



(51) International Patent Classification:

E04G 5/06 (2006.01) *E04G 5/14* (2006.01)
E04G 3/18 (2006.01) *E04G 21/32* (2006.01)

(21) International Application Number:

PCT/AU2009/001533

(22) International Filing Date:

24 November 2009 (24.11.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2008906150 27 November 2008 (27.11.2008) AU

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

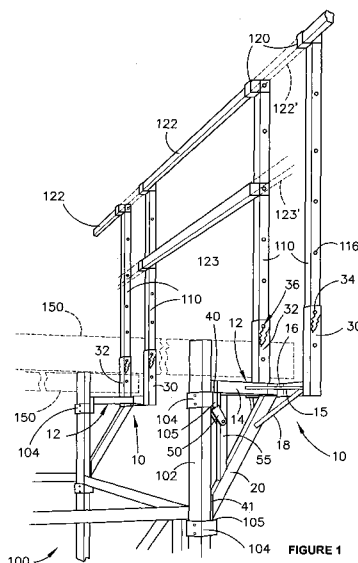
— of inventorship (Rule 4.17(iv))

Published:

— with international search report (Art. 21(3))

— with amended claims (Art. 19(1))

(54) Title: GUARDRAIL POST SUPPORT



(57) Abstract: A guardrail post support (10), including a body portion (12) with an element (42) that is adapted to be mounted to an upright component (102) of a shoring framework (100) so that the body portion (12) projects cantilever fashion laterally of said upright component (102). Also provided is a brace member (20) for additionally supporting the body portion (12) when it is mounted to said upright component (102), and at least two post mounts (30,32) upstanding from said body portion (12), which post mounts when in situ are horizontally spaced from said upright component and mutually spaced apart so as to accommodate between them a horizontally extending beam supported by said upright component, whereby when posts (110) are inserted in the post mounts (30,32), the posts (110) extend upwardly above said upright component (102) of the shoring framework (100).



Guardrail Post Support

Field of the invention

This invention relates generally to the protection of personnel during the construction of buildings, especially multi-storey buildings. The invention has a particular but not
5 exclusive focus on the safety of personnel involved in the installation of formwork systems to support successive slab floors as the height of a building progresses upwardly.

Background of the invention

A known approach to the support of formwork systems for slab and other floors is to
10 employ frame-linked post networks such as the Alshor system available from RMD. The posts or legs have regular polygonal cross sections and, at vertically spaced intervals, mounting rings or lugs that define circumferentially spaced pockets to receive depending tabs on frames and beams that can thereby be supported from the lugs.

The usual present practice is to prepare formwork above the current floor by supporting
15 transverse beams from the aligned lugs of multiple shoring posts and then to build up the formwork, for example table formwork, on the transverse beams. Although it is normal practice to quickly install guardrails about these beams and about the formwork, it has been realised that there is an interim period when personnel can be exposed to open edges above the currently guarded level.

20 It is a primary object of the present invention to address this deficiency.

Reference to any prior art in the specification is not, and should not be taken as, an acknowledgment or any form of suggestion that this prior art forms part of the common general knowledge in Australia or any other jurisdiction or that this prior art could
25 reasonably be expected to be ascertained, understood and regarded as relevant by a person skilled in the art.

Summary of the invention

The invention provides a guardrail post support, including:

5 a body portion with an element that is adapted to be mounted to an upright component of a shoring framework so that the body portion projects cantilever fashion laterally of said upright component;

a brace member for additionally supporting the body portion when it is mounted to said upright component; and

10 at least two post mounts upstanding from said body portion, which post mounts when in situ are horizontally spaced from said upright component and mutually spaced apart so as to accommodate between them a horizontally extending beam supported by said upright component;

whereby when posts are inserted in the post mounts, the posts extend upwardly above said upright component of the shoring framework.

15 Preferably, the body portion includes an elongate element and a transverse element on which the post mounts are disposed. In an advantageous configuration, the body portion is generally T-shaped.

Typically, the body portion, and preferably also the brace member, are metal beam components, for example square steel tubes.

20 The body portion may be adapted to be mounted to an upright component of a shoring framework by having a depending tab at an end of the body portion for receipt into a pocket on the upright component. A similar arrangement may conveniently be provided on the brace member for supporting the brace member at a lower pocket on the upright component.

25 The guardrail post support may be mounted to an upright component of a shoring framework by simply resting in one or more pockets on the framework. Safety catch

means is preferably provided to guard against inadvertent lifting of the post supports from their pocket.

In a typical arrangement, the post mounts may be upstanding tubular elements of sufficient length to stably receive the lower end of post of complementary dimensions.

- 5 The post support preferably carries means for fixing the posts to the post mounts, for example threaded or pin fastenings.

The invention extends to a set of one or more of the post supports and multiple guardrail posts dimensioned to be received in the post mounts of the post support. Preferably, the posts are more than two meters long, more preferably more than 2.2
10 meters long. This allows the posts to mount a guardrail above table forms supported above the level of the one or more post supports.

Brief description of the drawings

The invention will now be further described by way of example only, with reference to the accompanying drawings, in which:

- 15 Figure 1 is a perspective view of a pair of guardrail post supports according to an embodiment of the invention, shown in situ mounted to respective upright components of a shoring framework, with one of a variety of possible guardrail arrangements erected on the post supports;

Figures 2, 3 and 4 are respective front, rear and side elevations of the guardrail post
20 support; and

Figure 5 is a side elevation of an assembly of a shoring framework post, a guardrail post support of the form depicted in Figures 1 to 3, and a guardrail.

Detailed description of embodiments of the invention

The illustrated guardrail post support 10 includes a body portion 12 formed from a pair
25 of square steel tubes 14, 15 welded together in a T-shape, an underlying brace member

20, and a pair of upstanding post mounts 30,32 at the respective ends of the transverse element 15 of body portion 12.

The juncture of the tubes 14,15 of body portion 12 is strengthened by a pair of right angle brackets 16,17 welded into position to both tubes 14,15 at either side of tube 14, while brace member 20, which is also a square steel tube of a similar dimension to tubes 14,15, is welded to the underside of tube 14 between the brackets. The structure may be further stabilised and strengthened by a vertical strut 55 linking tubes 14,20 and/or by bracing tie-rods 18 (shown only in Figure 1 for the front post support).

Welded at the free ends of tubes 14,20 are respective thick steel plates 40,41 (e.g. 8mm thick) that are arranged in a common vertical plane and depend below the respective tubes to define respective tabs 42 (see Figure 4) by which they can be dropped into vertically spaced pockets 105 on an upright post or leg 102 of a shoring framework 100. It will be seen from Figure 1 that the guardrail post support 10 is thereby mounted to post 102 so that body portion 12 projects cantilever fashion laterally of the post 102. Pockets 105 are defined by respective circumferential octagonal mounting rings or lugs 104.

To guard against inadvertent uplift of the post support 10, the post support is latched down by a spring loaded catch 50 pivotally mounted to strut 55. Catch 50 has a pair of serrated or toothed upper edges 52 (see Figure 4) that engage under the respective octagonal mounting lug 104 on post 102 below the pocket 105 defined by the lug and in which plate 40 seats. The spring loading on catch 50 biases it to the outer, engaging position.

Each post mount 30,32 is a square tube of larger cross section than tubes 14,15 and 20. Each post mount 30,32 is closed at its lower end by a welded-in plate and open at its upper end so as to define a socket that snugly receives a respective guardrail post 110 of similar cross sectional dimension to tubes 14,15 and 20. The guardrail post is retained in its mount by one or both of a chain mounted pin 34 that engages registered apertures 36,116 on the post mount and the post (see Figures 1 and 2), or a threaded

screw or pin 38 (see Figures 3 and 4) fitted to a welded nut 39 on the outer face of the post mount to engage one of a corresponding set of apertures in the posts.

Each guardrail post at its upper end is fitted on its inner face (when mounted in the correct orientation in its post mount) with a right angular bracket 120 to receive a guardrail 122 (see Figure 1). A further threaded pin and welded nut arrangement 124 (Figure 5) is provided for locking the rail in place. Depending on the length of the posts 110, further intermediate rails 123 may be fitted, to the posts, e.g. at 600mm vertical spacings, by further brackets 121.

The guardrail posts 110 may of course come in a variety of lengths, but a particularly convenient length is greater than two metres, and preferably between 2.2 and 2.5 metres in length. This arrangement permits a guardrail to be provided atop table formwork being installed on cross beams, immediately above the level of body portion 12 of the post supports 10.

Figure 1 depicts one way in which a guardrail can be erected on guardrail post supports of the form illustrated in Figures 1 to 4. As a primary step when it is planned to commence installation of the next level of floor supporting formwork, multiple post supports 10 are fitted to a succession of uprights 102 at the edge of the working zone. The provision of two spaced post mounts 30,32 means that the post supports can be linked in a pair-wise fashion by guardrails 122,123 while leaving vertical clearance between the post mounts of each post-support to accommodate the passage between them of items such as horizontally extending beams 150. The beams are depicted, by broken lines at 150, in position supported by the adjacent uprights 102. The formwork can then be installed above these beams. Personnel can be located above table formwork extending beyond the uprights and yet be protected by the already installed guardrail.

Other guardrail arrangements are of course possible. For example, the guardrails can be continuous (broken lines 122', 123' in Figure 1), and/or there may be only one guardrail post 110 fitted to one or more of the post supports 10.

It will be understood that the invention disclosed and defined in this specification extends to all alternative combinations of two or more of the individual features mentioned or evident from the text or drawings. All of these different combinations constitute various alternative aspects of the invention.

CLAIMS

1. A guardrail post support, including:

a body portion with an element that is adapted to be mounted to an upright component of a shoring framework so that the body portion projects cantilever fashion
5 laterally of said upright component;

a brace member for additionally supporting the body portion when it is mounted to said upright component; and

at least two post mounts upstanding from said body portion, which post mounts when in situ are horizontally spaced from said upright component and mutually spaced
10 apart so as to accommodate between them a horizontally extending beam supported by said upright component;

whereby when posts are inserted in the post mounts, the posts extend upwardly above said upright component of the shoring framework.

2. A guardrail post support according to claim 1, wherein the body portion includes
15 an elongate element and a transverse element on which the post mounts are disposed.

3. A guardrail post support according to claim 2, wherein the body portion is generally T-shaped.

4. A guardrail post support according to any one of the preceding claims, wherein the body portion is formed from metal beam components.

20 5. A guardrail post support according to any one of the preceding claims, wherein the body portion is adapted to be mounted to an upright component of a shoring framework by having a depending tab at an end of the body portion for receipt into a pocket on the upright component.

6. A guardrail post support according to claim 5, wherein a depending tab is also provided on the brace member for supporting the brace member at a lower pocket on the upright component.
7. A guardrail post support according to any one of claims 1 to 4, wherein the body
5 portion is mounted to an upright component of a shoring framework by simply resting in one or more pockets on the framework.
8. A guardrail post support according to any one of claims 5, 6 or 7, wherein safety catch means is provided to guard against inadvertent lifting of the post supports from their pocket.
- 10 9. A guardrail post support according to any one of the preceding claims, wherein the post mounts are upstanding tubular elements of sufficient length to stably receive the lower end of post of complementary dimensions.
10. A guardrail post support according to any one of the preceding claims, wherein the post support carries means for fixing the posts to the post mounts.
- 15 11. A guardrail post support according to claim 10, wherein said means for fixing is threaded fastenings.
12. A guardrail post support according to claim 10, wherein said means for fixing is pin fastenings.
13. A set of one or more of the guardrail post supports according to any one of
20 claims 1 to 12, and multiple guardrail posts dimensioned to be received in the post mounts of the post support.
14. A set according to claim 13, wherein the posts are more than two meters long, for mounting a guardrail above table forms supported above the level of the one or more post supports.

AMENDED CLAIMS

received by the International Bureau on 5 March 2010 (05.03.10).

1. A guardrail post support for use with shoring framework for supporting beams and/or formwork for the construction of a new floor above the floor on which the shoring rests, including:

a body portion with an element that is adapted to be mounted to an upright component of the shoring framework so that the body portion projects cantilever fashion laterally of said upright component;

a brace member for additionally supporting the body portion when it is mounted to said upright component; and

at least two post mounts upstanding from said body portion, which post mounts when in situ are horizontally spaced from said upright component and mutually spaced apart so as to accommodate between them a horizontally extending beam supported by said upright component;

whereby when posts are inserted in the post mounts, the posts extend upwardly above said upright component of the shoring framework to provide a guardrail about the new floor being constructed above the shoring framework.

2. A guardrail post support according to claim 1, wherein the body portion includes an elongate element and a transverse element on which the post mounts are disposed.

3. A guardrail post support according to claim 2, wherein the body portion is generally T-shaped.

4. A guardrail post support according to any one of the preceding claims, wherein the body portion is formed from metal beam components.

5. A guardrail post support according to any one of the preceding claims, wherein the body portion is adapted to be mounted to an upright component of a shoring

framework by having a depending tab at an end of the body portion for receipt into a pocket on the upright component.

6. A guardrail post support according to claim 5, wherein a depending tab is also provided on the brace member for supporting the brace member at a lower pocket on the upright component.

7. A guardrail post support according to any one of claims 1 to 4, wherein the body portion is mounted to an upright component of a shoring framework by simply resting in one or more pockets on the framework.

8. A guardrail post support according to any one of claims 5, 6 or 7, wherein safety catch means is provided to guard against inadvertent lifting of the post supports from their pocket.

9. A guardrail post support according to any one of the preceding claims, wherein the post mounts are upstanding tubular elements of sufficient length to stably receive the lower end of post of complementary dimensions.

10. A guardrail post support according to any one of the preceding claims, wherein the post support carries means for fixing the posts to the post mounts.

11. A guardrail post support according to claim 10, wherein said means for fixing is threaded fastenings.

12. A guardrail post support according to claim 10, wherein said means for fixing is pin fastenings.

13. A set of one or more of the guardrail post supports according to any one of claims 1 to 12, and multiple guardrail posts dimensioned to be received in the post mounts of the post support.

14. A set according to claim 13, wherein the posts are more than two meters long, for mounting a guardrail above table forms supported above the level of the one or more post supports.

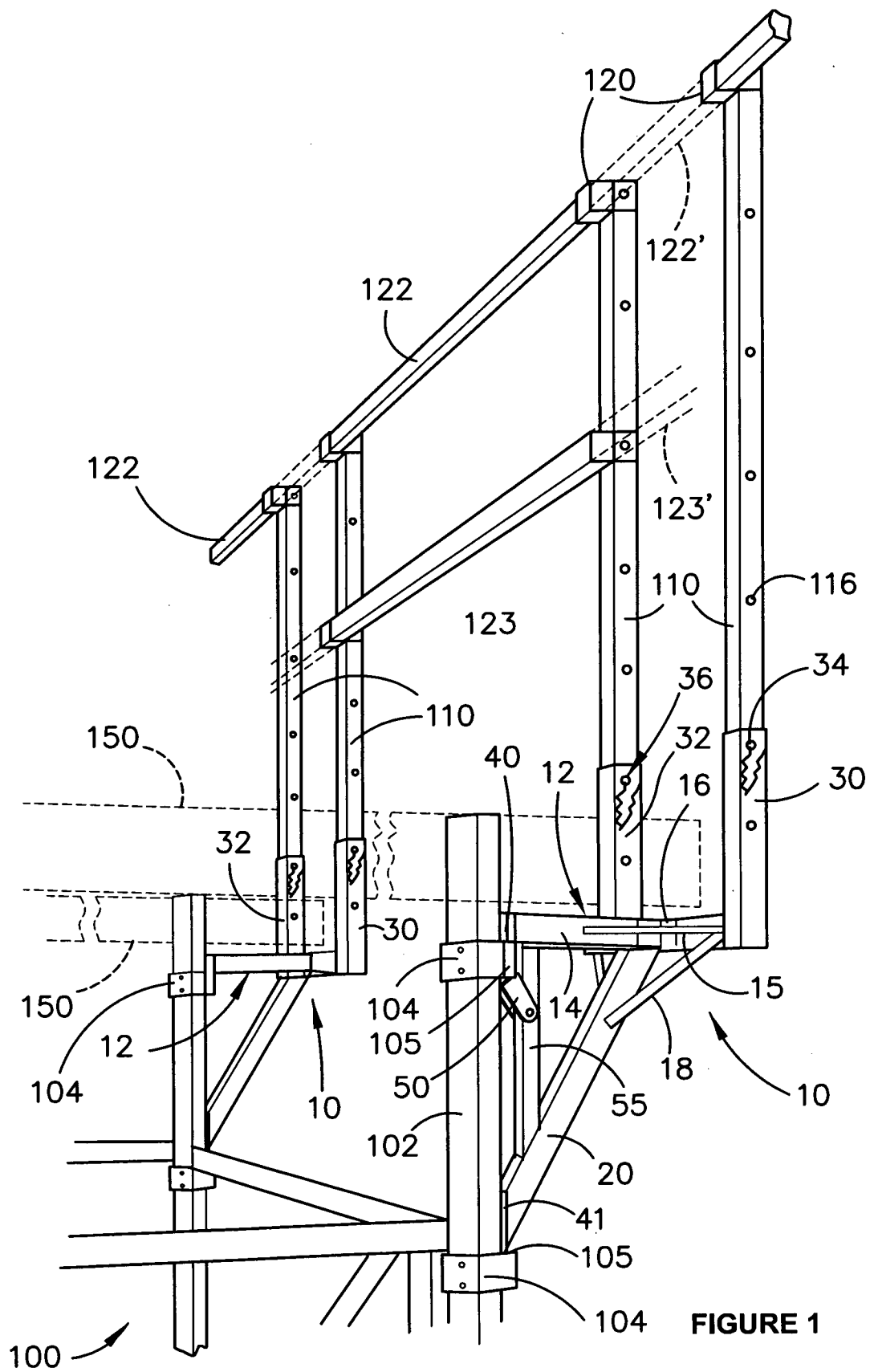


FIGURE 1

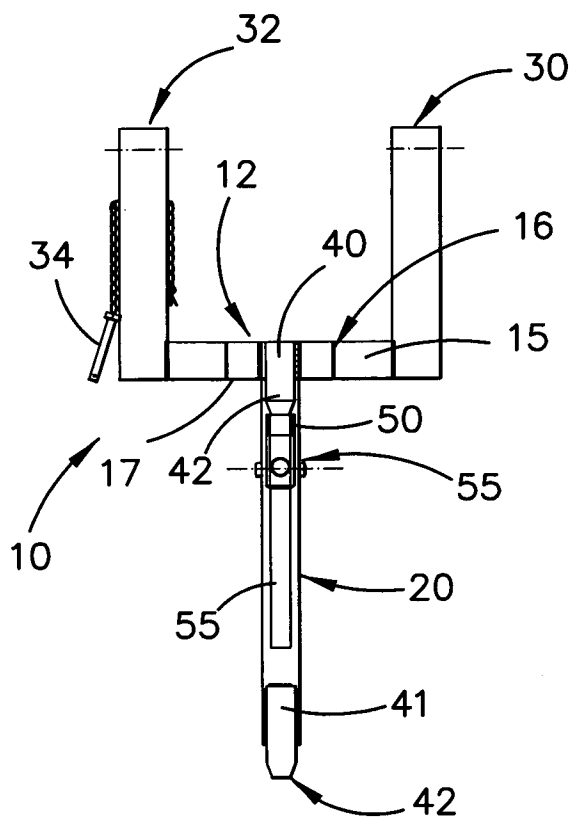


FIGURE 2

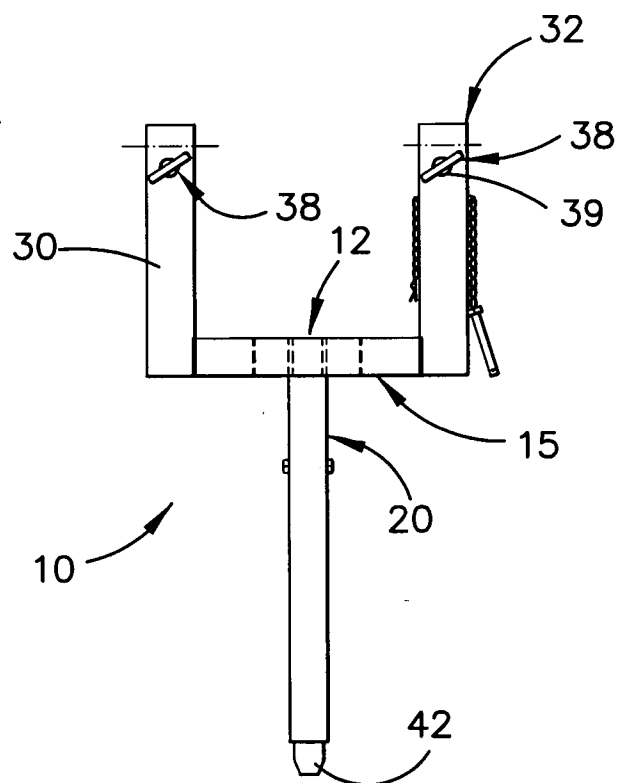
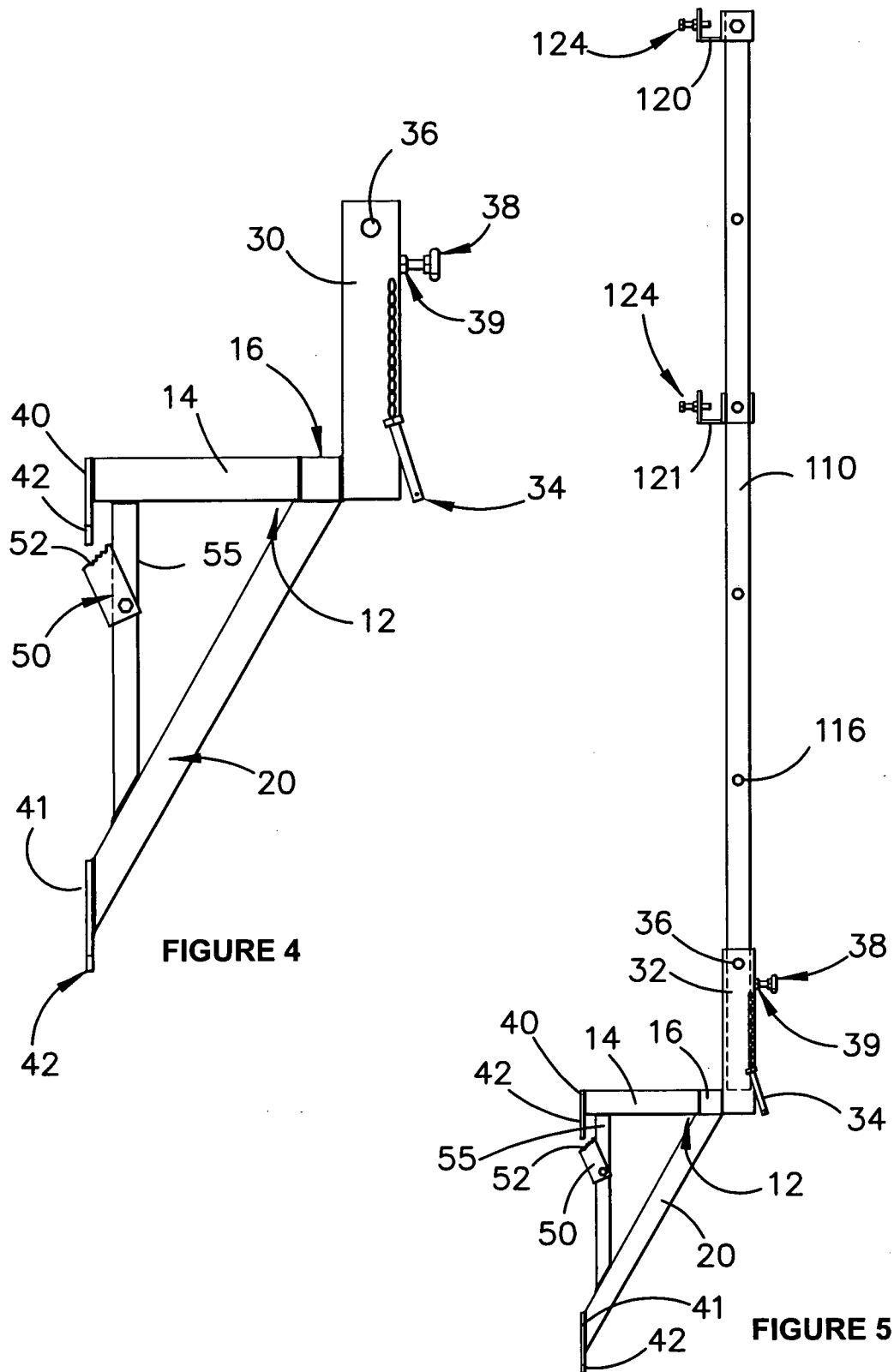


FIGURE 3



INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2009/001533

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl.

E04G 5/06 (2006.01) *E04G 5/14* (2006.01)
E04G 3/18 (2006.01) *E04G 21/32* (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)
WPI, EPODOC: IPC E04G21/32, E04G 1/26, E04G13/06, E04G5/04, E04G5/06, E04G25, E04G3/18, E04G5/14 and keywords:
rail+, brace+ and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR 2853345 A (SARL REMY HERVE) 8 October 2004 Figure 1 and Derwent Abstract Accession No. 2004-702456	1-14
Y	US 2008/0264725 A (MILES) 30 October 2008 Figures and [0071]-[0072]	1-14
Y	GB 2352263 A (WILHELM LAYHER W VERMOGENSVERWALTUNG GMBH) 24 January 2001 Figures	1-3, 9-14
Y	JP 9-025718 A (TODA CONSTRUCTION) 28 January 1997 Figures	1-3, 9-14

☒ Further documents are listed in the continuation of Box C

☒ 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	"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
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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
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Date of the actual completion of the international search
11 December 2009

Date of mailing of the international search report
21 DEC 2009

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2009/001533

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2003-120017 A (FUJIKI FUMIO) 23 April 2003. Figure 2 and Patent Abstracts of Japan abstract	
A	FR 2838763 A (SARL REMY HERVE) 24 October 2003 Figure 1	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2009/001533

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			
FR	2853345	NONE				
US	2008264725	AU	2006200200	AU	2007254713	WO 2007012107
GB	2352263	DE	29912557U	EP	1070807	
JP	9025718	NONE				
JP	2003120017	NONE				
FR	2838763	NONE				
Due to data integration issues, this family listing may not include 10 digit Australian applications filed since May 2001.						
END OF ANNEX						