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(54) Title: DEVICE FOR STRENGTHENING THE SURFACE OF PRODUCTS, METHOD AND USE THEREOF

Fig. 4

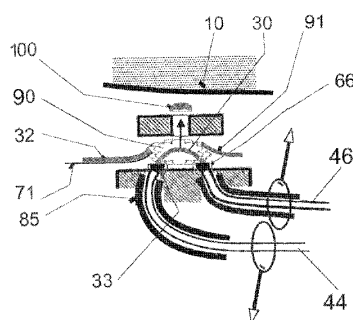
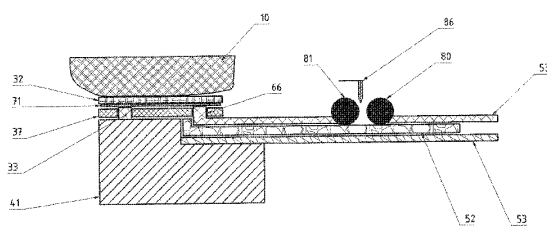


Fig. 12



(57) Abstract: The invention relates to a method and a device for strengthening the surface of workpieces, in particular of metal ones, by mechanical effects accompanying the impact of small projectiles or by mechanical effects accompanied by the impact of a shockwave induced by plasma created by electric evaporation of a metal foil, wherein the device comprises a polymer strip (32) which is provided with a metal foil (71) on the surface of the side diverted from the surface of the workpiece (10) in which foil bridges (34) are formed to form projectiles (100), further comprising two electrodes (33) and (66) adjacent to the metal foil (71) located on the polymer strip (32), wherein bridges (34) are formed between the contact surface areas (27) of the metal foil (71), and the electrodes (33) and (66) between which the plasma is formed, are mounted in a support body (41), through which flat conductors (44) and (46) are connected to a switch (84) for switching large currents and high voltages with a high-voltage source (83), wherein the polymer strip (32) provided with the metal foil (71) tightly abuts the support body (41) with the electrodes (33) and (66) and the electrodes (33) and (66) protrude above the upper surface of the support body (41) to provide electric contact with the contact surface areas (27) of the applied metal foil (71). The method of strengthening the surface of workpieces (10) by means of the device according to the invention consists in that one cycle of strengthening the surface of workpieces (10) involves the action of an electric current pulse supplied from a high voltage source (83) after closing the switch (84) by conductors (44, 46) to electrodes (33, 66) between which a high voltage is applied, thereby shorting the circuit on the metal foil (71) at the location of the

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bridges (34) to form a plasma expanding and by a. compressive force acting on the polymer strip (32) part of which hits as a projectile (100) the surface of the workpiece (10), wherein the plasma generated by the electric current pulse, in addition to the expansion pressure, is also accelerated by the electromagnetic Lorentz force (20) caused by the passage of electric current, through this plasma in the generated magnetic field.