June 11, 1929. T. BOLDIZZONI 1,717,003

AMUSEMENT APPARATUS

Original Filed Dec. 30, 1921 4 Sheets-Sheet 1

Fig. 1.

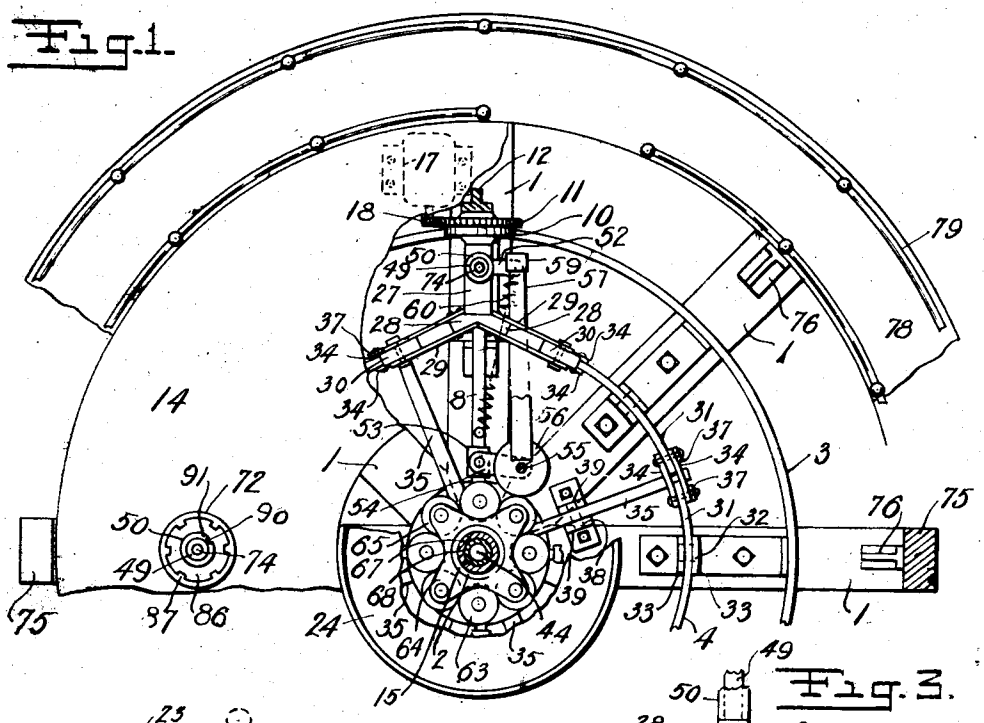


Fig. 3.

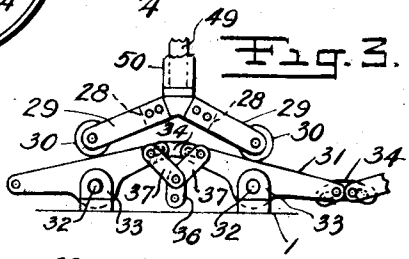
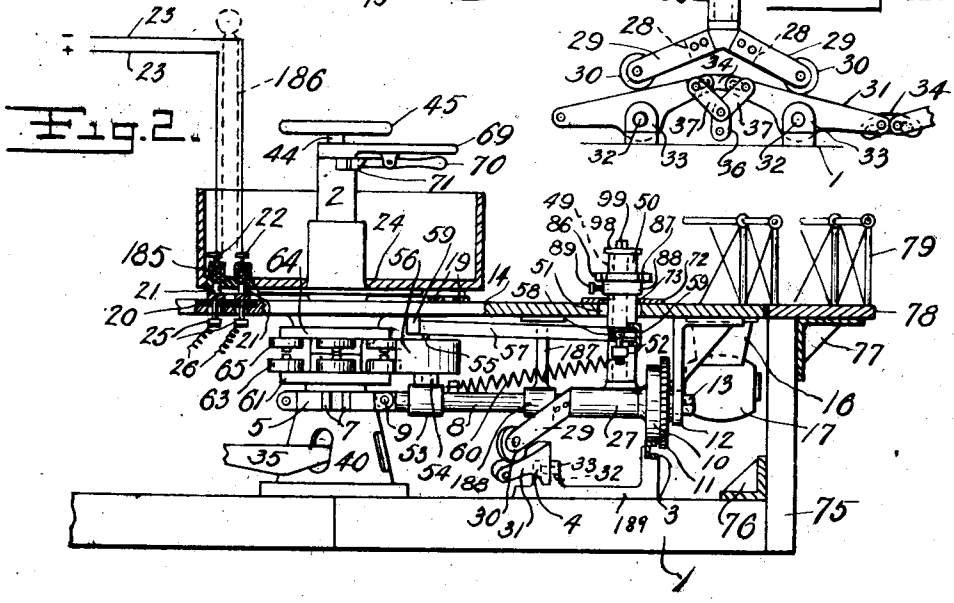


Fig. 2.



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June 11, 1929. T. BOLDIZZONI 1,717,003

AMUSEMENT APPARATUS

Original Filed Dec. 30, 1921 4 Sheets-Sheet 2

Fig. 4.

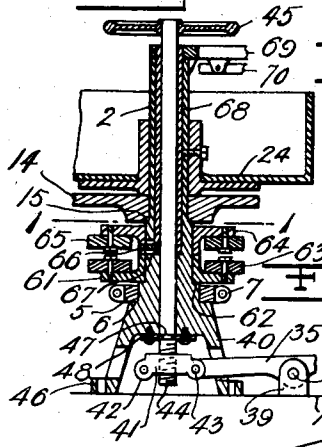


Fig. 5.

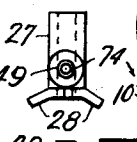


Fig. 9.

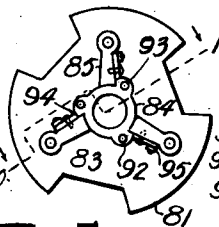


Fig. 10.

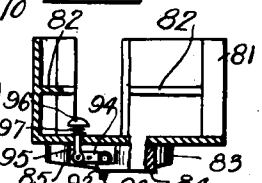


Fig. 6.

Fig. 7.

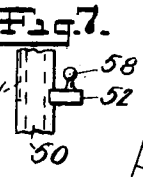


Fig. 11.

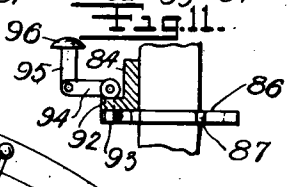
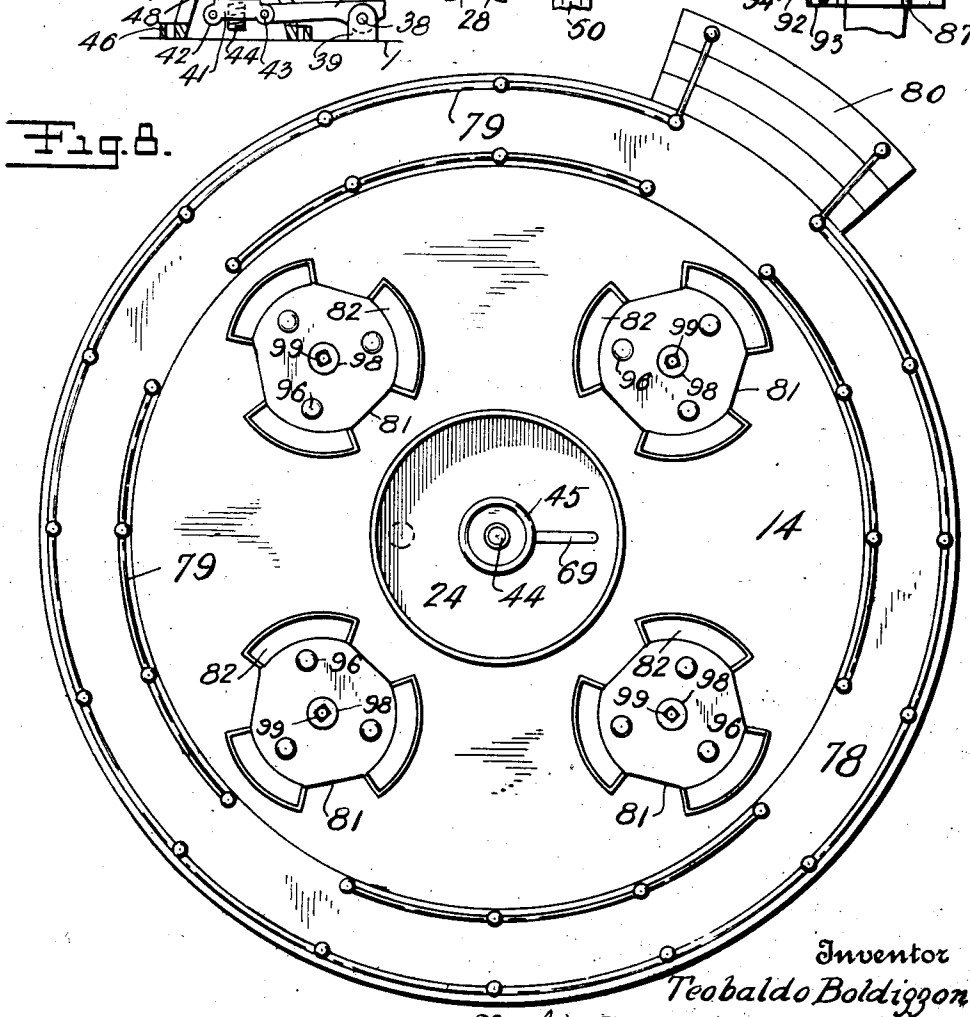


Fig. 8.



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June 11, 1929. T. BOLDIZZONI 1,717,003

AMUSEMENT APPARATUS

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Fig. 12

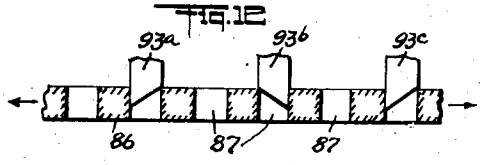


Fig. 13

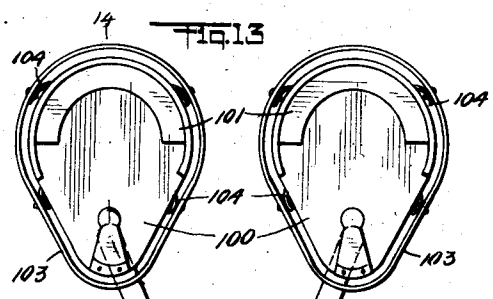


Fig. 14

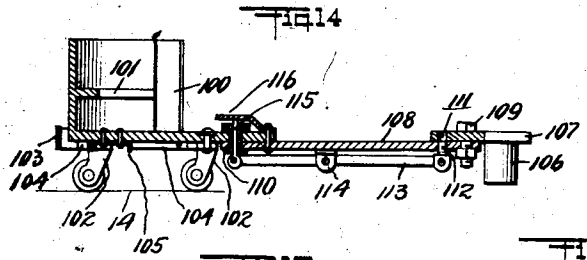


Fig. 15

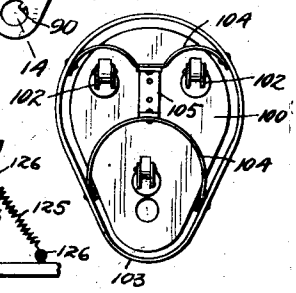


Fig. 16

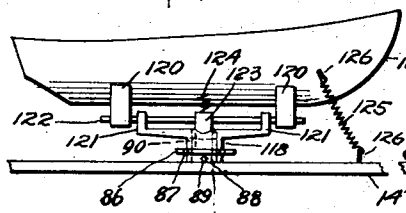


Fig. 17

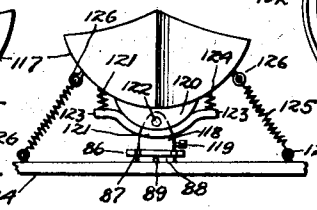


Fig. 18

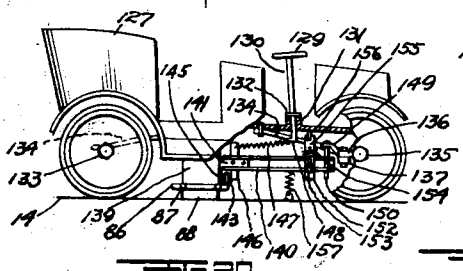


Fig. 19

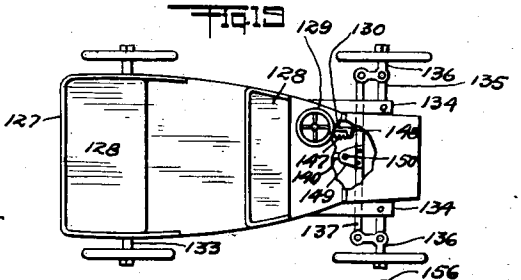


Fig. 20

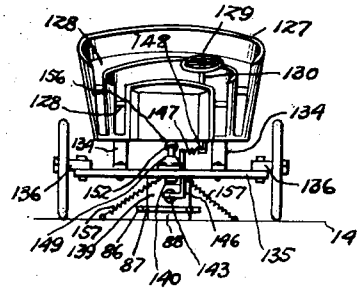
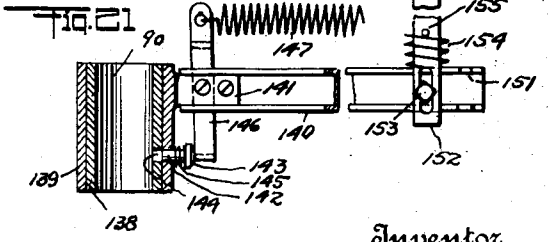


Fig. 21



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June 11, 1929. T. BOLDIZZONI 1,717,003

AMUSEMENT APPARATUS

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Fig.22

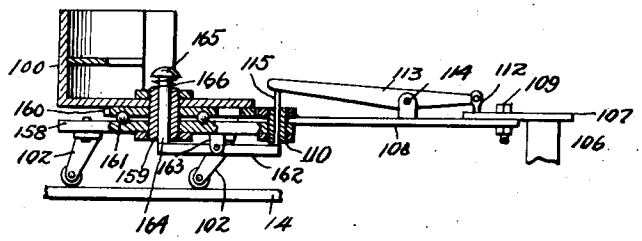


Fig.23

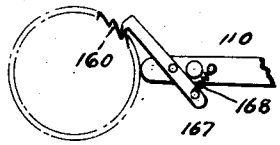


Fig.24

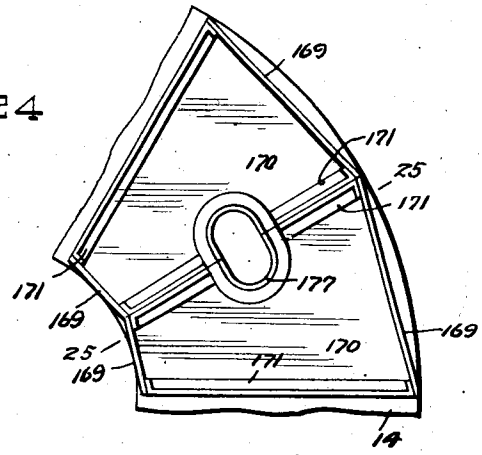


Fig.25

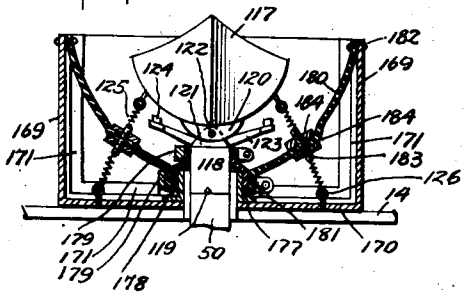
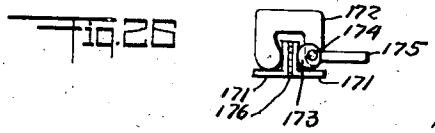


Fig.26



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By his Attorney
William F. Nickel

Patented June 11, 1929. 1,717,003

UNITED STATES PATENT OFFICE.

TEOBALDO BOLDIZZONI, OF NEW YORK, N. Y.

AMUSEMENT APPARATUS.

Application filed December 30, 1921, Serial No. 525,934. Renewed November 2, 1928.

I have invented an improved amusement apparatus adapted to be set up in parks and other places of recreation for the purpose of giving entertaining rides to patrons and visitors.

An object of the invention is to provide an apparatus comprising parts for mounting a number of conveyances that are revolved bodily about a central axis, while at the same time making a number of unusual movements on their points of support; thereby thrilling and startling the occupants, but in a safe and enjoyable manner; such conveyances being constructed in sets of varying design, the conveyances of each set differing in structure and mode of operation from the conveyances of the other sets; and each set being intended to be used in place of or to be substituted for any one of the other sets, in accordance with the wish of the owner or operator, or the desire of the public in any particular locality.

Other objects and advantages will appear in the following description and drawings, and the novel features are defined in the appended claims; but I of course reserve the right to make such changes as are within the spirit and scope of the invention as indicated by the general meanings of the terms in which the claims are expressed.

Figure 1 is a top plan of the mechanism of an amusement apparatus according to my invention; partly in section on the line 1—1, of Figure 4;

Figure 2 is a side view thereof partly in section;

Figure 3 is a view showing a portion of an adjustable track employed in the practice of my invention;

Figure 4 shows in vertical section the centre post or standard of the apparatus;

Fig. 5 is a top view of a detail; and

Figure 6 an end view of the same detail, a body having an upward extending journal that is part of a rocking or tilting carriage operated by the mechanism illustrated in Figures 1 and 2;

Figure 7 is a side view of a support to be mounted so as to be oscillated on the body shown in Figures 5 and 6;

Figure 8 is a top plan of an amusement apparatus according to my invention made on a slightly smaller scale than in Figures 1 and 2, and including conveyances for patrons;

Figure 9 is a bottom plan of one form of conveyance operated by the mechanism shown in Figures 1 and 2;

Figure 10 is a sectional view on line 10—10 of Figure 9 with said conveyance in proper position;

Figure 11 is a detail showing the manner in which the said conveyance is mounted and controlled;

Figure 12 is a diagrammatic view illustrating the manner in which said conveyance can be actuated;

Figure 13 is a top plan of a pair of different conveyances which can be used instead of the conveyance shown in Figures 9 and 10;

Figure 14 is a view mostly in section taken on the line 14—14 in Figure 13;

Figure 15 is a bottom plan of one of the conveyances shown in Figure 13;

Figure 16 shows a side view of a boat and a base for mounting same to be used in place of either of the above mentioned conveyances;

Figure 17 is an end view of said boat seen from the bow and the other parts illustrated in Figure 16;

Figure 18 is a side view of a conveyance having the shape of an automobile also to be employed in the practice of my invention, part of the automobile being broken away to show the manner in which the same is to be connected and operated;

Figure 19 is a top plan of said car partly broken away to show the operating connections;

Figure 20 is a front view thereof;

Figure 21 is a side view partly in section on a relatively large scale of the operating member for said automobile;

Figure 22 is a view principally in section of a modification of the conveyance shown in Figures 13, 14 and 15;

Figure 23 is a detail of the construction thereof;

Figure 24 is a top plan showing part of a sectional tank which can be employed in connection with the boat shown in Figures 16 and 17, to give a more realistic effect;

Figure 25 is a sectional view on the line 25—25 of the Figure 24; and

Figure 26 shows a clamp for holding the sections of said tank together.

The same numerals identify the same parts throughout.

The construction of the apparatus shown in the drawings as embodying my invention includes a number of floor beams 1 which are disposed so as to radiate outward from a common centre; these beams coming together at their inner ends; and thereon rests a central post or standard 2. See principally Figures 1 and 2. The important parts of my apparatus revolve around this post. On the beams 1 are placed an outer rail 3 and an inner rail 4, these rails being concentric with the post 2; the outer rail 3 having a straight or level top; while the inner rail 4 is adjustable and can be caused to present either a straight or level top or an uneven or undulatory top as desired. Encircling the standard or post 2 above the lower end thereof is a rotatable collar 5 which rests upon a shoulder 6. This collar has projecting lugs 7 on its circumference, these lugs being preferably arranged in pairs so that the lugs can receive between them the ends of shafts 8, pivot bolts 9 being employed to connect the shafts 8 and collar together. On the outer end of each shaft is a roller 10 which turns freely thereon, this roller resting upon the rail 3. The roller 10 is fixed to a gear 11, and beyond the roller 10 and gear 11 the end of the shaft 8 is received in the lower end of a bracket 12. A nut 13 may be screwed upon the end of the shaft beyond the bracket to secure the bracket and shaft in proper position. This bracket 12 is made fast to the under side of a platform 14, the centre of which rests upon the shoulder 15 of the standard 2; and, adjacent the rim of this platform on the under face thereof is attached the frame-work 16 of an electric motor 17. This motor has a pinion 18 which meshes with the gear 11; and when the motor revolves the pinion 18 will turn this gear and with it the wheel 10. Therefore the collar 5, the shafts 8, and the platform 14 will revolve bodily around the post 2.

I show only one shaft 8, wheel 10, gear 11, bracket 12 and motor 16, though the apparatus is designed to include four shafts 8, each with drive wheel, gear, bracket and motor as described; the other three being omitted for the sake of clearness. The platform is thus made strong enough to carry the weight intended for it and can be easily revolved round the post 2 at a minimum expenditure of power.

The construction thus set forth enables me to dispense with a good deal of cumbersome mechanism and to save considerable weight because the mounting of the motors upon the platform 14 so that they move with it renders unnecessary the attachment to the platform of a large circular gear or rack which would have to be employed if the motors 17 were attached to some fixed point and remained stationary while the platform 14 revolves.

The members 17 are supplied with current through a couple of slip rings or similar movable contacts 19 supported upon insulation 20 carried by the platform 14, as shown in Figure 2. A brush 21 makes contact with each of these rings and associated with each of these brushes is a binding post 22, conductors 23 joining the binding posts 22 to a source of current. The brushes 21 and binding posts 22 are carried by a fixed central stand 24 on the upper part of the post 2, above the revolving platform 14; and the platform 14 also has binding posts 25, one joined to each of the rings 20, and out of contact with the body of the platform, for the attachment of conductors 26. These binding posts 25 are preferably on the lower face of the platform and the conductors 26 may be arranged to supply the motors 17 in multiple or in any other feasible manner. Suitable switches may also be included to enable the motors 17 to run all in unison, or enable one or more of them to be thrown out of circuit when they are not needed.

The hinged connection between the shafts 8 and collar 5 enables the shafts to adjust themselves to the height of the rail 3; and if in practice this rail is a little too high or too low, no difficulty will be encountered. If, at the beginning, this rail is a little too high, with the collar 5 on the shoulder 6 and the rollers 10 on the rail 3, the wear of the parts will soon permit the platform to work down until the centre engages the shoulder 15; and if the rail should be a little too low the shafts 8 will swing downward until the rollers 10 engage the top of the rail 3 and the platform 14 will generally yield and work downward sufficiently at its circumference to keep the brackets 12 from lifting the rollers 10. If desired, the lower ends of the brackets 12, where the shafts 8 pass through them may be vertically slotted to allow some vertical play, for the purpose of letting all the parts easily adjust themselves into proper positions.

On each of the shafts 8 adjacent the wheel 10 I mount a hollow tubular body 27 which can oscillate on the shaft. The end of each of these bodies nearest to the post 2 has projections 28 extending in opposite directions. To each of these projections are fixed arms 29, these arms supporting at each side of the body 27 a roller 30 which engages the top of the track 4. This track is made in sections 31 mounted upon pivots 32 in lugs 33 and the ends of each section are joined to the ends of adjacent sections by links 34 having pin-and-slot engagement therewith as shown in Figure 3. When the sections 31 are arranged so that their tops are in alinement this track will be level, but when the sections are depressed at one end and elevated at the other, the top of this track will be uneven or undula-

tory as shown in Figure 3. To actuate the sections, I employ arms 35, the outer ends of which are attached to links 36 and each link 36 is joined by a pair of links 37 to two sections 31. The links 34 join all the sections together at their ends, thus making as many junctions as there are sections, while the arms 35 are located at each alternate junction of the sections 31. There may be two links 34 at each junction, one link 34 on the inner face and the other on the outer face of the rail 4, as shown in Figure 1, though only one such link on the inner face of the rail is indicated in the diagrammatic view Figure 3. The sections may bear the pins (fixed) and the links 34 should have the slots that unite the links 34 and sections 31; and at the junctions where the arms 35 are located the links 37 are shown as attached to the ends of the links 34 on the outer face of the rail by the same pins or rivets that are carried by the sections to engage the slots of the links 34. Each arm 35 is pivoted upon a bolt 38 supported by lugs 39 on the beams 1; although only one pivot bolt with lugs is illustrated on Figure 1, the other bolts and lugs being left out. At their inner ends these arms 35 extend into the hollow base 40 of the post 2. In this base is a head 41 with lugs 42, to be secured by pivot bolts 43 to the arms 35, the head having a threaded bore through it to receive the screw threaded end of a rod or shaft 44 which extends up through the centre of the post 2 and carries at its upper extremity a hand wheel 45. An operator on the stand 24, by turning this wheel, can make the head 41 move up and down, so as to actuate the arms 35 to raise or lower the ends of the sections 31 attached to these arms. The post 2 has a flange 46 at the bottom, to enable it to be held by bolts or other fastening devices to the beams 1; and the rod can be rotated in the post 2 but cannot move up and down because it has a groove 47 just above the head 41, and any suitable means such as fixed keys 48 inside the base 40 of the post and engaging the groove may be employed to hold the rod against vertical movement.

The body 27 has a journal 49 thereon and over this journal is placed a hollow support such as a sleeve or spindle 50. The journal and the spindle project through an opening 51 in the platform 14 and above the top face of same, and the support 50 has a rigid arm 52 which enables it to be turned on the journal 49. Each shaft 8 also has a collar 53 fixed to same adjacent its inner end and to this collar is pinned a lever 54. Each lever 54 extends transversely of the shaft 8 and carries on its outer end a pivot 55 which bears a roller 56. The upper end of this pivot may project above the roller and be united by a rod 57 to the arm 52. The arm 52 may carry a ball 58 attached to it by a neck or shank, and the upper end of the pivot 55 may likewise terminate in a ball, while the rod 57 may be a piece of hollow tubing having slots in its ends to enable the necks of the balls 55 to enter the bore of the tubing, the ends of the tubing being closed by caps 59. A spring 60 is fixed at one end to the arm 52 and at the other end to a fixed point adjacent the roller 56, such as a projection on the shaft 8 near the collar 53 or the collar itself or the pivot 55. This spring acts to draw the arm 52 towards the roller 56 and it will be apparent as the wheel 10 turns on the track 3, revolving the platform around the post 2, the track 4 will rock or tilt the body 27 so as to rock or tilt the journal 49 and spindle 50; and if at the same time the rod 57 is reciprocated, the spindle 50 as it revolves with the platform around the post 2 will also oscillate around the journal 49. In Figure 1 the end of the arm 57 is broken away, for convenience, adjacent the roller 56.

This spindle 50 can be made to oscillate around this journal 49 by parts mounted upon the post 2 below the platform and above the collar 5, such parts comprising another collar 61 resting upon a shoulder 62 just above the collar 5; and bearing a number of rollers 63, pivoted to the collar by bolts or the like, the edges of the rollers extending beyond the circumference of this collar. The collar 61 has an upward extending hub, and on the top of this hub rests the hub of a similar collar 64 having the same number of similar rollers 65. The lower collar 61 is fixed to the post 2 by the upper collar 64 can be adjusted around the post by means of a pin 66 fixed to this collar and extending inward through a slot 67 in the post to connect with a tubular sleeve 68 in the post, which encloses the rod 44 over the greater part of its length. This tubular spindle 68 passes upward out of the top of the post and to its upper extremity is fixed a lever 69 bearing a pivoted catch 70 on the top of the post 2 just below the lever 69. By means of this lever and catch the sleeve 68 can be turned and held in any adjusted position. The roller 56 is of sufficient height or thickness to engage both the rollers 63 and 65. When the rollers 63 and 65 are in alinement as shown in Figure 2, the space between the successive rollers of each collar will be relatively wide; and as each shaft 8 revolves and carries the roller 56 with it, the action of the spring 60 will cause the rod 57 to move the roller 56 into each gap between the successive rollers 63 on the lower collar 6, and 65 on the upper collar 64; and to pass each pair of upper and lower rollers, each roller 56 must move outward away from the centre of the post 2 and over them, thus moving the rod 57 in opposition to the spring 60. As a result the spindles 50 will be given their greatest oscillation if the lever 70 be operated to turn the sleeve 68 so as to move the upper rollers 65 into alinement or registry with the lower

rollers 63, as indicated in Figure 2; and their smallest oscillation when the rollers 63 and 65 are out of registry, as in Figure 1. The gaps between successive rollers encountered by each roller 56 as the shaft 8 carries it around the post 2 can thus be made more or less deep; and the inward movement of this roller 56 towards the post 2 can be restricted, thereby reducing the movement of the rod 57 and arm 52. In this way the oscillation of the spindle 50 can be regulated from a very slight degree to its maximum.

The holes 51 in the platform 14 at each point where the journals 49 and spindles 50 pass through it may be closed by plates 72. The holes 73 through these plates may be only slightly larger than the thickness of the spindle 50. These plates 72 may move or slide to some extent on the platform 14 as the spindles rock and the holes 51 will allow the maximum rocking movement which the rail 4 provides. The upper ends of the journals 49 will have threaded bores 74 to receive bolts, for a purpose which will appear later.

At the outer ends of beams 1 are uprights 75 each secured to the end of the beam by a brace 76. To the sides of these uprights may be attached brackets 77 to support a walk 78, which encircles the platform 14; and this walk may have a rail 79. The apparatus may be mounted by steps 80 at one point leading to the walk, and through gaps in the rail at regular intervals, the platform 14 may be reached by patrons.

The purpose of the platform 14 and of the tilting or rocking journals 49 and oscillating supports or spindles 50 is to carry a number of conveyances and give to those conveyances a combination of movements. The conveyances may be used in sets, four sets being shown as adapted to be mounted on the spindles 50. One set of these conveyances may have the form of cars as shown at 81 in Figures 8, 9 and 10. These cars 79 are each made with three seats 82 with gaps between them, so that the car can be entered at three points. The bottom of each car rests upon a spider 83 consisting of a central hub 84 and arms 85, the ends of which can be secured to the bottoms of the cars in any suitable way. The hubs 84 are adapted to fit over the spindles 50 and each spindle may be encircled by a collar or ring 86 having recesses 87 in its edge and being provided with a binding screw 88 to engage the outside of the hollow spindle 50, as by entering a hole therein; and hold the collar above the level of the platform 14. Inside of this collar will be a key 90 to engage a key-way 91 in the spindle so that the collar will turn as the spindle oscillates. Each hub 84 is shown as having lugs 92, one adjacent each of the arms 84, these lugs being bored out to receive locking catches 93. These catches may project below the lugs and above same and be pinned to levers 94; pivoted to the side of the arms 85, and pinned at their opposite ends to plungers 95 which pass up through the bottom of each car and carry on their upper ends the heads 96; the springs 97 between the heads and the floor of the car pressing the plungers upward and normally actuating the catches 93 to lower them. When the car is mounted on the spindle 50, the three catches 93 will fit into notches 87 of the ring 86, and each car will not only be rocked as its spindle rocks, but also will be swung around in one direction and then back about the journal 49 as the support 50 oscillates on same.

The lower ends of the notches 93 may be beveled in opposite directions around the circumference of the hub 84. This fact is diagrammatically indicated in Figure 12 where three catches are characterized as 93^a, 93^b and 93^c. This view is a developed view, which presents these catches as arranged in a straight line and the notches or recesses 87 of the ring 86 also arranged in a straight line. The catches 93^a and 93^c are beveled in the same direction and the catch 93^b in the opposite direction. As long as none of the plungers 95 is depressed and none of the riders steps upon the heads 96, the car will be locked to the ring 86 and will not only tilt and rock but will oscillate back and forth about the journal 49 as an axis. If one of the heads be depressed and the catch 93^a, for example, disengaged, the car will still be locked; but if the middle catch 93^b be disengaged, then, when the spindle 50 oscillates in one direction, for instance, as indicated by the arrow at the right of Figure 12, the car will be turned, but on the reverse movement, the ring will simply slip past the beveled ends of the catches 93^a and 93^c and the car will not be turned back in the opposite direction when the movement of the spindle 50 is reversed. In this way the car can be given a number of successive impulses to rotate it in a jerky or intermittent fashion on the spindle 50, around always in the same direction. If the two catches 93^a and 93^c be disengaged, leaving only the catch 93^b in engagement with the ring 86, the car 81 will be rotated intermittently in the opposite direction; while if all three catches are disengaged, the car will rock only, without rotating or oscillating. The cars 81 are therefore to some extent under the control of the passengers who can add to the amusement of the ride by depressing the heads 96, some at one time, and some at another, the result being unexpected circular motions or no circular motions of the car 81 as the platform 14 revolves and these cars are tilted and rocked. There will be one plunger and head opposite each of the seats.

When the cars 81 are mounted on the spindles 50 they are held in place by means of caps or plates 98 which engage the bottoms of the cars above the hubs 83 and are held in place

by bolts 99 screwed in the holes 74 in the ends of the journals 49, so that these cars cannot be jolted off the spindles 50 and caused to upset. The circular or oscillatory motions of the cars can be regulated by the lever 69, and the tilting or rocking eliminated by making the rail 4 straight with the wheel 45.

In place of the cars 81, the cars indicated at 100 in Figures 13, 14 and 15, can be utilized. These cars have seats 101 and each car is mounted upon rollers attached to casters 102 pivotally secured to the bottom; and around the edge of the bottom of each car is a resilient band of spring steel 103. This band is braced at two points near the front of the car and at two points near the back, by being attached to the opposite ends of bent springs 104 secured at their centres to the downward bent ends of a plate 105, made fast to the bottom of the car. At 106 as indicated, a hub having a flange 107 and to this flange are secured beams 108 by pivot bolts 109. Because the cars 100 are employed in pairs, two cars and two beams 108 are with each hub 106, each car being attached to the outer end of a beam 108 by a pivot bolt 110. This pivot bolt may have the form of a piece of tubing, flanged at one end and threaded at the other to receive a nut; or an ordinary bolt bored through from end to end may be employed instead. The hub 106 is designed to be fitted upon the end of the spindle 50 and to have a key 90 to engage the key-way 91 therein. When cars of this design are used, the wheel 45 is manipulated to make the track 4 straight or level, so that the hubs 106 will oscillate back and forth without rocking or tilting. So long as the beams 108 are attached to the flange 106 only by the bolts 109, the swinging of the flange from side to side as the hub oscillates will have little or no effect, because the beams 108 will turn freely on their pivots 109 and the cars 100 on the platform 14 will receive practically no other movement. I therefore provide the flange 106 with a pair of holes 111, adjacent bolts 109, and each beam 108 with a locking catch 112, which passes through the same from bottom to top and can move into and out of engagement with the adjacent hole 111. Each of these catches is pinned to a lever 113, pivotally secured to lugs 114 on the lower side of each beam 108 and the other end of each lever 113 is joined by a pivot to a plunger 115, which passes up in the hollow pivot 110 through the bottom of the car and projects above the floor of same. A pedal 116 may be fixed to the floor of each car and project over the plunger 115. Normally each lever 113 will be heavy enough at its end near the hub 106 to keep its catch 112 withdrawn from the hole 111 in the flange 106; or a spring may be used to engage the lever and hold it in the same position. With this arrangement any one of the occupants of the car, by pressing upon the pedal 116 can shoot either catch 112 into its hole 111 so as to make the corresponding beam 108 rigid with the hub by engagement at two different points, that is, by means of the pivot bolt 109 and the catch 112; and then, as the hub 14 is oscillated, the beams 108 will be swung back and forth across the platform between the stand 24 and back towards the walk 78, and will drag the cars 100 with them as this movement is effected, the cars of course swinging about the pivots 110.

In Figures 16 and 17 I show a boat 117 mounted upon a base such as spider or frame at the centre of which is a hub 118. This hub 118 may have a key 90 inside of it and be provided with the binding screw 119, so that it may be slipped over and fastened to the upper end of the spindle 50. To the bottom of the boat are fixed bearings 120 and two of the arms 121 of the spider may be provided with similar bearings so that the spider and the bearings 120 can be secured together by a pivot 122, this pivot being shown as a bar extending longitudinally below the keel of the boat. The other arms 123 of the spider may have cushions or springs 124 to limit the rocking movement of the boat on the pivot 122. Springs 125 secured to eye-bolts 126 in the hull of the boat and in the platform 14 are attached to each side of the boat adjacent either the bow or stern of same.

When these boats are used, they are mounted upon the spindle 50, and the rocking movement of the spindle due to the undulatory track 4 will cause the boat to bob up and down at the ends, and at the same time the oscillatory movements of the spindle 50 on the journal 49 will swing the bow and stern of the boat side-wise. As the bow swings to the right, for instance, the spring on the left will be stretched and as a result the boat will be tilted over and rocked to the left as far as the cushion 124 on the left side will permit. With this construction, and by adjustment of the track 4 and collars 61 and 64, the boat can be caused to rock more or less as if it were floating in rough or smooth water.

In place of the cars and boats above described, I may employ cars made in the form of automobiles 127, as indicated in Figures 18 to 21 inclusive. The automobiles will have seats 128 and each will be provided with a steering wheel 129 attached to a steering shaft 130 passing through a bearing 131 below the floor of the automobile. Above this bearing and engaging the upper end of it is a collar 132 on the shaft 130. To the rear axles 133 are attached longitudinal springs 134, these springs being also fixed to the bottom of the car; and similar springs are fixed to the bottom of the car and run to the front axle

135. At the ends of the front axle are steering knuckles 136; these steering knuckles being in the form of bell crank levers joined by a transverse steering rod or bar 137. The rear wheels are mounted upon the ends of the rear axles 135 and the front wheels on the steering knuckles 136.

The parts for imparting motion of these automobiles comprise a hub 138, which is loosely encircled by a head 139 carrying an arm 140; which may be channel-shaped in cross section and fastened by screws to a projection 141 on the head 139. The head 139 carries a locking catch 142 with a head 143, and the catch can enter and leave a hole 144 in the hub 138, a spring 145 normally projecting the catch out of engagement with the hole 144. This catch is engaged by the end of a lever 146, pivoted upon the arm 140 and connected by a spring 147 to an arm 148 on the steering shaft 130. When the wheel is turned the spring 147 is stretched to pull the lever 146 to push the catch 142 into the hole 144 and lock the hub 138 and head 139 together. The steering bar 137 has a plate 149 which bears a pivot pin 150 to enter and pass through openings 151 in the ends of the arm 141; and to this arm is also secured a bar 152 which is in substantially vertical position. This bar may have a pin-and-slot engagement with the arm 141, as indicated at 153 and be encircled by a spring 154 engaging the top of the arm 141 and a pin or collar 155 so that it continuously urges the bar upward. In the top of the bar may be a roller 156.

The hub 138 and head 139, together with the arm 141 are put underneath the automobile by slipping the hub 138 over the spindle 50. This hub has a key 90 the same as the hub 106 to engage the spindle 50 and is held by a cap 98 and bolt 99. As the journal 49 rocks, the arm 141 will move up and down and the bar 152, engaging the under side of the floor of the car, will cause it to bounce lightly on the springs 134. But as long as locking catch 142 is out of the hole 144, the arm 141 will not swing from side to side. By turning the steering wheel 129, however, the spring 147 can be pulled to actuate the lever 146 and push the catch 142 into the hole 144, as soon as the hub 138 brings the hole into registry with the catch. So long as the wheel is not released the arm 141 will then swing up and down and from side to side. As it swings from side to side, it turns the front wheels, thereby shortening the distance between the rod 137 and the front axle 135. The car thus makes a number of short starts forward and rearward while it swings sideways at its front wheels, giving the effect of a car of which the chauffeur has lost control, as when it is skidding. At the same time, the up and down movements of the arm 141 as it swings from side to side makes the roller 156 push up against the bottom of the car and then lowers this roller and the bar 152 carrying it. The automobile therefore bounces also on its springs 134. Springs 157 secured to the arm 141 and to the platform 14 on each side of the arm, hold the arm steady when the pin 142 is out of the hole 144.

In the modification shown in Figures 22 and 23, the car 100 is mounted upon a truck 158. For this purpose a journal 159 is secured to the truck and the bottom of the car, this journal consisting of a tubular bolt threaded at its ends to engage nuts below the bottom of the truck and above the floor of the car, to hold the car and truck together. On the under face of the bottom of the car is a ratchet gear 160 made fast to the bottom of the car and turning on ball bearings 161, which engage the car and the top of the truck. The truck has rollers provided with pivoted casters to enable it to move freely on the platform 14.

The front end of the truck is pivoted to the beam 108 by the pivot 110, the same as the car 100 in Figure 14, and this beam is secured by the pivot bolt 109 to the flange 107 of the hub 106. The locking pin or catch 112 is mounted upon the end of the lever 113 and when this locking pin passes through the opening in the flange 106 into a similar opening in the beam 108, the beam is made rigid with the hub and flange. The lever 113 and lugs 114 are mounted on top of the beam 108, and the end of the lever at the car rests upon the pin or plunger 115 passing through the pivot 110. On the lower face of the truck is a lever 162 pivoted in lugs 163 and this lever pushes against the lower end of the plunger 115 at one end and engages a plunger 164 in the journal 159 at the other. This plunger passes up through the hollow journal 159 into the car and has a head 165 with a spring 166 between this head and the floor to urge the plunger upward the same as in Figure 10. When the plunger is depressed the lever 162 raises the plunger 115 and depresses the locking catch 112 through the hole in the flange 106 into engagement with the hole in the beam 108, as soon as the latter hole comes into registry; and then the beam will swing the car back and forth over the platform 14 as before. On the end of the beam between the pivot 110 and the ratchet 160 is a pivoted pawl 167 engaged by a spring 168 attached to the beam to have its outer end kept in engagement with the teeth of the gear 160. The effect of this construction is to cause the car to rotate intermittently around the journal 159 as the truck 158 swings on the pivot 110. For example, if the truck should swing around the pivot 110 in a clockwise direction with reference to Figure 23, the car 100 would at the same time rotate in the

same direction around the journal 159 on the truck 158.

In Figures 24 and 25, I show two sections of a tank which can be assembled on top of the platform 14 and filled with water to enable the boats 117 to be used with a more realistic effect. Each section comprises ends 169 and a bottom 170 but no sides, and along the side edges of the ends and bottom are secured as by riveting angle members 171 so that when the sections are laid side by side, the angle members 171 of one section can be secured to the angle members of adjacent sections, and the sections thus be fastened together. For this purpose I may use a number of clamps 172, each shaped like an inverted U and carrying at the end of one arm a cam 173 on a pivot 174 and having a handle 175. When the sections are assembled, these clamps can be applied to the meeting portions of the angle irons along the edges of the ends 169 and bottoms 170, to bind these angle irons together as shown in Figure 26. Between each section may be placed gaskets or packing 176 to prevent leakage. The bottom of each section has at the middle of one lateral edge a semi-circular projection, so that when the sections are fitted together these two semi-circular projections will form a neck 177 through which the spindle 50 may project up into the tank. These semi-circular projections may be made of bent angle pieces secured to the bottoms 170, so that when the sections are fitted together, and secured by the clamps 172, the curved or bent angle members will cantact at their ends, making a continuous ring, a little elongated in the direction of the circumference of the platform 14. The edges of the bottoms within this ring are of course cut out to make an open passage. Along the edges of the bottoms where the necks 177 are, the members 171 run from the ends 169 to the necks 177, and along the other edges of the bottoms the members 171 extend continuously from one end 169 to the other. To close the bottom of the tank I may use a rubber sleeve 178 to slip upon the hub 118 and over the edge of the neck 177; employing clamping rings 179 to encircle the hub and the neck and hold it against the hub and against the rim of the neck, to make a flexible and leakproof joint. In combination with this joint, I may employ a leak proof sheet 180 which will be secured to the tank at the top of the ends 169 and will have a number of necks or openings 181 to fit over the sleeves 178 and be secured by the lower clamping ring 179. It is understood of course that the tank will be ring-shaped when assembled; consisting of a succession of sections, each pair like the ones shown with a neck 177 between them; and the sheet 180 will also be ring-shaped, like the platform 14, and will be secured by fasteners 182 to the tank along its inner and outer edges (top and bottom edges of the ends 169) and have as many necks 181 in it as there are necks 177. This sheet 180 may be used without the sleeve 178 or the sleeve may be used without the sheet, or both may be used together. When the sheet is used, the springs 125 attached to the end of the boat will be in two sections each, one secured to an eye bolt in the hull of the boat and the other to an eye bolt in the bottom of the tank, and each of these sections will be secured to a bolt 183 passing through the sheet 180 and bearing clamping nuts 184 to hold the sheet between them and prevent leakage around the bolts 183.

When this tank is used the boats can rock in real water and none of the water will escape from the tank.

The stand 24 carries an insulating plug 185 which bears the brushes 21 and binding posts 22. The wires 23 may be led in overhead and supported in any suitable manner. The uprights 75 which support the walk 78 may extend up far enough to carry lights for illumination and one or more additional uprights, one of which is indicated at 186, may be mounted on the stand 24. These uprights may support wires which are led in to the post 186 on the stand 24 and then down to the binding posts 22.

The under face of the platform may have a brace 187 for each shaft 8, and each of these braces may carry a bearing 188 at its lower end to receive the shaft. These bearings may engage the shafts loosely but are useful when the platform is of some length of span from the centre to the circumference.

With the cars shown in Figures 9 and 10, no keys 90 in the hubs 84 are needed, but such keys should be used in the hubs for the other cars, the boats and the automobiles. The caps 98 and bolts 99 should always be employed, but may sometimes be omitted for the cars shown in Figures 13 and 22, the boats because of the screw 119 in the hub 118, and the automobiles 127. Of course when the tank is employed for the boats the plates 72 can be removed.

The tank, by means of the clamps shown in Figure 26 can be assembled on the platform 14 by securing the sections together, and dismounted when not needed, with very little effort.

I provide the bands 103 to serve as buffers in case the cars 100 in Figure 13 collide.

The apparatus is shown as designed for four conveyances, and it can be built for a larger or smaller number. I have shown the conveyances as consisting of the cars 81, the cars 100 constructed as in Figures 14 and 22, the boats with or without the tanks, and the automobiles. When the apparatus is purchased, the buyer can secure all the conveyances, or one set only, and order the other

interchangeable sets later. When he has all the sets he can substitute one set for another at intervals for the sake of variety. All the conveyances are of sufficient capacity to make the operation of the apparatus in an amusement park quite profitable.

Having described my invention, what I believe to be new and desire to secure and protect by Letters Patent of the United States is:—

1. Amusement apparatus comprising supports for conveyances, said conveyances having locking catches to engage the supports, said catches being reversely beveled and being under the control of the occupants of said conveyances to enable different circular motions to be imparted to the conveyances by the supports.

2. Amusement apparatus comprising supports, conveyances to be actuated by said supports, beams pivotally connected to the conveyances, and locking catches to enable the beams to be actuated by the supports to move the conveyances.

3. Amusement apparatus comprising supports, conveyances in the form of automobiles, and operating members comprising an arm and pivot pin having sliding pivotal connection with the automobiles mounted on said supports to bounce said automobiles and simultaneously swing them from one side to the other, in combination with a rotatable platform for mounting said supports and conveyances.

4. Amusement apparatus comprising a central post, a collar rotatably mounted thereon, shafts separately pivoted to the collar, each of said shafts having rollers mounted on same, and a platform to revolve around the post and engaging and bearing on the outer ends of said shafts.

5. Amusement apparatus comprising a central post, a collar rotatably mounted thereon, shafts pivoted to the collar, a body rotatably carried on each shaft, a journal on each body, a rotatable spindle on each journal, a lever having a roller pivoted on each shaft, an arm on each spindle, a rod joining each arm and roller, and parts adjacent said post for operating the lever to oscillate the spindle.

6. Amusement apparatus including revolving platform, motors on the platform, drive gears to revolve the platform operated by the motors, moving contacts on the platform, an operator's stand at the centre of the platform, and brushes carried by the stand to cooperate with said contacts to supply current to said motors.

In testimony whereof, I have signed my name to this specification this 27th day of December, 1921.

TEOBALDO BOLDIZZONI.