INCREASING WAYS OF EFFICIENCY OF COTTON SEPARATOR

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The Republic of Uzbekistan is the world leader in cotton production and export. Therefore, cotton plays an important role in the country's economy.

In the process of processing cotton raw materials, one of the main elements of the system consisting of air-transporting pipes is the separator. The separator is mainly used to separate the cotton from the air stream and small dust particles.

One of the main disadvantages of XSS and XSCh brand separators, which worked as part of the pneumatic transport device in cotton ginning plants, is the impact of the main part of the cotton on the mesh surface installed in front of its inlet pipe.

During the process of extracting the cotton stuck to the mesh surface, the seeds break and the fiber breaks, so ways to reduce the impact of the cotton on the mesh surface have been sought. For this purpose, the above separators were replaced with SS-15A separator. The main difference of this separator from XSS and XSCh brand separators is that the mesh surface is located on the side of the working chamber. As a result of this, in the process of separating the cotton from the air, the impact on the mesh surface is reduced.

According to the results of the conducted research, it was proven that 25 percent of the total cotton will hit the mesh surface in this separator. In order to reduce the impact of this cotton, a plate-shaped guide is installed in the inlet pipe.

As a result, it is possible to reduce the impact of cotton on the mesh surface. However, the possibility that the deflector covers a certain part of the mesh surface will cause the aerodynamic drag of the separator to increase. Therefore, this proposal was not widely used in production. Certain changes have been made to the working structure of the separator, reducing the impact of cotton on the mesh surface. It is separated from the air by using the inertial force of the cotton. cotton separated from the air enters the vacuum valve through an additional installed channel. The main disadvantage of such a modified separator is that the channel installed towards the vacuum valve quickly clogs. Another reason for the cotton hitting the surface of the separator mesh is the amount of air entering the working chamber through the vacuum valve.

The task of the separator proposed by the authors is to separate the seeded cotton transported by air in cotton ginning plants from the air, it is appropriate if during this task the damage of the seed, the violation of the physical properties of the fiber, and the removal of dust with the air are prevented.

In order to ensure that the air sucked through the vacuum valve does not affect the separation process, it is proposed to place the air chamber on the inner side of the mesh surface.

In this separator, a certain part of the cotton entering the working chamber from the inlet pipe moves towards the mesh surfaces designed to absorb air, where the probability of the seeded cotton entering the working chamber directly sticking to the mesh surface is reduced due to the fact that the mesh surfaces draw air inwards in the same order. due to the fact that the size of the working chamber has increased compared to the previous separators, the speed of the cotton piece decreases sharply and the main part falls into the vacuum valve under the influence of its own weight. The cotton, partially adhering to the mesh surfaces, is drawn down into the vacuum valve by a squeegee fixed to the shaft. The seeded cotton falling on the vacuum-valve sheets is sent to further processing. The dust that came with the cotton is expelled through the air mesh surface. The air sucked through the vacuum valve does not affect the separation process.

This, in turn, reduces the amount of cotton sticking to the mesh surface and increases the probability of its movement towards the vacuum valve. Making the distance between the air chambers equal to the width of the inlet pipe increases the effect of cotton separation. Positioning the part at an angle opposite the inlet pipe of the air chamber ensures that some cotton particles moving towards the mesh surface are hit and move towards the vacuum valve. As a result, the separator reduces the probability of the cotton entering the working chamber moving towards the mesh surfaces. In turn, it is possible to ensure the linear movement of cotton. Since air is absorbed from the outside on mesh surfaces, the pad is placed on the outside.

This arrangement of the mesh surface provides an entirely new way of separating cotton from the air. Another advantage of this proposed separator is that it does not require additional energy during operation, and because the working chamber is larger, the impact of cotton on the separator wall is reduced.

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