May 3, 1955 A. N. SMITH 2,707,606

MOLDED PLASTIC TRACK ELEMENT FOR A TOY RAILWAY

Filed Jan. 11, 1951 2 Sheets-Sheet 1

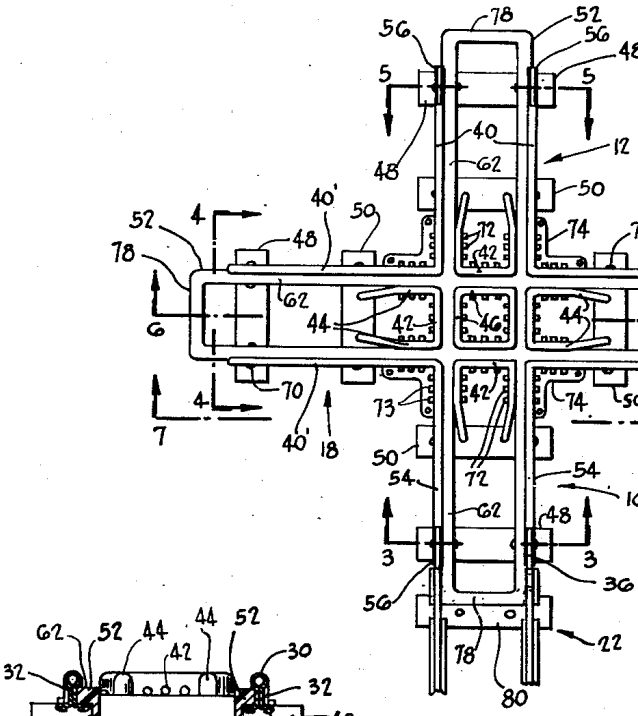

Fig. 1.

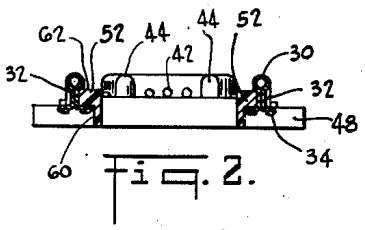

Fig. 2.

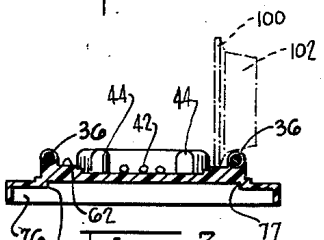

Fig. 3.

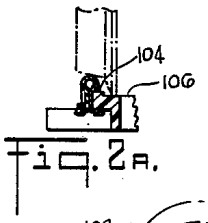

Fig. 2A.

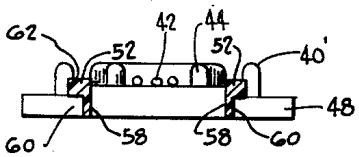

Fig. 4.

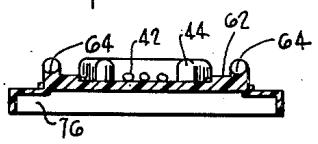

Fig. 5.

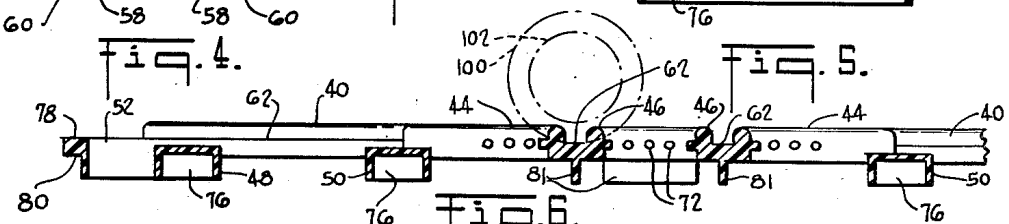

Fig. 6.

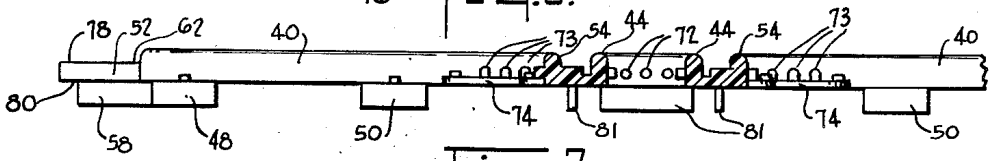

Fig. 7.

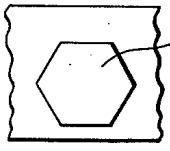

Fig. 11.

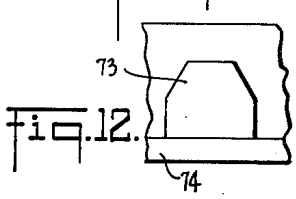

Fig. 12.

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MOLDED PLASTIC TRACK ELEMENT FOR A TOY RAILWAY

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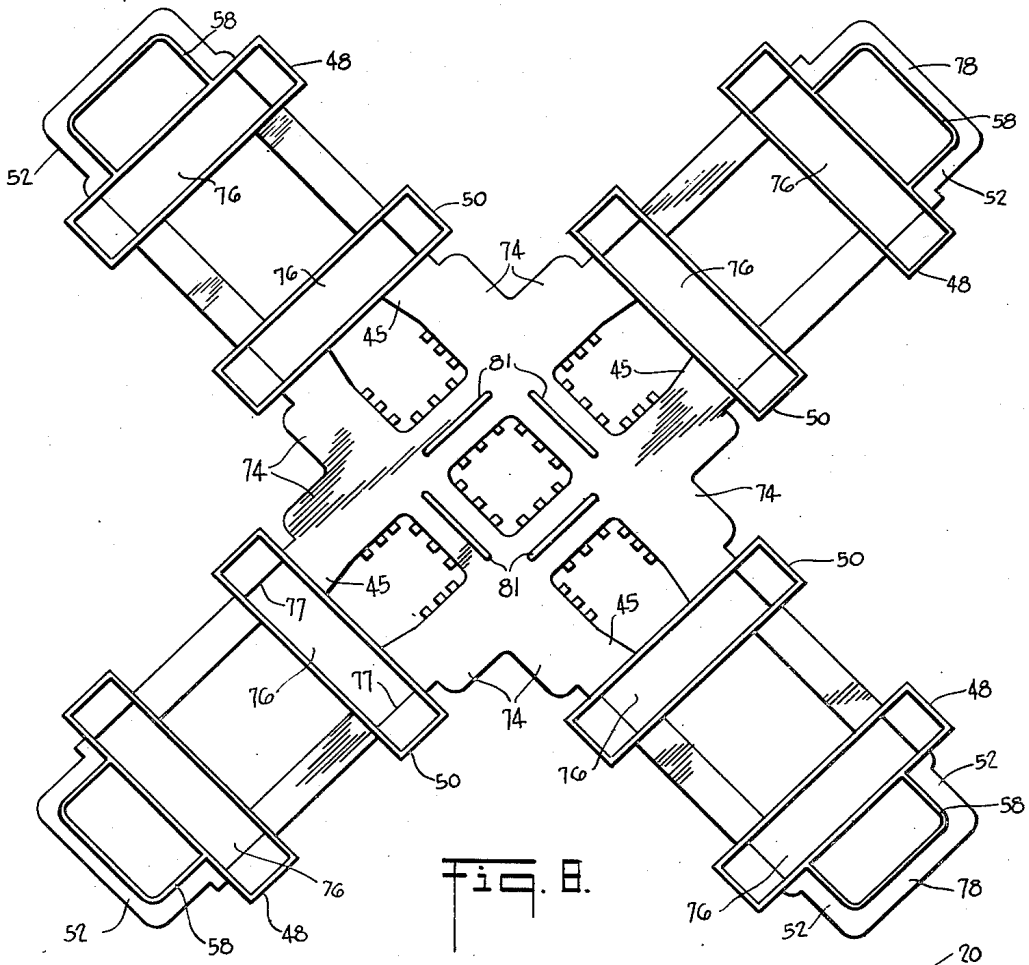

Fig. 8.

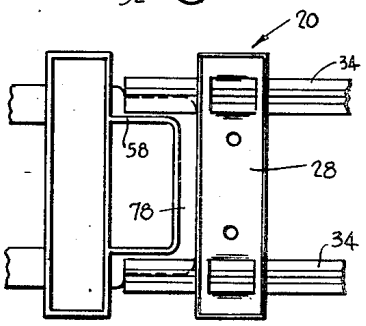

Fig. 9.

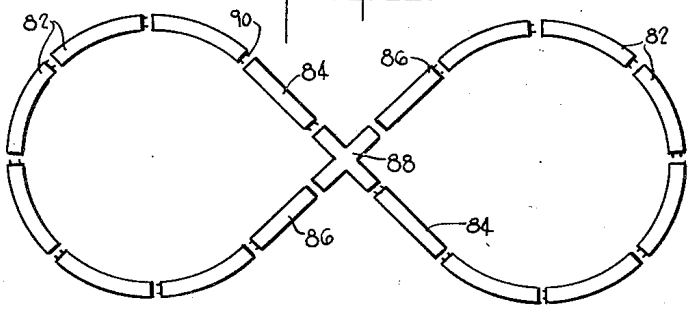

Fig. 10.

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MOLDED PLASTIC TRACK ELEMENT FOR A TOY RAILWAY

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Application January 11, 1951, Serial No. 205,545

17 Claims. (Cl. 246—464)

This invention relates to toy railroads, and more particularly to a track element in a toy railway system, especially a crossover.

The conventional toy railway has rails spaced by simulated ties, each rail being made of sheet metal bent to form a head, a web and a flange, and having a pin projecting longitudinally at one end, and being open at the other end to receive a like pin when rail sections are joined end to end. In addition to the regular track sections, special track elements such as a crossover or a track switch are employed. These special track elements usually require the assembly of many parts, and are rather expensive to manufacture. One object of the present invention is to simplify and cheapen the manufacture of such track elements, and to that end the element may be molded out of a suitable moldable plastic. This, however, complicates the problem of connecting the regular track sections or rails to the molded plastic track element, and a further feature and object of the present invention is to simplify the necessary connection. This is done primarily by projecting the molded track element beyond the ends of its own rails, and so dimensioning the projection as to fit frictionally between the webs of the connected metal rails. In accordance with a further feature of the invention, some of the molded rails terminate in depressed trough-like channels dimensioned to receive the pins of the metal rails.

Still another object of the invention is to give the molded track element an improved realistic appearance, which is done by molding studs at the sides of the simulated rails, said studs resembling the heads and nuts of track bolts employed in real railroads. A still further object of the invention is to simplify the molding of the track element, and more particularly to so design the track element that it may be molded in a simple two-part mold without requiring the use of movable cores. Still another object is to apply the invention to a crossover, and to thereby provide an improved crossover.

To accomplish the foregoing general objects, and other objects which will hereinafter appear, the invention resides in the toy track elements and their relation one to another as are hereinafter more particularly described in the following specification. The specification is accompanied by drawings in which:

Fig. 1 is a plan view of a molded plastic crossover embodying features of the invention;

Fig. 2 is a section drawn to larger scale and taken approximately in the plane of the line 2—2 of Fig. 1;

Fig. 2*a* is a fragmentary view similar to a part of Fig. 2, but showing a minor modification;

Fig. 3 is a section taken approximately in the plane of the line 3—3 of Fig. 1;

Fig. 4 is a section taken approximately in the plane of the line 4—4 of Fig. 1;

Fig. 5 is a section taken approximately in the plane of the line 5—5 of Fig. 1;

Fig. 6 is a section taken approximately in the plane of the line 6—6 of Fig. 1;

Fig. 7 is a section taken approximately in the plane of the line 7—7 of Fig. 1;

Fig. 8 is a bottom plan view;

Fig. 9 is a fragmentary bottom view showing the connection between the crossover and a track section;

Fig. 10 is explanatory of one method of using the crossover;

Fig. 11 is a fragment of Fig. 6 drawn to enlarged scale to show a detail; and

Fig. 12 is a fragment of Fig. 7 drawn to enlarged scale to show a detail.

Referring to the drawing, and more particularly to Fig. 1, the track element may be any appropriate track element, and is here exemplified by a 90° crossover. The crossover has four main arms generally designated 12, 14, 16 and 18 which, in the present case, are disposed at right angles, but it will be understood that the arms of the crossover may cross at other angles. The crossover is molded out of plastic molding material, yet is adapted to be used with conventional metal rail sections, the ends of two of which are indicated at 20 and 22 in Fig. 1. These may be conventional toy track sections having rails 24 and 26 spaced by ties 28. Each rail is made of sheet metal bent to form a head 30 (Fig. 2), a web 32, and a flange 34. The ties are also formed of pieces of sheet metal. Each rail has a pin 36 (Figs. 1 and 3) at one end, and is open at the other end to frictionally receive a like pin when the metal rail sections are joined end to end.

The crossover is molded out of a single body of molding material, and in the molding operation is formed with eight "arm" rails 40, and four "cross" rails 42 which fill in the side gaps between the arm rails to leave only a small crevice at the crossover points for passage of the flanges of the wheels. The crossover, as molded, further has eight arm guides 44, that is, guides for the inside faces of the wheel flanges, which guides are formed on and constitute a part of the arms of the crossover. There are also four cross guides 46 which guide the inside faces of the wheels or flanges at the center of the crossover. Each arm has two simulated ties 48 and 50, which are also formed integrally with the rest of the crossover structure. Thus a single body of molding material is molded in a single molding operation to form all of the numerous parts of the crossover.

In accordance with one important feature of the present invention, the ends of the arms are projected beyond the ends of the arm rails, as is indicated at 52, and these projections are so dimensioned as to fit frictionally between the webs of the paired sheet metal rails 24 and 26. Some of the arm rails, in this case the rails 40, 40 and 54, 54, terminate in depressed trough-like channels 56 dimensioned to cradle the pins of the metal rails.

Fig. 2 of the drawing shows how the edges of the arm extension 52 are received with a tight frictional fit between the webs 32 of the rails. The cross-section of the material at this point is in the form of an inverted L, as is better shown in Fig. 4. The parts 58 extend downward and are dimensioned to rest on the table or other surface which is supporting the simulated ties 48 and 50 of the crossover. The extensions 52 are cut away or recessed, as is indicated at 60, in order to clear the flange 34 of the track section, as is best shown in Fig. 2. The relation of the molded plastic rails to the extension and the ties is shown at 40′ in Fig. 4.

It is the ends of certain of these rails 40 which are depressed and made trough-like to receive the pins of the sheet metal rails, and this is best shown in Fig. 5., in which the troughs for receiving the pins are indicated at 64. Fig. 3 shows the relation of the pins 36 to the troughs when the metal track section is added.

The wheels of the rolling stock do not bump at the

pins 36 because the height of the base 62 just inside the channels 64 is made such as to support the flange 100 of the wheel 102, as is indicated in broken lines in Fig. 3. A similar situation is preferably established at the crossover points where there is necessarily a gap in the continuity of the rails. This is indicated in Fig. 6 in which it will be seen that flange 100 of wheel 102 rests on a bearing surface 62 at the crossover points. For improved appearance and simplicity in molding, the flange bearing surfaces 62 are preferably continued throughout the length of the crossover rails so that in the crossover here shown the surfaces marked 62 in Figs. 2 through 7 of the drawing all lie in a common plane, which plane includes the tops of the projections 52, and which extends throughout the crossover, including the spaces between the crossrails 42 and the cross guides 46, and the spaces between the arm rails 40 and the arm guides 44, except at the converging ends of the arm guides. If the height needed for extension 52 to frictionally fit the rails differs from that needed to support the wheel flange, the cross section at the projections 52 may be appropriately modified as is indicated by the change from Fig. 2 to Fig. 2*a*. In that figure it will be seen that the molded extension is built up somewhat at the point 104 to accurately fit the rail, while the height just inside the head of the rail at the point 106 is established at the desired amount to fit the standard flange of the railroad system wheels.

Reverting now to Fig. 1 it will be seen that the cross rails 42 serve to connect the arm guides 44, and also that the free ends of the arm guides 44 converge, thereby facilitating reception and guidance of the wheel flanges. The cross guides 46 are connected at their ends to form a hollow square.

At suitable points the crossover is molded with projections which give the same a more realistic appearance. Some projections, such as those indicated at 70, may simulate the heads of spikes used to hold the rails on the ties. Others, such as those indicated at 72, simulate the heads or the nuts of rail bolts.

In order to strengthen the crossover structure the arms are preferably provided with strengthening webs, indicated at 74 in Fig. 1. On the other hand, with a view to conserving the use of plastic the simulated ties 48 and 50 are all made hollow, as is clearly indicated at 76 in Figs. 6 and 8. This is also shown at 76 in Figs. 3 and 5, and there preferably are steps at 77 because the top of the tie is at a higher level between the rails than outside the rails.

The projections 52 for connecting the crossover to the metal track sections are preferably joined by cross connections or ends 78. The amount of projection is preferably made such that the cross connection 78 reaches the cross tie 28 of the metal track section. However, the cross connection 78 is preferably stepped or recessed, as is best shown at 80 in Figs. 6 and 7, this being at such a height as to enable the upper portion to slide over the cross tie 28. This takes care of certain already standardized toy track sections in which the cross tie at that end of the track which has no pins, is spaced a little further from the end of the rail than is the cross tie at the end having the pins. Thus in the particular case here shown it will be seen at the righthand of Fig. 1 that the cross connection 78 just reaches the cross tie 28, whereas at the bottom of Fig. 1 the cross connection 78 overlies the cross tie 30 of the track section. The abutting relation shown at the right end of Fig. 1 is also shown in Fig. 9 looking from the bottom.

It will be noted that the design of the crossover is such that it may be molded in a simple two-part mold without necessitating the use of movable cores. The mold opens with its parting plane parallel to the plane of the crossover. Thus the studs or simulated bolts 72 may be made cylindrical or be given a desired shape, preferably hexagonal as shown, because the parting plane may be carried up to the center line of the projections. The scale of the drawing is too small to show the hexagonal shape in Fig. 6, but the enlarged fragment in Fig. 11 shows it. In the case of those projections which overlie the reinforcing ledges 74, that is, the projections indicated at 73 in Fig. 7, the projections are not made hexagonal, and instead are carried down to the top surface of the reinforce ledge 74, in order to retain the advantage of using a simple two-part mold without movable cores. This is more clearly shown to enlarged scale in the fragmentary view of Fig. 12.

The crossover is supported on the ties 48 and 50, and further by the depending inner rims 58 of the extensions 52. In addition the center portion of the crossover is supported by four ribs or supports indicated at 81 in Figs. 6 and 7. The construction will be clear by reference to Fig. 8, which is a bottom view and which clearly shows the four supports 81, the rim or lower edge of the hollow ties 48 and 50, and the rim 58 of the extensions 52. Fig. 8 also shows the changes in configuration produced by the introduction of the reinforce ledges 74, and the convergence of the guide rails above the points 45.

The crossover may be used in various track layouts, a typical one being the "figure eight" shown in Fig. 10. In the drawing it will be seen that the figure eight is made up of six curved sections 82 at each end, each covering an arc of 45°, and two straight sections 84 and 86 at each end, the straight sections being connected to the crossover, generally designated 88. The drawing has been made symbolical, the pins 90 representing the end of a track section having pins, and by following the sections sequentially around the curve it will be seen the end of the section 86 towards the crossover is devoid of pins. Thus by making the crossover with two diametrically opposed arms adapted to receive pins (as at the top and bottom of Fig. 1), and the other two diametrically opposed arms adapted to receive rail ends without pins (as at the right and left of Fig. 1) the crossover is properly made for use with uniform track sections.

It is believed that the method of making my improved molded plastic track element, and of using the same with metal track sections, as well as the advantages thereof, will be apparent from the foregoing detailed description. It will also be apparent that while I have shown and described my invention in a preferred form, changes may be made in the structure shown without departing from the scope of the invention as sought to be defined in the following claims.

I claim:

1. A molded plastic track element for a toy railway, said element being adapted for use with toy track sections having a pair of rails spaced by ties, said track element having plastic molding material integrally molded to form simulated ties and a pair of rails thereon, the end of said element being projected beyond the ends of the said pair of rails and being so dimensioned as to fit between the webs of the pair of rails of the track section rails at the adjacent end of the track section.

2. A molded plastic track element for a toy railway, said element being adapted for use with conventional toy track sections having a pair of rails spaced by ties, each rail being made of sheet metal bent to form a head, a web and a flange and having a pin at one end and being open at the other end to receive a like pin when rail sections are joined end to end, said track element having plastic molding material integrally molded to form simulated ties and a pair of rails thereon, the end of said element being projected beyond the ends of the said pair of rails and being so dimensioned as to fit frictionally between the webs of the pair of sheet metal rails at the adjacent end of the track section, some of said element rails terminating in depressed trough-like channels dimensioned to receive the pins of the metal rails.

3. A molded plastic track element for a toy railway, said element being adapted for use with toy track sections

having a pair of rails spaced by ties, said track element having plastic molding material integrally molded to form simulated ties and a pair of rails thereon, the end of said element being projected beyond the ends of the said pair of rails and being so dimensioned as to fit frictionally between the webs of the pair of track section rails at the adjacent end of the track section, said projecting end having a support dimensioned to rest on the same surface as the ties but being stepped inwardly to clear the flanges of the pair of rails of the track section.

4. A molded plastic track element for a toy railway, said element being adapted for use with toy track sections having a pair of rails spaced by ties, said track element having plastic molding material integrally molded to form simulated ties and a pair of rails thereon, the end of said element being projected beyond the ends of the said pair of rails and being so dimensioned as to fit frictionally between the webs of the pair of track section rails at the adjacent end of the track section, and said plastic rails having horizontal projections simulating bolts.

5. A molded plastic crossover for a toy railway, said crossover having arms which are adapted for use with toy track sections each having a pair of rails spaced by ties, said crossover being a single body of plastic molding material molded to form arm rails, cross rails, arm guides, cross guides, and simulated ties, the ends of the arms being projected beyond the ends of the arm rails and being so dimensioned as to fit frictionally between the webs of the pair of track section rails at the adjacent end of the track section.

6. A molded plastic crossover for a toy railway, said crossover having arms which are adapted for use with conventional toy track sections each having a pair of rails spaced by ties, each rail being made of sheet metal bent to form a head, a web and a flange and having a pin at one end and being open at the other end to receive a like pin when rail sections are joined end to end, said crossover being a single body of plastic molding material molded to form arm rails, cross rails, arm guides, cross guides, and simulated ties, the ends of the arms being projected beyond the ends of the arm rails and being so dimensioned as to fit frictionally between the webs of the pair of sheet metal rails at the adjacent end of the track section, some of said arm rails terminating in depressed trough-like channels dimensioned to receive the pins of the metal rails.

7. A molded plastic crossover for a toy railway, said crossover having arms which are adapted for use with conventional toy track sections each having a pair of rails spaced by ties, each rail being made of sheet metal bent to form a head, a web and a flange and having a pin at one end and being open at the other end to receive a like pin when rail sections are joined end to end, said crossover being a single body of plastic molding material molded to form arm rails, cross rails, arm guides, cross guides, and simulated ties, the ends of the arms being projected beyond the ends of the arm rails and being so dimensioned as to fit frictionally between the webs of the pair of metal rails at the adjacent end of the track section, some of said arm rails terminating in depressed trough-like channels dimensioned to receive the pins of the metal rails, said projecting arm ends having supports dimensioned to rest on the same surface as the ties but being stepped inwardly to clear the flanges of the track sections.

8. A molded plastic crossover for a toy railway, said crossover having arms which are adapted for use with conventional toy track sections each having a pair of rails spaced by ties, each rail being made of sheet metal bent to form a head, a web and a flange and having a pin at one end and being open at the other end to receive a like pin when rail sections are joined end to end, said crossover being a single body of plastic molding material molded to form arm rails, cross rails, arm guides, cross guides, and simulated ties, the ends of the arms being projected beyond the ends of the arm rails and being so

dimensioned as to fit frictionally between the webs of the pair of metal rails at the adjacent end of the track section, some of said arm rails terminating in depressed trough-like channels dimensioned to receive the pins of the metal rails, said cross guides being connected at their ends to form a square.

9. A molded plastic crossover for a toy railway, said crossover having arms which are adapted for use with conventional toy track sections each having a pair of rails spaced by ties, each rail being made of sheet metal bent to form a head, a web and a flange and having a pin at one end and being open at the other end to receive a like pin when rail sections are joined end to end, said crossover being a single body of plastic molding material molded to form arm rails, cross rails, arm guides, cross guides, and simulated ties, the ends of the arms being projected beyond the ends of the arm rails and being so dimensioned as to fit frictionally between the webs of the pair of metal rails at the adjacent end of the track section, some of said arm rails terminating in depressed trough-like channels dimensioned to receive the pins of the metal rails, said arm guides being connected to the intermediate cross rails.

10. A molded plastic crossover for a toy railway, said crossover having arms which are adapted for use with conventional toy track sections each having a pair of rails spaced by ties, each rail being made of sheet metal bent to form a head, a web and a flange and having a pin at one end and being open at the other end to receive a like pin when rail sections are joined end to end, said crossover being a single body of plastic molding material molded to form arm rails, cross rails, arm guides, cross guides, and simulated ties, the ends of the arms being projected beyond the ends of the arm rails and being so dimensioned as to fit frictionally between the webs of the pair of metal rails at the adjacent end of the track section, some of said arm rails terminating in depressed trough-like channels dimensioned to receive the pins of the metal rails, and said guides and rails having projections simulating bolts for securing the rails.

11. A molded plastic crossover as defined in claim 5, in which there is a flange bearing surface at the ends and at the crossover points to prevent bumping where the wheels lack regular rail support.

12. A molded plastic crossover as defined in claim 5, in which there is a flange bearing surface at the ends and at the crossover points to prevent bumping where the wheels lack regular rail support, and in which the flange bearing surface is continued just inside the rails throughout the crossover or track element structure.

13. A molded plastic crossover as defined in claim 6, in which there is a flange bearing surface at the ends and at the crossover points to prevent bumping where the wheels lack regular rail support.

14. A molded plastic crossover as defined in claim 6, in which there is a flange bearing surface at the ends and at the crossover points to prevent bumping where the wheels lack regular rail support, and in which the flange bearing surface is continued just inside the rails throughout the crossover or track element structure.

15. A molded plastic crossover as defined in claim 7, in which there is a flange bearing surface at the ends and at the crossover points to prevent bumping where the wheels lack regular rail support.

16. A molded plastic crossover as defined in claim 7, in which there is a flange bearing surface at the ends and at the crossover points to prevent bumping where the wheels lack regular rail support, and in which the flange bearing surface is continued just inside the rails throughout the crossover or track element structure.

17. A molded plastic track element for a toy railway, said element being adapted for use with toy track sections having a pair of rails spaced by ties, said track element having plastic molding material integrally molded to form simulated ties and a pair of rails thereon, the

end of said element being projected beyond the ends of the said pair of rails and being so dimensioned as to fit between the webs of the pair of rails of the track section at the adjacent end of the track section, the projected end of said element being in the form of a broad U when viewed in plan, with the base of the U outermost and the ends of the U connected to the rails and the endmost crosstie of said element.

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