Dec. 31, 1963 N. BARTLETT 3,116,060

AMUSEMENT RIDE

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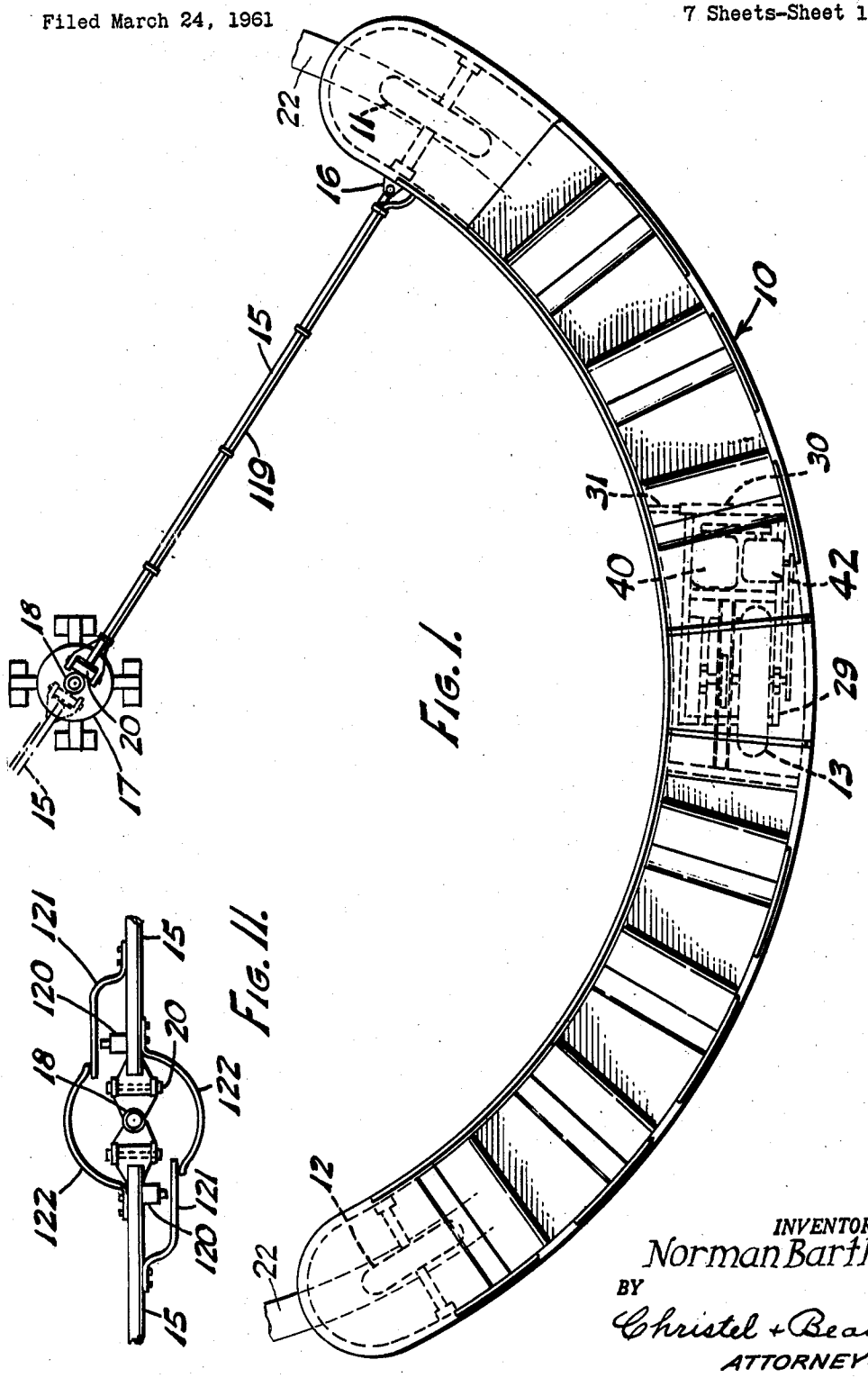

FIG. 1.

FIG. 11.

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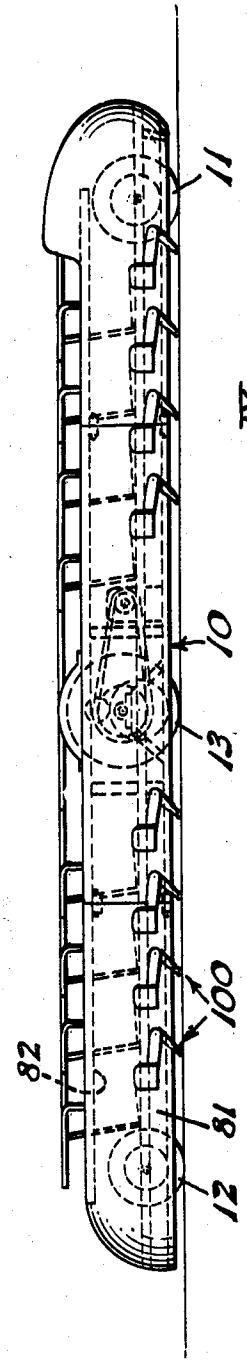

FIG. 2.

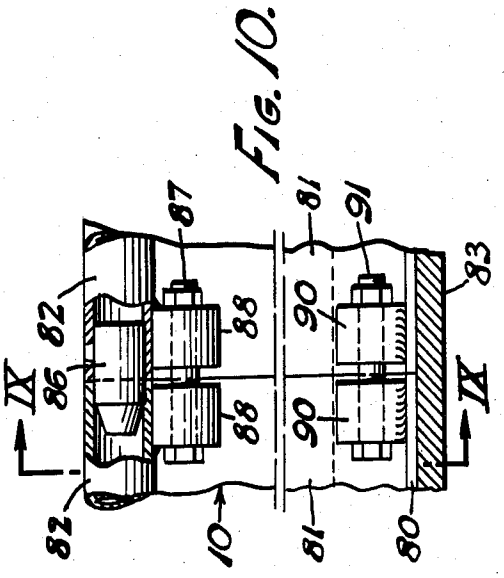

FIG. 10.

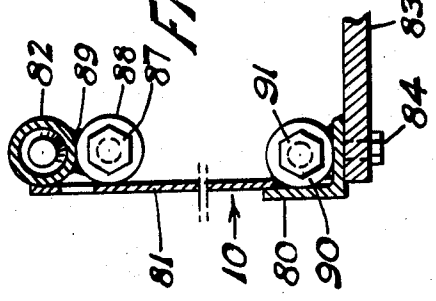

FIG. 9.

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FIG. 3.

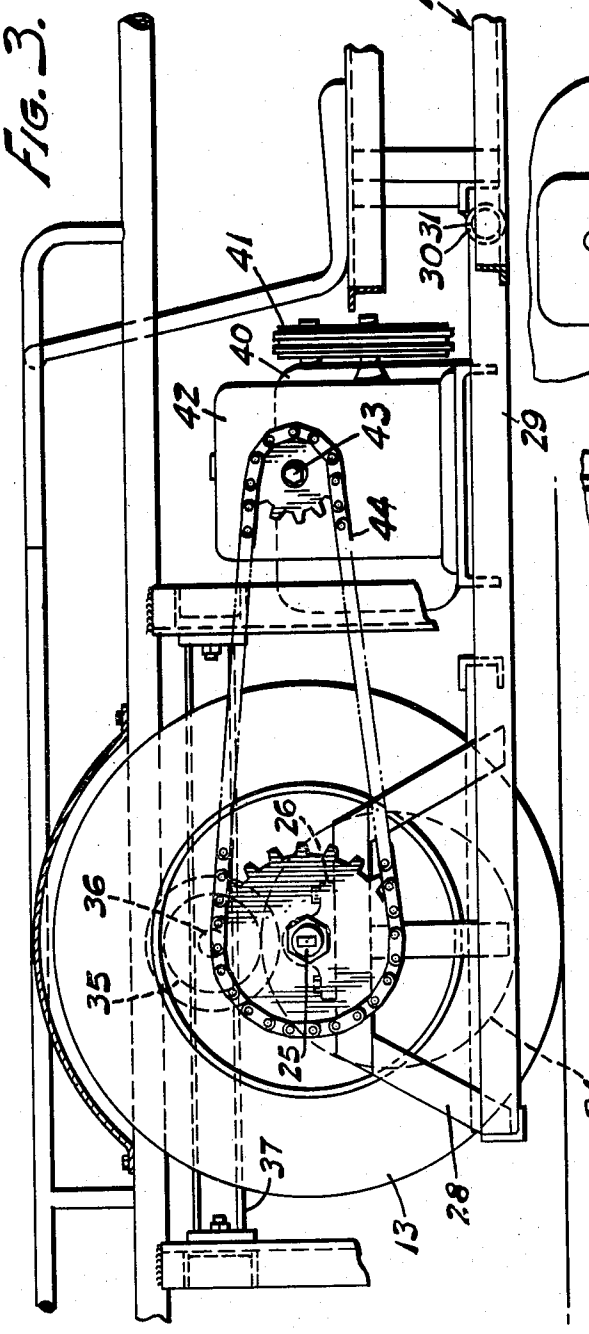

FIG. 8.

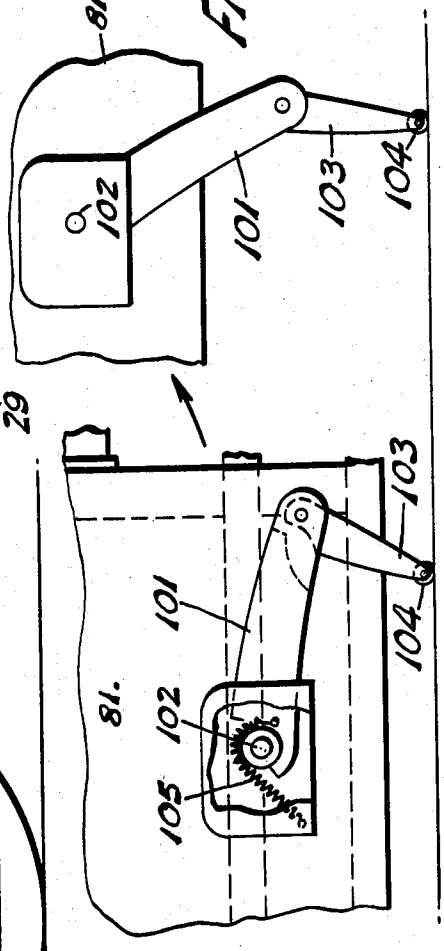

FIG. 7.

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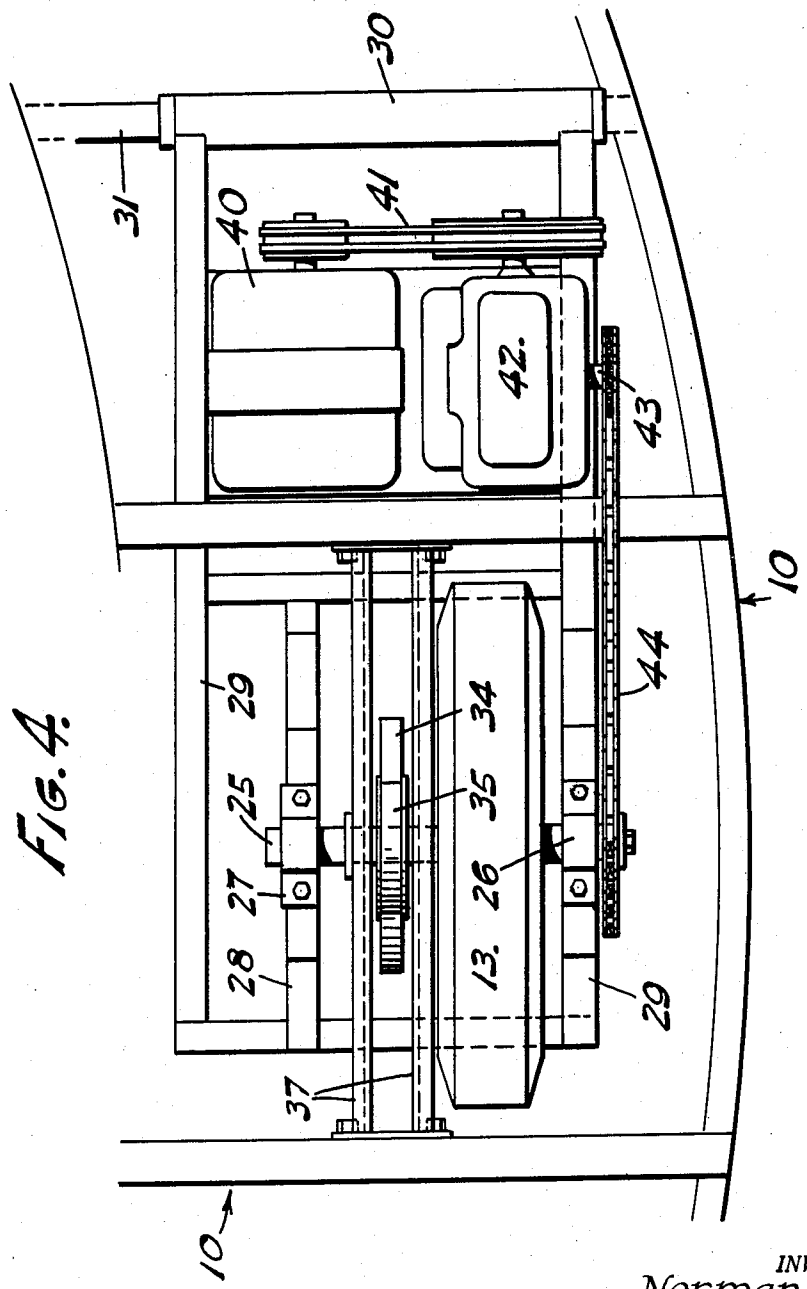

FIG. 4.

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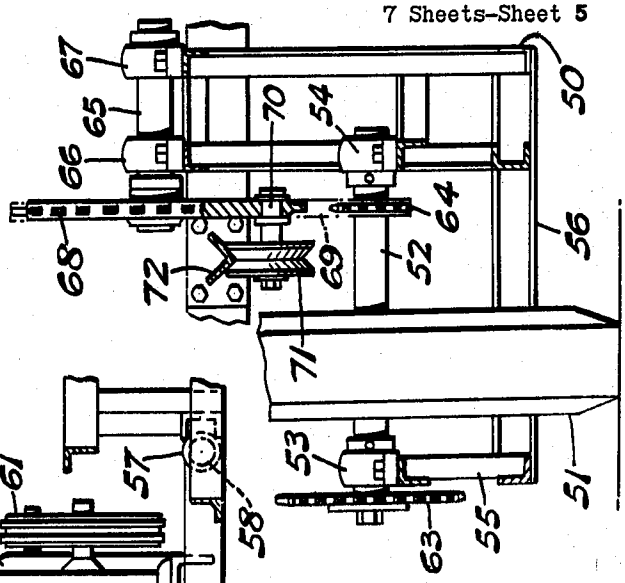
FIG. 6.



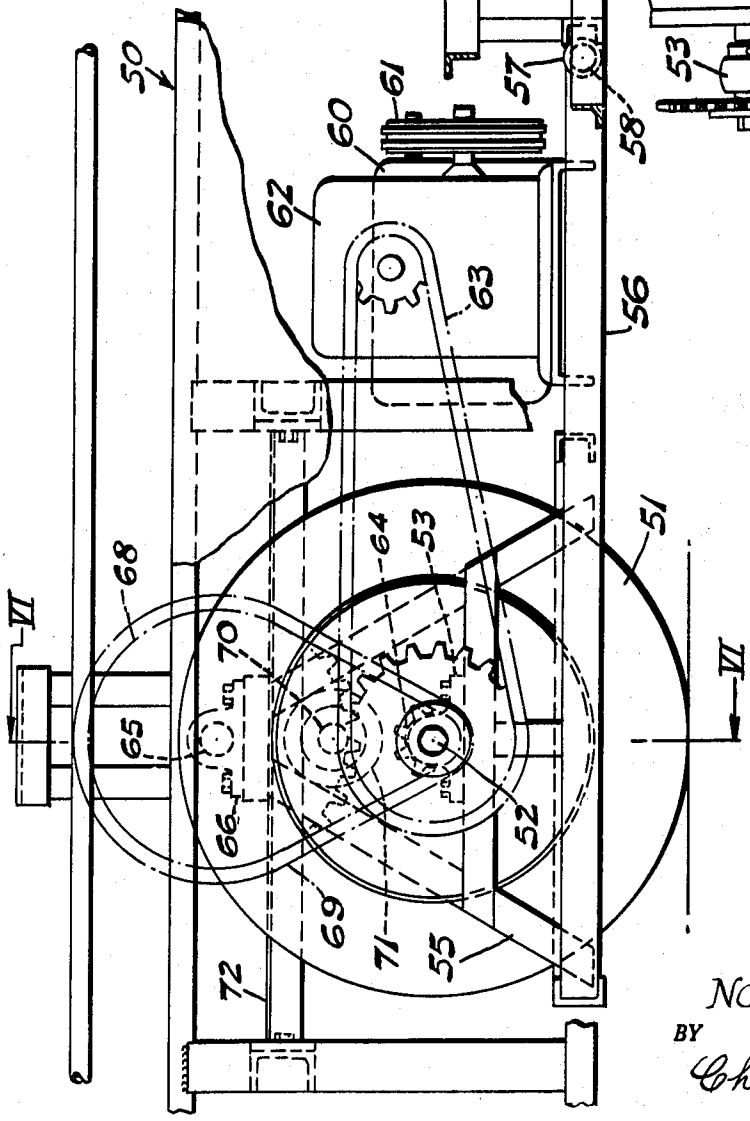


FIG. 5.

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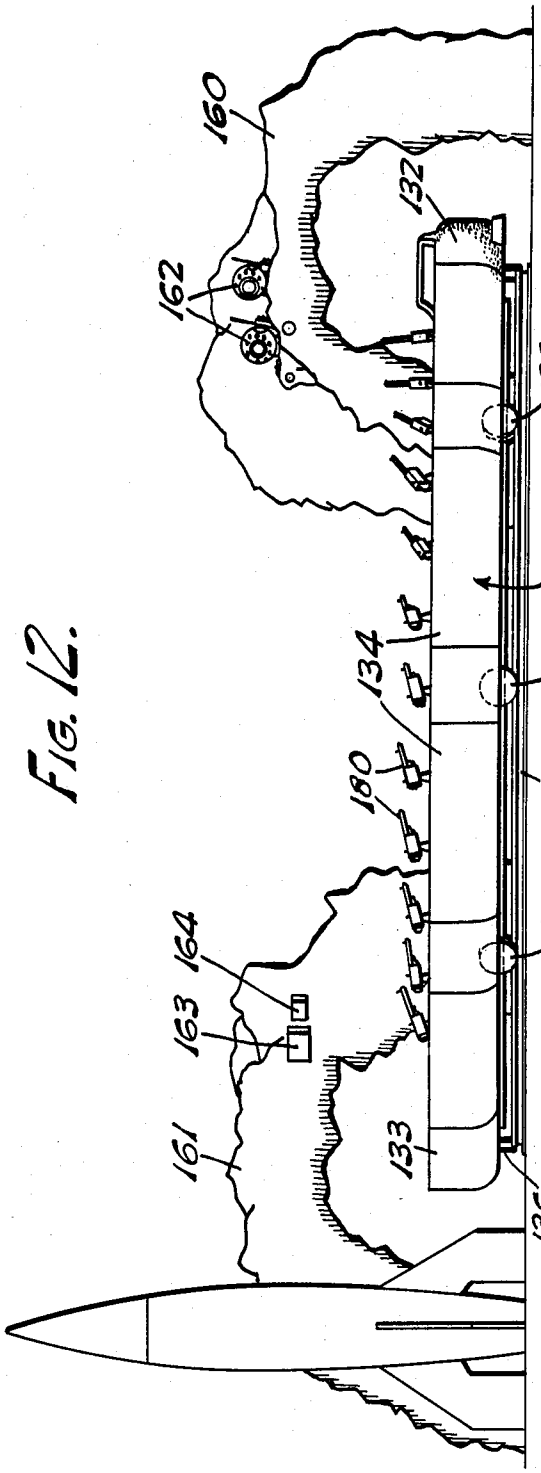

FIG. 12.

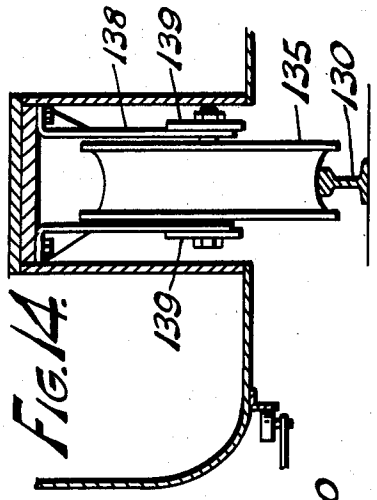

FIG. 14.

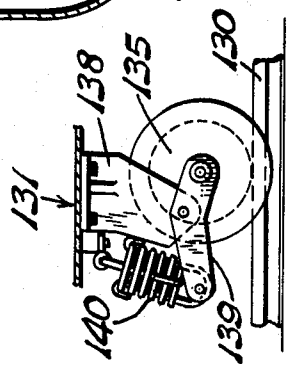

FIG. 16.

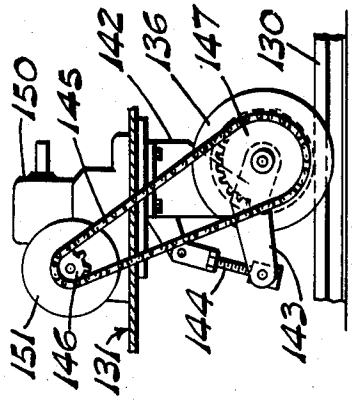

FIG. 15.

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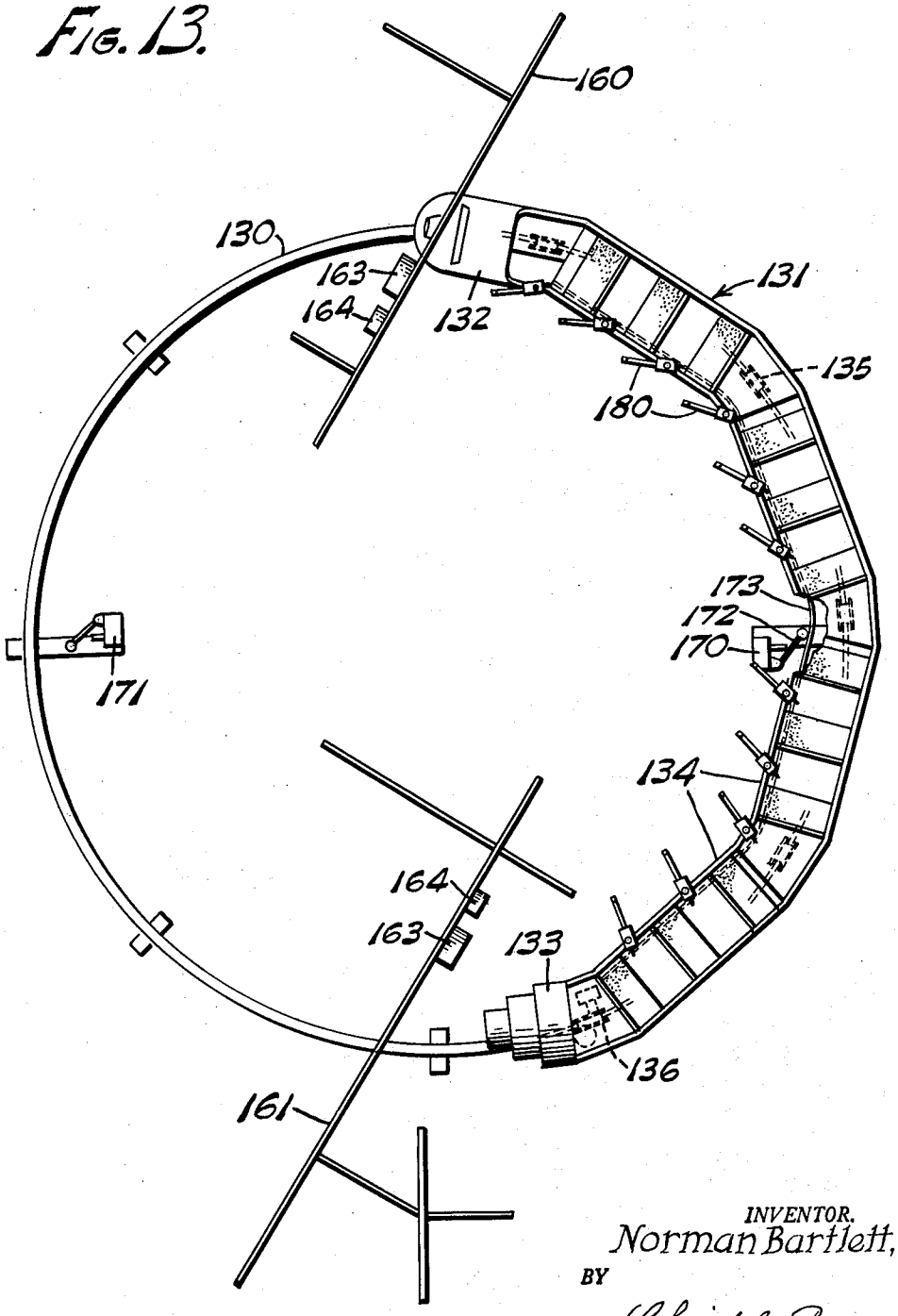
FIG. 13.



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United States Patent Office 3,116,060 Patented Dec. 31, 1963

3,116,060

AMUSEMENT RIDE

Norman Bartlett, North Miami Beach, Fla., assignor of one-half to Marjorie Bartlett, North Miami Beach, Fla.

Filed Mar. 24, 1961, Ser. No. 112,138
9 Claims. (Cl. 272—34)

This invention relates to amusement rides and particularly to amusement rides of the roundabout type. This application is a continuation-in-part of my prior copending application, Serial No. 673,739, filed July 23, 1957, now abandoned, which prior application is a full continuation of my application, Serial No. 423,794, filed April 16, 1954, which application is now abandoned.

According to the present invention an amusement ride is provided which comprises essentially an elongated arcuate ride car which is arranged to travel in a circular path which follows the arcuate extent of the car itself. Basically, the present invention provides a ride car of novel arcuate longitudinal formation which travels a circular path or orbit with a minimum of guidance or constraint and one wherein centrifugal and inertia forces are controlled and directed in a novel and unusual manner. Also, the considerable arcuate extent of the ride car is such that single front, rear, and intermediate wheels form a supporting tripod which gives highly stable support to the car.

Furthermore, the amusement ride of one form of the present invention provides novel wheel supports for the amusement ride car which cause the car to move in an undulating manner which simulates a serpentine or caterpillar movement. In one form of the present invention this novel undulation or serpentine movement is attained by periodically raising and lowering various portions of the ride car in a nonsynchronous or out-of-phase relationship.

Further features of the present invention are the manner in which the undulations or vertical reciprocations of the ride car are attained, sometimes in conjunction with the means for propelling the car about its circular pathway; a trackside switch arrangement for periodically operating a target figure firearm simulating signal in synchronism with passenger car operation; the manner in which car sections are assembled to provide a rigid unitary car structure; a novel leg simulating means associated with the car in the form set forth herein by way of example; and means for controlling the relative travel of several cars traversing the same circular path.

The undulation of the cars may be attained by the use of eccentric ground wheels, as will appear more fully later herein, or by providing resiliently mounted wheels whereby occupants can cause up and down movement of the car or portions of the car by jumping or rocking up and down. Furthermore, the two embodiments of the invention may readily be combined by employing eccentric wheels in conjunction with resilient mounting. In such case the undulation due to eccentric wheel mounting may be augmented by up and down movements of passengers.

Several practical embodiments of the present invention are illustrated in the accompanying drawings and described in the following specification. However, it is to be understood that such embodiments are set forth by way of example only and the various mechanical modifications may be made without departing from the spirit or scope of the present invention, which is not limited otherwise than as defined in the appended claims.

In the drawings:

FIG. 1 is a general top plan view of one form of the amusement ride car of the present invention;

FIG. 2 is a general side elevational view of the car of FIG. 1;

FIG. 3 is an enlarged elevational view similar to FIG. 2 but showing only the medial drive portion of the car of FIGS. 1 and 2 with portions thereof broken away for added illustration;

FIG. 4 is a top plan view of the portion of the amusement ride car illustrated in FIG. 3;

FIG. 5 is a view similar to FIG. 3 but showing an alternative drive means for producing vertical oscillations of the mid-portion of the amusement ride car;

FIG. 6 is a transverse cross-sectional view taken approximately on line VI—VI of FIG. 5;

FIG. 7 is an enlarged side elevational view of a leg simulating mechanism associated with the amusement ride car of the present invention;

FIG. 8 is a similar view showing another position of operation of the leg simulating mechanism;

FIG. 9 is a fragmentary cross-sectional view through a side wall portion of the amusement ride car of FIGS. 1 and 2 showing means for connecting car sections, the cross section being taken approximately on the line IX—IX of FIG. 10;

FIG. 10 is a longitudinal fragmentary cross-sectional view through the connecting structure of FIG. 9;

FIG. 11 is a fragmentary top plan view of a dual car control switching mechanism;

FIG. 12 is a side elevational view of a modified form of the amusement ride of the present invention;

FIG. 13 is a top plan view thereof;

FIG. 14 is a fragmentary cross-sectional view through one of the wheel supports thereof;

FIG. 15 is a fragmentary elevational view of the rear drive wheel of the ride of FIGS. 12 through 14; and

FIG. 16 is a side elevational view of one of the other supporting wheels of this embodiment.

Like characters of reference denote like parts throughout the several figures of the drawings. Referring generally to FIGS. 1 and 2, the amusement ride of one form of the present invention comprises broadly an elongated car of rigid construction designated generally by the reference numeral 10 in FIGS. 1 and 2. Car 10 is arcuate as viewed from above and is supported in a stable manner by front, rear and intermediate ground wheels 11, 12 and 13, respectively. A radius or distance arm 15 connects pivotally with the front portion of car 10 as at 16, FIG. 1, and is rotatably connected to a central anchorage member 17 as by means of a vertical bearing 18. Since the front end of car 10 undulates vertically during car operation, as will hereinafter appear, the inner end of radius or distance arm 15 is provided with a horizontal pivot member 20 to allow for such undulation.

In the example illustrated in FIGS. 1 and 2 the supporting or ground wheels 11 and 12 are mounted upon car 10 for eccentric rotation and are of different outer diameters so that the vertical movements imparted to car 10 by their eccentricities are out of phase with respect to each other. Means may also be provided for moving the central portion of car 10 alternately upwardly and downwardly in a manner which will presently appear. These up and down movements of the central portion of the car are also generally out of phase with respect to the front and rear undulations.

The foregoing suspension results in an arcuate car which travels in a circular path concentric with the arcuate form of the car and the out-of-phase undulations of the front, rear and middle part of the car produce a highly unusual serpentine effect. In fact, despite the fact that the car 10 is a single rigid unitary structure, without articulation of any kind, its visual effect in motion is that of a sinuously moving car arrangement.

In the embodiment of FIGS. 1 and 2 the wheels 11, 12 and 13 traverse a circular path which may be directly on the ground itself or may comprise a sheet metal surface

22. Furthermore, the wheels 11, 12 and 13 may comprise wheels having their peripheries formed to engage a monorail in tracking engagement, as in the embodiment of FIGS. 12 and 13.

In the general ride shown by way of example in FIGS. 1 through 11 the front and rear wheels 11 and 12 are merely non-driving or idler supporting wheels while the intermediate wheel 13 is arranged to be power driven, in a manner which will presently appear, to propel the car 10 about its circular orbit. The arcuate path defined by the ground wheels 11, 12 and 13 and the concentric radius or distance arm 15 in and of themselves produce a self-tracking ride arrangement without other guiding or restraining means. It is thus merely necessary to set the ride up on any flat surface without the usual trackways or similar guiding devices. However, if desired, a track and wheels guided thereby may be employed, as mentioned above.

In some instances the central ground wheel of the ride of the present form of the invention may likewise be eccentrically mounted to produce vertical undulations of this portion of the ride car. However, in the embodiments shown herein by way of example the vertical undulations of the central portion of the car are produced by other means which permit a greater vertical amplitude than could be attained, within reasonable practical limits, by merely mounting the central wheel eccentrically.

Furthermore, in another embodiment of the present invention, means are provided whereby the vertical undulations of the central portion of the car occur at a slower periodicity than the rotational speed of the central supporting wheel. This is particularly important where it is desired to operate the ride at a higher ground speed than could be tolerated if the vertical undulations of the middle part of the car were necessarily of the same frequency as the revolutions per minute of the central ground wheel.

These various factors cooperate intimately since the slower speed of undulation of the central portions of the ride car, in relation to the revolutions per minute of the associated ground wheel, in turn permits, in addition to faster ground movement, a much wider amplitude of vertical oscillation of this portion of the ride car than could be practiced if the periodicity of undulation of the central portion of the ride car were at a faster rate.

Reference will now be had to FIGS. 3 and 4 which depict one form of central ground wheel supporting and driving arrangement in conjunction with one form of means for producing vertical undulations of the adjacent medial portion of ride car 10. As there shown, ground wheel 13 is provided with a central drive shaft 25 which is journaled in bearings 26 and 27 which are fixed to a bracket structure 28.

This bracket structure 28 includes a pair of base rails 29 which extend generally in the direction of movement of car 10. At one end base rails 29 are provided with a horizontal bearing formation 30 which is rotatably mounted upon a shaft 31 which forms a fixed part of the structure of arcuate ride car 10. Thus ground wheel 13 and ride car 10 are mounted for free relative vertical movement by reason of pivotal movement of bearing 30 on fixed shaft 31.

A cam member 34 which in the present instance is merely an eccentric circular element is fixed to wheel drive shaft 25 and a rotatable follower 35 therefor is provided with a supporting shaft 36 carried between a pair of rails 37 which are a part of the fixed structure of ride car 10.

A driving motor for ground wheel 13 is designated 40 in FIG. 4 and has a belt and pulley driving connection 41 with the input shaft of a speed reducing gear assembly 42, the output shaft 43 of the latter being connected by a chain and sprocket driving connection 44 with the drive shaft 25 of ground wheel 13.

It will be seen from the foregoing that power operation of driving motor 40 rotates ground wheel 13 for driving rotation of ride car 10 about its circular pathway and also produces vertical oscillation of the central portion of ride car 10 by operation of cam 34 against the car-carried follower 35.

In the alternative or modified car driving and oscillating arrangement shown in FIGS. 5 and 6 the ride car is designated generally by the numeral 50. Car 50 is the same as ride car 10 referred to previously excepting as to details which are necessarily modified to cooperate with the alternative drive structure now being described. A central driving and supporting ground wheel designated 51 is the same in general as the driving and supporting wheel 13 previously described.

In the present modification ground wheel 51 is provided with a fixed central drive shaft 52 journaled in bearings 53 and 54 which are supported in a bracket framework 55 which is generally of the same type as the bracket framework 28 previously described. Bracket framework 55 includes a longitudinal base portion 56 terminating at one end in a transverse bearing 57 which is supported upon a fixed pivot shaft 58 which forms a part of the fixed structure of ride car 50, all generally as previously described.

An electric motor 60 has belt and pulley connection as at 61 with a speed reducing gear assembly 62 and the latter has chain and sprocket connection as at 63 with drive shaft 52 of ground wheel 51. A countershaft 65 is supported in bearings 66 and 67 which are likewise secured to the bracket framework 55. Shafts 52 and 65 carry cooperating sprockets designated 64 and 68, respectively, the sprockets 64 and 68 being connected by a driving chain 69. The sprocket 68 which is mounted upon countershaft 65 carries an eccentric pin 70 which in turn supports a rotatable V-pulley 71. V-pulley 71 bears against the underside of an angle bar 72 which is fixed at its opposite ends to the general framework of car 50.

From the foregoing it will be seen that rotation of sprocket 68, which is incident to driving rotation of ground wheel 51, moves the pulley 71 through a circular orbit in a vertical plane which produces vertical reciprocation of car 50 through the medium of angle bar 72. This vertical reciprocation, by reason of the speed reduction as between sprockets 64 and 68, is at a much slower amplitude than the revolutions per minute of ground wheel 51, in the present instance at a ratio of about 1 to 4. Thus, much higher ride speeds can be practiced without having a prohibitively fast vertical oscillation of the middle portion of the ride car.

If desired, either the front or rear wheels may be driven by the power unit, instead of the central wheel. In this case the two other wheels may be eccentrically mounted, or all three may be, as mentioned above.

The ride car of the present invention when in actual use comprises a single unitary rigid car structure. However, for ready portability, the ride car is actually manufactured in three sections and means are provided for connecting the three sections in rigid end-to-end relation in a manner which will now be described. Referring particularly to FIGS. 9 and 10, each ride car section comprises a pair of facing base channels which extend longitudinally along the opposite bottom edges of the car.

In FIGS. 9 and 10 the outer lower angle member is designated 80 and the outer side wall is designated 81, such outer side wall being welded along its lower edge to angle member 80 and along its upper edge to an upper marginal tubular member 82. A floor member 83 may be attached at its opposite longitudinal marginal portions to the lower face of the lower angle members in any desired manner as by means of bolts, one of which is designated 84 in FIG. 9.

Referring particularly to FIG. 10, a tubular member 82 at an end of each of the car sections has fixed thereto, as by welding or the like, a cylindrical plug member 86

provided with a tapered outer end portion which telescopes within the adjacent tubular member 82 of an abutting car section. The rigid alignment of the tubular members 82 which is thus established is maintained by means of a bolt and nut connection 87 which extends through a pair of cylindrical lugs 88 which are welded, respectively, to the undersides of the abutting tubular members 82 as at 89.

Similar cylindrical lug members 90 are welded into abutting angle members 80 adjacent to their meeting in aligned relation to receive a bolt and nut connection 91 for similarly securing the lower portions of the sections of car 10. Thus the simple securement or release of several ordinary bolt and nut connections effectively assembles or disassembles the car sections to permit ready shipment and portability and to provide a rigidly assembled unitary car structure which may be quickly erected when the ride is to be set up for use.

FIG. 7 and 8 depict in detail a novel leg-simulating link mechanism. A series of such leg-simulating mechanisms are shown in FIG. 2 and are there designated generally 100. Each leg action mechanism comprises an upper leg portion 101 which is freely rotatable on a shaft 102 fixed to project in any desired manner from ride car 10 along the lower portion of its external side wall. An outer leg element 103 is pivoted to the outer portion of leg portion 101 and has a depending end portion which is adaptable to come into engagement with the ground or other surface upon which the ride car 10 is operating. To this end the lower end of leg element 103 is, in the present instance, provided with an anti-friction roller 104.

An extension coil spring 105 is fixed at one end to car 10 and is attached at its other end to leg portion 101 in such manner that it exerts a counterclockwise rotational effect on leg portion 101, as viewed in FIGS. 7 and 8. The rotational pull of spring 105 is not sufficient to support or overcome the entire weight of leg portions 101 and 103 but is sufficient to hold the parts in the counterclockwise position illustrated in FIG. 7 when the lower end of leg element 103 is resting on the ground as there shown.

As ride car 10 raises in its undulating movement to the position shown in FIG. 8 and the supporting ground surface in effect recedes downwardly, the rotational pull of spring 105 is overcome to the extent that the leg elements 101 and 103 straighten to the more or less vertical position illustrated in FIG. 8. Upon further upward movement of car 10 the lower end of leg element 103, or its supporting roller 104, leaves the ground until a further lowering movement of car 10 when the lower end of leg element 103 re-engages the ground, effecting a simulated stepping movement.

Since the undulations of car 10 are unequal or out of phase along the length of the car, the flexing movements of the various leg-simulating assemblies 100 is not synchronized but is progressive in accordance with the progressive undulations of the several portions along the length of car 10. This produces, without any special driving or operating mechanism within the leg assemblies, other than the simple construction just described, an unusual and novel impression of animation which is highly important in amusement rides generally and which greatly enhances the attractiveness of the ride of the present invention.

The electrical energizing circuit for driving motor 40 is carried outwardly along arm 15 by means of a conductor designated 119 in FIG. 1.

In certain instances it will be found desirable to employ two ride cars operating on the same circular pathway instead of the single arcuate ride car thus far described. In such a case a second radius or distance arm 15 will extend in a diametrically opposite direction from radius or distance arm 15 which has been previously described and such a second arm 15 is indicated fragmentarily in dot and dash lines in FIG. 1.

Where two ride cars are operating over the same pathway with independent drive motor means for each some provision must be made to avoid collison between the two cars, it being impractical to attempt to exactly synchronize the operations of both cars. Means for assuring against end-to-end collision of the cars is shown fragmentarily in FIG. 11 where two radius or distance arms 15 are shown extending from the central anchoring structure.

As shown in FIG. 11 each radius arm 15 is provided adjacent its inner end with a micro-switch 120 and a spring arm 121 whose outer end is adapted to be pressed against the operating member of micro-switch 120 by pressure against the spring arm. Each of the arms 15 is likewise provided with a relatively rigid arcuate arm member 122 whose outer end is adjacent to the outer end of the opposite spring arm 121 but does not deflect the latter when the radius or distance arms 15 are properly spaced in an approximately diametral position.

When one of the two ride cars tends to approach the other, the rotation being counterclockwise as viewed in FIGS. 1 and 11, the outer end of its flexible arm 121 moves against the outer end of the opposed rigid arm 122, thus causing the end of the flexible arm to bear against the operating member of micro-switch 120 and thus interrupt the drive operating circuit of the approaching car to prevent its moving against the other car.

Reference will now be had to the embodiment of the present invention illustrated in FIGS. 12 through 16. In the form there shown the arcuate ride car of the present invention is mounted to travel about a circular trackway 130. The trackway may comprise conventional rail sections, structural I-beams or the like. It will be noted that in the embodiment of FIGS. 12 through 16 the trackway 130 comprises a circular monorail. Due to the arcuate extent of the car and the arcuate alinement of the wheels thereof which give the car stability, this single circular rail is sufficient to properly guide the car and support the same in a stable manner. Obviously, the construction of a monorail trackway is advantageous since it avoids the necessity for accurate lateral spacing which must be observed when multiple tracks are used. The car itself is designated generally by the numeral 131 and comprises an elongated rigid car assembly which is generally arcuate in extent, although in the present instance the car 131 is made up of a number of rigid end-to-end more or less rectangular car sections. The front section, in the present instance, is designated 132, the rear section is designated 133, and four intermediate sections are designated 134. The several car sections are secured end to end in a rigid manner but are preferably detached from each other for portability.

The assembled car 131 is supported by five ground wheels, the first four of which are idler wheels designated 135 and the rear wheel, in the present instance, is the drive wheel, designated 136. The non-driving wheels 135 are provided with self-contained resilient mountings, as shown in FIG. 16, each non-driving wheel 135 has a yoke 138 fixed to the bottom of a car section and a pair of arms 139 are pivoted at their medial points to yoke 138. Wheels 135 are mounted between the arms 139 at one end thereof and an extension coil spring 140 engages between the base of the yoke 138 and the opposite ends of the pair of arms 139.

In the present instance the driving wheel 136 is likewise supported by a fixed yoke member 142 and a pair of pivoted arms 143 but in this instance the opposite ends of the arms 143 have a relatively fixed but adjustable connection with the mounting 142 as by means of a turnbuckle connection 144. The turnbuckle 144 serves as an adjustment for a driving chain 145 which extends between a drive sprocket 146 and a mating sprocket 147 fixed to driving wheel 136.

A driving motor or gasoline engine 150 of any desired type may be provided for driving the ride and in the present instance motor 150 has suitable driving connection with a variable speed reducer 151, the drive sprocket 146 being carried by the output shaft of the latter.

A form of shooting or target arrangement is shown in conjunction with the present form of the invention although it is to be understood that this arrangement may also be used in conjunction with the earlier described embodiments. A pair of target panels 160 and 161 are provided which are in the form of arches extending across the track 130 at substantially diametrically opposed points.

As shown in connection with target panel 160, each of the target panels is provided with figures simulating space men or the like as at 162 and, as shown at the reverse of target panel 161 in FIG. 12, sounding and illuminating devices 163 and 164 are provided in association with the figures 162 which, upon electrical energization, provide illumination and sound effects which simulate the report and flash of the firearms of various kinds.

The sounding and illuminating devices of the target panels 160 and 161 are normally in open circuit condition and the sounding and illuminating circuits are adapted to be closed by a pair of circuit making and breaking devices 170 and 171 associated with the target panels 160 and 161, respectively. Circuit maker 170 has an operating arm 172 which is shown in its normally open circuit position and arm 172 engages along a rail 173 which extends along the bottom inner side of car assembly 131, following generally the polygonal contour thereof.

Referring to FIG. 13, as a car section 134 moves along from the position illustrated in FIG. 13 in a counterclockwise direction and as the mid-point of the car section reaches circuit maker 170, rail 173 exerts a camming effect against arm 172 to momentarily close the sounding and illuminating circuits of the target figures 162 of target panel 160.

Thus as each car section 134 passes through a predetermined zone in front of a target panel 160 or 161, the sounding and illuminating circuits of that target panel are energized to give the effect of shooting at the occupants of the particular car section.

The car sections themselves are provided with a plurality of firearm simulating devices 180 which may be universally mounted on the car sections where the occupants of the car can attempt to aim the firearm devices at the target figures.

The operation of circuit making device 171 in conjunction with cars approaching target panel 161 is the same as that previously described in connection with circuit making device 170 and target panel 160.

It is to be understood that the term "arcuate" as used herein in referring to the extent of the passenger car is meant to include the passenger car of FIG. 13 which is, strictly speaking, a multi-sided figure to simulate articulated cars but is a rigid unitary structure adapted to lie along and pursue a circular path of travel.

It will be noted from FIG. 1 that the arcuate extent of the wheel base of the end wheels 11 and 12 is approximately 120 degrees and that in the modification of FIG. 13 the arcuate extent of the wheel base of the end wheels is approximately 150 degrees. An arcuate extent of approximately 90 degrees or over will give the desired lateral stability to the car with only a single arcuately-alined row of supporting wheels. Since the object is to construct a ride which has the appearance and sensation of a car moving about a trackway, it is essential that the car be of some limited arcuate extent, as distinguished from a full circular merry-go-round type of passenger carrier. Accordingly, the arcuate car must have a definite front and rear end and a sufficient open space therebetween about the trackway to carry the impression for both observers and passengers of a finite car, as distinguished from a merry-go-round platform. Cars extending up to approximately 180 degrees successfully carry out the illusion and sensation of a finite car or train traversing a trackway, as distinguished from a full circular platform or support rotating on its own axis.

I claim:

1. In an amusement ride, a circular trackway, a rigid unitary passenger car of generally arcuate extent as viewed in plan, a plurality of at least three wheels along said car comprising a single row in arcuate alignment concentrically with and guided upon said circular trackway, the wheel base as defined by the front and rear wheel of said series being at least ninety degrees along said circular trackway whereby said front, rear and intermediate arcuately aligned wheels afford independent stable support for said car, and means for propelling said passenger car circularly about said trackway.

2. In an amusement ride, a circular trackway, a rigid unitary passenger car of generally arcuate extent as viewed in plan, a plurality of at least three wheels along said car comprising a single row in arcuate alignment concentrically with and guided upon said circular trackway, the wheel base as defined by the front and rear wheel of said series being at least ninety degrees along said circular trackway, whereby said front, rear and intermediate arcuately aligned wheels afford independent stable support for said car, means for propelling said passenger car circularly about said trackway, and independent yieldable means connecting between each wheel and said rigid car whereby the several wheels maintain ground engagement despite vertical deviations in the distances between various parts of said car and the underlying trackway.

3. In an amusement ride, a rigid unitary passenger car of generally arcuate extent as viewed in plan, a plurality of at least three supporting wheels along said car comprising a single row in arcuate alignment, means guiding said car along the line of said arcuate extent, the wheel base as defined by the front and rear wheel of said series being at least ninety degrees along said arcuate extent whereby said front, rear and intermediate arcuately aligned wheels afford independent stable support for said car, and means for propelling said passenger car about said line of arcuate extent.

4. In an amusement ride, a rigid unitary passenger car of generally arcuate extent as viewed in plan, a plurality of at least three supporting wheels along said car comprising a single row in arcuate alignment, means guiding said car along the line of said arcuate extent, the wheel base as defined by the front and rear wheel of said series being at least ninety degrees along said arcuate extent whereby said front, rear and intermediate arcuately aligned wheels afford independent stable support for said car, means for propelling said passenger car about said line of arcuate extent, and independent yieldable means connecting between each wheel and said car whereby the several wheels maintain ground contact despite ground surface irregularities and the like.

5. In an amusement ride, a circular monorail, a rigid unitary passenger car of generally arcuate extent as viewed in plan, a plurality of at least three wheels along said car comprising a single row in arcuate alignment concentrically with and guided upon said monorail, the wheel base as defined by the front and rear wheel of said series being at least ninety degrees along said monorail whereby said front, rear and intermediate wheels afford stable support for said car, and means for propelling said passenger car circularly about said monorail.

6. In an amusement ride, a circular pathway, a rigid unitary passenger car of generally arcuate extent as viewed in plan, a plurality of at least three wheels along said car comprising a single row in arcuate alignment concentrically with and guided upon said circular pathway, the wheel base as defined by the front and rear wheel of said series being at least ninety degrees along said circular pathway, and means for propelling said passenger car circularly about said pathway, said front and rear wheels being eccentrically mounted to raise and

lower the end portions of the car during passage thereof about said pathway.

7. In an amusement ride, a circular pathway, a rigid unitary passenger car of generally arcuate extent as viewed in plan, a plurality of at least three wheels along said car comprising a single row in arcuate alignment concentrically with and guided upon said circular pathway, the wheel base as defined by the front and rear wheel of said series being at least ninety degrees along said circular pathway, and means for propelling said passenger car circularly about said pathway, one of said wheels being eccentrically mounted to alternately raise and lower the car portion supported thereby.

8. In an amusement ride, a circular pathway, a rigid unitary passenger car of generally arcuate extent as viewed in plan, a plurality of at least three wheels along said car comprising a single row in arcuate alignment concentrically with and guided upon said circular pathway, the wheel base as defined by the front and rear wheel of said series being at least ninety degrees along said circular pathway, and means for propelling said passenger car circularly about said pathway, one of said wheels being eccentrically mounted to alternately raise and lower the car portion supported thereby and another

of said wheels being of a different diameter from said one wheel and eccentrically mounted to alternately raise and lower the car portion supported thereby out of synchronism with the raising and lowering of the first mentioned car portion.

9. In an amusement ride, a circular pathway, a rigid unitary passenger car of generally arcuate extent as viewed in plan, three ground-engaging wheels along said car comprising a single row in arcuate alignment concentrically with said circular pathway, the wheel base as defined by the front and rear wheel of said series being at least ninety degrees along said circular pathway, and power means connecting with one of said wheels for propelling said passenger car circularly about said pathway, the other two of said three wheels being eccentrically mounted to raise and lower the adjacent portions of the car during passage thereof about said pathway.

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