

IMPROVING PRODUCT QUALITY BY IMPROVING THE UXK TYPE EQUIPMENT FOR SEPARATING LARGE IMPURITIES FROM COTTON SEEDS

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Abstract

The abundance of large and small impurities in cotton and the low efficiency of cotton cleaning and drying technology lead to low quality and high cost of the obtained cotton products. As a result, the prices of cotton products and the indicators of income and net profit are low. Accordingly, the development of new methods of cleaning raw cotton from impurities and resource-saving equipment and technologies with high productivity is one of the important tasks.

Keywords: UXK equipment, large dirt, saw drum, seeded cotton.

Introduction

To clean cotton seed from various impurities, the type of technological equipment is selected taking into account their (mixtures') physical and mechanical properties. For example, a section of sawn drums is used to separate large impurities from cotton seed.

The efficiency of cleaning cotton seeds from impurities depends on the method of action of the equipment on the cotton seeds: shaking the cotton seeds on a mesh surface or grate, mixing the air flow during cleaning, and how the cotton seeds are combed into the sawn drums. The effect of cleaning equipment working elements on cotton seeds depends on a number of factors: the efficiency of the equipment, the speed of rotation of the working parts, the technological gaps between the working elements, their structure, and the number of times the cotton seeds are cleaned.

The UXK equipment is used to separate large impurities from cotton seeds. The UXK-unit sections can be of three types: UXK.01-initial section, UXK.02-middle section, UXK.03-final section.

The difference between them is that while the UXK.01 section has supply rollers, the UXK.03 section has a closed chute where the cleaned cotton exits the machine.

The UXK.02 section is designed to connect additional sections on both sides, and the number of sections in the unit can be increased or decreased due to this middle section (Figure 1). When cleaning selected varieties of cotton that are difficult to clean, the number of sections in the unit is increased to 6÷7. For example: The KOGT complex is used for these difficult-to-clean cotton varieties.

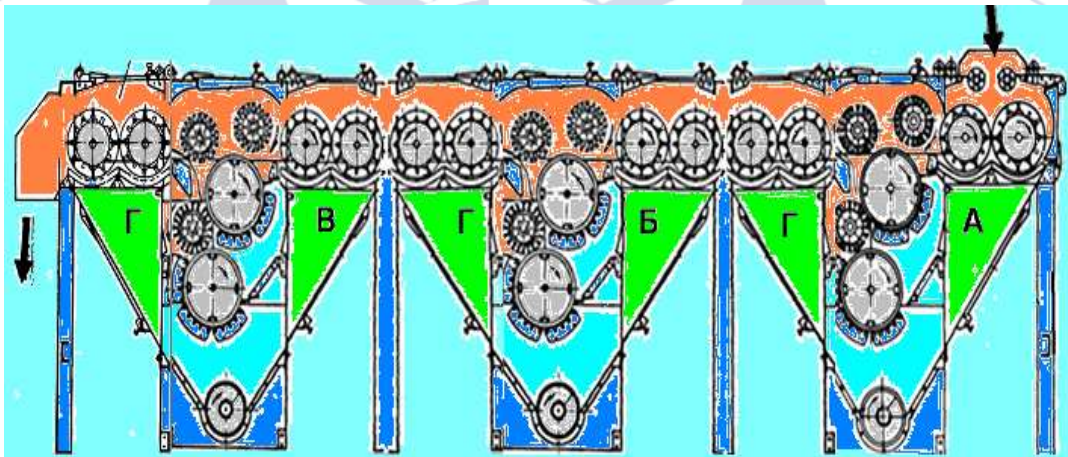


Figure 1. The UXK complex is constructed on the basis of connecting the UXK sections (A, B, V) with each other using EN-078 pile blocks (G).

While the UXK type cleaner operating in cotton ginning plants has a number of advantages, this equipment also has technical problems, which are as follows:

- The UXK cotton ginning machine consumes a lot of electricity;
- Although this cleaner is designed to clean small and large impurities from cotton, it is designed to clean cotton with a 4-4.5% impurity content picked by hand. It cannot clean cotton with a 10-18% impurity content picked by machine to the standard rate. This is a big problem.

In order to positively resolve the problems, it is necessary to design a modern, innovative cotton cleaning device.



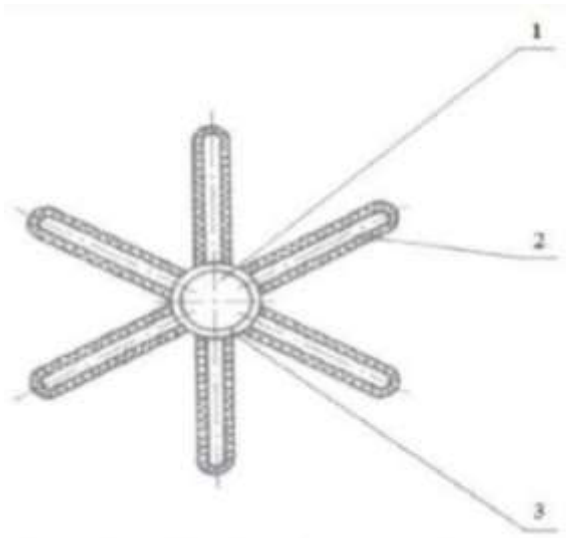


Figure 2. Drum with pegs.

1-drum with rubber coating, 2-rubber coating, 3- 100mm metal pipe.

The cotton enters the hopper of the machine and is directed through the feeder to a drum with rubber-coated pegs rotating towards each other. The peg drum is placed at a 15° slope, and the cotton is thoroughly shaken as it is directed from top to bottom, and the cleaning efficiency is high. Small impurities separated from the cotton are thrown out through the mesh surface. Solar panels are installed on the top of the device, and alternative electrical energy heats the radiators and provides hot air to the inside of the device. The cotton inside the device is cleaned with high efficiency as a result of heating and thorough shaking. The drum pegs are covered with a rubber coating, so that the cotton does not cause mechanical damage to the cotton when the pegs hit it during operation.

Conclusion

In conclusion, it can be said that a number of works have been carried out to improve the efficiency of the machine that cleans cotton from large impurities. Along with the cleaning efficiency of the machine, research has also been conducted to ensure that cotton does not become mixed with impurities. The results of testing the device for attaching cotton raw materials to the surface of a sawn drum in production conditions confirmed the results of practical tests. This article reviews



and analyzes research conducted to improve the design of machines for cleaning cotton from large impurities.

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