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SINGLE SIDED LASER SHOCK PEENING



ABSTRACT

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A method for single sided laser shock peening an article (16) includes laser shock peening a laser shock peening surface (18) on a first side (20) of the article while maintaining an opposite second surface (22) on a back side (24) of the article in acoustic communication with a shock attenuating material (59). The second surface is opposite the laser shock peening surface. The shock attenuating material is a material that does not allow tensile waves to be reflected back off the back side (24) through the article (16). The shock attenuating material (59) may be a liquid metal and the article (16) made from a titanium alloy. One such article is a gas turbine engine airfoil (34) of an integrally bladed disk (10) and the surfaces may be on an edge (LE, TE) of the airfoil. The shock attenuating material may be one that dissipates compressive waves or reflects back compressive shock waves caused by the laser shock peening.

Fig. 1