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TECHNICAL CHARACTERISTICS, ADVANTAGES AND DISADVANTAGES OF CARDING MACHINES IN WOOL PROCESSING PLANTS

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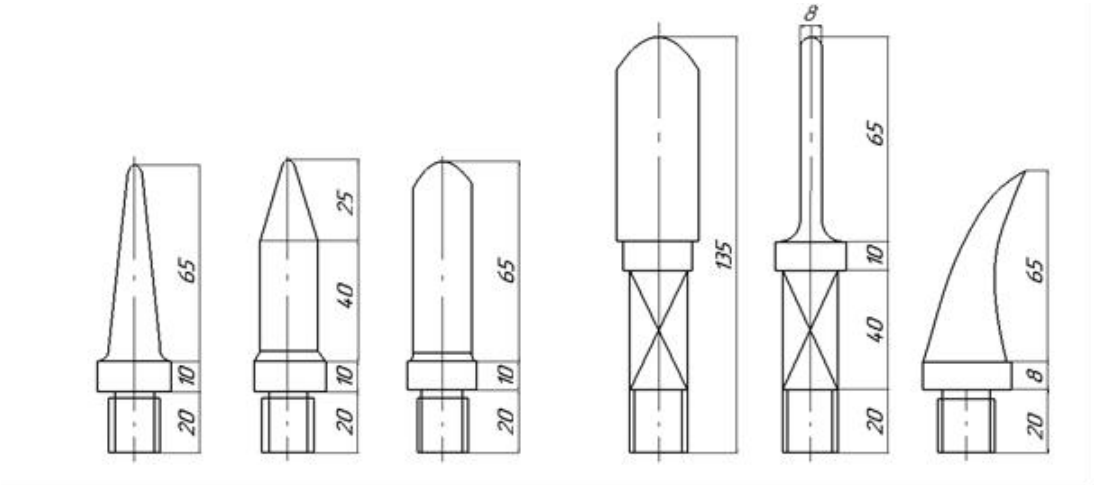
Abstract: This article describes 2 BT -150 -SH, AV-8V , SHArpante wool initial of cars The technical parameters of 2 BT -150 -SH machines for the initial cleaning of Karakul sheep wool in production enterprises were analyzed. advantage sides studied.

Keywords: wool fiber, cleaning, cylindrical, conical, edge , plank , thread , spring, lever.

The upper rollers of all feeders can move vertically. They rise when a thick layer of wool passes through, and then return to their original position. All upper rollers are pressed against the lower rollers by means of a spring or lever. The amount of loading is selected depending on the type of wool being processed: very tangled and tangled wool requires strong compression.

The working surface of the feed rollers should be smooth and free of any pits, as this can cause the wool to curl. The rollers should have a cleaning device to remove foreign matter stuck in them. The angular speeds of the drum are selected depending on the shape of the pile in the combing machine, their size, softness and combing. It is important to maintain the length of the fiber during the combing process. The pile shape is selected depending on the absolute breaking strength of the wool fiber of various fineness and the thickness of the wool. According to the structure of the piles, they are straight (cylindrical, conical, beveled) and oblique.

Straight conical and cylindrical piles (*Fig. 1.12 ab*) are well immersed in the wool mass and are easily separated from it. During the combing, the impact on the wool raw material is transmitted through the smooth surface of the piles and they do not break the fiber. Piles of this shape are used for combing semi-fine and fine wool fibers, which have relatively low breaking strength and fragmentation.



abc

Figure 1. The shape of drum pins in vacuum cleaners.

Straight-edged piles (*Fig. 1.12 c*) have a rectangular cross-section and a rounded edge, which reduces the degree of damage to the wool. The working edge of the pile is thin, which easily penetrates the thick mass of wool and pulls it. The edged pile exerts a stronger impact on the fiber than conical and cylindrical piles. Therefore, when separating the rounded wool pieces from each other, breakage and fiber structure distortion occur.

According to their shape, the skeins are divided into round, oval and pointed (*Fig. 1.12 g*). Skein skeins are used to comb heavily soiled wool and separate tangled wool from each other. In this process, massive breakage of fibers is observed. Therefore, the average length of the tangled wool fiber is relatively short. The surface of the pile should be smooth, regardless of its shape. There should be no irregularities on its surface, since the wool should not get tangled in the skeins and should be easily separated. In the drum, the skeins are located at a certain distance from each other along the rows that form them. In the drum slats, they are strengthened with the help of threads or pressed in a heated state.

The grid with a comb is installed under the drum according to its design, which affects the separation of foreign impurities in the wool. In order to clean the combs from foreign impurities, they are made removable. They are made of round metal rods, oval or polished metal sheets with holes punched in them. The holes of the mesh surface have a round or slotted shape, made of 1.5-2 *mm.* thick steel sheet. The holes of the mesh surface have a diameter of 10-13 *mm* , if the diameter of the holes is increased, the wool fibers fall out between the combs. In a grid with round holes, the wool is not well shaken and is cleaned as a result of the impact of the pile drum. In a grid with a comb, the impact of the pile force is better.

To achieve cleaning efficiency, it is advisable to use a barbed grid, which is made of a metal rod with a diameter of 5 *mm* and is fastened to the angle steel at intervals of 7-10 *mm.*

Reducing the distance between the bars reduces the cleaning efficiency of the sieve. At a small distance, foreign matter often clogs the sieve, resulting in a decrease in the efficiency of the sieve process.

Wool is produced during brushing, and the dust concentration in front of the brush is 200-250 *mg/m* $^{3.}$ To remove dust, a suction fan is installed on the brush. Air is sent to the cleaning chamber through turbines.

The distance between two working bodies is called the technological gap. The technological gap is positive (+), when the working surfaces overlap each other - negative (-). To prevent wool from getting tangled in the combing machine, it is recommended to set the technological gap as follows (*mm*):

Supply shaft – first drum +10...15

First – second drums +10

Pile drum – grate with grate +25

Another two-drum washing machine, the AV-8V model, is used in the VS-2A washing unit. The AV-8V washing machine has two pairs of feed rollers and differs from the 2BT-150-Sh machine in the feed device, the number of rows of piles in the pile drum, and the design of a mesh surface instead of a grate.

Another variant of the indicators given below, namely, a single-feed, small-diameter, and more compact "Sharpante" combing machine manufactured by the Belgian state, is also used. This is also a double-drum combing machine. The technical indicators of wool combing machines are given in Table 1.

Table 1. Technical indicators of vacuum cleaners

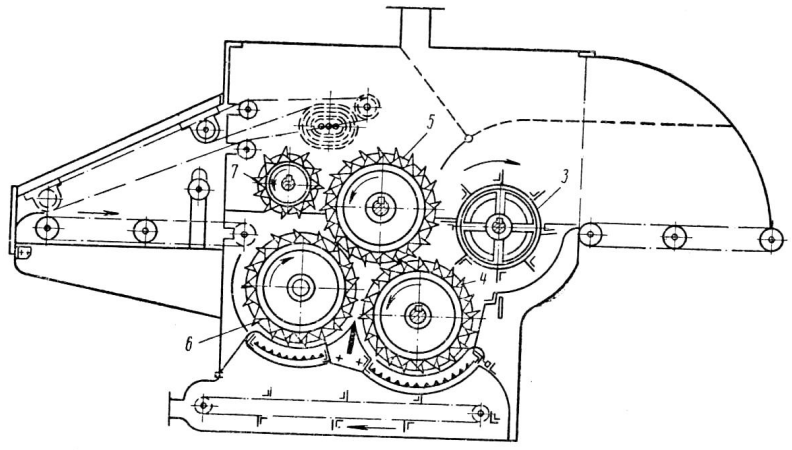
Indicator	2BT-150 - S h	AV-8V	Sharpanthe
Productivity , kg/ h	Up to 1600	Up to 1000	Up to 1500
Working width , mm	1500	1600	1420
Supply belt speed, m/s	0.07; 0.1; 0.13	0.07	0.05—0.1 5
Number of revolutions of pile drums, s $^{-1}$			
First	4.1	7.2	5.5
I second	4.75	7.9	6.2
Drum diameter , mm	950	740	725
E electric motor power , kW	7.5	7.5	7

Overall dimensions of the machine, mm			
He is a genius.	4230	3120	3370
E is	2210	2500	2320
Height	2260	2000	1700
Weight , kg	4750	2500	2300

The different designs and performance of pile drums are as follows: There are 4, 8, 12, 16 and 24 row pile drums in different designs of combing machines. Complete combing is characterized by the number of strokes of piles per 1 *kg* of unwashed wool being combed in combing machines.

$$P_к = (\kappa_1 m_1 n_{б_1} + \kappa_2 m_2 n_{б_2}) / \upsilon_{т.л} bq \quad (1.12)$$

this on the ground :
R_k — complete piles of the tattoo number);
k_1, k_2 — the number of rows of pegs in the drum;
m_1, m_2 — the number of piles in a row;
$n_{б_1}$, $n_{б_2}$ — drum rotation frequency , s^{-1};
$\upsilon_{т.л}$ — provider with a strap of the net speed , m/s;
b — provider with a strap of the net width , m;
q — 1 m 2 supply with a strap on the net wool mass , kg.
Check from the process then wool raw material wash to the car is transmitted.



2. 3BTU-type vacuum cleaner car scheme

Above shown all fight machines wool initial work technological in the process used , wool different small and large from mixtures in cleaning This is used. of cars work Productivity

1500-1600 kg/ hour organization does , but their main disadvantage difficult divisive plant remains separate It is not possible.

Wool sheared in the fall is partially cleaned by combing in 2 BT -150 -SH or two-drum straight-pile combing machines. Compliance with work regulations in the primary wool processing enterprises operating in our region is not satisfactory. The main reason for this is the very low quality indicators of the raw materials being received.

Currently, the existing wool processing enterprises in our region are not equipped with sufficient machinery. For example, it is necessary to use autofeeders to transfer raw materials brought from farms to the combing process. According to the technological regulations, AGSh-1 autofeeders should be used for unwashed wool, and AMSh-1 and APM-120-Sh for washed wool.

Today, almost all enterprises use machines without feeders in the wool carding process. This not only reduces the efficiency of the carding process, but also complicates the operation of the machine. Because the raw material, which is not fed in the same layer, gets wrapped around the piles of the carding drum, causing the machine to stop many times before the scheduled stoppage.

Due to the high layer of raw material being conveyed without the feeder, jams are occurring in the feeder of the screening machine. In order to solve this problem, the company has been using the feeder of the screening machine with the feeder removed. (Figure 3.)

Figure 4. Using the “ R uno Lux Bukhara ” enterprise 2 BT -150 -SH to touch car.

This in a way to touch process to perform very poor quality just like that without remaining fiber quality pointers to reduce reason is happening. Therefore , now using bride to touch of the car improvement question will reach.

first wool work of enterprises in all cleaning technology when used there is cars some parts construction modified. For example wool initial processing giver Peace in the enterprise 2 BT -150 -SH to touch car basis up rising installed (Fig. 5)

Figure 5. 2BT-150SH vibrating screen used at the Tinchlik enterprise.

In addition, instead of a supply belt grid, only a belt is installed. This eliminates the possibility of separating passive foreign impurities adhering to the raw material on the supply belt grid.

2 BT -150 -SH used in wool processing plants From a close study and analysis of sewing machines, it can be concluded that improving these machines is currently an important issue.

Based on the analyzed indicators, it is necessary to constructively update the main working bodies of existing screening machines, that is, the parts that directly affect the raw materials. One of the important issues of today is to obtain competitive products and bring significant benefits to the enterprise's economy by ensuring the efficient operation of the machines.

REFERENCES

1.FBIsmoyilov., Research on the improved technological process in the primary processing of wool., diss PhD., Bukhara. BMTI., 2021. p. 51.

2. FMDadaboyev., Improving the design of a wool raw material cleaning machine to increase cleaning efficiency. Diss. PhD., Namangan. NMTI., 2024.;41-p.
3. Ismayilov I.B., Ismayilov F.B., Sattorova N.N. Novaya razryxtilnaya car. "Contemporary innovative technologies and legkoyprom yshlennosti : problems and solutions" material international scientific and practical conference. Bukhara, 2021. 264-268 -str.
4. IsmoyilovI.B., IsmoyilovF.B, Kuldoshev.EI, Productivity and quality indicators of wool raw materials grown in Uzbekistan. Development of science and technology. Scientific and technical journal. Bukhara: 2025. No. 2, p. 354-359.
5. Sherst polugrubaya i grubaya neodnorodnaya mytaya sortirovannaya Gost 26588-85 Izdanie ofitsalnogo pereizdanie June 1997. c Izmeneniem No. 1, utverjdennym v dekabre

6. Rizaev Sh, Zokirov M, Sidorsov V, Ismoilov L, Ibragimov Yu. “Wool science and wool commodity science”. Tashkent.: “Mehnat”, 1985. – 221 p.

7. Ismoyilov IB, IsmoyilovF.B, Kuldoshev.EI, Kayumov JA, Theoretical substantiation of technological parameters of a machine for cleaning foreign impurities in wool fiber. Progress of science and technology. Scientific and technical journal. Bukhara: 2025. No. 2, 347-353 p

8. Ismoyilov FB Technology of primary processing of wool fiber. Textbook. Bukhara.: "Bukhara Brilliant Cargo" publishing house, 2024. – 292 p.

9.FMDadaboyev., Improving the design of a wool raw material cleaning machine in order to increase cleaning efficiency. Diss. PhD., Namangan. NMTI., 2024. 41-p

10. https://leafsmachinery.en.made-in-china.com/product/UFaGNzZVAIAC/China-Lab-Sheep-Wool-Blowing-Opening-Machine-Small-Scale-Alpaca-Wool-Processing-Machinery-for-Education-Purpose.html

11. https://kardmach.ru/product_list/1647912378/

1 2. Zelyatdinov V.V. Fizicheskie i tekhnologicheskie svoystva wool pomesey australian merino s Altayskaya tonkorunnaya v sravnenii s sherstyu ovets Altayskoy tonkorunnoy porody. Abstract. - Moscow: 1983. - 178 p

1 3. Patent Russian Federation RU, No. 2049183. Obezrepeivayushchaya aggregate U-1 / Ugryumov A.A. // 16.08.1998.

1 4. Patent Russian Federation, RU, No. 2049183 Ustanovka dlya ochistki shersti ot rastitelnyx primesey / Afanasev V.K., Bulanov A.B., Blinkova I.D. i dr. // 27.11.1995.