ANALYZE OF THE PRINCIPALS PARAMETERS TO THE DISC CUTTER

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Abstract: *Specialized paper [1] [2] present the geometry of the pinion cutter as a selfstanding tool. Other authors [3] and [4] simplify the approach to the pinion cutter arguing that: „Although all cutting tools namely, cutter, drill, drift, broach, file or mill, have completely different shapes, they still have common parts".*
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The geometry of the pinion cutter cannot be dealt with on an individual basis [3]. The paper develops an analogy between the „geometry of the basic tools", fig.1 and the variable geometry of the pinion cutter's tooth, fig.2.

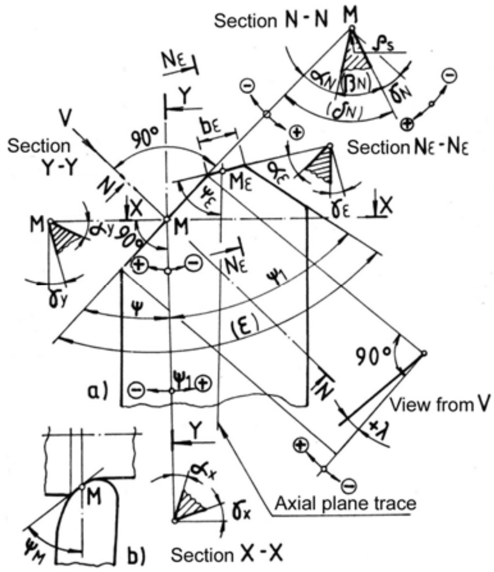

Fig. 1 Multi-edged basic tool geometry:
a.-rectilinear cutter; b.-curvilinear cutter. $\gamma = \gamma_N$ – main disengagement angle (constructive); $\alpha = \alpha_N$ – main setting angle (constructive); γ_v – main disengagement rear angle; α_v – main setting rear angle; γ_x – main lateral disengagement angle; α_x – main lateral setting angle; λ – main edge inclination angle; ψ – main cutting facet angle; ψ_1 – secondary cutting facet angle; ε – tool vertex angle: $\varepsilon = (\psi + \psi_1)$; ψ_ε – cutting facet transition angle (constructive); b_ε – transition edge width; ρ_β – main sharpening radius; $\delta \equiv \delta_N$ – main cutting angle; $\beta \equiv \beta_N$ – main sharpening angle.

Analogy between various tools. Figure 1 presents the geometry of the multi-edged basic tool while figure 2 we have the geometry of the pinion cutter's tooth.

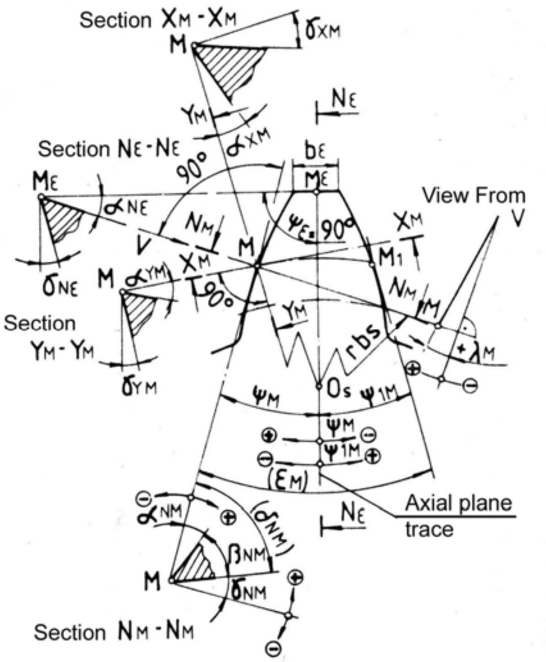

Fig.2 Variable geometry of the pinion cutter's tooth. $\gamma_M \equiv \gamma_{N_M}$ – main disengagement angle (constructive) in point M; α_{N_M} – main setting angle (constructive) in point M; γ_{Y_M} – main disengagement rear angle in point M; α_{Y_M} – main setting rear angle in point M; γ_{X_M} – main lateral disengagement angle in point M;
$\alpha_M = \alpha_{X_M}$ – main lateral setting angle in point M; λ_M – main edge inclination angle - in punctul M; ψ_M – main cutting facet angle - in point M;
ψ_{1_M} – secondary cutting facet angle - in point M_1; ε_M – tool vertex angle: $\varepsilon_M = (\psi_M + \psi_{1_M})$, in points M and M_1; ψ_ε – cutting facet transition angle (constructive - in point M); b_ε – transition edge width; ρ_β – main sharpening radius - in point M; $\beta_M = \beta_{N_M}$ – main sharpening angle - in point M; $\gamma_v \equiv \gamma_\varepsilon \equiv \gamma_{N_\varepsilon}$ – transition edge disengagement in point M_ε; $\alpha_v \equiv \alpha_\varepsilon \equiv \alpha_{N_\varepsilon}$ – transition edge setting angle in point M_ε;

CONCLUSIONS.

There is a unity of the cutting process in the facing, millig or planning processes. Therefore, the need ist o develop a unitary theory of cutting tools combined into an abstract tool is increasingly felt.

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