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FR-A- 509 051
GB-A-2 070 664
US-A-3 420 504
US-A-3 471 128

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Description

This invention relates to a method of fixing a wooden board to a U-shaped metal section, the wooden board extending through a hole in the base part of the U-shaped metal section.

Connections of this type are for instance shown in FR—A—509 051, which concerns a fence constituted by U-shaped horizontal rails and vertical boards. The boards extend through holes in the base part of the U-shaped rails. The boards are however loose and are at their bottoms supported on a solid base of the fence. The resulting fence is due to the lack of fixing between rails and boards rather difficult to use.

A step further in development is exemplified by US—A—3 420 504 and US—A—3 471 128, both documents showing how more or less U- or C-shaped rails (without holes) can be fastened to the ends of vertical members in a fence by compressing the C- or U-shaped rails. If this type of fastening means were to be used to combine metal rails with wooden bars the wooden bars would probably be damaged at the fastening point, resulting in a reduction in strength for the combined structure, or the rails would not be able to hold a wooden bar or board with a sufficient force to ensure a permanent rigid grip.

The object of the invention is to provide a method of joining or fixing wooden boards to a U-shaped metal section that overcomes the setbacks of the known technic, give a very secure grip in a very simple manner without weakening the wooden board where it extends through the metal section. The invention is particularly applicable to the fabrication of fence panels or modules.

The object of the invention is obtained by holding the wooden board and metal section in their intended relative positions, the limbs of the U-shaped metal section are then pressed against the board with a force sufficient to result in a permanent deformation of the base part of the U-shaped section and an elastic deformation of the board, whereby when the pressing operation is terminated the section limbs remain pressed against the board. Since the resilience of the wood is greater than that of the metal in the metal section a remaining stress will result between the metal section and the wooden board.

In accordance with a further development of the above inventive idea, which is particularly suitable for rails, the base part of the metal section has a longitudinal fold giving it an obtuse V-shape so that when the limbs of the sheet metal section are pressed against the board deformation takes place at the apex of the V giving the metal section a uniform cross-section. In this way the pleasing appearance is obtained with very easy means and furthermore the apex of the V preferably points upwards so that if the metal section is used as a horizontal rail in for instance a fence water will easily be drained off the rail.

In order further to improve the rigidity of the fixing of jointing in accordance with the invention one or both of the hole edges which at the

pressing together of the limbs of the U-shaped section are pressed against the board are provided with tips or edges facing towards the wood and that at the compressing stage are pressed into the wood causing a permanent deformation thereof at the lateral edges of the hole. In this way an improved longitudinal fixing as well as angular fixing of the bar in the U-shaped metal section is obtained. It is of course not necessary that the edge penetrating into the wood is straight but one can imagine that one or more small jags or tips project into the hole and give the desired extra grip. Especially when the rail is desired to be slightly angularly movable in order to allow inclined mounting it may be suitable that the portion of the hole edges which penetrate into the wood consist of a short piece at the centre of the hole so that the inserted board easily will allow adjustment of the inclination, with the board still strongly retained in the metal section or rail. This can for instance be the case when the invention is used to fabricate fences that have to adapt to the slope of the ground.

It can, of course, also be imagined within the scope of the invention, that the afore-mentioned section is doubled, i.e. comprises a similar "house" section facing downward and connected directly to the upper one. This embodiment, however, when applied to rails has the disadvantage, that water can be included in the section, unless, for example, the lower holes in the section are dimensioned greater than required for inserting the boards.

Due to the fact, that at the method according to the invention the height of the section, or rather the height of the side flanges has no major effect on how good the engagement between wood and sheet metal section will be, the flange height can be permitted to be determined entirely by the desired strength in vertical direction (it is in this direction the rail runs risk to be subjected to the greatest strains at climbing etc.) and at the same time the transverse dimensions of the rail can be held restricted, thereby rendering possible a good economy, in view of the raw material prices of today.

The invention is described in greater detail in the following, with reference to a practical embodiment thereof shown in the drawings. Fig. 1 is a perspective view of a portion of a rail according to the invention, Fig. 2 is a sectional view of the fixing according to the invention, and Figs. 3 and 4 show further details in the rail shown in Fig. 1.

The rail shown in Fig. 1 comprises a horizontally positioned sheet metal section 1, of which only a short piece is shown. In the sheet metal section a wooden bar 2 has been secured by pressing, in that the sheet metal section has been clamped about the wooden bar 2. This is shown more clearly in Fig. 2 where it can be seen how the sheet metal section 1 when it was pressed together has been folded additionally at the angle point 3, so that the tips or edges 4 and, respectively, 5 for the hole in the sheet metal sec-

tion, which are located on both sides of the board or wooden bar 2, have been pressed into the wood.

Fig. 1 also shows a rail post assembled of two identical sections 6 and 7. The section parts 6 and 7 include recesses of such design that members 8 bent to V-shape can be inserted, which in their longitudinal direction are fixed by means of recesses 9 and 10 embracing the post sections 6 and 7. When the rail is to be mounted, the section 1 quite simply is laid on the V-shaped member 8 and fixed against being lifted off in that a sleeve 11, which prior to the mounting had been pushed on the sheet metal section 1, is moved to abut the post, in which position it can be fixed in any desired way, for example by some snap-in lock.

In order to hold together the post brought about by the sections 6 and 7, at the upper end a cover can be located which extends over recesses 12 and, respectively, 13 in the upper ends of the sections. The cover may either be clasped on or snapped over the recesses 12, 13. Alternatively the cover 14 can be mounted in the way shown in Fig. 3, i.e. end projections are hooked in the cover whereafter the post parts 6 and 7 are moved together and thereafter inserted down into, for example, an anchorage 15 in the ground of the kind shown in Fig. 4. Of course, instead of using the anchorage 15, the post can be cast in concrete in known manner, but this should generally be a more expensive method, because of the greater amount of labour involved.

Claims

1. A method of fixing a wooden board or bar (2) to a U-shaped metal section (1), the wooden board extending through a hole in the base part of the U-shaped metal section, characterized in that with the wooden board and the metal section held in their intended relative position, the limbs of the U-shaped metal section are pressed against the board with a force sufficient to result in a permanent deformation of the base part of the U-shaped section and an elastic deformation of the board, whereby when the pressing operation is terminated the section limbs remain pressed against the board.

2. A U-shaped sheet metal section (1) for carrying out the method according to claim 1, comprising holes in the base part of the U-shaped section for the receiving of boards (2), characterized in that the base part of the metal section has a longitudinal fold (3) giving it an obtuse V-shape so that when the limbs of the sheet metal section are pressed against the board deformation takes place at the apex of the V giving the metal section a uniform cross section.

3. A sheet metal section as defined in claim 2, characterized in that one or both of the hole edges which at the pressing together of the limbs of the U-shaped section are pressed against the board are provided with tips or edges (4, 5), which face towards the wood and at the pressing together are pressed into the wood, so that a deformation

of the wood is obtained at the lateral edges of the hole in order to yield a strong longitudinal fixing of the bar in the section.

4. Railing assembly, characterized in that it comprises as ledgers sheet metal sections (1) according to any of the claims 2—3, with vertical wooden bars inserted into the sections, which bars have been fixed relative to the ledgers by the method defined in claim 1.

5. A railing assembly module, comprising horizontal sheet metal sections (1) of U-shaped cross-section and provided with holes in the base part of the U-shape receiving vertical boards or bars (2) of wood, characterized in that the limbs of the U-shaped metal section have been pressed against the boards or bars with such a force that the sheet metal sections are permanently deformed even after the removal of the pressing force, so that the edges (4, 5) of the holes in the sheet metal sections are pressed into the wood ensuring a good fixing of the module and the limbs remain pressed against the boards or bars.

Patentansprüche

1. Verfahren zum Befestigen einer Holzplatte oder eines -stabes (2) an einem U-förmigen Metallabschnitt (1), wobei die Holzplatte durch ein Loch in dem Basisteil des U-förmigen Metallabschnitts ragt, dadurch gekennzeichnet, daß dann, wenn die Holzplatte und der Metallabschnitt in den beabsichtigten relativen Lagen gehalten sind, die Schenkel des U-förmigen Metallabschnitts gegen die Platte mit einer Kraft gepreßt werden, die ausreicht, um eine bleibende Verformung des Basisteils des U-förmigen Abschnitts und eine elastische Verformung der Platte zu erreichen, wodurch bei Beendigung des Preßvorgangs die Schenkel des Abschnitts gegen die Platte gepreßt bleiben.

2. U-förmiger Metalltafel-Abschnitt (1) zur Durchführung des Verfahrens nach Anspruch 1 mit Löchern in dem Basisteil des U-förmigen Abschnitts zur Aufnahme von Platten (2), dadurch gekennzeichnet, daß der Basisteil des Metallabschnitts eine Längsfaltung (3) aufweist, durch die eine stumpfe V-Form erreicht ist, so daß dann, wenn die Schenkel des Metalltafel-Abschnitts gegen die Platte gepreßt werden, eine Verformung am Scheitel des V erreicht ist, durch die der Metallabschnitt einen gleichförmigen Querschnitt erhält.

3. Metalltafel-Abschnitt nach Anspruch 2, dadurch gekennzeichnet, daß mindestens einer der Lochränder die beim Zusammenpressen der Schenkel des U-förmigen Abschnitts gegen die Platte gepreßt werden, mit Schneiden oder Kanten (4, 5) versehen sind, die zum Holz weisen und die beim Zusammenpressen in das Holz gepreßt werden, so daß eine Verformung des Holzes an den Seitenrändern des Lochs erreicht wird um eine strenge längsgerichtete Befestigung des Stabes in den Abschnitt zu erreichen.

4. Gitteranordnung, dadurch gekennzeichnet, daß sie als Querträger Metalltafel-Abschnitte (1)

nach einem der Ansprüche 2 bis 3 enthält, wobei vertikale Holzstäbe in die Abschnitte eingesetzt sind, wobei die Stäbe gegenüber den Querträgern nach dem Verfahren gemäß Anspruch 1 befestigt sind.

5. Gitteranordnungs-Modul mit horizontalen Metalltafel-Abschnitt (1) mit U-förmigem Querschnitt, wobei Löcher in den Basisteil der U-Form vorgesehen sind, die vertikale Tafeln oder Stäbe (2) aus Holz aufnehmen, dadurch gekennzeichnet, daß die Schenkel des U-förmigen Metall-Abschnitts gegen die Platten oder Stäbe mit solch einer Kraft gepreßt sind, daß die Metalltafel-Abschnitte ständig verformt sind, selbst wenn die Preßkraft entfernt ist, so daß die Ränder (4, 5) der Löcher in den Metalltafel-Abschnitten in das Holz eingepreßt sind, wodurch eine gute Fixierung des Moduls sichergestellt ist, wobei die Schenkel gegen die Platten oder Stäbe gepreßt bleiben.

Revendications

1. Procédé pour fixer une planche ou madrier (2) de bois à un profilé métallique en U (1), la planche de bois s'étendant à travers un trou ménagé dans la partie de base ou âme du profilé métallique en U, caractérisé en ce que, la planche de bois et le profilé métallique étant maintenus dans leur position relative voulue, on serre les ailes du profilé métallique en U contre la planche avec une force suffisante pour qu'il se produise une déformation permanente de la partie de base du profilé en U, ainsi qu'une déformation élastique de la planche, de sorte que lorsque l'opération de serrage est terminée, les ailes du profilé restent serrées contre la planche.

2. Profilé en U (1) en tôle pour mettre en oeuvre le procédé selon la revendication 1, comprenant des trous dans sa partie de base en vue de recevoir des planches (2), caractérisé en ce que la

partie de base du profilé comporte un pli longitudinal (3) lui donnant la forme d'un V obtus de sorte que lorsque l'on serre les ailes du profilé contre la planche, il se produit au sommet du V une déformation donnant au profilé une section droite uniforme.

3. Profilé en tôle selon la revendication 2, caractérisé en ce qu'un seul ou les deux bords de trou qui, lorsque l'on serre l'une vers l'autre les ailes du profilé en U sont serrés contre la planche, sont pourvus de pointes ou arêtes (4, 5) qui sont orientées vers le bois et qui, lorsque l'on serre l'une vers l'autre les ailes, s'encastrent dans le bois, de sorte que l'on obtient une déformation du bois à l'endroit des bords latéraux du trou afin qu'ait lieu une fixation longitudinale solide de la planche ou madrier dans le profilé.

4. Ensemble de clôture, caractérisé en ce qu'il comprend, comme élément d'ossature, des profilés (1) en tôle selon l'une quelconque des revendications 2—3, avec des madriers ou planches de bois verticaux insérés dans les profilés, ces planches ou madrier étant fixés aux éléments d'ossature à l'aide du procédé selon la revendication 1.

5. Module d'ensembles de clôtures, comprenant des profilés horizontaux (1) en tôle ayant une section droite à profil en U et comportant dans la partie de base du profil en U des trous recevant des madriers ou planches verticales (2) en bois, caractérisé en ce que les ailes du profil en U ont été serrées contre les planches ou madriers avec une force telle que les profilés sont déformés de façon permanente même après la suppression de la force de serrage, de sorte que les bords (4, 5) des trous des profilés sont encastrés dans le bois, ce qui assure une bonne fixation du module, et les ailes restent serrées contre les planches ou madriers.

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FIG.1

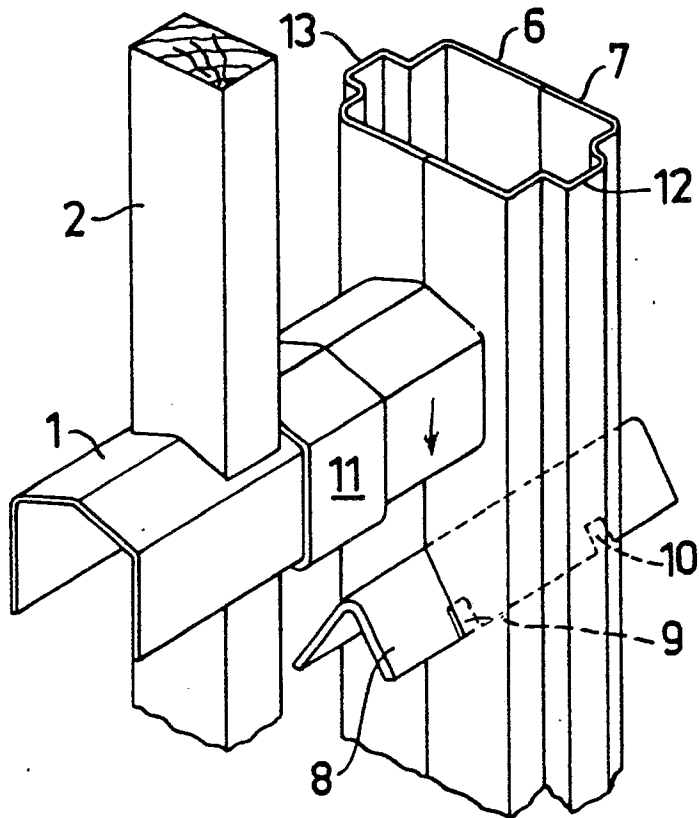


FIG. 3

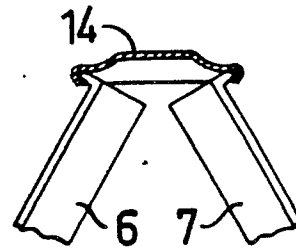


FIG. 2

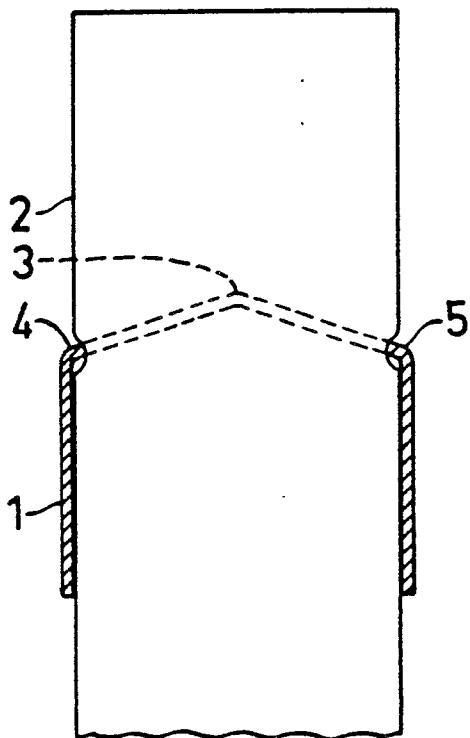


FIG. 4

