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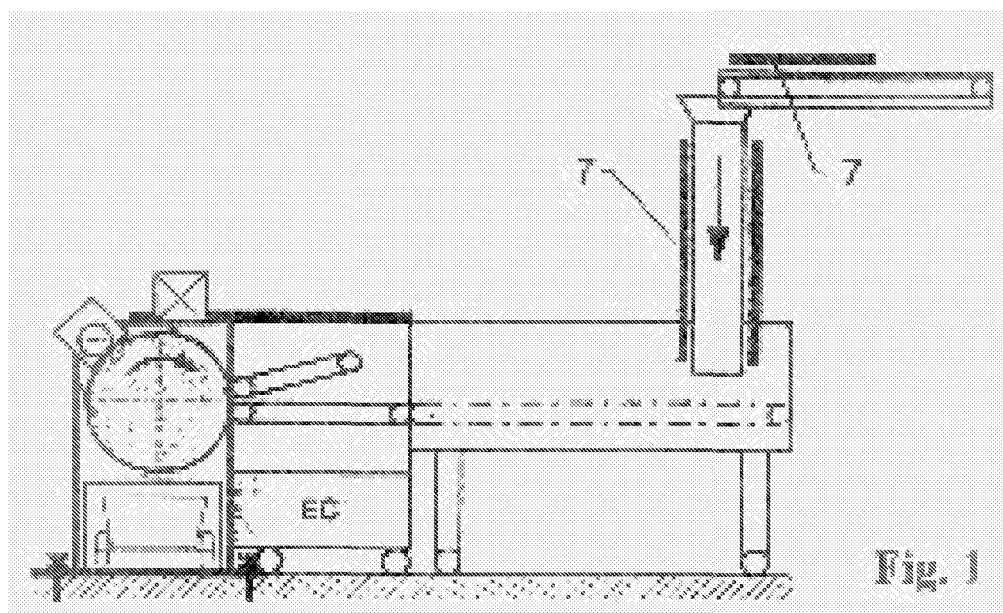
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(54) **Method and device for processing organic plant material, particularly tobacco**

(57) The invention relates to a method and a device for processing organic plant material, particularly tobacco. The method is based on feeding the material onto a compacting feeder for compaction of the discharged material, and then cutting/comminuting it. The method according to the invention is characterized in that before the cutting/comminuting step heat energy is delivered and the stream of the material is heated homogeneously,

preferably along at least a portion of the path of the conveyed material, particularly just before feeding the material to the cutting/comminuting zone, to a temperature from ambient to 99°C, preferably from 35°C to 80°C, and most preferably from 40°C to 70°C. The heating is carried out for a period of time in which all layers of the cross-section of the material stream reach the same temperature and, preferably, the same level of elasticity.



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Description

[0001] The invention relates to a method and a device for processing organic plant material, particularly tobacco materials.

[0002] According to the state of the art method for processing tobacco material, first the tobacco material is fed to a compacting feeder for compacting and then it is cut/comminuted.

[0003] The state of the art device for processing tobacco, shown in pos I, comprises a feeder 6 for feeding organic plant material, the outlet of which is led to an optional metering/discharging tube 5, the tube being a preceding device and the outlet of the tube being located above a compacting feeder 4 terminating with an assembly of compacting conveyors 3. A cutting/comminuting head 1 is located directly adjacent to the assembly. Tobacco material from the assembly of compacting conveyors 3 is fed to the cutting/comminuting zone 2. The device is equipped integrally with a control system EC.

[0004] With the known method and the device the feeding of the tobacco material to the cutting/comminuting zone is nonuniform, and the organic plant material particles are hard and stuck/compressed together, this adversely affecting the final results of comminution, expansion and drying processes.

[0005] According to the invention, the method for processing organic plant material, particularly tobacco, is characterized in that before the step of the cutting/comminuting, heat energy is delivered and the material stream is heated homogeneously across the material stream, preferably along at least a portion of the path of the transported material, particularly directly before feeding the material into the cutting/comminuting zone, to a temperature from ambient to 99°C, preferably in the range from 35°C to 80°C, most preferably from 40°C to 70°C. The heating is carried out for a period of time in which all layers of the cross-section of the material stream reach the same temperature and, preferably, the same level of elasticity.

[0006] The heating is carried out by means of electromagnetic waves of a wavelength range such that the emitted beam may cause an increase of temperature of all the components and/or some selectively chosen components only, e.g., only water or only the processed organic plant material, particularly tobacco. Preferably, the employed electromagnetic waves are of the range of microwave radiation, thereby the heating being carried out along the whole cross-section of the conveyed material stream, preferably just before entering the cutting/comminuting zone.

[0007] Moreover, steam is employed for heating, preferably just before the cutting/comminuting zone along the path of the stream of the conveyed material.

[0008] The device according to the invention for processing organic plant material, particularly tobacco material, is characterized in that it is equipped with heating subassemblies preferably located along at least a

portion of the path of the conveyed material.

[0009] The heating subassemblies comprise electromagnetic waves emitters, preferably in a range of microwaves.

5 **[0010]** Preferably, the heating subassemblies comprise sources of heated steam.

[0011] The path of the conveyed material stream is defined by an assembly of compacting conveyors and, preferably, a compacting feeder, a preceding device, particularly a metering/discharging tube, and at least a portion of a feeder.

10 **[0012]** The compacting conveyors are located directly adjacent the cutting/comminuting zone. The process according to the invention causes expansion and gives a uniform elasticity of particles of the organic plant material, particularly tobacco. Due to heating the material before feeding it to the cutting/comminuting zone, one obtains extra advantageous properties and quality parameters of the cut/comminuted product, and also advantageous increase of density of the product in the cutting/comminuting zone.

15 **[0013]** Furthermore, when employing the present invention, one obtains an improvement of rheological properties of particles of the organic plant product, particularly tobacco, and as a result advantageous homogenization of the stream of the product and also optimization of forces exerted in the cutting/comminuting zone.

20 **[0014]** Expansion of the tobacco material particles is obtained due to homogenous distribution of moisture in the processed particles, this resulting in a more uniform and advantageous distribution of density of the particles in the cutting/comminuting zone.

25 **[0015]** The process according to the invention allows for elasticizing the processed organic plant material and compensating moisture losses resulting from a squeeze of the organic plant material, particularly tobacco, in the cutting/comminuting zone, thereby obtaining better results of the expansion and drying steps following the cutting/comminuting step.

30 **[0016]** An embodiment of the present invention is presented in the attached drawing in which:

Fig. 1 shows schematically a front view of a device according to the invention, and

35 Fig. 2 shows a plane view of the device of Fig. 1.

[0017] All elements of the device according to the invention shown in Figs 1 and 2 are similar to elements of the device of pos. I. In Figs. 1 and 2 heating subassemblies 7 are marked with bold lines.

40 **[0018]** According to the invention, raw material to be processed is fed onto the compacting feeder 4 for compaction of the discharged material, thereafter the material is cut/comminuted. Before the cutting/comminuting step the stream of the material is heated homogeneously across the stream, preferably just before feeding the material into the cutting/comminuting zone 2, to a temperature from ambient to 99°C, preferably from 35°C to 80°C,

and most preferably from 40°C to 70°C. The heating is carried out for a period of time in which all layers of the cross-section of the material stream reach the same temperature and, preferably, the same level of elasticity.

[0019] The heating is carried out by means of electromagnetic waves of a wavelength range such that the emitted beam may advantageously cause an increase of temperature of the whole material and/or some selectively chosen components only, e.g., only water or only the processed organic plant material, particularly tobacco. Preferably, the employed electromagnetic waves are of a range of microwave radiation, thereby the heating being carried out along the whole cross-section of the conveyed material stream, preferably just before entering the cutting/comminuting zone.

[0020] According to the invention, steam heating is employed, preferably just before the cutting/comminuting zone along at least a portion of the path of the stream of the conveyed material.

[0021] The device according to the invention comprises a feeder 6 for feeding organic plant material. The outlet of the feeder 6 is optionally led to a metering/discharging tube 5, the outlet of which is situated above a compacting feeder 4 ended with an assembly of compacting conveyors 3 in direct proximity to which a cutting/comminuting head 1 is located. The heating subassemblies 7 are located along the assembly of compacting conveyors 3 and preferably along the compacting feeder 4, and also preferably along the metering/discharging tube 5 and/or along a portion of the feeder 6.

[0022] The heating subassemblies 7 comprise emitters of electromagnetic waves, preferably in a range of microwaves and/or may comprise sources of heated steam.

[0023] As shown, the path of the conveyed material is defined by the assembly of the compacting conveyors 3 and preferably the compacting feeder 4, the preceding device, particularly the metering/discharging tube 5 and at least a portion of the feeder 6.

[0024] The compacting conveyors are located in direct proximity to the cutting/comminuting zone 2.

carried out for a period of time in which all layers of the cross-section of the material stream reach the same temperature and, preferably, the same level of elasticity.

2. A method according to claim 1, **characterized in that** the heating is carried out by means of electromagnetic waves, preferably in a range of microwaves, preferably in a range of resonance spectrum of water.

3. A method according to claim 1, **characterized in that** steam is employed for heating.

4. A device for processing organic plant material, particularly tobacco, comprising a compacting feeder 4, ended with an assembly of compacting conveyors 3, in direct proximity to which a cutting/comminuting head 1 is situated, **characterized in that** it is equipped with heating subassemblies 7, preferably along at least a portion of the path of the stream of the conveyed material.

5. A device according to claim 4, **characterized in that** the heating subassemblies 7 comprise emitters of electromagnetic waves, preferably in a range of microwaves.

6. A device according to claim 4, **characterized in that** the heating subassemblies 7 comprise sources of heated steam.

7. A device according to claim 4, **characterized in that** the path of the stream of the conveyed material is defined by the assembly of the compacting conveyors 3 and preferably the compacting feeder 4, the preceding device, particularly the metering/discharging tube 5 and at least a portion of the feeder 6.

8. A device according to claim 7, **characterized in that** the compacting conveyors 3 are located in direct proximity to the cutting/comminuting zone 2.

Claims

1. A method for processing organic plant material, particularly tobacco, according to which the material is fed onto a compacting feeder for compaction of the discharged material, and then it is cut/comminuted, **characterized in that** before the step of cutting/comminuting heat energy is delivered and the stream of the material mass is heated homogeneously across the stream, preferably along at least a portion of the path of the conveyed material, particularly just before feeding the material into the cutting/comminuting zone, to a temperature from ambient to 99°C, preferably from 35°C to 80°C, and most preferably from 40°C to 70°C, the heating being

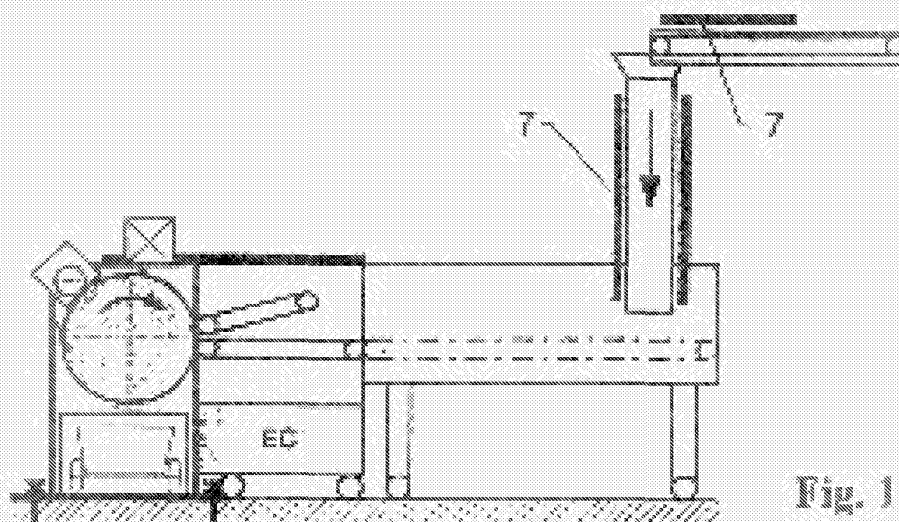


Fig. 1

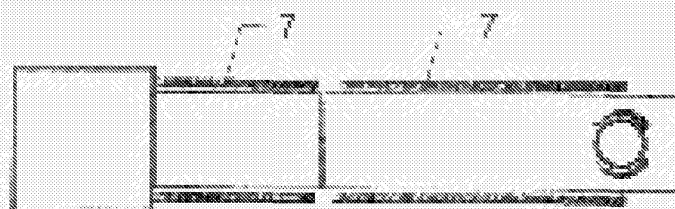
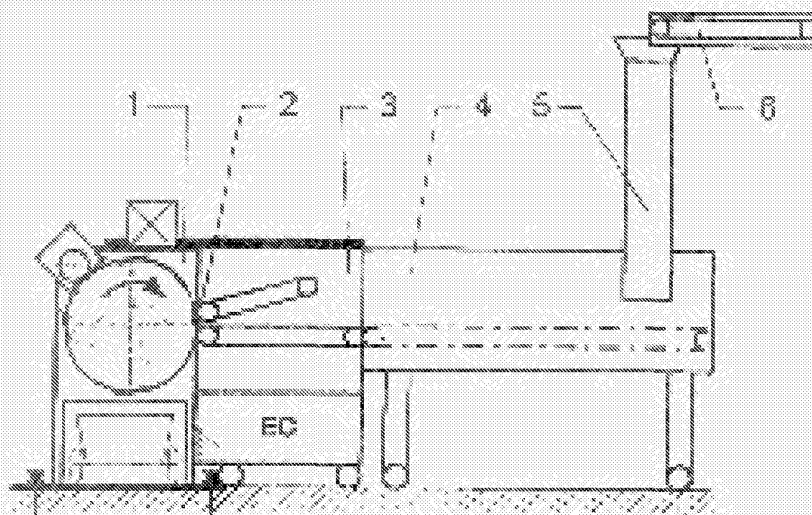


Fig. 2



pos. 1