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(71) Applicant: **Miura, Fukushiro**
15-2 Moegino, Midori-ku
Yokohama-shi Kanagawa-ken(JP)

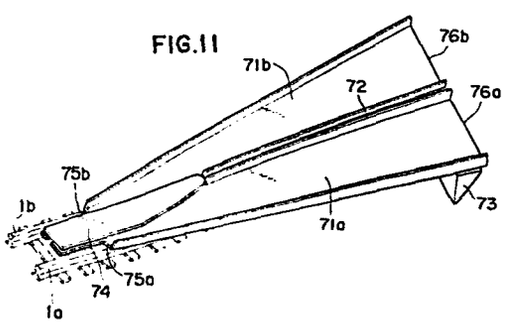
(72) Inventor: **Miura, Fukushiro**
15-2 Moegino, Midori-ku
Yokohama-shi Kanagawa-ken(JP)

(74) Representative: **LOUIS, PÖHLAU, LOHRENTZ & SEGETH**
Kesslerplatz 1
D-8500 Nürnberg(DE)

(54) **Electric rerailer.**

(57) An electric rerailer (10) provided with guide ways for guiding a vehicle of a model railway onto rails (1a, 1b), in which the surfaces of the guide ways are formed by electric conductors (71a, 71b) electrically isolated from each other and used respectively for the left and right wheels of the vehicle and the conductors are capable of being electrically contacted with the rails (1a, 1b) for the left and right wheels respectively. The guide ways are formed on inclined or horizontal surfaces of the rerailer base, and the rerailer base is capable of being releasably mounted on the rails or being connected between ends of the rails.

FIG.11



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Electric rerailer

This invention relates to a rerailer for a model railway, and more particularly to a rerailer for a power-driven vehicle such as locomotive, motive power car or the like.

When a model railway is used, it sometimes happens that the wheels of a model railway vehicle cannot easily be placed on the rails since the wheels under the vehicle body cannot be seen easily. To prevent this, a rerailer has been used as a guide member for guiding a vehicle onto rails. A conventional rerailer is constructed in the form of an inclined base having a wide wheel guide groove on its inclined surface. The width of the guide groove is narrowed at the lower section of the inclined surface so as to guide the wheels on both sides of the vehicle onto rails. When the rerailer is placed on rails and a vehicle is placed on the inclined surface of the rerailer, the vehicle moves on the inclined surface under its own weight and the wheels are guided by the guide groove onto the rails.

The conventional rerailer as described above is useful for guiding carriages and wagons because they can freely move on the inclined surface of the rerailer under their own weight. However, power-driven vehicles such as locomotives and motive power cars cannot move on the inclined

surface under their own weight because their motors and speed reducing mechanism serve as brakes. Therefore, the power-driven vehicles must be guided onto rails by manually moving them.

The primary object of the present invention is to provide an improved rerailer for a model railway.

Another object of the present invention is to provide a rerailer for automatically guiding a power-driven vehicle onto rails.

The specific object of the present invention is to provide an electric rerailer capable of supplying a drive current to a power-driven vehicle placed on the rerailer, and electrically moving the vehicle onto rails.

The rerailer in accordance with the present invention is characterized in that the surfaces of guide rails for guiding a vehicle onto rails are formed by discrete electric conductors used respectively for the left and right wheels of the vehicle, and the conductors are electrically contacted with the rails for the left and right wheels respectively. The conductors forming the surfaces of the guide rails (various types of guide paths such as groove-like paths, plane-like paths with a central partition wall and the like are herein called guide rails) transmits a drive current to the vehicle via the outermost circumference fo wheels so as to move the vehicle on the rerailer and guide it onto the rails.

The electric rerailer in accordance with the present invention has an extremely simple construction suitable to guide a power-driven vehicle.

The rerailer in accordance with the present invention can automatically move a power-driven vehicle onto the rails, and can of course be used also for guiding vehicles such as carriages which are not power driven. The rerailer may take an inclined form or a horizontal plane form. When it is horizontal, the vehicle being rerailed can easily be moved onto the rails by slightly pushing the vehicle forwards.

One way of carrying out the invention is described in detail below with reference to drawings which illustrate only one specific embodiment, in which:-

Figure 1 is a side view showing an embodiment of the electric rerailer in accordance with the present invention,

Figure 2 is a plan view showing the embodiment of Figure 1,

Figure 3 is an end view, viewed from the right of Figure 1,

Figure 4 is a sectional view taken along the line IV-IV of Figure 2,

Figures 5A, 5B, 5C and 5D are plan views showing various modifications of the embodiment shown in Figure 1,

Figures 6A and 6B are perspective view and a transverse sectional view showing another embodiment of the electric rerailer in accordance with the present invention,

Figures 7 and 8 are a perspective view and a transverse sectional view showing a further embodiment of the electric rerailer in accordance with the present invention,

Figures 9A to 9C are plan views showing various modifications of the embodiment shown in Figure 7,

Figure 9D is a sectional view taken along the line IX_D-IX_D of Figure 9C,

Figure 10A is a perspective view showing a still further embodiment of the electric rerailer in accordance with the present invention,
Figure 10B is a plan view showing the embodiment of Figure 10A,
Figure 10C is a perspective view showing the bottom of the embodiment shown in Figure 10A,
Figure 10D is a sectional view taken along the line XI_D-XI_D of Figure 10B, and
Figure 11 is a perspective view showing an even further embodiment of the electric rerailer in accordance with the present invention.

The present invention will hereinbelow be described in further detail with reference to the accompanying drawings.

Figures 1 to 4 show an embodiment of the inclined base type rerailer capable of being releasably mounted on rails in accordance with the present invention. In Figures 1 to 4, a rerailer 10 is placed on rails 1a and 1b of a model railway, and provided with guide rails 12a and 12b for guiding the left and right wheels of a vehicle on an inclined surface 11. The guide rails 12a and 12b are in the form of shallow grooves the outer edges of which are defined by guide walls 13a and 13b. The guide walls 13a and 13b protrude inwardly at the lower section of the inclined surface 11 so as to guide the wheels onto the rails 1a and 1b. Namely, the guide walls 13a and 13b guide large the diameter sections (flanges) 21a and 21b of wheels 2a and 2b shown in Figure 3 inwardly towards the middle between the guide walls 13a and 13b so as to place small diameter sections 22a and 22b of the wheels 2a and 2b on the rails 1a and 1b. Between the guide rails 12a and 12b is positioned a central guide wall 14 which prevents the vehicle from greatly deviating towards the guide wall 13a or 13b and which serves as

a central partition for separating the guide rails 12a and 12b from each other. The surfaces of the guide rails 12a and 12b are formed by electric conductors. In the embodiment shown, the surfaces thereof are formed by plate-like metal strips 15a and 15b, which are fitted by their elasticity to a plastic rerailer base 16 having the inclined surface 11, as best seen in Figure 4. As shown in Figure 4, a turned-back end 152b of the metal strip 15b is fixed by its elasticity to a lower thick-wall section 16a of the rerailer base 16, and the other turned-back end 151b of the metal strip 15b is fixed by its elasticity to an upper thick-wall section 16b of the rerailer base 16. The metal strip 15a is similarly constructed to have turned-back ends 152a and 151a.

The plate-like metal strip conductors 15a and 15b forming the surfaces of the guide rails 12a and 12b are electrically isolated from each other. When the rerailer 10 is placed on the rails 1a and 1b, the turned-back ends 151a and 151b of these conductors 15a and 15b contact the rails 1a and 1b respectively.

The rerailer 10 is provided with a positioning means for properly positioning the rerailer body on the rails in such a way that wheels guide outlets 17a and 17b at the lower end of the rerailer 10 (Figure 2) are positioned just inside the rails 1a and 1b respectively so as to guide the wheels thereto. The positioning means may comprise recesses which are formed at the bottom of the rerailer body so as to fit snugly on the rails. Or, as shown in Figure 3, sections 18, 19a and 19b may be protruded downwardly from the rerailer body at the center and on both sides thereof, and the recesses formed among them may be placed on the rails 1a and 1b. In any case, the metal strip conductors 15a and 15b should contact the rails 1a and 1b respectively.

In the embodiment shown, the metal strips 15a and 15b forming the surfaces of the guide rails 12a and 12b are turned back at both ends and fitted by their own elasticity to the rerailer base. This fitting method is advantageous for simplifying the construction and process for assembling the rerailer. However, the metal strips 15a and 15b may be of any other form insofar as they can be fixed to the rerailer base and parts of them contact with the rails. In short, the metal strips 15a and 15b may be of any construction having flat sections forming the surfaces of the guide rails 12a and 12b and the sections for electrically connecting the flat sections to the rails 1a and 1b respectively.

Further, in the embodiment described above, the guide rails 12a and 12b are provided with the central guide wall 14 for separating them and with the outer guide walls 13a and 13b. However, this construction may be modified in various ways. For example, as shown in Figure 5A, it is possible to provide only outer walls 24 as the guide walls and to have these gradually protrude towards the center therebetween at the outlet side of the rerailer so as to form guide wall sections 24a for guiding the wheels from the outside thereof onto the rails 1. Conversely, as shown in Figure 5B, it is possible to provide only an inner wall 25 as the guide wall and to have this gradually widened at the outlet side of the rerailer so as to form a guide wall section 25a for guiding the wheels from the inside thereof onto the rails 1. Further, as shown in Figure 5C, outer walls 26 may be provided on the outlet side of the rerailer, and an inner wall 27 may be provided on the inlet side of the rerailer. As shown in Figure 5D, it is also possible to form only an inner wall 28 on the outlet side of the rerailer, and outer walls 29 on the inlet side of the rerailer. In Figures 5A, 5C and 5D, conductors 30a and 30b are electrically isolated from each other by an electric

insulating section 30. The electric insulating section 30 may be formed by an insulator or a gap positioned between the conductors 30a and 30b.

In the above-described embodiments, the rerailer has an inclined surface and is placed on the rails. However, the rerailer may have a horizontal surface instead of the inclined surface. In this case, a rerailer having two horizontal guide rails is placed on the rails of a model railway. The horizontal surfaces on which the wheels of a vehicle are guided are formed by conductors, and the conductors are electrically contacted with the rails. Outlets for the vehicle may be formed on both ends of the rerailer to allow a power-driven vehicle to be driven forwards or backwards and guided onto rails.

Figures 6A and 6B show another embodiment of the rerailer in accordance with the present invention, which has a horizontal surface and is placed on rails. This embodiment is characterized by an extremely simplified construction in which the rerailer body is formed by the conductors themselves. In Figures 6A and 6B, a pair of flat conductor plates 31a and 31b serving as the guide rails are sandwiched and fixed between an upper plate 32a and a lower plate 32b of an I-shaped insulating plastic holder 32 serving also as a central partition wall. The central partition wall 32 has wide end sections 32c and 32d, whose ends associated with rails 1a and 1b are widened to a width approximately equal to the inside width between the rails 1a and 1b. The conductor plates 31a and 31b are respectively provided with longitudinal slits 33a and 33b at both ends. Inner portions 34a and 34b of the conductor plates 31a and 31b defining the slits 33a and 33b are bent downwardly inside the rails 1a and 1b, so that large diameter sections 21a and 21b of wheels 2a and 2b can move downwardly and small diameter sections 22a and 22b can be smoothly placed on the rails 1a and 1b.

The embodiment shown in Figures 6A and 6B is practically very convenient because it has a simple construction and because power-driven vehicles can be moved either forwards or backwards to be placed on the rails.

In Figures 6A and 6B, the insulating plastic holder 32 may take various shapes instead of the I-shaped sectional form. It is also possible to position the conductor plates on a plastic plate in parallel with each other at an interval, and fix them to the plastic plate with screws.

In the embodiments shown in Figures 1 to 6B, the rerailer is placed on the rails when it is used, and removed therefrom after a vehicle has been guided and moved onto the rails. When the rerailer is used, it is first placed on the rails, and the conductors of the rerailer are electrically connected to the rails. Thereafter, a power-driven vehicle is placed on the guide rails of the rerailer in such a manner that the wheels on one side of the vehicle are placed on one conductor, and the wheels on the other side on the other conductor. The rails are then energized in the same way as normally used for starting the power-driven vehicle by use of a controller. An electric current is fed from the rail to the conductor and then to the large diameter section of the wheel to the drive motor in the vehicle to start the vehicle. The started motor-driven vehicle is guided along the outer walls or the inner wall onto the rails and thereafter runs on the rails in the usual manner. In this way, the motor-driven vehicle is guided onto the rails by the rerailer in accordance with the present invention.

Figures 7 and 8 show a further embodiment of the rerailer in accordance with the present invention, which is of the type incorporated between the rails. In this embodiment, a rerailer 40 comprises conductor guide plates 43a, 43b having connection rails 41a, 41b and 42a, 42b at opposite

ends, and a guide wall 44 serving as a partition provided at the center of the conductor guide plates 43, 43b. The connection rails 41a and 42a for the left wheels (or right wheels, depending on the direction in which the vehicle faces) are electrically connected to a conductor guide plate 43a for the left (right) wheels. The connection rails 41b and 42b for the right (left) wheels are electrically connected to a conductor guide plate 43b for the right (left) wheels. The guide plates 43a and 43b made of conductors are electrically isolated from each other by the guide wall 44. As shown in Figure 8, large diameter sections 21a and 21b of wheels 2 electrically contact the surfaces of the conductor guide plates 43a and 43b respectively, while small diameter sections 22a and 22b and a slip-proof vinyl ring 20 do not. In the embodiment shown, the guide wall 44 serving as the central partition works in the same way as the inner wall 27 in Figure 5C, and the ends of the rails 41a, 41b, 42a and 42b on the guide plate side are flared outwardly so as to work in the same way as the outer walls 26 in Figure 5C. However, this construction may be varied in various ways.

For example, as shown in Figure 9A, the connection rails may be straight and a central guide wall 45 may be widened at both ends adjacent to the connection rails. Alternatively, as shown in Figure 9B, the connection rails may be straight, and outer walls 46 may be bent inwardly at both ends adjacent to the connection rails. In the latter case, a central insulator or partition 47 is necessary for electrically isolating conductors 43a and 43b from each other.

It is not necessary for the insulator or partition 47 to be provided between the conductors over their full length. Thus, for example, the conductors may be separated at their intermediate portions by a clearance therebetween

and be spaced apart and fixed to each other in the vicinity of both ends. Further, as shown in Figures 9C and 9D, the rails may be integrally connected with the outer walls to form rails 48a and 48b serving as guide walls fixed to the outer edges of conductor plates 49a and 49b respectively, and a central guide wall 50 may be positioned between the conductor plates 49a and 49b. This construction is identical with that in which the outer walls 46 in Figure 9B are integrally connected with the rails and the central guide wall in Figure 9A or 7 is positioned therebetween. In Figure 9C, the central guide wall 50 may of course be replaced by a clearance between the conductor plates 49a and 49b.

In case the guide rails of the rerailer are provided with either the outer walls or the inner wall, it is of course necessary to determine the width of the conductor of each guide rail so that the wheels on one side cannot go onto the conductor for the wheels on the other side or fall off the conductor. Thus, when only the outer walls are formed, the width of each conductor must always smaller than the distance between the large diameter sections 21a and 21b of the wheels. When only the inner wall is formed, the distance from the outer edge of one conductor to the inner edge of the other conductor must always be larger than the distance between the large diameter sections 21a and 21b of the wheels.

The embodiments shown in Figures 7 to 9C having rails for connecting with the track of a model railway at both ends are extremely useful in practical use because the rerailer can be connected to the track at any position of the model railway and can easily guide a motor-driven vehicle onto the track by starting it on the rerailer.

Figures 10A to 10D show a still further embodiment of the rerailer in accordance with the present invention. In this embodiment, the rerailer is of the type placed on the rails and corresponds to a modification of a combination of Figures 5C and 5D. In the embodiment shown, conductive inclined base pieces 61a and 61b made of a white metal or the like in a form symmetrical with each other are coupled by an insulating holder 62 made of a plastic or the like in I-shaped sectional form. A clearance 63 is provided between the inclined base pieces 61a and 61b. The inclined base pieces 61a and 61b have respetive outer guide walls 64a and 64b extending over their entire length and protruding inwardly adjacent to their lower ends. The pieces 61a and 61b also have inner guide walls 65a and 65b which protrude outwardly opposite to the protrusions of the outer guide walls 64a and 64b. The outer wall 64a and the inner wall 65a are formed integrally with the inclined base piece 61a, while the outer wall 64b and the inner wall 65b are integrated with the piece 61b. On the bottoms of the inclined base pieces 61a and 61b are provided recesses 66a and 66b for fitting with the rails at several positions in an easy and reliable manner. The central insulating holder 62 and the outer guide walls 64a, 64b define therebetween wheel guide rails 67a and 67b so as to guide the wheels of a power-driven vehicle via the protrusions of the inner and outer walls onto the rails.

In the embodiment shown in Figures 10A to 10D, inclined base pieces 61a, 61b are integrally formed of a white metal or the like and can very easily be combined by use of the insulating holder 62 obtained by plastic molding. The rerailer thus made exhibits a good outer appearance and is suitable for practical use.

The above-described embodiments can be applied to the rails of any type regardless of the rail width.

Figure 11 shows an even further embodiment of the rerailer in accordance with the present invention, which is particularly suitable for wide rails generally called O-gauge rails. In Figure 11, two conductive rails 71a and 71b for wheels are spaced apart from each other, and fixed on an insulating base 73 at the rear ends and on an insulating holder 74 at the front ends. The rails 71a and 71b are electrically contacted with the rails 1a and 1b at the front ends 75a and 75b respectively. However, it is also possible to extend the rear ends 76a and 76b over the back of the insulating base 73 as far as the rails.

Claims:

1. An electric rerailer (10) provided with guide ways for guiding a vehicle of a model railway onto rails (1a, 1b), characterized in that the surfaces of said guide ways are formed by discrete electric conductors (15a, 15b) used respectively for the left and right wheels (2a, 2b) of said vehicle, and said conductors are capable of being electrically contacted with the rails (1a, 1b) for the left and right wheels respectively.

2. An electric rerailer as defined in claim 1 wherein said guide ways are formed on inclined surfaces (12a, 12b), and the rerailer base (12) provided with said inclined surfaces is capable of being releasably mounted on said rails (1a, 1b).

3. An electric rerailer as defined in claim 1 wherein said guide ways are formed on horizontal planes (31a, 31b), and the rerailer base (32) provided with said horizontal planes is capable of being releasably mounted on said rails (2a, 2b).

4. An electric rerailer as defined in claim 1 wherein said guide ways (43a, 43b) are formed on horizontal planes, and the rerailer base (44) provided with said horizontal planes is connectable between ends of said rails (41a, 41b)

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FIG. 1

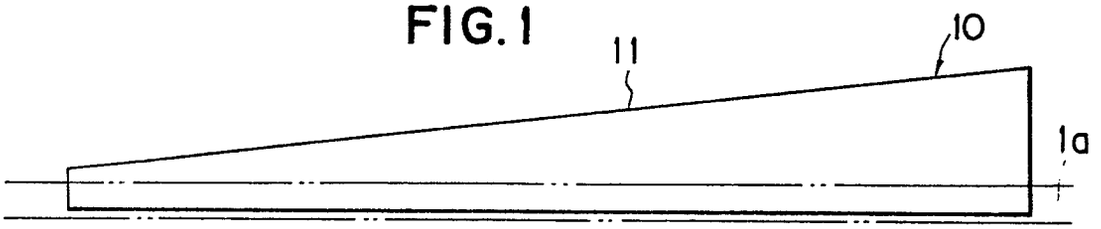


FIG. 2

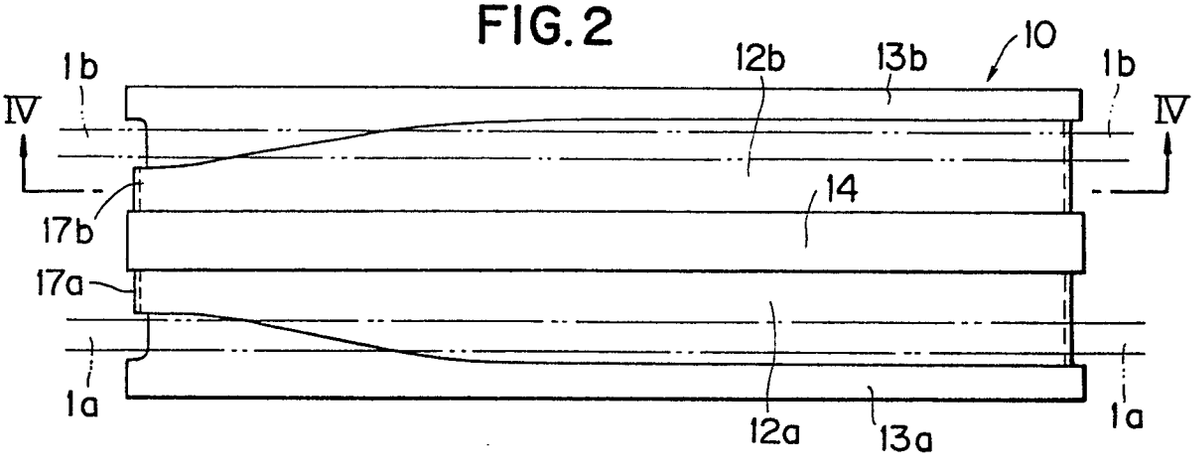


FIG. 3

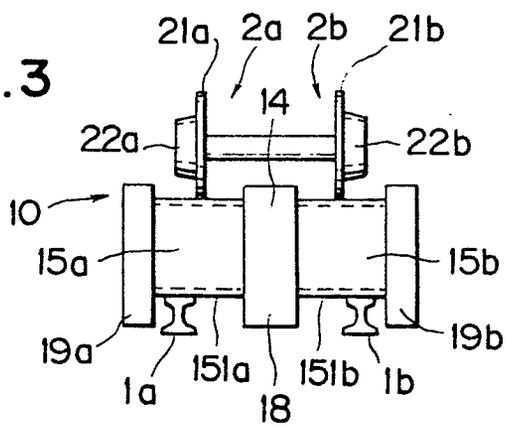


FIG. 4

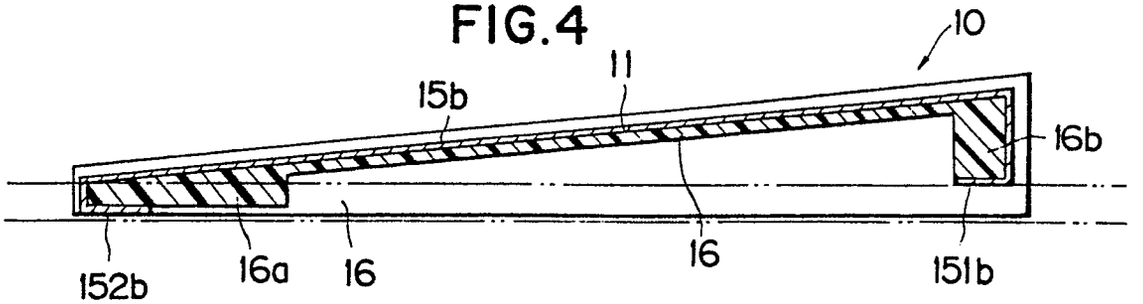


FIG.5A

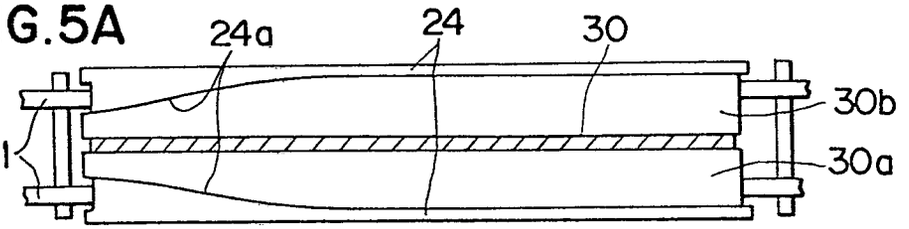


FIG.5B

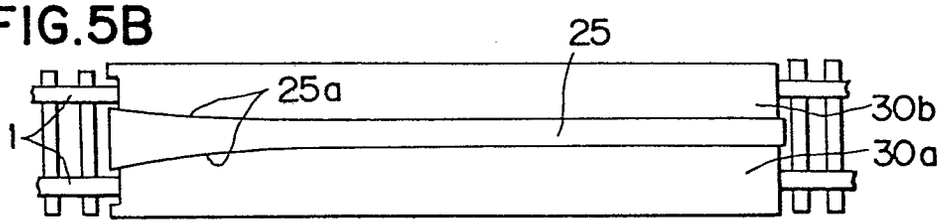


FIG.5C

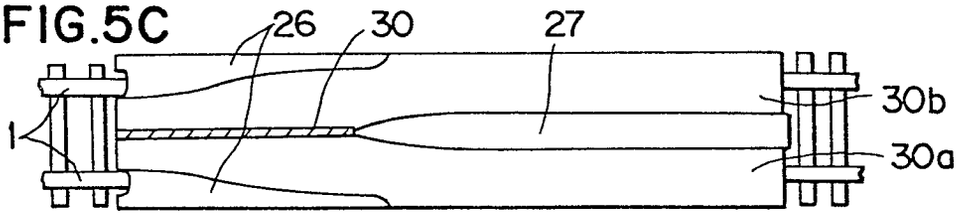


FIG.5D

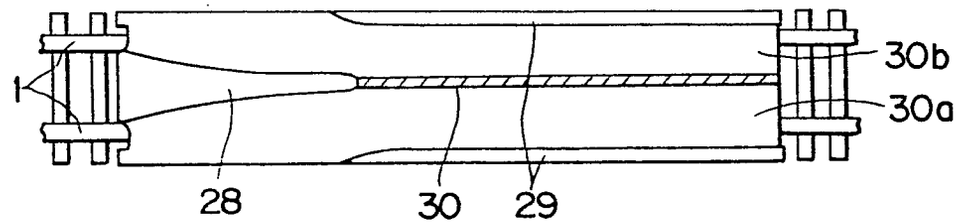


FIG.6A

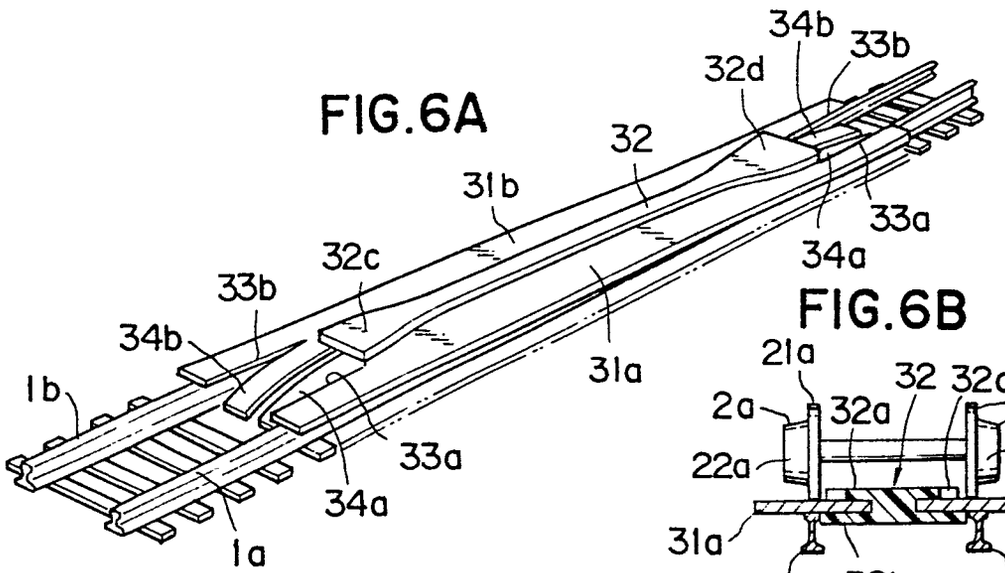


FIG.6B

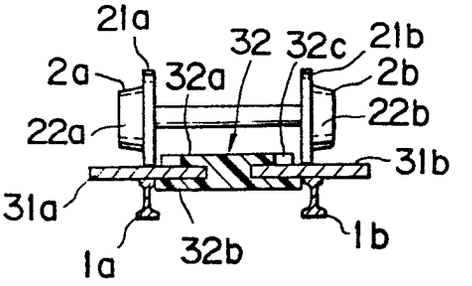


FIG.7

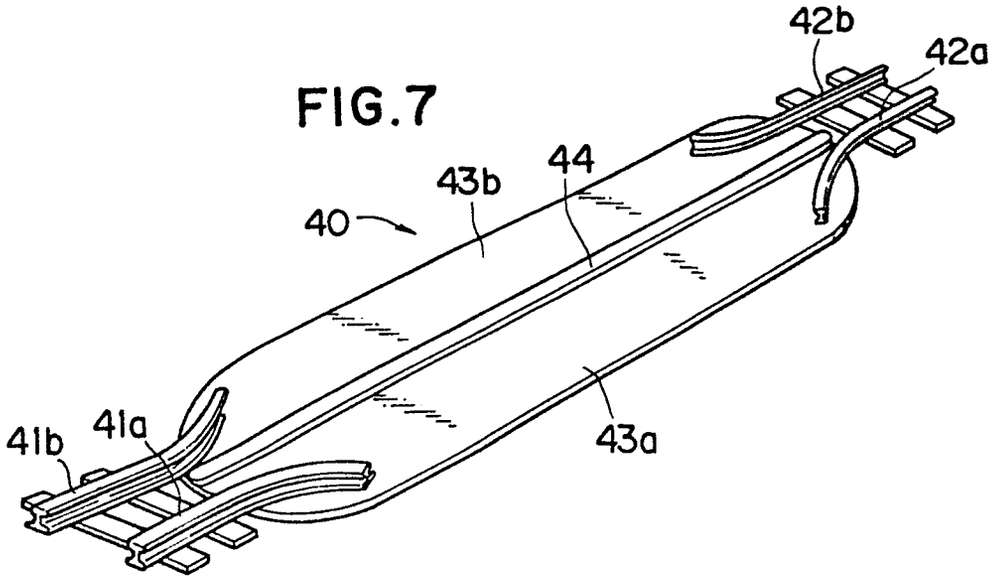


FIG.8

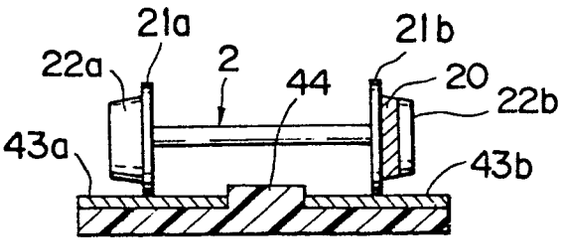


FIG.9A

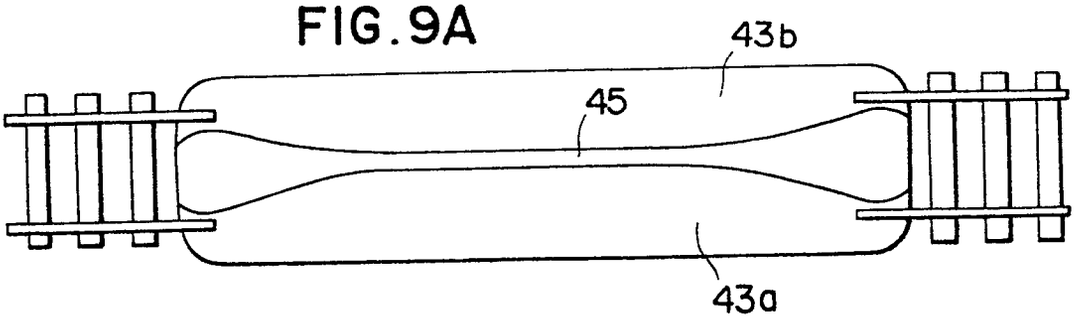


FIG.9B

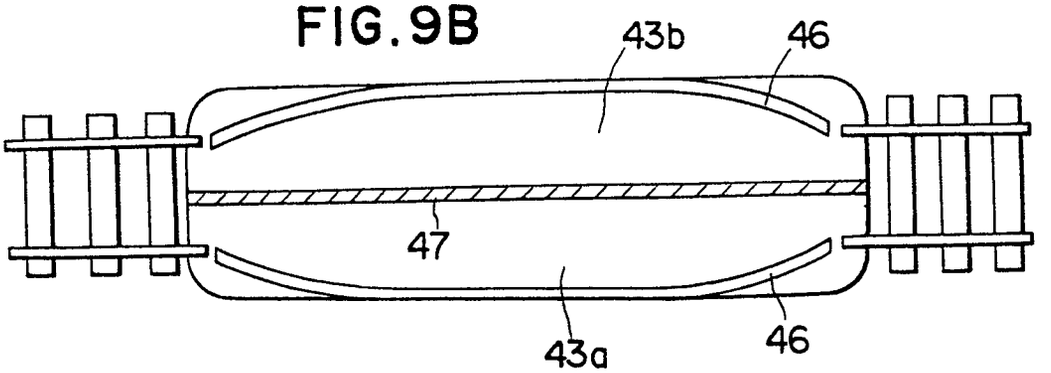


FIG.9C

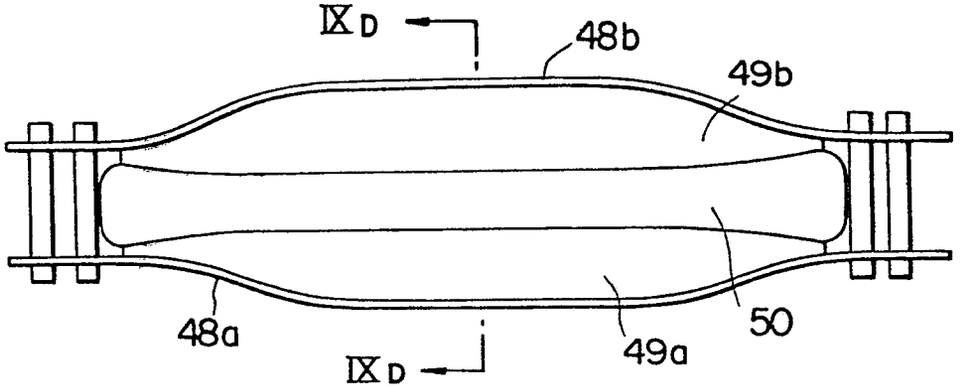


FIG.9D

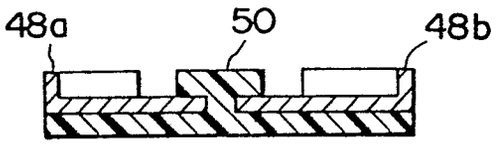


FIG.10A

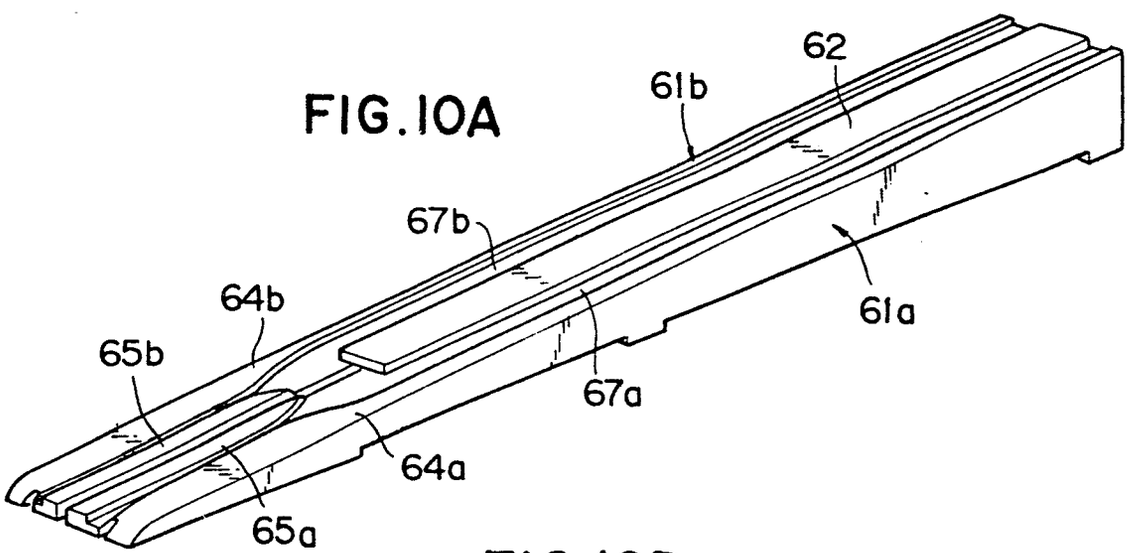


FIG.10B

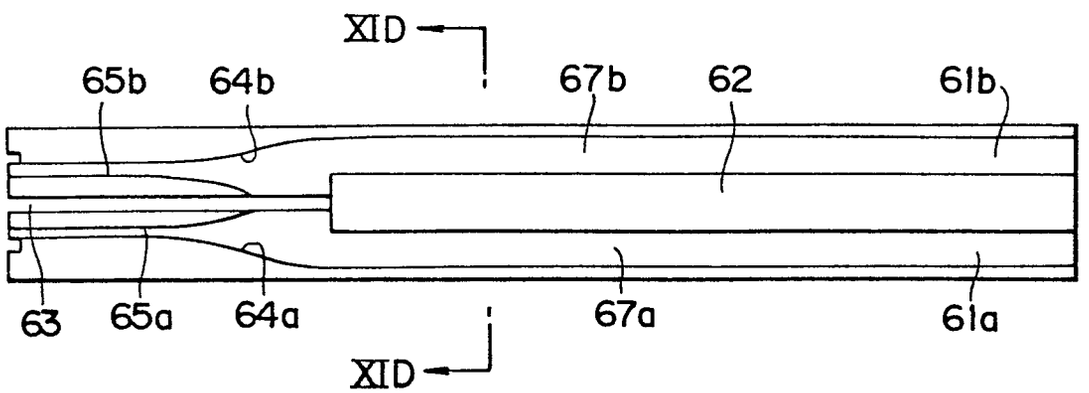


FIG.10C

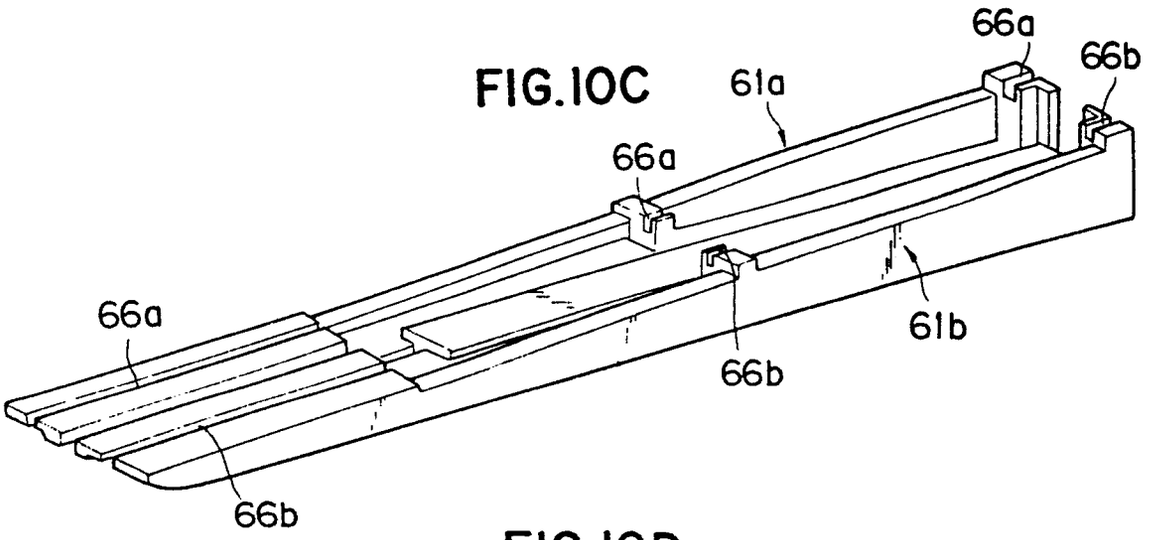


FIG.10D

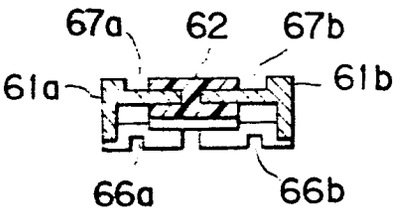
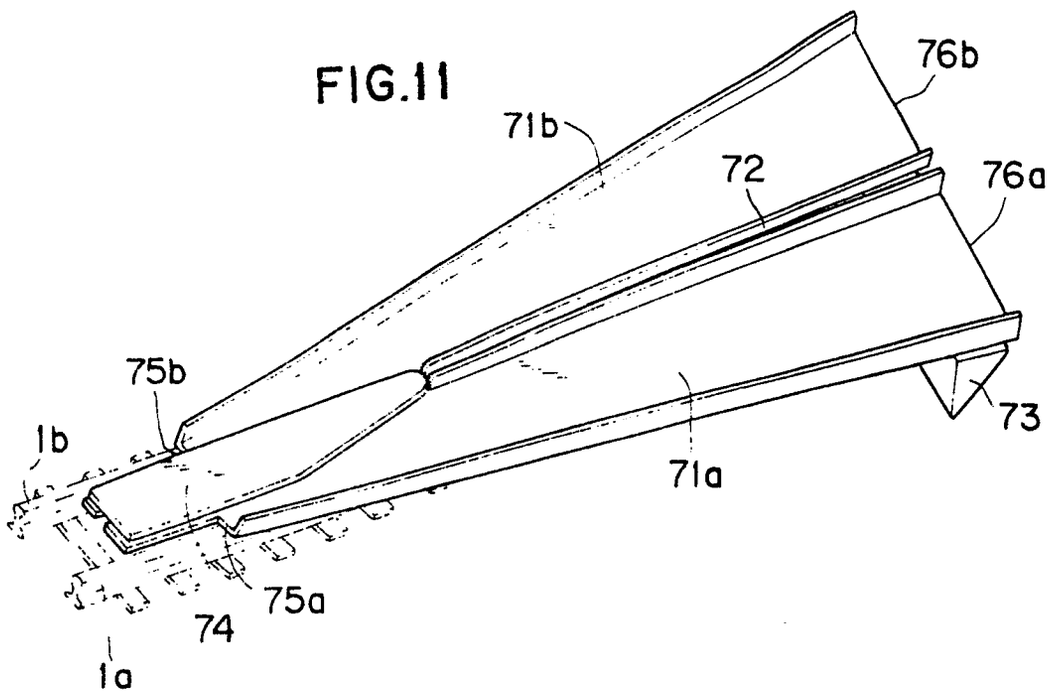


FIG.11



European Patent Office

EUROPEAN SEARCH REPORT

0097731
Application number

EP 82 10 5671

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Y	DE-A- 845 463 (MÄRKLIN) *Page 2, lines 73-74; figure 3*	1,2,3	A 63 H 19/30
Y	DE-A- 821 324 (MÄRKLIN) *Description; figures*	1,2,3	
A	US-A-1 888 760 (FLOWER) *Page 1, lines 63-82; figure 1*	4	

TECHNICAL FIELDS SEARCHED (Int. Cl. ³)

A 63 H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	04-03-1983	VANRUNXT J.M.A.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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