

ANALYSIS OF LEATHER SUPPLY DEVICES TO MECHANICAL PROCESSING PRESSING MACHINES IN THE LEATHER INDUSTRY

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Today, it is urgent to develop the theoretical and practical aspects of improving the main mechanisms and devices of shaft machines for the production of leather, which improve the quality of processed products in the mechanical processing processes of modern leather factories.

The delivery devices of mechanical processing shaft machines play a decisive role in the delivery of leather to the mechanical processing zone and from the processing machine to the rest. The quality of the supplier's equipment system can greatly affect the efficiency of the overall production line. Therefore, it is important to regularly analyze the effective operation of the system of delivery devices.

In addition to monitoring the performance of the delivery equipment system, it is also important to evaluate the quality of the wet semi-finished leather products being transported. It is necessary to ensure that the wet semi-finished leather products are transferred to the machine in a flat manner to avoid damage such as folds or creases. Any problems related to the quality of wet semi-finished leather products can be solved by making changes to the delivery device system, for example by redesigning the structure of the delivery device so that the wet semi-finished leather products are spread flat in the mechanical processing zone. delivery is possible.

It is known that today in the leather industry there are a number of machines that process wet semi-finished leather products in the process of mechanical processing on horizontal and vertical shaft machines . Currently, roller machines for mechanical processing of wet semi-finished products are manufactured by the following companies: 07599 / P3 "Svit", VOPM-1800-K, Bauce, Escomar, CM, 3P, Poletto, Turner, 3H, Suit, Shanghai Sunhome, Nantong Sirui, Yuong Pearl, owned by ALETTI (Polypress PM1, Polypress PM2, Polypress PM3 a, DUPLEX, Polypress), owned by BAUCE (Stenpress Bluestar TA 1S, Stenpress Bluestar TA 2S, Stenpress PRC-2 2 S, BLUESTAR H5), ESCOMAR belongs to the company (PCR 3, PCR-E5, PCR-E56), belongs to the MENEGHETTI company (New model 1986, New model 1987, PC/40), belongs to the RIZZI company (PRNA-FC-7, TRIA, PENTA), belongs to the TURNER company (Type 594, SIBOPRESS) [1].

It carries out the process of conveying mechanically processed wet semi-finished leather products from the processing zone to another zone along with conveying the wet semi-finished leather products to the processing zone by machinery . Machines for mechanical processing of wet semi-finished leather products are divided into horizontal and vertical types.

The supply devices of horizontal mechanical processing machines are divided into the following classifications:

- tape
- stringy
- roller
- pneumatic
- with a chain

In light industry, horizontal type machines of belt conveyors are widely used to transport leather raw materials to workplaces. According to the principle of operation, horizontal type machines: mechanical processing leather machines themselves are divided into conductive (VOPM-1800-K) and non-conductive (AIF-SM7650) types. Below we will consider the analysis of horizontal type conductive machine and non-conductive machine. Just-in-time device conveyors themselves are divided into two types:

- machines with a general delivery device together with mechanical processing shafts;
- cars equipped with a separate delivery device;

Below we will consider the machines that do not pass the horizontal type.

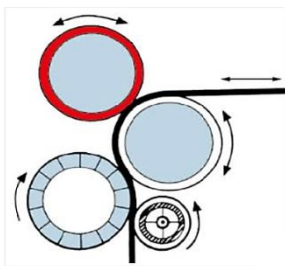


Figure 1. AIF-SM7650
sammying process

AIF-SM 7650 mechanical processing of wet semi-finished leather products in non-conducting machines and

the delivery of leather to the processing shafts is not automated and human labor is used extensively in this process, the wet semi-finished product is divided into several parts and processed in several stages. In the process of processing, first half is processed, then it is pulled out and the remaining second half is processed (Fig. 1). There are several machines of this type, one of which (Fig. 2) is the SK-3

compression machine. During mechanical processing, the skin must be dewatered by a machine, and then the working shafts can separate the oil from the dyeing and wet semi-finished product. If the water is not squeezed out when the wet semi-finished product is dyed, traces of water will remain in the color of the wet semi-finished product. Like the aforementioned AIF-SM7650 machine, this SK-3 machine requires a large amount of human labor in the wet semi-finished product processing process. Both of these machines

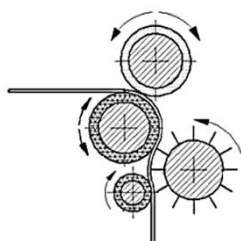


Figure 2. SK-3
sammying process

require a lot of labor to handle large volumes of wet semi-finished products. It is not possible to put these machines in mechanical processing lines, therefore, machines equipped with a device that delivers to the processing area are relevant, because horizontal type transfer machines are more

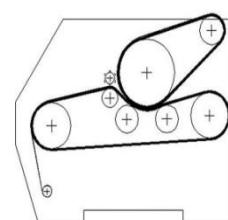


Figure 3. ANKE 3H
sammying machine

efficient, safer, easier to automate and suitable for production lines, and below the leather processing We will consider the machines equipped with the delivery device of the machines, and they, in turn, are divided into two types: machines with a general delivery device together with the working shafts and machines equipped with a separate delivery device. Below we will consider machines with a generalized delivery device in combination with working shafts. (Fig. 3) In these machines, since the delivery device is integrated with the processing shafts, the velocity of the wet semi-finished product is the same at the entrance and exit of the processing zone. In this machine, folding of wet semi-finished products can occur, because the speed is the same everywhere on the conveyor belt, the stretching of the skin occurs on the processing shafts, at which time the wet semi-finished product has to be pulled by the operator. , otherwise folds may occur in the wet semi-finished product. In such machines, the engine is used for a longer period of time than in machines equipped with a separate delivery device. Machines of this type are widespread, among which the VOPM-1800-K machine works on this principle, and we will also consider machines that do not generalize with working shafts.

After chemical treatment of the wet semi-finished product, the wet semi-finished product should be well leveled and spread, therefore, instead of the conveyor shafts, conveyors with conveyor belts are used, and it is VOPM-1800-K and PRN-2 company of Рицци installed on 6 machines (Fig. 4.5). The hydraulic mechanism of the PRN-2 ... 6 machine creates a pressure force of up to 5.2 MN on the shafts. The compression shafts of VOPM-1800-K machines do not have a strong enough pressure. Therefore, this problem was effectively solved in the best machines of this type from the Ritstsi company: PRS-2-6 and RO-1 ... 2, PRN-2 ... 6. The principle of operation of this machine is as follows: the pusher 2 adjusts the pressure force of the leveling shaft by

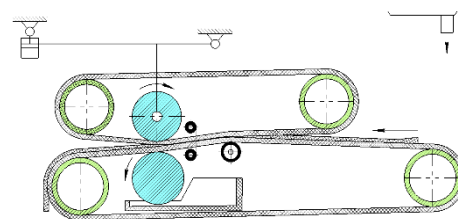


Figure 4. ВОПМ-1800-K

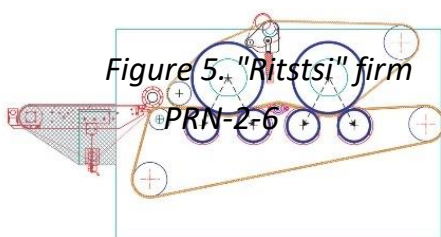
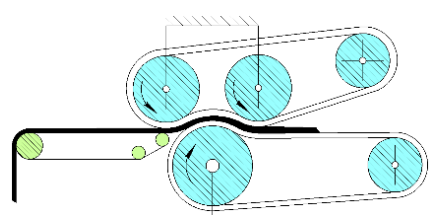


Figure 5. "Ritstsi" firm
PRN-2-6

Figure 7. DAYTONA 6C

moving through the spring lever-pusher 3, which generates a compressive force of up to 15 kN. Hydraulic cylinder 4 produces a compressive force of up to 150 kN on the compression shaft. The links of the transmission mechanism of the machine in (Fig. 6) are adjusted to the frame of the supporting shaft 1 and firmly fixed, the hydraulic cylinders press the second shaft 5 of the compression pair. Shaft 7 has an independent suspension and a pressure adjustment mechanism acting on its leveling shaft 6. When the camber of the transmission mechanism is rotated 180°, the links of the shafts 1 and 7 "break" and go to the idle position

[2]. The PRN-2-6 machine of the "Ritsti" company is equipped with a separate delivery device (Fig. 6). However, this delivery device has problems in conveying the wet semi-finished product to the processing area, where the angle of delivery and the wet semi-finished product must be constantly adjusted by the operator.

Many more cars can be added to this list and one of them is the DAYTONA 6C. The machine is equipped with a separate delivery device. The coverage width of the machine is up to 1800...3200 mm. In this machine, one of the above-mentioned (Fig. 5) PRN-2-6 machines is used to spread the wet semi-finished product to the mechanical processing zone and to automate the leveling, i.e. the leveling shaft, to reduce the manual labor of the operator. installed. However, this machine has a very small skin transfer angle and is a delivery device at that point

the tensile force is very large and it is always under tension. The reason for the small transmission angle is that the alignment shaft is placed very close to the crankshaft, the construction is complicated and it is necessary to deliver it to the machine at an acute angle.

Passing machines with a simple device are used for pressing wet semi-finished products, the PSR-69 machine from the Gottsini (Italy) company has two powerful hydraulic cylinders and a lever mechanism with a passing width of 1700 mm. creates a force of 4 MN in the compression shafts. The disadvantages of the machines that we reviewed above are also present in this machine. Therefore, even in the machines equipped with a separate delivery device, it is necessary to level the wet semi-finished product with the help of human labor. Therefore, in this process, we reduce the human labor in this process and remove the problems existing in the above machines in the transfer process and ho We would like to make the following proposal to ensure that semi-finished products are transferred to the processing area without folding:

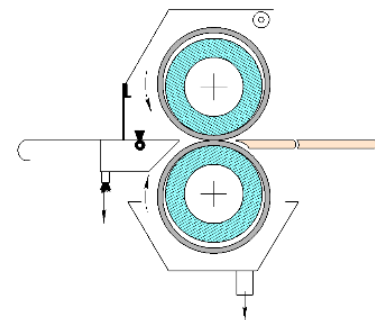


Figure 8. " Руцци " firm PSR-69

- Ensuring delivery of wet semi-finished leather product to the mechanical processing zone of the delivery devices without folding.
- Improving the processing quality of wet semi-finished leather products.
- Easing manual labor and increasing the productivity of technological machines.

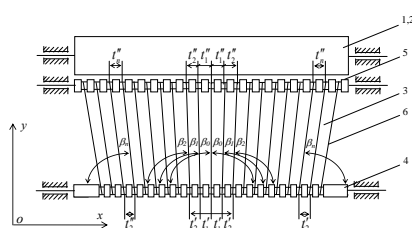


Figure 9. A machine that spreads the skin into the treatment area

(Fig. 9) shows the scheme of the new device for supplying and spreading the semi-finished leather product to the processing zone of the 1, 2 shaft pairs. The supply and spreader string conveyor 3 consists of drive and driven shafts 5, 4 and strings 6. The leading and driven

shafts 5 and 4 have grooves, in which endless strings 6 are placed. The pitch of the splines on the drive shaft 5 $t_1'' , t_2'' , t_3'' , \dots , t_n''$, the drive shaft has a pitch of 4 splines $t_1' , t_2' , t_3' , \dots , t_n'$. The operation of the device is carried out as follows. The wet semi-finished leather product is spread on the string conveyor 3, and when it moves due to the increase in pitch of the string, the semi-finished leather product is spread sideways under the influence of the frictional forces of the strings. In this way, the wet semi-finished leather product enters the processing zone without folding, which in turn ensures that the leather passes between the working shafts without folding. In general, in the leather industry, the analysis of the device that delivers the leather to the mechanical processing zone is an important aspect of ensuring the productive and efficient operation of the production line.

Currently, modern enterprises should be equipped with new machines and devices that use the latest advances in science and technology, mechanisms that ease manual labor, automatic and monitoring systems, and computer technologies should be widely used, and the main thing is to ease human labor and develop new constructions. is considered

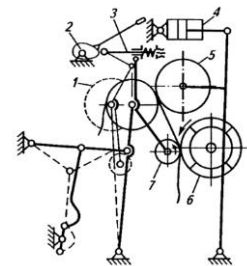


Figure 6. Scheme of PRS-7 compaction-leveling machine

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