

1VPU FIBER CLEANING MACHINE TO IMPROVE THE CLEANING EFFICIENCY BY IMPROVING THE COLUMNS

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Abstract

Improvement of 1VPU fiber cleaner Use of 1VPU type fiber cleaning machines in fiber cleaning technology of cotton cleaning enterprises. To increase the efficiency of fiber cleaning, a new design cassette-type column grid and fiber guide were developed for the 1VPU machine.

Keywords: cotton fiber, 1VPU fiber cleaner, cologne grid dirty compound

Introduction

This aspect has gained special importance in the priority directions set in order to increase the competitiveness of the country's economy in the Strategy of Actions on the five priority directions of the development of the Republic of Uzbekistan in 2017-2021, adopted at the initiative of our President Sh.M. Mirziyoev. In order to ensure the maximum economic efficiency of cotton production in our republic, concrete measures were developed between the International Bank for Reconstruction and Development on the cotton project in order to determine the quality of cotton fiber and other similar products obtained from cotton processing [1-3].

Therefore, cotton products produced by cotton ginning enterprises have high quality indicators and meet the requirements of world standards, which is the main factor for their popularity in the world market. Our cotton fully meets international standards for color, fiber length, hardness and micronaire indicators. This is one of the most important aspects that ensure its purchase in the world fiber market. But, as the President said what if we reprocess this fiber at home and take it to the world

market in the form of a finished product? It is natural that the income will increase several times. In addition, there are hundreds of other products that can be obtained from the cotton plant, all of which increase the economic efficiency several times. Most importantly, many new jobs will be created. In accordance with the concept of administrative reforms in the Republic of Uzbekistan, a decision was made "On measures to fundamentally improve the management system of the cotton industry" [4-7.]

Increasing the quality of fiber is one of the most urgent issues in the cotton ginning industry today. Therefore, the main focus is on reducing small and large impurities in cotton fiber, preventing free fibers from mixing with impurities, increasing fiber output, and reducing repair time and costs. If we look at the production sequence of a cotton gin, the effective operation of the gin has the greatest impact on the quality of the fiber produced. Today, the efficiency of cotton raw material cleaning is 95% and higher, and it is 25-30% in one-drum fiber cleaning machines. It can be seen that now the main attention is required to improve the fiber cleaning machines. As a result, the textile industry achieves high-quality products during fiber processing.

1VPU fiber cleaning machine operation procedure: The fiber flow from the ginning process is fed to the saw cylinder 6 through the pipe 1. Brush 2 wets the flow of fibers to the teeth of the saw; the saw cylinder cuts the fibers well when they are dragged through the colostrum grid 5, and as a result of a certain impact on the colostrum, the fibers separated from the fibers fall into the chamber 4 and are taken out by means of a belt conveyor. After the fiber is cleaned, it is transferred to the fiber tube through the take-off throat with the help of air. Inside the machine, louvered grilles 3 are installed to regulate the fiber movement and adjust the aerodynamic mode. The cleaning efficiency of the louvered grill is very important.

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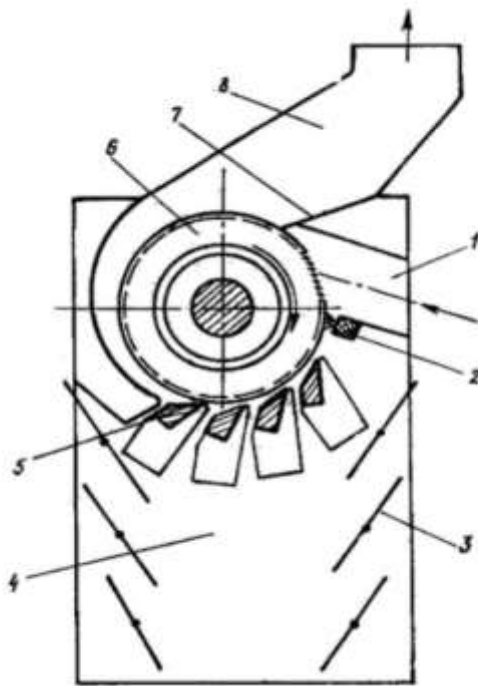


Figure 1 1VPU fiber cleaner

Direct flow single drum 1VPU fiber cleaning machine

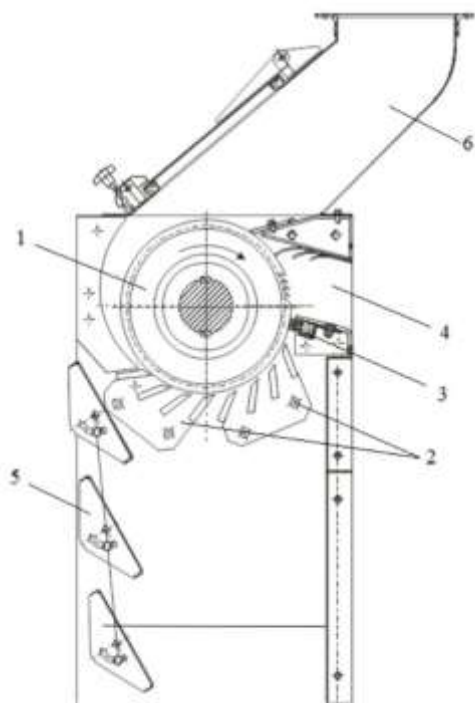
1-intake throat; 2-flat orientation brush; 3-blind fence; 4-waste chamber; 5-column grid; 6-saw cylinder; 7- knife; 8th take-off throat.

1VPU-M improved fiber cleaning machine

Improvement of 1VPU fiber cleaning machines 1VPU type fiber cleaning machines are used in the fiber cleaning technology of cotton cleaning enterprises. The results of the research conducted in the production show that although the cleaning efficiency of the machine is 25-35 percent in high and low grades based on the technical description, it is achieved on average in places up to 20 percent, and in the waste separated during the fiber cleaning process, the standard of fiber by grade (30- 40 percent) showing that it is going above the level [8-10]. One of the main reasons for this is the cultivation of more than 85 percent of hard-to-clean selected cottons (S-6524, An-Boyovut-2, etc.) in our Republic in recent years, and secondly, due to the deficiency of the structure of the columns in the 1VPU fiber cleaning machine, in the process of cleaning the fibers produced from hard-to-clean selection



cottons. is that it is not adapted to efficiently separate defective and impure impurities in the fiber. "Scientific Center of Cotton Industry" in order to eliminate the construction defect in the machine, to improve the quality indicators of the fiber by effectively separating difficult-to-clean defects and dirty compounds from the fiber composition while reducing the amount of fiber separation into waste during the fiber cleaning process and to increase the cleaning efficiency of the fiber cleaner. OJSC has developed a cassette-type column grid and fiber guide with a new design for the 1VPU machine. Since the cotton that is being prepared and processed is mainly picked by hand, a moderate size of the distance between the columns in the column grid was chosen in order to perform effective cleaning of the fiber produced from cotton and reduce the amount of separation of the fiber into the waste during the cleaning process. Cassette-shaped grids with two sections and four columns in each section are installed on one 1VPU machine (Fig. 1).



1VPU-M improved fiber cleaning machine Fig. 2. 1- saw cylinder; 2-cassette colossal bars; 3- fixed brush; 4- gorlovina; 5-jal- surface bars; 6th fiber pipe



Table 1. Comparison test results of 1VPU fiber cleaning machines with normal columnar and cassette columnar grid

Indicator name	1VPU with a normal column		1VPU with cassette column	
	before fiber cleaner	after fiber cleaner	before fiber cleaner	after fiber cleaner
Total fiber defects and impurities, percentage including:	12,17		11.02	11.02
- large impurities	6.14	9.82	5.02	5.02
- small impurities	2.1	5.11	2.16	2.16
- big	1.14	1.9	1.12	1.12
- seed pieces - seed husks in fiber	1.05	0.82	0.73	1.1
- combined entanglement	1/32	0.91	1/32	1/32
Fiber staple length, mm	31.2	31.3	31.2	31.4
Cleaning efficiency, percentage	-	19.3	-	36.2
Amount of fiber in waste, percentage	-	61.6	-	13.6
Staple length of waste fiber, mm	-	29	-	27.7

Its cleaning efficiency is 16.9 abs. it is seen that it has increased by percent. The amount of fiber separated into waste in the fiber cleaning process is 48 abs. It was found that the length of the waste fiber is 1.3 mm shorter. During the research work, the process of transporting the cleaned fiber completely through the fiber pipe to the fiber condenser with the help of air was carried out without any clogging and fiber sticking to the columns between the saw cylinder of the fiber cleaner and the

proposed column grid. The reduction of the amount of separation of fiber into waste and the increase of cleaning efficiency in the 1VPU fiber cleaning machine with a cassette-shaped column is mainly due to the strength of the grid. It was determined during the test work that it occurs due to its preservation. If the decrease in the amount of loss of fiber to the waste in the process of fiber cleaning has a positive effect on the output of the produced fiber, the reduction of defects and impurity in the content of the cleaned fiber leads to an increase in the quality index of the fiber and affects its transition from grade to grade. provides As a result, there will be an increase in the wholesale price of the produced fiber, an opportunity will be created to increase the company's profitability and increase its net profit.

Conclusion

The working condition of the column grid with a cassette-like structure installed on the 1VPU fiber cleaning machine, the effect on the machine's efficiency and the quality indicator of the produced fiber were studied. 2. During the period of research work, it was observed that the use of a cassette-shaped colossal grid in the machine increases the cleaning efficiency of the machine, improves the quality index of the produced fiber, and decreases the amount of fiber separation into waste.

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