

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: **81830019.6**

(51) Int. Cl.³: **B 02 B 3/00**
B 03 B 5/30

(22) Date of filing: **02.02.81**

(30) Priority: **01.02.80 IT 933480**

(43) Date of publication of application:
02.09.81 Bulletin 81/35

(84) Designated Contracting States:
AT CH DE FR GB LI

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(54) **Process for the separation of the cortical part from the inner part of rhizomes of irises, or the like.**

(57) Process to achieve an industrial separation of the cortical part from inner part of the rhizomes of irises, or of rhizomes or roots of officinal plants having similar physical characteristics, that separation having been up-to-now effected manually and done in order to eliminate odours, tastes and other properties that degrade the materials extracted from the said rhizomes or roots, said materials being utilized in the perfumery, pharmaceutical and alimentary industries.

With this method a grinding phase must come before that of decortication and the ground components are treated in one of two ways. In one solution the two components, when mixed in a proper liquid, get separated from one another according to the difference between their specific gravities. In a second solution the process is characterized by the fact that the specific gravities of the two components tend to diminish as the seasoning of the rhizomes, or roots, goes on, reaching values that are lower than those of water, or of a proper solution, and when these components are ground and mixed with said liquids they return to their original values at different rates.

EP 0 035 002 A2

Process to achieve an industrial separation of the cortical part from the inner part of rhizomes of irises, or of rhizomes or roots of officinal plants having similar physical characteristics.

The invention relates to a process to achieve an industrial separation of the cortical part from the inner part of rhizomes of irises, or of rhizomes or roots of officinal plants having similar physical characteristics, when the said rhizomes or roots are to
5 be used for perfumery, pharmaceutical and alimentary industries, and when the said separation of the cortical part from the inner part is done in order to eliminate odours, tastes and other properties that degrade the materials extracted from said rhizomes or roots.

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With irises, as with other officinal plants, the separation of the cortical part from the inner part is still done manually with the aid of special knives. The cost of this work is generally considerable, and in the case of iris rhizomes we may consider that the
15 cost of this operation constitutes half of the total cost of all the operation concerning the iris. In the case of the plants with which we are dealing solutions have been experimented with in order to eliminate or, at least, to reduce, the manual work involved in the decortication. However, none of the solutions experimented
20 with up-to-now have really brought about any improvement in this field, since the techniques used have remained basically manual. At the moment the only solution lies in local cottage industry where only a small part of manual labour is eliminated. In this case the rhizomes are rolled around with sharp stones as in a tumbling
25 barrel. This operation results in the partial decortication of the rhizomes, the work then having to be completed by hand. We consider this solution fit neither for an industrial level, nor for a reduction of costs.

The process we are proposing achieves the separation of the cortical part from the inner part of rhizomes of irises , or of rhizomes or roots of officinal plants having similar physical characteristics, in an industrially uncomplicated and economic way, and almost completely eliminates all manual work. In this process a grinding phase takes place before that of decortication and the separation of the two components, cortical and internal, is based on the fact that their specific gravities are different and that when the said two components are mixed with a liquid or solution with a specific gravity halfway between those of the two components one goes to the bottom and the other rises to the surface. In a second solution the separation is based on the fact that the above mentioned specific gravities tend to decrease as the seasoning of the rhizomes, or roots, goes on, reaching values that are lower than those of water, or of a proper solution, which before the seasoning time had specific gravity lower than those of the two components, and on the fact that the said specific gravities, when the rhizomes, or the roots, are ground and mixed with water, or with a solution, return to their original values at different rates. In this second case the separation of the ground mix can be achieved by mixing the ground rhizomes, or the ground roots, with water, or with a proper solution, which need only have a slightly higher specific gravity than the two components. The first of the two components to reach a higher specific gravity will be the inner part of the rhizomes, or of the roots, and the moment its specific gravity becomes higher than that of the water, or of the proper solution, it will begin to sink, while the other component, the cortical, will remain on the surface of the liquid. In the case of the irises, if the rhizomes have not been seasoned or have been seasoned for a short time, the values of the specific gravities of the two components, the cortical and the internal ones,

although different from each other, are both higher than that of water. In this case the separation is obtained by increasing the specific gravity of the water with the addition of sodium chloride, or other salts, up to a value halfway between the values of the
5 specific gravities mentioned above, and mixing the ground rhizomes into this solution. When this is done the inner parts of the iris rhizomes sink and the cortical parts thicken on the surface. With the irises this represents a prime method of obtaining the separation of the two components. The inner parts of the rhizomes
10 which we are interested in, can be rinsed several times in pure water after they have been taken out of the liquid in which they have settled. In a ratio of ground parts and water, whose value is 1 to 4, which is quite realistic, the quantity of sodium chloride in the water diminishes 6000+7000 times after the second rinsing.

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Specifically in the case of the irises the simplest and most economic form of separation of the cortical part of rhizomes from the inner part, is the second one mentioned. We need only use water. The system has already been explained. The ground rhizomes will be
20 mixed with water and one need only wait for one of the components, that is the inner part, to regain a specific gravity higher than that of water and sink to the bottom of the tank.

As an example, let's have a look at a plant fit to realize, practically, the separation of the two components of the rhizomes which
25 we have described. The plant might be made up of a cement tank, with a volume great enough to contain an economically suitable quantity of the product. This tank will contain the water, or the solution with the higher specific gravity. The tank will also contain
30 two types of large container, whose cross section will be the same as that of the tank, and these containers will be removed from the tank itself by winches set over the tank. Such containers

will be equipped to strain the water, or the liquid used, from the ground parts they contain. Therefore their bottoms and sides will be made of net fine enough to hold the ground parts as the water drains off. One of these containers will put on the bottom of the tank, the other one halfway between the bottom and the surface of the liquid. This upper container will have an opening bottom, which can be realized by hinging two half bottoms to a fixed central axis of the container. It should be possible to open or shut these two half bottom from the outside, with tierods fixed to the container itself. The steps involved in extracting the two components, the cortical and the inner ones, in chronological order could be the following : in the tank one container is kept on the bottom, the other one, with its mobile bottoms open, is kept halfway up; the ground parts are mixed into the liquid in the tank; when the heavier component settles, that is, accumulates in the container on the bottom, the mobile bottoms of the upper container are shut; the upper container is raised to the surface, thereby gathering the lighter of the two components, that is, the cortical parts; said upper container will be strained and put aside in the tank itself; the lower container, with the heavier component, the one in which we are interested, can then be taken out of the tank; the contents can be rinsed several times if the liquid was a solution of salts in water, or they can simply be recovered if pure water was used.

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This process industrializes one of the transformation phases of some agricultural materials that are used by industry. This phase requires a lot of manual work at the present moment and certainly impedes industrialization from the beginning. This process can be the basis of an industrialization which will involve the initial selection of the most productive plants of the highest quality, rational cultivation techniques and commercial standards which will protect the quality and the price.

Claims:

1. Process to achieve an industrial separation of the cortical part from the inner part of rhizomes of irises, or of rhizomes or
5 roots of officinal plants having similar physical characteristics, that separation having been up-to-now effected manually and done in order to eliminate odours, tastes and other properties that de-
grade the materials extracted from the said rhizomes or roots, said materials being utilized in the perfumery, pharmaceutical and ali-
10 mentary industries, the above mentioned process is characterized by the fact that a grinding phase takes place before that of de-
cortication and that the separation of the ground cortical part from the ground inner part is obtained in a second phase using the difference in their specific gravities.

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2. Process according to the claim 1, characterized by the fact that the ground components are mixed with liquids, or with solu-
tion, with specific gravities halfway between those of the two components, and separate as one sinks and the other rises.

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3. Process to achieve an industrial separation of the cortical part from the inner part of rhizomes of irises, or of rhizomes or roots of officinal plants having similar physical characteristics, that separation having been up-to-now effected manually and done
25 in order to eliminate odours, tastes and other properties that de-
grade the materials extracted from the said rhizomes or roots, said materials being utilized in the perfumery, pharmaceutical and ali-
mentary industries, the above mentioned process is characterized by the fact that a grinding phase takes place before that of de-
30 cortication and that the said industrial separation is effected after a seasoning time during which the specific gravities of the cortical and inner parts of the rhizomes, or of the roots, become

lower than the specific gravities of water, or of a proper solution, which before the seasoning time had specific gravity lower than those of the two components, this industrial separation being obtained by mixing the ground parts in said water, or in said proper solution, and using the fact that the specific gravities of the
5 two components, when they are mixed with water, or with said proper solution, return to their original values at different rates, and that the difference in the time involved is quite long enough to permit the separation of the components.