



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
30.04.2008 Bulletin 2008/18

(51) Int Cl.:
B27M 3/00 (2006.01) B27D 1/08 (2006.01)
B27H 1/00 (2006.01) B25B 5/00 (2006.01)

(21) Application number: **07020410.2**

(22) Date of filing: **18.10.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

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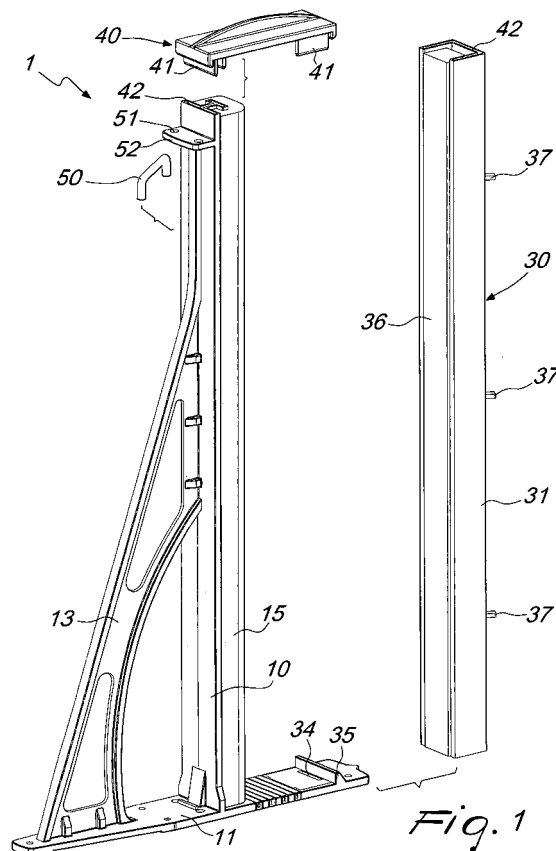
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(30) Priority: **25.10.2006 IT MI20062054**

(54) **Device for providing curved sheet-like elements by means of a plurality of superimposed layers**

(57) A device for the handicraft production of curved sheet-like elements by means of a plurality of superimposed layers, comprising a plurality of brackets (1), each of which defines an upright (10) which can be positioned at a point of the curved sheet-like element being provided and can engage an outer layer, the brackets being provided with a wing (11) for fixing to a supporting surface (12), presser means (30) being also provided for clamping the curved sheet-like element being produced against the upright.



Description

[0001] The present invention relates to a device for providing curved sheet-like elements by means of a plurality of superimposed layers.

[0002] As is known, in the field of handicraft woodworking for the production of sheet-like elements having a curved shape, a plurality of layers of wood interleaved with layers of glue are curved and fixed in the selected shape in order to obtain the desired shape when the glue is dry.

[0003] To provide this layering, plywood, thin solid wood, chipwood, medium-density fiber (MDF) sheets, and other materials which can withstand curving are used.

[0004] In the handicraft field, in order to obtain the curved shape, appropriately provided templates are built which are given the desired shape and on which the layers to be glued and curved are then positioned.

[0005] In the handicraft field, in order to provide a curved sheet-like element it is therefore necessary to proceed beforehand with the provision of the template, which is achieved by preparing two sheets or panels, made of low-value material if possible, on which the internal curving line of the item to be provided is traced.

[0006] The panels are joined and, by means of a single cut, the curving line is followed, obtaining two contoured panels which in practice constitute the curved shoulders of the template.

[0007] In order to obtain the selected width of the template, the shoulders are spaced by means of slats which act both as spacers and as supports for the layers that will be provided by the sheet-like elements.

[0008] Each slat is fixed, one by one, on the inside of the curved side of a shoulder of the template, each one at previously selected regions on both panels, obtaining a sort of rack in which the teeth are arranged within the curve.

[0009] The other shoulder, constituted by the previously cut panel, is then joined and the several slats are fixed in the previously marked points.

[0010] Once the glue drying time has elapsed, the template is placed on stands so as to facilitate subsequent work.

[0011] Once the template has been positioned, the first layer of plywood is fixed, generally by means of staples, and the sheet is placed by following the curvature, progressively stapling it on the sides of the template, and then the surface is sanded to clean it from the chips produced by the staples.

[0012] A second layer is spread with glue and the fixing operation is repeated for all the required layers.

[0013] In applying the layers it is necessary to check the correct adhesion of all the layers in order to avoid the presence of bubbles or bulges, since in this case it would be necessary to intervene with clamps to provide the correct positioning of the layers.

[0014] Other solutions even use a complementary

template, consequently doubling the time required to prepare the template.

[0015] Once gluing has occurred, the item is extracted from the template by means of a delicate and complicated operation, which is normally performed by means of wide chisels, wood wedges and rubber hammers, trying to penetrate between the item and the template so as to provide leverage and remove the staples.

[0016] It is necessary to perform this work skilfully in order to avoid damaging the item irreparably.

[0017] Quite often, the integrity of the template is damaged during this operation and the template might not be reused except after repairs.

[0018] The resulting panel must be trimmed by cutting it to the proper size and excluding the portions where the staples were provided.

[0019] Used templates are usually not disassembled, even if they are ruined or bulky, since the handicraftsman prefers to store them in case they are to be used later.

[0020] From what has been described above it is therefore evident that the solutions used in the background art of the handicraft type for the production of curved sheet-like elements require definitely long times, which usually entail very high costs, and therefore such work is quite frequently not remunerated adequately.

[0021] The aim of the invention is to solve the problems described above by providing a device for manufacturing curved sheet-like elements by means of a plurality of superimposed layers which allows to simplify considerably the production of the template with the possibility to reduce drastically the time required, by not having to proceed with gluing operations in the step for providing the template.

[0022] Within this aim, an object of the invention is to provide a device which eliminates the need for a complementary template, since it is always possible to provide a correct pressing action which allows optimum layering of the various elements.

[0023] Another object of the present invention is to provide a device which does not entail waste of any kind, since such device can be easily reused without any difficulty.

[0024] Another object of the present invention is to provide a device which, thanks to its particular constructive characteristics, is capable of giving the greatest assurances of reliability and safety in use.

[0025] Still another object of the present invention is to provide a device for providing curved sheet-like elements by means of a plurality of superimposed layers which can be easily obtained starting from commonly commercially available elements and materials and is also competitive from a merely economical standpoint.

[0026] This aim and these and other objects, which will become better apparent hereinafter, are achieved by a device for providing curved sheet-like elements by means of a plurality of superimposed layers, characterized in that it comprises a plurality of brackets, each of which defines an upright which can be positioned at a

point of the curved sheet-like element being provided and can engage an outer layer, said brackets being provided with a wing for fixing to a supporting surface, presser means being further provided for clamping said curved sheet-like element being produced against said uprights.

[0027] Further characteristics and advantages of the present invention will become better apparent from the description of a preferred but not exclusive embodiment of a device for manufacturing curved sheet-like elements by means of a plurality of superimposed layers, illustrated by way of nonlimiting example in the accompanying drawings, wherein:

Figure 1 is an exploded perspective view of the elements for providing the device;

Figure 2 is a plan view of the arrangement of a plurality of brackets arranged according to the curvature to be obtained for the sheet-like element;

Figure 3 is a view of the step for applying the layers;

Figure 4 is a view of the final step for applying the layers;

Figure 5 is a view of the step for pressing the superimposed layers;

Figure 6 is a sectional view, taken along a vertical plane, of the layer positioning step;

Figure 7 is a perspective view of a bracket, with the several layers that provide the curved sheet-like element in position;

Figure 8 is a sectional view, taken along a vertical plane, of the bracket during the step for pressing the layers;

Figure 9 is a plan view of the device, illustrating a plurality of brackets positioned to obtain a sheet-like element which has for example a semicircular curvature;

Figure 10 is a view of a different embodiment of the bracket.

[0028] With reference to the figures, the device for providing curved sheet-like elements by means of a plurality of superimposed layers, according to the invention, comprises a plurality of brackets, generally designated by the reference numeral 1, each of which has an upright 10 which protrudes substantially at right angles from a fixing wing 11 for a connection to a supporting surface 12.

[0029] Advantageously, the upright 10 is connected to the wing 11 by means of inclined reinforcement portions 13.

[0030] In greater detail, the upright 10 has, in a first embodiment, in transverse cross-section, a substantially T-shaped configuration due to the superimposition of an abutment strip 15, which is preferably made of wood and which defines, with its outer face, the abutment element 16 which can be positioned at the curved line to be followed.

[0031] According to what is shown in Figure 10, the abutment strip can be replaced by a plurality of spaced laminas 60, which are provided monolithically with the

upright 10 and lie on a plane which is substantially perpendicular to such upright.

[0032] The laminas 60 define, with their outer edge 61, an abutment element which can be positioned at the curve to be followed.

[0033] In practice, the handicraftsman defines on the supporting surface 12 the curved line that he wishes to obtain and then places the several brackets so that the strip 15, with its face 16, is arranged at the curvature of an outer side.

[0034] Once positioning has been performed, the several layers 20 that are to provide the curved sheet-like element are applied.

[0035] First of all, the first layer 20 is applied, optionally with the possibility to staple it to the strips 15 if they are provided, and then the layers are mated with the interposition of a layer of adhesive material.

[0036] Once the selected placement of the several layers has been performed, presser means, generally designated by the reference numeral 30, are provided and have an abutment upright 31 which can be applied to the wing 11 by inserting a beak 33 thereof in a slot 34 provided correspondingly in the wing 11, at an abutment protrusion 35, which engages the lower end of the abutment upright 31.

[0037] A presser strip 36 is provided inside the abutment upright, and screw means 37 act thereon which are associated with the upright 31 and can be actuated to push the presser strip 36 against the outer layer, thus achieving precise clamping.

[0038] There is also an upper bridge 40, which is designed to join mechanically the upright 10 to the abutment upright 31 and is provided with protrusions 41 which enter corresponding recesses 42 formed at the upper end of the upright 10 and of the abutment upright 31.

[0039] It should be added to the above that positioning bridges 50 are provided, which enter holes 51 defined in lugs 52 arranged at the upper end of the upright 10, with the function of providing a precise spacing element between the several brackets that must follow the curvature, thus achieving precise and uniform placement without difficulties of any kind.

[0040] With the device described above, therefore, the several brackets can be fixed easily and rapidly to the surface for providing the template, and once gluing and drying of the several layers that provide the sheet-like element have been performed, just a few minutes are sufficient to disassemble the brackets and reuse them.

[0041] Finally, the device described above allows to reduce drastically the manufacturing costs of a handicraftsman, allowing him to provide curved sheet-like elements at definitely competitive costs, in addition to the possibility to obtain a remarkable production quality.

[0042] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims.

[0043] All the details may further be replaced with other technically equivalent elements.

[0044] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirements.

[0045] The disclosures in Italian Patent Application No. MI2006A002054 from which this application claims priority are incorporated herein by reference.

[0046] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A. device for providing curved sheet-like elements by means of a plurality of superimposed layers, **characterized in that** it comprises a plurality of brackets, each of which defines an upright which can be positioned at a point of the curved sheet-like element being provided and can engage an outer layer, said brackets being provided with a wing for fixing to a supporting surface, presser means being further provided for clamping said curved sheet-like element being produced against said uprights. 20
2. The device according to claim 1, **characterized in that** said upright and said wing are substantially perpendicular one another. 30
3. The device according to claims 1 and 2, **characterized in that** it comprises at least one inclined reinforcement portion which is arranged between said fixing wing and said upright. 35
4. The device according to one or more of the preceding claims, **characterized in that** said upright has a substantially T-shaped transverse cross-section. 40
5. The device according to one or more of the preceding claims, **characterized in that** it comprises an abutment strip which can be positioned on said upright, said abutment strip having an outer face which can be positioned at the curved line to be followed. 45
6. The device according to one or more of the preceding claims, **characterized in that** said abutment element is made of a material which can be perforated. 50
7. The device according to one or more of the preceding claims, **characterized in that** it comprises, on said upright, a plurality of spaced laminas which define an abutment element which can be positioned at the curved line to be followed. 55
8. The device according to one or more of the preceding

claims, **characterized in that** said laminas are provided monolithically with said upright.

9. The device according to one or more of the preceding claims, **characterized in that** said presser means comprise an abutment upright which can be coupled detachably to said fixing wing. 5
10. The device according to one or more of the preceding claims, **characterized in that** said abutment upright defines, at one end, a beak which can be inserted in a slot which is provided correspondingly on said fixing wing at an abutment protrusion, an upper bridge for connection to said upright being provided in an upward region. 10
11. The device according to one or more of the preceding claims, **characterized in that** it comprises, inside said abutment upright, a presser strip on which screw means act in order to push said presser strip against the outer layer of the curved sheet-like element being provided. 15
12. The device according to one or more of the preceding claims, **characterized in that** said upper bridge comprises protrusions which can be inserted detachably in corresponding recesses defined at the upper end of said upright and of said abutment upright. 25
13. The device according to one or more of the preceding claims, **characterized in that** it comprises positioning bridges which can be inserted detachably in holes defined in lugs provided on said upright for the mutual positioning of said brackets. 30

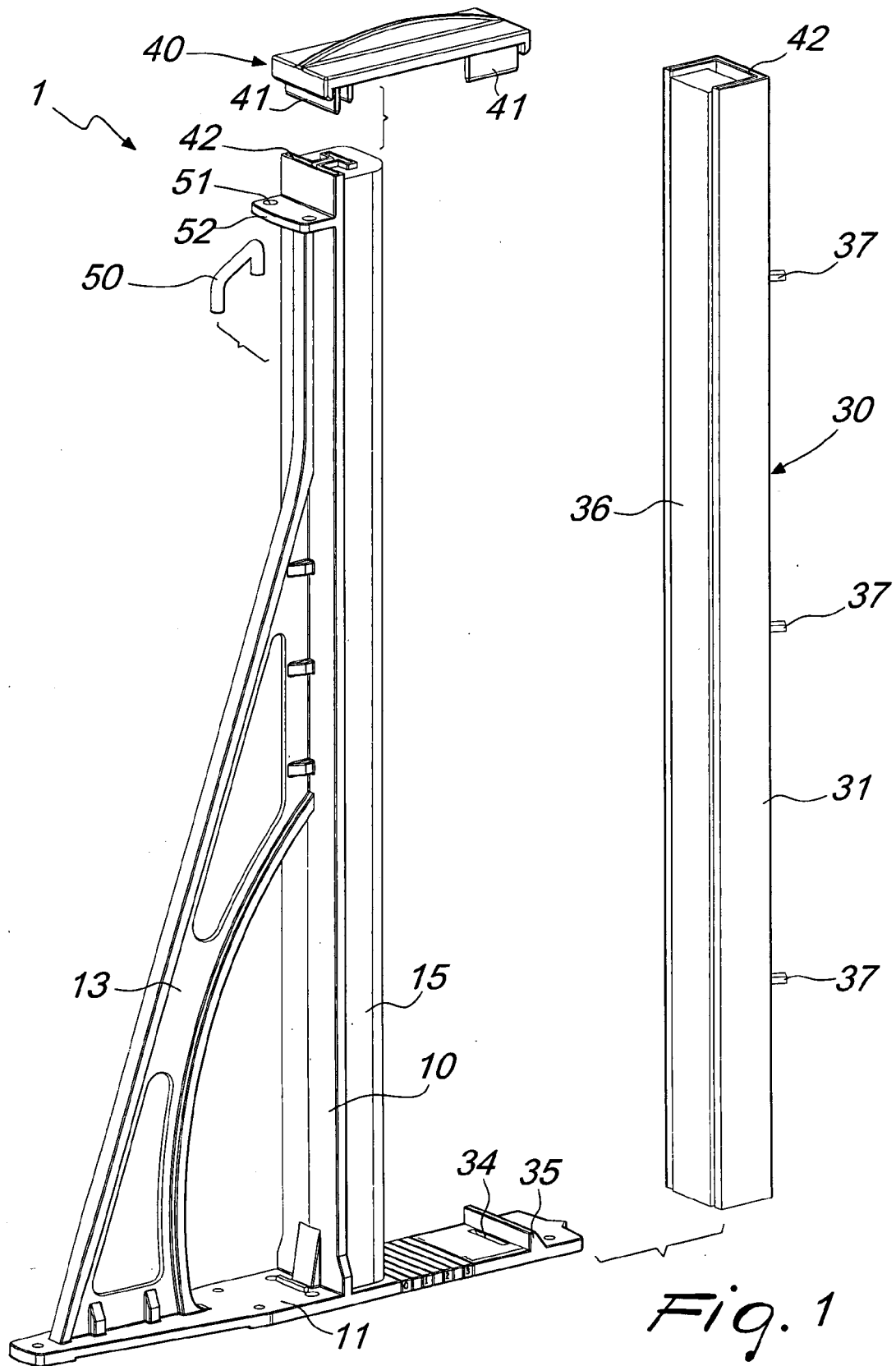


Fig. 1

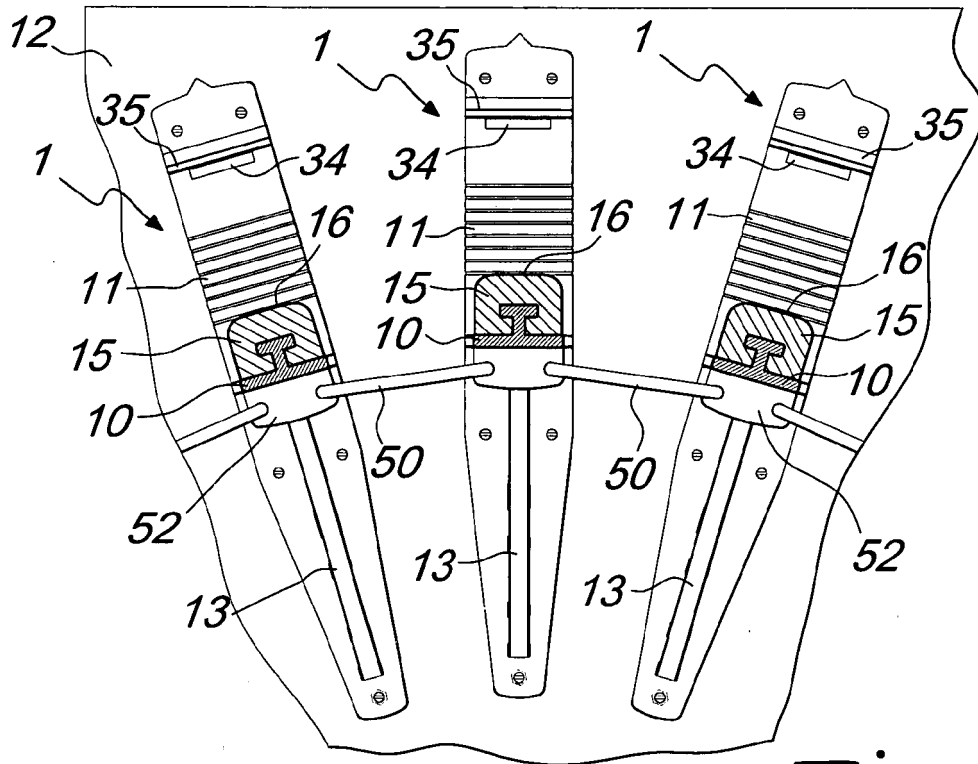


Fig. 2

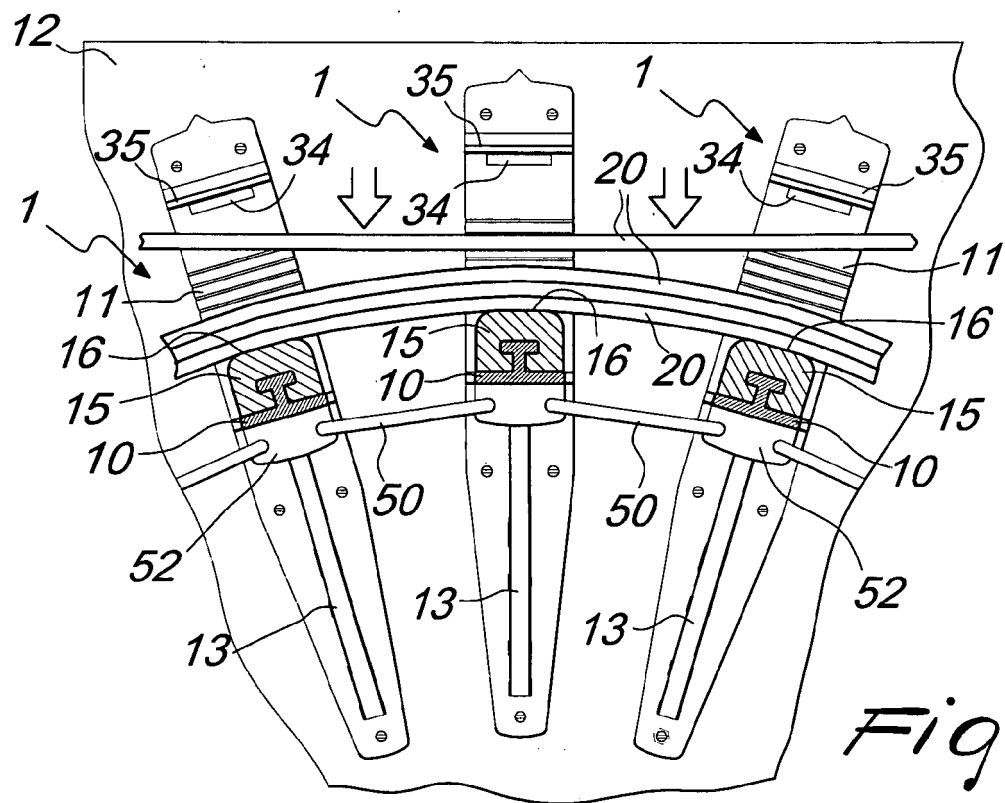


Fig. 3

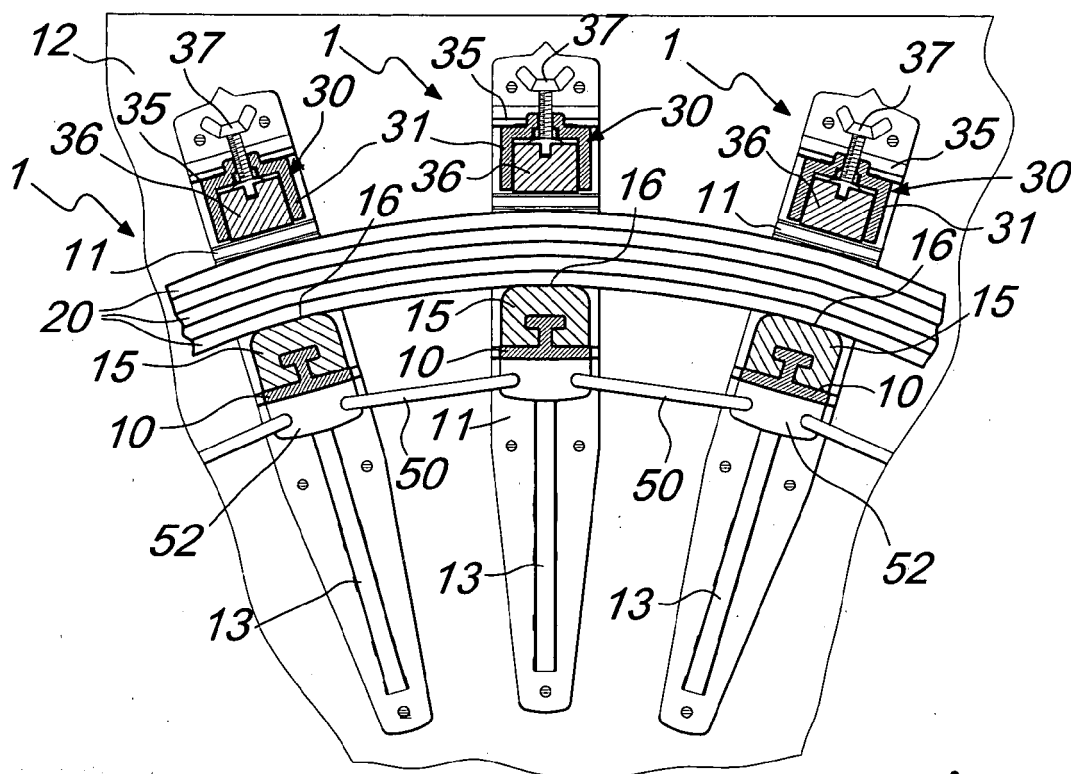


Fig. 4

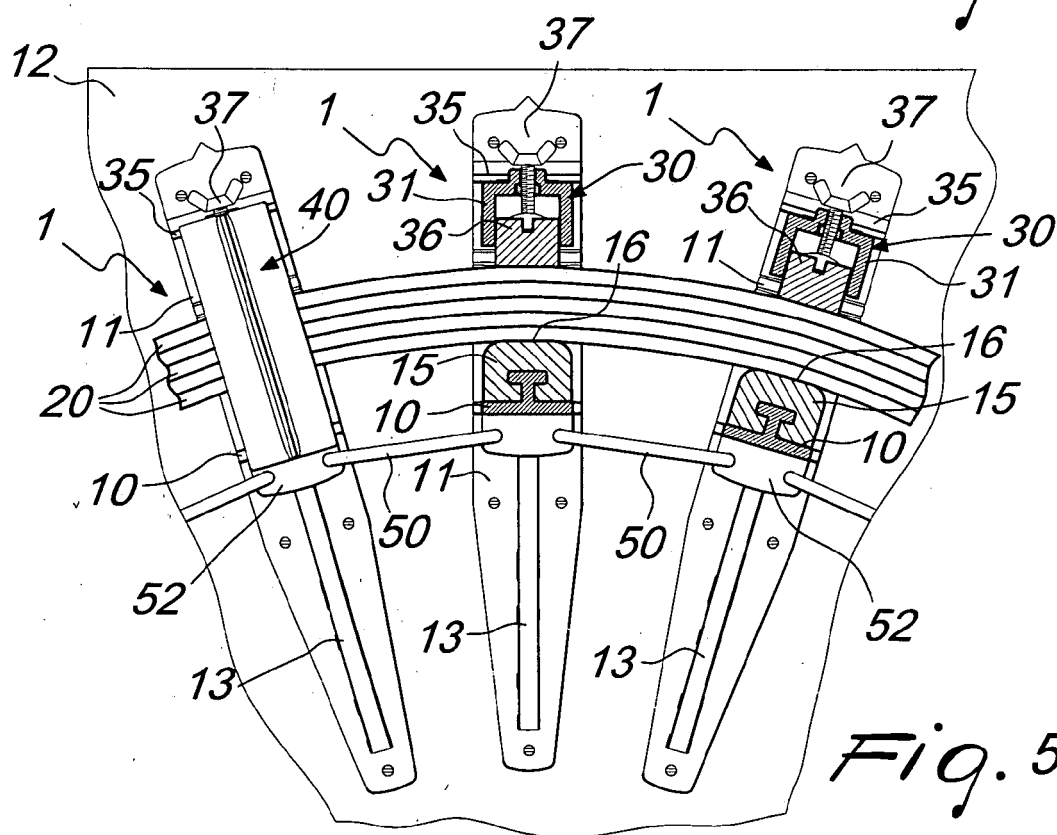
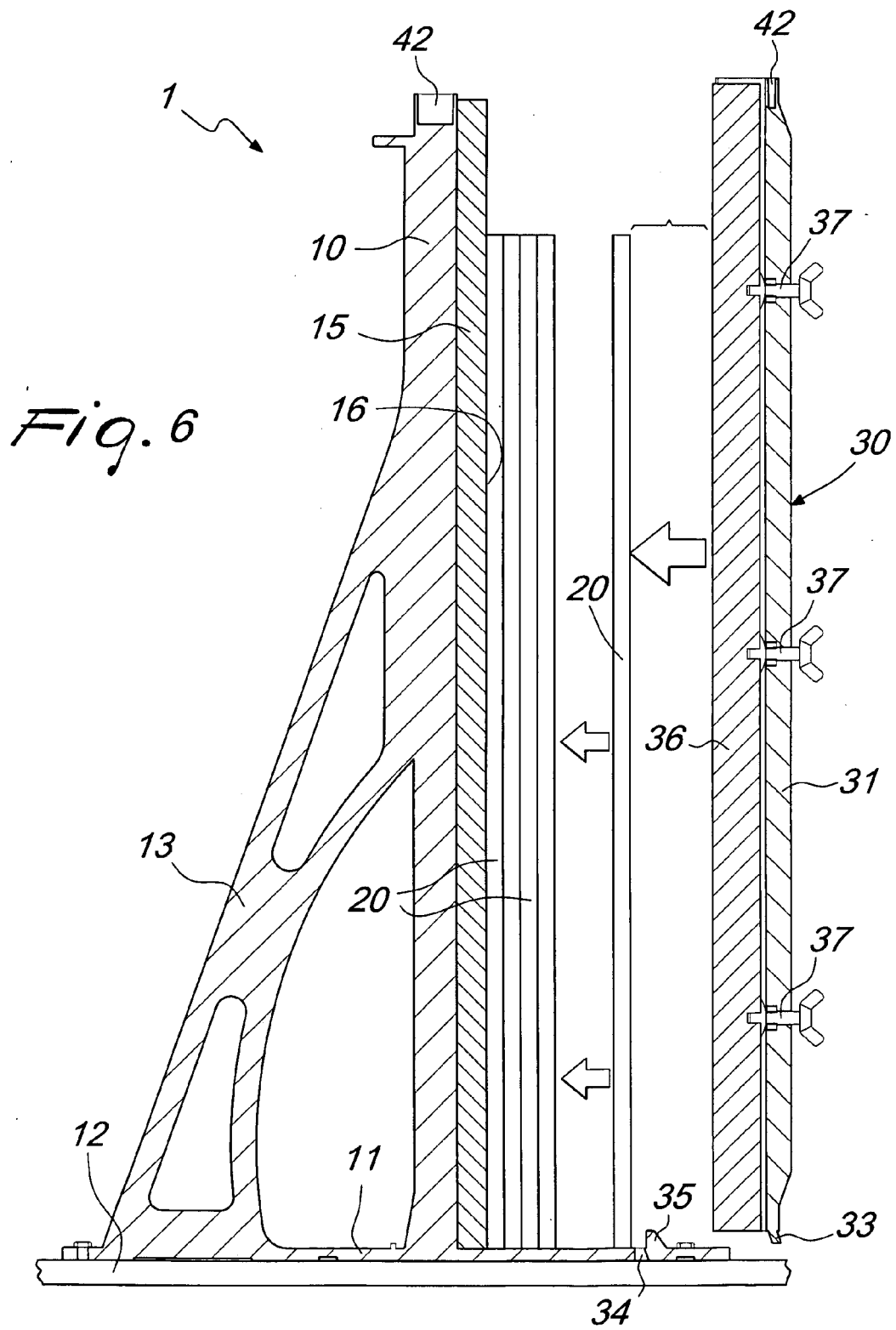
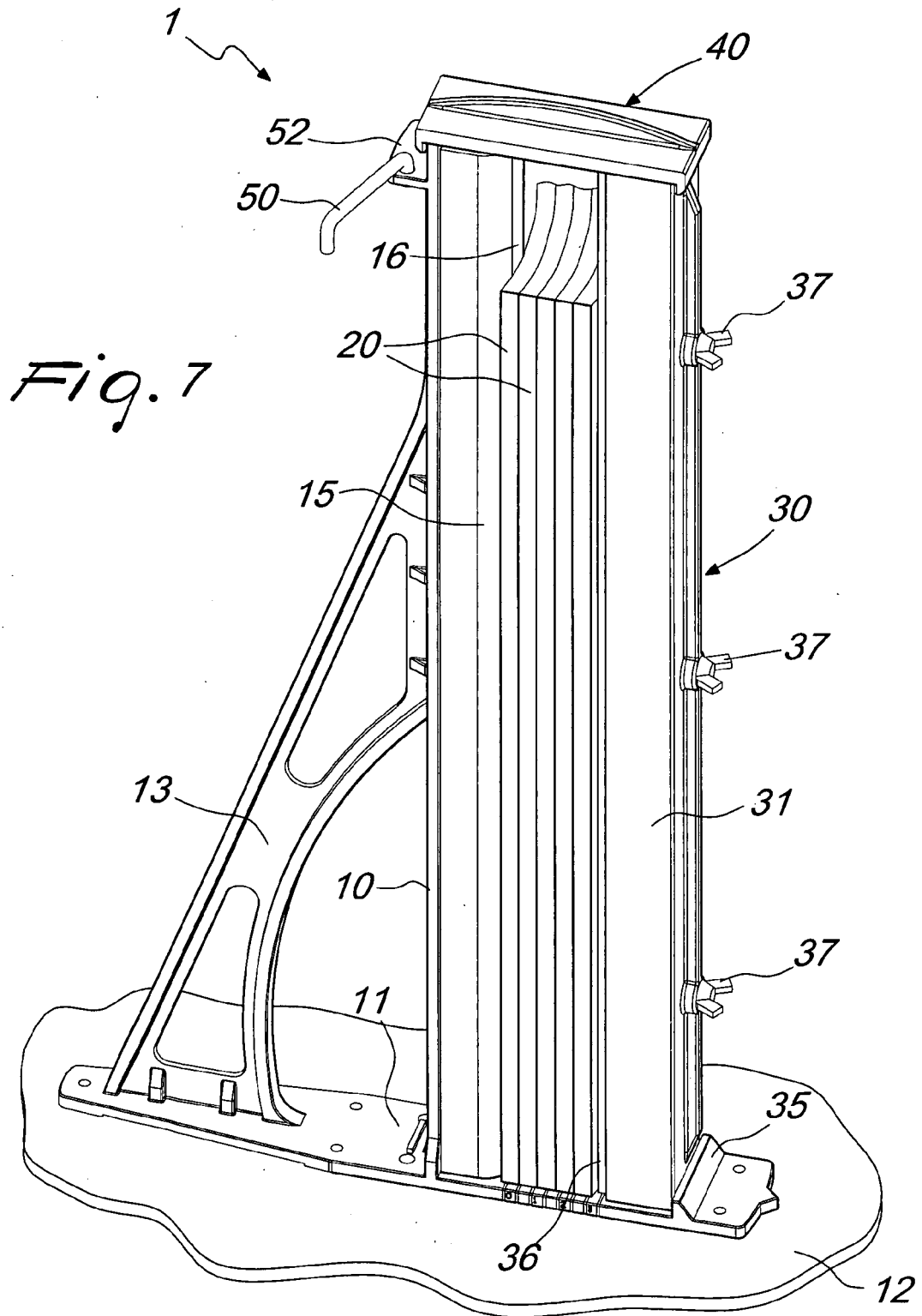
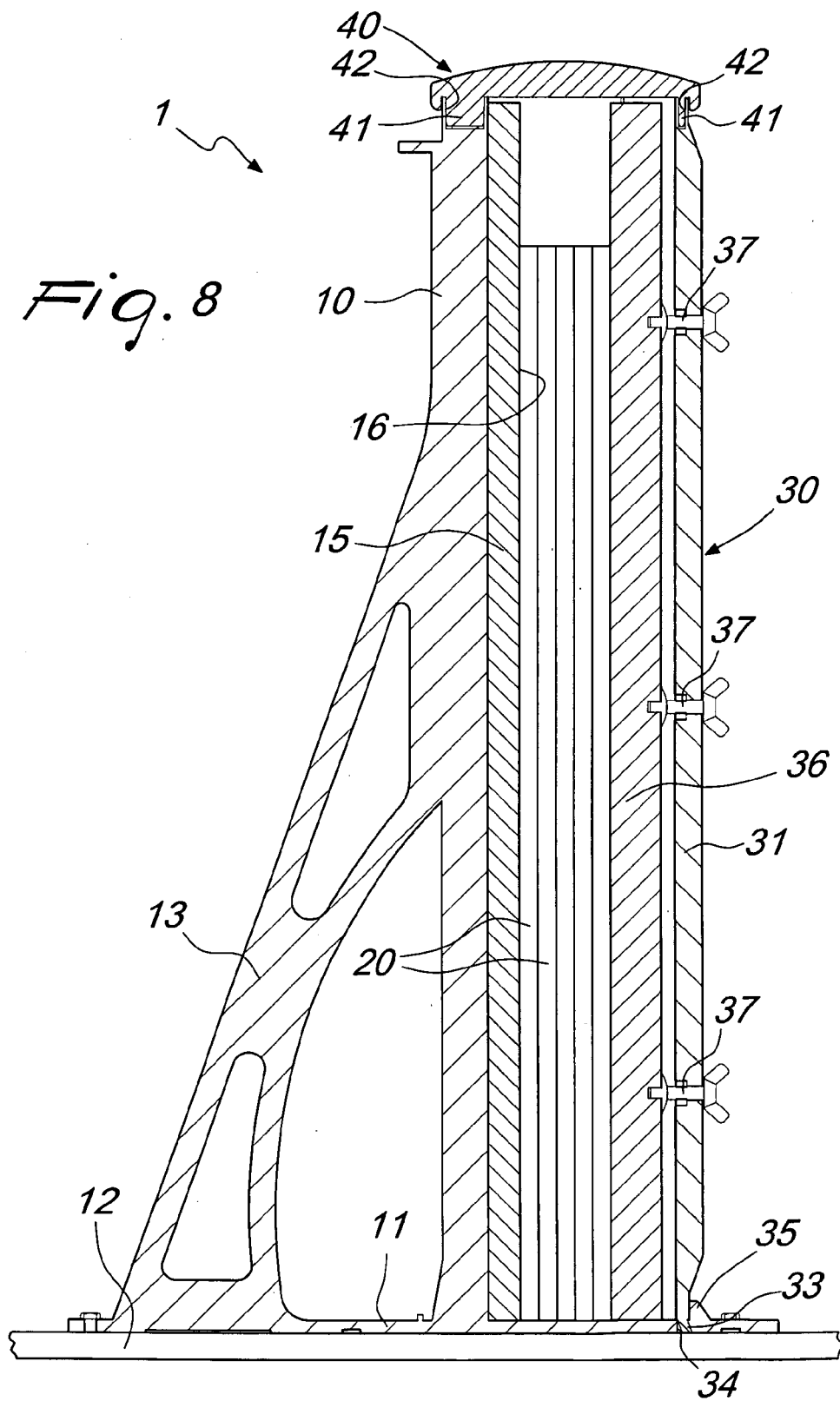


Fig. 5







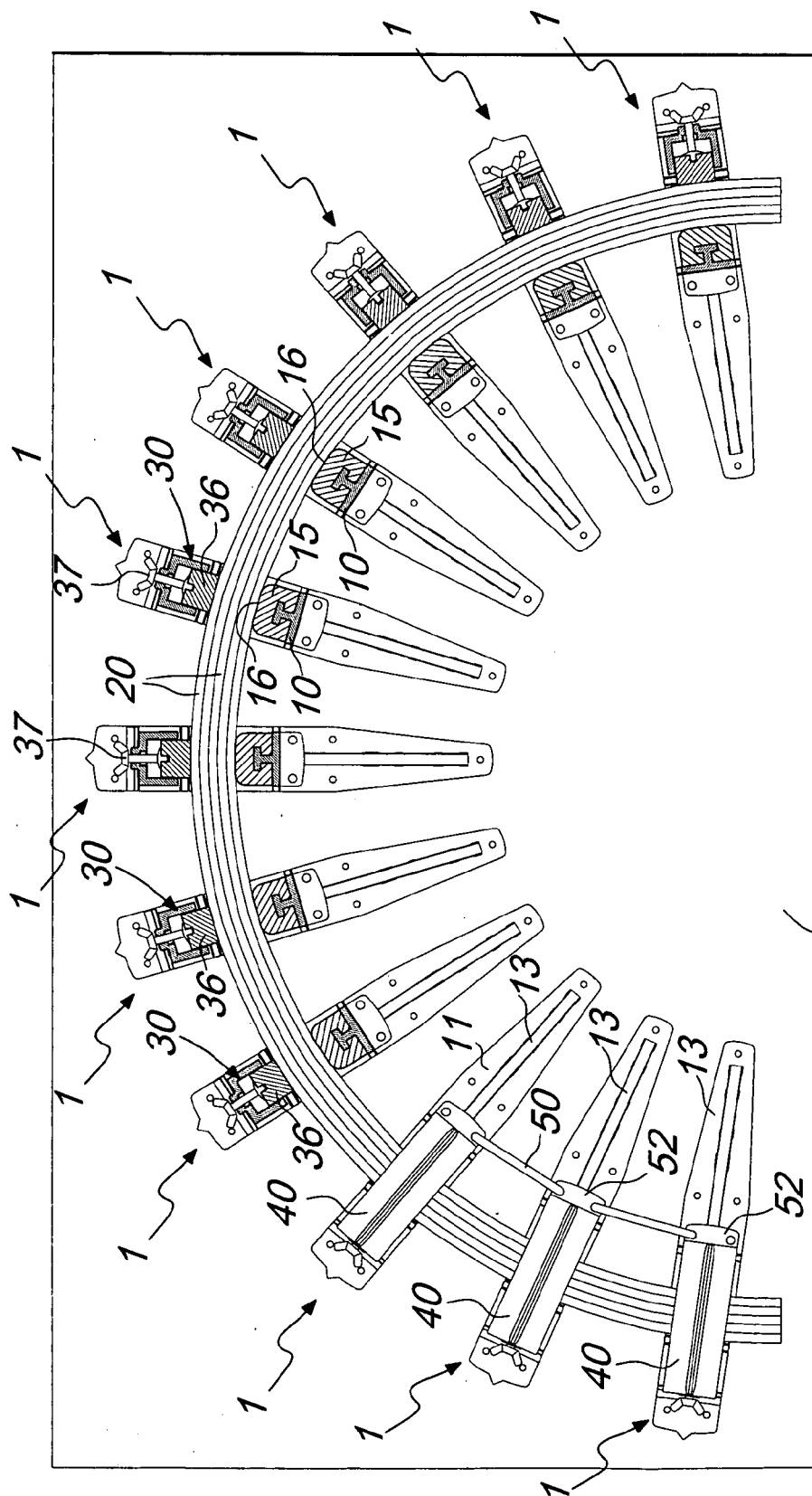
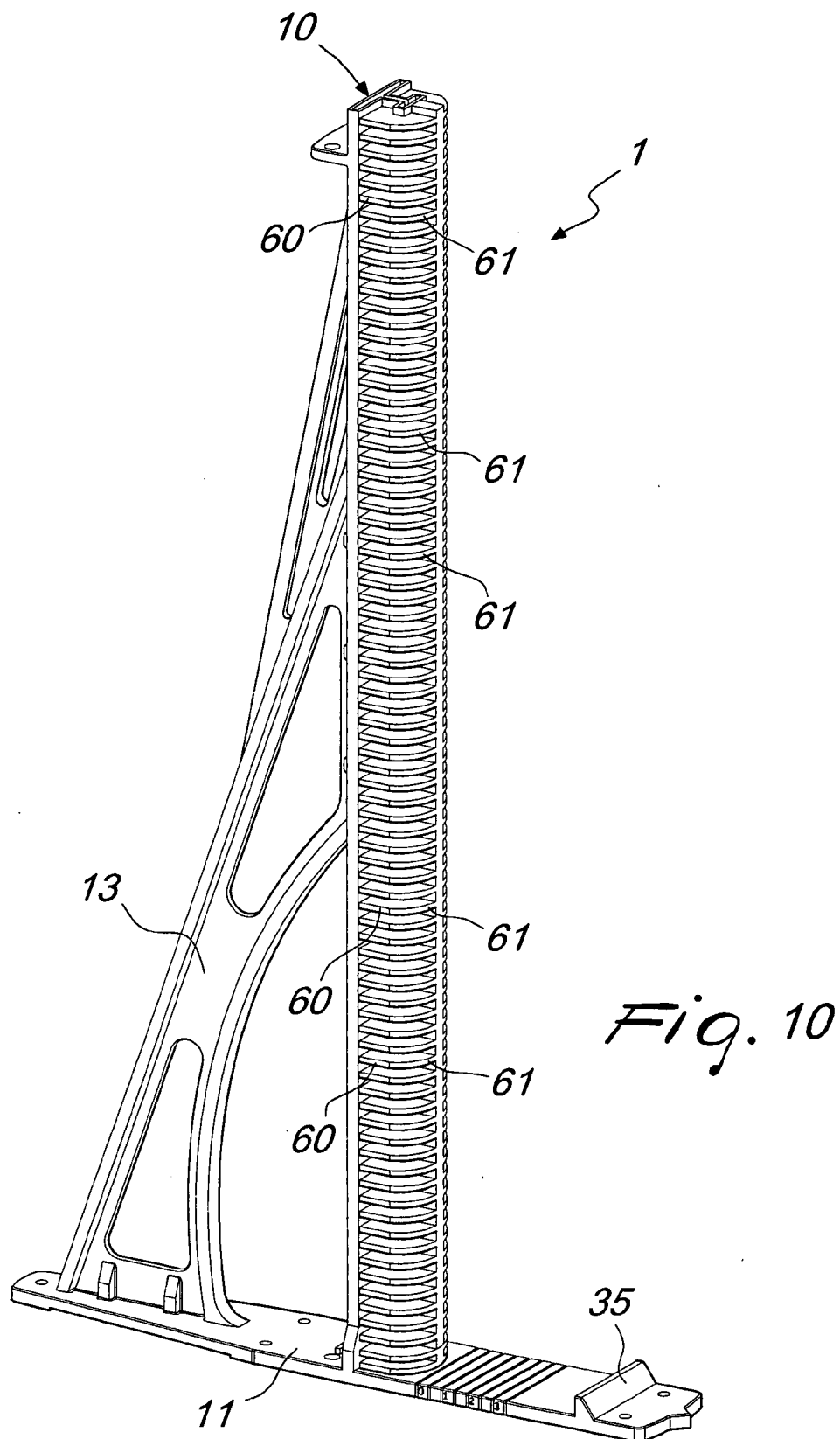


Fig. 9





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 07 02 0410

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			TECHNICAL FIELDS SEARCHED (IPC)
			B27M B27D B27H B25B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 25 January 2008	Examiner Hamel, Pascal
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 07 02 0410

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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REFERENCES CITED IN THE DESCRIPTION

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