Based on the graphic dependences in Figure 3, 4, we can make the following conclusions:

– aerodynamic characteristic and, therefore, the consumption of the packaged duct collector net with 10 modes constitute insignificant part of all installation consumption;

– disconnection of temporary inactive machines from the aspiration net significantly reduces energy consumption for material transportation, although net consumption is increasing due to decrease of the air consumption. If you accept the coefficient of the synchronous working machines as 0, 6, that power consumption of energy consumption will reduce on 21, 2% in the experiment;

– the main wood waste mass (86-90%) falls in the vertical collector, thus it isn't necessary to transport it by expensive pneumatic methods, which need large energy consumption. There is a tendency to some insignificant decreasing of the accumulated waste mass with the increasing of synchronous working suctions. It can be explain by the difference between modes of the waste entrance in the collector shell. It is necessary to connect air channel of the suction to the collector shell, which is leaned angle 40-50º;

– the additional economy of energy consumption is about 40%, what is achieved by the main mass of large wood waste transfer induct pipelines on the short distance from machines to the packaged collector. It helps to reduce pressure loss;

– only 8-13% of small factions of all waste mass gets in the cyclone, besides, the load slightly increases in the cyclone with the increase of the synchronous working machines quantity.

Although, the purification degree stays on the constantly high level (93-97%), it can be explain by the presence of speed reactor and small mass of the fine-dispersed dust ejected in the atmosphere.

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IMPROVING OF FIXING SYSTEM OF CUTTING PLATES IN BLOCK-MODULAR CUTTING TOOLS

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The paper present research system of fixing cutting plates and blocks in block-modular cutting tools

Reliability teams cutting tools to a large extent determined by the reliability of fixing plates in the housing. There are many designs of clamping mechanisms, taking into account the working conditions of the cutting tools and features for their manufacture. These systems reflect the current trends in the design of cutting tools: high precision of manufacturing of cutting plates, the closed grooves and precisely manufactured to accommodate the cutting plates, the cutting plates clamping mechanisms with a minimum number of structural elements, such as a screw or a lever. The implementation of such systems in terms of domestic production tool is not always possible, as it requires special equipment and precise, high-quality components elements. Therefore urgent to establish a system fixing cutting plates technological conditions for domestic production and not inferior to the best foreign systems reliability.

The system of fixing cutting plates, including the following key elements (fig. 1): the cutting plate (pos. 1) is set to open width direction groove cutting block (pos. 2). Fixing module of (pos. 3) is configured as a "T-shaped" strap, "the horizontal shelf" which is introduced into one part of the cutting plate hole and is pressed against the front surface of the cutting plate, while the other part is brought into contact with the bevel of the cutting block. The "horizontal shelf" of "T-shaped" strap is installed by planting in open longitudinal groove the cutting block. "Vertical shelf" of strap is designed as a screw threaded into "horizontal shelf" of strap and

installed in the "oval-shaped" hole of the cutting block. When the strap screw is performed simultaneous movement of strap in horizontal and vertical directions, and the strap of the cutting plate on the base, the side surface and the hole.

In the proposed system, the grooves are made open and reliability of fixing of cutting plate is provided except moves in radial, axially and tangentially relative to the machined surface of the work piece.

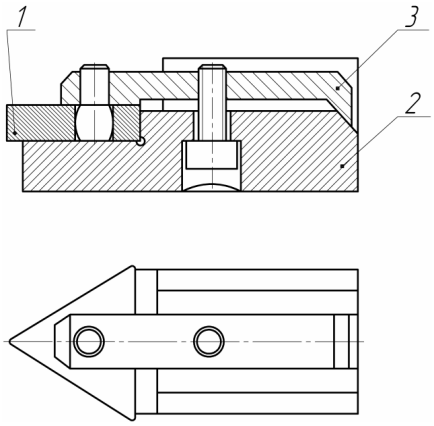

Fig. 1. The system of fixing cutting plates

The design of the cutting block (fig. 2) includes a cutting plate with hole installed into the transverse open groove relative to the geometric axis of the housing at a certain angle α. Clamping of plate provided a "T-shaped" strap placed in an open longitudinal groove of the housing of block and having formed at an angle α "strapping planar part" and "support part" in the form of plane or spherical surface. In the strapping part is a pin incoming hole of cutting plate. Strapping planar part in contact with the front surface of the cutting plate and support part – with a flat surface of the housing of block arranged at a predetermined angle ψ. Clamp of strap by using screws threaded into it and freely entering the "oval-shaped" hole in the housing of block.

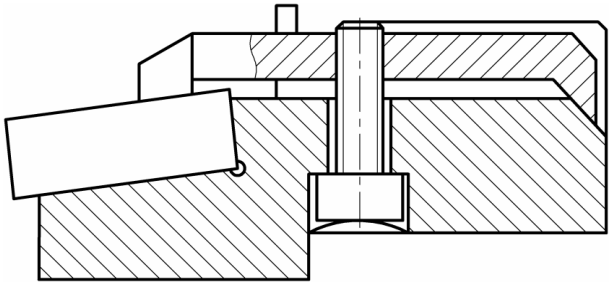

Fig. 2. The design of the cutting block

Proposed design of cutting block differs from known analogues following:

1. Clamp made T-shaped as opposed to most similar found structures (the L-shaped). And strapping part has "leverage" smaller than the reference.

2. Clamp is placed in a groove of the housing on the landing provides free movement in the longitudinal direction and fixed in the transverse, i.e. clamp works as a "yoke", the retaining plate on the transverse displacements.

3. Strapping part has a bevel at an angle α, the value of which is chosen as the value of the posterior angle of the cutting plate and a few adjusted for self-locking angle for the contacting materials.

4. The supporting part is performed flat or spherical and contacts with beveled angle ψ plane of housing of cutting block, whose value is chosen based on the possibility of longitudinal displacement of strap.

5. Pin included in the planting to hole of strapping part and has a spherical end (part of the hole of cutting plate).

6. Clamping screw enters freely into the housing bore and is slid able transversely direction in relation to its axis.

7. Housing of block is cylindrical, allowing its installation in the housing module hole tool and clamp two hollow cylindrical elements with radius «samples» of the corresponding cylinder of the housing, and a tightening screw them.

8. Design of elements of clamping as cutting plates and housing of cutting block provides action of clamping forces on the direction of the cutting force components that ensures additional sampling possible gaps in the design of the cutting process.

Fixing system of the cutting block in the housing module (fig. 3) also technological and reliable. Cutting block mounted on the cylindrical surface in the hole, where previously through the other hole entered into one element of the clamping mechanism ("cotter"). Then introduced another "cotter" and both "cotter" tightening screws, thus providing reliable clamping of cutting block between two "cotters" and exclusion of movement of cutting block in all directions. The exact location of "cotters" relatively cutting block considers direction acting on cutting plate cutting forces – clamping force directed along the cutting forces, which eliminates gaps in the contact elements during vibration system.

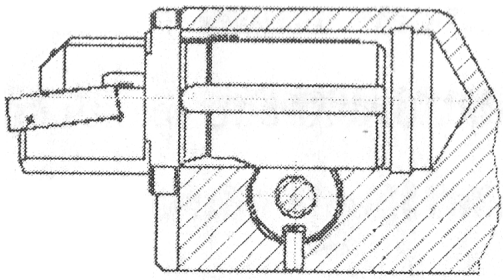

Fig. 3. Fixing system of the cutting block in the housing module

Thus, the reliability of the proposed design of block-modular cutting tools is dependent on the accuracy of performing linear and angular parameters of the components, material selection and details of the heat treatment, and compliance with the sequence of assembly and adjustment tool.

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FINDING OF RADIUS OF CONVERGENCE OF THE POWER SERIES CONTAINING NOT ALL POWER (X-A) WITH THE HELP OF FORMULA BY MEANS OF SIMPLE TRANSFORMATION OF COEFFICIENT OF THE SERIES

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Functional series of the form:

$$a_0 + a_1(x-a) + a_2(x-a)^2 + \ldots + a_n(x-a)^n + \ldots = \sum_{n=0}^{\infty} a_n(x-a)^n , \quad (1)$$

where $a_n \in R$, $n = 0,1,2,\ldots$, $a \in R$ are called a power series. Numbers $a_0, a_1, a_2, \ldots, a_n$ are called coefficients of power series.

If $a = 0$ we receive a series of the form

$$a_0 + a_1 x + a_2 x^2 + \ldots + a_n x^n + \ldots = \sum_{n=0}^{\infty} a_n x^n , \quad (2)$$

we will examine such power series from the point of view that if in series (1) put $x - a = y$ one can always go to a series which looks like form (2).