W. F. MANGELS.

AMUSEMENT APPARATUS.

APPLICATION FILED MAR. 19, 1918.

1,296,417. Patented Mar. 4, 1919.

5 SHEETS—SHEET 1.

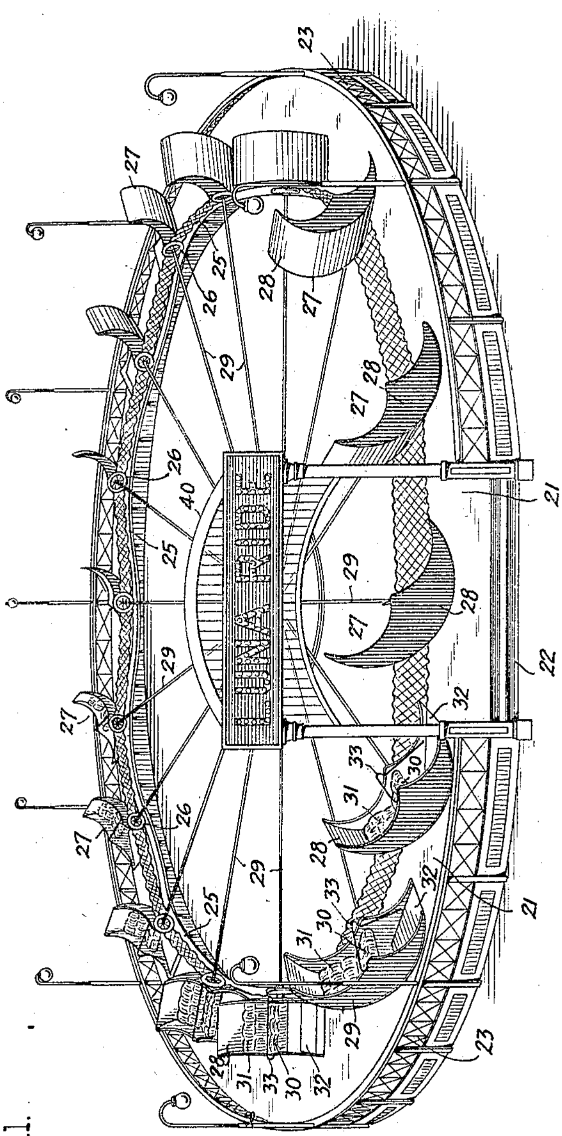

Fig.1.

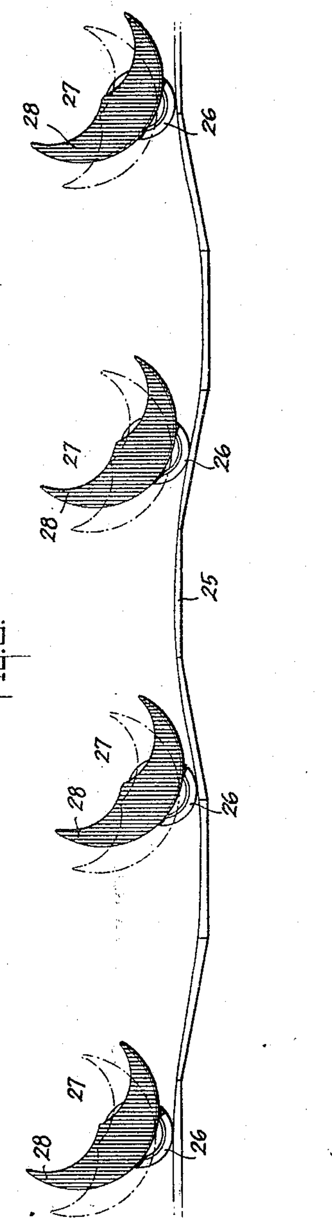

Fig.2.

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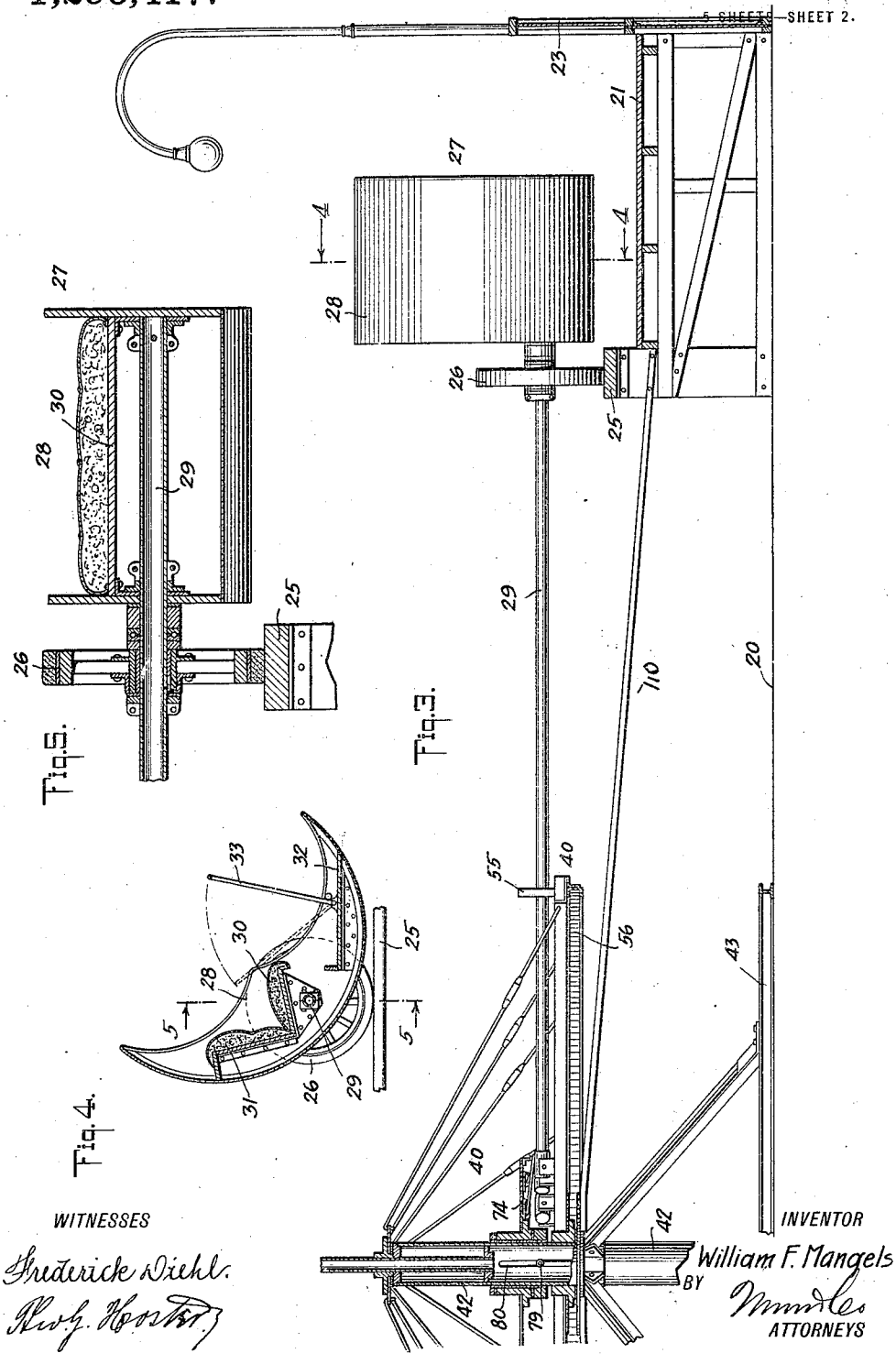

Fig. 3.

Fig. 5.

Fig. 4.

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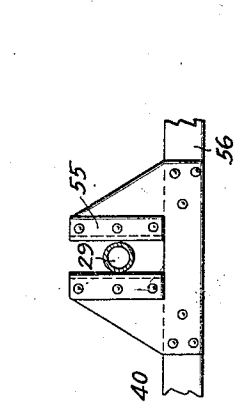

Fig. 8.

Fig. 6.

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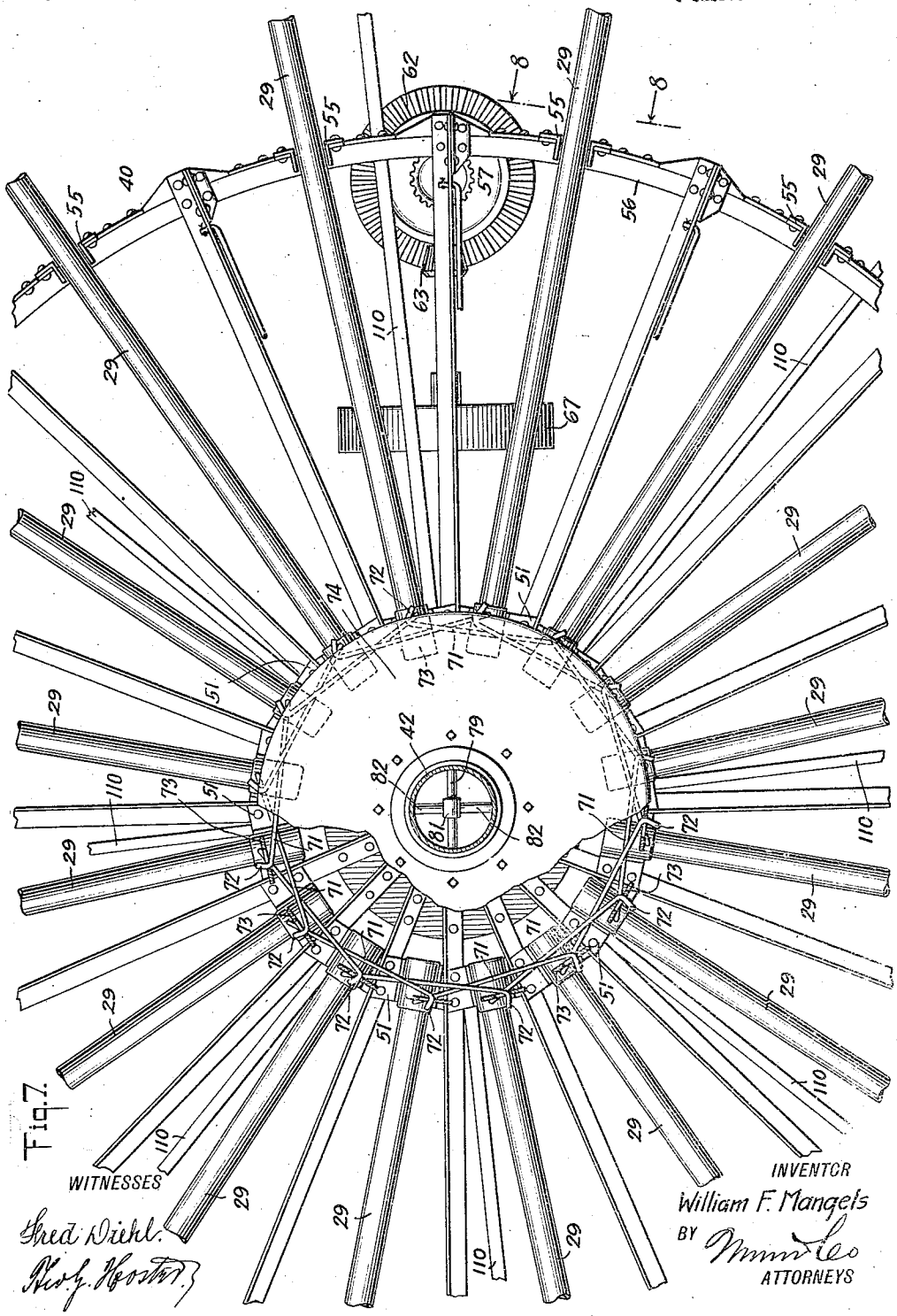

Fig. 7.

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5 SHEETS—SHEET 5.

Fig. 9.

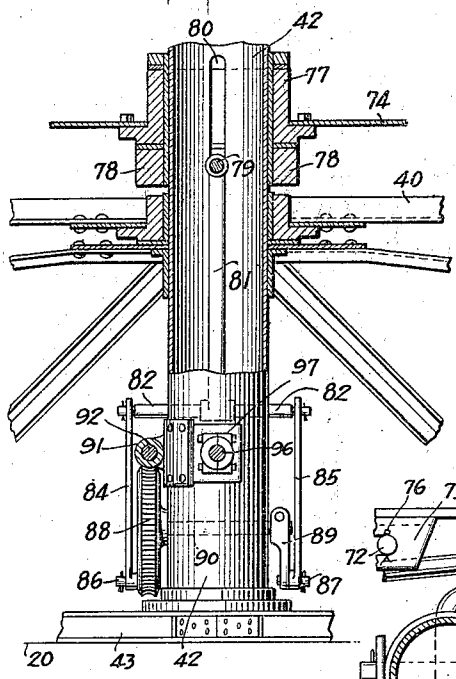


Fig. 10.

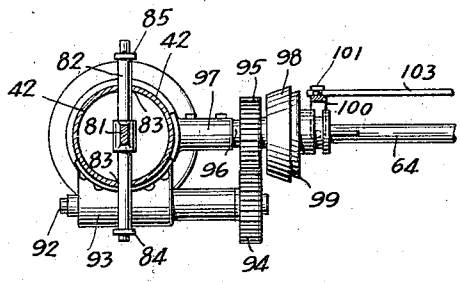


Fig. 12.

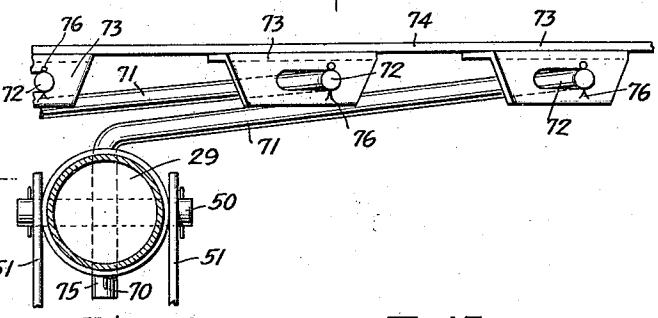


Fig. 11.

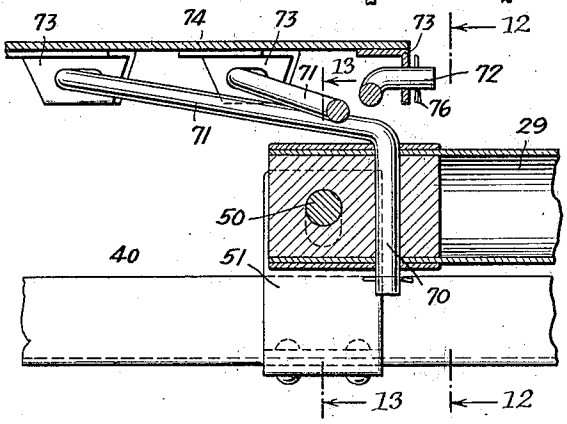


Fig. 13.

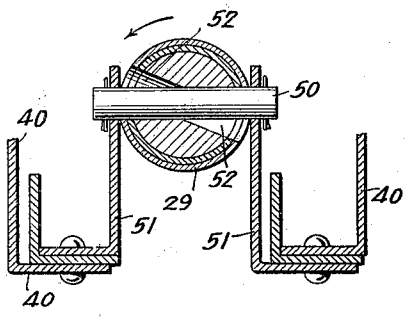
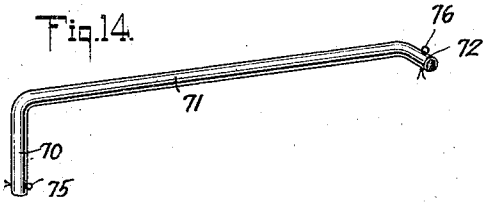


Fig. 14.



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UNITED STATES PATENT OFFICE.

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AMUSEMENT APPARATUS.

1,296,417. Specification of Letters Patent. Patented Mar. 4, 1919.

Application filed March 19, 1918. Serial No. 223,306.

To all whom it may concern:

Be it known that I, WILLIAM F. MANGELS, a citizen of the United States, and a resident of the city of New York, Coney Island, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Amusement Apparatus, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved amusement apparatus designed for use in pleasure resorts, exhibition grounds and like places, and arranged to accommodate a large number of persons at a time and to provide for such persons a highly amusing, enjoyable and exhilarating ride.

In order to accomplish the desired result, use is made of a track, a vehicle mounted to travel on the track, propelling means for propelling the vehicle on the said track, and rocking means for rocking the body of the vehicle in the direction in which the vehicle travels over the track.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the amusement apparatus;

Fig. 2 is a side elevation of the undulating track and a number of vehicles traveling along the said track;

Fig. 3 is an enlarged cross section of the amusement apparatus;

Fig. 4 is a sectional side elevation of one of the vehicles, the section being on the line 4—4 of Fig. 3;

Fig. 5 is a cross section of the same on the line 5—5 of Fig. 4;

Fig. 6 is an enlarged sectional side elevation of the driving mechanism;

Fig. 7 is a plan view of the same with parts shown in section;

Fig. 8 is a cross section of one of the vehicle axles and its bearing on the revoluble frame of the driving mechanism;

Fig. 9 is a cross section of the mast and adjacent parts, the section being on the line 9—9 of Fig. 6;

Fig. 10 is a sectional plan view of the same on the line 10—10 of Fig. 6;

Fig. 11 is an enlarged sectional side elevation of a portion of the mechanism for imparting a rocking movement to the axles of the vehicles;

Fig. 12 is a cross section of the same on the line 12—12 of Fig. 11;

Fig. 13 is a similar view of the same on the line 13—13 of Fig. 11; and

Fig. 14 is a perspective view of one of the connecting links connecting a vehicle axle with the cam for imparting a rocking motion to the axle.

On the floor or other suitable foundation 20 is arranged a circular platform 21 provided with an entrance 22 and a railing 23 inclosing the platform 21. Along the inner side of the platform 21 is arranged a circular track on which are mounted to travel vehicle wheels 26 of vehicles 27 following each other in spaced relation, as plainly indicated in Fig. 1. The track 25 is made undulating, as plainly indicated in Fig. 2, so that the vehicles 27 on being propelled forward have a bodily up and down movement owing to the wheels 26 traveling over the said track.

Each vehicle 27 is provided with a vehicle body 28 secured to the outer end of a vehicle axle 29 on which the wheel 26 is mounted to rotate loosely, as plainly indicated in Fig. 5. The vehicle body 28 is preferably of a crescent shape and extends above the platform 21 with the wheels 26 adjacent the inner side of the vehicle 28 so that free access is had to the vehicle body for the ingress and egress of the passengers. Each vehicle body 28 is preferably made to accommodate two persons seated alongside each other on a seat 30 located directly above the axle 29 and having a back 31 for the passengers to lean against. The vehicle body 28 is also provided with a platform 32 for the feet to rest on, and the usual pivoted guard rail 33 is provided to prevent the passengers from accidentally falling out of the vehicle.

The axle of each vehicle is mounted to rock, whereby a corresponding rocking motion is given to the vehicle body 28 (see Fig. 2) so that the vehicle body is not only propelled forward and has a bodily up and down motion as described but also has a rocking motion in the direction in which the vehicle is traveling.

In order to propel the vehicles and to cause the bodies thereof to rock the following arrangement is made: The axles 29 ex-

tend radially from a frame 40 having a hub 41 mounted to turn on a mast 42 erected on a base 43 resting on the floor or support 20. The axis of the mast 42 coincides with the center of the annular track 25. The revoluble frame 40 in its general construction is of the type used in roundabouts so that further description of the detailed construction is not deemed necessary.

The inner end of each axle 29 is mounted to swing up and down on a pivot 50 held on a bearing 51 attached to the frame 40, the pivot 50 extending within an opening 52 (see Figs. 11 and 13) elongated from the middle outward in a vertical direction to allow the axle 29 to rock on its axis. It will also be noticed that by the arrangement described the rocking movement of the axle 29 is limited by the top and bottom walls of the opening 52 coming into contact with the pivot 50. Each of the axles 29 engages vertical elongated bearings 55 (see Figs. 6 and 8) mounted on the rim of an internal gear wheel 56 forming part of the revoluble frame 40. The gear wheel 56 is in mesh with a pinion 57 secured on the upper end of a shaft 58 journaled in suitable bearings 59, 60 and 61 arranged on the base 43 of the mast 42. On the shaft 58 is secured a bevel gear wheel 62 in mesh with a bevel pinion 63 secured on a driving shaft 64 journaled in bearings 65, 66 arranged on the base 43. On the shaft 64 is secured a pulley 67 connected by belt with a motor for rotating the shaft 64. The rotary motion of the shaft 64 is transmitted by the pinion 63 and gear wheel 62 to the shaft 58 which by the pinion 57 imparts a direct rotary motion to the frame 40. It will be noticed that when the frame 40 is turned, the axles 29 are carried along so that the wheels travel over the undulating track 25, it being understood that as the axles 29 are pivoted at their inner ends on the pivots 50 they are free to swing up and down according to the undulations in the track 25.

In order to rock the axles 29 in unison, the following arrangement is made: Each of the axles 29 is engaged immediately in front of the corresponding pivot 50 by an angular arm 70 (see Figs. 11, 12 and 14) formed on one end of a link 71 terminating at its other end in an angular arm 72 engaging an elongated bearing 73 attached to a crank disk 74. Cotter pins 75 and 76 engage the ends of the arms 70 and 72 of each link 71 to hold the arms against accidental disengagement from the corresponding axle 29 and the corresponding gearing 73. The disk 74 is provided with a hub 77 mounted to turn on the mast 42, and the hub 77 rests on top of a ring 78 mounted to slide up and down on the mast 42. The ring 78 is provided with a crossbar 79 extending in vertical slots 80 formed diametrically opposite each other in the mast 42. The crossbar 79 is connected by a downwardly extending arm 81 with a crosshead 82 mounted to slide up and down on the mast 42 and extending through vertical slots 83 thereof. The outer ends of the crosshead 82 are connected by pitmen 84, 85 with wrist pins 86, 87, of which the wrist pin 86 is secured to a worm wheel 88 and the wrist pin 87 is secured to a crank arm 89. The worm wheel 88 and the crank arm 89 are secured on the outer ends of a shaft 90 journaled in suitable bearings arranged in the lower portion of the mast 42. The worm wheel 88 is engaged by a worm 91 on a shaft 92 journaled in a suitable bearing 93 attached to the mast 42. On one end of the shaft 92 is secured a gear wheel 94 in mesh with a gear wheel 95 having its shaft 96 journaled in a suitable bearing 97 attached to the mast 42 (see Fig. 10). The shaft 96 is provided with a clutch member 98 adapted to be engaged by a clutch member 99 mounted to turn with and to slide on the driven shaft 64 previously mentioned. The clutch member 99 is engaged by a shifting lever 100 fulcrumed at its upper end at 101 on a support 102 supported on the base 43 and the mast 42. A link 103 connects with the lower end of the shifting lever 100 and is controlled by the operator in charge of the machine to move the clutch member 99 in or out of engagement with the clutch member 98. When the clutch member 99 is in engagement with the clutch member 98 then the rotary motion of the shaft 64 is transmitted to the shaft 96 which by the gear wheels 95 and 94 rotates the worm shaft 92 and the latter by the worm 91 rotates the worm wheel 88 and consequently the crank shaft 90 so that an up and down sliding movement is given to the crosshead 82 by means of the pitmen 84 and 85. The up and down movement given to the crosshead 82 is transmitted by the arm 81 to the crossbar 79 whereby the ring 78 is correspondingly raised or lowered and with it the carrying disk 74. Normally the ring 78 and the disk 74 are in lowermost position with the angular arm 70 of the link 71 disposed vertically to hold the axles 29 and their vehicle bodies 28 in the normal position illustrated in Figs. 1 and 2. When the ring 78 and the carrying disk 74 are moved upward then the bearings 73 act on the angular arms 72 of the links 71 whereby the angular arms 70 of the said links impart a rocking movement to the axles 29 thus rocking the vehicle bodies 28. The rocking movement of the vehicle bodies 28 is such that the forward ends thereof move upward while their rear ends move downward (see dotted lines in Fig. 2). The occupants of the vehicle bodies 28 during the rocking thereof experience the sensation of their feet going up in the air and their heads

down while they are carried forward and at the same time are bodily moved up and down owing to the wheels 26 traveling over the undulating track 25. This rocking movement of the vehicle bodies 28 may be started or interrupted at any time during the travel of the vehicles 27 by the operator manipulating the link 103 correspondingly with a view to throw the clutch 99 in or out of engagement relative to the clutch member 98. When the wrist pins 86, 87 reach an uppermost position then the maximum throw of the vehicle bodies 28 has been reached and the said vehicle bodies have assumed the position indicated in dotted lines in Fig. 2. The vehicle bodies now gradually rock back to normal position during the further downward travel of the wrist pins 86 and 87. It is understood that this rocking of the vehicle bodies 28 can be repeated or interrupted at any time during a ride at the will of the operator in charge of the amusement apparatus.

In order to maintain the track 25 in proper concentric relation to the revoluble frame 40, the mast 42 is connected by braces 110 with the said track 25.

The operation is as follows:

When the apparatus is at a standstill the passengers can readily enter from the platform 21 and seat themselves in the vehicles 28 and then the motor is started to rotate the shaft 64 which by the gearing described rotates the frame 40 thus carrying the axles 29 around whereby a forward traveling motion is given to the vehicles 27. During this forward travel of the vehicles the vehicle bodies 28 move up and down owing to the wheels 26 traveling over the undulating track 25. At any time during the ride the operator manipulates the clutch member 99 so as to throw the same into engagement with the clutch member 98 whereby a rotary motion is given to the worm wheel 88 and the ring 78, and with it the carrying disk 74 is slowly raised and a gradual rocking movement in a rearward direction is given to the several axles 29 as before explained to rock the vehicle bodies independently of their forward and up and down movement. As previously stated, the rocking movement in one direction is limited owing to the positive throw of the wrist pins 86 and 87, it being understood that at the start the said wrist pins are in lowermost position, and when the maximum rocking position of the vehicle bodies 28 has been reached they are in uppermost position and during the next following downward movement the axles 29 are rocked in an opposite direction thus gradually returning the vehicle bodies to normal position. It is understood that this rocking movement given to the vehicle bodies 28 may be interrupted at any time and kept so for any desired length of time to heighten the effect upon the occupant of the vehicle bodies.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In an amusement apparatus, a track, a vehicle mounted to travel on the track, propelling means for propelling the vehicle on the track, and rocking means under the control of an operator for rocking the body of the vehicle backward and forward at the will of the operator and in the direction in which the vehicle travels.

2. In an amusement apparatus, an undulating track, a vehicle mounted to travel over the said track and having a vehicle body mounted to rock in the direction in which the vehicle is traveling, propelling means for propelling the vehicle over the track, and rocking means under the control of an operator for rocking the vehicle backward and forward at the will of the operator and while traveling over the undulating track.

3. In an amusement apparatus, a vehicle having a vehicle body mounted to rock, means for propelling the said vehicle, means for moving the vehicle bodily up and down, and means under the control of an operator for rocking the vehicle body backward and forward at the will of the operator and independent of the bodily up and down and traveling movement of the vehicle body.

4. In an amusement apparatus, a vehicle having a vehicle body mounted to rock, means for propelling the said vehicle, means for moving the vehicle body up and down, and means for rocking the vehicle body in an approximately vertical plane extending in the direction of its forward line of movement, the rocking movement of the vehicle body being under the control of an operator and being independent of its bodily up and down and traveling movement.

5. In an amusement apparatus, a track, a vehicle having an axle, a vehicle body and a vehicle wheel, the latter traveling on the said track and turning loosely on the axle, the said vehicle body being attached to the said axle to rock with the latter, means for propelling the vehicle and means for rocking the vehicle axle.

6. In an amusement apparatus, a track, a vehicle having an axle, a vehicle body and a vehicle wheel, the latter traveling on the said track and turning loosely on the axle, the said vehicle body being attached to the said axle to rock with the latter, means connected with the axle for propelling the vehicle, and means connected with the axle for rocking the latter and the vehicle body.

7. In an amusement apparatus, an endless undulating track, a vehicle having an axle, a vehicle body and a vehicle wheel, the said vehicle wheel traveling on the said track

and being mounted to turn loosely on the said axle, the said vehicle body being attached to the axle to rock with the same, propelling means connected with the said axle to propel the vehicle, and rocking means connected with the said axle for rocking the said axle and the said vehicle body.

8. In an amusement apparatus, an endless undulating track, a vehicle having an axle, a vehicle body and a vehicle wheel, the said vehicle wheel traveling on the said track and being mounted to turn loosely on the said axle, the said vehicle body being attached to the axle to rock with the same, propelling means connected with the said axle to propel the vehicle, rocking means connected with the axle for rocking the said axle and the said vehicle body, and controlling means under the control of an operator and connected with the said rocking means to control the latter.

9. In an amusement apparatus, a circular undulating track, a vehicle having an axle, a vehicle wheel and a vehicle body, the said wheel turning loosely on the axle and traveling on the said track, and the vehicle body being attached to the said axle, a mast disposed centrally relative to the said track, a revoluble frame mounted to turn on the said mast and on which the said axle is pivoted to swing up and down and to be carried around, and means connected with the axle to rock the same during the rotation of the frame.

10. In an amusement apparatus, a circular undulating track, a vehicle having an axle, a vehicle wheel and a vehicle body, the said wheel turning loosely on the axle and traveling on the said track and the vehicle body being attached to the said axle, a mast disposed centrally relative to the said track, a revoluble frame mounted to turn on the said mast and on which the said axle is pivoted to swing up and down and to be carried around, a disk mounted to turn on the mast and to slide up and down thereon, a link connecting the said disk with the said axle to rock the latter on moving the disk up and down, and actuating means connected with the said disk and under the control of an operator to move the disk up and down.

11. In an amusement apparatus, a circular undulating track, a vehicle having an axle, a vehicle wheel and a vehicle body, the said wheel turning loosely on the axle and traveling on the said track and the vehicle body being attached to the said axle, a mast disposed centrally relative to the said track, a revoluble frame mounted to turn on the said mast and on which the said axle is pivoted to swing up and down and to be carried around, a disk mounted to turn on the mast and to slide up and down thereon, a link connecting the said disk with the said axle to rock the latter on moving the disk up and down, a support for the disk and slidable on the mast, the support having a crossbar and the mast having a slot for the crossbar to slide in, a crosshead slidable on the mast and connected with the said crossbar, a crank shaft, and a pitman connecting the said crank shaft with the said crosshead.

12. In an amusement apparatus, a circular undulating track, a vehicle having an axle, a vehicle wheel and a vehicle body, the said wheel turning loosely on the axle and traveling on the said track, and the vehicle body being attached to the said axle, a mast disposed centrally relative to the said track, a revoluble frame mounted to turn on the said mast and on which the said axle is pivoted to swing up and down and to be carried around, a disk mounted to turn on the mast and to slide up and down thereon, a link connecting the said disk with the said axle to rock the latter on moving the disk up and down, a support for the disk and slidable on the mast, the support having a crossbar and the mast having a slot for the crossbar to slide in, a crosshead slidable on the mast and connected with the said crossbar, a crank shaft, a pitman connecting the said crank shaft with the said crosshead, a power drive for the said frame to rotate the latter, a power drive for the said crank shaft, and a coupling means under the control of an operator for connecting the frame power drive with the said crank shaft power drive.

13. In an amusement apparatus, a mast, a frame mounted to turn on the said mast, radially disposed axles having their inner ends mounted on the said frame to swing up and down and to rock on their axes, vertically elongated bearings on the said frame and engaged by the said axles intermediate the inner pivoted and the outer free ends of the axles, a circular track, the center of which coincides with the center of the said mast, and vehicles mounted on the outer ends of the said axles and traveling on the said track.

14. In an amusement apparatus, a mast, a frame mounted to turn on the said mast, radially disposed axles having their inner ends mounted on the said frame to swing up and down and to rock on their axes, vertically elongated bearings on the said frame and engaged by the said axles intermediate the inner pivoted and the outer free ends of the axles, a circular track the center of which coincides with the center of the said mast, and vehicles each having a vehicle wheel and a vehicle body, the said wheel being mounted to turn loosely on the axle and traveling on the track, and the vehicle body being attached to the axle.

15. In an amusement apparatus, a mast,

a frame mounted to turn on the said mast, radially disposed axles having their inner ends mounted on the said frame to swing up and down and to rock on their axes, vertically elongated bearings on the said frame and engaged by the said axles intermediate the inner pivoted and the outer free ends of the axles, a circular track the center of which coincides with the center of the said mast, vehicles each having a vehicle wheel and a vehicle body, the said wheel being mounted to turn loosely on the axle and traveling on the track and the vehicle body being attached to the axle, and power driven means connected with the said axles to rock the same in unison.

16. In an amusement apparatus, a revoluble frame, a vehicle axle extending radially from the said frame, manually controlled means connected with the said axle for rocking the latter at the will of the operator, a vehicle body mounted on the outer end of the said vehicle axle, a vehicle wheel mounted on the said axle, and a track on which the said vehicle wheel travels.

17. In an amusement apparatus, a revoluble frame, axles extending radially from the said frame, manually controlled means connected with the said axles for rocking the latter at the will of an operator, an annular undulating track the center of which coincides with the axis of the said frame, vehicle bodies fixed to the outer ends of the said axles, and vehicle wheels mounted to rotate loosely on the car axles and traveling on the said track.

18. In an amusement apparatus, a track, and a vehicle having a vehicle body, a single axle and a single wheel, the said body being attached to one end of the said axle and the said wheel being mounted to turn loosely on the said axle and traveling on the said track, the said wheel being adjacent one side of the vehicle body, the other side of the vehicle body being wholly unobstructed and manually controlled means connected with the said axle to rock the latter at the will of an operator.

19. In an amusement apparatus, a mast, a circular track, the center of which coincides with the said mast, a frame mounted to turn on the said mast, axles extending radially from the said frame and having their inner ends provided with openings, vehicle bodies attached to the outer ends of the said axles, vehicle wheels mounted to turn loosely on the axles adjacent the inner sides of the said bodies and traveling on the said track and pivots held on the said frame and engaging the said openings on the inner ends of the axles to allow the latter to swing up and down on the pivots and to rock thereon, the rocking movement of each axle being limited by its pivot pin and the wall of the opening.

20. In an amusement apparatus, a mast, a circular track, the center of which coincides with the said mast, a frame mounted to turn on the said mast, axles extending radially from the said frame and having their inner ends provided with openings, vehicle bodies attached to the outer ends of the said axles, vehicle wheels mounted to turn loosely on the axles adjacent the inner sides of the said bodies and traveling on the said track, pivots held on the said frame and engaging the said openings in the inner ends of the axles to allow the latter to swing up and down on the pivots and to rock thereon, the rocking movement of each axle being limited by its pivot pin and the wall of its opening, a disk mounted to turn and to slide up and down on the mast and having elongated bearings, and links having angular arms at the ends, one of the angular arms of a link extending through the inner end of a corresponding axle and at an angle to the axle's pivot and the other angular arm, the link engaging one of the said elongated bearings.

21. In an amusement apparatus, a mast, a circular track, the center of which coincides with the said mast, a frame mounted to turn on the said mast, axles extending radially from the said frame and having their inner ends provided with openings, vehicle bodies attached to the outer ends of the said axles, vehicle wheels mounted to turn loosely on the axles adjacent the inner sides of the said bodies and traveling on the said track, pivots held on the said frame and engaging the said openings on the inner ends of the axles to allow the latter to swing up and down on the pivots and to rock thereon, the rocking movement of each axle being limited by its pivot pin and the wall of the opening, a disk mounted to turn and to slide up and down on the mast and having elongated bearings, links having angular arms at the ends, one of the angular arms of a link extending through the inner end of a corresponding axle and at an angle to the axle's pivot and the other angular arm, the link engaging one of the said elongated bearings, and means to raise and lower the said disk.

22. In an amusement apparatus, a mast, a frame mounted to turn on the mast, vehicles having axles mounted to turn on and carried along by the said frame, and means under the control of an operator for imparting a limited rocking motion to the said axles and for interrupting such rocking movement at the will of the operator.

23. In an amusement apparatus, a mast, a frame mounted to turn on the mast, vehicles having axles mounted to turn on and carried along by the said frame, a disk revolving with the said frame and adapted to move up and down, the disk having elon-

gated bearings, and links each provided at the ends with angular arms, one of the angular arms of a link engaging a corresponding axle and the other arm engaging the said bearing to rock the axles on moving the disk up and down.

24. In an amusement apparatus, a vehicle having a single rocking axle, means under the control of an operator and connected with the said axle for rocking the latter continuously or interruptedly at the will of the operator, a single wheel mounted to turn loosely on the said axle, and a vehicle body secured approximately at its middle on the said axle.

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