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(54) **Prefabricated flooring panel**

(57) A prefabricated flooring panel (10) comprises:

a number of parallel slats (12, 12', 12'') arranged side by side;

fixing means (28, 32) for fixing said prefabricated flooring panel (10) to further similar prefabricated flooring panels; and

coupling means (20, 22, 22') that hold said slats (12, 12', 12'') together transversally and that allow said slats (12, 12', 12'') to be moved longitudinally with respect to their adjacent slats, so that said prefabricated flooring panel (10) can be installed with its slats (12, 12', 12'') longitudinally staggered.

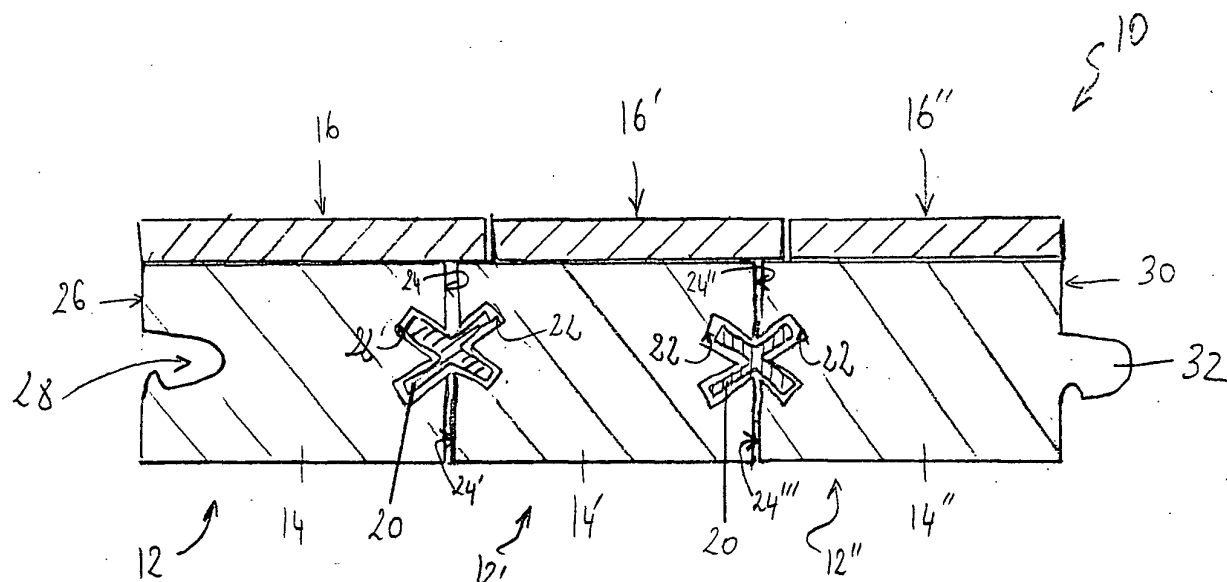


Fig. 2

Description**Field of the invention**

5 [0001] The present invention generally relates to wood flooring, and is more particularly concerned with flooring surfaces made of prefabricated flooring panels.

Background of the invention

10 [0002] Wood floorings are a popular method of providing a decorative and long-lasting flooring surface. While wood floorings have several advantages due to their durability and natural beauty, they also have several disadvantages. For example, the wood strips used to fabricate wood floorings are expensive due to the cost of the wood. In addition, wood floorings require a skilled craftsman to install the floor. As a result, the combined cost of the materials and the labor are relatively high. This has discouraged many people from selecting this type of flooring.

15 [0003] Attempts have been made to provide the aesthetic look of wood floorings without the associated costs. One method has been to provide a prefabricated panel that has several rows of veneer strips which are attached to a substrate. A major disadvantage of this type of floor, while providing the appearance of a wood flooring, is that it is made of rectangular panels. When the rectangular panels are installed, the seams that are formed between the rectangular panels extend over several strips of wood and are very visible. This makes it very obvious that the floor has been covered with prefabricated veneer panels rather than with real wood strips.

20 [0004] US 6,021,615 describes a prefabricated flooring panel that is made of a plurality of parallel wood slats situated side by side, with the slats being of the same lengths but staggered in their longitudinal positions. A tambour backing is adhesively secured to a back side of the slats to hold the slats together as a panel. By using an irregular pattern of hardwood slats, which end at different points, the seam that runs across the entire width of rectangular, prefabricated veneer panels is eliminated. Since there is no such seam, an observer would be unable to determine if a prefabricated panel was used or if individual strips of wood were installed in the conventional manner. However, variations in the positioning of the slats on the tambour backing-e.g. during manufacturing-from one panel to another results in the presence of gaps between the ends of the slats of two successive, abutted panels in the same row. Furthermore, the particular shape of this panel makes its handling, packaging and transport relatively inconvenient. Besides, the edges of the protruding slats can easily be damaged during handling and transport.

Object of the invention

35 [0005] The object of the present invention is to provide an improved prefabricated flooring panel that allows the construction of a flooring having the appearance of a real wood flooring. This object is achieved by a prefabricated flooring panel as claimed in claim 1.

Summary of the invention

40 [0006] A prefabricated flooring panel in accordance with the present invention comprises a number of parallel slats arranged side by side. Fixing means are provided for fixing the prefabricated flooring panel to further similar prefabricated flooring panels. It will be appreciated that the prefabricated flooring panel further comprises coupling means that hold the slats transversally and that allow the slats to be moved longitudinally with respect to their adjacent slats, so that the panel can be installed with its slats longitudinally staggered. Hence, the slats end at different locations, whereby a look of random slat arrangement is created. A wood flooring consisting of such prefabricated flooring panels has an improved aesthetic appearance when compared to a flooring made of traditional, rectangular veneer panels, where a noticeable seam line extends across several strips of wood. Since, with the present panels, there is no such seam line, an observer would be unable to determine if the present panel was used or if individual strips of wood were installed in the traditional manner. Hence, a flooring surface made of prefabricated flooring panels according to the invention has the appearance of a real wood flooring.

50 [0007] A further, particularly advantageous aspect of the present prefabricated flooring panel is the possibility of moving the slats and arranging them in a desired position, to give the panel a desired shape. For example, at the factory, the slats can be positioned in such a way as to minimize the dimensions of the panel, whereby simplifying its packaging, handling and transport. When panels according to the present invention are then used to install a floor, the flooring installer will arrange the slats in a staggered position, so as to avoid straight seams and obtain an improved aesthetic appearance.

55 [0008] The mobility of the slats is also of great interest for installing the panel, since it allows a very precise adjustment of the panel. Indeed, the ends of the slats of the panel can be adjusted to be in proper abutment with the ends of the

slats of the preceding panel in the same row, whereby avoiding gaps between two successive panels.

[0009] In addition to improving the appearance of the flooring by avoiding straight seams, the staggered position of the slats increases the strength of the flooring by avoiding weak points which would be produced by straight seams.

[0010] It is to be noted that the use of prefabricated flooring panels saves the installer a substantial amount of time, since the individual strips do no longer need to be installed one at a time.

[0011] In a preferred embodiment, the coupling means comprises an insert element for every pair of adjacent slats. The insert element cooperates with longitudinal channels in the adjacent longitudinal edges of the adjacent slats. A variety of shapes for the insert element and for the channels can be used, as long as adjacent slats are held transversally and can be moved longitudinally. To facilitate the assembly of the panel with further similar panels, the insert element should preferably be shorter than the slats the adjacent slats. In other words, the insert element should not extend over the whole length of the slats. The length of the insert element should preferably be such that, when the slats are staggered, the insert element is enclosed over its whole length by the adjacent slats.

[0012] It will be understood that the panels of the present invention are pre-assembled so as to be ready-to-lay for the flooring installer. The panels are thus generally assembled at the manufacturing stage, which ensures a precise machining of the channels to provide a smooth sliding of the insert element in the channels.

[0013] The fixing means of the present panel are preferably configured for a tongue-and-groove assembly with further similar panels. The panel may thus comprise a tongue on an external longitudinal edge of one of the outermost slats of the panel and a groove on an external longitudinal edge of the opposite outermost slat. Such tongue-and-groove joints are known per se, and allow a rapid and optionally interlocking assembly with adjacent panels. Likewise, the transversal edges of the slats will preferably be configured for a tongue-and-groove assembly with the transversal edges of the slats of further similar panels.

[0014] Since the principal use of the present panel is to install wood floorings, the panel will generally be made of wood or wood derived material. To provide a long-lasting flooring surface, the slats should be made of real wood. Hardwood, such as e.g. oak or beech, is preferred for its wear resistance, but softer wood such as e.g. fir or pine may also be used.

[0015] However, for cost reasons, each slat shall more generally comprise a supporting layer provided on one face with a covering layer. The supporting layer may e.g. be made of wood derived material such as H.D.F. (High Density Fiber) or M.D.F. (medium density fiber) or plywood. The covering layer shall consist of thin veneer strips attached to the supporting layer.

[0016] For every pair of adjacent slats, the covering layer of one of the pair of slats may be configured to partially cover the other adjacent slat. The gap between the supporting layers of adjacent slats is thus covered, whereby further improving the appearance of the panel.

[0017] Floating parquet floors as well as fixed (i.e. glued or nailed) parquet floors can be constructed with prefabricated flooring panels according to the invention.

[0018] It is to be further noted that, while it is expected that the principal use of the panel of the invention will be for flooring, it is also possible to use the present panels on walls or ceilings. Likewise, while the principal use of the panel of the invention is to install wood flooring, other materials such as synthetic flooring, marble, etc. may also be installed using this technique.

[0019] According to another aspect of the present invention, a method for installing a flooring surface is proposed. It comprises the following steps:

- providing a prefabricated flooring panel as described above;
- adjusting the slats of the prefabricated flooring panel in longitudinally staggered positions;
- installing the panel on a surface to be covered.

[0020] The installation of the panel is done according to the known methods and shall advantageously include the assembly of the panel with further similar panels, preferably by means of tongue-and-groove fittings, as well as fixing the panel to the target surface and/or to similar panels, e.g. using adhesives, nails or screws.

[0021] The mobility of the slats of the panel allows to adjust their position while assembling the panel to similar panels, in particular in the same row. Hence, the panel can be installed with precision and possible dimensional variations in the panel due to manufacturing can be compensated.

Brief description of the drawings

[0022] The present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Fig.1: is a plane view of a prefabricated flooring panel in accordance with a preferred embodiment of the invention;
 Fig.2: is a sectional view along line A-A of the prefabricated flooring panel of Fig.1;
 Fig.3: is a plane view of two assembled flooring panels.

[0023] In the Figures, same reference numbers indicate similar or identical elements.

Detailed description of a preferred embodiment

[0024] Fig.1 shows a plane view of a preferred embodiment of the present prefabricated flooring panel 10. It comprises three parallel slats 12, 12' and 12" that are longitudinally arranged side by side. It will be appreciated that the slats 12, 12' and 12" are pre-assembled in such a way that two adjacent slats 12, 12' and 12" can be moved longitudinally with respect to each other. Coupling means, which will be detailed below, hold the slats 12, 12' and 12" together transversally and allow the slats to be moved longitudinally with respect to their adjacent slats. It follows that a flooring installer can install the panel 10 with its slats 12, 12' and 12" longitudinally staggered.

[0025] As can be seen in Fig.2, in the present embodiment each slat 12, 12' and 12" consists of two layers: a supporting layer 14, 14', 14", e.g. made of wood material such as H.D.F. (High Density Fiber) or M.D.F. (medium density fiber) or plywood, and a covering layer 16, 16', 16". As shown in Fig.1, the covering layer is formed by a row of thin veneer strips 18, such as e.g. oak segments. The veneer strips 18 are disposed end to end and glued to the supporting layer 14, 14', 14".

[0026] In Fig.1, the panel 10 is shown with its slats 12, 12', 12" longitudinally staggered, as it would be positioned in a flooring. In Fig.3, the panel 10 of Fig.1 is assembled in end to end relationship to another similar panel 10' in the same row. Since the slats 12, 12', 12" end at different locations, a look of random slat arrangement is obtained. It is to be noted that the present panels 10 provide an improved aesthetic appearance when compared to the traditional, rectangular veneer panels, where a noticeable, straight seam line extends across several strips of wood. As can be understood from Fig.3, wherein the junction area between the two panels 10 and 10' is encircled with the dashed line, there is no such straight seam line and an observer would be unable to determine if the present panels 10 were used or if individual strips of hardwood were installed in the traditional manner. The surface flooring obtained with the present prefabricated flooring panels 10 thus has the appearance of a real wood floor.

[0027] The mobility of the slats 12, 12', 12" allows the flooring installer to define at will the end positions of the slats 12, 12', 12", which results in a great flexibility of use. It will be particularly appreciated that the mobility of the slats, while installing the panel, allows for a very precise adjustment of the panel. Indeed, the ends of the slats of the panel 10 can be adjusted to be in proper abutment with the ends of the slats of the preceding panel 10' in the same row, whereby avoiding gaps between two successive panels. in this encircled zone of Fig.3.

[0028] When compared to the rather cumbersome panels described in US 6,021,615, it will be noted that in the present panel 10, the slats 12, 12', 12" can be arranged in such a way as to minimize the dimensions of the panel 10. In the present case, since the panel 10 is made of slats 12, 12', 12" of equal lengths, the most compact shape is the rectangle. The mobility of the slats 12, 12', 12" thus allows to align the slats so as to form a rectangle, as indicated by the dashed lines in Fig.1. This greatly simplifies handling, packaging and transport of the panels. Basically, upon manufacturing of the panel 10, the slats 12, 12', 12" will be arranged so that the panel has a rectangular shape. The floor installer will then bring the slats 12, 12', 12" into longitudinally staggered positions during installation of a floor. Although in Fig.1 the slats are arranged in a step, it may alternatively arranged in a random manner. It will also be noted that the slats can have different lengths.

[0029] As already mentioned, adjacent slats within the panel are assembled by means of a coupling means. In the present embodiment, this coupling means, shown in Fig.2, is an insert element 20, which has an X-shaped cross-section. The insert element 20 cooperates with V-shaped channels 22 provided in the adjacent longitudinal edges (24, 24') and (24", 24'") of adjacent slats 12 and 12', respectively 12' and 12". This type of assembly allows to move the slats 12, 12', 12" longitudinally, but holds the slats 12, 12', 12" side by side transversally.

[0030] It is clear that the insert element is introduced longitudinally in the channels when pre-assembling the panel and that it is not possible to separate two adjacent slats without first removing the insert element.

[0031] The panel 10 is further provided with fixing means that are advantageously configured for a tongue-and-groove assembly with adjacent, similar panels (not shown). With regard to Fig.3, such adjacent panels would be installed to the left and/or to the right of the panels 10, 10'. Therefore, one of the outermost slats 12 of the panel 10 has its external longitudinal edge 26 provided with a groove 28. The opposite, outermost slat 12" of the panel 10 has its external longitudinal edge 30 provided with a tongue 32 having a profile matching that of the groove 26. In the present embodiment, the tongue-and-groove joint is preferably an interlocking joint, so that adjacent panels are held together in both vertical and horizontal directions.

[0032] Although not shown, the ends of each slat 12, 12', 12" is also preferably configured for a tongue-and-groove assembly with the ends of the slats of further similar panels. However, contrary to the tongue 28 and groove 32 of the

longitudinal edges 26 and 30, which have a particular profile to provide an interlocking joint, the tongues and grooves of the ends of the slats 12, 12' and 12'' shall preferably have a rectangular profile.

[0033] It is to be further noted that the covering layers 16 and 16' are configured so as to partially cover an adjacent slat. The gap between the supporting layers is thus hidden, which further contributes to the improved appearance of the panel 10.

[0034] In an alternative, not shown embodiment, the coupling means provided between each couple of adjacent slats may be realised in the form of a dovetailed joint. This alternative embodiment will however be described with reference to Fig.2 for a clear explanation. The coupling means shall thus comprise a longitudinal dovetailed tongue on one longitudinal edge, e.g. 24, resp. 24'', of the first 14, resp. 14', of the adjacent slats. The second slat 14', resp. 14'', shall have its adjacent longitudinal edge 24', resp. 24'', provided with a longitudinal groove having a profile matching that of the dovetailed tongue.

List of reference signs:

[0035]

10	prefabricated flooring panel
12, 12' and 12''	slat
14, 14', 14''	supporting layer
16, 16', 16''	covering layer
18	veneer strips
20	insert element
22	channel
24, 24', 24'', 24'''	longitudinal edge
26	external longitudinal edge
28	groove
30	external longitudinal edge
32	tongue

Claims

1. A prefabricated flooring panel comprising:

a number of parallel slats arranged side by side;

fixing means for fixing said prefabricated flooring panel to further similar prefabricated flooring panels; and

coupling means that hold said slats together transversally and that allow said slats to be moved longitudinally with respect to their adjacent slats, so that said prefabricated flooring panel can be installed with its slats longitudinally staggered.

2. The prefabricated flooring panel according to claim 1, wherein said coupling means comprises for every pair of adjacent slats an insert element that cooperates with longitudinal channels in adjacent longitudinal edges of said adjacent slats.

3. The prefabricated flooring panel according to claim 2, wherein said insert element is shorter than said adjacent slats.

4. The prefabricated flooring panel according to any one of the preceding claims, wherein said fixing means comprises a tongue on an external longitudinal edge of one of the outermost slats of said panel, and a groove on an external longitudinal edge of the opposite outermost slat of said panel.

5. The prefabricated flooring panel according to any one of the preceding claims, wherein said slats have transversal edges that are configured for a tongue-and-groove assembly with transversal edges of slats of further similar prefabricated flooring panels.

6. The prefabricated flooring panel according to any one of the preceding claims, wherein each slat comprises a

supporting layer provided on one face with a covering layer.

7. The prefabricated flooring panel according to claim 6, wherein for every pair of adjacent slats, the covering layer of one of said pair of adjacent slats partially covers the supporting layer of the other adjacent slat.

8. The prefabricated flooring panel according to claim 6 or 7, wherein said supporting layer is made of a wood derived material and said covering layer consists of strips of veneer.

9. A surface flooring comprising a multiplicity of prefabricated flooring panels according to any one of claims 1 to 8, assembled together with their slats longitudinally staggered.

10. A method for installing a flooring surface comprising:

- providing a prefabricated flooring panel according to any one of claims 1 to 8;
- adjusting the slats in longitudinally staggered positions;
- installing the prefabricated flooring panel on a surface to be covered.

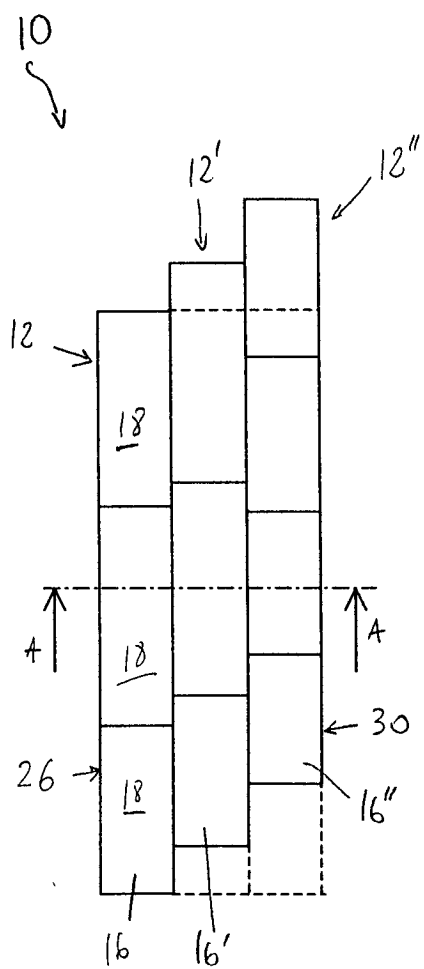


Fig. 1

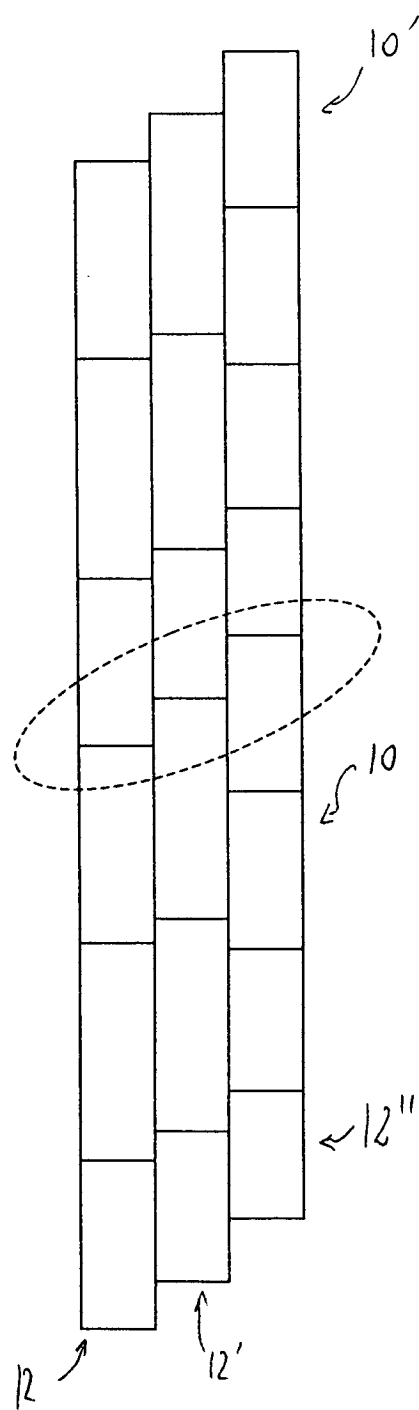


Fig. 3

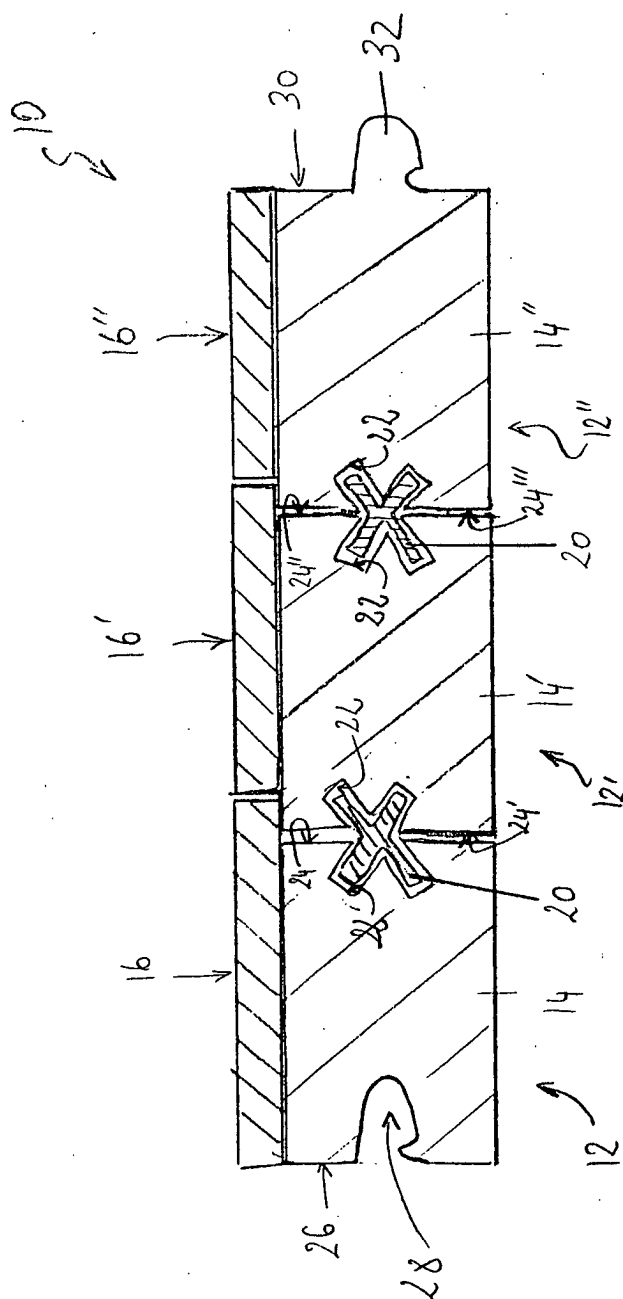


Fig. 2



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 01 0579

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7) E04F
Place of search THE HAGUE		Date of completion of the search 28 August 2002	Examiner Van Bost, S
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03 82 (P4/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 01 0579

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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28-08-2002

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