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TOY AND TRACK ASSEMBLY

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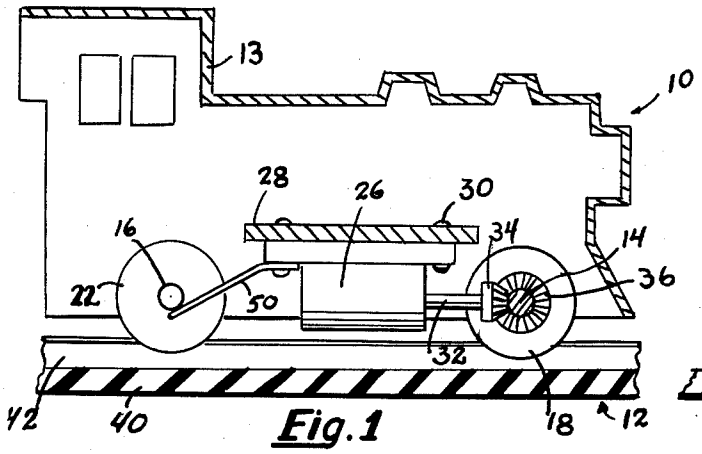


Fig. 1

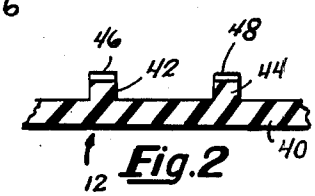


Fig. 2

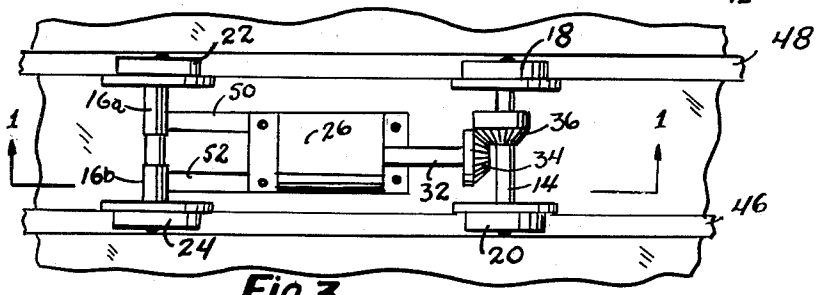


Fig. 3

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TOY AND TRACK ASSEMBLY

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The present invention relates to electrically operated toys, and in particular to improved track or road bed constructions for use with electrically motivated wheeled toys. This is a continuation in part of my earlier filed application Serial No. 528,084, filed August 12, 1955, now abandoned and which is a division of application Serial No. 244,557 filed August 31, 1951, and also abandoned, entitled "Toy and Track Assembly."

It is known to construct an electric toy which includes a wheeled vehicle simulating the engine of a train or an automobile and to drive said vehicle through an electrical circuit completed from a remote power supply to a track or roadbed for the toy. Usually the track or roadbed, which supplies the energization for the motor of the toy car or train, is fabricated by die-stamping, the respective metal component parts for each of the track sections and assembling these component parts by the use of appropriate rivets or similar fasteners.

In accordance with the present invention, there is provided a toy assembly which includes a road bed or base of insulating material provided with a pair of spaced-apart flat conducting metallic strips extending along the roadbed and each secured to a respective track or rail portion of said roadbed. The flat metallic strips serve as current conductors for the supply of power from a remote source to the motor-driven wheeled vehicle, and as surfaces on which respective wheels of said vehicle may ride, which surfaces offer improved traction and resistance to wear. The current-carrying strips of metal which are integrally secured to respective rail portions of the base of insulating material, may be bonded or otherwise secured to said trackway.

In a typical illustrative assembly there is provided a roadbed of insulating material, a pair of equally spaced flat metallic strips extending longitudinally of the roadbed and each integrally secured to the roadbed, a wheeled vehicle including front and rear axles and wheels operatively connected to the axles, an electric motor having an output shaft operatively connected to one of the axles to provide a driving connection for the vehicle, energy input terminals for the electric motor, and electrically conductive means respectively connected to the energy input terminals and individually in continuous and movable contact with one of the metallic strips.

Numerous advantages are realized by constructing toy assemblies according to the present invention. As to the unitary or one-piece track, the metallic strips bonded to the base result in a materially simplified construction and assure the mechanical fastening and securement of the track-forming elements to the base throughout the entire track length. From the production standpoint, manufacture is materially simplified, involves the use of less metal, results in a lighter structure, and minimizes the risk of the metallic strip separating from the supporting base.

From the standpoint of the consumer, the laminated track construction is inherently more suitable to lower voltage operation than rails of ordinary construction since it minimizes current losses and leakages. A unitary track construction assures greater life and minimizes possible injury to the user. It is less likely that the proposed rail-mounted conductors will separate from its support preventing the risk of rough or sharp edges which might possibly injure the user.

The above brief description, as well as further objects, features, and advantages of the present invention will be best appreciated by reference to the following detailed description of presently preferred illustrative embodiments, when taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a sectional view taken substantially along the line 1—1 of FIG. 3, showing a toy locomotive and track embodying features of the present invention;

FIG. 2 is a transverse sectional view of a unitary or one-piece track constructed according to the present invention;

FIG. 3 is a plan view of the vehicle and track assembly of FIG. 1 with portions of the vehicle removed to show the drive system.

Referring now specifically to FIGS. 1–3, inclusive, there is shown a first toy assembly in accordance with the present invention which is seen to include a wheeled vehicle 10, illustrated as a toy train locomotive, riding on a roadbed or base 12. The toy locomotive train 10 is of somewhat conventional construction and includes a hollow shell or body 13 supporting front and rear axles 14 and 16. A pair of front wheels 18 and 20 are secured to the front axle 14 while a pair of rear wheels 22 and 24 are secured to the rear axle 16.

Internally of the hollow shell or body 13 is an electrical motor 26 which is mounted on a bracket 28 by rivets 30 or the like. The output shaft 32 of the motor is connected by meshing bevel gears 34 and 36 to the front axle 14 to provide drive for the front wheels 18 and 20.

The roadbed or base 12 includes a base section 40 having integral elevated rail sections 42 and 44 which are formed of the same material as the base portion 40, preferably by a molding or extrusion process if the trackbed 12 is made of a moldable plastic material. Said rail portions 42 and 44 extend in spaced side-by-side relation at a separation determined by the spacing between the respective pairs of wheels 18, 20 and 22, 24. The base or roadbed 12 is fabricated mainly of an appropriate insulating material, such as an easily formed or molded plastic. On the coplanar flat upper faces of the rails 42 and 44 there are provided respective current conducting strips or metallic elements 46 and 48 which are integrally bonded or otherwise secured to the rails proper 42 and 44. Said metallic elements 46 and 48 extend the length of and are secured to the rail portions 42 and 44 by means of a suitable plastic cement or adhesive or may be applied to the material of 12 while it is in a molten state. The securing means may also be effected or supplemented by stamping or otherwise forming portions of each metal strip and causing said portions to become embedded in or otherwise grip respective portions of the side surfaces of the rail portions. The conductive strips 46 and 48 are fabricated of current conducting metal sheet or plate or may comprise a layer of metal sprayed or molded thereon. The conductive strips 46 and 48 are connected to an appropriate voltage supply (not shown) such as one or more batteries, and comprise opposite lines or sides of an energization circuit for the motor 26.

The energization circuit for the motor 26 includes a pair of brushes 50 and 52 which are connected to opposite terminals of the motor 26. The brushes 50 and 52 ride upon conductive sections 16*a* and 16*b* of the rear axle 16 which conductive sections are separated by an insulating section 16*c*. The circuit to the respective current-carrying strips 46 and 48 is completed by the rear wheels 22 and 24 which are made of an electrically conductive material. It will thus be appreciated that the electrical circuit for the motor 26 includes the brush 50, the axle section 16*a* of the rear axle 16, the wheel 22, and a track 46 to one side of the supply and the brush 52, the

axle section 16*b*, the wheel 24 and the strip 48 to the other side of the current supply.

As a feature of the invention, each of the wheels 18, 20, 22 and 24 is provided with an enlarged flange, generally designated by the reference numeral 54 which serves to laterally guide the train 10 in relation to the track or roadbed 12.

It will be appreciated that the wiring and assembly operations are reduced to a minimum and assure the provision of a high quality, durable, low cost toy. Specifically the proposed rail and conductor forming elements require less metal in production and assure the provision of a rugged structure in which the current-conducting parts or elements are not readily separated from the base or roadbed.

Numerous other modifications of the present invention will be appreciated by those skilled in the art and accordingly the appended claim should be construed broadly as is consistent with the appended claim and in certain instances some features of the invention will be used without a corresponding use of other features. For example, either or both the upper and lower surfaces of the metallic strip elements may be surface roughened or irregularly shaped. Roughening or irregularly shaping the under-surface of these elements will improve the bond or fastening to the respective rail portions 42 and 44. Roughening the upper surfaces will enhance the traction with the wheels of the vehicle.

The track-bed 12 may extend as an oblong straight portion or curved portion per se or to be joined with other portions of straight or curved track. It may also extend as a closed loop, figure eight, etc. The base section 40 may extend for a short distance either or both sides of the rail portions or a considerable distance therefrom and may be shaped or decorated to represent an embankment or part of the terrain. Conducting elements which are either integral with or mechanically connected to the elements 46 and 48 may extend either along the upper or lower surface of 40 for conection to a source

of electrical energy such as a battery or other electrical accessory.

If the track 12 is to be joined to other track sections, the ends of the elements 46 and 48 may be shaped for electrically connecting to similar elements on other sections of the track-way when they are abutted and mechanically joined together.

I claim:

In a toy track for guiding an electric motor-driven toy vehicle, comprising in combination a base of electrical insulating material, said base having spaced apart rail portions for guiding said vehicle, said rail portions having a plurality of parallel planar faces, at least one of said faces of each rail portion having a strip of electrically conductive metal integrally bonded thereto along substantially its entire length, said strip of electrically conductive metal being substantially as wide as the width of the face of said rail portion to which it is bonded, a toy vehicle having wheels shaped to be guided by at least one face of each of said rail portions, one of said strips of metal being connected in an electric circuit with a power supply, the other strip of electrically conducting metal extending along said track parallel to said first strip and serving as a ground return for electrical energy to said power supply, and means for conducting electrical energy from said power supply through said first strip to the motor in said vehicle and from said motor to said second strip.

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