

US00RE40264E

(19) United States

(12) Reissued Patent

Flamm

(10) Patent Number: US RE40,264 E

(45) Date of Reissued Patent: Apr. 29, 2008

(54) MULTI-TEMPERATURE PROCESSING

(76) Inventor: **Daniel L. Flamm**, 476 Green View Dr.,

Walnut Creek, CA (US) 94596

(21) Appl. No.: 10/439,245

(22) Filed: May 14, 2003

Related U.S. Patent Documents

Reissue of:

(64) Patent No.: 6,231,776
Issued: May 15, 2001
Appl. No.: 09/151,163
Filed: Sep. 10, 1998

U.S. Applications:

- (63) Continuation-in-part of application No. 08/567,224, filed on Dec. 4, 1995, now abandoned.
- (60) Provisional application No. 60/058,650, filed on Sep. 11, 1997.
- (51) Int. Cl.

H05H 1/00 (2006.01) **H01L 21/302** (2006.01)

(56) References Cited

U.S. PATENT DOCUMENTS

| 5,294,778 A 3/1994 Carman et al | 13 |
|--|------------|
| 5.320.982 A * 6/1994 Tsubone et al. 428/71 | 35 |
| 3,320,302 11 0,133 1 15000010 00 011. | 4 |
| 5,556,204 A * 9/1996 Tamura et al 374/16 | 51 |
| 5,571,366 A 11/1996 Ishii 156/34 | ļ 5 |
| 5,609,720 A * 3/1997 Lenz et al 438/71 | 5 |
| 5,645,683 A 7/1997 Miyamoto 156/643. | . 1 |
| 5,667,631 A 9/1997 Holland et al 216/1 | 3 |
| 5,695,564 A 12/1997 Imahashi | 9 |

| 5,700,734 | Α | | 12/1997 | Ooishi 438/592 |
|--------------|----|---|---------|-------------------------|
| 5,705,433 | Α | × | 1/1998 | Olson et al 438/695 |
| 5,756,401 | Α | | 5/1998 | Iizuka 438/719 |
| 5,770,099 | A | | 6/1998 | Rice et al 216/68 |
| 5,863,376 | Α | | 1/1999 | Wicker et al 156/345 |
| 5,925,212 | Α | | 7/1999 | Rice et al 156/345 |
| 5,939,831 | Α | | 8/1999 | Fong et al 315/111.21 |
| 5,948,283 | Α | | 9/1999 | Grosshart 216/67 |
| 5,965,034 | Α | * | 10/1999 | Vinogradov et al 216/68 |
| 6,008,139 | Α | | 12/1999 | Pan et al 438/730 |
| 6,033,478 | Α | | 3/2000 | Kholodenko 118/500 |
| 6,042,901 | Α | | 3/2000 | Denison et al 427/579 |
| 6,048,798 | Α | | 4/2000 | Gadgil et al 438/714 |
| 6,068,784 | Α | | 5/2000 | Collins et al 216/68 |
| 6,077,357 | Α | × | 6/2000 | Rossman et al 118/728 |
| 6,087,264 | Α | * | 7/2000 | Shin et al 438/706 |
| 6,090,303 | Α | | 7/2000 | Collins et al 216/68 |
| 6,140,612 | | | 10/2000 | Husain et al 219/390 |
| 6,165,311 | | | 12/2000 | Collins et al 156/345 |
| 6,167,834 | В1 | | 1/2001 | Wang et al 418/723 |
| 6,391,148 | | | 5/2002 | Marks et al. |
| 6,486,069 | | | 11/2002 | Marks et al. |
| 2001/0003676 | A1 | | 6/2001 | Marks et al. |

FOREIGN PATENT DOCUMENTS

| EP | 1236226 A2 | 7/2001 |
|----|----------------|--------|
| JР | 59076876 A * | 5/1984 |
| WO | WO-01/41189 A2 | 7/2001 |

* cited by examiner

Primary Examiner—Anita Alanko

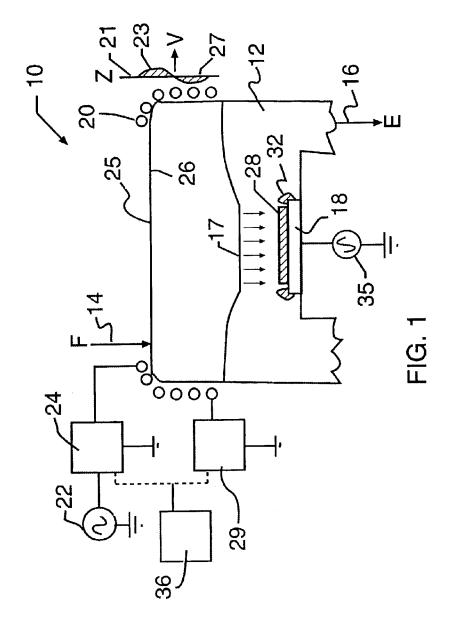
(74) Attorney, Agent, or Firm-Daniel L. Flamm

(57) ABSTRACT

The present invention provides a technique, including a method and apparatus, for etching a substrate in the manufacture of a device. The apparatus includes a chamber and a substrate holder disposed in the chamber. The substrate holder has a selected thermal mass to facilitate changing the temperature of the substrate to be etched during etching processes. That is, the selected thermal mass of the substrate holder allows for a change from a first temperature to a second temperature within a characteristic time period to process a film. The present technique can, for example, provide different processing temperatures during an etching process or the like.

59 Claims, 15 Drawing Sheets







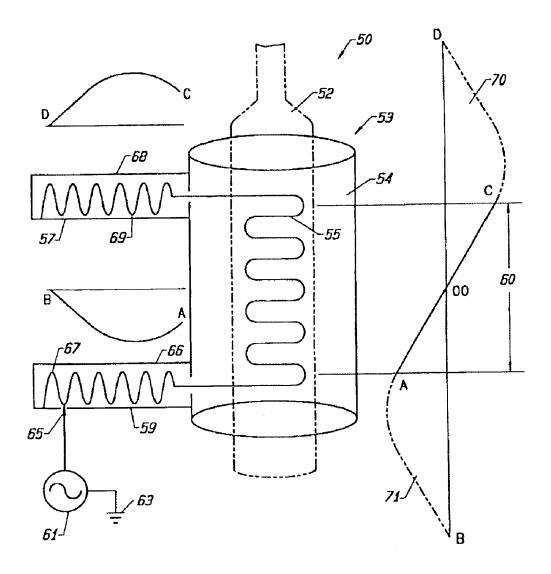
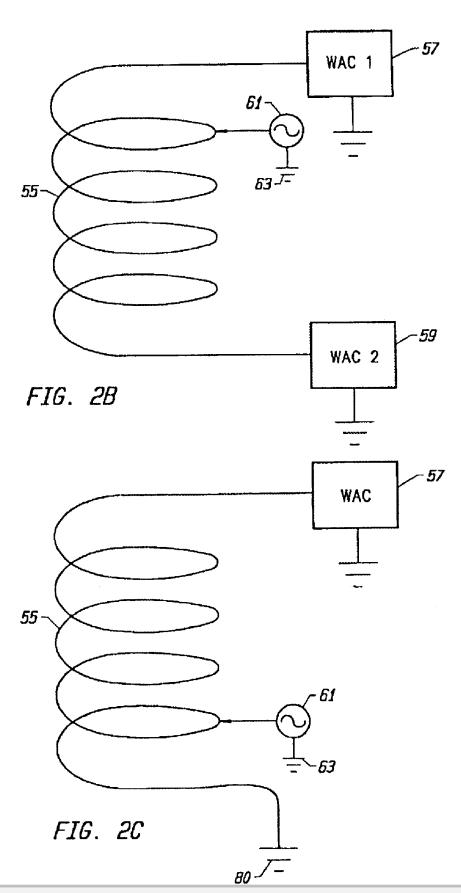


FIG. 2A



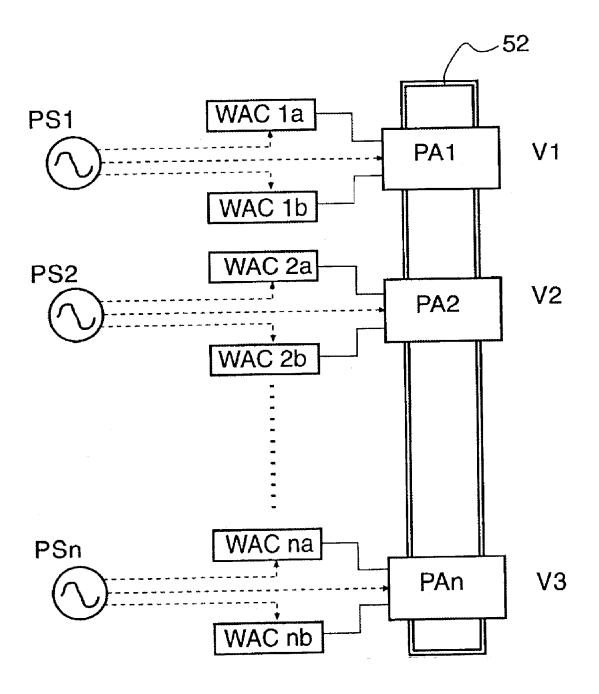


Fig. 2D



DOCKET

Explore Litigation Insights



Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time** alerts and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.

