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(54) **Joists**

Träger

Poutres

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Description

Field of the Invention

5 [0001] This invention relates to joists, a term intended to cover similar structural components such as beams, struts or ties.

Background to the Invention

10 [0002] Some known joists are fabricated in a factory to required lengths and delivered to the job site. On arrival at the job site, the joist is sometimes found to be under or over length: extending the length of a joist is virtually impossible and shortening the length of a joist by cutting is difficult because typical joists have metal webs. To overcome this problem joists with trimmable ends of wood have been made available but these have not satisfied the dual requirements of being capable of being trimmed to a desired length and also readily supported at their ends in a wall or by a joist hanger.

15 [0003] Document US-A-4501102 discloses (see figures 1 and 3) a joist (10), with upper and lower chords (11, 12) interconnected by web means (14), wherein the identical ends of the joist have a block of wood or wood substitute (35, 36) of a width corresponding to the width of the chords, whereby each end of the joist is of solid material which can be cut through at any position on the joist end to enable the joist to be trimmed to a desired length on site.

Summary of the Invention

[0004] According to the invention there is provided a plurality of joists, each joist comprising longitudinally extending upper and lower chords interconnected by web means, wherein each end of each joist has a block of wood (or wood substitute) which spans and interconnects the upper and lower chords and which has a width corresponding to the width of the chords, whereby said each end of the joist is of solid material which can be cut through at any position on the joist end to enable the joist to be trimmed to a desired length on site, and wherein the plurality of joists comprises at least two joists of differing lengths, and each joist having trimmable ends of the same length, the difference in length between the joists being less than the combined length of the trimmable ends of either joist.

[0005] The or each block may be connected to the chords by any convenient means, but a mechanical connection employing nails or tangs is preferred.

[0006] Not only can the solid material at the joist end be cut to provide a joist of a length required at the job site, but the equality of width of the block and the chords gives a trimmed joist a rectangular cross-section which facilitates building-in of the joist end or support of the joist end by a joist hanger.

[0007] Preferably the two ends of each joist are identical, each having a corresponding block of wood (or wood substitute) and each being capable of being cut to enable the joist to be trimmed to size.

[0008] The or each block is preferably softwood but may be a substitute made from other materials, e.g. reconstituted plastic.

[0009] The web means may be of metal, conveniently being v-shaped metal webs attached to both facing sides of the chords.

40 [0010] The invention can be extended to any plural number of joists, for example six in the specific embodiment to be described.

Brief Description of the Drawings

45 [0011] A series of six joists, in accordance with the invention will now be described by way of example with reference to the accompanying drawings in which:

Figures 1a to 1f are side views of the six joists,

50 **Figure 2** is an end view on the line A-A of Figure 1F,

Figure 3 is a side view of a block of an end portion of one of the joists, and

Figure 4 is an end view of the block shown in Figure 3.

Detailed Description

[0012] The series of six modular joists shown in Figures 1A to 1F have respective overall lengths of 4,800mm, 4,200mm,

3,600mm, 3,000mm, 2,400mm and 1,800mm. At each end of each joist there is an end portion 10 having a length of 350mm. Thus, the joists have respective central portions 12 with lengths of 4,100mm, 3,500mm, 2,900mm, 2,300mm, 1,700mm and 1,100mm. Apart from the lengths of the central portions 12, the six joists are identical so the shorter joist shown in Figure 1 will now be described in detail.

[0013] The shorter joist has wooden upper and lower chords 14, 16 each of which is of the same rectangular cross-sectional shape and extends for the complete length of the joist. Over the central portion 12 of the joist, the chords are interconnected by V-shaped metal webs 18 which are nail plated to the outwardly-facing edges of the chords 14, 16, so the central portion 12 is hollow and can accommodate services such as wiring or plumbing.

[0014] At each end portion 10, the volume between the chords 14, 16 is filled by a solid wooden block 20 the upper surface of which is rigidly attached to the undersurface of the chord 14 and the lower surface of which is rigidly attached to the upper surface of the chord 16. As best seen in Figure 2, the block 20 has a width identical to the width of the chords 14, 16 so that in cross-section the end portion 10 presents a rectangular shape.

[0015] Figures 3 and 4 show how a 50mm length at the end of each block 20 adjoining the central portion 12 is chamfered at 22 to receive the ends of the adjacent metal webs 18. In Because each end portion 10 is of solid wooden material (made up of the upper and lower chords 14, 16 and the wooden block 20) the end portion 10 can be sawn transversely to the length of the joist to enable the joist to be trimmed to length on the job site. By providing a series of joists with a step difference in length (600mm) of less than twice the length of each end portion 10 (350mm), a joist of any length can be obtained by appropriate trimming of a joist end.

[0016] Whether trimmed or not, the joist end presents a rectangular cross-sectional shape which is devoid of recesses. This rectangular cross-sectional shape makes it easier for the joist end to be secured to a joist hanger (which can be attached directly to the planar sides of the joist end) or for the joist end to be built into a wall.

[0017] The dimensions of the joists, chords and block may vary but four exemplary sets of dimensions are given in millimetres in the four lines of the table below.

Overall vertical depth of joist	Horizontal width of joist	Vertical depth of each chord	Vertical depth of block
195	72 or 97	35	125
219	72 or 97	47	125
254	72 or 97	47	160
304	72 or 97	47	210

Claims

1. A plurality of joists, each joist comprising longitudinally extending upper and lower chords (14, 16) interconnected by web means (18), wherein each end of each joist has a block of wood or wood substitute (20) which spans and interconnects the upper and lower chords (14, 16) and which has a width corresponding to the width of the chords (14, 16), whereby said each end of the joist is of solid material which can be cut through at any position on the joist end to enable the joist to be trimmed to a desired length on site, and wherein the plurality of joists comprises at least two joists of differing lengths, and each joist having trimmable ends of the same length, the difference in length between the joists being less than the combined length of the trimmable ends of either joist.
2. A plurality of joists according to claim 1, wherein the or each block (20) is softwood.
3. A plurality of joists according to claim 1, wherein the or each block (20) is a wood substitute made from reconstituted plastic.
4. A plurality of joists according to any one of claims 1 to 3, wherein the two ends of each joist are identical, each having a corresponding block (20) of wood or wood substitute and each being capable of being cut to enable the joist to be trimmed to size.
5. A plurality of joists according to any one of the preceding claims, wherein each block (20) is connected to the chords (14, 16) by a mechanical connection employing nails or tangs.
6. A plurality of joists according to any one of the preceding claims, wherein the web means (18) are v-shaped metal webs attached to both facing sides of the chords.

7. A plurality of joists according to any of the preceding claims, wherein there are six joists.

Patentansprüche

1. Mehrzahl von Trägern, wobei jeder Träger sich einen in Längsrichtung erstreckenden oberen und unteren Flansch (14, 16), die über Stegmittel (18) miteinander verbunden sind, umfasst, wobei jedes Ende jedes Trägers einen Block (20) aus Holz oder Holzersatzstoff hat, der den oberen und unteren Flansch (14, 16) überspannt und verbindet und dessen Breite der Breite der Flansche (14, 16) entspricht, wobei jedes Ende des Trägers aus massivem Material ist, das an einer beliebigen Position am Trägerende durchgeschnitten werden kann, damit der Träger vor Ort auf eine gewünschte Länge zurechtgeschnitten werden kann, und wobei die Mehrzahl von Trägern mindestens zwei Träger unterschiedlicher Länge umfasst, wobei jeder Träger zurechtschneidbare Enden mit derselben Länge hat, wobei der Längenunterschied zwischen den Trägern kleiner ist als die kombinierte Länge der zurechtschneidbaren Enden jedes Trägers.
2. Mehrzahl von Trägern nach Anspruch 1, wobei der oder jeder Block (20) Weichholz ist.
3. Mehrzahl von Trägern nach Anspruch 1, wobei der oder jeder Block (20) ein aus rekonstituiertem Kunststoff hergestellter Holzersatzstoff ist.
4. Mehrzahl von Trägern nach einem der Ansprüche 1 bis 3, wobei die beiden Enden jedes Trägers identisch sind, wobei jedes einen entsprechenden Block (20) aus Holz oder Holzersatzstoff hat und geschnitten werden kann, damit der Träger zurechtgeschnitten werden kann.
5. Mehrzahl von Trägern nach einem der vorhergehenden Ansprüche, wobei jeder Block (20) über eine mechanische Verbindung unter Einsatz von Nägeln oder Laschen mit den Flanschen (14, 16) verbunden ist.
6. Mehrzahl von Trägern nach einem der vorhergehenden Ansprüche, wobei es sich bei den Stegmitteln (18) um v-förmige Metallstege handelt, die an beiden gegenüberliegenden Seiten der Flansche angebracht sind.
7. Mehrzahl von Trägern nach einem der vorhergehenden Ansprüche, wobei sechs Träger vorliegen.

Revendications

1. Pluralité de poutres, chaque poutre comprenant des membrures supérieure et inférieure (14, 16) s'étendant longitudinalement, interconnectées par des moyens d'âme (18), chaque extrémité de chaque poutre ayant un bloc de bois ou de produit de substitution du bois (20) qui s'étend entre les membrures supérieure et inférieure (14, 16) et les relie entre elles et dont la largeur correspond à la largeur des membrures (14, 16), chaque dite extrémité de la poutre étant fabriquée en matériau massif qui peut être coupé en une position quelconque sur l'extrémité de la poutre pour permettre de tailler la poutre à la longueur souhaitée sur le site, la pluralité de poutres comprenant au moins deux poutres de longueurs différentes, et chaque poutre ayant des extrémités pouvant être taillées, de la même longueur, la différence de longueur entre les poutres étant inférieure à la longueur combinée des extrémités pouvant être taillées de l'une ou l'autre poutre.
2. Pluralité de poutres selon la revendication 1, dans laquelle le ou chaque bloc (20) est en bois tendre.
3. Pluralité de poutres selon la revendication 1, dans laquelle le ou chaque bloc (20) est un produit de substitution du bois fabriqué en plastique reconstitué.
4. Pluralité de poutres selon l'une quelconque des revendications 1 à 3, dans laquelle les deux extrémités de chaque poutre sont identiques, chacune ayant un bloc correspondant (20) en bois ou en produit de substitution du bois, et chacune pouvant être coupée pour permettre de tailler la poutre à la dimension voulue.
5. Pluralité de poutres selon l'une quelconque des revendications précédentes, dans laquelle chaque bloc (20) est connecté aux membrures (14, 16) par une connexion mécanique employant des clous ou des tenons.
6. Pluralité de poutres selon l'une quelconque des revendications précédentes, dans laquelle les moyens d'âme (18)

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sont des âmes en métal en forme de V attachées aux deux côtés en regard des membrures.

7. Pluralité de poutres selon l'une quelconque des revendications précédentes, **caractérisée en ce qu'il y a six poutres.**

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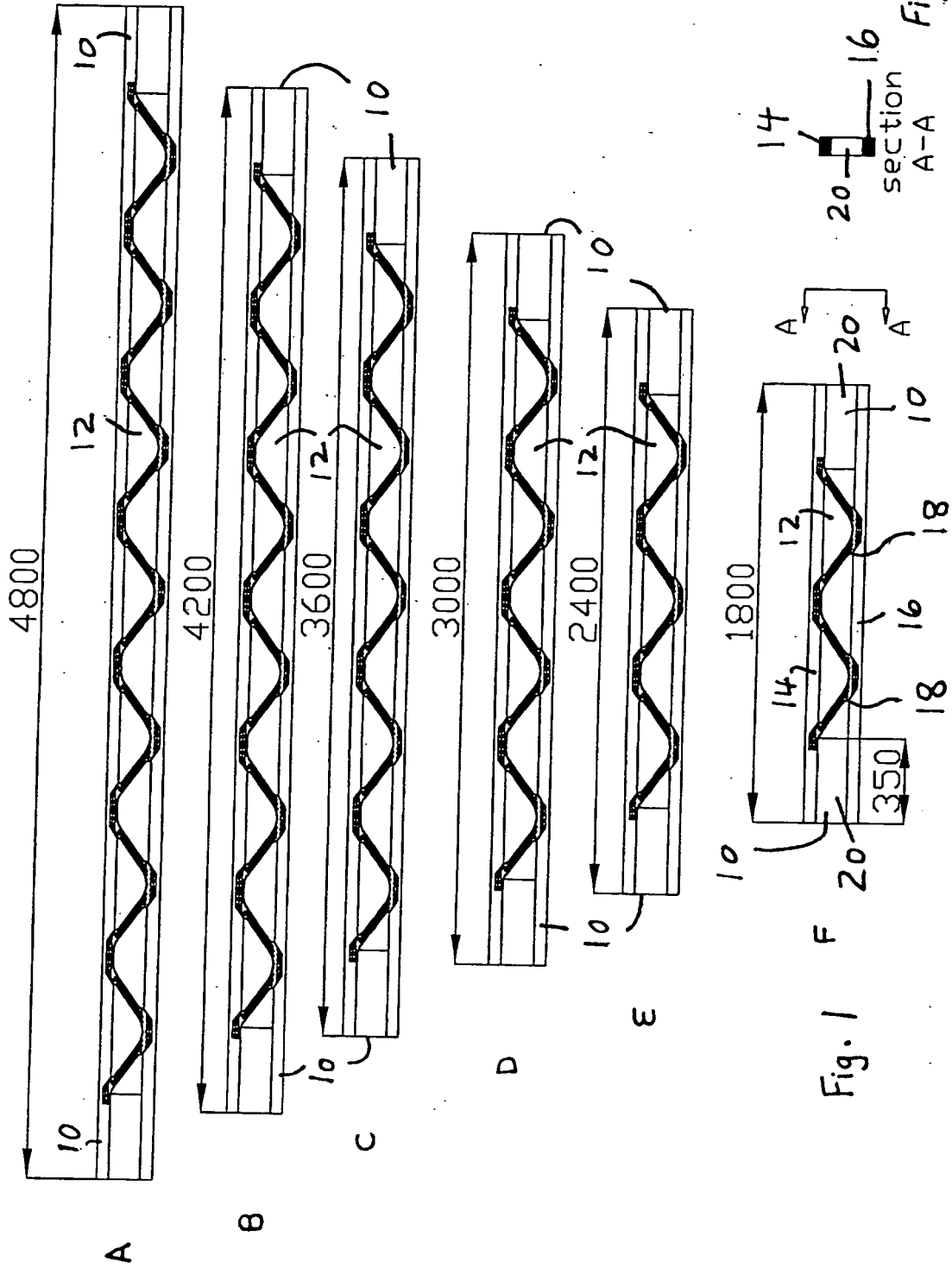


Fig. 1

Fig. 2

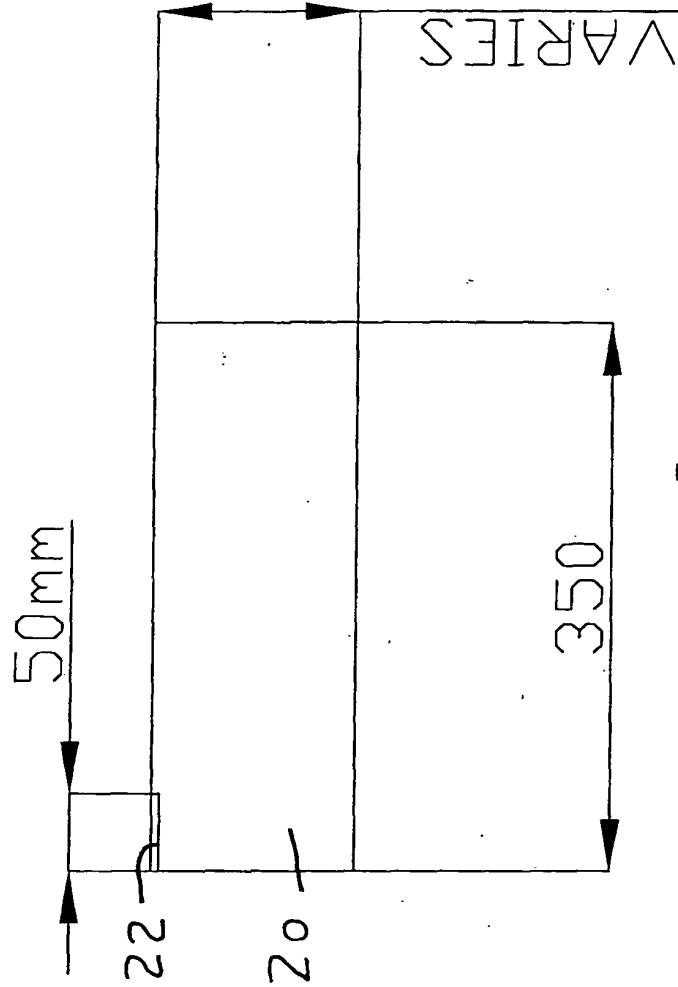


Fig. 3

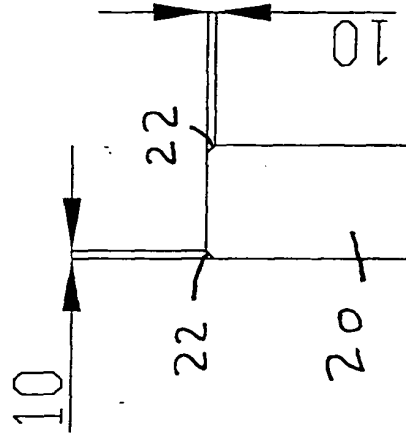


Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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