



GOALS AND OBJECTIVES OF IMPROVING THE WORKING CHAMBER OF THE LINTER

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Abstract: This article outlines the general essence of improving the working chamber of linters, lists its shortcomings and what positive results can be obtained by eliminating them.

Key words: Linter, gins, working chamber, fiber, cotton seeds, saw blades.

After ginning, cotton seeds still have a fibrous material, the amount of which depends on the botanical and industrial grade of raw cotton. The fibrous material remaining on cotton seeds consists of fibers ranging in length from 1–1.5 to 25–26 mm. A fiber with a length of 6 mm or more is called a lint.

The purpose of the linter machines installed in the linter shops of cotton ginning plants is to mechanically remove the linter from cotton seeds. The following technological requirements are imposed on linter machines: during linting, the seeds should not be damaged and the natural qualities of the lint should not deteriorate; crushed seeds should not fall into the lint; contamination of the lint with skin with fiber and fluff with weed impurities should be minimal; on the linter, devices and mechanisms should be installed to regulate the productivity, clogging of the lint and the pubescence of the seeds.

The linter machine consists of the following main elements: a feeder-cleaner, a working chamber with a dusty cylinder and a tedder, a device for removing lint from the teeth of saw blades and auxiliary devices for removing seeds, lint and weed impurities from the machine.

The linting process is influenced by the profile and size of the working chamber, the position of the chamber relative to the saw cylinder, the size and location in the working chamber of the agitator, density valve and seed comb. The turner is one of the main elements of linter machines. It is designed to rotate the seed roller, give it a stable structure when moving from the front bar to the apron and create supports for exposing the seeds on the arc of the saw blades entering the seed chamber.

The operation of the agitator depends on its diameter, location in the working chamber, the number of revolutions and the gap between its blades and saw blades. The purpose of the working chamber is the formation of a seed roller, with the help of which a continuous supply of seeds to the teeth of the saw





blades on the arc of their entry and the removal of bare seeds from the working chamber is ensured.

Increasing the agitator speed improves the structure of the outer layer of the seed roller and increases its stability. In the working chamber, when the agitator rotates, the seeds are thrown to its walls by centrifugal force, forming two annular layers. The outer layer, denser, forms the arch of the seed roller, and the inner, sparse, is located in the rotation zone of the agitator. For normal operation of the seed chamber, it is necessary that the outer layer of the seed roller has a dense, bound structure, is stable in motion, and the arch does not collapse when passing through the upper open part of the chamber.

In fact, gin and linter machines have many structural similarities, and perform almost similar functions, their difference is that gin machines separate long fibers of cotton, that is, the primary separation takes place in gin machines, and the remaining pubescence is separated on linters.

However, having a similar design, these machines have various disadvantages. That is, the shortcomings that linters have do not affect the work of gins. One of these big drawbacks is the deformation of the saw teeth in linters, which occurs due to the gravity of the seeds acting on the saw teeth. As a result of these deformations, the grates that are tightly attached to the saws are damaged, in turn, damage and wear of the grates forms gaps between the saw and the grate, into which small quarrels can enter and exit into the outlet of the clean lint, mixing and contaminating it.

In the working chamber, when the agitator rotates, the seeds are thrown to its walls by centrifugal force, forming two annular layers. The outer layer, denser, forms the arch of the seed roller, and the inner, sparse, is located in the rotation zone of the agitator.

For normal operation of the seed chamber, it is necessary that the outer layer of the seed roller has a dense, bound structure, is stable in motion, and the arch does not collapse when passing through the upper open part of the chamber.

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