Belyaeva A.Yu.,

Ph.D., associate professor,

Zhuk Orest, student

Igor Sikorsky Kyiv Polytechnic Institute

Cleaning mechanism

shavings from the working area of the machine

Nowadays, chips are removed from the working area of the machine by simple methods, without the use of special mechanisms [1].

1. With scrapers, brushes, rakes - the so-called mechanical method;
2. Gravitational, ie the chips fall under the action of gravity

chip collector under or near the machine;

3. Flushing with a coolant stream;
4. Blowing or suction;
5. With the help of an electromagnet.

Often these methods are used in combination with each other. However, in practice in automatic or semi-automatic lines there may be cases when the use of these methods does not give the desired result. Various transport mechanisms can be used to remove chips from the work area. Depending on the specific conditions determined by the layout of automatic and semi-automatic lines, the organization of work on them, the following three systems of chip transportation from the line to the general shop transport system of chips are used [1].

1. Transportation of shavings in containers when from individual machines through windows in the frame shavings are poured into appropriate containers. Such a ystem less more perfect than automated.

1. Transportation of shavings by conveyors passing outside the lines and have separate supply conveyors of one type or another separately from the machines.

2. Transportation of shavings by conveyors mounted directly in the line, or those passing under it in a special pit, ditch, tunnel. The use of such a transportation system eliminates the need to have a chip removal device on each of the individual working units of the line, as it is located directly below the processing area on the same units.

In most modern lines, the chip conveyor is mounted directly in the line or passes under it in the ditch. The use of a particular design of a similar built-in conveyor, as well as its location (through the machines of the line or in the ditch under the machines) depend on the specific operating conditions of the line and its layout; this takes into account whether coolant is used in the operation of machines; the type, shape and size of the chips are important [1].

Very often as a transport mechanism conveyors of different types are used - belt, scraper, auger, vibrating. Taking into account the classification of chips and vehicles used, the most rational solution would be to install an auger conveyor, namely:

material - brass; type of machine - lathes; type of shavings - small, straight; specific weight (t / m3) - - 0.8-1.0; vehicles, conveyors - augers [1].

The screw conveyor consists of a fixed chute or tube containing a screw (screw), with a drive at one end and a free other end. In addition, the screw conveyor has loading and unloading nozzles, connecting flanges, a mechanical reducer and a drive motor (Fig. 1).

The positive properties of augers include:

• simplicity of construction and simplicity of maintenance;

• Small overall dimensions in comparison with others

conveying devices (belt and plate

conveyors) of the same productivity;

• convenience of intermediate unloading;

• ease of operation.

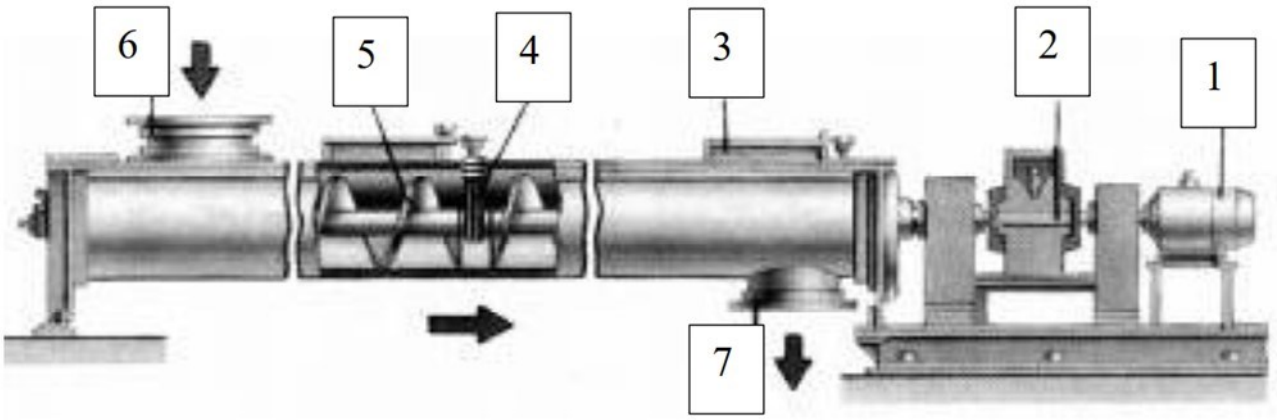

Fig. 1

1 - electric motor; 2 - reducer; 3 - gutter; 4 - suspension bearing;

5 - auger; 6 - loading branch pipe; 7 - unloading branch pipe.

The initial data for the design are the characteristics of the cargo, the height and distance of its transportation, as well as the performance of the conveyor. Based on initial data the design scheme is developed, the angle of inclination is defined the number of intermediate screw supports (after 2… 4 m). The diameters of the screws of horizontal and inclined conveyors should not be less than 12 times the size of the pieces during transportation homogeneous in size pieces of cargo. Screw diameters Dw are assigned from a number of preferred numbers in accordance with DSTU 2672-94. The diameter of the auger shaft accepted $dv \approx 0.35\ldots 0.10 \cdot Dw$. The speed of rotation of the screw depends on the type load and screw diameter. Maximum auger speed determined by approximate ratios: for light non-abrasive materials $n = 60 / Dw$, for heavy non-abrasive materials $n = 45 / Dw$ and for heavy abrasive materials $n = 30 / Dw$

Sources:

1. Automation of production processes / GA Shaumyan M. "Higher. school". 1978