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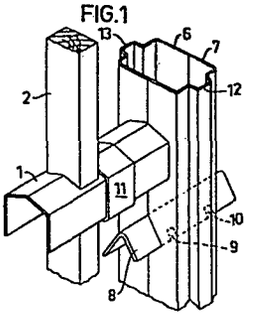
(54) **Fixing method.**

(57) A method of fixing sheet metal sections and wooden bars or boards relative to each other, which latter transversely to the longitudinal direction of the sheet metal sections can be inserted into holes punched in the sheet metal sections, at which method after the boards have been inserted into intended holes and after the positions and angles for the sheet metal sections and boards have been aligned relative to each other, the sheet metal sections are pressed together about the boards, so that the sheet metal section after the removal of the pressing force assumes a permanent deformation, while the inserted board or boards elastically spring back so that section and wood permanently are pressed against each other.

FIG.1



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Fixing method

This invention relates to a method of fixing sheet metal sections relative to each other by wooden bars or boards, which latter are inserted transversely to the longitudinal direction of the sheet metal sections into holes punched in said sections. The object of the invention is primarily to render possible the manufacture of rail modules consisting of horizontal ledgers comprising the sheet metal sections and vertical boards. For utilizing the method at the manufacture of rail modules, several desires shall be satisfied, if possible. Firstly, the method shall be economic. Furthermore, the fixing shall be strong so as to be capable to withstand the strains arising, for example, when children or adults cling to and climb on the rail, and the dead weight of the rail and snow load must not cause the rail to get crooked in the course of years. It also is desired that the rail, when so required, permits to be positioned slightly inclined to adapt to possible slopeness of the ground. It should preferably be possible to make this adjustment at the mounting, but it can, of course, also be imagined at a more substantial slopeness to manufacture the rail modules angular in a corresponding degree. Wind and weather must neither result in the rail falling to pieces.

The aforesaid objects are realized according to the invention, in that subsequent to the insertion of the boards into the holes in the sheet metal sections and after the boards and sheet metal sections have been aligned in the intended angles and positions, the sheet metal section or sections are pressed together against the boards, so that for the sheet metal sections a permanent deformation is obtained, and after the removal of the pressing force the board springs back elastically, so that section and wood assume a pre-stress relative to each other, which fixes them one to the other.

According to a further development of the above inventive idea, which is especially suitable particularly for rails, the sheet metal section can have a cross-section, the outline of which resembles a house, i.e. it has two more or less vertical side flanges and a V-shaped central portion, the point of which is directed upward. In this way, the deformation will take place in the point of the V when the sheet metal section is pressed together, so that the section even after the deforming pressing operation has a similar appearance. In order to additionally improve the fixing force against movement of the board or boards in respective holes, it may be suitable that the edges of the hole are slightly folded inward, so that at the pressing operation the edges are pressed into the wood, which will result in a greater or smaller local deformation thereof. 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 yield the desired extra grip. Especially when a rail is desired to be slightly moved inclined at its final mounting, it may be suitable that the portion of the hole edges which penetrates into the wood only consists of a shorter piece at the centre of the hole, so that inserted boards are subjected to a more modest counter-holding moment when the rail module is bent up to adapt to the ground slopeness.

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 to-day.

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 section, 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. the recesses 12,13 are hooked in whereafter the post parts 5 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 sheet metal sections and wooden bars or boards relative to each other, which latter can be inserted transversely to the longitudinal direction of the sheet metal sections into holes punched in the sheet metal sections, c h a r a c t e r i z e d i n that after the boards have been inserted into intended holes, and after the positions and angles of the sheet metal sections and boards relative to each other have been aligned, the sheet metal sections are pressed together about the boards, so that the sheet metal section after the removal of the pressing force assumes a permanent deformation while the inserted board or boards elastically spring back, so that section and wood permanently are pressed against each other.

2. A sheet metal section for carrying out the method according to claim 1, comprising holes for the receiving of boards, c h a r a c t e r i z e d i n that the sheet metal sectionbetween the surfaces which have been pressed together has been provided with a fold to form a nominal deformation place for the sheet metal section, which hereby assumes a uniform appearance.

3. A sheet metal section as defined in claim 2, c h a r a c t e r i z e d i n that one or both of the hole edges which at the pressing together of the section are pressed against the board are provided with tips or edges, which face toward the wood and at the pressing together are pressed into the wood, so that a compression over permanent local deformation thereof is obtained, in order to yield a strong longitudinal fixing of the bar in the section.

4. A rail, c h a r a c t e r i z e d i n that it comprises as ledgers sheet metal sections according to

any one 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 rail module, comprising horizontal sheet metal sections (1) and vertical boards or bars (2) of wood, which have been assembled in that the sections, after the bars have been inserted into the same, have been clamped together with great force about the bars, so that the sheet metal sections have assumed a permanent deformation even after the removal of the pressing force, so that the hole edges (4 and 5) in the sheet metal section are pressed into the wood for ensuring a good fixing relative to each other.

FIG.1

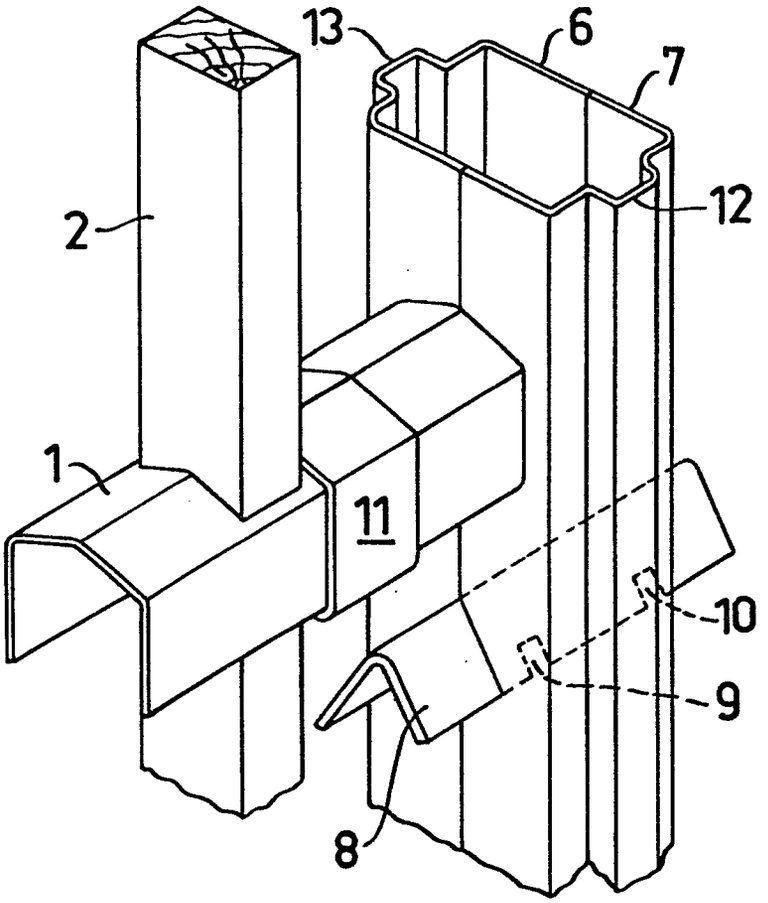

FIG.3

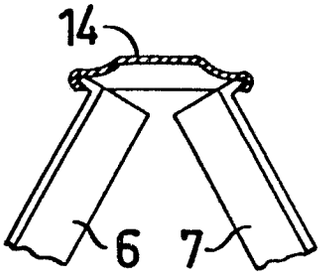

FIG.2

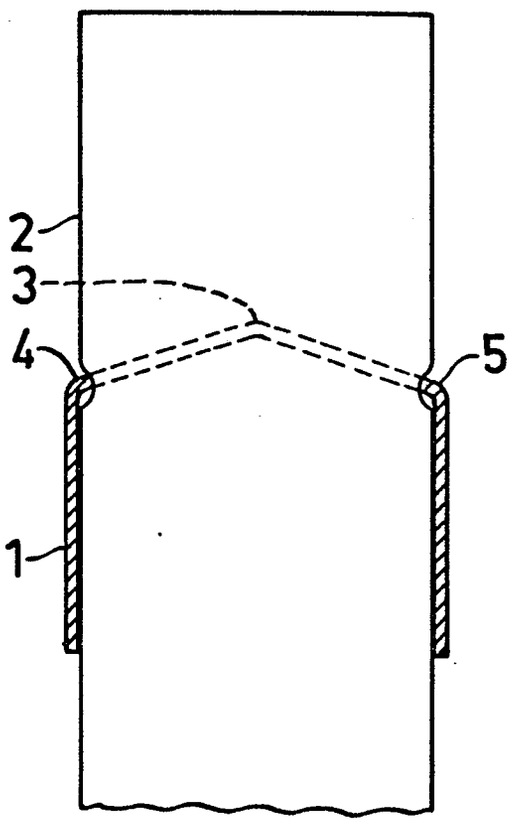

FIG.4