

(19)



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 115 540 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
15.02.2006 Bulletin 2006/07

(51) Int Cl.:
B27B 1/00 ^(2006.01) **B27M 3/00** ^(2006.01)

(21) Application number: **99930038.7**

(86) International application number:
PCT/SE1999/000914

(22) Date of filing: **28.05.1999**

(87) International publication number:
WO 1999/062679 (09.12.1999 Gazette 1999/49)

(54) **A METHOD FOR DIVIDING A LOG AND A WOOD UNIT**

VERFAHREN ZUM AUFTEILEN EINES BAUMSTAMMES UND HOLZEINHEIT

PROCEDE PERMETTANT DE DIVISER UN RONDIN ET UNITE DE BOIS

(84) Designated Contracting States:
AT DE FI FR GB

(30) Priority: **29.05.1998 SE 9801911**

(43) Date of publication of application:
18.07.2001 Bulletin 2001/29

(73) Proprietor: **Holmen AB**
114 84 Stockholm (SE)

(72) Inventor: **Hammarström, Lars**
826 00 Söderhamn (SE)

(74) Representative: **Winter, Brandl, Fűrnis, Hübner**
Röss, Kaiser,
Polte Partnerschaft Patent- und
Rechtsanwaltskanzlei
Alois-Steinecker-Strasse 22
85354 Freising (DE)

(56) References cited:
EP-A2- 0 167 013 EP-A2- 0 518 246
WO-A1-91/04379 WO-A1-93/08000
SE-C- 115 667

EP 1 115 540 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

Description

FIELD OF THE INVENTION AND PRIOR ART

[0001] The present invention relates to a method for dividing a log.

[0002] Such methods aim at obtaining a wood piece from a log which as such has good wood properties or may be assembled to wood units having such properties, and which by that stipulates a higher price. "Log" also comprises the case of a log already round-reduced before carrying out the method.

[0003] Methods of this type are already known through many different patents, such as for example the Swedish patent 19 315, EP 0 286 701, EP 0 518 246 and EP 0 518 246.

[0004] However, these methods already known are associated with two substantial disadvantages. Firstly, a complicated and by that costly machine equipment is required for enabling division of the log into wood pieces, and secondly, not all wood pieces obtained in this way have that good wood properties that they may be used as high quality wood with an optimum strength and shape stability. Wood pieces having such properties aimed at may be called "industrial wood" and are primarily characterized by having at least several of the surfaces thereof provided with substantially standing annual rings.

SUMMARY OF THE INVENTION

[0005] The object of the present invention is to provide a method of the type defined in the introduction, in which the disadvantages just mentioned of such methods already known are reduced to a large extent.

[0006] This object according to the invention is obtained by a method according to claim 1.

[0007] This method may be carried out by means of a conventional simple saw mill equipment, and this means that a main part of the volume of the log may result in so called "cross-sawn industrial wood" by the fact that said third cuts are applied substantially perpendicularly to the first and second cuts. Another important advantage of this method is that "cross-sawn industrial wood" is a defined article, which facilitates quality certification of the products produced by this wood article.

[0008] According to a preferred embodiment of the invention two cuts are applied on each side of the centre axis of the log for forming a centre wood piece resulting from second cuts and restricted by these cuts. Such a wood piece will have substantially standing annual rings of at least the two surfaces resulting from said second cuts, i.e. is to be considered as industrial wood. Additionally, also the first wood pieces receive substantially standing annual rings for the surfaces resulting from the third cut, which is to be compared with a conventional dividing of a log, in which only the very centre deal receives surfaces having substantially standing annual rings.

[0009] According to another preferred embodiment of the invention also a third second cut is applied along a plane including the centre axis of the log. This is advantageous in the case of larger log dimensions, since an adaptation of the wood output to the log dimension takes place in this way, and it is at large log dimensions well be possible to apply even more than three second cuts for obtaining a higher number of centre wood pieces.

[0010] According to another preferred embodiment of the invention the centre wood piece or pieces resulting from the application of the second cuts are cut by applying cuts being substantially perpendicular to the second cuts on each side of the centre axis for removing surface-near material and obtaining at least one centre wood piece having a substantially rectangular cross-section. The centre wood piece or the centre wood pieces gets in this way a pleasant appearance.

[0011] According to another preferred embodiment of the invention two cuts are applied on the centre wood piece substantially perpendicularly to said second cuts on each side of the centre axis and comparatively close thereto for removing the marrow streak of the log while obtaining part centre wood pieces located on each side thereof. Such part centre wood pieces form high quality cross-sawn industrial wood having substantially standing annual rings for at least three surfaces.

[0012] According to another preferred embodiment of the invention in step b) two third cuts are applied on each side of the centre axis of the log for forming a second wood piece having a substantially rectangular cross-section with the sides of the cross-section rectangle formed by the two third cuts, a part of one first cut surface and a part of one second cut. Such a second wood piece is also to be considered as a high quality cross-sawn industrial wood having substantially standing annual rings for at least two sides thereof. Such second wood pieces will of course be obtained on each side of said second cuts, i.e. two for each log. However, at large log dimensions it is well possible to apply more than two third cuts, so that correspondingly more high quality second wood pieces are then obtained.

[0013] According to another preferred embodiment of the invention said sub-surface and a surface of each said first wood piece emanating from a second cut are used as guide surfaces for material removing machining of the respective first wood piece. It will by this be very easy to machine the first wood piece further for refining it, so that for example this machining is carried out by removing material in the longitudinal direction of the log along a surface extending in the transversal direction substantially perpendicularly to said guide surfaces on the opposite side of the first wood piece with respect to the surface generated by the respective third cut, which constitutes a further preferred embodiment of the invention. Wood pieces having two surfaces suited for glueing to other corresponding such wood pieces for forming a wood unit according to the appended independent claim having a very high shape stability and substantially standing an-

nual rings of all sides may by this be obtained.

[0014] According to another preferred embodiment of the invention said first cuts are applied substantially in parallel with the extension of the fibres of the log in the longitudinal direction of the log, and according to another preferred embodiment of the invention said first cuts are applied substantially in parallel with the centre axis of the log. The corresponding possibilities are also offered for the other cuts. Thus, sawing or cutting in parallel with the fibres as well as in parallel with the heart may be utilised for the method according to the invention.

[0015] Further advantages as well as advantageous features of the invention will appear from the following description and the other dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] With reference to the appended drawings, below follows a description of methods according to preferred embodiments of the invention.

[0017] In the drawings:

Fig. 1 is a cross-section view of a part of a log, in which cuts intended to be applied on the log according to a division method according to a preferred embodiment of the invention are shown,

Fig. 2 is a cross-section view of a wood unit produced from wood pieces obtained by the division method illustrated in Fig. 1 and machined further, and

Fig. 3 is a view corresponding to Fig. 1 illustrating a division method according to another preferred embodiment of the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

[0018] How a method for dividing a log according to a preferred embodiment of the invention is composed will now be described with reference to Fig. 1. First of all, in a first step surface-near material is removed according to two first cuts 2, 3 applied in the longitudinal direction of the log on each side of the centre axis of the log along two planes extending in the transversal direction of the log substantially in parallel with each other for forming first cut surfaces 4. After that two second cuts 5, 6 are applied on the log in the longitudinal direction thereof between the planes defined by said cut surfaces 4 and extending in the transversal direction of the log substantially in parallel with these planes, so that a centre wood piece 7 is obtained.

[0019] Two further cuts 8 are then applied on this centre wood piece 7 at the ends thereof for removing surface-near material and obtaining at least one centre wood piece having a substantially rectangular cross-section. However, it is also conceivable to apply the cuts 8 before

the second cuts 5, 6 are applied. It is later on possible to apply cuts 9, 10 substantially perpendicularly to said second cuts 5, 6 on the centre wood piece on each side of the centre axis 11 and comparatively close thereto for removing the marrow streak 12 of the log while obtaining part centre wood pieces 13, 14 in the form of high quality "cross-sawn industrial wood" on each side thereof.

[0020] Two third cuts 17, 18 are then applied on each of the two outer pieces 15, 16 obtained by applying the second cuts 5, 6 on each side of the centre axis of the log, i.e. when looking at the log not divided yet, substantially perpendicularly to the first cut surface 4 while intersecting them so that sub-surfaces 19, 20 result on each side of the respective third cut, so that four first wood pieces 21, each having one said sub-surface 19 are formed in this way. Two second wood pieces 22 in the form of cross-sawn industrial wood having very good properties are in this way obtained, which have a substantially rectangular cross-section with the side of the cross-section rectangle formed by the two third cuts 17, 18, a sub-surface part 20 of the first cut surface as well as a part of a second cut 5 and 6, respectively.

[0021] The first wood pieces 21 may then be placed in for example a planning machine while utilising the sub-surface 19 and the part of the second cut 5 or 6 extending substantially in parallel therewith as guide surfaces when planning, in which material is removed in the longitudinal direction of the log along a surface extending in the transversal direction substantially perpendicularly to said guide surfaces on opposite side of the first wood piece with respect to the surface generated by the respective third cut 17, 18. It is then possible to carry out the machining so that groove or tongue is formed in the surface resulting from the machining. Four wood pieces 21 so machined may then be glued to each other by using said sub-surfaces 19 and the surface resulting from said machining as glue surfaces and while turning the right-angled corners resulting from the respective second and third cut as outer corners for a wood unit 23 having a longitudinal inner hollow space 24 according to Fig. 2. This wood unit has substantially standing annual rings at all surfaces, and the area inscribed by the outer outline thereof is considerably larger than the total cross-section area of the four wood pieces thereof, so that a considerable "wood gain" is made. It is also well possible to machine the circle arc surface of the respective wood piece 21 shown in Fig. 1 and 2 in an optional desired way before the gluing of the pieces together or for using the wood pieces so obtained in another way than by gluing them together with three other such ones, for example by flat planning this surface.

[0022] It is illustrated in Fig. 3 what a method according to a second preferred embodiment of the invention may look like, in which this method only differs from that shown in Fig. 1 by the application of three second cuts, i.e. a second cut 25 extending substantially through the centre axis of the log is also applied, and the marrow streak is in this case not removed, which however is well possible.

This method is suited for larger log dimensions. It would also be possible to apply further second cuts when the dimensions are very large, and it would also be possible to apply more than two third cuts in such cases.

[0023] The invention is of course not in any way restricted to the preferred embodiments described above, but many possibilities to modifications thereof would be apparent to a man with ordinary skill in the art without departing from the basic idea of the invention as defined in the claims.

[0024] Many such possible modifications have been suggested above, but the list thereof may of course be made considerably longer.

[0025] It is pointed out that the material removal and the application of the different cuts preferably but not necessarily takes place by sawing.

[0026] It is underlined that it is within the scope of the invention to apply the different cuts at different points of time and even in different places. Said second cuts may for example be applied in a sawmill and then the first and third cuts be applied on said outer pieces after transport thereof to another sawmill.

Claims

1. A method for dividing a log (1), whereby two first cuts (2, 3) are applied in the longitudinal direction of the log on each side of the centre axis (11) of the log for removing surface-near material along two planes extending substantially in parallel with each other in the transversal direction of the log for forming first cut surfaces (4), and that in step a) at least two second cuts (5, 6) are applied on the log in the longitudinal direction thereof between said two planes and extending substantially in parallel with said planes in the transversal direction of the log and that in step b) on each side of the centre axis of the log at least two third cuts (17, 18) are applied substantially perpendicularly to said planes while intersecting the first cut surfaces so that sub-surfaces (19, 20, 19) thereof result on each side of each third cut, so that four first wood pieces (21) are formed, in which step a) is carried out before step b) or step b) is carried out before step a) **characterized in that** each respective wood piece (21) is divided in only one of the two curved corners, so that one sub-surface (19) is formed.
2. A method according to claim 1, **characterized in that** a) one second cut (5, 6) is applied on each side of the centre axis of the log for forming a centre wood piece (7) resulting from second cut surfaces and restricted by these cuts.
3. A method according to claim 1, **characterized in that** also a third second cut (25) is applied along a plane including the centre axis (11) of the log.
4. A method according to claim 2 or 3, **characterized in that** the centre wood piece or pieces resulting from the application of the second cuts (5, 6, 25) are cut by applying cuts (8) being substantially perpendicular to the second cuts on each side of the centre axis for removing surface-near material and obtaining at least one centre wood piece having a substantially rectangular cross-section.
5. A method according to any of claims 2-4, **characterized in that** two cuts (9, 10) are applied on the centre wood piece substantially perpendicularly to said second cuts (5, 6) on each side of the centre axis (11) and comparatively close thereto for removing the marrow streak (12) of the log while obtaining part centre wood pieces (13, 14) located on each side thereof.
6. A method according to any of claims 1-5, **characterized in that** said sub-surface (19) and a surface of each said first wood piece (21) emanating from a second cut (5, 6) are used as guide surfaces for material removing machining of the respective first wood piece.
7. A method according to claim 6, **characterized in that** said machining is carried out by removing material in the longitudinal direction of the log along a surface extending in the transversal direction substantially perpendicularly to said guide surfaces on the opposite side of the first wood piece with respect to the surface generated by the respective third cut (17, 18).
8. A method according to claim 6 or 7, **characterized in that** the machining is constituted by planing.
9. A method according to any of claims 1-8, **characterized in that** said first cuts (2, 3) are applied substantially in parallel with the extension of the fibres of the log in the longitudinal direction of the log.
10. A method according to any of claims 1-4, **characterized in that** said first cuts (2, 3) are applied substantially in parallel with the centre axis of the log.
11. A method according to claim 1, **characterized in that** said second cuts are applied substantially in parallel with the extension of the fibres of the log in the longitudinal direction of the log.
12. A method according to claim 1, **characterized in that** said second cuts (5, 6) are applied substantially in parallel with the centre axis of the log.
13. A wood unit (23) obtained by assembling four first wood pieces (21) obtained by carrying out the method according to claim 7 with each of the four corners

of the wood unit (23) formed by a right-angled corner of each respective first wood piece (21) emanating from a second cut (5, 6) and a third cut (17, 18), said first wood pieces being glued to adjacent ones along said sub-surfaces and the surfaces resulting from said machining, so that the wood unit has a longitudinal inner hollow space (24).

Patentansprüche

1. Ein Verfahren zum Zerteilen eines Baumstammes (1), bei dem die beiden ersten Schnitte (2, 3) in der Längsrichtung des Baumstammes auf jeder Seite der Mittelachse (11) des Baumstammes zur Entfernung von oberflächennahem Material entlang zweier Ebenen, die sich in der Querrichtung des Baumstammes im Wesentlichen parallel zueinander erstrecken, angewendet werden zur Ausbildung von ersten Schnittflächen (4), und wobei im Schritt a) mindestens zwei zweite Schnitte (5, 6) auf den Baumstamm in dessen Längsrichtung angewendet werden, welche zwischen den beiden Ebenen liegen und sich in der Querrichtung des Baumstammes im Wesentlichen parallel zu den Ebenen erstrecken, und wobei im Schritt b) auf jeder Seite der Mittelachse des Baumstammes im Wesentlichen Senkrecht zu den Ebenen unter Schneiden der ersten Schnittflächen mindestens zwei dritte Schnitte (17, 18) angewendet werden, so dass sich auf jeder Seite eines jeden dritten Schnittes daraus Unterflächen (19, 20, 19) ergeben, so dass vier erste Holzstücke (21) gebildet werden, wobei Schritt a) vor Schritt b) ausgeführt wird oder Schritt b) vor Schritt a) ausgeführt wird, **dadurch gekennzeichnet, dass** jedes Holzstück (21) in lediglich einer der beiden gebogenen Ecken geteilt wird, so dass eine Unterflächen (19) gebildet wird.
2. Ein Verfahren nach Anspruch 1, **dadurch gekennzeichnet, dass** a) ein zweiter Schnitt (5, 6) auf jeder Seite der Mittelachse des Baumstammes angewendet wird zum Ausbilden eines zentralen Holzstücks (7), das sich aus den zweiten Schnittflächen ergibt und durch diese Schnitte begrenzt ist.
3. Ein Verfahren nach Anspruch 1, **dadurch gekennzeichnet, dass** auch ein dritter Schnitt (25) entlang einer Ebene, welche die Mittelachse (11) des Baumstammes einschließt, angewendet wird.
4. Ein Verfahren nach Anspruch 2 oder 3, **dadurch gekennzeichnet, dass** das zentrale Holzstück oder die zentralen Holzstücke, die sich aus der Anwendung der zweiten Schnitte (5, 6, 25) ergeben, durch Anwenden von Schnitten (8), die auf jeder Seite der Mittelachse im Wesentlichen senkrecht zu den zweiten Schnitten verlaufen, geschnitten werden, um

oberflächennahes Material zu entfernen und mindestens ein zentrales Holzstück mit im Wesentlichen rechteckigem Querschnitt zu erhalten.

5. Ein Verfahren nach einem der Ansprüche 2-4, **dadurch gekennzeichnet, dass** auf das zentrale Holzstück zwei Schnitte (9, 10) im Wesentlichen senkrecht zu den zweiten Schnitten (5, 6) auf jeder Seite der Mittelachse (11) und vergleichsweise nahe dazu angewendet werden, um den Kernstreifen (12) des Baumstammes zu entfernen, während auf jeder Seite davon angeordnete, getrennte zentrale Holzstücke (13, 14) erhalten werden.
6. Ein Verfahren nach einem der Ansprüche 1-5, **dadurch gekennzeichnet, dass** die Unterfläche (19) und eine Fläche von jedem ersten Holzstück (21), die von einem zweiten Schnitt (5, 6) ausgeht, als Führungsflächen für eine Bearbeitung zur Materialentfernung des entsprechenden ersten Holzstückes verwendet werden.
7. Ein Verfahren nach Anspruch 6, **dadurch gekennzeichnet, dass** die Bearbeitung durchgeführt wird durch Entfernen von Material in der Längsrichtung des Baumstammes entlang einer Fläche, die sich in Querrichtung, im Wesentlichen senkrecht zu den Führungsflächen auf der gegenüberliegenden Seite des ersten Holzstückes, bezogen auf die durch den entsprechenden dritten Schnitt (17, 18) erzeugte Fläche, erstreckt.
8. Ein Verfahren nach Anspruch 6 oder 7, **dadurch gekennzeichnet, dass** die Bearbeitung durch Hobeln geschieht.
9. Ein Verfahren nach einem der Ansprüche 1-8, **dadurch gekennzeichnet, dass** die ersten Schnitte (2, 3) im Wesentlichen parallel angewendet werden, wobei sich die Fasern des Baumstammes in der Längsrichtung des Baumstammes erstrecken.
10. Ein Verfahren nach einem der Ansprüche 1-4, **dadurch gekennzeichnet, dass** die ersten Schnitte (2, 3) im Wesentlichen parallel zu der Mittelachse des Baumstammes angewendet werden.
11. Ein Verfahren nach Anspruch 1, **dadurch gekennzeichnet, dass** die zweiten Schnitte im Wesentlichen parallel zu der Erstreckung der Fasern des Baumstammes in der Längsrichtung des Baumstammes angewendet werden.
12. Ein Verfahren nach Anspruch 1, **dadurch gekennzeichnet, dass** die zweiten Schnitte (5, 6) im Wesentlichen parallel zu der Mittelachse des Baumstammes angewendet werden.

13. Eine Holzeinheit (23), die erhalten wird durch zusammensetzen von vier ersten Holzstücken (21), die erhalten werden durch Ausführen des Verfahrens gemäß Anspruch 7, wobei jede der vier Ecken der Holzeinheit (23) gebildet wird durch eine rechteckige Ecke von jedem der jeweiligen ersten Holzstücke (21), die sich aus einem zweiten Schnitt (5, 6) und einem dritten Schnitt (17, 18) ergibt, wobei die ersten Holzstücke entlang der Unterflächen und der Flächen, die sich aus der Bearbeitung ergeben, mit den angrenzenden verleimt sind, so dass die Holzeinheit einen innenliegenden Längshohlraum (24) aufweist.

Revendications

1. Méthode pour détailler une grume de bois (1) dans laquelle les deux premières coupes (2, 3) sont effectuées dans la direction longitudinale de la grume, de part et d'autre de l'axe de centre (11) de la grume, pour retirer la matière proche de la surface sur deux plans s'étendant sensiblement parallèlement l'un par rapport à l'autre dans la direction transversale de la grume, afin de former les premières surfaces de coupe (4), et que, dans l'étape a), au moins deux deuxièmes coupes (5, 6) sont effectuées sur la grume, dans la direction longitudinale de celle-ci, entre lesdits deux plans et s'étendant sensiblement parallèlement auxdits plans dans la direction transversale de la grume et que, dans l'étape b), de part et d'autre de l'axe de centre de la grume, au moins deux troisièmes coupes (17, 18) sont effectuées sensiblement perpendiculairement auxdits plans en coupant les premières surfaces de coupe de sorte à obtenir ainsi des sous-surfaces (19, 20, 19) de chaque côté de chaque troisième coupe, de sorte à former quatre premières pièces de bois (21), dans lequel l'étape a) étant effectuée avant l'étape b), ou l'étape b) étant effectuée avant l'étape a), **caractérisée en ce que** uniquement l'un des deux coins avec l'arrondi de chaque pièce de bois respective (21) est coupé, de sorte à former une sous-surface (19).
2. Méthode selon la revendication 1, **caractérisée en ce que** a) une deuxième coupe (5, 6) est effectuée de part et d'autre de l'axe de centre de la grume pour former une pièce de bois centrale (7) résultant des deuxièmes surfaces de coupe et délimitée par ces coupes.
3. Méthode selon la revendication 1, **caractérisée en ce qu'**une troisième deuxième coupe (25) est effectuée sur un plan comprenant l'axe de centre (11) de la grume.
4. Méthode selon la revendication 2 ou 3, **caractérisée en ce que** la ou les pièces de bois centrales obtenues par la réalisation des deuxièmes coupes (5, 6,

25) sont coupées en effectuant des coupes (8) sensiblement perpendiculaires aux deuxièmes coupes de part et d'autre de l'axe de centre afin de retirer la matière proche de la surface et obtenir au moins une pièce de bois centrale ayant une section transversale sensiblement rectangulaire.

5. Méthode selon l'une des revendications 2 à 4, **caractérisée en ce que** deux coupes (9, 10) sont effectuées sur la pièce de bois centrale, sensiblement perpendiculairement auxdites deuxièmes coupes (5, 6) de part et d'autre de l'axe de centre (11) et comparativement près de celui-ci, pour retirer la bande étroite (12) de la grume en obtenant des pièces de bois centrales (13, 14) disposées de part et d'autre de celle-ci.
6. Méthode selon l'une des revendications 1 à 5, **caractérisée en ce que** ladite sous-surface (19) et une surface de chacune desdites premières pièces de bois (21) créées par une deuxième coupe (5, 6) sont utilisées comme surfaces de guidage pour l'usinage par enlèvement de matière de la première pièce de bois respective.
7. Méthode selon la revendication 6, **caractérisée en ce que** ledit usinage est effectué en retirant de la matière dans la direction longitudinale de la grume, sur une surface s'étendant, dans la direction transversale, sensiblement perpendiculairement auxdites surfaces de guidage, sur le côté opposé de la première pièce de bois par rapport à la surface générée par la troisième coupe (17, 18) respective.
8. Méthode selon la revendication 6 ou 7, **caractérisée en ce que** l'usinage est constitué par un rabotage.
9. Méthode selon l'une des revendications 1 à 8, **caractérisée en ce que** lesdites premières coupes (2, 3) sont effectuées sensiblement parallèlement au sens des fibres de la grume, dans la direction longitudinale de la grume.
10. Méthode selon l'une des revendications 1 à 4, **caractérisée en ce que** lesdites premières coupes (2, 3) sont effectuées sensiblement parallèlement à l'axe de centre de la grume.
11. Méthode selon la revendication 1, **caractérisée en ce que** lesdites deuxièmes coupes sont effectuées sensiblement parallèlement au sens des fibres de la grume, dans la direction longitudinale de la grume.
12. Méthode selon la revendication 1, **caractérisée en ce que** lesdites deuxièmes coupes (5, 6) sont effectuées sensiblement parallèlement à l'axe de centre de la grume.

- 13.** Bloc de bois (23) obtenu par l'assemblage de quatre premières pièces de bois (21) obtenues en procédant selon la méthode selon la revendication 7, chacun des quatre coins du bloc de bois (23) étant formé par un coin en angle droit de chaque première pièce de bois (21) respective obtenu par une deuxième coupe (5, 6) et une troisième coupe (17, 18), lesdites premières pièces de bois étant collées à des pièces adjacentes sur lesdites sous-surfaces et sur les surfaces résultant dudit usinage, de sorte que la pièce de bois possède un espace intérieur longitudinal creux (24).

15

20

25

30

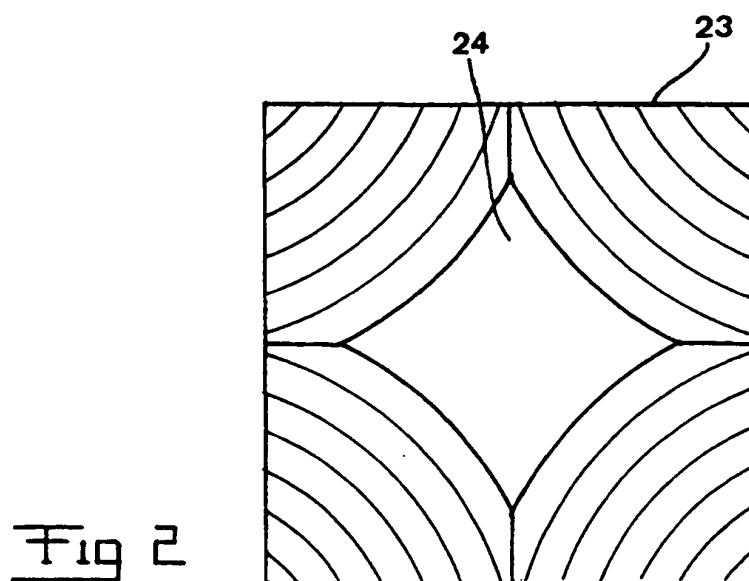
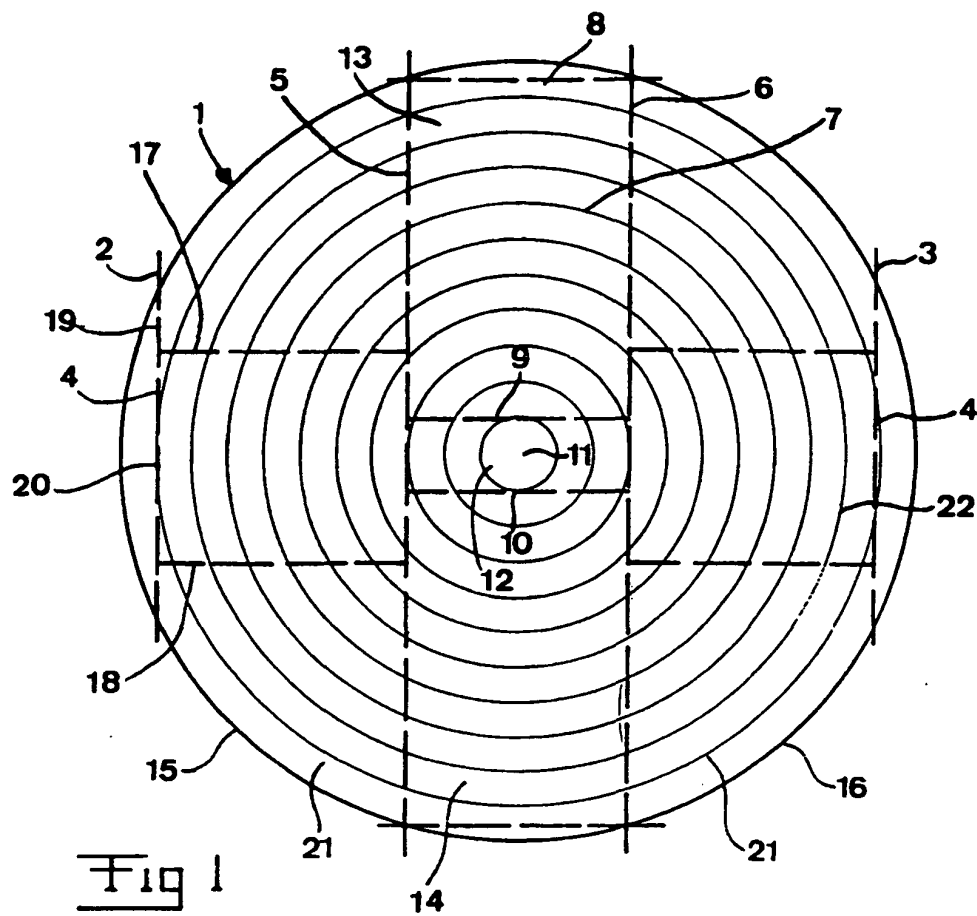
35

40

45

50

55



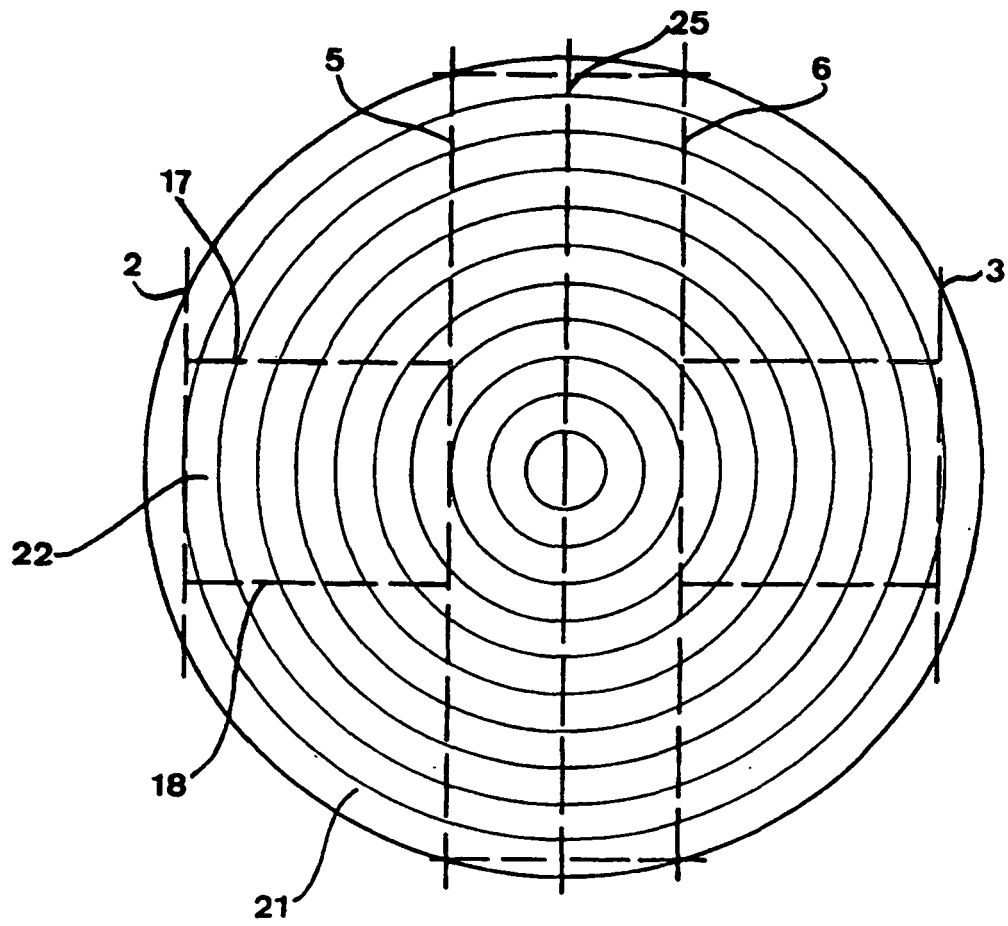


Fig 3