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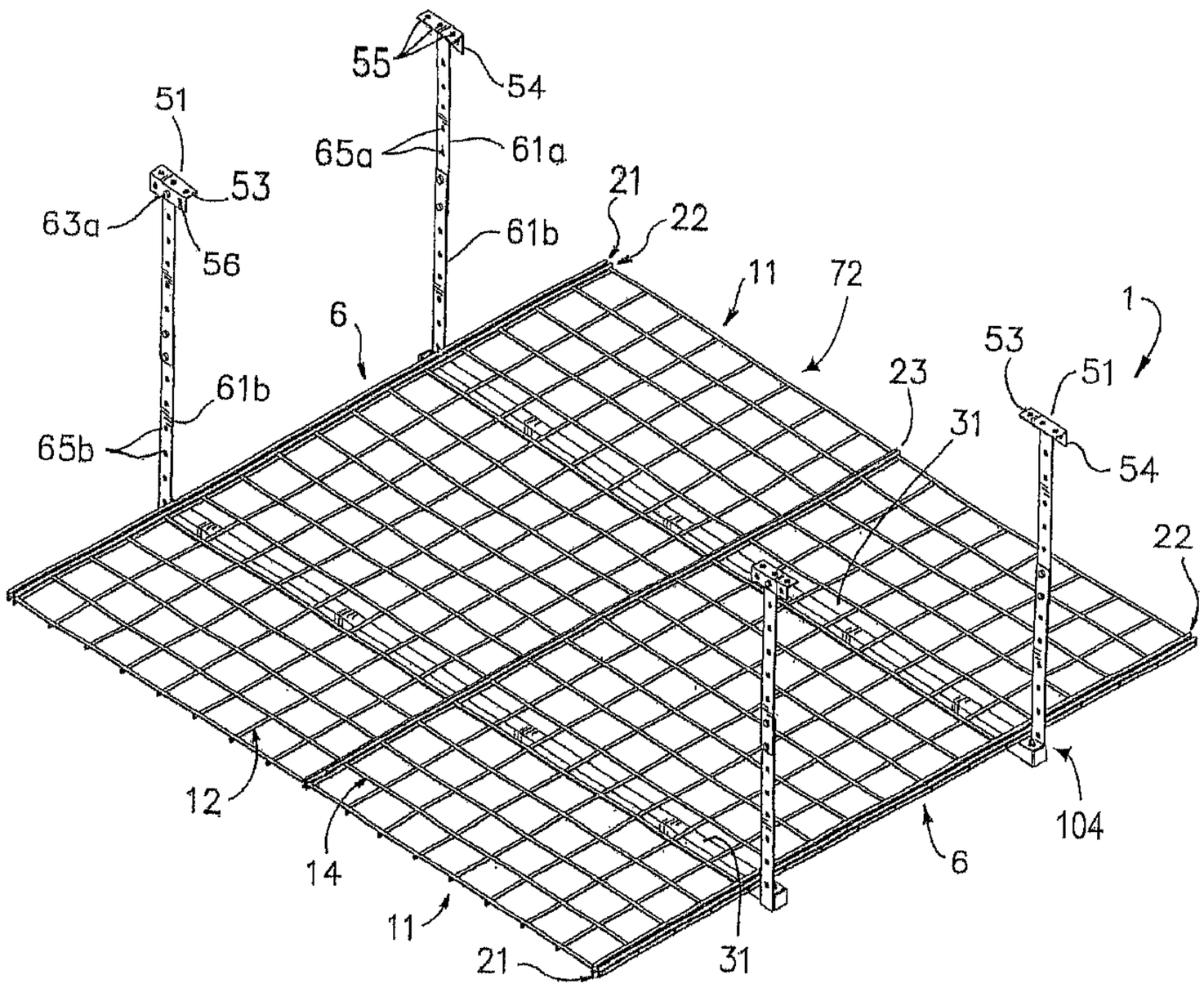
(71) Demandeur/Applicant:
HYLOFT, INC., US

(72) Inventeurs/Inventors:
MIKICH, MICHAEL J., US;
DUNSEATH, DWAYNE, US;
MATTHIAS, TIMOTHY M., US;
TOROSIAN, MARK C., US

(74) Agent: OYEN WIGGS GREEN & MUTALA LLP

(54) Titre : TABLETTE DE RANGEMENT SUSPENDUE
(54) Title: SUSPENDED STORAGE SHELF



(57) Abrégé/Abstract:
A suspended storage shelf includes a platform formed by one or more panels supported by a support frame having at least one support beam and at least two suspension posts, optionally adjustable in length, spaced from one another and attached at a lower end to the support beam. A fastener secures the support frame to a structure. In an embodiment with two or more panels, the panels form a continuous surface by, for example, being positioned adjacent one another along the support beam, being secured to one another such as with a coupling, and/or being secured to the support beam. Optionally, the panels are positioned along the support beam and the length of the support beam is such that the suspension posts retain the panels in adjacency. Optionally, the suspension posts are attached at the ends of the support beam each of which extend beyond the platform.

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(71) Applicant *(for all designated States except US)*: **HYLOFT USA, LLC** [US/US]; 5175 W. Diablo Dr., Suite 110, Las Vegas, NV 89118 (US).

(72) Inventors: **MIKICH, Michael, J.**; 5175 W. Diablo Dr., Suite 110, Las Vegas, NV 89118 (US). **DUNSEATH, Dwayne**; 5175 W. Diablo Dr., Suite 110, Las Vegas, NV 89118 (US). **MATTHIAS, Timothy, M.**; 5175 W. Diablo Dr., Suite 110, Las Vegas, NV 89118 (US). **TOROSIAN, Mark, C.**; 5175 W. Diablo Dr., Suite 110, Las Vegas, NV 89118 (US).

(74) Agent: **MORISHITA, Robert, Ryan**; 3800 Howard Hughes Parkway, Suite 850, Las Vegas, NV 89109 (US).

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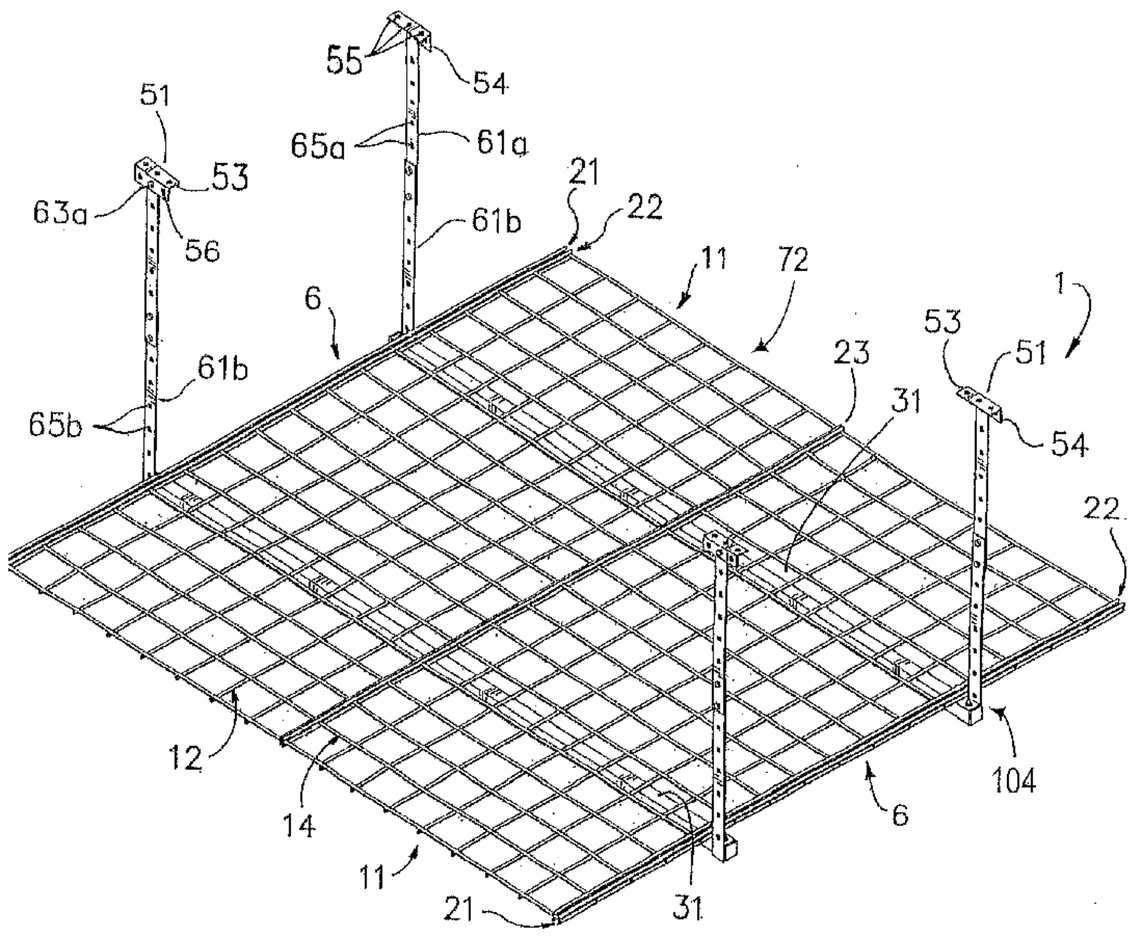
(54) Title: SUSPENDED STORAGE SHELF



(57) Abstract: A suspended storage shelf includes a platform formed by one or more panels supported by a support frame having at least one support beam and at least two suspension posts, optionally adjustable in length, spaced from one another and attached at a lower end to the support beam. A fastener secures the support frame to a structure. In an embodiment with two or more panels, the panels form a continuous surface by, for example, being positioned adjacent one another along the support beam, being secured to one another such as with a coupling, and/or being secured to the support beam. Optionally, the panels are positioned along the support beam and the length of the support beam is such that the suspension posts retain the panels in adjacency. Optionally, the suspension posts are attached at the ends of the support beam each of which extend beyond the platform.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

SUSPENDED STORAGE SHELF

Field of the Invention

The present invention relates to shelving. More specifically, the present invention is a storage shelf suspended beneath a structure.

Background of the Invention

Suspended storage structures, including Applicant's own prior U.S. Patent No. 6,435,105 and U.S. Design Patent Nos. 459,926 and 470,353, all incorporated herein by reference, are known in the art. Examples of suspended structures are also shown in references assigned to Applicant, such as U.S. Patent No. 6,409,031 and U.S. Design Patent No. 416,152, also incorporated herein by reference. These devices, along with the present invention, are intended to address some of the drawbacks of other suspended storage structures.

For example, U.S. Patent No. 4,441,583 to Vaught shows a cable hanger intended to support a swinging scaffold hanging from a walkway grating. Since the scaffold is intended to swing, a loop of cable carries the scaffold. However, it is often undesirable for a storage shelf to swing as the scaffold of Vaught does. Moreover, it is desirable to suspend a storage shelf from structures other than a walkway grating.

Summary of the Invention

A storage shelf for suspending from a structure includes a platform formed by one or more individual panels. Optionally, the platform includes two or more individual panels. The platform is supported by a support frame having at least one support beam and at least two suspension posts spaced from one another and

attached at a lower end to the support beam. The support beam and suspension posts may optionally be integrally formed. In one optional embodiment, the panels are of substantially equal length and the support beam is an integer multiple of the panel length. A fastener secures the support frame to the structure such that the support beam and suspension post cooperate to suspend the platform from the structure.

In one optional embodiment, the support beam has two ends, each of which extend beyond the platform. In such an optional embodiment, support frame may include a suspension post attached at a lower end to each support beam end.

In an optional embodiment, the suspension post or posts are of adjustable length. For example, in one optional embodiment the suspension post includes at least two post elements and the length of the suspension post is adjusted by selectively joining the post elements.

In an optional embodiment in which two or more panels are provided, the panels form a substantially continuous support surface by, for example, positioning the panels adjacent one another along the support beam, securing each panel to an adjacent panel, and/or securing each panel to the support beam. In an optional embodiment, the storage shelf includes a coupling securing adjacent panels. In one particular optional embodiment, the panels are formed from a grid of wire members and the coupling comprises a clamp securing adjacent wire members of adjacent panels. In another optional embodiment, the panels are positioned along the support beam and the length of the support beam is such that the suspension posts retain the panels in adjacency.

Brief Description of the Drawings

FIG. 1 shows an elevated perspective view of an embodiment of a suspended storage shelf according to the present invention;

FIG. 2 shows a perspective assembly view of an embodiment of a suspended storage shelf according to the present invention;

FIG. 3 shows a perspective assembly view of an alternate embodiment of a suspended storage shelf according to the present invention;

FIG. 4 shows an end view of an embodiment of a suspended storage shelf according to the present invention mounted to a structure;

FIG. 5 shows a perspective assembly view of an embodiment of a coupling according to the present invention;

FIG. 6 shows a perspective assembly view of an alternate embodiment of a suspended storage shelf according to the present invention;

FIG. 7 shows an elevated perspective view of a fastener and suspension post element according to the optional embodiment of FIG. 6;

FIG. 8 shows a perspective view of a suspension post element according to the optional embodiment of FIG. 6;

FIG. 9 shows an elevated perspective view of an alternate embodiment of a suspended storage shelf according to the present invention;

FIG. 10 shows an elevated perspective view of a fastener according to the optional embodiment of FIG. 9;

FIG. 11 shows an elevated perspective view of a suspension post element according to the optional embodiment of FIG. 9;

FIG. 12 shows an elevated perspective view of a suspension post element and support beam according to the optional embodiment of FIG. 9;

FIG. 13 shows an elevated perspective view of an alternate embodiment of a suspended storage shelf according to the present invention.

Description

Reference is now made to the figures wherein like parts are referred to by like numerals throughout. Referring generally to FIGS. 1–13, the present invention is a suspended storage shelf 1. The storage shelf 1 is suspended from an overhead structure 100 such as a ceiling or other overhead surface. The storage shelf generally includes a platform 72, a support frame 104 having at least one support beam 31 and at least two spaced suspension posts 61, and a fastener 51.

The storage shelf 1 includes a platform 72 formed by one or more individual panels 11. The panels 11 may take any shape, but in an optional embodiment, the panels 11 are planar. Also, while the panels 11 may have any construction, including solid construction, in an optional embodiment, the panels 11 are formed from a wire grid in which wire members 12, 14 cooperate to form the panels 11.

As stated, only one panel 11 is needed to form the platform 72. However, it is also contemplated that multiple panels 11 may be used to form the platform 72. In an optional embodiment including two or more panels 11, the panels 11 form a substantially continuous surface. This may occur in many different ways. For example, in one optional embodiment, such as that shown in FIGS. 5, 6, and 13, each panel 11 is secured to an adjacent panel 11, such as through a coupling or a hinge. In an optional embodiment, the coupling is a clamp 101, such as that formed from a mating bolt 102 and nut 103, that secure and retain adjacent wire members 23 along the edges 9 of adjacent panels 11 in substantial contact.

In another optional embodiment, such as that shown in FIGS. 2 and 4, the panels 11 are formed into a substantially continuous surface by securing each panel 11 to a support beam 31. For example, a mating bolt 105 and nut 106 threaded through a hole 36 in the support beam 31 and through a gap between wire elements 21, 22 may secure and retain panels 11 to the support beam 31 adjacent one another.

In one optional embodiment, such as that shown in FIGS. 1 and 9, the panels 11 are positioned along a support beam 31 in adjacent relationship so that the panels 11 cooperate to form a substantially continuous surface. In one optional embodiment, the panels 11 may be oriented with the edges 9 of adjacent panels 11 perpendicular to the support beam 31 such that the support beam 31 prevents the panels 11 from separating. In this embodiment, as well as the other embodiments described, the support beam 31 may be of a length that the suspension posts 61 retain the panels 11 in adjacency. In one particular optional embodiment, the panels 11 are of substantially equal length and the support beam 31 is an integer multiple of the panel length to accommodate an integer number of panels 11.

Turning to the support frame 104, as discussed above, the support frame 104 includes at least one support beam 31 attached to at least two suspension posts 61 spaced from one another. It should be noted that although the terms "beam" and "post" usually connote narrow, elongate structures, it is contemplated that either the support beam 31 and/or the suspension posts 61 may be flat and/or planar to aid in supporting the platform 72. In the optional embodiment of FIGS. 1 and 2, for example, each of two support beams 31 are connected to a lower end of two suspension posts 61. While the optional embodiment of FIGS. 1 and 2 shows each support beam 31 attached to a suspension post 61 at its ends, it is contemplated that the suspension posts 61 could be attached to the support beam 31 at any point along the length of the support beam 31. Similarly, although the optional embodiment of FIGS. 1 and 2 show the ends of the support beam 31 extending beyond the edges 6 of the platform 72, it is contemplated that the support beam 31 may be of any length, either longer or shorter, with respect to the platform 72. In other embodiment, such as that shown in FIGS. 6–12, the support beam 31 and suspension posts 61 are connected through a corner joint that serves to form a suspension post element 61b

as well as a portion, shown of FIG. 8, or all, shown in FIG. 12, of the support beam 31. It is noted that the support beam 31 need not necessarily be unitary and may optionally comprise joined sections as shown in FIGS. 6–8.

The support beams 31 and suspension posts 61 may be attached to one another in a non-permanent, or even releaseable fashion. For example, in the optional embodiment of FIG. 2, an L-shaped flange 66 at the lower end of the suspension posts 61 may include a hole 70 that aligns with a hole 35 in the support beam 31. A mating nut and bolt threaded through the aligned holes 35, 70 attach the flange 66, and consequently the suspension post 61, to the support beam 31. In an alternate optional embodiment, shown in FIG. 3, the support beams 31 and suspension posts 61 are integrally formed. For example, a support beam 31 and suspension posts 61 could be formed into a U-shape with the support beam 31 disposed between two suspension posts 61, such as the embodiment shown in FIGS. 6 and 9, or an O-shape substantially similar to the U-shaped form but with an extra support frame member connecting the ends of the suspension posts 61 opposite the support beam 31.

The suspension posts 61 are optionally adjustable in length. For example, in one optional embodiment, the suspension posts 61 each include post elements 61a, 61b that may be selectively joined to adjust the length of a suspension post 61. More specifically, an upper post element 61a includes holes 65a therethrough. A lower post element 61b includes holes 65b therethrough. When the holes are aligned, mating bolts and nuts may retain the relative positions of the upper post element 61a and the lower post element 61b with respect to one another. By shifting the holes 65a, 65b aligned by increasing or decreasing the overlap between the upper post element 61a and lower post element 61b, the overall length of the support post 61 may be adjusted. In alternate optional embodiments (not shown), the post

elements may mate, that is, an outer post element may receive an inner post element such that the length may be adjusted by inserting or removing the inner post element from the outer post element; or the post elements may engage one another end-to-end such that addition or removal of post elements alter the length.

As noted above, the support frame 104 is attached to the structure 100 through a fastener 51 such that the suspension posts 61 and the support beam 31 cooperate to suspend the platform 72 from the structure 100. More specifically, the fastener 51 permits a transfer of the load on the platform 72 to the structure 100. The fastener 51 may take many forms. In its most elemental form, the fastener 51 is any hardware connecting the support frame 104 to the structure 100. For example, any bracket, threaded fastener, mating fastener, brad, anchor, or other attachment device could be used. Moreover, it is possible that the fastener 51 may be part of the support post 61, as discussed in greater detail below, or may have more than one piece, such as a toggle bolt, concrete anchor, wall anchor, or the like that cooperates with the fastener 51 to suspend the suspended storage shelf 1.

In the optional embodiment of FIG. 1 and 3, for example, an angle bracket with two legs 53, 54 may be secured to an upper end of a support post 61. In such an optional embodiment, a first leg 53 with one or more holes 55 therethrough may be secured to the structure 100 using an attachment 57 such as a screw or bolt. A second leg 54 with one or more holes 56 therethrough may be secured to a support post 61 through a hole 65a in the support post 61. Alternatively, in the optional embodiment of FIG. 6, the fastener 51 is a flange 110 disposed at an end of a support post 61. For example, in the optional embodiment of FIG. 10, the flange 110 is connected to a receiver 112 that mates to an end of a support post 61. It is noted that in any of these optional embodiments, the fastener 51 may be removable from, fixed to, or integral with the support post 61. For example, in FIG. 13, the

fastener 51 is an angle formed at the end of a support post 61. That is, the fastener 51 of the optional embodiment shown in FIG. 13 is not a separate piece but integrally formed with the support post 61.

While certain embodiments of the present invention have been shown and described it is to be understood that the present invention is subject to many modifications and changes without departing from the spirit and scope of the claims presented herein.

I CLAIM:

1. A storage shelf for suspending from a structure, comprising:

a platform comprising one or more individual panels;

a support frame comprising:

at least one support beam subjacent said platform, the one or more panels of said platform positioned along said support beam to form a substantially continuous surface; and

at least two suspension posts spaced from one another and attached at a lower end to said support beam; and

a fastener securing said support frame to said structure such that said suspension post and said support beam cooperate to suspend said platform from said structure.

2. The storage shelf of claim 1 wherein said support beam is integrally formed with a lower end of each said suspension post.

3. The storage shelf of claim 1 wherein said support beam has two ends, such that each said support beam end extends beyond said platform.

4. The storage shelf of claim 3 wherein said support frame comprises a suspension post attached at a lower end to each support beam end.

5. The storage shelf of claim 4 wherein the length of said support beam is such that said suspension posts at each support beam end retain said panels in adjacency.

6. The storage shelf of claim 1 wherein said platform comprises two or more panels, the storage shelf further comprising a coupling securing adjacent panels.

7. The storage shelf of claim 6 wherein said panels are formed from a grid of wire members and said coupling comprises a clamp securing adjacent wire members of adjacent panels.

8. The storage shelf of claim 1 wherein said platform comprises two or more panels and each panel is secured to said support beam.

9. The storage shelf of claim 1 wherein said suspension post is of adjustable length.

10. The storage shelf of claim 9 wherein said suspension post has at least two post elements such that the length of said suspension post is adjusted by selectively joining said post elements.

11. The storage shelf of claim 1 wherein said panels are positioned along said support beam such that the edges of adjacent panels are perpendicular to said support beam.

12. The storage shelf of claim 1 wherein said panels are of equal length and said support beam has a length that is an integer multiple of the length of said panels.

13. A storage shelf for suspending from a structure, comprising:

a platform comprising two or more individual panels;

a support frame comprising:

at least one support beam subjacent said platform, said panels positioned along said support beam adjacent one another to cooperate to form a substantially continuous surface; and

at least two suspension posts spaced from one another and attached at a lower end to said support beam; and

a fastener securing said support frame to said structure such that said suspension post and said support beam cooperate to suspend said platform from said structure.

14. The storage shelf of claim 13 wherein said support beam is integrally formed with a lower end of each said suspension post.

15. The storage shelf of claim 13 wherein said support beam has two ends, such that each said support beam end extends beyond said platform.

16. The storage shelf of claim 15 wherein said support frame comprises a suspension post attached at a lower end to each support beam end.

17. The storage shelf of claim 16 wherein the length of said support beam is such that said suspension posts at each support beam end retain said panels in adjacency.

18. The storage shelf of claim 1 further comprising a coupling securing adjacent panels.

19. The storage shelf of claim 18 wherein said panels are formed from a grid of wire members and said coupling comprises a clamp securing adjacent wire members of adjacent panels.

20. The storage shelf of claim 13 wherein each panel is secured to said support beam.

21. The storage shelf of claim 13 wherein said suspension post is of adjustable length.

22. The storage shelf of claim 21 wherein said suspension post has at least two post elements such that the length of said suspension post is adjusted by selectively joining said post elements.

23. The storage shelf of claim 13 wherein said panels are positioned along said support beam such that the edges of adjacent panels are perpendicular to said support beam.

24. The storage shelf of claim 13 wherein said panels are of equal length and said support beam has a length that is an integer multiple of the length of said panels.

25. A storage shelf for suspending from a structure, comprising:

a platform comprising two or more individual panels, each said panel secured to an adjacent panel to cooperate to form a substantially continuous surface;

a support frame comprising:

at least one support beam subjacent said platform; and

at least two suspension posts spaced from one another and attached at a lower end to said support beam; and

a fastener securing said support frame to said structure such that said suspension post and said support beam cooperate to suspend said platform from said structure.

26. The storage shelf of claim 25 wherein said support beam is integrally formed with a lower end of each said suspension post.

27. The storage shelf of claim 25 wherein said support beam has two ends, such that each said support beam end extends beyond said platform.

28. The storage shelf of claim 27 wherein said support frame comprises a suspension post attached at a lower end to each support beam end.

29. The storage shelf of claim 25 further comprising a coupling securing adjacent panels.

30. The storage shelf of claim 29 wherein said panels are formed from a grid of wire members and said coupling comprises a clamp securing adjacent wire members of adjacent panels.

31. The storage shelf of claim 25 wherein each panel is secured to said support beam.

32. The storage shelf of claim 25 wherein said suspension post is of adjustable length.

33. The storage shelf of claim 32 wherein said suspension post has at least two post elements such that the length of said suspension post is adjusted by selectively joining said post elements.

34. A storage shelf for suspending from a structure, comprising:

a platform comprising two or more individual panels;

a support frame comprising:

at least one support beam subjacent said support surface, said panels secured to said support beam adjacent one another to cooperate to form a substantially continuous surface; and

at least two suspension posts spaced from one another and attached at a lower end to said support beam; and

a fastener securing said support frame to said structure such that said suspension post and said support beam cooperate to suspend said platform from said structure.

35. The storage shelf of claim 34 wherein said support beam is integrally formed with a lower end of each said suspension post.

36. The storage shelf of claim 34 wherein said support beam has two ends, such that each said support beam end extends beyond said platform.

37. The storage shelf of claim 36 wherein said support frame comprises a suspension post attached at a lower end to each support beam end.

38. The storage shelf of claim 34 further comprising a coupling securing adjacent panels.

39. The storage shelf of claim 38 wherein said panels are formed from a grid of wire members and said coupling comprises a clamp securing adjacent wire members of adjacent panels.

40. The storage shelf of claim 34 wherein said suspension post is of adjustable length.

41. The storage shelf of claim 34 wherein said suspension post has at least two post elements such that the length of said suspension post is adjusted by selectively joining said post elements.

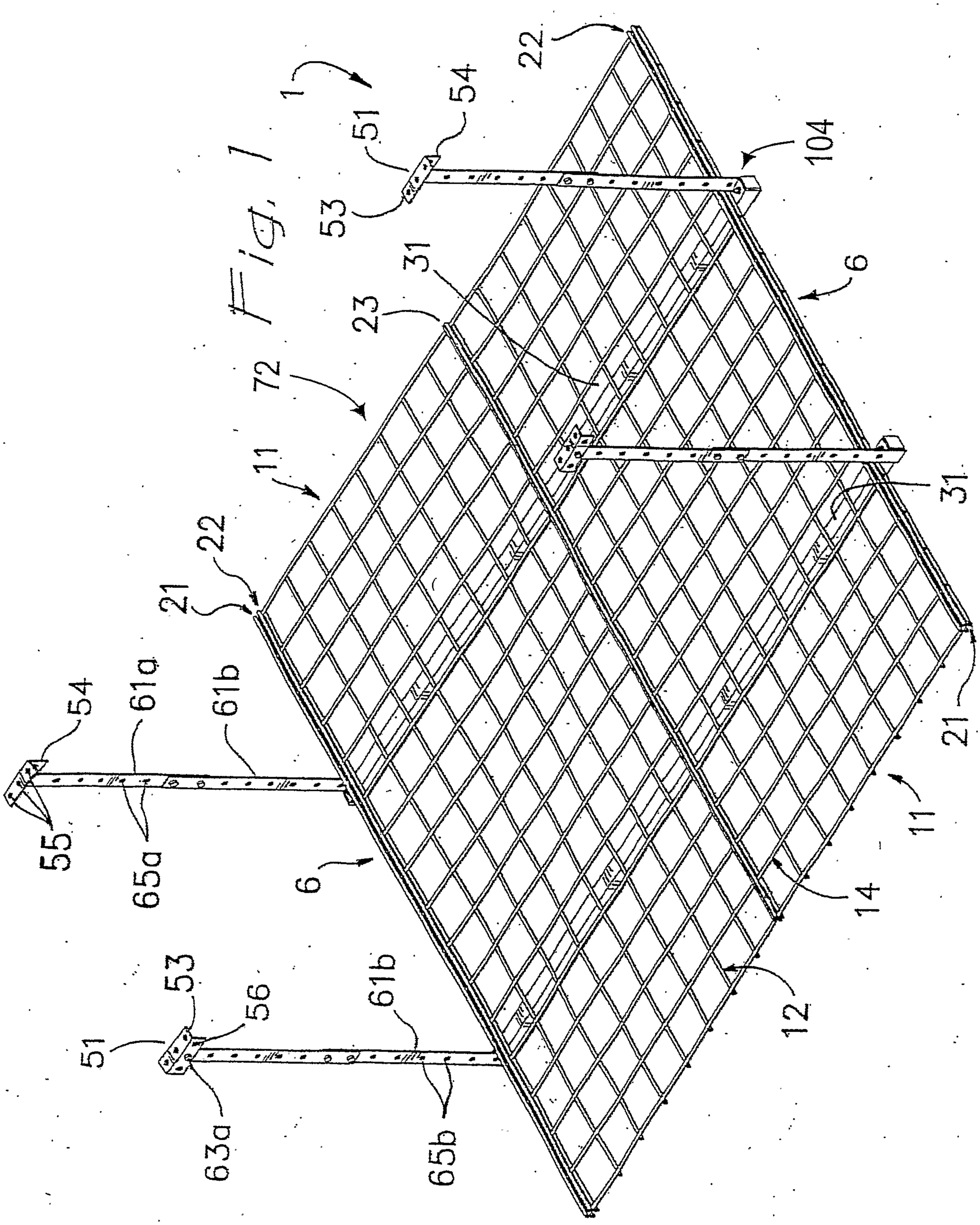
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Fig. 1

Fig. 2

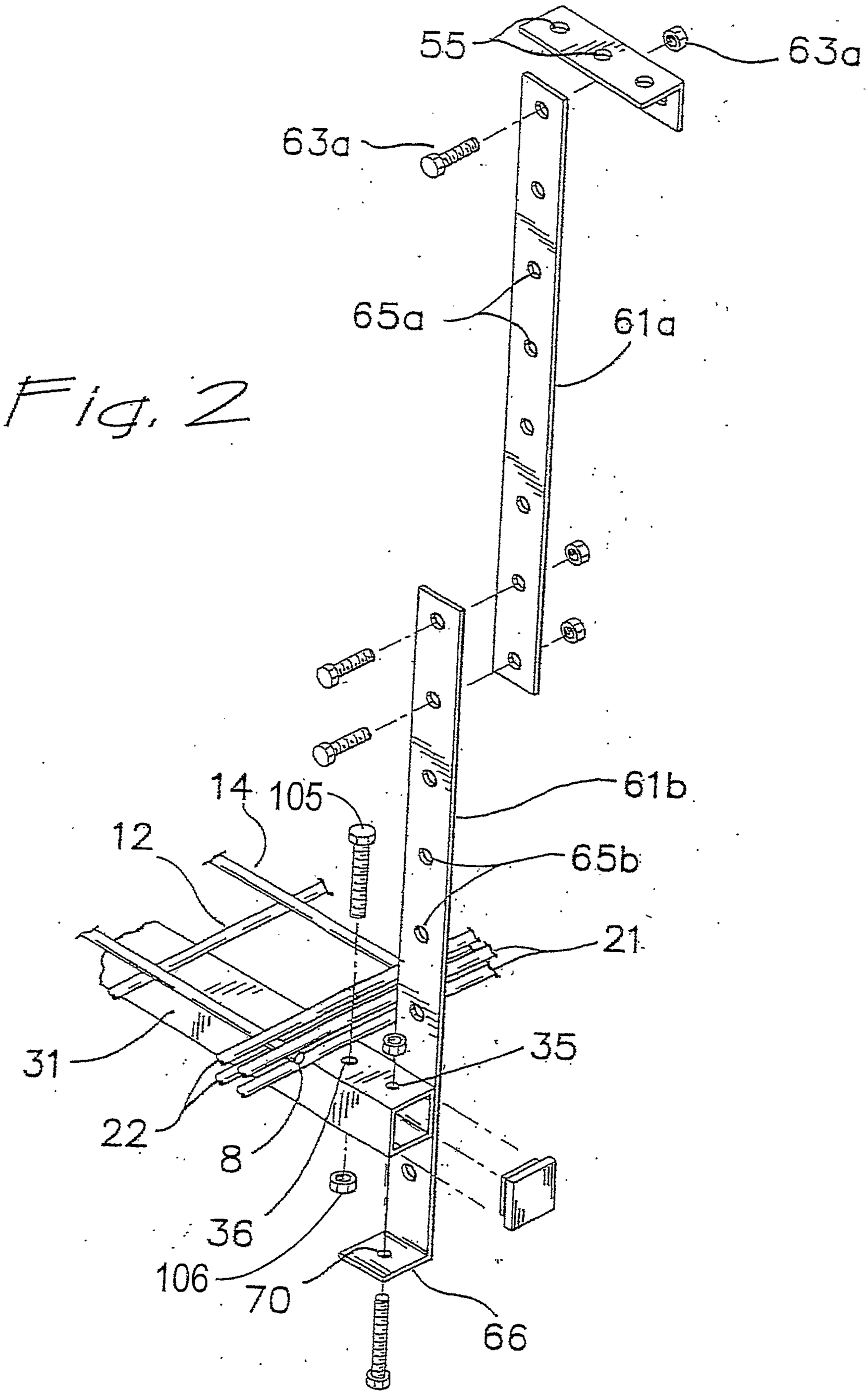
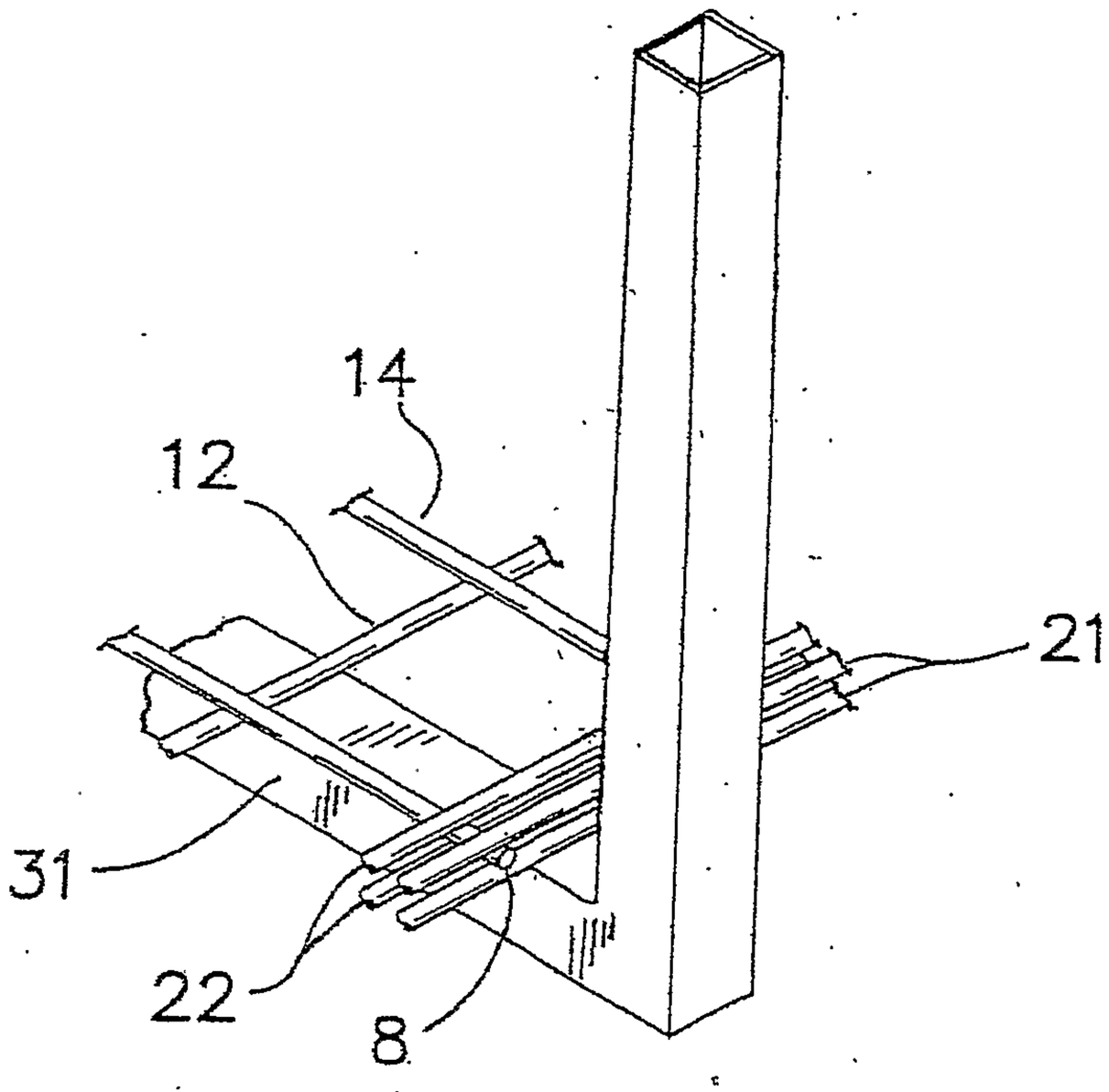


Fig. 3



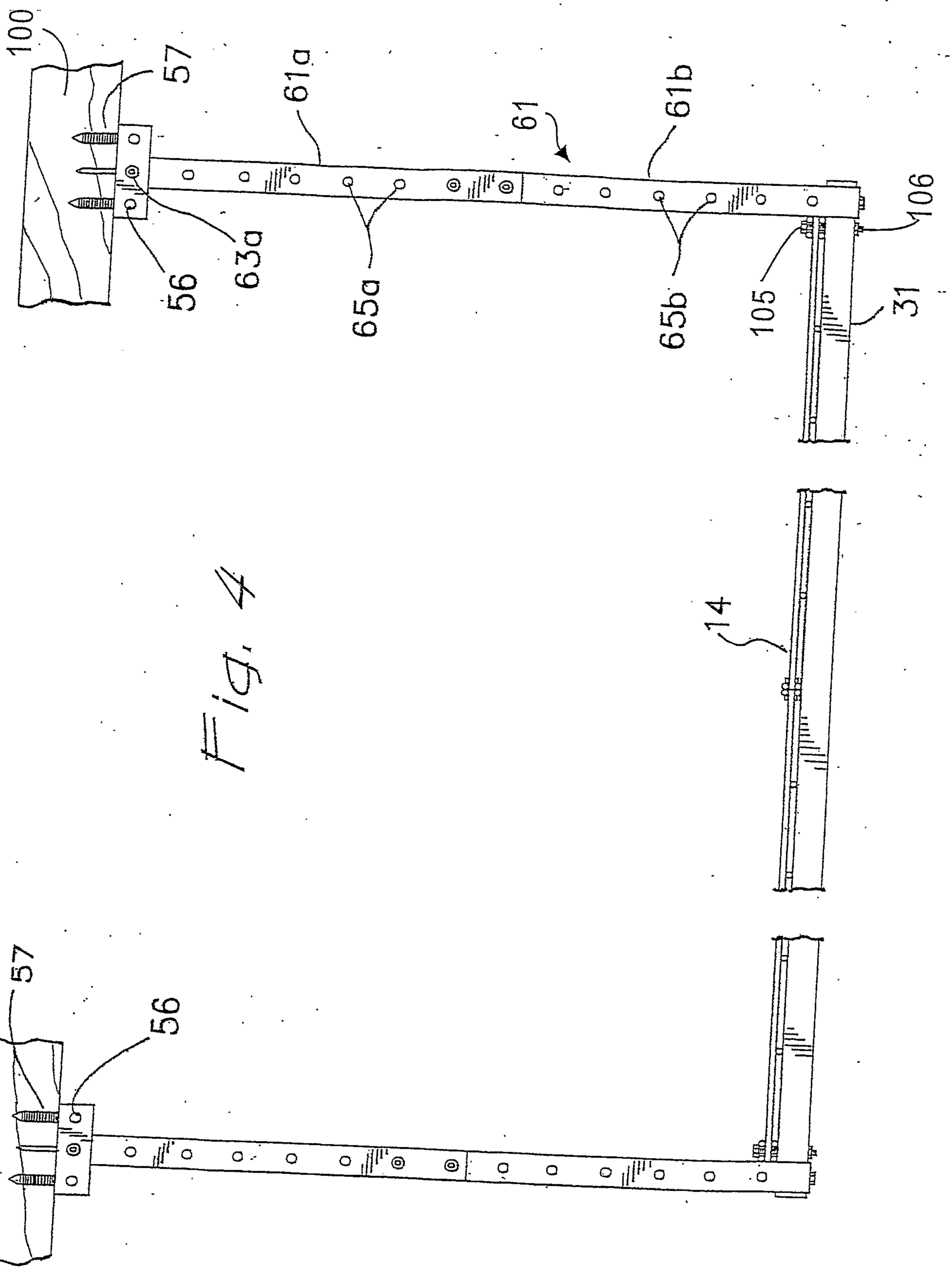


Fig. 4

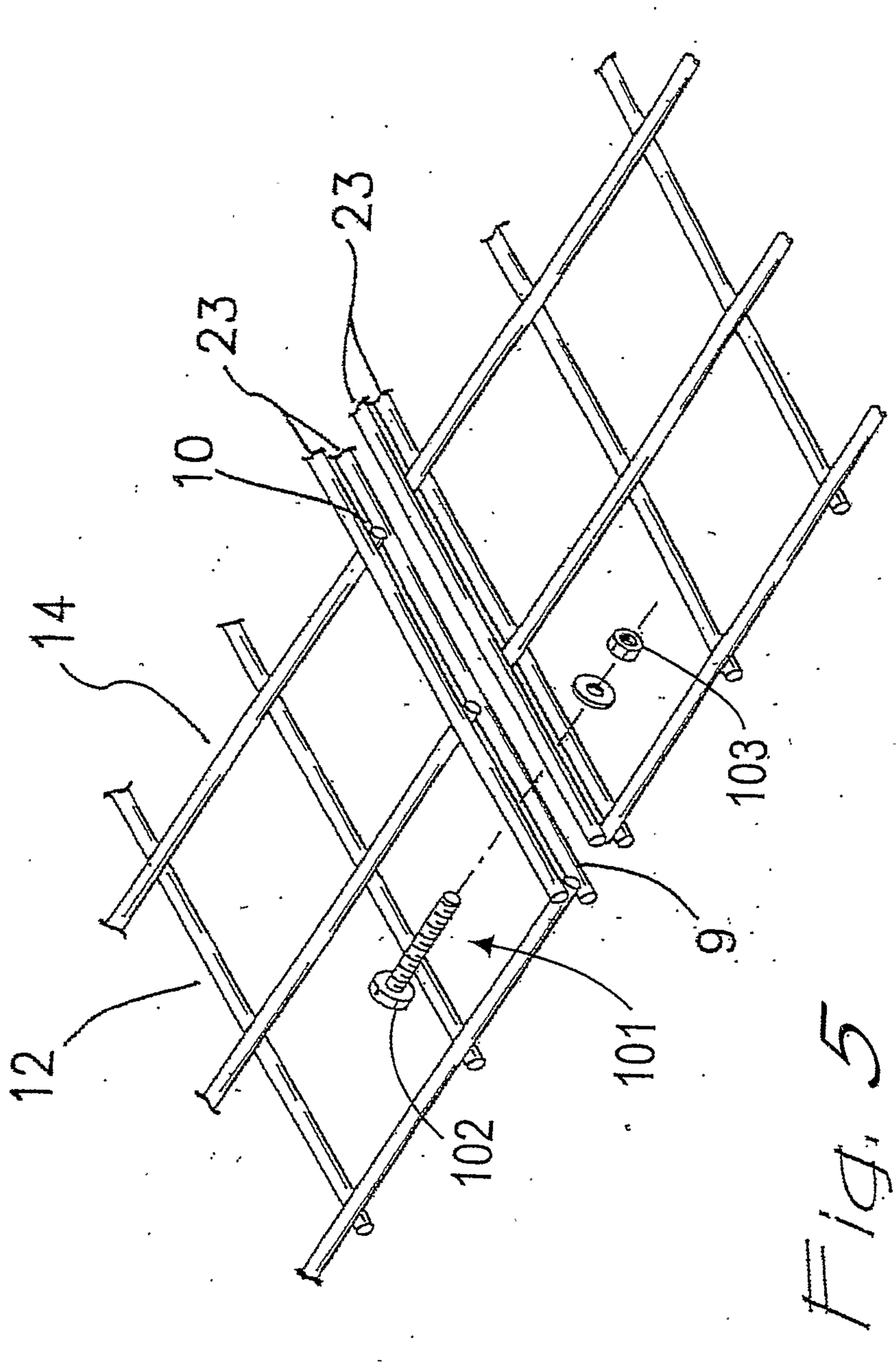


Fig. 5

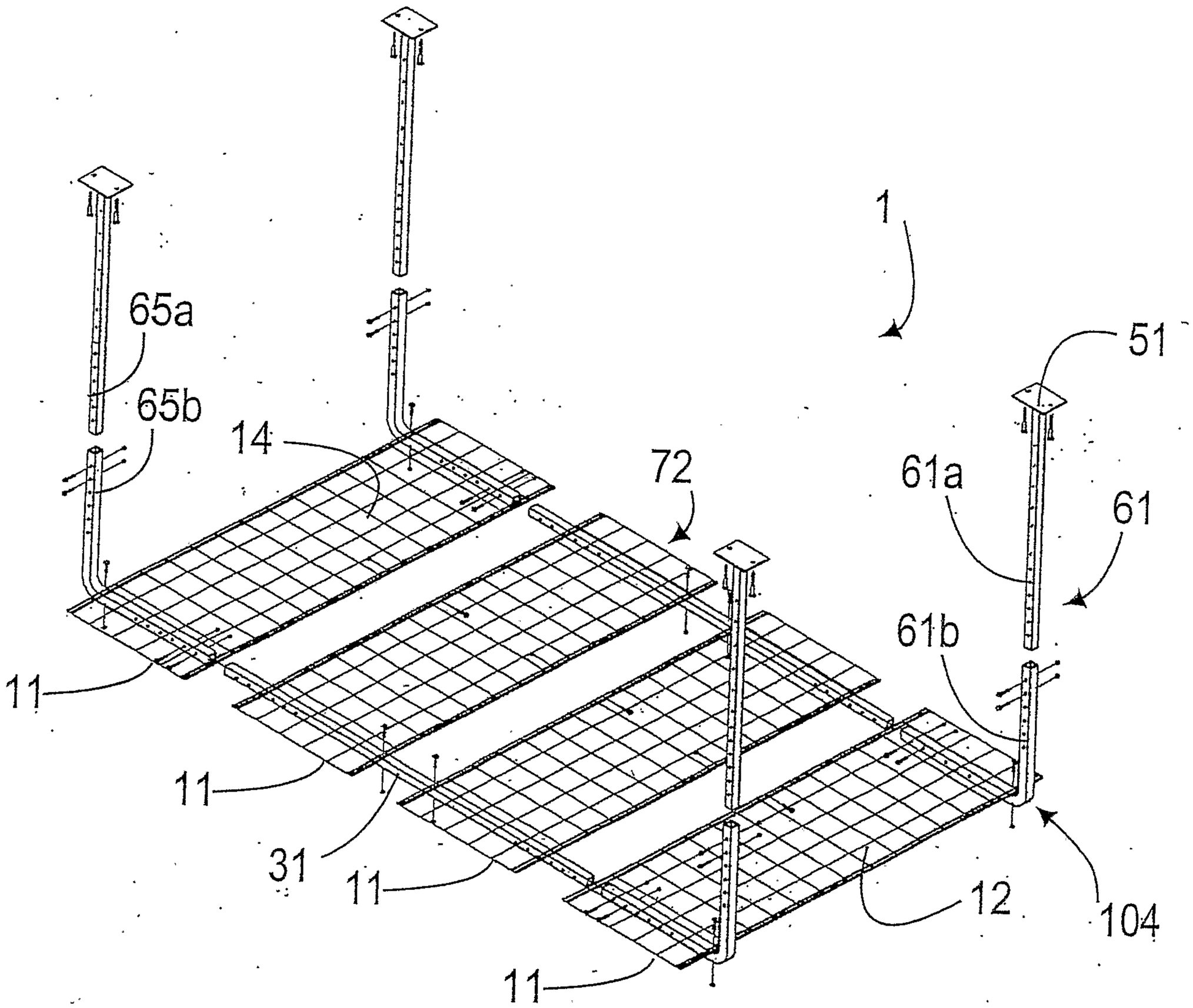


Fig. 6

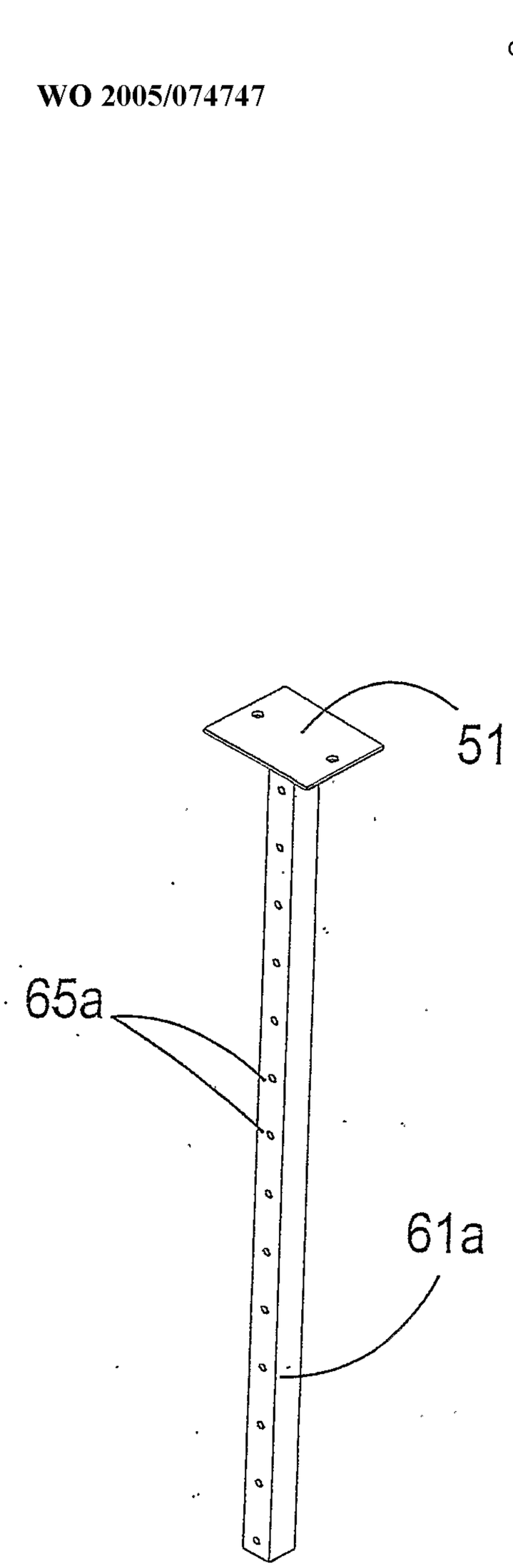


Fig. 7

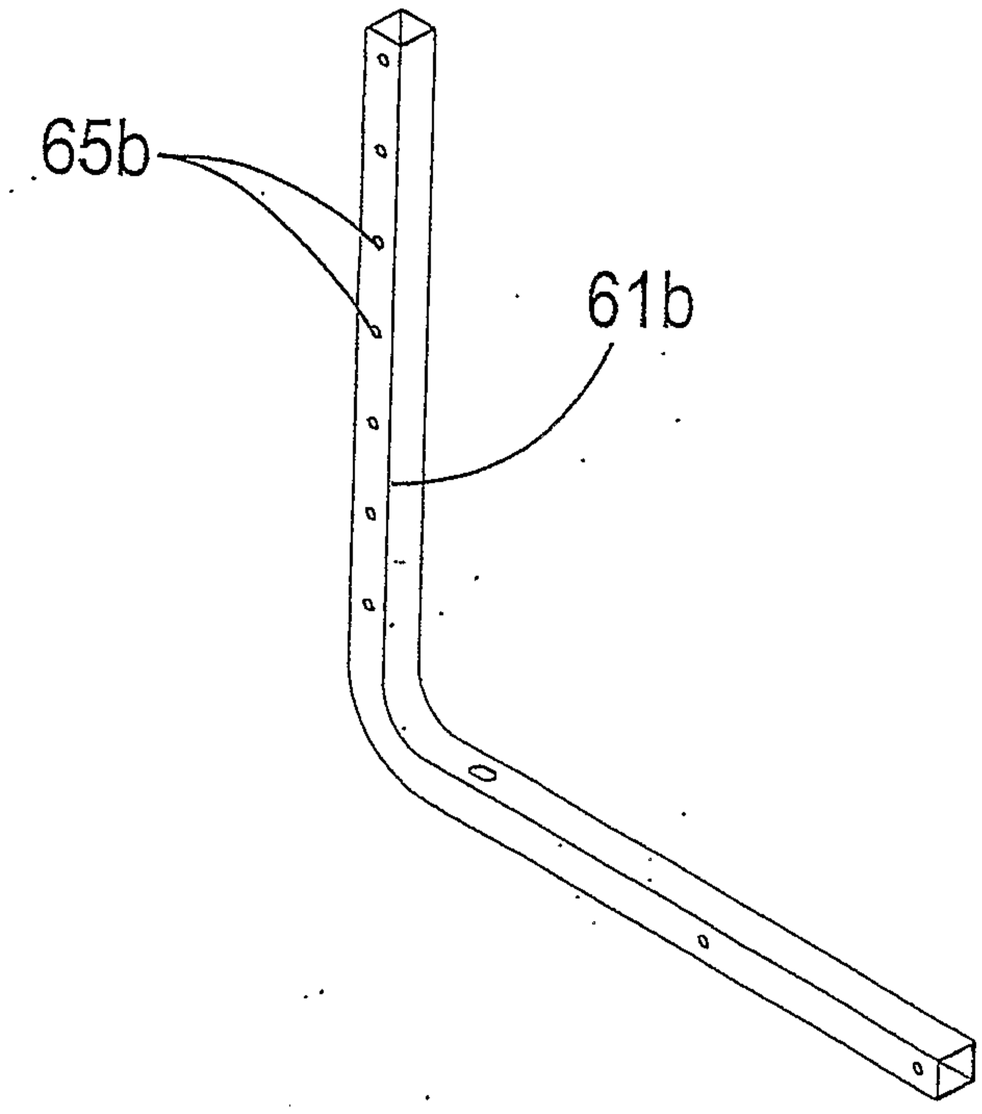


Fig. 8

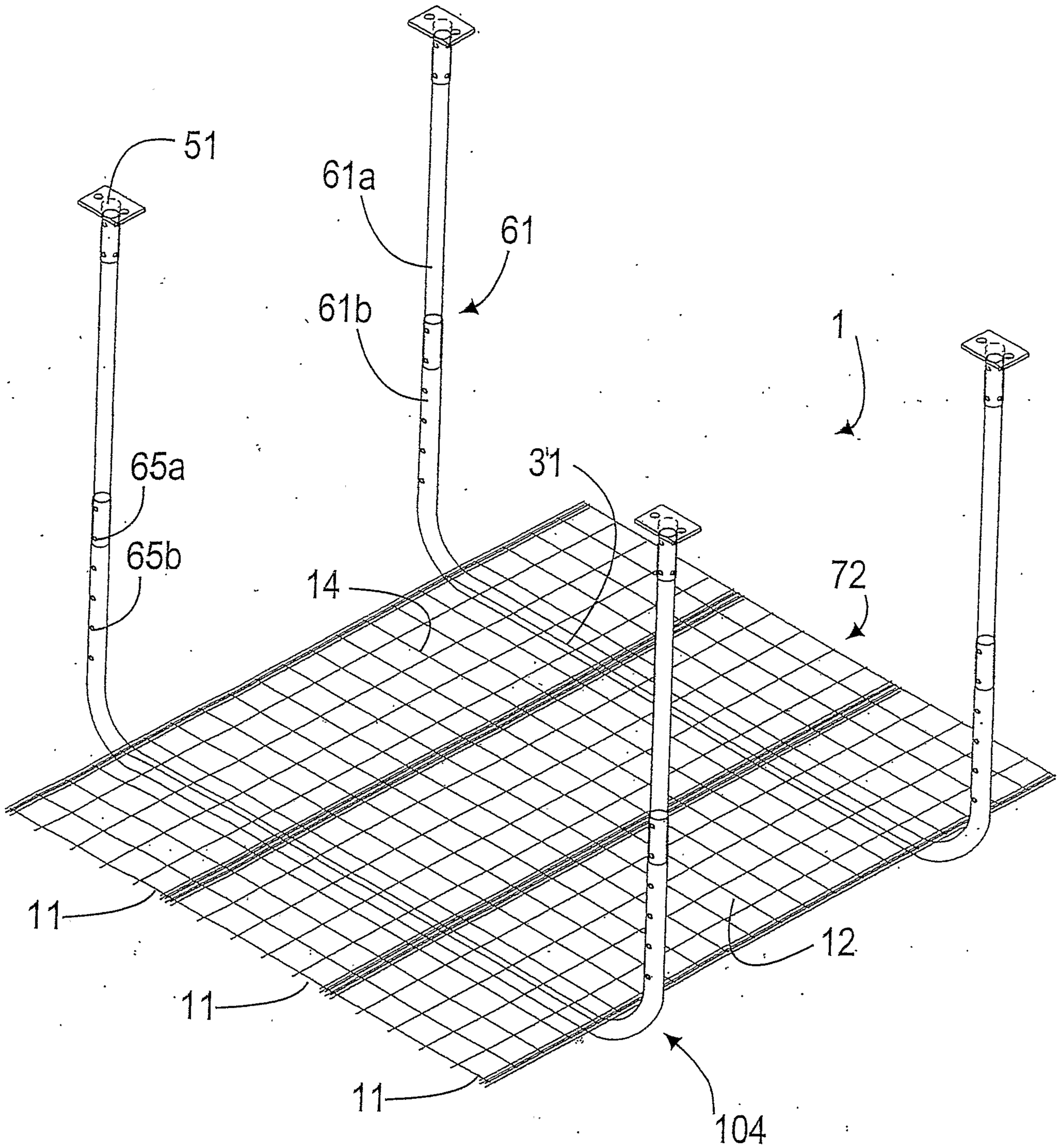


Fig. 9

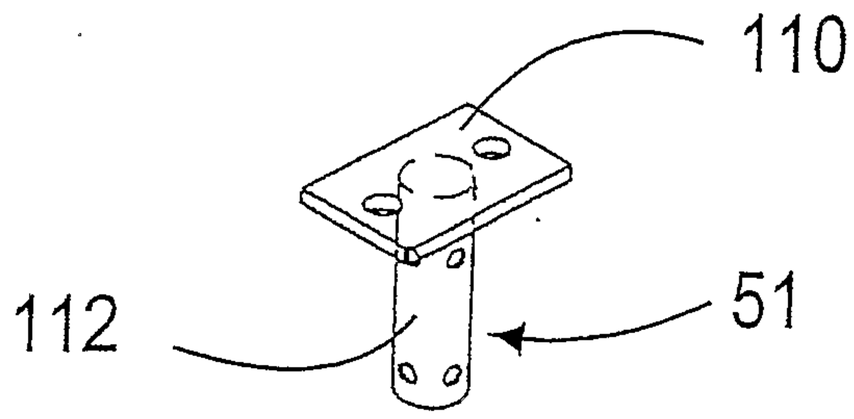


Fig. 10

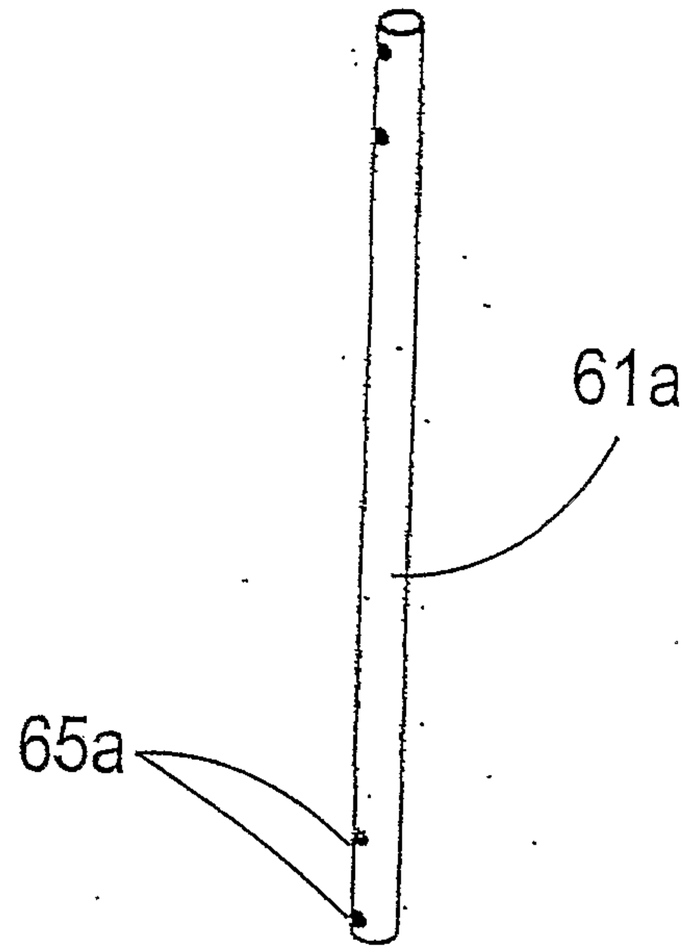


Fig. 11

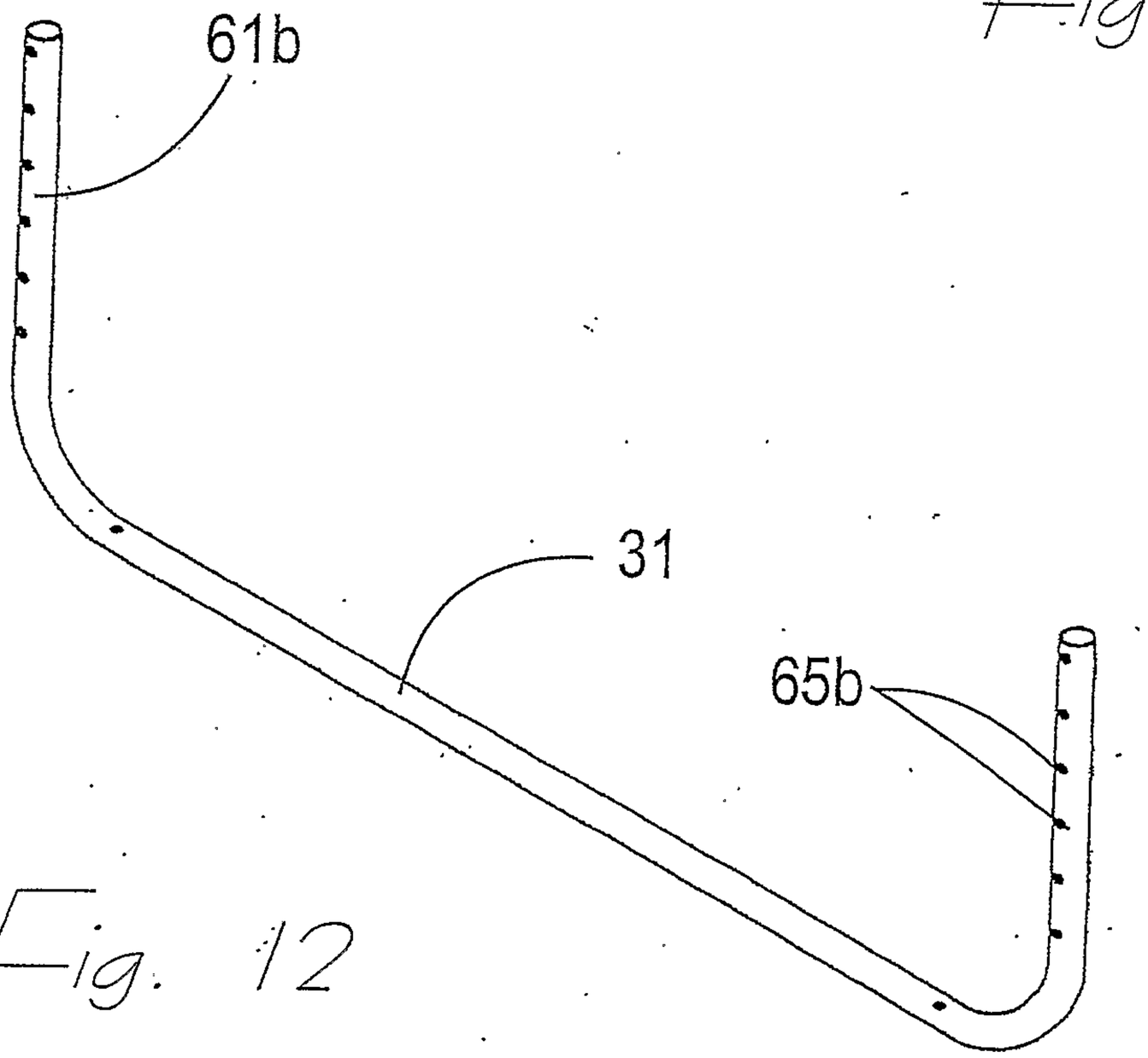


Fig. 12

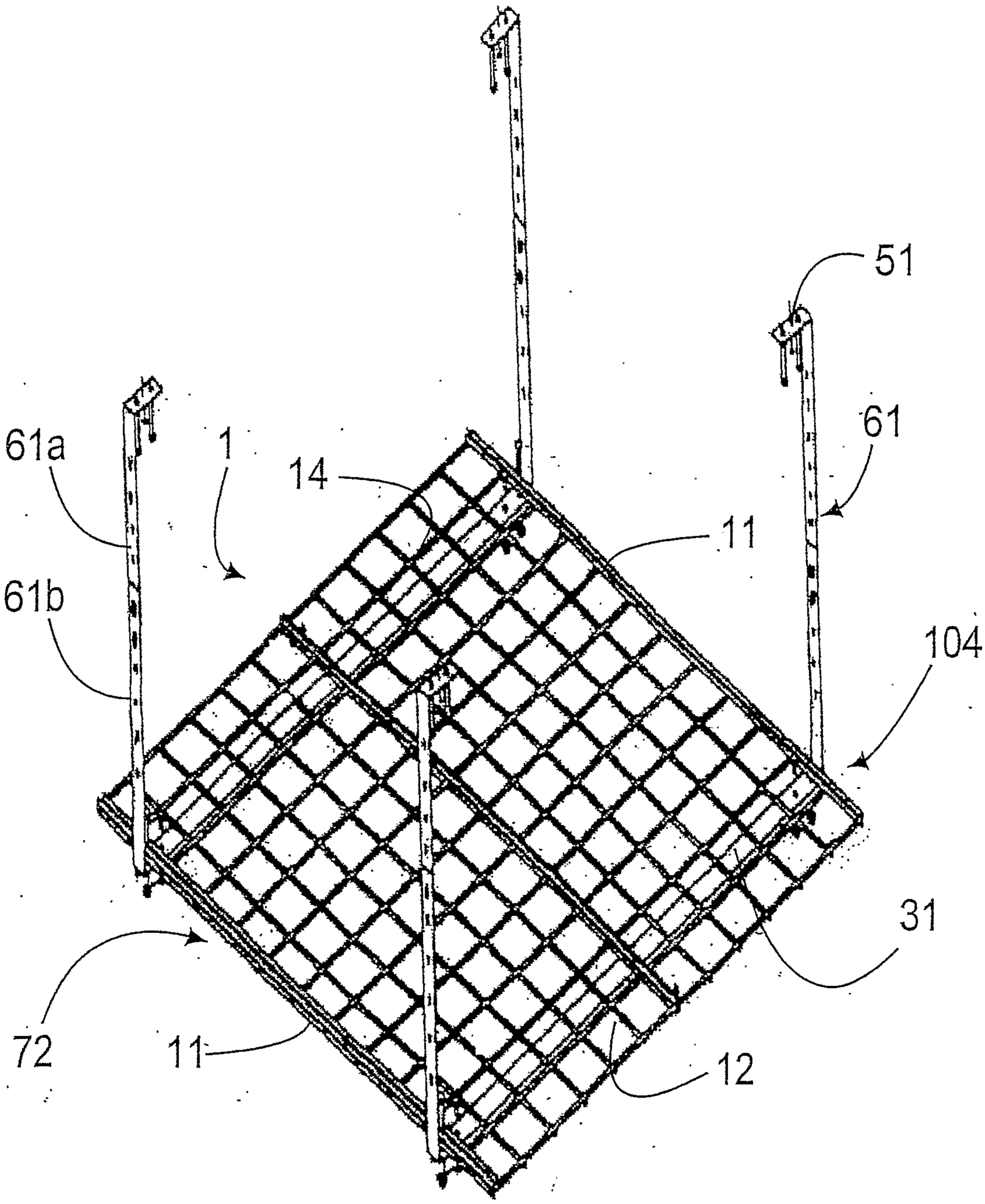
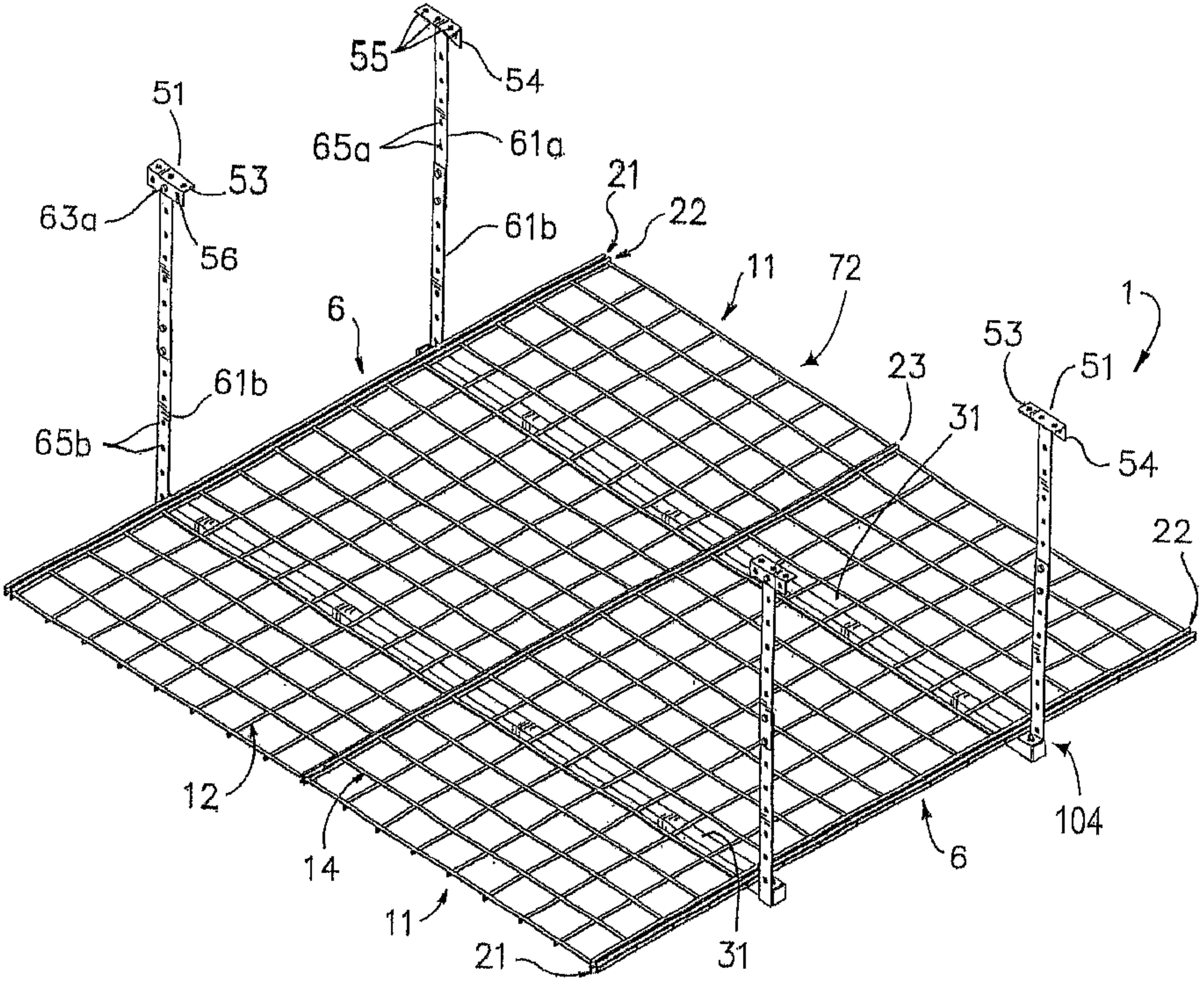


Fig. 13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