

APPLICATION OF METHODS OF INCREASING THE QUANTITY OF FIBER OUTPUT DURING THE PROCESS OF SPINNING

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ANNOTATION

In the process of separating the seeds, the raw material formed in the working chamber of the gin depends on the composition of the roller. This is due to the fact that the teeth of the rotating saw grab the fiber, attach the cotton to its back and make the roller with the raw material rotate, and the process of separating the seeds takes place in the working chamber.

Key words: Lint, fiber, staple length, fluff, type, non-woven fabric, ripening, lintering, seed, grid, brush.

INTRODUCTION

Increasing industrial production is one of the main factors in the economic development of independent Uzbekistan. President of our republic Sh. The following words of Mirziyoev prove it: "In a word, the rapid development of our light industry, including cotton fiber processing enterprises, constitutes our priority strategic goals. Account books show that a seven- to eight-fold increase in the amount of net profit from cotton raw materials alone and replenishing our treasury with hard currency through exports, we will be able to make our lives fuller and more prosperous [1]. In the republic, cotton growing is one of the largest branches of the national economy, and is of great importance in the country's economy and in improving the material well-being of the people. A large part of the republic's consumption fund consists of industrial goods produced from cotton raw materials. Seed cotton is one of the most necessary types of raw materials in the production of industrial and food products. In terms of its importance, it ranks alongside grain, gold, oil and other extremely important types of raw materials in the state economy. Seeded cotton is a raw material for cotton ginning enterprises, and its fiber serves as a semi-finished product for textile, knitting, footwear, light industry and other industries.

It is known that the sawing process is quite complicated. Because its operation depends on the composition of the raw material roll formed in the working chamber of the gin, the teeth of the rotating saw grab the fiber and attach the cotton pieces behind it, forcing the raw material roll to rotate. This process depends on the structure of the working chamber. Its structure, in turn, changes the composition of the raw material roller, its speed, the fiber level of the seed, its density, the quality of the obtained fiber and seed, and finally the relative rotation frequency of the layers of the raw material roller.

In order to improve the above indicators, it is necessary to improve the ginning technology. It is known that the rotation of the raw material roller, its density change and many technological indicators are mutual friction during the movement of the roller, which leads to a large energy consumption for its rotation. Through energy, the state, speed, density and pressure of mutual movement between layers are determined. This makes it possible to mutually control the quality of fiber and seed [2;3].

It is known that in the process of separating medium-fiber cotton from sawdust, some seeds remain in the working chamber for a long time, which seriously affects the productivity of the machine and the quality of the output products. In addition, it is observed that seeds that have not been completely removed from the fiber pass between the seed combs. It is known from scientific research that more than 50% of the composition of the raw material is ready-to-go seeds. Since these seeds are heavier in mass compared to the fiber, they tend to the center of the raw material shaft and accumulate there. Decreasing the amount of hairless seed leads to a decrease in the weight and density of the raw material, and increases the level of fiber and the amount of hairy seed, all of which leads to an increase in the overall fiber level [4].

4 DP-130 and 5 DP-130 type sawing machines are used in the process of seed cotton processing in our republic (Fig. 1). It is known that the process of ginning is carried out with uniform release of ginned seeds from the working chamber and uniform arrival of seeded cotton to the working chamber.

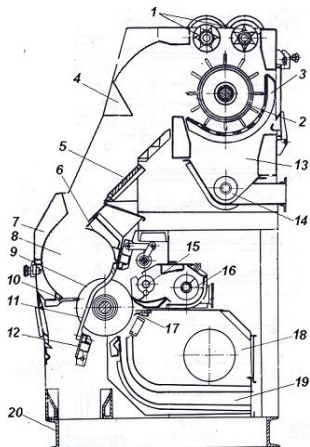


Figure 1. 4DP-130 cross section of saw gin

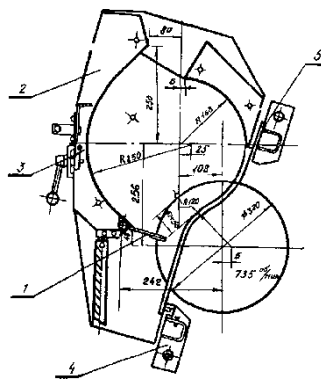


Figure 2. Working chamber of the saw gin.

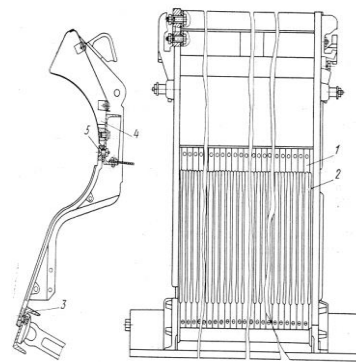


Figure 3. The Colossian Fence of the saw gin.

Research has shown that the longer the seed stays in the chamber, the more fibrous material is removed from its surface (Figure 2). But in this case, the genie's work efficiency decreases. Also, the quality of fiber and seed decreases due to mechanical effects. This condition is controlled by a seed comb. The crushed seed leaves the working chamber through the channels between the colostrum and the seed comb. The size of these channels directly affects the amount of seed coming out of the working chamber. Channel dimensions are modified by the position of the seed comb piles [5].

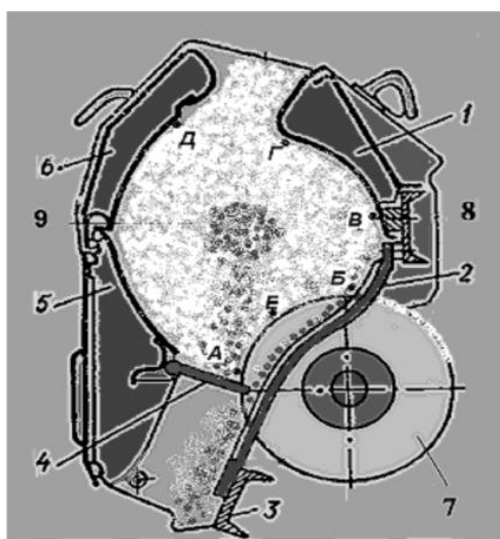
Taking into account the results of the above research, the distance between the seed comb and the colosnik is important. To this end, 30 different seed combs were tested in a sawmill.

Experiments were conducted with a constant deviation angle of 100 and a distance from the tips of the comb to the column of 30, 20, and 10 mm. In previous experiments, a seed comb of 55 mm length showed good results when the seed comb piles were 105 mm long. A 105 mm seed comb was selected for this experiment.

According to the conducted scientific research, the parameters of the ginning process change with the change of the distance from the tip of the pile to the kalasnik, that is, the hairiness of the seed increases and the fiber output decreases. But in this case, the gin's efficiency is high. Also, the quality of the fiber increases, and mechanical damage to the seed decreases.

The productivity of fiber and seed in the working unit can be increased by increasing the mass of the raw material in it, or by reducing the average time spent by fiber and seed in the unit. To increase the rotation speed of the raw material shaft, the cross section of the working unit can be enlarged, but this increases the friction force of the raw material shaft against the surfaces of the working chamber and prevents rotation.

(Figure 4).



1. Пештоқ брус.
2. Колосник.
3. Пастки брус.
4. Чигит тароғи.
5. Пастки фартук.
6. Олдинги фартук.
7. Аррали цилиндр.
8. Юқори брус.
9. Хом ашё валиги.

Figure 4. Gin working chamber and raw material shaft.

The seeds that are ready to be completely separated from the fibers from the raw material roller of the working chamber make up more than half of the mass of the roller. Due to this, the productivity can be increased only by reducing the average time the seed stays in the unit. As the distance between the seed comb and the colostrum decreases, fiber output increases, hairiness, work efficiency decreases, fiber and seed quality decreases. In relation to fiber, increasing the distance between colostrum and seed comb improves fiber and seed quality (Fig. 3).

It is known that the working chamber of saw fiber separators consists of a rib cage, a front apron, a place where cotton enters the chamber and a seed comb. These elements of the working chamber, their structure, size and location relative to the saw have a great influence on the process of saw fiber separation.

A decrease in the amount of hairless seed leads to a decrease in the mass of the raw material, and an increase in the fiber level and the amount of hair seed, all of which leads to an increase

in the overall fiber level. Based on the production results, the positive change in the composition of the raw material shaft is due to the increase in its rotation speed, as well as the reduction of the time of seed and fiber in the raw material shaft. As a result, it leads to an improvement in the quality of the output product.

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