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(54) Device for constructing a pile planking in the ground

(57) A device for constructing a pile planking in the ground (3), which pile planking in particular is formed by concrete pile elements (4). Said device comprises a receiving member (8), consisting of a front wall (10), a platform (9) and two side walls (11) connected to this for receiving at least one pile element (14). A substantial vertical pressure beam (13) is movable mounted in said receiving member (8) and between said pressure beam (13) and said front wall (10) are provided pressing means, in the shape of jacks (12) or such like, serving for pressing away a pile element (14) from said front wall (10). Said device comprises a digging machine (2), mounted to a tractor (1) in a substantial vertical direction, a groove (4) being formed in the ground (3) by moving said digging machine (2) by means of said tractor (1), the front wall (10) of said receiving member (8) being fixedly connected to said digging machine (2).

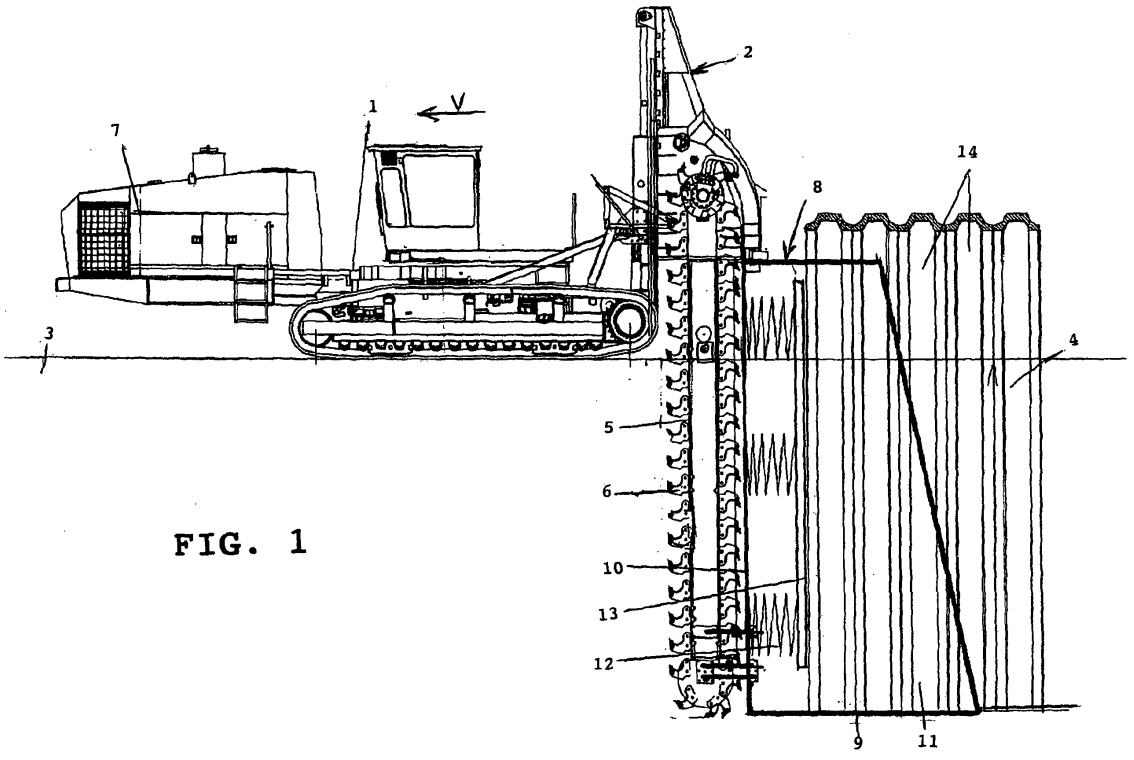

FIG. 1

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Description

[0001] The invention relates to a device for constructing a pile planking in the ground, said pile planking in particular being formed by concrete pile elements and said device comprising a receiving member, consisting of a front wall and two side walls connected to this for receiving at least one pile element, a substantial vertical pressure beam being movable mounted in said receiving member, between said pressure beam and said front wall pressing means, in the shape of jacks or such like, being mounted for pressing away a pile element from said front wall.

[0002] Such a device is known by BE 792637 A1. In case of this known device the receiving member suspends from a carriage being supported onto the ground by means of two beams distanced from each other on either side of said receiving member. Separate jacks being present for moving said receiving member in respect of said carriage.

[0003] Said vertical extending pressure beam, present is said receiving member, being bended such that first a pile element can be lowered onto said bended portion after which said jacks are operated for moving away said beam from said pile element such that this can move downward to its final position.

[0004] So such a device and operating it is substantial combrous and it is remarked that, before the device can be used, a groove has to be digged into the ground in which groove said receiving member will have to be lowered.

[0005] Further the two side beams of said carriage will have to be supported by the ground on either side of the groove, to obtain a stable positioning of said carriage. This might give difficulties in the case of a sloping ground and a less stable surface of the ground.

[0006] Further a disadvantage of said known device is that the ground has to be stable such that the side walls of the groove will not collapse before the receiving member can be brought between them.

[0007] Now the object of the invention is to remove these disadvantages and to that end it is provided for, that the device comprises a digging machine, mounted to a tractor in a substantial vertical direction, a groove being formed in the ground by moving said digging machine by means of said tractor, the front wall of said receiving member being fixedly connected to said digging machine, said pressure beam present in said receiving member being a straight beam.

[0008] In this way it is obtained that said receiving member takes care for direct supporting the side walls of the digged groove such that collapsing of said side walls is prevented.

[0009] Further said receiving member is moved together with said digging machine by means of said tractor and no separate means are necessary for moving said receiving member.

[0010] The pile elements are at once positioned in said receiving member over its whole length such that a straight pressure beam can be used for pressing a pile element against a previous positioned one.

[0011] In view of this said at least two jacks, divided over the height of the front wall of the receiving member and said pressure beam can have a stroke that is not much larger than the related dimension of the pile element.

[0012] From DE3600663 A1 a device is known comprising a vertical positioned digging machine for digging a groove. With said digging machine means are connected for guiding a pile element which has to be brought into the ground. No means are present for moving and pressing a pile element toward a previous positoned one and firmly against this. This means that during downwardly moving of a pile element this has to lie firmly against the previous one by which the operation will be counteracted caused by the friction between the various parts.

[0013] Further no use is made of a tractor for supporting said digging machine, such that it is not guaranteed that the digging machine will be hold in the substantial vertical position. In view of this a special tilting device is connected between said digging machine and the support means for this. This makes said known device more combrous.

[0014] The invention is further explained by means of an embodiment shown in the drawing, in which,

[0015] Fig. 1 shows a side view of a device according to the invention during a given step of constructing a pile planking in the ground;

[0016] Fig. 2 shows a side view corresponding to fig. 1 but in a smaller scale and at the moment that the device is set into operation; and

[0017] Fig. 3 up to 5 show further phases during operation of the device.

[0018] It is remarked that in the drawing, for the sake of clarity, the ground present near the different parts, is omitted, such that given parts can be indicated with drawn lines.

[0019] Figure 1 shows a tractor 1 being coupled to a digging machine 2, such that when the tractor is moved in the direction V in the ground 3 a groove 4 will be shaped.

[0020] The digging machine 2 is, in the known way, executed as an endless belt or chain 5, provided with blades 6. The width of the blades 6 will substantially correspond to the width of the groove 4 made by it. The ground being transported upwardly will be removed laterally near the upper end of the digging machine 2.

[0021] Obviously the parts, by which the tractor 1 is connected to the digging machine 2, are executed such that said digging machine can always be brought into its vertical position independent of the position of said tractor.

[0022] To prevent the slanting backwards of the tractor 1 caused by the weight of the digging machine 2, the motor compartment 7 of the tractor 1 extends forwardly, such that it serves as a counterweight. In the motor com-

partment 7, among other parts, the motor is mounted which can drive the tractor 1 as well as the digging machine 2 such as by means of hydraulic motors either in a like way.

[0023] A receiving member 8, consisting of the platform 9, the front wall 10 and the side walls 11, is connected to the digging machine 2. For the sake of clarity the receiving member 8 is indicated by somewhat thicker lines.

[0024] On the front wall 10 of the receiving member 8 three jacks 12 are mounted supporting a beam 13. In figure 1 the pressure beam 13 engages a pile member 14 which is pressed against a preceding element 14.

[0025] For the sake of clarity the jacks 12, the pressure beam 13 and parts of the pile elements 14, lying behind the side wall 11 of the receiving member 8, are indicated by drawn lines, although they are essentially not visible in the side view. The upper rims of the elements 14 are perspectively shown.

[0026] The figures 2 up to 5 show succeeding steps during the operation of the device according to the invention.

[0027] Figure 2 shows the moment that the digging machine 2, coupled to the tractor 1, and the receiving member 8 connected to it, are present above the ground 3. In the receiving member 8 a number of pile elements 14 are positioned by means of the crane 15.

[0028] When the device is put into operation the digging machine 2 will make a groove 4 into the ground 3, such that the digging machine 2, together with the receiving member 8 will gradually move into the ground and the position will be reached shown in figure 3.

[0029] Thereupon the jacks 12 are operated and the oressure beam 13 will press the pile elements 14, positioned in the receiving member 8, away from the digging machine 2, as shown in figure 4.

[0030] Thereupon the jacks 12, together with the pressure beam 13, are retracted and the situation is reached as indicated in figure 5. In the room 16, now obtained, a next element 14 can be positioned by means of the crane 15, such that again the situation is reached as shown in figure 3.

[0031] It is remarked that when in what is said above there is spoken of concrete pile elements these can be also elements of pre-stressed concrete.

[0032] Obviously only a single possible embodiment of a device according to the invention is shown in the drawing and is described above and that many modifications can be applied without departing from the inventive idea, as this is indicated in the accompanying claims.

Claims

1. A device for constructing a pile planking in the ground (3), said pile planking in particular being formed by concrete pile elements (4) and said device comprising a receiving member (8), consisting of a front wall (10) and two side walls (11) connected to this for receiving at least one pile element (14), a substantial vertical pressure beam (13) being movable mounted in said receiving member (8), between said pressure beam (13) and said front wall (10) pressing means, in the shape of jacks (12) or such like, are mounted for pressing away a pile element (14) from said front wall (10), **characterized in that** said device comprises a digging machine (2), mounted to a tractor (1) in a substantial vertical direction, a groove (4) being formed in the ground (3) by moving said digging machine (2) by means of said tractor (1), the front wall (10) of said receiving member (8) being fixedly connected to said digging machine (2), said pressure beam (13) present in said receiving member (8) being a straight beam.

2. Device according to claim 1, **characterized in that** said receiving member (8), connected to said digging machine (2), comprises a platform (9) on which the lower end of at least one pile element (14) can rest, the distance between the side walls (10) of said receiving member (8) substantially being equal to the related dimension of said pile element (14) and the distance beween said side walls (11) being increased towards the free edges of these.

3. Device according to claim 1 or 2, **characterized in that** the said at least two jacks (12), divided over the height of the front wall (10) of the receiving member (8), are having a stroke which is at least equal to the dimension of the pile element (14), measured in the direction corresponding to the stroke of said jacks.

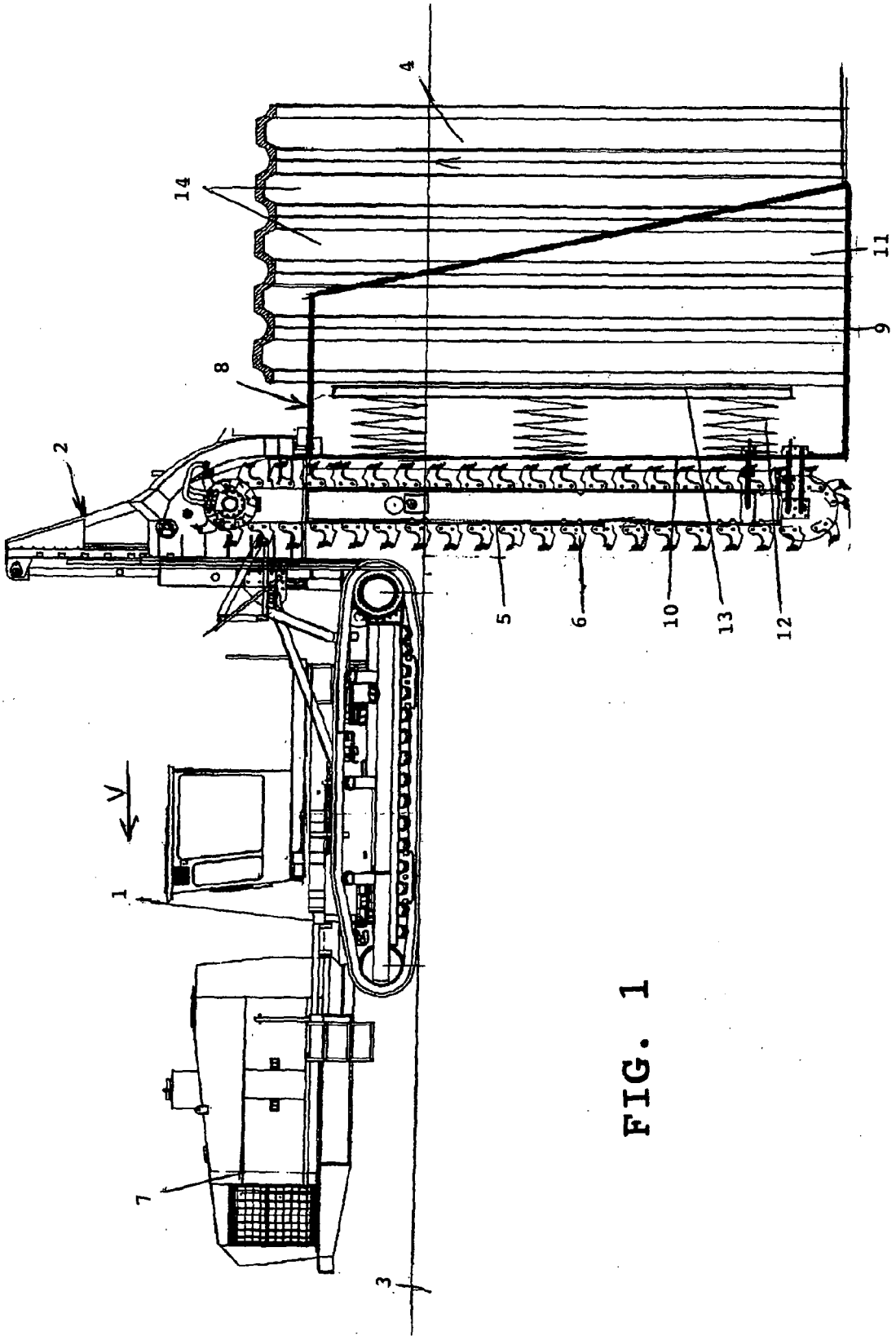


FIG. 1

FIG. 2

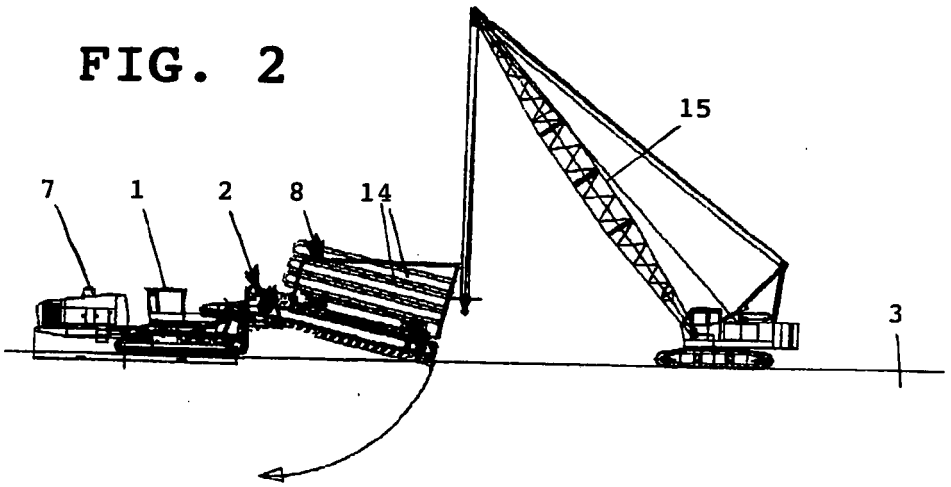


FIG. 3

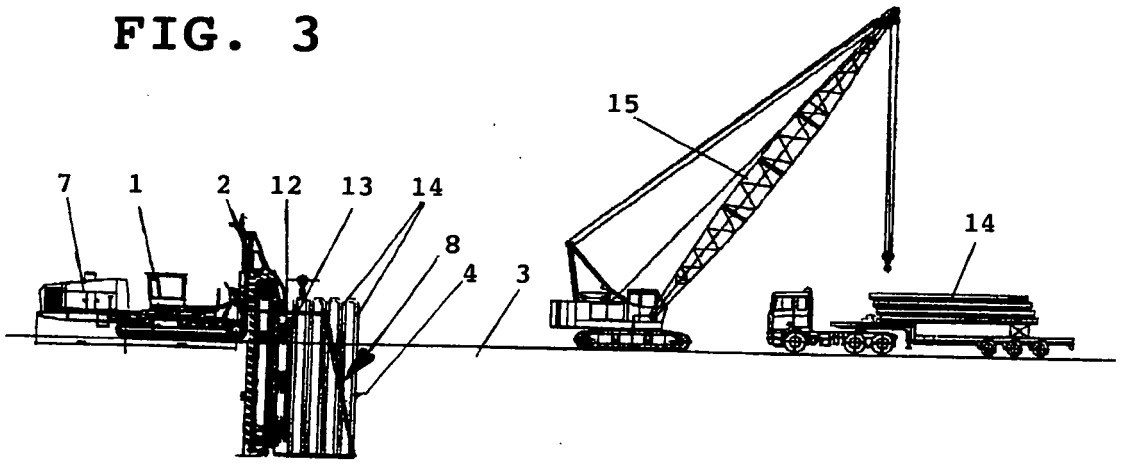


FIG. 4

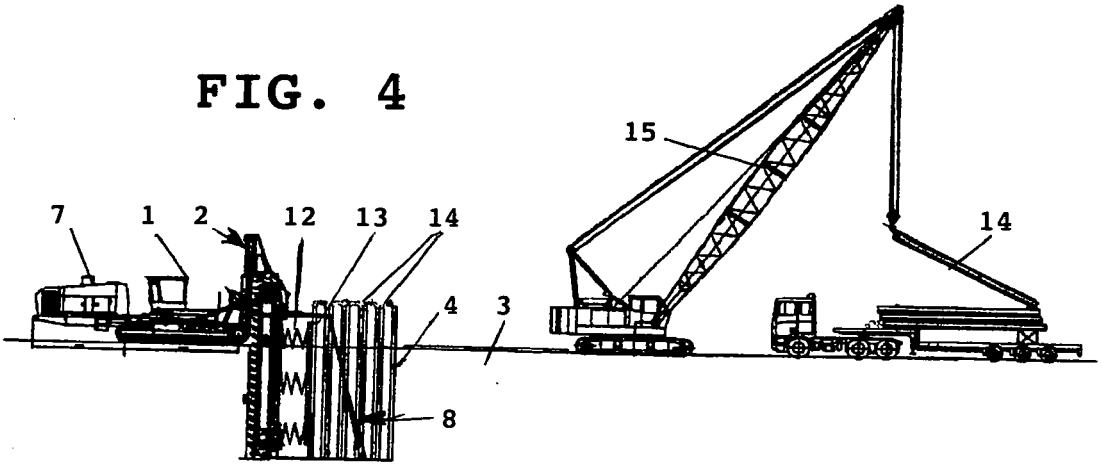
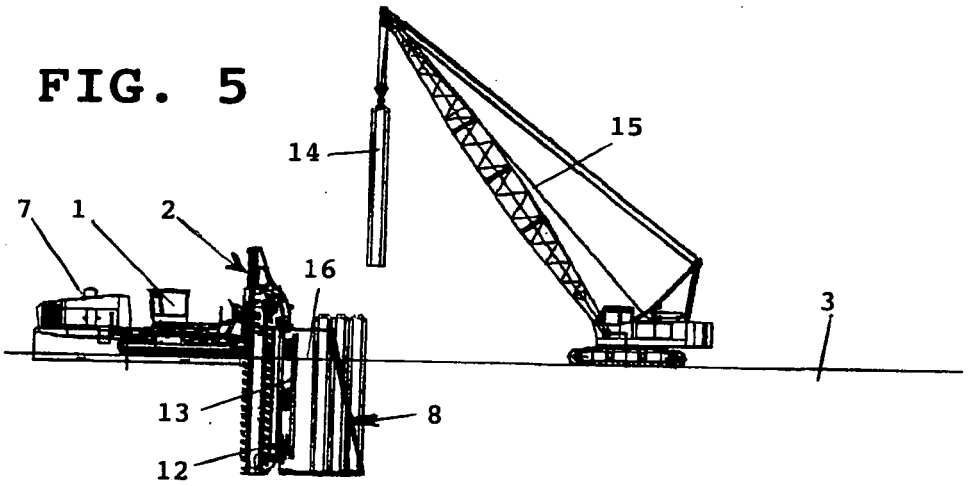


FIG. 5



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EUROPEAN SEARCH REPORT

Application Number
EP 10 07 5587

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	BE 792 637 A1 (SMET HUGO A C M) 30 March 1973 (1973-03-30) * pages 6-10; figures 1-3 * -----	1-3	INV. E02D13/02 E02D13/04 E02D17/13
A	DE 36 00 663 A1 (HACKMACK ALFRED) 19 June 1986 (1986-06-19) * figure 1 * -----	1-3	
A	NL 98 924 C (VAN HEES BERNARDUS) 15 August 1961 (1961-08-15) * figure 4 * -----	1-3	
A	NL 6 906 052 A (SOC D CONST ET D ENTREPRISES G) 12 January 1970 (1970-01-12) * figure 2 * -----	1-3	
A	US 5 409 326 A (KU CHUN-I [TW]) 25 April 1995 (1995-04-25) * figure 4 * -----	1-3	
A	NL 9 500 213 A (I D S B V I O [NL]) 2 September 1996 (1996-09-02) * figure 2 * -----	1-3	TECHNICAL FIELDS SEARCHED (IPC) E02D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	2 November 2010	Leroux, Corentine

CATEGORY OF CITED DOCUMENTS

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02-11-2010

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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