

ANALYSIS OF FOREIGN TECHNIQUES AND TECHNOLOGIES IN THE PROCESS OF SEPARATION OF COTTON FROM AIR

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Separators partially similar to the SX separator are widely used in cotton ginning enterprises of the Indian state. Its main working organ is a brush scraper, and the mesh surface makes up about $\frac{1}{3}$ of the working organ [1].

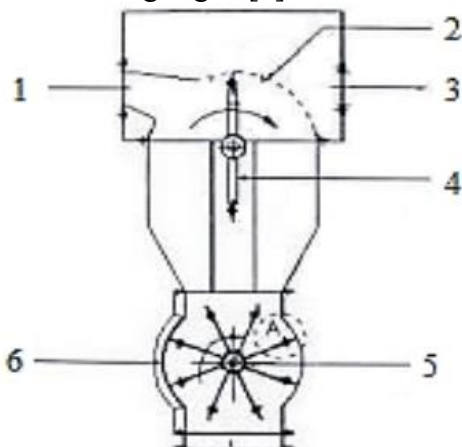


Figure 1. The cross-cutting scheme of the "Bajaj" separator used in the cotton ginning enterprise of the state of India.

1- cotton inlet; 2- mesh surface; 3-separated air outlet; 4-blade; 5-shaft; 6-vacuum-valve.



Figure 2. "Bajaj" in the cotton ginning enterprise of the state of India general view of the separator.

The separator of the Hardwick-Etter company is used in the pneumatic transport equipment of the cotton gins of the USA (Fig. 2).

The cotton stream moving in the pipe 1 falls on the wall 2, hits it, goes to the vacuum valve 3 and is taken out, the air sucked by the fan in the pipe 5 passes through the surface 6, which is constantly cleaned by the rotary separator 4.

The company points out the following advantages of the new separator: the cotton does not fall directly on the mesh surface, which prevents it from drying out, the mesh surface is always clean, as a result, the continuity of air flow is maintained. But in the separator, there is a sudden change in the direction of movement, which leads to an increase in air pressure [2].

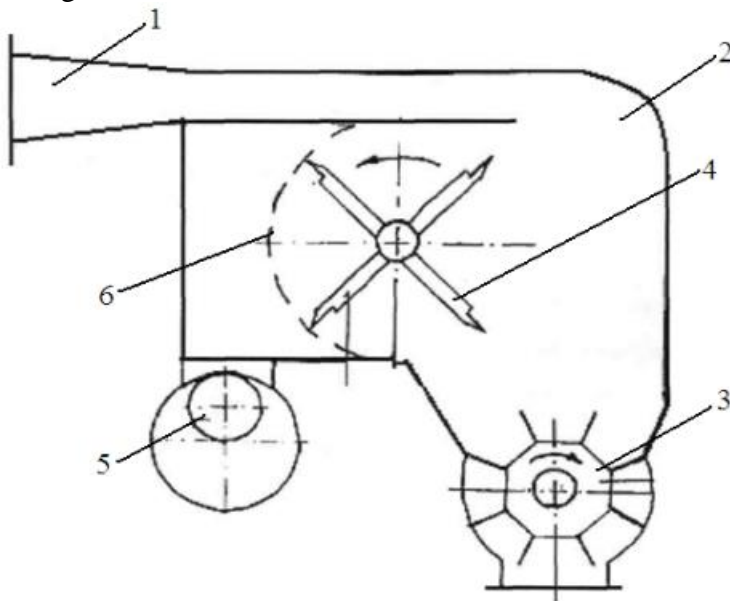


Figure 3. Schematic diagram of the Hardwick-Etter separator.

1-channel; 2- wall; 3 - vacuum valve; 4-rotating separator; 5 - pipe; 6th surface.

The separator consists of a hermetically sealed housing (3) connected to the inlet pipe (1) and a diverter. In the central part of the body is a drum with a mesh surface, and under it is a brush whose bristles touch the mesh surface (5). In the lower part of the body, a vacuum valve is fixed. The separator works in the following order: air is sucked from a mesh drum with a fan connected to a 75 kW drive, which dilutes the air in the hermetically sealed casing pipe to which the inlet pipe is connected, and as a result, the cotton raw material is conveyed to the inlet slot at a speed of 20 m/sec.

In the separator, cotton moves with its inertia along the curved surface of the housing, and the main part immediately sticks to the vacuum valve (6), and a smaller part to the mesh drum (4), from which the brush (5) it is cleaned with the help of a vacuum valve.

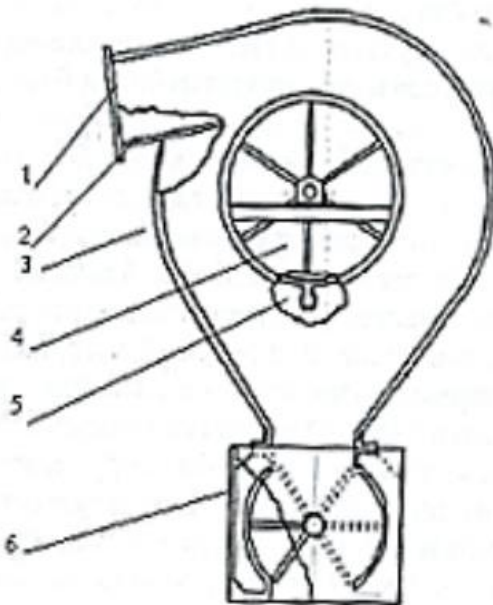


Figure 4. The scheme of the cotton separator MZF-10

1-incoming pipe; 2nd guide shield; 3rd corps; 4-drum with mesh surface; 5th brush; 6- vacuum valve;

The dimensions of the inlet slot of the short pipe (1) are 1892 x 350 mm, the diameter of the drum with a mesh surface is 770 mm, that of the vacuum valve is 680 mm, the rotation frequency of the mesh drum is 47 r/min, that of the vacuum valve is 20 r/min, mass of the separator is 1800 kg.

Researches were conducted by foreign scientists on the improvement of pneumatic transport devices [4]. The main type of pneumotransporters are separators - that is, separators. In addition to this main function, separators remove a limited amount of dust and small impurities from cotton. Separators are used in various places of cotton ginning enterprises. They are used to transport cotton and re-transfer incoming cotton in the discharge system.

References:

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