

Title (en)
METHOD FOR SIMULTANEOUS PEENING AND SMOOTHING

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Application
EP 82630084 A 19820908

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Abstract (en)
[origin: EP0074918A2] A method for simultaneously shot peening and smoothing includes use of relatively large, smooth, hard, spherical steel shot having a substantially uniform diameter in the range 1-2.5 mm. Titanium workpieces are provided in one step with a compressive stress layer of the order of 0.13 mm and a surface finish of better than 15×10^{-6} inch AA, compared to conventional peened finishes of the order of 40×10^{-6} inch AA. Surface finish and peening intensity are interrelated and dependent on shot diameter, mass, velocity, and energy within relatively small limits. The shot diameter is uniform within ± 0.05 mm; the shot impact velocity is uniform within ± 4 percent or less, in the range 1.4-12 m/s. The method is also applied to the simultaneous densification and smoothing of overlay coatings on workpieces, such as those deposited by physical vapor deposition and plasma spraying. Usually heat treatment follows the peening step. When thin edged workpieces are peened they are oscillated through critical angles with respect to the collimated shot stream used in the invention. Thus, residual compressive stresses are obtained at the edges but damage from direct impact of the large shot is avoided.

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Citation (search report)
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