July 11, 1950 M. LEITHOLD 2,514,652

TOY RAILROAD TRACK

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Fig. 1.

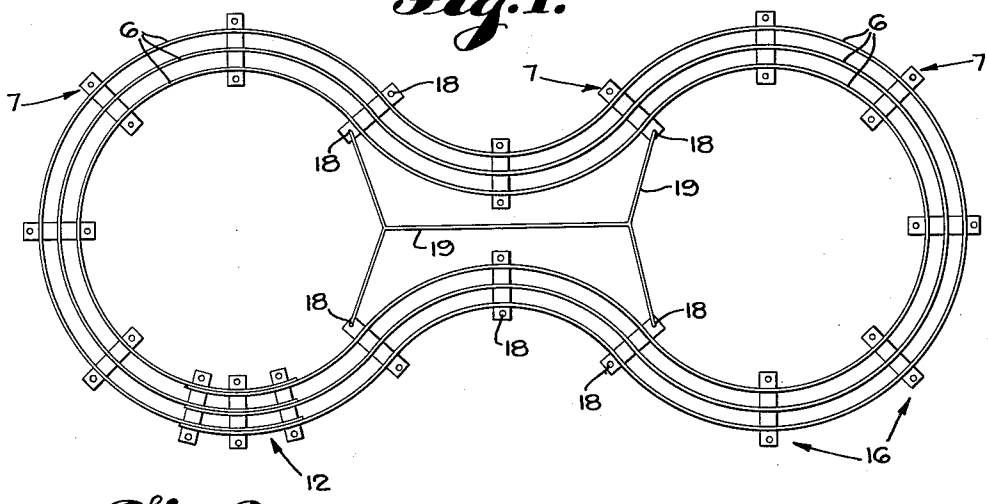


Fig. 2.

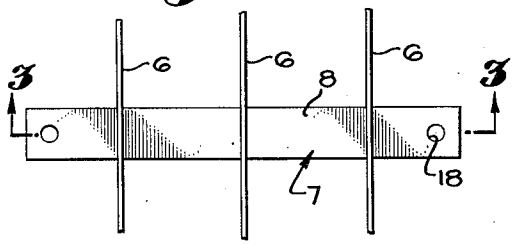


Fig. 4.

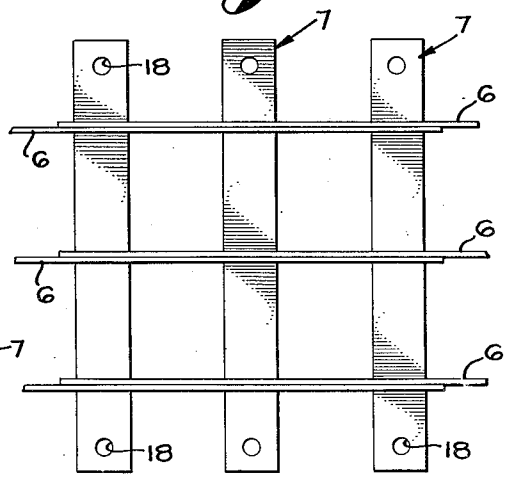
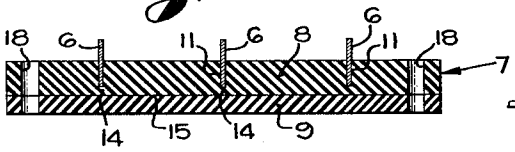


Fig. 3.



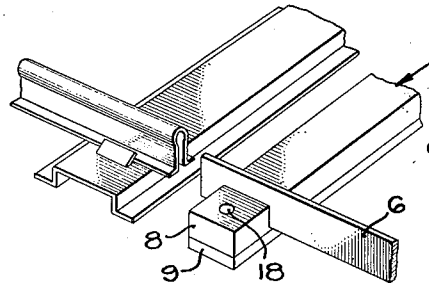


Fig. 5.

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TOY RAILROAD TRACK

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5 Claims. (Cl. 238—10)

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This invention relates to a track for toy railroad trains, either electrically or mechanically operated, and particularly relates to a track of flexible characteristics, rather than the customary rigid system of curves and tangents.

It is an object of this invention to provide a track for toy railroads having long, flexible rails which may be bent to form, within limits, a track of any curvature that the train operator desires.

Another object of the invention is to provide a track for toy railroads which may be either a two-rail or a three-rail system, according to whether the system is to be mechanically or electrically operated, thereby permitting additional trackage to be constructed from a given quantity of rail material when only a two-rail system is desired.

A further object of the invention is to provide a track for toy railroads in which the ties and rails are provided as separate entities, to be assembled as in standard railroad practice, and in which the placement of the ties determines the curvature of the rails and the correct alignment of consecutive rails, whereby the operator is given opportunities for the exercise of judgment and skill and is afforded a more realistic approach to the problems of railroad building.

Yet another object of the invention is to provide a track for toy railroads extremely simple and economical to manufacture and requiring relatively little container space for shipment or storage.

Still a further object of the invention is to provide a track for toy railroads which is not easily damaged, and which can survive the hazards of being stepped on and the wear and tear of being repeatedly pulled apart and reassembled.

I accomplish the above objects of the invention, and others which will be apparent or will be specifically pointed out as the description proceeds, by using flexible metallic ribbon as material for the rails of my track and by constructing the ties with an upper layer of resilient material, slotted to receive the rails, and with a lower layer of relatively rigid material to provide the ties with requisite strength. I am aware that others have attempted the use of flexible metallic ribbon for rail material with a view to accomplishing many of the objects of the present invention, but so far as I have been able to ascertain, they have not fully achieved these objects because of the lack of suitable ties for holding the rails. It will be obvious that in any trackage system the rails and ties form a combination, each element of which must have qualities particularly suited to its functions in relation to the other element. As

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with standard railroads, failure of a tie to hold a rail can result in a wreck, fortunately of toy proportions, and the use of long flexible rails poses problems as to suitable forms of ties which this invention undertakes to solve.

I have illustrated my invention in the accompanying drawings, in which:

Fig. 1 is a plan view of a toy railroad track constructed in accordance with the principles of my invention.

Fig. 2 is a fragmentary plan view on an enlarged scale showing a group of rails held in a single tie;

Fig. 3 is vertical sectional view taken on the line 3—3 on Fig. 2;

Fig. 4 is a fragmentary plan view showing the end portions of rails held by a plurality of adjacent ties; and

Fig. 5 is a perspective view illustrating a potential junction of a rail of a track according to this invention with a rail of a conventional toy track.

Referring to the details of the drawings as indicated by reference numerals, a plurality of rails 6 are demountably set in ties 7. The rails 6 will ordinarily be two or three in number, according to whether the toy railroad is mechanically operated or whether it is electrical and therefor requires a third rail as an electric conductor, but as will be explained hereinafter a still greater number of rails 6 may be set in a single tie 7. The rails 6 are made of strips of flexible metallic ribbon, preferably of spring steel, and may be of a quality and form similar to ordinary steel measuring tape. I have found that when such rails are held by ties of the kind hereinafter described, they need no heads or upper beads to engage the wheels of the toy train, and the flanged wheels of the train will run on them without derailment.

The ties 7, as best illustrated in Fig. 3, have an upper layer 8 of a resilient tenacious material such as soft rubber, and a lower layer 9 of a harder material which may preferably be hard rubber. I prefer to have both of the layers 8 and 9 of rubber, although of different hardnesses, as this construction permits bonding the two layers together, as by vulcanizing, to form a strong and rigid union by which the softer layer 8 is held incapable of bending or buckling away from the harder layer 9. The layer 8 may suitably have a hardness in the range of 55 to 65 Shore, and the layer 9 may have a hardness approximating 95 to 100 Shore. However, other materials may be used and the layers 8 and 9 may be joined by other methods than vulcanizing, with

the object of providing a tie 7 which will resiliently grip the rails 6 and yet be so reinforced as to be substantially incapable of curvature as a unit.

The upper layer 8 of each of the ties 7 is provided with slots 11 spaced apart to receive the lower margins of the rails 6 and to hold the rails at the gauge required for the toy railroad. There may be two slots 11 in each tie 7, but preferably there are three slots, in order to accommodate the third rail of an electrically operated railroad. The third rail may of course be omitted and the slot 11 appropriate thertto be left vacant when the track is intended for use with a mechanically operated train. Some toy trains are designed to receive electric power from a third rail disposed outwardly from the bearing or gauge-defining rails, rather than disposed between them and it will be understood that the slots 11 may be arranged and spaced according to the gauge and type of the railroad for which they are intended and that they may be increased in number above three and so spaced that a tie may be used for either a broad gauge or a narrow gauge toy railroad.

Each of the slots 11 is of such width that when one of the rails 6 is inserted therein, the rail will be held tenaciously by the resilient material forming the slot. Nevertheless, due to the resiliency of the layer 8 each slot 11 is sufficiently distensible to be capable of spreading so as to receive two rail laid therein in parallel, as shown in Fig. 1 at 12 and in detail in Fig. 4. In this manner the ends of consecutive rails may be secured to form a continuous track, or the two ends of each flexible rail may be joined to form a closed curved railroad as shown in Fig. 1. The rails 6 may be quite thin, for example less than forty one-thousandths of an inch in thickness, as is desirable to render them flexible, and it will be found that a rail-end of these small dimensions presents no material obstacle to the transit of a wheel flange. Several ties, and preferably at least two, may be placed in close proximity at a rail junction in order more securely and closely to hold the overlapping ends of the rails, as illustrated in Fig. 4. The pairs of overlapping rail ends will not necessarily be abreast of each other, but as the ties may be fitted to the rails as needed it will be obvious that a firm track structure may be achieved.

Preferably the slots 11 do not extend through the upper layer 8 to the lower layer 9 but are only of sufficient depth to grip the lower margins of the rails 6 and to be bottomed within the layer 8 by bottom walls 14, thus permitting the layer 8 to be one unit rather than a plurality of units and to make a continuous vulcanized joint 15 with the layer 9.

To bend the track structure to any desired horizontal curvature, it is only necessary to place the ties 7 in positions radial to the curve. The soft resilient upper layer 8 permits any tie to be moved along a rail 6 and yet to grip the rail firmly when manual pressure is released. For example it will be noticed that the ties indicated by arrows at 16 in Fig. 1 have been so placed relative to the rails 6 as to engage between them rail sectors of length increasing from the inside of the curve to the outside thereof. The effect of this placement is to bend the rails 6 to a curve such that the ties 7 are radial thereto. To increase the sharpness of curvature, the ties would be placed to intersect rail segments of still greater difference of length and to construct a

track straight-away they would be placed to intersect rail portions of equal length. When the track is curved, the rails impose a torsional force upon the ties, which would distort the soft upper layer 8 and permit the ties to slip on the rails except for the presence of the rigid lower layer 9. The rigid unit 7 formed by the two layers 8 and 9 can flex neither horizontally nor vertically in response to the aforesaid torsional force, nor can the slots 11 be distended by that force beyond the point at which they firmly grip the rails 6, due to the fact that their wall portions are bonded by vulcanization to the layer 9.

It is often desirable to leave a toy railroad track in assembled condition for a period of time, during which it may be moved intentionally or by accident and caused to suffer distortions during the moving. The ties 7 are therefore preferably provided with end holes 18 extending through both the layers 8 and 9. The holes 18 may receive stapling devices such as tacks to hold the track in place on a wooden floor or table top, or wires or strings 19 to brace the track as a unit while it is being moved.

It will be seen from Fig. 5 that my improved railroad track may readily be used in conjunction with conventional units of a toy track. The rail 6 of my track may easily be inserted in the slot 20 at the end of a rail of a conventional unit. Conventional rails are usually formed with a cylindrical crown or head adapted to receive a connecting pin, and with downwardly extending flanges forming the body and foot of the rail. The slot 20 between these flanges is usually adequate to receive the end of a relatively thin rail such as the rail 6 of this invention or may easily be spread to make reception possible. In this manner, conventional switches, cross-overs, and other track units may be utilized as required in a toy railroad system, while the track embodying this invention is used for the curves and straightaways of the system.

A track constructed as hereinabove described may be subjected to very considerable abuse without injury. If kicked or stepped upon, the flexible rails 6 yield resiliently instead of acquiring permanent deformations, and the resilient layers 8, in which the rails are imbedded, supplement the springiness of the rails. Horizontal curvature of the track may be regulated at will by increasing or decreasing the distance between the outer ends of adjacent ties 7 along the curve, and it becomes unnecessary to have set patterns of track or to be limited as to track layout by the presence or absence of special shapes and lengths of rigid track units.

While I have described and illustrated a preferred embodiment of my invention, it will be understood that the specific description and illustration is only in the nature of example by which I do not intend to be limited, the spirit and scope of my invention being best defined by the appended claims.

I claim as my invention:

1. A toy railroad track comprising: rails of flexible metallic ribbon; and ties having a slotted upper layer of rubber sufficiently resilient and tenacious to slideably grip a single rail when said single rail is inserted in a slot of said tie and sufficiently distensible to permit parallel placement of two of said rails in a slot, and having a lower layer of relatively hard rubber adapted to reinforce said upper layer for preventing curvature of said upper layer.

2. A toy railroad track comprising: rails of flexible metallic ribbon; and ties having upper and

lower layers respectively of soft and hard rubber, the upper layer of said ties each having a plurality of narrow slots for receiving and gripping the lower margins of said rails, the lower layer of said ties being adapted to reinforce the upper layer thereof, and the end portions of said ties having fastener receiving means whereby said ties may be secured in angular relation one to another.

3. A tie for a toy railroad track comprising an upper portion of relatively soft rubber having a plurality of spaced slots requiring distention to receive a metallic ribbon of the order of thickness of metallic measuring tape and a lower portion of relatively hard rubber adapted to reinforce said upper layer for preventing curvature of said upper portion.

4. A toy railroad track comprising: rails of flexible metallic ribbon; and ties having an upper layer of resilient tenacious rubber of a hardness substantially in the range of 55 to 65 Shore, and a lower layer of rubber of a hardness approximating 95 to 100 Shore, said upper layer having

slots for receiving and gripping said rails, and said upper and lower layers being joined by vulcanization to form a substantially inflexible unit.

5. A toy railroad track as set forth in claim 4, in which said slots are bottomed in said upper layer, and said upper layer is a unit having continuous vulcanized adhesion to said lower layer.

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