Feb. 21, 1928. 1,660,012

B. S. MOORE ET AL

AMUSEMENT DEVICE

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Fig. 1.

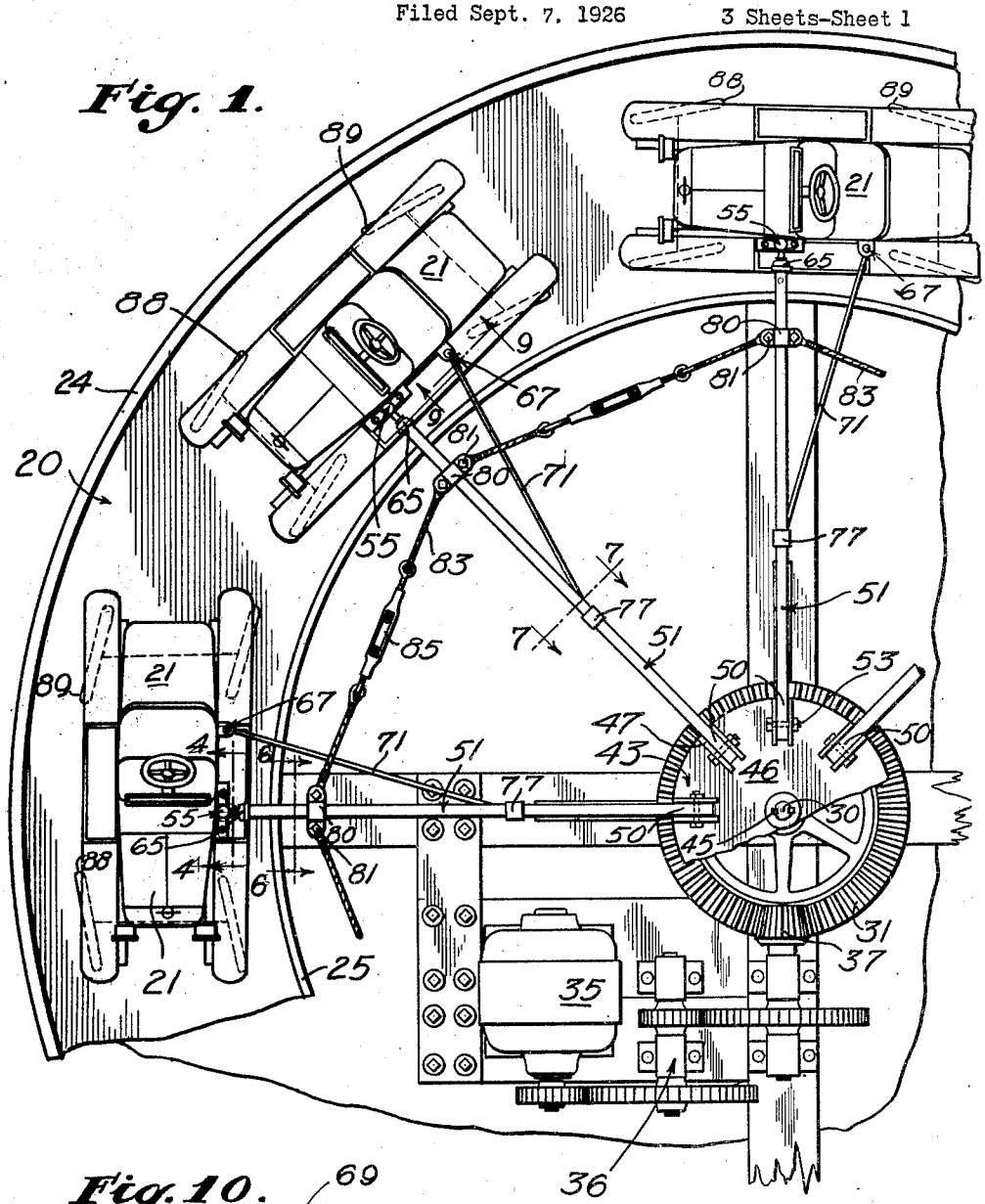
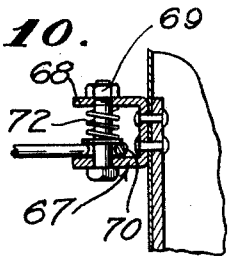


Fig. 10.



INVENTORS:
BALDY S. MOORE
WALTER F. ADAMS,
BY Fred Wann
ATTORNEY.

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B. S. MOORE ET AL

AMUSEMENT DEVICE

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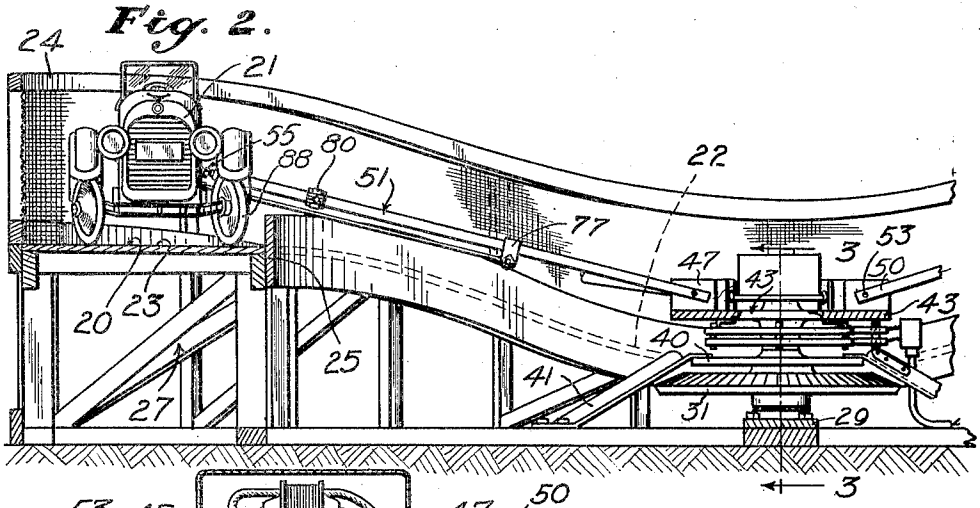
Fig. 2.



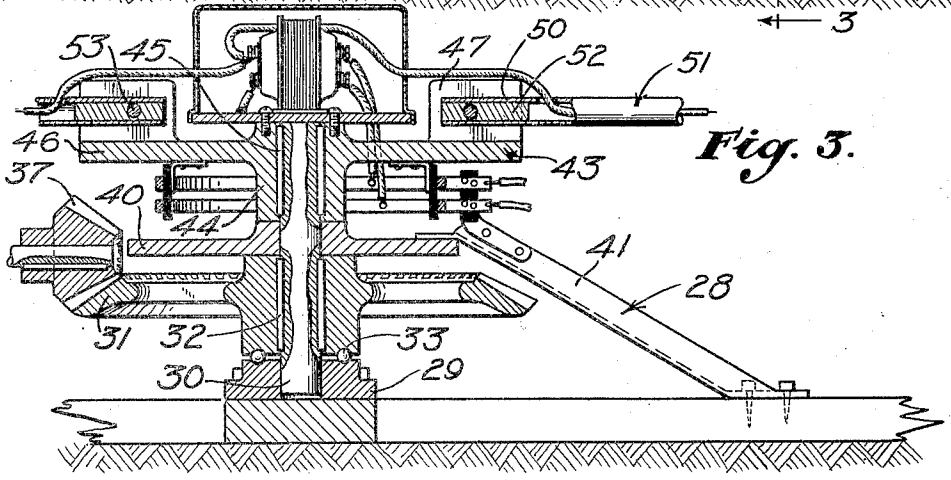


Fig. 3.

Fig. 7.

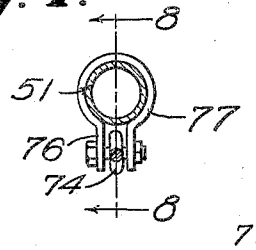


Fig. 6.

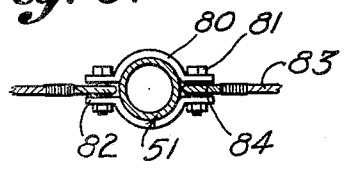
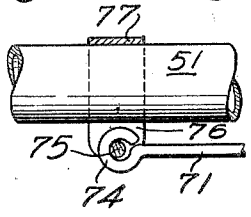


Fig. 8.



INVENTORS:
BALDY S. MOORE
WALTER F. ADAMS
BY Fred W. Mann
ATTORNEY.

Feb. 21, 1928. 1,660,012

B. S. MOORE ET AL

AMUSEMENT DEVICE

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Fig. 11.

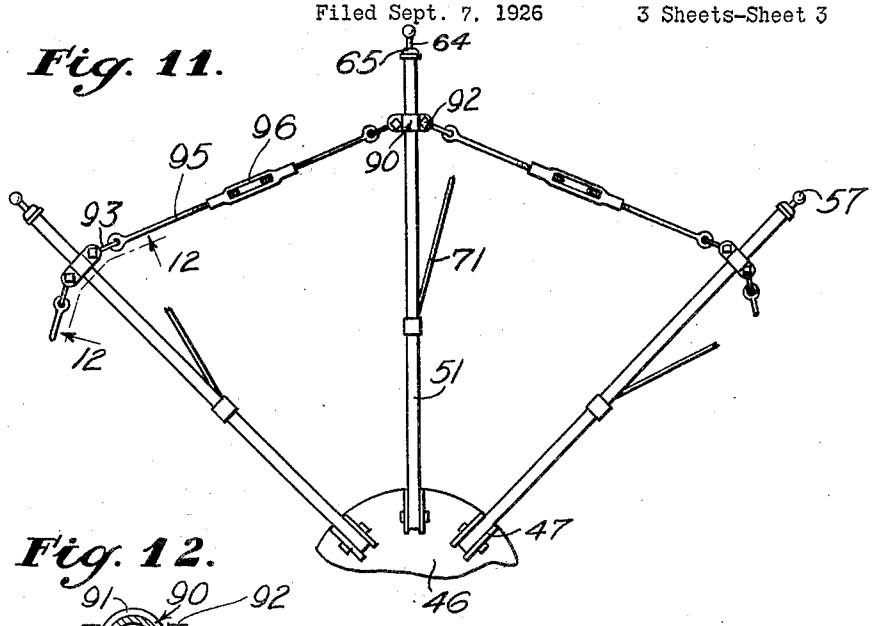


Fig. 12.

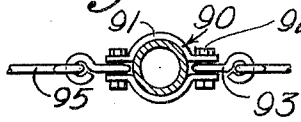


Fig. 4.

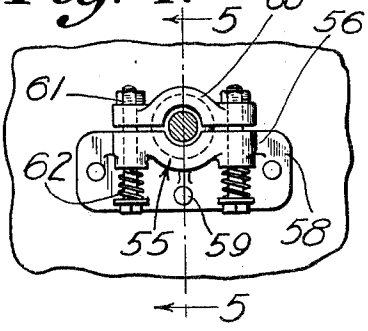
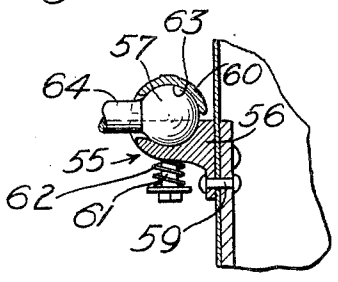


Fig. 5.



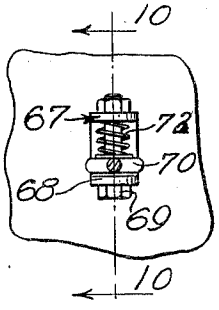


Fig. 9.

INVENTORS:
BALDY S. MOORE
WALTER F. ADAMS
BY Ford W. Harris
ATTORNEY.

Patented Feb. 21, 1928. 1,660,012

UNITED STATES PATENT OFFICE.

BALDY S. MOORE, OF VENICE, AND WALTER F. ADAMS, OF LONG BEACH, CALIFORNIA.

AMUSEMENT DEVICE.

Application filed September 7, 1926. Serial No. 133,819.

Our invention relates to amusement devices and particularly to amusement rides such as are operated at pleasure resorts, carnivals and beaches.

The ordinary amusement rides, such as the roller coaster, which are patronized by grown-ups are too strenuous and dangerous for children; and therefore special devices for accommodating children have come into general use. The children's rides, such as the merry-go-round and miniature airplanes, lack thrill for children and are therefore not wholly satisfactory.

We have observed that children get much pleasure out of riding velocipedes, toy automobiles and the like, up and down hill.

The general object of our invention is to provide a ride for children which will give the children sufficient thrill or excitement and yet not be dangerous. Our invention consists of a plurality of individual vehicles which run on a circular path. The circular path is wave-shaped, having alternating troughs and crests. The vehicles running on the circular path have wave motions which simulate riding up and down hills.

We have found that each vehicle must have an up-and-down movement entirely independent of the other vehicles but must always occupy the same circular position relative to the others.

It is accordingly one of the objects of this invention to provide an amusement device of this character having vehicles which operate on a circular wave-shaped path, each vehicle having individual up-and-down movement but being retained in a certain circular position relative to the other vehicles.

In our invention we use vehicles in the form of miniature automobiles having four wheels. The ordinary automobile has only the front wheels pivoted, this being for the purpose of guiding the automobile. In our invention the front wheels are locked in a certain position so that they guide the automobile in a circular path of a given diameter. It is found that if the back wheels are left in their original positions, that is, parallel to the longitudinal axis of the automobile, considerable side strains are placed thereon, which result in an uneven running of the automobile over the path, and considerable side strains on the rubber tires of the wheels, eventually throwing them from place. We have discovered that such difficulties as these may be eliminated by placing the rear wheels at right angles to a radial line extending from the center of the circular path.

It is accordingly one of the objects of our invention to provide an amusement ride of the character mentioned in which all of the wheels of each vehicle are arranged in planes at right angles to a radial line extended from a point around which the vehicles operate and through the axis of each of the wheels.

Further objects and advantages will be made evident hereinafter.

Referring to the drawings in which we illustrate our invention,

Fig. 1 is a partial plan view of the invention.

Fig. 2 is a vertical section of Fig. 1.

Fig. 3 is an enlarged section taken on the line 3—3 of Fig. 2.

Fig. 4 is an enlarged section taken on the line 4—4 of Fig. 1.

Fig. 5 is a section taken on the line 5—5 of Fig. 4.

Fig. 6 is an enlarged fragmentary section taken on line 6—6 of Fig. 1.

Fig. 7 is a section on the line 7—7 of Fig. 1.

Fig. 8 is a section taken on the line 8—8 of Fig. 7.

Fig. 9 is a section taken on the line 9—9 of Fig. 1.

Fig. 10 is a section taken on the line 10—10 of Fig. 9.

Fig. 11 is a fragmentary view showing an alternative construction of the invention.

Fig. 12 is a section taken on the line 12—12 of Fig. 11.

Referring to the drawings in detail, the numeral 20 represents a circular path on which vehicles in the form of miniature automobiles 21 are adapted to run. The track 20 is wave-shaped, having alternate high and lower portions or troughs 22 and crests 23 which simulate consecutive hills. The path 20 is surrounded by a suitable fence 24 and with an inner ledge 25, this structure being supported on suitable frame work 27.

At the center of the path 20 is mounted a frame 28. The frame 28 has a base 29 into which a vertical shaft 30 is extended. Keyed to the shaft 30 immediately above the base 29 is a drive bevel gear 31. The drive bevel gear 31 is locked to the shaft 30 by means of keys 32. The drive bevel gear 31 is supported by the base 29 by means of a

bearing 33. For driving the drive bevel gear 31 we provide a motor 35 which operates reduction gearing, generally indicated by the numeral 36. A drive pinion 37 of the reduction gearing 36 engages the drive bevel gear 31. Mounted directly above the drive bevel gear 31 is a bearing plate 40 which supports the vertical shaft 30, the bearing plate 40 being rigidly supported by frame arms 41. Mounted on the upper end of the vertical shaft 30 is a hub plate 43. The hub plate 43 has a nave 44 through which the upper end of the vertical shaft 30 extends, the parts being drivably attached together by keys 45. Extending radially outward from the nave 44 of the hub plate 43 is a cylindrical flange 46 having bearing walls 47 extended upward therefrom in pairs, which pairs are circularly arranged and spaced an equal distance apart. The structure described in this paragraph constitutes the driving mechanism of the invention.

Inner ends 50 (Figs. 1 and 3) of radial arms or spokes 51 rest between the pairs of bearing walls 47. The spokes 51 may be in the form of pipes, as shown, the inner ends thereof being provided with filler bars 52. The inner ends 50 of the spokes 51 are pivotally secured to the pairs of bearing walls 47 by pivot bolts 53 which extend through the inner ends of the spokes and through the bearing walls. The outer ends of the spokes 51 are attached to the inner sides of the vehicles 21 by ball-and-socket joints 55.

As shown in detail in Figs. 4 and 5, the ball-and-socket joints 55 each consist of a socket 56 and a ball 57. Each socket 56 has a block 58 which is attached by rivets 59 to the inner side of the body of one of the vehicles 21. Associated with the block 58 is a cap 60 which is secured thereto by bolts 61 having compression springs 62, as illustrated clearly in Figs. 4 and 5. The ball 57 rests in an accommodating pocket 63 provided by the block and cap 58 and 60. The ball 57 has a stem 64, by means of which it is attached to a fitting 65 mounted at the outer end of one of the spokes 51.

Fastened to the inner side of the body of each vehicle 21 and the rear of the ball-and-socket joint 55 thereof is an attachment clip 67. As illustrated in Figs. 9 and 10, the attachment clip 67 has a pair of horizontal flanges 68 which support a vertical bolt 69. Surrounding the lower part of the vertical bolt 69 immediately above the lower flange 68 is an eye 70 of a tie rod 71. Surrounding each bolt 69 between the eye 70 and the upper flange 68 is a compression spring 72 which is provided for the purpose of preventing the outer end of the tie rod 71 from vibrating vertically on the vertical bolt 69. Each tie rod 71 extends inward from each vehicle 21 and is attached to the spoke 51 which is associated with the same vehicle as is the tie rod. Figs. 7 and 8 illustrate means for attaching the tie rods to the spokes. The inner ends of each tie rod 71 is provided with an eye 74 through which a bolt 75 is extended. Each bolt 75 also extends through ears 76 of an attachment member 77 which surrounds one of the spokes 51. The bolts 75 serve dual purposes—they serve as a means for attaching the tie rods to the attachment members and also for securing the attachment members to the spokes 51.

The spokes 51, as will be noted from Fig. 1, extend radially outward from the hub plate to the vehicle which is attached to the outer end thereof. It is necessary that these spokes be equally spaced. For the purpose of spacing the spokes we provide attachment means consisting of plates 80 which are secured to each of the spokes 51 near the outer ends thereof by bolts 81 extending through ears 82 thereof. Connected to each of the bolts 81 is a flexible member 83, which flexible member 83 is provided with an eye 84 which surrounds each bolt 81. The other ends of the flexible members 83 are connected to turn buckles 85 by means of which the spaces between the different spokes 51 may be regulated. The flexible members 83 hold the spokes 51 in their proper radial relationship but permit them to move relatively up and down. This is necessary since the vehicles 21 pass over a wave-shaped path.

Front wheels 88 of the vehicles 21 and back wheels 89 are arranged so that their axles extend on a radial line projected from the center of rotation of the spokes 51. This allows a free movement of the vehicles in a circular path without any side strains which would be present if any of the wheels were not arranged in the positions described and shown.

The operation of the invention is substantially as follows:

After the patrons have been seated in the vehicles 21 the motor 35 is energized and the reduction gearing 36 is set into operation. The drive pinion 37 of the reduction gearing rotates the drive bevel gear 31, thus rotating the shaft 30. The spokes 51 are turned with the hub plate 43 and the vehicles 21 are moved over the circular path. In Fig. 2, one of the vehicles 21 is shown on a crest 23 of the circular path 20. The spoke 51 attached to this vehicle 21 extends downward at a noticeable angle. When this vehicle reaches a trough 22 the spoke 51 extends substantially straight from the vehicle 21. It will be seen that in order to permit a relative swinging motion of this nature, it is necessary to provide a hinged joint at the hub plate 43 and also at the vehicle 21. As the vehicle 21 is moving from

a trough to a crest, the front end thereof is higher than the back end; therefore there must be a relative movement between the spoke 51 attached to this vehicle and the vehicle in a plane substantially at right angles to the extension of the spoke 51. When the vehicle is passing from a crest to a trough, the back end is higher than the front end. Therefore, there will again be a relative motion between the vehicle and the spoke. The ball-and-socket joint 55 which the invention provides permits the relative motion between the vehicles and the spokes, both in planes parallel to the extension of the spokes and in planes at right angles thereto. The spoke attached to the vehicle 21 in Fig. 2 is considerable higher than the spoke attached to a vehicle positioned 90° from the one shown in Fig. 2. It is necessary that there be a relative vertical swinging between the different spokes 51 because they move up and down independently. The means for attaching the spokes together permits such a relative motion. The flexible members 83, however, retain the spokes in their proper radial relationship.

The tie rods 71 hold the cars 21 in their proper positions, that is, at right angles to a radial line or to the extension of a spoke 51 which is attached to the car. The manner of attaching the tie rods 71 to the vehicles 21 permits the relative motion between the vehicles and the spokes 51, as previously described, but is designed so that there will be no vibration and so that there will be no danger of a child being injured by placing his hand in the clip 67.

In Figs. 11 and 12 we show a modified form of means for holding the spokes 51 in their proper spaced relationship. This means includes an attachment arrangement 90 having plates 91 which are attached together by bolts 92. Carried by the bolts 92 are eye fixtures 93, to which metal bars 95 are attached. The inner ends of the bars 95 are connected to a turn buckle 96. In this form of the invention, in place of using flexible members 83, we use stiff bars 95 and attach the stiff bars 95 to eye fixtures 93 which permit a hinging action to take place. This arrangement functions as does the arrangement in the other form of the invention, retaining the spokes in proper spaced relationship but permitting relative vertical movement therebetween.

From the foregoing description it will be seen that our invention provides an amusement ride which is especially adapted for children and which provides sufficient excitement without any danger. The construction is such that there are no exposed moving parts in which children could place their fingers.

We claim as our invention:

In an amusement ride of the class described, the combination of: a wave-shaped circular path; vehicles adapted to run on said path; driving mechanism at the center of said path; radial spokes extending from said driving mechanism to said vehicles; hinge means connecting said spokes to said driving mechanism so that said spokes may swing only in a vertical plane; ball-and-socket joints each of which connects the outer end of one of said spokes to one of said vehicles; rigid braces each of which is flexibly connected at one end to one of said vehicles and at the other end is flexibly connected to the spoke which is connected by one of said ball-and-socket joints to said vehicle; and spacing means for retaining said spokes in proper spaced relation.

In testimony whereof, we have hereunto set our hands at Los Angeles, California, this 31st day of August, 1926.

BALDY S. MOORE.
WALTER F. ADAMS.