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(12) # EUROPEAN PATENT APPLICATION

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(54) **Track sections for model railways and the like.**

(57) A track section (2) for use in a model railway or other tracked vehicle layout, the track section including at least one pair of rails or tracks (8) and rail or track supporting means (6, 10), said track section being in the form of a generally hollow structure such that electric cable or other power-carrying means may be located beneath the rails or tracks and within the hollow interior of the track section, a plurality of track sections being removably connectable together in end-to-end relationship by co-operating plugs (22A) and sockets (22B) on the ends of the track sections, means (60A, 62) being provided to prevent relative sideways displacement between connected track sections.

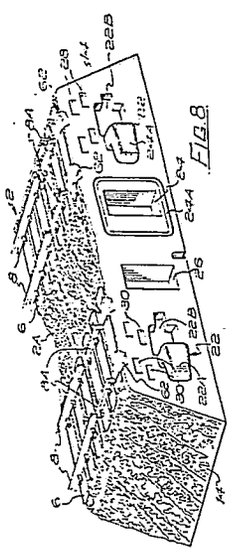

FIG.8

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Description

Track Sections for Model Railways and the like

This invention relates to model railways and other tracked vehicle layouts and particularly to the tracks for use in connection with such layouts.

According to the present invention there is provided a track section for use in a model railway or other tracked vehicle layout, said track section including at least one pair of rails or tracks and rail or track supporting means, said track section being in the form of a generally hollow structure such that electric cable or other power-carrying means may be located beneath said rails or tracks and within the hollow interior of said track section, means being provided to removably connect together a plurality of said track sections in end-to-end relationship.

The generally hollow interior of the track section will preferably include at least one internal support so as to divide the generally hollow interior into two arches or the like, each of said arches being capable of housing electric cable or other power-carrying means.

Said track section will preferably include two pairs of rails or tracks and rail or track supporting means.

Track sections will preferably be removably connected together in end-to-end relationship by means of co-operating plugs and sockets on the ends of said track sections.

Bridging rails will be provided to connect together the rails or tracks on connected track sections, said bridging rails including a key locatable in said track section to prevent relative sideways displacement between connected track sections.

Connector clips will preferably be carried on the ends of said rails or tracks to be connected, said bridging rails engaging said connector clips to connect said rails or tracks.

Said connector clips may include tails projectable into the hollow interior of said track section, said tails acting as intermediaries to supply power to or take power from said rails or tracks.

Said track section will preferably include apertures in each of the end faces thereof, said apertures communicating with the hollow interior of the track section and housing electrical connectors formed on the ends of computer-type cables located within said arches, said cables being supported internally of said track section by cable supports formed integrally on said track section.

Each end of said track section will preferably include pluralities of open-ended housings communicating with the hollow interior and for accommodating electrical clips, said electrical clips being carried by cables located within the hollow interior and being urged towards the open ends of said housings and the adjacent end of said track section to provide additional electrical connections on said track section.

Said clips will preferably be urged towards the open ends of the housings and the adjacent end of the track section by means of a spring located in the housing.

In order that the invention may be more readily understood, embodiments thereof will now be described, by way of example, reference being made to the accompanying drawings, wherein:

Figure 1 is a composite plan view of a track section in accordance with the invention, the left side of the Figure being a top plan view and the right side of the Figure being an underneath sectional view;

Figure 2 is a composite sectional front elevation, the sections being taken on lines A - B and B - B in Figure 1;

Figure 3 is an end elevation, to a larger scale, of the track section of Figures 1 and 2, the elevation being in the direction of arrow X in Figure 1;

Figure 3A is a sectional elevation on line C - C in Figure 3;

Figure 4 is a sectional elevation taken on line D - D in Figure 3;

Figure 5 is a sectional end elevation of Figure 3;

Figure 6 is a perspective view of an electrical clip;

Figure 7 is an elevation of part of Figure 1, to a larger scale;

Figure 7A is a sectional end elevation taken on line E - E in Figure 7;

Figure 7B is a sectional end elevation taken on line F - F in Figure 7;

Figure 8 is a perspective view of a track section similar to that of Figures 1 to 5, but showing an alternative form of track section;

Figure 8A is a perspective view of a connector rail for use with a track section in accordance with the invention;

Figure 9 is an end view of the track section of Figure 8 showing the positions of electrical connections;

Figures 10 to 14 show in sequence the formation of the electrical connections of Figure 9.

Referring to the drawings and firstly to Figures 1 to 5, there is shown a track section of plastics material, indicated generally by reference numeral 2, these Figures as composite views showing one half of a vertical sided track section and one half of a sloping sided track section.

On its upper surface 2A the track section 2 has recesses 4 to accommodate sleepers 6 formed of plastics material to represent timber, concrete or other material and supporting lengths of rail 8 on the usual chairs 10, connector clips 8A being provided to accommodate bridging rails when track sections re connected together. The upper surface 2A is vertically spaced from the lower extremities of the track section by essentially forming the track section as a hollow structure, thereby allowing power cables to be located beneath the upper surface and within the track section. The sides 12 and 14 together with members 16 serve to form such a structure and to form two arches beneath the rails or tracks, the

members 16 acting as housings to take plug-in fixings of signals, pylons etc from the top of the track section. Thin webs 18 of plastics material having a slot 18A together act as a computer-type cable support, and additional thin webs 20 of plastics material having a slot 20A also serve as a cable support. Webs 18 and 20 are formed integrally with track section 2.

At each end of the of the track section 2 there are means 22 to enable a plurality of track sections to be removably connected together in end-to-end relationship. Such means will be described in greater detail hereinafter in the description.

Each end of the track section 2 is provided with apertures 24 and 26 which communicate with the hollow interior and the arches of the track section and which form housings for accommodating computer-type cable socket and plug connections, the aperture 24 being bounded by a slot 24A for housing a rubber, neoprene or other material gasket, not shown.

The end of the track section opposite to that shown in Figure 3 similarly includes two apertures, and the slot 24A but arranged in opposite hand so that only one of the apertures in each end of the track section need be surrounded by the afore-mentioned gasket.

Additionally, each end of the track section 2 has pluralities 28 and 30 of open-ended apertures forming housings for electrical connectors. A section through one of said housings is shown in Figure 3A. Locatable in said housings are electrical clips, one of which is indicated by reference numeral 32 in Figure 6. The clip 32 is secured to a power cable 34 and has legs 36, 38 and an integral bridging portion 40, the end 36A of the leg 36 being bent outwardly to the position shown in dotted outline. When the clip is located in the housing, the leg 38 lies in the channel or groove 42 and the leg 36 lies in the channel or groove 44 with the end 36A engaging an abutment 46. The clip is urged towards the outer extremity 30A of the housing by means of a spring 48,displacement of the clip 32 from the housing being prevented by end 36A of the leg 36. The bridging portion 40 forms a contact at the outer extremity of the aperture. Electrical clips may be similarly applied to the other apertures 28 and 30.

As will be seen from Figures 1, 2, and 4, there are openings or slots 50 towards each end of the track section through which may project legs 52 of the connector clips 8A. Each connector clip 8A, one of which is shown in detail in Figure 7, has a bifurcared portion 54 which is in two sections - a first section 56 (shown in cross-section in Figure 7A) for the rail 8, and a second section 58 (shown in cross-section in Figure 7B) for a connector rail to be referred to in more detail below. The connector clip 8A is brazed or spot welded to one end of the rail 8 to provide permanent electrical connection, and to allow for differential movement of rail and plastics material caused by expansion and contraction. Locking perforations 62 are provided on the clip. With the legs 52 of the connector clips projecting through the openings or slots 50, electrical power may be supplied to the rails, or taken from the rails, via electrical connectors (not shown) locatable in connector supports 64 formed integrally on the track section 2.

Referring now to Figures 8 and 8A, the track section 2 is slightly different from that shown in the previous Figures in that this track section has two sloping sides 14 instead of one sloping side and one vertical side, but in all other material respects the track sections are the same.

The means 22 to connect adjacent track sections together in end-to-end relationship each consist of a lug 22A and a slot 22B, the arrangement being that by inserting the lugs 22A of one track section into the slots 22B of an adjacent track section, and then moving the track sections laterally relative to one another, the track sections may be removably locked together. To bridge the gaps between adjacent ends of the rails 8 when track sections are connected together as described, connector rails 60 are inserted into the connector clips 8A so as to provide continuity of the rails 8 and to provide electrical continuity. It will be seen that the connector rail 60 has a plastics material key 60A adapted to locate in a composite recess in the abutting ends of the connected track sections, four halves of such composite recesses being indicated by reference numerals 62. With the connector rails 60 in the connector clips 8A and the keys 60A in the said recesses, the connected track sections are prevented from relative sideways displacement.

Figure 9 shows the end of track section 2 of Figure 8 and shows the positioning of electrical connectors and plugs -indicated generally by reference numerals 64 and 66 - in the apertures 24 and 26, the electrical connectors and plugs being formed on the ends of computer-type cable. The computer-type (multi-core) cables are held in place within the track section by means of the webs and slots shown in and described with reference to Figure 5.

Each connector is formed - referring now to Figures 10 to 14 - by firstly removing the insulation from that cable 68 (Figure 10) to expose the flat conductors 70, bending the ends of the flat conductors as shown in Figure 11, forming a plastics material block 72 by injection moulding or other means and inserting the block onto the ends of the conductors 70 (Figure 12), bending the conductors around the plastics material block (Figure 13) to form the connections, and then inserting the formed connection in the aperture in the end of the track section 2 (Figure 14). The final bending action of the conductor strands provides the necessary space behind the mating surfaces so that when connected to an adjacent track section, positive pressure is exerted between conductors to give good electrical contact even when subjected to deflections and repeated use. Setting the plug within the end of the track section prevents the ends of the conductors from being accidentally dislodged from their correct positions.

It will be seen that the thin strip conductors are staggered within the cable so as to allow for easy removal of the insulation and to allow for connection to all strands from one side by insertion of spiked connectors passing through the outer insulation at

set centres.

The invention thus provides a track section, a plurality of which may be removably connected together and disconnected quickly and easily without damaging the rails or track, which enable power cables to be concealed beneath the track section, and which has the facility of enabling auxiliary items such as controls, colour light or semaphore signals and other auxiliary items and ancilliaries to be electrically connected to the model railway layout. The internal cable system may be used to provide secondary electrical supply to the rails or tracks over and above the continuity provided by the rails or tracks themselves, this being particularly useful when the track section is to be used externally where corrosion can cause problems. Each track section would be provided with connections for the fixing of overhead catenary systems again connected to the internal cable system.

The use of a double cable system within the track section allows an increase in the operating potential as and when required as well as overcoming the problems of waterproofing the joints as the rubber, neoprene or other material sealing gasket will only be needed around one of the connector plugs at each end of the track section. Each gasket will then seal against smooth plastics material on the adjacent track section.

As the track section is of sufficient size and strength to withstand vigorous use, its application is not limited to internal use. Indeed, the system opens up the whole exciting outdoor and garden application. There is no need for elaborate preparation of foundation for the track as it can now be laid direct over, for example, lawns and patios alike. Model large engineering structures such as bridges, platforms, and the like can now be included into the layouts in the correct scale with the corresponding visual impact.

The track sections shown in the drawings may be varied in that the track sections may have two vertical sides, instead of one sloping side and one vertical side, or two sloping sides. In addition, the track sections may be curved or straight and may include flat to vertical slope transitions, and the depth of the track sections may be varied. Aluminium or plastics material extrusions may be secured to the sides or one side of the track sections to provide supports for bridges, signals, platforms, rails and other items which are intended to form part of the overall model railway layout.

Instead of the track sections receiving separate sleepers and rails or tracks, such items may be moulded integrally into the track section during formation of the latter.

Finally, it will be appreciated that the track section may include only one arch or the like and one pair of rails or tracks and rail or track supporting means, instead of two of such items as shown and described, and that the invention is equally applicable to track sections for use in other tracked vehicle layouts, such as, for example, model motor racing layouts, trams etc.

Claims

1. A track section for use in a model railway or other tracked vehicle layout, said track section including at least one pair of rails or tracks and rail or track supporting means, said track section being in the form of a generally hollow structure such that electric cable or other power-carrying means may be located beneath said rails or tracks and within the hollow interior of said track section, means being provided to removably connect together a plurality of said track sections in end-to-end relationship.

2. A track section according to Claim 1, wherein the generally hollow interior of the track section includes at least one internal support to divide said generally hollow interior into two arches or the like, each of said arches being capable of housing electric cable or other power-carrying means.

3. A track section according to Claim 1 or Claim 2, wherein said track section includes two pairs of rails or tracks and rail or track supporting means.

4. A track section according to any of Claims 1 to 3, wherein the means for removably connecting together a plurality of track sections comprise a plurality of co-operating plugs and sockets on the ends of each track section.

5. A track section according to any of Claims 1 to 4, including bridging rails to connect together the rails or tracks on connected track sections, said bridging rails including a key locatable in said track sections to prevent relative sideways displacement of connected track sections.

6. A track section according to Claim 5, wherein said bridging rails engage in connector clips carried on the rails or tracks to be connected.

7. A track section according to Claim 6, wherein said connector clips include tails projectable into the hollow interior of said track section, said tails acting as intermediaries to supply power to or take power from said rails or tracks.

8. A track section according to any of Claims 2 to 7, wherein apertures are formed in each end face of the section, said apertures communicating with the hollow interior of the track section and housing electrical connectors formed on the ends of computer-type cable located within said arches, said cables being supported internally of said track section by cable supports formed integrally on said track section.

9. A track section according to any of Claims 2 to 8, wherein each end of the track section includes pluralities of open-ended housings communicating with the hollow interior and for accommodating electrical clips carried by cables located within the hollow interior, said electrical clips being urged to-

wards the open ends of said housings and the adjacent ends of said track section to provide additional electrical connections on said track section.

10. A track section according to Claim 9, wherein each said clip is urged towards the open end of its housing and the adjacent end of the track section by means of a spring located in said housing.

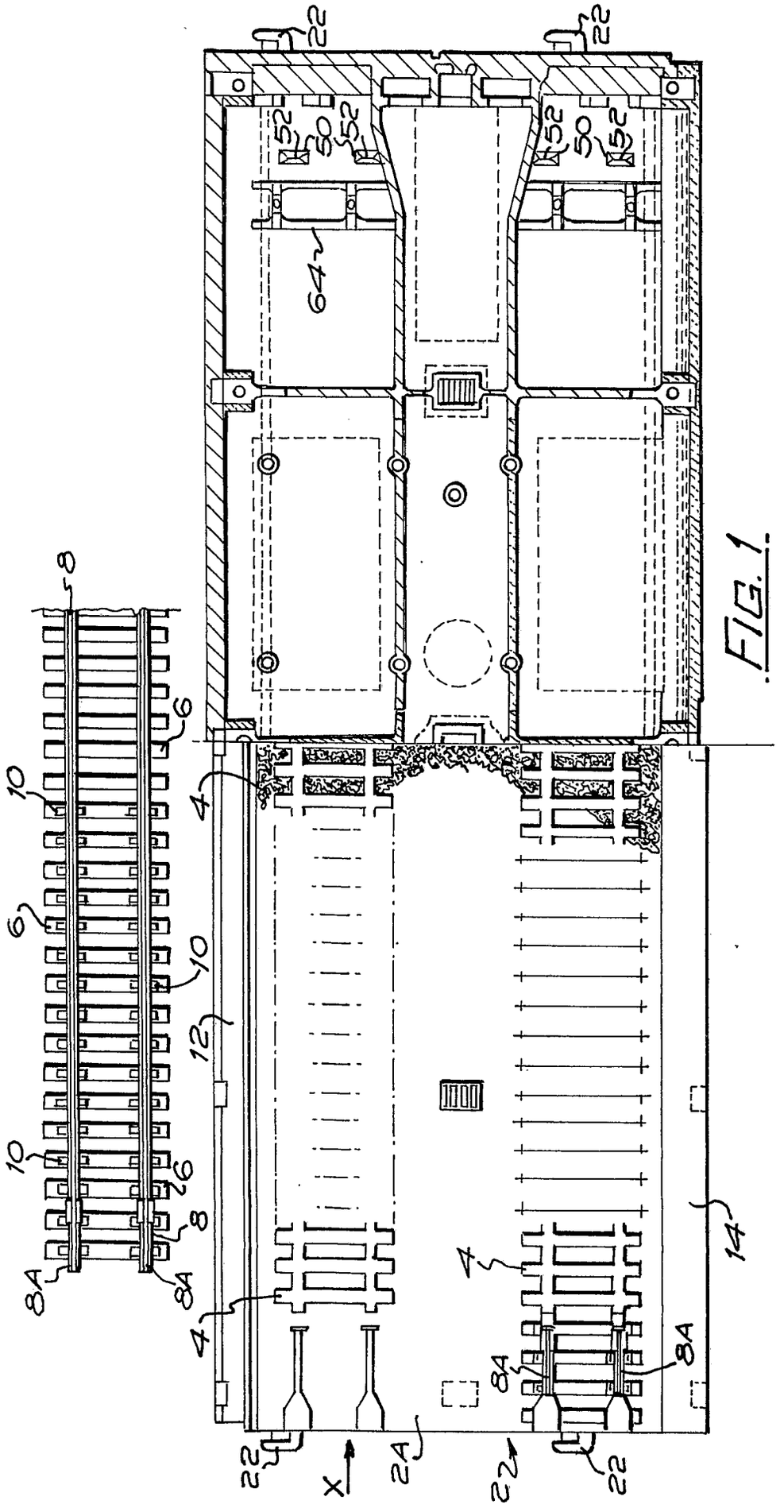
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FIG. 1

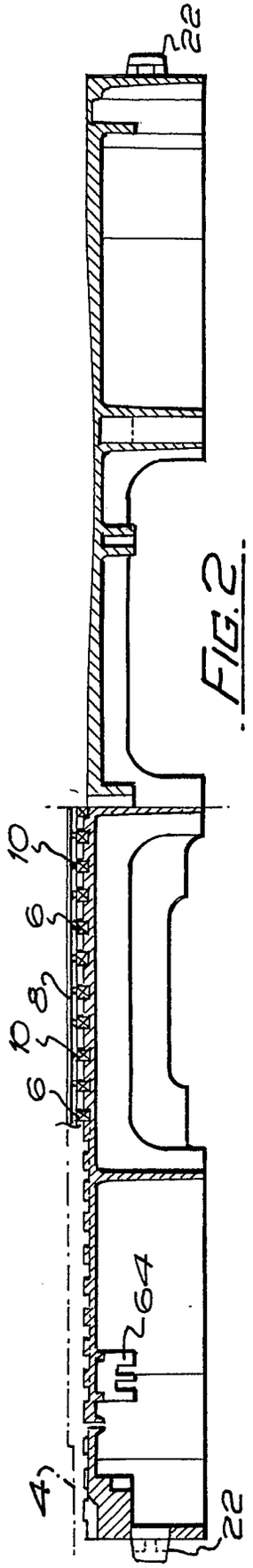


FIG. 2.

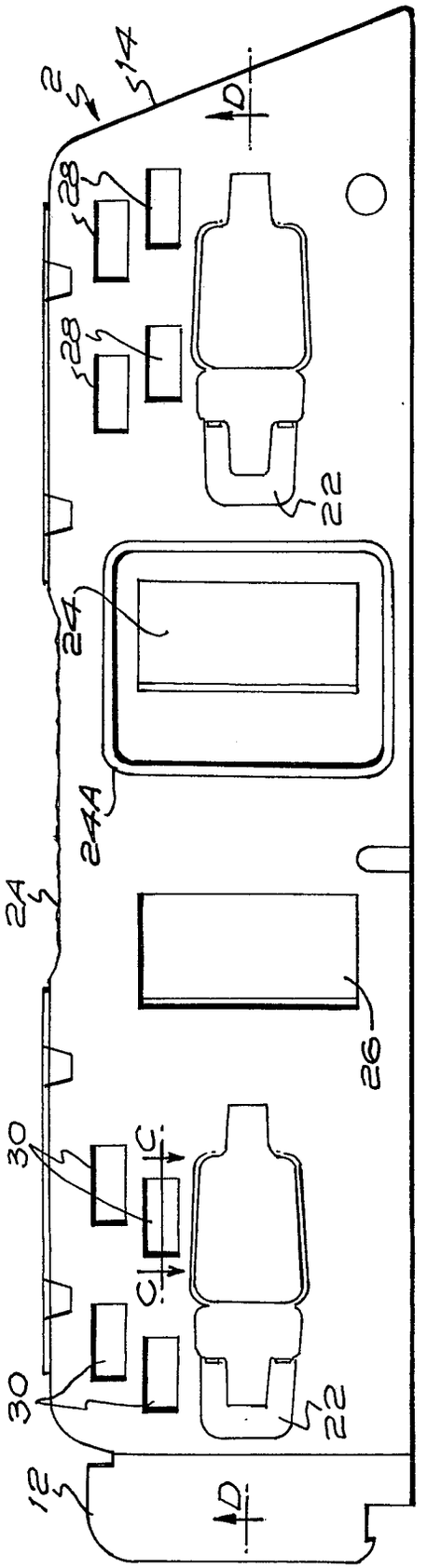


FIG. 3.

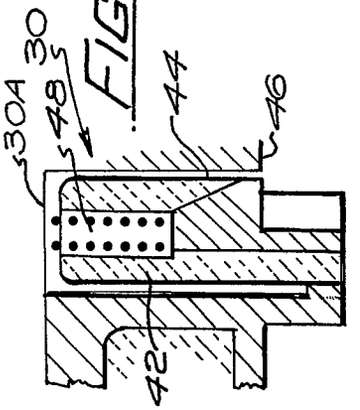


FIG. 3A.

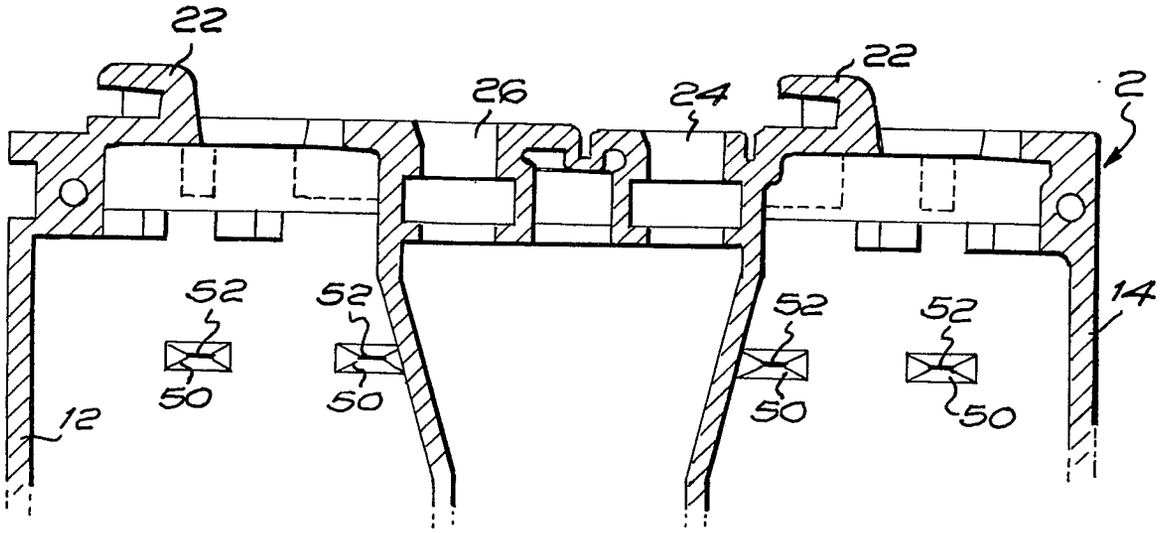
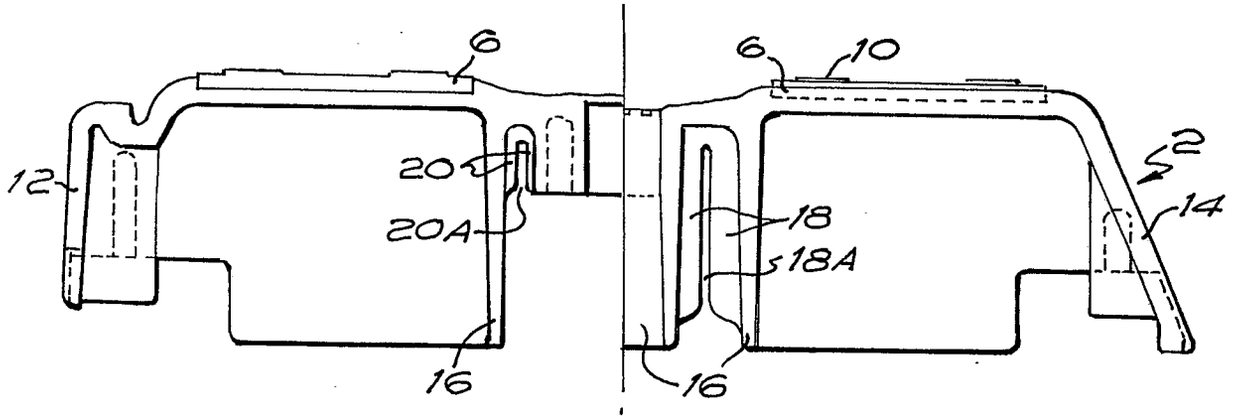


FIG. 4

FIG. 5



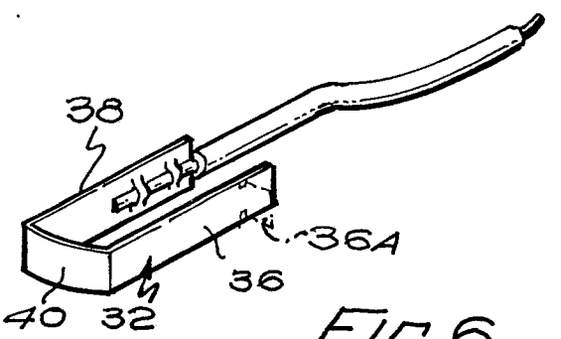


FIG. 6

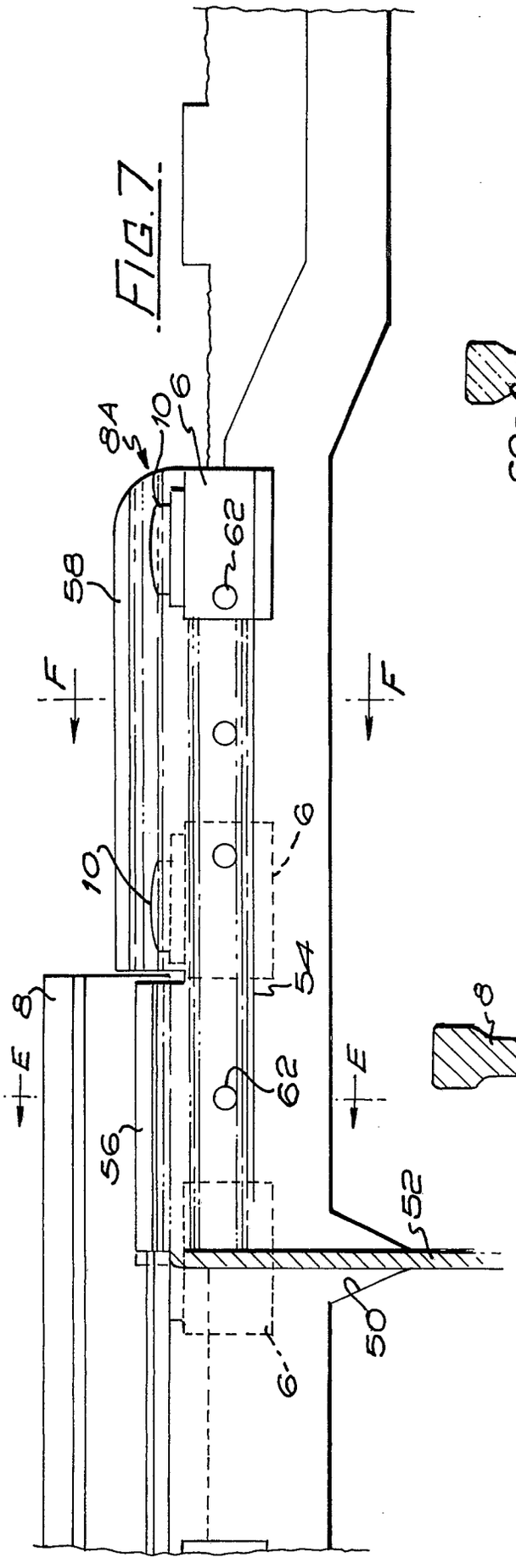


FIG. 7.

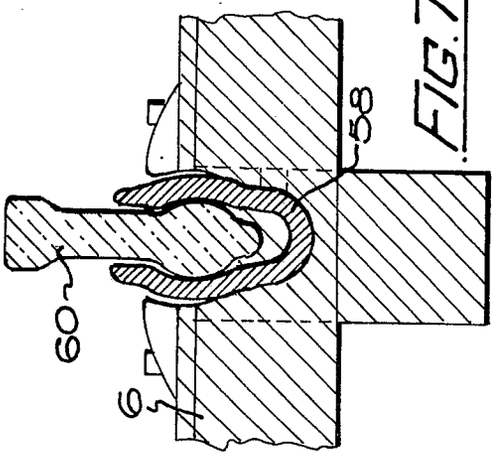


FIG. 7B.

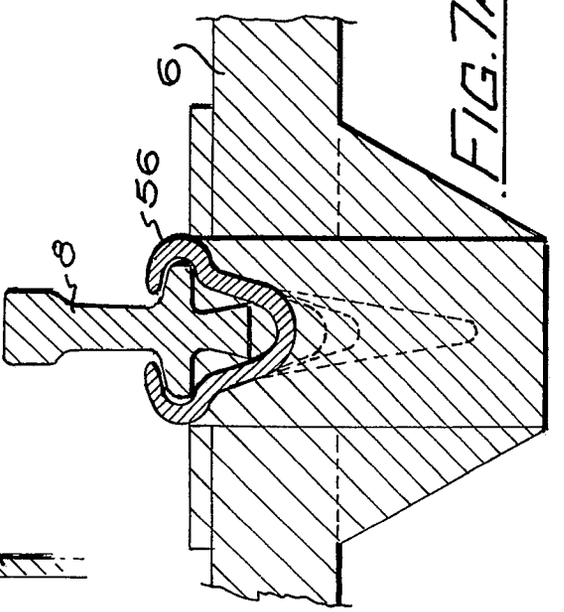


FIG. 7A.

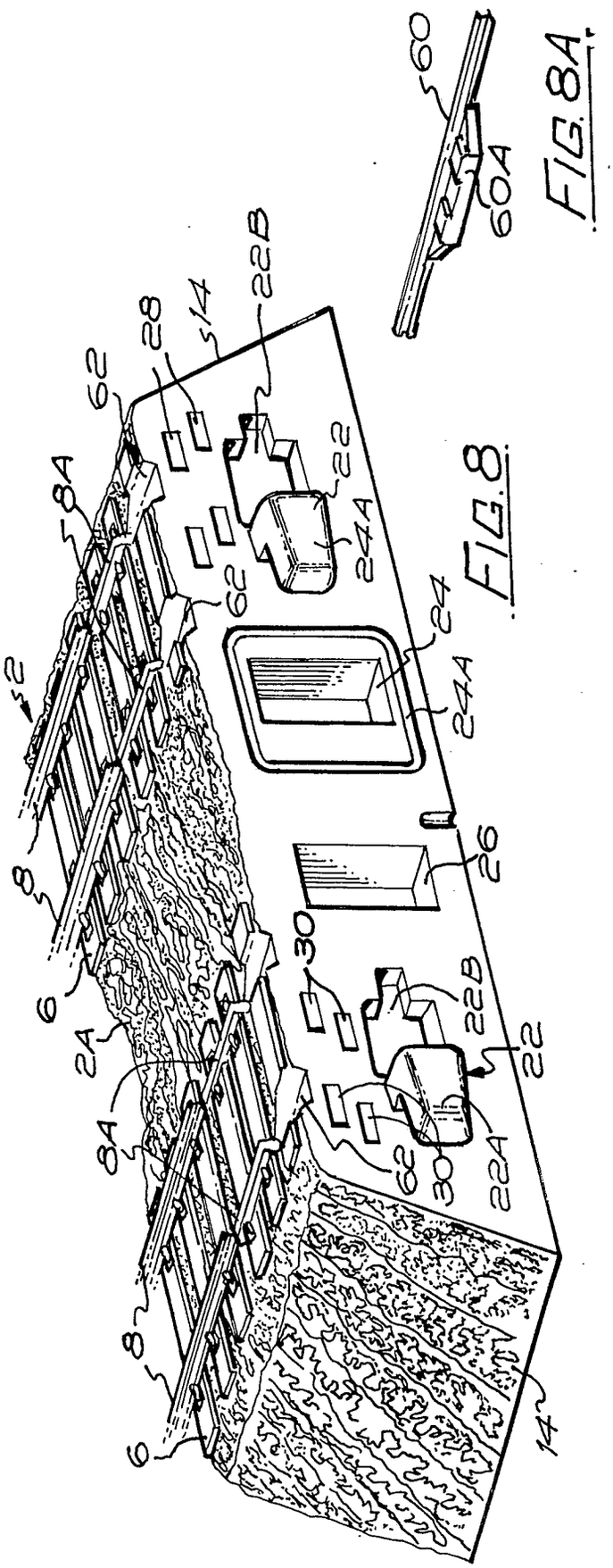


FIG. 8A.

FIG. 8.

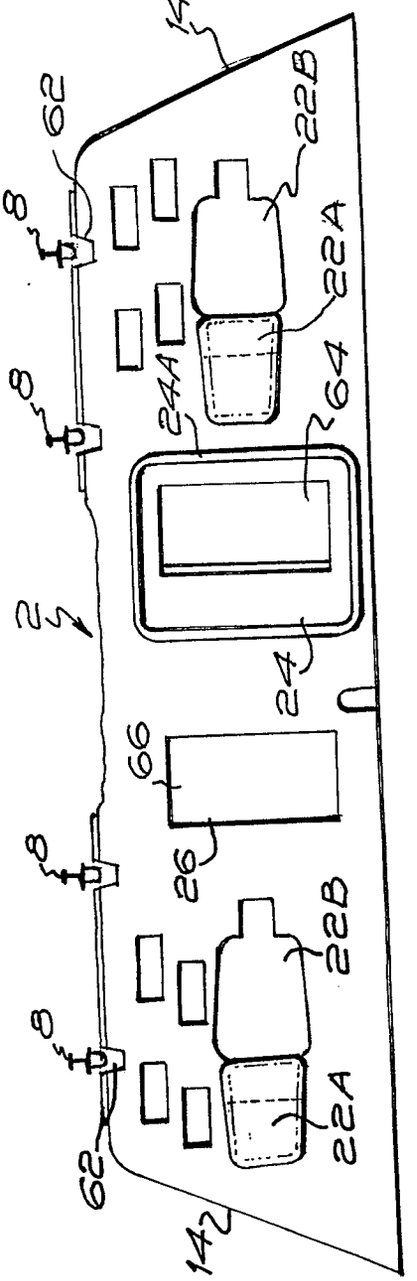


FIG. 9

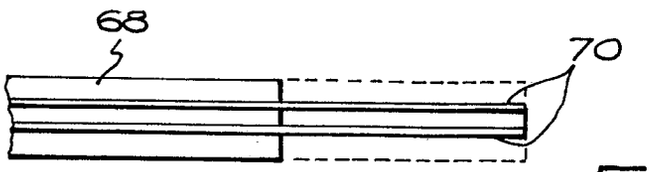


FIG. 10

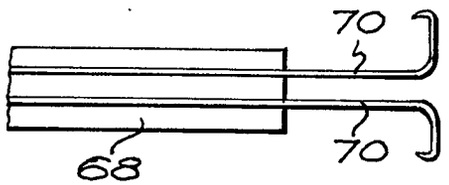


FIG. 11

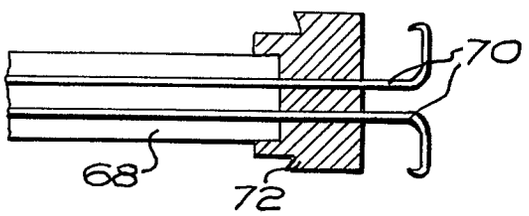


FIG. 12

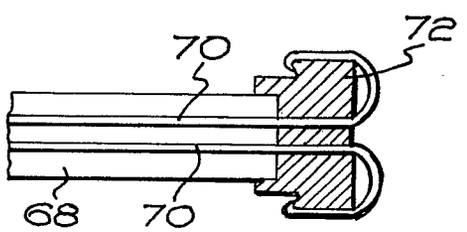


FIG. 13

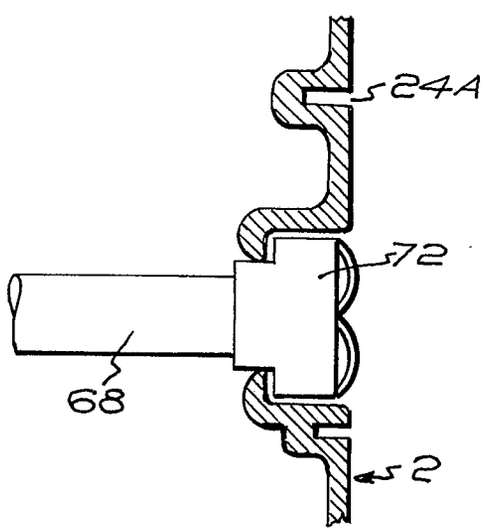


FIG. 14

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 30 2018

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.4)
Y	FR-A-1 325 754 (J.R.P. ALLARD) * Claim 2; figures *	1,4-7	A 63 H 19/30
Y	CH-A- 258 033 (RENOLD) * Page 1, line 29 - page 2, line 7; figures *	1-7	
Y	DE-A-1 815 879 (ITZEHOER NETZFABRIK) * Claims 1-3; figures *	2,3	
A		1,4	
A	GB-A-1 534 665 (PLAYART LTD) * Page 2, line 1 - page 2, line 49; figures *	5	
A	GB-A- 984 746 (WARING) * Claim 16; figures *	3,4,9, 10	
A	US-A-4 697 812 (RUDELL et al.) * Column 3, line 17 - column 4, line 39; figures *	1-5	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			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	02-06-1989	CLARKSON P.M.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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D : document cited in the application
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