

(19)



(11)

**EP 2 706 143 B1**

(12)

**EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:  
**28.09.2016 Bulletin 2016/39**

(51) Int Cl.:  
**D21H 23/56** <sup>(2006.01)</sup>      **D21H 19/00** <sup>(2006.01)</sup>  
**B05D 1/02** <sup>(2006.01)</sup>      **A24D 1/00** <sup>(2006.01)</sup>  
**A24D 1/02** <sup>(2006.01)</sup>

(21) Application number: **12749773.3**

(86) International application number:  
**PCT/CN2012/074417**

(22) Date of filing: **20.04.2012**

(87) International publication number:  
**WO 2012/113356 (30.08.2012 Gazette 2012/35)**

(54) **MANUFACTURING DEVICE AND PREPARATION METHOD FOR CIGARETTE PAPER HAVING FLAME-RETARDING STRIPES**

HERSTELLUNGSVORRICHTUNG UND HERSTELLUNGSVERFAHREN FÜR ZIGARETTENPAPIER MIT FLAMMHEMMENDEN STREIFEN

DISPOSITIF DE FABRICATION ET PROCÉDÉ DE PRÉPARATION DE PAPIER À CIGARETTES COMPORTANT DES BANDES NE PROPAGEANT PAS LA FLAMME

(84) Designated Contracting States:  
**AL 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 RS SE SI SK SM TR**

• **LI, Jinsong**  
**Mudanjiang, Heilongjiang 157013 (CN)**

(30) Priority: **02.12.2011 CN 201110393663**

(74) Representative: **Hofstetter, Schurack & Partner**  
**Patent- und Rechtsanwaltskanzlei**  
**PartG mbB**  
**Balanstrasse 57**  
**81541 München (DE)**

(43) Date of publication of application:  
**12.03.2014 Bulletin 2014/11**

(73) Proprietor: **Mudanjiang Hengfeng Paper Co., Ltd**  
**Mudanjiang City, Heilongjiang 157013 (CN)**

(56) References cited:  
**EP-A1- 1 321 048**      **WO-A1-03/005840**  
**CN-A- 1 305 414**      **CN-A- 1 680 044**  
**CN-A- 1 993 521**      **CN-A- 101 173 488**  
**CN-A- 101 680 187**      **CN-A- 102 234 957**  
**JP-A- 2004 143 612**      **US-A- 5 789 022**  
**US-A- 5 811 157**      **US-A- 6 010 739**  
**US-A1- 2003 165 631**      **US-A1- 2004 062 877**  
**US-A1- 2009 301 506**      **US-B1- 6 203 858**  
**US-B1- 6 309 463**      **US-B1- 6 416 628**

(72) Inventors:  
• **WANG, Qicheng**  
**Heilongjiang 157013 (CN)**  
• **CHEN, Yuxiang**  
**Heilongjiang 157013 (CN)**  
• **LIANG, Bing**  
**Heilongjiang 157013 (CN)**

**EP 2 706 143 B1**

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

**Description****BACKGROUND OF THE INVENTION****Field of the Invention**

[0001] The present invention generally relates to an apparatus and a method for manufacturing paper sheet, and in particular, to an apparatus and a method for manufacturing cigarette paper with fire retardant strip.

**Description of the Related Arts**

[0002] A cigarette butt may cause a fire destroying thousands of hectares of forest, and there are a lot of fire disasters caused by smoking. The temperature at the center area of the cigarette butt is up to 700°C-800°C, the temperature at the combustion cone surface is also up to 300°C-500°C, and these temperatures are much higher than ignition point of general solid combustibles, e.g., paper and cloth. Cigarette made from cigarette paper with fire retardant strip can improve security of the cigarette (i.e. low ignition).

[0003] In a conventional method for manufacturing cigarette paper with fire retardant strip, several spaced bar-shaped fire retardant strips are printed on the raw sheet of the cigarette paper. Once the cigarette burns to such fire retardant region, ignition naturally goes out as the fire retardant absorbs heat and less oxygen enters into the cigarette. When the cigarette burns to the area of the fire retardant strip, if the cigarette is smoked, the oxygen will enter into the cigarette due to the smoking, and the cigarette would continue to burn.

[0004] No sizing is applied since the raw sheet of cigarette paper for manufacturing cigarette paper with fire retardant strip belongs to these on which non-printing is made. When a coating layer of fire retardant strip is printed on the raw sheet of cigarette paper by a relief printing, the bar-shaped coating layer region tends to have transverse contraction while no corresponding transverse contraction occurs on these non-printing regions, thereby resulting in corrugation of the paper sheet.

**SUMMARY OF THE INVENTION**

[0005] An object of the present invention is to provide an apparatus and a method for manufacturing a cigarette paper with a fire retardant strip, which may effectively reduce or even avoid occurrence of corrugations on the printed fire retardant strip, without changing these requirements on production of technical standards of raw sheet of the cigarette paper.

[0006] In order to achieve the above-mentioned object, the present invention provides a manufacturing apparatus for manufacturing a cigarette paper with fire retardant strips. The apparatus comprises a first and a second coating roller arranged in contact with and parallel to each other and having an opposite axially rotational direction

with each other; wherein a contact position between the first and second coating rollers is provided through which the cigarette paper passes; and, wherein a feeding tube with a plurality of feeding nozzles is provided outside the first and/or the second coating roller. Feeding tubes are provided outside both said first and second coating rollers which are arranged in a horizontal or an inclined manner such that a feed liquid storage tankcoating liquid tank is formed at the contact position between said first and second coating rollers.

[0007] Preferably, the feeding tube and, a coating metering bar arranged in contact with and parallel to the second coating roller, are provided outside the second coating roller.

[0008] More preferably, the first and second coating rollers have rims at both axial ends thereof, the rims being parallel to each other and at which a barrier sheet is provided.

[0009] Another object of the present invention is to provide a method for manufacturing a cigarette paper with a fire retardant strip by using a manufacturing apparatus according to any one of the embodiments as described above, wherein the method comprises, applying a coating layer of diffusion-resistant and osmosis-resistant material, 0.5-2.5% by weight of a raw sheet of a cigarette paper, on a front and/or a back surface of the raw sheet of the cigarette paper.

[0010] Preferably, the method comprises applying the coating layer of diffusion-resistant and osmosis-resistant material on either the front or the back surface of the raw sheet of the cigarette paper.

[0011] More preferably, the method comprises applying the coating layer of diffusion-resistant and osmosis-resistant material on both the front and the back surface of the raw sheet of the cigarette paper.

[0012] Furthermore, the coating layer of diffusion-resistant and osmosis-resistant material comprises oxidized starch or carboxy methyl cellulose sodium, which is in 0.3-8% of mass concentration.

[0013] Preferably, the method further comprises a step of printing a fire retardant on one surface or both surfaces of the cigarette paper with the fire retardant strip by a printing process.

[0014] Compared with the prior arts, one or more technical solution(s) according to these embodiments of the present invention at least has following technical benefits and advantages.

[0015] In order to print a fire retardant on one surface or both surfaces of the cigarette paper with the fire retardant strip, the present invention provides applying the coating layer of diffusion-resistant and osmosis-resistant material, e.g., oxidized starch or carboxy methyl cellulose sodium, on the surface of the raw sheet of the cigarette paper, thereby achieving certain diffusion-resistant diffusion resistance, permeability resistance and, reduction of corrugation during the printing of the fire retardant on the strip. Meanwhile, in the present invention, the coating layer of diffusion-resistant and osmosis-resistant mate-

rial on the surface of the raw sheet of the cigarette paper can also increase tensile strength of the cigarette paper and improve surface performance of the cigarette paper.

### **BRIEF DESCRIPTION OF THE DRAWINGS**

**[0016]** The accompanying drawings described here will be made to provide a further understanding for the present invention and constitute a part of the present application; the following exemplary embodiments and the description thereof are used to explain the present invention and is not improper limitation thereto, wherein:

Fig. 1 is a schematic view of a cigarette produced by a cigarette paper with a fire retardant strip according to the present invention;

Fig. 2 is a structurally schematic view of a cigarette paper with a fire retardant strip according to an embodiment of the present invention; and

Fig. 3 is a structurally schematic view of a cigarette paper with a fire retardant strip according to another embodiment of the present invention.

### **DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE IVENTION**

**[0017]** Hereafter, the technical solution of the present invention is further described in detail through the accompanying drawings and following embodiments.

Embodiment 1:

**[0018]** Referring to figure 1 and figure 2, a preferable embodiment of a cigarette paper with a fire retardant strip according to the present invention is shown. A fire retardant strip 2 is printed, by a fire retardant printing apparatus, on a cigarette paper 1, as shown in Fig. 1. In an example, the width of the fire retardant strip 2 is 2-8 mm. In a preferable embodiment, at least two fire retardant strips 2 are provided on the cigarette paper 1, and, the distance between the two adjacent fire retardant strips 2 is 10-30 mm. Preferably, in this embodiment, the fire retardant strip 2 has a bar shape, the width of the fire retardant strip 2 is 6 mm, and, the distance between the two adjacent fire retardant strips 2 is 19 mm.

**[0019]** As shown in Fig. 2, a schematic structure of a single-sided surface-coating on a back surface of a paper sheet is illustrated. The manufacturing apparatus according to the present invention comprises a first coating roller 3 and a second coating roller 4 arranged in contact with and parallel to each other and having an opposite axially rotational direction (for example, a direction shown by the arrow in Fig. 2) with each other. A cigarette paper 5 passes through a contact position between the first coating roller 3 and the second coating roller 4. A feeding tube 7 is provided outside the first coating roller 3 or the

second coating roller 4, and in this embodiment, the feeding tube 7 is preferably provided outside the second coating roller 4, as shown in Fig. 2. The feeding tube 7 is provided with a plurality of feeding nozzles 8, and in this embodiment, the feeding tube 7 is preferably provided with a plurality of feeding nozzles 8 towards the second coating roller 4.

**[0020]** Further, in this embodiment, a coating metering bar 6 which is arranged in contact with and parallel to the second coating roller 4 is also provided outside the second coating roller 4.

**[0021]** During operation, the prepared feed liquid for coating is sprayed onto the second coating roller 4 through the feeding nozzles 8 of the feeding tube 7, and then, the redundant feed liquid on the second coating roller 4 is removed by metering a pressure adjustment between the coating metering bar 6 and the second coating roller 4. Consequently, a layer of uniform feed liquid thin film is formed from the feed liquid for coating on the second coating roller 4, and then, the layer of feed liquid is transferred to the surface of the cigarette paper 5 by means of rotation between the second coating roller 4 and the first coating roller 3.

**[0022]** In this embodiment, oxidized starch is used as the feed liquid for coating and is in 3% of mass concentration. Further, oxidized starch accounts into 0.8% in weight for the raw sheet of the cigarette paper. Thus, an improved diffusion diffusion-resistant and permeability resistance is achieved.

**[0023]** Those skilled in the art will understand that, in those practical applications, in order to achieve an optimal state of production, the above-mentioned concentration and percentage may be finely adjusted in accordance with factors such as certain degrees of corrugation of the paper sheet, requirements on the air permeability of the fire retardant strip and drying capacities, in these conditions liking temperature, humidity, etc., in different regions and locals and different environments.

Embodiment 2:

**[0024]** Referring to figure 3, another preferable embodiment of a cigarette paper with a fire retardant strip according to the present invention is shown, where a schematic structure of a double-sided dip-coating for a paper sheet is illustrated. In this embodiment, the first coating roller 3 and the second coating roller 4 are arranged in a horizontal or an inclined manner such that a feed liquid storage tank is formed at the contact position between the first coating roller 3 and the second coating roller 4. Fig. 3 shows that it is generally in a horizontal manner. Feeding tubes 7 are provided outside both the first coating roller 3 and the second coating roller 4, as shown in Fig. 3. The first coating roller 3 and the second coating roller 4 have rims at both axial ends thereof, the rims are parallel to each other and at which a barrier sheet 9 is provided. Accordingly, a feed liquid for coating of a certain liquid level is formed within the contact region between

the first coating roller 3 and the second coating roller 4, such that the cigarette paper can be dipped into it, so as to achieve the coating of the feed liquid.

[0025] During operation, the feed liquid for coating flows to the first coating roller 3 and the second coating roller 4, respectively, and, by means of the sealing effect of the barrier sheet 9, a feed liquid for coating in a certain liquid level is formed between the first coating roller 3 and the second coating roller 4, such that paper sheet for the cigarette paper 5 can pass through between the first coating roller 3 and the second coating roller 4 so as to complete the dip-coating process of the feed liquid on the paper sheet. Furthermore, those skilled in the art will understand that, by adjustment to the flow of the two feeding tubes 7, the amount of the feed liquid can be equal to that of the feed liquid absorbed by the paper sheet, so as to ensure stable liquid level of the feed liquid for coating.

[0026] Another object of the present invention is to provide a method for manufacturing a cigarette paper with a fire retardant strip. The method comprises, applying a coating layer of diffusion-resistant and osmosis-resistant material, which is in 0.5-3.5% by weight of a raw sheet of a cigarette paper, on a front and/or a back surface of the raw sheet of the cigarette paper. Preferably, the coating layer of diffusion-resistant and osmosis-resistant material is in 0.5-2.5% by weight of the raw sheet of the cigarette paper. Thus, diffusion-resistant improved diffusion resistance and permeability resistance are achieved.

[0027] In one embodiment of the present invention, the method comprises applying the coating layer of diffusion-resistant and osmosis-resistant material on either the front or the back surface of the raw sheet of the cigarette paper, as in the process of the arrangement shown in Fig. 2.

[0028] In another embodiment of the present invention, the method comprises applying the coating layer of diffusion-resistant and osmosis-resistant material on both the front and the back surfaces of the raw sheet of the cigarette paper, as in the process of the arrangement shown in Fig. 3.

[0029] The coating layer of diffusion-resistant and osmosis-resistant material comprises oxidized starch or carboxy methyl cellulose sodium, which is in 0.3-8% of mass concentration. Preferably, oxidized starch or carboxy methyl cellulose sodium is in 1-5% of mass concentration. Thus, diffusion-resistant improved diffusion resistance and permeability resistance are achieved.

[0030] After the above-mentioned processes of the cigarette paper with the fire retardant strip, the method further comprises a step of printing a fire retardant on one surface or both surfaces of the cigarette paper with the fire retardant strip by a printing process, such that the coating layer of diffusion-resistant and osmosis-resistant material, e.g., oxidized starch or carboxy methyl cellulose sodium, is coated on the surface of the raw sheet of the cigarette paper, thereby achieving certain

diffusion-resistant diffusion resistance and permeability resistance as well as reduction of corrugation during the printing of the fire retardant on the strip. Meanwhile, in the present invention, the coating layer of diffusion-resistant and osmosis-resistant material on the surface of the raw sheet of the cigarette paper can also increase tensile strength of the cigarette paper and improve surface performance of the cigarette paper.

[0031] It is obvious for those skilled in the art that various types of paper sheet manufacturing apparatuses and methods can be completed by using the manufacturing apparatus for the cigarette paper with the fire retardant strip and the method for manufacturing the same according to the present invention.

[0032] It should be noted that above embodiments only are used to explain the technical solutions of the present invention and should not be construed to be limiting on the invention. Although the present invention is described in detail with reference to the preferable embodiment, those skills in the art may understand that the embodiments of the present invention can be modified or the partial technical features are replaceable with equivalents without departing from the spirits of the technical solution of the present invention, which should be within the scope of the present invention.

## Claims

1. A manufacturing apparatus for manufacturing a cigarette paper with a fire retardant strip, **characterized in that**, said manufacturing apparatus comprises a first (3) and a second (4) coating roller arranged in contact with and parallel to each other and having an opposite axially rotational direction with each other; wherein a contact position between said first (3) and second (4) coating rollers is provided through which said cigarette paper passes; and, wherein a feeding tube (7) with a plurality of feeding nozzles (8) is provided outside said first (3) and/or said second (4) coating roller; wherein feeding tubes (7) are provided outside both said first (3) and second (4) coating rollers which are arranged in a horizontal or an inclined manner such that a coating liquid tank is formed at the contact position between said first (3) and second (4) coating rollers.
2. The manufacturing apparatus according to claim 1, **characterized in that**, the feeding tube (7) and, a coating metering bar (6) arranged in contact with and parallel to said second coating roller (4), are provided outside said second coating roller (4).
3. The manufacturing apparatus according to claim 2, **characterized in that**, said first (3) and second (4) coating rollers have rims at both axial ends thereof, the rims being parallel to each other and at which a barrier sheet (9) is provided.

4. A method for manufacturing a cigarette paper with a fire retardant strip by using a manufacturing apparatus according to any one of claims 1-3, **characterized in that**, the method comprises, applying a coating layer of diffusion-resistant and osmosis-resistant material, which is in 0.5-2.5% in weight for a raw sheet of a cigarette paper, on a front and/or a back surface of the raw sheet of the cigarette paper.
5. The method for manufacturing the cigarette paper with the fire retardant strip according to claim 4, **characterized in that**, applying the coating layer of diffusion-resistant and osmosis-resistant material on either the front or the back surface of the raw sheet of the cigarette paper.
6. The method for manufacturing the cigarette paper with the fire retardant strip according to claim 4, **characterized in that**, applying the coating layer of diffusion-resistant and osmosis-resistant material on both the front and the back surface of the raw sheet of the cigarette paper.
7. The method for manufacturing the cigarette paper with the fire retardant strip according to claim 5 or 6, **characterized in that**, the coating layer of diffusion-resistant and osmosis-resistant material comprises oxidized starch or carboxy methyl cellulose sodium, which is in 0.3-8% of mass concentration.
8. The method for manufacturing the cigarette paper with the fire retardant strip according to claim 7, **characterized in that**, the method further comprises a step of printing a fire retardant on one surface or both surfaces of the cigarette paper with the fire retardant strip by a printing process.

#### Patentansprüche

1. Herstellungsvorrichtung zur Herstellung eines Zigarettenpapiers mit einem feuerhemmenden Streifen, **dadurch gekennzeichnet, dass** die Herstellungsvorrichtung eine erste (3) und eine zweite (4) Beschichtungswalze umfasst, die in Kontakt miteinander und parallel zueinander angeordnet sind und eine zueinander entgegengesetzte axiale Drehrichtung aufweisen; wobei eine Kontaktposition zwischen der ersten (3) und der zweiten (4) Beschichtungswalze vorgesehen ist, durch die das Zigarettenpapier hindurchgeht; und wobei ein Zufuhrrohr (7) mit einer Vielzahl von Zufuhrdüsen (8) außerhalb der ersten (3) und/oder der zweiten (4) Beschichtungswalze vorgesehen ist; wobei die Zufuhrrohre (7) außerhalb sowohl der ersten (3) als auch der zweiten (4) Beschichtungswalze vorgesehen sind, die in einer horizontalen oder geneigten Weise angeordnet sind, so dass ein Beschichtungsflüssig-

keitstank in der Kontaktposition zwischen der ersten (3) und der zweiten (4) Beschichtungswalze gebildet ist.

2. Herstellungsvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Zufuhrrohr (7) und ein Beschichtungsdosierstab (6), der in Kontakt mit und parallel zur zweiten Beschichtungswalze (4) angeordnet ist, außerhalb der zweiten Beschichtungswalze (4) vorgesehen sind.
3. Herstellungsvorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** die erste (3) und die zweite (4) Beschichtungswalze Ränder an beiden axialen Enden davon aufweisen, wobei die Ränder zueinander parallel sind und an denen eine Sperrplatte (9) vorgesehen ist.
4. Verfahren zur Herstellung eines Zigarettenpapiers mit einem feuerhemmenden Streifen unter Verwendung einer Herstellungsvorrichtung nach einem der Ansprüche 1-3, **dadurch gekennzeichnet, dass** das Verfahren das Aufbringen einer Überzugsschicht aus einem diffusionsbeständigen und osmo-sebeständigen Material, das 0,5-2,5 % im Gewicht für einen rohen Bogen eines Zigarettenpapiers ist, auf eine vordere und/oder hintere Oberfläche des rohen Bogens des Zigarettenpapiers umfasst.
5. Verfahren zur Herstellung des Zigarettenpapiers mit dem feuerhemmenden Streifen nach Anspruch 4, **gekennzeichnet durch** das Aufbringen der Überzugsschicht aus diffusionsbeständigem und osmo-sebeständigem Material auf entweder die vordere oder die hintere Oberfläche des rohen Bogens des Zigarettenpapiers.
6. Verfahren zur Herstellung des Zigarettenpapiers mit dem feuerhemmenden Streifen nach Anspruch 4, **gekennzeichnet durch** das Aufbringen der Überzugsschicht aus diffusionsbeständigem und osmo-sebeständigem Material auf sowohl die vordere als auch die hintere Oberfläche des rohen Bogens des Zigarettenpapiers.
7. Verfahren zur Herstellung des Zigarettenpapiers mit dem feuerhemmenden Streifen nach Anspruch 5 oder 6, **dadurch gekennzeichnet, dass** die Überzugsschicht aus diffusionsbeständigem und osmo-sebeständigem Material oxidierte Stärke oder Carboxymethylcellulosenatrium umfasst, das eine Massenkonzentration von 0,3-8 % aufweist.
8. Verfahren zur Herstellung des Zigarettenpapiers mit dem feuerhemmenden Streifen nach Anspruch 7, **dadurch gekennzeichnet, dass** das Verfahren ferner einen Schritt des Druckens eines feuerhemmenden Mittels auf eine Oberfläche oder beide Oberflä-

chen des Zigarettenpapiers mit dem feuerhemmenden Streifen durch einen Druckprozess umfasst.

## Revendications

1. Dispositif de fabrication de papier à cigarettes comportant une bande ignifuge, **caractérisé en ce que** ledit dispositif de fabrication comprend un premier (3) et un deuxième (4) cylindre applicateur agencés en contact l'un avec l'autre et parallèlement l'un à l'autre, et ayant un sens de rotation axialement opposé ; dans lequel une position de contact est ménagée entre lesdits premier (3) et deuxième (4) cylindre applicateur, à travers laquelle passe ledit papier à cigarettes; et dans lequel un tube d'alimentation (7) doté d'une pluralité de buses (8) est ménagé à l'extérieur dudit premier (3) et/ou dudit deuxième (4) cylindre applicateur ; dans lequel des tubes d'alimentation (7) sont ménagés à l'extérieur desdits premier (3) et deuxième (4) cylindres applicateurs, lesquels sont agencés de manière horizontale ou oblique de sorte qu'un réservoir de liquide de revêtement est formé à la position de contact entre lesdits premier (3) et deuxième (4) cylindres applicateurs.
2. Dispositif de fabrication selon la revendication 1, **caractérisé en ce que** le tube d'alimentation (7) et une barre de raclage (6) placée en contact et parallèlement audit deuxième rouleau applicateur (4), sont ménagés à l'extérieur dudit deuxième cylindre applicateur (4).
3. Dispositif de fabrication selon la revendication 2, **caractérisé en ce que** lesdits premier (3) et deuxième (4) cylindres applicateurs sont dotés de rebords aux deux extrémités axiales, les rebords étant disposés parallèlement l'un à l'autre, et sur lesquels une feuille barrière (9) est ménagée.
4. Méthode de fabrication de papier à cigarettes comportant une bande ignifuge, avec utilisation d'un dispositif de fabrication selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que** la méthode comprend l'application d'une couche de revêtement en matériau résistant à la diffusion et à l'osmose, qui représente entre 0,5 et 2,5 % du poids d'une feuille brute de papier à cigarettes, sur une face avant et/ou une face arrière de la feuille brute du papier à cigarettes.
5. Méthode de fabrication de papier à cigarettes comportant la bande ignifuge selon la revendication 4, **caractérisée par** l'application de la couche de revêtement en matériau résistant à la diffusion et à l'osmose soit sur la face avant, soit sur la face arrière de la feuille brute de papier à cigarettes.
6. Méthode de fabrication de papier à cigarettes comportant la bande ignifuge selon la revendication 4, **caractérisée par** l'application de la couche de revêtement en matériau résistant à la diffusion et à l'osmose, à la fois sur la face avant et sur la face arrière de la feuille brute de papier à cigarettes.
7. Méthode de fabrication de papier à cigarettes comportant la bande ignifuge selon la revendication 5 ou 6, **caractérisée en ce que** la couche de revêtement en matériau résistant à la diffusion et à l'osmose comprend de l'amidon oxydé ou de la carboxyméthylcellulose de sodium qui constitue 0,3 à 8 % de la concentration massique.
8. Méthode de fabrication de papier à cigarettes comportant la bande ignifuge selon la revendication 7, **caractérisée en ce que** la méthode comprend en outre une étape d'impression d'un revêtement ignifuge sur une face ou sur les deux faces du papier à cigarettes avec la bande ne propageant pas la flamme au moyen d'un processus d'impression.

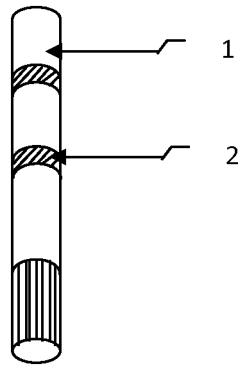


Fig.1

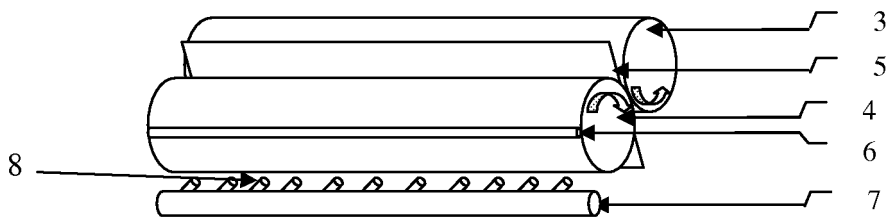


Fig.2

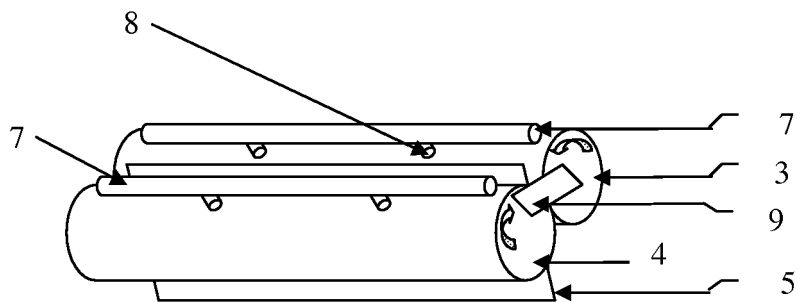


Fig.3