

ANALYSIS OF THE TECHNOLOGICAL REQUIREMENTS FOR SAW GINNING PROCESS AND ITS WORKING PARTS AND THE DEFECTS THAT ARISE

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Abstract. *This article talks about the main point and types of the sawing process, the technological requirements that must be met during sawing and the defects that arise, the technological requirements for the working chamber of the sawing machine and the saw cylinder.*

Key words: *ginning, roller ginning, saw gin, fiber, saw cylinder, working chamber, colosnik.*

Along with cereal crops, cotton is one of the oldest cultural crops on our planet. Cotton thread was used in the Indus Valley 3 thousand years ago [1].

Cotton was cultivated for economic purposes in Central Asia 5 centuries before our era. The main product produced from cotton raw materials is cotton fiber. Therefore, it is classified according to the quality of cotton fibers in the world [2].

After the cotton is dried and cleaned, it comes to the main building of the cotton gin, where the fiber is separated from the seed.

The process of ginning is the removal of fiber from the surface of the seed, so this process is considered the main process. The essence of this process is that the fiber is first hung and then separated from the seed [3].

The process of separating the fiber from the seed is divided into two types, that is, with a saw and with a roller. Currently, many cotton processing enterprises prefer the sawing method due to its high productivity [4].

In sawing machines, a cylinder picked from sawing discs serves as a working organ, and a ribbed grid works together with sawing discs to separate the fiber from the seed [5].

The following technological requirements must be met during ginning of seed cotton:

- Extraction of fibers suitable for spinning from seeds;
- - absence of defects in the fiber and seed as a result of the influence of the gin working bodies on the fiber;
- The pieces of seeded cotton do not join the fiber or seed coming out of the gin;

- high efficiency of cleaning from dead and dirty compounds;
- the hairiness of the emerging seed and the amount of fiber in the carcass are determined

it should be ensured that it does not exceed the norm [6].

By fulfilling these requirements, it is possible to increase work productivity and product quality.

Separation of fiber from cotton, that is, in the process of ginning, carrying out the work process without following the established technological guidelines causes a number of defects [7].

The following defects may appear during the ginning process:

- Fibers attached to a piece of seed pod;
- broken and damaged fibers, knots;
- twisted, blown fibers, rags, broken seeds.

In order to prevent defects from appearing in the process of ginning, gins and others cleaning equipment should be used in accordance with technological requirements.

The working chamber is considered the most important part of the saw ginning machine, and cotton fiber is separated as a result of the technological interaction of the saw cylinder and the colosnik [8].

The following technological requirements are imposed on the work chamber:

- parts of the camera do not have defects in cotton;
- Does not damage the seeds;
- the chamber profile prevents the rotation of seeded cotton as much as possible does not;
- There should be as few obstacles as possible to the arrival of seeded cotton and the exit of fibers and seeds from it.

The saw cylinder (Fig. 1) is considered the main working body of the saw gin, and ginning performed the process, that is, the process of separating the fiber from the seed. It consists of 80 and 130 saw discs (1), saw seals (2), seal shaft (3), clamping washers (4) and bearings (5).

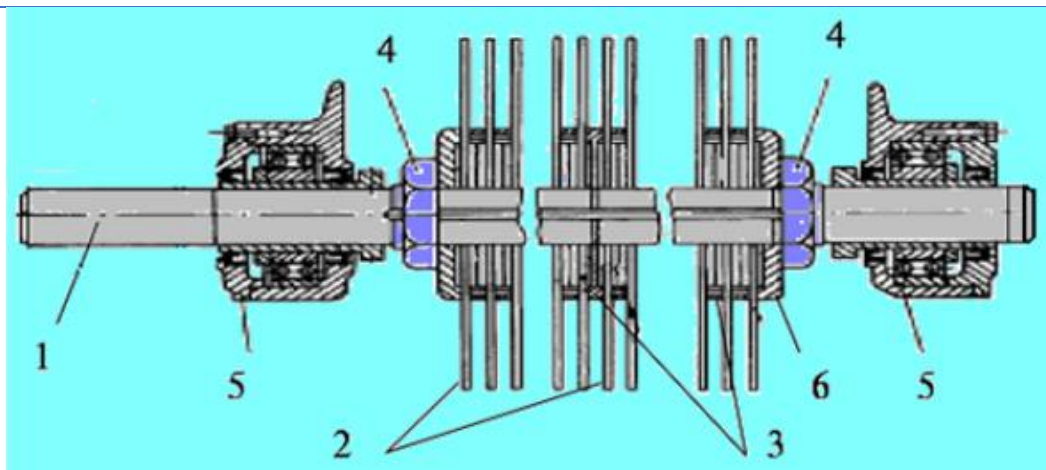


Figure 1. The structure of the saw cylinder.

1 - saw cylinder axis; 2 - saw discs; 3-saw gaskets; 4. Nut;
5 - bearing. 6 - sealing washer;

The saw cylinder has the following technological requirements:

- Saw teeth should have a high fiber cutting ability;

- The saw discs are attached to the shaft and maintain their position during operation it should pass between the ribs without changing. For this purpose, the saw enters the tongue in the hole of the saw disc in the groove directed along the shaft and does not allow the saw disc to rotate on the shaft [9].

Conclusion. In conclusion, it is the most optimal thing to use each device according to its technological requirements. If the equipment is not used according to the specified requirements, many defects will arise in the work process and their elimination will require time and financial resources. As a result of interruptions caused by defects, the standards that must be fulfilled may not be fulfilled and the enterprise may be economically damaged.

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