Nov. 14, 1967 A. EINFALT 3,352,251

TOY TRACK SYSTEM

Filed Sept. 8, 1965 2 Sheets-Sheet 1

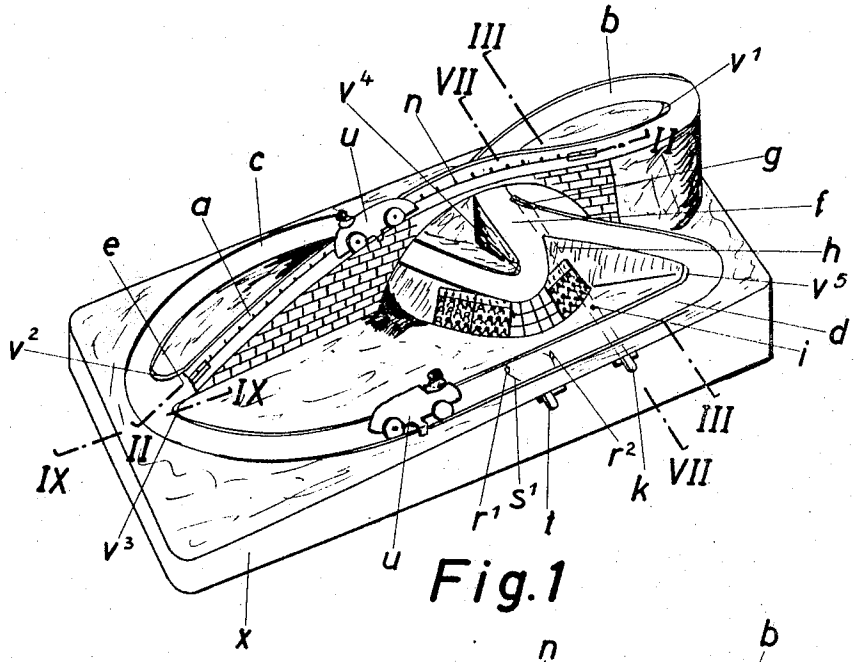


Fig. 1

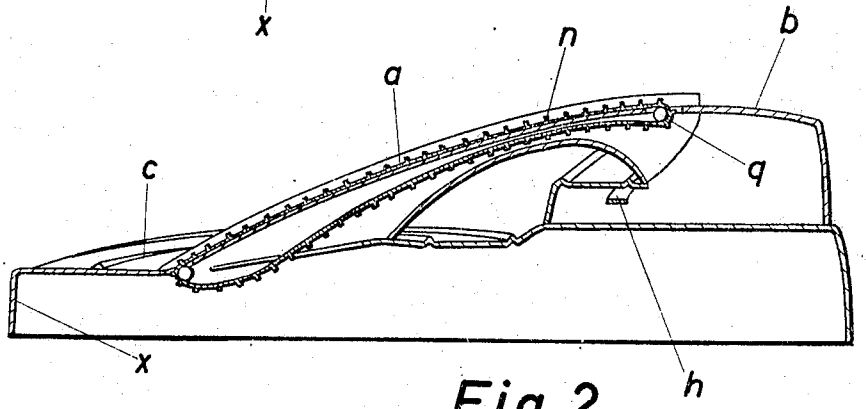


Fig. 2

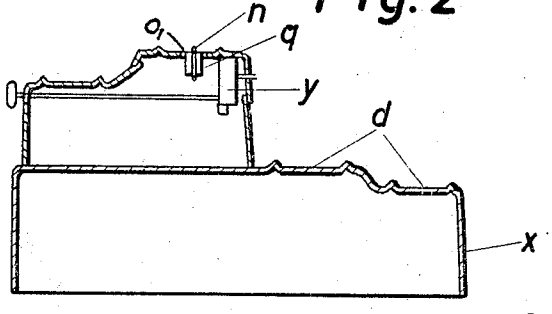


Fig. 3

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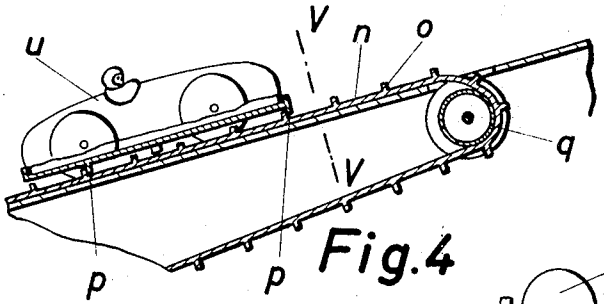


Fig.4

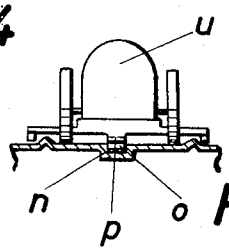


Fig.5

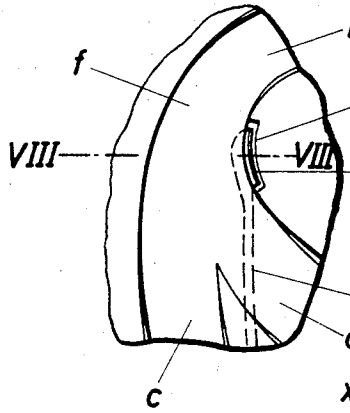


Fig.6

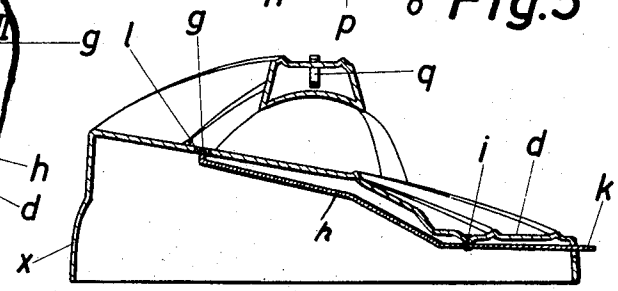


Fig.7

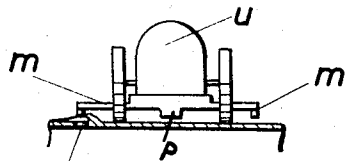


Fig.9

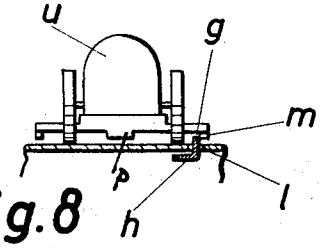


Fig.8

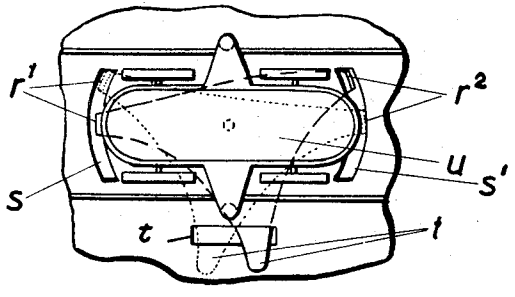


Fig.10

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TOY TRACK SYSTEM

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10 Claims. (Cl. 104—63)

ABSTRACT OF THE DISCLOSURE

A toy track system which includes one or several branch tracks or switches for directing one or several vehicles on the track system to a selected traffic route. The track system provides a comparatively long total track length within the overall dimensions of the toy thereby facilitating storage and transport of the toy when the same is not in use.

The present invention relates to a toy track system for toy vehicles, and more particularly to a toy track system having one or several branch tracks and including switching means for directing one or several vehicles on the track system to a selected traffic route.

It is an object of the invention to provide a novel and improved toy track system of the general kind above referred to which makes available to a playing child a greater choice of control of traffic routes than was heretofore available with toy track systems of the kind involved, thereby increasing the play value of the toy.

It is also an object of the invention to provide a novel and improved toy track system of the general kind above referred to, the total track length of which is considerably greater in reference to the base structure of the toy than was heretofore available. Such compact design of the track system facilitates storage and transport of the toy when not in use.

Still another object of the invention is to provide a novel and improved toy track system which guides one or several vehicles traveling thereon safely through the curves included in the track system, thereby making the toy more attractive to a child and also assuring the safety of the toy.

The aforementioned objects, features and advantages and other objects, features and advantages which will be pointed out hereinafter are attained by providing a toy track system including an upgrade on which a vehicle is driven upwardly by means of a conveyor chain mounted on the base structure of the toy. The upper end of the upgrade is continued into at least two downgrades along which the vehicle will travel by gravity action. The lower ends of the downgrades rejoin the upgrade near or at the lower end thereof, so that an endless track system is provided. One of the downgrades is preferably provided on one side of the upgrade and the other on the other side, to accommodate a maximum track length on a given base area.

The invention also provides switch means which control the traffic route of a vehicle traveling on the track system, for instance, by means of a switching tongue on the track system and a catch on the vehicle, and which are controllable by a child in a simple and readily understandable fashion.

The invention further provides guide strips or built-ups along one or several curves of the track system. These guide strips coact with suitable protrusions on one or both side walls of the vehicle to guide the same safely through each curve having these guides alongside. Such guidance of the vehicle assures that a vehicle can travel through narrow curves at a comparatively high velocity without being catapulted off the track system. The possibility of safely using narrow curves further permits the use of a base which is comparatively narrow in relation to the total track length of the system, which in turn is desirable to make the toy interesting to a child.

Finally, the invention provides a station from which vehicles may start and at which they are stopped. This station includes means such that a stopped vehicle can be released while a following vehicle is stopped.

In the accompanying drawing a preferred embodiment of the invention is shown by way of illustration, and not by way of limitation.

In the drawing:

FIG. 1 is a perspective view of a toy track system according to the invention with two vehicles traveling thereon;

FIG. 2 is a section taken on line II—II of FIG. 1;

FIG. 3 is a section taken on line III—III of FIG. 1;

FIG. 4 is a fragmentary enlarged view of the driving mechanism of the toy for driving a vehicle upwardly on an upgrade;

FIG. 5 is a section taken on line V—V of FIG. 4;

FIG. 6 is a fragmentary plan view upon switching means for directing a vehicle to a selected one of the downgrades of the track system;

FIG. 7 is a section taken on line VII—VII of FIG. 1;

FIG. 8 is a section taken on line VIII—VIII of FIG. 6;

FIG. 9 is a section taken on line IX—IX of FIG. 1, and

FIG. 10 is a plan view upon the station or terminal of the toy track system.

Referring now to the figures in detail, the exemplified toy track system comprises a hollow base structure *x*, which may be molded of a suitable synthetic plastic, but of course can also be formed of sheet metal. The entire track system is built upon the base structure and includes an upgrade *a* which is continued at or near its upper end by a downgrade *b*. The downgrade is divided at *f* into two branches *c* and *d*, which rejoin the upgrade at the lower end *e* thereof.

As is apparent, the track system provides several traffic routes, whcih can be selected by a playing child by means of a switching means, shown in detail in FIGS. 6, 7 and 8. The switching means comprises a switching tongue *g* which is fitted in a correspondingly shaped slot *l* in the base structure. The switching tongue can be selectively placed either in a position in which it protrudes from the level of the track system, or in a position in which it is substantially flush therewith. As can best be seen in FIG. 8, the switching tongue in its protruding position is engageable with a lug *m* extending from one side of a vehicle *u*. The switching tongue can be selectively placed in either one of its positions by means of a lever *h* terminating in a grip *k*. The lever is pivotally supported at *i* in base structure *x*.

A directional force, such as gravity or a spring, may bias the lever, and with it switching tongue *g*, into the position flush with the level of the track system. As is evident, the switching tongue in its protruding or lifted position directs a vehicle traveling downwardly on track section *b* to track section *d*, while in the lower or flush position of the switching tongue the vehicle is directed to track section *c*.

The exemplified vehicle is not self-propelled, but is driven upwardly on upgrade *a* by drive means, shown as a conveyor chain or belt *n*. This chain is an endless chain mounted within the hollow base structure and guided over a drive pulley *q*, which should be visualized as being driven by a suitable drive motor, such as a spring motor (not shown), also mounted within the base structure. The chain or belt has on its outer side crosswise protruding ribs *o* which extend through a slot *o'* lengthwise of the upgrade and are engageable with one or several lugs *p* extending from the bottom of the vehicle body, as is clearly shown in FIGS. 4 and 5. As is evident, the vehicle detaches itself automatically from the cross ribs *o* of the chain when reaching the upper end of the upgrade.

As can be seen in FIG. 1, at least some of the curves of the track system are comparatively narrow. To guide a vehicle safely through these curves when traveling downwardly from its peak position at the upper end of the upgrade, guide tracks or strips *w* are provided at some or all of the curves. Such guide strips are shown at v^1, v^2, v^3, v^4 and v^5. The guide strips *w* are engageable with lugs *m* provided on both sides of the vehicle. The coaction of the guide strips *w* with lugs *m* is clearly shown in FIG. 9.

To increase further the operational controls available to a child, one or several terminals or stations, such as the one shown in FIG. 10, are preferably provided. These stations are arranged to arrest a vehicle *u* arriving in the station, and also to release a stopped vehicle when a second vehicle *u* arrives. The functions of the station are selected to simulate as closely as possible the actual operational conditions maintained for a real track system with a similar layout.

For this purpose the toy terminal or station comprises noses r^1 and r^2, both mounted on a lever *t* pivotally supported beneath a selected portion of the track system. The station is indicated in FIG. 1 as being provided on track section *d*. Noses r^1 and r^2 protrude upwardly through arcuate slots *s* and *s'*, respectively, and a grip portion of lever *t* protrudes from an elongated slot *t'* in the track bed. As is evident, placement of lever *t* into the position shown in FIG. 10 in full lines will arrest a vehicle *u* arriving in the statement by engagement of nose r^1, which is in its middle position, with the foremost lug *p* or any other suitable portion of the vehicle body. Nose r^2 is passed by the vehicle, since this nose is in a side position; that is, out of the way of lugs *p*. When lever *t* is placed in its dotted-line position, nose r^2 will occupy the middle position, while nose r^1 is moved to the side position. Accordingly, the vehicle previously arrested is released, and the next following vehicle is stopped by nose r^2 when entering the station. Accordingly, the station can be used by a child to prevent a collision of this vehicle with a second vehicle already in the station and to effect the arrival and leaving of vehicles.

While the invention has been described in detail with respect to a certain now preferred example and embodiment thereof, it will be understood by those skilled in the art, after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention, and it is intended, therefore, to cover all such changes and modifications in the appended claims.

What is claimed is:

1. A toy track system comprising, in combination, a base structure including an upgrade track portion, several downgrade track portions branched off from an elevated portion of the track system and rejoining the upgrade at the lower end thereof to form on the base structure a continuous track system having several branches; a vehicle traveling on said track system; drive means mounted on the base structure and engageable with said vehicle at the lower end of the upgrade for driving the vehicle to the upper end of the upgrade; switch means for directing the vehicle into a selected one of said downgrades, said vehicle traveling by gravity along the selected downgrade and to the juncture point thereof with the upgrade, said switch means including a switching member movable between a position substantially flush with the track level and a raised position upwardly protruding therefrom, said vehicle having on one of its sides a catch means engageable with said switching member in the raised position thereof; and an actuating means coacting with said switching member for moving the latter into a selected one of said positions, engagement of the switching member with said catch means leading the vehicle into a predetermined one of said downgrades.

2. A toy track system according to claim **1**, wherein said upgrade track portion substantially bisects said base structure, one of said downgrade track portions being disposed substantially on one side of the upgrade and another substantially on the other side of the upgrade.

3. A toy track system according to claim **1**, wherein said switching member and said actuating means comprise a lever having at one end a grip and at the other end a bent-off portion, said bent-off portion forming the switching member and the grip the actuating means, said lever being pivotally supported on said base structure.

4. A toy track system according to claim **1**, wherein said vehicle has a lateral protrusion on both sides, and wherein said downgrades include curves and a lateral protrusion along the inside of at least one of said curves, said protrusion along the curve being engageable with the protrusion on the respective side of the vehicle for guiding the latter through the respective curve.

5. A toy track system according to claim **1**, wherein said drive means comprise an endless conveyor chain mounted on the base structure substantially parallel to said upgrade track portion, and a drive motor on the base structure for continuously driving said conveyor chain, said base structure including an elongated slot in alignment with an upwardly moving portion of the chain and said upwardly moving portion of the chain being drivingly engageable through said slot with the vehicle for driving said vehicle upwardly on the track.

6. A toy track system according to claim **5**, wherein said conveyor chain comprises lengthwise spaced cross ribs and said vehicle has at least one lug protruding from the bottom of the vehicle for engagement with a cross rib on the chain.

7. A toy track system according to claim **1** and comprising at least one control station for stopping and releasing vehicles traveling over a predetermined track portion of said track system, said station including two movably mounted stop members, said stop members being at the ends of the cross arm of a generally T-shaped lever, said lever being pivotally supported on the base structure, and actuating means coacting with said stop members for jointly moving the same between a first position in which one of said stop members blocks said track portion and the other clears the same and a second position in which said one stop member clears said track portion and the other stop member blocks the same.

8. A toy track system according to claim **7**, wherein said two stop members are disposed lengthwise of said track portion, whereby in said first position of the stop members said one stop member blocks a first vehicle reaching the station in a predetermined direction of travel and in the second position of the stop members said one

stop member releases said blocked vehicle and blocks a second vehicle following the first one and reaching the station in said predetermined direction.

9. A toy track system according to claim **7**, wherein said lever is mounted below said track portion parallel thereto, said track portion including two slots, each of said stop members protruding upwardly through one of said slots.

10. A toy track system according to claim **7**, wherein said station is located on one of said downgrades.

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