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THE INFLUENCE OF A HORIZONTAL FEEDER ON THE QUALITY OF COTTON TRANSFER DURING THE TRANSFER OF RAW COTTON TO PRODUCTION

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Abstract
Today, the increase in demand for cotton fibre requires the improvement of cotton ginning equipment and the analysis of their technological processes. The main first stage of the cotton gin is the transfer of the harvested cotton to the production workshop. In this article, the horizontal feeder to the cotton pneumatic transport pipeline used in cotton gins is analyzed and recommendations are given.

Keywords: tape, drum, cotton fibre, technology, density, dirt, seed, great.

Introduction
The increase in the demand for cotton fibre requires the improvement of cotton gin equipment and the analysis of their technological processes. The main first stage of a cotton gin is to transfer the ginned cotton to the production department. Agar increases the productivity of the production departments by transferring the seeded cotton to a horizontal conveyor with the help of a quality shredder and an even layer on the surface of the horizontal conveyor to the pneumatic transport pipes [1-3].

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Methodology

During the analysis of the working processes of the currently used crusher, several shortcomings were identified. One of these disadvantages is the uneven distribution of the cotton mass along the direction of movement, or in other words, the uneven distribution of the cotton. is transmitted. This is due to the fact that the density of cotton increases when it is stored in a drum. is transmitted. As a result, blockages occur in the pipe neck, in the separator, and in the separator. In our previous studies, we have studied this process in detail and the cotton is uniform We have proposed a pneumomechanical actuator design that provides

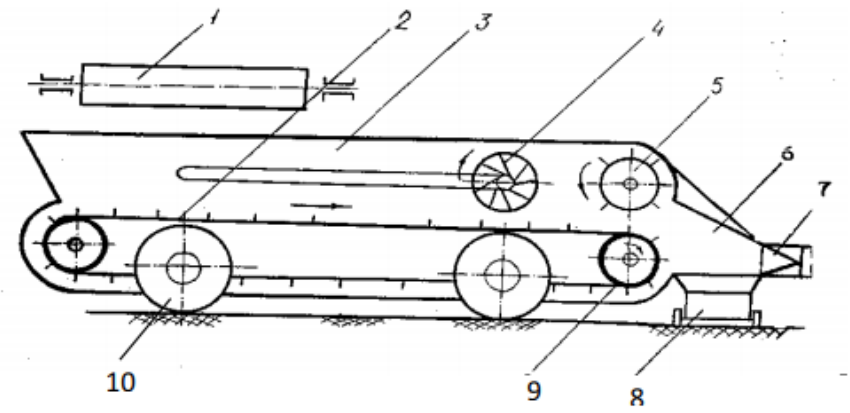

Figure 1. Horizontal feeder circuit (MG -1694727).

1-transmission tape; 2-horizontal tape; 3rd row; 4-leveling drum; 5-pile drum; 6-funnel; 7- pipeline; 8-collector; 9- leading drum; 10-lead drum.

The next piece of equipment used to transfer cotton to the pneumatic pipeline is the above-mentioned mobile belt conveyor. The horizontal conveyor, which ensures uniform transfer of cotton, is created on the basis of this conveyor. In the production process, the performance of the conveyor belt device depends on the width of the belt, its coefficient of use of the unit surface, the linear speed of the belt, and the moisture and density of the layer of the material moving on it [4-7]. The supplier we are designing is the technological chain of primary processing of cotton located in the main part, and its productivity is the productivity of the entire technological chain determined. Above the tape (2) before the drum (5), the levelling drum (4) is installed. At the end of the feeder is a funnel (6) connected to the pipe (7).

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The funnel (6) is heavy and made removable to remove impurities. Funnel (6) and collector holes are drilled into the drawer walls. It is designed to let the air flow out. Release of the supplier's cotton ginning machine (not shown in the diagram). tape (1) is located at the bottom. Tape (1) speed is selected higher than tape (2) speed. Therefore, it is important to calculate the performance of the new supplier. Based on the above, the cotton transfer efficiency of the supplier equation can be expressed as:

$$U = k \cdot vl \cdot V \cdot h \cdot \gamma \quad (1)$$

Here: v_l-tape speed, m/s; V-tape width, m; h – height of passing cotton layer, m; k_x–the coefficient of use of the tape surface;γ-cotton layer density, kg/s^3 According to the available information, the speed of the tape vl=5.8 m/s; tape width V=0.4 m; the density of the cotton layerγ =40 – 60 kg/m^3. However, this indicator (γ) is reduced by 1.5-2 times in the processes of mechanical impact on cotton. According to the studies carried out so far, the coefficient of use of the surface of the tape is around k=0.3 - 0.5. The height of the passing cotton layer depends on the distance between the outer circumference of the levelling drum and the tape. This interval is equal to h = 150 mm. However, it is reduced due to the friction force between the fins installed on the surface of the tape and the drum plates with the cotton layer. Depending on the results of practical studies, we take this height as h = 0.1 m. Cotton layer densityγ=30 kg/m^3, and we take the coefficient of use of the tape surface as k=0.45. Based on the results, we calculate the supplier's cotton transfer efficiency.

$$U = k \cdot vl \cdot V \cdot h \cdot g = 0,45 \cdot 5,8 \cdot 0,4 \cdot 0,1 \cdot 30 = 3,132\, kg/s$$

or since 1 kg/s=3600kg/h=3.6 t/h U=3.132·36=11.28 t/hour.

Productivity of the technological process in cotton ginning enterprises is 8-12 t/h changes around. The result obtained by calculation falls within this range and from that it can be said that the new supplier in the current cotton gins can be used with success [8-12]. In the study of the process of transporting cotton in an air-assisted transport device violation of the quality of cotton transported in it as a result of conducted research was determined. Quality disturbances mainly occur during the movement of the seed in the pipe it happens due to the blows received as a result of hitting the walls. By air the speed of cotton with a moisture content of 9.2% and dirtiness of 1.2% in the conveyor device V=24-26 m/s when 1.2-1.4% of the

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seed is broken. As a result, cotton fibre defects increase by 0.3-0.4%. Cotton from cotton mills located at a distance from Syekhs extends the radius of action of the carrier device with the help of air during transportation the need arises. This is the result of the above seed breakage and various defects in the fibre increasing the probability of

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The main reason for this is the unevenness of the cotton in the pipe from the transmission. The pile cutter of the RBX ginning machine is cotton and gives it to the tape in pieces. Cotton in the form of unevenly distributed lumps on the tape transmitted to the pipe. This situation causes the uneven location and movement of cotton inside the pipe emits Uneven movement not only causes the quality of cotton in the pipe to be disturbed but also interferes with the uniform operation of all machines in the technological process. Such a condition adversely affects their effectiveness. Often, the result of uneven transmission is the worker of processing machines there are cases of cotton blockage in organs. This in turn of the machines causes it to stop for a certain period of time. In addition, if the cotton is jammed due to the remaining, the working organs of the machine will quickly fail. Figure 2 shows the uneven transport of cotton in an air-assisted conveying device Dependence of seed breakage on air flow rate in cotton at different moisture content shown on the basis of the graphs used.

Fig. 2. Damage of cotton to different humidity during transportation

The working elements of the cotton horizontal supply machine of the models created in the graphic above use the process of receiving raw materials and transferring cotton express correctly the introduction of cotton wool will prevent a decrease in the quality of cotton raw materials. A decrease in the damage rate of raw materials for the manufacturer reduction will certainly affect the economics of any producer.

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Conclusion

At the end of the conclusion, the article developed a theory of raw material transfer that ensures smooth movement along the pipeline. It has been scientifically proven that the horizontal belt and levelling drum must work together to convey the raw material evenly.

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