

Aug. 24, 1954

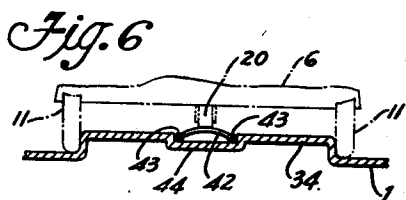
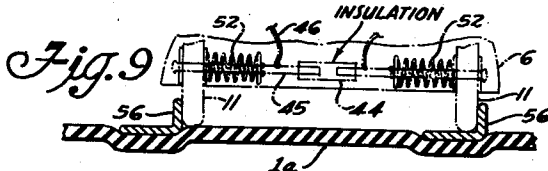
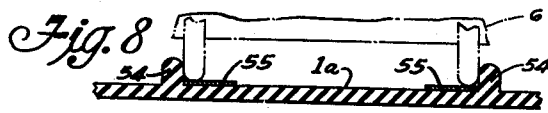
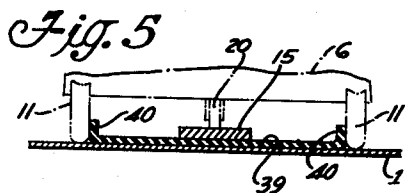
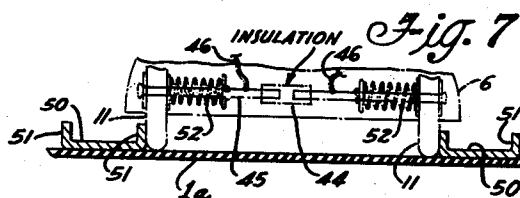
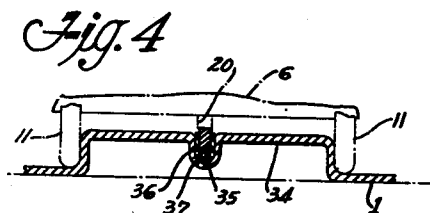
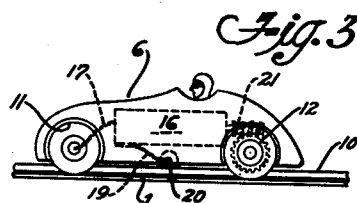
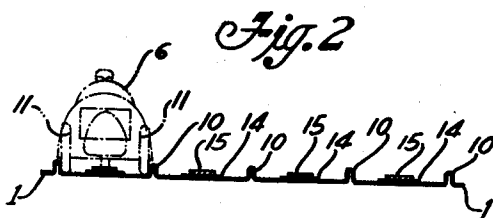
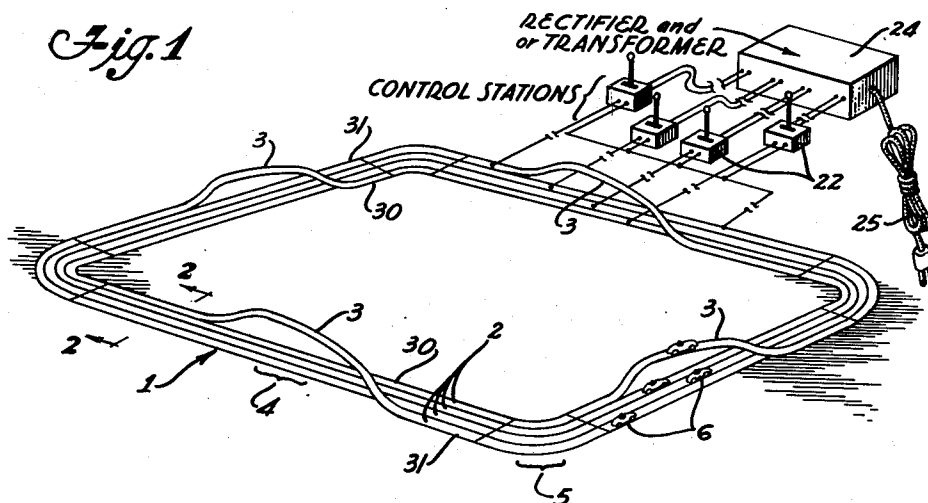
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2,687,304

RACING GAME APPARATUS

Filed Sept. 13, 1949

3 Sheets-Sheet 1



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RACING GAME APPARATUS

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3 Sheets-Sheet 2

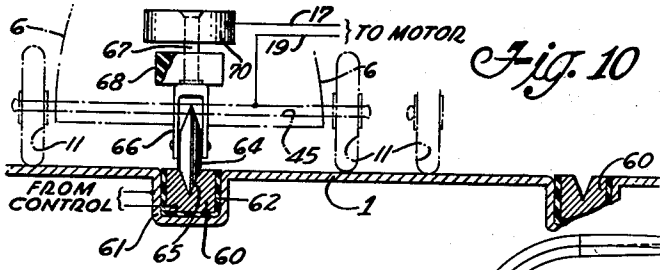


Fig. 10

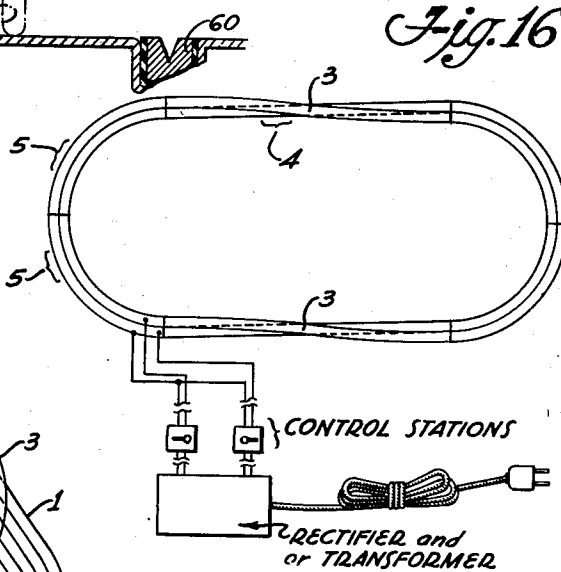


Fig. 16

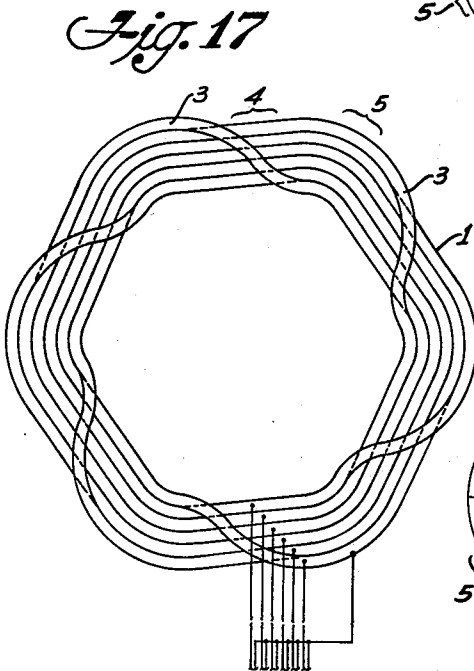


Fig. 17



Fig. 18

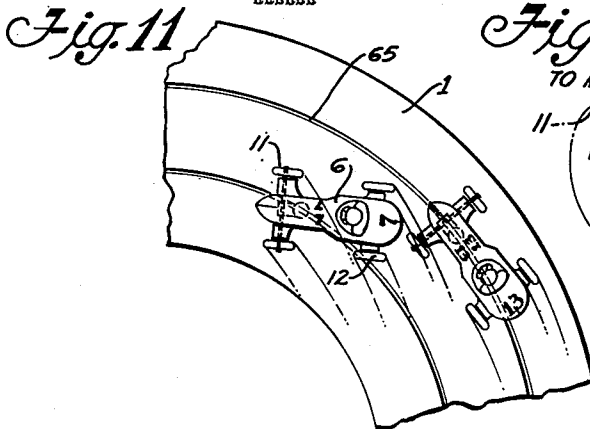


Fig. 11

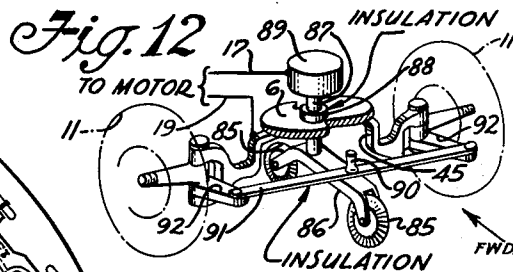


Fig. 12

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RACING GAME APPARATUS

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Fig. 13

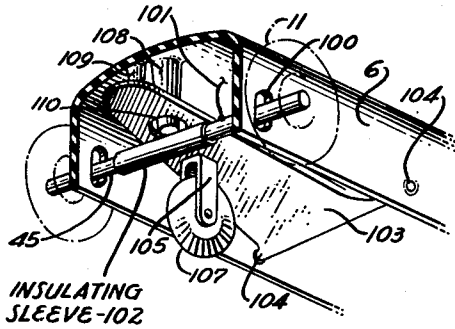


Fig. 14

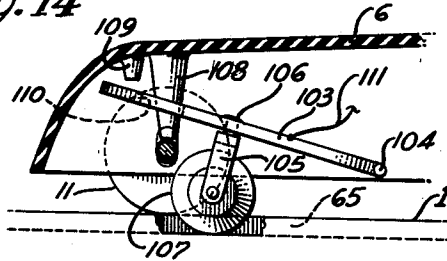


Fig. 15

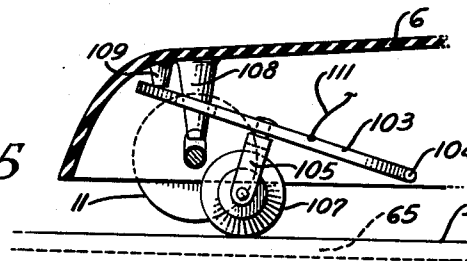


Fig. 20

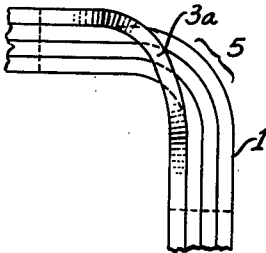


Fig. 19

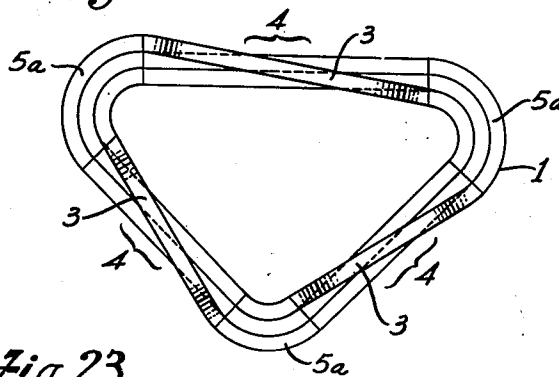


Fig. 21

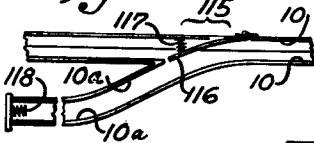
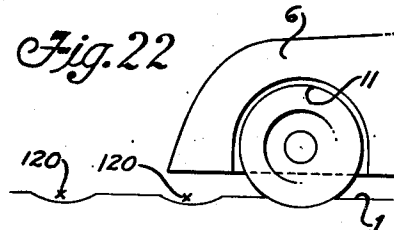


Fig. 23



Fig. 22



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2,687,304

RACING GAME APPARATUS

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Application September 13, 1949, Serial No. 115,462

2 Claims. (Cl. 273—86)

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The present invention relates to games and, more particularly, to a game wherein miniature vehicles can be raced under individual remote manual control over adjacent endless paths that are substantially identical in length.

One of the main obstacles in providing a satisfactory game in which vehicles are raced under remote control over adjacent endless paths is that when the paths are relatively short in length and positioned, for example, so that the vehicle paths are adjacently concentric, the paths are of very unequal length and each path has different radii of curvature.

It is an object of the present invention to provide a game in which a plurality of vehicles can be raced under separate remote manual control, and wherein a plurality of closely adjacent endless vehicle paths are provided with each path of exactly the same length and in which each vehicle, in the course of its travel once around a path, will experience curves of the same radii as each of the other vehicles.

It is another object of the present invention to provide a game in which a plurality of vehicles are raced over adjacent paths under remote manual control, and wherein the paths are of the same length and difficulty of negotiation by the vehicle, to the end that the winning of the race by manual control of a vehicle over one of the identical paths is almost entirely a matter of superior skill on the part of the operator controlling the winning vehicle.

It is a still further object of the invention to provide a game having a plurality of identical endless and adjacent paths, together with means for maintaining an electrically driven vehicle on each of said paths, with or without the possibility of vehicles interfering during travel over their respective paths.

It is still another object of the present invention to provide a game in which a plurality of adjacent endless vehicle paths are provided of substantially identical extent and curvature, together with means for restraining a vehicle on each path in such a manner that an operator can control the speed of a vehicle and can also control the relative position of a vehicle to the extent that the controlled vehicle can, by the use of the operator's skill, be placed in a position to interfere with a vehicle on an adjacent path.

In brief, the present invention comprises a foundation member having a plurality of adjacent and endless paths thereon. In order that each path may be of substantially identical length and have substantially identical curvatures over its extent, each path crosses from

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one side of the path plurality to the other side at least once during the extent of the paths. Means are provided on the foundation member to restrain a vehicle to at least the general area of each path, and such restraining means are also preferably adapted to conduct electrical current to the plurality of electrically driven vehicles adapted to be driven over the paths. Means are provided for individual speed control of the vehicles by operators who are in a position to watch the progress of the vehicles over the paths. The vehicle restraining means may be proportioned to have greater or less effect on maintaining the vehicles on the paths, so that too high speed may result in departure of the vehicles from their paths on turns, for example. In other aspects of the invention the restraining means may be so designed as to permit skidding of the vehicles on turns so that part of the vehicle can be placed over an adjacent path to provide deliberate interference with a vehicle on that adjacent path, when desired.

The end result of the game of the present invention is a game in which the skill of the vehicle operators, coordinating vehicle speed with path curvatures and in certain instances with vehicle aspect with respect to adjacent paths, is substantially the sole criterion for winning by driving a vehicle over one or more laps around the paths in the shortest time. The hazards offered greatly resemble those involved in the direct driving of automobiles around a racing track and, in a like sense, the winning of the race depends upon the skill of the vehicle operator to drive the vehicle around the path at the highest speed without overturn of or accident to the vehicle.

The present invention will be more fully understood by reference to the following description of the appended drawings, in which:

Figure 1 is a schematic perspective view of one embodiment of the present invention showing a foundation member with four paths thereon, vehicles for the paths, and remote vehicle controllers.

Figure 2 is a cross sectional view taken as indicated by line 2—2 in Figure 1, showing one form of vehicle restraining means.

Figure 3 is a side view of a vehicle suitable for use on the paths shown in Figure 2.

Figures 4 to 10, inclusive, are cross sectional views showing various means for maintaining the vehicles on the paths.

Figure 11 is a top view of the vehicles guided as shown in Figure 10, in skidding aspect.

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Figure 12 is a perspective view of a front wheel positioning means.

Figure 13 is a perspective view from the side and bottom of a modified front end suitable for use on a skidding car.

Figure 14 is a diagrammatic view of the front end of Figure 13 in normal use.

Figure 15 is a diagrammatic view of the front end of Figure 13 showing the position with the contact wheel out of the guide groove.

Figure 16 is a schematic plan view of a two-path game.

Figure 17 is a schematic plan view of a six-path game.

Figure 18 is a schematic plan view of a two-path game in which each path makes two laps.

Figure 19 is a schematic plan view of a triangular path game.

Figure 20 is a schematic plan view of a crossover on a curved section of the path.

Figure 21 is a diagram of a switch type low speed hazard.

Figure 22 is a schematic side view of a high speed hazard.

Figure 23 is a schematic plan view of a collision hazard.

Referring first to Figure 1, the game comprises a foundation member 1 having a plurality of paths 2 thereon, each path being closely adjacent the other paths except for a crossover section 3. There is one crossover section 3 for each path, and this section 3 preferably extends upwardly and over the other paths along straight portions 4 of the game, between curves 5 of the game, the clearance between paths being sufficient for vehicles on other paths to pass under the crossover sections 3. In forming the game, the various portions can thus be made with the curves 5 separate, the straight sections 4 with three paths thereon separate, and with the crossover sections 3 separate. These various portions may then be assembled into a complete game as shown in Figure 1, for example by various types of connection members well known in the art.

Means are provided on the foundation member 1 to restrain vehicles 6 to their respective paths, and such means may take several forms, as shown by way of example, in Figures 4 to 10, inclusive. The vehicle restraining means can also be utilized to energize vehicle motors, which preferably are electrically driven, as shown in Figures 2 and 3.

In this case, the foundation member 1 is of sheet metal provided with raised ridges 10. For the outlining of four paths, five ridges 10 are used, spaced to contact the sides of front vehicle wheels 11 which in this case are of metal. The rear wheels 12 of the vehicle are preferably slightly closer together and are, in order to obtain traction, preferably rubber tired.

Between each ridge 10 is positioned a strip of insulation 14 all around each path, and on each insulation strip is positioned a conductor strip 15. Vehicle 6 is provided with a body of some readily moldable material, such as rubber or plastic, and contains an electric motor 16 of a variable speed type, with an output wire 17 to the motor 16 connected to front wheels 11. The input to the motor is a spring 19 mounted on vehicle 6 to press a conductive fifth wheel 20 onto conductor 15. The motor 16 in this case drives the rear wheels 12 through gearing 21. Other forms of drive are deemed full equivalents.

Each conductor 15 is connected outside of the foundation member 1 through a speed control station 22 to a rectifier and/or transformer 24 ener-

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gized by an A. C. connection 25, with the returns from the speed control stations 22 connected to foundation member 1 in the case of the arrangement shown in Figures 1, 2, and 3.

The vehicles are lined up on the foundation member 1 in their respective paths with or without handicap, with separate operators at the speed control stations 22. The race can then start and be run for as many laps of the device as may seem desirable.

All of the vehicles 6 are preferably geared to travel faster than a speed at which they can negotiate curves 5 without overturning, with the speed controls full open. Each vehicle will, because of the crossover sections 3, cross from an inside path 30 to an outside path 31 once each lap. Thus, in the game shown in Figure 1, each vehicle passes around all of the four curves of different radii during one lap, and each path is exactly the same length.

Inasmuch as the radius of the inner path on the curves is less than the radius of the outer path on the curves, these paths at the curves will have different critical speeds for vehicle overturn, and a slower, more careful driver may well win the race. Again, the down grade of each crossover section 3 will add speed to a vehicle leading into the following outside curve, which must be compensated for by controller operation. However, the direction of vehicle progression over the crossover sections 3 is a matter of choice.

In Figures 4, 5, and 6, three restraining means variations are shown, based on the use of a conductive foundation member 1, as was used in the embodiment of Figures 1, 2, and 3.

In Figure 4, a single broad ridge 34 is raised from foundation member 1 with the wheels of the vehicle fitting outside of ridge 34. The central conductor is in this case a vertical strip 35 pressed into a strip groove 36, with an insulator 37 therebetween. Fifth wheel 20 of the vehicle then bears against the upper edge of strip 35.

The arrangement of Figure 5 utilizes a flat insulating strip 39 having upturned edges 40 engaging the wheels of the vehicle, with a conductor 15 mounted centrally on insulating strip 39.

In Figure 6, the foundation member is provided with a broad ridge 34 as in Figure 4, with a central broad groove 41. The conductor is in this case a flexible strip 42 of metal sprung into the corners of groove 41 with insulating material 43 at the strip edges only.

Figures 7, 8, and 9 show arrangements in which the foundation member 1a is of insulating material. In this case, no fifth wheel is used, and the front wheels 11 of the vehicle are insulated from each other as by insulation block 44 in front axle 45 with motor leads 46 taken from each side of block 44. In Figure 7, the vehicle restraining means are a pair of conductive rail strips 50 having upturned wheel engaging edge portions 51. The two rail strips 50 form the electrical circuit. Preferably, in order that the electrical contact on both sides of the vehicle be held on curves, the front wheels 11 are lightly spring pressed outwardly as by spring 52.

In Figure 8, the restraining means are insulating ribs 54 projected upwardly from the foundation member 1a, with the electrical contact with the separately insulated wheels 11 being made by flat rail strips 55 positioned just at the inside of each rib 54. In this case no spring pressing of wheels 11 is necessary.

Figure 9 shows a combination of the devices of Figures 7 and 8. In this case, the conductive

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rail strips are angle sections 56 with one front wheel 11 running on the horizontal portion of one angle 56 and with the other front wheel 11 running on foundation member 1a but bearing against the vertical portion of the other angle 56. Here again, spring pressing of the wheels outwardly is desirable, as shown.

All of the embodiments of the invention so far shown and described forcibly restrain both front and rear wheels to a predetermined path, with no possibility of interfering with adjacent vehicles, except by overturn or by jumping the vehicle out of its proper path.

In Figures 10 and 11, however, a vehicle and restraining means construction is shown which permits the vehicle to skid to place a portion thereof in or over adjacent paths, the amount of skid, as in full sized vehicles, being related to vehicle speed and curvature of path.

In this case, foundation member 1 is conductive, as in the device of Figures 1, 2, and 3. The paths are generally outlined on the foundation member 1 solely by a single conductive grooved member 60 which may be of extruded metal, set into a mating portion 61 of the foundation member 1 and separated therefrom by insulation 62. The front wheels of the vehicle may be in this case slightly toed in, and the vehicle is restrained solely by a special fifth wheel 64 which is shaped in this case to fit a guiding groove 65 grooved in member 60.

Fifth wheel 64 is mounted in the fork 66 of a vertical pivot 67, rotating and sliding in an insulating bearing 68 mounted on vehicle 6 forward of its center of gravity. A weight 70 is used on top of pivot 67 to keep the fifth wheel securely in groove 65 at all times. As the pivot 67 is free to turn with respect to bearing 68, the vehicle is free to skid on the turns, and if desired, the grooved members 60 can be so spaced on the foundation members so that it is possible to skid the rear portion of one vehicle into the path of an adjacent vehicle, either to force the operator of the adjacent vehicle to slow down the adjacent vehicle to avoid a collision or to deliberately cause such a collision as would overturn the adjacent vehicle without overturning the skidding vehicle. Figure 11 shows the vehicle of Figure 10 in skidding position.

However, as can be seen from the plan view of the skidding car in Figure 11, the front wheels 11 of the skidding car are turned with the vehicle and are not in a natural position for a skid. A simple means for maintaining the front wheels in a position corresponding to the direction of the guiding groove 65 is shown in Figure 12, in perspective.

Here, the guide means on the vehicle comprises two small guide wheels 85 connected by a longitudinal yoke 86 to which, forward of the center between wheels 85, an upright pin 87 is attached. This pin passes through an insulating bearing 88 attached to the vehicle body 6 and is topped by a weight 89. As in the embodiment shown in Figure 10, motor leads 17 and 19 are taken from the weight 89 and front axle 45 of the vehicle, respectively.

Rearwardly of pin 87 a vertical lug 90 is erected upwardly from yoke 86, passing through a cross rod 91 of insulating material to connect with angle brackets 92 journaled on axle 45 on which front wheels 11 are mounted.

In this modification when the body of the vehicle skids, the front wheels are held in alignment with guiding groove 65 at all times, and

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provide a more realistic appearance to the vehicle when skidding.

In Figures 13, 14, and 15 a modification of the front end assembly for use on a skidding car is shown.

Referring first to Figure 13, the body of vehicle 6 is of plastic material provided with side slots 100 through which the front axle 45 extends, the latter being in this case a metal rod. The front wheels 11 are of metal to contact the foundation member 1. A lead 101 to the motor is taken off the axle 45. Slots 100 provide for a slight rocking of axle 45, so that both front wheels will always contact the foundation member 1.

The central portion of axle 45 is covered with an insulating sleeve 102 on which rests the forward portion of a metal tongue 103, mounted to rotate vertically with respect to the vehicle 6 on pivots 104. Extending downwardly from tongue 103 is a wheel fork 105 mounted to swivel on a fork pin 106 (Figure 14) attached to tongue 103. Wheel fork 105 supports a single contact wheel 107 having a periphery shaped to enter the guide groove 65 as in the embodiment shown in Figures 10 and 12. The upper limit of travel of front axle 45 is defined by an axle stop 108 extended downwardly from the top of vehicle 6, and the upper limit of travel of tongue 103 is defined by a tongue stop 109 just forward of axle stop 108. The tongue 103 is provided with an aperture 110 through which axle stop 108 passes. The other motor lead 111 is taken from the tongue.

In ordinary use of the vehicle equipped with the front end as shown in Figures 13, 14, and 15, the front wheels 11 are in contact with the foundation member 1 and the contact wheel 107 is in the groove 65, with the weight of the body resting on the front axle 45 through axle stop 108. The weight of the tongue 103 keeps contact wheel 107 in groove 65. The vehicle is thus guided around its path as determined by guide groove 65 with the same possibility of skidding as exists in the embodiment shown in Figure 10. However, if and when the vehicle should leave its path, the contact wheel 107, being out of its groove, will raise tongue 103 until the forward end of this tongue contacts the tongue stop 109. This will lift the front wheels off the foundation member 1 entirely, and will thus prevent the front wheels from shorting the power supply. This shorting could readily happen if one front wheel 11 should contact the guide groove 65 with the other front wheel 11 contacting the foundation member 1. Thus the construction of Figures 13, 14, and 15 prevents shorting of the power supply when a vehicle leaves its proper path.

The paths, both in number and configuration, when made in accordance with the teachings of the present invention, are subject to many variations. Several such variations are shown in Figures 16 to 24, inclusive.

In Figure 16 a two-path, two-vehicle arrangement is shown, with two cross over sections 3 on the straight portions 4 of the foundation member. As each end curve 5 is a quarter circle, straight track portions may be inserted between these curves, if desired, to increase lap length. Similarly, the straight portions 4 may be lengthened for the same purpose.

In Figure 17 a six-path, six-vehicle game is shown, the foundation member 1 being of hex-

agonal shape, with the cross over sections 3 between each corner curve.

In Figure 13 a variation is shown where two paths are provided for two vehicles only, but where each path makes two laps with the cross over sections 3 on the straight portions 4 of the foundation member. One path is indicated by dotted line A, the other by solid line B. Here again, if desired, additional length can be given to both paths by bisecting the end curves and inserting straight portions without cross over sections. Many other variations of path configuration will occur to those skilled in the art following the teachings herein, the main desideratum being only that sufficient cross over sections be used to provide equal lengths for all vehicle paths. Once the paths are delineated, any of the restraining and conducting means described herein, as well as others occurring to those skilled in the art following the teachings set forth herein, can be used to confine the vehicles to these paths to the desired extent as outlined above.

In addition to the various hazards existing in the game paths so far described, additional hazards can be deliberately added, as shown in Figures 19 to 23, inclusive.

In Figure 19, a triangular track is shown, to provide sharper turn sections 5a with the straight portions 4 and cross overs 3 therebetween. In this case only three paths are provided.

Turns of various sharpnesses and configurations can be made by providing special cross overs 3a at the curved sections 5, as shown in Figure 20.

Special path hazards for both slow and high speeds may also be provided. For example a side-tracking switch 115 can be provided, as shown in Figure 21, to create what may be called a "pit stop." When used in conjunction with the raised wheel ridges 10, for example, a spring leaf 116 can be attached to one ridge 10 and held, as by a backing spring 117 to deflect the front wheels 11 of a vehicle 6 into a pair of dead end ridges 10a terminated by spring bumper 118. Spring leaf 116 and backing spring 117 are proportioned to load the switch so that if the vehicle enters the switch with a sufficiently high velocity the spring leaf 116 is straightened out and the vehicle will continue on its proper path. However, if hit at substantially lower velocity, the switch will deflect the vehicle into the dead end section 10a—10a, requiring a loss of time for the vehicle operator to place the vehicle back on the proper path. When the construction of Figures 10, 12, or 13 is used, the leaf 116 is placed in the path of wheels 64, 65, or 107, respectively.

A high speed hazard can be simply provided by making a series of hollows 120, for example, in foundation member 1, as shown in Figure 22, requiring the operator to slow down the vehicle when passing over the bumps thus formed, or the vehicle will leave its proper path.

A collision hazard may also be deliberately introduced by the use of a special section 4a as shown in Figure 23. Here the guide grooves 65 are deliberately made to be so close together that two vehicles cannot pass each other. Thus, to avoid collision, vehicles on adjacent paths must be controlled to pass through the section 4a one ahead of the other to avoid a collision.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited

to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is, therefore, claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

We claim:

1. In combination, a vehicle, a foundation member, a guide groove on said foundation member, a plurality of supporting wheels mounted on said vehicle in fixed steering relation thereto and bearing on said foundation member outside of said groove, a substantially vertical pivot rotatably supported by said vehicle forward of the center of gravity thereof, a guide wheel supported on said pivot to rotate in a vertical plane and shaped to enter and fit said groove, the axis of rotation of said guide wheel passing through the axis of said pivot, said guide wheel being free to rotate around both of said axes, means for driving said vehicle, and means on said foundation member in the path of said vehicle forming a hazard to normal progression of said vehicle at other than a predetermined maximum speed past said hazard.

2. A game having a foundation member having a plurality of adjacent vehicle guide grooves therein, the extent of said grooves having a curved portion, a vehicle for each of said grooves, each vehicle comprising a vehicle body, a plurality of vehicle supporting wheels carried by said body in fixed steering relation thereto and bearing on said foundation member outside of a groove, a substantially vertical pivot rotatably supported by said vehicle body forward of the center of gravity thereof, a guide wheel supported on said pivot to rotate in a vertical plane and shaped to enter and fit a groove, the axis of rotation of said guide wheel passing through the axis of said pivot, said guide wheel being free to rotate around both of said axes, and means for driving said vehicles, said grooves being spaced in at least a portion of their curved extents sufficiently close that as said vehicles skid while being driven over said curved extents, they can interfere with a vehicle on an adjacent path, limited portions of adjacent grooves being sufficiently close to prevent simultaneous passage of adjacent vehicles through said limited portions.

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