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(54) **Truss**

Gitterträger

Poutre en treillis

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(73) Proprietor: **Donà, Severino**
20090 Caleppio di Settala (MI) (IT)

(72) Inventor: **Donà, Severino**
20090 Caleppio di Settala (MI) (IT)

(74) Representative: **Concone, Emanuele et al**
Società Italiana Brevetti S.p.A.
Via Carducci 8
20123 Milano (IT)

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Description

[0001] The present invention relates to a truss, and in particular to a truss which can be employed as a crossbar or portion of arc in the supporting structures of the movable coverings.

[0002] Known trusses comprise a pair of horizontal beams connected by means of a reticulated structure comprising a plurality of diagonal bars. The beams and the diagonal bars are generally made up of metal sections welded to each other. In particular, one or both beams include substantially rectangular metal sections whereby it is necessary to weld to the beams pairs of vertical metal plates or U-shaped portions of metal sections in order to contain laterally and to properly weld the ends of the diagonal bars, thus reinforcing the truss. The welding of these reinforcing members to the beams obviously increases the manufacturing time and cost of the truss, while decreasing its aesthetic value.

[0003] FR-2226523 discloses a truss comprising a pair of beams which are mutually connected by a plurality of diagonal bars and consist of a section bar with thin walls and a middle stiffening rib. In which two longitudinal grooves for the diagonal bars are made. Due to the middle rib comprising the longitudinal grooves, said section bar can be carried out only by extrusion of a material which can be easily worked, for example aluminum, so that the truss is relatively expensive.

[0004] DE-19610638 discloses a truss with beams having a central cavity and a longitudinal groove. However, also these beams can be produced only by extrusion, since their walls are not joined in a continuous manner. In particular, the side walls of the longitudinal groove coincide with a portion of the outer side walls of the beams. Therefore, the latter cannot be manufactured from a steel plate bent with a forming machine for reducing the manufacturing costs and increasing the mechanical resistance of the truss, especially if the beams have a quadrilateral symmetrical profile.

[0005] It is therefore an object of the present invention to provide a truss which is free from said disadvantages. Said object is achieved with a truss, the main features of which are disclosed in the first claim and other features are disclosed in the subsequent claims.

[0006] Thanks to the particular longitudinal groove of the beams, the diagonal bars can be directly introduced and fixed therein, so that the truss according to the present invention can be obtained in a simple and resistant way without the help of said reinforcing members. Furthermore, with this arrangement, the diagonal bars can be simply cut at right angle, since their joint with the beams is carried out through the side walls, thereby reducing the surfaces to be mutually welded, with a consequent reduction of manufacturing times and costs.

[0007] Another advantage of the truss according to the present invention is its better aesthetic appearance thanks to the hiding of the ends of the diagonal bars.

[0008] Further advantages and features of the truss

according to the present invention will be clear to those skilled in the art from the following detailed and non-limiting description of an embodiment thereof with respect to the attached drawings, wherein:

- figure 1 shows a partial front view of the truss according to said embodiment; and
- figure 2 shows an enlarged cross-sectional side view of the truss of figure 1 according to plane II-II of figure 1.

[0009] Referring to said figures, there is seen that the truss according to the present embodiment of the invention comprises in a known way a pair of beams 1 connected by means of a reticulated structure comprising a plurality of diagonal bars 2 arranged so as to form a series of triangular openings.

[0010] According to the invention, one or both beams 1 consist of metal sections which have a cross-section, for example with a substantially rectangular shape, with the surface 1a facing the diagonal bars 2 provided with a longitudinal groove 1b having a substantially rectangular cross-section. The width of groove 1b is substantially equal to the width of the diagonal bars 2, so that the ends of the latter can be introduced in groove 1b and easily fixed therein, in particular by means of weldings 3 or bolts passing through holes formed along axis 4.

[0011] In the present embodiment, the cross-section of the diagonal bars 2 is substantially rectangular, but it is clear that in other embodiments it could be different, e.g. U-shaped. Moreover, in this embodiment the angles between a diagonal bar 2 and the adjacent bars are substantially right, whereas the angles between bars 2 and beams 1 may change according to the specific strength requirements.

[0012] In other embodiments of the invention, beams 1 could be not straight but rather curved, so that the resulting truss is also curved and can be used as a portion of a semicircular arc for coverings, for example of sports fields or protective coverings.

[0013] Possible additions and/or modifications may be made by those skilled in the art to the above-described and illustrated embodiment, yet without departing from the scope of the invention

Claims

1. Truss comprising a pair of beams (1) connected by means of a reticulated structure comprising a plurality of diagonal bars (2), wherein one or both beams (1) consist of a metal section provided with a longitudinal groove (1b) facing the diagonal bars (2), said groove (1b) comprising three walls and having a substantially rectangular cross-section, the width of said groove (1b) being substantially equal to the width of the diagonal bars (2) so that the ends of the latter can be introduced and fixed in the groove (1b), the

walls of said metal section having a substantially constant thickness the walls of said groove (1b) having substantially the same thickness as the other walls of the metal section, **characterized in that** the walls of said metal section form a single central cavity around said groove (1b), the walls of which are distinct from the other walls of the metal section.

2. Truss according to the preceding claim, **characterized in that** the side walls of the longitudinal groove (1b) are joined to a wall (1a) of the metal section facing the diagonal bars (2).
3. Truss according to claim 1 or 2, **characterized in that** said metal section has a quadrilateral profile with three substantially flat walls and the fourth wall (1a) facing the diagonal bars (2) centrally interrupted by the longitudinal groove (1b).
4. Truss according to one of claims 1 to 3, **characterized in that** the ends of the diagonal bars (2) are fixed in the longitudinal groove (1b) of the beams (1) by means of weldings (3).
5. Truss according to one of claims 1 to 3, **characterized in that** the ends of the diagonal bars (2) are fixed in the longitudinal groove (1b) of the beams (1) by means of bolts.
6. Truss according to one of the preceding claims, **characterized in that** the angles between a diagonal bar (2) and the adjacent bars are substantially right.
7. Truss according to one of the preceding claims, **characterized in that** the beams (1) are curved.

Patentansprüche

1. Träger bzw. Gitterträger, umfassend ein Paar von Trägern bzw. Balken (1), die mittels einer vernetzten Struktur verbunden sind, umfassend eine Mehrzahl von diagonalen Stangen bzw. Streben (2), wobei ein oder beide Träger (1) aus einem metallischen bzw. Metallquerschnitt bestehen, der mit einer Längsnut bzw. -rille (1 b) versehen ist, die zu den diagonalen Stangen (2) gerichtet ist, wobei die Rille (1 b) drei Wände umfaßt und einen im wesentlichen rechteckigen Querschnitt aufweist, wobei die Breite der Rille bzw. Nut (1 b) im wesentlichen gleich der Breite der diagonalen Stangen (2) ist, so daß die Enden der Letzteren in die Rille (1 b) eingefügt und festgelegt werden können, wobei die Wände des metallischen Querschnitts eine im wesentlichen konstante Dicke aufweisen, wobei die Wände der Rille (1b) im wesentlichen dieselbe Dicke wie die anderen Wände des metallischen Querschnitts aufweisen, **dadurch**

gekennzeichnet, daß die Wände des metallischen Querschnitts einen einzigen zentralen Hohlraum um die Rille (1 b) ausbilden, dessen Wände von den anderen Wänden des metallischen Querschnitts unterschiedlich sind.

2. Gitterträger nach dem vorangehenden Anspruch, **dadurch gekennzeichnet, daß** die Seitenwände der Längsrille (1 b) mit einer Wand (1a) des metallischen Querschnitts verbunden sind, die zu den diagonalen Stangen (2) gerichtet ist.
3. Gitterträger nach Anspruch 1 oder 2, **dadurch gekennzeichnet, daß** der metallische Querschnitt ein vierseitiges Profil mit drei im wesentlichen ebenen bzw. flachen Wänden aufweist, und wobei die vierte Wand (1a), die zu den diagonalen Stangen (2) gerichtet ist, zentral durch die Längsrille (1b) unterbrochen ist.
4. Gitterträger nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, daß** die Enden der diagonalen Stangen (2) in der Längsrille (1 b) der Träger (1) mittels Verschweißungen (3) festgelegt sind.
5. Gitterträger nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, daß** die Enden der diagonalen Stangen (2) in der Längsrille (1 b) der Träger (1) mittels Bolzen festgelegt sind.
6. Gitterträger nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** die Winkel zwischen einer diagonalen Stange (2) und den benachbarten Stangen im wesentlichen rechtwinklig sind.
7. Gitterträger nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, daß** die Träger (1) gekrümmt bzw. gebogen sind.

Revendications

1. Poutre à treillis comprenant une paire de poutrelles (1) raccordées au moyen d'une structure réticulée comprenant une pluralité de barres diagonales (2), dans laquelle l'une des poutrelles (1) ou les deux est (sont) constituée(s) d'une section métallique munie d'une rainure longitudinale (1b) faisant face aux barres diagonales (2), ladite rainure (1b) comprenant trois parois et ayant une section transversale sensiblement rectangulaire, la largeur de ladite rainure (1b) étant sensiblement égale à la largeur des barres diagonales (2) de telle sorte que l'on peut introduire et fixer les extrémités de celles-ci dans la rainure (1b), les parois de ladite section métallique ayant une épaisseur sensiblement constante, les parois de ladite rainure (1b) ayant sensiblement la même

épaisseur que les autres parois de la section métallique, **caractérisée en ce que** les parois de ladite section métallique forment une unique cavité centrale autour de ladite rainure (1b), dont les parois sont distinctes des autres parois de la section métallique. 5

2. Poutre à treillis selon la revendication précédente, **caractérisée en ce que** les parois latérales de la rainure longitudinale (1b) sont jointes à une paroi (1a) de la section métallique faisant face aux barres diagonales (2). 10
3. Poutre selon la revendication 1 ou 2, **caractérisée en ce que** ladite section métallique a un profil quadrilatéral avec trois parois sensiblement plates et la quatrième paroi (1a) faisant face aux barres diagonales (2) interrompues centralement par la rainure longitudinale (1b). 15
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4. Poutre à treillis selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que** les extrémités des barres diagonales (2) sont fixées dans la rainure longitudinale (1b) des poutrelles (1) au moyen de soudures (3). 25
5. Poutre à treillis selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que** les extrémités des barres diagonales (2) sont fixées dans la rainure longitudinale (1b) des poutrelles (1) au moyen de boulons. 30
6. Poutre à treillis selon l'une quelconque des revendications précédentes, **caractérisée en ce que** les angles entre une barre diagonale (2) et les barres adjacentes sont sensiblement droits. 35
7. Poutre à treillis selon l'une quelconque des revendications des revendications précédentes, **caractérisée en ce que** les poutrelles (1) sont courbées. 40

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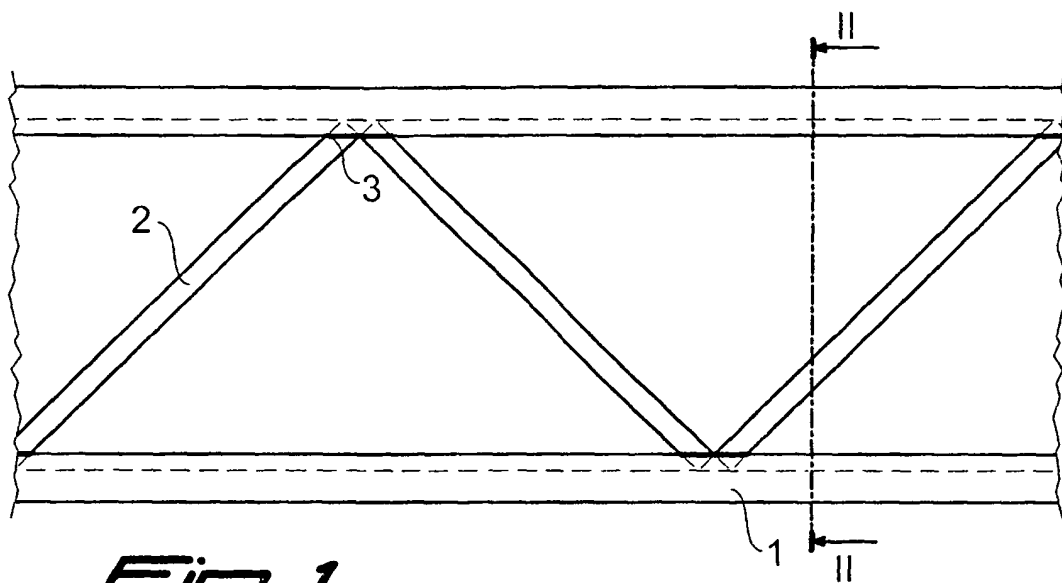


Fig. 1

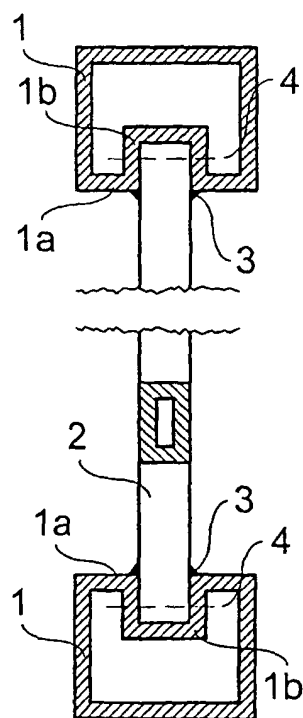


Fig. 2