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(12) **United States Patent**  
**Kantor et al.**

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(54) **APPARATUS AND PROCESS FOR THE CONTROLLED REDUCTION OF ORGANIC MATERIAL VIA MICROWAVE RADIATION**

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(\* ) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(57) **ABSTRACT**

A controllable, continuous-feed system and process for the reduction or depolymerization of organic materials using microwave energy in a reducing, substantially oxygen-reduced atmosphere. The microwave energy is generated by a plurality of magnetrons in a microwave tunnel. Gaseous products may be extracted from the microwave tunnel for recycling and/or analysis. A collector such as a liquid trap may be used to separately collect floating and sinking constituents of the solid products while preventing the escape of the reducing atmosphere from the system.

**17 Claims, 12 Drawing Sheets**

