

IMPROVEMENT OF 1VPU FIBER CLEANER

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Abstract

In order to eliminate the shortcomings of the 1VPU type fiber cleaner used in cotton cleaning enterprises, we offer improved fiber cleaning equipment. The difference between this construction and the existing one is the installation of additional columns in the working chamber. As a result, the cleaning surface becomes larger and the cleaning efficiency is expected to increase by 0.5-1.0%.

Keywords: 1VPU fiber cleaner, fine dirt, colossal grid, fiber, efficiency.

Introduction

In the intricate world of textile manufacturing, the meticulous cleaning of fibers stands as a linchpin for ensuring product quality and operational efficiency. Among the arsenal of equipment dedicated to this task, the 1VPU Fiber Cleaner has long been regarded as an indispensable workhorse. Its role in effectively eliminating impurities from raw fibers, thus priming them for subsequent processing stages, is pivotal in upholding the standards of modern textile production.

However, as the textile landscape evolves amidst technological advancements, market demands, and sustainability imperatives, the status quo becomes inadequate. Recognizing this imperative for continual enhancement, the focus has shifted towards optimizing the performance and capabilities of the 1VPU Fiber Cleaner.

This article embarks on a detailed exploration of the strides taken in the improvement of the 1VPU Fiber Cleaner, delving into the nuanced upgrades poised to redefine fiber cleaning practices. Through a lens of innovation, efficiency, and

sustainability, we dissect the technological advancements and operational refinements that underpin the upgraded iteration of this pivotal equipment.

From the integration of cutting-edge sensor technologies to the refinement of cleaning algorithms, each enhancement is meticulously crafted to address the evolving needs of the textile industry. Moreover, this article illuminates the far-reaching implications of these enhancements, ranging from heightened productivity and resource optimization to elevated product quality and environmental stewardship.

As we navigate through the intricacies of these improvements, we also shed light on the practical considerations and implementation challenges encountered along the way. By encapsulating real-world insights and industry expertise, this article serves as a guiding beacon for manufacturers navigating the path towards enhanced fiber cleaning operations.

Ultimately, the upgraded 1VPU Fiber Cleaner symbolizes not just an incremental advancement in technology but a transformative leap towards excellence in textile manufacturing. Through concerted efforts in innovation and continuous improvement, we propel the industry forward, unlocking new frontiers of efficiency, sustainability, and competitiveness.

The main part

The competitiveness of cotton fiber in the world market is mainly determined by its appearance, fiber length, and the amount of impurities and defects in its content. After ginning, there are impurities in the cotton fiber in the form of dirt and impurities. Their amount exceeds the norms established by the UzDST standard. If the fibers are spun in such a way, then impurities, dirt and other defects will enter the fibers. This makes the work of textile factories difficult, that is, the warped cotton fibers have defects that spoil the appearance of the product.

The scientists of our country and abroad concluded that the most effective way to clean the fiber from dirt and impurities is to do it directly when it comes out of the gin. Since the ginned fiber is 0.15 - 0.25 kg/m³ when ginned, it is the most convenient condition for cleaning the fiber, and the efficiency of cleaning it after the ginning process gives great results. Currently, in the sawed ginned cotton ginning enterprises, the fiber cleaning machines are used in operation. : 3-OVP-M; 3-OVP-MU; 3-OVP-M1 (after 80-saw demons) 1VP; 2VP; 1VPU; 2VPU; 1VPM; 2VPM



(after 130-saw demons).The cleaning process in single-saw cylinder fiber cleaners is as follows: the fiber coming out of the machine is fed to the saw cylinder (2) through the receiving throat (1) of the machine, and the fiber brush (3) attached to the saw teeth is thoroughly cleaned on the teeth. is put on, then dragged over the colosniks (4). Since the angle of inclination of the saw teeth is small (150), after passing through the colossal grid, under the influence of centrifugal force and air flow, the fibers are separated from the saw teeth and fed to the fiber transfer pipe through the throat (5). The fiber is finely ground due to the impact on the edge of the colostrums, and as a result of shearing and centrifugal forces, the dead, small particles and defects mixed in the fiberis separated from the fiber, then enters the waste chamber (6). To adjust the aerodynamic mode of the car, a grill (7) is installed on the rear and front sides. The main working organs of individual fiber cleaners are a saw cylinder and a colosnik grid.

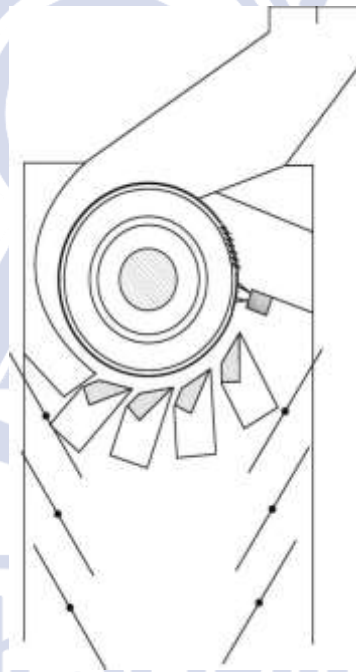


Figure 1. 1VPU fiber cleaning equipment available in the enterprise

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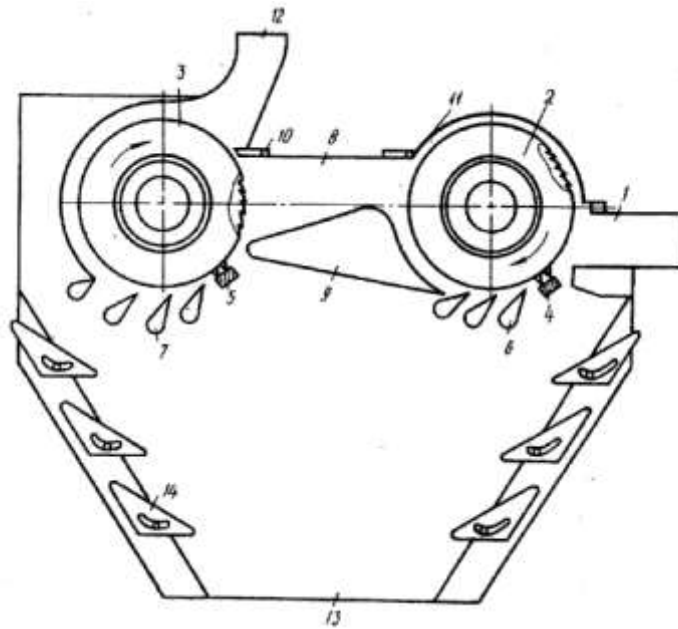


Figure 2. Offered new 1-VPU model vacuum cleaner.

1- fiber entrance, 2,3- saw cylinder, 4,5- fixed brush, 6,7- wheel 8- pipe, 9-
guide, 10, 11- striking knife

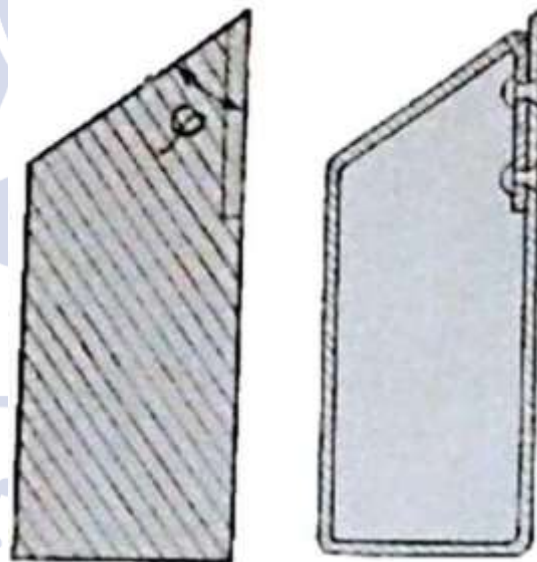


Figure 3. Proposed Colossian

Conclusion

In order to increase the cleaning efficiency of the 1VPU fiber cleaning machine,
we reduced the number of drums to 2 and made the colosniks lighter. Based on the



theoretical analysis, we have achieved a 10% increase in the cleaning efficiency and achieved an economy of the material used in the colosniks.

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