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⑤④ **Roof truss assembly.**

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⑤⑧ References cited:
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DE-A-1 609 653
FR-A-1 067 094
FR-A-2 434 908
GB-A- 634 277
GB-A-2 041 060
GB-A-2 051 908
US-A-3 263 381
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Grundzüge des neuzeitlichen Holzbaues, Band 1, (1981), Konstruktionselemente von G. Dröge und K.-H. Stoy, Verlag von Wilhelm Ernst & Sohn, Berlin-München

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Description

The present invention relates to a light-weight roof truss assembly suitable for being mounted at the building site and consisting of wooden beams or girders and connecting means in which said beams are insertable to be connected with each other, each connecting means consisting of a pair of identical nailable boards which are fixed in opposed relationship on opposite sides of said beams by fixing means which are driven through the boards of said connecting means and the beam disposed therebetween, said beams to be interconnected being insertable into a position determined by the desired roof truss configuration.

The manufacture of roof trusses by a carpenter on a building site demands great skill and normally involves high costs. For this reason, one has instead chosen, to an ever greater extent, to manufacture roof trusses in factories and deliver them ready for erection on the building site. Since industrial manufacture is rational, it has been possible to bring down costs, but, in some cases, the transport to the building site is a problem because of the lack of special vehicles. In addition, cost savings can be reduced in cases where it is desirable to produce a small series of roof trusses with special dimensions or of special design because the machines must first be properly adjusted.

US—A—4 275 537 discloses a large heavy beam comprising a considerable amount of iron, solid beams and a steel wire. This beam is unable to solve the above-mentioned problem and the publication does not show the appearance of the ridge portion of the roof trusses. Presumably, two beams forming an angle with one another are interconnected by means of truss plates. This publication involves pretensioning of roof beams by means of a steel wire, and the metal structure illustrated is specifically adapted to connect the steel wire to the upper chord. GB—A—2 051 908 shows the conventional use of truss plates which are disadvantageous in that the timber must be cut at the correct angles at locations where two pieces of timber meet. Truss plates are usually applied by means of a press in the factory, but it is also possible to use a hammer, although the result will then not always be the best. The publication "Konstruktionselemente", volume 1, G. Dröge and K.-H. Stoy, Berlin-München 1981, pp. 201, illustrates the use of supporting panels for beam junctures, but in this case the pieces of timber must be cut at the correct angles and no spacer and stop means for simplifying the assembly are provided.

The object of the present invention is to make it possible to manufacture light-weight roof trusses of every desired dimension, construction and roof pitch on the building site in an uncomplicated way and at a competitive price. According to the invention, this object is achieved by the provision of a roof truss assembly as disclosed in "Konstruktionselemente", in which said beams

are of the type consisting of flanges of wood and a web of metal interconnecting said flanges, and that at least one spacer forming a stop for restricting the depth of insertion of the beams in said connecting means is fixed between said boards; those being marked on the outside at the locations where the fixing means are to be driven in for anchorage of the wood flanges of the beams and of the spacer in said boards.

The invention will be described in greater detail hereinbelow with reference to the accompanying drawing which shows one embodiment of the invention in perspective.

The roof truss, generally designated 10 in the drawing, consists of beams 11, 12 and 13 of which the beams 11 and 12 form the upper chords of the truss while the beam 13 forms the lower chord. The beams 11, 12 and 13 are composed of flanges 14, 15 and a web 16 in the form of a wire bent in zigzag which interconnects the flanges. These beams give a highly resistant and light-weight roof truss. Instead of the beams illustrated in the drawing, it is of course possible to use conventional roof truss wood. The beams 11, 12 forming the upper chords are secured to each other by a connecting means in the form of an insert member 17 consisting of two identical, parallel boards 19, for instance of plywood, which are disposed opposite each other and nailed at 21 an opposite sides of a wooden block 20, thus forming a spacer. The adjacent, outwardly facing edge surfaces of the means 17 make an angle with each other which corresponds to the desired roof pitch. As seen in the drawing, the end portions of the beams 11, 12 are insertable until the squarely cut ends of the beams abut against the spacer 20. The beams 11, 12 are so placed that their outwardly facing sides are flush with the outer sides of the means 17, whereby the beams 11, 12 are placed with the desired slope, which in the present instance corresponds to a roof pitch of 45°. The beams 11, 12 are fixed in the insert member by means of nails 23 which are driven through both of the boards 19 and the flanges of the intermediate beam. To this end, the boards 19 on the outside have markings 22 which indicate where the nails 23 should be driven in.

The beams 11, 12 forming the upper chords are joined with the beam 13 of the lower chord by means of insert members 18 which also consist of two parallel, opposed boards 24 which, like the boards 19, are held at a distance from each other which corresponds to the thickness of the beam flanges, by means of spacers 25, 26 which also serve as stops and support means for the beam ends. The boards 24 here have two opposite sides making an angle with each other which is determined by the roof pitch, in this instance 45°, being interconnected at the side facing away from the beams by means of a short side which is at right angles to the side of the connecting means that extends along the upper chord beam. The side of the means 18 which faces away from the beams is located, as appears from the drawing, at a distance from the spacers 25, 26 and between these

spacers and said side there are provided wooden blocks 27, 28 extending along the outer sides of the connecting means, thus defining a space closed on three sides. In this space, a fixing portion 30 of a loose truss overhang is insertable and fixable by nailing. If the roof to be made should have no truss overhangs, said space is sealed by means of a wooden block 31 which is fastened with nails.

In the manufacture of roof trusses by means of the roof truss assembly according to the invention, the required amount of insert members 17, 18 are ordered from the factory, it being necessary only to indicate the desired roof pitch. The means 17, 18 are then delivered together with beams 11, 12, 13, if such are not already available on the building site since being also usable as framework elements, e.g. studs, in housing constructions, and truss overhangs or, alternatively, wooden blocks 31. On the building site, the beams 11, 12 and 13 are cut to suitable lengths. The beam ends are then inserted in the insert members 17, 18 in the manner shown in the drawing, whereupon nails are driven in at the indicated locations. Consequently, the manufacture of the trusses is highly rational and, hence, they can be produced at a low price. If use is made of beams 11, 12, 13 of the type shown in the drawing, the result will be a light-weight roof truss with excellent physical properties.

Claims

1. A light-weight roof truss assembly for being mounted at the building site and consisting of wooden beams or girders (11, 12, 13) and connecting means (17, 18) in which said beams are insertable to be connected with each other, each connecting means (17, 18) consisting of a pair of identical nailable boards (19, 24) which are fixed in opposed relationship on opposite sides of said beams (11, 12, 13) by fixing means (23) which are driven through the boards (19, 24) of said connecting means and the beam (11, 12, 13) disposed therebetween, said beams (11, 12, 13) to be interconnected being insertable into a position determined by the desired roof truss configuration, characterised in that said beams (11, 12, 13) are of the type consisting of flanges of wood and a web of metal interconnecting said flanges, and that at least one spacer (20, 25, 26) forming a stop for restricting the depth of insertion of the beams (11, 12, 13) in said connecting means is fixed between said boards (19, 24); those being marked on the outside at the location (22) where the fixing means (23) are to be driven in for anchorage of the wood flanges of the beams (11, 12, 13) and of the spacer (20, 25, 26) in said boards (19, 24).

2. Roof truss assembly as claimed in claim 1, characterised in that the truss base connecting means (18), in addition to the space for receiving the beams (11, 12, 13), has a space in which a shaft portion (30) of a loose truss overhang (29) is insertable and fixable.

3. Roof truss assembly as claimed in claim 1 or

2, characterised in that the connecting means (17, 18) consist of plywood boards (19, 24) which are nailed (21) on opposite sides of wooden blocks forming said spacers (20, 25, 26).

Patentansprüche

1. Leichte Dachkonstruktion, geeignet zur Errichtung an der Baustelle und bestehend aus hölzernen Balken oder Trägern (11, 12, 13) und Verbindungsgliedern (17, 18), in die die Balken einführbar sind, um miteinander verbunden zu werden, wobei jedes Verbindungsglied (17, 18) aus zwei identischen, nagelbaren Tafeln (19, 24) besteht, die einander gegenüber auf entgegengesetzten Seiten der Balken (11, 12, 13) mittels Befestigungsglieder (23) befestigt sind, die durch die Tafeln (19, 24) der Verbindungsglieder und den dazwischen angebrachten Balken (11, 12, 13) getrieben werden, wobei die miteinander zu verbindenden Balken (11, 12, 13) in einer von der erwünschten Dachstuhlkonfiguration bestimmten Lage einführbar sind, dadurch gekennzeichnet, dass die Balken (11, 12, 13) des aus hölzernen Flanschen und einem diese verbindenden Metallsteg bestehenden Typs sind, und dass zwischen den Tafeln (19, 24) zumindest ein Abstandstück (20, 25, 26) befestigt ist, das einen die Einführungstiefe der Balken (11, 12, 13) in die Verbindungsglieder begrenzenden Anschlag bildet, wobei die Verbindungsglieder auf ihrer Aussenseite an denjenigen Stellen (22) Markierungen tragen, wo die Befestigungsglieder (23) zur Verankerung der hölzernen Flansche der Balken (11, 12, 13) und der Abstandstücke (20, 25, 26) in die Tafeln (19, 24) einzutreiben sind.

2. Dachstuhlkonstruktion nach Anspruch 1, dadurch gekennzeichnet, dass das untere Verbindungsstück (18) des Dachstuhls ausser dem die Balken (11, 12, 13) aufnehmenden Raum einen Raum besitzt, in den ein Schaftteil (30) eines losen Dachstuhlüberstandes (29) einführbar und befestigbar ist.

3. Dachstuhlkonstruktion nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass die Verbindungsglieder (17, 18) aus Sperrholztäfel (19, 24) bestehen, die auf entgegengesetzten Seiten von die genannten Abstandstücke (20, 25, 26) bildenden Holzblöcken genagelt sind.

Revendications

1. Ferme légère se prêtant à l'assemblage sur le chantier de construction et comprenant des poutres en bois formant des arbalétriers et un entrain (11, 12, 13) et des dispositifs d'assemblage (17, 18) dans lesquels les poutres sont à insérer pour être reliées entre elles, chaque dispositif d'assemblage (17, 18) étant constitué de deux panneaux identiques (19, 24) se laissant clouer et qui sont fixés l'un en face de l'autre sur des côtés opposés des poutres (11, 12, 13) par des éléments de fixation (23) qui sont enfoncés à travers les panneaux (19, 24) du dispositif d'assemblage dans les poutres disposées entre eux, les poutres

(11, 12, 13) à assembler étant insérées dans les dispositifs d'assemblage en une position déterminée par la configuration désirée de la ferme, caractérisée en ce que les poutres (11, 12, 13) sont du type comprenant des parties longitudinales extérieures en bois et une âme en métal reliant ces parties extérieures entre elles, et en ce qu'au moins une entretoise (20, 25, 26), formant une butée pour limiter la profondeur d'insertion des poutres (11, 12, 13) dans le dispositif d'assemblage, est fixée entre les panneaux (19, 24), les panneaux étant marqués, sur le côté extérieur, aux endroits (22) où les éléments de fixation (23) sont à enfoncer dans les panneaux (19, 24) pour

fixer les parties en bois des poutres (11, 12, 13) et l'entretoise (20, 25, 26).

5 2. Ferme selon la revendication 1, caractérisée en ce que le dispositif d'assemblage d'entrait (18) présente, en plus de l'espace destiné à recevoir les poutres (11, 12, 13), un espace dans lequel peut être insérée et fixée la tige (30) d'une pièce de ferme libre disposée en surplomb (29).

10 3. Ferme selon la revendication 1 ou 2, caractérisée en ce que les dispositifs d'assemblage (17, 18) sont formés de panneaux en contreplaqué (19, 24) qui sont cloués (21) sur des côtés opposés de blocs de bois formant lesdites entretoises (20, 25, 26).

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