INNOVATIVE IMPROVEMENTS TO THE CHX-3M2 INDUSTRIAL DIRT CLEANING BRUSH

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Abstract

The equipment used for cleaning in the initial processing of seeded cotton plays a crucial role in cotton ginning operations. Typically, this machinery is installed in the cleaning sections of cotton ginning enterprises, where it ensures the effective removal of dirt and other impurities from the raw cotton. However, the specific location and arrangement of this equipment can vary depending on the layout and design of each facility. These variations in equipment placement aim to optimize efficiency in the cleaning process and ensure seamless integration into the overall cotton processing workflow.

Keywords: ChX-3M, UXK sections, 1XP type equipment, dirty mixtures.

Introduction

ChX-3M equipment is a cleaner with a complex structure in the category of large pollution cleaning equipment. Therefore, it is desirable to study the structure and technological process of the cleaning equipment ChX-3M2, which is more often used in cotton ginning enterprises, in depth.

If equipment with two cleaning sections of the ChX-3M type is placed in a row (in the form of a battery), (4-6 devices in each row), the UXK sections and the 1XP type equipment are installed in series in one flow line [1].

Although the working bodies used in the technology of separating large mixtures from seeded cotton are the same, the methods of their installation (saw drum, colosniks, brushes) in the equipment may be different. For this reason, the structures of cleaning machines from large impurities are also different from each other [2].

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The cross-section of the CHX-3M2 pile-saw drum cleaning equipment shows the technological process diagram. The cleaner is intended for cleaning the picked seed cotton from large and small weeds. It is mainly installed in cleaning departments of cotton cleaning enterprises [4].
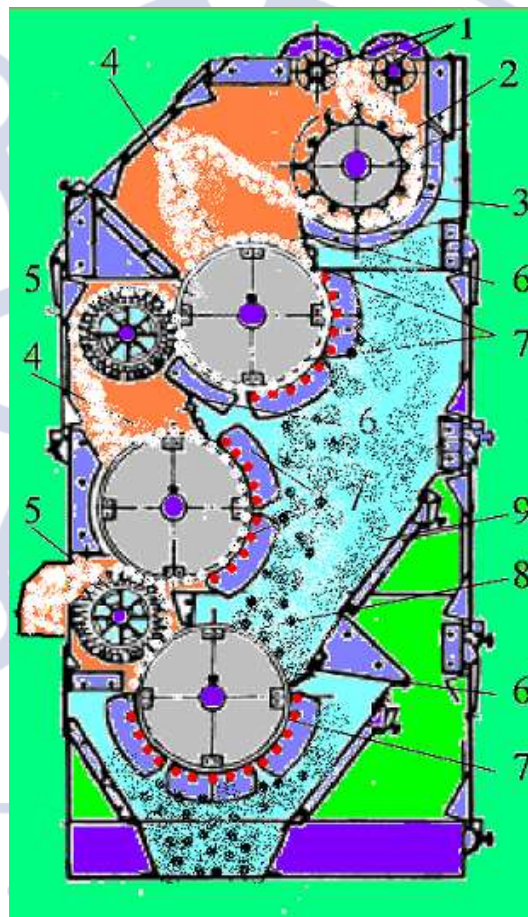

Figure 1. Technological scheme of the purifier ChX-3M2 cotton from large impurities
1-providing rollers; 2nd detector-cleaner drum; 3-mesh surface (surface); 4-saw drum; 5-brush drum; 6-fixed brush; 7-column grid; 8-saw regeneration section; 9 - inclined plane; 10 - base (corpus).

Seed cotton with impurity impurities is conveyed evenly by roller feeders (1) to the pile squeegee-cleaning drum (2), which, in turn, is cleaned of small impurities by crushing the seed cotton into small pieces and dragging the shredded seed cotton over the mesh surface (3). Then it is fed to the first sawing drum.

The seeded cotton is leveled on the sawn surface with a fixed brush (6) and fixed to the teeth of the saws.

The pieces of seed cotton attached to the saw teeth hit the colostrums (7) during movement, so that the gap between the saws and the seed cotton connection is reduced. A part of the active properties turns into passive properties and falls through the colosniks under the influence of air due to centrifugal force. The seeded cotton is separated from the saw teeth by a brush drum, and the cleaning is repeated in the second section of the saw drum, which is similar in structure, and the separated clean seeded cotton is transferred to the cotton collection conveyor (auger) through the brush drum.

The impurities separated during the cleaning of cotton are removed from the equipment with a common dirt auger placed under the equipment and sent to a special pneumotransporter system.

The cleaned seeded cotton is transferred to the equipment that performs the next technological process.

The cleaner is intended for cleaning the picked seed cotton from large and small specific sticks. It is mainly installed in cleaning departments of cotton cleaning enterprises.

The technological process of the ChX-5 seed cotton cleaning equipment from large impurities is the same as the ChX-3M2 cleaner, only it differs in the construction structure of some working bodies. For example: "knife drum" is installed instead of "pile drum" in ChX-3M2 equipment, and a "bumpy surface" is placed on the opposite side. The "mesh surface" installed under the drum has been removed. As a result of this design change, the productivity of the ChX-5 cleaner for seed cotton dyeing has increased to 6.0 tons per hour.

The efficient operation of the designed cleaners is evaluated by its following technological parameters: cleaning efficiency, seed damage, waste fiber.

Figure 2. Improved CHX-3M2 large debris removal equipment

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Cleaning section. The cleaning section of the ChX-3M2 labor-type cleaning machine separates cotton from large impurities due to the effect of centrifugal force on the surface of the cotton grate in saw drums (Fig. 2).

The cleaning section consists of sawed pile-plate drums 1 and a grate 2. The performance of this section depends on the cleaning efficiency and seed damage, the design of the drum and carbon grate, the speed of rotation of the drum and the efficiency of the work.

The technological assessment of the machines for cleaning the seeded cotton from large impurities are indicators such as waste, cleaning efficiency, seed damage and the amount of free fibers in the cleaned seeded cotton.

The process of improving technological processes and equipment in cotton gins is a continuous process, and until now, cotton gin equipment has become the technological equipment of the competition. Scientific research works are being carried out intensively on obtaining the quality indicators of fiber, that is, preserving the natural properties of seeded cotton fibre.

In order to effectively use machines and equipment, I realized that it is necessary to know the main types of machines and equipment used in cotton ginning enterprises, their structure and operation process, which parts or mechanisms can quickly fail during work, and the use of equipment and equipment for repairing broken parts. . At the same time, I also reviewed the methods and skills of assembling and testing machines and equipment.

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