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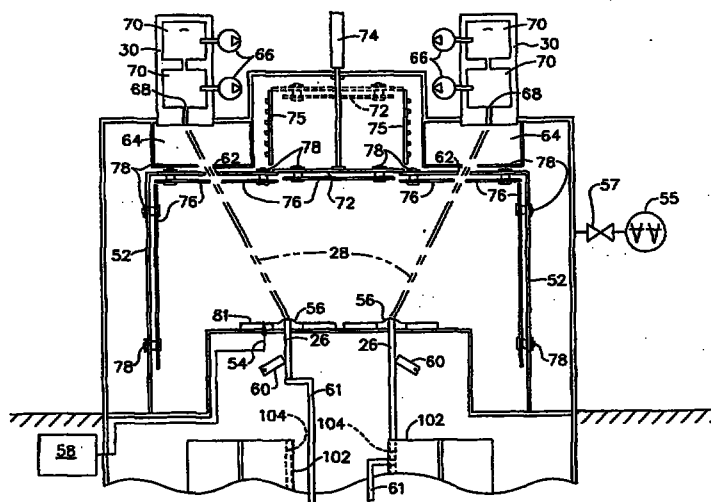
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(54) Title: ELECTRON BEAM PHYSICAL VAPOR DEPOSITION APPARATUS



(57) Abstract: An electron beam physical vapor deposition (EBPVD) apparatus (10) for producing a coating (e.g., a ceramic thermal barrier coating) on a article (20). The EBPVD apparatus (10) generally includes a coating chamber (12) that is operable at elevated temperatures and subatmospheric pressures. An electron beam gun (30) projects an electron beam (28) through an aperture (68) in a wall of the coating chamber (12) and onto a coating material (26) within a coating region defined within the chamber (12), causing the coating material (26) to melt and evaporate. The operation of the EBPVD apparatus (10) is enhanced by the inclusion within the coating chamber (12) of a second chamber (64) that encloses the aperture (68) so as to separate the aperture (68) from the coating region. Also provided is means (66) for maintaining the second chamber (64) at a pressure lower than the coating region. As a result, coating pressures of greater than 0.010 mbar can be practiced inside the coating region with minimal or no adverse effect on the operation and reliability of the electron beam gun (30).

WO 01/11107 A1