IMPROVEMENT OF THE EXTRACTION EQUIPMENT OF RING SPINNING MACHINES

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ABSTRACT

The purpose of the stretching process is to reduce the linear density of the product by reducing the number of fibers in its cross-section by pushing the fibers in the product relative to each other. The essence of stretching is to increase the speed of movement of the fibers, ensure their displacement relative to each other and redistribute the fibers.

Keywords: Stretch, fiber, movement, spinning, elasticity, break, quality, density, elasticity, rubber.

To develop the production of ready-made textiles and light industrial products with high added value based on the deep processing of raw cotton in our republic, to improve the quality and quantity of cotton products produced for the domestic and foreign markets based on the modernization of the cotton ginning industry, special attention is paid to ensuring their competitiveness. In particular, in the Action Strategy for the further development of the Republic of Uzbekistan in 2017-2021, the tasks of "increasing the competitiveness of the national economy, reducing energy and resource consumption in the economy, and widely introducing energy-saving technologies in production" are defined. [1]. In order to ensure the performance of these tasks, it is important to create and introduce effective spinning technology and tools into production, based on the rational control of the spinning speed of the working cylinder of the spinning machine in cotton industry enterprises. One of the main technological processes of spinning enterprises is the stretching equipment, whose task is to stretch the skein. It is known that during spinning, the rough products are thinned and finally a thread of the required linear density is formed. Technologically, it is not recommended to stretch and thin the product many times at once. Therefore, the spinning process is divided into several stages, the most important and one of the most complicated of which is the stretching and thinning of the product. The purpose of the stretching process is to reduce the linear density of the product by reducing the number of fibers in its cross section by pushing the fibers in the product relative to each other. consists of redistribution of fibers.

Each previous pair of stretchers rotates faster than the next pair. The number of times the speed of the first pair is greater than the speed of the last pair, the

longer the product. When the product is stretched, the fibers slide between each other, change their position, that is, they are located differently. When the fibers slide, a frictional force is created: this force straightens the ends of the fibers and makes them parallel to each other. The ratio of the speed of the front pair of cylinders to the speed of the rear pair of cylinders in the stretching device is called the stretch and serves as a stretch indicator. And so,

$$E = \frac{\vartheta_2}{\vartheta_1}$$

here: eating; ϑ_1 - the speed of the rear pair m|min; ϑ_2 - the speed of the output pair m|min.

In the process of stretching, the weight of the product does not change, the linear density decreases as much as its length increases. The ratio of the linear densities before and after the product is stretched indicates how many times the product has been stretched

$$E = \frac{T_K}{T_ч} \cdot d,$$

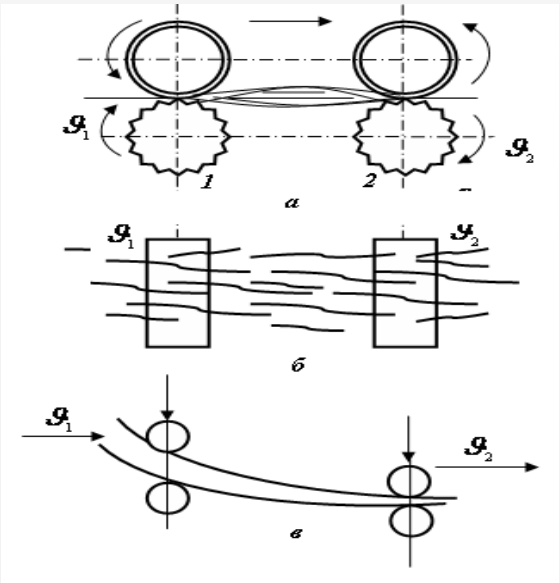
here: T_K – linear density of the product before stretching (input); $T_ч$ – linear density after stretching (at exit); d – number of products being added.

The simplest stretching device is shown, consisting of two pairs of cylinders 1 and 2 and rollers lying on them. The cylinders are driven by gears, and the rollers rotate due to the force generated between the cylinders and the rollers. The front pair 2 rotates faster than the back pair 1, and due to this, the product - the braid is stretched. The stretching pairs are tight with the fibers themselves and give them full speed. rollers are made taram taram (riffy) so that the stretching pairs fit well together with the fibers and give them their full speed, and the rollers are compressed under the influence of loads or springs on the cylinders: the rollers the surface is made of elastic polymer and rubber materials.

If the fibers do not move relative to each other during stretching, such stretching is called the first type of stretching. If during stretching the fibers move relative to each other along their entire length, such stretching is called the second type of stretching. At present, only the second type of stretching is adopted for stretching and thinning the product (wick, skein) in spinning factories. It is called

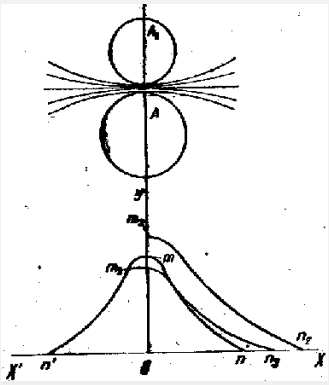
the stretching area of the surface where the fibers can move relative to each other. The distance between the beginning and the end of the movement of the fiber is called the limit of the stretching area.

In the field of stretching, the movement of fiber products can be divided into two, i.e. uncontrolled and controlled fibers.



(Figure 1) **Interpretation of stretching pairs and the movement of fibers in it**

The fibrous material (wick or pile) passing between the pairs in the stretching device is compressed between the cylinder and the roller, and a frictional force is generated on their surface. The space where the friction force acts between the fibers and between the fibers and the details of the stretching tool is called the surface of the friction force.



(Figure 2) **Surface friction force**

In order for the stretching process to be normal, the pressure of the leading pair should be greater than the pressure of the supporting pair. Then, as soon as the front ends of the fibers in the posterior pair of compression fall into the

compression of the anterior pair, the fibers begin to move from the speed of the posterior pair to the speed of the anterior pair.

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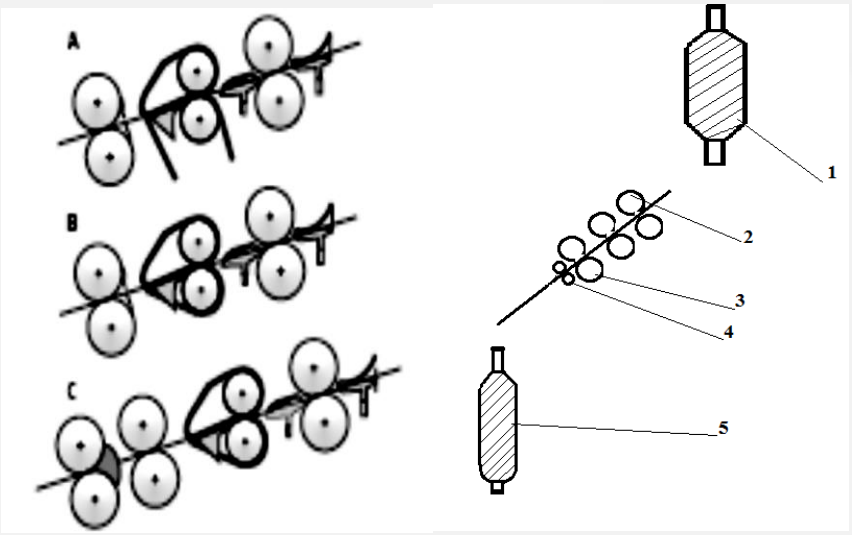
In order for the stretching process to proceed normally and to obtain a uniform product, the rollers placed on the cylinder should be of good quality and press the fibers to the cylinder with normal pressure. Rollers are divided into elastic, magnetic and self-weight types.

The main function of the tapes is to control the floating fibers in the drawing equipment and to improve the unevenness of the thread.



(Figure 3) ***Stretching equipment for ring spinning machines.*** *1-pillow, 2-rubber coating, 3-guide cylinder 4-additional rubber coating, 5-spun thread.*

By adding additional rollers to the stretching equipment, they are coated with special rubbers, i.e. nephron rhombic mesh, and are installed after the variable and fixed rollers (the diameter of the fixed roller is 0.25 the diameter of the variable rollers and it is equal to 0.28 m and consists of two stretching zones) passes through the roller of the stretching zones and passes through the additional rollers. Additional rollers, due to the fact that the thread is well compressed when passing through the mesh coating, and due to the openness of the gaps, the small impurities in the thread remain in the gap and are absorbed by the air. By reducing a few marts, the product increases the yarn's quality indicators (ripeness, smoothness, flatness, length at the break and the amount of naps) and leads to the improvement of the quality indicators of the fibers. In addition, you can save a certain amount of raw materials, electricity, labor time, and increase productivity.

Conclusion

If it is used in the production of equipment, the quality indicators of the spun yarn (toughness of the yarn, breakage during stretching, reduction of the amount of neps in the yarn, unevenness of the yarn) increase by 20-25%. Currently, this equipment is used in the technological production process of Tashkent textile group.

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