(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 2 239 077 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
13.10.2010 Bulletin 2010/41

(51) Int Cl.:
B23D 47/04 *(2006.01)* ***B27B 5/06*** *(2006.01)*

(21) Application number: **10425113.7**

(22) Date of filing: **09.04.2010**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK SM TR
Designated Extension States:
AL BA ME RS

(30) Priority: **10.04.2009 IT RM20090166**

(71) Applicant: **SCM Group S.p.A.**
47900 Rimini (RN) (IT)

(72) Inventor: **Gabrielli, Arcadio**
47900 Rimini(RN) (IT)

(74) Representative: **Santi, Filippo et al**
Barzano' & Zanardo Roma S.p.A.
Via Piemonte 26
00187 Roma (IT)

(54) **Machine for cutting panels.**

(57) The present invention relates to an improved machine for cutting panels, said machine being of the kind comprising a zone (B) for supplying panels (C) to be cut and a zone (A) for cutting panels according to pre-set and modifiable cutting configurations, said machine providing, in said supply zone, at least a longitudinal elongated member (3), substantially extending according to the direction of advancement of panels (C) to be cut, said machine being **characterized in that** said at least a longitudinal elongated member (3) is fixed substantially transversely with respect to the advancement direction of the panels to be cut, and in that said at least a elongated member is provided with a plurality of motion elements (4) for moving panels to be cut, said motion elements (4) being slidably and independently movable along said at least a longitudinal elongated member (3).

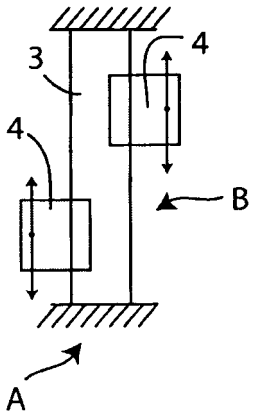

Fig. 1

EP 2 239 077 A1

Description

[0001] The present invention relates to an improved machine for cutting panels.

[0002] More specifically, the invention concerns a machine of the above kind, permitting obtaining a better flexibility in cutting panels regardless their type and arrangement.

[0003] As it is well known, in the field of machines for cutting panels, particularly sawing wood panels, many solutions have been suggested during the last decades, all of them substantially aiming to optimise performances of machines in order to obtain maximum use flexibility.

[0004] Among the known solutions, it is for example possible mentioning the one described in the Italian Patent n° 1.298.389, in the name of Giben International, in the US patent n° 6,546,834, in the name of the same Giben, claiming the priority of the above Italian Patent, and European Patent EP 1 510 276 in the name of Valter Naldi.

[0005] Particularly, the solution described in the above mentioned Italian Patent (also filed as European Patent EP 0 963 270) comprises a cutting machine for cutting panels and the relevant cutting method, wherein the innovative solution suggested provides grasping elements constrained on the movable device so as to be movable according to a horizontal direction, obviously by suitable control means, i.e. according t a direction perpendicular with respect to the movable device advancement direction.

[0006] Said patent also provides an independent method claim, describing a method for cutting panels, wherein it is provided, as one of the characterising features, presence of grasping means (pliers), constrained to the movable device, and having the possibility of making (all of them, possibly only one) movements according to the horizontal direction, perpendicular with respect to the movable device advancement direction.

[0007] US patent n° 6,546,834, of the same Giben, claiming the priority of the above mentioned Italian Patent, describes and claims a method for cutting panels.

[0008] Finally, Nardi's European Patent concerns a machine for cutting panels.

[0009] Examining the specification and claims of the patent, it is noted that the innovative feature that the European Patent Office deemed as patentable, is a complicated system of interferences among areas of the different grasping means of two different cutting systems.

[0010] None of these solutions has a cutting structure with one or more longitudinal elongated members, i.e. extending according to the panel advancement direction and provided with at least a movement element, which is movable along the elongated member, according to said panel advancement direction.

[0011] It is therefore specific object of the present invention an improved machine for cutting panels, said machine being of the kind comprising a zone for supplying panels to be cut and a zone for cutting panels according to pre-set and modifiable cutting configurations, said machine providing, in said supply zone, at least a longitudinal elongated member, substantially extending according to the direction of advancement of panels to be cut, said machine being **characterized in that** said at least a longitudinal elongated member is fixed substantially transversely with respect to the advancement direction of the panels to be cut, and in that said at least a elongated member is provided with a plurality of motion elements for moving panels to be cut, said motion elements being slidably and independently movable along said at least a longitudinal elongated member.

[0012] According to the invention, there are provided, in said supply zone, at least two longitudinal elongated members, substantially extending along the advancement direction of the panels to be cut, substantially fixed transversely with respect to the advancement direction of the panels to be cut, each one of said at least two elongated members being provided with at least a relevant motion element for moving said panels to be cut, slidably movable along the relevant longitudinal elongated member, said relevant motion elements of the panels being independently movable each other along said panel advancement direction.

[0013] Furthermore, according to the invention, said at least a motion element provides at least a grasping group, and/or at least a pushing group and/or at least a suction group, movable with respect to the relevant motion element, along said panel advancement direction.

[0014] Further, according to the invention, said at least a motion element provides a plurality of grasping group, and/or of pushing groups and/or of suction groups, independently movable with respect to the relevant motion element, along said panel advancement direction.

[0015] Still, according to the invention, said machine provides a plurality of longitudinal elongated members, fixed in a position substantially transversal with respect to the advancement direction of the panels to be cut.

[0016] Particularly, according to the invention, said at least two longitudinal elongated members are each one provided with a plurality of motion elements, particularly two or three motion elements.

[0017] Always, according to the invention, said motion elements provide at least a grasping group, and/or at least a pushing group and/or at least a suction group.

[0018] Furthermore, according to the invention, each one of said motion elements provides two, preferably three, grasping groups each one independently engageable with panels to be cut.

[0019] Still, according to the invention, each grasping group provides a plier that can be engaged or disengaged with said panels to be cut.

[0020] Particularly, according to the invention, said pliers are movable between two positions with respect to the relevant motion element, respectively a position of engagement with the panels to be cut, and a position of disengagement with the panels to be cut.

[0021] Preferably, according to the invention, in said

disengagement position, said pliers are raised with respect to the working plane.

[0022] Still, according to the invention, said motion elements movable along said longitudinal elongated members are interchangeable motion elements.

[0023] Always, according to the invention, said machine provides one or more control units, controlling motion of said at least one longitudinal elongated member and/or of said at least one motion element and/or of said at least one grasping group and/or of said at least one pushing group and/or of at least one suction group.

[0024] Present invention will be described for illustrative but not limitative purposes according to its preferred embodiments, with particular reference to the figures of the enclosed drawings, wherein:

figure 1 is a top schematic view of a first embodiment of the machine for cutting panels according to the invention;
figure 2 is a top schematic view of a second embodiment of the machine for cutting panels according to the invention;
figure 3 is a top schematic view of a third embodiment of the machine for cutting panels according to the invention;
figure 4 is a top schematic view of a fourth embodiment of the machine for cutting panels according to the invention;
figure 5 is a top schematic view of a fifth embodiment of the machine for cutting panels according to the invention;
figure 6 is a top schematic view of a sixth embodiment of the machine for cutting panels according to the invention;
figure 7 is a top schematic view of a seventh embodiment of the machine for cutting panels according to the invention;
figure 8 is a top schematic view of an eight embodiment of the machine for cutting panels according to the invention;
figure 9 is a lateral schematic view of a machine according to the invention;
figure 10 is a top view of an embodiment of a grasping group for a machine according to the invention;
figure 11 is a lateral view of the grasping group of figure 10;
figure 12 is a front view of the grasping group of figure 10; and
figure 13 is a top view of a second embodiment of a grasping group for a machine according to the invention.

[0025] In the various figures, the same elements will be indicated by the same references.

[0026] Observing the figures of the enclosed drawings, it is schematically shown a machine for cutting panels. Only inventive particulars of the machine are shown in the figures, the other parts being omitted for clarity reasons, not being part of the scope of the present invention.

[0027] Machine schematically shown in the figures provide on the front part a cutting zone, generically indicated with reference A, that will be not described in greater detail, since, as already said, not included within the scope of the present application, upward which it is realized a zone, generically indicated by reference B, for supplying and advancing panels to be cut.

[0028] Observing first figure 1 of the enclosed drawings, it is shown a first embodiment of the machine according to the invention, wherein a longitudinal elongated member £ is provided in said supply zone B, said member 3 substantially extending according to the advancement direction of the panels to be cut. Said elongated member 3 is fixed in its position transversal with respect to the advancement direction of panels to be cut.

[0029] In the machine as shown, elongated member 3 is provided with a plurality of elements 4 for moving panels to be cut. Said elements 4 are movable, sliding and independently each other, along the longitudinal elongated member 3.

[0030] In embodiment of figure 2, machine provides two longitudinal elongated members 3, substantially extending along the advancement direction of panels to be cut, and fixed in a position substantially transversal with respect to the advancement direction of the panels to be cut.

[0031] At least an element 4 for moving panels to be cut is provided on each elongated member 3, said element 4 being slidable along the same member 3.

[0032] Each motion element 4 is movable independently with respect to the others, along said advancement direction of the panels to be cut.

[0033] Observing now figure 3, it is observed an embodiment wherein said motion element 4 provides at least a grasping group 5. As an alternative, or in combination, it can provide at least a pushing group and/or at least a suction group, movable with respect to the relevant motion element 4, along the advancement direction of the panels.

[0034] In embodiment of figure 4, motion element 4 provides a plurality of grasping groups 5. As an alternative, or in combination, it can provide a plurality of pushing groups and/or of suction groups, movable independently each other with respect to the motion element 4, along the advancement direction of the panels.

[0035] Figure 5 is useful to indicate that machine according to the invention can provide a plurality of longitudinal elongated members 3, fixed in a position substantially transversal with respect to the advancement direction of the panels to be cut.

[0036] Observing the following figures 5 - 8, embodiments are shown wherein at least two longitudinal elongated members 3 are provided, each one, with a plurality of motion element 4 that can be two or three means 4. As already said, they can be comprised of at least a grasping group 5 and/or of at least a pushing group and/or at least a suction group.

[0037] As it can be observed, each grasping group 5 can engage independently with the panels to be cut.

[0038] In each embodiment, each motion means generically indicated by reference number 4, is movable along a slide (not shown) provided on elongated member 3 for advancing panels to be cut.

[0039] Each motion element 4 provides a grasping 5 or pushing group, that can comprise at least a pliers or pusher, and that can be replaceable or not.

[0040] In embodiments shown in the figures, said grasping 5 or pushing group provides three pliers grasping elements 6, which are independently movable for engaging or not with said panels to be cut (not shown).

[0041] In the embodiment of figure 13, motion element 5 shown has rotable pliers 6.

[0042] As it can observed particularly from figure 11, movement of single pliers is such to permit withdrawing pliers 6 from the position grasping panels, by a movement (in this case by a piston, but that can be obtained by different technical solutions) that, besides displacing backward pliers 6, lift the same with respect to the working plane.

[0043] Present invention has been described for illustrative, but not limitative, purposes, according to its preferred embodiments, nut it is to be understood that variations and/or modifications can be introduced by those skilled in the art without departing from the relevant scope, as defined in the enclosed claims.

Claims

1. Improved machine for cutting panels, said machine being of the kind comprising a zone (B) for supplying panels (C) to be cut and a zone (A) for cutting panels according to pre-set and modifiable cutting configurations, said machine providing, in said supply zone, at least a longitudinal elongated member (3), substantially extending according to the direction of advancement of panels (C) to be cut, said machine being **characterized in that** said at least a longitudinal elongated member (3) is fixed substantially transversely with respect to the advancement direction of the panels to be cut, and **in that** said at least a elongated member is provided with a plurality of motion elements (4) for moving panels to be cut, said motion elements (4) being slidably and independently movable along said at least a longitudinal elongated member (3).

2. Machine according to claim 1, **characterized in that** it provides, in said supply zone, at least two longitudinal elongated members (3), substantially extending along the advancement direction of the panels (C) to be cut, substantially fixed transversely with respect to the advancement direction of the panels to be cut, each one of said at least two elongated members (3) being provided with at least a relevant motion element (4) for moving said panels to be cut, slidably movable along the relevant longitudinal elongated member (3), said relevant motion elements (4) of the panels being independently movable each other along said panel (C) advancement direction.

3. Machine according to claim 2, **characterized in that** said at least a motion element (4) provides at least a grasping group (5), and/or at least a pushing group and/or at least a suction group, movable with respect to the relevant motion element (4), along said panel (C) advancement direction.

4. Machine according to claim 3, **characterized in that** said at least a motion element (4) provides a plurality of grasping group (5), and/or of pushing groups and/or of suction groups, independently movable with respect to the relevant motion element (4), along said panel (C) advancement direction.

5. Machine according to claim 1, **characterized in that** it provides a plurality of longitudinal elongated members (3), fixed in a position substantially transversal with respect to the advancement direction of the panels (C) to be cut.

6. Machine according to one of the preceding claims, **characterized in that** said at least two longitudinal elongated members (3) are each one provided with a plurality of motion elements (4), particularly two or three motion elements (4).

7. Machine according to one of the preceding claims, **characterized in that** said motion elements (4) provide at least a grasping group (5), and/or at least a pushing group and/or at least a suction group.

8. Machine according to claim 7, **characterized in that** each one of said motion elements (4) provides two, preferably three, grasping groups (5) each one independently engageable with panels (C) to be cut.

9. Machine according to claim 7 or 8, **characterized in that** each grasping group (5) provides a pliers (7) that can be engaged or disengaged with said panels (C) to be cut.

10. Machine according to claim 9, **characterized in that** said pliers are movable between two positions with respect to the relevant motion element (4), respectively a position of engagement with the panels to be cut, and a position of disengagement with the panels to be cut.

11. Machine according to claim 10, **characterized in that,** in said disengagement position, said pliers are raised with respect to the working plane.

12. Machine according to one of the previous claims, **characterized in that** said motion elements (4) movable along said longitudinal elongated members (3) are interchangeable motion elements (4).

13. Machine according to one of the previous claims, **characterized in that** it provides one or more control units, controlling motion of said at least one longitudinal elongated member (3) and/or of said at least one motion element (4) and/or of said at least one grasping group (5) and/or of said at least one pushing group and/or of at least one suction group.

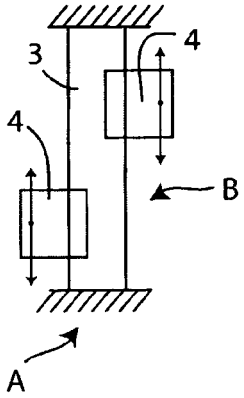

Fig. 1

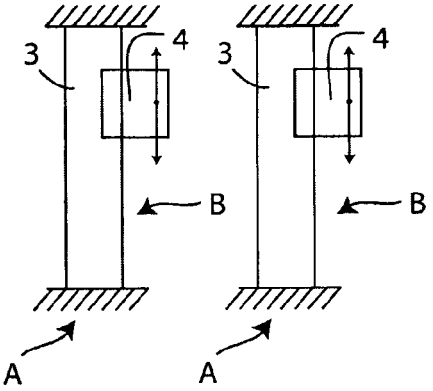

Fig. 2

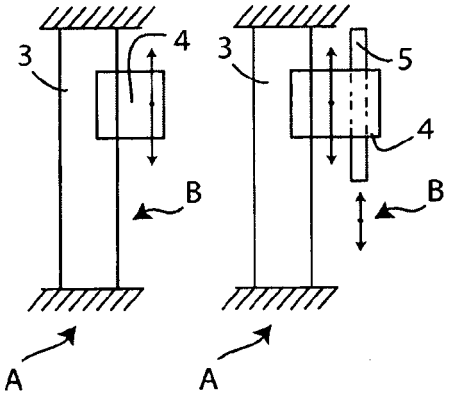

Fig. 3

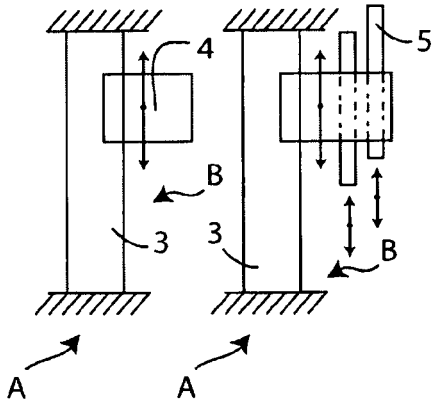

Fig. 4

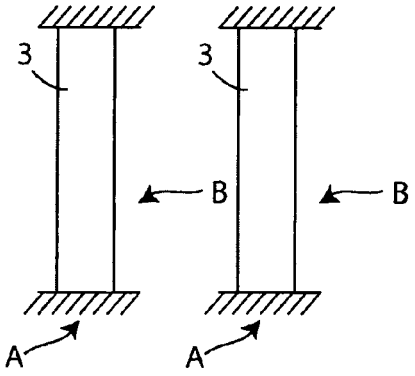

Fig. 5

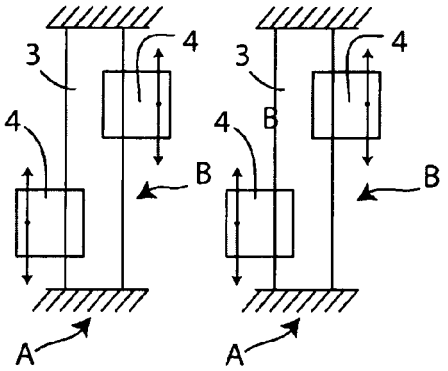

Fig. 6

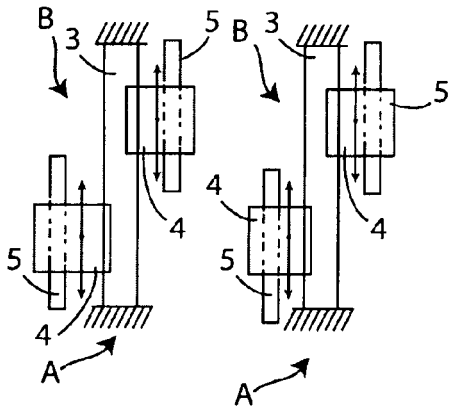

Fig. 7

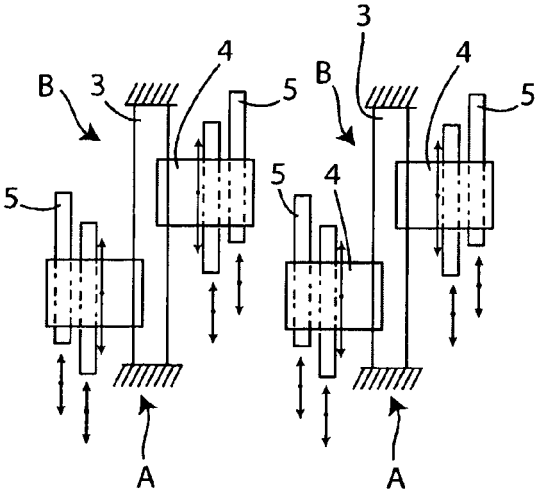

Fig. 8

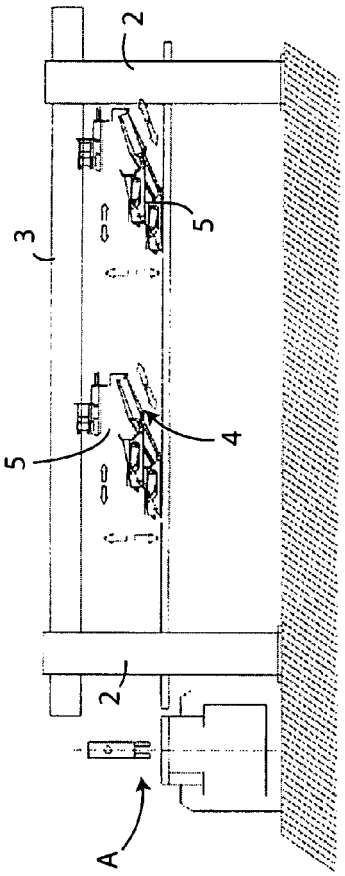

Fig. 9

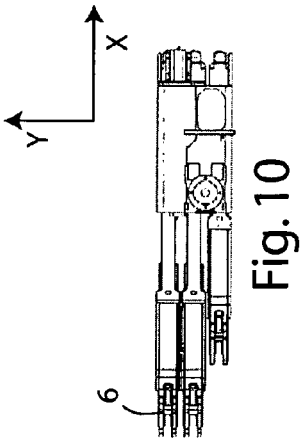

Fig. 10

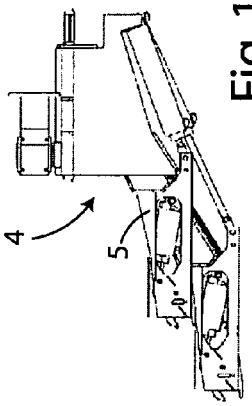

Fig. 11

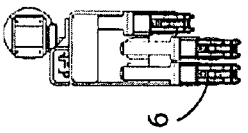

Fig. 12

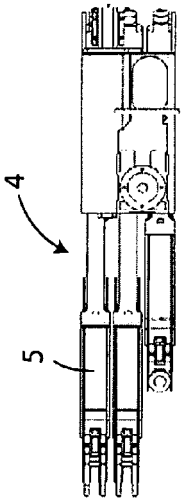

Fig. 13

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 10 42 5113

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	DE 10 2006 027013 B3 (KLESSMANN IMA GMBH HOLZBEARBEI [DE]) 3 January 2008 (2008-01-03) * paragraph [0013] * * paragraph [0017] * * paragraph [0020] - paragraph [0021] *	1-13	INV. B23D47/04 B27B5/06
Y,D	US 6 546 834 B1 (BENUZZI PIERGIORGIO [IT]) 15 April 2003 (2003-04-15) * column 4, line 18 - line 39 * * column 5, line 15 - line 30 * * column 9, line 55 - line 65 *	1-13	
Y	WO 02/051574 A1 (SCHULER PRESSEN) 4 July 2002 (2002-07-04) * page 6, line 14 - line 19 *	12	
A,D	EP 1 510 276 A1 (NALDI VALTER [IT]) 2 March 2005 (2005-03-02) * figures *	1-13	
X,P	EP 2 111 939 A2 (NALDI VALTER [IT]) 28 October 2009 (2009-10-28) * paragraph [0005] - paragraph [0006] * * paragraph [0019] * * paragraph [0033] * * paragraph [0035] - paragraph [0037] * * paragraph [0040] * * paragraph [0043] - paragraph [0045] * * paragraph [0049] *	1-13	TECHNICAL FIELDS SEARCHED (IPC) B23D B27B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	10 August 2010	Vaglienti, Giovanni

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

1

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 42 5113

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-08-2010

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102006027013 B3	03-01-2008	NONE	
US 6546834 B1	15-04-2003	AT 218408 T	15-06-2002
		BR 9807462 A	25-04-2000
		CA 2279993 A1	08-07-1999
		CN 1248191 A	22-03-2000
		CZ 9902940 A3	15-03-2000
		DE 69805763 D1	11-07-2002
		DE 69805763 T2	21-11-2002
		DK 963270 T3	09-09-2002
		EP 0963270 A1	15-12-1999
		ES 2178287 T3	16-12-2002
		HK 1025280 A1	09-05-2003
		WO 9933600 A1	08-07-1999
		IT BO970740 A1	24-06-1999
		JP 2001513040 T	28-08-2001
		PL 335349 A1	25-04-2000
		PT 963270 E	31-10-2002
WO 02051574 A1	04-07-2002	DE 10064155 A1	11-07-2002
EP 1510276 A1	02-03-2005	AT 357987 T	15-04-2007
		DE 602004005539 T2	13-12-2007
		ES 2283913 T3	01-11-2007
		US 2005046099 A1	03-03-2005
EP 2111939 A2	28-10-2009	NONE	

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- IT 1298389 **[0004]**
- US 6546834 B **[0004] [0007]**
- EP 1510276 A **[0004]**
- EP 0963270 A **[0005]**