

Jan. 9, 1951

S. P. ROSHAK

2,537,281

ELECTRIC TOY

Filed Sept. 16, 1946

4 Sheets-Sheet 1

Fig. 1.

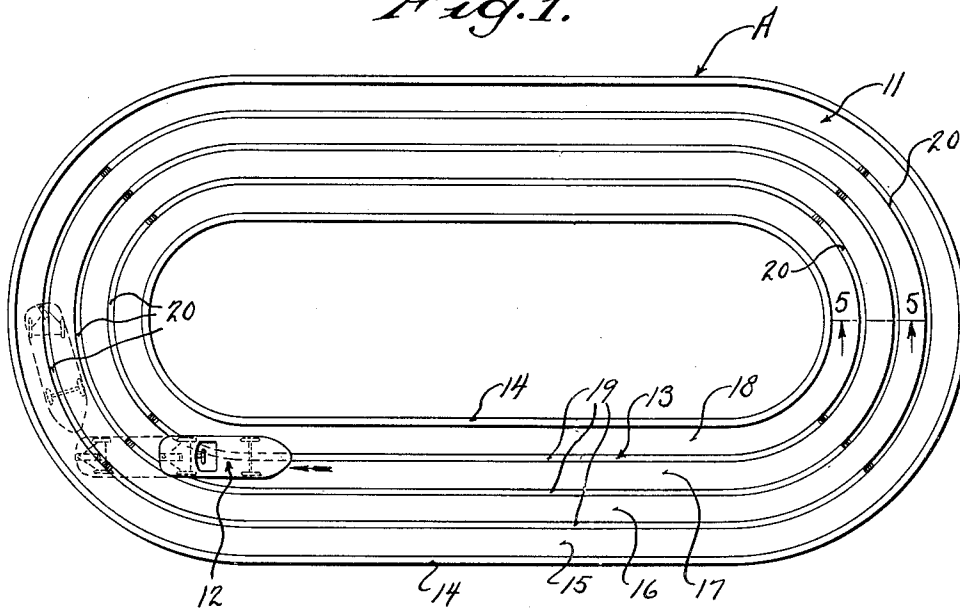
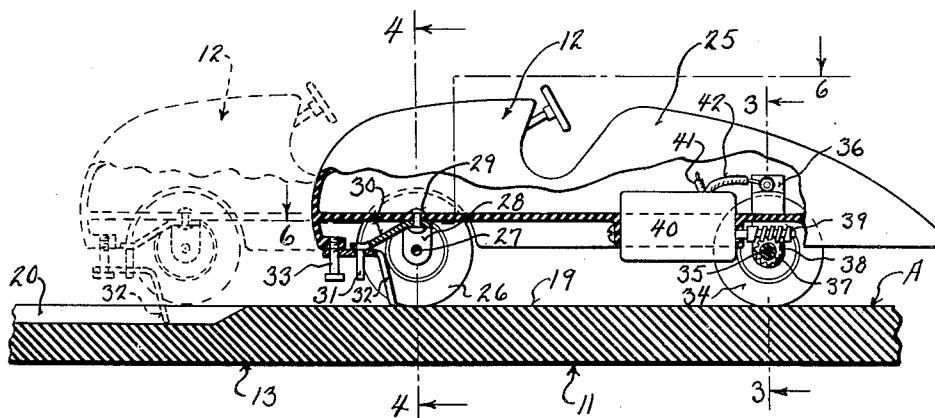


Fig. 2.



INVENTOR.

INVENTOR,
STANLEY P. ROSHAK

BY

ATTORNEYS

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S. P. ROSHAK
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Fig. 3.

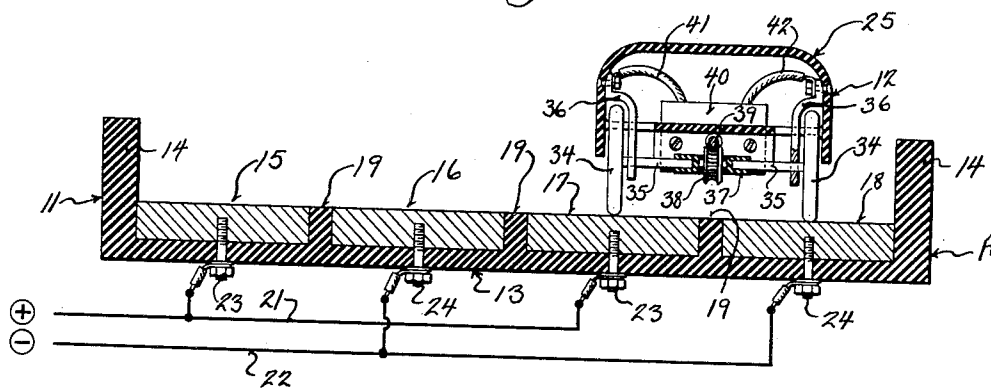


Fig. 4.

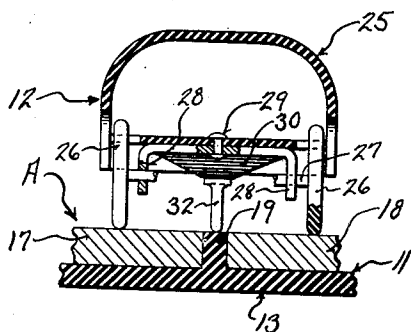


Fig. 5.

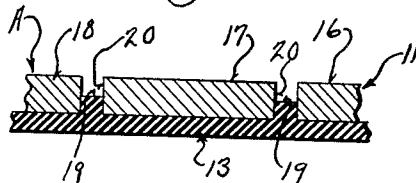
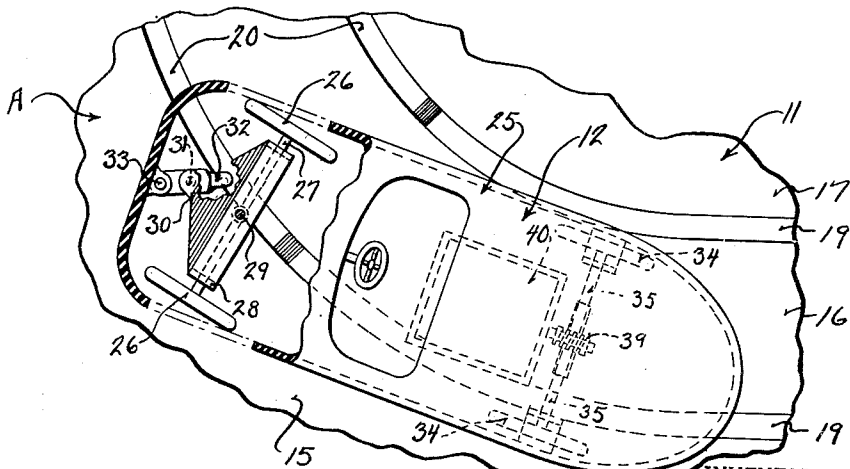


Fig. 6.



INVENTOR.
STANLEY P. ROSHAK

BY

Charles W. Wright

ATTORNEYS.

Jan. 9, 1951

S. P. ROSHAK
ELECTRIC TOY

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Fig. 7.

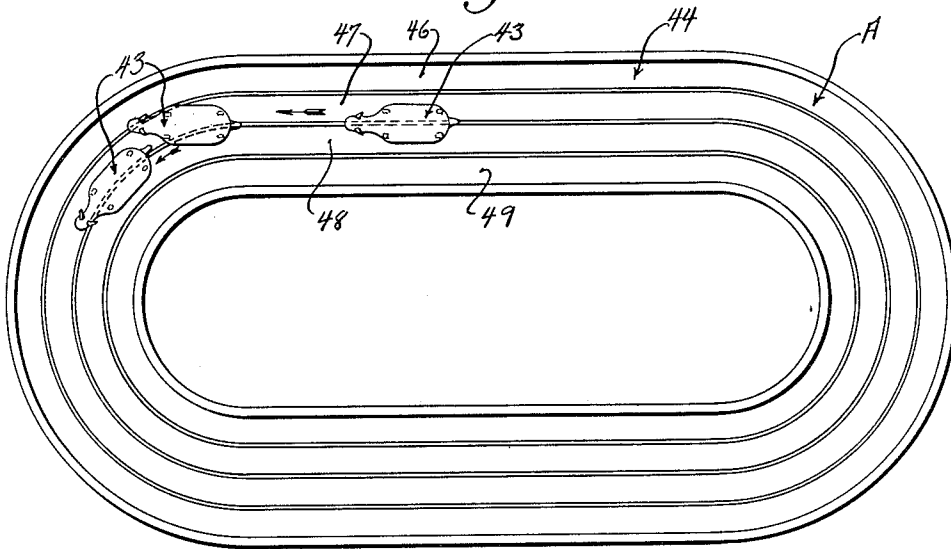
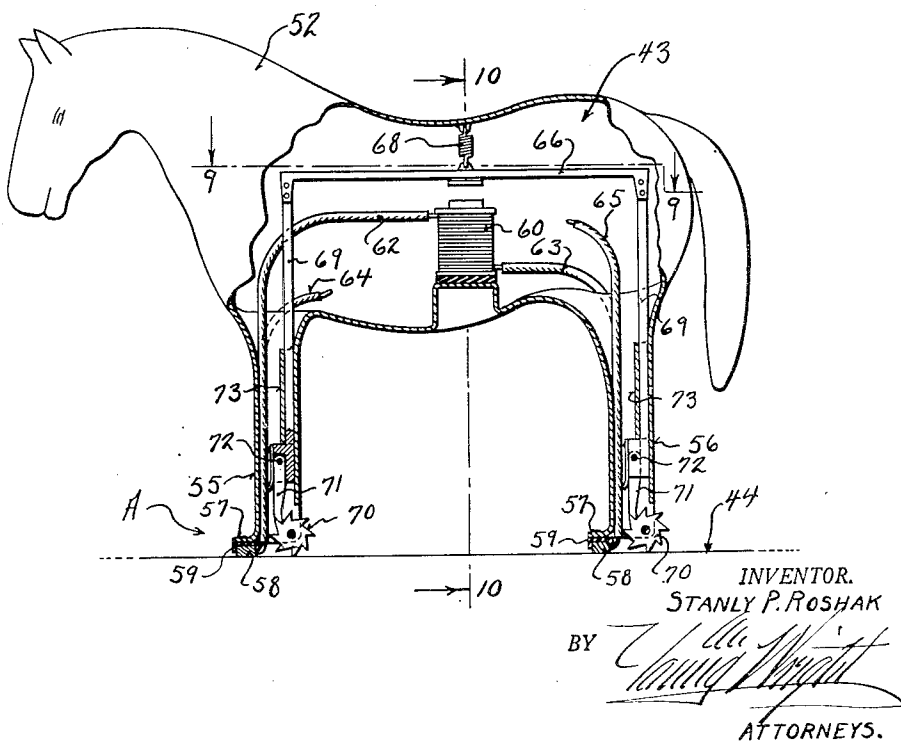


Fig. 8.



INVENTOR.
STANLEY P. ROSHAK
BY *Charles Wyatt*
ATTORNEYS.

Jan. 9, 1951

S. P. ROSHAK
ELECTRIC TOY

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Fig. 9.

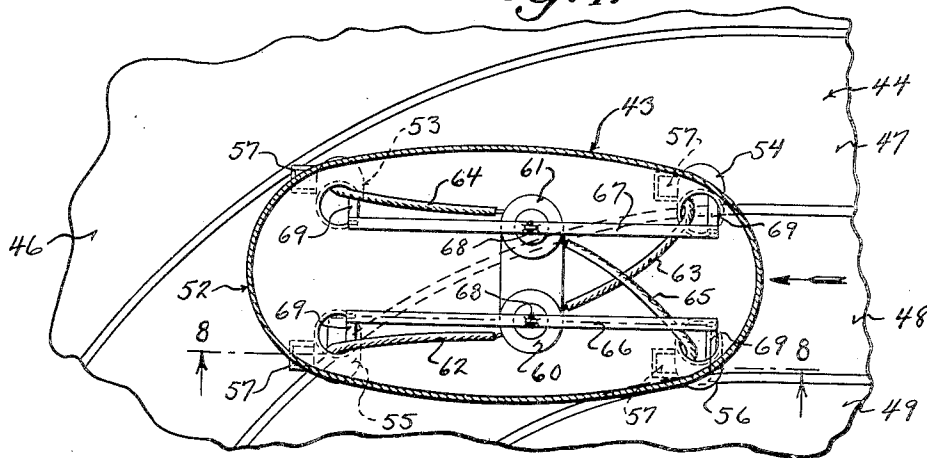
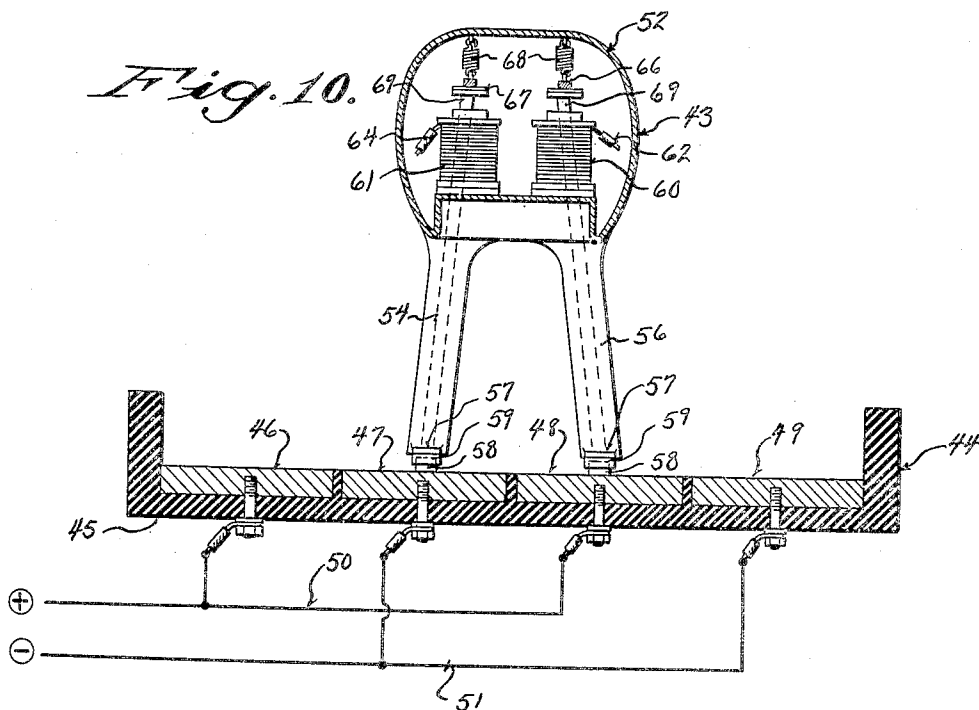


Fig. 10.



INVENTOR,
STANLEY P. ROSHAK
BY *Charles Wright*
ATTORNEYS.

UNITED STATES PATENT OFFICE

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ELECTRIC TOY

Stanley P. Roshak, Milwaukee, Wis.

Application September 16, 1946, Serial No. 697,209

1 Claim. (Cl. 104-148)

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This invention appertains to toys and amusement devices and more particularly to an electrically operated miniature race track.

One of the primary objects of my invention is to provide an amusement device embodying a miniature race track along which is adapted to travel electric motor driven toy vehicles or figures simulating horses, dogs, etc.; novel means being provided for the transmission of current from the track to the motors of the vehicles or figures.

Another salient object of the invention is to provide novel means for steering the vehicles around curves during the travel of the vehicles on the track.

A further object of my invention is to provide guide grooves in the track, particularly around the end curved sections thereof, with a depending steering arm on each vehicle for finding and engaging a guide groove in the track for turning the wheels of the vehicle in accordance with the layout of the track.

A further important object of my invention is to provide a toy race track or the like having figures simulating the appearance of animals such as horses, with means carried by the feet of the figures for propelling the figures around the track; electric driving means being provided in the bodies of the figures receiving current from the track for actuating the propelling means.

A still further object of my invention is to provide means for actuating the propelling means for the figure on one side thereof independent of the propelling means on the other side thereof, whereby should the contact shoes for one set of propelling means be out of engagement with the conductor strips of opposite polarity on the track, the other pair of shoes will serve to supply current to the other set of propelling means, thereby tending to turn the figure around a curved track.

A still further object of my invention is to provide an amusement device of the above character which will create interest and which can be placed upon the market at a reasonable cost.

With these and other objects in view the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawings, in which drawings

Figure 1 is a top plan view of my amusement device showing one of the vehicles on the track.

Figure 2 is an enlarged fragmentary detail longitudinal sectional view illustrating the action of the steering means for the vehicle.

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Figure 3 is a transverse sectional view taken substantially on the line 3-3 of Figure 2 looking in the direction of the arrows and illustrating the driving means for the vehicle and the means for conducting current to the motor of the vehicle.

Figure 4 is a fragmentary transverse sectional view taken substantially on the line 4-4 of Figure 2 looking in the direction of the arrows, showing the front steering end of a vehicle.

Figure 5 is a fragmentary sectional view through the track, the view being taken substantially on the line 5-5 of Figure 1 looking in the direction of the arrows and illustrating the guide grooves in the curved portion of the track.

Figure 6 is a detail fragmentary view partly in plan and partly in section, the part in section being taken substantially on the line 6-6 of Figure 2 looking in the direction of the arrows and illustrating the steering means.

Figure 7 is a top plan view of a miniature race track showing the use of my novel figures thereon.

Figure 8 is an enlarged longitudinal sectional view through one of the figures taken substantially on the line 8-8 of Figure 9 looking in the direction of the arrows.

Figure 9 is a horizontal sectional view through one of the figures taken substantially on the line 9-9 of Figure 8 looking in the direction of the arrows and showing the initial position of a figure as it approaches a curved portion of the track.

Figure 10 is a transverse sectional view taken substantially on the line 10-10 of Figure 8 looking in the direction of the arrows.

Referring to the drawings in detail, wherein similar reference characters designate corresponding parts throughout the several views the letter A generally indicates my novel amusement device and the same includes a miniature race track 11. As shown in Figures 1 to 6 inclusive toy vehicles 12 are adapted to travel around the track.

The miniature race track 11 can be constructed in different manners and of different shapes, but as illustrated the same can be of substantially oval shape in plan or of an oblong form with rounded ends. It is to be also understood that the base could be laid out in the form of a city or town, with stores and the like. In the present instance I have shown the track to include a baseboard 13 formed from plastic or other non-electric conducting material and the inner and outer edges of the board can be provided with guard rails 14. Imbedded in the baseboard are spaced parallel relatively wide electric conduc-

tor strips 15, 16, 17 and 18. The conductor strips can be insulated one from the other in any preferred way, but as illustrated the conductor strips can be conveniently insulated and separated one from the other by ribs 19 formed on the base board.

In accordance with my invention the ribs 19 at the curved portions of the track can be reduced in height so as to form guide grooves 20 between the conductor strips. The purpose of these guide grooves 20 will later appear. These guide grooves could extend entirely around the track or any portion thereof without departing from my invention.

Electric current is supplied to the track from any suitable source of electric energy and I have shown feed and return wires 21 and 22 leading toward the track. The wire 21 is electrically connected to binding posts 23 connected with the conductors 15 and 17. The wire 22 is connected to the conductor strips 16 and 18 by binding post 24. Thus there are provided alternate conductor strips of opposite polarity. That is, one set of conductor strips constitutes feed strips and the other set constitutes return strips. Naturally the track can be provided with as many sets of conductor strips as may be preferred.

Likewise there may be as many toy vehicles 12 as may be desired and as each vehicle is constructed identical with each other only one vehicle has been illustrated and only one vehicle will be described in detail.

The vehicle 12 is preferably in the form of a racing automobile and includes a body 25. This body is preferably molded from plastic or other nonelectric conducting material. The body is provided with front wheels 26 which are mounted upon a swinging steering axle 27. The axle is mounted in an inverted U shaped yoke 28 and this yoke at its center is mounted for swinging or turning movement on a pivot pin or rivet 29 carried by the body. The yoke has formed thereon at its transverse center a forwardly extending leg 30 and this leg preferably inclines downwardly. The forward end thereof carries a depending guide pin 31. Slidably mounted upon the pin for up and down movement is a depending steering arm 32. This arm is held by gravity against the track, but if desired spring means can be utilized for normally urging the arm down. The arm forward of the pin 31 is slidably and rotatably mounted upon a supporting stud 33 and this stud is anchored to the body of the vehicle. From the construction so far, it can be seen that the steering arm is free to move up and down and to turn on the stud 33. Obviously, upon the turning of the arm, its motion will be transmitted to the yoke 28 through the leg 30 and consequently the front wheels 26 will be turned.

During the travel of the vehicle around the track, the steering arm is in constant engagement with the upper face of the track and when the vehicle approaches a curve the arm will fall in one of the grooves 20 which will bring about the turning of the vehicle (see Fig. 6).

The vehicle is provided with rear drive wheels 34 and these wheels are secured to stub axles 35 rotatably mounted in bearing brackets 36 secured to the opposite sides of the vehicle. These brackets are formed from electric conducting material for a purpose, which will later appear. These stub axles 35 are united for synchronous turning movement by a sleeve or coupling 37 formed from nonelectric conducting material.

Thus each stub axle is insulated one from the other. It is to be also understood that the rear wheels 34 are of electric conducting material.

The coupling or sleeve 37 has rigidly secured thereto or formed thereon a worm wheel 38 and this worm wheel 38 meshes with a worm 39 formed on or keyed to the armature shaft of a small electric motor 40. The electric motor 40 is fastened to the body 25 of the vehicle and the terminals thereof are electrically connected by separate wires 41 and 42 to the opposite brackets 36.

While I have illustrated one particular form of drive between the electric motor 40 and the stub axles 35 it is to be understood, of course, that other equivalent driving means can be substituted therefor.

When the vehicle is placed on the track 11 with the rear wheels thereof engaging conductor strips of opposite polarity, say strips 17 and 18 (see Fig. 3) the current will flow from wire 21, binding posts 23, conductor strips 17, one wheel 34, one bracket 36, wire 41, motor 40, wire 42, the other bracket 36 and wheel 34, conductor strip 18 back to wire 22. Consequently the vehicle will be propelled around the track. As the same reaches a curve the vehicle tends to continue its straight forward path (see Fig. 1) until the steering arm 32 finds its way into one of the grooves 20, at which time the front steering wheels will be turned and the vehicle will follow the track. This lends interest to the device in that where a plurality of vehicles are used on the track the same will change their positions relative to one another and thus lend excitement to the device. As the vehicles change their position from one set of conductors to another on the straightaway, this will only add to the further excitement of watching the amusement device. If it so happens that the rear wheels simultaneously engage nonconductor ribs, then current would momentarily be interrupted to the vehicle and this would give other vehicles time to pass the mentioned vehicle.

It is to be also understood, that the specific steering mechanism shown is by way of example and other types of steering mechanism can be employed.

While in Figures 1 to 6, I have shown toy automobiles, it is to be understood that toy figures can be utilized in lieu thereof and in Figures 7 to 10 of the drawing I have shown miniature animals 43 which are shaped to simulate the appearance of horses. Obviously other forms of animals can be used.

The track in this form of the invention is indicated by the reference character 44 and can be formed in the same manner as the track in Figures 1 to 6. Hence the track 44 includes a base plate 45 formed from nonelectric conducting material and the base plate carries spaced parallel conductor strips 46, 47, 48, and 49. The conductor strips 46 and 48 are electrically connected with a feed wire 50 while the strips 47 and 49 are electrically connected to a return wire 51. Alternating current is preferably supplied in this form of my invention.

Each figure 43 includes a body 52 fabricated to simulate the desired animal and the animal is provided with depending legs 53, 54, 55, and 56. The lower ends of the legs are shaped to simulate hoofs 57 and each hoof has connected therewith a contact shoe 58. It is to be noted that each contact shoe is insulated from its hoof by a piece of insulation 59.

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Rigidly mounted within the body 52 and insulated therefrom is a pair of spaced magnets 60 and 61. One terminal of the magnet 60 is electrically connected by wire 62 with the shoe 58 of one front leg 55. The other terminal of the magnet 60 is electrically connected, by wire 63 with the shoe 58 carried by the rear leg 54. Hence the terminals of this magnet are connected to opposite diagonal legs. One terminal of the magnet 61 is electrically connected to the contact shoe 53 carried by the leg 53 by a wire 64 and the other terminal of the magnet 61 is electrically connected, by wire 65 with the shoe 58 carried by the rear leg 56. Consequently the terminals of this magnet are electrically connected to shoes carried by the opposite diagonal legs of the figure. The magnet 60 is provided with a longitudinally extending armature 66 and the magnet 61 is provided with a similar armature 67. Both armatures are normally held in a raised position away from their magnets by contractile coil springs 68. The ends of the armatures each carry depending operating rods 69 which extend slidably through the hollow legs of the figures. Below the lower ends of the rod 69, the feet 57 of the legs of the figure carry rotatable ratchet wheels 70 and these ratchet wheels are adapted to engage the track and when turned serve as means for propelling a figure over a track. The rods 69 each carry a pivoted dog 71 and each dog is normally urged into engagement with its ratchet wheel by a spring 72. Suitable guiding means 73 is provided in each leg for each rod.

When a figure is placed on the track the opposite diagonal corner legs will engage conductor strips of different polarity and hence the magnets will receive current from the track. The energizing of the magnets 60 and 61 and the springs 68 will alternately raise and lower the rods 69 and this movement will turn the ratchet wheels 70. Hence the figures will travel along the track. The tendency of a figure when reaching the curved portion of the track is to travel straight ahead and consequently the shoes 58 carried by the legs 54 and 55 (see Fig. 9) will ride on the same conductor strip 47; and consequently no current will be fed to the magnet 60. However, the shoes 58 of the legs 53 and 56 will be

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on different conductor strips namely strips 47 and 48 consequently the magnet 61 will be periodically energized from the supply and consequently the ratchet wheels 70 carried by the legs 53 and 54 will be operated and the figure will tend to move around the curve.

As the points of the ratchet wheel 70 engage the track, they function, momentarily, to raise the contact shoes and interrupt the circuits to the magnets.

From the foregoing description, it can be seen that I have provided an amusement device which will simulate a race track and in which the figures associated therewith are motor driven from current transmitted from the track itself.

Changes in details may be made without departing from the spirit or the scope of this invention but what I claim as new is:

In an amusement device, a toy race track including a baseboard and a series of continuous conductors on said board spaced laterally, the conductor strips being of alternate polarity, feed and return wires for said strips, a toy vehicle adapted to travel along said track having a driving electric motor, a circuit between a pair of conductor strips and the motor, insulator ribs carried by the base board between the conductor strips, said insulator ribs terminating short of the upper faces of the conductor strips defining guide grooves between said conductor strips, said vehicle having front swinging steering wheels, a depending steering arm slidably and rotatably carried by the vehicle operatively connected with the steering wheels, said steering arm being normally held against the track and adapted to ride into a guide groove.

STANLEY P. ROSHAK.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,507,723	Avery -----	Sept. 9, 1924
1,606,691	Boyer -----	Nov. 9, 1926
1,613,866	Avery -----	Jan. 11, 1927
1,856,991	Franklin -----	May 3, 1932
1,886,484	Kline -----	Nov. 8, 1932