Dec. 4, 1956 W. E. REXFORD 2,772,843

MOLDED PLASTIC TRACK SWITCH FOR A TOY RAILWAY

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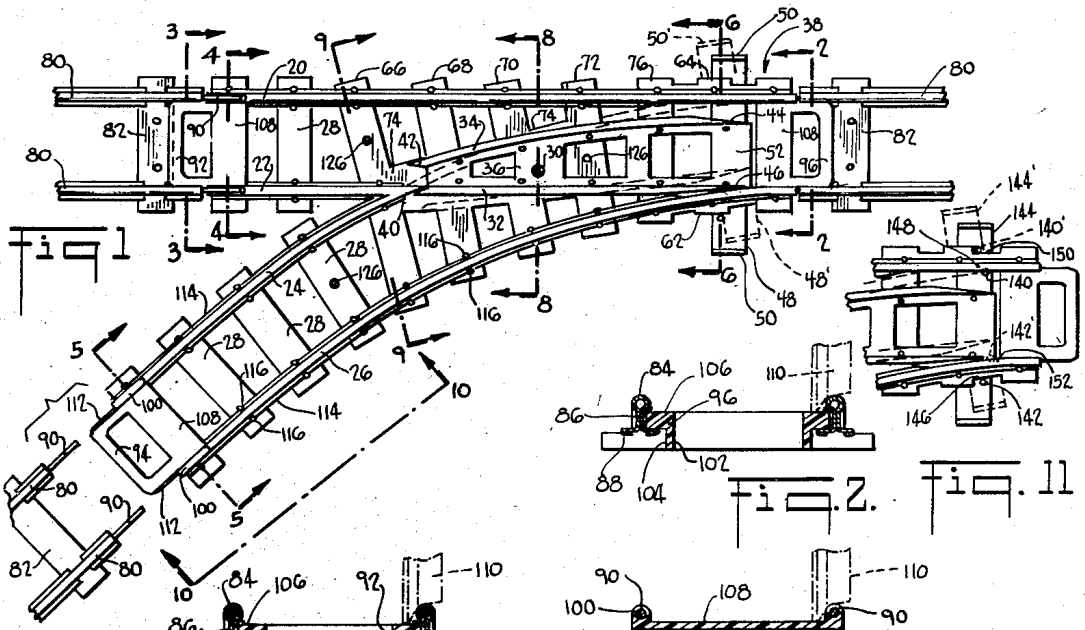

Fig. 1

Fig. 2.

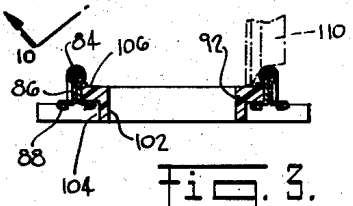

Fig. 3.

Fig. 4.

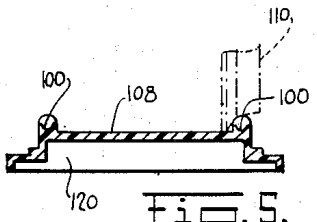

Fig. 5.

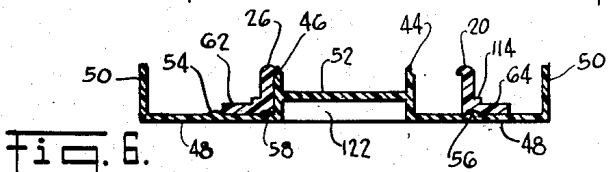

Fig. 6.

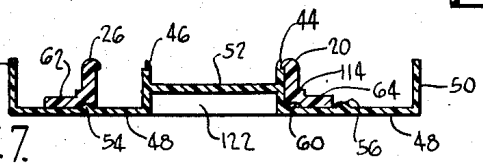

Fig. 7.

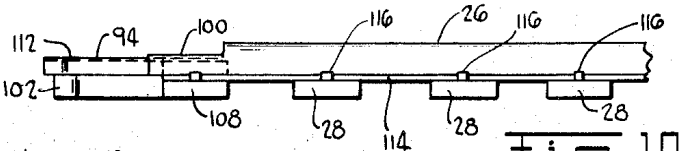

Fig. 10.

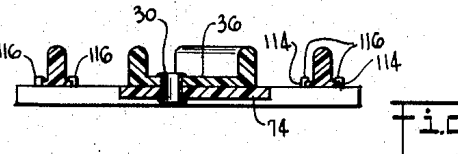

Fig. 8.

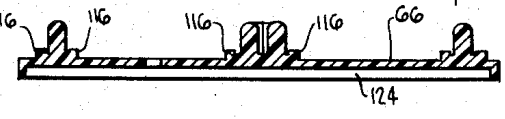

Fig. 9.

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MOLDED PLASTIC TRACK SWITCH FOR A TOY RAILWAY

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4 Claims. (Cl. 246—415)

This invention relates to toy railroads, and more particularly to a track switch for use in such railroads.

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 opened 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, most importantly a track switch, are employed. These 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 toy track switches, and to that end the present track switch may be molded in only two parts, out of a suitable moldable plastic. One of the parts includes main line rails, branch line rails, a frog for the inner rails, a common end for the outer rails, and simulated ties, all molded integrally. The other part is a pivoted tongue unit comprising a main line rail and a branch line rail molded integrally with a base. The rails are so bevelled at one end as to mate with the frog, and are tapered at the other end to form tongues cooperating with the outer rails.

In accordance with a further feature and object of the invention the operation of the switch is simplified by molding the tongues integrally with a movable operating bar, disposed beneath the outer rails at the common end of the switch. One or more upwardly projecting finger pieces may be molded integrally with the bar to facilitate movement of the same and consequent change in position of the switch. The bottom of the switch and the top of the operating bar are preferably provided with mating detent projections and recesses in order to hold the switch in either main line or branch line position.

A further object of the invention is to provide means for connecting the regular metal track sections to the molded plastic track switch. A further object of the invention is to minimize bumping of the wheels at the transition or connecting points.

A further object of the invention is to simplify molding of the track switch, and more particularly, to so design the track switch that it may be molded in a simple two-part mold without requiring the use of movable cores. To this end the molded rails have web portions as wide as the head, but the appearance is nevertheless made realistic because the rails are given simulated flange portions which are wider than the head, and therefore wider than the web. Moreover, the track switch is readily and preferably provided with a series of simulated spike heads at the rail flanges at each of the ties, these too being molded integrally with the other parts in the single common molding operation.

To accomplish the foregoing objects, and other objects which will hereinafter appear, the invention resides in the toy track switch elements, and their relation one to another, as are hereinafter more particularly described

in the following specification. The specification is accompanied by a drawing in which:

Fig. 1 is a plan view of a toy track switch 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. 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 view similar to Fig. 4, but showing the switch in branch line position;

Fig. 8 is a section taken approximately in the plane of the line 8—8 of Fig. 1;

Fig. 9 is a section taken approximately in the plane of the line 9—9 of Fig. 1;

Fig. 10 is a side elevation of a part of the track switch looking in the direction of the arrows 10—10 of Fig. 1; and

Fig. 11 is a fragmentary plan view showing a modified detent mechanism.

Referring to the drawing, and more particularly to Fig. 1, the toy track switch comprises straight main line rails 20 and 22 and curved branch line rails 24 and 26. There are simulated ties 28 molded integrally with the rails. There is also a separately molded tongue unit pivoted at 30. This comprises a main line rail 32 and a branch line rail 34 molded integrally with a base 36.

The outer rails 20 and 26 have a common end generally designated 38. The inner rails 22 and 24 terminate in a common frog 40. The rails 32 and 34 of the tongue unit are so bevelled at 42 as to mate with the frog 40, and are tapered at the other end to form tongues 44 and 46 which cooperate with the outer rails 20 and 26, respectively.

The tongues 44 and 46 are preferably molded integrally with a movable operating bar 48 which is disposed beneath the outer rails at the common end 38. This bar is preferably provided with one or more integrally molded upwardly projecting fingers pieces 50 which facilitate operation of the switch. To operate the switch the bar is pushed to either the solid line position 48, 50 in Fig. 1, or the broken line position 48', 50', thus changing the tongues from the solid line position which corresponds to main line operation, to the broken line position which corresponds to branch line operation.

Referring now to Figs. 6 and 7, the tongues 44 and 46 are molded integrally with the part 52 of the base 36 (in Fig. 1) and with the dropped operating bar 48, the latter having upwardly projecting finger pieces 50 at its ends. Fig. 6 shows the switch in main line position with the tongue 46 against the rail 26. Fig. 7 is similar but shows the switch in branch line position with the tongue 44 against the main line rail 20.

In these figures it will be seen that the parts are preferably provided with mating detent projections and recesses in order to hold the switch in either position. More specifically, in the present case the bar 48 is provided with detent projections 54 and 56, and the bottom of the switch at a point above the bar is provided with detent recesses 58 (Fig. 6) and 60 (Fig. 7). Moreover, the detent action may be enhanced by providing the rails 20 and 26 with base portions 62 and 64 so dimensioned that the detent projections come just outside the base portions. Thus in Fig. 6 the projection 54 cooperates with the part 62, while the projection 56 is received in the recess 60. In Fig. 7 the projection 56 cooperates with the part 64,

while the projection 54 is received in the recess 58. The bar 48 is preferably so dimensioned as to rest directly on the floor or table or other surface supporting the entire track switch. In this way the bar helps support the track switch.

The various parts of the base 36 of the tongue unit rest directly on the common ties 66, 68, 70 and 72, all of which are joined in their middle region by a common connecting surface 74 (Figs. 1 and 8) extending longitudinally of the switch. The base 36 of the tongue unit rests directly on the said connecting surface 74, which runs from the tie 66 to the tie 72, and rests also on the tie 76. The base 36 may itself be cut out at three points as indicated in the drawing, thus conserving in the use of the plastic molding material, and also improving the realism of the appearance of the track switch. The pivot 30 is preferably an eyelet, as is best shown in Fig. 8. This figure also shows how the base 36 of the tongue unit rests directly on the connecting portion 74 of the main part of the switch.

Although the track switch is molded out of plastic it is preferably designed for use with conventional toy track sections made out of sheet metal. The ends of three such sections are indicated in Fig. 1, and it will be seen that the sections comprise rails 80 spaced by ties 82, each rail being made of sheet metal bent to form a head 84 (Figs. 2 and 3), a web 86, and a flange 88. Each rail has a pin 90 (Fig. 1) at one end, and is open at the other end (see Fig. 2) to receive a like pin when rail sections are joined end-to-end.

In accordance with the present invention the ends 92, 94 and 96 of the switch project beyond the ends of the outer rails 20 and 26, and are so dimensioned as to fit frictionally between the webs of the sheet metal rails. In Fig. 1 the ends 92 and 96 are shown joined to the track sections, while the end 94 is shown spaced from a track section, the latter being added by simply pushing it longitudinally around the projecting end 94 of the track switch. Some of the molded plastic rails—in this case the lefthand ends of all four of the rails—are depressed to form trough-like channels 100 dimensioned to receive or to clear the pins of the metal rails. These channels are best shown at the end 94 in Fig. 1 and also in Figs. 4 and 5.

Referring to Figs. 2 and 3 it will be seen that the projecting ends preferably have supports 102 dimensioned to rest on the same surface as the ties of the track switch, but these supports are stepped inwardly as indicated at 104 to clear the flanges 88 of the track sections. Figs. 2 and 3 also show clearly how the extensions 96 and 92 are frictionally received between the webs 86 of the metal rails.

The top surfaces 106 of the extensions, and of the end-most ties 108 of the track switch, inside the rails, is preferably made at a height such as to bear the wheel flanges where the wheel bearing surface otherwise would be bumpy. For example, at the metal pins 90 the wheels rest on the flanges instead of the regular bearing surface, this being clearly shown by the broken line indication of the wheel 110 in Figs. 2, 3 4 and 5.

If, as in the present case, the preferred height for the frictional engagement with the metal rail differs from the preferred height to bear the wheel flange, the top surfaces of the extensions 92, 94 and 96 may be stepped slightly, as is clearly shown in Figs. 2 and 3, thus fulfilling both requirements. In effect marginal ledges are added to the side edges of the extension, as is indicated at 112 in Fig. 1. Similar ledges are provided at the other two ends of the track switch, but are concealed by the metal rails.

Each of the two parts of the track switch is preferably molded in a simple two-part mold which does not require any movable cores or the like. With this object in view undercuts are avoided, and more specifically the web portions of the molded plastic rails of the switch are made as wide as the head of the rail. Despite this fact there is no loss of realism in the appearance of the track because the base of each plastic rail has a simulated flange made wider than the head, as is indicated at 114. Moreover, a series of simulated spike heads are provided at the rail flanges at each of the ties, these being indicated at 116. These projections are molded integrally with the rails and ties, and do not in any way complicate the molding operation, yet they greatly improve the realistic appearance of the finished switch.

The ties 28, 66, 68, etc. of the track switch are disposed beneath the flanges of the plastic track, and are quite low, but the three endmost ties 108, while having their end outside the rails disposed at the same low level as the other ties, are disposed at a high level between the rails in order to provide the flange bearing surfaces previously referred to. To save molding material the raised central portion of the end ties is hollowed, as best shown at 120 in Figs. 4 and 5. In somewhat similar fashion the central portion 52 of the cross bar 48 is hollowed between the switch tongues, as is indicated at 122 in Figs. 6 and 7. Even the comparatively flat ties 28, 66, 68, etc. may be hollowed somewhat, as is indicated at 124 in Fig. 9.

The track switch may be provided with a few screw holes for receiving small wood screws when the switch is used in permanently mounted track layouts. In the present case there are three such holes indicated at 126 (Fig. 1).

Fig. 11 shows a slight modification of the invention, in which the detents 140 and 142 are so located on the operating bar 144 as to cooperate with the edges of the switch structure. This eliminates the need for recesses such as the recesses 58 and 60 shown in Figs. 6 and 7. In Fig. 11 when the switch is in the main line position shown in solid lines, the detent 142 comes outside the notched part 146 of the switch structure, while the detent 140 comes inside the part 148 of the switch structure. When the operating bar 144 is shifted to put the switch into the branch line position, shown in broken lines, the detent 140 assumes the position 140' and fits just outside the notched part 150 of the switch structure, while the detent 142 moves to the position 142', and thus comes just inside the part 152 of the switch structure.

Because of this construction it will be understood that in the claims the reference to the use of "mating detent projections and recesses" is intended to include a completely open recess or notch or edge portion, such as is shown in Fig. 11, as well as a localized recess such as that shown at 58 and 60 in Figs. 6 and 7.

It is believed that the method of making my improved molded plastic track switch, and of using the same with metal track sections, as well as the advantages thereof, will be apparent from the foregoing 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 track switch for a toy railway, said switch comprising only two pieces each molded out of a suitable molding plastic which is rigid at room temperature, one piece having main line rails, branch line rails, a common end for the outer rails, a frog for the inner rails, and simulated ties, said parts being all molded integral, and the other piece being a pivoted tongue unit comprising a base above said ties, a main line rail, a branch line rail, and an operating bar all molded integrally with said base, said rails of said tongue unit being beveled at one end to mate with the frog and being tapered at the other end to form tongues cooperating with the outer rails, said movable operating bar being disposed beneath the outer rails at the common end, said bar having an integrally molded upwardly projecting finger piece to facilitate operation of the switch, the bottom of said common end and the top of said operating bar having mating detent pro-

jections and recesses to hold the switch in either main-line or branch line position, said integral tongue unit and operating bar being so shaped and dimensioned, and the simulated ties on each side of the operating bar being so spaced apart, that the parts may be assembled by inserting the tongue upwardly between the said ties and then turning the tongue down to its horizontal position between the outer rails, and said ties being so spaced apart that the integral operating bar may oscillate with the tongue as the bar is moved longitudinally to operate the switch.

2. A track switch for a toy railway, said switch being adapted for use with conventional toy track sections having 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 switch being molded out of a suitable molding plastic which is rigid at room temperature, and having main line rails, branch line rails, a common end for the outer rails, a frog for the inner rails, and simulated ties, said parts being all molded integrally, and a pivoted tongue unit comprising a main line rail and a branch line rail molded integrally with a base disposed above said ties, said rails being beveled at one end to rate with the frog and being tapered at the other end to form tongues cooperating wtih the outer rails, the tongues being molded integrally with a movable operating bar disposed beneath the outer rails at the common end, said bar having an integrally molded upwardly projecting finger piece to facilitate operation of the switch, the bottom of said common end and the top of said operating bar having mating detent projections and recesses to hold the switch in either main-line or branch line position, said integral tongue unit and operating bar being so shaped and dimensioned, and the simulated ties on each side of the operating bar being so spaced apart, that the parts may be assembled by inserting the tongue upwardly between the said ties and then turning the tongue down to its horizontal position between the outer rails, and said ties being so spaced apart that the integral operating bar may oscillate with the tongue as the bar is moved longitudinally to operate the switch, the ends of said switch projecting beyond the ends of the rails and being so dimensioned as to fit frictionally between the webs of the sheet metal rails.

3. A track switch for a toy railway, said switch being molded out of a suitable molding plastic which is rigid at room temperature, and having main line rails, branch line rails, simulated ties, a common end for the outer rails, a frog for the inner rails, and a pivoted tongue unit comprising a main line rail and a branch line rail molded integrally with a base disposed above said ties, said rails being beveled at one end to mate with the frog and being tapered at the other end to form tongues cooperating with the outer rails, the tongues being molded integrally with a movable operating bar disposed beneath the outer rails at the common end, said bar having an integrally molded upwardly projecting finger piece to facilitate operation of the switch, the bottom of said common end and the top of said operating bar having mating detent projections and recesses to hold the switch in either main line or branch line position, said integral tongue unit and operating bar being so shaped and dimensioned, and the simulated ties

on each side of the operating bar being so spaced apart, that the parts may be assembled by inserting the tongue upwardly between the said ties and then turning the tongue down to its horizontal position between the outer rails, and said ties being so spaced apart that the integral operating bar may oscillate with the tongue as the bar is moved longitudinally to operate the switch, the molded track switch rails having web portions as wide as the head and having simulated flange portions wider than the head in order to facilitate molding the track switch in a simple two-part mold without requiring movable cores.

4. A track switch for a toy railway, said switch being adapted for use with toy track sections having rails spaced by ties, said track switch being molded out of a suitable molding plastic which is rigid at room temperature, and having main line rails, branch line rails, simulated ties, a common end for the outer rails, a frog for the inner rails, and a pivoted tongue unit comprising a main line and a branch line rail molded integrally with a base disposed above said ties, said rails being beveled at one end to mate with the frog and being tapered at the other end to form tongues cooperating with the outer rails, the tongues being molded integrally with a movable operating bar disposed beneath the outer rails at the common end, said bar having an integrally molded upwardly projecting finger piece to facilitate operation of the switch, the bottom of said common end and the top of said operating bar having mating detent projections and recesses to hold the switch in either main line or branch line position, said integral tongue unit and operating bar being so shaped and dimensioned, and the simulated ties on each side of the operating bar being so spaced apart, that the parts may be assembled by inserting the tongue upwardly between the said ties and then turning the tongue down to its horizontal position between the outer rails, and said ties being so spaced apart that the integral operating bar may oscillate with the tongue as the bar is moved longitudinally to operate the switch, the ends of said switch projecting beyond the ends of the rails and being so dimensioned as to fit frictionally between the webs of the track section rails, the molded track switch rails having web portions as wide as the head and having simulated flange portions wider than the head in order to facilitate molding the track switch in a simple two-part mold without requiring movable cores.

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