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3,377,958

LANE CHANGE FOR RACEWAY TOY

Filed June 16, 1965

2 Sheets-Sheet 1

FIG. 1

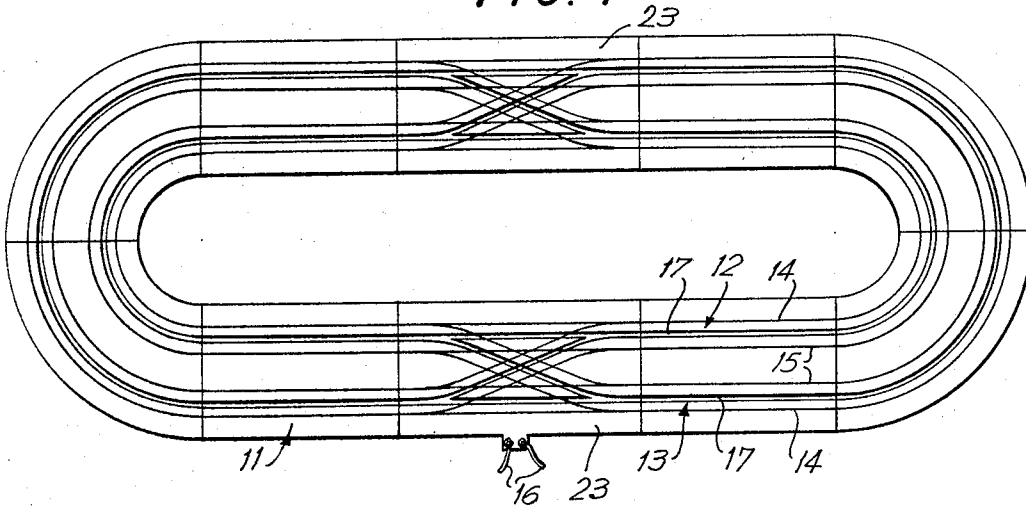


FIG. 2

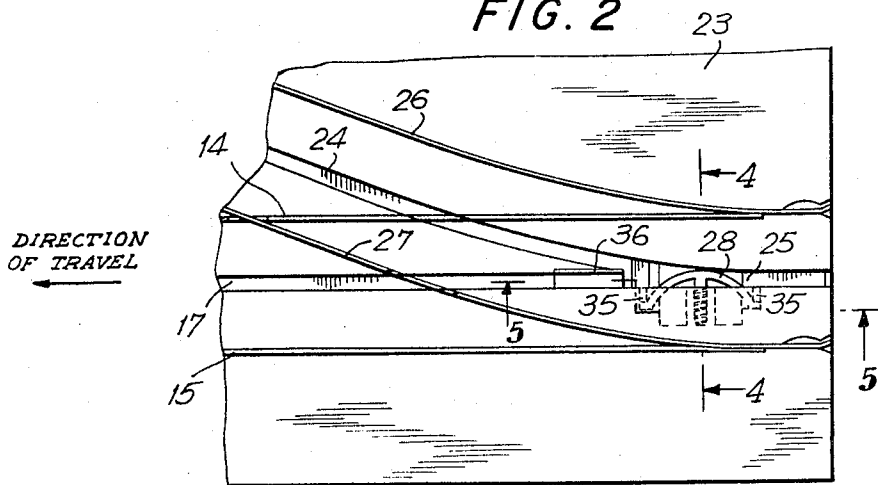


FIG. 2a

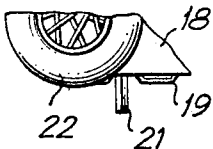
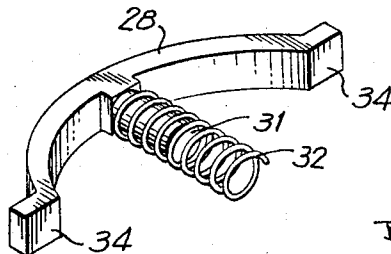


FIG. 3



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FIG. 4

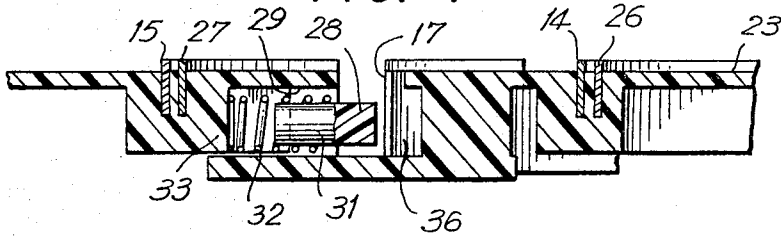


FIG. 5

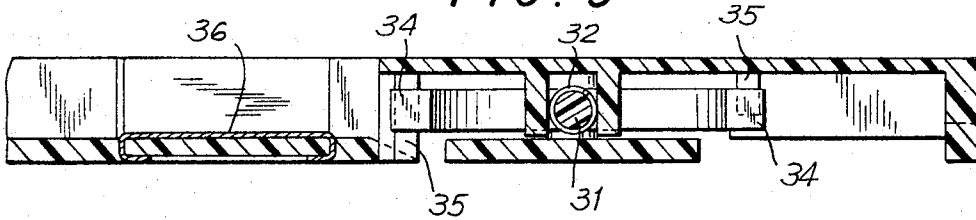


FIG. 6

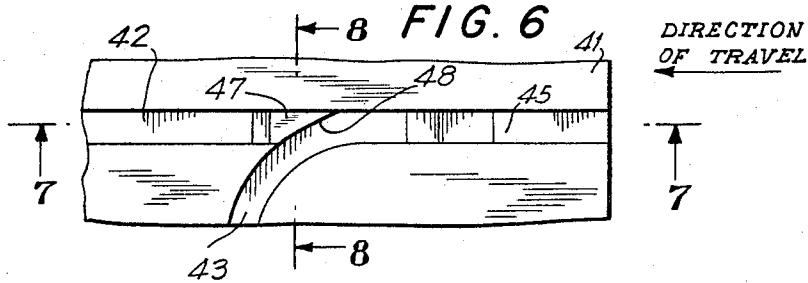


FIG. 7

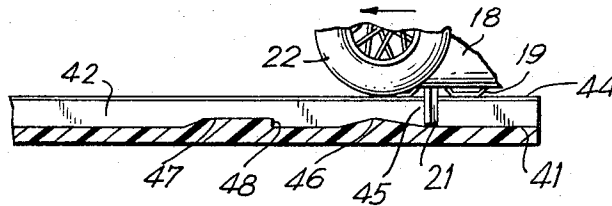
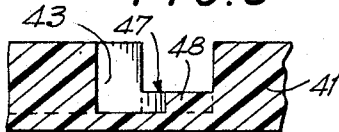


FIG. 8



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LANE CHANGE FOR RACEWAY TOY

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4 Claims. (Cl. 104—60)

ABSTRACT OF THE DISCLOSURE

A lane change slot arrangement in a trackway for a slot racing toy in which the path to be followed by the vehicle depends on the speed of the vehicle with deflection elements in the trackway slot for controlling the direction of travel of the vehicle.

This invention relates generally to a racing toy and more particularly to a toy racing game or arrangement generally known as slot racing wherein an electrified track layout is provided for the travel of miniature racing cars therealong, the racing cars being guided by guide fingers cooperating with slots in the tracks, the cars being remote controlled.

The instant invention is more specifically directed to tracks having lane change portions wherein a toy vehicle may be caused to switch between adjacent or parallel lanes under the control of the operator. While lane change or switching by remote control is generally known in the art, switching in prior art devices has generally been accomplished by positive switch means wherein the switch point is pre-set to selectively guide the vehicle either in a straight path or in a switching direction. The instant invention, on the other hand, relates to controlling of the switching operation only in response to the speed of travel of the vehicle through the switch point, with no remote switch controlling means being required other than means for controlling the speed of operation of the vehicle.

Accordingly, a primary object of this invention is to provide a track incorporating lane change means of improved and simplified construction wherein selection of straight or lane change travel is responsive solely to the speed of travel of the vehicle along the track at the point of lane change.

Another object of the invention is to provide simplified means for selectively guiding a vehicle in a lane change direction when the vehicle approaches a change point at a slow speed while permitting it to continue in a straight direction when the vehicle approaches at a medium or high speed.

A further object of the invention is to provide simplified spring biased means for deflection of the vehicle into a change lane when the vehicle is traveling at a relatively slow speed, said means being rendered ineffective by said vehicle when traveling at a medium or high speed.

Still another object of the invention is to provide means for guiding a vehicle through a finger depending therefrom, said means adapted to guide a vehicle along one slot when traveling at a first speed and along a second slot when traveling another speed.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

Generally speaking, in accordance with the invention, a vehicle track section is provided with a change lane branching out from a straight lane at a change point with the vehicle being guided by cooperation between a depending finger and slots in the track. Means are provided in the track for controlling the direction of the vehicle through the depending finger with such means effective to deflect the vehicle finger into the change lane slot at slow speed, said means being avoided or rendered ineffective

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when the vehicle is traveling at a higher speed. In one embodiment, spring means are adapted to bias the finger toward the change lane slot, the biasing means being overcome if struck by the depending finger with a sufficient force as developed by the vehicle traveling at a medium or high speed. In a second embodiment, no moving parts are required with guide portions in the slot adapted to guide the finger in a change lane direction, the slot also including a ramp in advance of the guide portions adapted to lift the vehicle and depending finger by a sufficient amount to permit it to clear the guide portions when the vehicle is traveling at a medium or high speed. With either embodiment, the operator remotely controlling the speed of operation of the vehicle can thereby select whether the vehicle is to travel in a straight or lane change direction by controlling the speed at which the vehicle enters the change point.

The invention accordingly comprises the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the constructions hereinafter set forth, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a plan view of a simple oval, two-track slot racing layout with each track being provided with lane change or crossover points along each straight section;

FIG. 2 is a partial plan view, at enlarged scale, of lane change means constructed in accordance with a first embodiment of the invention;

FIG. 2A is a partial elevational view of a usual type of racing car showing the guide finger depending therefrom;

FIG. 3 is a perspective view of the cam and spring means forming the operating element of the embodiment of FIG. 2;

FIG. 4 is a sectional view, at a greatly enlarged scale, taken along line 4—4 of FIG. 2;

FIG. 5 is a sectional view, at a greatly enlarged scale, taken along line 5—5 of FIG. 2;

FIG. 6 is a partial plan view, at an enlarged scale, of a second embodiment of the instant invention;

FIG. 7 is a partial sectional view, taken along line 7—7 of FIG. 6; and

FIG. 8 is a partial sectional view, taken along line 8—8 of FIG. 6.

Referring now to FIG. 1, a typical slot racing layout is shown, the layout including a plurality of track sections 11 which are interconnected by any suitable means to form a complete and continuous layout. The layout includes two continuous tracks 12 and 13 along which miniature toy racing vehicles are adapted to travel in a simulated racing situation. Each track includes spaced conductors 14 and 15 with which suitable shoes on the vehicle make contact for electric drive of the motors within the vehicles. The tracks are connected by means of conductors 16 to a power supply and rheostat controls so that each operator can remotely control his respective vehicle. The electrical system can be of any conventional type known in the art and, since it forms no part of the instant invention, no further description thereof is deemed necessary.

Each track is formed with a central slot 17 between the conductors, the slot receiving a depending finger on the vehicle to guide the vehicle, and the shoes on the vehicle are oriented to remain in contact with the spaced conductors. A portion of a vehicle is shown in FIG. 2A for the sake of completeness. As shown, body 18 supports shoes 19 and depending finger 21, the shoes and depending finger being generally located toward the front of the vehicle proximate of front wheels 22.

The track shown in FIG. 1 includes two lane change

sections 23 which are constructed as hereafter described. One lane change section is shown in FIGS. 2 through 5 with slot 17 forming the slot for travel of the vehicle in the straight, forward direction. The direction of travel is indicated by the arrow in FIG. 2. A lane change slot 24 is connected between the slots of the parallel tracks and approaches each slot tangentially. At the change lane entry point, approximately indicated at 25 on FIG. 2, means are provided for selectively determining whether depending finger 21 will be guided along slot 17 or slot 24. Of course, conductors 26 and 27 are carried by the lane change section to permit current pick-up when the vehicle is traveling along the lane change path.

In the embodiment shown in FIGS. 2 through 5, an arcuately shaped cam deflector 28 is slidably mounted within a groove 29 in track section 23. Groove 29 mounts the cam deflector beneath the surface of the track for slidable movement transverse to slot 17 to substantially and yieldably block the slot. Cam deflector 28 is provided with a central radial post 31 about which is mounted a coil spring 32 acting against a solid portion 33 of the track section to bias the cam deflector into slot 17. The outer ends of cam deflector 28 are provided with outwardly extending arms 34 adapted to engage posts 35 to limit the outward movement of the cam deflector. Note that track sections for use in slot racing are generally molded of plastic insulating material thereby forming the slots, solid portions and posts as required. Generally, the only metal portions are the trackway conductors which are suitably secured in grooves in the plastic track. Of course, it should be noted that the conductors are spaced or otherwise insulated from one another, especially at crossover points thereof. Since, in the lane change section, the depending finger 21 will strike the walls of slots 17 and 24 during the selective guiding, it has been found desirable to reinforce the plastic wall at the joint between slots 17 and 24 with a metal reinforcing portion 36 suitably secured to the plastic track section.

The operation of the lane change section in connection with FIGS. 2 through 5 may now be described. As the vehicle travels along the track with depending finger 21 in slot 17, it approaches lane change entry point 25 at a speed controlled by the remote operator. As depending finger 21 strikes cam deflector 28, the depending finger will be biased into contact with the opposite wall of the slot and will thereby be forced toward lane change slot 24, with only sufficient deflection of cam deflector 28 occurring to permit the depending finger to pass the deflector. Thus, at slow speed the vehicle enters the lane change portion and thereupon tangentially enters the parallel track.

However, at a higher speed such as may be termed a medium or high speed, depending finger 21 strikes cam deflector 28 with a considerable force thereby moving the deflector against the spring biasing out of its interference position with the slot. The movement of the deflector coupled with the inertia of the vehicle at higher speed seeking to carry it in a straight line, renders the deflector ineffective thereby permitting the depending finger to continue in its travel in slot 17 and a change of lane of the vehicle is not effected. Thus, the remote operator controls the path along which his vehicle will travel by controlling the speed of the vehicle as it approaches the lane change entry point. Where two vehicles are competing, the operators will preferably have their vehicles on the inside lanes since the circuit path is shorter. However, passing can only be accomplished by lane change and, with skill, the operator can cause his vehicle to change from one lane to another, as he so desires. With skill, the operator will also learn the maximum speed at which the vehicle can approach the lane change entry point and effect a lane change operation so as to minimize time lost during slow down.

An alternate embodiment devoid of moving parts is shown in FIGS. 6 through 8, the alternate embodiment

serving the same purpose as the embodiment previously described and operating responsive to the speed of the vehicle.

Referring now to FIGS. 6 through 8, a lane change section 41 molded of a plastic material includes a straight slot 42 and a lane change slot 43. Spaced conductors are also provided but, for the most part, these have been omitted for the sake of simplicity, with a conductor 44 being shown in FIG. 7. A vehicle travels along the surface of section 41 with shoes 19 in contact with conductors 44 and with depending finger 21 in slot 42. Point 45 may be considered the lane change entry point. The base of slot 42 is provided with a first ramp 46 with slopes upwardly to a peak from the entry point and thereupon slopes downwardly to the normal slot level. Spaced along the direction of travel of first ramp 46 is a second ramp 47 which has an upright leading edge 48 and a rearward edge which slopes down to the normal slot level. Referring to FIGS. 6 and 8, second ramp 46 is located in slot 42 beyond, in direction of travel of the vehicle, the tangential entry of lane change slot 43 with leading edge 48 forming a continuation of slot 43 at a substantially lower level.

The operation of this lane change construction is as follows. When the vehicle approaches the lane change entry point at a relatively slow speed, the lower end of depending finger 21 guides along the surface of first ramp 46 to raise the vehicle by a slight amount from the track. The vehicle has sufficient inertia to continue its travel should electrical contact be broken and, as the depending finger passes the first ramp, the vehicle settles down onto the track with the depending finger at its normal level. The depending finger thereupon engages the leading edge 48 of the second ramp and, as may be clearly seen in FIG. 6, the leading edge guides the depending finger into lane change slot 43 to effect a lane change operation.

On the other hand, if the vehicle approaches the lane change entry point at a medium or high rate of speed, the depending finger rides up ramp 46 and throws the vehicle upwardly by a slight amount. If the forward speed of the vehicle is sufficient, the lower end of depending finger 21 will remain raised for a sufficient time to permit it to clear the leading edge 48 of the second ramp. When this occurs, the depending finger will not be guided into the lane change slot but will, instead, continue in straight slot 42. Thus, with the embodiment of FIGS. 6 through 8, the direction of travel of the vehicle is controlled by the speed of the vehicle and no moving parts within the track are required.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above constructions without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

What is claimed:

1. A trackway including a through slot, a lane change slot communicating with said through slot, a deflector slidably mounted in said trackway for movement transverse to said through slot, said deflector being positioned to enter said through slot from the side thereof opposite the side with which said lane change slot communicates and in advance thereof, and spring means biasing said deflector into said through slot.

2. The structure defined in claim 1 wherein said deflector comprises a central arcuately shaped portion having outwardly projecting arms on opposite ends thereof

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and central means for supporting a spring, said spring means including a compression spring engaged between said central means and said trackway for urging said arcuately shaped deflector into a substantially blocking position in said through slot while permitting same to be deflected against the action of said spring to a non-blocking position, said trackway further including posts adapted to cooperate with said deflector arms for limiting the movement of said arcuately shaped deflector into said through slot under the biasing of said spring.

3. A trackway including a through slot, a lane change slot communicating with said through slot, a first fixed ramp at the base of said through slot in advance of the area of communication of said lane change slot with said through slot, and a second fixed ramp at the base of said through slot beyond said area of communication, the leading edge of said second fixed ramp forming a continuation of the lower portion of one wall of said lane change slot.

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4. The structure defined in claim 3 wherein said first fixed ramp is gradually upwardly inclined from the base of said through slot toward said area of communication, the highest point of said ramp being below the surface of said trackway, and wherein the leading edge of said second fixed ramp rises substantially perpendicularly from the base of said through slot and terminates at a level below the surface of said trackway.

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