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The invention relates to the mechanical engineering, in particular to the workpiece surface strengthening by plastic deformation.

The process for knurling the bevel wheel teeth with strengthening of their surface, according to the first variant, is carried out by several taper rollers of plastic deformation, placed round the edges, which are communicated a precession motion around the precession center. Strengthening of the teeth surface is carried out by means of alternating microdisplacements, generated by a high-frequency ultrasonic generator. Novelty consists in that the plastic deformation of the bevel wheel teeth takes place under the simultaneous action of ultrasounds and high-voltage currents, generated by an electric current inductor.

In the process for knurling the bevel wheel teeth with strengthening of their surface, according to the second variant, strengthening of the teeth surface is carried out in the final knurling phase by means of the axial microdisplacements of the bevel wheel blank part.

The device for realization of the process for knurling the bevel wheel teeth with strengthening of their surface includes a crank shaft (2), mounted vertically onto a frame (1), above the wheel rotation mechanism and coaxially to its axis, brackets (4) rigidly fixed onto a body (3), freely installed onto the shaft crank (2), and an assembly of the microdisplacements of plastic deformation, including a ultrasonic generator (14). Onto the brackets (4) there are fixed taper knurls (5), installed onto axles (6). Novelty consists in that the assembly of the microdisplacements of plastic deformation additionally includes an axle bearing (11), placed between the turntable (9) and the wave concentrator (12) of the ultrasonic generator (14), and placed inside the turntable (9), onto which bevel wheel's blank part (7) is fixed. The ultrasonic generator (14) is kinematically joined with a control system (15).

Inside and outside the bevel wheel's blank part (7), in the zones adjacent to the plastic deformation region there may be placed high-voltage electric current inductors.

Claims: 4
Fig.: 2