PATHS TO INCREASE THE EFFICIENCY OF CLEANING THE SAW GIN

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The disadvantage of existing saw gins is their low cleaning efficiency. A new saw gin scheme has been developed, containing a front apron with a comb, a grate with a frontal beam, a saw cylinder and an air chamber with a nozzle, characterized in that the saw cylinder, in the direction of its rotation, is behind the grate, after the saws exit the gaps between the grates , a tuning shaft is installed, in which every two pegs adjacent along its length are located in such a way that the gap between them is located opposite each saw blade of the saw cylinder. This increases the efficiency of fiber cleaning.

Keywords: Fibers, saw cylinder, grate, front beam, peg shaft, air chamber.

Saw gins are the main technological machine and are installed in gin or gin-linter shops of cotton factories. During the operation of the gin, raw cotton is fed into a raw chamber, in which a raw roller is formed, rotating under the influence of a saw cylinder, consisting of whole and partially ginned raw cotton flakes, as well as seeds of different pubescence, which are concentrated in the middle part of the volume of the raw roller. The saw cylinder saws cut through the raw roller and transmit rotation to it by friction and by gripping the saw teeth with a strand of raw cotton fly fibers located in the raw roller. In this case, the rotation speed of the raw roller is less than the rotation speed of the saw drum.

The strands of fibers separated from the seeds are transported by the saw teeth of the saw cylinder to another grate, the grates of which are parallel to the saw cylinder and are designed to clean the strands of fiber, which, under the influence of centrifugal force, move out of the gaps between the saws and deviate from the saw teeth. After

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As a result of these impacts, impurities, fiber defects and uluc are separated from the fiber strands, which are released from the gin through the gaps between the grates. After cleaning, the fiber strands are blown off the saw teeth by a stream of air from the air chamber nozzle, which transports them from the gin to the fiber outlet, which is under vacuum.

The purpose of this research is to increase the efficiency of cleaning saw gins by increasing the reliability and efficiency of the cleaning unit, for which a new design will be developed.

In modern technology of the ginning process, after cleaning the fiber in gins, it is removed from the teeth of the saw drum, carried out by one of the following methods: mechanical (brush drum) and aerodynamic (air chamber).

In the domestic cotton ginning industry, two-chamber gins with brush removal of fiber were used to process medium-fiber raw cotton until the late 40s of the 20th century. However, due to a number of economic problems, mainly related to the shortage of natural bristles, single-chamber gins with a bottom-removal air chamber were used, which in turn were later replaced by more efficient, from the point of view of uluco emission, top-removal chambers.

At the same time, the air chamber is simple in design and operation, while the mechanical method requires the manufacture of brush elements and careful balancing of the drums.

The essence of the experiment is that the saw cylinder, in the direction of its rotation, behind the grate, after the saws exit the gaps between the grates, has a peg shaft installed, in which every two pegs adjacent along its length are located in such a way that the gap between these pegs is located opposite each saw of the saw cylinder,

and the pegs shaft rotates in the same direction as the saw cylinder and, and its pegs have a lower linear speed compared to the saw teeth.

As a result, each strand of fiber hooked onto a saw tooth, the ends of which, after leaving the gap between the grates, are located on both sides of the saw and, under the action of the centrifugal force, are deflected from the saw tooth, is transported between two pegs adjacent along the length of the peg shaft and hits their sides with their entire length both ends of the strand. Due to this, the efficiency of separating uluk, fiber defects and impurities from them significantly increases.

Strands of fibers are transported by teeth in the gaps between the saw blades of the saw cylinder, and then, under the action of centrifugal force, are pushed out of the gaps between the saw blades and deflected from the saw teeth. After this, the fiber strands hit the pegs of the peg shaft and are cleaned of uluk, fiber defects and impurities, which are thrown from the pegs into the discharge vehicle, and the fiber strands are transported by saw teeth to the air chamber, a stream of air from the nozzle of which blows the fiber strands off the saw teeth and transports them from the gin to the fiber extraction plant.

Economic efficiency from the use of the proposed saw gin is achieved due to more effective fiber purification, increasing its quality and selling value.

This increases the efficiency of fiber cleaning and solves the problem of the utility model. In this case, the uluk fibers separated from the strands, fiber defects and impurities are thrown off the pegs of the rotating peg shaft into the discharge vehicle by centrifugal force, which eliminates their accumulation between the pegs of the tuning shaft, which ensures its reliable operation.

Rotation of the peg shaft in the same direction with the saw cylinder with a lower linear speed of the pegs compared to the linear speed of the saw teeth ensures the collision of the fiber strand with the pegs of the peg shaft. Moreover, the strength of these collisions and, accordingly, the efficiency of fiber cleaning depends on the difference in their linear speeds, with an increase in which they also increase, which makes it possible by adjusting the rotation speed of the peg shaft to set its optimal value and achieve maximum fiber cleaning efficiency.

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