Aug. 21, 1951 W. DUBILIER 2,565,359

FLEXIBLE TRACK SYSTEM FOR TOY TRAINS

Filed Dec. 4, 1946

Fig. 8.

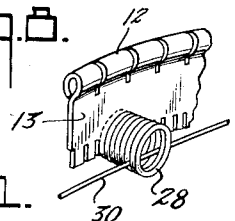


Fig. 9.

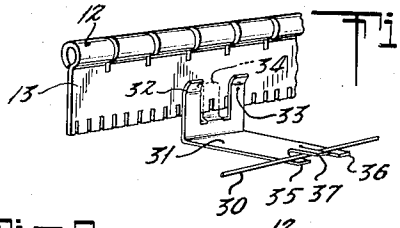


Fig. 1.

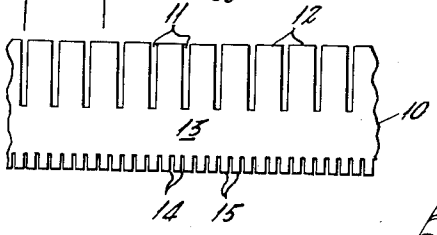


Fig. 2.

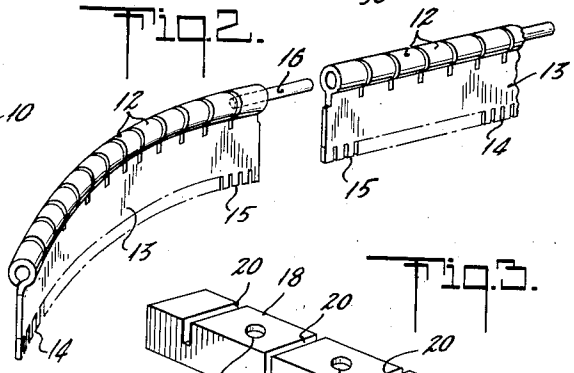


Fig. 5.

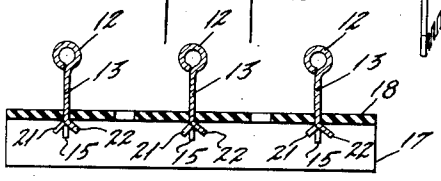


Fig. 3.

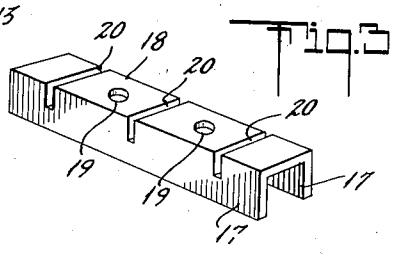


Fig. 4.

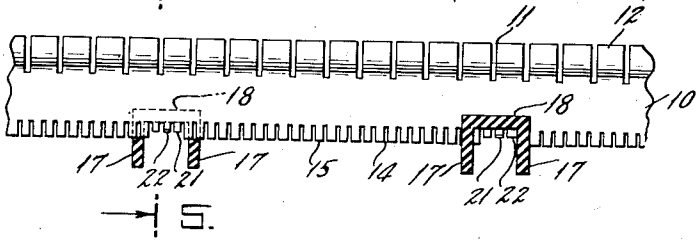


Fig. 6.

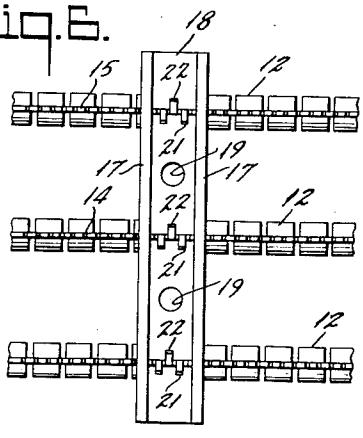
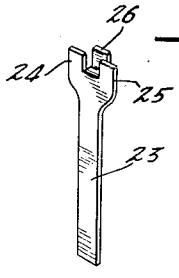


Fig. 7.



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FLEXIBLE TRACK SYSTEM FOR TOY TRAINS

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4 Claims. (Cl. 238—10)

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The present invention relates to flexible track systems for toy trains, more particularly to tracks of the type comprising a structurally strong beaded rail for use in connection with miniature railways, the said beaded rail being laterally flexible in order to permit varying convolutions or curves in accordance with the shape of the rail desired.

More specifically, the invention is concerned with flexible track systems of the type described in applicant's U. S. Patent #2,196,257 issued April 9, 1940, wherein a flat strip or ribbon of relatively soft, malleable or bendable metal is used, said strip being slotted at one of its portions with slots running transversely across the ribbon. Such a ribbon when folded with its slotted portion forming a hollow beaded rail head and with its unslotted portion forming a supported member or web for the rail, has the strong yet stable and flexible construction required for the purpose intended. The flexible tracks may be supplied in desired lengths together with appropriate ties or track-spacing members and connecting elements for mechanically and electrically connecting the track sections with each other or with other track sections of existing toy railway systems available on the market.

In using flexible tracks of the above type, the child may construct his own railway system of any desired complex shape or curvature and the tracks may be disassembled and re-used for building up a new system of different shape and configuration in a multiplicity of variations, whereby to greatly stimulate the child's interest and ingenuity in devising his own railway system or network.

In the known track systems of the above type, the bendable track segments are held in properly spaced relation by frictional mounting in slots of suitable spacers or tie members or by special spring clips secured to said tie members. This method of assembling a two-rail or three-rail track has the drawback that the sections may become easily loosened or relatively displaced and eventually completely disengaged from the tie members during the assembly as well as in operation, due to the pressure of the locomotive on the rails vertically and laterally especially in case of sharp curves.

Accordingly, an object of the present invention is the provision of a flexible toy track system which may be easily assembled in any desired shape and wherein the track sections are rigidly held by the tie members substantially in

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the same horizontal plane and in predetermined laterally spaced relationship corresponding to the plane and spacing of the wheels or the third rail contact member of the train.

Another object of the invention is the provision of a flexible toy railway track system, the separate parts of which may be put together in any desired arrangement or configuration and in a substantially rigid or permanent manner until intentionally disassembled.

Still another object is to provide a toy railway track system of this type which can be assembled and disassembled easily and substantially without the exercise of special skill or the requirement of special tools, but which nevertheless will be strong and rigid in the assembled condition.

These and further objects and novel aspects of the invention will become more apparent from the following detailed description of a preferred embodiment thereof taken in reference to the accompanying drawing forming part of this specification and wherein:

Figure 1 is a plan view of a portion of the metal ribbon or strip employed in forming a track according to the invention;

Figure 2 is a perspective illustration of a pair of completed adjacent track segments prior to being joined into a continuous rail;

Figure 3 is a perspective view of a tie member or spacer for holding the tracks or rail segments in properly spaced lateral relation in a standard three-rail track system;

Figure 4 is a transverse sectional view of a pair of spaced tie members according to Figure 2 with a track segment according to Figure 2 shown in the inserted position;

Figure 5 is a sectional view taken on line 5—5 of Figure 4;

Figure 6 is a bottom view of a completed three-rail track section according to the invention;

Figure 7 illustrates a simple tool for assembling the tracks according to the invention; and

Figures 8 and 9 illustrate suitable electrical connectors for establishing contact between the rails and a current-operating source in case of electrically driven trains.

Like reference numerals identify like parts throughout the different views of the drawing.

Referring more particularly to Figures 1 and 2, there is shown a ribbon or strip 10 of relatively soft malleable or bendable metal or metal alloy, said ribbon being provided at one edge portion with equi-spaced transverse slots 11 extending in the example shown, from the outer edge of the ribbon inwardly to a predetermined distance so

as to provide toothed or slotted portions or elements 12. Similarly, the opposite edge portion of the ribbon 10 is provided with transverse and preferably also equi-distant slots 14 to provide slotted elements or tabs 15 of substantially lesser width and length than the elements 12 and to leave a central unslotted or continuous ribbon portion 13.

The ribbon or strip 10 punched or slotted in the manner shown in Figure 1 is subjected to a bending operation in a suitable tool or machine to produce a rail with the toothed or slotted elements 11 beaded or bent into substantially circular shape to form the head of the rail and with the unslotted or ribbon portion 13 and the slotted elements 15 forming the supporting member or web of the rail, as shown more clearly in Figure 2. With a construction of this type, the spaced relation of the slotted beaded elements 12 permits bending of the track or rail in any angular or curved form, as shown in the drawing, while substantially retaining the proper shape and mechanical rigidity for the track sufficient for supporting and guiding a train. Such tracks may be supplied in specified or long lengths from which appropriate sections may be cut or severed and assembled into any desired shape.

In order to interconnect the various sections with each other or with existing standard rigid track sections to form a continuous rail system, suitable connecting means in the form of connecting pins 16 are provided frictionally mounted in the ends or bores of the adjoining rails, as shown more clearly in Figure 2. Such a joint between adjacent rail segments constitutes a mechanical as well as an electrical interconnection of the two rail segments for forming a continuous track system. If two rail segments according to the invention are to be joined, the connecting element 16 may be in the form of a simple cylindrical pin which may be slightly tapered towards the ends to insure an efficient frictional joint both mechanically and electrically. If a track segment according to the invention is to be joined with a segment of another existing system, then one portion or end of the connecting pin is constructed with the proper cross-sectional configuration, that is either round, rectangular or otherwise, corresponding to the standards of the various toy railway systems available on the market.

In order to hold two or more track segments in predetermined laterally spaced relationship, corresponding to the spacing between the wheels or third rail contact member of the train, ties or spacing members are provided as shown in Figure 3 of substantially inverted U- or channel-shaped cross-section and having a pair of lateral supporting walls 17 and a top wall 18. The tie members are furthermore provided with transverse slots or grooves 20 extending through the top wall 18 and the side walls 17 to a predetermined depth as shown in the drawing. The number of and spacing between the slots depends upon the type of track or gauge and the number of rails in the track as is understood. In the drawing, a three-rail track has been shown with the outer rail serving as a guide for the train and the central rail being used as a current conducting means cooperating with a suitable sliding contact member mounted upon the locomotive and serving to energize the latter from a suitable current operating source. The metal body of the train and the outer rails serve as a return conductor, in a manner well understood by those skilled in the art. If a mechanical locomotive is used, the third rail may be omitted as is understood. The tie members arranged at suitable distances from each other may be affixed or secured to a base or floor in any suitable manner such as by means of bolts or the like passing through the mounting holes 19.

In the assembled track section as shown in Figures 4 to 6, the ribbon portion or web 13 engages the grooves 20 of the tie members 17—18, the construction being preferably such that the inner ends of the slotted elements 15 are substantially coincident or flush with the inner face of the top wall 18. The rails are permanently and securely mounted by bending the slotted elements 15 against the underface of the walls 18 alternately in opposite directions, as shown at 21 and 22 in Figures 4, 5 and 6 of the drawing. For this purpose the width of the tabs 15 should be such that at least two or preferably three elements will be positioned within the inner or channel portion of the ties 17—18, as is understood.

The bending of the slotted elements 15 may be effected with the aid of a screwdriver or the like or a special tool may be employed as shown in Figure 7. In the latter, numeral 23 represents a handle or body portion provided with a first pair of spaced flat prongs 24 and 25 lying in one plane and a third intermediate prong 26 slightly offset with respect to and lying in a plane different from that of prongs 24 and 25. This tool is especially designed for track constructions wherein three slotted elements or tongues 15 are positioned within the inner or channel space of the tie members as shown in the drawing. All that is required for securing the rails to the ties, is to insert the tool with its prongs engaging the slotted elements 15 and bending it first towards one side and then towards the other side against the underface of the top walls 18, whereby to firmly secure the rails to the ties. By bending back the slotted elements 15 into a straight shape by the aid of a screwdriver or the like, the tracks may be easily disassembled and re-used in constructing a new rail system of different shape or configuration.

The tie members 17—18 preferably consist of an insulating composition material such as a plastic or thermoplastic or the like. If a thermoplastic is used, the ties may be produced in great lengths by an extrusion process, from which appropriate elements are cut or severed and slotted in the manner shown in the drawing. In the case of electric trains this provides for proper insulation between the main rails and the third or current supply rail as is understood, so that no further insulating elements are required. This results in a substantial simplification and reduction of cost of the entire track system. In case of mechanical locomotives, the ties may be of metal or metal alloy as desired.

Referring to Figure 8, there is shown a simple electrical terminal element or clamp for connecting a current source to rails according to the invention at any desired point thereof. This connector has the simple form of a coil spring 28 of resilient wire with the turns thereof sprung into intimate contact. In order to effect a connection to the rail, two adjacent turns of the coil 28 are applied to engage the opposite faces of the web portion 13 to provide a frictional joint in a manner well understood. A connecting wire 30 from a battery or other current source is then inserted between two further turns of coil

28 to complete the circuital electric relationship.

A modified construction of a clamp or connector element is shown in Figure 9 comprising a flat element of resilient metal 31 bent at a right angle and having each of its ends formed with slidly displaced tongues 32, 33, 34 and 35, 36, 37 respectively, adapted for frictional connection to the web portion 13 and for clamping a connecting wire 30, in the manner shown in the drawing and readily understood by those skilled in the art.

While there has been shown and described a desirable embodiment of the invention, it is understood that this disclosure is for the purpose of illustration and that various changes in shape, proportion and arrangement of parts as well as the substitution of equivalent elements and materials for those shown herein and described, may be made without departing from the spirit and scope of the invention as defined in the appended claims. The specification and drawing are accordingly to be regarded in an illustrative rather than in a limiting sense.

I claim:

1. A flexible track comprising a plurality of bendable rail sections each constituted by a ribbon portion forming a web and a head portion at one edge of said web, said web being provided with spaced transverse slots at its opposite edge forming a continuous succession of adjacent mounting tabs, tie members of inverted U-shaped cross-section having side walls and a top wall provided with spaced transverse grooves adapted for engagement by the webs of said rail sections, to hold said rail sections in laterally spaced relation, said slots being spaced by distances so that at least two of said tabs lie between said side walls in the inserted position of the rail sections in said grooves, said tabs being adapted to be bent against the underface of the top walls of said tie members.

2. A flexible track comprising a plurality of bendable rail sections each constituted by a metallic ribbon portion forming a web and a head portion at one edge of said web, said web being provided with equi-distant transverse slots at its opposite edge to form a continuous succession of mounting tabs, tie members of substantially inverted U-shaped cross-section having a pair of side walls and a top wall provided with spaced transverse grooves extending through said top wall, each of said grooves being adapted for engagement by the webs of said rail segments, whereby to hold said rail sections in laterally spaced relation, said slots being spaced by distances so that at least two of said tabs lie between the side walls of said tie members in the inserted position of the rail sections in said grooves, said tabs being adapted to be bent against the under face of the walls of said tie members.

3. A flexible track comprising a plurality of bendable rail sections each constituted by a metallic strip having a plurality of substantially transverse slots forming a succession of spaced bendable elements in the strip terminating in

a substantially continuous longitudinal region at one edge of the strip, said strip being rolled over with said bendable elements forming a hollow beaded and laterally bendable rail head and said continuous region forming a web, said web having a plurality of further transverse slots at the opposite edge of said strip, to form a continuous succession of mounting tabs, tie members of substantially inverted U-shaped cross-section having a pair of side walls and a top wall provided with spaced transverse grooves extending through said top wall, said grooves being adapted for engagement with the webs of said rail sections to maintain said rail sections in laterally spaced relation, said further slots being spaced by distances so that at least two of said tabs lie between the side walls of said tie members in the inserted position of the rail sections in said grooves, said tabs being adapted to be bent against the underface of said top walls of said tie members.

4. A flexible track comprising a plurality of bendable rail sections each constituted by a metallic strip having a plurality of substantially equi-distant transverse slots forming a succession of spaced bendable elements in the strip terminating in a substantially continuous longitudinal region at one edge of said strip, said strip being rolled over with said bendable elments forming a hollow beaded and laterally bendable rail head and with said continuous region forming a web, said web having a plurality of further transverse and equidistant slots at the opposite edge of said strip to form a continuous succession of mounting tabs, tie members of substantially U-shaped cross-section having a pair of side walls and a top wall provided with spaced transverse grooves extending through said top wall, said grooves being adapted for engagement by the webs of said rail sections, to maintain said rail sections in laterally spaced relation, said further slots being spaced so that at least two adjacent tabs lie between the side walls of said tie members in the inserted position of said rail sections in said grooves, said tabs being adapted to be bent against the underface of the top walls of said tie members.

WILLIAM DUBILIER.

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