(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
1 February 2007 (01.02.2007)

PCT

(10) International Publication Number
WO 2007/012107 A1

(51) International Patent Classification:
E04G 1/00 (2006.01) *E04G 3/00* (2006.01)
E04G 5/00 (2006.01) *E04G 7/00* (2006.01)
E04G 21/32 (2006.01)

(21) International Application Number:
PCT/AU2006/000851

(22) International Filing Date: 19 June 2006 (19.06.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

2005904030	28 July 2005 (28.07.2005)	AU
2006200200	18 January 2006 (18.01.2006)	AU
2006201721	24 April 2006 (24.04.2006)	AU

(71) Applicant *(for all designated States except US)*: **AD HOC (NSW) PTY LTD** [AU/AU]; 5 Dinnison Circuit, Kambah, ACT 2902 (AU).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: **MILES, Robert** [AU/AU]; 5 Dinnison Circuit, Kambah, ACT 2902 (AU).

(74) Agent: **DUMMER, Peter, C.**; Wallington-Dummer, GPO Box 3888, Sydney, NSW 2001 (AU).

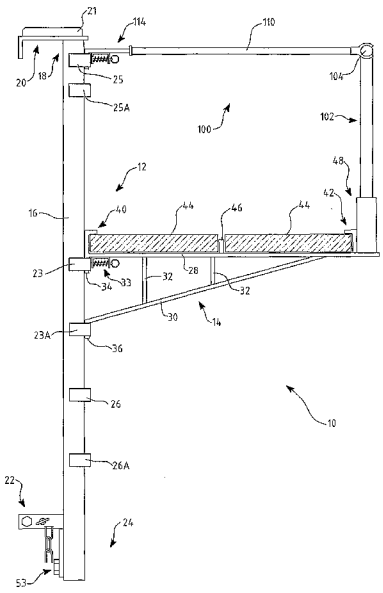
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

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.

(54) **Title:** HOOK-ON SCAFFOLD



(57) **Abstract:** A scaffold assembly comprising at least one pair of hook-on scaffold elements; said scaffold elements adapted for support of at least one builder' s plank; each of said elements comprising a vertical main shaft provided with a hook structure at an upper end of said main shaft and a securing bracket at a lower end of said main shaft; each of said hook-on scaffold elements further comprising a braced hook-on arm; said hook structure adapted for engagement with a horizontal top plate of a building frame, and said securing bracket adapted for engagement with a vertical stud or a horizontal element of said building frame.

WO 2007/012107 A1

HOOK-ON SCAFFOLD

The present invention relates to safety devices for use in the construction of buildings and, more particularly to support structures for personnel working above ground level.

BACKGROUND

Safety of personnel involved in the building industry has increasingly become the subject of regulation. A particularly dangerous aspect of work on construction sites is where personnel is required to work at some height above ground level, for example on two-storey buildings or where steeply sloping terrain is involved.

In at least some jurisdictions it is now a requirement that scaffolding be installed where personnel is required to work at a greater than a set height above ground level. Scaffolding supported at ground level involves the erection of a large number of structural elements of frames with adjustable feet, cross bracing and fasteners etc, being expensive in both material and labour. Moreover, where sloping ground, projecting patios and other obstructions are encountered, the use of scaffolding becomes particularly awkward and time consuming.

It is an object of the present invention to address or ameliorate some of the above disadvantages.

NOTE:

The term "comprising" (and grammatical variations thereof) is used in this specification in the inclusive sense of "having" or "including", and not in the exclusive sense of "consisting only of".

BRIEF DESCRIPTION OF INVENTION

Accordingly, in a first broad form of the invention, there is provided a scaffold assembly comprising at least one pair of hook-on scaffold elements; said scaffold elements adapted for support of at least one builder's plank; each of said elements comprising a vertical main shaft provided with a hook structure at an upper end of said main shaft and a securing bracket at a lower end of said main shaft; each of said hook-on scaffold elements further comprising a braced hook-on arm; said hook structure adapted for engagement with a horizontal top plate of a building frame, and said securing bracket adapted for engagement with a vertical stud or a horizontal element of said building frame.

Preferably, said assembly further comprises a safety rail assembly for attachment to said pair of hook-on scaffold elements.

Preferably, said vertical main shaft comprises a length of metal rectangular hollow section; said main shaft

provided at intervals along its length with hooking eyes projecting from said main shaft in a first outward direction; said hooking eyes adapted for engagement with said braced hook-on arm.

Preferably, said hook structure comprises a metal horizontal plate projecting from said upper end of said main shaft in a second inward direction; said hook structure further including a metal vertical plate depending from an outer end of said horizontal plate.

Preferably, said metal horizontal plate is provided with a strengthening rib extending substantially the length of said plate.

Preferably, said securing bracket comprises a generally U-shaped fabrication comprising a spaced apart pair of arms extending from a back plate in said second inward direction; said arms adapted to accept between them a said vertical stud or a horizontal element of said frame.

Preferably, said pair of arms are of a length so as to project past an inner face of said vertical stud or horizontal element; outer ends of said arms provided with apertures adapted to accept therethrough a securing element so as to secure said securing bracket to said vertical stud or said horizontal element.

Preferably, said securing element is a first wing bolt passing through a first of said apertures in a first of said arms and threadably engaging with a threaded one of said apertures in a second of said arms.

Preferably, one of said arms is provided with a threaded aperture at a median position along said arm; said threaded aperture adapted to accept a second wing bolt; said second wing bolt adapted for engagement with said vertical stud or said horizontal member so as to prevent any movement of said bracket relative said vertical stud or said horizontal element.

Preferably, each said first wing bolt and said second wing bolt are secured to said bracket by a length of chain.

Preferably, said securing bracket is rotatably attached to said main shaft; attachment of said securing bracket arranged so as to allow said bracket to rotate 90 degrees between a first position for engagement with said vertical stud and a second position for engagement with said horizontal element.

Preferably, said hooking eyes comprise U-shaped elements projecting horizontally from said main shaft; arms of said U-shaped elements attached to opposing sides of said main shaft, and wherein separation between an outer face of said main shaft and inside faces of cross bars of

said U-shaped elements is adapted to accept hooking lugs of said braced hook-on arm.

Preferably, said main shaft is provided with at least one pair of said hooking eyes.

Preferably, said main shaft is provided with two pairs of said hooking eyes; said two pairs providing two levels of attachment of said hook-on arm.

Preferably, one of each of said at least one pair of hooking eyes is provided with an aperture through said cross bar of said U-shaped element; said aperture adapted to receive a spring-loaded pin for securing one of said hooking lugs inserted in said hooking eye.

Preferably, said braced hook-on arm comprises a horizontal support member, an angled bracing member and at least one intermediate brace member extending between said horizontal supporting member and said angled bracing member.

Preferably, an inner end of each of said horizontal support member and said angled bracing member is provided with one of said hooking lugs; each respective one of said hooking lugs adapted for insertion into a corresponding one of said pair of hooking eyes.

Preferably, one of said hooking lugs for said horizontal support member is provided with an aperture adapted for passage therethrough of said spring-loaded pin; said spring-loaded pin passing through said aperture in a said hooking eye when said braced hook-on arm is assembled to said main shaft.

Preferably, said horizontal support member is of length sufficient to support thereon two side-by-side said builder's planks.

Preferably, an inner end and an outer end of said horizontal support member are provided with retaining plank safety hook elements; said safety hook elements adapted to retain respective outer edges of said side-by-side builder's planks.

Preferably, said horizontal support member is further provided at an outer end with a vertical safety rail support element.

Preferably, adjoining ones of said hook-on scaffold elements in use are adapted to each support a stanchion of said safety railing in a respective said safety rail support element; said safety railing extending between said adjoining hook-on scaffold elements; said safety rail comprising a pair of said stanchions and upper and lower horizontal rail elements.

Preferably, said stanchions and said horizontal rail elements are interconnected by snap-lock hooks.

Preferably, said horizontal rail elements comprise telescoping inner and outer tube members; said inner and outer tube members allowing adjustment of length of said safety railing between adjoining said stanchions.

Preferably, said upper end of said vertical main shaft is provided with at least one bracket for attachment of a cross bracing member of said safety railing.

Preferably, said cross bracing member comprises a tubular member provided at a first inner end with a locking structure adapted for engagement with said at least one bracket; said tubular member provided at a second outer end with a snap-lock hook for engagement with said upper rail element of said safety railing.

Preferably, said locking structure comprises a spring-loaded pin assembly; said spring-loaded pin engaging with an aperture provided in said at least one bracket so as to secure said cross bracing member from inadvertent disengagement with said at least one bracket.

In a further broad form of the invention, there is provided a builder' plank support system adapted for attachment to frame elements of a building; said system

including a scaffold assembly provided with a hook plate at an upper end of said scaffold assembly and a securing bracket at a lower end; said securing bracket adapted for fastening to a vertical stud or a horizontal element of said frame.

In yet a further broad form of the invention, there is provided a method for supporting at least one builder's plank and safety railing at the side of a building; said method including the steps of:

(a) hooking a hook plate of at least one pair of hook-on scaffold assemblies over a horizontal top plate of a frame of said building,

(b) securing a bracket of each of said scaffold assemblies to a vertical stud or a horizontal element of said frame,

(c) positioning said at least one builder's plank over horizontal members of hook-on arms of said at least one pair of said scaffold assemblies.

Preferably, said method further includes the steps of;

(a) inserting stanchions of said safety railing into stanchion support elements of said scaffold assemblies,

(b) attaching horizontal railing elements to said stanchions,

(c) bracing said railings by cross bracing members extending between said railings and brackets on vertical shafts of said at least one pair of scaffold assemblies.

In still a further broad form of the invention, there is provided a safety system for personnel engaged in construction of a building; said system including a scaffold assembly adapted for attachment to elements of a frame of said building; adjoining ones of said scaffold assembly adapted for support of at least one builder's plank and a safety railing, and wherein a lower end of said scaffold assembly is secured by a bracket to a vertical stud or a horizontal element of said frame.

BRIEF DESCRIPTION OF DRAWINGS

Embodiments of the present invention will now be described with reference to the accompanying drawings wherein:

Figure 1 is a side elevation view of a hook-on scaffold assembly according to a preferred embodiment of the invention,

Figure 2 is a perspective view of a main vertical shaft and associated components of the scaffold assembly of Figure 1,

Figure 2A is a perspective view of the upper end of the main vertical shaft of Figure 2,

Figure 3 is a perspective view of a hook-on arm of the scaffold assembly of Figure 1,

Figure 3A is an enlarged side view of a spring-loaded pin mechanism of the hook-on arm of Figure 3,

Figure 4 is a perspective detailed view of a securing bracket of the scaffold assembly of Figures 1 and 2,

Figure 5 are representations of bolts for use with the scaffold assembly of Figures 1 to 4,

Figure 6 is a perspective view of a safety railing for attachment to the scaffold assembly of Figure 1,

Figure 7 is a detail view of the inner end of a cross bracing member of the safety railing attachment of Figure 6,

Figure 8 is a perspective view of a pair of scaffold assemblies of Figure 1 attached to the frame of a building and supporting a pair of builder's planks and a safety railing.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

With reference to Figure 1, a scaffold assembly 10 according to a preferred embodiment of the invention,

comprises a vertical main shaft 12 and a braced hook-on arm 14. Main shaft 12 includes a vertical length of rectangular section tubing 16 to which is affixed at an upper end 18 a hook structure 20. Hook structure 20 may be formed of a piece of steel angle, strengthened with a rib 21 as shown in Figure 2A.

A securing bracket 22 is rotatably attached at a lower end 24 of tubing 16. Also attached at intervals along the lower portion of the length of tubing 16, are two pairs of first hooking eyes 23 and 23A, and 26 and 26A in the form of U-shaped brackets as best seen in Figure 2. Attached at upper end 18 of main shaft 12 are a further pair of hooking eyes 25 and 25A, shown in more detail in Figure 2A.

Braced hook-on arm 14 comprises a horizontal support member 28, and an angled bracing member 30 formed of flat bars (or rectangular section tubing) affixed one to the other towards their respective outer ends and provided with intermediate bracing elements 32. Both the inner end of horizontal support member 28 and angled bracing member 30 are provided with vertical hooking lugs 34 and 36 respectively (as best seen in Figure 3), adapted for insertion into either the upper pair 23 and 23A, or the lower pair of hooking eyes 26 and 26A.

Sides of the U-shaped pairs of brackets 23 and 23A, and 26 and 26A, are affixed to opposite sides of tubing 16 such that a sufficient gap is left between the inside faces

of the base of the brackets and the outside face of tubing 16 for insertion of vertical hooking lugs 34 and 36. The upper brackets 25 and 25A are similarly constructed and arranged; in this case to accept a cross brace 110 of the safety railing system to be further described below.

Braced hook-on arm 14 is provided with a spring loaded pin mechanism 33 (shown in enlarged detail in Figure 3A) located on the underside and at the inner end of horizontal support member 28. Mechanism 33 comprises a U-shaped bracket 41 with apertures in the legs of the bracket for slidingly retaining pin 38. Pin 38 is provided with a washer 39, welded to pin 38, and a coaxial compression spring 43 retained between washer 39 and the inside of bracket 41. Pin 38 is further provided with an aperture 47 at an outer end of pin 38 for attachment of a split ring 45, by which means pin 38 may be pulled into a retracted position relative to vertical hooking lug 34. Vertical hooking lug 34 is provided with a hole 37 (as shown in Figure 3) coaxial with pin 38 of mechanism 33.

Each of the upper ones 23 or 26 of the pairs of brackets 23 and 23A, and 26 and 26A, is provided with a hole 27, the arrangement being such that when lug 36 is inserted into a bracket 23 or 26, initially with pin 38 of spring-loaded mechanism 33 retracted, the pin 38 is driven by spring 43 through holes 37 and 27 in vertical hooking lug 34 and bracket 23 or 26 respectively (as best seen in

Figure 1) to secure braced hook-on arm 14 to main shaft 12. Main shaft 12 may also be provided with apertures 29 axially aligned with apertures 27 of brackets 23 and 26 such that with a sufficiently long pin 38, the end of the pin passes through the wall of tubing 16.

The vertical hooking lug 34 of horizontal support member 28 is extended upwards to incorporate an inner end safety hook element 40. An outer end safety hook element 42 is provided near the outer end of horizontal support member 28. Half way between these safety hook elements 40 and 42 is a divider lug 46. The length of horizontal support member 28 and the distances between the divider lug 46 and insides of safety hook elements 40 and 42 is such as to provide support for two side by side standard builder's planks 44.

The outermost end of horizontal support member 28 is provided with a vertical safety rail support element 48, which is adapted to receive an upright 102 of a safety rail assembly 100, more fully described below.

With reference now to Figures 1, 2 and 4, the securing bracket 22 rotatably attached to the lower end 24 of main shaft 12, comprises a back plate 50 and first and second side plates 52A and 52B to form a generally U-shaped structure. Back plate 50 is provided with an aperture 51 to allow bracket 22 to be attached by a bolt 53 to the lower end 24 of main shaft 12. For this purpose, main shaft 12 is

provided with an aperture 54 and a threaded nut 55 welded to the inside wall of tubing 16 as can be seen in the section A-A of Figure 2.

First and second side plates 52A and 52B are respectively provided with an aperture 56 and an aperture and threaded nut 58 adapted to accept therethrough the wing bolt 60 shown in Figure 5A. The length of first and second side plates 52A and 52B is such that a vertical stud, or a horizontal element of a building frame can be retained between the side plates 52A and 52B and back plate 50 and wing bolt 60.

Side plate 52A is further provided with a second aperture and threaded nut 62 at an intermediate position along the length of side plate 52A, adapted to accept the shorter wing bolt 64 shown in Figure 5B. Wing bolt 64 may be driven through the aperture and threaded nut 62 to engage with the side of a vertical stud or horizontal member of a building frame to firmly secure the securing bracket 22 to the frame member. Preferably, wing bolts 60 and 64 are attached to bracket 22 by short lengths of chain 65 and 66.

With reference to Figure 8, a pair of scaffold assemblies 10 and 10A are shown attached to the side of a building frame 70. Scaffold assemblies 10 and 10A are spaced apart to suit the length of two side by side builder's planks 44.

The portion of building frame 70 shown in Figure 8 includes vertical uprights or studs 72, a top plate 74 and an intermediate noggin or horizontal frame member 76. The hook structures 20 and 20A are hooked over top plate 74, with the securing bracket 22 of scaffold assembly 10 secured to one of the studs 72 while the securing bracket of scaffold assembly 10A is rotated at 90 degrees and secured to horizontal frame member 76.

In the arrangement shown in Figure 8, the braced hook-on arms 14 and 14A have been attached to the upper pair of brackets. At this higher level, in some jurisdictions at least, it may be a requirement that the scaffolding arrangement of scaffold assemblys 10, 10A and planks 44 be provided with a safety railing.

Figure 6 shows a safety railing system 100 for use with scaffolding elements 10 and 10A. Safety railing 100 is comprised of stanchions 102 and horizontal top rail 104 and horizontal intermediate rail 106. Each of top rail 104 and 106 is made up of telescoping sections so that the length of the railings between adjoining stanchions may be readily adjusted.

Preferably, stanchions 102 and rails 104 and 106 are interconnected by snap-locks 108. The vertical safety rail support elements 48 and 48A of braced hook-on arms 14 and 14A are adapted to accept as inserts stanchions 102 and 102A of safety railing 100.

For added security, safety railing 100 is provided with a number of cross braces 110 connected at an outer end by a snap-lock fitting 112 either to top rail 104 as shown in Figures 1, 6 and 7, or to stanchion 102. Cross brace 110 is provided at an inner end with a locking structure 114 adapted for attachment to main shaft 12 by hooking into the upper brackets 25, when attached to top rail 104, or to 25A when attached to a stanchion 102.

Locking structure 114 is shown in more detail in Figure 7 and is of similar construction to the spring-loaded mechanism of hook-on arm 14 previously described. As for that mechanism, the spring-loaded pin 120 of locking structure 114 passes through a hole 31 provided in brackets 25 and 25A when a cross brace 110 is connected to main shaft 12, thus preventing inadvertent disengagement of the cross brace and endangering the integrity of the railing system.

It will be understood that the scaffold assemblies of the present invention may be used equally effectively on timber, steel or aluminium framing members. As well, the components making up the scaffolding elements and safety railing may be fabricated out of steel, aluminium or a combination of these materials, and that the specific design details may be modified without departing from the principles of the invention.

SUMMARY

The hook-on scaffold 180 is an adjustable apparatus which can be used by carpenters/builders who are installing truss roofs and also floor bearers on two storey buildings. The scaffold is used in a set of at least two. It does not require tools when setting up. The scaffold, which can accommodate two side-by-side builder's planks, gives workers a bigger safety area to walk on. The work area width is enlarged from 95mm to 460mm. When set at correct working height, safety harnesses are not required. Provision is made for a detachable safety rail.

The components making up the hook-on scaffold are:

1. MAIN SHAFT WITH SIX HOOKING EYES.
2. HOOK PLATE.
3. HOOK ON ARM.
4. SAFETY BRACKET.
5. LOCKING WING BOLT.
6. SPRING-LOADED MECHANISM
7. SAFETY RAIL
8. SAFETY RAIL CROSS BRACE

1. MAIN SHAFT WITH FOUR HOOKING EYES.

The Main Shaft (12) is preferably a square tubing 50mm by 50mm by 1.6mm and the average length is 1.3 metres. Hooking eyes (26) and (26A) are welded to the main shaft (12) at the required safety height with a 6mm gap from the main shaft (12). Hooking eyes (23) and (26) are different to hooking eyes (23A) and (26A) in that they have a hole to enable a spring-loaded pin to lock the hook-on arm (14) to the main shaft (12). There is a nut (55) welded inside the bottom of the main shaft (12) to which the safety bracket (22) is attached. Main Shaft (12) also has further hooking eyes (25) and (25A) for attachment of a safety rail cross brace (110).

2. HOOK PLATE.

The Hook Plate (20) is welded to the main shaft (12) which hangs over the top plates of timber/metal frame. The hook plate (20) is 100mm wide to suit 95mm to 100mm top plates. It may be reinforced with a strengthening rib (21)

3. HOOK ON ARM.

The hook on arm (14) is made from steel which consists of two bars, the first being a horizontal bar and the other bar is at an angle. It has a non adjustable hooking lug (34) and (36) at the end of the horizontal bar (28) and the

end of the angle bar (30). Hooking lug (34) has a hole in it to enable a spring-loaded pin (38) to lock the hook on arm (14) to the main shaft (12). For extra strength braces (32) are welded between the horizontal bar (28) and the angle bar (30). The hook on arm (14) hooks into the hooking eyes (26), on the main shaft (12), which are set at the appropriate working height conditions. At each end of the arm is a plank safety hook(40) & (42) to hold the two planks in place and between each plank there is a divider lug (46). On the outside of the hook on arm (14) a cylinder (48) is welded to hold the safety rail (100).

4. SAFETY BRACKET.

The safety bracket (22) is bolted to the main shaft (12) and locks around the stud of timber/metal. The safety bracket (22) is a 'U' shaped frame of flat steel. It is held in place around the stud by a wing bolt (60). The safety bracket (22) can be rotated 90 degrees to suit noggins on a frame. The safety bracket (22) consists of a back plate (50) which can be rotated and has a hole (51) to insert a bolt (53) to attach the safety bracket (22) to the main shaft (12). Two side plates (52A) & (52B) are attached to the back plate (50). Side plate (52A) has two nuts welded to accommodate wing bolts (60) & (64) and safety chain (65) is also welded to it. Side plate (52B) has a hole to accommodate wing bolt (60), and the safety chain (66) is also welded to it.

5. LOCKING WING BOLT.

A wing bolt (60) is at the end of the safety bracket (22) and a locking wing bolt (64), which bites into the stud, is half way along the safety bracket (22). The two wing bolts are on opposite sides of the safety bracket (22). Attached to each wing bolt (60) & (64) are safety chains (66) & (65). On each wing bolt (60) & (64) there is a spacer washer to control penetration of the wing bolts.

6. SPRING-LOADED MECHANISM

The spring-loaded mechanism (33) is a safety feature that secures the hook-on arm (14) to the main shaft (12). The spring-loaded mechanism (33) consists of a U-shaped bracket (41), spring-loaded pin (38) and spring (43). Pin (38) extends through holes in bracket (41) and is provided with a hole (47) for attachment of a split ring (45). Pin (38) is further provided with a washer (39) welded to the shaft of the pin.

7. SAFETY RAIL.

The safety rail (100) consists of two horizontal rails (104) & (106) utilising telescopic aluminium tubing. There are two upright posts (102), each having two snap lock hooks (108), one hook being at the top of the post and the other at the centre of the post. The bottom end of the upright post (102) is inserted into the cylinder (48) welded to the hook-on arm (14). The Safety rail (100) is held in place by the snap lock hooks (108) to upright posts (102). A locking arm (110) locks the safety rail (104) to the frame with a snap lock on one end and a hook (114) on the other end. The hook has a hole so it can be fixed to the shaft.

The above describes only some embodiments of the present invention and modifications, obvious to those skilled in the art, can be made thereto without departing from the scope and spirit of the present invention.

CLAIMS

1. A scaffold assembly comprising at least one pair of hook-on scaffold elements; said scaffold elements adapted for support of at least one builder's plank; each of said elements comprising a vertical main shaft provided with a hook structure at an upper end of said main shaft and a securing bracket at a lower end of said main shaft; each of said hook-on scaffold elements further comprising a braced hook-on arm; said hook structure adapted for engagement with a horizontal top plate of a building frame, and said securing bracket adapted for engagement with a vertical stud or a horizontal element of said building frame.

2. The scaffold assembly of claim 1 wherein said assembly further comprises a safety rail assembly for attachment to said pair of hook-on scaffold elements.

3. The scaffold assembly of claim 1 or 2 wherein said vertical main shaft comprises a length of metal rectangular hollow section; said main shaft provided at intervals along its length with hooking eyes projecting from said main shaft in a first outward direction; said hooking eyes adapted for engagement with said braced hook-on arm.

4. The scaffold assembly of any one of claims 1 to 3 wherein said hook structure comprises a metal horizontal plate projecting from said upper end of said main shaft in a second inward direction; said hook structure further including a metal vertical plate depending from an outer end of said horizontal plate.

5. The scaffold assembly of claim 4 wherein said metal horizontal plate is provided with a strengthening rib extending substantially the length of said plate.

6. The scaffold assembly of claim 4 wherein said securing bracket comprises a generally U-shaped fabrication comprising a spaced apart pair of arms extending from a back plate in said second inward direction; said arms adapted to accept between them a said vertical stud or a horizontal element of said frame.

7. The scaffold assembly of claim 6 wherein said pair of arms are of a length so as to project past an inner face of said vertical stud or horizontal element; outer ends of said arms provided with apertures adapted to accept therethrough a securing element so as to secure said securing bracket to said vertical stud or said horizontal element.

8. The scaffold assembly of claim 7 wherein said securing element is a first wing bolt passing through a first of said apertures in a first of said arms and threadably engaging with a threaded one of said apertures in a second of said arms.

9. The scaffold assembly of any one of claims 6 to 8 wherein one of said arms is provided with a threaded aperture at a median position along said arm; said threaded aperture adapted to accept a second wing bolt; said second wing bolt adapted for engagement with said vertical stud or said horizontal member so as to prevent any movement of said bracket relative said vertical stud or said horizontal element.

10. The scaffold assembly of claim 9 wherein each said first wing bolt and said second wing bolt are secured to said bracket by a length of chain.

11. The scaffold assembly of any one of claims 1 to 10 wherein said securing bracket is rotatably attached to said main shaft; attachment of said securing bracket arranged so as to allow said bracket to rotate 90 degrees between a first position for engagement with said vertical stud and a second position for engagement with said horizontal element.

12. The scaffold assembly of any one of claims 3 to 11 wherein said hooking eyes comprise U-shaped elements projecting horizontally from said main shaft; arms of said U-shaped elements attached to opposing sides of said main shaft, and wherein separation between an outer face of said main shaft and inside faces of cross bars of said U-shaped elements is adapted to accept hooking lugs of said braced hook-on arm.

13. The scaffold assembly of any one of claims 3 to 12 wherein said main shaft is provided with at least one pair of said hooking eyes.

14. The scaffold assembly of any one of claims 3 to 13 wherein said main shaft is provided with two pairs of said hooking eyes; said two pairs providing two levels of attachment of said hook-on arm.

15. The scaffold assembly of claim 13 or 14 wherein one of each of said at least one pair of hooking eyes is provided with an aperture through said cross bar of said U-shaped element; said aperture adapted to receive a spring-loaded pin for securing one of said hooking lugs inserted in said hooking eye.

16. The scaffold assembly of any one of claims 1 to 15 wherein said braced hook-on arm comprises a horizontal support member, an angled bracing member and at least

one intermediate brace member extending between said horizontal supporting member and said angled bracing member.

17. The scaffold assembly of claim 16 wherein an inner end of each of said horizontal support member and said angled bracing member is provided with one of said hooking lugs; each respective one of said hooking lugs adapted for insertion into a corresponding one of said pair of hooking eyes.

18. The scaffold assembly of claim 16 or 17 wherein one of said hooking lugs for said horizontal support member is provided with an aperture adapted for passage therethrough of said spring-loaded pin; said spring-loaded pin passing through said aperture in a said hooking eye when said braced hook-on arm is assembled to said main shaft.

19. The scaffold assembly of any one of claims 16 to 18 wherein said horizontal support member is of length sufficient to support thereon two side-by-side said builder's planks.

20. The scaffold assembly of claim 19 wherein an inner end and an outer end of said horizontal support member are provided with retaining plank safety hook elements;

said safety hook elements adapted to retain respective outer edges of said side-by-side builder's planks.

21. The scaffold assembly of any one of claims 16 to 20 wherein said horizontal support member is further provided at an outer end with a vertical safety rail support element.

22. The scaffold assembly of claim 21 wherein adjoining ones of said hook-on scaffold elements in use are adapted to each support a stanchion of said safety railing in a respective said safety rail support element; said safety railing extending between said adjoining hook-on scaffold elements; said safety rail comprising a pair of said stanchions and upper and lower horizontal rail elements.

23. The scaffold assembly of claim 22 wherein said stanchions and said horizontal rail elements are interconnected by snap-lock hooks.

24. The scaffold assembly of claim 22 or 23 wherein said horizontal rail elements comprise telescoping inner and outer tube members; said inner and outer tube members allowing adjustment of length of said safety railing between adjoining said stanchions.

25. The scaffold assembly of any one of claims 1 to 24 wherein said upper end of said vertical main shaft is provided with at least one bracket for attachment of a cross bracing member of said safety railing.

26. The scaffold assembly of claim 25 wherein said cross bracing member comprises a tubular member provided at a first inner end with a locking structure adapted for engagement with said at least one bracket; said tubular member provided at a second outer end with a snap-lock hook for engagement with said upper rail element of said safety railing.

27. The scaffold assembly of claim 26 wherein said locking structure comprises a spring-loaded pin assembly; said spring-loaded pin engaging with an aperture provided in said at least one bracket so as to secure said cross bracing member from inadvertent disengagement with said at least one bracket.

28. A builder' plank support system adapted for attachment to frame elements of a building; said system including a scaffold assembly provided with a hook plate at an upper end of said scaffold assembly and a securing bracket at a lower end; said securing bracket adapted for fastening to a vertical stud or a horizontal element of said frame.

29. A method for supporting at least one builder's plank and safety railing at the side of a building; said method including the steps of:

(a) hooking a hook plate of at least one pair of hook-on scaffold assemblies over a horizontal top plate of a frame of said building,

(b) securing a bracket of each of said scaffold assemblies to a vertical stud or a horizontal element of said frame,

(c) positioning said at least one builder's plank over horizontal members of hook-on arms of said at least one pair of said scaffold assemblies.

30. The method of claim 26 wherein said method further includes the steps of;

(a) inserting stanchions of said safety railing into stanchion support elements of said scaffold assemblies,

(b) attaching horizontal railing elements to said stanchions,

(c) bracing said railings by cross bracing members extending between said railings and brackets on vertical shafts of said at least one pair of scaffold assemblies.

31. A safety system for personnel engaged in construction of a building; said system including a scaffold assembly adapted for attachment to elements of a frame of said building; adjoining ones of said scaffold assembly adapted for support of at least one builder's plank and a safety railing, and wherein a lower end of said scaffold assembly is secured by a bracket to a vertical stud or a horizontal element of said frame.

32. A scaffold assembly as herein described and with reference to the accompanying drawings.

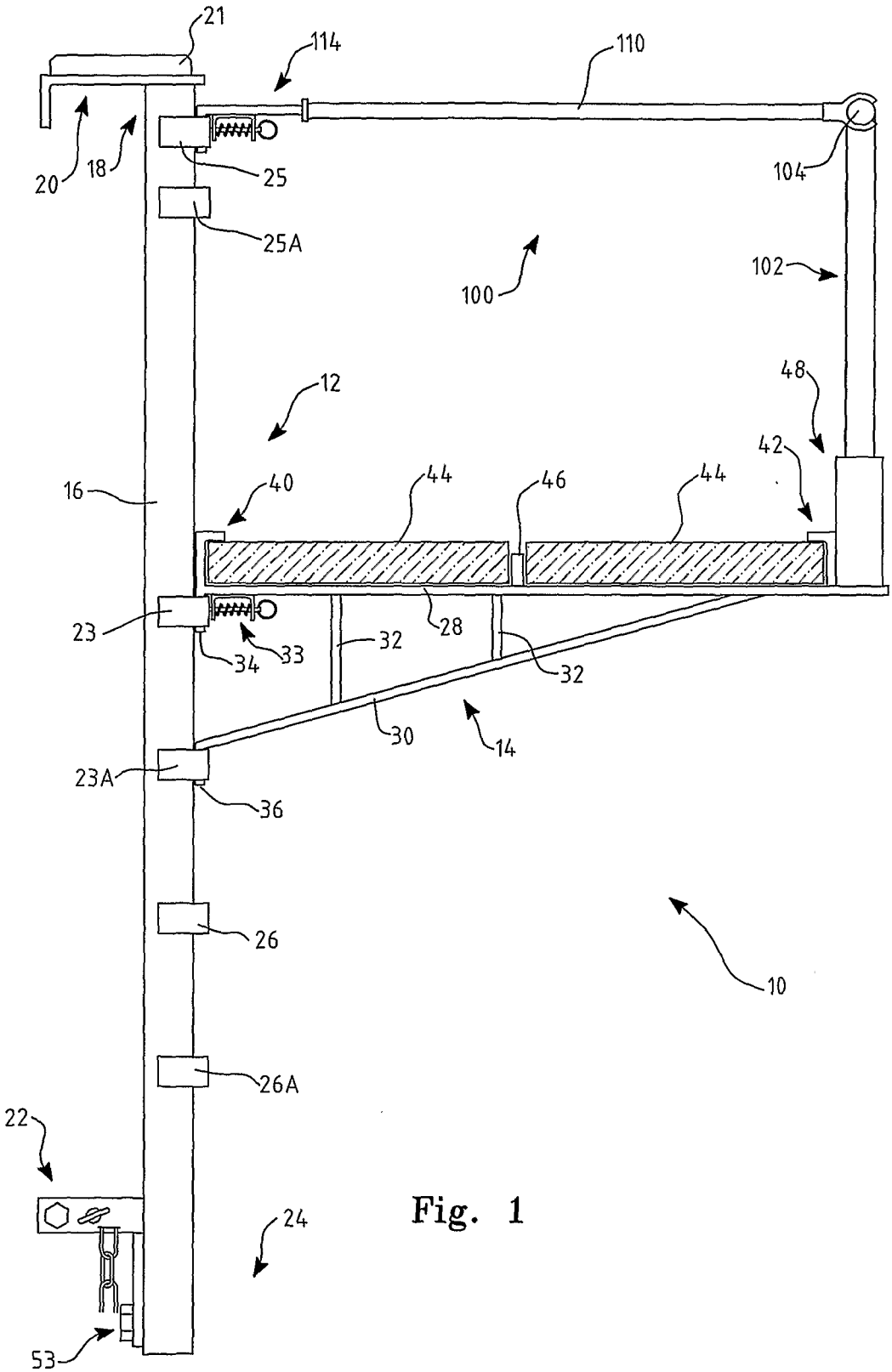

21
114
110
20
18
25
104
25A
100
102
12
48
42
16
40
44
46
44
23
28
34
33
32
32
30
14
23A
36
26
10
26A
22
24
53

Fig. 1

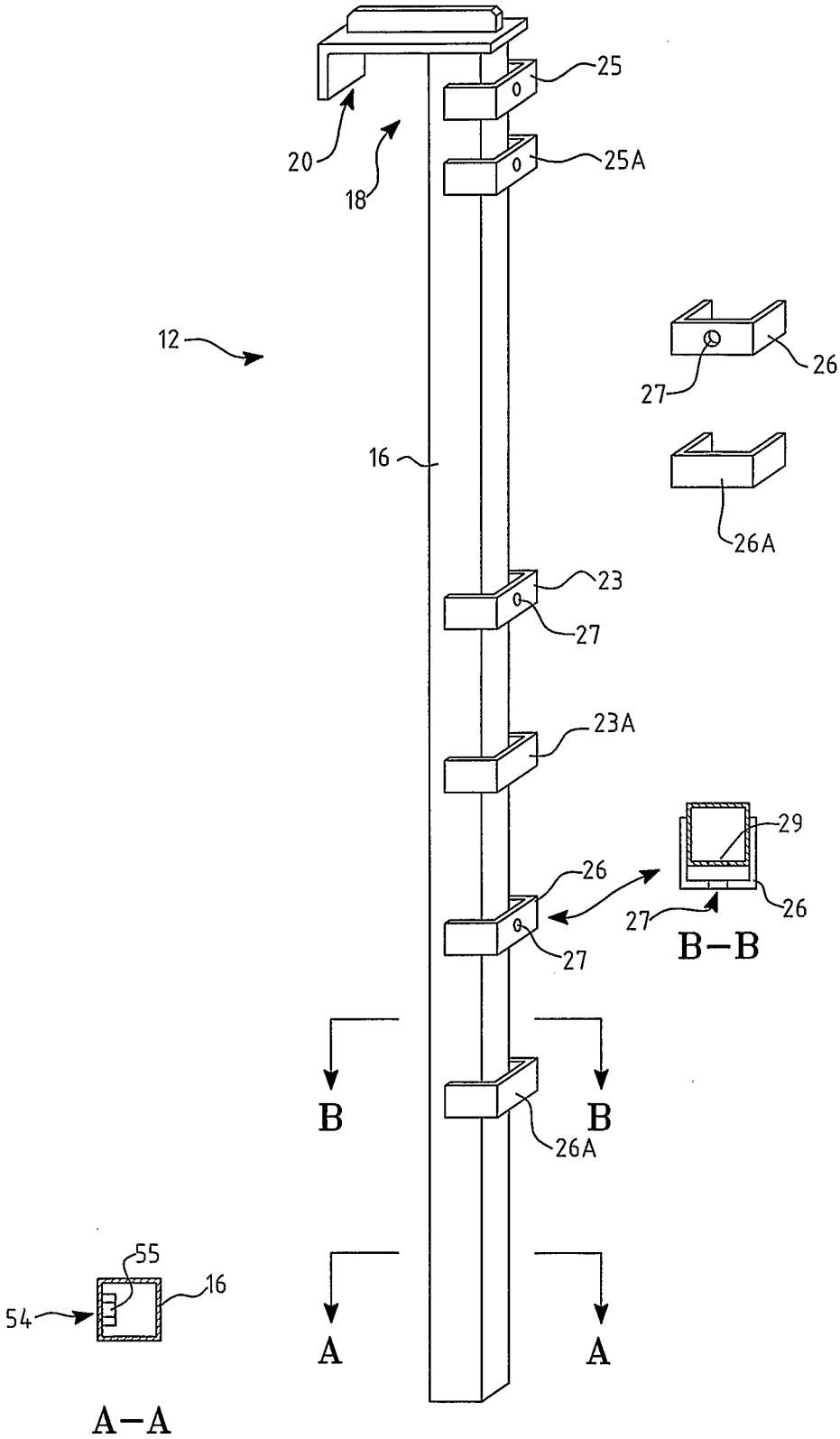

25
20
18
25A
12
26
27
16
26A
23
27
23A
29
26
27
27
B–B
B
B
26A
55
16
54
A
A
A–A

Fig. 2

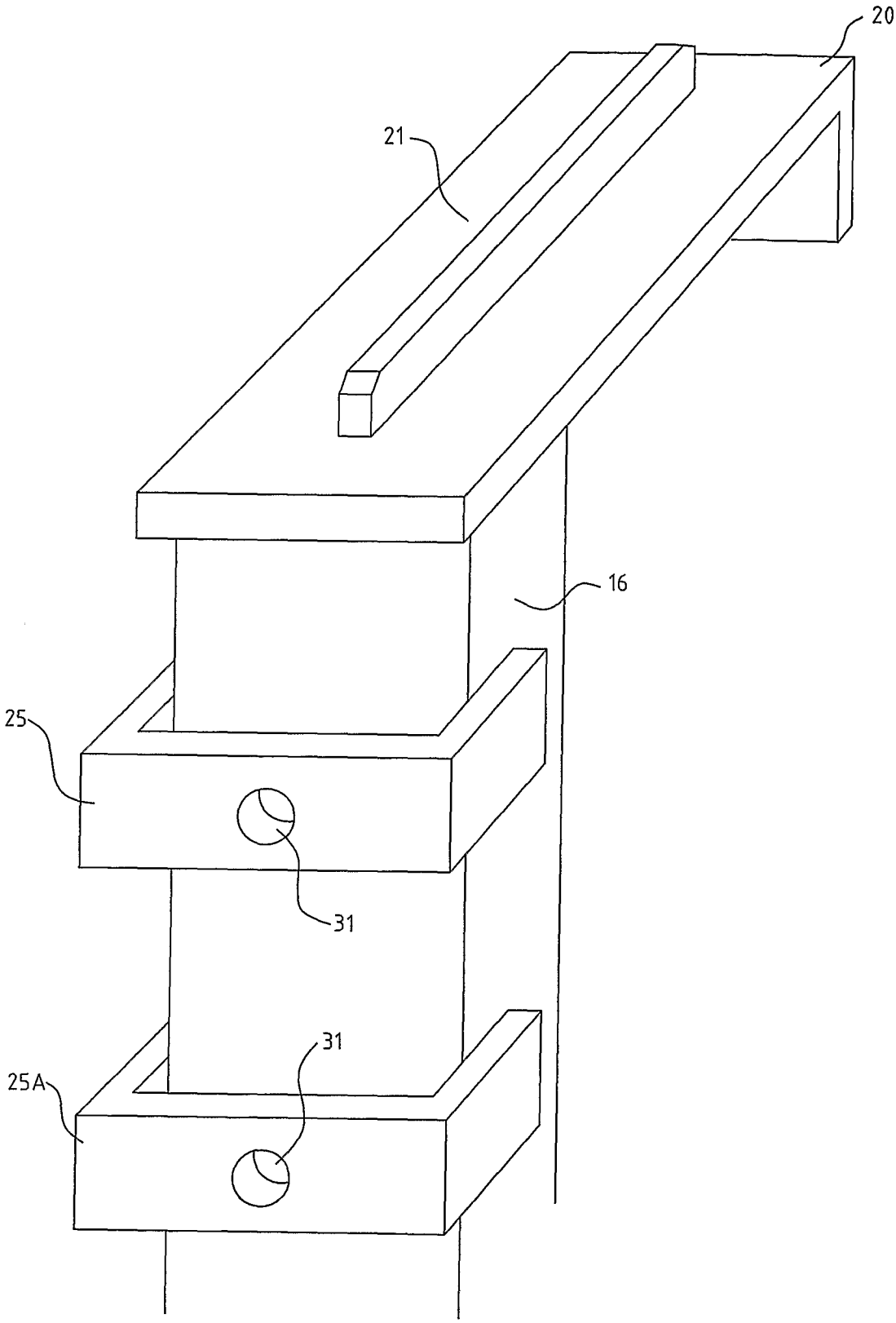


Fig. 2A

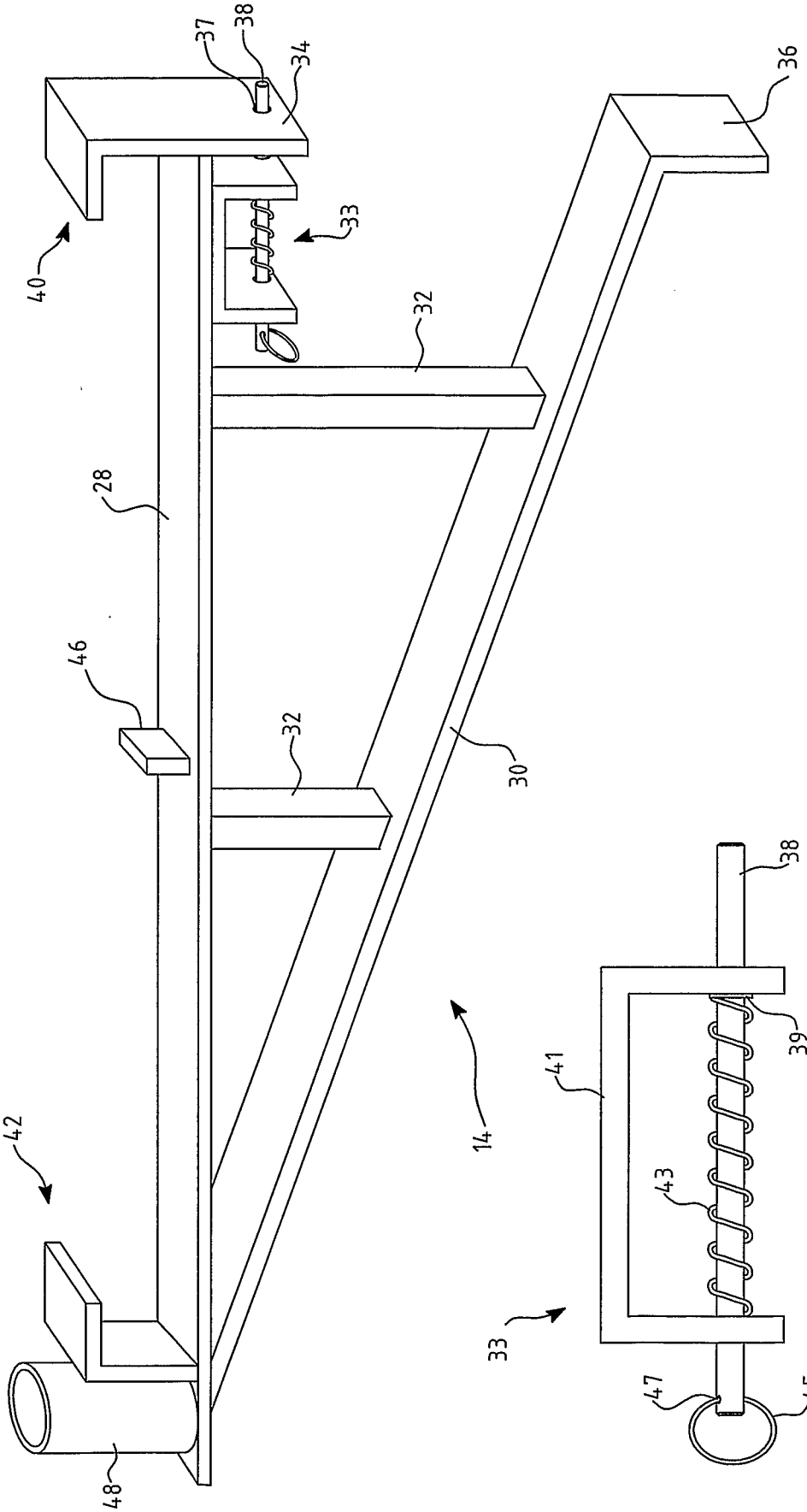


Fig. 3

Fig. 3A

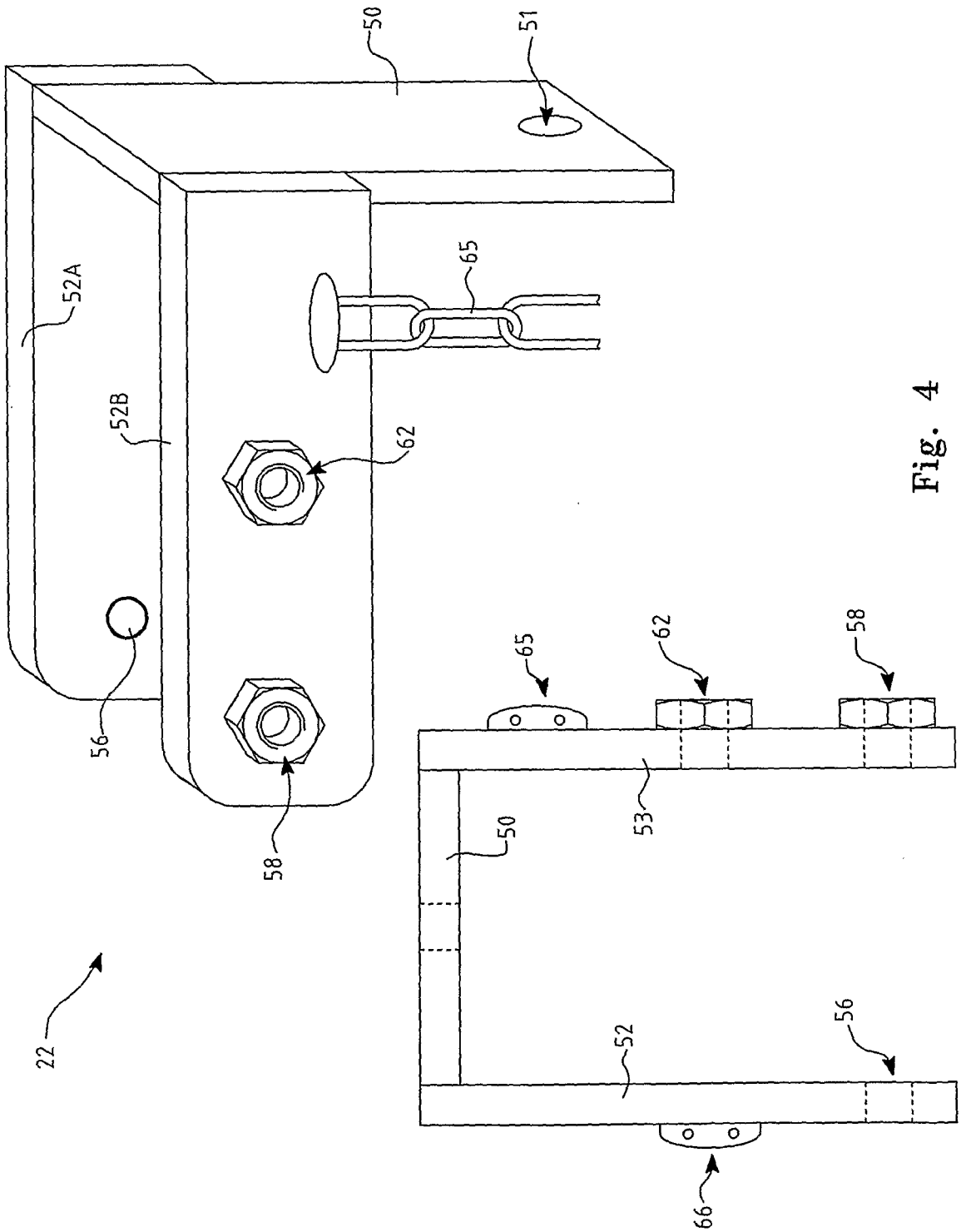


Fig. 4

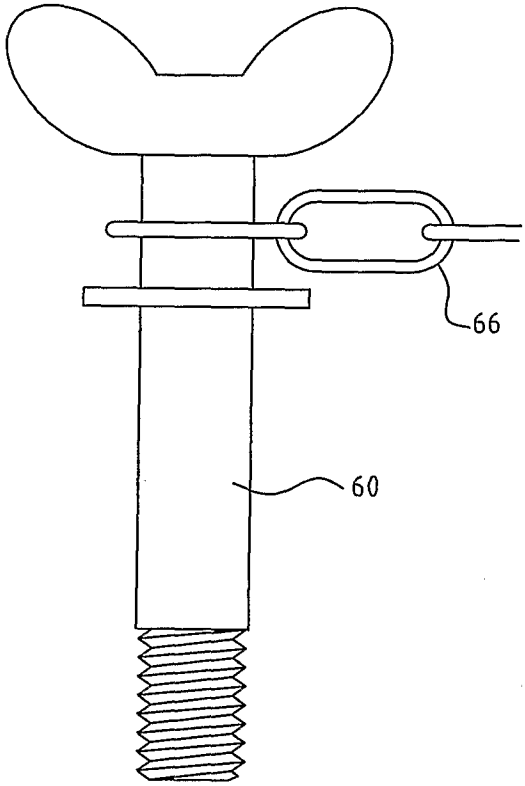


Fig. 5A

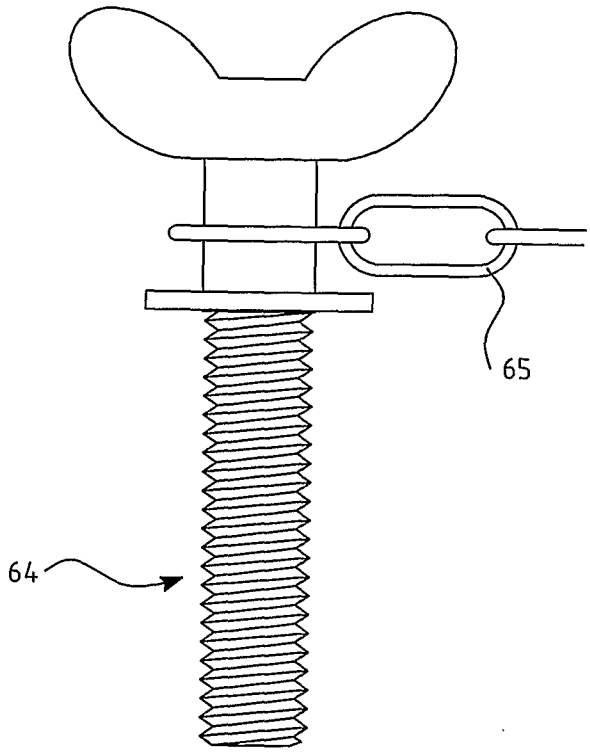


Fig. 5B

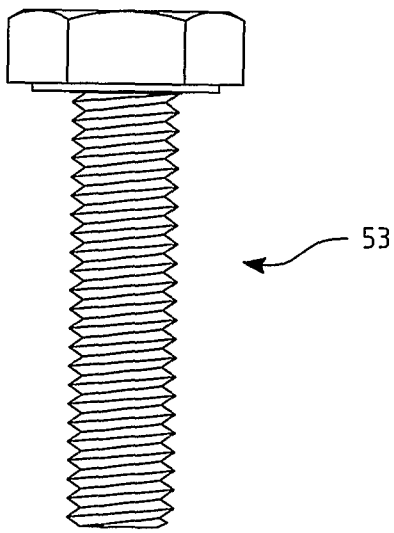


Fig. 5C

Fig. 5

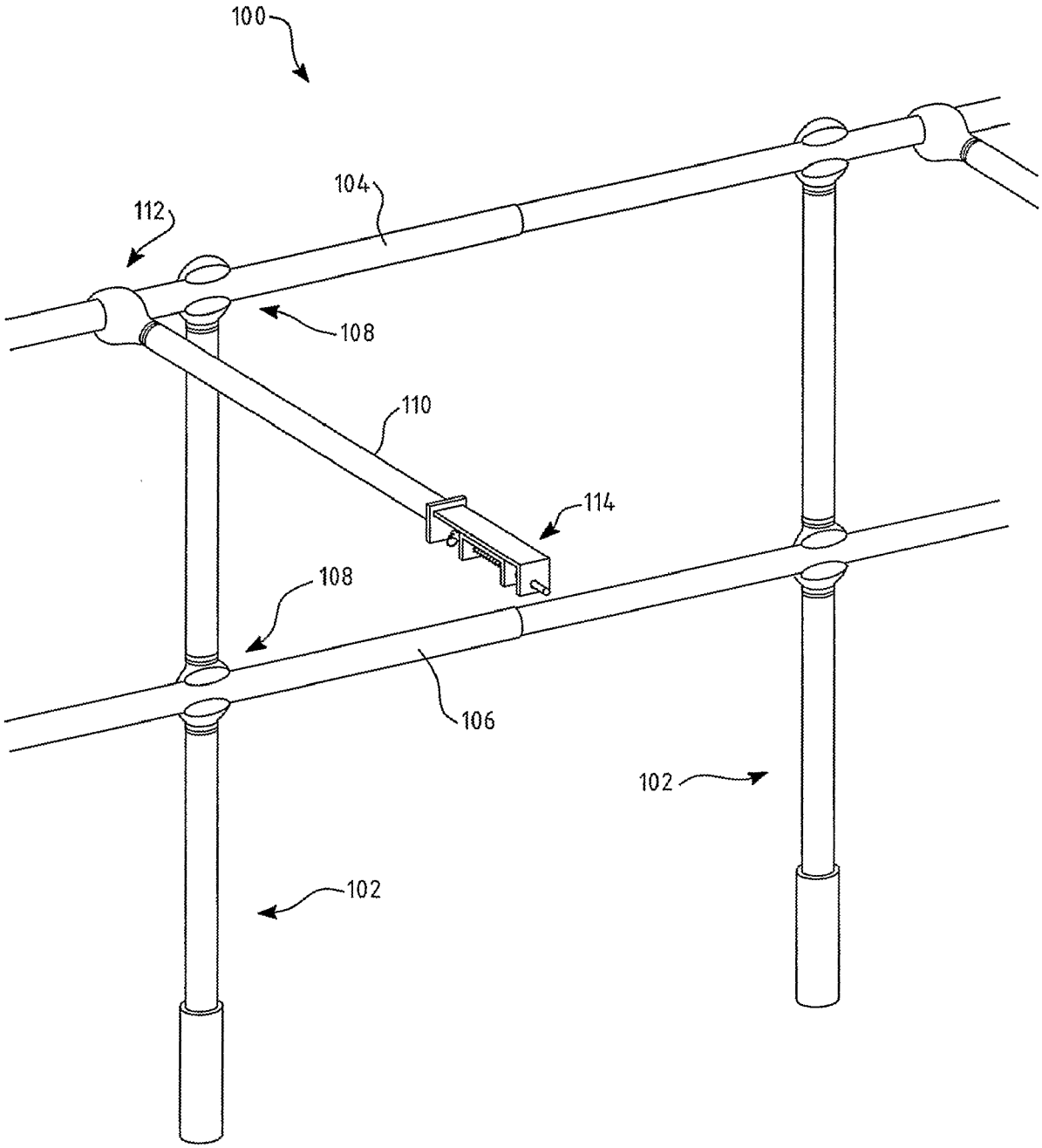


Fig. 6

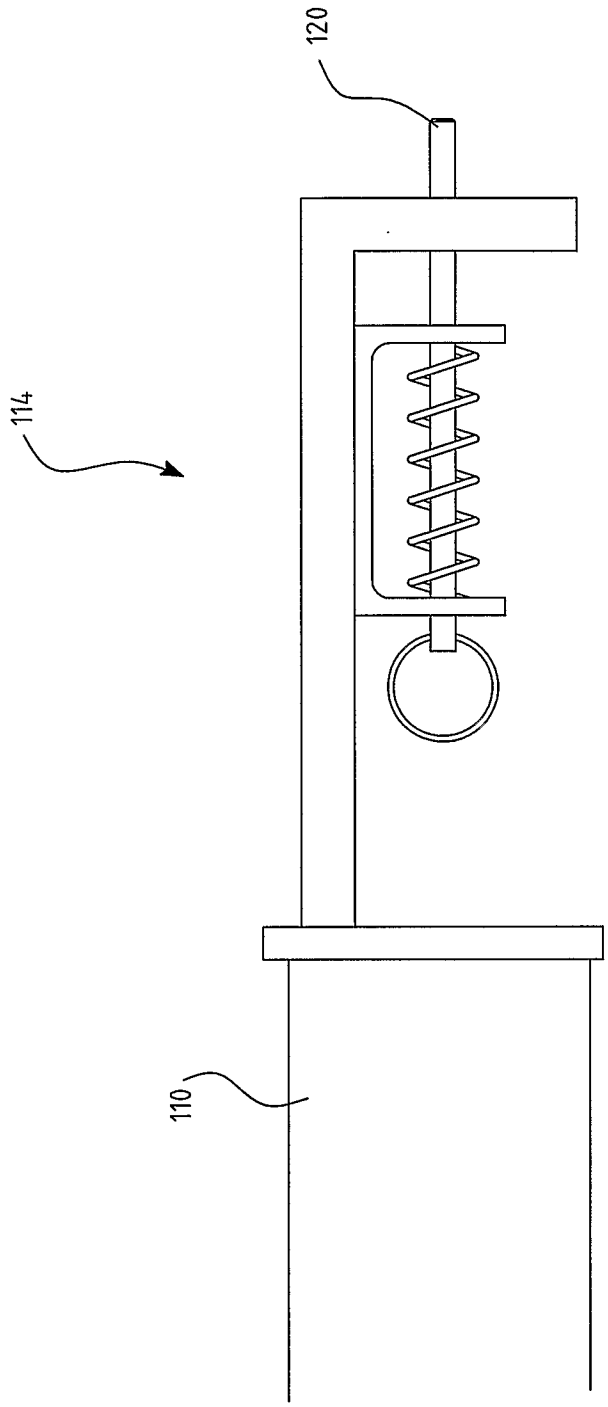


Fig. 7

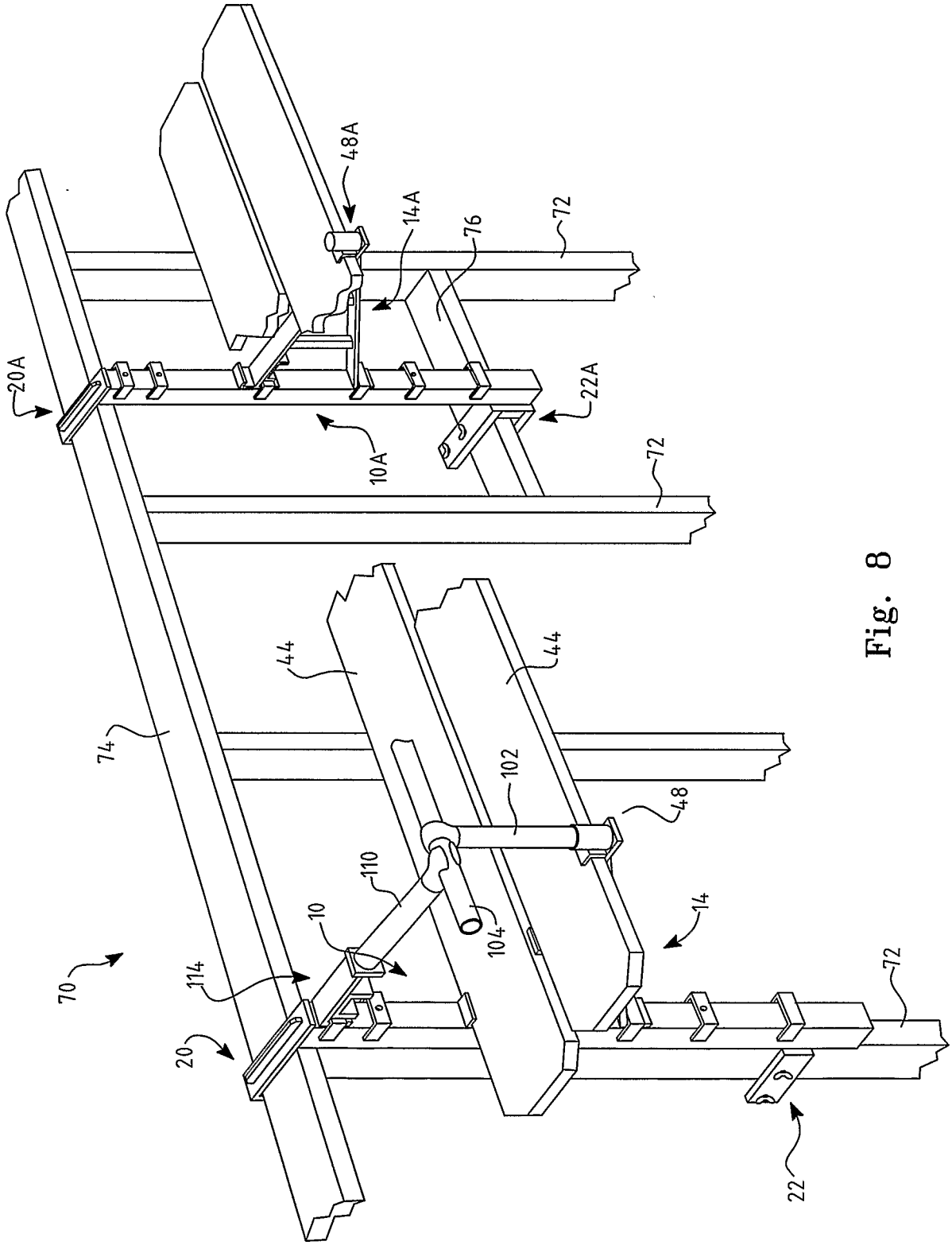

48A
14A
76
72
20A
22A
10A
72
44
44
74
102
48
110
10
104
14
70
114
72
20
22

Fig. 8

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2006/000851

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. ***E04G 1/00*** (2006.01) ***E04G 5/00*** (2006.01) ***E04G 21/32*** (2006.01)
E04G 3/00 (2006.01) ***E04G 7/00*** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Derwent DWPI - E04G, A47L 3/00 with keywords hook, clip, bracket, mount, plate, arm, distal, end, tail, hang, hung, suspended, stud, pole, post, column, shaft, plank, board, platform and the like

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AU 199338263 A1 (BISDEE) 12 August 1993 Full description, all figures	28, 31
X	WO 1999/047767 A1 (WALL WALKER LLC.) 23 September 1999 Full description, all figures	28, 31
X	AU 199228491 A1 (KAGAR DEVELOPMENTS LIMITED) 27 May 1993 Full description, all figures	31

[X] Further documents are listed in the continuation of Box C [X] See patent family annex

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 September 2006	10 OCT 2006
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer **VINCE BAGUSAUSKAS** Telephone No : (02) 6283 2110

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2006/000851

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	AU 2003101011 A4 (ELLIS) 5 February 2004 Full description, all figures	
A	US 4909350 A (JACOBS) 20 March 1990 Full description, all figures	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/AU2006/000851

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member			
AU	3826393				
WO	9947767	AU	34511/99	US	6053280
AU	2849192	AU	28491/92	NZ	245172
AU	2003101011				
US	4909350				

Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001.

END OF ANNEX