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Study Of Automatic Devices Of Spinning Yarn Weighting Machine

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Annotation. At present, the following main technological factors are controlled and automatically adjusted in carding machines: thread tension in zones, elongation, pressure of compression shafts, temperature in the drying part of the carding frame, carding level in the hopper, moisture content of carded yarn, weaving weight the density of the package at the bottom. Threads spun in a spinning machine are mainly dipped in liquid spinning, the excess of the required amount is squeezed out, and then dried. In the front part of the machine, the yarns coming from different spools are separated from each other and wound on the weaving spool.

Keywords: Carding process, spun yarn drying, carding and drying machines, drum, chamber, mixed and special carding machines.

Introduction part. Threads spun in a spinning machine are mainly dipped in liquid spinning, the excess of the required amount is squeezed out, and then dried. In the front part of the machine, the yarns coming from different spools are separated from each other and wound on the weaving spool. To perform these tasks, each honing machine must have the following devices and mechanisms:

- installation of coils wrapped in the given tan, a device that ensures uniform and constant tension of the threads being spun from them;
- an ohor container with rollers for absorbing ohor directly on the threads of the body and squeezing out the excess amount - taz;
- a device for drying excess moisture as a result of drying out of threads;
- machines that separate the threads coming from different spools;
- emulsifying device that increases the smoothness of skin threads;
- mechanisms that move the threads and wind them on the weaving reel at the same speed;
- devices and tools that monitor, adjust and manage the process of honing.

There are many types of drying machines, and they are mainly divided into the following depending on the drying method: drum, chamber, mixed and special.

In drum carding machines carded threads are dried as a result of direct contact with the surface of the heated drum.

In the chamber drying machine, threads are dried under the influence of hot air moving inside the chamber.

Infra-violet rays were used to dry the yarns prepared in a special way. This method is used in experimental grinding machines and is widely used in production.

Main part. In the process of bleaching, the tan threads absorb the bleach and the level of bleach decreases. The amount of immersing the threads in the warp affects the amount of warping, that is, the breakage of the warp threads during the weaving process. It is necessary to keep the level of ohor in the cage at the specified amount so that the amount of ohor is the same.

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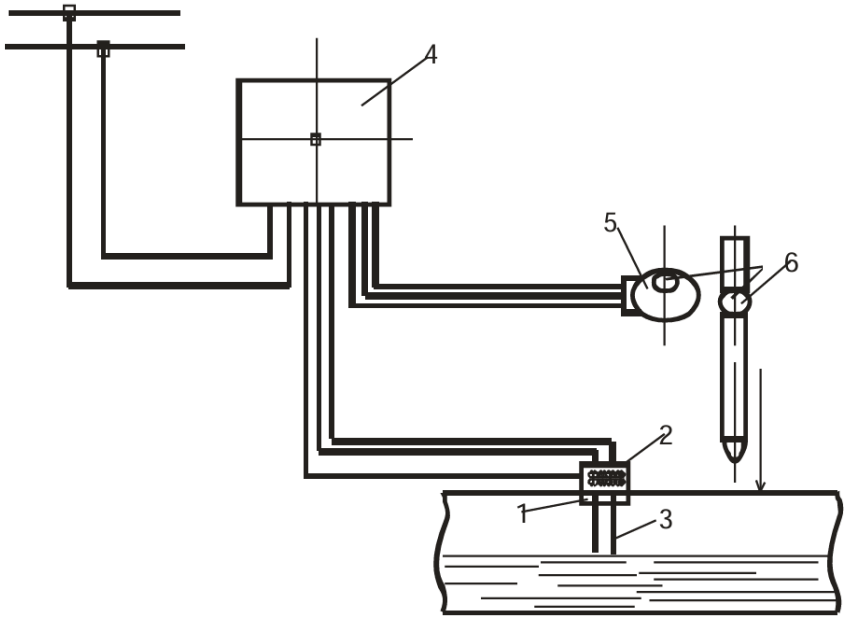

Figure 1. Image of an automatic device that controls the amount of ash in the bunker.

1. Metal scoop.
2. Insulator.
3. Electrodes.
4. Relay.
5. Reversible electric motor.
6. Acorn faucet.

As a result of the decrease in the amount of ash in the bunker, one of the electrodes (3) does not touch the ash and there is a break in the current, (4) the relay activates and connects the electrodes (zamo'kaet), starts the reversible electric motor and opens the ash tap to the desired amount in the ash bath if enough, a short circuit 108 is formed between the electrodes, the relay causes the electric motor to rotate backwards and the tap is closed. The degree of decrease in the amount of ash in the bath should not exceed 3 mm.

The temperature of the manger in the bunker is automatically adjusted using a positional adjuster. The heat regulator (Fig. 1) consists of a sensitive element consisting of a brass tube and an internal rod 5. The element serves to close and open the pipe through which the steam is transmitted by activating the lever 2 and the micro-burner executive mechanism 3, which is placed in the furnace hole 4 of the heating machine. The principle of operation of the adjuster is based on the fact that the coefficient of linear expansion of the brass pipe 1 and the internal rod 5 is drastically different. If the temperature differs from the specified value, the length of the brass tube will change due to heating or cooling. As a result, the internal strenghen is stimulated, because its length does not increase. The left end of the inner rod is fixed inside the brass pipe, and the right end rests on lever 2. As the temperature drops, the brass tube shrinks. The lever 2 is turned, and through the micro-burner 3, current is transmitted to the electromagnetic coil. The electromagnet opens the valve of the machine that supplies steam to the manger. When the temperature of the furnace increases, the brass tube becomes longer and stops transmitting current to the coil through the micro-burner 3. The actuator stops the steam transfer to the furnace.

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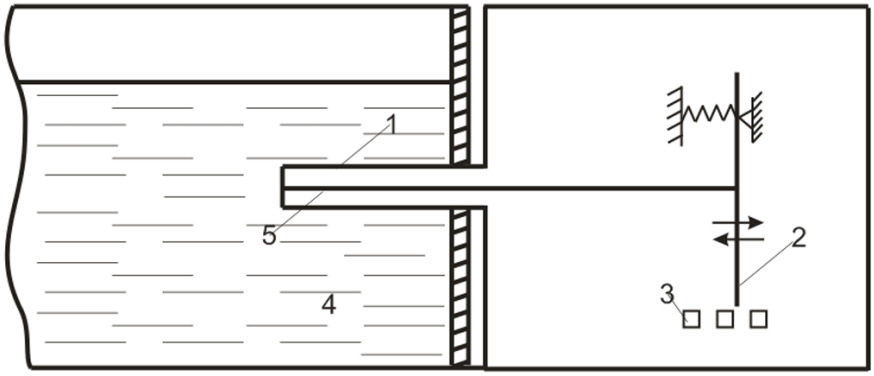

Figure 2. Image of the automatic temperature controller in the hopper.

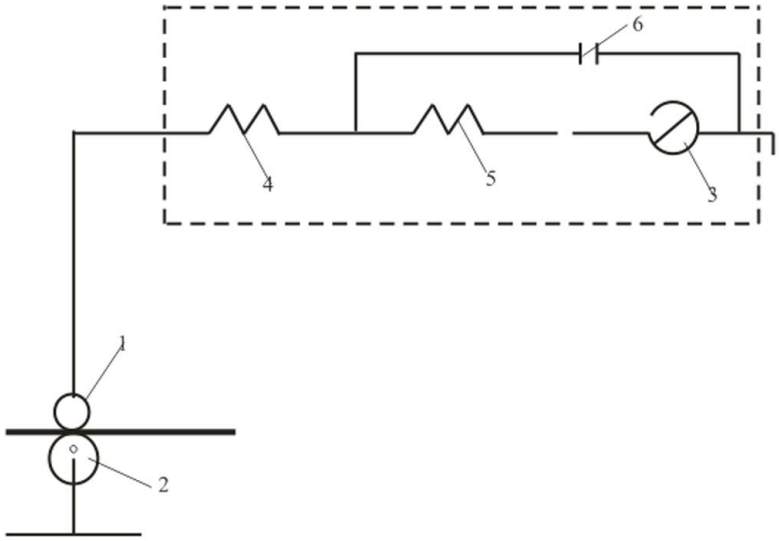

Figure 3. Image of the device showing the moisture content of the spinning yarn.

The main parts of the device:
1. Bending guide roller.
3. Gal vanometer.
6. Condenser.
2. Metal roller-meter.
4.5. Objections.

Results and discussions. In order to obtain high-quality carded spinning yarns, it is necessary to correctly set and maintain the technological parameters of the carding process. High-quality warped yarns are less likely to break during the weaving process. The indicators of the weaving process are selected depending on the type of fiber, the linear density of the thread, the structure of the produced fabric and the purpose of its use, the composition of the weaving machine and the type of weaving machine. The main indicators of the grinding process are as follows:

- Speed of calving;
- The tension of the body thread by machine zones;
- Elongation of threads during weaving;
- Pressure of compression shafts;
- Drying temperature.

These, in turn, affect indicators such as concentration, amount, thread elongation, and humidity.

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The drying speed is determined by the length of thread passing through the machine per unit of time and depends on the machine's drying capacity. The amount of water evaporated by the drying part of the machine per unit of time is called the drying capacity of the machine.

$$V = \frac{Q \cdot 10^6}{a \cdot T \cdot n_T \cdot 60} \text{ , m/min}$$

Q - drying capacity of the machine, kg/h
a - humidity coefficient (a = 0.7 – 1)
T - linear density of tanda yarn
n_T - he number of threads on the warp

The speed of drum honing machines is 30-150 m/min, and the speed of chamber honing machines is 12-80 m/thousand. In order to ensure high-quality threading, it is advisable to choose the speed of threading depending on the type of fiber, the thread and the structure of the fabric. For example, the spinning speed of viscose threads is 50-70 m/min, acetate and triacetate threads 40-50 m/min, capron threads 27-30 m/min, single raw wool thread 30-35 m/min, cooked raw wool thread 40- 50 m/min, single raw cotton yarn 40-50 m/min, cooked raw cotton yarn 60-70 m/min, wet-spun raw flax yarn 30-40 m/min, dry-spun raw flax yarn 25 -30 m/min is acceptable. Baling speed determines the actual performance level of the machine.

Literature analysis and methodology. Many researchers have conducted research on spinning yarn and drying it. A number of information and guides are provided on spinning and spinning equipment. This literature contains the latest experiences, methods and guidelines in the field of new automated technologies.

For example, the literature [1] is an important guide to support faster production and deployment of new automated technologies. The book presents the best practices, techniques and guidelines in the field of automated technologies, and provides comprehensive information on the processes of preparation of yarns for weaving.

Also, the literature [2] provides information on the improvement of human living conditions by automated technologies. The book presents new technology automation, laboratory control, features and good practices of automated technologies, and provides some guidance on textile manufacturing efficiency.

In the literature [3], information is given about the main device of the machine for spinning and drying the spun thread. However, information about the types of equipment is not provided. The book shows practical exercises and instructions on the principle of operation of spinning devices.

Literature [4] shows information about the structure and principle of operation of the devices in the process of spinning and drying the spun yarn. Practical instructions on the main indicators of the lime process are given.

The literature [5] is related to the spinning and drying process of spun yarn, and describes the methods and experiences of creating and using automated technologies.

These literatures are important resources that help to create and use new automated technology in the field of textile, yarn production. By using them, you can effectively learn how to implement and manage new automated technologies.

Conclusion. The purpose of carding spun yarns is to increase the hardness and abrasion resistance of the yarns. Single spinning yarns are deformed, stretched, rubbed, crushed when passing through the weaving equipment, therefore, the fibers of the yarns sticking out to the outside are glued to the base, and to a certain extent, the ocher material is soaked into the yarns, and the outer side is brought to a smooth state, as a result, the yarns interruption is reduced. One of the biggest problems in the sewing and knitting industry is the breaking of spun threads during the work process. Such problems are not observed in the industry if the spun yarn is fully combed and the comb composition meets the requirements.

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