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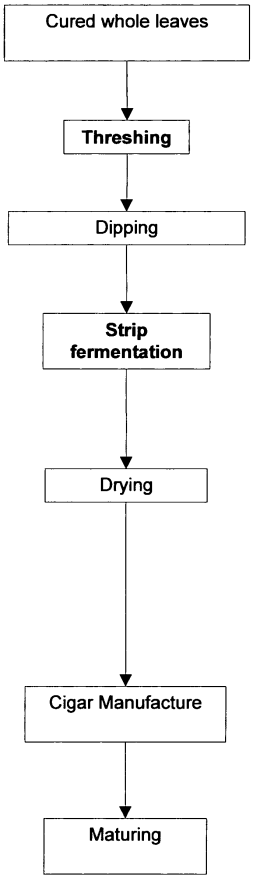
(54) Tobacco leaf processing

(57) A process of producing a smoking article, preferably a cigar is described. After harvest, whole tobacco leaves are cured. Post-curing the leaves are threshed such that the leaf components are separated and the lamina is turned into strips. Tobacco strips are dipped and fermented for a period of time before being dried. The dried tobacco provides a filler for the cigar, which filler is wrapped in tobacco leaf to produce the smoking article , which is matured for a period.

Figure 1b



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Description

[0001] The present invention relates to tobacco leaf processing, in particular, though not limited to, the processing of tobacco leaf for smoking articles, especially cigars and cigarettes made from tobacco that has been subjected to a partial fermentation process. Cigars of this kind are, for example, sold under the registered trademark TOSCANO.

[0002] Smoking articles of this kind are filled with fermented threshed tobacco leaves and wrapped with non-fermented tobacco leaf. The tobacco used in such articles is very often a dark fire-cured Kentucky tobacco.

[0003] After harvest, tobacco generally undergoes a curing process. The tobacco may be air-cured, flue-cured, or fire-cured; Kentucky tobacco is usually fire-cured.

[0004] Subsequent to curing, the production process can be divided into two distinct stages as illustrated in figure 1a. The two stages comprise fermentation, which is completed by manufacturing the cigars, and maturing.

[0005] In the prior art process (see figure 1a) whole tobacco leaf, which includes midrib, side veins and lamina, is dipped in water before being placed in bulks capable of containing up to 500kg of moist tobacco. These conditions mark the start of the fermentation process, which lasts around three weeks, during which time the tobacco is periodically turned, usually at 3 to 4 day intervals, such as to avoid excessive heat accumulation and to improve homogeneity.

[0006] The fermentation process is a strong process characterised by very intense biological and chemical events leading to modification of the tobacco bulk physical and chemical conditions. Changes that occur during fermentation are, pH values change from acidic (5 to 5.5) to a basic value of 8 - 8.5, temperature increases from "room" temperature up to about 60 - 65°C, nitrate is converted to nitrite and levels of the main tobacco specific nitrosamines (TSNAs) increase. Examples of the main TSNAs are 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK), N'-nitrosonornicotine (NNN), N'-nitrosoanatabine (NAT), and N'-nitrosoanabasine (NAB).

[0007] At the end of the fermentation process the leaves are partially dried and then they are mechanically threshed, wherein the midrib, side veins and lamina are separated. The midrib and veins are discarded and the lamina is cut into strips to form the filler for the cigar. The filler together with a wrapper of non-fermented tobacco leaves are combined to form the cigar that undergoes the maturing process.

[0008] The maturing stage generally takes up to 1 year, during which time only slight modifications take place; maturing does not account for any appreciable TSNA increase. At the end of the maturing step, the cigars are ready for marketing.

[0009] TSNA levels increase appreciably during the fermentation stage of the whole production process. Therefore, it is an aim of the present invention to provide an improved fermentation process, thereby reducing the levels of TSNA in the processed tobacco.

[0010] Accordingly, the present invention provides a process of producing tobacco for use in making a smoking article, which process comprises in the following order, the steps of:

(a) threshing cured tobacco leaves;
(b) dipping a selected part of the cured leaves of step (a);
(c) fermenting the result of step (b); and
(d) drying the result of step (c).

[0011] Preferably, the smoking article is a cigar or a cigarette.

[0012] Preferably, the smoking article is a cigar or a cigarette made from tobacco that has been subjected to a partial fermentation process.

[0013] Preferably, the dried tobacco obtained from step (d) is utilised to manufacture a cigar, which cigar then undergoes a further step of maturing. The dried tobacco produced from step (d) of the process provides the filler of the cigar and whole tobacco leaf provides the wrapper, both of which are combined in the manufacture of the cigar. Preferably, the wrapper is formed of non-fermented whole tobacco leaf.

[0014] Preferably, the cigars are matured for a period of up to one year. The maturation period affects the flavour of the cigar when smoked. Some cigars of this kind (for example those sold under the trademark TOSCANO GARIBALDI 5 are matured for about four months, whereas those under the trademark ANTICO TOSCANO have a maturation period of about 12 months.

[0015] Preferably, the tobacco leaf undergoing step (a) of the process has been fire-cured.

[0016] Preferably, Kentucky tobacco provides the tobacco leaves.

[0017] Tobacco leaf, as harvested, comprises midrib, side veins and lamina. During threshing, the lamina, midrib and side veins are separated, of which the midrib and side veins are discarded and strips of lamina are produced. The strips are dipped in water and placed in bulks to undergo fermentation according to step (c).

[0018] Preferably, during fermentation the tobacco is turned daily. More preferably, the tobacco is turned once daily.

[0019] Advantageously, the process as defined above reduces the level of TSNAs in the smoking article, preferably a cigar.

[0020] Embodiments of the present invention will be described by way of example only with reference to the accompanying drawings in which:

Figures 1a shows the process steps of known tobacco production; and

Figure 1b shows the process steps of tobacco production in accordance with an embodiment of the

present invention.

[0021] Referring to figure 1b, the process of producing cigars from fire-cured Kentucky tobacco, is illustrated.

[0022] After harvest, Kentucky tobacco undergoes a strong fire curing process, which involves burning special wood to generate smoke that slowly penetrates the cells of the tobacco leaves. During fire curing, the tobacco leaves change in colour from green through yellow to brown.

[0023] Cured Kentucky leaves are used as the starting material for the process.

[0024] The cigars described in this example are characterised by a filler provided by fermented threshed leaves and a wrapper of non fermented tobacco leaves, and are made exclusively of Kentucky tobacco leaf.

[0025] In the process according to an example of the present invention, after fire curing the tobacco, whole tobacco leaf is mechanically threshed such that the lamina is separated from the midrib and side veins. Strips of lamina are produced suitable for filling the cigar. The strips of lamina are dipped in water before being placed in bulks of moist tobacco to undergo the fermentation process, hereinafter referred to as strip fermentation. Strip fermentation takes about two weeks and requires daily turning of the tobacco bulk to avoid excessive heat accumulation and to improve homogeneity.

[0026] At the end of the fermentation process the lamina is dried and utilised as the filler for the cigar. A wrapper of whole tobacco leaves wraps the filler to produce the cigar.

[0027] The cigar is machine produced, wherein a machine assembles the wrapper, which is pre-cut tobacco leaf and the filler to form a cigar in a single step. Starch glue is used to secure the cigar.

[0028] The filler, together with the wrapper, form the cigars that undergo the maturing process. The duration of maturing is dependent on the type/brand of cigar produced; for example the cigars of this kind sold under the trademark TOSCANO GARIBALDI 5 take 4 months to mature.

[0029] The matured cigar(s) may then be packaged for sale.

[0030] Sensory test evaluation showed no significant differences between cigars produced from the prior art process (figure 1a) and those formed from the process according to the present invention (figure 1b).

[0031] After fermentation, the levels of TSNA present in the tobacco may be identified by techniques known to the skilled person, for example gas chromatography. Comparatively, the process according to the present invention (figure 1b) produces lower levels of TSNA accumulation during fermentation than the prior art process (figure 1a). Considerably lower levels of TSNAs were identifiable in cigars produced by the process according to the present invention (figure 1b) than those produced by the prior art process (figure 1a). At the end of the fermentation process, a range of 70-150 mg/Kg of TSNA was recorded in tobacco from the prior art process (figure 1a), whereas in the production of tobacco according to the process of the present invention (figure 1b) a range of 20-50 mg/kg was recorded.

[0032] In summary, a process of producing a cigar is described. Post-curing, whole tobacco leaves are threshed such that the leaf components are separated and the lamina is turned into strips. Tobacco strips are dipped and fermented for a period of time before being dried. The dried tobacco provides a filler for the cigar, which filler is wrapped in tobacco leaf to produce the cigar, which is matured for a period.

[0033] All publications mentioned in the above specification are herein incorporated by reference. Various modifications and variations of the described methods of the invention will be apparent to those skilled in the art. Although the invention has been described in connection with specific preferred embodiments, various modifications of the described modes for carrying out the invention which are obvious to those skilled in cigar manufacture or related fields are intended to be within the scope of the following claims.

Claims

1. A process of producing tobacco for use in making a smoking article, which process comprises the following consecutive steps:

   (a) threshing cured tobacco leaves;
   (b) dipping a selected part of the cured leaves of step (a);
   (c) fermenting the result of step (b); and
   (d) drying the result of step (c).

2. A process according to claim 1, comprising the further consecutive step of (e) manufacturing a smoking article.

3. A process according to claim 2, comprising the further consecutive step of (f) maturing the smoking article.

4. A process according to claim 3, wherein the smoking article is matured for a period of about three months to thirteen months, preferably being matured for a period of about four months to twelve months.

5. A process according to any preceding claim wherein step (a) further comprises separating tobacco leaf parts and forming strips of lamina.

6. A process according to any preceding claim wherein the selected part in step (b) comprises lamina strips.

7. A process according to any one of the preceding claims, wherein during step (c) the tobacco is turned

daily.

8. A process according to any one of the preceding claims wherein during step (c) the tobacco is turned once daily.

9. A process according to any one of the preceding claims wherein Kentucky tobacco provides the tobacco leaves.

10. A process according to any preceding claim comprising the further consecutive step of (g) packaging the smoking article.

11. A process according to any preceding claim, wherein the smoking article is a cigar or a cigarette.

12. A process according to any preceding claim, wherein the smoking article is a cigar.

13. Matured tobacco made by the process of any of the preceding claims.

14. A cigar made by the process of any of claims 1 to 12.

15. A cigar according to claim 14, which cigar is packaged, preferably packaged for sale.

16. A process as substantially as described herein and with reference to Figure 1b.

17. Matured tobacco as substantially as described herein and with reference to Figure 1b.

18. A cigar as substantially as described herein and with reference to Figure 1b.

Figure 1a

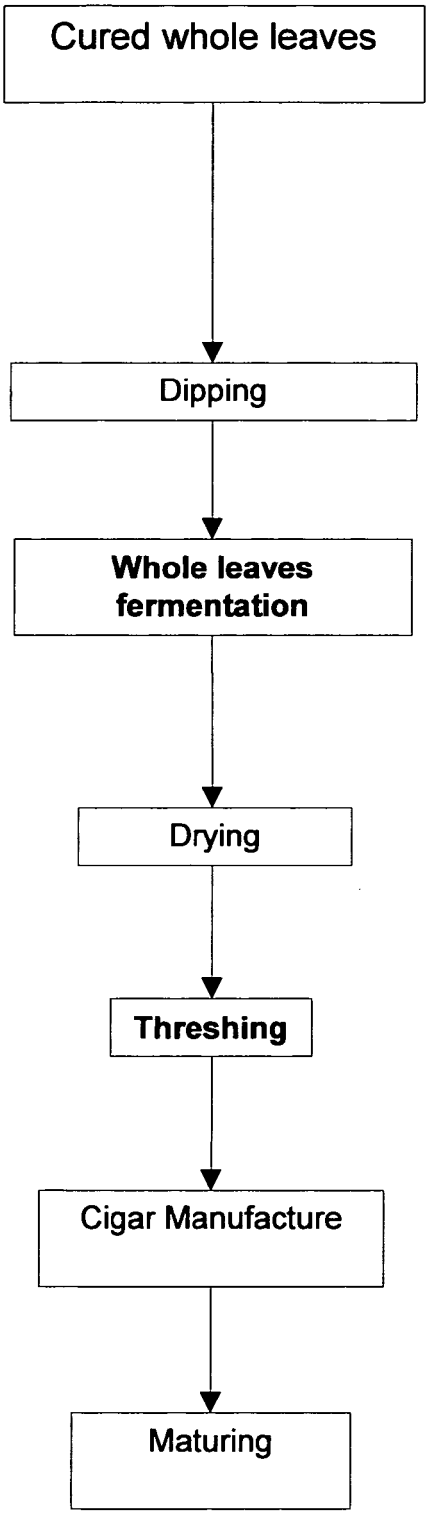
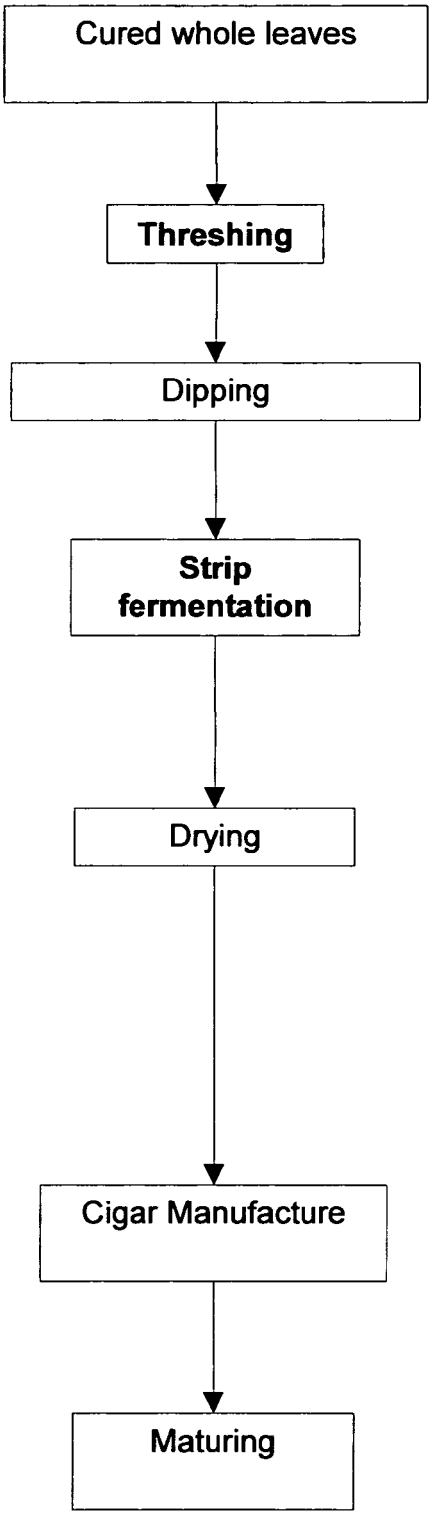


Figure 1b



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EUROPEAN SEARCH REPORT

Application Number
EP 05 42 5600

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	US 3 067 068 A (JOSEPH FINBERG) 4 December 1962 (1962-12-04) * column 6, line 9 - line 72 *	1,5,6,9, 10,13, 16,17	INV. A24B3/00
Y		11,12, 14,15,18	
Y	WO 96/14763 A (BROWN D G [MW]; STEPHANOU A M [ZW]) 23 May 1996 (1996-05-23) * claims 1,4,7 *	11,12, 14,15,18	
A	DE 38 22 785 A1 (HAUNI WERKE KOERBER & CO KG [DE]) 19 January 1989 (1989-01-19) * claim 1 *	1-18	

TECHNICAL FIELDS SEARCHED (IPC)

A24B
A24D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	17 November 2006	Pille, Stefaan

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
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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 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 42 5600

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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17-11-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3067068 A	04-12-1962	NONE	
WO 9614763 A	23-05-1996	NONE	
DE 3822785 A1	19-01-1989	NONE	

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