The invention relates to the mechanical engineering, in particular to manufacture of gear wheels.

The process for smoothing the bevel gearing wheel teeth consists in that a tool is imparted a motion, imitating the real operating conditions by coordinated displacement with respect to the mobile system of coordinates (X1, Y1, Z1) and the fixed system of coordinates (X, Y, Z), the origin of coordinates of which coincides with the center of space-spherical motion, the Z1 axis forming with the Z axis a nutation angle and describing a conic plane with the vertex in the center of space-spherical motion, and the tool is imparted an oscillatory motion with respect to the X1 and Y1 coordinates in accordance with the equation

$X = -R_i(1-\cos\Theta)\cos\Psi\sin\Psi$;

$Y = R_i(\sin2\Psi + \cos\Theta\cos2\Psi)$;

$Z = -R_i\sin\Theta\cos\Psi$,

where R_i is the coordinate of the mobile axes equal to the distance from the origin of coordinates X, Y, Z up to the plane wherein the fixed point is situated;

Θ – the nutation angle equal to the angle between the axes Z and Z1;

Ψ – the precession angle.

The tool axis passes through the center of precession motion at an angle with the plane formed by the axes X1 and Y1. The tool is made in the form of profile disk along the edges with a radius R, inside which there are made grooves, wherein there are placed balls, with the possibility of radial displacement. The tool is imparted an additional linear motion along the tooth, at an angle $\delta \geq 0$ with the plane formed by the axes X1, Y1. At the beginning of working, the center of disk profiling with the radius R is installed onto the pitch cone for wheel working with the vertex in the center of space-spherical motion, the axis of rotation of the tool is placed perpendicular to the axis of rotation of the blank, the disk axis is placed symmetrically about the Z1 axis, and at the end of the working course the center of radius R of the tool is deflected from the pitch cone for wheel working with the vertex in the center of space-spherical motion with a value prescribed by the relation

$a = l \cdot tg\beta$,

where l – the length of the pitch cone generator;

β – the taper angle of the roller.

Claims: 9
Fig.: 11