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(54) **THERMIONIC VACUUM DIODE DEVICE WITH ADJUSTABLE ELECTRODES**

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Related U.S. Application Data

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(63) Continuation-in-part of application No. 10/507,273, filed as application No. PCT/US03/07015 on Mar. 6, 2003, now Pat. No. 7,169,006.

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(60) Provisional application No. 60/373,508, filed on Apr. 17, 2002, provisional application No. 60/362,494, filed on Mar. 6, 2002.

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(51) **Int. Cl.**

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(57) **ABSTRACT**

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In accordance with one embodiment of the present invention, a Gap Diode is disclosed in which a tubular actuating element serves as both a housing for a pair of electrodes and as a means for controlling the separation between the electrode pair. In a preferred embodiment, the tubular actuating element is a quartz piezo-electric tube. In accordance with another embodiment of the present invention, a Gap Diode is disclosed which is fabricated by micromachining techniques in which the separation of the electrodes is controlled by piezo-electric, electrostrictive or magnetostrictive actuators. Preferred embodiments of Gap Diodes include Cool Chips, Power Chips, and photoelectric converters.

(58) **Field of Classification Search** 310/306, 310/369; 136/200, 201, 202, 205; 62/3.2, 62/3.3; 322/2 R; 445/67; 438/380, 141
See application file for complete search history.

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12 Claims, 7 Drawing Sheets

