

departments of the enterprise, taking into account the demand for household goods (slippers, hats, children's toys, finishing elements for products, cloths for animals).

Thanks to this stock, the companies have an opportunity to cooperate in the production of products and processing of waste, and create a separate database, which is available only for this user of the software module.

Application of the developed program at the enterprises of light industry will allow to:

- reduce the percentage of attacks between templates by 2-5%;
- reduce the volume of waste utilization;
- ensure the economic distribution of material resources;
- expand the range of household products from waste;
- increase the level of automation of the processes of designing clothes and rational use of raw materials;
- improve environment;
- create new jobs at sewing and non-profit enterprises for the manufacture of goods.

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A NEW SEED COTTON REGENERATOR

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Key words: seed cotton, cleaner, regenerator, waste, large trash, small trash, flying of seed cotton, regenerative effect.

Abstract. The article considers the problems of improving the quality of cotton fiber by developing a new design of cotton regenerator that provides more efficient and qualitative regeneration and cleaning of seed cotton from cleaner's waste of cleaners.

The content of flyings in the wastes, depending from the moisture content and contamination of the seed cotton to be cleaned, as well as from the degree of wear of the doffing brushes, guide drums, lapping brushes and the size of the gaps between the saw drums and grid bar, is 1-2% from cleaned seed cotton in the serial cotton cleaning units of UChK. While cleaning seed cotton with high moisture and contamination, content of seed cotton in the wastes increases [1].

Regenerators RX (1RX) [2], which were developed in the early 80s of the last century to extract flyings from the wastes of the RX-1 serrated cleaners, were used to prevent the losses of seed cotton with wastes and were included in the pneumatic transport system of the PLPH production lines and worked under vacuum. The wastes of the cleaners contained mainly large trash and flyings of seed cotton. With this waste composition, the regenerator RX provided reliable operation with a capacity of up to 1 ton / hr, its regenerative effect was 95%, and the cleaning efficiency, depending on the contamination of the wastes, reached 80%.

In the 90s of the last century, instead of the production lines of the type PLPH, cotton ginneries were equipped with cotton-cleaning aggregates UHK, consisting of sections where the separated small and large trash particles enter the common bunker and are withdrawn from it by a screw. Due to the combination of small and large trash, the load on the regenerators increased by 2-3 times, and under the influence of the screw, small trash particles began to penetrate into the flyings of seed cotton and become difficult to remove. As a result of this, the cleaning effect of the regenerators of RX has decreased to 50%, and the contamination of regenerated flyings during the cleaning of seed cotton of hard-to-clean varieties has reached 70%. Consequently, when they were mixed with seed cotton, the quality of the produced fiber began to decrease by one or two classes.

The recommendation on separate processing of seed cotton and regenerated flyings developed in 1995 and then included in the technological procedure [2] due to some reasons is not fulfilled at all ginneries. The implementation of this recommendation improves the quality of cotton fiber by one class, and the quality of fiber from regenerated flyings is reduced by one to two classes.

A promising solution to the problem is the development of a new complex of cotton ginning equipment with a separate withdrawal of large and small trashes containing seed cotton flyings. Currently, it is advisable to develop a new more efficient regenerator of seed cotton from waste.

Observations of the operation of the regenerator RX showed that the cleaning rate of regenerated flyings is 3-4 times. The cleaning effect of the regenerator is reduced to 50-60% if more than 30% of fine trash is present in waste products of cotton, which is observed when cleaning seed cotton with trash content more than 5%. In this case the impurity of regenerated flyings increases to 20 or more percent, that after mixing of flyings to seed cotton begins to decrease the quality of the produced fiber [3,4].

During the operation of the regenerators RX it was also noticed that with increasing productivity its catching effect was practically unchanged, and the cleaning effect was reduced.

In the regenerator of RH, the outdated working bodies are used:

- gripping serrated drums, the sawings of which break and come off the shells, which reduces the gripping ability of the drums;
- doffing brush drums, whose brushes quickly wear out and shorten, that reduces the efficiency of seed cotton doffing;
- lapping brushes, which deviate from the serrated drums, that reduces the gripping ability of the sawings.

Currently, to replace these unreliable and requiring frequent replacements, and repairs of working parts, new more reliable and efficient working tools have been developed for seed cotton cleaners. These are gripping saw cylinders designed to replace the serrated drums, doffing cylinder drum with metal bars - to replace the brush drum, fixing metal bars - to replace the lapping brushes.

The abovementioned analysis showed that the main drawbacks of the serial regenerator are related to the construction of the pneumatic feeder and working parts. At the same time, the use of two gripping drums - the main and regeneration drums - is sufficient and acceptable for the regenerator being developed.

Serrated drums of regenerators RX have a diameter of 480 mm, and modern gripping saw cylinders are made from over-intersected gin saws with a diameter of 300 mm. Accordingly, with a decrease in the diameter of the cylinder, the length of the arc of the arrangement of the bars is reduced, and with the optimal gaps between them equal to 40 mm, their number decreases from 10 to 6 in the main drum and from 15 to 8 in the regeneration one. Due to the reduction in the number of bars, a certain reduction in the cleaning effect will occur, which will be compensated by an increase in the cleaning rate of regenerated flyings from 3-4 times to 6-8 times [6].

The installation of the saw cylinders, as well as the serrated drums in the regenerator RX, on the same vertical axis is optimal for achieving a compact location with the doffing drum adjoining both cylinders and for providing convenient maintenance of the grid bars.

Taking into account the revealed shortcomings of the pneumatic feeder of the semi-cylindrical shape in the developing regenerator, it is expedient to form a channel from the inlet to the outlet hole above the sidewall and side of the main gripping drum, which should be located at opposite sidewalls.

In order to prevent the transit of seed cotton flyings, impurities, free fiber and fibrous motes in it, it is advisable to place an air permeable bar drum along its longitudinal axis with the arrangement of the rods along the helical line. When rotated, such drum will ensure the winding of the air around it with an axial displacement in the direction from the inlet to the outlet. Due to this, the waste moving with the air flow will repeatedly pounce on the surface of the main gripping saw cylinder. In this case, the frequency of supply of waste and regenerated flyings can be regulated by the speed of rotation of the bar drum.

The regenerative effect of the new regenerator will be roughly the same as for the 95% as in the RX regenerator, and the cleaning effects, due to the exclusion of transit of trash impurities and the increase in the cleaning rate, will be much higher: a total of 85-90%, by large trash 90-95 %, by small trash 80-85%, by motes 50-70%. At the

same time, the content of seed cotton in the waste of the new regenerator will be no more than 2-4%, which corresponds to a similar indicator of a serial regenerator of RX, and the contamination of the regenerated flyings should not exceed 10-15% [7].

On the basis of the developed scheme and above selected parameters of working parts, drawings of a pilot industrial sample of a new regenerator of seed cotton from wastes of cleaning equipment have been prepared.

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IMPROVED TECHNOLOGY FOR HUMIDIFYING OF COTTON PRODUCTS

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Key words: seed cotton, cotton fiber, humidifier, moisture, humidification, cotton bale, press, gin, cleaner.

Annotation. The article considers the problems of improving the quality of cotton fiber by developing a new design of humidifiers for seed cotton and cotton fiber which provide more efficient and qualitative humidification of cotton materials.