

United States Patent

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[54] CURRENT FEEDING RAIL ELEMENT FOR
ELECTRIFIED TOY RAILWAY TRACKS
5 Claims, 10 Drawing Figs.
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[50] Field of Search 238/10, 10
A-F; 246/1

[56]

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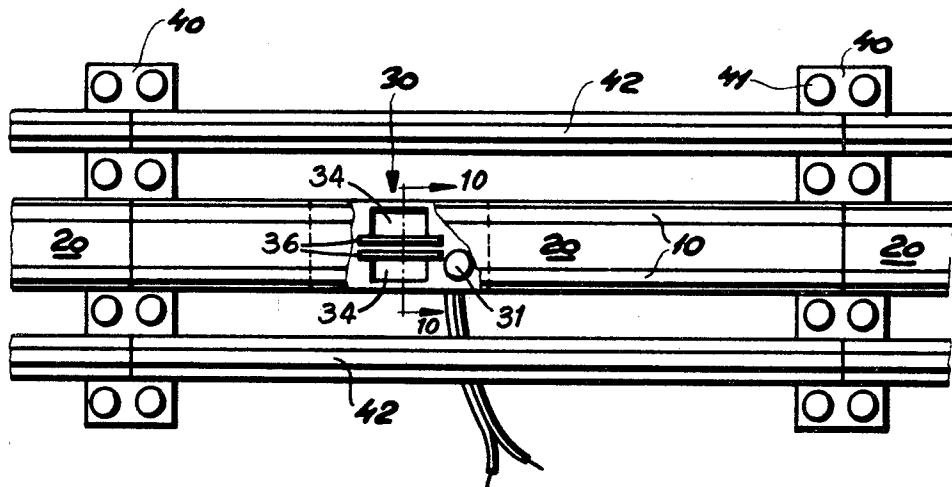
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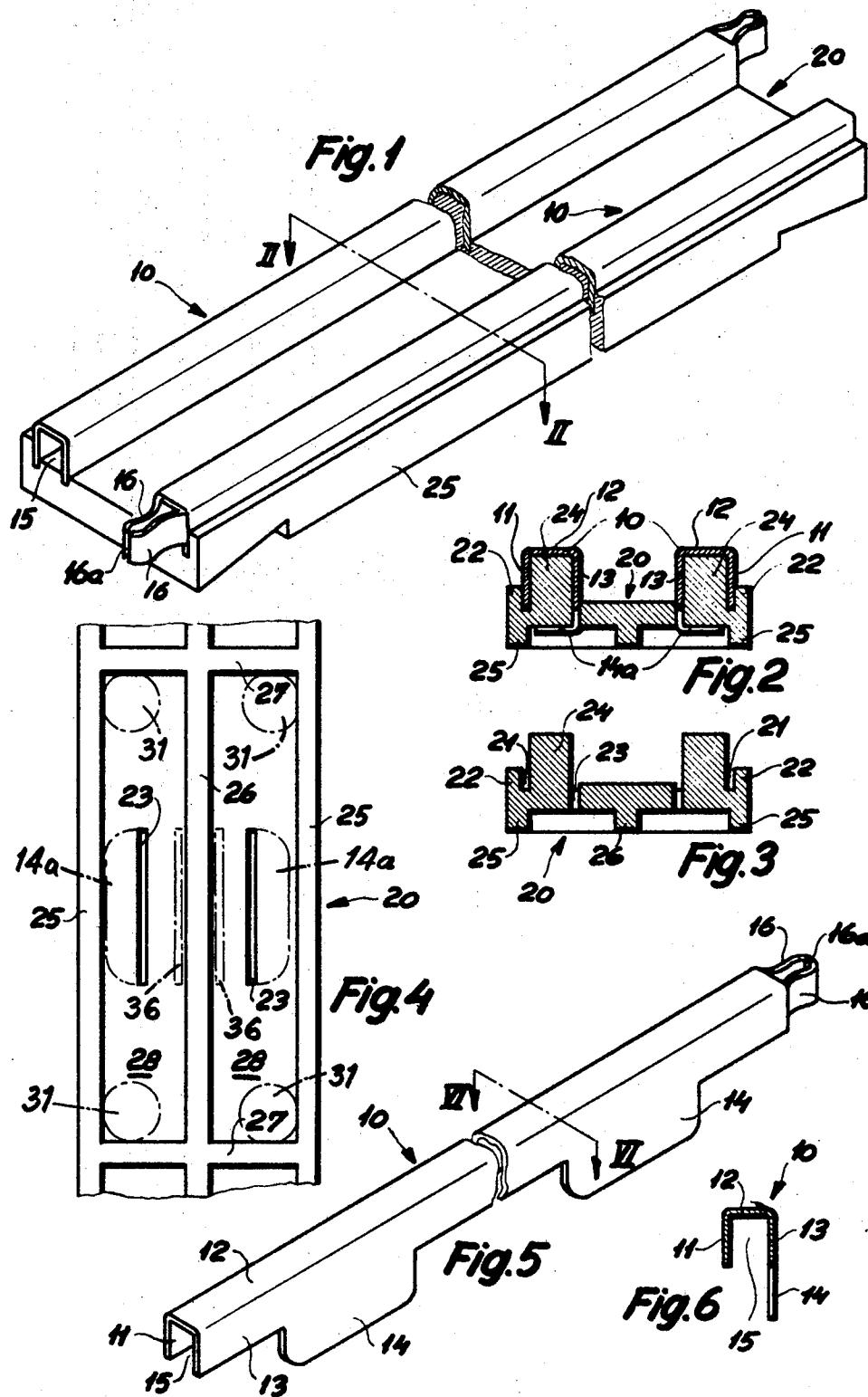
ABSTRACT: A current feeding rail element for electrified toy railway tracks including an elongated body of molded plastic material provided with a pair of current rails mounted on the top face and having fastening tongues extending through apertures in the body and bent over to form contact faces at the bottom face of the body, coupling ribs being provided at the bottom face of the body for detachably mounting a connector having corresponding coupling means and a pair of contact members adapted to contact a pair of rail-fastening tongues when the connector is clamped against the bottom face of the rail element.



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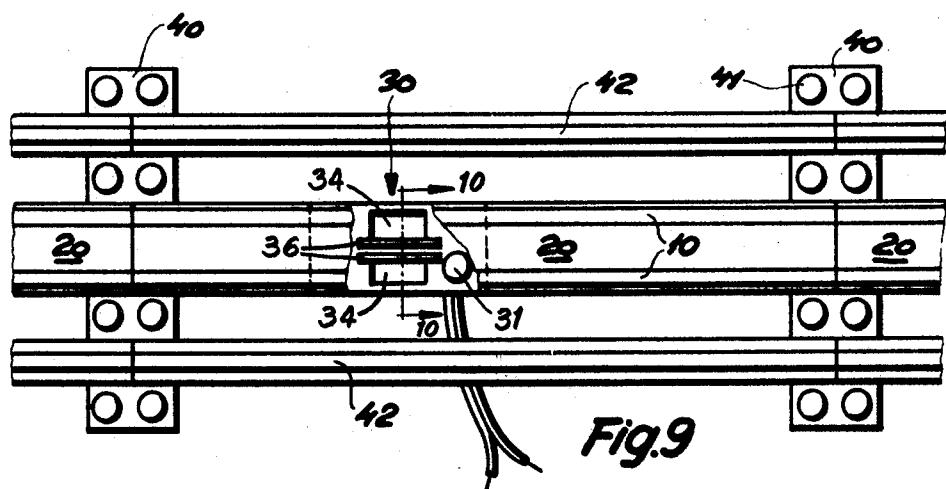
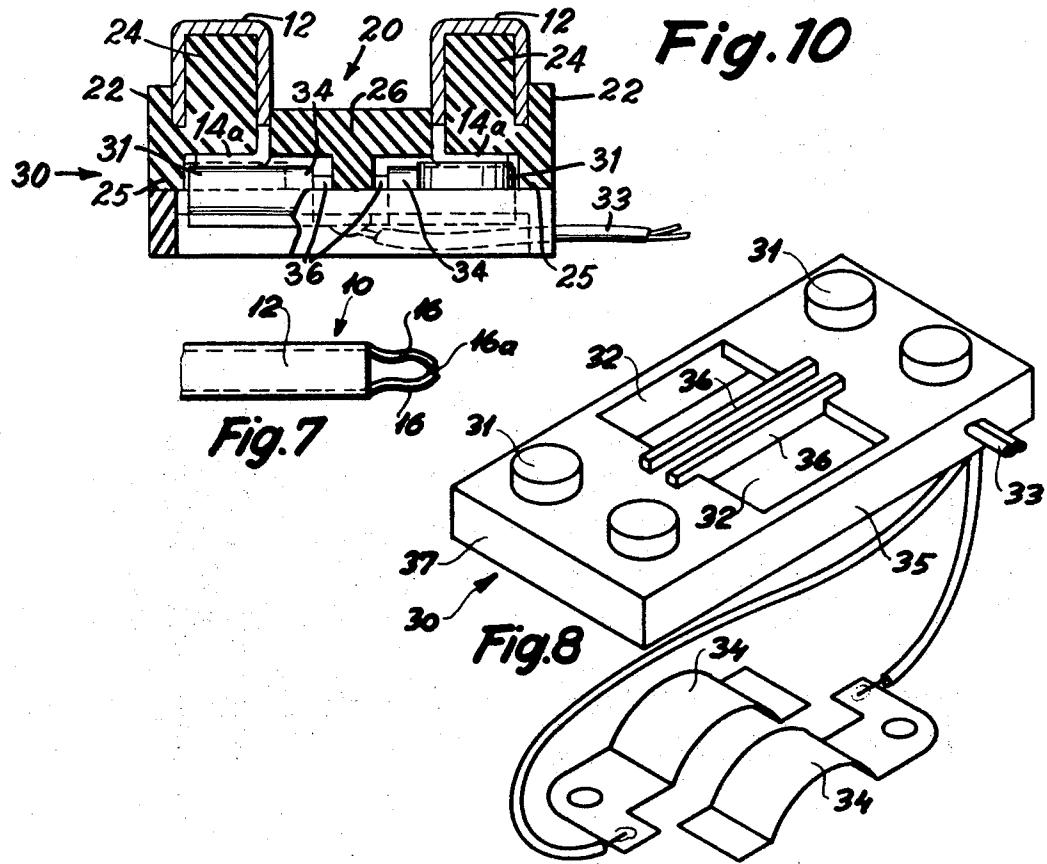
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CURRENT FEEDING RAIL ELEMENT FOR ELECTRIFIED TOY RAILWAY TRACKS

This invention relates to toy building sets including elements for building toy railway tracks and, more particularly, to elements adapted to supply electric current from a power source, such as a battery or a transformer, to sections of an electrified toy railway track.

One object of the invention is to provide simple and inexpensive means for building current feeding rails adapted to be detachably connected to a power source at a plurality of points along the track.

Another object is to provide coupling means for detachably mounting the current feeding rails on the upper face of a plurality of sleeper elements connecting and supporting the track rails.

A further object is to enable an electrified toy railway track to be built and dismounted by means of standard elements belonging to a toy building set, as explained in U.S. Pat. No. 3,464,624 (application Ser. No. 597,390).

These and related objectives of the present improvements will appear in detail from the following description with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view showing a rail element according to the invention.

FIG. 2 is a sectional view taken along the line II-II in FIG. 1.

FIG. 3 is a sectional view similar to FIG. 2, but with the current rails removed.

FIG. 4 is a sectional bottom plan view of the element shown in FIG. 1 showing in broken lines the position of parts of the plate member 30 when said plate member and body 20 are pressed together.

FIG. 5 is a perspective view of a current rail pertaining to the element shown in FIG. 1.

FIG. 6 is a sectional view taken along the line VI-VI in FIG. 5.

FIG. 7 is a top plan view of one end of the rail shown in FIG. 5.

FIG. 8 is an enlarged, perspective view of a connector adapted to be mounted on the bottom face of the element shown in FIGS. 1-4.

FIG. 9 is a top plan view showing a section of an electrified toy track embodying the current rail element and the connector according to the invention.

FIG. 10 is a view in section taken on the line 10-10 of FIG. 9.

The current feeding rail element shown in FIGS. 1-4 comprises a body 20 of molded plastic material which, for the purpose of electrical toy trains, will be electrically nonconductive. In the top surface of this material are molded rail supporting ridges 24, as shown in FIGS. 2 and 3, and slits 21 extending in the lengthwise direction of the element adjacent the ridges 24 and defining ribs 22 at either side of the element 20. The body 20 is further provided with a plurality of apertures 23, the purpose of which will be explained in the following.

As shown more particularly in FIGS. 2, 3 and 4, the bottom face of the body 20 is provided with a central rib 26 extending in the lengthwise median plane of the element and with a pair of similar ribs 25 at either side of the body 20 and, moreover, with transversely extending ribs 27, which together with the ribs 26 and 25 define a series of rectangular recesses 28.

A pair of current feeding rails 10 are mounted on the top surface of the body 20 and are supported on the ridges 24.

The rails 10, one of which is shown more clearly in FIG. 5, are made of continuous metal strips of inverted U-shape fitting down over the ridges 24. The top faces 12 of the rails 10 are adapted to provide a sliding contact with a pair of contact members (not shown) mounted on an electric toy train moving along the track shown in FIG. 9. One side 11 of each rail is inserted in one of the slits 21, so as to be firmly supported against the adjacent rib 22. The other side 13 of the rail 10 is in part provided with extensions 14 adapted to be inserted

through the apertures 23 to form bendable fastening tongues 14a bent over so as to abut the bottom face of the body 20 within the recesses 28. The bent over fastening tongues also serve as contact faces 14a for contacting the contact members 34 of the connector 30 shown in FIG. 8.

As shown in FIG. 4, the slits or apertures 23 in the body 20 are arranged in pairs disposed symmetrically with respect to the central rib 26 with one aperture 23 in each of the recesses 28. The width of the cavity 15 of the rails 10, as shown in FIGS. 5 and 6, is substantially equal to the width of the ridges 24, so as to provide for a firm support of the rails on said ridges.

As shown in FIGS. 5 and 7, one end of each rail 10 is provided with an extension comprising a pair of tongues 16 separated by a narrow slit 16a, so as to provide for resilient coupling means for electrically and mechanically connecting the rail with an adjacent rail in another element extending in the lengthwise direction of the rails by introducing the resilient tongues 16 into the cavity 15 of the adjoining rail.

The connector shown in FIG. 8 comprises a plate member 30 of molded plastic material having side and end faces 35 and 37, respectively, and coupling members in the form of studs 31. The plate 30 is further provided with a pair of apertures 32 adapted to insert resilient contact members 34 which, for the sake of clarity, are shown separated from the plate 30 and connected with leads 33 adapted to connect the contact members 34 to a stationary power source (not shown).

The shape and dimensions of the plate element 30 and the location of the studs 31 are such that the connector will fit into a pair of adjoining recesses 28 when clamped against the bottom face of the body with the studs 31 contacting the inner faces of the ribs 25 and 27 and the resilient contact members 34 each contacting one of the rail contact faces 14a in the recesses 28.

A pair of coupling ribs 36 are located symmetrically with respect to the lengthwise median plane of the plate element 30 at a distance substantially equal to the width of the central rib 26 at the bottom face of the body 20, so as to provide for additional coupling means for clamping the connector of FIG. 8 to the bottom face of the element 20.

As shown in FIG. 9, the current-feeding rail elements 20 are adapted to be mounted on sleeper elements 40 provided with coupling studs 41 similar to the studs 31 of FIG. 8, thus providing for the mounting of a continuous current feeding track comprising a pair of current rails 10 and mounted on the sleeper elements 40 intermediate a pair of track rails 42. The dimensions and arrangement of the coupling studs 41 on the sleeper elements 40 are such that the ribs 25, 26 and 27 at the bottom face of the elements 20 may be clamped unto the top surface of the sleeper elements 40 with the studs 41 contacting the inner faces of the said ribs. Similarly, the track rails 42 are provided with cavities having a width corresponding to the diameter of the studs 41, so as to provide for detachably mounting the track rails 42 on the sleeper elements 40 as explained in U.S. Pat. No. 3,464,624 (application Ser. No. 597,390).

It will be understood that the elements 20 constituting the continuous current-feeding double rail track as well as the connector element 30, the sleeper elements 40 and the track rails 42 all constitute elements of a toy building set as described in U.S. Pat. No. 3,005,282, and that the connector element 30 is adapted to be connected to the rail track at any part thereof defined by the recesses 28 comprising the rail contact faces 14a. It will also be observed that rail tracks 20, 10 may be combined with a plurality of connectors 30, some of which may be adapted to derive current from the rails 10 to various accessories, such as signal lamps or electromechanical devices pertaining to the electrified toy railway track.

I claim:

1. In a toy railway track comprising a plurality of sleeper elements and a pair of track rails mounted thereon an element detachably mounted on said sleepers intermediate said pair of

track rails, said rail element comprising a body of electrical insulating material elongated in the direction of the track and having a top face and a bottom face, a pair of metallic current-feeding rails mounted on the top face of said element, a plurality of metallic rail contacts mounted at the bottom face of said element and each connected with one of said current-feeding rails, on the top face of said element, a plurality of metallic rail coupling means at the said bottom face for detachably mounting said element on the sleeper elements, a connector comprising a plate of electrical insulating material and having a pair of metallic contact members mounted at one face thereof, leads connected with said contact members and coupling means for detachably mounting said connector on the bottom face of said rail element with its contact members contacting a pair of said rail contacts at the bottom face of said rail element.

2. A current-feeding rail element, as defined in claim 1, and comprising an elongated body of molded plastic material and of substantially rectangular shape, said body having a top face carrying a pair of metallic current-feeding rails and a bottom face provided with ribs extending along the edges thereof, a central rib in the median plane of said bottom face and a plurality of transversely extending ribs located at regular intervals so as to define a plurality of rectangular recesses disposed symmetrically with respect to said central rib, an aperture in each of said recesses, said current feeding rails comprising

continuous strips of thin sheet metal bent to a cross section of inverted U-shape and provided at one side with a plurality of bendable fastening tongues adapted to be inserted in said apertures and to be bent over so as to abut the bottom face of the rail element within said recesses.

5. A toy railway track, as defined in claim 1, in which the sleeper elements are rectangular plate elements made of molded plastic material and include a plurality of coupling studs adapted to engage the coupling means at the bottom face of said rail element.

10 6. A connector for a current-feeding rail element, as defined in claim 2, said connector comprising a plate element of rectangular shape and made of moldable plastic material, a pair of resilient contact members disposed symmetrically with respect to the longitudinal median plane of said plate element and coupling studs adjacent the corners of said plate element and adapted to engage the recesses at the bottom face of said rail element.

15 7. A current feeding rail element, as defined in claim 2, in which one end of each rail is provided with a pair of resilient tongues symmetrically disposed with respect to the median plane of the rail and extending lengthwise beyond the end of the rail so as to be adapted to be introduced into the cavity of an adjoining rail end.