"JOURNAL OF SCIENCE-INNOVATIVE RESEARCH IN UZBEKISTAN" JURNALI
VOLUME 2, ISSUE 4, 2024. APRIL
ResearchBib Impact Factor: 8.654/2023 ISSN 2992-8869

INTRODUCING ADDITIONAL TECHNOLOGY TO THE WORKING CAMERA OF THE DV-1M ROLLER GENIE

H. E. Turdiyev
Lecturer, Fergana Polytechnic Institute, Fergana, Uzbekistan
E-mail: h.e.turdiyev@ferpi.uz

S.Umarov
Student, Fergana Polytechnic Institute, Fergana, Uzbekistan
A.Khalimov
Student, Fergana Polytechnic Institute, Fergana, Uzbekistan

Annotation

Metals may be present in long-staple seeded cotton falling into the roller gin. Metal impurities damage the equipment during operation. In order to prevent this, we place a piece of magnet in the equipment that catches metal compounds. The seeded cotton falls into the pile drum through the securing roller. There, it is cleaned of small impurities and enters the working chamber through a chute.

Keyword: Saw drum, colosnik grill, air nozzle, dirt removal auger, brush.

Introduction

Metals may be present in long-staple seeded cotton falling into the roller gin. Metal impurities damage the equipment during operation. In order to prevent this, we place a piece of magnet in the equipment that catches metal compounds. The seeded cotton falls into the pile drum through the securing roller. There, it is cleaned of small impurities and enters the working chamber through a chute [1-4].

The main stage in the initial processing of seed cotton is ginning, that is, the process of separating the fiber from the seed.

Since the bond strength of cotton fibers with long seeded seed is much lower than that of medium fiber, the fiber can be separated from the seed by the force of friction on hairy surfaces. Therefore, in order to preserve the natural properties of the fiber, it is convenient to separate the long-fiber cotton from the seed of the fiber in the gins [5-7].

The industrial grade I, II and III cotton with long fiber seed is processed at the roller ginning enterprise. The main function of the roller gin is to separate the long fiber cotton fiber from the seed.

Along with the development of long-fiber cotton, roller gins also underwent great changes. At present, one working roller or two working rollers are used.

The main working part of roller gins is a working (leather) roller and a fixed blade. Due to the hairy surface of the roller, the fiber of long-fiber cotton adheres well to the surface and has a positive effect on removing the seeds, keeping these long fibers in their natural state. This process is successfully used to this day, despite the low productivity of roller gin [8-10].

The working process of the DV-1M demon is as follows:

With the help of a distributing auger, the seeded cotton is distributed to a row (battery) of gins and is lowered into a mine installed on each gin. Counter-rotating receiving rollers take the seeded cotton from the mine and transfer it to the drum with piles, and the drum drags the cotton over the mesh surface and drops it into the beam. In this case, small impurities are separated from the seeded cotton and fall down through the holes of the net, and the thoroughly sifted seeded cotton is transferred to the drum with a needle. With the drum needles, the seeded cotton is transferred to the main parts of the equipment - the working roller, the fixed knife, the beating device. The return drum serves to smooth the seed cotton layer on the surface of the needle drum and hold back the excess.

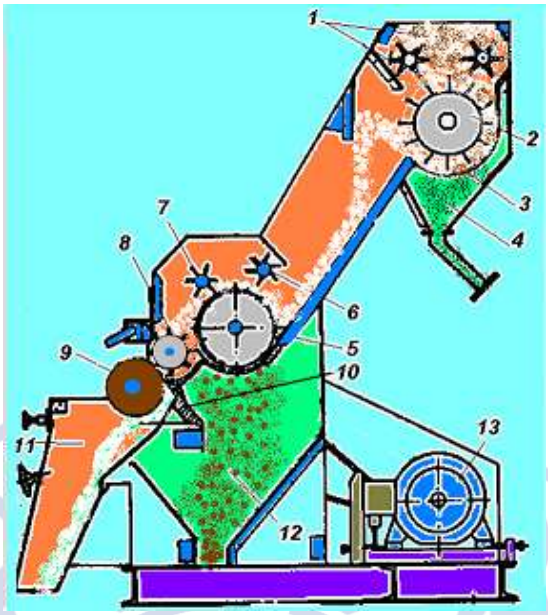

Fig. 1. Cross-section of the DV-1M roller gin.
1-receiving rollers, 2-pile drum, 3- mesh surface, 4-discharge conveyor, 5-needle drum, 6-leveling roller, 7-accelerating roller, 8-beating roller, 9-working roller, 10 - fixed blade, 11- kiyanov, 12- seed collection hopper, 13- electric motor

Then, the cotton is spread evenly and ensures the normal execution of the ginning process. The accelerator drum transfers the seeded cotton from the needle drum to the beater drum. The beater transports this cotton between the plates to the ginning zone. The working roller attaches the fibers to its surface and pulls it under the fixed knife.

The beating device separates the fibers by hitting (dragging) the seeds with the side surface of the smooth plates, and passes the incompletely removed seeds under the needle drum. In this case, the seeds separated from all the fibers fall through the holes of the net and are transferred to the seed auger, and the seeds whose fibers are not completely removed are fed again to the ginning process with cottons with common seeds.

The fibers on the working roller are transferred in the form of a compacted tape through a conveyor to a belt conveyor and then to a fiber cleaner. The seeds with complete fibers fall under the beating device, leave the equipment through the seed collecting hopper and fall into the seed conveying auger.

Impurities separated by gin feeders are removed using a pneumatic system.

Offer. Metals may be present in long-staple seeded cotton falling into the roller gin. Metal impurities damage the equipment during operation. In order to prevent this, we place a piece of magnet in the equipment that catches metal compounds. The seeded cotton falls into the pile drum through the securing roller. There, it is cleaned of small impurities and enters the working chamber through a chute. We will place a piece of magnet on this rod. Metal pieces are caught here. As a result, the operating time of the working parts of the equipment is extended.

References:

1. Babadjanov M.A. (2009). Technological process design. Textbook. T.:, Cholpon. 182 p.
2. Zikriyoyev E.Z. (2002). Cotton preliminary processing. Tashkent Mehnat.
3. M.T. Tillaev, "Technology and equipment of preliminary processing of cotton", methodical manual for performing laboratory work. T., "TTESI", 2015.
4. M.A. Gapparova, M.E. Ruzmetov, T.O. Toychiyev. (2018). Preliminary processing of natural fibers. Study guide. Tashkent, TTESI.
5. Turdiyev, H. E. (2024). Improving the efficiency of the technology of cleaning seed cotton from large impurities. Journal of Science-Innovative Research in Uzbekistan, 2(2), 372-379.
6. Turdiyev, H. E., & Ogli, Y. A. K. (2024). To study the analysis of the operation technology, operational characteristics and equipment of the device that transports cotton by air. Journal of Science-Innovative Research in Uzbekistan, 2(2), 508-512.
7. Turdiyev, H. E., Tursunaliyeva, D., & Hayitova, M. (2024). Improvement of the column grid of the vtm type fiber cleaner used in foreign technology. Journal of Science-Innovative Research in Uzbekistan, 2(2), 583-588.
8. Turdiyev, H. E. (2024). 2SB-10 model drum dryer improvement of the paddles in order to increase the level of cotton drying. Journal of Science-Innovative Research in Uzbekistan, 2(2), 503-507.
9. Rakhmanov, B., Razzakov, S., & Kosimov, L. (2023). The research on the influence of temperature on the properties of synthetic fibres for load-handling devices. In E3S Web of Conferences (Vol. 460, p. 10003). EDP Sciences.
10. Zikirov, M. C., Qosimova, S. F., & Qosimov, L. M. (2021). Direction of modern design activities. Asian Journal of Multidimensional Research (AJMR), 10(2), 11-18.