May 20, 1930. J. A. SHERRY 1,759,170

AMUSEMENT DEVICE

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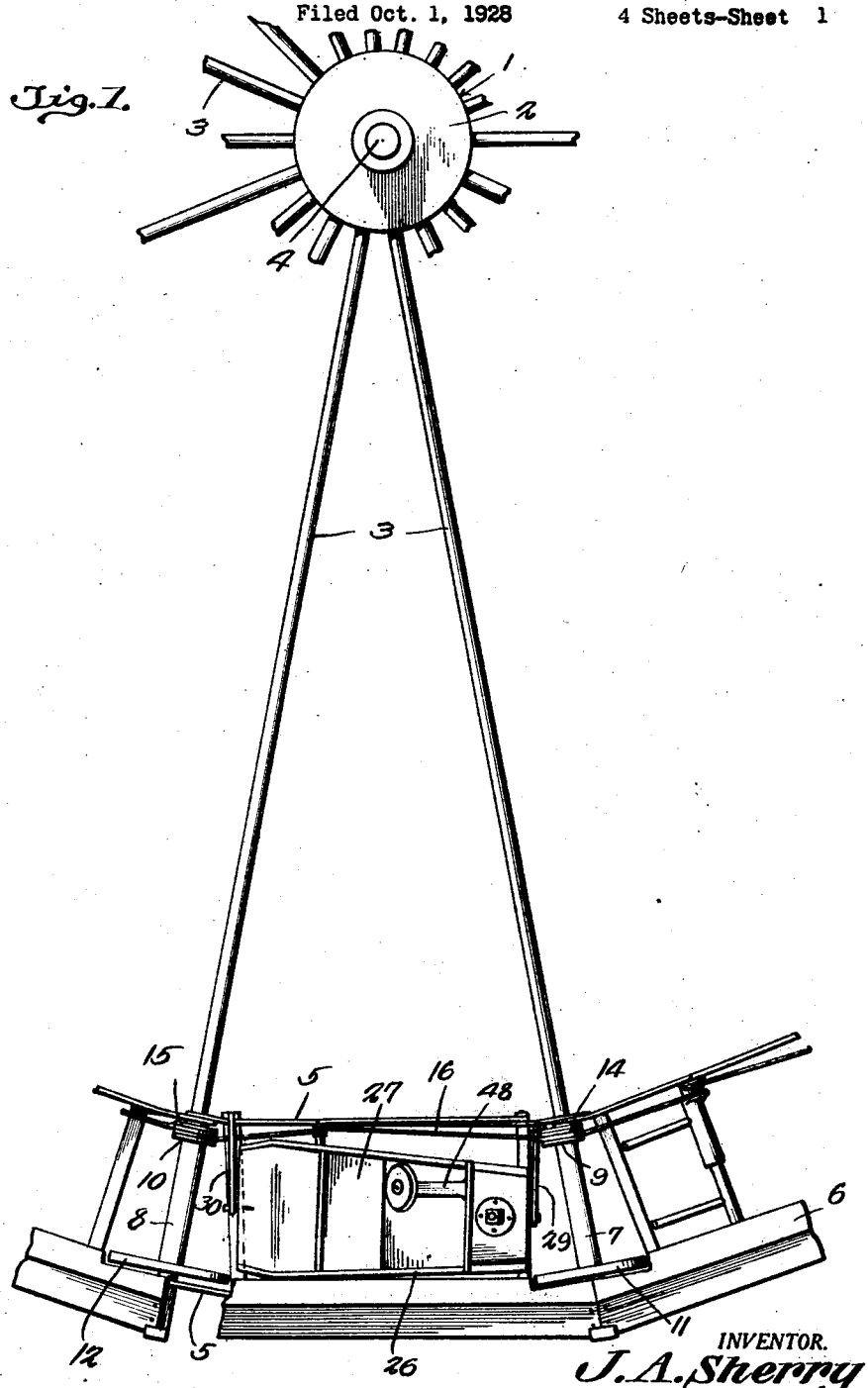
Fig. 1.



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AMUSEMENT DEVICE

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Fig. 2.

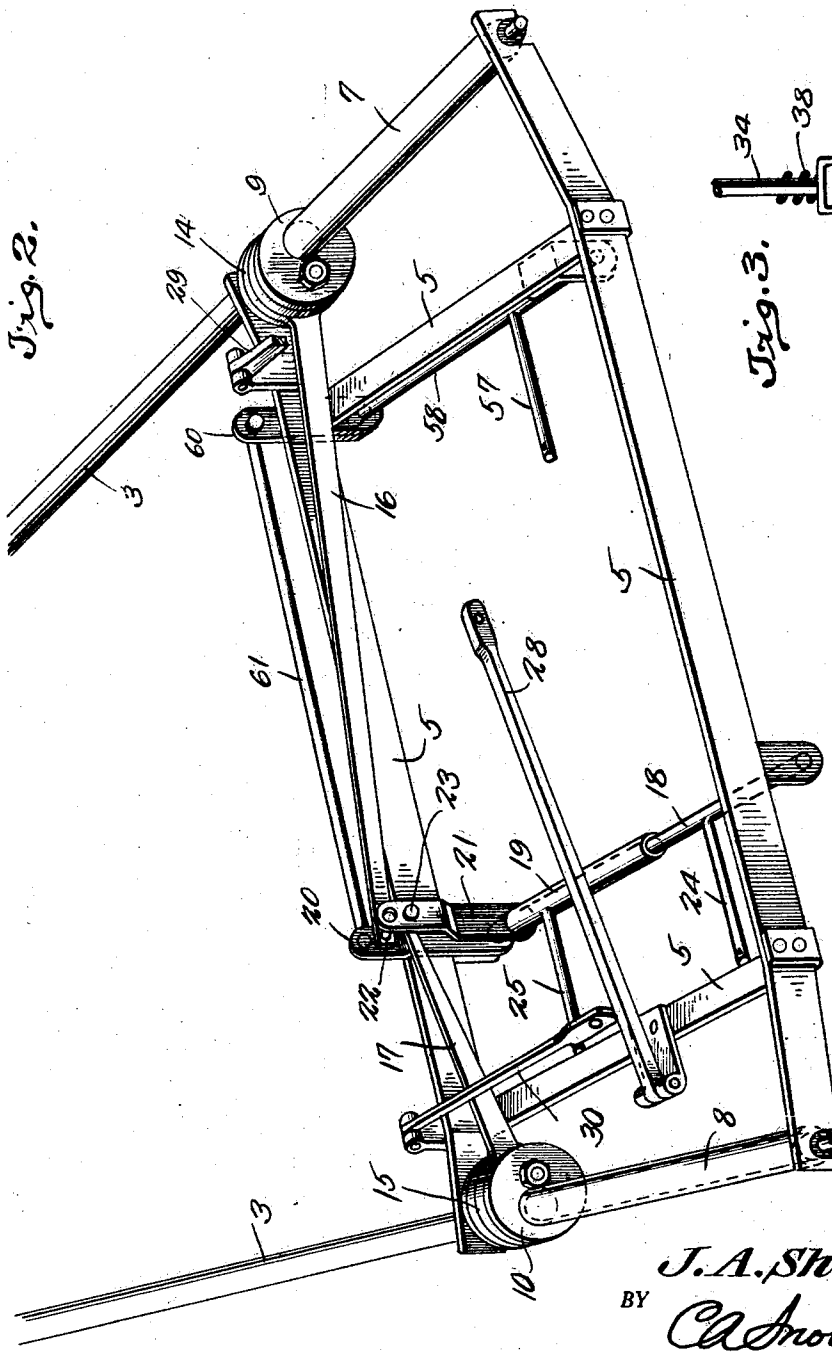

Fig. 3.

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Fig. 4.

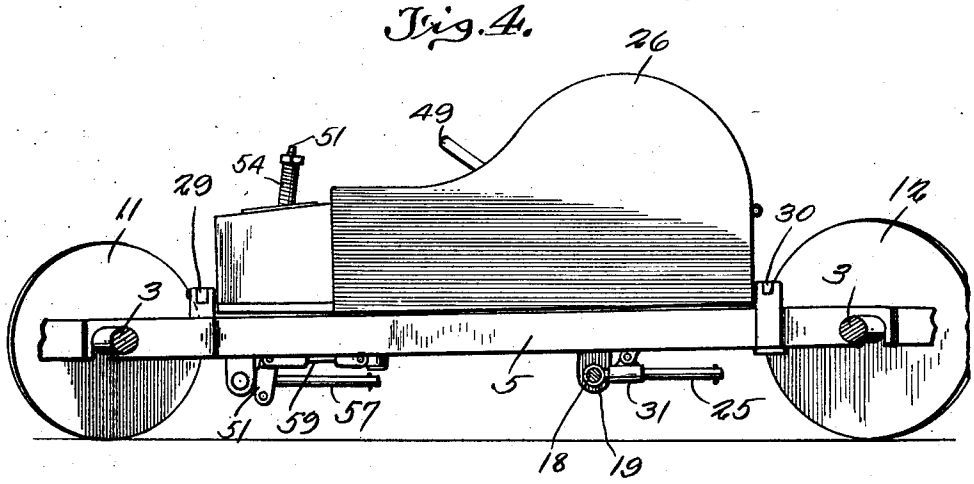
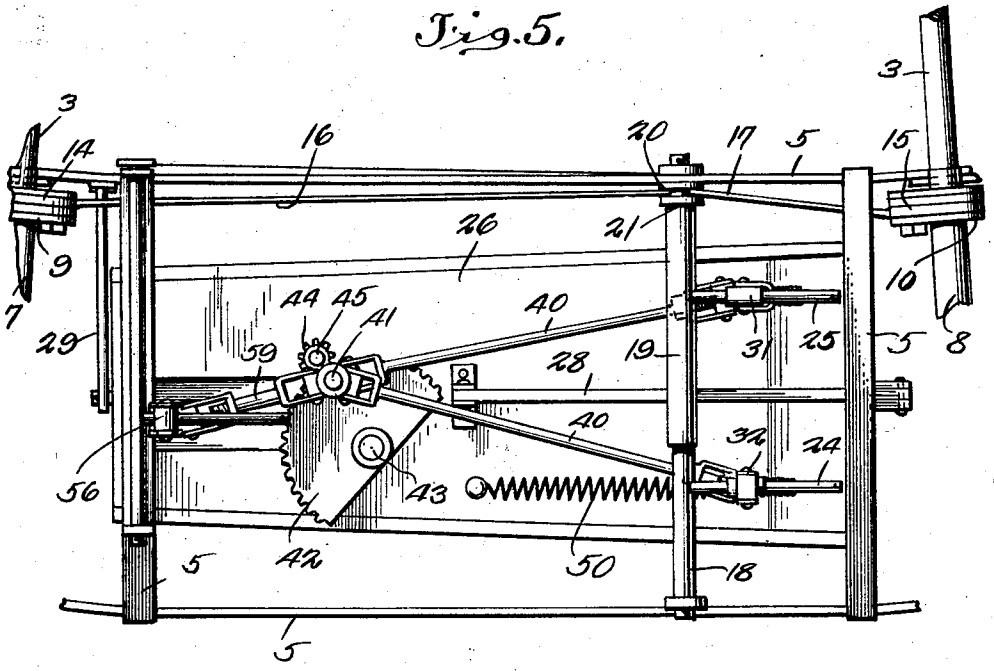


Fig. 5.



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AMUSEMENT DEVICE

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Fig. 6.

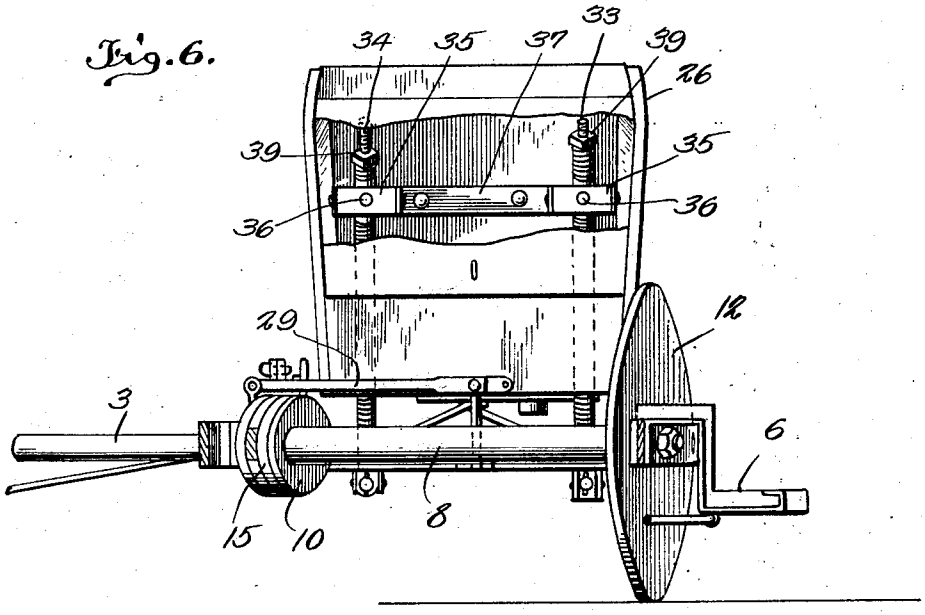
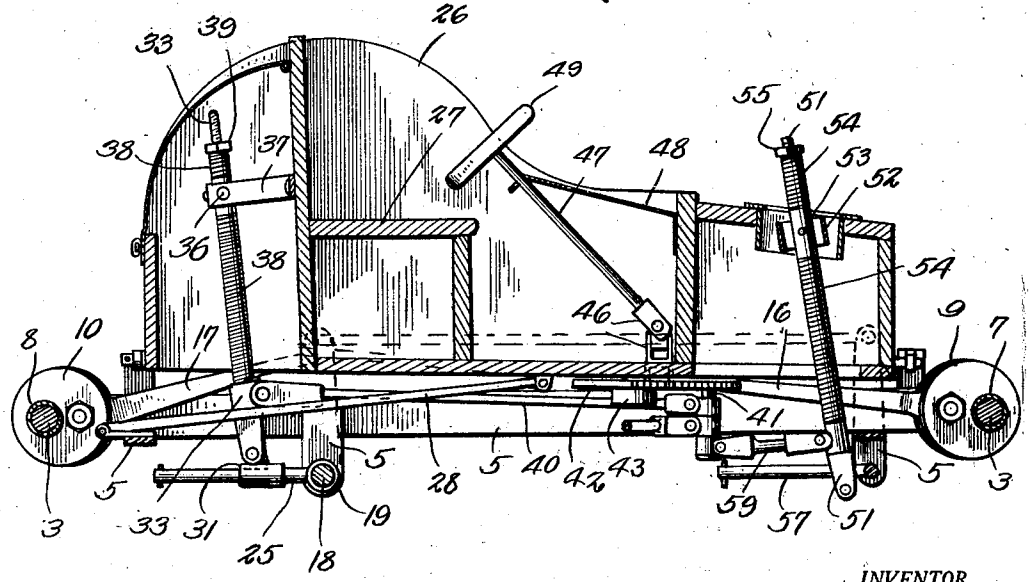


Fig. 7.



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Patented May 20, 1930 1,759,170

UNITED STATES PATENT OFFICE

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AMUSEMENT DEVICE

Application filed October 1, 1928. Serial No. 309,406.

The machine forming the subject matter of this application is an amusement device in the nature of a merry-go-round, including a rotor mounted to turn about a vertical axis, there being vehicles at the periphery of the rotor, the vehicles moving in an orbit, as the rotor turns.

This invention aims to provide a novel means whereby a compound swinging movement may be imparted to the vehicles, both longitudinally and transversely, as the vehicle moves in its orbit, mechanism being provided whereby the operator can increase the aforesaid compound swinging movement to a maximum, or cut it down to practically nothing.

Other objects will appear as the description proceeds. Within the scope of the claims, changes can be made in the structure shown, without departing from the spirit of the invention.

In the drawings:—

Figure 1 is a plan of a device constructed in accordance with the invention, parts being broken away;

Figure 2 is a perspective showing portions of the operating mechanism;

Figure 3 is a sectional view showing one of the slides;

Figure 4 is a vertical section in which the vehicle and attendant parts appear in elevation;

Figure 5 is a bottom plan;

Figure 6 is a view showing the vehicle in rear elevation, parts being broken away;

Figure 7 is longitudinal section of the vehicle.

The machine shown is in the nature of a merry-go-round, including a rotor 1 (Fig. 1) comprising a hub 2 and spokes 3 radiating from the hub, the rotor being mounted to turn about a vertical shaft 4. At the periphery of the rotor, there is a duplication, including a plurality of supporting frames, vehicle bodies, and so on; but since there is no novelty in mere duplication, the description will proceed in the singular number, so far as the vehicle and parts that carry and operate it are concerned.

Figure 2 shows that adjoining spokes 3 carry a frame 5, and according to the showing of Figs. 1 and 6 a foot board 6 is mounted on the outer part of the frame 5, so that persons desiring to ride in the vehicles hereinafter described, can get into and out of them without difficulty.

The frame 5 carries a vehicle body 26. As the vehicle body 26 moves around in an orbit, when the rotor 1 turns on the vertical shaft 4, the vehicle body tips sidewise, and endwise also. Figure 2 embodies a good showing of the means whereby the vehicle body is tilted longitudinally and transversely, as aforesaid. A tubular shaft 7 turns on one of the spokes 3, between the side bars of the frame 5. This shaft 7 may be called a forward shaft, and a rear shaft 8 is mounted to turn on an adjoining spoke 3. The shaft 7 carries an eccentric 9, and there is an eccentric 10 on the shaft 8. A wheel 11 (Fig. 1) is secured to the shaft 7, and a wheel 12 is secured to the shaft 8, the wheels being adapted to roll along a track (not shown). The eccentric 9 carries a strap 14, and the eccentric 10 carries a strap 15. The strap 14 is on the forward end of a rearwardly extended rod 16, and the strap 15 is on the rear end of a forwardly extended rod 17.

A transverse shaft 18 is mounted to rock on the frame 5, and a tubular shaft 19 is mounted to rock on the shaft 18. The shaft 18 has an upstanding arm 20, and the shaft 19 has an upstanding arm 21, these arms being located close together, at the inner side of the frame 5, as Figure 2 will show. The rear end of the rod 16 is pivoted at 22 to the arm 20, and the forward end of the rod 17 is pivoted at 23 to the arm 21. The shaft 18 has a rearwardly extended arm 24, and the shaft 19 has a rearwardly extended arm 25.

The vehicle body 26 has a seat 27. An anchor rod 28 is pivoted at its rear end to the frame 5, and is loosely pivoted at its forward end to the bottom of the vehicle body 26, the construction being such that although the rod 28 connects the vehicle body to the frame against movement bodily in the direction of the length of the rod 28, the vehicle 26, nevertheless, can tilt both in the direction of its length, and crosswise. A transverse anchor rod 29 and a transverse anchor rod 30 are pivoted at their outer ends to the frame 5.

The inner ends of the anchor rods 29 and 30 are pivoted to the ends of the vehicle body 26. The anchor rods 29 and 30 hold the vehicle 26 against moving bodily in a transverse direction, to wit, lengthwise of the spokes 3, but they do not prevent the vehicle 26 from tipping both lengthwise and crosswise.

A slide 31 is movable for adjustment along the arm 25, a slide 32 being movable along the arm 24, the slide 32 being shown in detail in Figure 3, and the slide 31 showing in side elevation in Figure 7. The lower end of a pitman 33 is pivoted to the slide 31, and the lower end of a pitman 34 is pivoted to the slide 32. The pitmen 33 and 34 can slide to a limited extent, in the direction of their length, in yokes 35 which are pivotally mounted at 36 in a bracket 37 (Figs. 6 and 7) on the back part of the vehicle body 26.

Adjusting nuts 39 are threaded on the upper ends of the pitmen 33 and 34. Compression springs 38 are mounted on the pitmen 33 and 34 and press at their inner ends against the yokes 35, the upper end of the uppermost springs 38 abutting against the nuts 39, and the lowermost springs 38 being engaged by the forked lower ends of the pitmen 33 and 34, as indicated in Fig. 3. The yokes 35 are so mounted that they can tilt both lengthwise of the vehicle body 26 and crosswise of it, the result being that the vehicle body has a rather free movement with respect to the pitmen 33 and 34, although when the pitmen move up and down, they impart transverse swinging movement to the vehicle body 26, the springs 38 cooperating with the yokes 35 to connect the pitmen 33 and 34 yieldably with the vehicle body 26. The springs 38, of course, serve as a cushioning means for the vehicle body 26 whilst it is being tipped crosswise in opposite directions by the action of the pitmen 33 and 34.

Referring to Figure 5 in comparison with Figure 7, it is clear that when the arms 24 and 25 swing up and down, carrying with them the pitmen 33 and 34, the vehicle body 26 not only will be tipped back and forth crosswise, but lengthwise as well. The amount that the vehicle body 26 tilts, as aforesaid, will depend on the position of the slides 31 and 32 with respect to the common axis of rotation of the shafts 18 and 19. If the slides 31 and 32 are slid on the arms 24 and 25 until the slides are up close to the shafts 18 and 19, the body 26 will be tilted to an inappreciable extent.

When the slides 31 and 32 are moved away from the axis of rotation of the shafts 18 and 19, the amount of tilting movement that is imparted to the vehicle body 26 is increased, because the effective length of the arms 24 and 25 is increased, and the pitmen 33 and 34 have a greater vertical throw. A means is provided whereby the slides 31 and 32 can be moved toward and away from the axis of the shafts 18 and 19, at the will of an operator. It is possible, therefore, for a person to keep the vehicle 26 comparatively steady, or, if he prefers, he can increase the tilting movement of the vehicle, both lengthwise and crosswise, to the maximum. The mechanism for doing this will now be described.

It is shown in Figures 7 and 5 that a pair of forwardly converging rods 40 are pivoted at their rear ends to the lower ends of the pitmen 33 and 34. The forward ends of the rods 40 are mounted for swinging movement, both horizontally and vertically, on a pivot element 41 carried by a gear segment 42 which is mounted to turn on a stub shaft 43 on the bottom of the vehicle body 26. A pinion 44 meshes with the gear segment 42 and is carried by a vertical shaft 45 that turns in the bottom of the vehicle body 26. A universal joint 46 (Fig. 7) connects the upper end of the shaft 45 with an inclined steering shaft 47 journaled in a bearing 48 carried by the dashboard of the vehicle, or supported otherwise.

There is a hand wheel 49 on the shaft 47, the hand wheel being accessible to a person occupying the seat 27. A retractile spring 50 is connected at its forward end to the vehicle body 26 (Fig. 5) the rear end of the spring being connected to the slide 32. If a person occupying the seat 27 becomes excited, owing to the jouncing that he is receiving, and lets go of the steering wheel 49, the spring 50 reacts on the slide 32 and pulls it up close to the shaft 18, motion being transmitted by way of the rods 40, the pivot element 41, and the gear segment 42, to the slide 31, that slide being pulled up close to the shaft 19. The result is that when the steering wheel 49 is set free, the tilting movement of the vehicle body 26 is reduced to a minimum.

Any suitable means may be provided for supporting the forward end of the vehicle body 26, so that the vehicle body can tilt both longitudinally and transversely, as hereinbefore explained. The means for mounting the forward end of the vehicle body may comprise a pitman 51, like the pitment 33 and 34, the pitman having longitudinal movement in a yoke 52 pivotally mounted at 53 for swinging movement on the vehicle body, both longitudinally and transversely of the body.

The springs 54 function like the springs 38, and the nut 55 operates like the nut 39. The lower end of the pitman 51 is pivoted to a slide 56 (Fig. 5), mounted to reciprocate for adjustment on an arm 57 that extends rearwardly from a shaft 58 (Fig. 2) journalled on the frame 5. An adjustable connection 59 (Figs. 5 and 7) is pivoted at its forward end to the lower part of the pitman 51, the rear end of the connection 59 being mounted on the pivot element 41 of the segment 42, for swinging movement both horizontally and

vertically. Figure 2 shows that there is an arm 60 on the inner end of the shaft 58. A connecting rod 61 is pivoted to the arm 60, and to the arm 20 of the shaft 18.

In practical operation, the track wheel 12 rotates the tubular shaft 8, and the track wheel 11 rotates the tubular shaft 7. The wheels 11 and 12 rotate at different speeds, because, as shown in Figure 4, the wheel 12 is of greater diameter than the wheel 11. The shaft 8, and the shaft 7, therefore, rotate at different speeds. The shaft 8 rocks the shaft 19 (Fig. 2) by way of the eccentric 10, the strap 15, the rod 17, and the arm 21. The shaft 7 rocks the shaft 18 by way of the eccentric 9, the strap 14, the rod 16, and the arm 20. When the shaft 18 is rocked, the arm 24 swings up and down, and when the shaft 19 is rocked, the arm 25 swings up and down.

The slide 31 is moved along the arm 25, and the slide 32 is moved along the arm 24, to change the throw of the pitmen 33 and 34, by a train of parts including the hand wheel 49 (Fig. 7), the universal joint 46, the shaft 45 (Fig. 5), the pinion 44, the gear 42, the pivot element 41, and the rods 40, which are pivoted to the lower ends of the pitmen 33 and 34, as shown in Figure 7. When the steering wheel 49 is released, the spring 50 of Figure 5 brings the slides 31 and 32 back to a place where the arms 24 and 25 have a minimum effective length, the tilting movement of the body 26 being decreased accordingly.

When the arms 24 and 25 swing up and down, the pitmen 34 and 33 rock the vehicle body 26 transversely. This will be obvious when Figure 6 is noted, in comparison with Figure 5. Most of the time, the eccentrics 9 and 10 do not synchronize and have the same throw. This is true because the track wheels 11 and 12 are not of the same diameter (Fig. 4). So long as the eccentrics 9 and 10 do not synchronize as to throw, the vehicle body 26 will be tilted lengthwise, as well as crosswise. The wheels 11 and 12 make many revolutions as they move once around the circle that is represented in Figure 1 by the radii that extend from the wheels 11 and 12 to the center 4 of rotation of the rotor 1, and at several places in this circle, the eccentrics 9 and 10 will be so disposed with respect to each other that they have the same throw. As the eccentrics 9 and 10 approach the aforesaid position, the longitudinal tilting movement of the body 26 dies away to nothing, and as the eccentrics 9 and 10 move with respect to each other out of the position where they have the same throw, the longitudinal tilting movement of the body 26 increases. Assuming that the slides 31 and 32 are moved away from the shafts 18 and 19 (Fig. 2) the body 26 has a transverse tilting movement all the time, but for the reasons hereinbefore stated in connection with the relative operation of the eccentrics 9 and 10, the body 26 has a longitudinal tilting movement that varies back and forth between maximum and minimum.

The mechanism for supporting the body 26 for movement as hereinbefore described, may be of any desired form, but in the present embodiment of the invention, it is adapted to impart an up and down swinging movement to the forward end of the body. Thus, when rocking movement is imparted to the shaft 18 of Figure 2, the arm 20 on that shaft, the rod 61, and the arm 60, rock the shaft 58, and the arm 57 is caused to swing up and down. The pitman 51 raises and lowers the forward end of the body 26. Comparing Figures 5 and 7, it appears that when the gear segment 42 is rotated by means of the hand wheel 49 to shift the slides 31 and 32 and to vary the throw of the pitmen 33 and 34, the connection 59 moves the slide 50 on the arm 57, thereby to vary the effective length of the arm 57, and to change the throw of the pitman 51, the amount of vertical movement imparted to the forward end of the body 26 being changed accordingly.

One of the advantages following the use of the spring 50 of Figure 5 is that when there is no one in the vehicle 26, the slides 31 and 32 will be pulled in close to the shafts 19 and 18, and the vehicles 26 will have no appreciable movement either crosswise or lengthwise. The rotor or turn-table 1, therefore, will never be dragging around a number of empty vehicles or carriages that are jumping violently up and down.

Having thus described the invention, what is claimed is:—

1. In an amusement device, a rotor mounted to turn in a substantially horizontal plane, a vehicle, means for mounting the vehicle on the rotor for oscillatory tilting movement with respect to the vertical and transversely of the path of the vehicle as it is carried around in an orbit by the rotor; mechanism for imparting the aforesaid tilting movement to the vehicle, said mechanism including supporting wheels for the vehicle; and means under the control of an occupant of the vehicle for varying the aforesaid tilting movement between maximum and minimum.

2. In an amusement device, a rotor mounted to turn in a substantially horizontal plane, a vehicle, means for mounting the vehicle on the rotor for oscillatory tilting movement with respect to the vertical and transversely of the path of the vehicle as it is carried around in an orbit by the rotor; a shaft mounted for rocking movement and having an arm, a slide movable along the arm, means under the control of an occupant of the vehicle for changing the position of the slide along the arm, a connection between the slide and one side of the vehicle, thereby to impart the aforesaid tilting movement to the

vehicle, and mechanism for operating the shaft, said mechanism including a supporting wheel for the vehicle.

3. In an amusement device, a rotor mounted to turn in a substantially horizontal plane, a vehicle, means for mounting the vehicle on the rotor for oscillatory tilting movement with respect to the vertical and transversely of the path of the vehicle as it is carried around in an orbit by the rotor, shafts mounted for rocking movement and having arms, connections between the arms and transversely spaced parts of the vehicle, thereby to impart the aforesaid tilting movement to the vehicle, and mechanisms for operating the shafts, said mechanisms each including a supporting wheel for the vehicle, the wheels rotating at different speeds as they carry the vehicle in its orbit.

4. In an amusement device, a rotor mounted to turn in a substantially horizontal plane, a vehicle, means for mounting the vehicle on the rotor for oscillatory tilting movement with respect to the vertical and transversely of the path of the vehicle as it is carried around in an orbit by the rotor; a supporting wheel for the vehicle, an eccentric connected to the supporting wheel to turn therewith, a shaft supported for rocking movement and having arms, a connecting rod pivoted to one arm and having a strap cooperating with the eccentric, and a connection between the other arm and one side of the vehicle, thereby to impart the aforesaid tilting movement to the vehicle.

5. In an amusement device, a rotor mounted to turn in a substantially horizontal plane, a vehicle, means for mounting the vehicle on the rotor for oscillatory tilting movement with respect to the vertical and transversely of the path of the vehicle as it is carried around in an orbit by the rotor; eccentrics mounted for rotation, shafts supported for rocking movement, each shaft having a first and a second arm, connecting rods pivoted to each of the first arms, each connecting rod having a strap co-operating with one of the eccentrics, a connection between each of the second arms and transversely spaced points on the vehicle, thereby to impart the aforesaid tilting movement to the vehicle, and supporting wheels for the vehicle, each supporting wheel being connected to one eccentric, the wheels rotating at different speeds as they carry the vehicle in its orbit.

6. An amusement device, constructed as set forth in claim 5, and further characterized by the provision of means for mounting the connections on the second arms for adjustment toward and away from the shafts, and mechanism under the control of an operator for actuating said means.

7. In an amusement device, a rotor mounted to turn in a substantially horizontal plane, a vehicle, means for mounting the vehicle on the rotor for swinging movement longitudinally of the path of the vehicle as it is carried around in an orbit by the rotor, and for oscillatory tilting movement with respect to the vertical and transversely of the path of the vehicle as it is carried around in an orbit by the rotor; mechanism for imparting each of the aforesaid movements to the vehicle; and means under the control of an occupant of the vehicle for varying the aforesaid movements between maximum and minimum.

8. In an amusement device, a rotor mounted to turn in a substantially horizontal plane, a vehicle, means for mounting the vehicle on the rotor for swinging movement longitudinally of the path of the vehicle as it is carried around in an orbit by the rotor, a shaft mounted for rocking movement and having an arm, a connection united to the vehicle, means for mounting the connection on the arm for movement along the arm, means under the control of an occupant of the vehicle for changing the position of the connection along the arm, and mechanism for operating the shaft, said mechanism including a wheel on which the vehicle is supported and by which said mechanism is driven.

9. In an amusement device, a rotor mounted to turn in a substantially horizontal plane, a vehicle, means for mounting the vehicle on the rotor for movement with respect to the rotor; and mechanism for imparting movement to the vehicle, said mechanism including an arm mounted for swinging movement, a connection pivoted to the vehicle, means for mounting the connection on the arm for adjustment along the arm, means under the control of an operator for adjusting the connection along the arm, and means for imparting swinging movement to the arm, the last specified including a supporting wheel on which the vehicle is carried as it moves in its orbit.

10. In an amusement device, a rotor mounted to turn in a substantially horizontal plane, a vehicle, means for mounting the vehicle on the rotor for movement with respect to the rotor; and mechanism for imparting movement to the vehicle, said mechanism comprising shafts supported for rocking movement, each shaft having a first and a second arm, eccentrics mounted for rotation, connecting rods pivoted to each of the first arms, each connecting rod having a strap cooperating with one of the eccentrics, a connection between each of the second arms and spaced points on the vehicle, and supporting wheels connected respectively to the eccentrics, the wheels rotating at different speeds as they carry the vehicle in its orbit.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

JAMES A. SHERRY.