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(54) Title: A MICROWAVE PLASMA REACTOR FOR MANUFACTURING SYNTHETIC DIAMOND MATERIAL

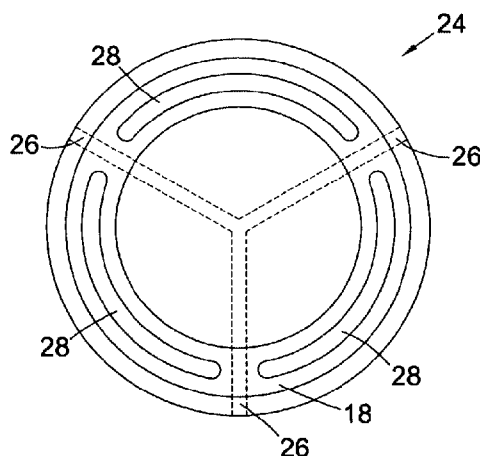


Fig. 4

(57) Abstract: A microwave plasma reactor for manufacturing a synthetic diamond material via chemical vapour deposition, the microwave plasma reactor comprising: a plasma chamber; a substrate holder disposed in the plasma chamber for supporting a substrate on which the synthetic diamond material is to be deposited in use; a microwave coupling configuration for feeding microwaves from a microwave generator into the plasma chamber; and a gas flow system for feeding process gases into the plasma chamber and removing them therefrom, wherein the microwave coupling configuration for feeding microwaves from the microwave generator into the plasma chamber comprises: an annular dielectric window formed in one or several sections; a coaxial waveguide having a central inner conductor and an outer conductor for feeding microwaves to the annular dielectric window; and a waveguide plate comprising a plurality of apertures disposed in an annular configuration with a plurality of arms extending between the apertures, each aperture forming a waveguide for coupling microwaves towards the plasma chamber.

