

(19)



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(11)

EP 0 945 569 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
13.02.2002 Bulletin 2002/07

(51) Int Cl.7: **E04H 17/16**, E04H 17/14

(21) Application number: **99104307.6**

(22) Date of filing: **03.03.1999**

(54) **Flexible connection device for panelings, particularly for metallic panels for fencings**

Flexible Verbindungsvorrichtung für Panele, insbesondere für Metalpaneele von Zäunen

Dispositif flexible de connection de panneaux, spécialement de panneaux métalliques de clotûres

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IT LI LU PT
Designated Extension States:
AL RO

(30) Priority: **26.03.1998 IT TO980056 U**

(43) Date of publication of application:
29.09.1999 Bulletin 1999/39

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Description

[0001] The present invention refers to a flexible connection device for panelings, particularly for metallic panels for fenceings.

[0002] Different types of metallic panels for open-air fenceings are known in the art: these panels allow enclosing wide spaces, for example in industrial companies, by following the outline of the ground both along its extension (therefore with different types of rectilinear or curvilinear paths), and along its height (on rough grounds with valleys and hills). Though being prearranged in panels and therefore adapted to guarantee a certain flexibility, do taking into account these applications on open and irregular grounds, these panels must in any case be cut very accurately to the desired measure at the beginning and the end of the fencing, or when the fencing is curved or changes its slope in such a way as to prevent connection of two panels with standard sizes. Therefore, the installing person must provide preparing some panels with an exact measure, by cutting them from the standard ones, and therefore it must often provide installing metallic support rods to which these final panels must be connected: when particularly severe situations occur, the metallic rods to be provided are as many as two, one providing the support for a set of incoming panels, and the other one composing the support for another set of outgoing panels.

[0003] All panels for fenceings are equipped with a plurality of connection devices, usually shaped with drilled wings or ears projecting from every panel and adapted to allow securing the panel on support rods or sometimes to other panels. These connection devices, in case of cutting of final panels, must be rebuilt and welded again to panel crop ends, and sometimes must also be reworked (for example by cutting and bending their structures) to allow non-rectilinear connections of the panels. These workings are costly and affect the price of a traditional panel by an increase of about 25%.

[0004] Another connection device, which forms the preamble of claim 1, is disclosed in US-A-5 026 028.

[0005] Object of the present invention is solving the above prior-art problems, by providing a device for connecting panelings that has a very reduced cost and that does not require re-workings before its easy assembly on the interested panel.

[0006] A further object of the present invention is providing a device for connecting panelings that allows a flexible connection of panelings one to the other, providing a final fencing with different shapes and perfectly adaptable to the open space to be enclosed.

[0007] The above and other objects and advantages of the invention, as will appear from the following description, are obtained by a flexible connection device for panelings as claimed in Claim 1. Preferred embodiments of the present invention are claimed in the dependent Claims.

[0008] The present invention will be better described

by some preferred embodiments thereof, given as a non-limiting example, with reference to the enclosed drawings, in which:

- 5 - Figure 1 is a perspective view of part of a fencing with panels equipped with the device of the present invention;
- Figure 2 is a perspective view of an embodiment of the device of the present invention; and
- 10 - Figure 3 is a top view of the device of Fig. 2 provided for an oblique connection.

[0009] With reference to the Figures, there is shown a preferred embodiment of the flexible connection device 1 of the present invention.

[0010] According to such embodiment, the flexible connection device 1 for panelings, particularly for metallic panels 3 for fenceings, is substantially composed of a section bar 5 whose cross-section is shaped as a C that is equipped with a projecting wing 7. This wing 7 has at least one hole drilled therein, that allows its different future connections.

[0011] The section bar 5 has obtained therein at least one pair of holes, one hole for every arm of the C, and preferably, as shown, two pairs of holes, also adapted for the following connections.

[0012] The device 1 is further equipped with a L-shaped bracket 9, that has obtained therein at least one hole for every arm of the L. The first hole is useful for a rotary connection of the bracket 9 to the wing 7 by using connection means 11 that penetrate into both holes of bracket 9 and wing 7. The connection means 11, that are commonly composed of rivets, allow inclining the bracket 9 with respect to the wing 7 (and therefore with respect to device 1 and panels 3) in order to adapt the resulting fencing to any bending or roughness of the ground, as also shown in Fig. 3. The bracket 9 is adapted to be secured to a support rod 13 of the fencing, as shown in Fig. 1. As can be seen from such Figure, usually two devices 1 are connected to the two upper and lower side ends of every panel 3, in order to guarantee a more complete and stronger fixing to the support rod 13.

[0013] The device 1 of the present invention is finally equipped with securing means 15 placed in the at least one pair of holes in the section bar 5: these securing means, that are commonly composed of a screw 17 and a corresponding bolt 19, are adapted to secure the section bar 5 to the metallic panels 3, after having placed every section bar 5 astride of the metallic panel 3 itself. In this way, a further translation flexibility for the section bar 5 is guaranteed longitudinally on the panel 3, after having secured it thereabove.

[0014] Numerous variations are possible to the device 1 of the present invention: for example, at least one of the holes of bracket 9, particularly the one serving for the connection to the support rod 13, is composed of a slot, that is an elongated hole, for a further installation

flexibility. Or, also the holes in section bar 5 can be composed of elongated slots adapted to contain at least one of the securing means 15.

[0015] The most complete embodiment of the device 1 of the present invention has been previously described. Obviously, it can be built according to several configurations and different embodiments, depending on the applications for which it is provided. For example, the bracket 9 can be omitted and the device 1 can be used to directly connect pairs of panels 3 one to the other, by using the respective slots 7: they can be connected one to the other through securing means that are similar to the previous ones, for example of the rivet type, in order to guarantee the maximum flexibility of use.

[0016] The installation of the device according to the present invention will now be described.

[0017] According to the nature of the space to be enclosed, it is provided to manufacture a set of standard metallic panels 3 and some panels 3 that are cut to exact measures. During their installation, then, the two embodiments of the device 1 of the present invention are used (adequately pre-fixed to the different panels 3) to mutually connect the panels 3, or to secure the panels 3 to the support rods 13. After having adequately oriented the brackets 9 with respect to the slots 7, the fencing is completed and it faithfully follows the outline and the roughnesses of the enclosed space, through a simple, quick, flexible and highly strong operation.

Claims

1. Flexible connection device (1) for panelings, particularly for metallic panels (3) for fencings, said device (1) being composed of:

- a section bar (5) whose cross-section is shaped as a C, said section bar (5) having obtained therein at least one pair of holes, one hole for every arm of the C; and
- securing means (15) placed in said at least one pair of holes and adapted to secure said section bar (5) to said metallic panels (3);

said device (1) being **characterised in that** it further comprises:

- a projecting wing (7) having at least one hole obtained therein, said projecting wing (7) extending on one part of the long side of the C that joins the two arms of the C, and extending longitudinally with respect to the section bar (5) and along a direction that is at a right angle with respect to the direction on which the two arms of the C are extending.

2. Flexible connection device (1) according to Claim 1, **characterized in that** it further comprises a L-

shaped bracket (9), said bracket (9) having obtained therein at least one hole for every arm of the L, said bracket (9) being rotatably connected to said wing (7) through connection means (11) that penetrate into both holes of said bracket (9) and said wing (7), said bracket (9) being adapted to be secured to a support rod (13) of the fencing.

3. Flexible connection device (1) according to Claim 2, **characterized in that** at least one of the holes of said bracket (9) is composed of a slot.

4. Flexible connection device (1) according to any one of Claims 1 to 3, **characterized in that** said section bar (5) is equipped with two pair of holes inside which two screws (17) with bolts (19) penetrate, said screws (17) being adapted to secure and fasten the device (1) to the metallic panel (3).

5. Flexible connection device (1) according to any one of Claims 1 to 3, **characterized in that** said holes of said at least one pair of holes in said section bar (5) are composed of elongated slots adapted to contain at least one of said securing means (15).

6. Flexible connection device (1) according to Claim 1, **characterized in that** the slot (7) of said section bar (5) is rotatably connected to a corresponding slot (7) of another section bar through connection means (11) of the rivet type.

7. Flexible connection device (1) according to Claim 2, **characterized in that** said slot (7) of said section bar (5) is rotatably connected to said bracket (9) through connection means (11). of the rivet type.

8. Metallic panels (3), particularly for fencings, **characterized in that** they are equipped with at least one of the connection devices (1) according to any of Claims 1 to 7, said connection devices (1) being secured to said panels (3) at the upper and/or lower ends thereof.

Patentansprüche

1. Vorrichtung zur flexiblen Verbindung (1) von Tafelwerk, insbesondere für Metalltafeln (3) für Umfriedungen, bestehend aus:

- einer Profilleiste (5) mit einem C-förmigen Querschnitt; die Profilleiste (5) weist mindestens ein Paar Bohrungen auf, eine pro Arm von C; sowie
- Befestigungselementen (15), mit Sitz in mindestens einem Paar der Bohrungen der Profilleiste und zur Befestigung der Profilleiste (5) an den Metalltafeln (3) vorgesehen;

diese Vorrichtung (1) ist **dadurch gekennzeichnet, dass** sie ausserdem folgende Teile Bauteile umfasst:

- einen vorstehenden Flügel (7), der mindestens eine Bohrung aufweist, dieser vorstehende Flügel (7), der sich über einen Teil der Längsseite von C erstreckt und die beiden Arme von C verbindet und der sich im Verhältnis zu Profilleiste (5) in Längsrichtung sowie entlang einer Richtung, die sich im rechten Winkel zu der Richtung befindet, in die sich die beiden Arme von C erstrecken, ausdehnt. 5
- 2. Vorrichtung zur flexiblen Verbindung (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** sie weiterhin eine Halterung (9) in L-Form umfasst, diese Halterung (9), die mindestens eine Bohrung für jeden Arm von L aufweist und die mit Verbindungselementen (11), die in beide Bohrungen der Halterung (9) und des Flügels (7) eingeführt sind, drehend mit Flügel (7) verbunden ist und die für die Befestigung an einer Stützstange (13) der Umfriedung vorgesehen ist. 10 15 20
- 3. Vorrichtung zur flexiblen Verbindung (1) nach Anspruch 2, **dadurch gekennzeichnet, dass** mindestens eine der beiden Bohrungen der Halterung (9) aus einer Öse besteht. 25
- 4. Vorrichtung zur flexiblen Verbindung (1) nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Profilleiste (5) mit zwei Paar Bohrungen versehen ist, in die zwei Schrauben (17) mit Mutterschrauben (19) eingeführt sind, die Schrauben (17) sind zur Befestigung der Vorrichtung (1) an die Metalltafel (3) vorgesehen. 30 35
- 5. Vorrichtung zur flexiblen Verbindung (1) nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** mindestens ein Paar der Bohrungen der Profilleiste (5) aus verlängerten Ösen bestehen, in die mindestens eines der Befestigungselemente (15) eingeführt ist. 40
- 6. Vorrichtung zur flexiblen Verbindung (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** 45

der Flügel (7) der Profilleiste (5) mit Verbindungselementen (11) vom Typ Nieten, drehend mit einem entsprechenden Flügel (7) einer anderen Profilleiste verbunden ist. 50
- 7. Vorrichtung zur flexiblen Verbindung (1) nach Anspruch 2, **dadurch gekennzeichnet, dass** 55

der Flügel (7) der Profilleiste (5) mit Verbindungselementen (11) vom Typ Nieten, drehend mit der genannten Halterung (9) verbunden ist.

- 8. Metalltafeln (3), insbesondere für Umfriedungen, **dadurch gekennzeichnet, dass** sie mindestens mit einer der Verbindungsvorrichtungen (1) nach einem der Ansprüche von 1 bis 7 ausgestattet sind, die Verbindungsvorrichtungen (1) sind an den oberen und/oder unteren Enden der Tafeln (3) befestigt.

Revendications

- 1. Dispositif de raccord flexible (1) pour des groupes de panneaux, en particulier pour des panneaux métalliques (3) pour clôtures, ledit dispositif étant constitué :

- d'un profilé (5) avec une section transversale en forme de C, ledit profilé (5) ayant, réalisée dans celui-ci, au moins une paire de trous, un pour chaque branche du C : et
- des attaches de fixation (15) placées dans ladite paire de trous au moins et permettant de fixer ledit profilé (5) auxdits panneaux métalliques (3):

ledit dispositif (1) étant **caractérisé par le fait qu'il** comprend en outre :

- une ailette saillante (7) ayant au moins un trou réalisé dans celle-ci, ladite ailette saillante (7) s'étendant sur une partie du long côté du C qui relie les deux branches du C, et s'étendant dans le sens longitudinal par rapport au profilé (5) et le long d'une direction qui est à angle droit par rapport à la direction vers laquelle s'étendent les deux branches du C.

- 2. Dispositif de raccord flexible (1) selon la revendication 1, **caractérisé par le fait qu'il** comprend en outre une attache (9) en forme de L, ladite attache (9) ayant, réalisé dans celle-ci, au moins un trou pour chaque branche du L, ladite attache (9) étant raccordée de façon tournante à ladite ailette (7) à l'aide de dispositifs de raccord (11) qui pénètrent dans les deux trous de ladite attache (9) et ladite ailette (7), ladite attache (9) pouvant être fixée à une tige de support (13) de la clôture.
- 3. Dispositif de raccord flexible (1) selon la revendication 2, **caractérisé par le fait qu'au moins un** des trous de ladite attache (9) est composé d'une boutonnière.
- 4. Dispositif de raccord flexible (1) selon une revendication quelconque parmi les revendications allant de 1 à 3, **caractérisé par le fait que** ledit profilé (5) est pourvu de deux paires de trous à l'intérieur des-

quels deux vis (17) avec des boulons (19) pénètrent, lesdites vis (17) permettant de fixer et de serrer le dispositif (1) sur le panneau métallique (3).

5. Dispositif de raccord flexible (1) selon une revendication quelconque parmi les revendications allant de 1 à 3, **caractérisé par le fait que** lesdits trous de ladite au moins paire de trous dans ledit profilé (5) sont constitués de boutonnières allongées permettant de recevoir au moins une desdites attaches de fixation (15). 5 10
6. Dispositif de raccord flexible (1) selon la revendication 1, **caractérisé par le fait que** l'aillette (7) dudit profilé (5) est reliée de façon tournante à une ailette correspondante (7) d'un autre profilé à l'aide de dispositifs de raccord (11) du type rivets. 15
7. Dispositif de raccord flexible (1) selon la revendication 2, **caractérisé par le fait que** ladite ailette (7) dudit profilé (5) est reliée de façon tournante à ladite attache (9) à l'aide de dispositifs de raccord (11) du type rivets. 20
8. Panneaux métalliques (3), en particulier pour clôtures, **caractérisés par le fait qu'ils** sont pourvus d'au moins un des dispositifs de raccord (1) selon une revendication quelconque parmi les revendications allant de 1 à 7, lesdits dispositifs de raccord (1) étant fixés auxdits panneaux (3) à leurs extrémités supérieures et/ou inférieures. 25 30

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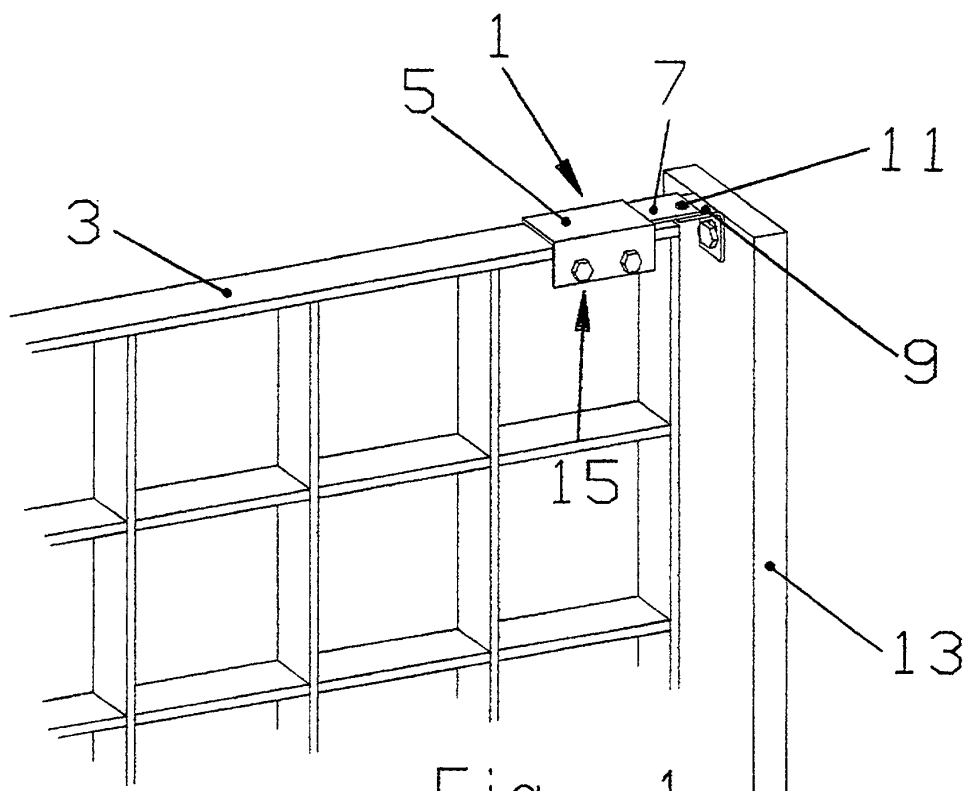


Fig. 1

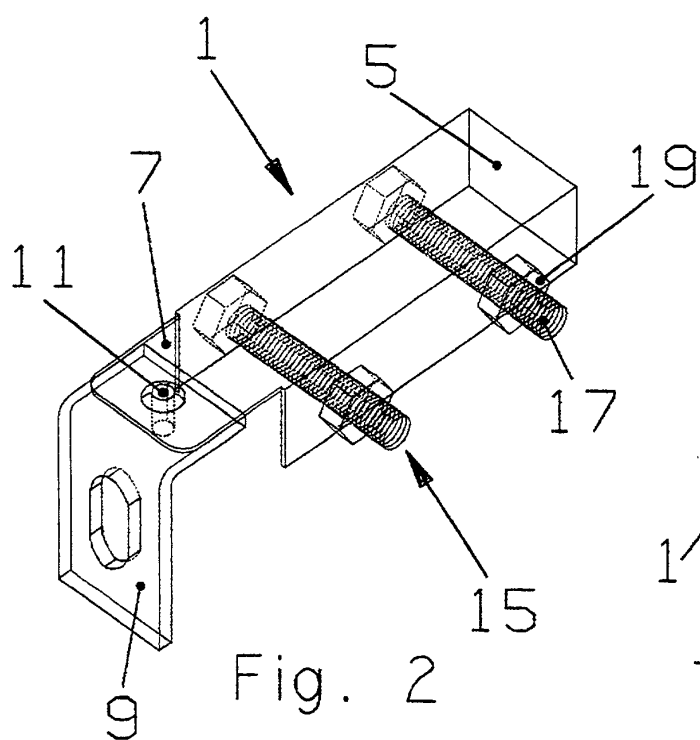


Fig. 2

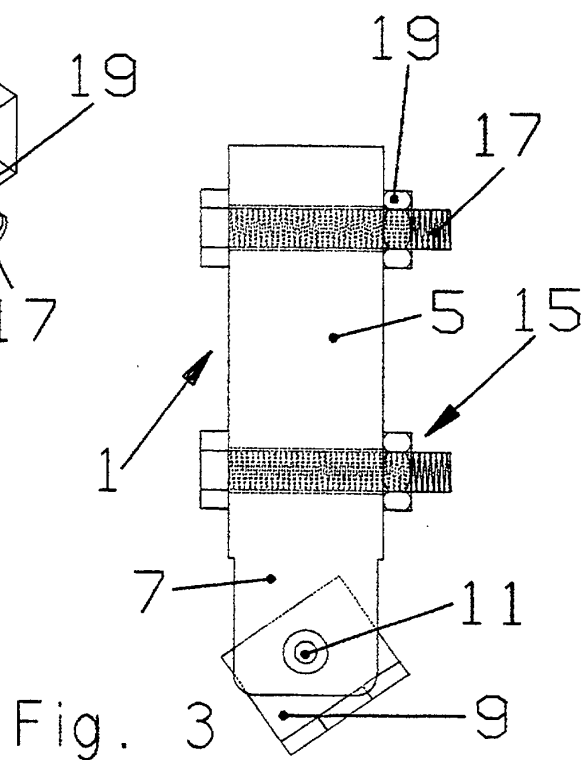


Fig. 3