

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 February 2003 (06.02.2003)

PCT

(10) International Publication Number
WO 03/010401 A1

(51) International Patent Classification⁷: **E04F 21/20**,
E04G 21/18, E04F 15/04

(21) International Application Number: PCT/AU02/00822

(22) International Filing Date: 25 June 2002 (25.06.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PR 6584 25 July 2001 (25.07.2001) AU
27730/02 27 March 2002 (27.03.2002) AU

(81) Designated States (*national*): AE, AG, AL, AM, AT, 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, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, 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, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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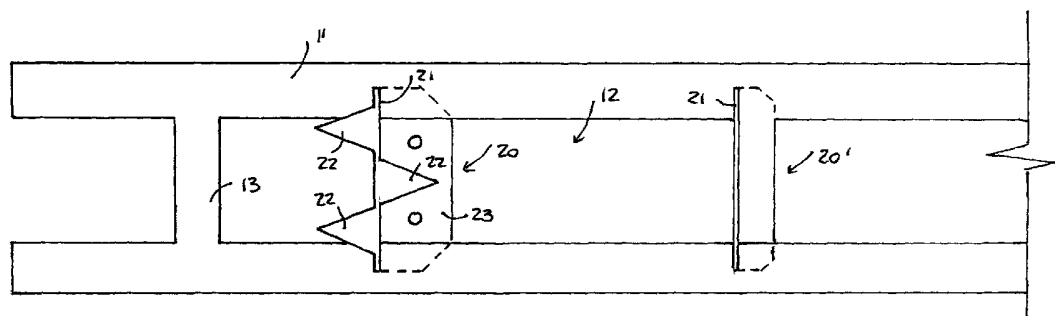
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Published:

— 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: APPARATUS FOR LAYING DECKING



(57) Abstract: An apparatus for laying decking comprises a longitudinally extending base member (10) attachable to, or integrally formed with, the upper surface (51) of a decking joist (50) and a plurality of spacers (20). The base member (10) has a plate portion (11) with a longitudinally extending slot (12) extending therethrough for engagement with the spacers (20). Each spacer (20) has a wall (21) upstanding from the plate portion (11) in a plane perpendicular to a longitudinal axis of the base member (10) when the spacer (20) is engaged with the plate portion (11).



WO 03/010401 A1

APPARATUS FOR LAYING DECKING

Technical Field

The present invention relates to decking structures, and in particular relates to apparatus for laying decking.

Background of the Invention

Decking is typically laid on a framework of parallel timber joists by laying successive lengths of decking on top of the joists perpendicular thereto, and nailing each successive length of decking to the underlying joists. The lengths of decking are spaced for drainage. Such spacing is usually provided by driving nails into the joists abutted against the side of a first laid length of decking, with a second length of decking being positioned on the joists abutted against the opposing side of the nails, thereby providing a space the width of the nails between lengths of decking. The second length of decking is then nailed into position on the joists, and the spacing nails removed. Such a process, is, however, cumbersome and often results in subsequent warping of the lengths of decking as a result of movement once the spacing nails have been removed.

Further, the space between adjacent lengths of decking provides for ingress of water which subsequently pools on the joists in the area of each joist exposed between the adjacent lengths of decking. Such pooling of water can result in premature rotting of the timber joists. When decking is being replaced, it is consequently often necessary to also replace the framework of joists as a result of such rotting, greatly increasing the cost of the decking replacement.

Object of the Invention

It is the object of the present invention to overcome or substantially ameliorate at least one of the above disadvantages.

Summary of the Invention

In a broad form the present invention provides apparatus for laying decking comprising:

a longitudinally extending base member attachable to, or integrally formed with, the upper surface of a decking joist, said base member having a plate portion with a longitudinally extending slot extending therethrough, and

a plurality of spacers engageable with said plate portion by means of said slot, each said spacer having a wall adapted to upstand from said plate portion in a plane substantially perpendicular to a longitudinal axis of said base member when said spacer is engaged with said plate portion.

5 Typically, said longitudinally extending base member is adapted to be placed over a decking joist and attached thereto.

Typically, said base member is formed from sheet material.

Typically, said base member is formed as an inverted channel, comprising said plate portion and opposing side portions adapted to extend downwardly over the side
10 surfaces of a decking joist.

Typically, said plate portion is provided with a plurality of said longitudinally extending slots positioned end to end, longitudinally adjacent slots each being separated by a web therebetween.

Typically, said webs have a width less than that of the lengths of decking to be
15 laid, with the centres of longitudinally adjacent said webs being spaced a distance substantially equal to an exact multiple of the combined width of a length of decking and thickness of a said spacer wall.

Typically, said wall of each of at least some of said spacers is provided with at least one spike upstanding from at least one face of said wall for engaging the side of a
20 length of decking.

Preferably, said wall of each of at least some of said spacers is provided with at least one said spike upstanding from each opposing face thereof.

Preferably, each said spike is located toward the top of the respective said wall.

In a preferred form each said spacer is provided with a flange extending
25 generally perpendicularly to said wall, with a laterally extending slot being formed at each lateral end of said wall immediately above said flange, said spacer slots and said flange being adapted to engage said plate portion of said base member on opposing sides of said base member slot.

Typically, each said spacer is formed from sheet material.

30 In another broad form, the present invention provides a method of laying decking comprising the steps of:

attaching longitudinally extending base members to the upper surface of each of a plurality of parallel decking joists, each said base member having a plate portion with a longitudinally extending slot extending therethrough;

laying a first length of decking on said base member plate portions generally perpendicular to a longitudinal axis of each of said base members;

engaging a plurality of spacers with said plate portion of at least some of said base members by means of the respective said slot, with a wall of each said spacer
5 upstanding from said plate portion in a plane substantially perpendicular to the longitudinal axis of the respective said base member,

abutting a face of each said spacer wall with a side of said first length of decking,

laying a second length of decking on said base member plate portions adjacent said first length of decking on the opposing face of each of said spacer walls, and

10 abutting said second length of decking against said opposing face of each of said spacer walls.

Typically, during said abutting steps a spike upstanding from the respective face of each said wall engages the side of the respective said length of decking.

In another form the present invention provides apparatus for laying decking
15 comprising:

a longitudinally extending sheet member incorporating a plurality of spacer walls upstanding from said sheet member in a plane substantially perpendicular to a longitudinal axis of said sheet member,

wherein each said spacer wall is longitudinally spaced a distance substantially
20 equal to the width of a length of decking.

Brief Description of the Drawings

Preferred forms of the present invention will now be described by way of example with reference to the accompanying drawings wherein:

Figure 1 is plan view of a base member of the apparatus of a preferred
25 embodiment of the present invention.

Figure 2 is a plan view of the apparatus of the preferred embodiment of the present invention.

Figure 3 is a side elevation view of a decking installation incorporating the apparatus of Figure 2.

30 Figure 4 is an end elevation view of the decking installation of Figure 3.

Figure 5 is a plan view of a spacer of the apparatus of Figure 2.

Figure 6 is a front elevation view of the spacer of Figure 5.

Figure 7 is a plan view of an alternate spacer of the apparatus of Figure 2.

Figure 8 is a front elevation view of the alternate spacer of Figure 7.

Figure 9 is a side elevation view of a decking installation depicting a spacer installation tool.

Figure 10 is a plan view of an alternate apparatus of the present invention.

5 Figure 11 is a side elevation view of the apparatus of Figure 10.

Detailed Description of the Preferred Embodiments

With reference to Figures 1 to 4 of the accompanying drawings, an apparatus for laying decking according to the preferred embodiment of the present invention includes a longitudinally extending base member 10 attachable to the upper surface 51 of a decking joist 50. The base member 10 has a plate portion 11 with a longitudinally extending slot 12 extending therethrough. In the preferred embodiment a plurality of slots 12 are formed end to end, with each longitudinally adjacent pair of slots being separated by a web 13 which serves to stiffen the base member 10 and to make it easier to handle and locate on to the joist 50.

15 As best seen in Figures 3 and 4, the base member 10 is here in the form of an inverted channel, comprising the plate portion 11 and opposing side portions 14 which extend downwardly over the side surfaces 52 of the decking joist 50. Apertures 15 in the side portions 14 enable the base member 10 to be fastened to the joist 50 by nails or other suitable fasteners. In an alternate form, the base member could merely be formed as a flat sheet comprising the plate portion to be laid on top of the decking joist 50 and nailed thereto. The base member 10 is here formed of sheet material, being galvanised sheet steel, however the person skilled in the art will appreciate other suitable materials.

The apparatus of the preferred embodiment of the present invention further comprises a plurality of spacers 20, 20' engageable with the base member plate portion 11 by means of the slots 12 as depicted particularly in Figures 2 and 3. The spacers 20, 20' each have a wall 21 which upstands from the plate portion 11 in a plane perpendicular to the longitudinal axis of the base member when the spacer 20, 20' is engaged with the plate portion. The walls 21 of the spacers accordingly form spacing partitions spaced along the length of the base member 10. As will be appreciated from Figure 3, these partition walls 21 provide the required spaces between adjacent lengths of decking 60, which are laid on to the plate portion 11 and joists 50 between the spacers 20, 20' as will be discussed further below.

One form of spacer 20, depicted in further detail in Figures 5 and 6, is provided with spikes 22 upstanding from opposing faces of the wall 21 for engaging the side of the adjacent length of decking 60 by penetrating the same as depicted in Figure 3 to secure the same without the need for driving nails through the thickness of the length of decking 60 into the underlying joist 50 as per the commonly used method. Any number of spikes 22 might be formed on one or both faces of the wall 22 for engaging the adjacent length of decking 60.

As depicted to the right of Figures 2 and 3 and in further detail in Figures 7 and 8, the second form of spacer 20' does not include any spikes 22. Such an alternate form of spacer 20' would be particularly suitable for use adjacent the end length of decking such that a sharp spike 22 does not protrude from the decking structure in a dangerous manner. This alternate form of spacer 20' will also be suitable where it is desired to still fasten the length of decking 60 to the underlying joist 50 utilising nails extending through the thickness thereof and into the joist in the usual manner.

Referring particularly to Figures 5 and 6, the spacer 20 is in the form of the wall 21, the spikes 22 provided toward the top of the wall 21 and a flange 23 extending generally perpendicularly to the wall 21. Laterally extending slots 24 are formed at each lateral end of the wall 21 immediately above the flange 23. As can be seen in Figures 2 and 3, the spacers slots 24 and flange 23 are configured to engage the plate portion 11 of the base member 10 on opposing sides of the base member slot 12. The upper face of the flange 23 engages the lower face of the plate portion 11, and the spacer slots 24 have a height slightly greater than the thickness of the plate portion 11 such that the spacer is held relatively firmly in place with the wall 21 upstanding from the plate portion 11. The spacer 20 is here stamped and folded from galvanised sheet steel. This form of spacer 20 can be manufactured quite cost effectively from sheet material. The flange 23 may further be provided with apertures 25 to enable the spacers 20 to be nailed into the upper surface of the joist 50 if desired to further secure the spacers 20. The leading edge corners 26 of the flange are here chamfered for ease of installation, preventing any sharp corner from biting into the timber of the underlying joist 50 as the spacer 20 is engaged with the base member 10.

The alternative form of spacers 20' as depicted in Figures 7 and 8 is of a similar form to the spacer 20, with the omission of the spikes 22.

In use, base members 10 are placed over the parallel joists 50 and fastened thereto utilising nails through apertures 15 in the base member sides 14. A first length of

decking 60 is then laid on top of the joists 50 directly on to the plate portions 11 with the length of decking 60 extending generally perpendicular to the joists 50. Working along the length of decking 60 from one end to the other, a spacer 20 is inserted into the slot 12 of each base member 10 adjacent the length of decking 60, initially with the wall 21
5 extending in the longitudinal direction of the slot 12. The spacer 20 is then rotated through 90° such that the spacer flange 23 slides underneath the plate portion 11 at each side of the slot 12, with the opposing regions of the plate portion 11 being received in the spacer slots 24, thereby effectively keying the spacer into the slot such that the spacer wall 21 is upstanding from the plate portion 11 and extending in a direction perpendicular
10 to the base member 10 longitudinal axis.

Utilising a special tool 40, as depicted in Figure 9, the wall 21 of the spacer 20 is engaged beneath the spikes 22 with the face 41 of the tool 40, driving the spacer toward the length of decking 60, engaging the spike 22 with the side of the length of decking 60 to penetrate the same and secure the length of decking 60 to the joist 50. The spacer 20 is
15 then secured to the joist 50 by hammering nails through the apertures 25 in the flange 23 of the spacer. It is envisaged, however, that, so long as the edges of the decking are retained, there might be no need to nail the spacers to the joist 50, as their position will be fixed by the adjacent lengths of decking 60.

A second length of decking 60 is then laid on the joists 50 adjacent the spacer 20
20 and driven toward the spacer 20 such that the remaining protruding spike 22 engages the side of the second length of decking 60 and penetrates the same, again thereby fastening the second length of decking 60 to the joist 50. The process is then repeated with successive lengths of decking.

As can be best seen from Figure 3, the spacer wall 21 creates an even space
25 between successive lengths of decking 60, providing a uniform appearance throughout the decking. Use of the spikes 22 also prevents the need for nailing the lengths of decking 60 directly to the joist, providing an unblemished finish to the upper surface of the decking. The spacer wall 21 effectively fills the lower half of the gap between adjacent lengths of decking 60 above the joist 50, such that any water falling between the adjacent lengths of
30 decking 60 will pool on top of the galvanised spacer wall 21 rather than on the underlying joist. Whilst some water will inevitably still rest on the joist, the greatly reduced level of pooling will likely reduce the tendency of the joist to prematurely rot, thereby increasing its lifespan.

When securing the end length of decking 60, it will be appropriate to utilise the alternate form of spacer 20' as depicted toward the right of Figures 2 and 3, such that no spike will protrude from the edge of the decking. Alternatively, a spacer might be utilised which only has spikes 22 facing in one direction, to penetrate the end of the last length of decking 60.

In scenarios where the joists 50 have been subject to rot as a result of pooling of water between adjacent lengths of decking where the initial decking installation did not utilise the apparatus of the present invention, it would currently usually be necessary to replace the framework of joists as well as the decking. Utilising the apparatus of the preferred embodiment of the present invention, however, the base member 10 can be overlaid on to a joist which has been subject to some rot, with the base member 10 acting to reinforce the joist 50 weakened by rot. Substantial savings will accordingly be afforded by alleviating the requirement to replace the joists.

Typical timber joists are formed of 4 inch x 2 inch (102 mm x 51 mm) timber, and hence the base member 10 is dimensioned accordingly to fit snugly over the joists. Typical overall dimensions of the base member will be approximately 46 mm high so as to cover most of the upper half of the joists, and 57 mm wide, allowing for the material sheet thickness of approximately 1.9 mm. The slots 12 are approximately 30 mm wide.

The standard lengths of decking are typically approximately 90 mm x 22 mm. To ensure that a spacer 20 can be engaged with the slots 12 between each successive length of decking, the webs 13 formed between each slot should have a width significantly less than the 90 mm width of the lengths of decking, and should have their centres separated by close to an exact multiple of the combined width of the length of decking and the thickness of the wall 21 of the spacers 20, which are here formed from 1.9 mm thick galvanised sheet. Having the centres of the webs 13 spaced in this manner will ensure that, so long as the base member 10 is located on the joist such that the first web 13 lays directly beneath the centre of the first length of decking 60, then each successive web 13 will lie beneath the centre of another length of decking, leaving room for the spacers 20 as required. To assist in appropriate positioning of the base member 10 to ensure that the first web 13 is located beneath the centre of a length of decking, it is preferred that the first web is positioned with its centre approximately half the width of a length of decking away from the end of the base member 10, with the last web positioned a similar distance from the opposing end of the base member. This will ensure that

successive lengths of base member can be positioned end to end without disrupting the location of subsequent webs 13.

The spacers 20 here have an overall height of approximately 15 mm, such that the spikes 22, which are also approximately 15 mm long, will engage the sides of the lengths of decking 60 at approximately half their height.

Whilst the above preferred embodiment has been described in relation to a base member adapted to be laid over a timber joist, it is envisaged that versions of the base member 10 might be utilised with steel "top hat" section joists which are typically utilised with decking installations laid over a concrete slab. Where steel joist sections are utilised, it is also envisaged that the base member might be integrally formed with the joist, forming the upper face of such a joist section.

In an alternate form of the present invention as depicted in Figures 10 and 11, a single piece of apparatus is utilised. This apparatus comprises a longitudinally extending sheet 100 of material with spacer walls 101 upstanding therefrom and equidistantly spaced a distance approximately equal to the width of a length of decking. Such a sheet 100 might be moulded from plastics material and nailed directly to the upper surface of a timber joist. Lengths of decking would then be located on the joist between successive spacers walls 101 and nailed to the joist through the thickness of the lengths of decking and through the plastic sheet material 100.

The person skilled in the art will appreciate other possible modifications and variations.

Claims:

1. Apparatus for laying decking comprising:
a longitudinally extending base member attachable to, or integrally formed with, the upper surface of a decking joist, said base member having a plate portion with a
5 longitudinally extending slot extending therethrough, and
a plurality of spacers engageable with said plate portion by means of said slot, each said spacer having a wall adapted to upstand from said plate portion in a plane substantially perpendicular to a longitudinal axis of said base member when said spacer is engaged with said plate portion.
- 10 2. The apparatus of claim 1, wherein said longitudinally extending base member is adapted to be placed over a decking joist and attached thereto.
3. The apparatus of claim 2, wherein said base member is formed from sheet material.
4. The apparatus of claim 3, wherein said base member is formed as an
15 inverted channel, comprising said plate portion and opposing side portions adapted to extend downwardly over the side surfaces of a decking joist.
5. The apparatus of claim 1, wherein said plate portion is provided with a plurality of said longitudinally extending slots positioned end to end, longitudinally adjacent slots each being separated by a web therebetween.
- 20 6. The apparatus of claim 5, wherein said webs have a width less than that of the lengths of decking to be laid, with the centres of longitudinally adjacent said webs being spaced a distance substantially equal to an exact multiple of the combined width of a length of decking and thickness of a said spacer wall.
7. The apparatus of claim 1, wherein said wall of each of at least some of
25 said spacers is provided with at least one spike upstanding from at least one face of said wall for engaging the side of a length of decking.
8. The apparatus of claim 7, wherein said wall of each of at least some of said spacers is provided with at least one said spike upstanding from each opposing face thereof.
- 30 9. The apparatus of claim 7, wherein each said spike is located toward the top of the respective said wall.
10. The apparatus of claim 1, wherein each said spacer is provided with a flange extending generally perpendicularly to said wall, with a laterally extending slot being formed at each lateral end of said wall immediately above said flange, said spacer

slots and said flange being adapted to engage said plate portion of said base member on opposing sides of said base member slot.

11. The apparatus of claim 1, wherein each said spacer is formed from sheet material.

5 12. A method of laying decking comprising the steps of:

attaching longitudinally extending base members to the upper surface of each of a plurality of parallel decking joists, each said base member having a plate portion with a longitudinally extending slot extending therethrough;

10 laying a first length of decking on said base member plate portions generally perpendicular to a longitudinal axis of each of said base members;

engaging a plurality of spacers with said plate portion of at least some of said base members by means of the respective said slot, with a wall of each said spacer upstanding from said plate portion in a plane substantially perpendicular to the longitudinal axis of the respective said base member,

15 abutting a face of each said spacer wall with a side of said first length of decking,

laying a second length of decking on said base member plate portions adjacent said first length of decking on the opposing face of each of said spacer walls, and

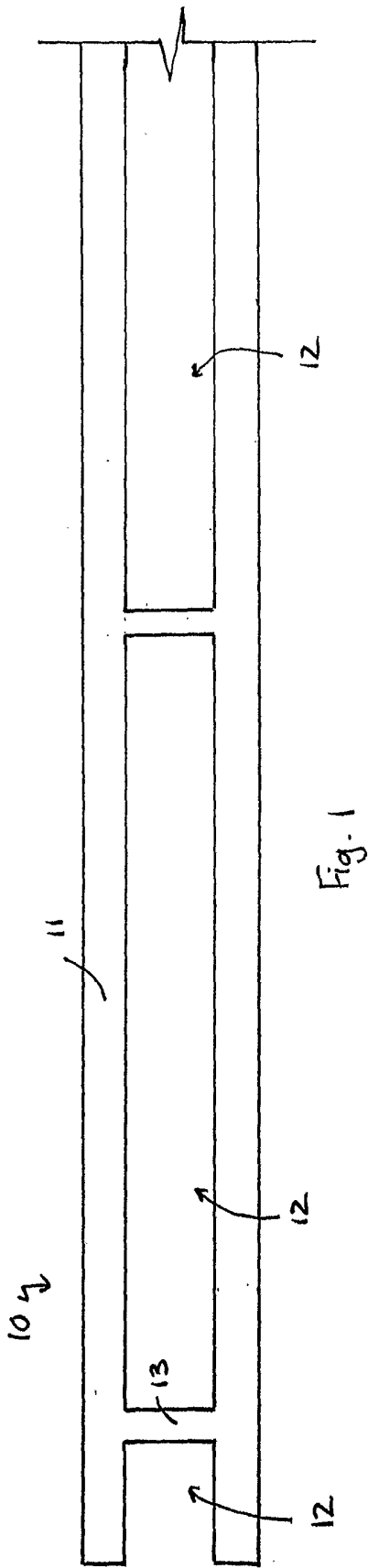
abutting said second length of decking against said opposing face of each of said spacer walls.

20 13. The method of claim 12, wherein, during said abutting steps a spike upstanding from the respective face of each said wall engages the side of the respective said length of decking.

14. Apparatus for laying decking comprising:

25 a longitudinally extending sheet member incorporating a plurality of spacer walls upstanding from said sheet member in a plane substantially perpendicular to a longitudinal axis of said sheet member,

wherein each said spacer wall is longitudinally spaced a distance substantially equal to the width of a length of decking.



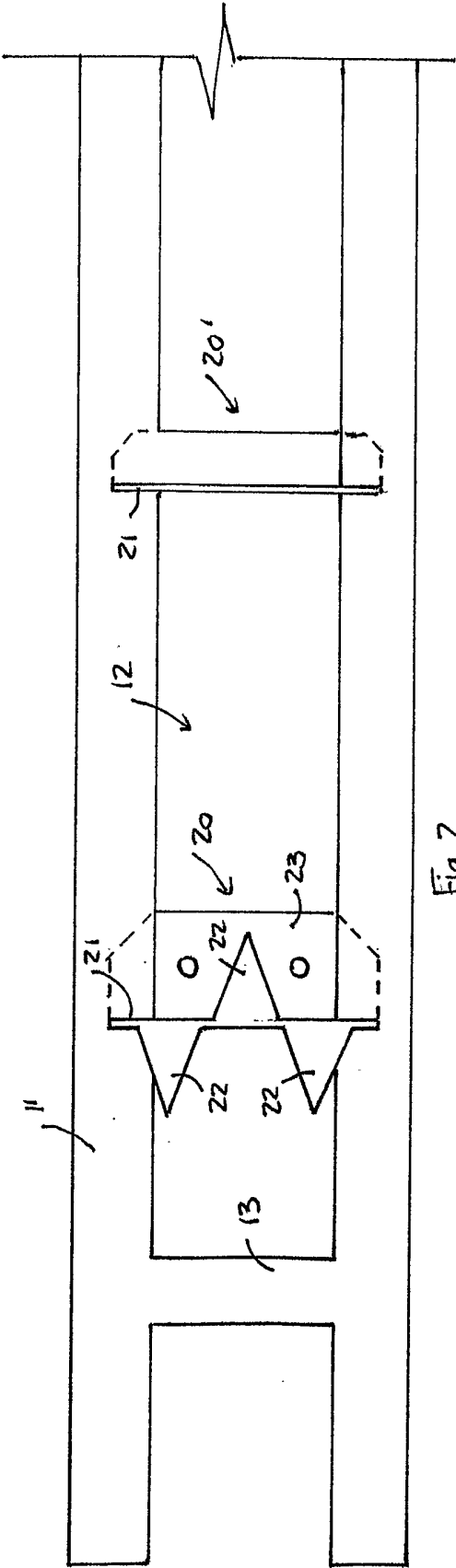


Fig. 2

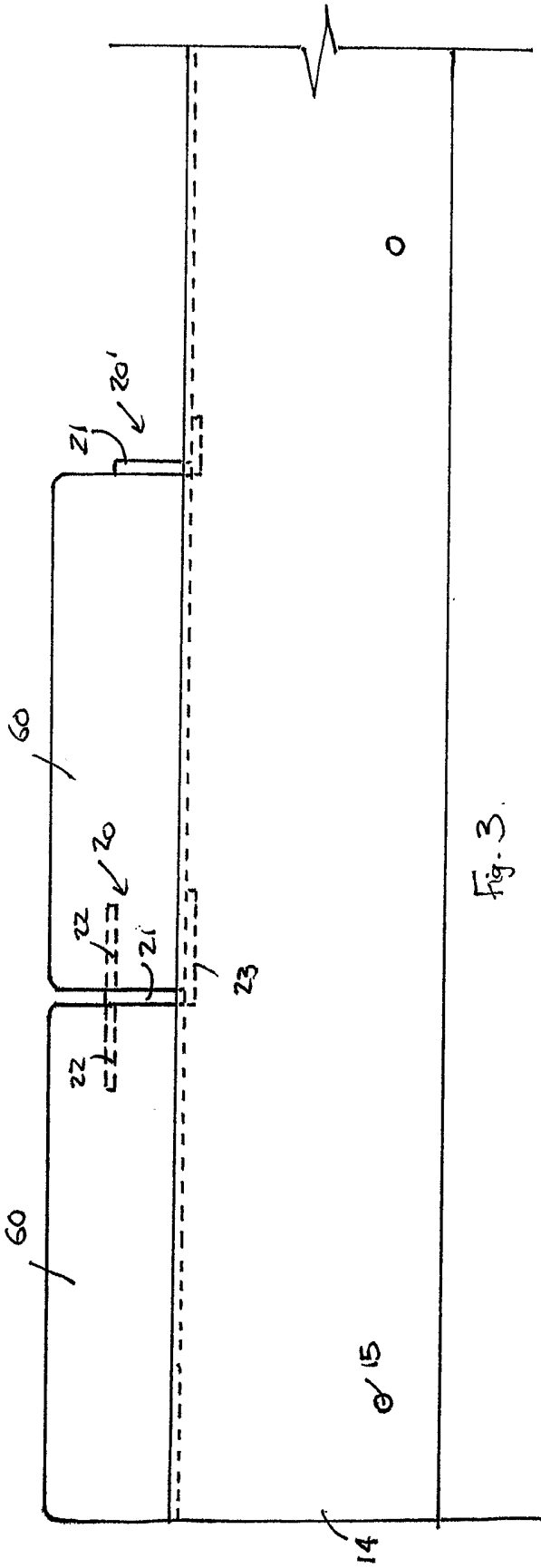
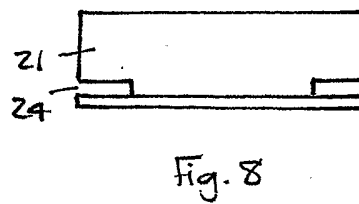
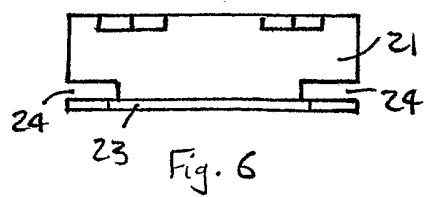
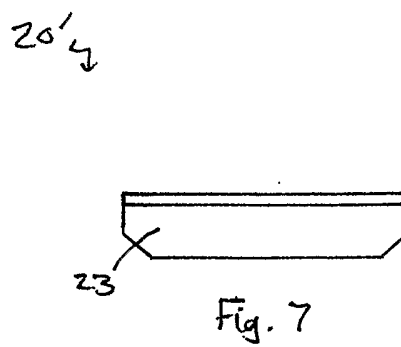
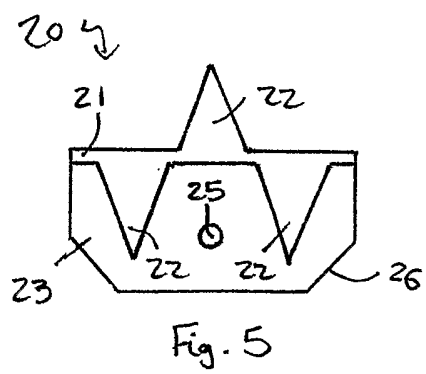
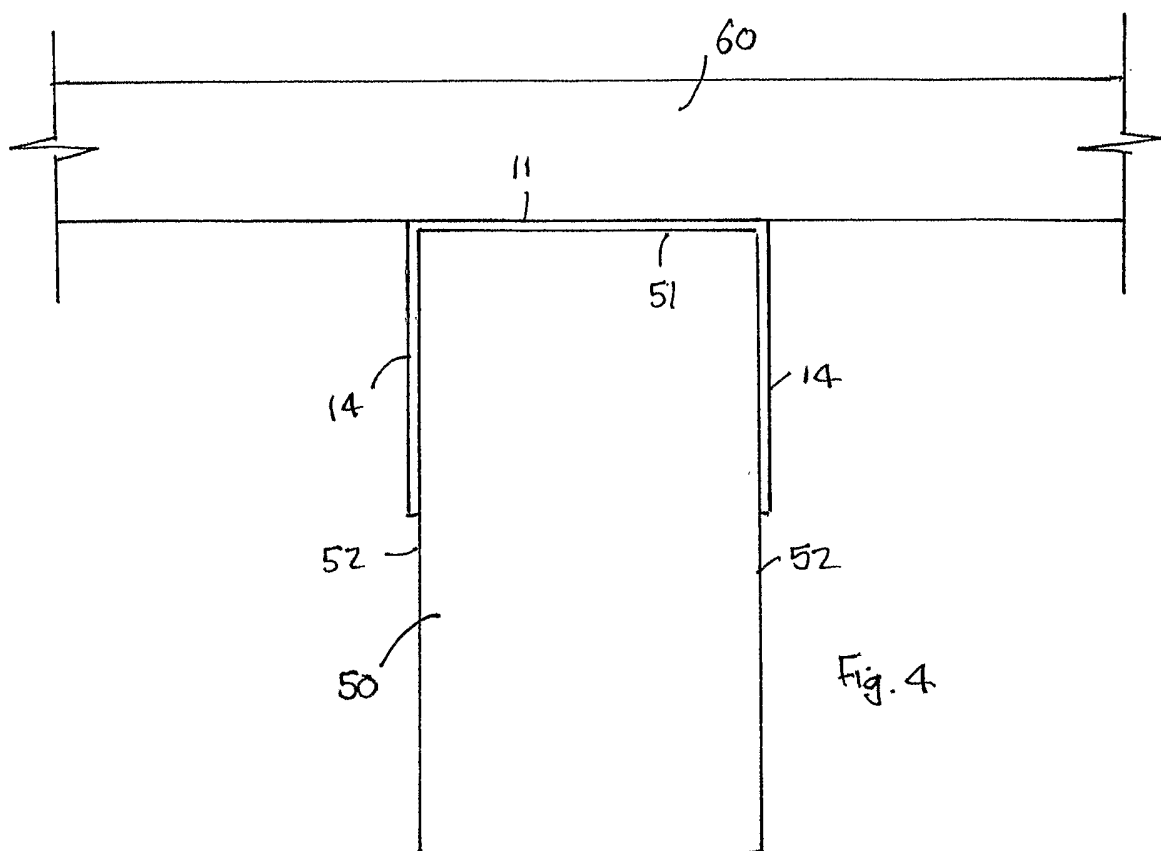
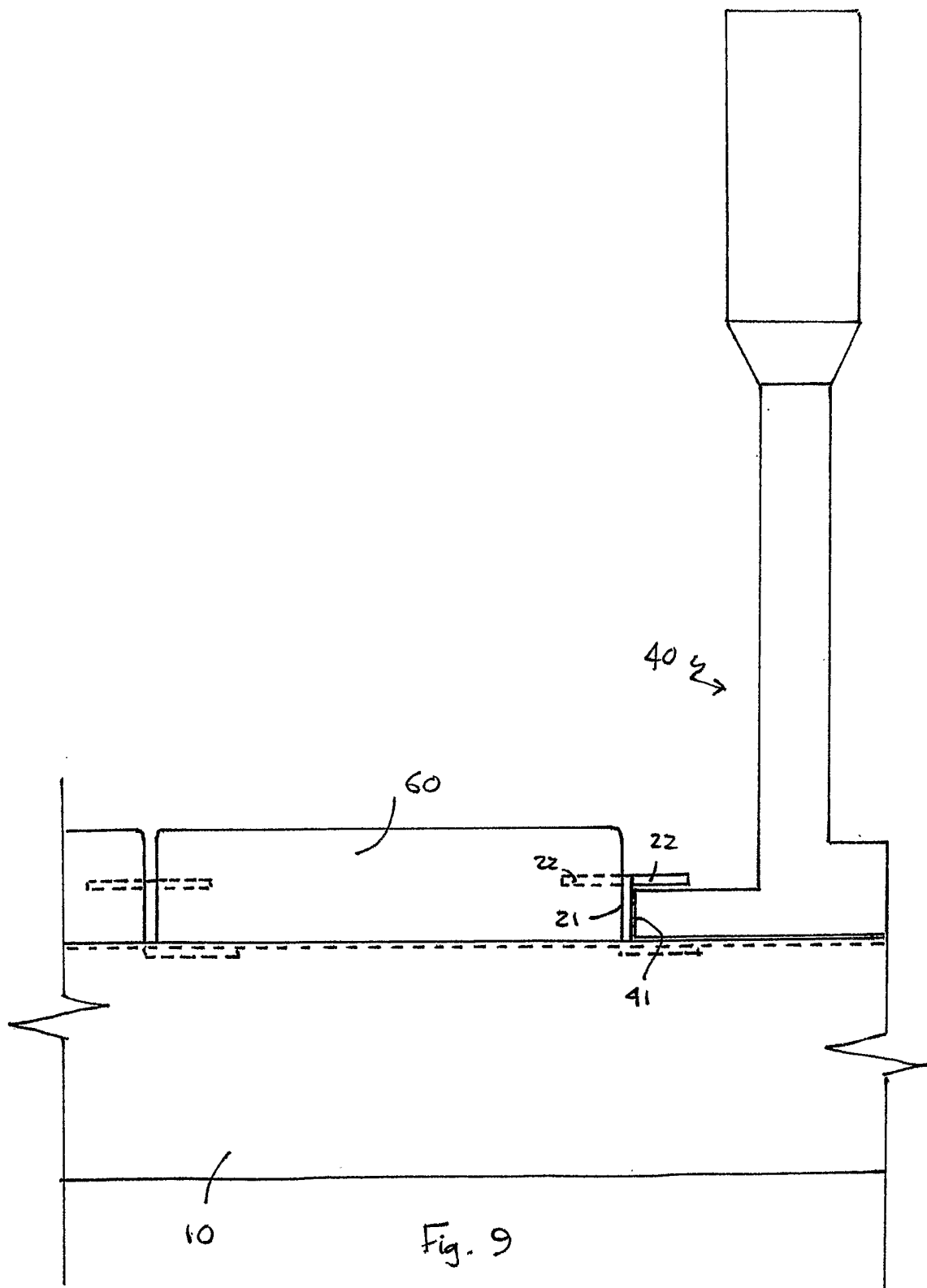


Fig. 3





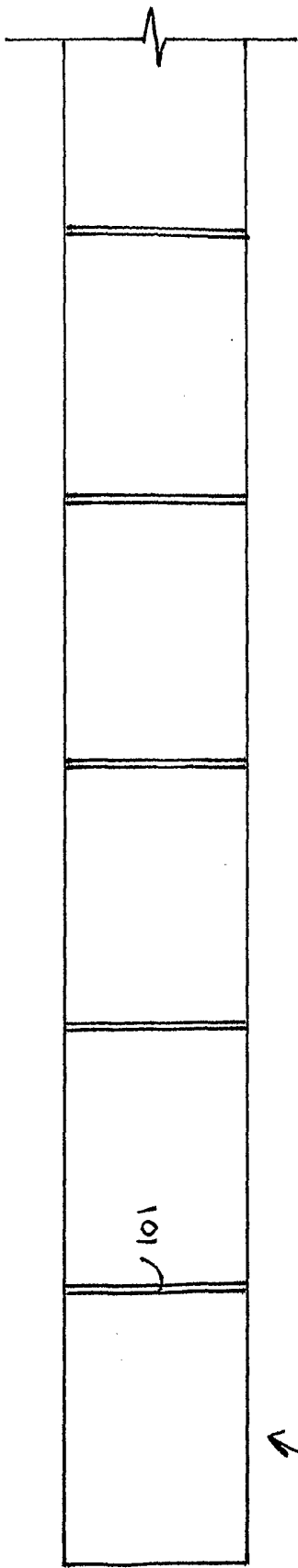


Fig. 10

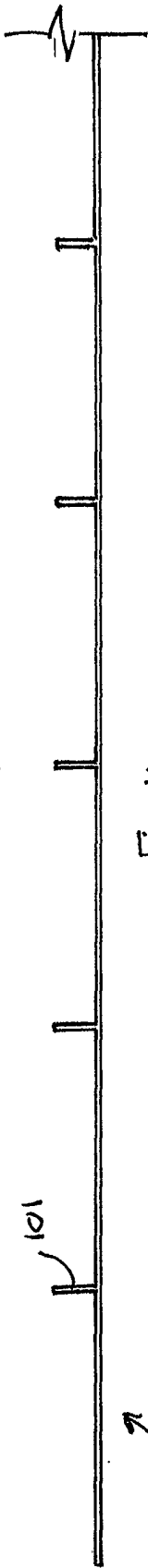


Fig. 11

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU02/00822

A. CLASSIFICATION OF SUBJECT MATTER												
Int. Cl. ⁷ : E04F 21/20, E04G 21/18, E04F 15/04												
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) REFER ELECTRONIC DATA BASE CONSULTED BELOW												
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU: IPC E04B 1/38, 1/62, 1/64, 5/00, 5/12, E04F 15/02, 15/04, 21/20, E04G 21/18												
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DWPI & keywords: E04B/-, E04F/-, E04G/-, deck, spac, gap, distanc, joist, bearer, beam, plat, base, strip, web, bar, sheet, elongate, channel, template, join, attach, connect, lock, fasten, secur, slat, board, adjacent, next etc.												
C. DOCUMENTS CONSIDERED TO BE RELEVANT												
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.										
P,X	AU 200150101 A1 (PROUD) 6 December 2001 See figures.	14										
P,X	WO 01/71113 A1 (GUSTAVSEN) 27 September 2001 See figures.	14										
X	WO 96/18776 A (HOWELL) 20 June 1996 See figures.	14										
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Date of the actual completion of the international search 23 August 2002		Date of mailing of the international search report 29 AUG 2002										
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International application No.

PCT/AU02/00822

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	AU 81736/94 B (HOWELL et al) 3 August 1995 See figures.	14
X	AU 56375/94 A (BUNNINGS FOREST PRODUCTS PTY LTD) 1 September 1994 See figures.	14
X	US 4965980 A (LEAVENS) 30 October 1990 See figures.	14
X	US 4858399 A (SALATO) 22 August 1989 See figures.	14
A	CA 1290131 A (BLIND NAIL MANUFACTURING LTD) 8 October 1991 See figures.	1-13
A	WO 95/25856 A (MAYNE INDUSTRIES HOLDINGS PTY LTD) 28 September 1995 See figures.	1-13

Supplemental Box

(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box No: II

The different inventions are:

1. Claims 1-13 are directed to an apparatus for deck laying comprising a longitudinally extending base member attachable along the upper surface of a decking joist, consisting of a plate portion with a longitudinally extending slot, and a plurality of spacers engageable with the plate portion by means of the slot, each spacer when engaged to have an upstanding portion in a plane perpendicular to the longitudinal axis of the base portion.
2. Claim 14 is directed to an apparatus for deck laying comprising a longitudinally extending sheet member attachable to the top surface of a decking joist which has a plurality of spacer walls upstanding from the sheet in a plane perpendicular to the longitudinal axis of the sheet and spaced a distance substantially equal to the width of a length of decking.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU02/00822

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	200150101		
WO	01/71113		
WO	96/18776	AU	42935/96
AU	81736/94	AU	42935/96
AU	56375/94	WO	96/18776
US	4965980		
US	4858399		
END OF ANNEX			