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(54) **Scaffolding platform and procedure for the realisation thereof**

(57) A scaffolding platform (1) comprises a flat element (2) with elements (3) for connecting to said scaffolding at the opposite ends. Each of said connection elements (3) comprises a body defined by a single folded sheet which has stiffening means both on a first portion (4) associated with said flat element (2), and on sec-

ond hookshaped portions (5) which can be associated with said scaffolding.

A procedure for realising a scaffolding platform (1) comprises a cutting step and subsequent folding steps of a connection element.

Moreover, the procedure also comprises a cutting step and subsequent folding steps of a flat element.

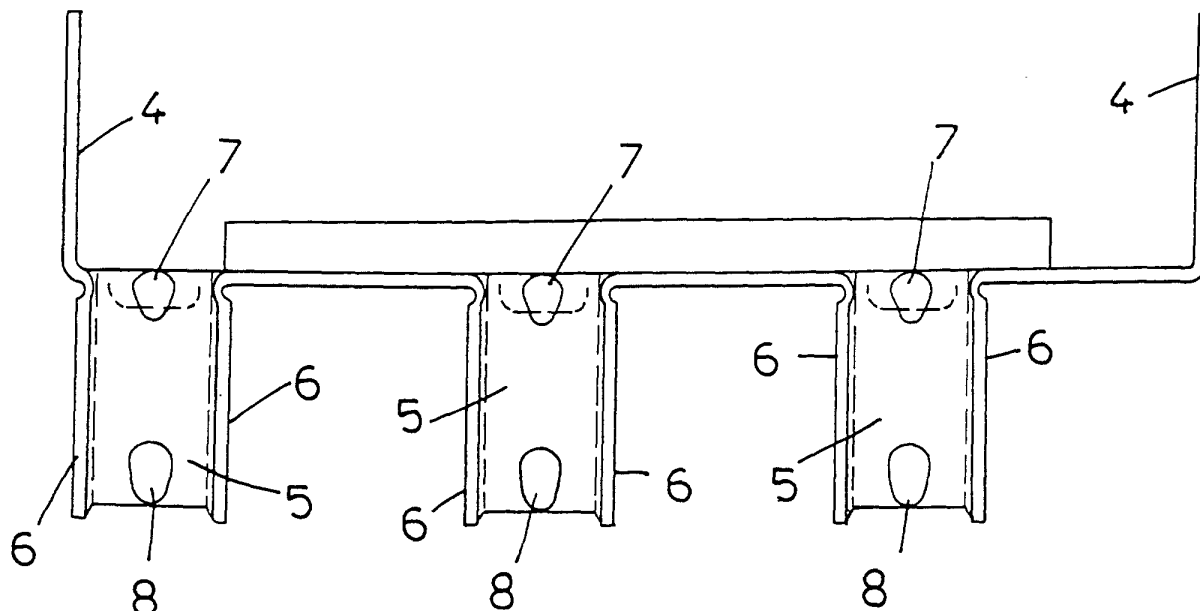


FIG. 3

Description

[0001] The present invention refers to a scaffolding platform and to a procedure for the realisation thereof.

[0002] Currently, when work needs to be carried out upon structures at different heights, for examples upon buildings, scaffolding is used which allows access to zones of the structure itself which are otherwise out of reach.

[0003] Usually, scaffolding comprises a frame made of tubular elements which supports a plurality of platforms upon which workers can move and work.

[0004] Traditional platforms comprise a flat element, for example with a rectangular base, which carries elements for connecting to the frame on the two smaller sides.

[0005] The connection elements comprise a first portion, which is connected to the flat element, to which are welded second hook-shaped portions realised through a sheet with a greater thickness with respect to the sheet which constitutes the first portion to guarantee high mechanical properties.

[0006] In practice, therefore, since very thick sheets must be machined, which must be welded together to form a joint, both the platforms and the traditional procedure for the realisation thereof are expensive and complex.

[0007] The technical task which the present invention proposes is, therefore, that of eliminating the quoted technical drawbacks of the prior art, realising a scaffolding platform which is substantially very cost-effective and stronger, in particular compared to platforms of the traditional type.

[0008] In this technical task a purpose of the invention is that of realising a scaffolding platform which has a flat element with high mechanical properties whilst at the same time having a lower, or at least the same, weight as traditional flat elements.

[0009] Another purpose of the invention is that of realising a scaffolding platform which has a connection element realised without welding and through a single sheet having a substantially reduced thickness, whilst still guaranteeing high mechanical properties.

[0010] The last but not least purpose of the invention is that of realising platforms for scaffolding with mechanical characteristics which are at least comparable with those of said traditional platforms, whilst still guaranteeing a reduced weight and a lower time and difficulty of construction.

[0011] The technical task, as well as these and other purposes, according to the present invention are achieved by realising a scaffolding platform comprising a flat element having an element for the connection to said scaffolding at the opposite ends, characterised in that each of said connection elements comprises a body defined by a single folded sheet having stiffening means both on a first portion associated with said flat element, and on second hook-shaped portions which can be as-

sociated with said scaffolding.

[0012] The object of the invention is also a procedure for realising a connection element for a scaffolding platform, characterised in that it comprises a first cutting step, wherein a sheet is cut so as to define a first substantially quadrilateral element from which transversally protrude second substantially quadrilateral elements, a second folding step, wherein the side ends of said first substantially quadrilateral element are substantially folded square, a third folding step, wherein the side edges of said second quadrilateral elements are substantially folded square on the opposite side with respect to said side ends of said first substantially quadrilateral element, a fourth folding step, wherein said second substantially quadrilateral elements are substantially folded square on the opposite side with respect to said side ends of said first substantially quadrilateral element both at the connection between said second elements and said first element and in its own intermediate portion so as to define hook-shaped portions.

[0013] Moreover, the invention also has as its object a procedure for the realisation of a flat element of a scaffolding platform, comprising a step of cutting a sheet and a subsequent step of folding said sheet so as to define two tubular elements at the opposite ends of said plate, characterised in that it comprises a profiling step of said plate, wherein substantially longitudinal ribs are realised, and an embossing step of the sheet itself, wherein substantially longitudinal are realised.

[0014] Further characteristics and advantages of the invention shall become clearer from the description of a preferred but not exclusive embodiment of the scaffolding platform and of the procedure for the realisation thereof according to the finding, illustrated for indicating and not limiting purposes in the attached drawings, wherein:

- figure 1 shows a contoured element of a connection element to be folded according to the finding;
- figure 2 shows a front view of a connection element according to the finding;
- figure 3 shows a schematic view from above of the connection element according to figure 2;
- figure 4 shows a longitudinal section view of the connection element of figure 2;
- figure 4a shows a side view of the connection element of figure 2;
- figure 5 shows a front view of a flat element according to the finding;
- figure 6 shows a front view of a different flat element according to the finding; and
- figure 7 shows a view from above of a scaffolding platform according to the finding.

[0015] With reference to the quoted figures, a scaffolding platform is shown wholly indicated with the reference numeral 1.

[0016] The platform 1 comprises a flat element 2 with

a substantially rectangular base, which has suitable elements 3 for connecting to the scaffolding on the two smaller sides.

[0017] The connection elements 3 comprise a body defined by a single sheet which is folded to define a first portion 4 associated with the flat element 2, and second hook-shaped portions 5 which can be associated with the scaffolding.

[0018] In the example shown the connection element 3 comprises three hook-shaped portions 5; it is, however, clear that in other examples the portions 5 can be of whatever number.

[0019] The hook-shaped portions 5 each have stiffening means which give them high mechanical properties, even though they are made out of sheets with a substantially reduced thickness.

[0020] The stiffening means comprises two ribs 6 which extend from the second hook-shaped portions 5.

[0021] In particular the ribs 6 stretch along the opposite free edges of the portions 5 and extend along the convex side of the same portions 5.

[0022] The stiffening means also comprises a first flattened portion 7 realised at the folded end of the second hook-shaped portions 5 connected to the first portion 4.

[0023] The stiffening means comprises, moreover, a second flattened portion 8 realised at an intermediate fold of the second hook-shaped portions.

[0024] The first portion 4 comprises a wall 9 from which an edge 10 protrudes which also serves to stiffen the connection element 3.

[0025] The edge 10 protrudes from a side 11 of the wall 9 opposite the side from which the second hook-shaped portions 5 protrude in a substantially opposite direction to the second portions 5 themselves.

[0026] Moreover, three spacers 12 protrude from the wall 9 of the first portion 4 towards each of the second hook-shaped portions.

[0027] The spacers 12 and the first portion 4 are made in a single piece for example through plastic deformation of the wall 9 which is possibly carried out after having made some notches on the wall 9.

[0028] The wall 9 has a through opening 18 wherein a wedge for locking the platform 1 to the tubular scaffolding elements is housed.

[0029] The wedge has enlargements and/or locking elements which allow the aforementioned locking.

[0030] The flat element 2 comprises a central portion 13 with folded ends which define two tubular stiffening elements 14 which constitute seats in which to house the portion 4 of the connection element 2.

[0031] The element 2 has, when it is of a particularly large size (in particular width), a further central tubular element defined by a sheet which is folded over and welded to the central element 13 itself.

[0032] The central portion 13 has a plurality of longitudinal ribs 16.

[0033] A rib 16 is arranged at the centre of the flat element 2 and other ribs 16 extend parallel to the first.

[0034] In different examples the ribs 16 are all equally spaced from each other or else the first and/or last rib have different distances whilst all the others remain equally spaced.

[0035] Moreover, the central portion 13 also has a plurality of bosses 17 which are arranged between the ribs 16 and are all longitudinally aligned either individually or in groups.

[0036] The present invention also has as its object a procedure for realising a scaffolding platform.

[0037] The procedure foresees some steps in which connection elements 3 are realised and other steps in which flat elements 2 are realised.

[0038] Subsequently, the connection elements 3 are connected to the flat elements 2 by stitch welding.

[0039] The procedure according to the present invention, in the part in which the connection elements are realised, comprises a first cutting step, wherein a sheet is cut so as to define a contoured element 20.

[0040] The contoured element 20 comprises a first substantially quadrilateral element 21 from which second substantially quadrilateral elements 22 protrude transversally.

[0041] In a subsequent second folding step the side ends 23 of the first substantially quadrilateral element 21 are substantially folded square.

[0042] In a third folding step side edges 24 of the second quadrilateral elements 22 are substantially folded square on the opposite side with respect to the side edges 23 of the first element 21.

[0043] In a fourth folding step also the second substantially quadrilateral elements 22 are substantially folded square on the opposite side with respect to the side ends 23 of the first quadrilateral element 21.

[0044] In particular, the second quadrilateral elements 22 are folded at their connection portion to the first quadrilateral element 21 and at an intermediate portion, so as to define hook-shaped portions.

[0045] In a subsequent step an edge 10 is also folded and stiffeners are realised.

[0046] Moreover, in preferred examples of the procedure according to the finding, during the first cutting step relieves 25 are realised in the connection zone between the second quadrilateral elements 22 and the first quadrilateral element 21.

[0047] The relieves 25 allow the subsequent folding steps to be carried out without the danger that cracks and/or damage appear in the sheet.

[0048] Moreover, in a fifth punching step, spacers 12 are realised through plastic deformation of a wall of the connection element 3.

[0049] Possibly, before the punching, a shearing step can be foreseen wherein two notches are made on the sides of a zone to be punched.

[0050] During the first cutting step two contoured elements 20 are simultaneously cut from a single sheet, with the second quadrilateral elements 22 of one contoured element 20 which are interposed between the

second quadrilateral elements 22 of another contoured element 20.

[0051] The procedure according to the present invention, in the part in which flat elements 2 are realised, comprises a cutting step of a sheet and a subsequent 5 folding step of the same sheet so as to define a central portion 13 having two tubular elements 14 at the opposite ends.

[0052] Moreover, in a profiling step of the plate, longitudinal ribs 16 are realised on the central portion 13, and possibly also on part of the tubular portions 14. 10

[0053] The procedure continues with the insertion of a tubular element 15 or stiffening profile, stitch welded to the flat element 2 or sheet surface.

[0054] In an embossing step, moreover, bosses which are also arranged substantially longitudinally on the flat element or surface 2 and are substantially truncated-cone-shaped are made on the central portion and possibly also on part of the side portion 14. 15

[0055] In practice, it has been noted how the scaffolding platform according to the invention is particularly advantageous since it is cost-effective and, moreover, can replace platforms of the traditional type. 20

[0056] Moreover, the procedure for realising a scaffolding platform allows the aforementioned platforms to be realised in a more cost-effective manner with respect to the traditional procedures and requires connections which are welded only to fix the connection elements to the flat element, whereas both the flat element and the connection element have no welded components since they are each realised in a single piece. 25

[0057] The scaffolding platform and the procedure for the realisation thereof thus conceived are susceptible to numerous modifications and variants, all falling within the scope of the inventive concept; moreover, all of the details can be replaced with technically equivalent elements. 30

[0058] In practice, the materials used, as well as the sizes, can be whatever according to the requirements and the state of the art. 35

Claims

1. Scaffolding platform comprising a flat element with an element for connection to said scaffolding at the opposite ends, **characterised in that** each of said connection elements comprises a body defined by a single folded sheet which has stiffening means both on a first portion associated with said flat element, and on second hook-shaped portions which can be associated with said scaffolding. 45
2. Platform according to claim 1, **characterised in that** said stiffening means comprises ribs associated with said second hook-shaped portions. 50
3. Platform according to one or more of the previous

claims, **characterised in that** said stiffening means comprises at least one first flattened portion realised at a folded end of said second hook-shaped portions connected to said first portion.

4. Platform according to one or more of the previous claims, **characterised in that** said stiffening means comprises at least one second flattened portion realised at an intermediate fold of said second hook-shaped portions. 5
5. Platform according to one or more of the previous claims, **characterised in that** said first portion comprises at least one edge, which extends, on an opposite side to the one from which said second hook-shaped portions protrude, in a substantially opposite direction to said second hook-shaped elements. 10
6. Platform according to one or more of the previous claims, **characterised in that** a plurality of spacers extend from said first portion towards each of said second hook-shaped portions, said spacers and said first portion being realised in a single piece. 15
7. Platform according to one or more of the previous claims, **characterised in that** said flat element comprises a plurality of longitudinal ribs. 20
8. Platform according to one or more of the previous claims, **characterised in that** said flat element comprises a plurality of bosses substantially longitudinally aligned either individually or in groups. 25
9. Platform according to one or more of the previous claims, **characterised in that** said wall (9) has a through opening (18) wherein a wedge is housed having enlargements and/or elements for locking to said tubular elements of said scaffolding. 30
10. Procedure for realising a connection element of a scaffolding platform, **characterised in that** it comprises a first cutting step, wherein a sheet is cut so as to define a first substantially quadrilateral element from which second substantially quadrilateral elements transversally protrude, a second folding step, wherein the side ends of said first substantially quadrilateral element are substantially folded square, a third folding step, wherein the side edges of said second quadrilateral elements are substantially folded square on the opposite side with respect to said side ends of said first substantially quadrilateral element, a fourth folding step, wherein said second substantially quadrilateral elements are substantially folded square on the opposite side with respect to said side ends of said first substantially quadrilateral element both at the connection between said second elements and said first ele- 35

ment and in its own intermediate portion so as to define hook-shaped portions.

11. Procedure according to claim 10, **characterised in that** in said first cutting step relieves are realised in the connection zone between said second quadrilateral elements and said first quadrilateral element, so that during said subsequent folding steps cracks and/or damage do not appear in said sheet.

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12. Procedure according to claims 10 or 11, **characterised in that** it comprises a fifth punching step, wherein said spacers are realised.
13. Procedure according to claims from 10 to 12, **characterised in that** during said cutting step two shapes are cut simultaneously from a single plate, with second quadrilateral elements of one contoured element interposed between second quadrilateral elements of another shape.

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14. Procedure for realising a flat element of a scaffolding platform, comprising a cutting step of a sheet and a subsequent folding step of said sheet so as to define two tubular elements at opposite ends of said plate, **characterised in that** it comprises a profiling step of said plate, wherein substantially longitudinal ribs are realised, and an embossing step of the same plate, wherein substantially longitudinal bosses are realised.

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15. Scaffolding platform and procedure for the realisation thereof as described and claimed.

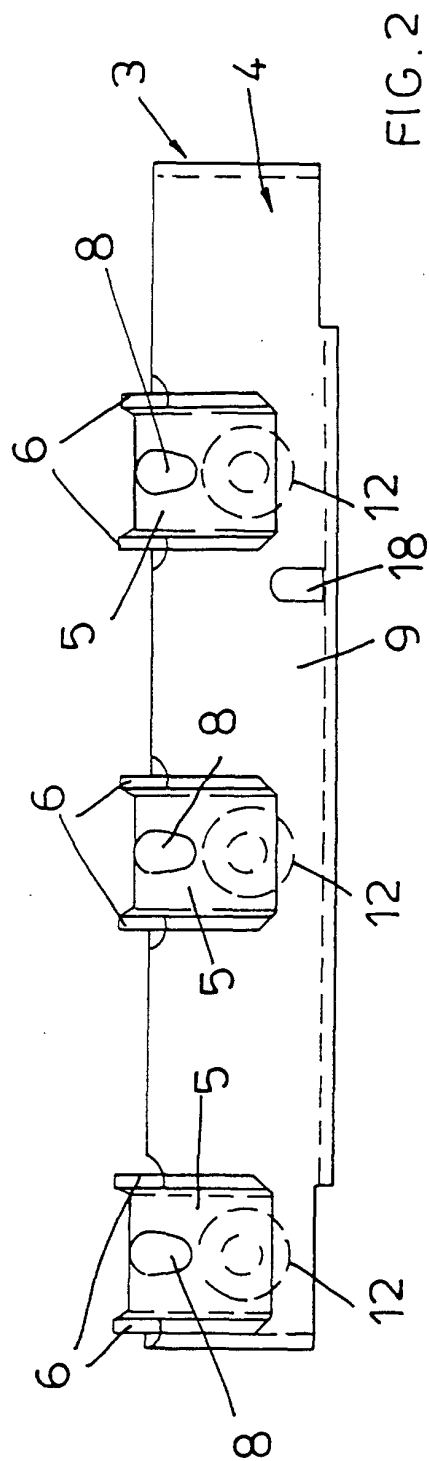
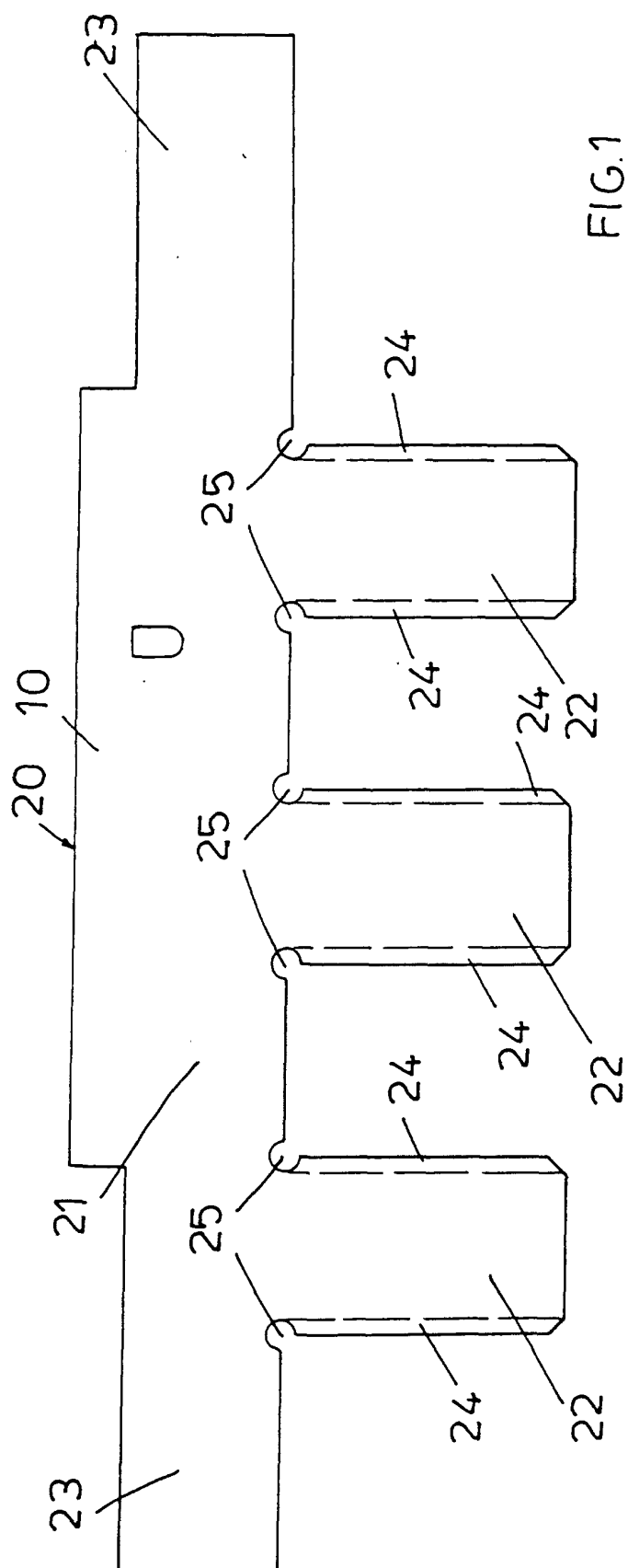
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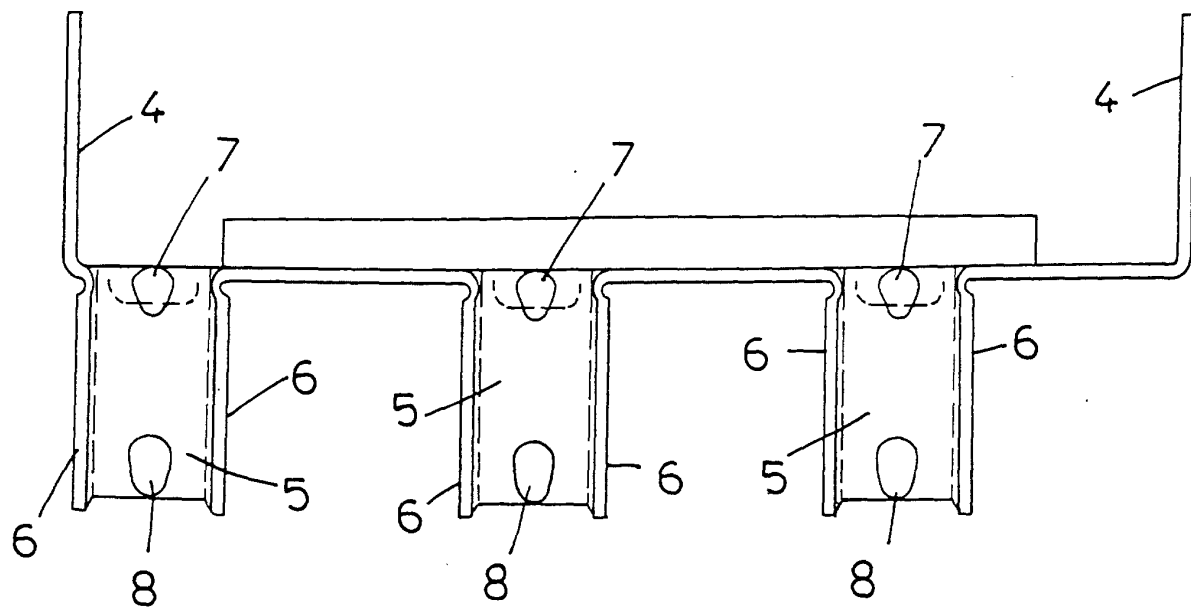


FIG. 3

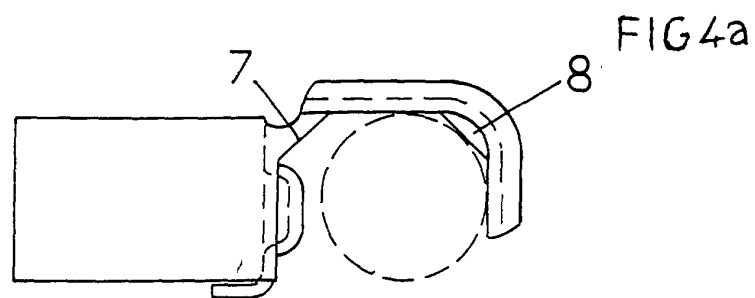


FIG. 4a

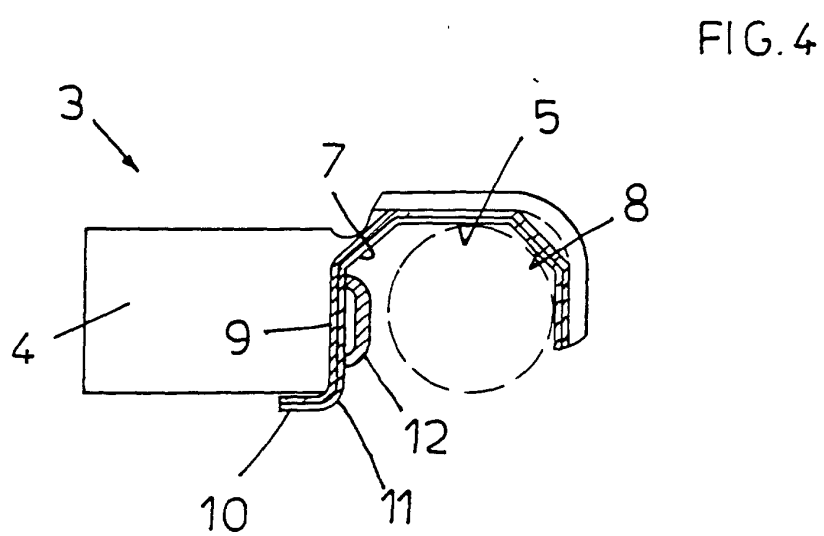


FIG. 4

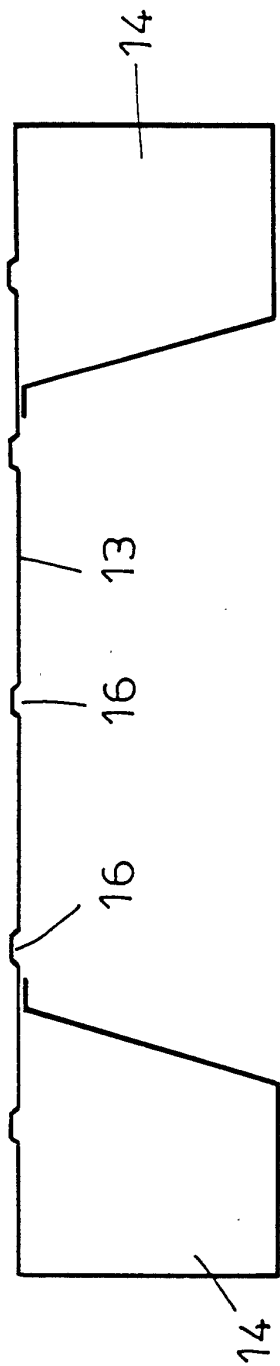


FIG 5

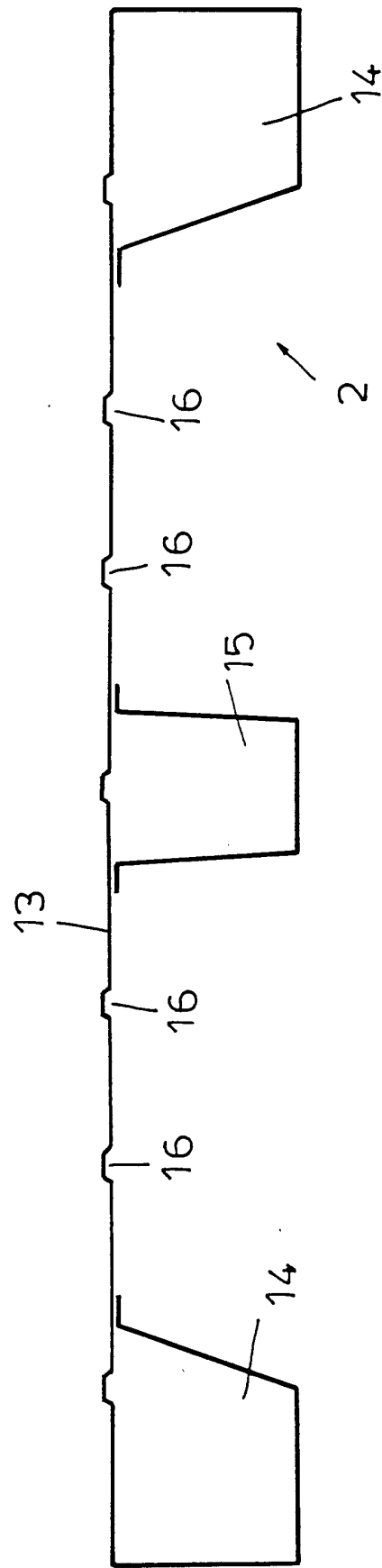


FIG. 6

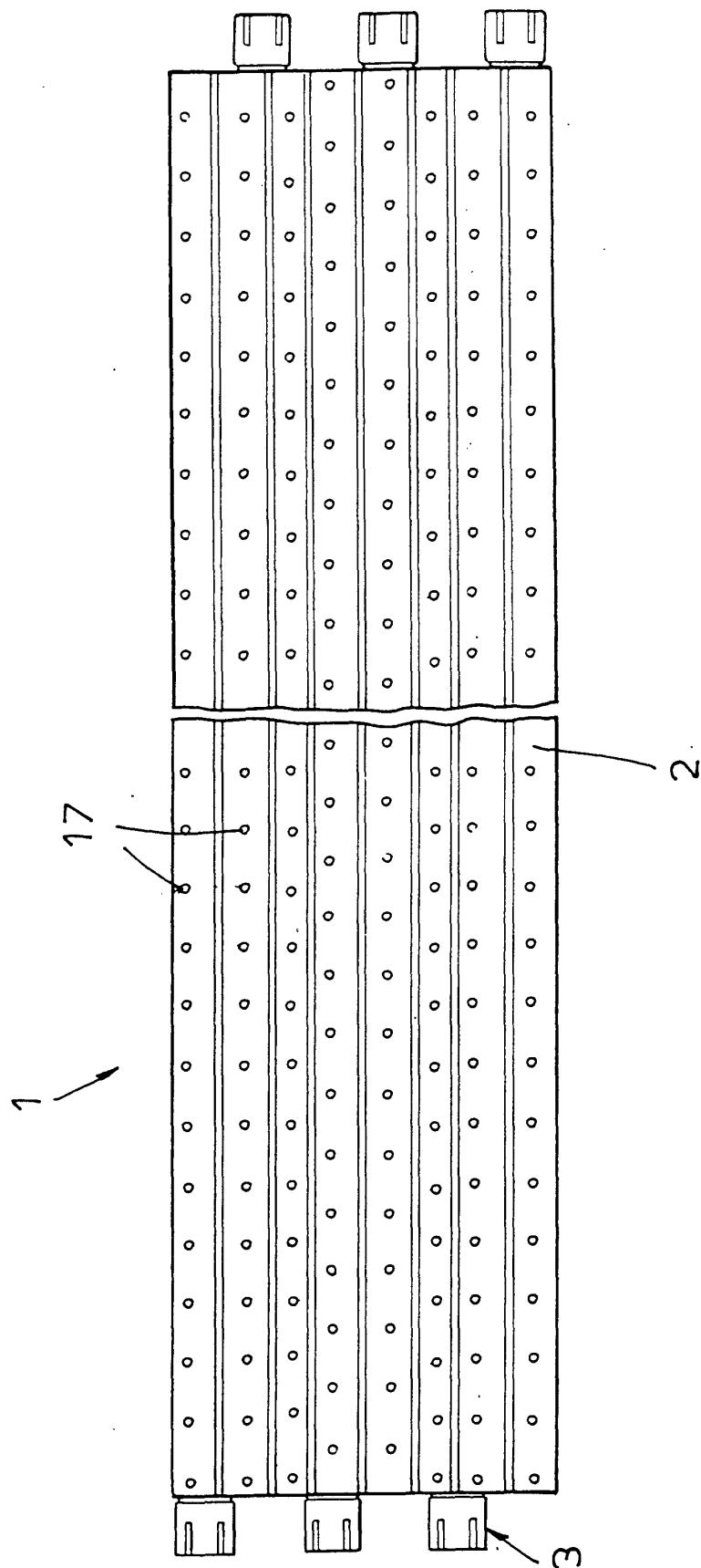


FIG. 7