

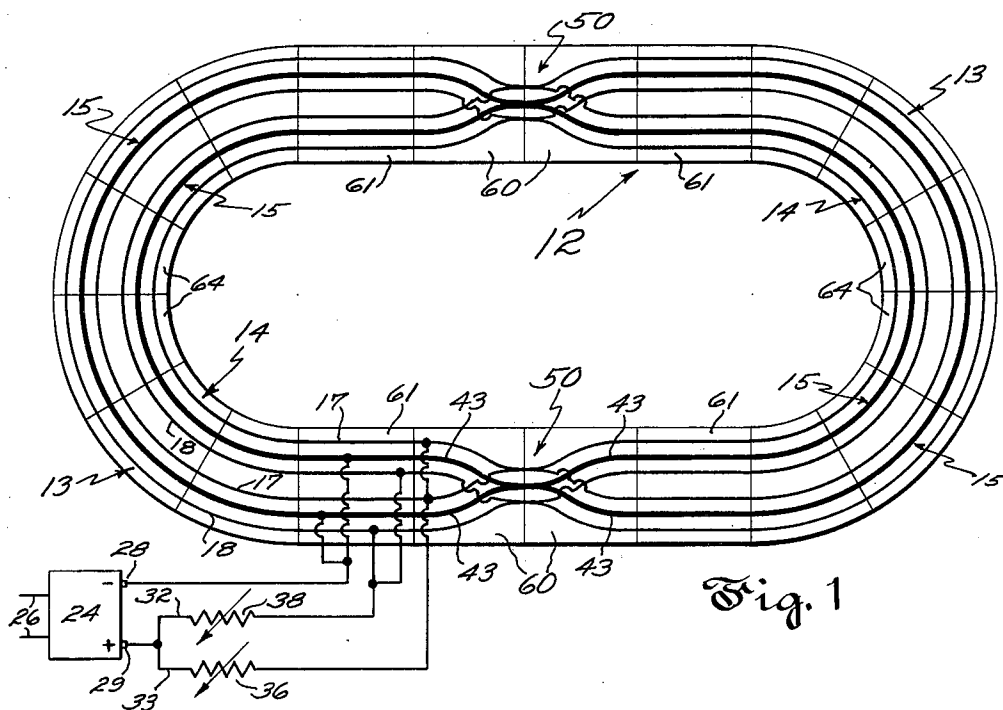
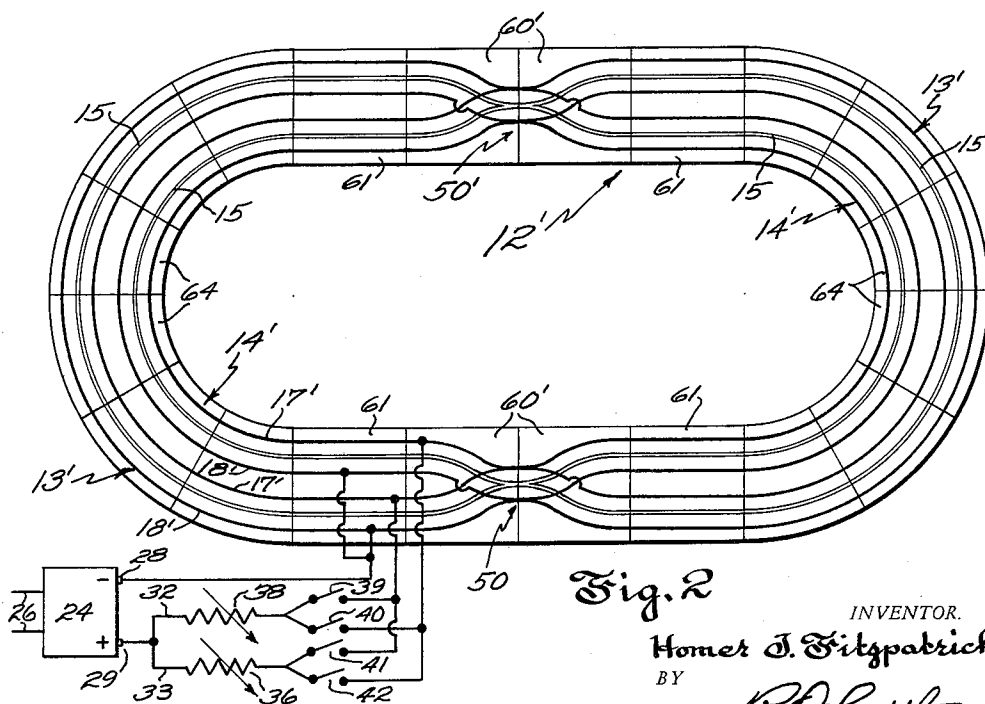
Sept. 14, 1965

H. J. FITZPATRICK  
SKILL INFLUENCED CHANCE PERFORMANCE  
OF MODEL RACE GAME VEHICLES

3,205,833

Filed Jan. 19, 1962

4 Sheets-Sheet 1



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4 Sheets-Sheet 2

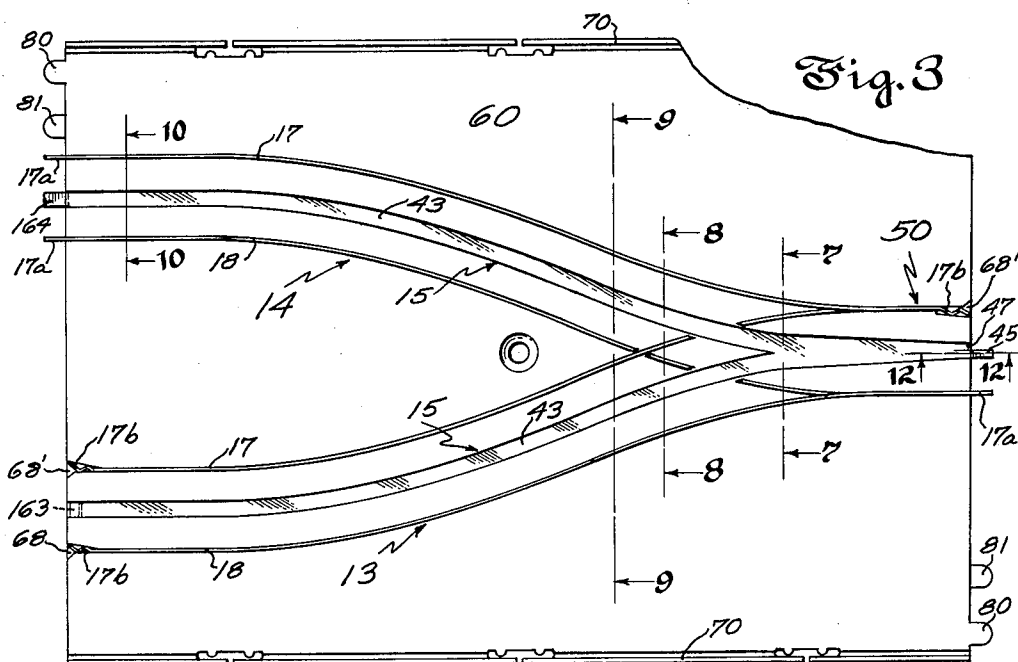
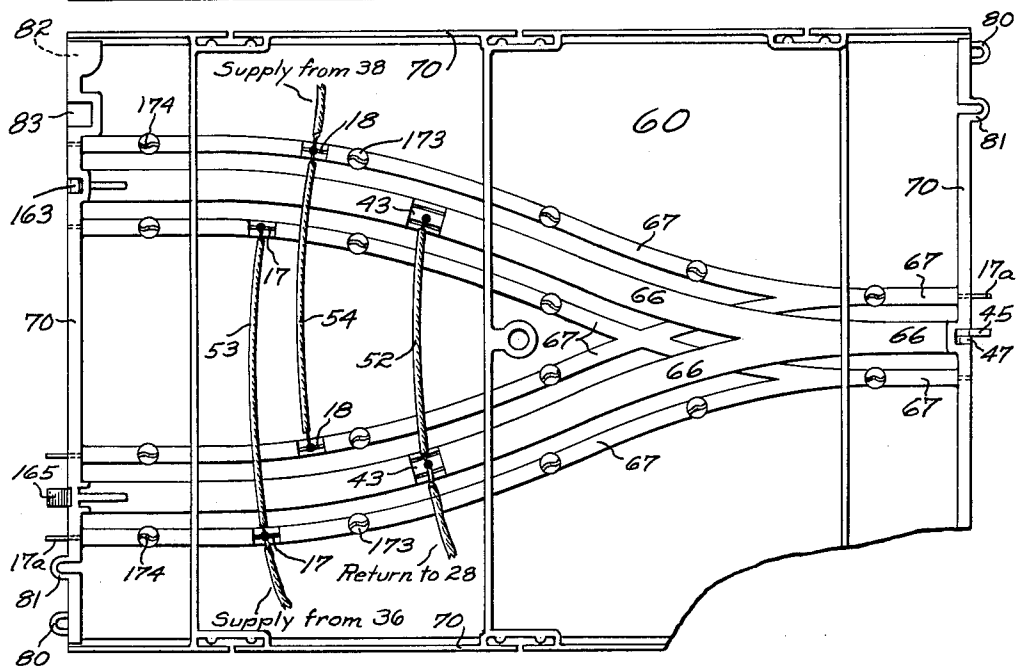


Fig. 4

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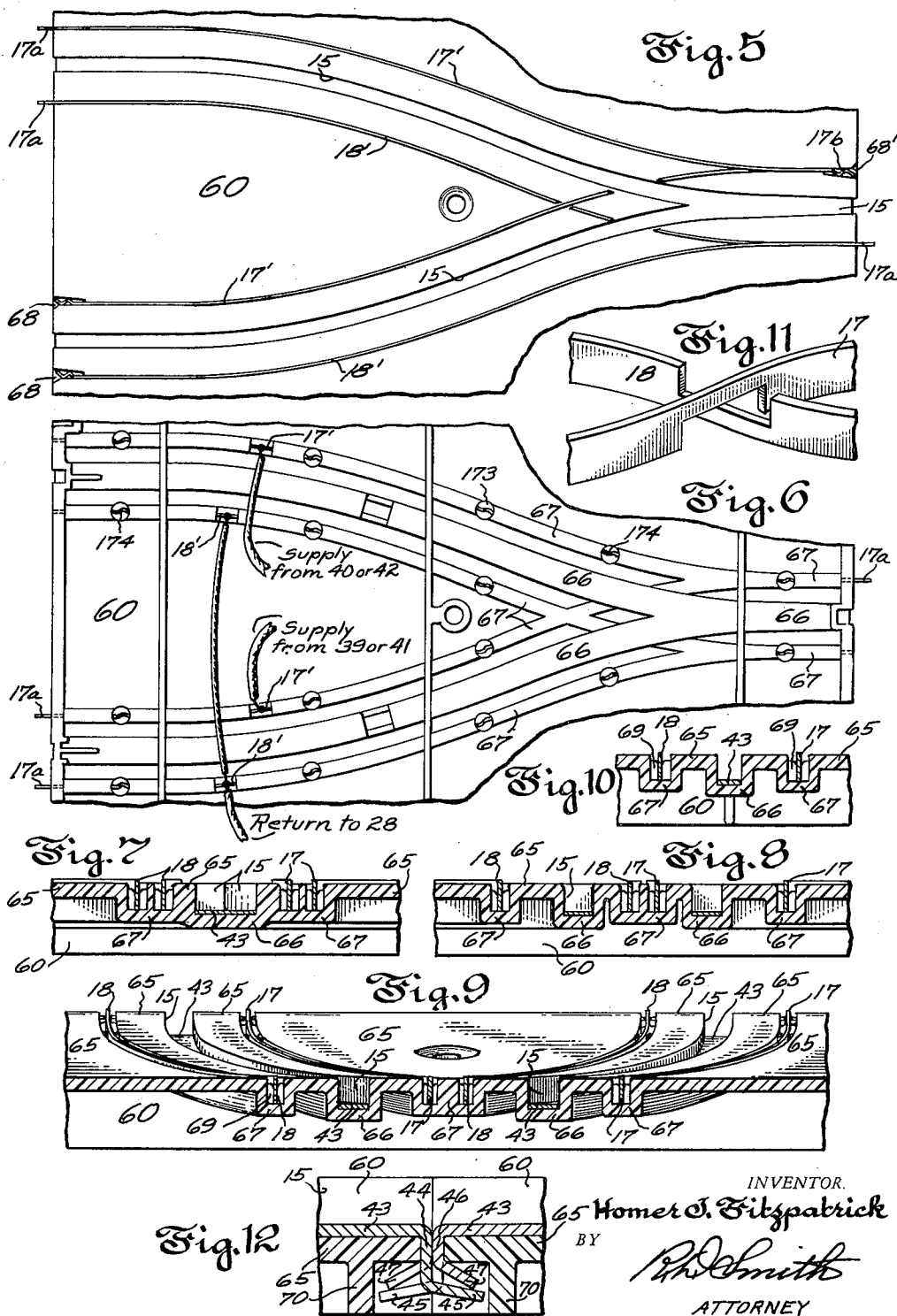
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Fig. 13

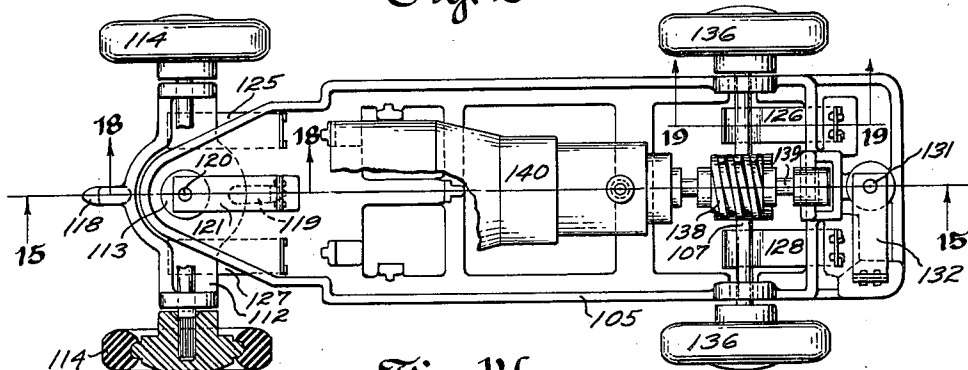


Fig. 14

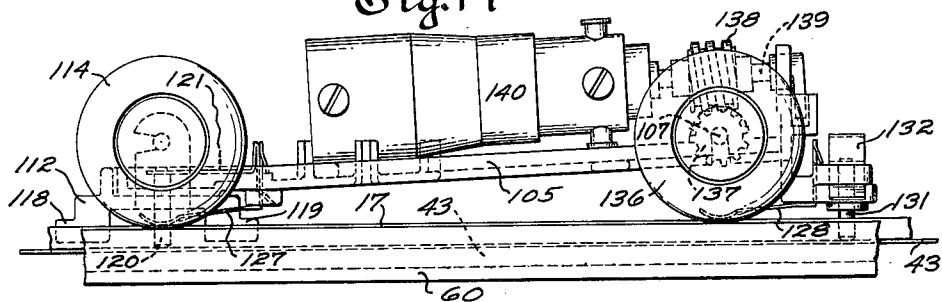
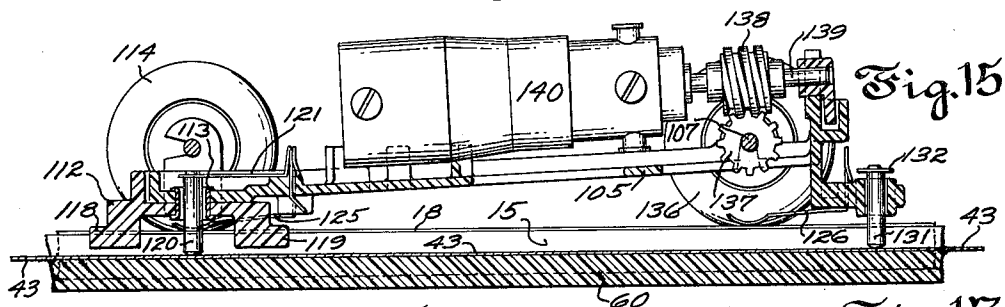


Fig. 16

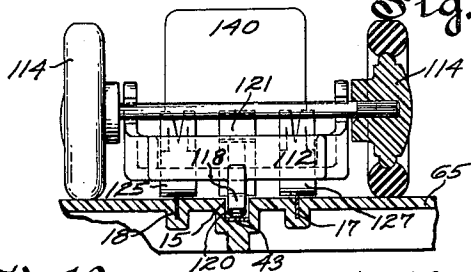


Fig. 17

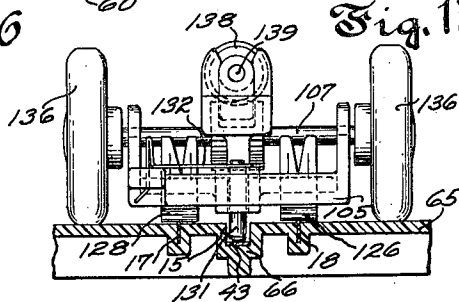


Fig. 18

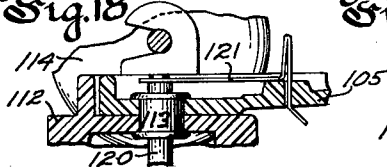
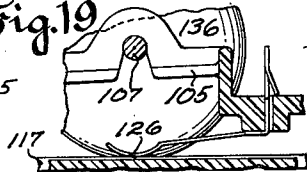


Fig. 19



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## SKILL INFLUENCED CHANCE PERFORMANCE OF MODEL RACE GAME VEHICLES

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10 Claims. (Cl. 104—60)

This invention relates to a novelty feature herein referred to as "chicane" applicable to toy race games and model vehicular traffic systems for adding play interest and contest excitement in the operation of such toys which usually are characterized by parallel courses of guided vehicle travel. An example of such toys is illustrated in a co-pending application, Serial No. 127,302, filed July 27, 1961, owned by the assignee of the present application.

It has been proposed, in simulated race tracks affording parallel courses of travel for miniature or model automotive vehicles, to accomplish vehicle guidance by means of grooves that determine separate paths of travel for the vehicles so arranged that they cross each other at a common grade level for leading racing vehicles from an inner course to an outer course or vice versa at such crossover. In former proposals care has been taken that a vehicle traveling in one course shall be certain to cross the other course at the intersection of the courses.

It is an object of the present improvements to provide a mergence of inner and outer courses of travel in a toy race track at a common point in both courses of vehicle travel herein termed a "chicane" constructed to serve as an intersection capable of leading a vehicle traveling in one course to cross the other course but with uncertainty as to whether such shall be the result of whether at the chicane a vehicle may continue following the same course instead of crossing over, the purpose being to introduce into the play an element of chance which to some degree can be tempered or influenced by exercise of skill in the remote control of the speed of one or more vehicles as they enter and leave the chicane. Thus the term chicane connotes the artfulness or dexterity involved in influencing by remote control the performance of vehicles contesting a right-of-way at the chicane.

Another object is to provide increased interest in operation of the toy by incorporating the chicane in two separable sections of a continuous road bed so that the sections incorporating the chicane can be inserted as a substitute for regular road bed sections at any desired point or points in the circuitous extent of the race track.

A further object is to provide separate manual electrical controls in the system of electrical energization of each of two electrically separate parallel courses of vehicle travel so that, say, racing cars traveling their respective courses can be independently controlled as to speed at the chicane by contesting players thereby to influence variously the performance of the vehicles as to whether either vehicle shall or shall not cross the path of the other vehicle in passing through the chicane.

Through such means attempts can be made to cause or avoid collision between the vehicles arriving at the chicane at nearly the same time. The results can be recorded in a scoring system according to rules of play. This adds greatly to the entertainment value of miniature traffic systems whether of the race track type or of the more complicated interchange traffic simulating types that employ settable branch track switches as disclosed in the aforesaid pending application.

The above and other objects of the present improvements will appear in greater particularity from the following description of successful embodiments of the invention having reference to the accompanying sheets of drawings wherein:

FIG. 1 shows diagrammatically one kind of electro-mechanical system in a sectional roadbed for miniature electric vehicles of the race track type incorporating at each of two points in the circuit of vehicle travel a chicane embodying the present improvements.

FIG. 2 shows diagrammatically a modified electro-mechanical system of sectional roadbed employing a different electric circuitry.

FIG. 3 is an enlarged plan view of one section of roadbed showing more particularly certain structural features of the invention corresponding to FIG. 1.

FIG. 4 is a bottom view of the roadbed section of FIG. 3.

FIG. 5 is a plan view of a modified section of roadbed corresponding to FIG. 2.

FIG. 6 is a bottom view of the roadbed section of FIG. 5.

FIG. 7 is an enlarged view taken in section on the plane 7—7 in FIG. 3, looking in the direction of the arrows.

FIGS. 8, 9 and 10 are views drawn on the same scale as FIG. 7 taken in section on the respective planes 8—8, 9—9 and 10—10 in FIG. 3, looking in the direction of the arrows.

FIG. 11 is a perspective view of conductive strips removed from the roadbed where crossing each other without making electric contact.

FIG. 12 is a view drawn on a still further enlarged scale taken in section on the plane 12—12 in FIG. 3.

FIGS. 13 and 14 are respectively a plan view and side elevation showing on an enlarged scale the chassis of a miniature automotive race car suitable for traveling on and collecting propulsion current from the roadbeds illustrated in FIGS. 3 or 5.

FIG. 15 is a view taken in section on the plane 15—15 in FIG. 13 looking in the direction of the arrows.

FIG. 16 is a front view looking from the left at FIG. 13, the roadbed appearing in section.

FIG. 17 is a rear view looking from the right at FIG. 13, the roadbed appearing in section.

FIGS. 18 and 19 are views taken in section on the respective planes 18—18 and 19—19 in FIG. 13, looking in the direction of the arrows.

For convenience of comparison with the aforementioned copending application, Serial No. 127,302, many of the parts referred to in the following description are designated herein by reference numerals that correspond with those used in the copending application.

In FIG. 1 the insulative sectional road bed 12 incorporates two circuitous courses or lanes of vehicle travel 13 and 14 that are mainly parallel. Each lane includes a vehicle guiding central groove 15 sunk in the top surface of the roadbed. This groove in each lane is flanked by an inner conductor 17 and an outer conductor 18 running alongside and spaced laterally from each groove 15 on opposite sides thereof. The terms "inner" and "outer" are with respect to the curvature of the circuitous race track. Current is supplied to each of these lateral conductors 17 and 18 in the electrical system diagrammed in FIG. 1. In other figures of the drawings these two conductors are shown to comprise strips of conductive metal whose top edges project a little above the top surface of the roadbed. The particular system shown in FIG. 1 also includes a conductor 43 resting on the bottom surface of each of the grooves 15, and such conductor is continuous and of the same electrical polarity throughout all of the grooves 15. This central conductor is represented by heavy black lines in FIG. 1 to show that such central conductor 43 in groove 15 of the outer lane 13 merges with such central conductor 43 in groove 15 of the inner lane 14. Although elsewhere separated, the grooves 15 become coincident at the junction of conductors 43 at each of two points in the circuitous courses

of the lanes. The novel arrangements of the groove and of all the conductors at these points are herein referred to as "chicanes" designated by the reference numeral 50.

The inner lateral conductor 17 and outer lateral conductor 18 in each of lanes 13 and 14 in FIG. 1 are of the same (positive) electrical polarity which differs from the polarity (negative) of the central conductor 43. The lateral conductors 17, 18 cross each and cross the central conductor 43 at the chicane but without making electrical contact. This is diagrammatically indicated in FIG. 1. Such non contacting crossover of the conductors is accomplished structurally by means of the relative shaping and positioning of the lateral conductors shown most clearly in FIG. 11 where two such conductors appear removed from the insulative material of the roadbed but related as when embedded therein. Where the lateral conductors 17 and 18 cross the central conductor 43 they avoid contact therewith by terminating short thereof to form a gap through which the central conductor extends. Electrical continuity of each lateral conductor is then afforded by bus wires 53 and 54 as shown in FIG. 4 which in an electrical sense span the gap.

The chicane may be incorporated in a combination of two special sections 60 of the roadbed 12. These special sections 60 may be alike in construction but reversely disposed end-for-end and when so assembled may be substituted for any of the regular straight sections 61 or curved sections 64 of the roadbed proper for introducing thereinto the chicane feature.

FIG. 1 represents at 24 a so-called power pack 24 containing voltage stepdown primary and secondary windings as in a toy transformer supplied with alternating current at household voltage through a conventional attachment cord 26. The housing of this power pack also contains a current rectifier (not shown) that delivers unidirectional current of negative polarity at binding post 28 and of positive polarity at binding post 29 at voltages reduced to potentials used in toy railroads.

In FIG. 1 binding post 28 is connected only to the central conductor 43 in each of the two lanes 13 and 14 of vehicle travel while binding post 29 is connected through a lead 33 to a variable rheostat 36 and at the same time through a parallel lead 32 to a similar and separately operable variable rheostat 38. From rheostat 36 current is fed to only the inner conductor 17 of each of the two lanes of vehicle travel, while current from rheostat 38 is fed to only the outer conductor 18 in each of the said two lanes. The two rheostats may be located sufficiently far apart so that they can be separately operated by two players respectively who are contesting the racing performance of rival vehicles running respectively in lanes 13 and 14 toward and through the chicane. In FIG. 1 it will be clear that although the polarity of current is the same throughout all the lateral conductors 17 and 18 in both lanes nevertheless the potential of the current in the inner conductors 17 of both lanes can be made different from the potential in the outer conductors 18 of both lanes under the separate control of independent rheostats 36 and 38.

In FIGS. 2, 5 and 6 a modified electrical system is shown wherein the central conductor 43 is omitted from the groove 15. Consequently in the wiring diagram of FIG. 2 the binding posts 28 and 29 of the power pack 24 have no electrical connection to any conductor in the roadbed other than to the inner and outer lateral conductors 17' and 18' in each of the lanes 13' and 14'. However either of rheostats 36 or 38 can feed positive current to either of the inner lateral conductors 17' through selectively operable make-and-break switches indicated as 39, 40, 41 and 42 in FIG. 2. In FIG. 2 the outer lateral conductors 18' in both lanes are in permanent connection with the negative binding post 28 of the power pack.

Each of these said four switches can be located to be individually manipulated by a different contestant so that

as many as four players can independently operate the switches while two more players can independently operate the two variable rheostats. Thus various contesting players can speed up, start, or stop contesting vehicles in each of the lanes 13' and 14'. Obviously any player can defeat the performance of any vehicle that is intended by another player.

The physical construction of the main extent of the sectional roadbed is depicted in FIGS. 7-12, inclusive, to be approximately as disclosed in the aforesaid pending application wherein each section comprises a downward open, slab-like, hollow, molded, integral body of insulative plastic material, such as high impact polystyrene, incorporating a top wall 65 bordered by side walls 70 on which the roadbed stands. From the top wall 65 there depends individually continuous ribs 66 and 67 respectively underlying the groove 15 and each of the conductors 17 and 18 or 17' and 18'. Each of ribs 67 contains a continuous narrow channel 68 paralleling groove 15 in which channels there are fixedly but removably lodged the upright, resilient, metallic strips 17, 18 or 17', 18' whose top edge as aforesaid is slightly elevated above the top horizontal surface of section wall 65. While not so shown in FIGS. 3 and 5, the channels 68 may contain spaced bosses 69 projecting inward from the side walls of the channel to engage the side faces of the strips 17, 18 and give these strips a retentive frictional fit in the channels 68 which thus are enabled to be wider than the thickness of the strips. This feature of the construction is better shown in FIGS. 7 to 10, inclusive. Strips 17 and 18 are even more securely held down in the channels 68 by twisting their bottom edges at 17a at spots along the ribs 67 where such strip edges are exposed within cut-outs 173 in the plastic of the ribs.

As in the aforesaid co-pending application one end 17a or 18a of each of strips 17 and 18 is straight and projects a short distance beyond the mating edge of its roadbed section. The other end portion 17b or 18b of the same strip has a resilient offset formation capable of flexing laterally in a socket-like enlargement 68' at the open end of the channel 68. When any roadbed section is placed in edge-to-edge contact with a mating roadbed section the straight end 17a of strip 17 becomes resiliently squeezed between the offset end portion 17b of the mating strip 17 and the side wall of channel 68 thus insuring good electrical contact between conductive strips of adjacent roadbed sections while permitting the sections to be separated by merely pulling them apart.

Corresponding conductive continuity of the central conductor 43 in the grooves 15 of the sections is obtained as shown in FIG. 12 wherein one-half of the width of the end portion of each of the conjoined central conductors 43 is bent downward over the end of the insulative wall 65 of the roadbed section 60 in a portion 44 and then is bent away from the section edge in outboard relation thereto in a terminal portion 45. The other half of the width of the same end portion of the conjoined central conductors 43 is also bent downward in a portion 46 and then bent inward toward the section in a fold-over manner in its terminal portion 47. When the edges of the two chicane sections 60, 60 are brought together, the strip portions 45 and 47 wipe against each other as accommodated by the springiness of the strips 43 and without causing permanent distortion of the bent end portions of the conductors. The individual opposite end portions 164 of central conductors 43 of the chicane sections of roadbed make electrical contact with conductors 43 of the regular roadbed sections 61 as in the copending application. Also as in the before mentioned copending application, the meeting edges of the hollow slab-like bodies of insulative material that form the roadbed sections are held in uniplanar alignment by the insertion of lugs 80 and 81 into sockets 82 and 83, respectively, of the adjacent roadbed section with a snug slip fit.

The construction of a miniature or model vehicle, such

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as a simulated race car suited to running in the lanes of the roadbeds of FIGS. 1, 2, 3 and 5, is shown in FIGS. 15-19, inclusive, and may be like that illustrated and described in the aforesaid copending application. The vehicle chassis 105 has journaled therein a detachable rear wheel axle 107. The front end portion of chassis 105 rests on a wheeled truck 112 that is pivotally connected by an eyelet 113 to swivel relatively to the chassis for steering the front road wheels 114. The insulative body of truck 112 also carries depending therefrom or integral therewith two vehicle piloting feet 118, 119 which have a somewhat loose or free sliding fit in the groove 15 of the roadbed hereinbefore described. The hollow center of pivotal eyelet 113 admits therethrough and completely spaced therefrom a spring mounted, conductive, current collecting rod 120 normally supported and constantly urged downward into sliding contact with the central conductor 43 by a conductive leaf spring 121 mounted on the chassis as best shown in FIG. 15.

In a manner similar to the removable mounting of leaf spring 121 on the chassis, one to four additional conductive leaf spring current collectors 125 to 128, inclusive, can likewise be lodged removably and interchangeably on the chassis respectively at its respective four corners so as to wipe lightly on lateral conductors 17 and 18 of the roadbed, or selectively on any one or more of such lateral conductors depending on how many of the leaf spring collectors 125, 126, 127 or 128 the vehicle chassis carries.

At the rear end of chassis 105 there is a rearwardly offset, vertical slide bearing removably carrying a second current collecting rod 131 which is normally pressed downward into constant wiping engagement with the central conductor 43 by means of a conductive leaf spring 132 fixed on the chassis.

The axle 107 of the rear traction wheels 136 has fixed thereon a driven worm wheel 137 in mesh with the driving worm 138 on the power shaft 139 of the direct current reversible electric motor 140 carried by the chassis as shown.

The opportunity for increased fun in the operation of simulated traffic systems or race tracks having the chicane feature of these improvements will be recognized in the almost unlimited forms of starting, stopping and speed control of the racing miniature vehicles as they approach and pass through the chicane with a performance that can be only partly influenced by competing players manipulating the several controls of current fed to the various conductors in the two or more lanes of vehicle travel. Such vehicles can be made to race into the chicane at varying speeds, stopped and restarted at the pleasure of the players, caused to collide or to just miss colliding, all accompanied by the uncertainty as to which branch lane the vehicle will pass upon leaving the chicane. The results will be changed by variation in the length of the stretch of the grooves where they are coincident and by variation of the angle at which the grooves converge into and depart from such coincidence.

The appended claims are directed to all fair equivalents of the embodiments that are herein disclosed to illustrate the invention.

What is claimed is:

1. A model roadbed structure equipped electrically to energize and guide self-propelled model vehicles in chance determined courses of travel, comprising in combination with a model vehicle, at least two current collectors carried by said vehicle, conductors disposed along said roadbed in each of side-by-side unidirectional lanes of travel positioned to be wiped conductively by said current collectors for feeding propulsion current to said vehicle, a piloting foot carried by said vehicle, and a portion of said roadbed structure containing continuous grooves in respectively different lanes coextensive respectively with said conductors and of width to be tracked by and to guide said piloting foot, two of said grooves merging in a direction

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of vehicle travel from the said respective lanes into coincidence throughout a common directional extent of the length of said grooves at a junction of said lanes and forking beyond said junction into two branch grooves diverging from each other at an acute angle, whereby a vehicle traveling through said junction can be steered by its said piloting foot from said common extent of groove length into either of said branching grooves.

2. A simulated roadbed structure as defined in claim 1, in which the groove width throughout the said coincident extent of the said grooves is substantially no greater than the single width of one of said grooves.

3. A simulated roadbed structure as defined in claim 1, in which the extent of the said coincidence of the said grooves is greater than the length of the said piloting foot in the direction of vehicle travel.

4. A model roadbed structure as defined in claim 1, together with a source of electric current having at least two supply terminals, one of said terminals being electrically connected to one of the said conductors in each of the said lanes and the other of said terminals being electrically connected to a different one of said conductors in each of said lanes.

5. A model roadbed structure as defined in claim 1, in which said roadbed structure comprises a continuous series of adjoining sections traversed by the said lanes, and two of said lanes together with the said coincident extent of the said grooves at the said junction are confined to a common level on only two of said adjoining roadbed sections.

6. A model roadbed structure as defined in claim 5, in which the said two of the said roadbed sections are mutual facsimiles separably joined on a line intersecting the said common directional extent of coincidence of the said grooves.

7. A model roadbed structure as defined in claim 6, in which the said two of the said roadbed sections are joined together in reverse image relationship.

8. A simulated roadbed structure equipped electrically to energize and guide self-propelled model vehicles in chance determined lanes of travel, comprising in combination with said vehicles, at least two current collectors carried by each vehicle, conductors disposed along said lanes to be wiped conductively by said current collectors for feeding propulsion current to said vehicles, a piloting foot carried by each of said vehicles, and a portion of said roadbed structure containing a continuous groove coextensive with one of said conductors in side-by-side relation thereto of width to be tracked by and guide said piloting foot, at least two of said grooves merging openly in a direction of vehicle travel into coincidence at a junction in their lengths and opening therebeyond in said direction into both of at least two branch grooves diverging from each other at an acute angle, whereby a vehicle traveling through said junction can be steered by its said piloting foot into either of said branching grooves, one of said conductors occupying said groove and another of said conductors crossing both said groove and said groove occupying conductor without coming into conductive contact with the latter and without obstructing the tracking of said piloting foot in said groove.

9. A simulated roadbed structure equipped electrically to energize and guide self-propelled model vehicles in chance determined lanes of travel, comprising in combination with said vehicles, at least two current collectors carried by each vehicle, conductors disposed along said lanes to be wiped conductively by said current collectors for feeding propulsion current to said vehicles, a piloting foot carried by each of said vehicles, and a portion of said roadbed structure containing a continuous groove coextensive with one of said conductors in side-by-side relation thereto of width to be tracked by and guide said piloting foot, at least two of said grooves merging openly in a direction of vehicle travel into coincidence at a junction in their lengths and opening therebeyond in said

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direction into both of at least two branch grooves diverging from each other at an acute angle, whereby a vehicle traveling through said junction can be steered by its said piloting foot into either of said branching grooves, there being three of the said conductors in each of said lanes, one of said three conductors occupying the full extent of said grooves, and the other two of said three conductors paralleling the said grooves in each of said lanes, together with a source of electric current having at least two supply terminals, one of said terminals being electrically connected to said groove occupying conductor in each of said lanes, and the other of said terminals having parallel branches each containing a variable rheostat, one of said rheostats being connected to one of said groove paralleling conductors in each of said lanes, and the other of said rheostats being connected to a different one of said groove paralleling conductors in each of said lanes.

10. A simulated roadbed structure equipped electrically to energize and guide self-propelled model vehicles in chance determined lanes of travel, comprising in combination with said vehicles, at least two current collectors carried by each vehicle, conductors disposed along said lanes to be wiped conductively by said current collectors for feeding propulsion current to said vehicles, a piloting foot carried by each of said vehicles, and a portion of

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said roadbed structure containing a continuous groove coextensive with one of said conductors in side-by-side relation thereto of width to be tracked by and guide said piloting foot, at least two of said grooves merging openly in a direction of vehicle travel into coincidence at a junction in their lengths and opening therebeyond in said direction into both of at least two branch grooves diverging from each other at an acute angle, whereby a vehicle traveling through said junction can be steered by its said piloting foot into either of said branching grooves, at least one of said conductors in one of said lanes crossing at least one of said conductors in the other of said lanes near said junction of said grooves without coming into mutual conductive contact.

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