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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 June 2004 (10.06.2004)

PCT

(10) International Publication Number
WO 2004/049531 A1

(51) International Patent Classification[7]: H02G 3/04, F16L 3/22

(21) International Application Number: PCT/NZ2003/000098

(22) International Filing Date: 21 May 2003 (21.05.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
522757 22 November 2002 (22.11.2002) NZ

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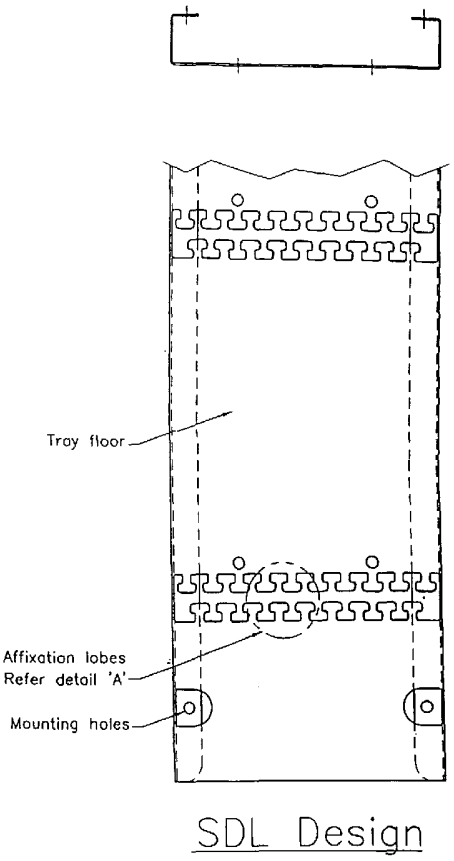
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL,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

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,

[Continued on next page]

(54) Title: SUPPORT APPARATUS AND METHOD OF USE



(57) Abstract: An item support apparatus for supporting one or more items including at least one item attachment facilitation characterised in that the item attachment facilitation portion includes one or more lobes to which at least one attachment device may be attached to secure an item to support the apparatus. The present invention is further directed to a method including the steps of placing the attachment device around the item to be attached, moving the attachment device over the head of the lobe, reducing the diameter of the attachment device to thereby attach the item to the waist of the lobe.

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SE, SI, SK, TR), OAPI patent (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.

SUPPORT APPARATUS AND METHOD OF USE

TECHNICAL FIELD

This invention relates to an apparatus and method of use.

Preferably, although not exclusively, the invention relates to a support apparatus for supporting items. The support apparatus of the invention may be suitable for any number of items, particularly elongate flexible items.

BACKGROUND ART

Cable management systems are required in a number of industries, for example telecommunications, computer and power supply. Cable trays or harnesses are often used in cable management systems. Such cable trays usually consist of an elongate floor with upstanding sides, the cable or cables running along the floor of the tray and the whole arrangement bolted or fastened to a support structure using the upstanding side flanges.

The patent literature contains a number of examples of such cable trays.

NZ 123,319 discloses a cable tray consisting of a number of bridge pieces separated by gaps. The bridge pieces are welded to flanged edge strips at various points. This method of construction provides for a light tray which still affords the stiffness required to support cables and the like.

NZ 195,882 discloses a curved, horizontally mounted, cable ladder. Flexible side walls are provided so that the cable ladder may be positioned smoothly around corners and the like in order to minimise abrasion of cables.

NZ 209,996 discloses a cable tray with an elongate floor comprising a plurality of longitudinally extending slots. The slots lighten the overall weight of the cable tray and provide means for securing cables to the body of the tray.

NZ 330,252 discloses another type of cable support which may be used when supporting a very small number of cables to items of furniture and the like.

When installation of cable trays take place, the trays are usually mounted to a ceiling or other portion of a building or structure and the cables are placed on the floor of the tray and fixed to the tray using fastening means. The fastening means usually comprise cable-ties. As the cable tray is usually mounted to the support structure before the cables are laid and attached to said tray the latter process becomes more encumbered. To affix the cables to the tray when the tray is in position, for example, when mounted to the support structure, the installer must pass cable-ties through the tray, usually from the bottom, around the wire, and back through the tray before fastening. This can be particularly time consuming and awkward.

It is an object of the present invention to address the foregoing problems or at least to provide the public with a useful choice.

Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only.

All references, including any patents or patent applications cited in this specification, are hereby incorporated by reference. No admission is made that any reference constitutes prior art. The discussion of the references states what their authors assert, and the applicants reserve the right to challenge the accuracy and pertinency of the cited documents. It will be clearly understood that, although a number of prior art publications are referred to herein, this reference does not constitute an admission that any of these documents form part of the common general knowledge in the art in New Zealand or in any other country.

It is acknowledged that the term 'comprise' may, under varying jurisdictions, be attributed with either an exclusive or an inclusive meaning. For the purpose of this specification, and unless otherwise noted, the term 'comprise' shall have an inclusive meaning - i.e. that it will be taken to mean an inclusion of not only the listed components to which it directly refers, but also other

non-specified components or elements. This rationale will also be used when the term 'comprised' or 'comprising' is used in relation to one or more steps in a method or process.

Where in the foregoing description reference has been made to integers or components having known equivalents, then such equivalents are herein incorporated as if individually set forth.

DISCLOSURE OF INVENTION

According to one aspect of the present invention there is provided an item support apparatus for supporting one or more items including at least one item attachment facilitation portion characterised in that the item attachment facilitation portion includes one or more lobes to which at least one attachment device may be attached to secure an item to the support apparatus.

The term 'lobes' incorporates any device which provides both a head and a waist.

In a preferred embodiment the attachment device is attached to the item attachment facilitation portion by placing the attachment device around the item to be attached, over the head of the lobe wherein the attachment device's diameter is reduced, thereby attaching the item to the waist of the lobe.

In a preferred embodiment, the item may be an electrical cable, pipe, rope, or other length of material.

In a preferred embodiment, the item support apparatus is constructed from a rigid or resilient material.

In a preferred embodiment, the item support apparatus is constructed from metal, plastic, or a composite material.

In a preferred embodiment, the lobes are oriented so that a line between the centre of the waist and the centre of the head is perpendicular to the transverse axis of the item support apparatus.

In a preferred embodiment, the item attachment facilitation portions comprises a plurality of lobes.

In a preferred embodiment one or more lobes maybe utilised to attach the items.

In a preferred embodiment, the item attachment facilitation portion comprises a number of groups of lobes spaced along the length of the item support apparatus.

In a preferred embodiment, the attachment device includes a cable-tie, elasticated band, hose clamp, or a device capable of permanently or temporarily reducing its diameter.

According to a further aspect of the invention there is provided a method for supporting one or more items characterised in the step of attaching one or more items to an item support apparatus according to the present invention.

In a preferred embodiment of the method of the present invention characterised in the steps of:

(a) placing the attachment device around the item to be attached;

(b) moving the attachment device over the head of the lobe;

(c) reducing the diameter of the attachment device to thereby attaching the item to the waist of the lobe.

In a preferred embodiment the item may be an electrical part, cable, pipe, rope, or other length of material.

In a preferred embodiment the attachment device includes a cable-tie, elastic band, hose clamp, or a device capable of permanently or temporarily reducing its diameter.

According to a further aspect of the present invention there is provided a method for attaching an item to a structure including affixing an item support apparatus according to the present invention to said structure and attaching the item using the method according to the present invention.

The apparatus of the present invention may be used to support items larger than the size of the lobes simply by passing the attachment means around the items and over two or more lobes.

BRIEF DESCRIPTION OF DRAWINGS

Figure 1; Plan view of apparatus according to a preferred embodiment of the invention.

Figure 2; Plan of apparatus according to a preferred embodiment of the present invention showing in detail 'A' different styles of item attachment facilitation portion or 'lobe'.

BEST MODES FOR CARRYING OUT THE INVENTION

In a preferred embodiment of the method of the present invention the item support apparatus is attached to a support structure via the mounting holes. The tray floor is positioned in the horizontal plane. The cables are laid perpendicular to the transverse axis of the tray. A cable-tie is positioned around the elongate flexible items. The cable-tie is then moved along the elongate flexible items towards affixation lobes. The cable-tie is then are passed over the head of the affixation lobes and tightened. The reduced diameter of the cable-tie limits the movement of the cable-tie once attached to the affixation lobes and therefore limits the movement of the cables relative to the support structure.

Aspects of the present invention have been described by way of example only and it should be appreciated that modifications and additions may be made thereto without departing from the scope of the appended claims.

What we claim is:

1. An item support apparatus for supporting one or more item(s) including:

at least one attachment facilitation portion;

characterised in that the item attachment facilitation portion includes one or more lobes to which at least one attachment device means may be attached to secure an item to the support apparatus.

2. An item support apparatus according to claim 1 wherein the item support apparatus is configured so that:

the at least one attachment device can be attached to the one or more item(s) attachment facilitation portion(s) by placing the attachment device around the item(s) to be attached and over the head of the lobe for attachment thereto.

3. An item support apparatus according to claim 1 or claim 2 wherein the item(s) is/are selected from the group consisting of an electrical cable, pipe, rope, or other length of material.

4. An item support apparatus according to any one of claims 1 to 3 wherein the lobes are orientated so that a line between the centre of the waist and the centre of the head is perpendicular to the transverse axis of the item support apparatus.

5. An item support apparatus according to any one of claims 1 to 4 wherein the item attachment facilitation portion comprises a plurality of lobes.

6. An item support apparatus according to any one of claims 1 to 5 wherein one or more

lobes may be utilised to attach the item(s).

7. An item support apparatus according to any one of claims 1 to 6 wherein the item attachment facilitation portion comprises a number of groups of lobes spaced along the length of the item support apparatus.

8. An item support apparatus according to any one of claims 1 to 7 wherein the attachment device is selected from the group consisting of a cable-tie, elasticated band, hose clamp or any device capable of permanently or temporarily reducing its diameter.

9. A method for supporting one or more items characterised by the step of attaching the item(s) to an item support apparatus according to any one of claims 1 to 8.

10. A method according to claim 9 characterised by the steps of:

(a) placing the attachment device around the item to be attached;

(b) moving the attachment device over the head of the lobe;

(c) reducing the diameter of the attachment device;

thereby attaching the item to the waist of the lobes.

11. A method according to claim 9 or claim 10 wherein the item(s) is selected from the group consisting of an electrical part, cable, pipe, rope, or other length of material.

12. A method according to any one of claims 9 to 11 wherein the attachment device is selected from the group consisting of a cable-tie, elastic band, hose clamp, or any device capable of permanently or temporarily reducing its diameter.

13. A method according to any one of claims 9 to 12 wherein the item(s) is an

electrical cable and the attachment means is a cable-tie.

14. A method for attaching an item to a structure including affixing an item support apparatus according to any one of claims 1 to 8 to said structure and attaching the item(s) using the method according to any one of claims 9 to 13.

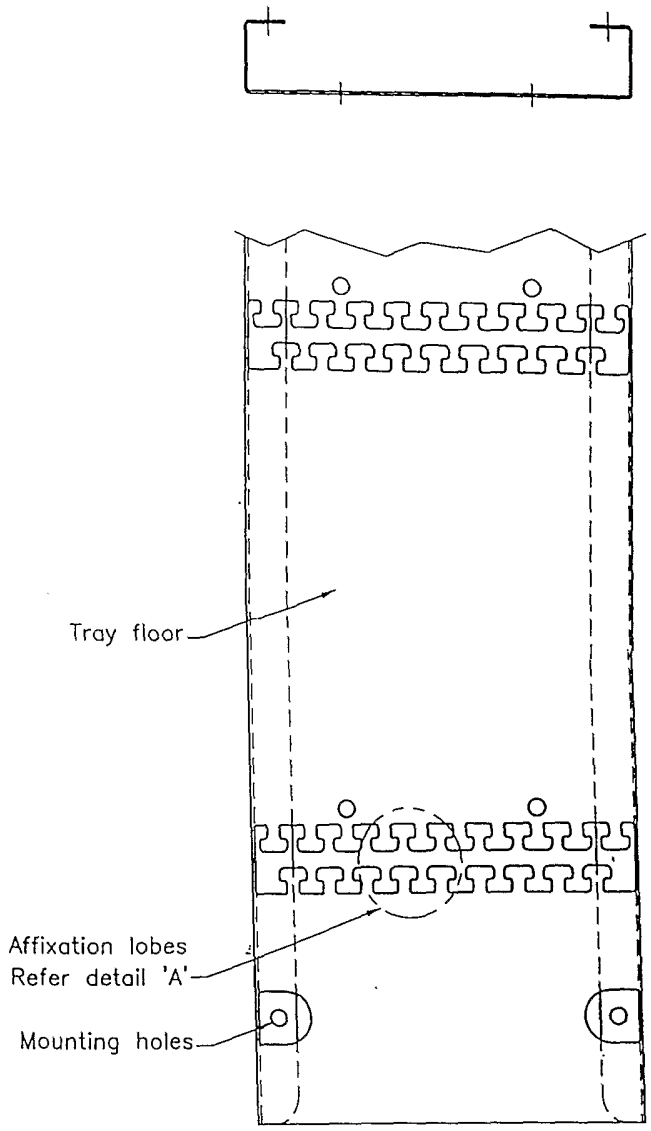
15. A method according to claim 14 wherein the item(s) is an electrical cable and the structure is a temporary or permanent building.

16. An item support apparatus substantially as herein described with reference to any example and/or drawing thereof.

17. A method for supporting one or more items substantially as herein described with reference to any example and/or drawing thereof.

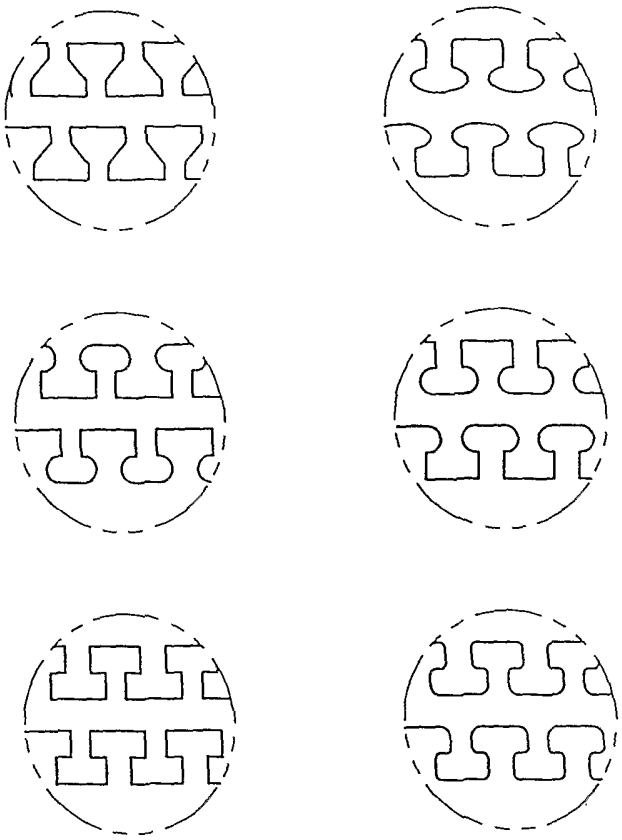
18. A method for attaching an item to a structure substantially as herein described with reference to any example and/or drawing thereof.

FIGURE 1



SDL Design

FIGURE 2



Variations for detail 'A'

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ03/00098

A. CLASSIFICATION OF SUBJECT MATTER

Int. Cl. [7]: H02G 3/04, F16L 3/22

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)
PLEASE REFER TO THE ELECTRONIC DATABASE CONSULTED BELOW

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)
DWPI : IPC H02G 1/-, H02G 3/-, F16L 3/- and key words: tray, lobe, cable, secure, attach 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.
X	GB 2067851 A (RACEWAY SYSTEMS PTY LTD.) 30 July 1981 See entire document and drawing	1 - 18
X	FR 2387407 A (TEHALIT KUNSTSTOFFWERK G.M.B.H.) 10 November 1978 See entire document and drawings	1 - 18
X	GB 1580214 A (BICC LIMITED) 26 November 1980 See entire document and drawings	1 - 18
X	EP 0723102 B1 (THOMAS & BETTS CORPORATION) 19 December 2001 See entire document and drawings	1 - 18

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

* Special categories of cited documents:

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"E" earlier application or patent but published on or after the international filing date

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"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
15 July 2003	29 JUL 2003
Name and mailing address of the ISA/AU	Authorized officer
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	**AMOD PRADHAN** Telephone No : (02) 6283 2510

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ03/00098

C (Continuation). **DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/03266 A1 (METAL DEPLOYE S. A.) 11 January 2001 See abstract and drawings	1 - 18
X	ADC - The Broadband Company, Media And Broadcast Products, [retrieved on 19-09-02]. Retrieved from the Internet, http://www.majortech.com/productinfo/adc1/9icon96.pdf See figure: I-96 System (Rear View)	1 - 18

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/NZ03/00098

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					
GB	2067851	US	4432519	NZ	195882	ZA	8008093
FR	2387407	AT	263078	BE	865982	CH	627590
		NL	7803890				
GB	1580214	HK	26781	MY	7982		
EP	0723102	CA	2167653	US	5639048	JP	9023529
WO	01/03266	AU	55414/00	EP	1192693	FR	2796121

END OF ANNEX