

July 10, 1923.

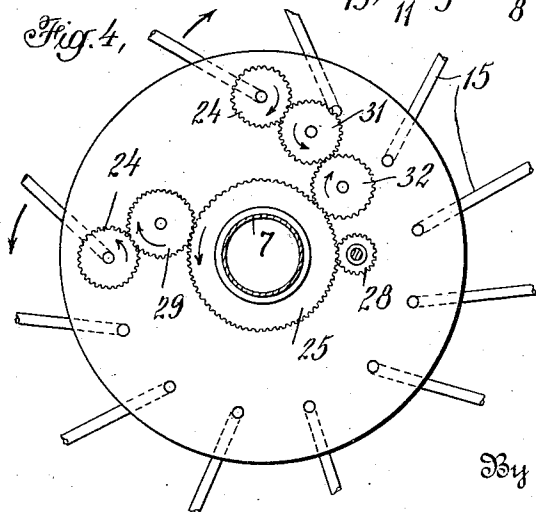
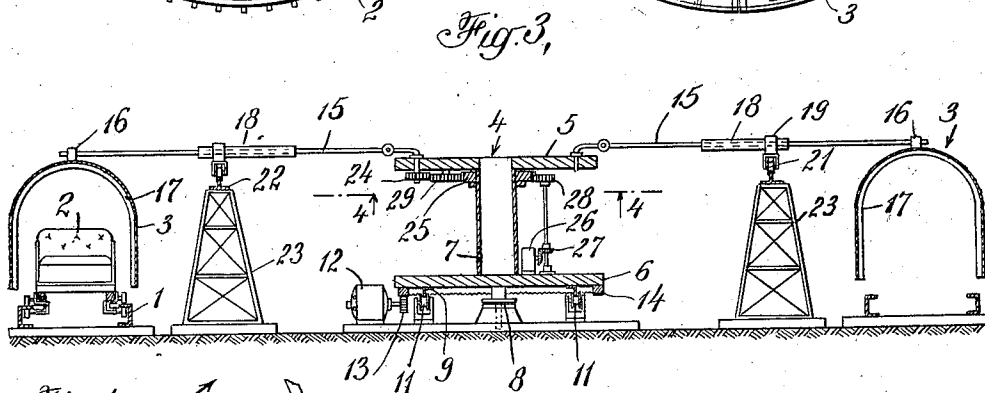
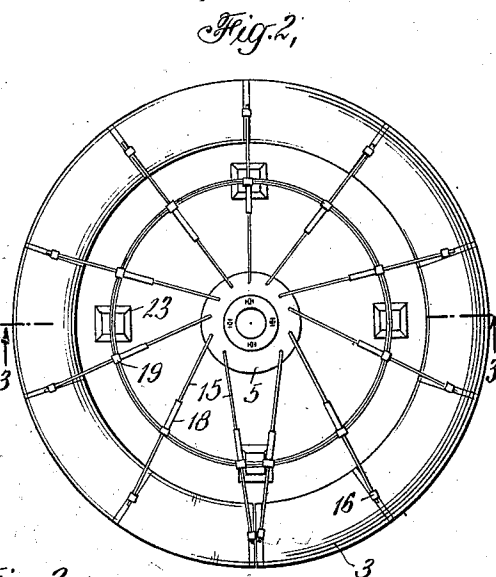
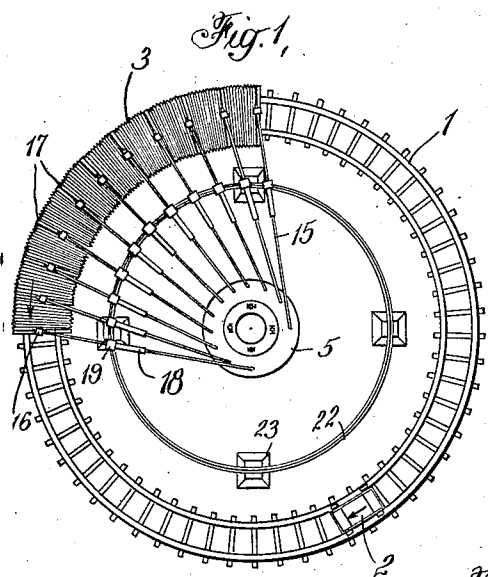
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AMUSEMENT APPARATUS

Filed Dec. 3, 1921

5 Sheets-Sheet 1



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Fig. 5

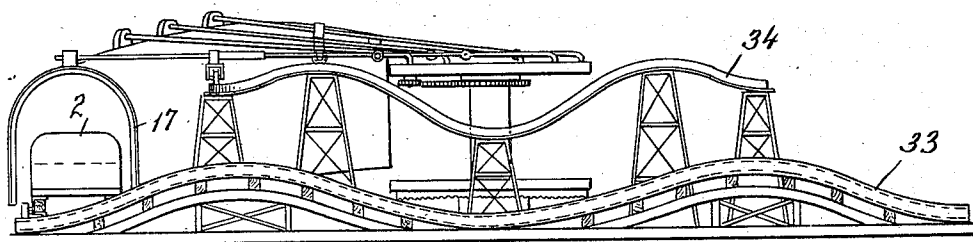


Fig. 6

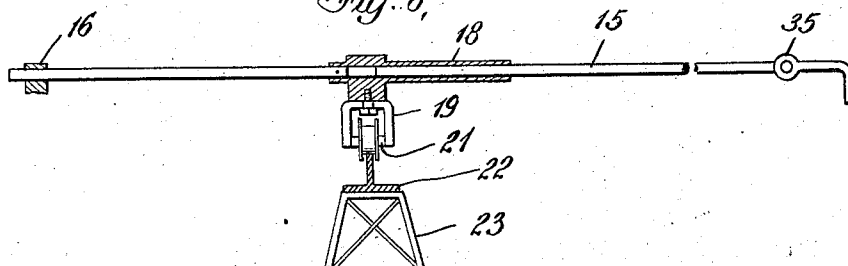
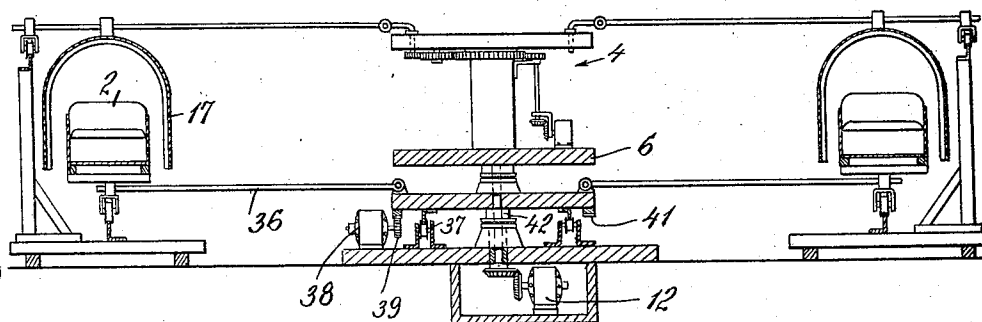


Fig. 7



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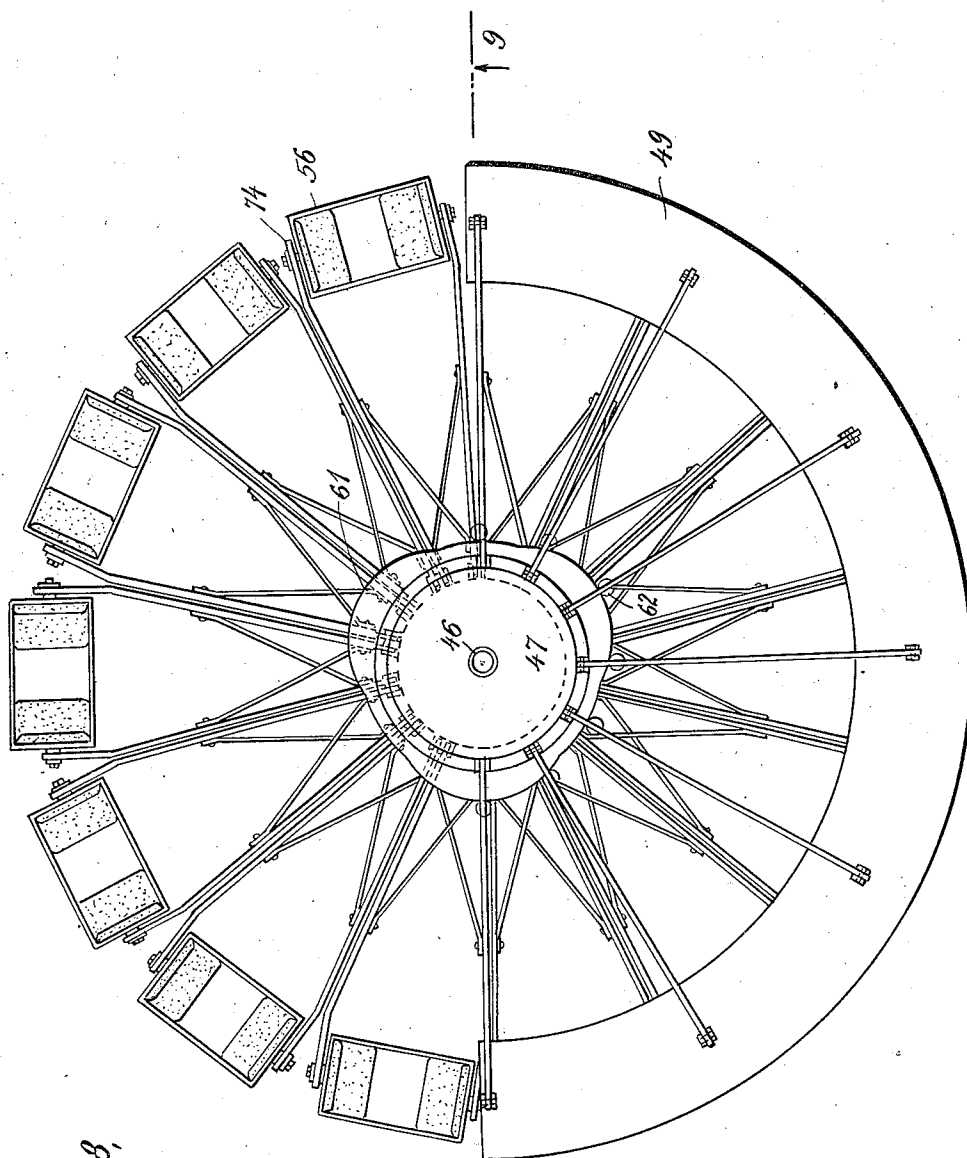


Fig. 8.

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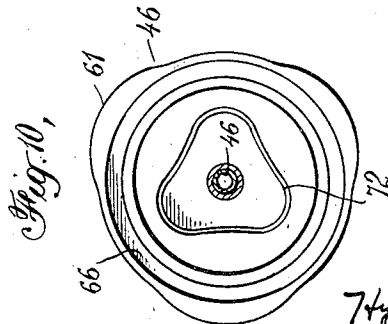
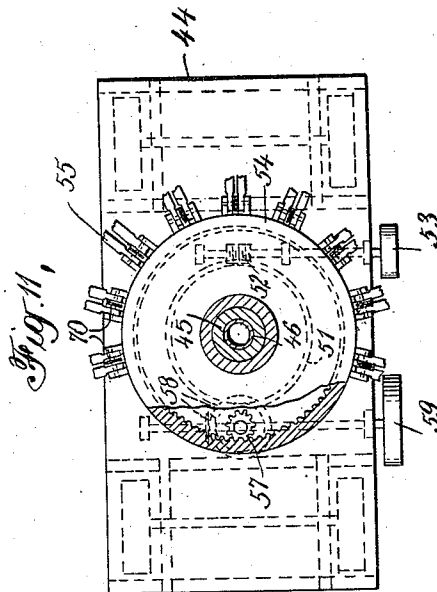
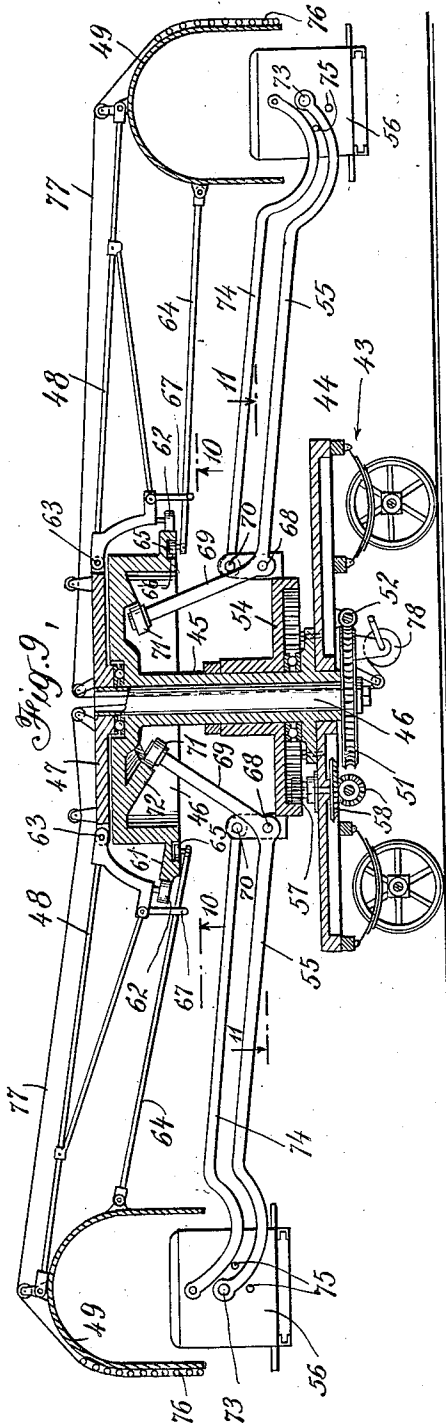
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Fig. 12,

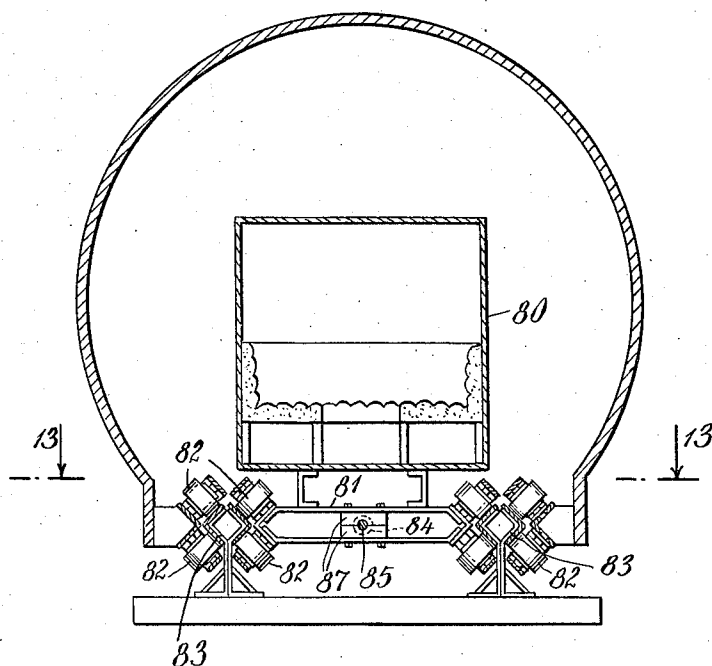
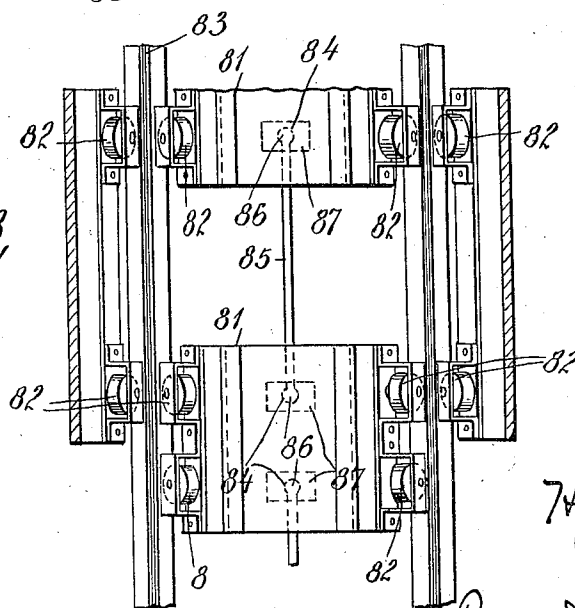


Fig. 13,



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UNITED STATES PATENT OFFICE.

HYLA FREDERICK MAYNES, OF GAINES, PENNSYLVANIA.

AMUSEMENT APPARATUS.

Application filed December 3, 1921. Serial No. 519,585.

To all whom it may concern:

Be it known that I, Hyla F. Maynes, a citizen of the United States of America, residing at Gaines, in the county of Tioga, State of Pennsylvania, have invented certain new and useful Improvements in Amusement Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to amusement apparatus of the general type disclosed in my U. S. Patent No. 1,397,009, November 15, 1921, in which an illusory sense of speed is secured by passing a movable tunnel over passenger-carrying cars in a direction opposite to that in which the cars themselves are moving. Various effects can be obtained by varying the relative movement of cars and tunnels.

It is an object of the present invention to provide certain improved means for supporting and operating both tunnel and cars. Thus in the specific embodiments of the invention shown in the patent, both cars and tunnel run upon trackways. According to the present invention means are provided for moving the tunnel alone or both tunnel and cars by means radiating from a central point. It is a further object of this invention to provide novel means for collapsing the tunnel, and raising its sides so that access may be had to the cars. It is a further object of the invention to provide new means for mounting cars or a movable tunnel upon a trackway, so that they can attain high speeds and yet be free from the danger of jumping the trackway, either laterally or vertically.

Certain preferred embodiments of the invention are disclosed in the accompanying drawings and are described in the following description. In these drawings Fig. 1 is a plan view of an apparatus constructed in accordance with this invention showing a trackway, cars upon the trackway and the movable tunnel in collapsed condition; Fig. 2 is a plan view of the same apparatus with the tunnel extended to completely cover the trackway and enclose the cars; Fig. 3 is a vertical section on an enlarged scale taken on line 3—3 of Fig. 2; Fig. 4 is a fragmentary view taken along line 4—4 of Fig. 3 and showing on still a larger scale the

mechanism whereby the tunnel is collapsed; Fig. 5 is a view, partly in section, of a modified form of device in which both cars and tunnel pursue an undulating course; Fig. 6 is a detail view of one of the radiating rods which impart movement to the tunnel and operate to collapse and extend it; Fig. 7 is a vertical section similar to Fig. 3 of a still further modified form in which the cars, although running upon a trackway are moved by means of radial arms extending from a central point; Fig. 8 is a plan view with the tunnel partly broken away showing another modification in which both tunnel and cars are not only operated from a central point but are also supported by arms radiating from that point; Fig. 9 is a vertical section taken along line 9—9 of Fig. 8; Fig. 10 is a detail view taken on line 10—10 of Fig. 9 and showing the cams which impart to both tunnel and cars of Fig. 8 an undulating movement; Fig. 11 is a fragmentary section taken along line 11—11 of Fig. 9; Fig. 12 is a vertical section through a modified form of device in which both tunnel and cars run upon a trackway and showing novel means for preventing either from leaving the trackway; and Fig. 13 is a section taken along line 13—13 of Fig. 12.

Referring first to Figs. 1, 2, 3, 4 and 6, 1 designates an annular trackway upon which a car or cars 2 are designed to run, motive power being supplied in any desired manner, preferably by means of a motor situated on the car and not shown. A collapsible tunnel 3 is mounted to cover the trackway and enclose the cars. This tunnel is made up of a series of U-shaped supporting frames 17 supporting the walls of the tunnel which are preferably made of some heavy fabric designed to be collapsed and expanded after the manner of bellows.

This tunnel is supported, moved and collapsed as follows: At the center of the annular trackway 1 is situated a turntable 4. This turntable comprises upper and lower platforms 5 and 6 respectively which are connected by means of a central shaft 7. The whole turntable is designed to rotate about a central bearing 8 and is supported by means of an annular rail 9 situated upon the lower face of platform 6 and running upon a series of rollers 11. Rotation of the turntable is effected by means of a motor 12 to the shaft of which is connected a pin-

ion 13 engaging an annular rack 14 on the lower face of the platform 6.

Radiating from the upper platform 5 are a series of rods or adjustable arms 15, the outer ends of which slidably engage apertured blocks 16 which are fastened to the U-shaped supports 17 which constitute the rigid and shape-defining members of the tunnel. The rods 15 are made in two parts connected by means of sleeves 18. The outer part is rigidly secured to one end of this sleeve while the inner part is slidably mounted therein for a purpose which will be described later. Secured to each sleeve is a bracket 19 in which a roller 21 is journaled. This roller is designed to run upon an annular trackway 22 within and concentric with the trackway 1 supported upon a series of standards 23.

The inner ends of rods 15 are turned downwardly and are journaled within the platform 5, as shown in Figs. 3 and 4. Secured to the lower ends of these extensions of the two rods which support the ends of the tunnel are pinions 24. Rotatably mounted upon the shaft 7 is a gear 25 driven by a motor 26 on platform 6 through beveled pinions 27 and pinion 28. One of the pinions 24 is operatively connected to gear 25 by means of one intermediate pinion 29, while the other pinion 24 is connected to the gear 25 by means of two intermediate pinions 31 and 32. By means of the train of gears just described and clearly shown in Fig. 4, counter-clockwise rotation of gear 25 results in moving the arms 15 to collapse the tunnel while clockwise rotation of gear 25 has the opposite result.

The operation of this form of the device is as follows: Supposing that the apparatus is in the condition shown in Fig. 1 with the entire tunnel collapsed and occupying little less than one quadrant of the entire trackway. The trackway is then open and the passengers may enter the cars without difficulty. The cars having been filled are started around the trackway. The motor 26 is then started and the tunnel extended until its two ends meet, as shown in Fig. 2. This condition having been attained, motor 26 is stopped. (Automatic means may be employed for shutting off the current when the tunnel is completely extended.) Rotation of the tunnel as a whole is then effected by means of motor 12. The necessity for making the arms 15 in two parts and slidably connected by means of a sleeve will be evident from a comparison of Figs. 1 and 2. The distance between the trackway 22 and the inner end of the rods 15 varies with the condition of the tunnel and some means for allowing for this change must be provided. The sleeve 18 permits the necessary elongation and contraction.

The form of device shown in Fig. 5 is

identical with that just described, with the exception that the flat trackway 1 is replaced by an undulating trackway 33 and the annular trackway 22 by an undulating trackway 34, the undulations of the two being coincident so that as the cars rise the tunnel likewise goes up with them. This form has necessitated a placing of joints 35 within rods 15.

In the form shown in Fig. 7 the tunnel is operated precisely as described above. Here, however, the cars instead of being propelled by their own power are moved by means of radial arms 36 secured to a second turntable 37 and driven by means of a motor 38, pinion 39 and annular rack 41. In this form of device the motor 12 which rotates the tunnel is placed beneath the turntable 37 and is connected to the turntable 4 by means of a shaft 42 extending through the turntable 37.

Referring now to Figs. 8, 9, 10, and 11, a form of the device is shown in which both tunnel and cars are supported from and operated by a centrally located mechanism, the whole being supported upon a car 43. Secured to the platform 44 of this car is a sleeve 45, at the upper end of which is secured a cam member 46 to be described in detail later. Extending through this sleeve 45 is a hollow shaft 46, to the upper end of which is fixed a platform 47. From this platform a series of radial arms 48 extend and support the tunnel 49. Secured to the lower end of shaft 46 is a worm wheel 51 rotated by means of a worm 52 which receives its power from a pulley 53, said pulley and pulley 59 noted below being driven by any usual means.

Journaled about the lower end of sleeve 45 is an annular rack member 54 from which radiate a series of trussed arms 55 which support the cars 56. Rotation of the cars is effected by means of the pinion 57 meshing with rack 54 and driven through beveled pinions 58 and pulley 59.

By means of this device it is possible to dispense with all trackways and support and operate both tunnel and cars from a central point. As in the other device the tunnel could be moved in one direction and the cars in another. The apparatus as shown in Fig. 9 is provided with means for doing more than this. It is provided with means for causing both tunnel and cars to undulate as in the device shown in Fig. 5, but without the use of trackways.

This undulation is produced as follows: The periphery of cam member 46 is a cam having three raised portions 61. Secured to extensions of arms 48 are rollers 62 designed to contact with the periphery of cam member 46 varying the movement of the tunnel. Thus, as the tunnel revolves about the central axis the rollers 62 ride up upon portions 61 and cause an undulation in the tunnel

movement, the arms 48 being pivoted to the platform 47 at 63. In order to maintain the side walls of the tunnel vertical during this undulation the outer ends of arms 48 are also pivoted to the tunnel and a rod 64 secured to the inner side of the tunnel and provided at its inner end with a roller 65 which travels in an annular groove 66 in cam member 46. This rod 64 is slidably supported by means of a stirrup 67 depending from the extension on arm 48. By these means the tunnel walls are maintained vertical as it rises and falls.

The cam member 46 also causes the cars to undulate. The arms 55 which support the cars and are pivoted at 68 to the annular rack 54 are extended upwardly as at 69 and provided at their inner extremities with rollers 71 which make contact with a cam 72. This cam, as shown in Figs. 9 and 10, is designed to complement the peripheral cam of member 46, so that as the rollers 62 ride outwardly upon cam surfaces 61 the rollers 71 move inwardly upon the flattened surfaces of cam 72. Both tunnel and cars are therefore raised and lowered at the same point and at the same time. In order to maintain the cars in a vertical position during this undulatory movement they are pivotally supported at 73 to the arms 55 and a second parallel arm 74 likewise pivoted to the car at one end and to a rigid arm 70 carried by member 54 at the other. In order to prevent the tipping of the cars at any time should link 74 become disengaged, either during movement or during loading and unloading, pins 75 are provided which would bear against arms 55 and serve as safety stops. They do not, however, interfere with the undulatory movement of the cars.

In order to remove the tunnel to enable the passengers to enter and leave the cars, means are provided for raising the outer side walls. The outer side walls of the tunnel 49 are reinforced by a series of annular rings 76. By means of a cable 77 operated by means of a drum or series of drums 78 mounted on the lower face of worm wheel 51, it is possible to raise and lower these side walls when occasion demands it.

In Figs. 12 and 13 novel means are shown for preventing either a car or tunnel from leaving the trackway, even at high speeds. A car 80 is shown, provided with a truck 81. The wheels 82 are in pairs and are mounted so that their axes are at an angle to each other. The rails 83 of the trackway are shown as square in cross section and mounted upon a diagram, so that the wheels run upon the upper and lower inclined faces. The wheels of the trucks supporting the tunnel are similarly mounted and ride upon the outer inclined faces of the rail. It is clear that such a car and such a tunnel can attain high speeds and yet make relatively

short curves both laterally and vertically without danger of jumping the track. All prior constructions designed to attain this end have employed three wheels in a set, one to support the car, one to prevent lateral displacement and one to prevent vertical displacement. By the device shown I have accomplished this same result by the use of only two wheels.

In these Figs. 12 and 13 I have also shown a novel coupling device. The forward and rearward cross bars of the truck are provided with sockets 84 comprising two separable blocks 87 designed to seat one end of a link 85, this link being provided at each end with a ball 86. Such a joint permits perfect flexibility of movement, is simple and safe.

Although certain preferred embodiments of the invention have been shown and described, it will be clear that various modifications might be made without departing from the spirit of the invention which is, of course, not limited to the structural details shown.

I claim:

1. An amusement apparatus comprising a car, a tunnel adapted to enclose the car and move relative thereto, and means situated centrally of the apparatus for moving the tunnel.

2. An amusement apparatus comprising a car designed to traverse a substantially circular path, a tunnel adapted to enclose the car and move relative thereto, and arms radiating from the center of the path controlling the movement of the tunnel.

3. An amusement apparatus comprising a substantially circular trackway, a car adapted to run upon said trackway, a tunnel adapted to enclose the car and move relative thereto, a turntable at the center of the trackway, arms radiating from said turntable and attached to the tunnel, and means for rotating the turntable to move the tunnel.

4. An amusement apparatus comprising a substantially circular trackway, a car adapted to run upon said trackway, a collapsible tunnel adapted to enclose the car and move relative thereto, a turntable at the center of the trackway, arms radiating from said turntable pivoted thereto and attached to the tunnel, and means for swinging the arms about their pivots to collapse and extend the tunnel.

5. An amusement apparatus comprising a car designed to traverse a substantially circular path, a tunnel adapted to enclose the car and move relative thereto, and arms radiating from the center of the path controlling the movement of the tunnel and the car.

6. An amusement apparatus comprising a car, a tunnel adapted to enclose the car and

move relative thereto, means situated centrally of the apparatus for moving the tunnel, and means for raising the side walls of the tunnel to permit access to the cars.

- 5 7. An amusement apparatus comprising a car designed to traverse a substantially circular path, a tunnel adapted to enclose the

car and move relative thereto, arms radiating from the center of the path controlling the movement of the tunnel, and means for causing the tunnel to pursue an undulatory path. 10

In testimony whereof I affix my signature.
HYLA FREDERICK MAYNES.