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5-LP EQUIPMENT SUPPLY SYSTEM CONSTRUCTION STRUCTURE IMPROVEMENT

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Annotation: As we know, 5-LP and 6-LP linters are widely used in cotton ginning factories. This article aims to reduce the amount of negative factors affecting the quality of raw materials by making changes to the construction structure of the 5-LP linter equipment supply system.

Keywords: Cotton seed, linter, fiber, fuse, magnet, iron pieces, nail, nut, fuse.

Introduction

The demand for clothes made of cotton fibers is increasing worldwide. This situation causes an increase in the demand for cotton fiber and its consumption in the world market. Cotton is grown in 38 countries of the world, and this product accounts for 95% of the total amount of cotton. India, China, the USA, Pakistan, and Brazil, which are the world leaders in the production of cotton fiber, in order to maintain their position and influence in the fiber market, the fiber producers have to improve the consumption characteristics of the cotton fiber produced and their compatibility with the market conditions. they are conducting extensive research on providing.

Cultivation of cotton raw materials, separation of fiber from residual hairy seed (lintering), production and supply of quality fiber are the basis of the national economy [1-3]. Separation of the fiber from the remaining hairy seed in the initial processing of cotton indicates that the seed is not cleaned sufficiently. For this reason, it is one of the urgent tasks to thoroughly study foreign techniques and technologies of linters, to improve existing linters in our Republic and to increase their efficiency based on achievements and experiences. Improvement of technique and technology in cotton lintering, including obtaining high-quality lint, is one of the main problems. That's why scientific research on getting high-quality fluff by completely separating the seed and increasing the quality of linter is of particular importance in fluff production [4-7].

After the ginning process, a certain amount of short fibers remain on the surface of the seed. These fibers are called fluff. Fluff is obtained by scraping the surface of the seed. The equipment that separates the fluff from the seed is called a linter. The length of fluff is from 6 mm to 26 mm, fibers shorter than 6 mm are called fluff and are obtained by delintering.

Among all the technological machines, linters are highly automated, and the process of continuously transferring the seed to the working chamber at the same rate is fully automated.

Lintering process in 5-LP equipment

The seeds are fed to the pile-plate drum (3) with the help of the seed-receiving shaft (1) of the KPP feeder installed on the linter. Due to the rotation of the drum, the pile and planks drag the seed over the surface of the mesh with 2.5 x 3 mm holes, it is cleaned of small impurities in the amount of seed, and it flows evenly along the length of the feeder tube (4) into the working chamber of the linter. falls. The reason why the seed falls into the working chamber of the linter at the same time and is intensively stirred is the checkerboard arrangement of the pile-planks and their rotation at the same speed. In the working chamber (6), the rotating saw cylinder (7) and the filter (8) create a rotary roller where the seeds are compacted. The teeth of the saw (7) are inserted into the rotating shaft of the seed, and it hangs or scrapes off the fibrous mass on the surface of the seed - this is called lint.

The lint caught on the saw teeth is carried through the colosnik (10) and is separated from the saw teeth due to the speed of the air coming out of it when it comes to the slot of the air compartment (9). It separates the fluff and sends it down, that is, to the fluff-departing pipe (13) of the air chamber, and from there, the fluff goes with the air to the battery condenser.

After the slivers are picked up to a certain extent, they are separated from the rotating roller, fall onto the colostrum (10), then slide down, pass between the comb (12) and the colostrums, fall into the collection conveyor and are sent to the next processing equipment. During the separation of the lint from the saw teeth, the large and small pieces separated due to the standing of the large rake (14) are removed from the equipment through the conveyor (15).

The output of the seed is controlled by the seed comb (12). The higher the comb is raised, the more the density of the seed bed increases and the amount of fluff is obtained, if it is lowered, the density of the seed bed decreases and the amount of fluff is reduced, but the fiber of the emerging seed is higher. lib, the total lint output is reduced because a large percentage of the lint is lost with the seed. In this case, the length of the fluff obtained is high, and the fluff belongs to type A.

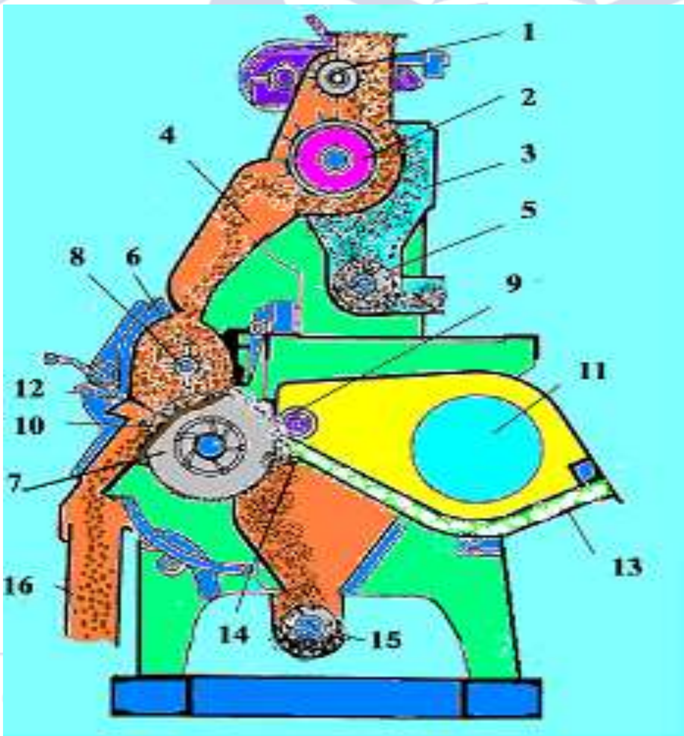


Figure 1. Scheme of technological process of 5LP type linter

1. Supply shaft; 2. Timing drum; 3. Dirt bunker; 4. Sloping rod; 5. Dirt auger; 6. Working chamber; 7. Saw cylinder; 8. Adjuster; 9. Slot; 10. Kolosnik; 11. Air chamber; 12. Seed comb; 13. Lint transfer pipe; 14. Hopper; 15. Screw conveyor; 16. Lintered seed falling bar;

The main indicators of linter performance are lint separation rate and seed productivity.

There are two ways to configure the linter workflow:

- by changing the position of the seed comb;
- by changing the seed supply procedure.

By changing the position of the seed comb, the degree of fluff separation from the seed is changed. By changing the seeding mode, the linter's seeding performance is changed.

Adjustment of the supply of seed to the linter is performed depending on the density of the seed mass in the working chamber. The performance of the linter on the seed is carried out by changing the length of the chain connecting the variator with the seed density lever in the working chamber and by changing the position of the load on the lever of the density lever [8-10].

The first disadvantage of the 5LP linter is that when the distance between the seed comb and the grid is reduced, the density of the seed roll increases, which leads to an increase in removal. With an increase in this space, on the contrary, there is a decrease in the separation of fluff from the seeds and an increase in the permeability of the linter through the seeds. It is very difficult to achieve an optimal balance between these indicators.

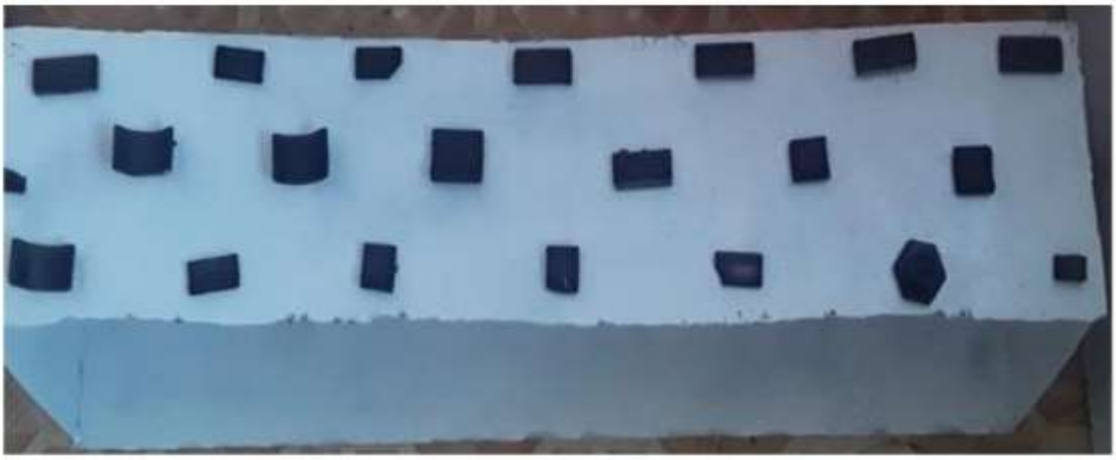
The second disadvantage of the 5 LP linter is that it is impossible to reduce the distance between the saws, because with its reduction, the sawdust from the working chamber cannot leave the gaps between the saw discs, but only through the saw. The gap between the seed comb and the saw, which reduces the productivity of the linter.

The third disadvantage of the 5-LP linter is the complex profile of the grids that make up the grid. 160 saw linters have 161 grates installed.

The width of the grid should be strictly observed, especially in the workplace, because the gap between adjacent grids in this area is only 2.5-3.1 mm. Improper production of the grid legs leads to their rubbing against the saws, the edges of the grids and the inherent rotation of the saws.

Also, the disadvantages of the 5-LP linter are the use of a complex mechanical system for uniform supply of seeds to the working chamber, consisting of two gears, an IVA variator (Andreev's pulse variator), two levers, a chain and a density valve. It is not the system that provides the necessary uniformity of seed delivery to the working chamber, which reduces their linting efficiency.

Scientific observations have shown that the quality of lint and seed passing through the feeder, which is one of the main working parts of the 5-LP linter, is not up to the required level. As a result of our expectations, the connection of the linter with the supplier of the main working body, the presence of bolts, nuts, nails, iron pieces among the seed coming from it, the lint becomes very dirty, and the seed is damaged, so the 5th The improved design of the feeder assembly of the LP linter requires a magnet to be placed on the lint feeder assembly, resulting in the retention of small iron particles and improved linter performance.



The recommended magnetic feeder will retain the bolts, nuts, nails, and iron pieces in the seed passing through the system, thereby reducing lint and seed damage.

Conclusion: In conclusion, it should be said that the above change is an important factor in order to achieve one of the most urgent problems in cotton ginning factories, such as getting quality fiber and lint. in the working chamber, the seeds are rotated, forming a seed roller and at the same time providing the seed roller with the required density. Creates conditions for effective linting process. The magnetic feeder system offered by us keeps the impurities such as iron pieces, bolts, nuts, and nails in the incoming seeds, increases the efficiency of the linter and allows to obtain clean lint and undamaged seeds.

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