July 30, 1940. E. A. ZEBULSKE 2,209,550

AMUSEMENT RIDE

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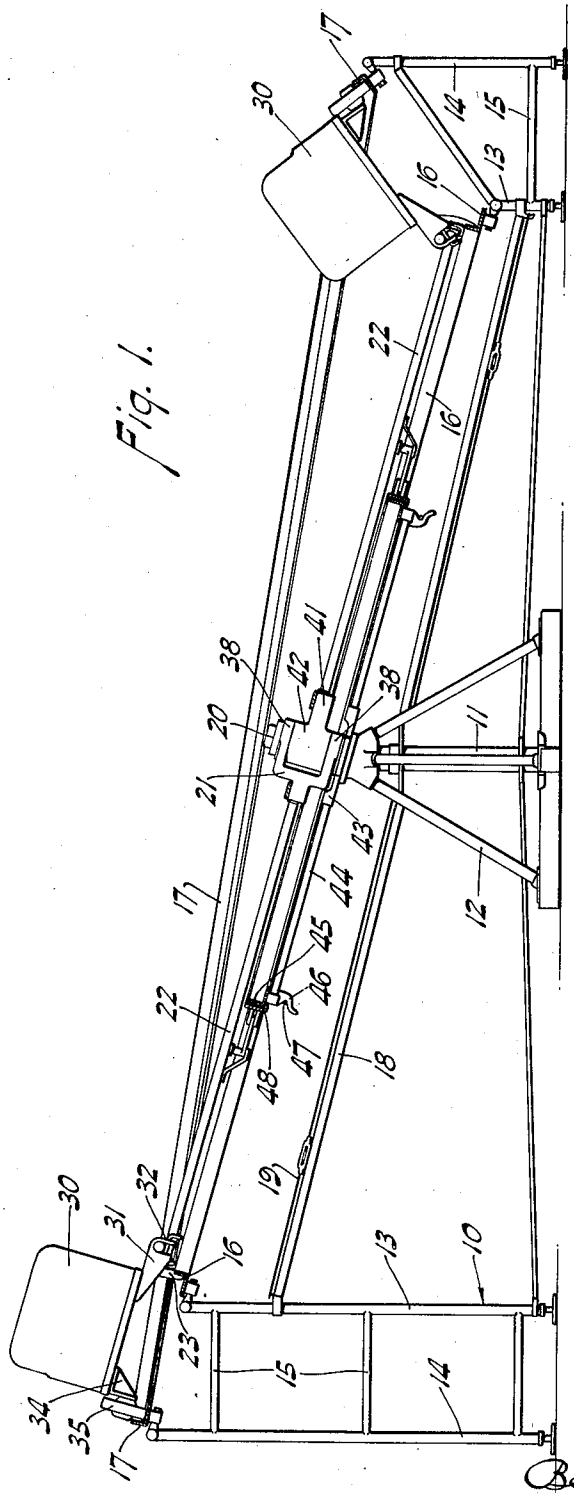

Fig. 1.

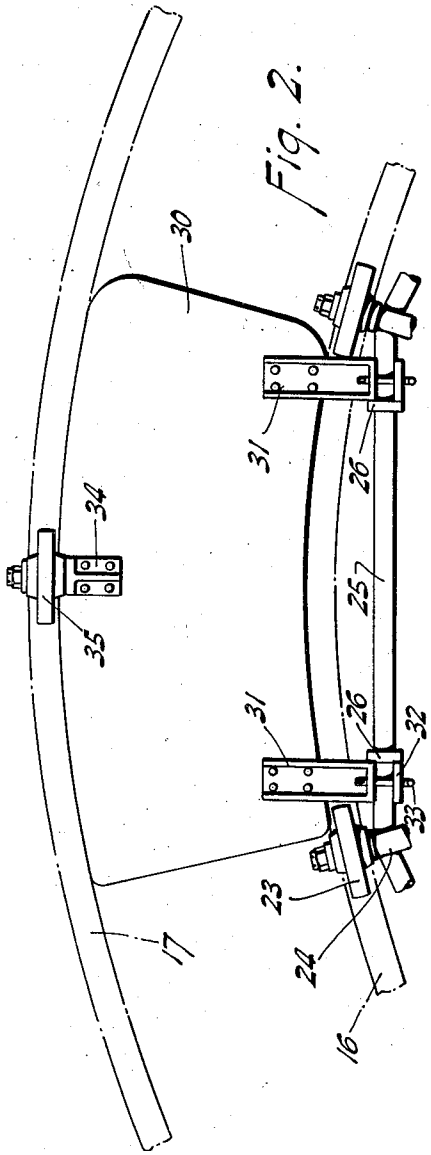

Fig. 2.

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Fig. 3.

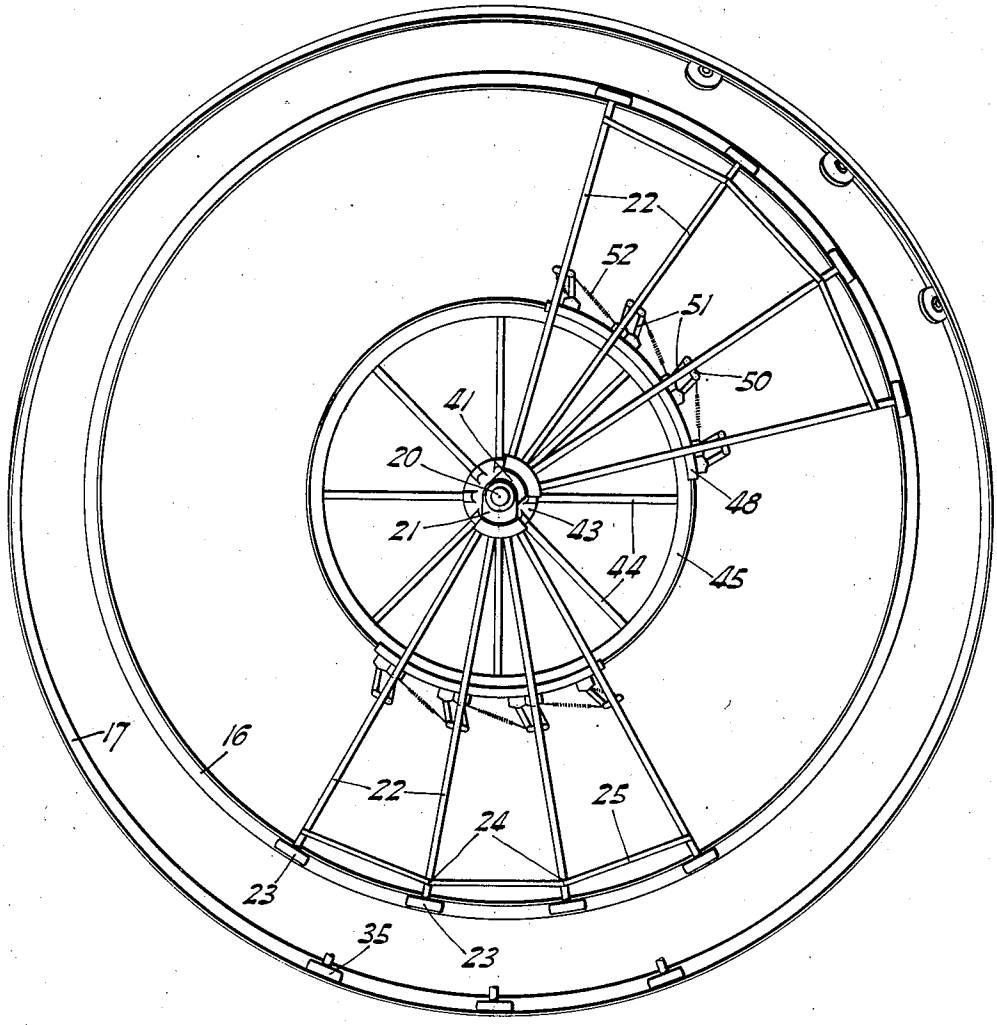

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Fig. 6.

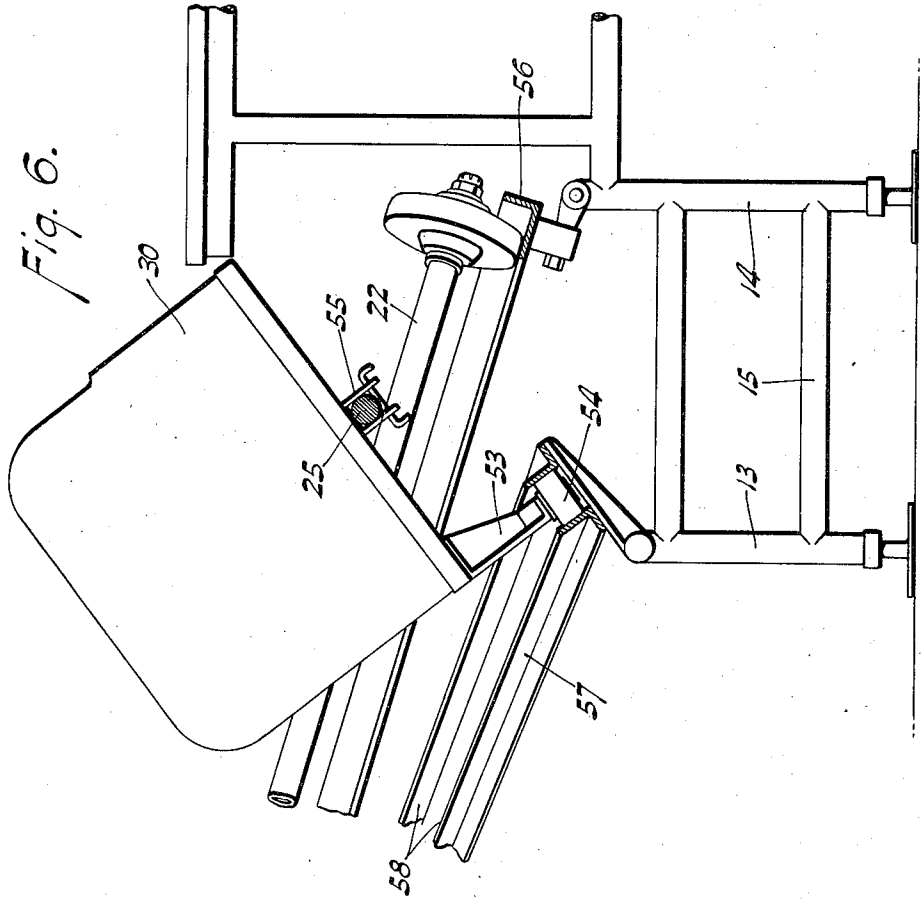


Fig. 4.

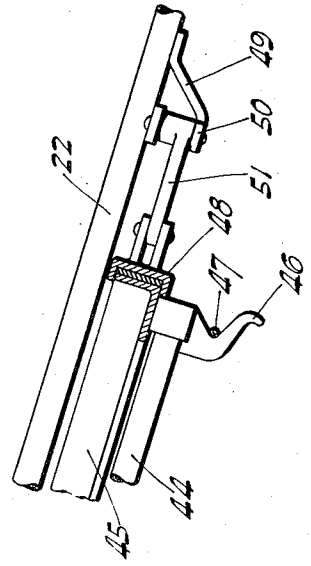
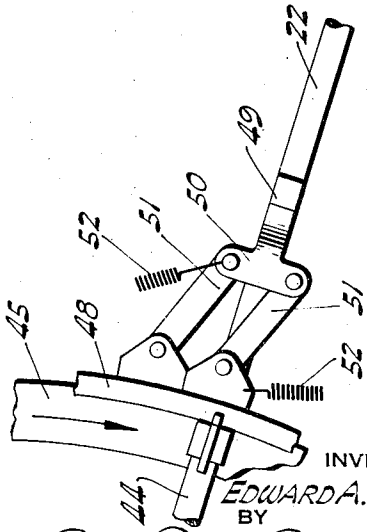


Fig. 5.



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UNITED STATES PATENT OFFICE

2,209,550

AMUSEMENT RIDE

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Application August 29, 1939, Serial No. 292,441

5 Claims. (Cl. 272—51)

This invention relates to improvements in an amusement device known as a "roundabout" and suitable for use at carnivals and amusement parks and the like. More particularly it relates to such a device in which one or more cars rotate in a circle around a common center, the plane of the circle being inclined at an angle to the horizontal.

In devices of this type it has been common to have the cars rotate in such manner that they are at a constant angle to the plane of the circle in which they rotate. Ordinarily this angle is at right angles to such plane. With this construction, when the car is at the top of its travel, that is, at the top of the circle, the car leans inwardly, which creates a force in an inward direction counteracting to a greater or lesser extent the centrifugal force which tends to throw the car and the passengers outwardly. At the bottom of the circle, however, both car and passengers are leaning outwardly, which accentuates the centrifugal force and gives the passengers a feeling that they may be thrown out of the car.

It has also been considered desirable to impart variable speeds to the passenger carriers in such a device. Such proposals have been impractical because, with such an arrangement, the centrifugal force acting on the passengers is even greater than normal at those points where the passenger carriers are traveling at their fastest.

It is an object of this invention to construct a roundabout of the class described in such a fashion that the passengers are comfortable at all times and have no tendency to be thrown outward. This permits the utilization of greater operating speeds for the device with safety to the passengers.

It is a further object to accomplish this result by a simple device which maintains the cars at all times in a position whereby the centrifugal force upon the passengers is adequately counteracted. It is still another object to provide an improved means for imparting variable speed to the passenger carriers in such a device. Other objects will appear hereinafter.

These objects are accomplished by the invention herein described which will be more readily understood by reference to the appended drawings.

In the drawings:

Fig. 1 is a side view of one form of the device, partly in elevation and partly in cross section;

Fig. 2 is a bottom, plan view of a passenger carrier employed in the device;

Fig. 3 is a plan view of the entire apparatus shown in Fig. 1, the passenger carriers being omitted for the sake of clearness in illustration;

Fig. 4 is an enlarged side view of the clutch mechanism employed in the apparatus of Fig. 1;

Fig. 5 is a plan view of the clutch mechanism shown in Fig. 4; and

Fig. 6 is an enlarged, side view of an alternative form of device.

Referring to Fig. 1, the device generally is located on a frame 10 which consists of a central column 11 held in place by lateral braces 12, a plurality of circumferential supporting columns 13 located at a constant distance from central column 11, and a second set of circumferential columns 14 located outwardly from columns 13 and connected thereto by lateral braces 15. The columns 13 and 14 are highest on one side of the column 11 and lowest on the other, while the intermediate columns 13 and 14 graduate in height from the highest to the lowest. The columns 13 and 14 are kept in a fixed position with regard to central column 11 by means of rods 18 and braces 19.

Rigidly attached to the inner columns 13 is a circular track 16 which is preferably located in a single plane, at an angle inclined substantially to the horizonal. Rigidly attached to the outer columns 14 is a second circular track 17 located in a plane less inclined to the horizontal than that of track 16, as shown in Fig. 1. By this means it is seen that any vehicle traveling on the two tracks as a unit will be inclined at a substantial angle to the plane of track 16 at the bottom of the track, while at the top it is either inclined not at all or at a much lesser angle. Therefore, centrifugal force, which is much greater at the bottom than at the top, is adequately compensated for at all points.

Located at the center of the device and adjacent the top of the column 11 is a member 21 freely rotatating around a fixed shaft 20. To the member 21 are attached a number of radially extending sweeps 22. These sweeps are preferably rigidly attached to the member 21 and at their outer ends are provided with rollers or wheels 23 which ride on the track 16.

Somewhat inwardly from the outer end of each sweep 22 is a joint 24 to which is attached a tie member 25, circular in cross section, and extending to a similar joint on the next adjacent sweep. These tie members 25 serve to keep the sweeps rigidly in position and apart from each other and serve also as supports for the cars, which will be described next. Fitted on each tie member 25 are collars 26, located near each end

of the tie member, for the purpose hereinafter described.

On each tie member 25 is positioned a passenger carrier 30 which can rotate about the tie members 25 as an axis. Each car is held in place on its tie member by means of brackets 31 having a depending flange 32 forming a slot into which the tie member 25 fits. These brackets are attached to the under side of the car and are located adjacent each end of the car, fitting snugly over the tie member 25 between the collars 26, the collars preventing the cars from sliding longitudinally. The slot formed by the bracket and flange 32 is preferably curved to fit the contour of the tie member 25. The tie member is positively held within the bracket by means of a pin 33. On its outer edge the car 30 is provided with a single bracket 34 to which is attached a freely rotating wheel 35 riding on the second circular track 17. The car is thus supported at three points; namely, the bracket 34, and the two brackets 31.

In Fig. 6 is shown an alternative form of arrangement of the two tracks. In this form the sweeps 22 ride on the outer track 56. A bracket 55 (corresponding to bracket 31) is located toward the center of each end of the underside of the passenger carrier 30. These are held in place on tie member 25 by means of pins and collars in a fashion similar to that shown in Fig. 2. Although the center of gravity of the passenger carrier 30 is thus somewhat inward of bracket 55, the effect of centrifugal force during the operation of the device is to cause most of the weight of the passenger carrier 30 to rest on the brackets 55.

The inner track 57 in this case is designed to prevent movement in either direction. A wheel 54 on a bracket 53 rides between the two flanges 58 of the track 57.

Referring again to Fig. 1, the passenger carriers may be driven in two groups, one group associated through its sweeps with freely rotating member 21 and the second group associated through its sweeps 22 with a second member 41, also freely rotating around shaft 20. Member 21 is provided with two extending arms 38 through holes in which the shaft 20 extends. Member 41 is provided with a single arm 42 fitting between arms 38 and also provided with a hole through which shaft 20 extends. In this way the two members 21 and 41 can rotate independently of each other, within the limits that the passenger carriers 30 of the two groups do not collide with each other.

By the arrangement hereinafter described, the two groups of passenger carriers are driven at different rates of speed. The group of cars at the bottom of the inclined circle will travel at a higher rate of speed than those at the top. Due to the fact that the carriers are constantly traveling around the circle, each of the two groups will alternately travel the fastest, so that the average speed of the two groups is the same. Thus neither group will ever collide with the other group, provided the difference in speed at the top and at the bottom is properly chosen. In this arrangement, in order to provide for the greater centrifugal force at the bottom than at the top of the inclined circle, the passenger carriers are maintained at a greater angle to the horizontal at the bottom than at the top, as clearly shown in Fig. 1.

The two groups of carriers are driven at different rates of speed by a special form of clutch located between the driving mechanism and the driven mechanism. The driving mechanism comprises a member 43 also freely rotatable on shaft 20. Rigidly attached to this member are radially extending spokes 44, attached at their outer ends to a circumferential member or wheel 45. Depending from the under side of wheel 45 are a plurality of hooks 46 provided with V-shaped notches in which ride a driving cable 47. The driving cable is driven by any suitable sort of prime mover (not shown). The outer surface of the wheel 45 frictionally engages with shoes 48 which in turn are attached, in the manner hereinafter described, to the sweeps 22.

To each sweep 22 is attached a bracket 49 provided with a cross-arm 50. At each end of the cross-arm 50 there is attached a link 51, extending parallel to each other and each attached at its opposite end to the shoe 48. Also attached to the shoe 48 is a light tension spring 52 extending to the cross-arm 50 of the next adjacent sweep. The links 51 are of such a length that, when there is frictional contact between wheel 45 and shoe 48, links 51 will extend at an angle therefrom. The direction of this angle is such that the sweeps 22 are always in advance of their corresponding shoes 48. This is shown in Fig. 5, where the direction of rotation is indicated by an arrow.

In operation, initial contact between the shoe 48 and the wheel 45 is secured by means of the spring 52. As the sweeps and carriers are moved on the upward side of the circle this contact tends to become more secure, due to the weight of the sweeps and carriers, which exert a moment of force inwardly against the wheel 45. This position can be visualized by turning the drawing (Fig. 5) one-quarter turn counterclockwise, so that the left-hand margin of the page becomes the bottom. As the sweeps and carriers approach and reach the downward side of the circle (visualized by turning the drawing, Fig. 5, one-quarter turn clockwise, so that the right-hand margin of the page becomes the bottom), the weight of sweeps and carriers no longer remains effective. In this position, in fact, the weight of the sweeps and carriers, together with centrifugal force, pulls shoe 48 away from wheel 45 against the slight tension of the spring 52. Thus the carriers and sweeps are allowed to travel faster than wheel 45 until their maximum speed is attained at the bottom of the circle. As the sweeps and carriers travel on the upward side and the speed of sweeps and carriers drops to that of wheel 45, contact between shoe 48 and wheel 45 is again established, and the cycle is repeated.

It has been found that the most practical arrangement with this variable speed travel is to have the carriers in two groups. A single group, however, can be operated equally well, although the full benefits of the device will not be realized thus. In addition, more than two groups can be accommodated provided the apparatus is constructed on a sufficiently large scale.

As many other modifications obviously may be made, the invention is not intended to be limited except as defined by the appended claims.

I claim:

1. An amusement device comprising an inner circular track located in a plane substantially inclined to the horizontal, an outer circular track located in a plane less inclined to the horizontal than said inner circular track, and a passenger carrier traveling on said tracks, the inclination of said two tracks to each other being such that

said passenger carrier is at all times at an angle inwardly inclined to the vertical.

2. An amusement device comprising an inner circular track located in a plane substantially inclined to the horizontal, an outer circular track located in a plane less inclined to the horizontal than said inner circular track, a plurality of sweeps extending substantially from a common center, wheels on said sweeps traveling on one of said tracks, and a passenger carrier attached to said traveling sweeps and also traveling on the other of said tracks, the inclination of said two tracks to each other being such that said passenger carrier is at all times at an angle inwardly inclined to the vertical.

3. An amusement device comprising an inner circular track located in a plane substantially inclined to the horizontal, an outer circular track located in a plane less inclined to the horizontal than said inner circular track, a plurality of sweeps extending substantially from a common center, tie members connecting said sweeps, wheels on said sweeps traveling on one of said tracks, and a passenger carrier attached to said tie members and also traveling on the other of said tracks, the inclination of said two tracks to each other being such that said passenger carrier is at all times at an angle inwardly inclined to the vertical.

4. An amusement device comprising an inner circular track located in a plane substantially inclined to the horizontal, an outer circular track located in a plane less inclined to the horizontal than said inner circular track, a passenger carrier traveling on said tracks, the inclination of said two tracks to each other being such that the angle of inclination inwardly to the vertical of said passenger carrier increases towards the bottommost point of said tracks and decreases towards the topmost point of said tracks, and means for causing said passenger carrier to travel at a speed increasing towards the bottommost point of said track and decreasing towards the topmost point of said track.

5. An amusement device comprising an inner circular track located in a plane substantially inclined to the horizontal, an outer circular track located in a plane less inclined to the horizontal than said inner circular track, and a passenger carrier traveling on said tracks, the inclination of said two tracks to each other being such that the angle of inclination inwardly to the vertical of said passenger carrier increases towards the bottommost point of said tracks and decreases towards the topmost point of said tracks.

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