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Wakalopulos et al.

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[54] **STERILIZATION BY LOW ENERGY ELECTRON BEAM**

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[57] **ABSTRACT**

[21] Appl. No.: **09/270,966**

A sterilization apparatus wherein one or more electron beam tubes are used to direct electron beams into an ambient gaseous environment to create an electron plasma cloud into which non-sterile target objects may be moved. The electron plasma cloud is formed by interaction of the electron beam with the ambient atmosphere. Helium or other like gaseous may be used to expand the effective volume of the electron plasma cloud. Manipulators are used to move target objects in the electron plasma cloud, exposing non-sterile surfaces to the cloud and then joining the surfaces together where appropriate. The beam tube used to generate the electron beam has a thin low energy absorbing window which allows relatively low energy beams to be used, minimizing damage to materials within the surface of the target objects.

[22] Filed: **Mar. 17, 1999**

[51] **Int. Cl.**⁷ **H01J 37/00**; H01J 37/30; H01J 37/301

[52] **U.S. Cl.** **250/492.3**; 250/492.1; 250/435

[58] **Field of Search** 250/492.3, 492.1, 250/398, 435

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18 Claims, 6 Drawing Sheets

