

[72] Inventor **Joseph Saint-Pastou**  
**5 rue Pierre Mouren, 13 Marseille 7,**  
**France**  
[21] Appl. No. **741,924**  
[22] Filed **July 2, 1968**  
[45] Patented **Jan. 4, 1972**  
[32] Priority **July 18, 1967, July 24, 1967, Nov. 4,**  
**1967, Dec. 19, 1967, Jan. 8, 1968**  
[33] **France**  
[31] **114577; 115396; 22035; 22085; 22115**

[54] **METHOD OF MAKING CIGARETTE PAPER WITH**  
**ASH-RETAINING MEANS**  
2 Claims, 11 Drawing Figs.

[52] U.S. Cl. .... **117/44,**  
**117/45, 117/68, 117/111 B, 117/152, 117/154**  
[51] Int. Cl. .... **B44d 5/12,**  
**B44d 5/00**  
[50] Field of Search ..... **117/111,**  
**137, 138, 44, 45, 68; 131/4, 15**

[56] **References Cited**  
**UNITED STATES PATENTS**  
2,049,320 7/1936 Ruben et al. .... 117/138

2,380,047 7/1945 Hyman ..... 117/111  
2,398,844 4/1946 Muggleton et al. .... 117/111  
2,772,184 11/1956 Wolfe et al. .... 117/111 X  
2,962,385 11/1960 Rees et al. .... 117/111 X  
3,373,052 3/1968 Rode ..... 117/111  
2,147,889 2/1939 Gardiner ..... 131/4  
2,985,175 5/1961 Rich ..... 131/4

FOREIGN PATENTS

421,236 12/1934 Great Britain ..... 131/4

*Primary Examiner*—Alfred L. Leavitt  
*Assistant Examiner*—Edward G. Whitby  
*Attorneys*—Robert E. Burns and Emmanuel J. Lobato

**ABSTRACT:** This disclosure concerns cigarette paper which has an open network consisting of a flameproof substance intended to maintain ashes in place after combustion of the tobacco and of the paper, characterized by the fact that the elements forming said network are slightly profiled and that the junction points of these elements are reinforced in order to give the assembly sufficient rigidity. The disclosure also concerns a process for making this cigarette paper and cigarettes using such paper.

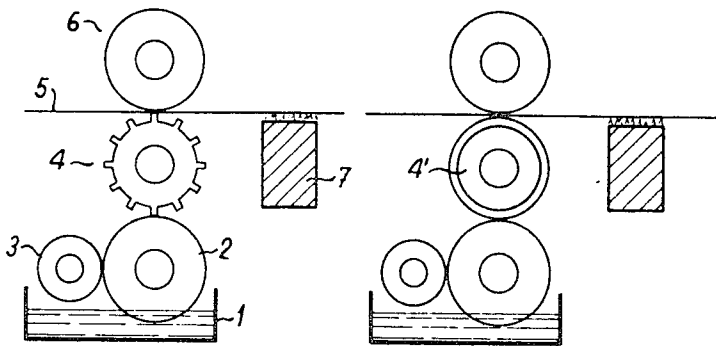


FIG. 1

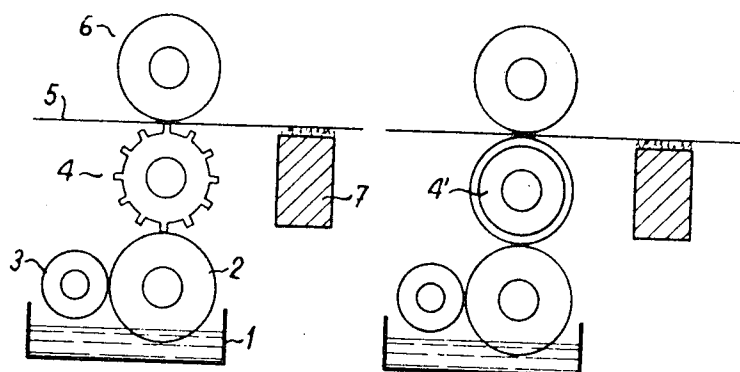


FIG. 2

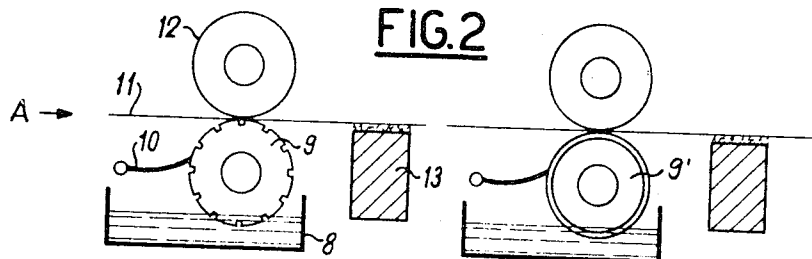
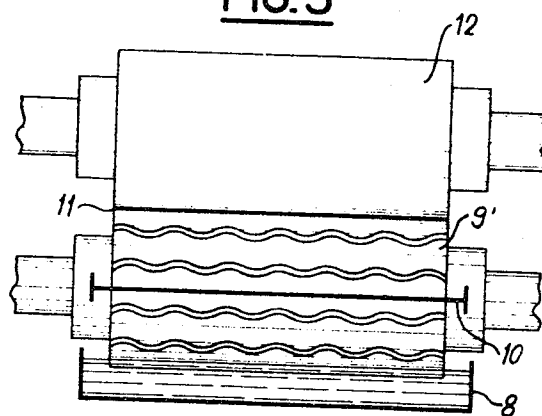


FIG. 3



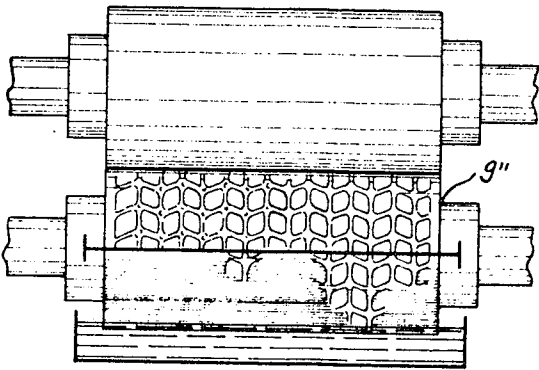


FIG. 4

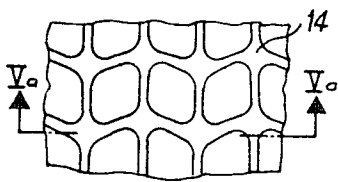


FIG. 5



FIG. 5a

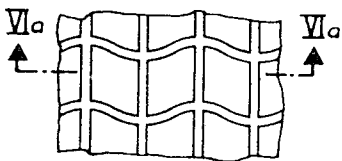


FIG. 6

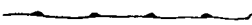


FIG. 6a

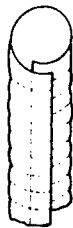


FIG. 7



FIG. 7a

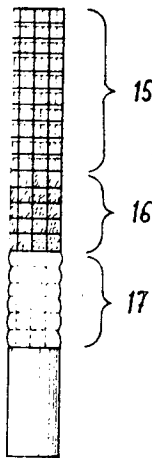


FIG. 8

# METHOD OF MAKING CIGARETTE PAPER WITH ASH-RETAINING MEANS

Already known are cigarettes whose paper comprises an incombustible armature of asbestos or metal for example which has the shape of a grill which remains after the tobacco and the paper are consumed in order to retain the ashes. These however are solutions which are expensive and difficult to put into operation.

It has also been suggested to print a network of flameproof material on cigarette paper by using for example silicone varnishes. The drawback of this solution is that either the grills have openings which are too small to allow suitable draw or the grills are too thin to give a sufficient resistance.

The present invention aims at paliating these drawbacks and has for its object a cigarette paper having an open network of a flameproof substance intended to maintain ashes in place after combustion of the tobacco and the paper, characterized by the fact that the elements forming said network are slightly profiled and that the junction of these elements are reinforced in order to give a sufficient rigidity to the assembly.

It also has for its object a process which makes it possible to industrially obtain the impregnation of a material as thin and fragile as cigarette paper, characterized by the fact that there is employed at least one roller with relief intended to impregnate said network on the paper, this roller cooperating with a roller covered by a supple coating pressing the paper between these two rollers and making it advance, means being provided for depositing such substance on said roller with relief.

It also has for its object a cigarette obtained with a paper according to the invention, characterized by the fact that the elements of said network are superimposed in the glued edges of the cylinder forming the cigarette.

The accompanying drawing represents, by way of examples, some embodiments of the process as well as examples of the paper and of the cigarette.

FIG. 1 is a schematic view of a first device for carrying out the process.

FIG. 2 is a schematic view of another device.

FIG. 3 is an end view taken along A of FIG. 2.

FIG. 4 is a side view of a third device.

FIGS. 5 and 5a are above and cross-sectional views of a paper impregnated with the device of FIG. 4, and FIGS. 6 and 6a are similar views of a paper obtained with the device of FIGS. 2 and 3.

FIGS. 7 and 7a are perspective and cross-sectional views of an impregnated paper forming a cylinder.

FIG. 8 is a view of a cigarette.

The substance used for the impregnation comprises:

A flameproof sodium such as sodium silicate (35 to 40 percent),

a binder which retards combustion such as talc, micronized mica or calcium carbonate (30 to 35 percent),

a softening product, gum arabic or paraffin previously treated with glucose to compensate the alkalinity of the silicate (5 to 10 percent),

a coloring material such as titanium white (5 to 10 percent),

a solvent of demineralized water for example (5 to 10 percent).

There can be added aromatic substances, coloring materials or products with beneficial effects.

In the device shown in FIG. 1, the flameproof substance is disposed in reservoir 1 whose level is maintained constant by means not shown, this substance being moreover constantly mixed in order to remain homogenous. This mixture is driven by a wetting roller 2, the surplus being removed by a regulating roller 3, and deposited on the raised elements of roller 4 which has rectilinear longitudinal profiles. These profiles are dimensioned in such a way as to form on the paper bands of about 0.5 mm. in width and spaced by 3 mm., dimensions which are optimum to obtain sufficient draw and rigidity. Paper 5 passes between this roller 4 and a supporting rollers 6 with adjustable pressure which deforms the paper in the

profiles of roller 4. In order to avoid spreading by capillarity the substance in the paper, the same is heated by a suitable system 7, for example infrared. Paper passes then into a second system which differs from the first uniquely by the shape of the profiles of roller 4' which are transversal. This double passage process makes it possible to provide in the connecting points of the treated bands a surplus of material which is intended to reinforce the links of the network.

In the device shown in FIGS. 2 and 3, reservoir 8 is found again in which bathes roller 9 having in hollow the elements which must form the network on the paper. The surplus of flameproof solution is taken off by scraper-blade 10. Paper 11, after having passed between roller 9 and a support roller 12, is heated by the device 13. Paper passes then in a similar system, of which roller 9' has transverse profiles. The profiles of rollers 9 and 9' can be rectilinear or present sinuous or broken lines. It is possible too to use a roller with sinuous profiles such as shown in FIG. 3, and a roller with rectilinear profiles.

In the two devices described, it is possible to impregnate the two series of bands perpendicularly one relative to the other on the same surface of the paper or on the contrary each on one face. The advantage of treating the paper in two operations is to enable the same to deform itself in the profiles which gives more solid elements in the network.

The device illustrated in FIG. 4 differs from the preceding ones by the fact that the network is applied on the paper in a single operation, roller 9'' having in hollow this network being the only element which differs from the impregnation system shown in FIG. 3. In order to obtain a network whose connecting points are sufficiently resistant, roller 9'' has hollows 14 which are deeper at the junction points in such a way that the paper obtained with this process and a part of which is shown in FIG. 5 and 5a has at the junction points 14 an accumulation of material.

In FIGS. 6 and 6a is shown paper obtained with the device shown in FIGS. 2 and 3, this paper having a slight wrapping caused by the retraction of the material, warping attenuated by the drawing of the paper during the formation of the cigarette.

To obtain a cigarette, there will be made a cylinder paper in the glued edges of which the networks are superimposed (FIGS. 7 and 7a). When the cigarette is smoked, contact with the burning part will allow the elements of the network to progressively weld.

In FIG. 8 is shown a cigarette which is in part consumed. In region 15 only the armature subsists, in region 16 the ashes are maintained in place by the network, the paper being consumed, and in region 17 the cigarette not being yet consumed.

In order to avoid a fall of ashes at the end of the cigarette, the edges of the paper can be folded back towards the inside, after hardening this part of the paper with a material such as starch.

What is claimed is:

1. A method of producing a cigarette paper having an open network of flameproof material for supporting cigarette ash comprising, advancing cigarette paper along a given path, while advancing the paper subjecting it to pressure along surfaces defining a first network of first substantially parallel lines thereon and simultaneously depositing first narrow bands of a flameproof impregnant material along said first network in a fluid state, drying said first narrow bands of flameproof impregnant material and while drying the fluid material simultaneously shrinking the paper along areas corresponding to the first network without substantially shrinking areas of said paper free of the impregnant material, thereafter subjecting the paper to pressure along surfaces defining a second network of second substantially parallel lines, said second lines extending transversely to said first lines, and simultaneously depositing second narrow bands of a flameproof impregnant material along said second network in a fluid state, and drying said second narrow bands of flameproof impregnant material.

2. A method according to claim 1, in which said impregnant material is deposited on both sides of said paper.