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11 Publication number:

**0 308 051
A1**

12

EUROPEAN PATENT APPLICATION

21 Application number: 88306997.3

51 Int. Cl.4: **A24F 47/00**

22 Date of filing: 29.07.88

30 Priority: 12.09.87 GB 8721504

43 Date of publication of application:
22.03.89 Bulletin 89/12

64 Designated Contracting States:
DE ES FR GB IT NL

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54 Method and device for reducing the level of nicotine in cigarettes.

57 This invention utilizes Bakuhan stone to absorb moisture and to produce nicotine decomposition from an ion reaction. A device using the method and intended to be put in a cigarette packet to absorb moisture and decompose nicotine, may be cigarette shaped.

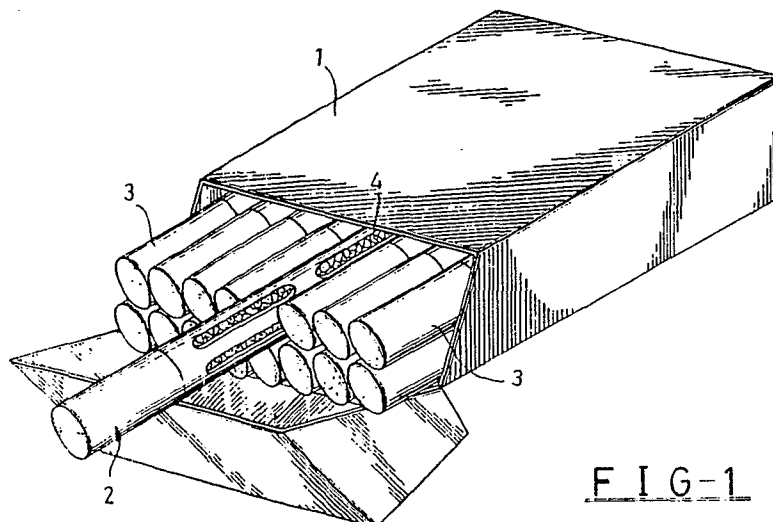


FIG-1

Method and device for reducing the level of nicotine in cigarettes

The invention relates to the reduction of the nicotine levels in cigarettes and the like.

It is generally understood that nicotine contained in cigarettes is injurious to the human body, so in the past filter tips or cigarette holders were invented to reduce damage from nicotine, by preventing a part of the nicotine content from entering the body.

Furthermore, those who use filters in cigarette holders all know, whenever the filter tip is full of nicotine inside, it must be replaced by a new one, which is really very inconvenient, and whenever the packing of cigarettes is broken, or a packet of cigarettes is opened too long, it will produce the bad smell of being mildewed. So the device disclosed in this specification is intended to solve the two disadvantages mentioned above.

The invention provides a method of reducing the moisture content and nicotine level in cigarettes or the like comprising the steps of procuring a container, placing a quantity of Bakuhan stone in the container and placing also said cigarettes or the like in the container.

Preferably Bakuhan stone is itself be placed in a perforated container.

Advantageously, the container may be of a size and shape comparable with the cigarettes or the like within the packet.

There will now be described with reference to the accompanying drawings an example of a perforated container according to the invention.

In the drawings:-

Figure 1 shows a perspective view of a cigarette packet containing a device according to the invention;

Figure 2 is a longitudinal section through the device of Figure 1;

Figure 3 is a perspective view of the device;

Figure 4 is an exploded view of the device.

Figure 1 shows a tubular device 2 protruding from a cigarette packet 1. The device is filled with Bakuhan stone granules 4.

The device 2 comprises a body 5 and a cap 6. The body 5 is filled through its mouth 7 and is provided with elongate slots 8 in its cylindrical wall and an aperture 9 in its end wall.

Bakuhan stone is a magnet metal stone.

The present invention discloses that Bakuhan stone has the effect of rendering cigarettes resistant to moisture and mildew and of decomposing nicotine. Nicotine is decomposed by an ion reaction produced by the Bakuhan stone (4). After insertion in the cigarette pack (1) the device (2) requires only 10 minutes or so to develop the effect, and the result is that not only the damage from nicotine is reduced, but also the unique pungent taste contained in the original nicotine of the cigarette is eliminated, so that the cigarette is smoked more pleasantly.

In addition, Bakuhan stone (4) possesses the function of absorption, so, besides absorbing moisture in the air and the alcohol in wine, chlorine and impure material (miscellaneous substance) in the water may also be absorbed. After Bakuhan stone (4) is granulated to the size as in Figure 4, it is filled into the body (5), and after the body (5) is closed with the cap (6), then it becomes the finished product.

But Bakuhan stone (4) in the finished product must be treated so that the Bakuhan stone will never fall out of the body (or the holes of various shapes) or the round hole (a) on the end wall (various hole shapes).

From the applied example mentioned above, it may be clearly understood that after putting Bakuhan stone (4) into the perforated container (2), it then becomes the finished product, and if the main body is made from plastics, the outer shape may simply be changed (of course high-class material such as gold or copper or other metal material may also be used). The design of a long cylinder shape for use in the cigarette pack is very convenient.

Furthermore, besides the device (2) formed as the body (5) described above filled with Bakuhan stone (4) a wider container of better ventilation or cylinder plate shape, or any other suitable shape filled with Bakuhan stone may be also utilised, and to cut Bakuhan stone into stone pieces may also be applicable.

From this, it may be understood that the chief purpose of this creation is to offer the device, in which the Bakuhan stone, using its function of moisture-absorption and nicotine decomposition (in the cigarette pack), completely eliminates the disadvantages of the original filter tip of inconvenience of carriage and necessity of replacement, etc., the prior art filter tip cannot develop the effect of moisture absorbtion.

A. The following experimental results are given by way of example only to illustrate the property of Bakuhan stone:

1. Sample: BAKUHAN STONE

2. Purpose of the test:

5 To examine the influence of the sample on nicotine in an aqueous solution.

3. Outline of the test:

The sample was put in to a nicotine aqueous solution. After 15, 30 and 60 minutes, nicotine concentrations of the solution were determined respectively by gas-liquid chromatography and each value was compared with that determined prior to the addition of the sample.

10 4. Results:

The results are shown in Table-1. The percentage of nicotine concentration at each time to that determined prior to the addition of the sample is also given in Table-1.

Table-1

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Change of nicotine concentration				
	Time (min)*			
	before addition	15	30	60
nicotine concentration (mg/ml)	0.992	0.997	0.935	0.943
Percentage of nicotine concentration (%)	100	101	94.2	95.0

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* Time after addition of the sample

5. Methods:

1) Procedure

30 About 10 g of the sample was put in to 50 ml aqueous solution containing 1 mg/ml nicotine and allowed to stand until determination was made. For determination of nicotine, 0.5 ml aliquot of the sample and 1 ml internal solution* were pipetted into a 5 ml volumetric flask and diluted to volume with methanol and then subjected to gas-liquid chromatography.

* 0.2 % (V/V) n-Heptadecane methanol solution

Gas-liquid chromatography equipment

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Type: Shimadzu GC/7A (FID)

Column: 20% PEG 20M on Chromosorb W (AW), 80-100 mesh, 3 mm x 2 m

Temperature : injection 230 C, column 210 C

Gas flow rate : Nitrogen 40 ml/min, Hydrogen 0.6 kg/cm² Air 0.5 kg/cm².

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B. The following experimental results are given by way of comparison between two cigarette filters, one of which was used to smoke ten ordinary cigarettes and the other of which was used to smoke ten cigarettes from a packet which contained a device according to the invention.

1. Sample : two cigarette filters

2. Purpose of the test:

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To determine the amount of nicotine existing in the two filters.

3. Outline of the test and method.

The two samples were separately put into 1 litre of distilled water and shaken for a few minutes. The amount of nicotine present was determined by gas liquid chromatography.

4. Results:

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The results are shown in Table 2 below:

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Table 2

Comparative nicotine concentration	
Sample	Nicotine mg/ml
Filter used to smoke ten ordinary cigarettes	0.73
Filter used to smoke ten cigarettes treated with the device according to the inventor.	0.26

5. Gas-liquid chromatography equipment

Type : Shimadzu GC-7A (F1 detector)

Column : PEG 20M on Chromosorb W, 80-100 mesh 2.5 mm x 2m

Temperature: Injection 235 °C, column 210 °C

Gas flow rate: Nitrogen 40 ml/min, Hydrogen 0.6 kg/cm.

Claims

1. A method of reducing the nicotine level in cigarettes or the like comprising the steps of procuring a container, placing a quantity of Bakuhan stone in the container and placing also said cigarettes or the like in the container.

2. A method as claimed in claim 1, characterised in that Bakuhan stone is itself first placed in a perforated container.

3. A device for the reduction of the nicotine level in cigarettes or the like using the method according to claim 2, characterised in that the perforated container is of a size and shape comparable with a cigarette.

4. A device as claimed in claim 3, characterised in that the container is provided with slots formed in the cylindrical wall thereof.

5. A device as claimed in Claim 4 characterised in that said container is provided with an aperture in an end wall thereof.

6. A device as claimed in any of Claims 3-5 wherein the device comprises a tube with a removable cap.

7. A device according to any of Claims 3-6 wherein the Bakuhan stone is granulated to a size slightly larger than can escape through said perforations.

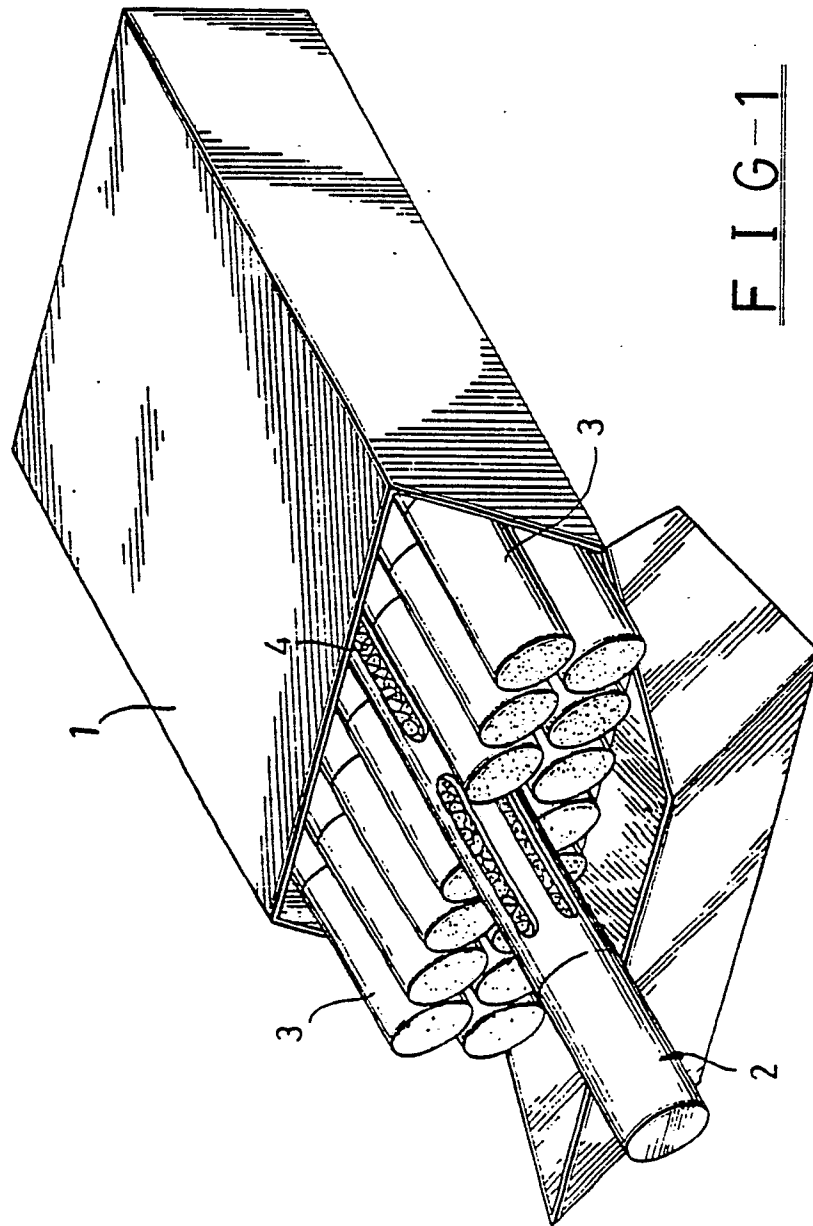


FIG-1

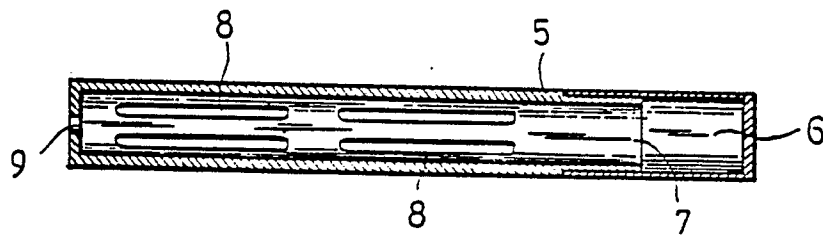


FIG-2

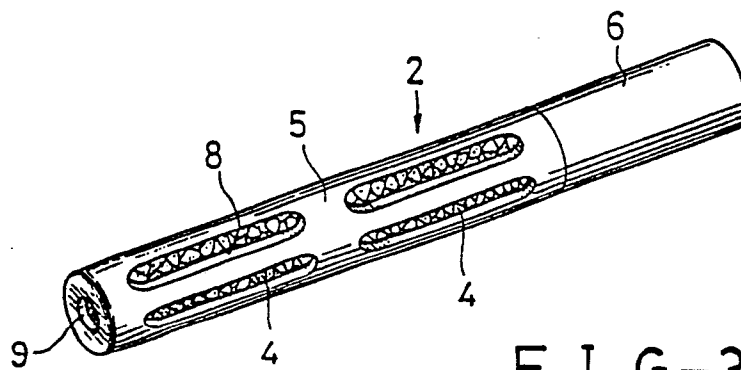
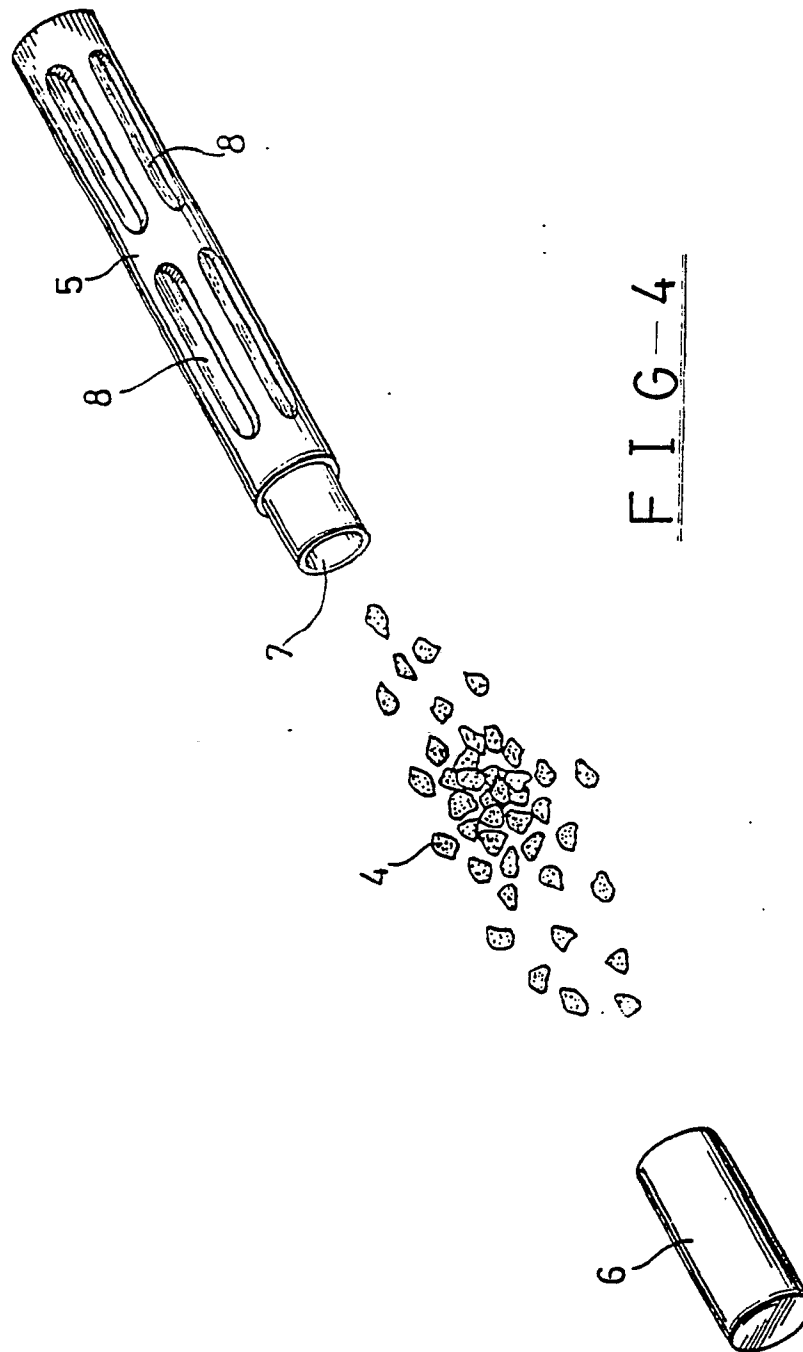


FIG-3





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EUROPEAN SEARCH REPORT

Application Number

EP 88 30 6997

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	US-A-3589374 (TOMIZO AOKI) * abstract; figure 1 * ---	1	A24F47/00
A	FR-A-2584273 (LEPETIT) * claims 1, 2; figure 1 * ---	1	
A	BE-A-361871 (PARDINI) ---		
A	FR-A-2446454 (LORENZON) -----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			A24F A24B A24D
Place of search THE HAGUE		Date of completion of the search 15 DECEMBER 1988	Examiner RIEDEL R.E.
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			
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