

United States Patent [19]
Sellers

[11] **Patent Number:** **5,651,865**
 [45] **Date of Patent:** **Jul. 29, 1997**

[54] **PREFERENTIAL SPUTTERING OF INSULATORS FROM CONDUCTIVE TARGETS**

5,300,205 4/1994 Fritsche 204/298.08 X
 5,303,139 4/1994 Mark 204/298.08 X
 5,427,669 6/1995 Drummond 204/298.08

[75] Inventor: **Jeff C. Sellers**, Palmyra, N.Y.

FOREIGN PATENT DOCUMENTS

0 591 675 8/1993 European Pat. Off. .
 0 564 789 A1 10/1993 European Pat. Off. .
 0 636 702 7/1994 European Pat. Off. .
 WO87/05053 8/1987 WIPO .

[73] Assignee: **ENI**, Rochester, N.Y.

Primary Examiner—Nam Nguyen
Attorney, Agent, or Firm—Trapani & Molldrem

[21] Appl. No.: **261,988**

[22] Filed: **Jun. 17, 1994**

[51] **Int. Cl.⁶** **C23C 14/34**

[57] **ABSTRACT**

[52] **U.S. Cl.** **204/192.13; 204/192.12; 204/298.03; 204/298.08**

Pulses of positive voltage are applied to the target of a dc sputtering process to create a reverse bias. This charges insulating deposits on the target to the reverse bias level, so that when negative sputtering voltage is reapplied to the target, the deposits will be preferentially sputtered away. The reverse bias pulses are provided at a low duty cycle, i.e., with a pulse width of 0.25–3 microseconds at a pulse rate of about 40–100 KHz. This technique reduces sources for arcing during a reactive sputtering process.

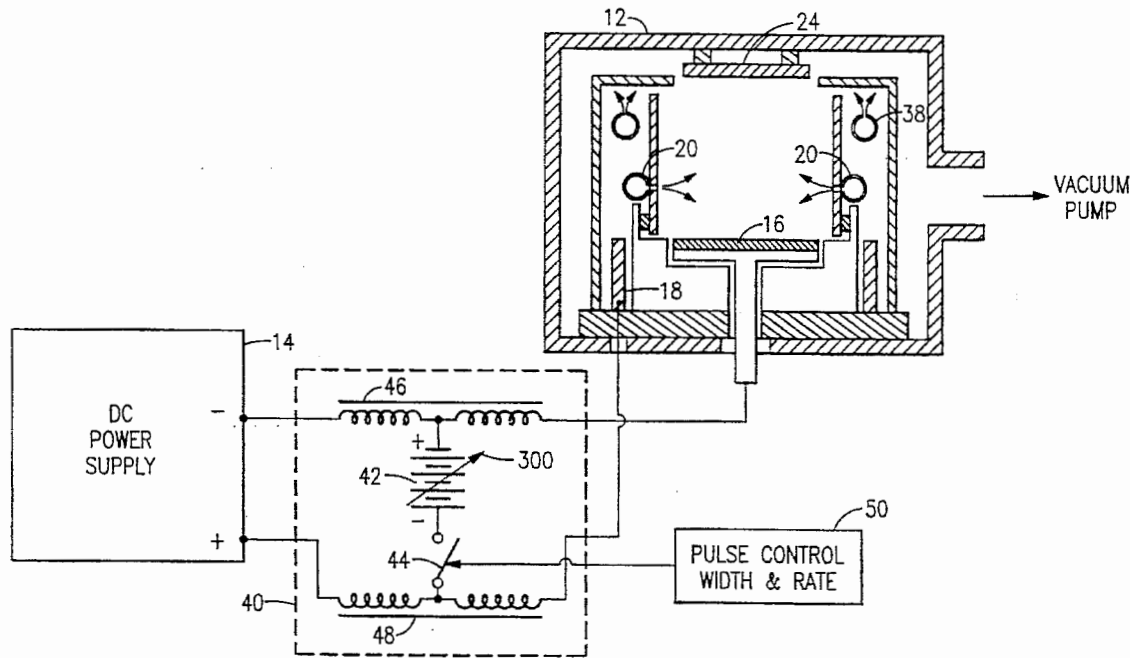
[58] **Field of Search** 204/192.12, 192.13, 204/298.03, 298.08

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,103,324 7/1978 Vandervelden et al. 204/298.08 X
 4,936,960 6/1990 Siefkes et al. 204/298.41 X
 5,241,152 8/1993 Anderson et al. 204/298.08 X
 5,286,360 2/1994 Szczyrbrowski et al. 204/298.08

5 Claims, 4 Drawing Sheets



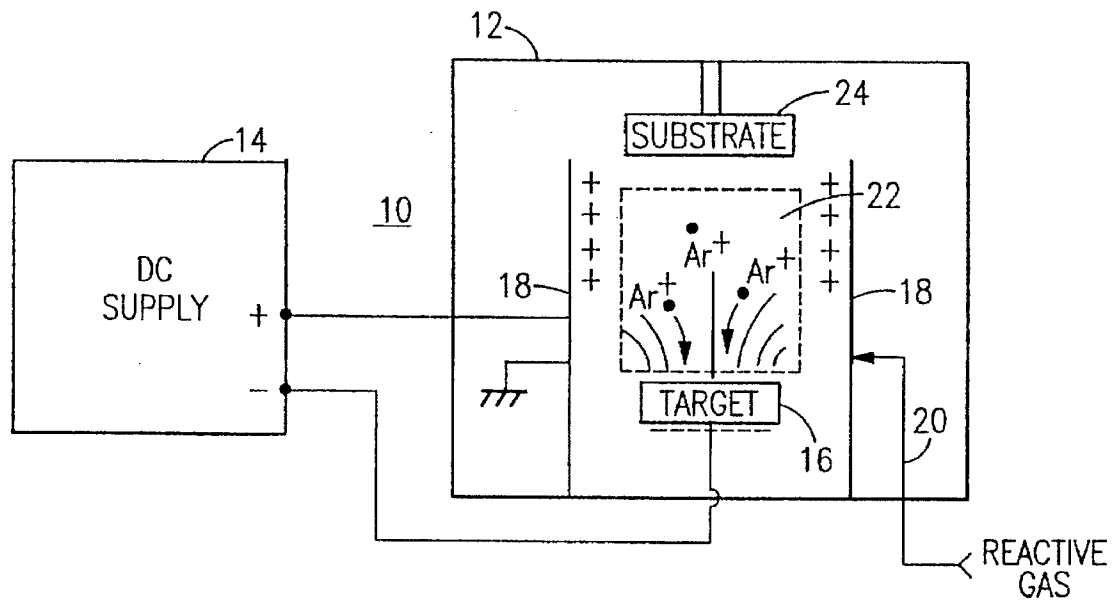
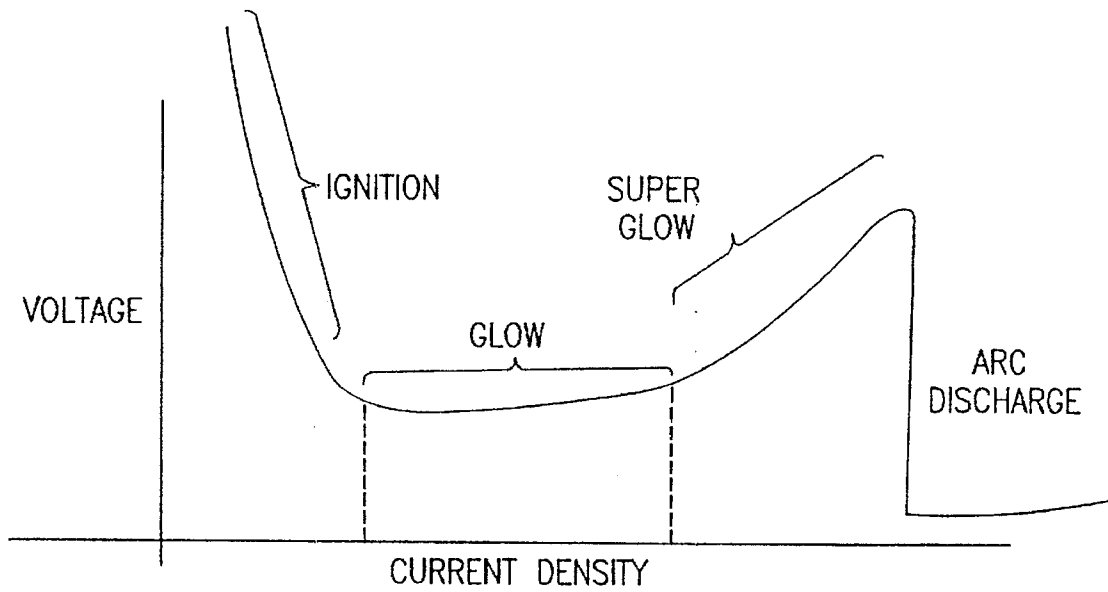


FIG. 1



PASSIONE CURVE

FIG. 2

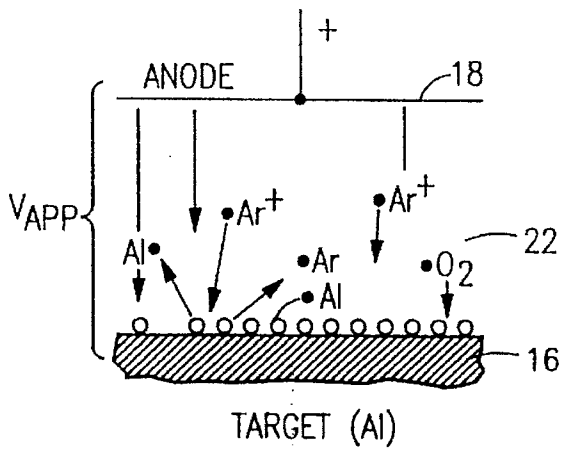


FIG. 3

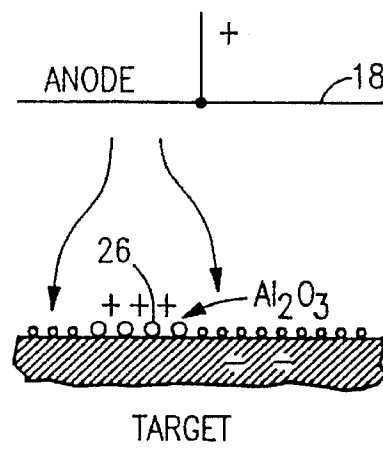


FIG. 4

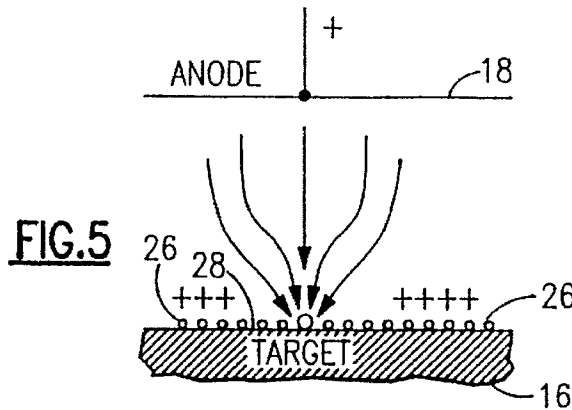


FIG. 5

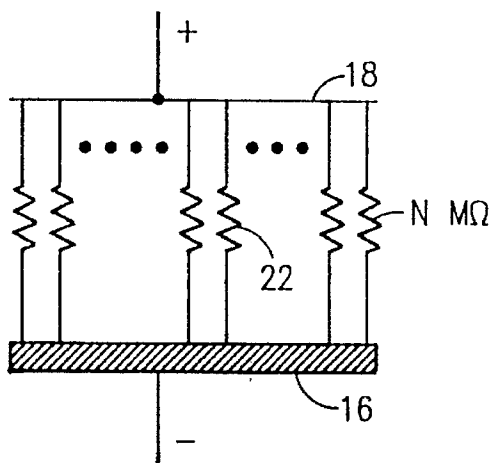


FIG. 6

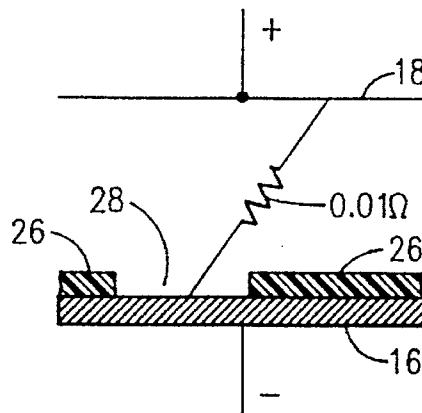


FIG. 7

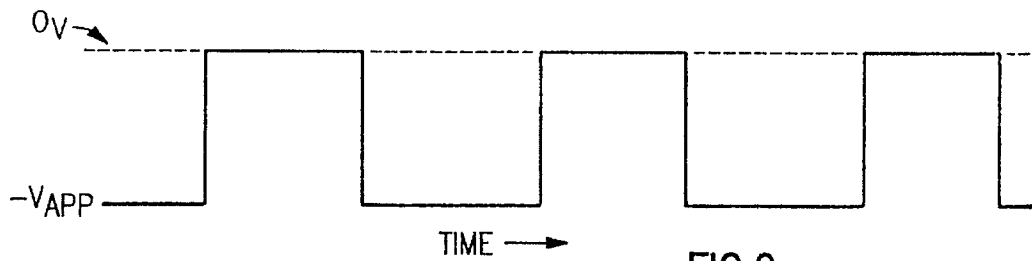
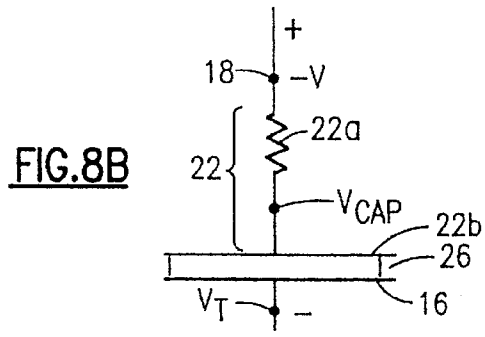
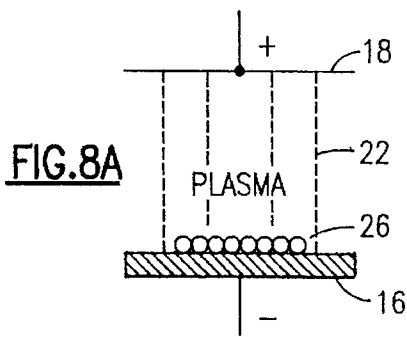


FIG. 9
Prior Art.

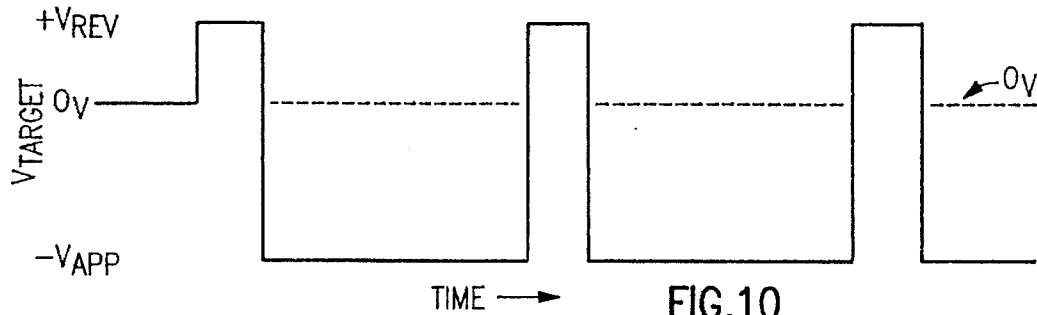


FIG. 10

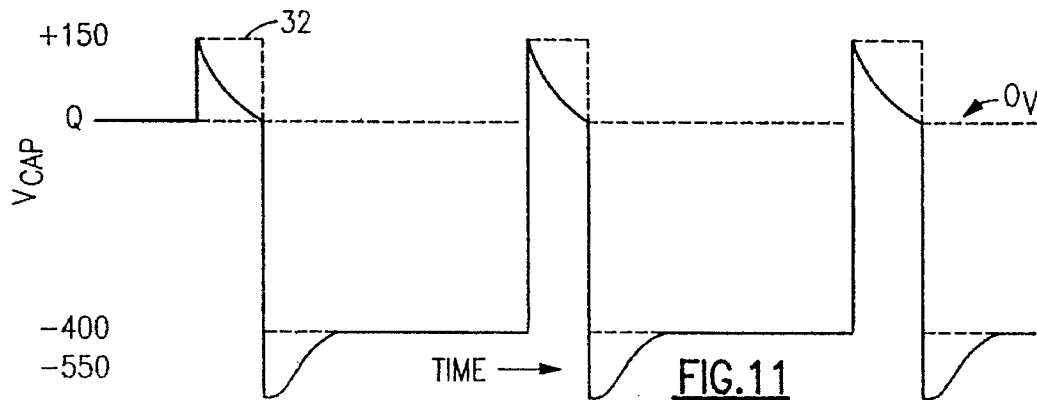


FIG. 11

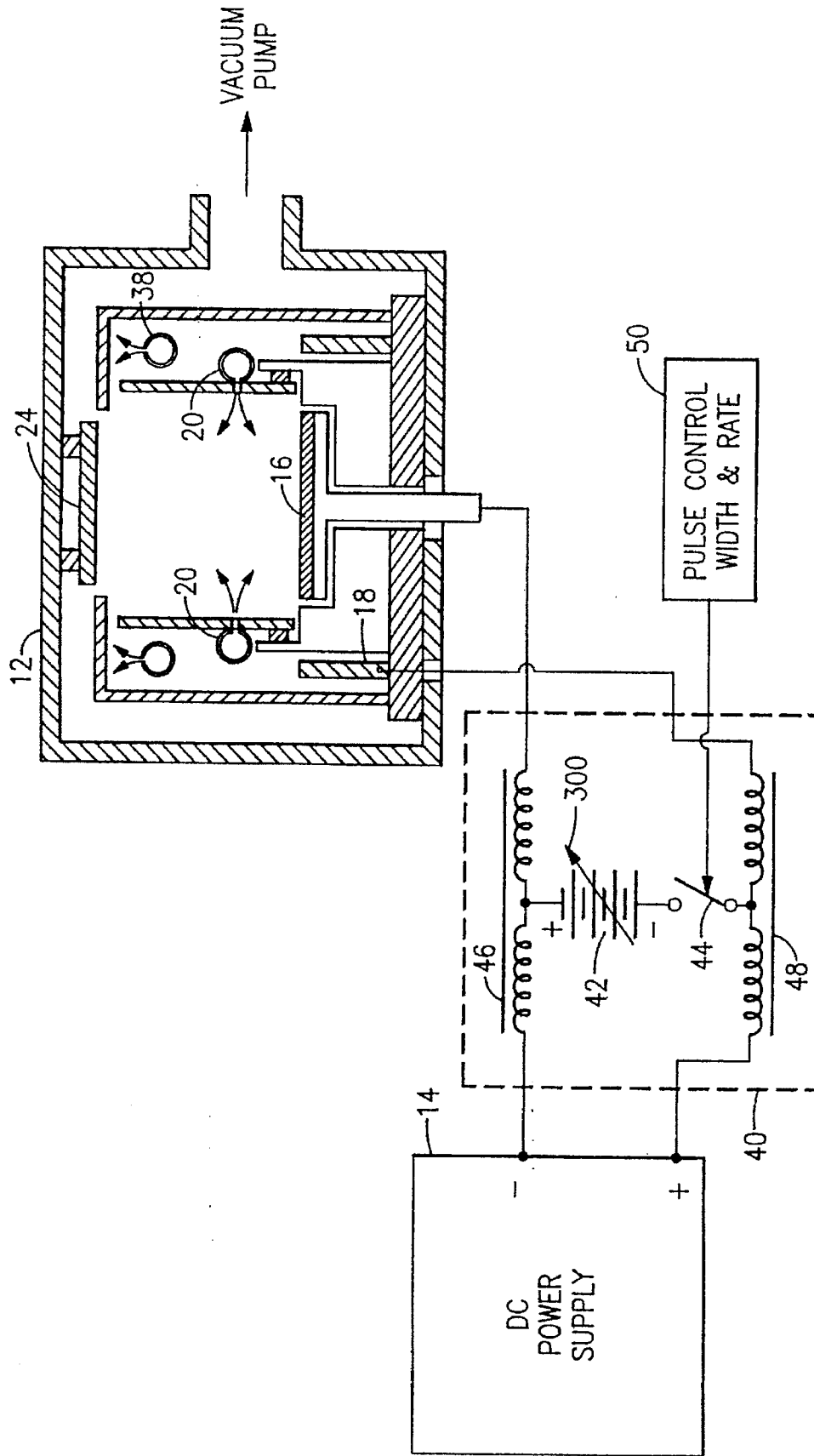


FIG.12

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.