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(54) Rail bar connection

(57) Rail bars (1,2) are connected by means of connecting plates (4,5), being placed on each side of the rail bar lying in line. Thereafter a curing adhesive is injected into the space between the respective connecting plates (4,5) and the rail bars (1,2). At the end of the connecting plates (4,5), sealing members (11,12) in the

form of a U adapted to the shape of the web recess of the rail bar are provided. One of the legs of the U runs parallel to the foot and the other leg runs parallel to the rail surface of the rail bar.

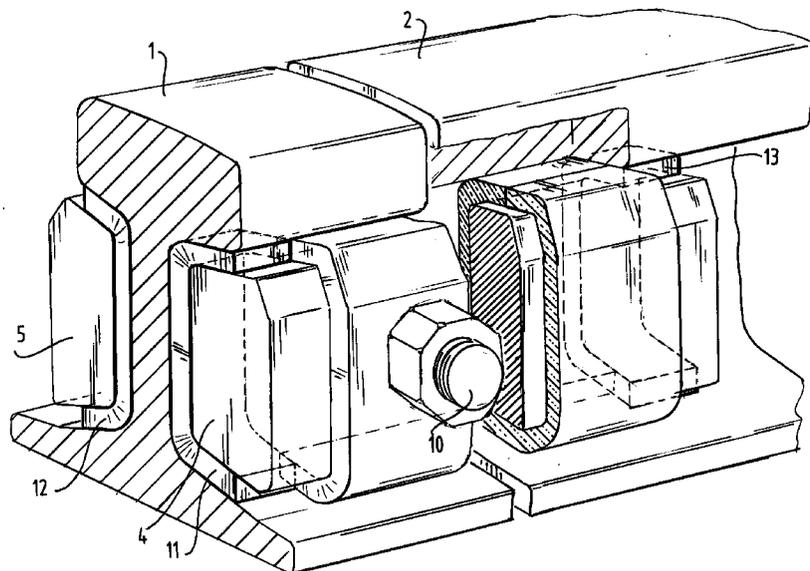


FIG. 2

EP 0 824 162 A1

Description

The invention relates to a rail bar connection consisting of connecting plates placed on either side against rail bars lying mutually in line with interposing of sealing members, nut-bolt connecting means clampingly connecting to the rail bars the connecting plates located on either side of the rail bars, and curing adhesive injected into the space between the respective connecting plates and the rail bars.

Such a rail bar connection is known from EP-A-96201341.3 and EP-A-96201324.1.

In the known rail bar connection the interspace between the connecting plates and the rail bar is sealed using sealing rods, for instance of flexible plastic.

The invention has for its object to provide an alternative option for the sealing.

This is obtained according to the invention in that the sealing members on the ends of the connecting plates take the form of a U adapted to the shape of the web recess of the rail bar, one of the legs of which U runs roughly parallel to the foot and the other leg of which runs roughly parallel to the rail surface of the rail bar.

The sealing member is preferably of flexible material so that an operationally reliable seal against the injected adhesive is obtained.

According to one embodiment the U-shaped sealing member can be placed between the rail bar and the end part of the connecting plate.

It is also possible to arrange a sealing member against the end face of the connecting plate. The dimensions of the sealing member will herein be chosen such that the end face of the connecting plate is covered.

According to the invention the sealing member can have a recess for passage of an electrically conducting rod.

It is also possible to embody the sealing member according to the invention as auxiliary implement. In that case the sealing members placed on either side of the rail bar are mutually joined on each of the end parts by means of connecting elements engaging round the rail bar. In this case therefore the sealing members clamp wholly round the rail bar. Such a sealing member in the form of an auxiliary implement is removed after curing of the injected adhesive.

In preference the connecting elements are hingedly connected to the sealing members.

The invention will be further elucidated with reference to the drawings.

In the drawings:

fig. 1 shows in perspective view a rail bar connection to which the invention can be applied,
fig. 2 is a perspective view of a first embodiment of the invention,
fig. 3 is a perspective view of a second embodiment

of the invention,

fig. 4 is a cross sectional view of a third embodiment of the invention,

fig. 5 is a cross sectional view of a fourth embodiment of the invention,

fig. 6 shows in perspective view a fifth embodiment of the invention, and

fig. 7 shows a sixth embodiment.

The rail bars 1 and 2 are mutually connected with optional interposing of an intermediate plate 3 by arranging connecting plates 4 and 5 on either side. The connecting plates are coupled by nut-bolt connections 10 to each other and to the rail bars for connecting. Connecting plates 4 and 5 can have a recess for receiving rods 6, 7, 8 and 9 of conductive material for transmission of signals, for instance for rail safety devices.

The interspace between the connecting plates and the rail bars for connecting is filled by injecting a curing adhesive. In order to seal the interspaces to the outside, sealing members are used according to the invention which as according to fig. 2 take the form of a U 11, 12, the shape of which is adapted to the web recess of the rail bar, this such that the lower leg in fig. 2 lies parallel to the foot of the rail bar and the upper leg runs parallel to the rail surface of the rail bar. A similar sealing member 13 is arranged on the other end of the connecting plate. The sealing members 11, 12, 13 are clamped fixedly by tightening nut-bolt connection 10 and therein seal the interspace between the plates and the rail bars from the atmosphere.

In the embodiment of fig. 3 the sealing member takes the form of a U-shaped plate which is arranged against the end face of connecting plate 4 and engages round the end face with bent edge portions. Also in this case the sealing member 14 has a form adapted to the web recess of the rail bar such that the plate lies sealingly against respectively the rail bar and the connecting plate. Recesses are also present as required in the plate for passage of the conducting rods 6, 7.

In the embodiment of fig. 4 the sealing members arranged on either side of the rail bars are mutually connected by connecting elements 15, 16 running roughly horizontally. These connecting elements can form part of the sealing members, such as for instance the connecting element 16 which forms part of sealing member 17 and the connecting element 15 which forms part of connecting member 18. The sealing members 17, 18 connected to form an auxiliary implement can be opened and closed by means of the clamping bracket 19. In this case also the sealing member 17 respectively 18 is adapted in form to the shape of the web recess of the rail bar for connecting. The connecting members 17, 18 connect onto the end face of the connecting plates, for instance 4. Sealing member 17 is connected by means of a hinge connection 20 to the connecting element 15. After curing of the adhesive the auxiliary implement can be opened and removed.

It is noted that instead of a hinge 20 a hooking hinge can be employed consisting of a hook-like part and a pin co-acting therewith which is engaged by the hook. The connecting elements can in this way be releasably coupled to each other.

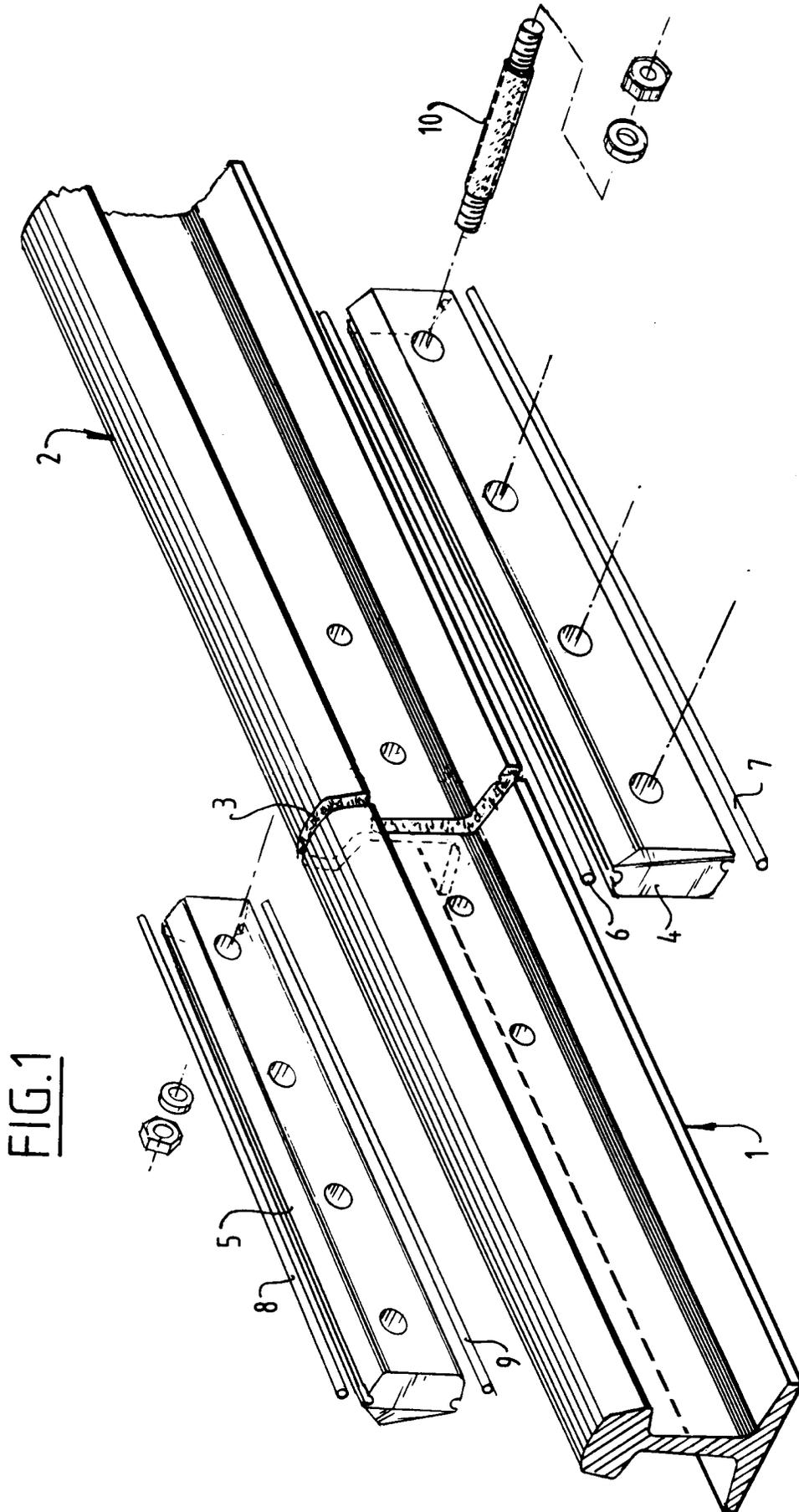
Shown in fig. 5 is an auxiliary implement for sealing the rail bars 1, 2 abutting with the end faces (see also fig. 1). The form of the sealing members 21, 22 is adapted to the outer contour of the connecting plate.

Fig. 6 shows an embodiment consisting of two sealing elements 25, 26 of identical shape, preferably of foam material or other suitable plastic. The mutually facing parts of the sealing elements have a contour adapted to the shape of the rail bars. The two separate sealing members can be mutually coupled by means of a clamping bracket 29 consisting of two parts connectable by slot-tongue connections, for instance 27, 28. After use the sealing member can be disposed of and thus constitutes an investment mould.

The embodiment of fig. 7 relates to a sealing plate 30 for arrangement between the end faces of the rail bars. When the rail bars for coupling are mutually joined the rail bars are pulled against each other with for instance a hydraulic implement, so that the plate 30 is compressed. A sealing effect is thus obtained in relation to the two rail bars for connecting. In order to enable the injected adhesive to flow from the one side of the rail bar to the other side, the middle portion 31 of plate 30 is provided according to the invention with a ribbed structure, thus creating through-flow channels during operation.

Claims

1. Rail bar connection consisting of connecting plates placed on either side against rail bars lying mutually in line with interposing of sealing members, nut-bolt connecting means clampingly connecting to the rail bars the connecting plates located on either side of the rail bars, and curing adhesive injected into the space between the respective connecting plates and the rail bars, **characterized in that** the sealing members on the ends of the connecting plates take the form of a U adapted to the shape of the web recess of the rail bar, one of the legs of which U runs roughly parallel to the foot and the other leg of which runs roughly parallel to the rail surface of the rail bar.
2. Rail bar connection as claimed in claim 1, **characterized in that** the U-shaped sealing member is placed between the rail bar and the end part of the connecting plate.
3. Rail bar connection as claimed in claim 1, **characterized in that** the sealing member is placed against the end face of the connecting plate.
4. Rail bar connection as claimed in claims 1-3, **characterized in that** the sealing members have a recess for passage of an electrically conducting rod.
5. Rail bar connection as claimed in claim 3, **characterized in that** the sealing members placed on either side of the rail bar are mutually joined on each of the end parts by means of connecting elements engaging round the rail bar.
6. Rail bar connection as claimed in claim 5, **characterized in that** the connecting elements are hingedly connected to the sealing members.
7. Rail bar connection as claimed in claims 1-6, **characterized in that** the sealing members for the rail bars abutting with the end faces are formed by mutually connectable sealing elements engaging the rail bars and adapted to the shape of the rail bars.
8. Rail bar connection as claimed in claim 7, **characterized in that** the coupling between the sealing elements is formed by a clamping bracket engaging round the sealing elements.
9. Rail bar connection as claimed in claim 8, **characterized in that** the clamping bracket consists of two mutually co-acting elements which can be coupled by means of slot-tongue connections.
10. Rail bar connection as claimed in claims 1-9, **characterized in that** the sealing elements are of plastic.
11. Rail bar connection as claimed in claims 1-8, **characterized in that** a plate is arranged between the end faces of the abutting rail bars, the middle portion of which plate has passages for adhesive.



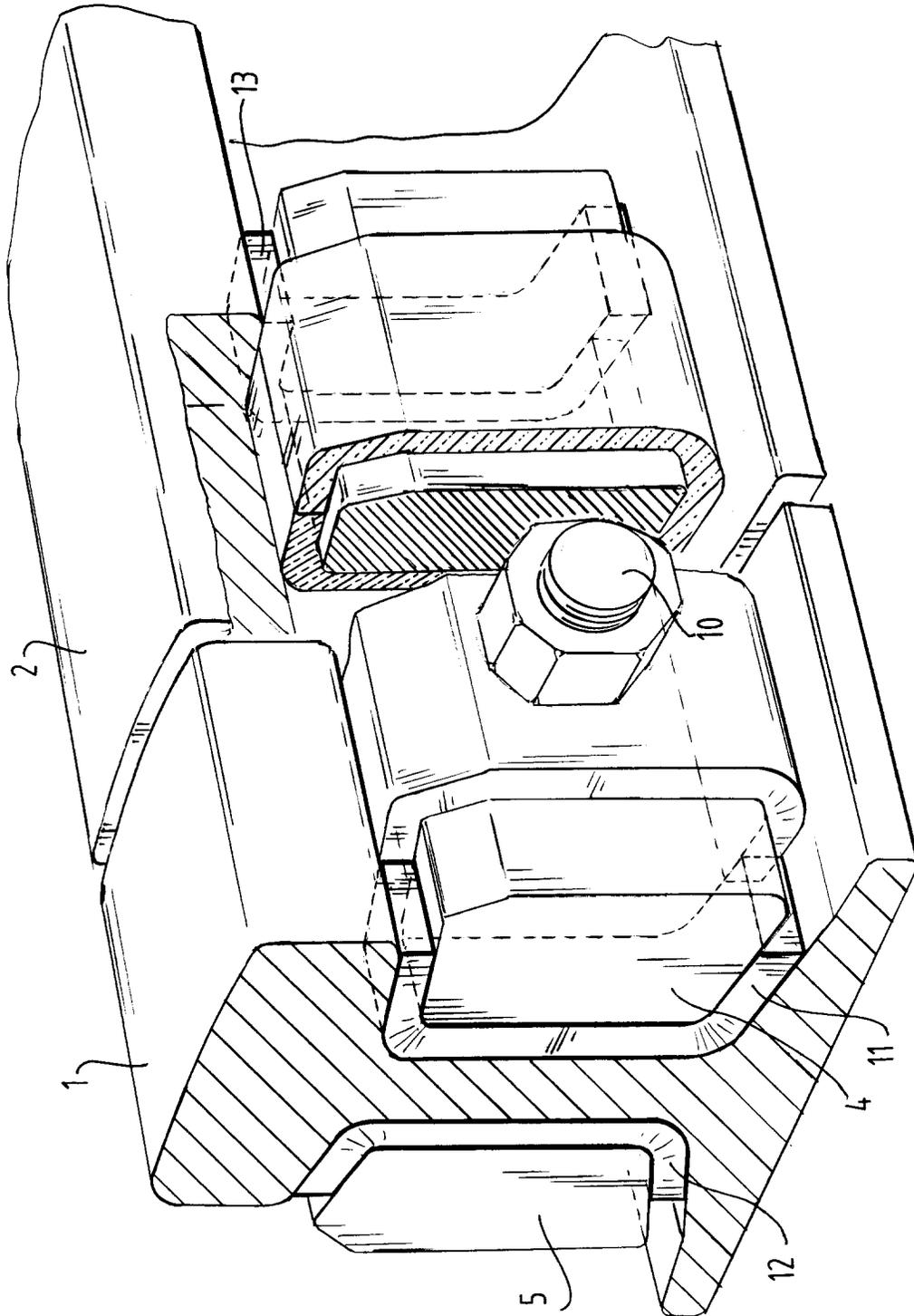


FIG.2

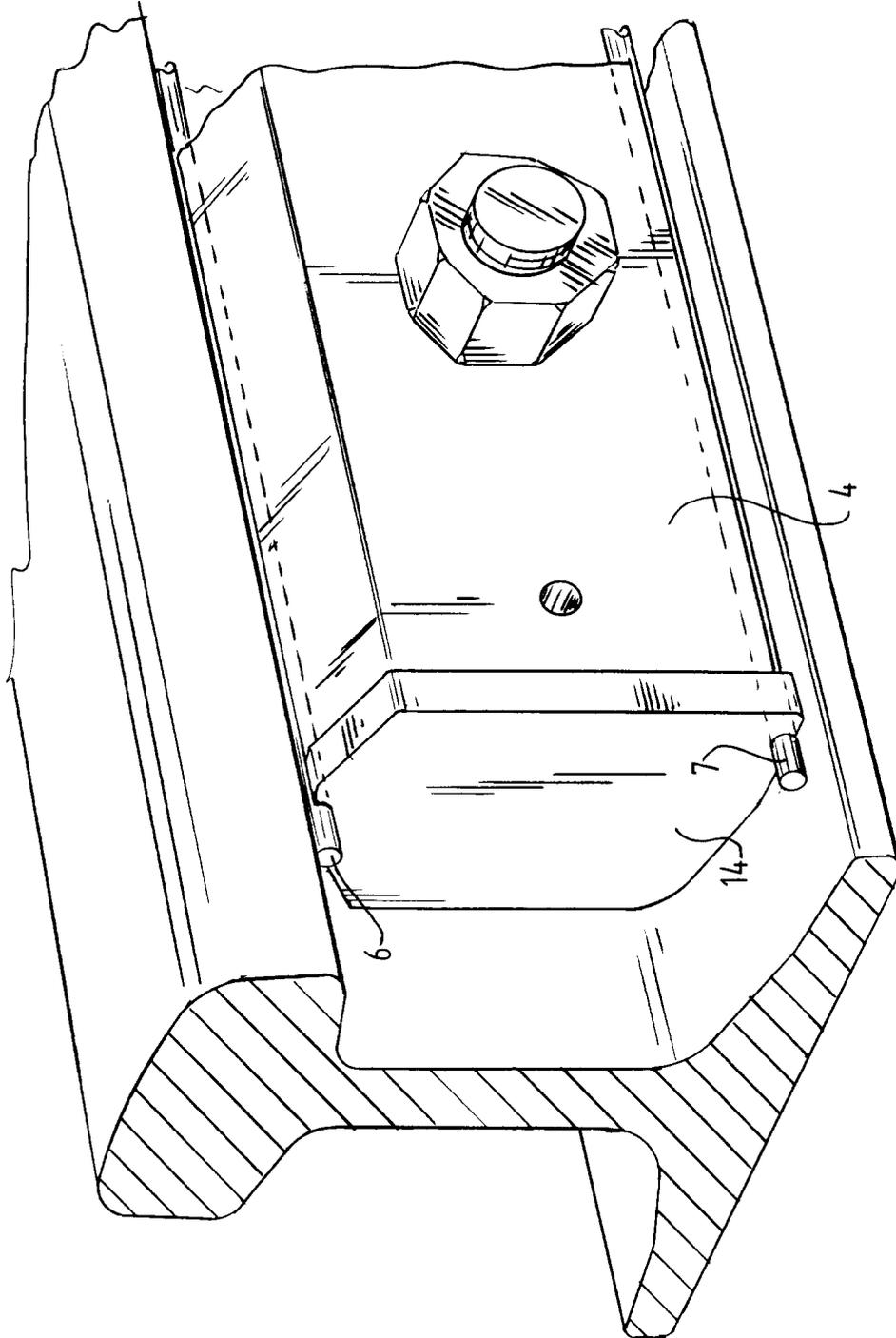


FIG.3

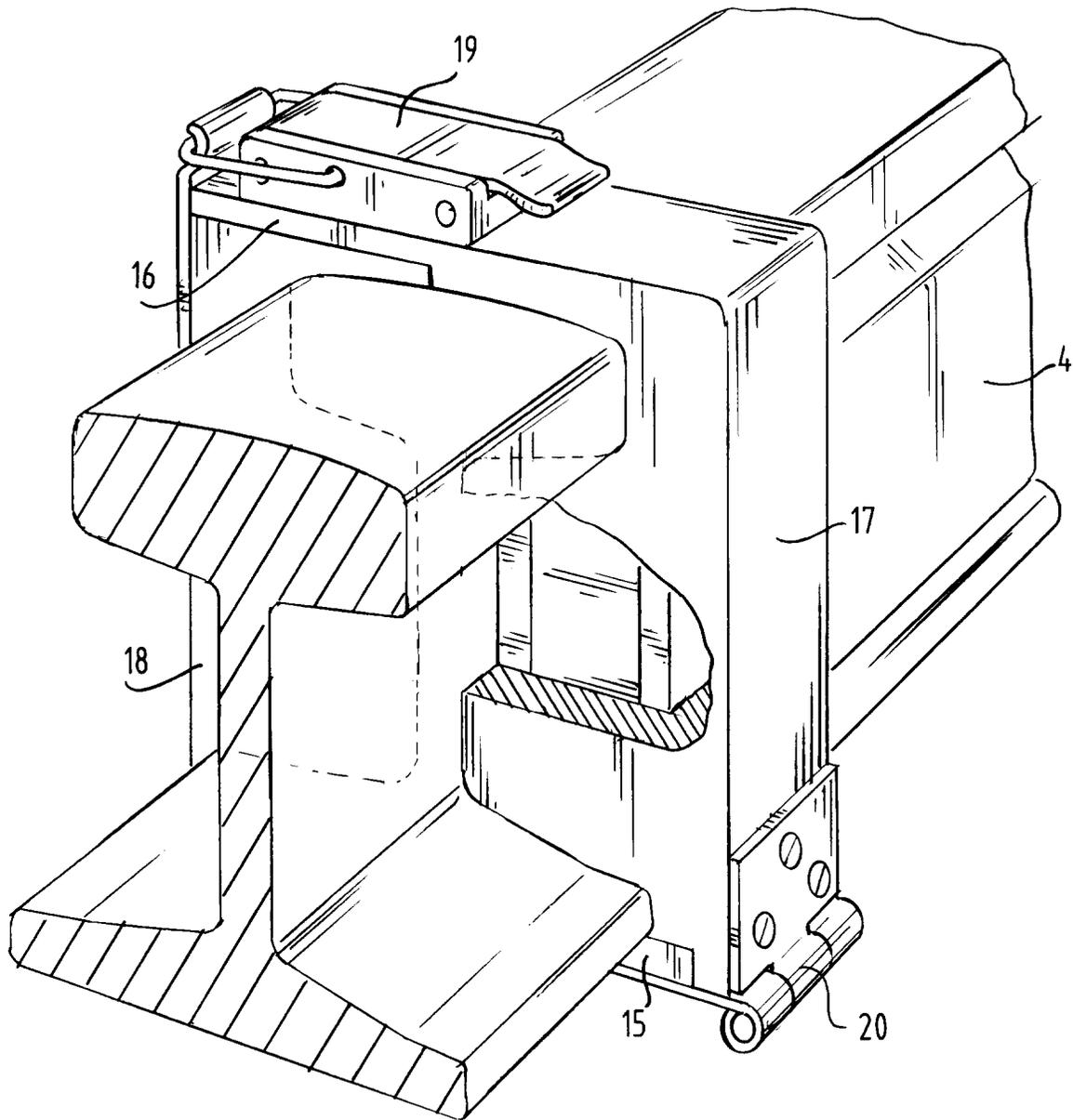
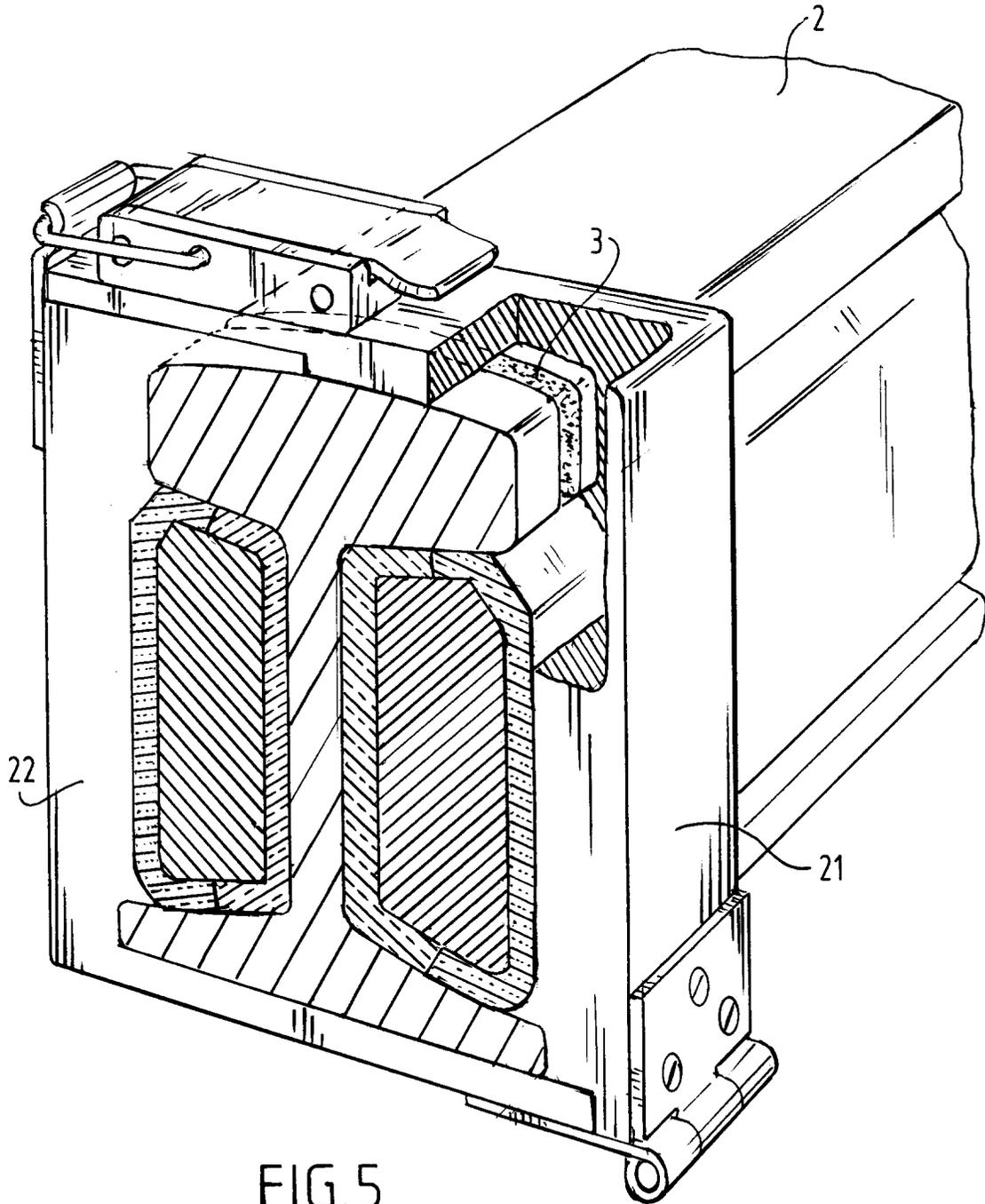


FIG.4



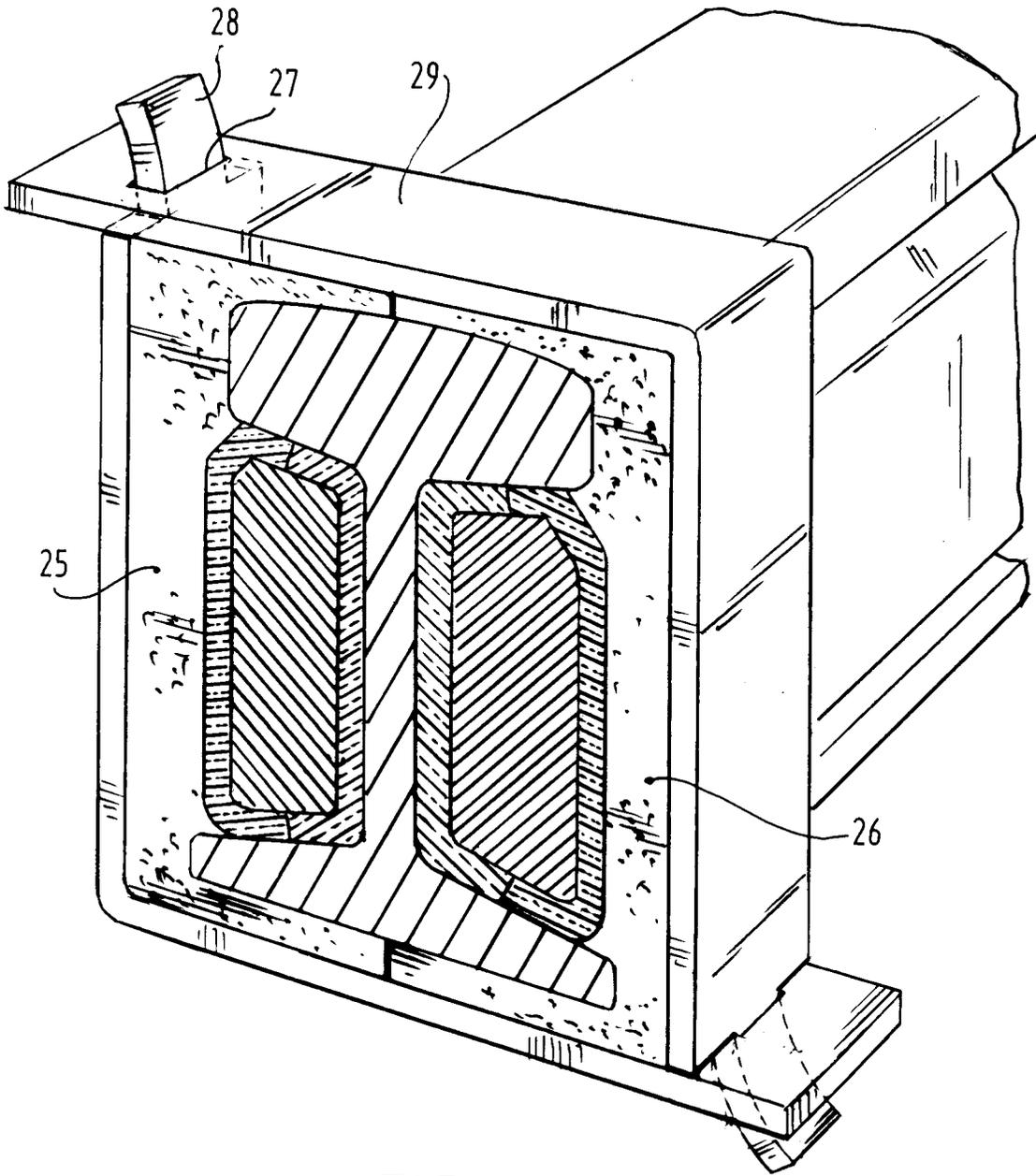


FIG.6

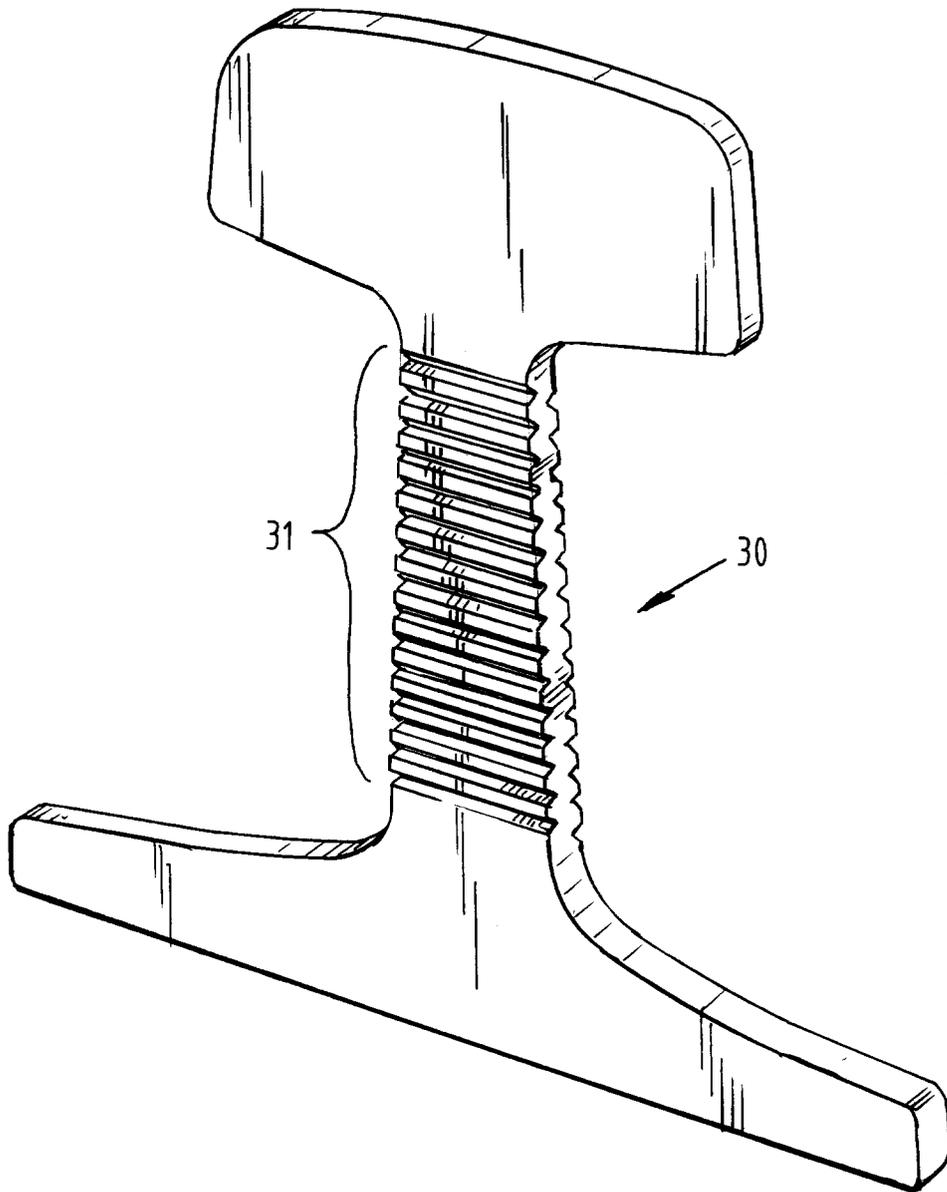


FIG.7



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EUROPEAN SEARCH REPORT

Application Number
EP 96 20 2294

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.6)
A	US 3 381 892 A (EISSES JACOB A) 7 May 1968 * the whole document * ---	1,2,10	E01B11/04
A	DE 12 41 473 B (FRANZ CLOUTH RHEINISCHE GUMMIWARENFABRIK) 1 June 1967 * the whole document * ---	1	
A	US 2 915 250 A (FOREMAN) 1 December 1959 * the whole document * ---	3	
A	US 1 507 770 A (FEHR) 9 September 1924 * claims; figures * ---	11	
A	FR 1 276 336 A (VEB LEUNA-WERKE) 17 November 1961 -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E01B
Place of search	Date of completion of the search	Examiner	
THE HAGUE	9 January 1997	Blommaert, S	
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