

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number:

0 001 342
A1

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: 78300376.7

(51) Int. Cl.²: **E 04 G 3/10**
E 04 G 3/14

(22) Date of filing: 12.09.78

(30) Priority: 19.09.77 GB 38960/77
22.05.78 GB 38960/77

(43) Date of publication of application:
04.04.79 Bulletin 79/7

(84) Designated contracting states:
BE CH DE FR LU NL SE

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(54) Improvements in girder fittings.

(57) A girder fitting adapted to be secured to a length of scaffold tube and to clamp the scaffold tube to a girder. The fitting (10) comprises a main body (14), a clamp (16) pivotally mounted on the main body (14) at one end thereof, and means (18,20) for releasably holding the clamp (16) to the main body (14). The clamp (16) and main body (14) are so shaped as to receive and clamp between them a length of scaffold tube (9) and the main body (14) is further shaped such that the vertical load of the scaffold tube (9) is borne substantially entirely by the main body. A portion (22) of the main body (14) extends at an end remote from the clamp (16) in a direction substantially at right angles to the major length of the main body (14) and a screw (24) is provided which is engageable with a flange (13) of the girder whereby a length of scaffold tube (9) fitted with the fitting (10) can be clamped to the flanged girder.

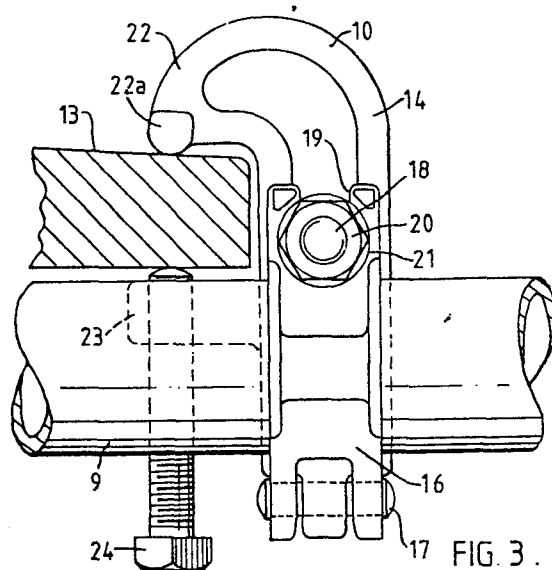


FIG. 3.

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Title: Improvements in Girder Fittings.

This invention relates to the attachment of scaffolding platforms, workmen's platforms or cradles and the like to flanged girders of steel or like material and is particularly concerned with fittings for securing
5 scaffolding to such girders.

It is known to clamp scaffold tubes to one another at right angles by means of clamps which are shaped to engage around the scaffold tubes and which are held in position by means of a single screw. Such arrangements
10 are disclosed for example in British Patent Specifications Nos. 78128 and 65380. However, such arrangements cannot be used to clamp scaffold tubes to flanged girders.

The present invention aims to provide a fitting which can be used to clamp a scaffold tube to a flanged
15 girder, the scaffold tube forming part of a workmen's platform or cradle whereby said platform can be secured directly to the girder.

According to the invention, there is provided a fitting adapted to be secured to a length of scaffold
20 tube and to clamp said scaffold tube to a girder, said fitting comprising a main body, a clamp pivotally mounted on the main body, said clamp and main body being so shaped as to receive and clamp between them a length of scaffold tube, the main body further being so shaped
25 that the vertical load of the scaffold tube is borne substantially entirely by said main body, and a portion

of said main body extending at an end remote from the clamp in a direction substantially at right angles to the major length of the main body, a screw being provided which is engageable with a flange on a girder
5 whereby a length of scaffold tube fitted with said fitting can be clamped to a flanged girder.

The invention will now be further described, by way of example, with reference to the accompanying drawings, in which :-

10 Figure 1 is a side elevation of one embodiment of a girder fitting according to the invention;

Figure 2 is a front elevation of the fitting shown in Figure 1;

15 Figure 3 is a side elevation of a second embodiment of a girder fitting according to the invention;

Figure 4 is a front elevation of the fitting shown in Figure 3;

20 Figure 5 shows one manner in which fittings according to the invention may be used in the construction of a working platform;

Figure 6 is a section taken on the line VI-VI in Figure 5;

25 Figure 7 shows fittings according to the invention used in the construction of one embodiment of a cantilevered scaffold platform;

Figure 8 is a view, similar to Figure 7, of a second embodiment of a cantilevered scaffold platform having fittings according to the invention;

30 Figure 9 shows fittings according to the invention used in tying scaffolding to vertical steelwork columns;

Figure 10 shows the detail marked X in Figure 9 to an enlarged scale;

Figure 11 is a section taken on the line XI-XI in Figure 10;

35 Figure 12 shows fittings according to the invention

used for securing hand rails to vertical steelwork columns in an unfinished building;

Figure 13 is a section taken on the line XIII-XIII in Figure 12; and

5 Figure 14 shows fittings according to the invention used in the construction of yet another form of working platform.

In the drawings, like parts are denoted by like reference numerals.

10 Reference will first be made to Figures 1 and 2 of the drawings in which the fitting 10 comprises a main body 1 having, adjacent one end, an arcuate recess 2 and on which one end of a latch or clamp 4 is pivotally mounted by means of a rivet 3. A latch bolt 6 is also
15 pivotally mounted on the main body 1 and is receivable in a slot 5 in the other end of the clamp 4. The latch bolt 6 is screw-threaded along at least part of its length and a nut 7 and washer 8 are provided thereon.

20 The other end of the main body 1 is curved from the axis of the major portion of the length of said body and terminates in a part 11 extending substantially at right angles to said axis. The part 11 is provided with a screw-threaded bore for receiving a screw 12.

25 In use, the fitting is secured to a length of scaffold tube 9 by engaging the arcuate recess 2 on said scaffold tube 9 and pivoting the clamp 4 into engagement with said scaffold tube. The latch bolt 6 is then allowed to drop into the slot 5 in the clamp 4 and the nut 7 turned until the body 1 and clamp 4 are clamped
30 to the scaffold tube in an immovable manner. The fitting is then ready for the part 11 of the main body 1 to be hooked over the flange 13 of a flanged girder. The screw 12 is then turned to draw the scaffold tube 9 into engagement with the underside of the flange 13.

Owing to the main body 1 being in a vertical plane, the vertical load from the scaffold tube 9 is transferred via the lug retaining the rivet 3, into the main body 1. By means of this arrangement, the latch bolt is only
5 subjected to loads from the fitting being clamped onto the scaffold tube 9.

Referring now to Figures 3 and 4 of the drawings, the fitting 10 comprises a main body 14 having adjacent one end an arcuate recess 15 and on which one end of a
10 latch or clamp 16 is pivotally mounted by means of a rivet 17. A latch bolt 18 pivotally mounted on the main body 14 is receivable in a slot 19 in the other end of the clamp 16. Part of the length of the latch bolt 18 is screw-threaded for receiving a nut 20, a washer 21
15 being interposed between the nut 21 and clamp 16.

The other end of the main body 14 is curved from the axis of the major portion of the length of said body and terminates in a part 22 extending substantially at right angles to said axis. The end of said part 22 is
20 provided with a bar-like projection 22a the longitudinal axis of which is substantially perpendicular to said axis of the main body as well as to the remainder of part 22. The projection 22a is intended to rest on the flange 13 of a flanged girder.

25 Located intermediate the ends of the main body 14 and extending substantially at right angles to the said axis of the main body is a lug 23 which is aligned with the part 22 but spaced therefrom. The lug 23 is provided with a screw-threaded bore for receiving a screw 24.

30 As with the embodiment described with reference to Figures 1 and 2 of the drawings, the fitting shown in Figures 3 and 4 can be secured to a length of scaffold tube 9 by engaging the arcuate recess 15 on the scaffold tube and pivoting the clamp 16 into engagement with the
35 said scaffold tube. The latch bolt 18 is then allowed

to drop into the slot 19 in the clamp 16 and the nut 20 turned until the main body 14 and clamp 16 are clamped to the scaffold tube in an immovable manner. The part 22 can then be hooked over the flange 13 of a flanged girder so that the projection 22a bears on said flange and the screw 24 turned to clamp the fitting to the flange 13.

Again, in this case, the vertical load from the scaffold tube 9 is transferred to the main body 14 via the lug retaining the rivet 17 so that the latch bolt is subjected only to the load of the fitting being clamped onto the scaffold tube. Moreover, in this embodiment, the load of the scaffold tube and fitting is borne by the part 22 and its projection 22a, the screw 24 serving merely to secure the fitting onto the girder and not being subjected to direct load.

The main body 1 or 14 and latch or clamp 4 or 16 are preferably made of drop forged steel while the bolt 6 or 18 and screw 12 or 24 are preferably made of mild steel although other materials may be used if desired.

Either of the above described fittings according to the invention can be used in a variety of applications, examples of which are shown in Figures 5 to 14 of the accompanying drawings.

Figures 5 and 6 show the manner in which fittings according to the invention can be used to suspend a working platform from a series of flanged girders forming the steelwork of, for example, a bridge or roof in order to gain access for painting or maintenance work for example. As shown in Figure 5, a single scaffold tube 9 is secured to the flanges 13 of two parallelly-extending girders 25 and 26 by two fittings 10.

A series of vertical scaffold tubes 27 are secured at spaced intervals to the scaffold tube 9 and a horizontal scaffold tube 28 is secured to the scaffold

tubes 27 to extend parallel to the scaffold tube 9 to form a framework. This framework is secured to a like framework 29 (Figure 6) by further horizontal scaffold tubes 30, 31 and 32, the tubes 32 being interconnected
5 between the two frameworks by a transversely extending scaffold tube 33. Timber boards 34 are laid on the scaffold tubes 28 and 33 to form a working platform. Additional vertical boards 35 serve as toe boards and the scaffold tubes 31 serve as hand rails. The platform
10 may be extended further by other frameworks 29 as shown in Figure 6.

Figure 7 shows an example of a cantilevered scaffold which can be used where areas to be painted or maintained are near steelwork to which a working platform can be
15 fixed by means of fittings 10 according to the invention. In this case, the boards 34 are placed directly on a series of scaffold tubes 9 to which vertical tubes 27 are secured for the location of toe boards 35 and hand rails 31. Furthermore, the platform can be braced by
20 means of struts 36 bearing on the lower flange of an I-section girder 37 to the upper flange of which the fittings 10 are secured. Adjacent struts 36 are connected together by scaffold tubes 38 and adjacent scaffold tubes 9 are connected together by scaffold tubes 39.

25 In the alternative embodiment shown in Figure 8, the fittings 10 are secured to the lower flange of I-section girder 37. In this case, the struts 36, scaffold tubes 38, one set of the vertical scaffold tubes 27 and one hand rail 31 can be dispensed with.

30 Figures 9 to 11 show how fittings according to the invention can be used for tying scaffolding to steelwork. Two fittings 10 are clamped to a vertical I-section girder 40 as shown in Figures 10 and 11 and scaffolding 41 is secured to the scaffold tubes 9 which
35 are clamped to the girder by the fittings 10.

Figures 12 and 13 show how fittings according to the invention can be used to secure scaffold tubes 9 serving as hand rails to columns consisting of vertical I-section girders 42 to which are secured horizontal girders 43 which carry a floor level 44 of an unfinished building. The hand rails can be readily fitted and provide safer working conditions for workmen on the floor level 44.

Figure 14 shows an arrangement for erecting a platform scaffold which is similar to the arrangement shown in Figure 7 except that in this case the scaffold tube 9 is secured to the upper flanges of two I-section girders 37 and 45 extending parallel to each other. In this case, only one fitting 10 is required to secure the scaffold tube 9 to each girder and to prevent movement of the scaffold tube 9 along the girders 37 and 45.

It will be seen that, by means of the fitting according to the invention, standard equipment used throughout the scaffolding industry may be used to secure a variety of working platforms to girder form steelwork thus representing a considerable saving in special equipment which would otherwise be necessary.

Other embodiments and modifications of the above described fittings are possible without departing from the scope of this invention as defined by the appended claims.

Claims:

1. A fitting adapted to be secured to a length of scaffold tube and to clamp said scaffold tube to a
5 girder, characterised in that the fitting comprises a main body (1,14), a clamp (4,16) pivotally mounted on the main body (1,14) and means (6,7; 18,20) for releasably holding the clamp (4,16) to the main body (1,14), said clamp (4,16) and main body (1,14) being
10 so shaped as to receive and clamp between them a length of scaffold tube (9), the main body (1,14) further being so shaped that the vertical load of the scaffold tube (9) is borne substantially entirely by said main body (1,14), and a portion (11,22) of said main body (1,14)
15 extending at an end remote from the clamp (4,16) in a direction substantially at right angles to the major length of the main body (1,14), a screw (12,24) being provided which is engageable with a flange (13) on a girder whereby a length of scaffold tube (9) fitted with
20 said fitting can be clamped to a flanged girder.
2. A fitting according to claim 1, characterised in that the main body (1,14) is provided with an arcuate recess (2,15) adapted to receive and engage a portion of the scaffold tube (9) and in that the clamp (4,16)
25 is pivotally mounted on the main body (1,14) adjacent said arcuate recess (2,15).
3. A fitting according to claim 1 or claim 2, characterised in that the clamp (4,16) is pivotally mounted at one end on the main body (1,14), in that the
30 other end of the clamp (4,16) is provided with a slot (5,19) and in that the releasable holding means comprise a bolt (6,18) pivotally mounted on the main body (1,14) and engageable in the slot (5,19) in said clamp (4,16).
4. A fitting according to claim 3, characterised in
35 that the head of the bolt (6,18) is pivotally mounted

in the main body (1,14) and said bolt (6,18) has a screw-threaded shank and in that a nut (7,20) is engaged on said screw-thread and is effective, on being turned, to draw the said other end of the clamp (4,16) towards the
5 main body (1,14).

5. A fitting according to any preceding claim, characterised in that the said portion (11) of the main body (1) extending substantially at right angles to the major length of said main body (1) is provided
10 with a screw-threaded bore and in that the screw (12) is engageable with the screw-thread of said bore.

6. A fitting according to any one of claims 1 to 4, characterised in that the main body (14) is provided, intermediate its ends, with a lug (23) aligned with
15 said portion (22) of the main body (14) extending substantially at right angles to the major length of said main body (1) but spaced from said portion (22).

7. A fitting according to claim 6, characterised in that the lug (23) is provided with a screw-threaded
20 bore and in that the screw (24) is engageable with the screw-thread of said bore.

8. A fitting according to any preceding claim, characterised in that the main body (1,14) and clamp (4,16) are made of drop forged steel.

FIG. 1.

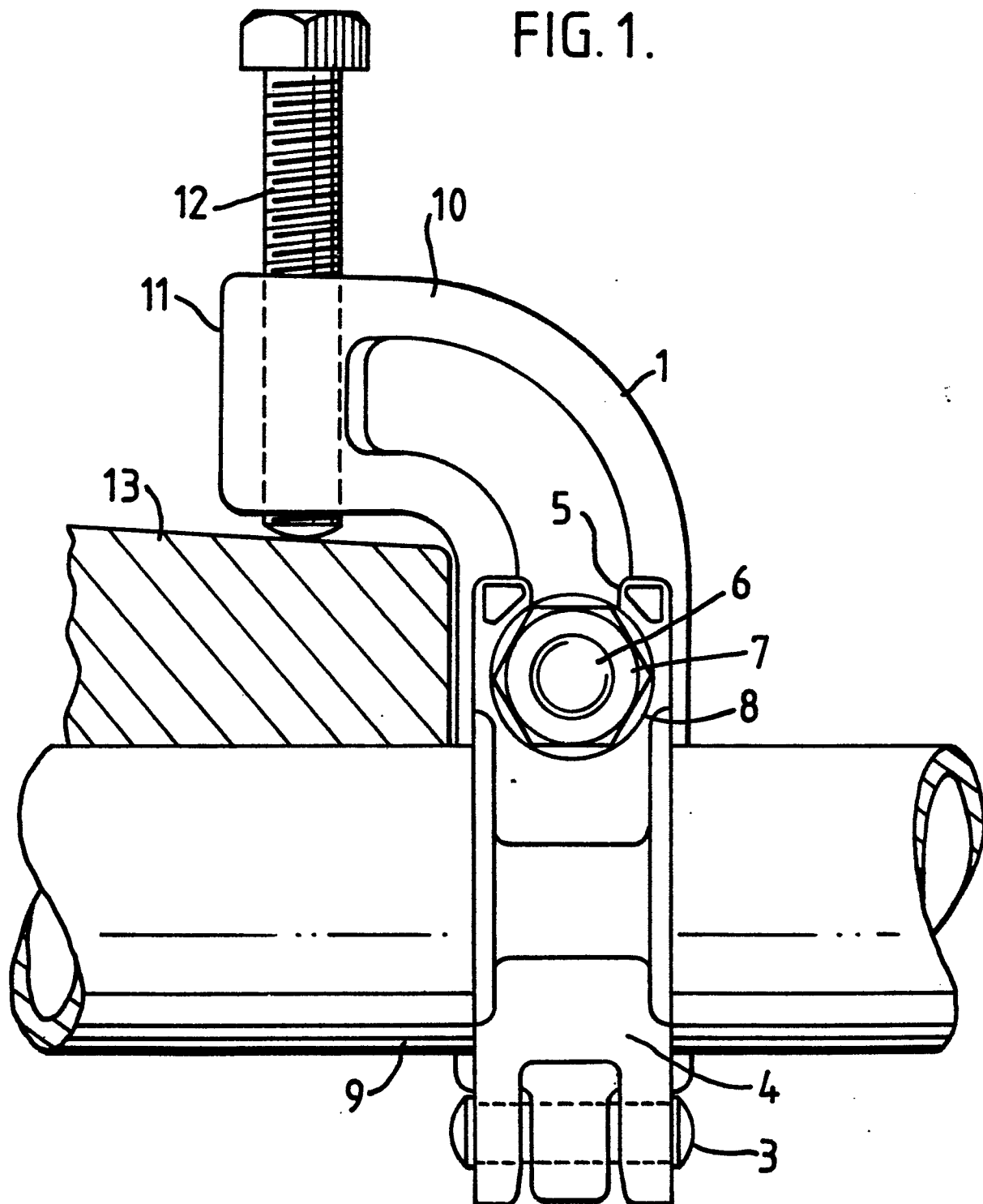
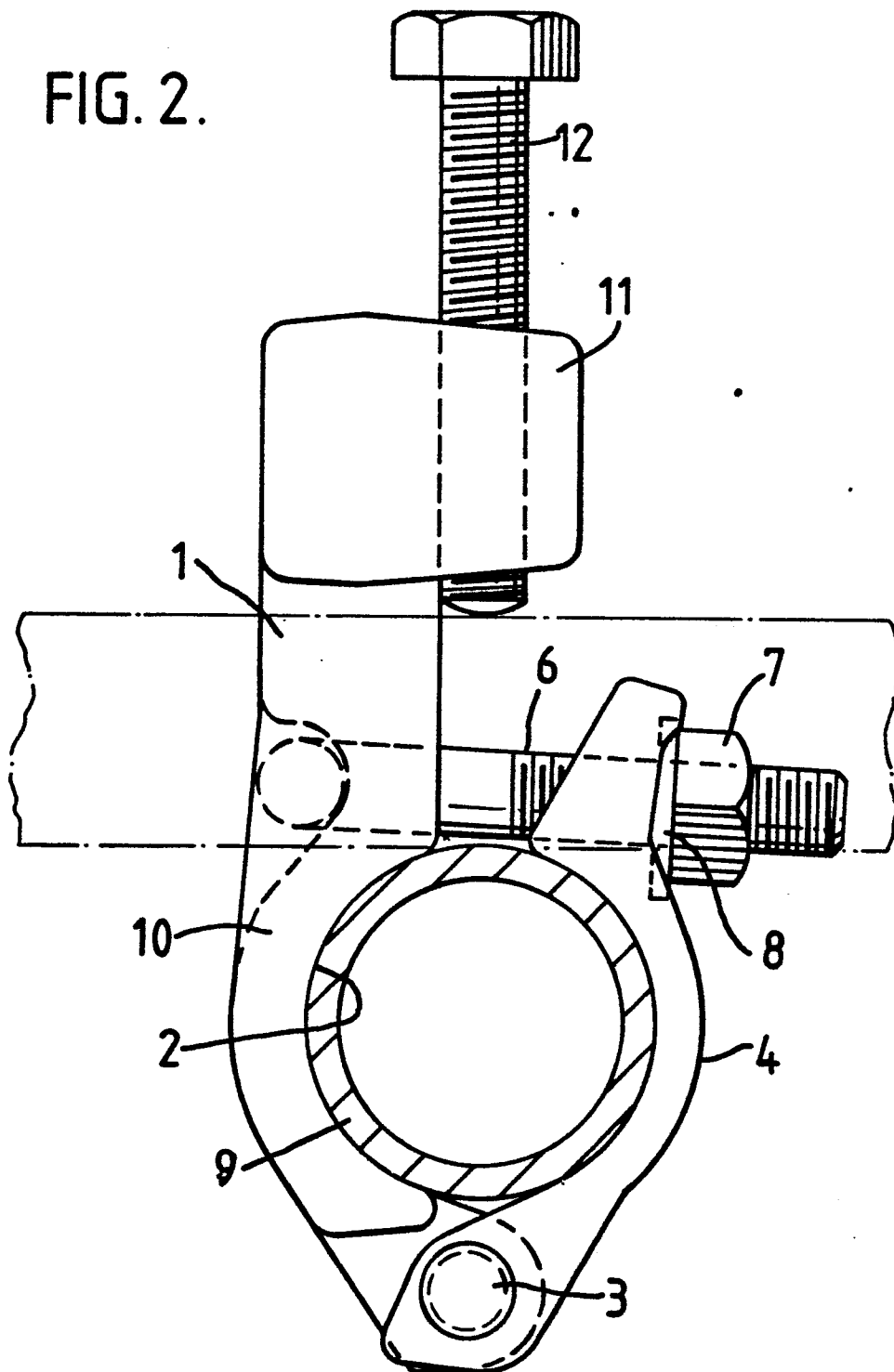


FIG. 2.



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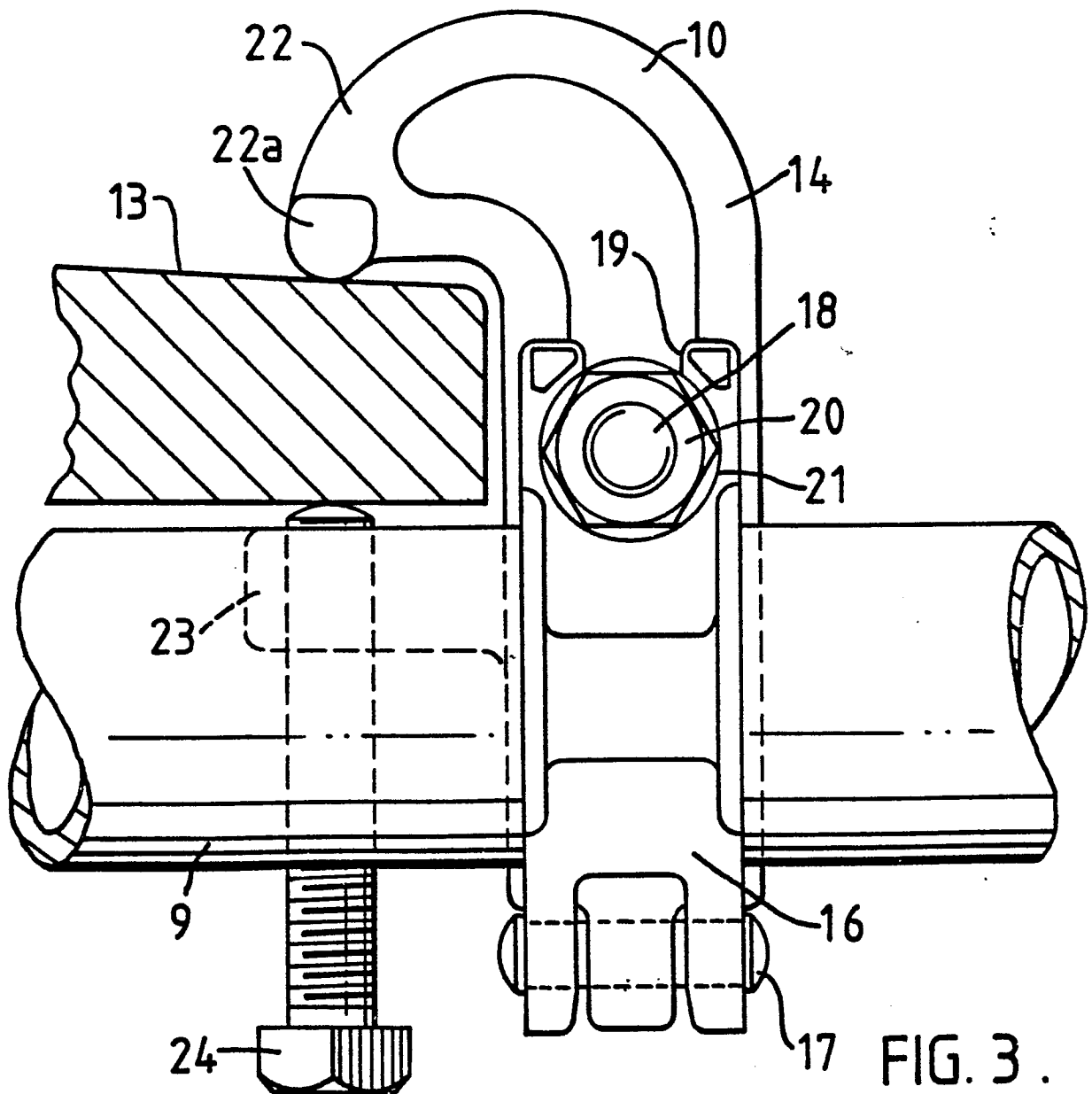


FIG. 3 .

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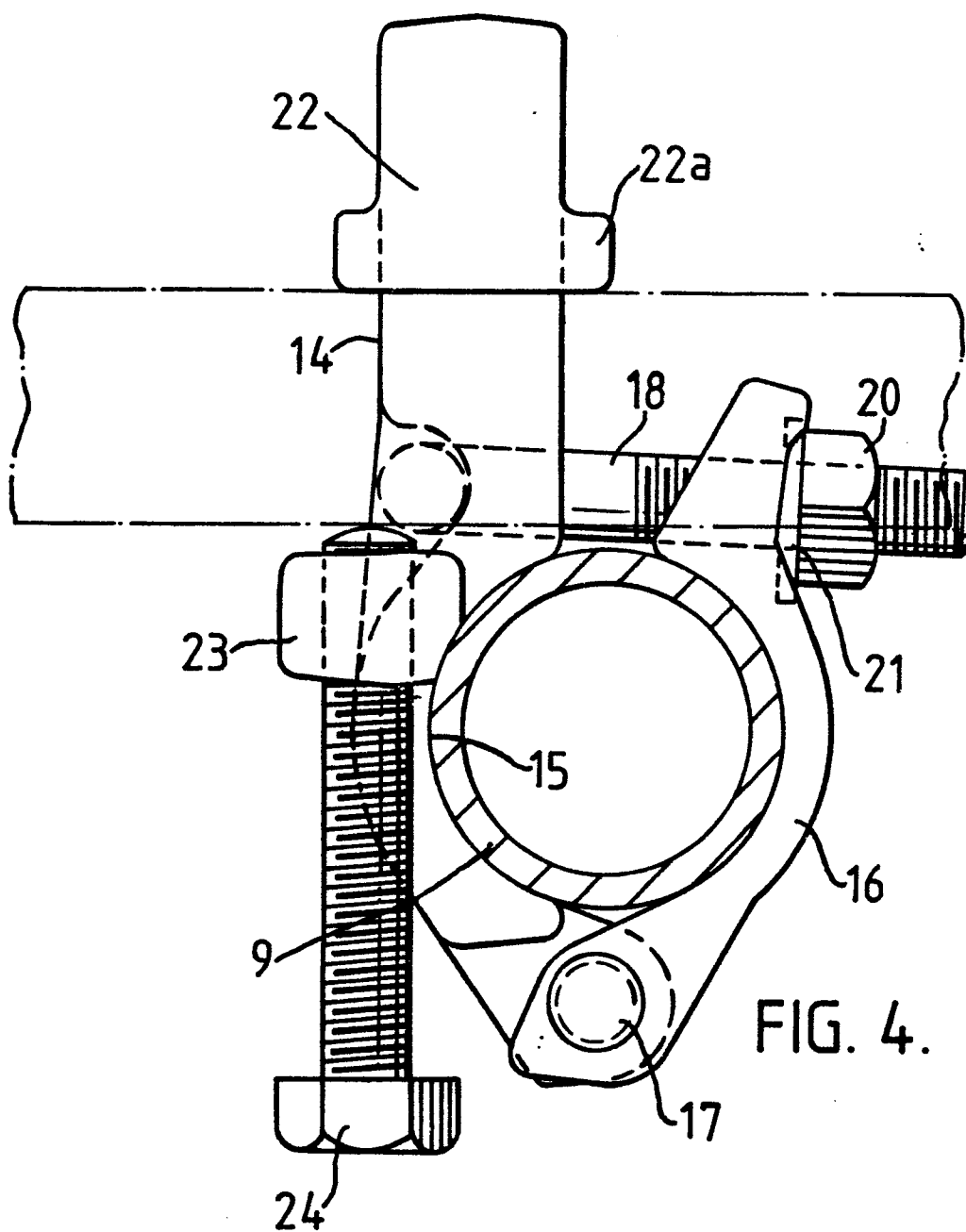


FIG. 4.

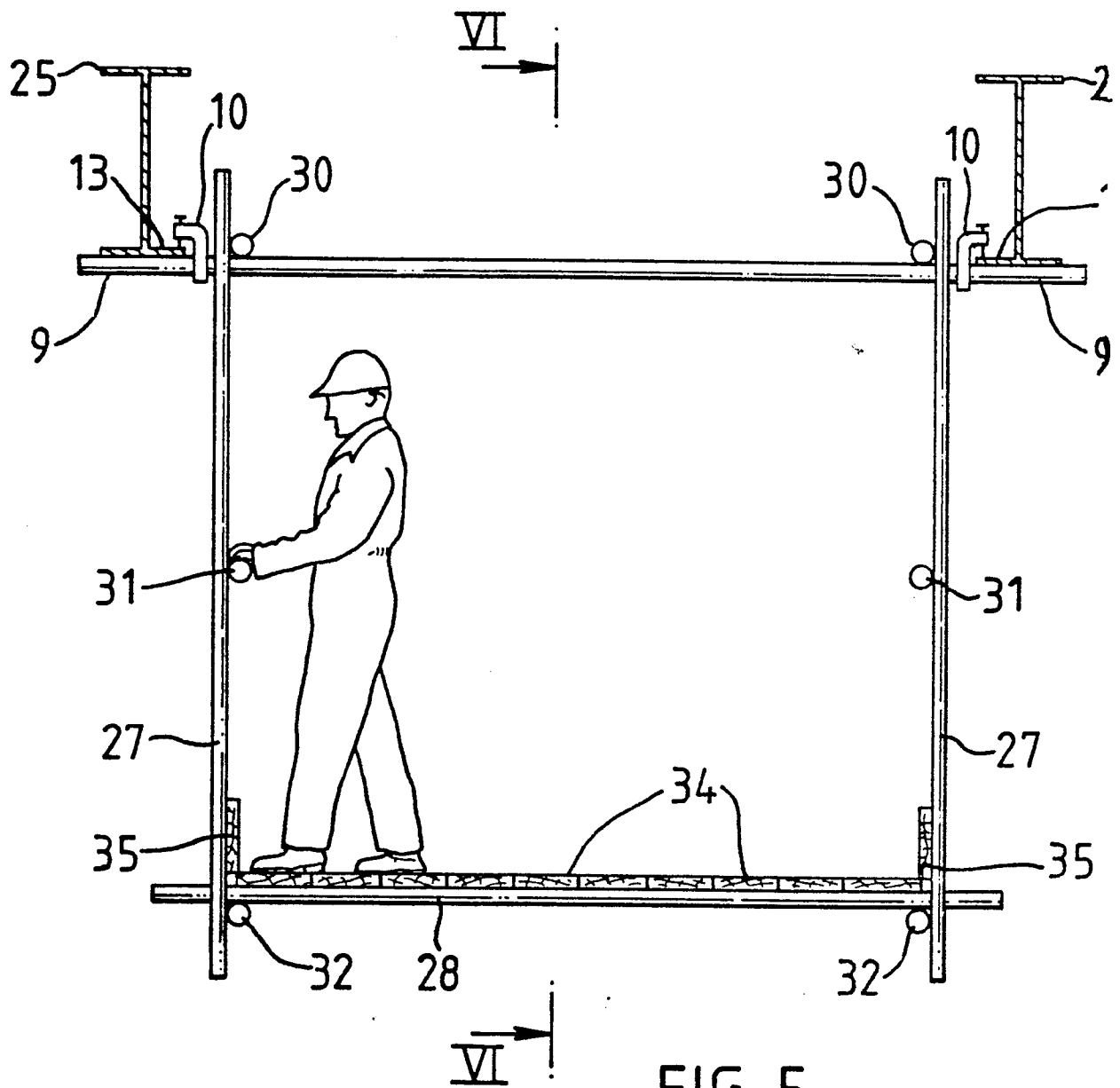


FIG. 5.

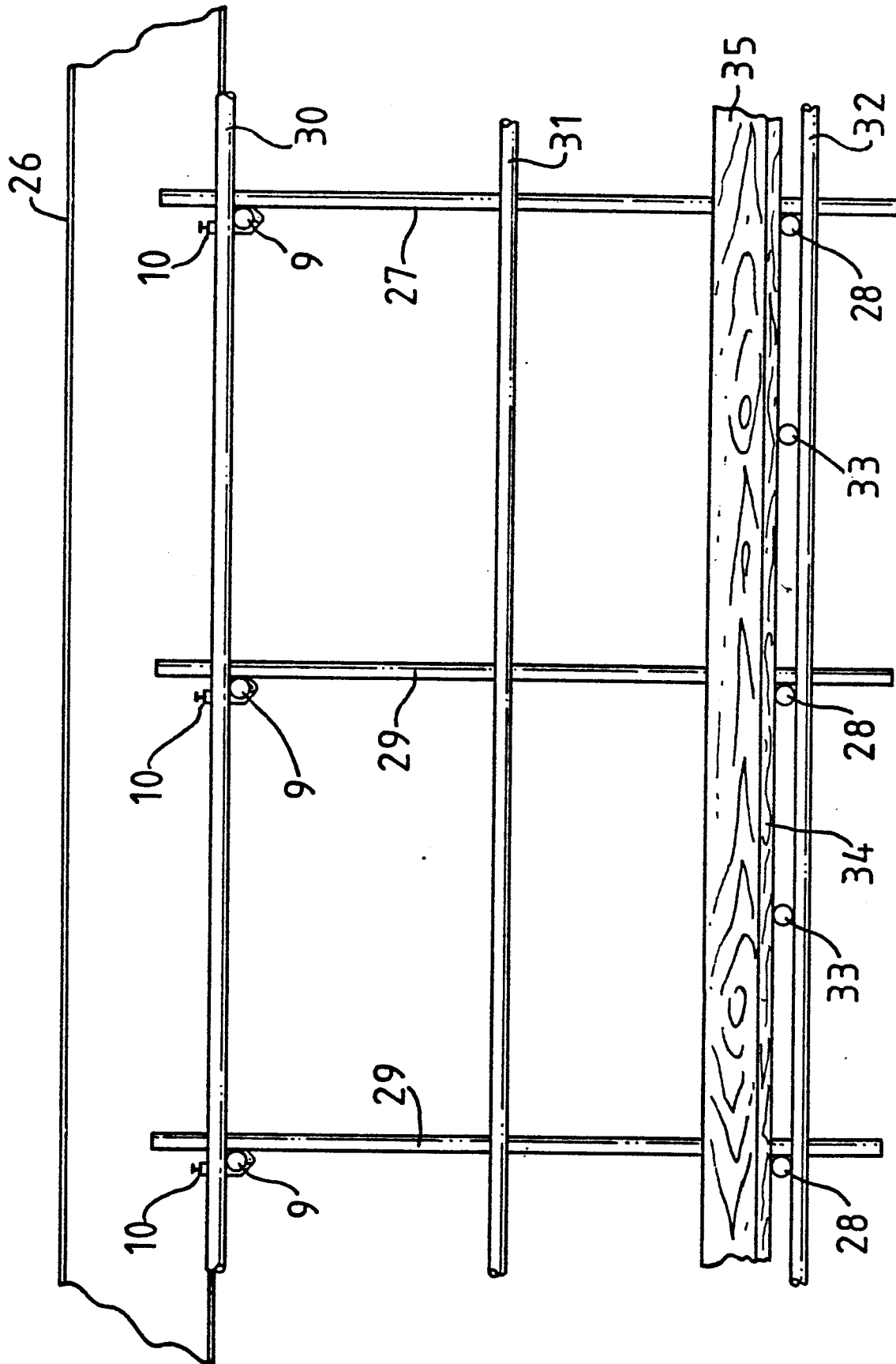


FIG. 6.

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FIG. 7.

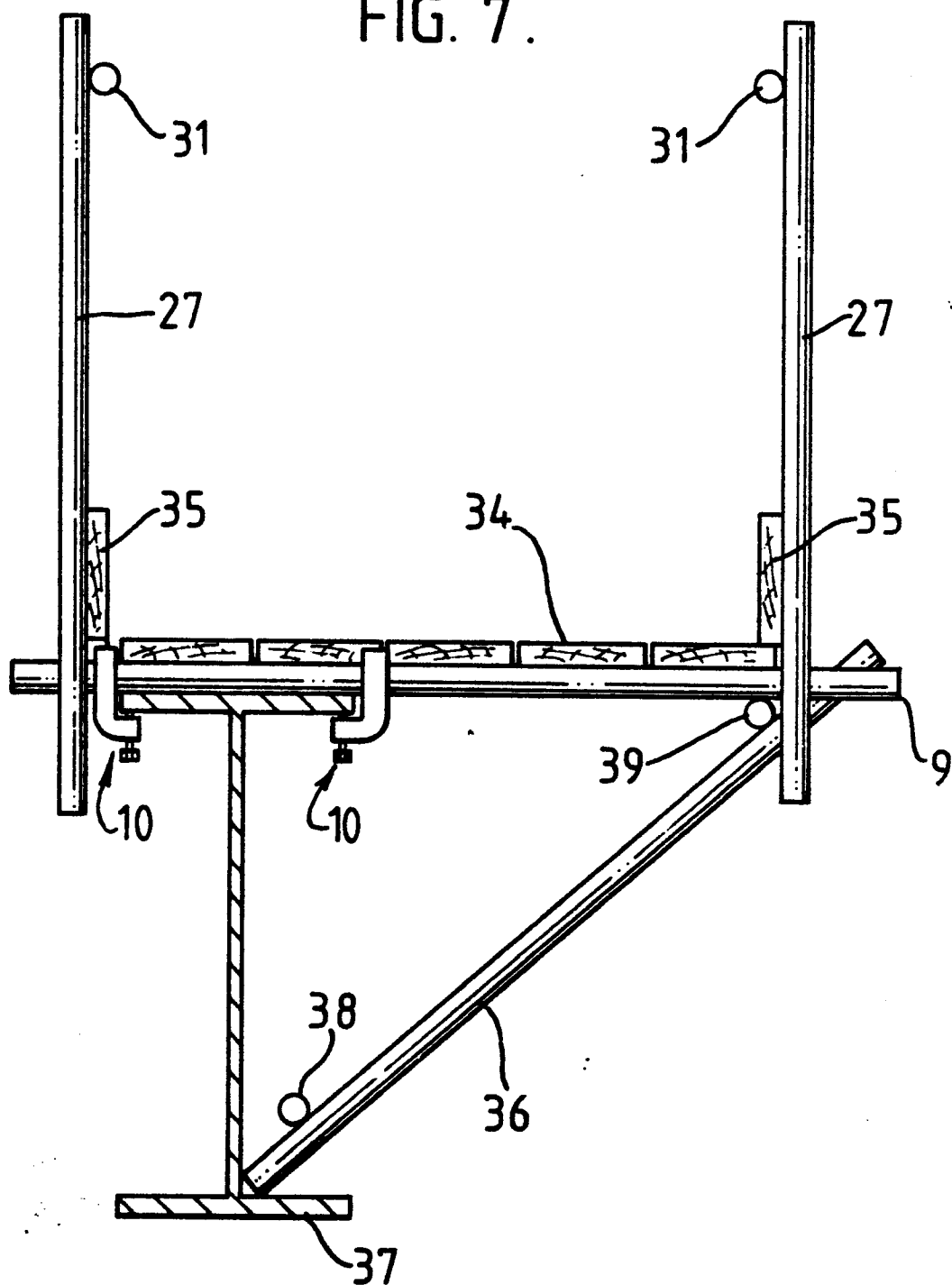
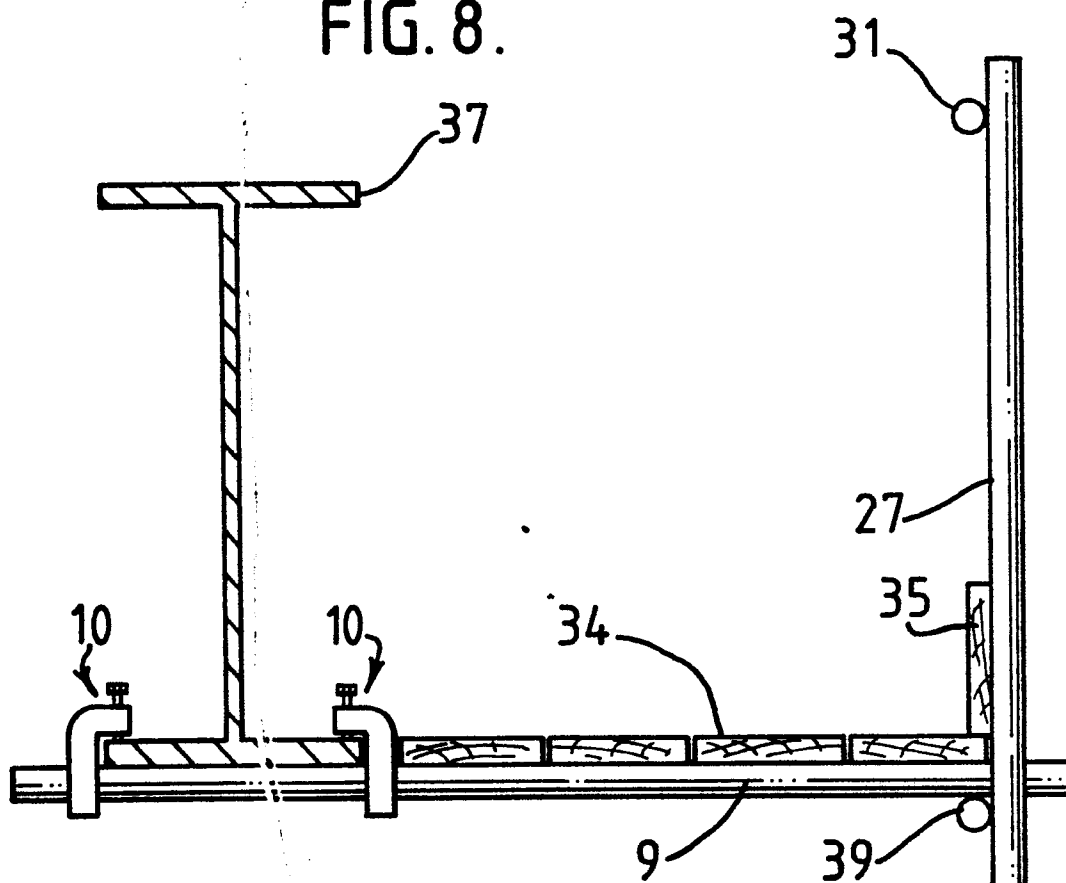
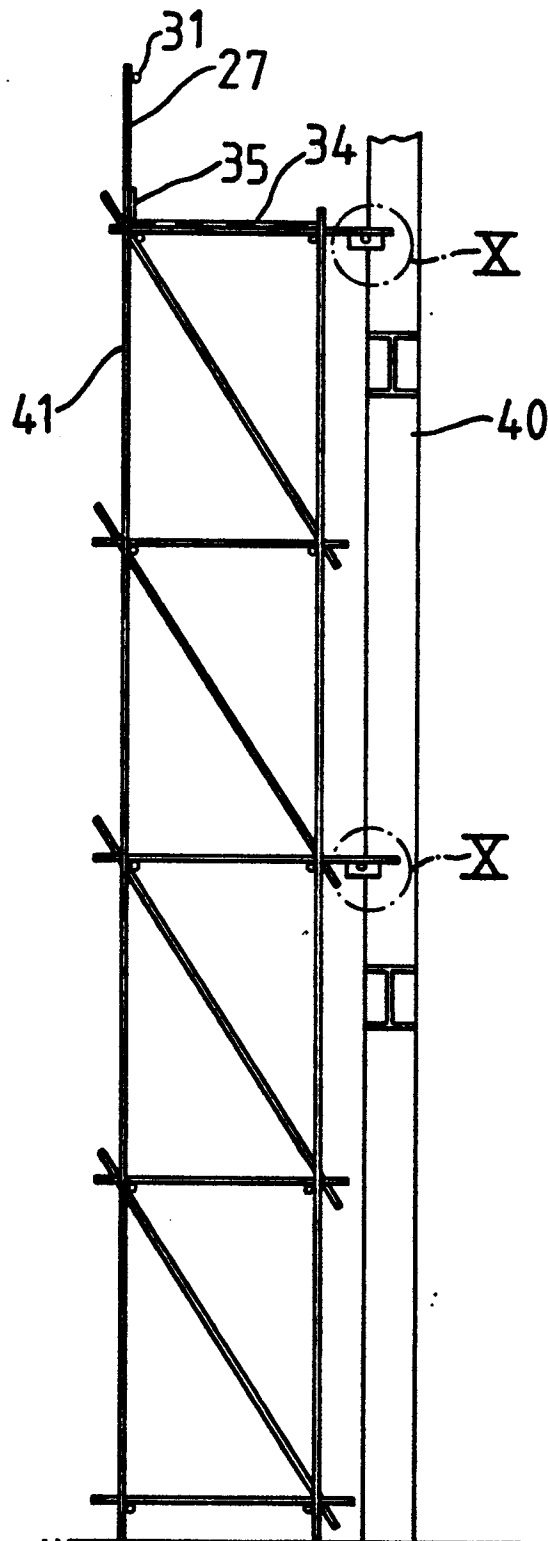


FIG. 8.



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FIG. 9.



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FIG. 10.

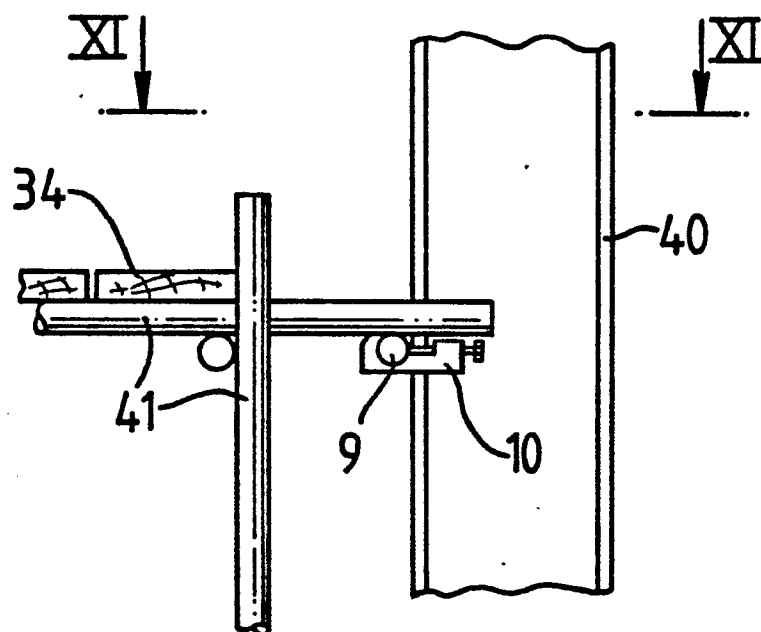
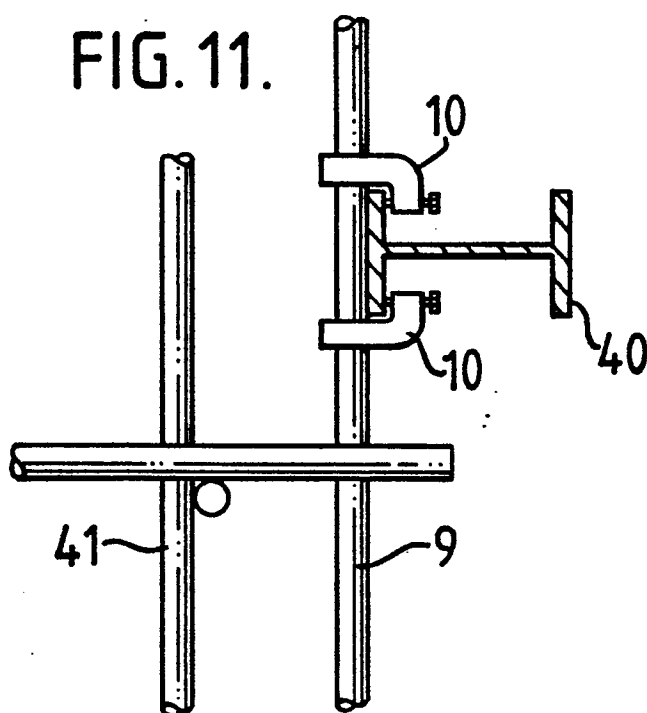


FIG. 11.



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FIG.12.

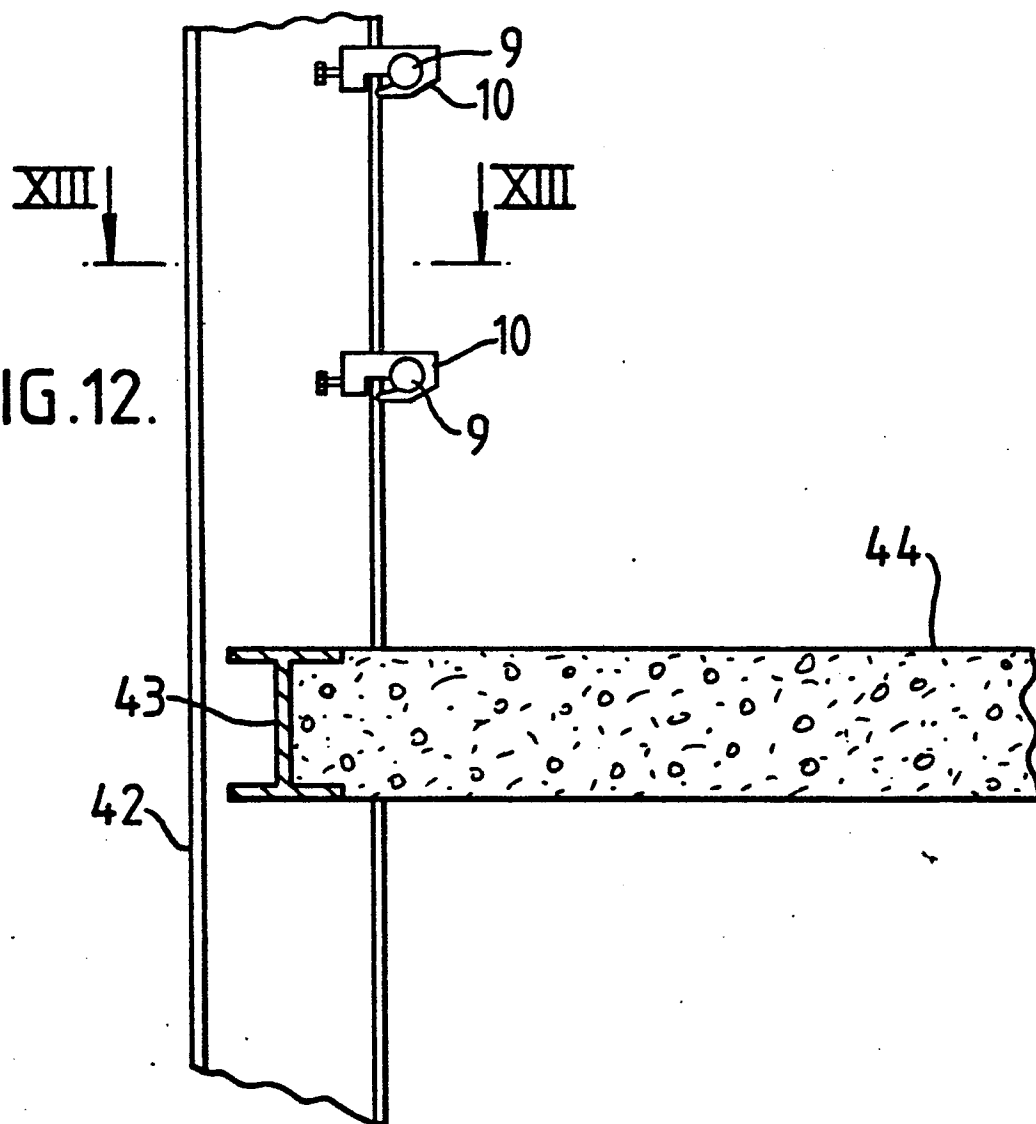
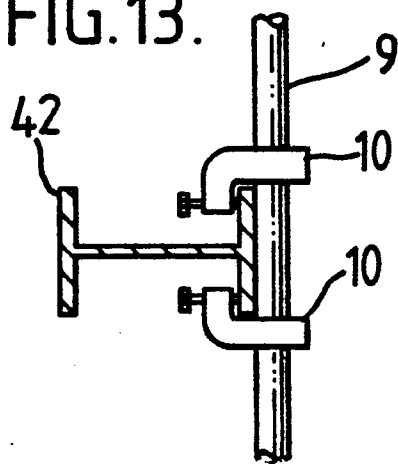


FIG.13.



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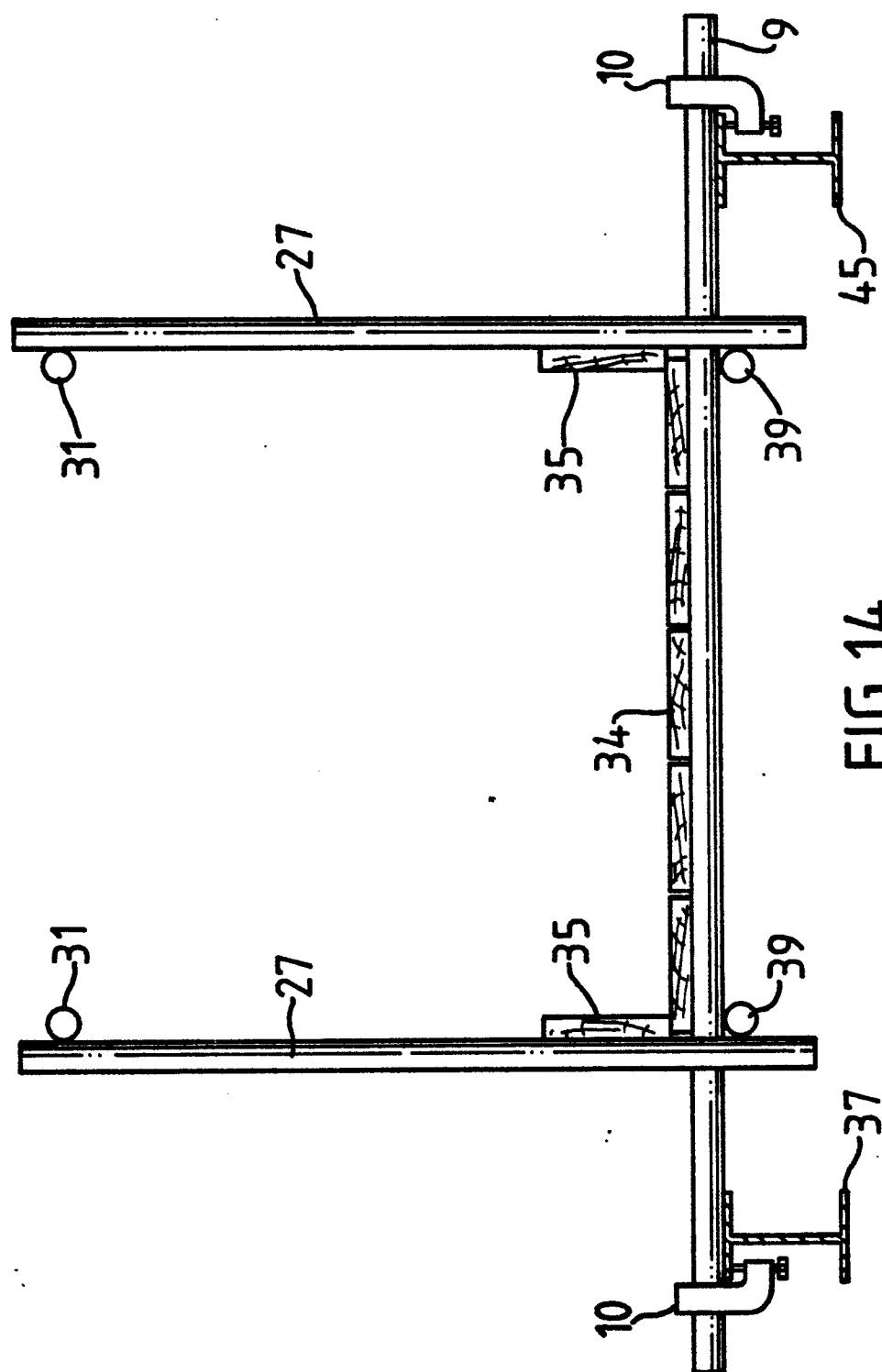


FIG. 14.



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EUROPEAN SEARCH REPORT

0001342

Application number

EP 78 30 0376

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	<u>US - A - 2 165 221 (BURTON)</u> * Page 1, lines 16-55; page 2, lines 1-27; page 4, lines 13-38; figures 1-3,18,19 * -- <u>US - A - 1 710 693 (DAVIDSON)</u> * Page 1, lines 48-101; figures 1-5 * --	1,2,3,5 1-5	E 04 G 3/10 3/14
P,E	<u>FR - A - 2 346 523 (WORTH WESTERN SCAFFOLDING CY)</u> * Page 2, lines 9-37; page 3, lines 1-26; figure 1 * & DE - A - 2 714 690 ----	1-4,8	TECHNICAL FIELDS SEARCHED (Int.Cl. ³) E 04 G
			CATEGORY OF CITED DOCUMENTS
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The present search report has been drawn up for all claims			
Place of search	Date of completion of the search	Examiner	
The Hague	11-12-1978	VIJVERMAN	