If only one blade is movable, we consider that this blade only moves into offset, i.e. $D_m = D_{m1}$.

Blade design flaws which result in offset occurrence are mostly presented by their shape defections and defections of tool's mounting face position relative to technological bases. Thus, the summary blade offset caused by one parameter or other is to be expressed by formulas:

For configuration with two movable blades:

$$D = D_к + D_{m1} + D_{m2}; \quad (3)$$

For configuration with a single movable blade:

$$D = D_к + D_m. \quad (4)$$

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TECHNOLOGICAL PROVISION OF THREAD CUTTING RELIABILITY OF SEMI-AUTOMATIC SEWING MACHINE

Stanislav Krasner, senior lecturer; Boris Sunkuyev, professor;
Dmitriy Korneenko, teaching assistant
Vitebsk State Technological University, Vitebsk, the Republic of Belarus

To determine offsets, caused by technological reasons, we worked out the calculation model of cutting tool, shown in Fig.1. This model contains one moveable and one fixed blade. Here, 1 is a moveable detail (a holder) which holds the moveable blade 2.

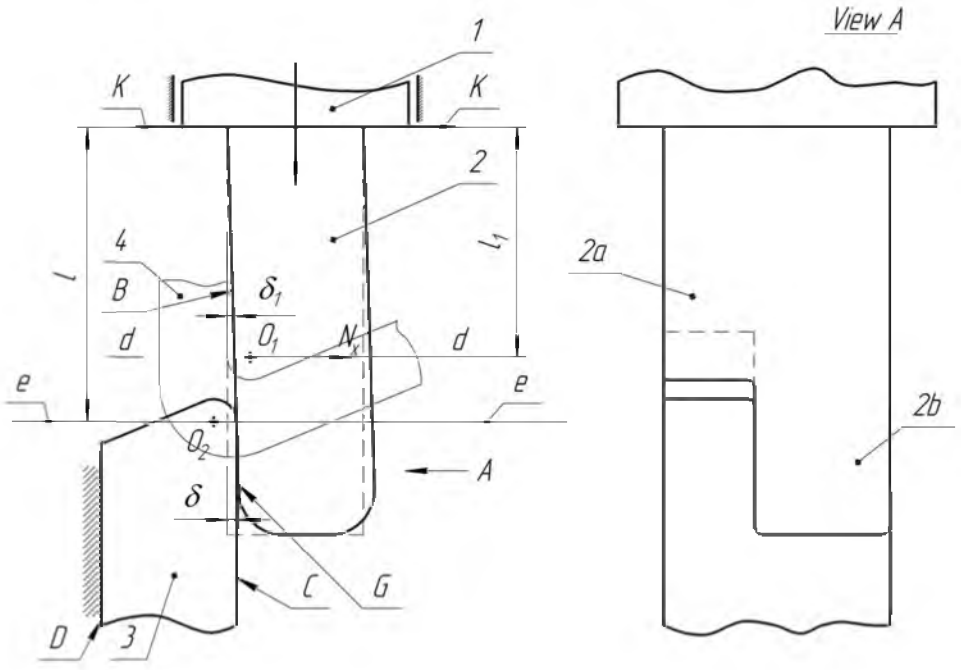

Figure 1 – Blade offset at thread cutting

The moveable blade has both cutting part *2*a and mounting part *2*b. The surface *G* of the mounting part constantly contacts with the surface C of the fixed blade *3*. The surface D of the fixed blade is rested upon fixed mount and practically not deformed while thread cutting *4*.

The offset of movable blade might be caused by force N_x, produced by the thread itself. Blade offset at d-d section is calculated as follows:

$$\Delta_{T(d-d)} = \frac{N_x l_1^3}{3EI}, \quad (1)$$

Where E is a Young's modulus for moveable blade's material, Н/м^2;

I is an inertia moment of moveable blade's cross-section, м^4;

l_1 is a distance between the center of moveable blade's attachment and the center of spherical radius of moveable blade's cutting edge, m.

For e-e cross-section which is characteristic for thread cutting, the moveable blade offset is:

$$\Delta_{T(e-e)} = \frac{N_x l_1^3}{3EI} \cdot \frac{l}{l_1} = \frac{N_x l_1^2 l}{3EI}. \quad (2)$$

For the initial moment of cutting, the length l_1 is expressed via distance l between the attachment point of the moveable blade and the center of spherical radius of moveable blade's cutting edge.

$$l_1 = l - (1 - e_u)\Delta_M - r_1 - r_2, \quad (3)$$

Where e_u is an elastic component of relative compression deformation of the material (sewing thread);

Δ_M is a thickness of the material (sewing thread), m;

r_1 – is a spherical radius of moveable blade's cutting edge, m;

r_2 – is a spherical radius of fixed blade's cutting edge, m.

For most cases, in accordance with formula (3) we will obtain the following:

$$l \gg l_1, \quad (4)$$

It is acceptable even more, as the length used in formula (2) is of degree three. Formula (4) takes the following form then:

$$\Delta_{T(e-e)} = \frac{N_x l_1^3}{3EI} \cdot \frac{l}{l_1} = \frac{N_x l^3}{3EI}. \quad (7)$$

Formula (7) allows to determine the offset range in typical cross-section, using the resistance force N_x.

Blade offsets, caused by design flaws, will be found as follows:

$$\Delta_K = T_b \frac{H}{l}, \quad (8)$$

Where T_b is a runout tolerance of the surface of moveable blade's hinge joint, mm;

H is a height of hinge joint, m.

The degree of tension in the condition (1) is determined under the formula:

$$d_{\min} = \left| \sum_j^{m-1} T_{Aj} \right|, \quad (9)$$

Where T_{Aj} is a tolerance of j, i.e. one of the elements of dimensional chain of moveable blade's attaching unit, m.

Further calculations showed that newly-designed blade doesn't require any additional measures to provide adequate tension between moveable and fixed blade. Reliable thread cutting is provided only by the blade's design layout.

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LEADERSHIP STYLES IN EDUCATION

Nechai Ludmila Urevna, social pedagogue
Vitebsk State Technological University, Vitebsk, the Republic of Belarus

A leadership style is a leader's style of providing direction, implementing plans, and motivating people [1].

There are different styles of leadership in education. Leadership styles in education have different effects on the overall learning process. They affect the leader i.e. the principal, their followers, i.e. the teachers, and those who are addressed, i.e. the students.

As the competitiveness in the world of education increases, the implementation of these styles becomes more and more important. The role of every individual starting from the principal, teachers to the students is important, and the ultimate goal remains the enhancement and upkeep of the teaching-learning relationship. The job of every individual in this process is to create the necessary conditions for teachers to develop and execute their own teaching styles and methods, in a manner that is simple and most effective for students. Also, the development of other aspects of the educational framework, such as association with external groups that facilitate better teaching and learning, the care of the infrastructure, etc., all come under the purview of educational leadership. In education, the different leadership styles that are known to be most effective have been mentioned here. Ultimately, however, the type that will be most effective is one that suits the personality of the leader, i.e. the principal, and the openness of the group members, i.e. teachers, to the types that are implemented within the educational framework.

Instructional Leadership

It is also known as hierarchical leadership. Here, the principal is at the top of the ladder, where the decisions taken and actions delegated intend to promote student growth and learning. Thus, goal-setting, provision of essential resources for goal achievement, supervision of teachers, and coordination of the tasks necessary to achieve the goal come under the purview of the principal. For this method to be successful, the principal must continually seek the betterment of entire educational system, and possess a personality that will help in the implementation of the aforementioned requirements of instructional leadership. This is one of the rarely practiced styles in education, because in present days and time, a principal is expected to perform more managerial tasks than the instructional. Also, this method