sections 22 and 23 are welded together to form the dual axis joints. Straps 19a are secured by bolt means 21a in this modification.

A seat assembly S is secured adjacent the lower ends of the vertical members by a dual axis joint 25 between the assembly and each of the members. The seat assembly shown for illustrative purposes will accommodate four riders and comprises the horizontal seat rails 26 and 27 arranged at right angles to one another. Extending from each of the lower ends of the vertical members 10-13 and rigidly secured thereto by bolt means 28 is a pair of spaced apart strap members 29 and 30 which diverge at their lower ends into horizontal foot rests 31 for the rider seated on the corresponding seat 32 fixed

on the outer ends of the rails. Thus, means are provided at the lower end of the members 10-13 for supporting the rider's feet. A hand grip 36 is secured to the vertical members at a convenient height.

The rails 26, 27 are pivotally secured to the vertical members and between the strap members 29, 30 by the bolt means 33 which extends through the strap members, and also pivotally extends through a block 34. Members 26 and 27 also extend through their respective block 34 at right angles to the bolt means 33.

In this manner, a dual axis joint is provided between the vertical members and the seat assembly in which the axes of the joint are at right angles to one another.

The axes 4 and 5 may alternately be mounted on a ceiling or other overhead structure, if desired, and a main support frame which rests on the ground is not essential to the invention.

The dual axis joints provided at the upper and lower ends of the two pairs of vertical and substantially parallel members arranged on mutually perpendicular, horizontal axes permit the seat assembly to swing in various paths at a constant attitude relative to the ground and without twisting of the seat assembly around a vertical axis. In other words, when the vertical members are set in parallelism with one another, two vertical, parallelogram linkages are provided at right angles to one another which stabilize the seat assembly in all direction.

It may be desirable, however, to provide a different type of ride other than one in which the seat assembly maintains a constant attitude relative to the ground, and this is provided as follows: The spacing of the upper ends of the members 10-13 may be varied along their respective axes 4 and 5 by loosening the set screws 17a and adjusting the position of the blocks 16 on the axes relative to one another. In this manner, the members of either pair may be positioned so that they are no longer parallel with one another but instead, for example, are closer together at their upper ends. This has the effect of eliminating the true parallel linkage action and results in the seat assembly being tipped within predetermined limits, at the extreme outward limit of its swinging travel. Therefore, it is not necessary for the vertical members of each pair to be in exact parallelism with one another, but in any event, the feature of providing two pairs of substantially parallel members at right angles to one another does provide a guided and restricted attitude of the seat assembly relative to the ground.

A damping means may be provided to restrict the swinging motion and limit the extent thereof. This means has been shown as comprising a series of relatively strong springs 40, one connected at its outer end to each vertical member. As shown in FIGURE 6, the inner ends of these springs are connected to the lower end of the centrally located spring-strut unit 45. This unit is fastened at its upper end to the central plate C. The spring-strut is resiliently extensible in the well-known manner and is of weaker strength than the springs 40. When the swing is at rest, the springs 40 assume the position shown in FIGURE 6. When the swing unit moves outwardly a sufficient distance, the spring-strut unit 45 begins to extend before the springs 40, as unit 45 is of weaker strength. Thus, the unit 45 provides the initial damping action. Continued outward movement of the swing beyond this point, however, causes springs 40 to extend, resulting in additional damping action. As a result of this damping means, maximum outward extent of the swinging movement is established and the riders may increase their rate of rotation as desired and without injury, as by striking the legs of the support frame.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention:

1. A swing including support means and comprising,

a pair of substantially parallel and vertically disposed rigid members swingably mounted at their upper ends to said means and about a generally horizontal first axis and also about axes which are substantially normal to said first axis, a second pair of substantially parallel and generally vertical rigid members swingably mounted on said support means about a generally horizontal second axis which is substantially normal to said first axis, said second pair of members also swingably mounted about axes which are substantially normal to said second axis, whereby a dual axis connection is formed between each member and said support means, and a seat assembly mounted adjacent the lower ends of said members and connected to each of said members by a dual axis joint whereby swinging of said assembly may occur without twisting of said assembly about a vertical axis, said assembly having seats on the outside of said members.

2. A swing comprising, a support frame, a pair of parallel and vertical rigid members swingably mounted at their upper ends about a horizontal axis and also about axes which are normal to said first axis, a second pair of parallel and vertical rigid members swingably mounted on said frame about a horizontal second axis which is normal to said first axis, said second pair of members also swingably mounted about axes which are normal to said second axis to thereby form a dual axis connection between each member and said support frame, and a seat assembly mounted adjacent the lower ends of said rigid members and connected to each of said members by a dual axis joint whereby swinging of said assembly without twisting about a vertical axis may occur and said assembly maintains a substantially constant attitude relative to the ground during swinging movement, said assembly having seats on the outside of said members.

3. A swing comprising, a support frame, two pairs of substantially parallel and vertical rigid members, each pair being swingably mounted at its upper end on said frame about horizontal and separate axes, said axes being arranged perpendicular to one another, each member of each pair also being mounted adjacent its upper end about an axis which is perpendicular to its respective said separate axis whereby a dual axis joint is formed between each member and said frame, a seat assembly mounted adjacent the lower ends of said members and having a dual axis joint with each of said members which axes of each of said joints are arranged perpendicular to one another and are generally horizontally disposed, whereby said assembly may swing in a substantially constant attitude relative to the ground and without twisting about a vertical axis, said assembly having seats on the outside of said members.

4. A swing comprising, a support frame, four generally vertically disposed rigid members, each having a dual axis joint at its upper end for being swingably connected to said frame about mutually perpendicular and horizontal axes, and a seat assembly having a dual axis joint with each of said rigid members adjacent the lower ends thereof for swinging relative thereto about perpendicular and horizontal axes, said assembly having seats on the outside of said members.

5. A swing comprising, a support frame, four generally vertically disposed rigid members, each having a dual axis joint at its upper end for being swingably connected to said frame, and a seat assembly having a dual axis joint with each of said rigid members adjacent the lower ends thereof for swinging relative thereto, each of said joints comprising a pair of horizontal and perpendicularly arranged axes, which permits swinging of said assembly at a substantially constant attitude relative to the ground and without twisting about a vertical axis, said assembly having seats on the outside of said members.

6. A swing including support means and comprising, four substantially parallel and generally vertically disposed rigid members, each being swingably connected at its upper end to said support means by means of a dual axis joint, each of said joints comprising mutually perpendicular and horizontal axes, and a seat assembly having a dual axis joint including mutually perpendicular and horizontal axes with each of said members adjacent the lower ends thereof for swinging relative thereto, said assembly having seats on the outside of said members.

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