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CHANGING THE CONSTRUCTION OF THE WORKING CHAMBER IN ORDER TO SEPARATION OF COTTON FIBER FROM CHARGE

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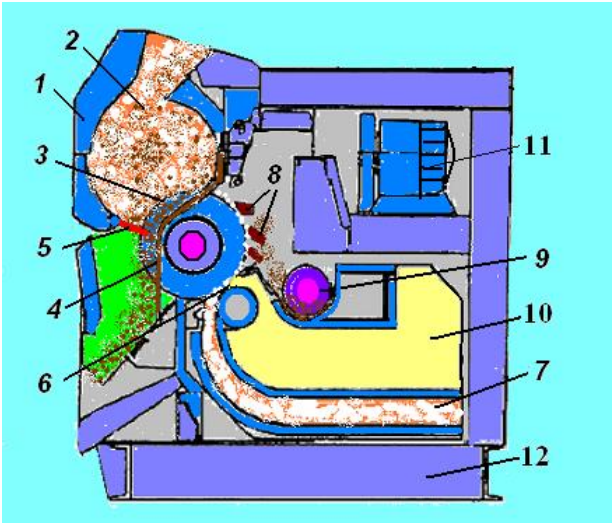
Abstract:
According to the results of the literature analysis conducted in the scientific article in order to determine the main factors affecting the increase in density and the loss of the natural quality of the fiber in the process of fiber separation, the most important of them was the presence of unginned seed cotton in the working chamber. . We would like to give an overview of the new working chamber for the control of the technological process of the two-chamber working body, which ensures the preservation of the natural properties of seed cotton and its products, and for saw fiber separators.

Keywords. cotton, seed, fiber, gin, working chamber, apron, kolosnik.

Introduction

Saw gin is considered the main technological machine of the cotton ginning enterprise, and its task is to separate the cotton fiber from the seed. The seeded cotton is dried in the drying-cleaning and cleaning shops to the condition of moisture and after it is cleaned from the weeds, it is sent to the main building of the enterprise for ginning (separation of fiber). Up to now, ginning of medium fiber seeded cottons in cotton ginning enterprises; Saw gin machines 4DP-130, 5DP-130, DPZ are being used. The production of high-quality fiber depends mainly on the working process of the ginning machine, which does the main work in cotton gins.[1]



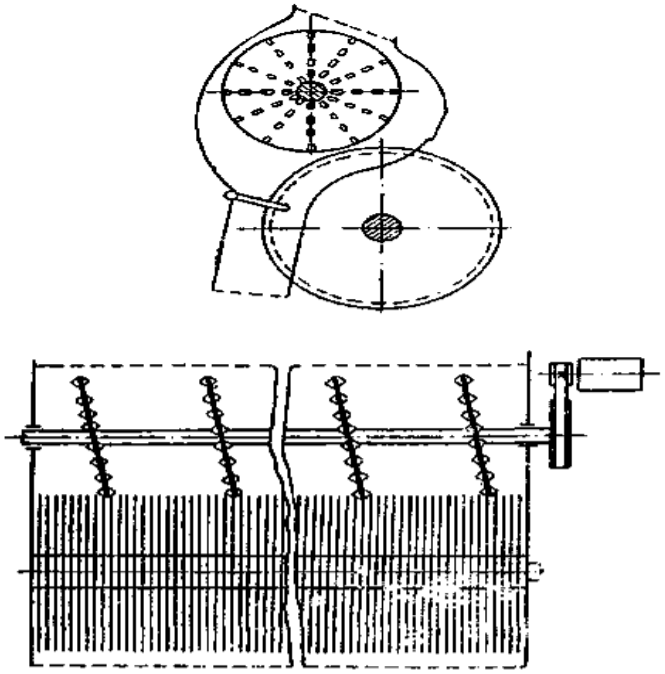
1-picture. 5DP-130 technological drawing of a type chainsaw genie

1-upper apron; 2- working chamber; 3- saw cylinder; 4-colosniks; 5-seed comb 6-saplo; 7-fiber exit pipe 8 - colosnik; 9 – large screw; 10- air chamber; 11- electric motor; 12-corpus.

It can be considered that the beginning of the development of the process of sawing in Uzbekistan is the research conducted by the engineer I. N. Botvinkin. A number of articles have been published on the results of the study of the interaction between raw material and saws in an experimental cotton factory..

X.T. Axmedxodjaev[2] The scientific research work is aimed at creating an opportunity for the faster exit of the seeds separated from the fiber from the working chamber of the saw fiber separator by creating grooves, i.e. depressions, on the working surface of the colosniks and installing a device that ensures the consistency of the density of the raw material. In this case, the seed separated from the fiber falls on the colossal concave working surface between the saws and moves downwards along this groove under the influence of its own weight. Due to the fact that the colosnik surface is in contact with the raw material roller, some seeds separated from the fiber may stick to the raw material roller without falling down. Due to the grooves on the surface of the proposed colosnik, the seeds separated from the fiber will roll down this groove under the influence of their own weight.

Over the years, a number of studies have chosen different ways to increase the effectiveness of gin. Parameters such as the configuration of the working chamber, the position of the seed comb for the free exit of the seeds from the working chamber, the shape of the colosniks, the geometry of the saw tooth, the speed regime of the saw cylinder, the diameter of the saw cylinder, and the distance between the saws have been studied. During the theoretical study of the ginning process by researchers, the composition of the raw material, the nature and rate of ginning, the release of seeds from the working chamber, the shape of the gin working chamber and the saw teeth, the reason for the occurrence of defects in the ginning process, and the coverage of the saw teeth were evaluated, during the process, they found out that not all saw teeth are uniformly covered with fiber and not all of them participate in ginning.[3The authors believe that it is necessary to improve the shape of the raw material chamber in order to increase the number of revolutions of the saw cylinder to 700...730 min-1, reduce the relative speed of the roller compared to saws, accelerate the removal of seeds from the center of the chamber, and facilitate the rotation of the raw material roller. D.A. Kotov [4] found out in his research that the accelerator rotates the raw material shaft and changes its composition and rotation speed. I.D. Kort [5,6] proposed an accelerator in which disks with grooves on the surface of the shaft are installed obliquely to the axis of the shaft. When the engine is working, the raw material shaft is separated into parts by the disks, as a result, the rotation of the raw material shaft accelerates. The inclined installation of the discs on the shaft causes the layers of the raw material shaft to be constantly mixed in the axial direction, which leads to better hooking of the cotton pieces by the saws of the gin saw cylinder.



2- picture. A working chamber with an inclined disk accelerator

The raw material shaft accelerator [7,8] consists of a shaft with disk blades installed on it with a certain step. Each part is in the form of a curved surface, one part of which is made in the form of a left-handed screw, and the other part is made in the form of a right-handed screw (Fig. 1.13). This accelerator, along with its blades, ensures the acceleration of the rotation of the raw material shaft and the axial displacement of the vibration. As a result of the continuous active effect of the disks on the cotton in the chamber, the ginning productivity increases and, due to the continuous interaction of the blades with the raw material shaft, the damage to the seed is reduced by preventing the impact on the seed. If we come to the project of changing the construction of the working chamber in order to obtain high-quality cotton fiber, due to the increase in the density of the raw material in the working chamber, the rotation of the saw cylinder slows down and when the density increases, it stops moving. [9,10] despite the fact that there are practical, scientific works devoted to the study, the issue has not been fully resolved. In addition, the seeded cotton coming to the working chamber of the ginning machine falls from above, as a result of which the unginned seeded cotton in the raw material shaft is mixed with the partially ginned raw material shaft, and as a result, a part of the seeded cotton faces the saw and the rest remains in the raw material shaft. With these in mind, our new working camera will help prevent problems. In this case, reducing the size of the gin working chamber, seed cotton is fed from the lower part, that is, it is fed directly to the saw, and 30-40% of the seed cotton is fed to the saw cylinder teeth in the direction of rotation of the saw cylinder. the worker enters the chamber and the initial ginning takes place and ensures that the seed cotton is less in the

raw material stock.[11,12] As a result of initial ginning, we achieve high-quality fiber while preserving the natural properties of the main fiber. V. I. Kuzmin, D. A. Kotov, R. Kattakho'jaev, M. Tillaev and others conducted scientific research on the further improvement of the gin machine. [13] As a result of research, constructions have been created that allow to increase productivity and improve fiber quality. As a result of the conducted scientific research, it was shown that the speed of the raw material is important in increasing the productivity of the sawing machine [14,15]. The working principle of the proposed new working chamber is as follows, the incoming seed cotton moves down with its own weight through the front chamber, and the seed cotton attached to the teeth of the saw cylinder enters the working chamber with the help of the saw cylinder, and the seed cotton attached to the saw teeth directly The saw leads to the grid with colosniks, takes the fibers stuck to the saw teeth between the colosniks, and the seed that does not fit between the colosniks remains in the working chamber.

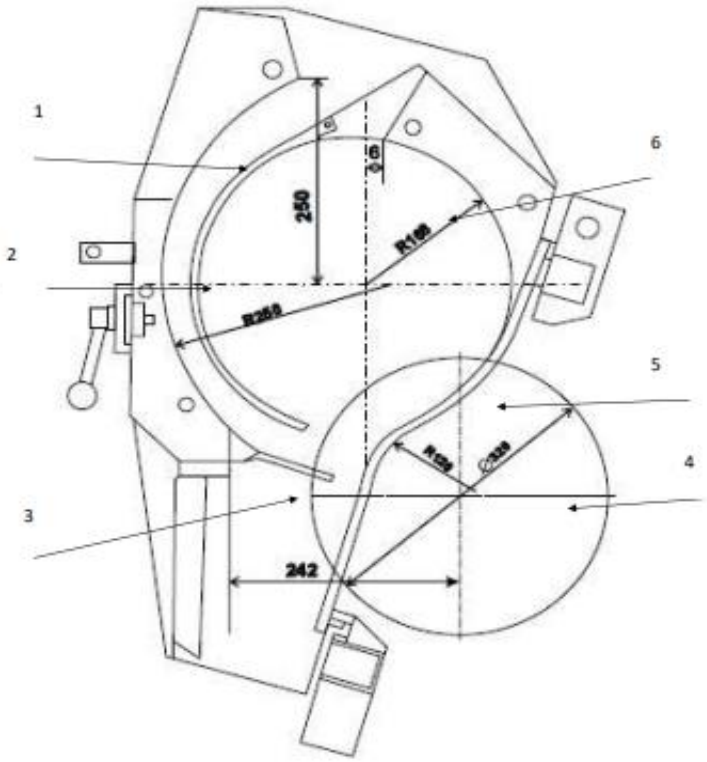


Figure 3. A new improved working camera

1- 1- front camera,
2- -anterior and posterior chamber wall,
3- seed comb,
4- - saw cylinder,
5- -column grid,

If we calculate the surface, size and mass of cotton falling into the new working chamber of the gin machine shown in the picture, the amount of cotton coming into the working chamber will be: m0=10.72kg. In this case, we can see that due to the small surface area of the working chamber, the mass of the raw material shaft is somewhat lighter. As a result of the light mass of the raw material shaft, there are no stops (zaboy) in the working chamber of the gin machine, and in addition, damage to the fiber is reduced.

Conclusion

As we know, the accumulation of seeds in the middle of the raw material during the ginning process leads to an increase in density. As a result of the increase in density, fibers and seeds meet with a saw cylinder rotating at a speed of 730 rpm. As a result, the density of the raw material increases, and the damage to the seed and fiber increases. The solution to the problem that needs to be solved is to improve the construction of the working chamber and introduce it into production.

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