Sawing Processes

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ABSTRACT

Today, the production of high-quality fiber in accordance with world standards poses an important task for specialists and scientists in the field of processing, such as the improvement of existing equipment and technologies.

Keywords: Cotton, fiber, seed, chamber, raw material, roller, density, construction, experiment, factor.

Enter. High-quality fiber production depends mainly on the working process of the gin machine that separates the fiber from the seed, which performs the main work in cotton ginning enterprises. Due to the low possibility of adjusting the density of the raw material shaft in the working chamber of the existing sawing machine in the cotton ginning factories, and as a result of the effect of the friction of the raw material shaft with the working chamber, its speed is low. This has a negative effect on productivity and fiber quality. Therefore, the following works will be carried out through the proposed technology: Proposing a new improved gin machine based on the analysis of the results of the previously conducted research and preparing working drawings. Making a copy of the experiment in different sizes. Analyzing the results of research and determining the most favorable technological dimensions that will make the improved construction work effectively. Preparation and testing of a production copy of this genie machine device.

Relevance of the study. In the process of separating the cotton fiber from the seed in the gin machine, the formation of raw material depends on several factors. The most important of them are the speed of rotation of the raw material, fiber content, density, the amount of seeds separated from the fiber, etc. In addition, it is necessary to take into account the force of friction created by the walls of the working chamber due to the pressure created in the raw material. These factors have an effect on the productivity of the gin machine and the quality of the obtained fiber. Under the influence of the pressure of the raw material in the working chamber, jams and friction are formed. This friction force affects the rotation of the raw material and creates significant resistance. Especially when the DP-130 gins were working with low-grade cotton, it was observed that there were frequent blockages in the working chamber. Such a situation has a negative effect on the process of cotton ginning, causing a decrease in the productivity and quality of the fiber. In order to experimentally study the influence of the speed of the rotation

of the working chamber inside the working chamber, it is necessary to test it by passing it on a 30-saw gin machine.

Research object and methods. A number of problems can be solved by removing the seeds separated from the fiber from the working chamber of the gin. In order to study the process of ejecting the seeds separated from the fiber from the working chamber of the gin machine, the 30-saw test device of the gin machine was installed in the scientific laboratory of the "Technology of preliminary processing of natural fibers" department of the Namangan Institute of Engineering Technologies.

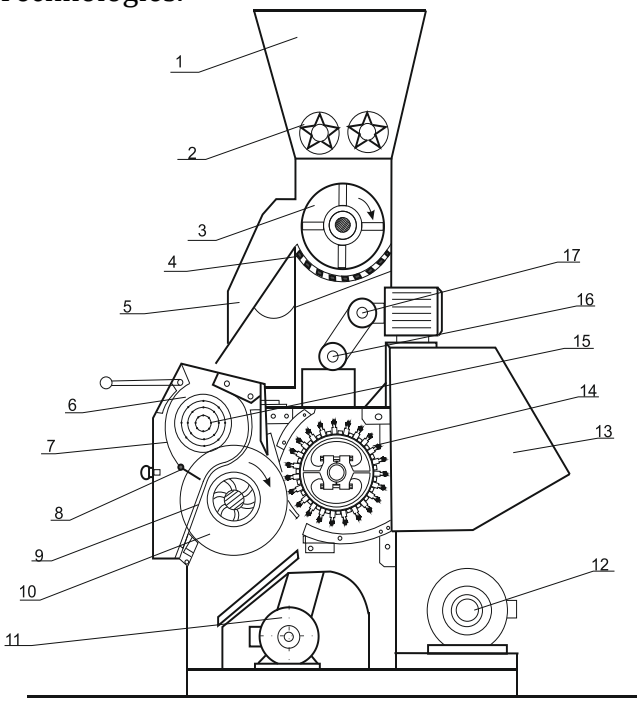

Figure 1. Scheme of the device intended for the 30-saw test of the gin machine.
1-bunker, 2-supply rollers, 3-pile drum, 4-netting surface, 5-throw, 6-working chamber, 7-apron, 8-seed comb, 9-colosniks, 10-saw cylinder, 11th engine (for rotating the brush drum), 12th engine (for rotating the saw cylinder), 14th brush drum.

The construction of the new gin working chamber has changed, 3 saw cylinders are installed at once, ginning process is carried out in 3 places. The new kalosnik grid has a semi-circular form, occupies 3 out of 4 parts of the working chamber, and increases the fiber separation part of the chamber. In the 1st cylinder of seeded cotton, mainly long fibers are separated, in the 2nd cylinder, shorter fibers are separated, and in the 3rd cylinder, very short fibers are separated. Due to the rotating movement of the disc roller leading to the ginning point, the seed also rotates around its center of gravity and the fibers are separated more completely. Selective technologies of sawing are created with the help of a fiber separator with 3 saw cylinders, i.e. fiber length sorting is carried out.

It is planned to test several working cameras in the experimental device. 3 saw cylinders are installed inside the working chamber of the saw cylinder, the main task of which is to sort the fibers according to their length.

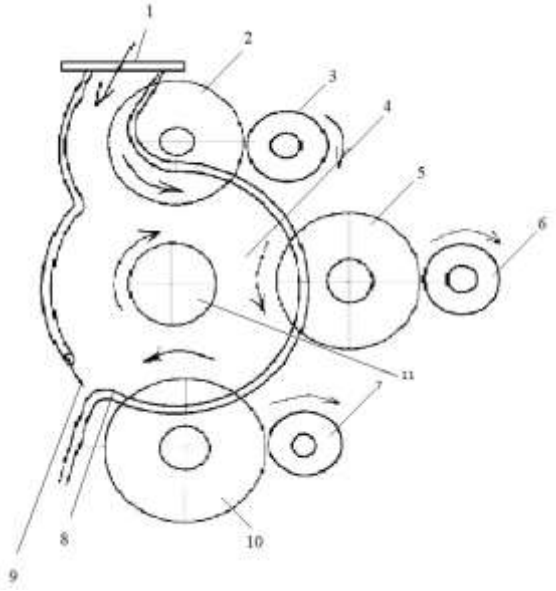

Figure 2. Proposed demon work cam
1-inlet pipe; 2,5,10-saw cylinders; 3,6,7 fiber splitters; 4th working chamber; 8-column grid; 9-seed comb; 11-disc roller.

Discussion of the obtained results and conclusions. Analyzing the results of the research and determining the most favorable technological dimensions that will make the improved construction work effectively on this basis. The goal of the new equipment is to achieve the quality and length of the fiber, and to increase the volume of exportable fiber.

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