(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 094 246**
A2

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **83302635.4**

(22) Date of filing: **10.05.83**

(51) Int. Cl.³: **E 04 G 11/48**, E 04 G 11/36

(30) Priority: **11.05.82 GB 8213680**

(43) Date of publication of application: **16.11.83 Bulletin 83/46**

(84) Designated Contracting States: **AT BE CH DE FR GB IT LI LU NL SE**

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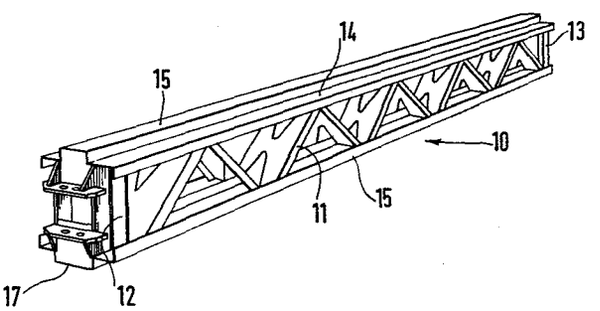
(54) Improvements in decking systems and beams therefor.

(57) A beam (10) for a decking system has two deck supporting surfaces (14, 15), one of the surfaces (14) having an upstand (16) for matching decking dimensioned in imperial units and the other surface (15) having an upstand (17) for matching decking dimensioned in metric units.

A decking structure includes beams (10) supported on props (21) and connecting elements (20) supporting decking sheets (50) or decking elements (60).



EP 0 094 246 A2

IMPROVEMENTS IN DECKING SYSTEMS AND BEAMS THEREFOR

The invention relates to decking systems, being systems to provide temporary deck support during construction of, primarily, reinforced concrete floors, the deck acting as a lower shutter surface for the concrete.

Typically, such decking systems have a pair of spaced apart, parallel beams supported by a temporary braced structure, the beams supporting edges of decking sheets or decking elements. It is most common in the construction industry to use either plywood sheets, which are generally supplied in imperial dimensions, or domed moulds (hereinafter termed "coffer moulds") as decking elements, the coffer moulds being generally supplied in metric dimensions. In each case, an upstand is required on each support beam to provide a continuous shuttering surface for the concrete and to locate the decking sheets or moulds, and hitherto, the upstands have been provided either by screwing plywood strips of appropriate width, depending on whether imperial or metric dimensioned decking is used, to flat topped beams, or by providing two different beams for the imperial and metric decking. Neither practice is satisfactory.

According to the invention there is provided a beam for a decking system, which beam has two deck supporting surfaces, one of the surfaces having an upstand for matching decking dimensioned in imperial units, and the other surface having an upstand for matching decking dimensioned in metric units.

The deck supporting surfaces are preferably mutually oppositely facing.

The upstand to match decking dimensioned in imperial units is preferably 2 inches wide and e.g. 1 inch high, and the upstand to match decking dimensioned in metric units is preferably 75 mm wide and 25 mm high.

The beam may comprise a central structural portion and a pair of profiled plates on the structural portion,

one profiled plate providing the one deck supporting surface and associated upstand, and the other profiled plate providing the other deck supporting surface and associated upstand.

The central structural portion of the beam may be a framework.

The invention further provides a decking structure comprising a pair of spaced apart, parallel beams according to the invention at least one decking sheet or decking element extending between and supported by the beams, and support means for supporting the beams in a desired position.

The support means may comprise upright props at each end of each beam, and bracing elements connecting adjacent props.

Each prop may be secured to the associated beam by a connecting element including a first plate secured, preferably by bolting, to the prop and a second plate secured, preferably by bolting, to the beam. The second plate may be slidable between a lowered position and a raised position, there being means for locking the second plate in the raised position.

The connecting element preferably includes a head plate for aligning with the upstand in use on the associated beam. The head plate is preferably removably mounted on the connecting element, so that a 2 inch wide head plate or a 75 mm wide head plate can be used.

The decking structure may comprise a multiplicity of beams and joints or spacer beams connecting the beams.

By way of example, the embodiment of a beam, and embodiments of a deck structure according to the invention will now be described with reference to the accompanying drawings, in which:-

Fig. 1 is a perspective view of a beam;

Figs. 2A and 2B show a connecting element for connecting a prop to a beam;

Fig. 3 is a perspective view of a beam connected to a prop, together with infill and spacer beams;

Fig. 4 is a perspective view of a beam connected to a

prop and to a secondary beam;

Fig. 5 is a perspective view of a beam connected to a prop and supporting joists;

Fig. 6 is a general view of a deck structure assembled;

Fig. 7 is a general view of an alternative embodiment of a deck structure, partly assembled;

Fig. 8 is a side view of a deck structure illustrating a cantilever bracket; and

Fig. 9 is a side view of a further application of a cantilever bracket.

A beam 10 for a decking structure is shown in Fig. 1. The beam 10 is of steel having a central support framework of members 11, end members 12 and 13 and first and second deck supporting plates 14 and 15 respectively.

The first deck supporting plate 14 is profiled to provide a central upstand 16 2 inches wide and ¾ inch high. It is the first deck supporting plate 14 which is uppermost when decking sheets dimensioned in imperial units are to be supported, the upstand 16 matching the imperial unit decking sheets.

The second deck supporting plate 15 is profiled to provide a central upstand 17 75 mm wide and 25 mm high. The second deck support plate 15 is uppermost when decking sheets or elements dimensioned in metric units are to be supported by the beam 10. The upstand 17 matches the metrically dimensioned decking sheets or elements.

Fig. 6 illustrates a decking structure supporting plywood decking sheets dimensioned in imperial units and Fig. 7 illustrates a decking structure supporting coffer moulds dimensioned in metric units. More detailed reference to Figs. 6 and 7 will appear later.

Figs. 2A and 2B show a drophead connecting element 20 for connecting a prop 21 to a beam 10. The drophead 20 has a lower plate 22 which is bolted to an upper plate 23 of the prop 21. Extending upwardly from the lower plate 22 of the drophead are elongate and parallel plates 24 and 25. The plates 24 and 25 carry a support plate 26 slidable between a lower position (Fig. 2B) and an upper position

(Fig. 2A). The support plate 26 is held in its upper position by a wedge 27 having a slot 28 engaged by a pin or the like extending between the plates 24 and 25. As can be seen in Fig. 2A, the slot 28 is angled to a wedging surface 29 such that movement of the wedge 27 from left to right in Fig. 2A urges the support plate 26 against a stop 30. When not required, the wedge can be swung between the plates 24 and 25. The drophead connecting element 20 has a detachable head 31 for matching, in the case of a 2 inch wide head, the 2 inch wide upstand 16 of an adjacent beam 10, or in the case of a 75 mm wide head 31, the 75 mm wide upstand 15 of an adjacent beam 10.

Fig. 3 shows part of an assembled deck supporting structure with a main beam 10 supported at one end by the support plate 26 of drophead 20. A connecting plate 32 of the beam 10 is dropped onto studs on the support beam 10, a further connecting plate 33 being used if the other deck supporting surface were required. Each main beam 10 has two connecting plates 32 and 33 at each end thereof. Also shown engaged on studs on the support plate 26 is an infill beam or spacer 34. A further infill beam or spacer 34 is shown supported on deck supporting plate 14 of the beam 10.

Fig. 4 shows a further part of a deck supporting structure with a main beam 10 supported by a drophead 20 in the same way as in Fig. 3 but with the support plate 26 of the drophead supporting a secondary beam 35 instead of a spacer or infill beam 34. The secondary beam 35 has a support ledge 36 flush with the top surface of the support plate 26 of the drophead 20 for supporting ends of intermediate main beams.

Fig. 5 shows a further construction detail with a main beam 10 again supported by a drophead 20, the upper deck supporting plate 14 supporting a joist hanger 40. The joist hanger 40 has a flange 41 which rests on the deck supporting plate 14 and a joist supporting ledge 42 which supports a joist 43. The joist 43 is shown supported by a cross-joist 44, the cross-joist 44 being supported at one

end by a cradle 45 mounted on a prop 46.

Fig. 6 shows a typical deck supporting structure with two plywood sheets 50 in position, the plywood sheets being dimensioned in imperial units. The deck structure has a set of main beams 10, each beam 10 being supported at each end thereof by a drophead connecting element 20, each with a head plate 31 which matches the upstand 16 of the deck supporting plates 14 of the main beams 10. Infill beams or spacers 34 extend between the main beams 10. The drophead connecting elements 20 are each supported on a prop 21 and rigidity to the structure is given by transoms 51 and ledgers 52 connected between the props 21 in conventional manner. The height of the props 21 is adjustable conventionally by screw threaded adjusters 53 on each prop.

Fig. 7 illustrates a further deck supporting structure supporting three rows of deck elements in the form of coffer moulds 60. Main beams 10 are upside-down with respect to the positions shown in Fig. 6 so that deck supporting plates 15 are uppermost providing a 75 mm wide upstand 17 at the side of each mould 60. The coffer moulds 60 are standard elements commonly made of plastics material and dimensioned in metric units. Three rows of main beams 10 are supported by dropheads 20 each with 75 mm headplates 31' attached and the fourth row of main beams 10 is supported on secondary beams 35 each extending between two dropheads 20. The dropheads 20 are supported on props 21 and braced by ledgers in a similar way to that described in relation to Fig. 6. Infills or spacer beams ensure correct spacing of the main beams.

Figs. 8 and 9 illustrate the use of a cantilever bracket where a supporting slab for the deck supporting structure is not enclosed by walls or beams.

In Fig. 8, the deck supporting structure is supported on a slab 70 and main beams 10 are supported on props 21 as hereinbefore described. A cantilever bracket 71 is mounted on prop collars 72, the cantilever bracket being

a triangular structure having a beam support 73 at its free end. The beam support 73 includes a cradle 74 supporting in the Fig. 8 embodiment a timber bearer 75. The timber bearer 75 supports a spacer or infill beam and one edge of decking sheets 76. In the Fig. 8 embodiment, a shuttering structure 77 provides an edge face aligned with the edge of the slab 70.

In the Fig. 9 embodiment, a slab 80 supports a deck structure including main beams 10 supported on props 21 as hereinbefore described. A cantilever bracket 71 is mounted on prop collars 72 and the beam cradle 74 supports a 4 ft main beam 10.

Thus a complete decking system according to this embodiment of the invention to allow adaptability for decking sheets or elements in metric or imperial units requires main beams in 8 ft, 6 ft, and 4 ft nominal lengths, dropheads, secondary beams in 1800 mm nominal lengths, infill beams or spacers in 4ft 2 inches and 900 mm nominal lengths, joist hangers and cantilever brackets. With these elements, a required deck supporting structure can be provided. The use of the joist hanger as illustrated in Fig. 5 allows making up around the edges of a slab when the slab is enclosed by walls or beams, and the use of the cantilever brackets 71 allows provision of an overhang where the slab is not enclosed by walls of beams.

The advantages of a deck supporting structure according to the invention are that only nine basic components are required, only three bracing members are required for the props, namely 4ft 2 inch transoms and 900 mm and 1800 mm ledgers, the main beams are instantly ready for use, the imperial unit dimensioned plywood sheets do not have to be cut and that either decking sheets dimensioned in imperial units or coffer moulds dimensioned in metric units can be used without adaptation of the supporting structure.

CLAIMS

1. A beam (10) for a decking system characterised in that the beam two deck supporting surfaces (14,15), one of the surfaces (14) having an upstand (16) for matching decking dimensioned in imperial units and the other surface (15) having an upstand (17) for matching decking dimensioned in metric units.

2. A beam as claimed in Claim 1 characterised in that the deck supporting surfaces (14,15) are mutually oppositely facing.

3. A beam as claimed in Claim 1 or Claim 2 characterised in that the upstand (16) for matching decking dimensioned in imperial units is 2 inches wide and 1 inch high.

4. A beam as claimed in any preceding Claim characterized in that the upstand (17) to match decking dimensioned in metric units to 75mm wide and 25mm high.

5. A beam as claimed in any preceding Claim characterised by a central structural portion (11) and a pair of profiled plates (14,15) on the structural portion (11), one profiled plate (14) providing the one deck supporting surface and associated upstand (16) and the other profiled plate (15) providing the other deck supporting surface and associated upstand (17).

6. A beam as claimed in Claim 5 characterised in that the central structural portion (11) is a framework.

7. A decking structure comprising a pair of spaced apart parallel beams (10) as claimed in any preceding Claim characterised by support means (20,21,34,35) for supporting the beams (10) in a desired position and at least one decking sheet (50) or decking element (60) extending between and supported by the beams (10).

8. A decking structure as claimed in Claim 7 characterised in that the support means (20,21,34,35) comprise upright props (21) at each end of each beam and bracing elements (34,35) connecting adjacent props.

9. A decking structure as claimed in Claim 8 characterised in that each prop (21) is secured to the associated beam (10) by a connecting element (20) including a first plate (22) secured to the prop (21) and a second plate (26) secured to the beam (10).

10. A decking structure as claimed in Claim 9 characterised in that the second plate (26) is slidable between a lowered position and a raised position, there being means (27) for locking the second plate in the raised position.

11. A decking structure as claimed in Claim 9 or Claim 10 characterised in that the connecting element (20) includes a head plate (31) for aligning with the upstand in use on the associated beam (10).

12. A decking structure as claimed in Claim 11 characterised in that the head plate (31) is removably mounted to allow matching with either upstand.

13. A decking structure as claimed in any one of Claims 7 to 12 characterised by a multiplicity of beams (10), and joints or spacer beams connecting the beams.

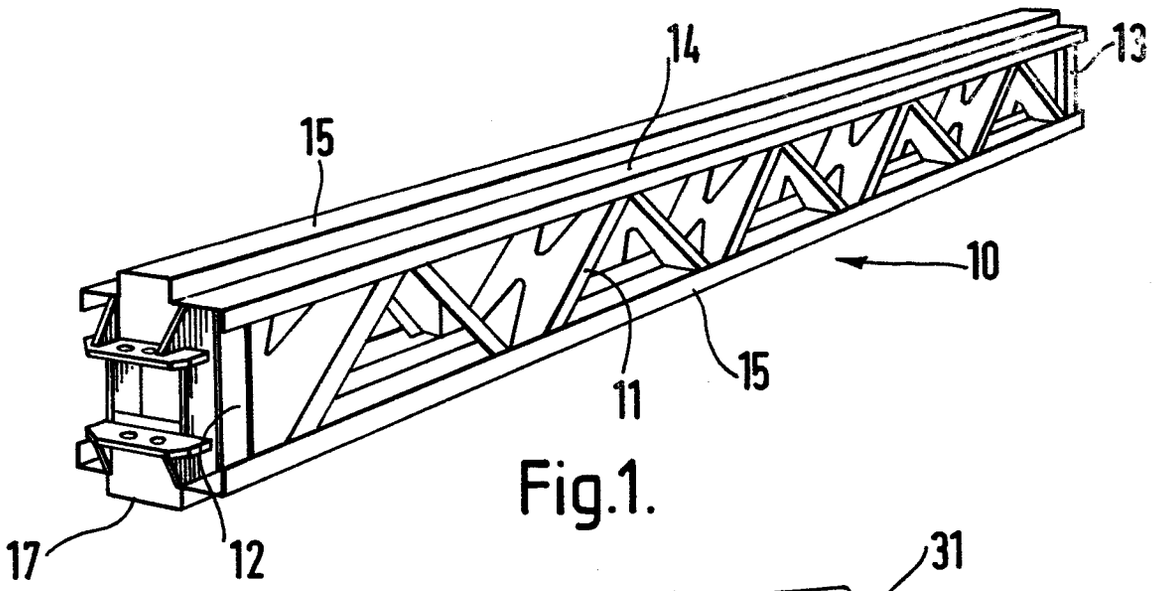


Fig.1.

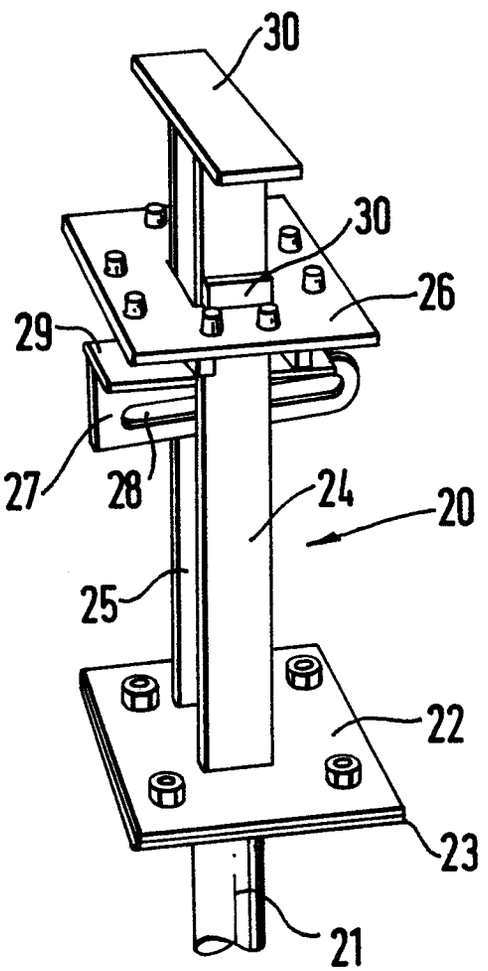


Fig.2A.

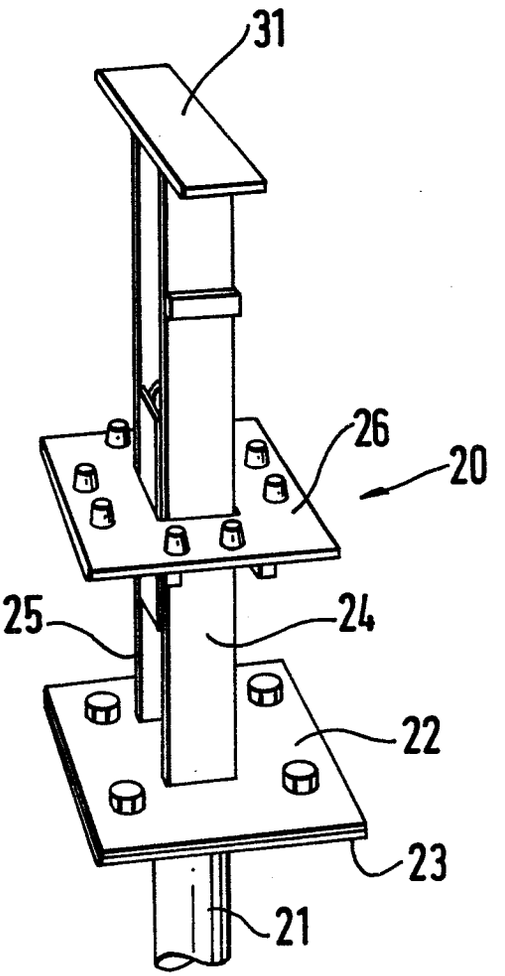


Fig.2B.

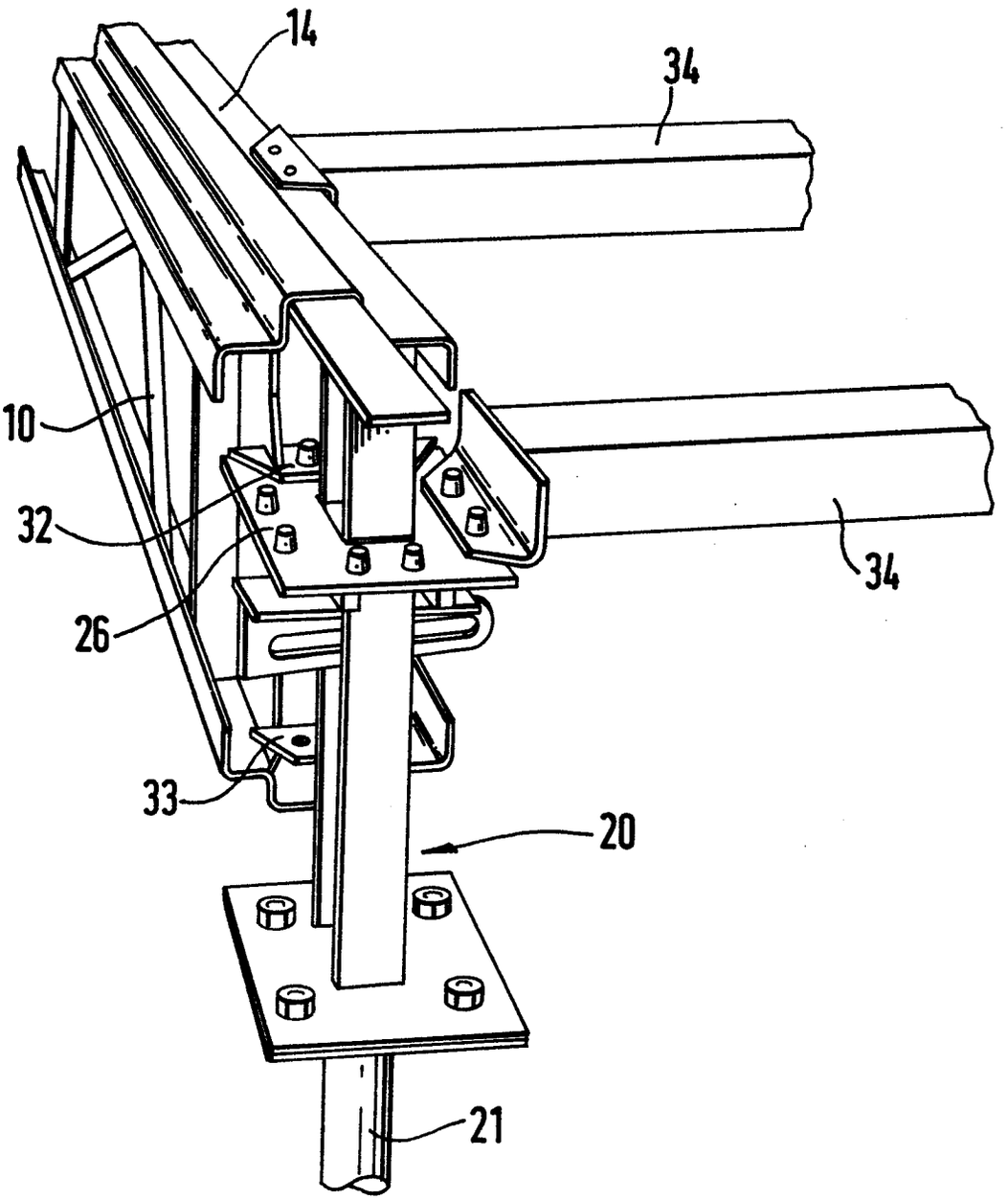


FIG.3.

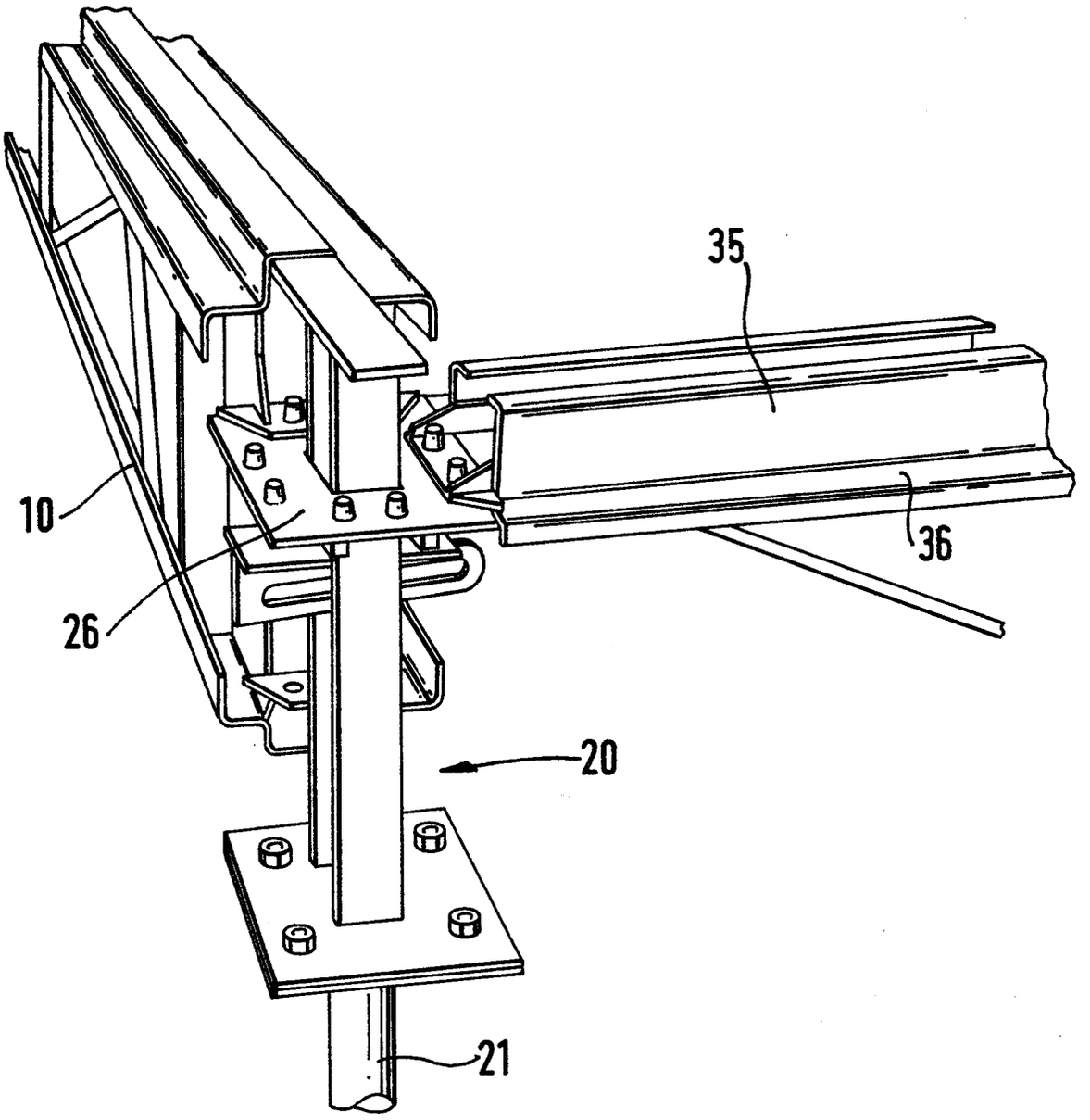


FIG.4.

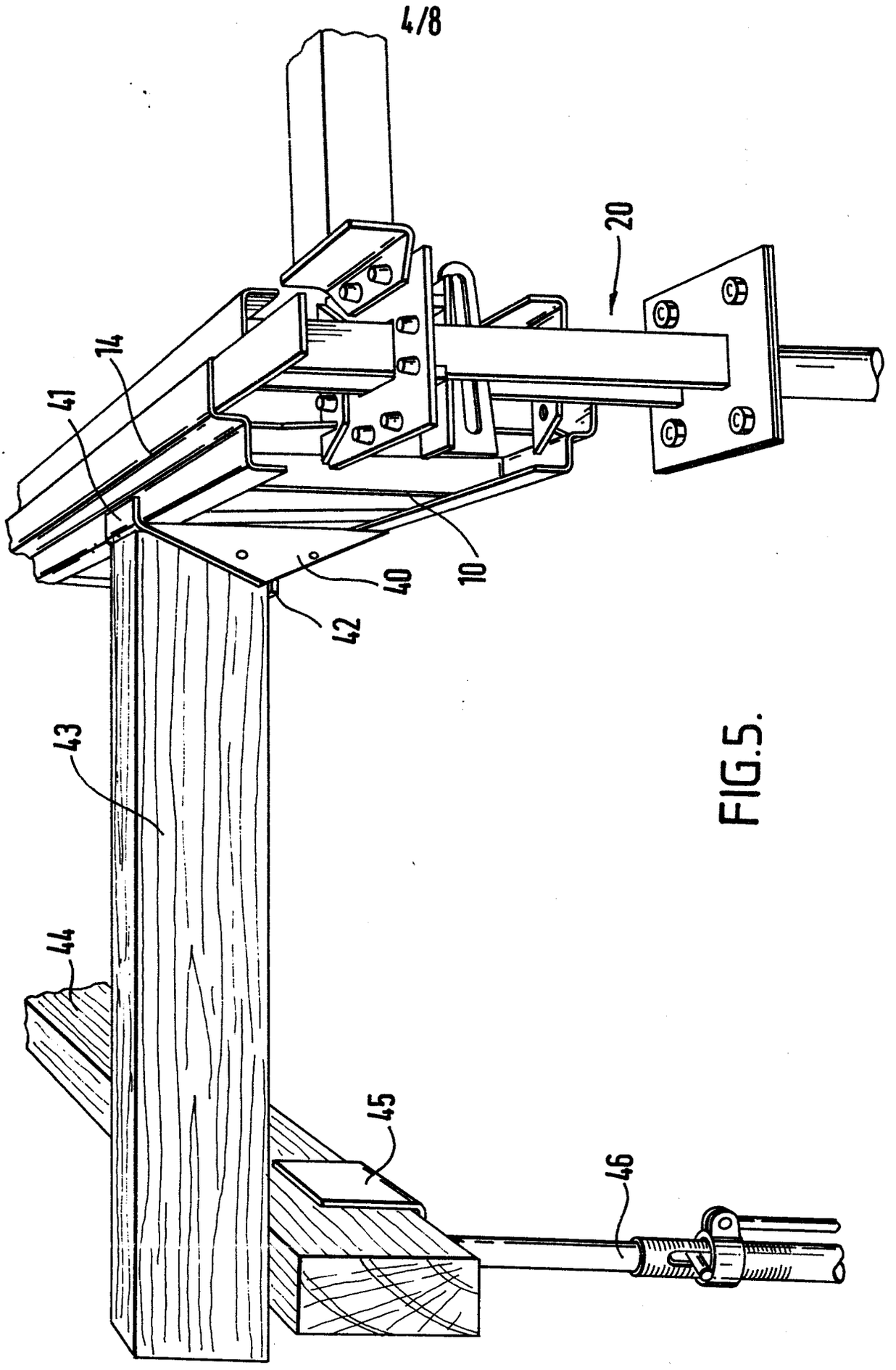


FIG.5.

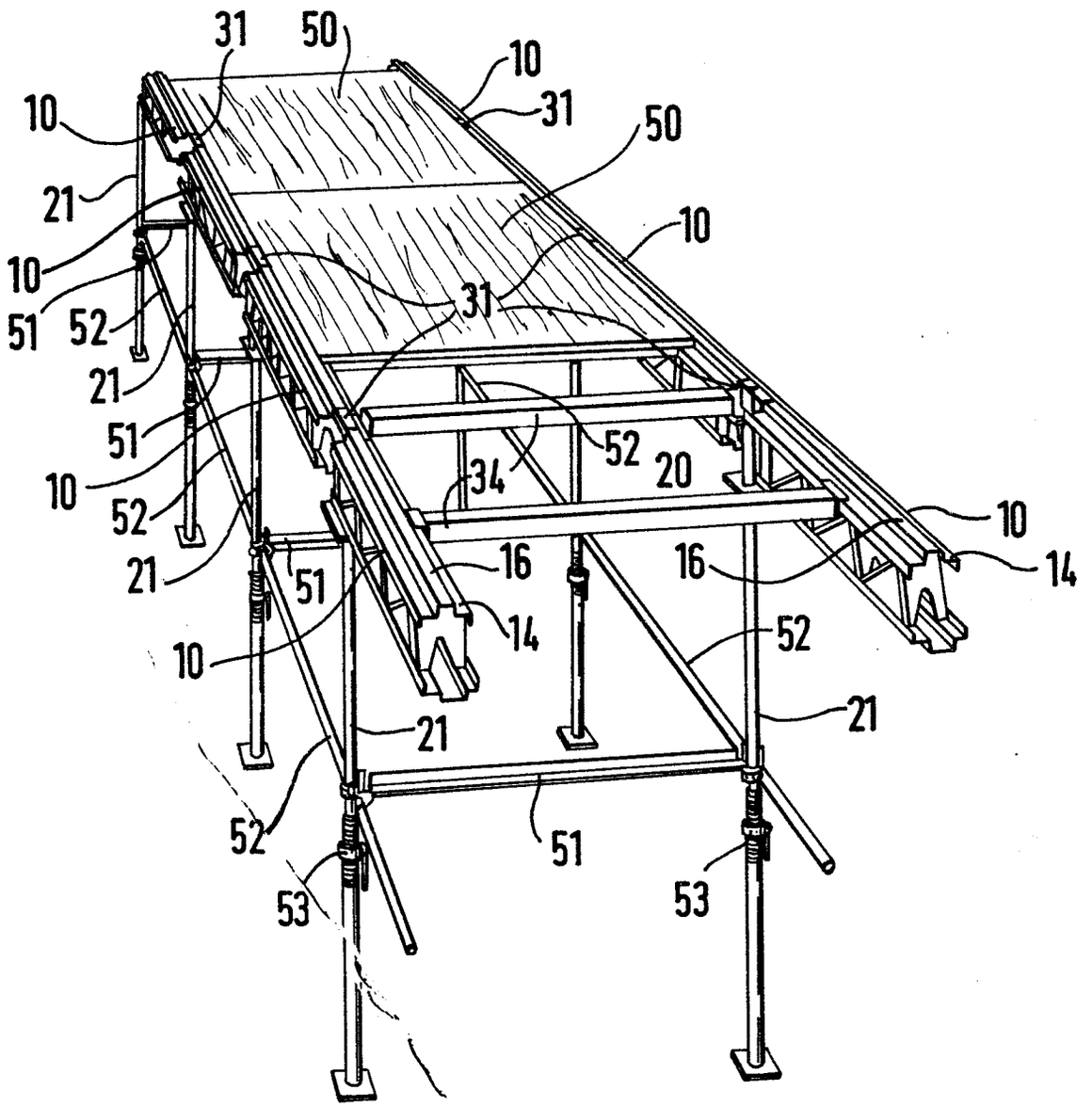

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FIG.6

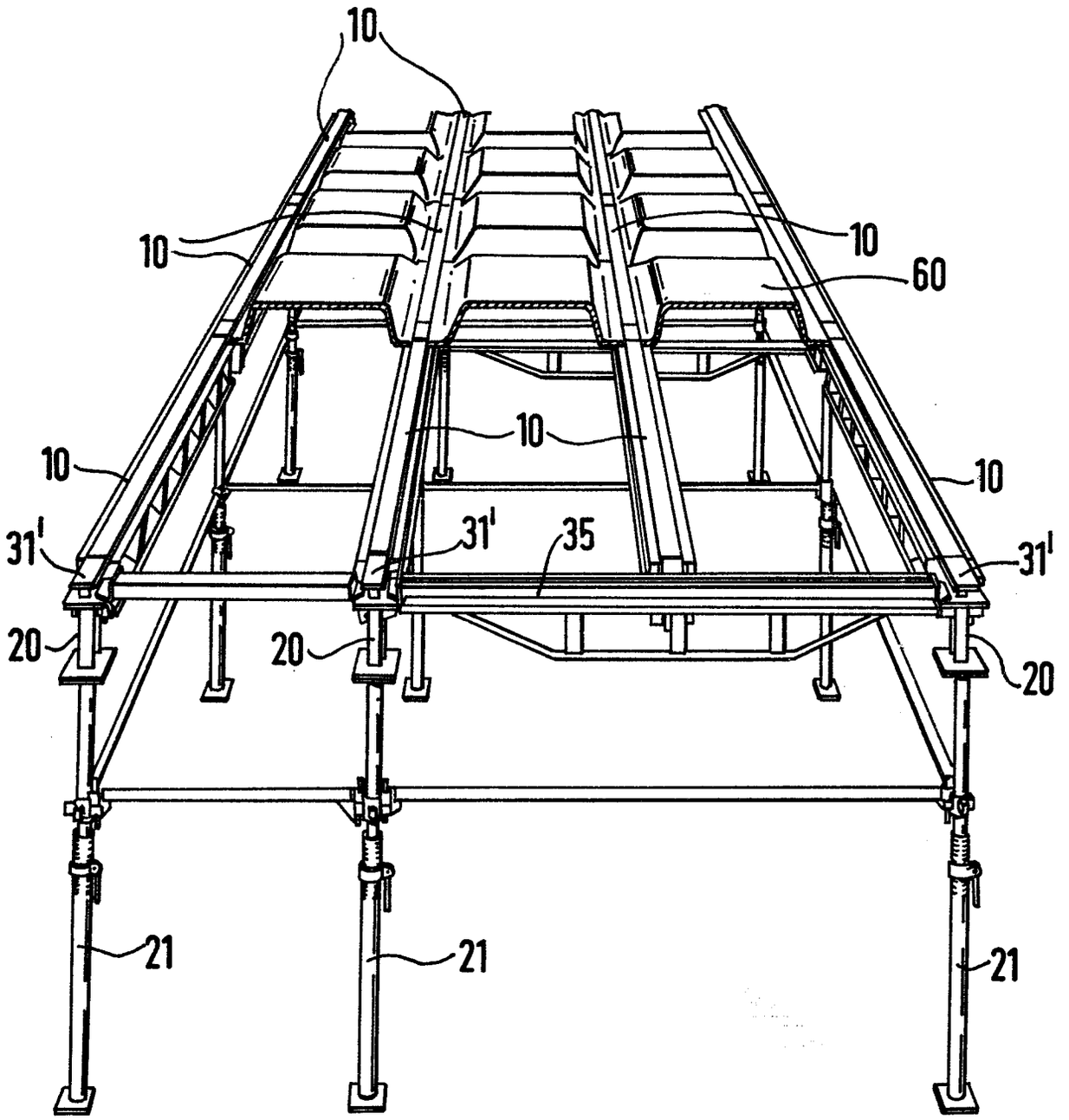

FIG.7.

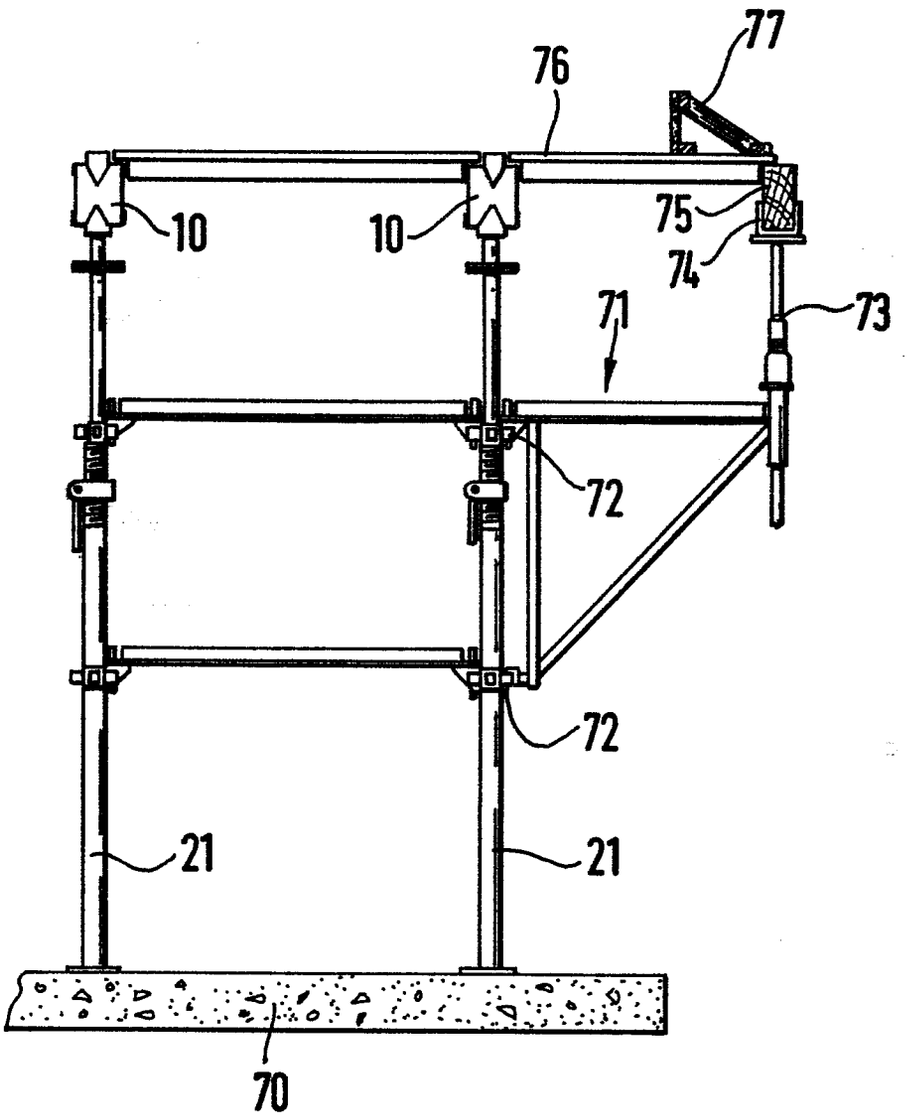

FIG.8

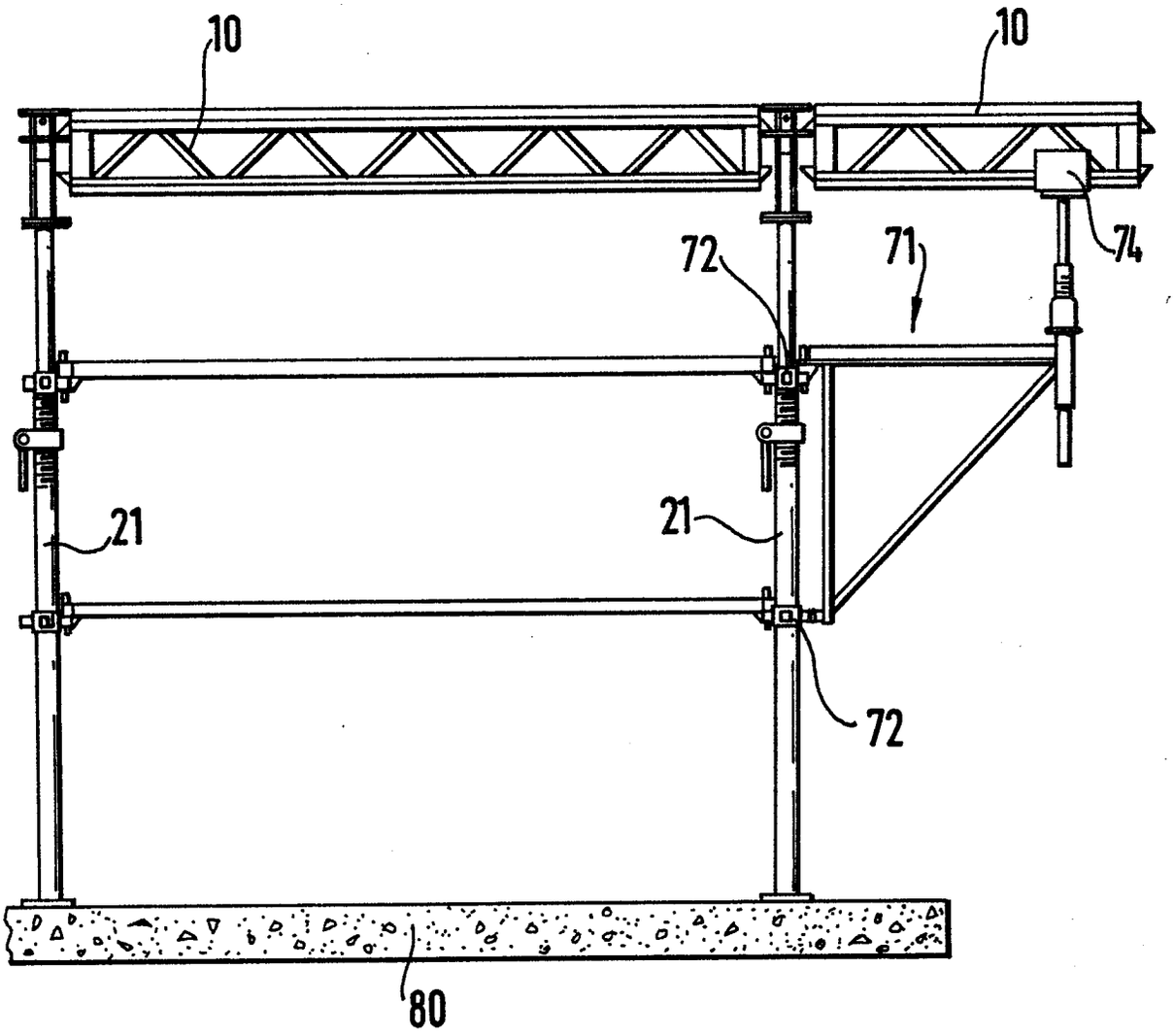

FIG.9.