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(54) Supporting element

(57) The invention relates to a supporting element for bricks that are dried while being supported thereon. The supporting element comprises a plate (2) with downwardly extending plate edges (3). A stiffening section (4) extends between said plates, which stiffening section (4) is connected to the plate (2) at spaced-apart points of attachment on the bottom side of the plate (2), wherein a spacer (7) is provided between two points of attachment so as to keep the stiffening section (4) spaced from the plate (2) between said two points of attachment. The invention further relates to a method for manufacturing such a supporting element.

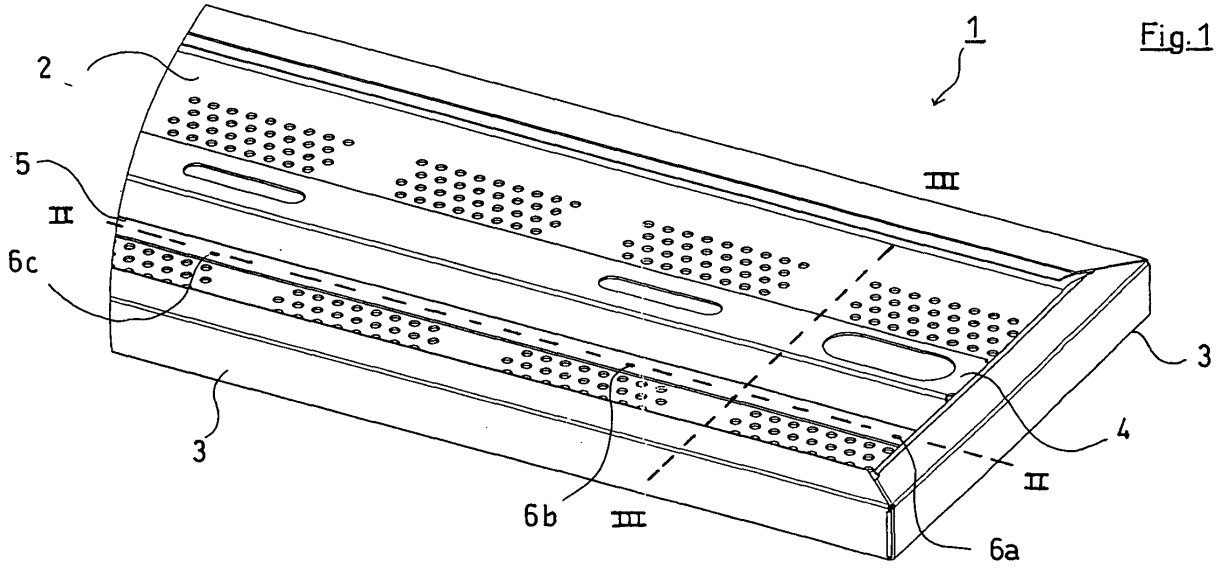


Fig.1

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Description

[0001] The present invention relates to a supporting element for bricks that are dried while being supported thereon, comprising a plate with downwardly extending plate edges, between which plate edges a stiffening section extends, which stiffening section is connected to the plate at spaced-apart points of attachment on the bottom side of the plate.

[0002] Such a plate is generally known, it is used in the brick industry for placing green bricks of clay or loam thereon. Usually, the stiffening section is spot-welded to the plate. The plate supporting the green bricks is subsequently taken to a drying space for drying the clay or loam. Then the plates with the green bricks of clay or loam are taken to a kiln, where they are baked into bricks. A major problem that occurs with the supporting elements that are currently being used is that the plate and the stiffening section vibrate against one another during handling and transport, which causes noise nuisance. Especially when large numbers of plates are being handled and transported, as is the case in the brick industry, this leads to objectionable noise. In the course of time several attempts have been made to solve this problem. One of said attempts was to increase the number of spot welds between the plate and the stiffening section. This measure only led to a limited reduction of the noise level, whilst this "solution" moreover had this drawback that the quality of the spot-welded joints may be affected when the distance between two spot welds becomes (too) small, because the cooling of the spot weld may be influenced by heat being passed through the material when a spot weld is made adjacently thereto. The brick industry itself has also searched for indirect solutions to the problem of noise nuisance caused by the supporting elements, such as the provision of noise cabins or encasings around spaces in the production process where the supporting elements cause noise nuisance. Furthermore, attempts have been made to make guides for the plates of a material that is said to have a sound-damping effect, e.g. HMPE. All these attempts have remained unsuccessful, however. So far, the desired result still has not been achieved.

[0003] Consequently it is an object of the present invention to provide a supporting element for drying bricks which provides a solution for the above problem, at least partially so, and which reduces the amount of noise nuisance to a considerable degree. According to the present invention, this object is accomplished by a supporting element as referred to in the introduction, wherein a spacer is provided between two points of attachment so as to keep the stiffening section spaced from the plate between said two points of attachment. Since spacers push the plate and the stiffening section away from each other between the two points of attachment, contact between the plate and the stiffening section is not entirely prevented but considerably reduced. After all, the spacer has a damping effect on the vibration of both the plate and the stiffening section, as a result of which both the duration and the amplitude of the vibrations that occur during handling and transport are significantly reduced.

[0004] In a special embodiment of the invention, the spacer functions as a means of attachment, and the location at which the spacer is present between the plate and the stiffening section can be regarded as a point of attachment. This special embodiment provides a supporting element for bricks being dried while being supported thereon, comprising a plate with downwardly extending plate edges, between which plate edges a stiffening section extends, which stiffening section is connected to the plate at spaced-apart points of attachment on the bottom side of the plate, wherein a spacer is provided as a means of attachment at at least one point of attachment for attaching the stiffening section to the plate and keeping it spaced therefrom. The advantages are the same as with the supporting element as discussed above, an additional advantage being the fact that no separate means or methods of attachment are required for interconnecting the plate and the stiffening section.

[0005] A suitable variant to this special embodiment is an embodiment in which the point of attachment extends a certain length, for example at least substantially the entire length of the stiffening section. In that case the invention relates to a supporting element for bricks being dried while being supported thereon, comprising a plate with downwardly extending plate edges, between which plate edges a stiffening section extends along a certain length, which stiffening section is connected to the plate at spaced-apart points of attachment on the bottom side of the plate, which means of attachment comprise at least one spacer for keeping the stiffening section spaced from the plate at least substantially along the length thereof. This could be realised, for example, by means of a joint comprising a putty or a glue having elastic properties being resistant to the repeated temperature fluctuations that are used in drying bricks.

[0006] The stiffening section is preferably an elongated section having a U-shaped cross-section, the ends of the legs of the stiffening section being flanged to form section edges used for connecting the stiffening section to the plate. The U-shape imparts a sufficient degree of rigidity to the supporting element to prevent the plate from deflecting under the load of the bricks. Especially before the baking process, the bricks are comparatively heavy on account of the water that is present in the clay or the loam. The section edges extend parallel to the plate and thus provide a projecting surface for interconnecting the plate and the stiffening sections. If the ends of the legs furthermore extend away from each other, it will be easier to handle the section when connecting it to the plate.

[0007] Preferably, a spacer is provided between respective pairs of adjacent points of attachment of a section edge. It will be understood that in this way the damping effect of the spacer will be greatest.

[0008] The spacer is preferably made of a resilient material. Although hard materials effectively reduce noise

pollution as well, in that they push the plate and the stiffening section apart, a resilient material will provide an even better damping effect.

[0009] The spacer is preferably resistant against repeated temperature fluctuations in the range from about 0 °C to about 120 °C. This ensures that the properties of the material will be retained after a number of drying and baking cycles of bricks on the plate.

[0010] In a preferred embodiment of the invention, a spacer comprises elements made of plastic material. There are many plastics that have been good vibration damping properties, and the elements can be fitted between the plate and the stiffening section in a simple manner. Once the plate and the stiffening section are interconnected, the force that is exerted on the elements by the plate and the stiffening section may already suffice for holding the plastic elements in their clamped-down position. It is also possible to bond the plastic elements to the plate and/or the stiffening section or attach them in another manner.

[0011] In another preferred embodiment of the invention, the spacer comprises a filling material, for example a suitable putty or a suitable foam material such as PUR. A suitable filling material is easy to provide on the plate or the stiffening section and, after possible curing, will have a damping effect on the vibration of the stiffening section relative to the plate.

[0012] In yet another preferred embodiment of the invention, the spacer comprises a tape. Tape, too, is easy to provide and can be affixed to the plate or in the stiffening section relatively long before the plate and the stiffening section are interconnected, without any of the desired properties noticeably deteriorating.

[0013] The present invention further relates to a method for manufacturing a supporting element, comprising the steps of forming the plate and connecting the stiffening section to the bottom side of the plate, wherein a spacer is provided on the plate and/or the section edges, between two spot welds to be formed, prior to said connecting step. Providing the spacer in advance is easy because both the plate and the section edges are readily accessible. Especially in those cases where the spacer is provided on the section edges, a correct positioning will moreover be easy to realise. Only the positions of the points of attachment to be subsequently formed need to be taken into account in that case.

[0014] Preferably, a local difference in level is provided in the plate and/or the stiffening section for positioning the spacer. In the first place, the local difference in level provides a marker point that helps to position the spacer correctly. In the second place, local differences in level help to prevent spacers from being displaced during the period between the provision of the spacers and the connection of the stiffening section to the plate.

[0015] The present invention will be explained in more detail hereinafter by means of a description of a preferred embodiment of the invention, in which reference is made to the following schematic figures:

Figure 1 shows part of a supporting plate for drying bricks;

Figure 2 is a sectional view along the line II-II in figure 1; and

Figure 3 is a sectional view along the line III-III in figure 1.

Figures 4, 6 and 5, 7 are sectional views corresponding to figures 2 and 3, respectively, of an embodiment in which the spacers also function as means of attachment.

[0016] With reference to figure 1, there is shown a supporting plate 1, whose bottom side faces upwards. The supporting plate 1 consists of a perforated plate 2, which is provided with upright edges 3 at the long sides and the short sides, which edges enable a good circulation of air via the bottom side of the plate during the drying process of bricks (not shown) that are present on the supporting plate. A U-shaped section 4 extends along the length of the brick drying plate 1, the ends of the legs of said U-shape being bent outwards at right angles so as to form edges 5. The section 4 prevents the plate 2 from deflecting when bearing the weight of the stones before or after drying. The section 4 is connected to the plate 2 by means of spot welds 6.

[0017] Figure 2 is a longitudinal sectional view of a part of the brick drying plate 1 of figure 1 along the line II-II, in which a spacer, in this case in the form of a plate 7 of plastic material is shown to be present between the plate 2 and the edge 5 of the section, between two adjacent spot welds 6a and 6b. When the brick drying plate 1 is being lifted or moved on a conveyor, the plate 7 of plastic material prevents the section edge 5 and the plate 2 from vibrating against each other and thereby causing noise nuisance.

[0018] Figure 3 is a cross-sectional view of a part of the brick drying plate 1 of figure 1, along the line III-III in said figure. This figure clearly shows that the section 4 has two edges 5, and that a plate 7 of plastic material is provided between the section 4 and the plate 2 at every edge 5.

[0019] Figures 4 and 5 are a longitudinal sectional view and a cross-sectional view (along the line V-V), respectively, of a supporting plate 11 comprising a plate 12 and a section 14 that is attached to the plate 12 at points of attachment by means of putty 18. The putty 18 consists of an elastic material and as such also functions as a spacer.

[0020] Figures 6 and 7 are a longitudinal sectional view and a cross-sectional view (along the line VII-VII), respectively, of a supporting plate 21 comprising a plate 22 and a section 24 that is attached to the plate 22 at points of attachment by means of putty 28. The putty 28 consists of an elastic material and as such also functions as a spacer.

[0021] The preferred embodiment as described above and shown in the figures merely serves to illustrate the invention. The preferred embodiment must not be con-

strued as limiting the scope of the present invention, which is defined in the appended claims. Many adaptations that will be obvious to those skilled in the art are possible, such as the provision of a layer of filling material or a strip of tape instead of the plate of plastic material. Instead of the plate of plastic material, also other materials having different shapes may be used.

Claims

1. A supporting element for bricks that are dried while being supported thereon, comprising a plate with downwardly extending plate edges, between which plate edges a stiffening section extends, which stiffening section is connected to the plate at spaced-apart points of attachment on the bottom side of the plate, **characterized in that** a spacer is provided between two points of attachment so as to keep the stiffening section spaced from the plate between said two points of attachment.

2. A supporting element according to claim 1, **characterized in that** the stiffening section is an elongated section having a U-shaped cross-section, the ends of the legs of the stiffening section being flanged to form section edges used for connecting the stiffening section to the plate.

3. A supporting element according to claim 2, **characterized in that** a spacer is provided between respective pairs of adjacent points of attachment of a section edge.

4. A supporting element according to any one or more of the preceding claims, **characterized in that** the spacer is made of a resilient material.

5. A supporting element according to any one or more of the preceding claims, **characterized in that** the spacer is made of a material which is resistant against repeated temperature fluctuations in the range from about 0 °C to about 120 °C.

6. A supporting element according to any one or more of the preceding claims, **characterized in that** said spacer comprises an element of plastic material.

7. A supporting element according to any one or more of the claims 1-5, **characterized in that** said spacer comprises a filling material.

8. A supporting element according to any one or more of the claims 1-5, **characterized in that** said spacer comprises a tape.

9. A method for manufacturing a supporting element according to any one of the preceding claims, comprising the following steps:

   - forming the plate, and
   - connecting the stiffening section to the bottom side of the plate,

   wherein a spacer is provided on the plate and/or the section edges, between two spot welds to be formed, prior to said connecting step.

10. A method according to claim 9, **characterized in that** a local difference in level is provided in the plate and/or the stiffening section for positioning the spacer.

Fig.1

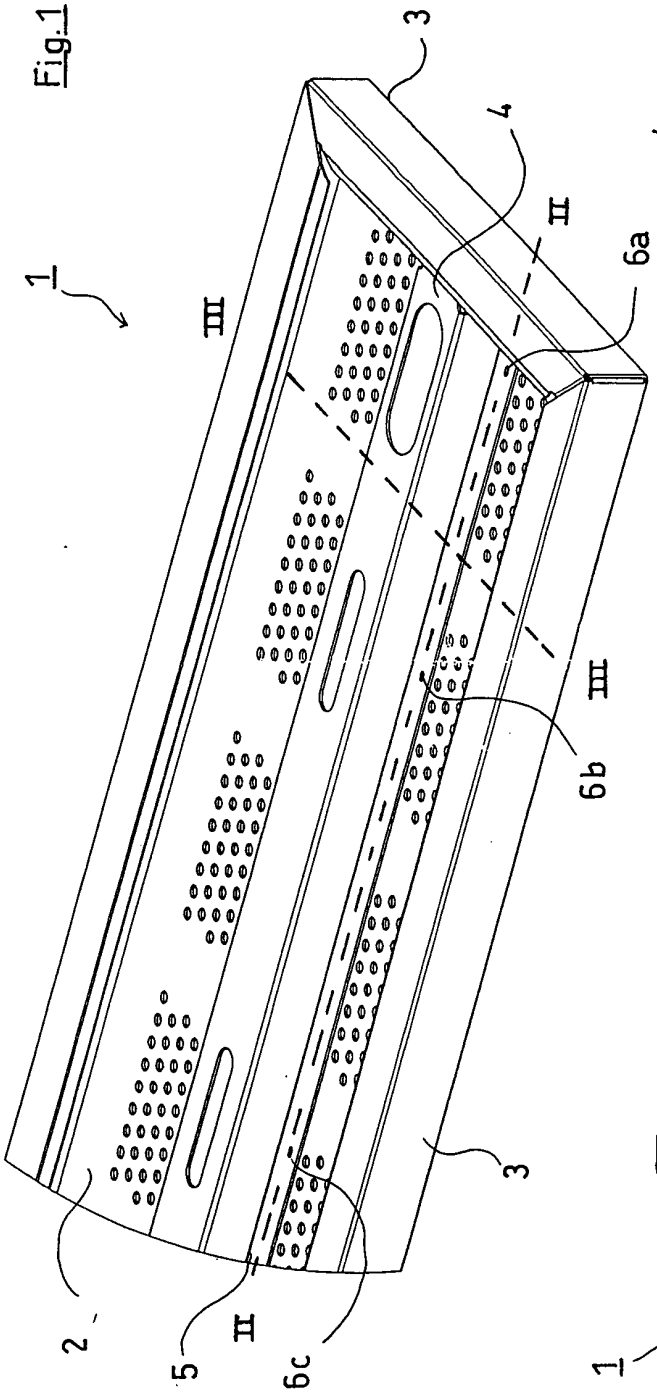


Fig.3

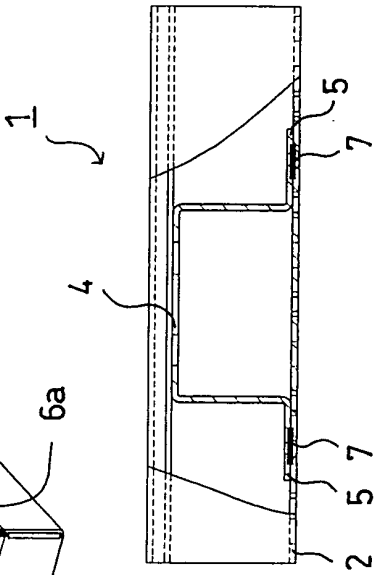
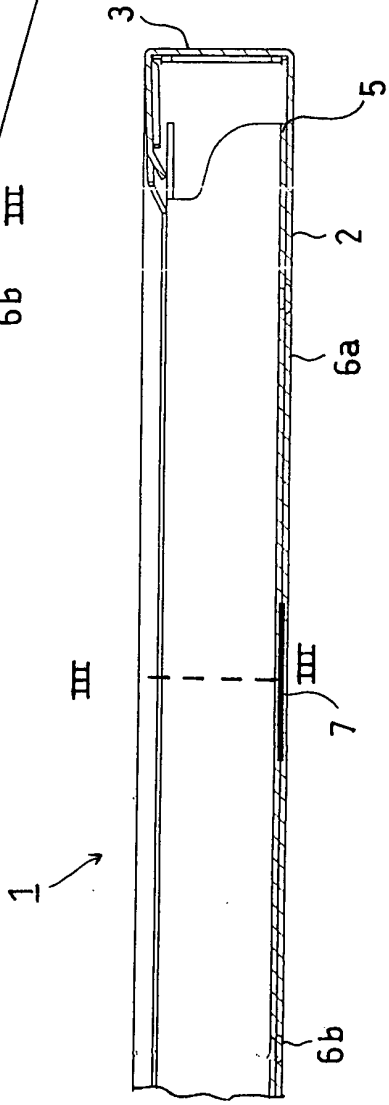


Fig.2



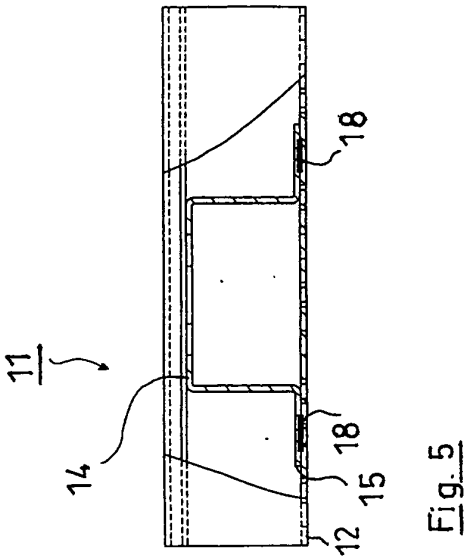


Fig.5

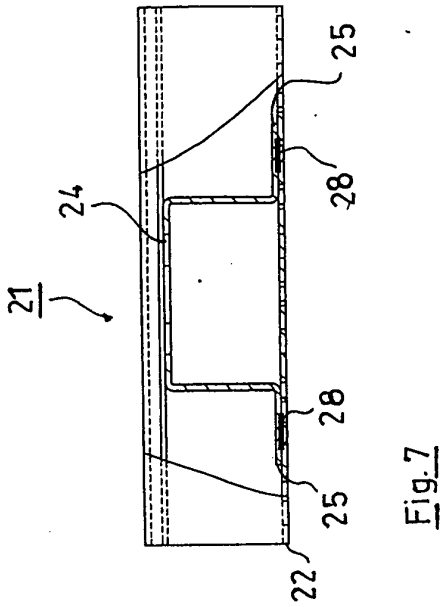


Fig.7

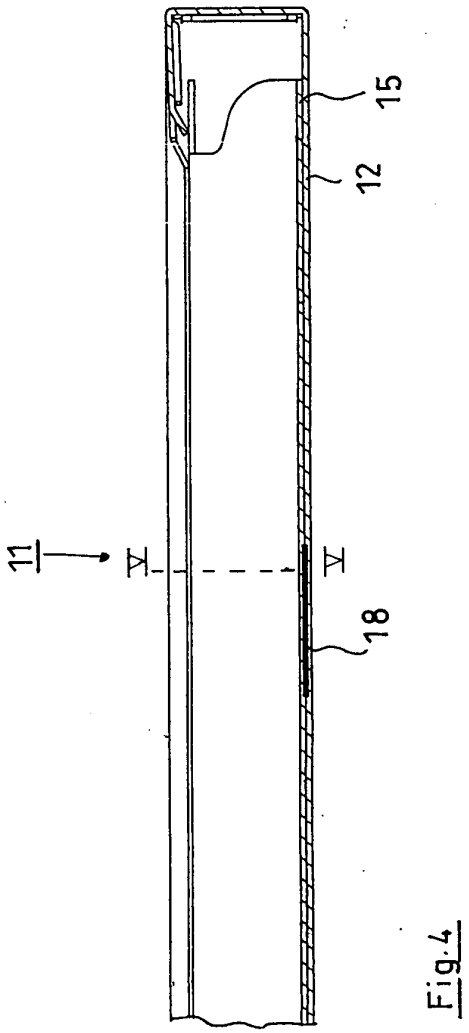


Fig.4

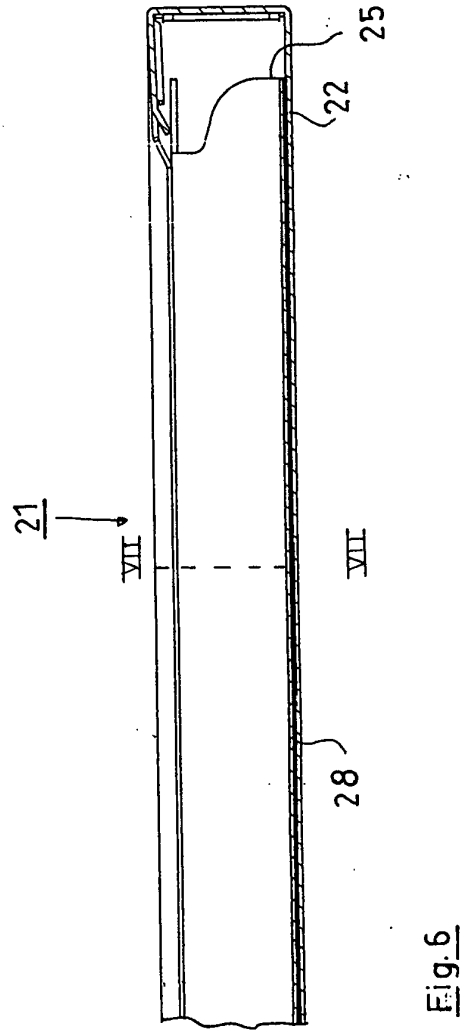


Fig.6

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 05 07 6790

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	BE 558 649 A (NOVOBRIC) 15 July 1957 (1957-07-15) * page 3, line 21 - page 4, paragraph 5; claims 1,4,5; figures *	1,9	B28B7/00 F26B25/18
A	FR 2 725 588 A (PPI SA PIECES FROFILES INDUSTRIELS) 19 April 1996 (1996-04-19) * page 3, line 14 - page 4, line 26; figures 1-7 *	1,9	
A	DE 297 05 369 U1 (ROBERT THOMAS METALL- UND ELEKTROWERKE, 57290 NEUNKIRCHEN, DE) 5 June 1997 (1997-06-05) * page 4, last paragraph - page 6, paragraph 1; claim 1; figures 1-5 *	1,9	
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TECHNICAL FIELDS SEARCHED (IPC)

B28B
F26B
F27D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 November 2005	Orij, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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16-11-2005

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