

April 9, 1940.

W. DUBILIER

2,196,257

TRACK SYSTEM FOR TOY TRAINS

Filed June 14, 1938

2 Sheets-Sheet 1

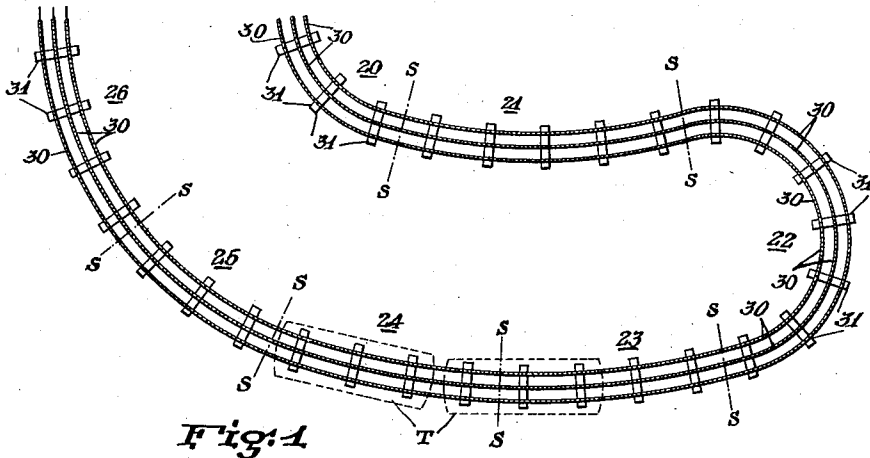


Fig. 1

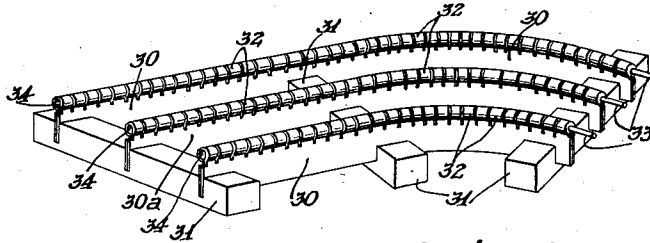


Fig. 2

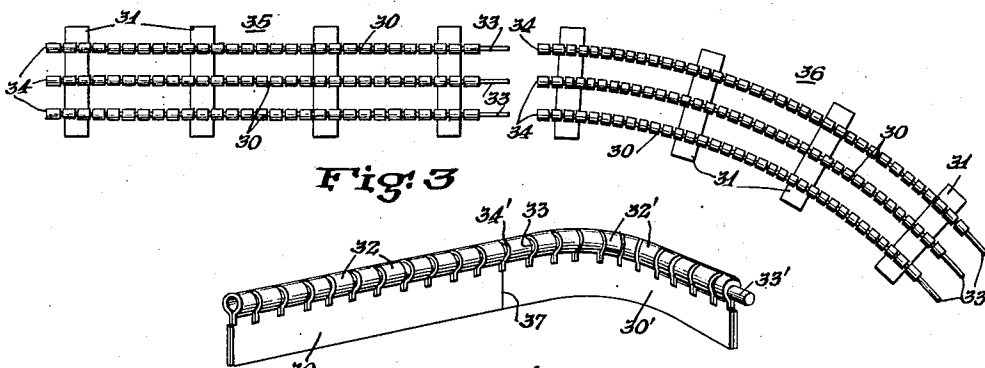


Fig. 3

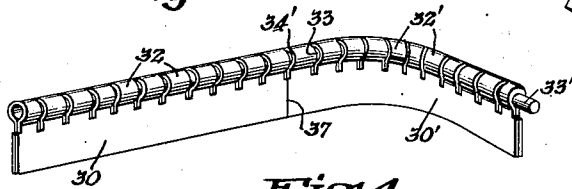


Fig. 4

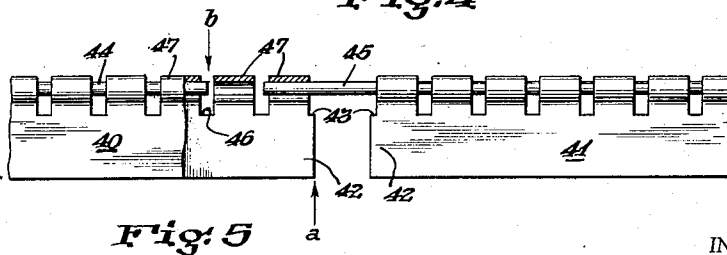


Fig. 5

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2 Sheets-Sheet 2

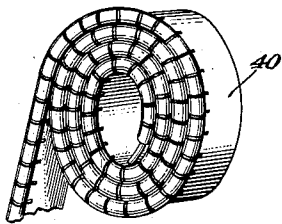


Fig. 6

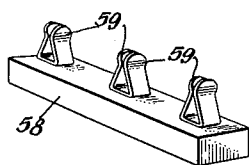


Fig. 11

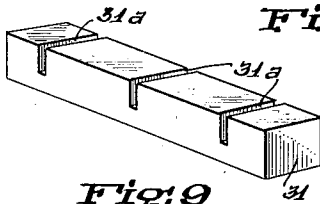


Fig. 9

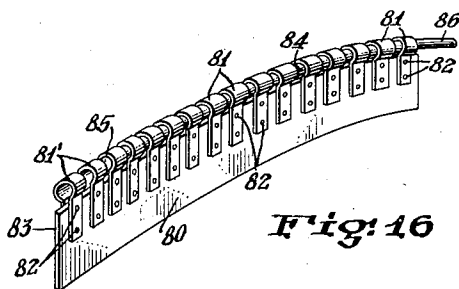


Fig. 16

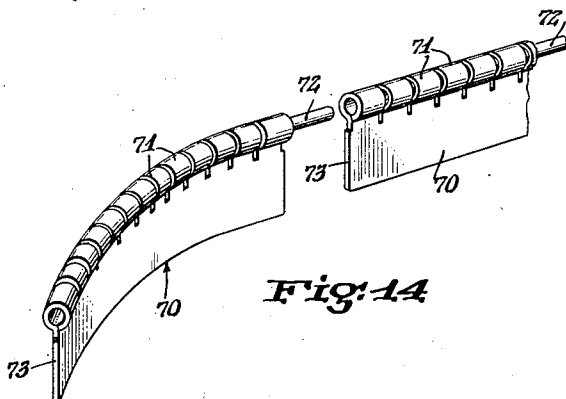


Fig. 14

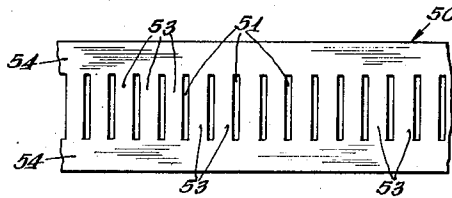


Fig. 7



Fig. 8

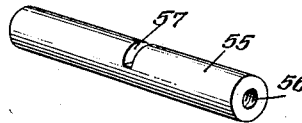


Fig. 10

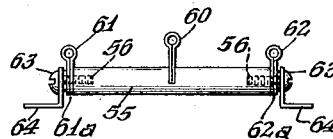


Fig. 12

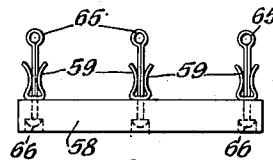


Fig. 13

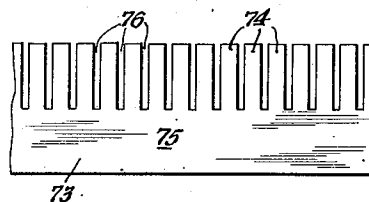


Fig. 15

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2,196,257

TRACK SYSTEM FOR TOY TRAINS

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Application June 14, 1938, Serial No. 213,575

5 Claims. (Cl. 238—10)

This invention relates to track systems for toy trains and more particularly relates to novel flexible tracks adapted to be arranged in a multiplicity of configurations. This case is a continuation in part of my prior application, Serial No. 187,790, filed January 31, 1938, entitled "Toy train system."

The general track arrangement for prior art toy train systems consisted of segmented tracks of predetermined length and shape. The track segments were rigidly constructed and adapted to be joined end to end to form the track system for the train. The number of shapes into which such tracks could be formed was naturally limited due to the rigid construction of the track segments. Accordingly, after the system was used several times, the child became tired of it due to the repetitious paths and similar appearance of its operation.

In accordance with my present invention, I contemplate providing flexible track systems for toy trains which the child may arrange into any number of shapes or forms. These tracks may be employed with either electrically or mechanically driven toy trains. The construction of my novel tracks readily permits bending thereof without mechanical weakening.

The flexible tracks of my present invention are provided in long lengths or rolls together with appropriate track spacing members. The child accordingly may construct his own railway system using spacers corresponding to regular railway ties. The track system can be made in any length desired, and formed into any complex shape or curvature. The non-rigid construction of the track system for the toy trains provides means for developing the ingenuity of the child and results in a longer period of continued interest as compared to systems of the prior art.

The preferred form of my novel track is a wire ribbon, the longitudinal central portion of which contains a multiplicity of parallel transverse slots, bent around a flexible wire. The portion of the ribbon bent around the wire forms a beaded section constituting the rail proper. The remainder of the track ribbon constitutes the supporting structure for the track. The continuous flexible track is severable into any desirable length in a manner to be hereinafter described in detail to form cooperating track segments. The severed track segments cooperate with other track segments for joining into a continuous operable railway track system.

It is accordingly an object of my present in-

vention to provide novel flexible track constructions for toy train systems.

Another object of my present invention is to provide a toy train track system adapted to be arranged into a multiplicity of configurations.

A further object of my present invention is to provide a continuous flexible track section readily adapted to be severed into small sections for forming flexible track segments.

These and further objects of my present invention will become apparent in the following description of my invention taken in connection with the drawings in which:

Figure 1 is a plan view of a portion of a flexible track arrangement composed with the flexible tracks.

Figure 2 is a perspective detail view of a flexible track section in accordance with my invention.

Figure 3 is a plan view of two adjacent flexible track sections adapted for mechanical joining.

Figure 4 is an enlarged perspective view of two track segments in joined relation.

Figure 5 is a partial sectional view of two track segments illustrating their coaction for mechanical joining thereof.

Figure 6 is a perspective view of a partial roll of the continuous track element before being cut-up into sections.

Figure 7 is a plan view of a portion of the metallic ribbon used in forming the track sections.

Figure 8 shows a portion of the central core or wire for the tracks.

Figures 9, 10 and 11 are perspective views of the track-supporting sections or ties supplied with the tracks for forming the rail system.

Figure 12 is an end view of a three-section track employing the track spacer of Figure 10.

Figure 13 is an end view of a three-section track employing the spacer of Figure 11.

Figure 14 is a perspective illustration of two adjacent sections of a modified flexible track arrangement following the principles of my invention.

Figure 15 is a plan view of a portion of the metal ribbon employed in forming the modified track of Figure 14.

Figure 16 is a perspective view of a further modification of a track section in accordance with my present invention.

In Figure 1 I have illustrated a typical multicurve track system into which the flexible track sections of my present invention can be formed. The flexible track system is composed of individual track sections 20, 21, 22, 23, 24, 25 and 26, 55

lying between the broken lines s—s drawn transversely of the tracks on the figure. The ends of adjacent track sections are mechanically and electrically joined along the positions s—s in a manner to be hereinafter described. The individual track sections comprise track segments 30 and track spacer or tie members 31. Ties 31 rigidly hold the track segments 30 in predetermined laterally spaced relationship corresponding to the spacing between the wheels and the third rail contact member of the train. A train T is indicated in dotted in position upon the track system.

Figure 2 is an enlarged perspective view of a track section such as used to build up the flexible track system. The track section comprises track segments 30 positioned upon spacers or tie members 31. The track segments consist of a serrated beaded section 32 enclosing a wire core 33. The wire 33 projects from one end of each track segment, from the right end in Figure 2. A portion of the wire at the opposite end 34, the left end of the segment, is removed in a manner to be described, to constitute the female joint in the track assembly.

Figure 3 is a plan view of two separated track sections 35 and 36. The right ends of the sections 35 and 36 contain projecting wire sections 33 constituting the male joining members of the assembly. The left ends 34 of the track sections contain holes in the beaded portions of the track sections 30 to engage with the projecting wire sections 33.

Figure 4 is a perspective illustration of two single track segments 30 and 30' mechanically and electrically interconnected. The projecting portion 33 of segment 30 sets into the female end 34' of segment 30'. Joint 37 between track segments 30 and 30' constitutes a mechanical as well as electrical interconnection of the two segments for forming the continuous track system.

The track segments are formed from a continuous roll of track supplied with the train outfit. Figure 6 is a perspective illustration of a portion of the roll of the track 40 as supplied. The track, being flexible, is unwound from the roll and straightened. A desirable length of track segment is clipped off by a pair of pliers. In forming a curved track section such as illustrated in Figure 2, different lengths of individual track segments are required. The outer segment of the curved track is greater in length than the inner one. Accordingly, the mechanical skill of the child is brought into play in properly designing and constructing the track sections. The preferred procedure is to insert the middle track segment 30a to determine the mean or average length of the track section and the mean curvature thereof. The inner and outer track segments are proportioned to the medial one 30a as to shape and length required.

In clipping off the track length from roll 40, it is necessary to automatically form the male and female joints of the individual segments. An important feature of the flexible track system of my present invention resides in the simple manner in which the joined members are formed. The end partially broken-away view of Figure 5 illustrates the simple manner in which the male and female joints are formed from the track. Partial track segment 40 indicates the continuation of the track roll shown in Figure 6. Segment 41 has been severed from the track roll. The proper method of severing

and constructing the track segments is as follows:

With an ordinary cutting pliers or shears, sever the metal body portion 42 transversely of the track in the region indicated by the arrow a. Region a is chosen to intersect a slotted region in the beaded portion of the track. Slotted region 43 was here chosen. Another cut is required for completing the severance of the track section 41. The wire core of section 41 is severed from the continuous wire core 44 of the continuous track roll 40. A substantial projecting portion of wire core 45 remains with the track 41 to constitute the male joining portion thereof. To provide for this joint, wire 45 is cut away from the main wire 44 at an intermediate portion in the ribbon constituting the track 40. By cutting wire 44 between the slotted position 46 at the ribbon indicated by the arrow b, a substantial male joining section at 45 is insured for track 41.

The length of the projecting wire portion 45 should preferably be predetermined and standard for the whole track system. The length is readily determined by counting the number of slotted elements 47 from the region of severance a to determine the cutting region b. In the illustrated track, two slotted elements 47 are used to determine the length of the joint for the track segments. Since relatively soft, malleable or bendable metal is used for the body of the tracks 42 and the wire core 44, sharp, clean cuts along a and b regions are readily made with an ordinary metal severing tool. The cuts on successive regions corresponding to a on track roll 40 determines the length of the individual track segments. The lengths of the segments are optional but are chosen for the proper design of the track structure and to compensate for differential lengths constituting a curved track section. The distance between the region of severance a and the wire cutting ribbon b determines the length of the electrical-mechanical joint between the track sections. In cutting the wire 44 at b, the male joint members for the severed track segment are determined as well as the female joint for the next segment to be formed. The forming of the track segments from the flexible track roll is a simple procedure which the average child can readily learn.

One form for constructing the track members is illustrated in Figures 7 and 8. A metallic ribbon 50 is used. Ribbon 50 contains a plurality of equispaced transverse slots 51. Figure 8 shows the flexible metal wire 52 which is placed centrally of the ribbon 50 before bending thereof. The spaced slotted elements 53 result from the transverse slots 51 in metal strip 50. The wire core 52 is placed centrally of the metal ribbon 50. Metal strip 50 is then bent around the wire and pressed into the shape to form the track member as shown in perspective in Figure 4. The outer ends 54 of the strip are pressed together to form the supporting body portion of the track. The slotted elements 53 constitute the beaded section of the track upon which the train rides.

Electrical contact is made to the tracks in any preferred manner for in turn communicating a proper electrical circuitual relationship with the train supported and guided thereon. Three track segments have been illustrated as forming the individual track sections. However, a different number may be so used. The all metal feature of my tracks makes the problem of electrical con-

duction of the current between the track sections and from the tracks to the train simple as will be evident to those skilled in the art. The spaced relation of the slotted segments 53 permit bending of the track in any angular or curved form while substantially retaining the proper shape and mechanical rigidity for the track sufficient for supporting and guiding the train.

Figures 9, 10 and 11 are perspective illustrations of track tie members used for building up the track sections from the individually cut and formed track segments. Figure 9 is the simplest form and comprises a rectangular block 31 containing transverse slots 31a for containing the body portions of the track segments. Figure 2 illustrates the coaction of the flexible track segments 30 with the blocks 31 as shown in Figure 9. The tracks are thus maintained in proper spaced relationship corresponding to the design of the train. In Figure 10, a cylindrical tie member 55 is illustrated containing threaded end portions 56 and a central slotted portion 57. Figure 11 illustrates a further tie form comprising a rectangular block 58 and spring clip members 59 for gripping the body portions of the track segments as will now be evident.

In Figure 12 I have illustrated an assembly for employing the cylindrical tie members 55 as track supporting ties. In this type of tie, the central or "third rail" 60 is in a higher position than the end rails 61 and 62. Thus the power collecting shoe in the train is necessarily positioned a little higher than in the track system illustrated in Figure 2. The end track section 61 and 62 contain spaced holes in the body portions 61a and 62a thereof to accommodate screw members 63 which are screwed into threaded ends 56 of tie 55. Brackets 64 are included between the screw 63 and the tie 55 for fastening the track assembly to a baseboard or merely resting it on the floor as desired. Figure 13 is an end view of the tie 58 shown in Figure 11 containing the track segments 65 to constitute the track section. Tracks 65 are held in position by the spring clips 59. Screw members 66 hold clips 59 in position on block 58. Electrical connection to the tracks may be made through the screw members 66 in the tie 58 or in any other suitable manner.

A modified track arrangement is illustrated in Figures 14 and 15. Figure 14 is a perspective illustration of track segments 70 containing beaded sections 71 and wire cores 72. The body section 73 of the track 70 is a single metal layer in place of the double layer of the previous modification. Figure 15 shows the metal strip 75 used for forming the track sections. Strip 75 contains slotted portions 76 forming the toothed elements 74. Elements 74 are bent around the wire core 72 to form the beaded section 71 of the track. The beaded section of the track consists of individually spaced elements gripping a wire core 72. The spaced elements permit twisting or bending of the track in any desired shape in a manner hereinabove described. After bending the track will retain the bent form. The rigidity of the track is unimpaired and may be used to support the regular toy train systems.

Figure 16 is a perspective illustration of a section of a further modified form of flexible track. A flexible strip 80 either of metal, fiber, composition or a laminated combination thereof has secured to the top longitudinal end 83 thereof a plurality of clamping members or elements 81. Clamps 81 are secured to flexible strip 80 by suit-

able means 82 such as rivets or, if metal to metal, by spot welding. A reinforcing wire 84 is secured above edge 83 of strip 80 by the clamping members 81 in a manner similar to the track arrangements hereinabove described.

The clamping elements 81 are of a thin material such as .010 inch. For a conductive track, both the wire 84 and the clamping elements 81 are of conductive material. The intimate contact of wire 84 with elements 81 establishes a continuous electrical arrangement across the top or bearing surface of the track. One end 86 of wire 84 projects beyond the track section to constitute the male joint connection of the track. At the other end, one or more clamping elements 81' are hollow, namely do not contain a reinforcing wire, in order to constitute the female connection joint for the track segment.

The spacing between the clamping segments 81 is preferably less than the width of the elements 81 as taken in the longitudinal direction of the track. Such close spacing of the segments is preferable to avoid a "bumpy" riding of the train on the track. The closer the spacing of the elements 81, the smoother the ride on the track. However, too close a spacing is to be avoided. Thus, a spacing between elements 81 should be at least equal to the thickness of the element 81 to permit the flexing or bending of the completed track section without interference by the adjacent clamping elements. This spacing design feature also is applicable to the previously described track modifications.

In describing my invention, I have employed preferred embodiments. I am aware that the invention is capable of modified embodiments falling within the broader spirit and scope thereof. Accordingly, I do not intend to be limited except as set forth in the following claims.

I claim:

1. A flexible track section comprising a metallic strip having a plurality of spaced slots arranged perpendicular to the longitudinal axis of the strip along the central region of the strip forming a succession of spaced bendable elements in the strip terminating in opposite substantially continuous longitudinal regions near the edges of the strip, said strip being folded-over substantially centrally of said elements to form a hollow beaded linear section laterally bendable into a multiplicity of stable curved forms, said continuous longitudinal sections being contiguous and forming a vertically rigid supporting section, the bead being supported thereby and forming the rail section.

2. A flexible track section comprising a metallic strip having a plurality of substantially equispaced transverse slots forming a succession of spaced bendable elements in the strip terminating in a substantially continuous longitudinal region near the edge of the strip, said strip being rolled over said elements to form a hollow beaded linear section laterally bendable into a multiplicity of stable curved forms said continuous region comprising a vertically rigid supporting section, the bead being supported thereby and forming the rail section.

3. A flexible track section comprising a strip having a plurality of spaced transverse slots along an edge of the strip forming a succession of spaced bendable elements in the strip terminating in a substantially continuous longitudinal region near the opposite edge of the strip, said strip being rolled over along said elements to form a hollow beaded linear section laterally bendable into a

multiplicity of stable curved forms said continuous longitudinal section forming a vertically rigid supporting section, the bead being supported thereby and forming the rail section, said slots
5 extending through said beaded rail section.

4. A flexible linear member comprising a metallic strip having a plurality of substantially equi-spaced transverse slots forming a succession of spaced elements in the strip terminating in opposite substantially continuous longitudinal regions,
10 said strip being rolled over along said elements; and a wire enclosed within said spaced rolled over elements to form a hollow beaded rigid linear section laterally bendable into a multiplicity of
15 stable curved forms, said continuous longitudinal sections being contiguous and forming a vertically rigid supporting section, the bead being supported thereby and forming the rail section.

5. A flexible track section comprising a metallic strip having a plurality of spaced slots arranged perpendicular to the longitudinal axis of the strip along the central region of the strip forming a succession of spaced bendable elements in the
5 strip terminating in opposite substantially continuous longitudinal regions near the edges of the strip, said strip being folded-over substantially centrally of said elements to form a hollow beaded linear section bendable laterally into a
10 multiplicity of stable curved forms; and a metallic wire enclosed within said spaced folded-over elements, said continuous longitudinal sections being contiguous and forming a vertically rigid supporting section, the bead being supported thereby
15 and forming the rail section.

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