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EXPERIMENTAL STUDY OF THE STRUCTURAL PARAMETERS OF PEGGED DRUMS IN CLEANING COTTON FROM FINE IMPURITIES

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Abstract
The initial processing of raw cotton includes cleaning it from impurities, which is considered one of the main technological stages, significantly influencing fiber separation and subsequent cleaning operations.

Keywords: Cotton, cleaning, fine impurities, pegged drum, raw material, technological process.

Introduction

Cotton cleaning agents are cleaned uniformly, that is, a monotonous phenomenon occurs in it, the cotton raw material is sifted in pile drums and transported through mesh surfaces, as a result of which the cotton raw material is cleaned of impurities. This process is repeated several times under the influence of pile drums. One of the cleaning calculation indicators of the machine depends on the new quality indicators of the pile drums.

The cotton cleaning machine leads to a thorough cleaning of the raw material. , The movement of the working parts is one of the important indicators that do not damage the cotton fiber. [4.5].

The appearance of the proposed improved cotton cleaning drums of different lengths is shown in Figure 3.1.

The pile method of the pile drums for cleaning cotton lint was prepared in descending order. That is, the first pile bar shaft is 100 mm, the piles are 150 mm (not shown in the figure), the drum diameter is 300 mm, the top level of the piles is 50 mm (3.1,a-), the diameter including the drum is 310 mm, the piles are 310 mm in diameter, the piles are 45 mm in diameter, the piles are 320 mm in diameter, and the piles are 40 mm in height (3.1,v-figure) [6.7.8.9].

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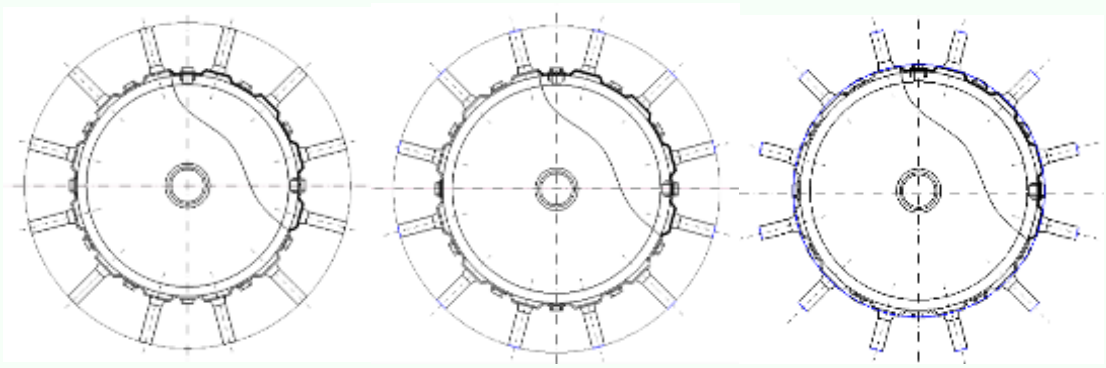

a) **b)** **v)**

a) series pile drum (h=50mm); b) series pile drum (h=45mm); c) series pile drum (h=40mm).

Figure 3.1. View of the drums with piles of different lengths of the improved cotton gin

In the proposed design, the diameters of the linings of the improved pile drums increase in the sequence of the cleaning arc, i.e., the diameter of the lining of the second pile drum increases in the order D2<D3, D3<D4, while the overall outer diameter of the drum remains unchanged with an increase in the length of the piles to h1, h2 and hn. After the cotton is first effectively screened and cleaned using the slatted drums, it is partially cleaned in the pile drum of the second series, the process is carried out due to the reduction of the screening zone along the cleaning arc, i.e. the length of the piles, while the length of the piles varies in each drum. The improved cleaning pile drums are shown in Figure 3.2 [1.2.3].

Figure 3.2. Improved pile drum

In order to determine the extent of the change in the length of the piles in the pile drum located in a row in the improved design, the laboratory device was used to determine the effect of the change in the length of the pile drum piles on the screening process and cleaning efficiency of the cotton raw material, and to study

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the reduction of impurities when changing the length of the piles. In this case, by determining the initial contamination of the cotton raw material, changing the length of the pile drum piles, the reduction of impurities in its content was studied by repeatedly passing the cotton through the drum. Also, the length of the piles is changed to maintain the total diameter of the pile drum with piles of different lengths. The diameter of the length of the piles in the pile drum at the beginning of the cleaning arc of the cotton is smaller than the diameter of the next drum, and the screening process occurs due to the increase in the screening zone in the pile drum and the reduction of the lengths of the piles.

By changing the number of revolutions of the pile drum, the screening process is carried out by the piles of the gin drum. It is known that an increase in the screening process of cotton raw materials affects the cleaning efficiency, but taking into account the increase in mechanical damage to the seeds in the cotton, the drum rotation frequency cannot be increased, therefore, when determining the optimal rotation frequency, mechanical damage to the seeds should also be taken into account [11.12.13].

By increasing the screening zone of the pile drums, the amount of cotton raw materials transferred can also be increased, but the productivity also begins to change due to the decrease in the amount of cotton dirt passing through each pile drum, therefore, it is advisable to determine the optimal productivity.

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