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(54) **Title:** METHOD OF PRODUCTION OF PRESSED FORMS FOR COFFEE PRODUCTS MAKING

(57) **Abstract:** The method of producing pressed coffee grounds for coffee products making from roasted or decontaminated green coffee beans. A continuous production process involves the following stages: heat treatment of raw material, cooling the roasted raw material, immediately after cooling, excluding the degassing stage, grinding it to obtain ground coffee powder with a particle size of 100 to 550 μm, separation of the powder and fine fraction agglomeration, mixing the ground coffee powder with additive ingredients and following pressing it, drying the pressed coffee grounds in briquette or puck form. The method allows, in particular, producing pressed coffee grounds containing up to 80% cream, and the rest is ground coffee and sugar.

METHOD OF PRODUCTION OF PRESSED FORMS FOR COFFEE PRODUCTS MAKING

The utility model refers to coffee products and methods of coffee product making. In particular, it is qualified as a method of producing pressed ground coffee forms for making coffee products.

A known method (RF Patent No. 2454872 "Coffee Pods Manufacturing Method and Coffee Pod for Making Coffee Produced Using the Method"), when the initial coffee material is compacted under pressure, which allows producing a coffee pod of a certain taste. The taste in this case directly depends on such coffee parameters as moisture content in the coffee material and the degree of roast of coffee beans. The disadvantage of this method is the low solubility of coffee pods, as well as their fragility during transportation.

The utility model is designed to create a method of producing pressed ground coffee forms for making coffee products, free from the disadvantages mentioned above. In particular, the utility model is meant to create a method for producing a pressed form of a structure and hardness allowing accurate dosing per cup of coffee and freely soluble in water. Such pressed forms shall withstand sorting, packaging, and transportation while preserving the integrity at all times and shall be suitable for making high-quality coffee.

The objective is reached by producing pressed forms for coffee products making, where the roasted or decontaminated green coffee beans are the raw material, which is a continuous production process including the stages as follows:

a) raw materials heat treatment in a coffee roaster at a temperature between 170°C to 240°C;

b) roasted material cooling to a temperature between 24°C and 36°C;

c) raw material grinding in the coffee mill immediately after cooling, eliminating the degassing step to obtain the ground coffee powder with a particle size of 100 to 550 μm;

d) ground coffee powder separation in a special device;

e) agglomeration of the fine fraction of ground coffee powder in a designated device;

f) mixing ground coffee powder with additive ingredients;

g) ground coffee powder pressing;

h) pressed coffee forms drying in the impinge conveyor using infrared radiation;

i) pressed forms filling in vacuum package shaped like a briquette or a puck.

The granulometric composition of coffee grounds should fall within the range as follows: 80% - particles of 350-550 μm in size, 20% - particles less than 350 μm in size.

Additive ingredients are in the solid dispersed phase or as molecular solution, or as a colloidal solution.

The pressed ground coffee forms shaped like briquettes or pucks shall be dried to a moisture content of 4.5%.

The package is of the same shape as the pressed forms, and its size is within 10 to 60 mm.

The method for producing pressed forms for making coffee products is implemented as follows: beans of roasted or decontaminated green coffee are used as a raw material, heat-treated in a coffee roaster at a temperature of 170°C to 240°C, then are cooled to a temperature between 24°C to 36°C and ground in a coffee mill, excluding the degassing stage, to produce ground coffee powder with a particle size of 100 to 550 μm. The coffee cooled and ground using the above method is then separated in a special device. After the separation of the produced coffee grounds, the process of agglomeration of the coffee powder fine fraction is carried out in a designated device, and then the powder is mixed with additive ingredients and compacted.

Additive ingredients are in the solid dispersed phase or as a molecular solution, or as a colloidal solution. Application of additives in the bulk (coffee grounds) as additional ingredients provides free-water binding, which in turn ensures the strength of the pressed coffee forms. The liquid component is introduced into the bulk to ensure the agglomeration of fine fractions and improved adhesion of powder particles during the pressing process.

Pressed forms are then dried in an impinge conveyor using infrared radiation to achieve a moisture content of 4.5%. The final stage is the packing of pressed forms in a sealed package shaped like a briquette or a puck, the size of which varies from 10 to 60 mm. It is essential that granulometric composition of coffee grounds falls within the range as follows: 80% - particles of 350-550 μm in size, 20% - particles less than 350 μm in size.

The above process consists of separate processes and operating steps and is a continuous production process.

Unlike the standard process of the roasted coffee beans production, the proposed method includes no steps of "degasifying treatment" of roasted coffee beans.

The suggested method of producing ground coffee in the form of pressed coffee grounds allows the manufacture of products of not less than 10 mm and not exceeding 60 mm in size – that is both in the form of pucks and briquettes.

The above pressed coffee grounds (briquettes and/or pucks) can be used for making beverages by common extraction methods, such as maceration, digestion, percolation and perforation. The main method of using the coffee pods is the digestion by decanting (decoction)

method – that is, pouring drinking water heated to a temperature of 96-99°C to cover the briquettes, followed by infusion.

The utility model method allows producing pressed forms (as a briquette and/or a puck), which may consist of complex compositions of ingredients. In one of the utility model implementations, the pressed forms contain up to 80% cream, and the rest is ground coffee and sugar.

Pressed ground coffee forms for making coffee products produced by this method can be used as follows:

Take a puck out of the package and put it in a 200 - 300 ml vessel for making hot drinks (glass, mug or cup), and pour 150 – 200 ml hot water (96°C – 99°C). Let it brew for 180 - 200 seconds (during this time, soluble substances are extracted in the amount of 20 – 25% of the puck weight, and larger powder fractions are sedimented).

The proposed utility model has a number of advantages over the common ones. Firstly, to make coffee beverages using the above-mentioned pressed coffee forms, you don't need measuring containers for dosing the coffee beverage. Pucks and briquettes are completely soluble without any additional stirring. At the same time pucks and briquettes are firm enough to endure transportation without being damaged.

FORMULA OF THE UTILITY MODEL

1. The method of producing pressed coffee grounds for coffee products making, where the roasted or decontaminated green coffee beans are the raw material, which is a continuous production process including the stages as follows:

a) raw materials heat treatment in a coffee roaster at a temperature of 170°C to 240°C;

b) roasted material cooling to a temperature between 24°C and 36°C;

c) raw material grinding in the coffee mill immediately after cooling, eliminating the degassing step to obtain the ground coffee powder with a particle size of 100 to 550 μm;

d) ground coffee powder separation in a special device;

e) agglomeration of the fine fraction of ground coffee powder in a special device;

f) mixing ground coffee powder with additive ingredients;

g) ground coffee powder pressing;

h) pressed material drying in the impinge conveyor using infrared irradiation;

i) packaging of pressed grounds in vacuum package shaped like a briquette or a puck.

2. The method of claim 1, **wherein** the granulometric composition of the coffee grounds should be within 80% - particles of 350 - 550 μm in size, 20% - particles of less than 350 μm in size.

3. The method of claim 1, **wherein** the additive ingredients are in a solid dispersed phase, either as a molecular solution or as a colloidal solution.

4. The method of claim 1, **wherein** the pressed coffee grounds is shaped like briquettes or pucks.

5. The method of claim 1, **wherein** the pressed grounds are dried to get a moisture content of 4.5%.

6. The method of claim 1, **wherein** the packaging is of the same shape as the pressed coffee grounds.

7. The method of claim 1, **wherein** the size of the pressed coffee grounds varies from 10 to 60 mm.

8. The method of claim 4, **wherein** the pressed grounds includes up to 80% cream and the rest is ground coffee and sugar.

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A. CLASSIFICATION OF SUBJECT MATTER

A23F5/12, A23F5/08, A23F5/14, A23P10/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: A23F, A23P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and, where practicable, search terms used)

Espacenet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X	UA 137660 U (VASYLEVSKYI, Yurii Vasyliovych [UA]), 25 October 2019 (25.10.2019) (the whole document)	1-8
Y	WO 2019/106413 A1 (STALMAKHOU, Yury [BY], SHAMAEV, Vladimir [UA], SENAKOSAU, Aleh [BY]), 06 June 2019 (06.06.2019) (the whole document)	1-8
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☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA/UA THE STATE ORGANIZATION "UKRAINIAN NATIONAL OFFICE FOR INTELLECTUAL PROPERTY AND INNOVATIONS" Dmytra Hodzenka Str., 1, Kyiv, 01601, Ukraine Facsimile No.+380 (44) 494-05-35	Authorized officer **I. ZHDANOVA** Telephone No. +380 (44) 494-05-37

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
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