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Hauzer et al.

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[54] **METHOD AND APPARATUS FOR COATING SUBSTRATES**

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[30] **Foreign Application Priority Data**

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Dec. 19, 1989 [DE] Fed. Rep. of Germany 3941918

[51] Int. Cl.⁵ **C23C 14/32; C23C 14/34; C23C 14/48**

[52] U.S. Cl. **204/192.38; 204/192.16; 204/192.3; 204/298.41; 427/530; 427/580**

[58] Field of Search **204/192.38, 298.41, 204/192.16, 192.3; 427/580, 523, 524, 530**

[56] References Cited

U.S. PATENT DOCUMENTS

4,877,505	10/1989	Bergmann	204/192.38
5,037,517	8/1991	Randhawa	204/192.15
5,160,595	11/1992	Hauzer et al.	204/192.38
5,234,561	8/1993	Randhawa et al.	204/192.38

FOREIGN PATENT DOCUMENTS

2-34775 2/1990 Japan 204/298.14

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Khourie and Crew

[57] ABSTRACT

A method and an apparatus for coating substrates is described in which the layer to be applied is produced by the condensing particles of a plasma generated by a gas discharge which are incident on the substrates. Both an arc discharge vaporization coating process and a cathode sputtering coating process are effected in the same apparatus, and the arc discharge vaporization process is carried out before the cathode sputtering process.

28 Claims, 9 Drawing Sheets

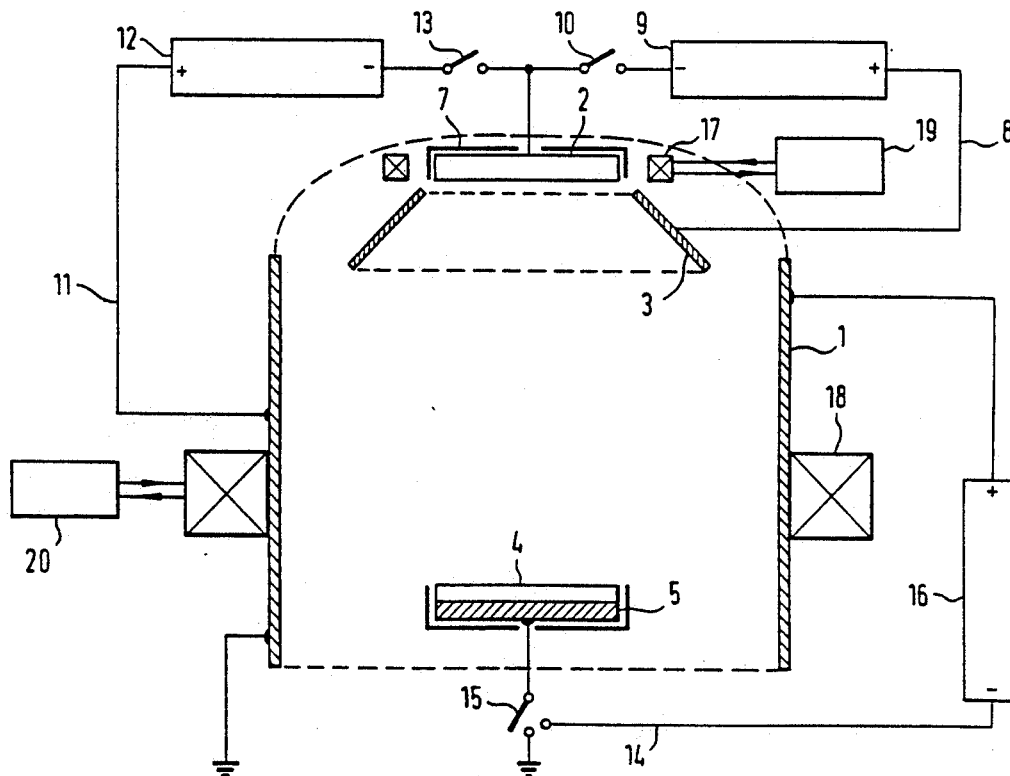


Fig. 1

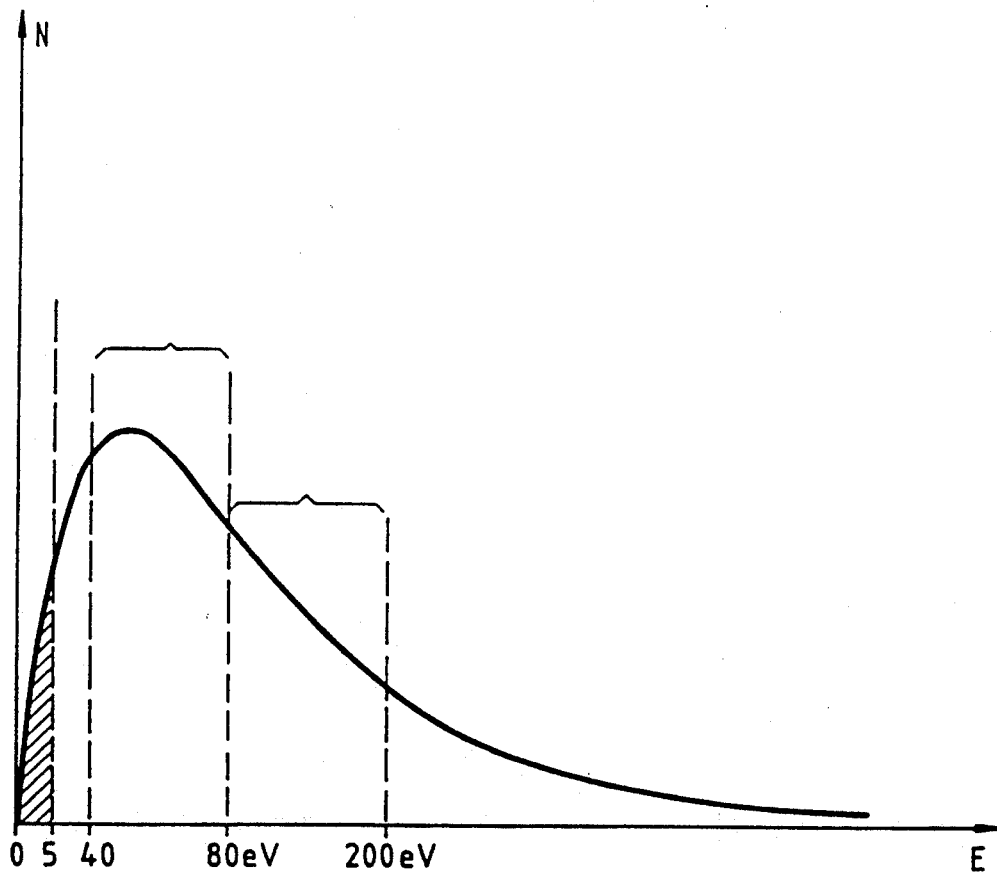


Fig. 2A (PRIOR ART)

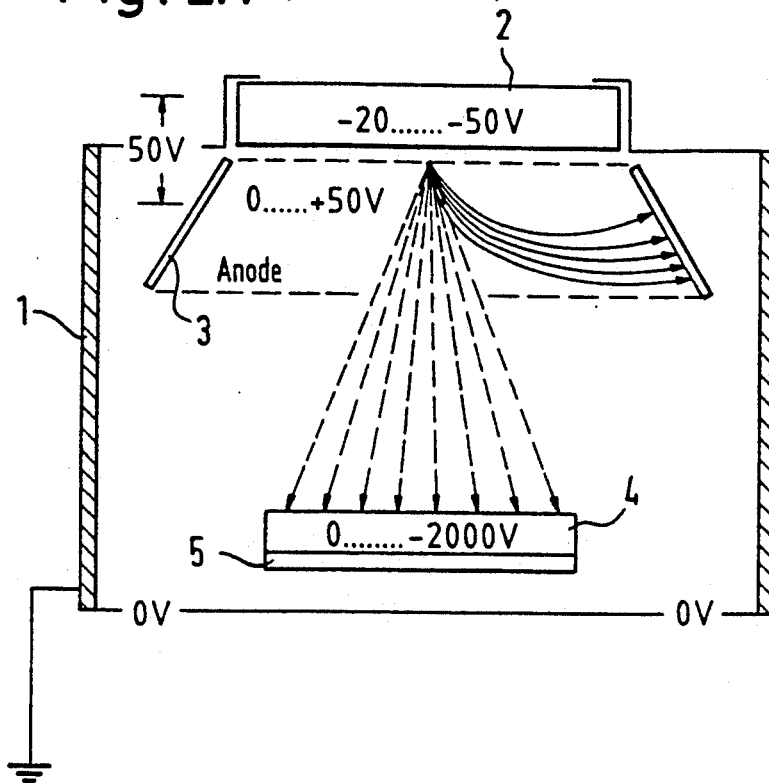


Fig. 2B (PRIOR ART)

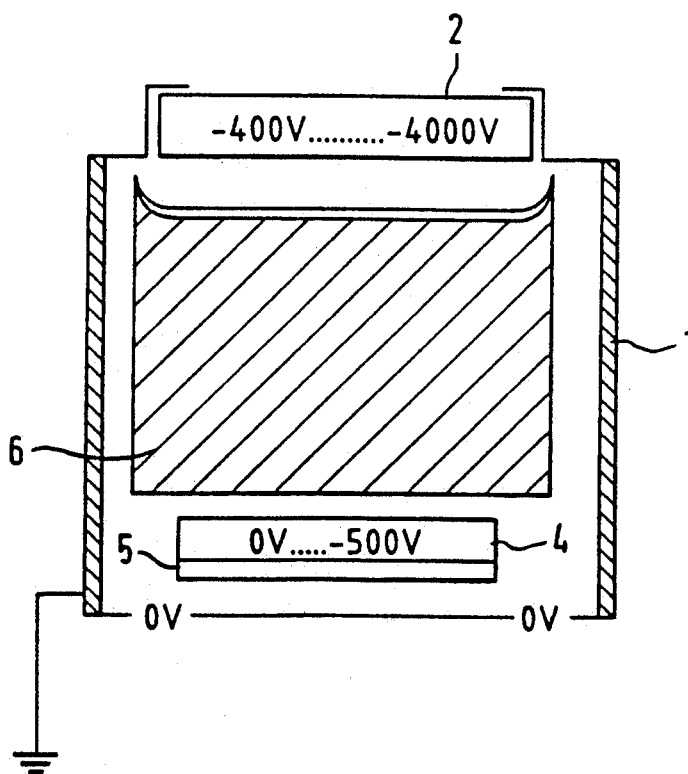


Fig. 3

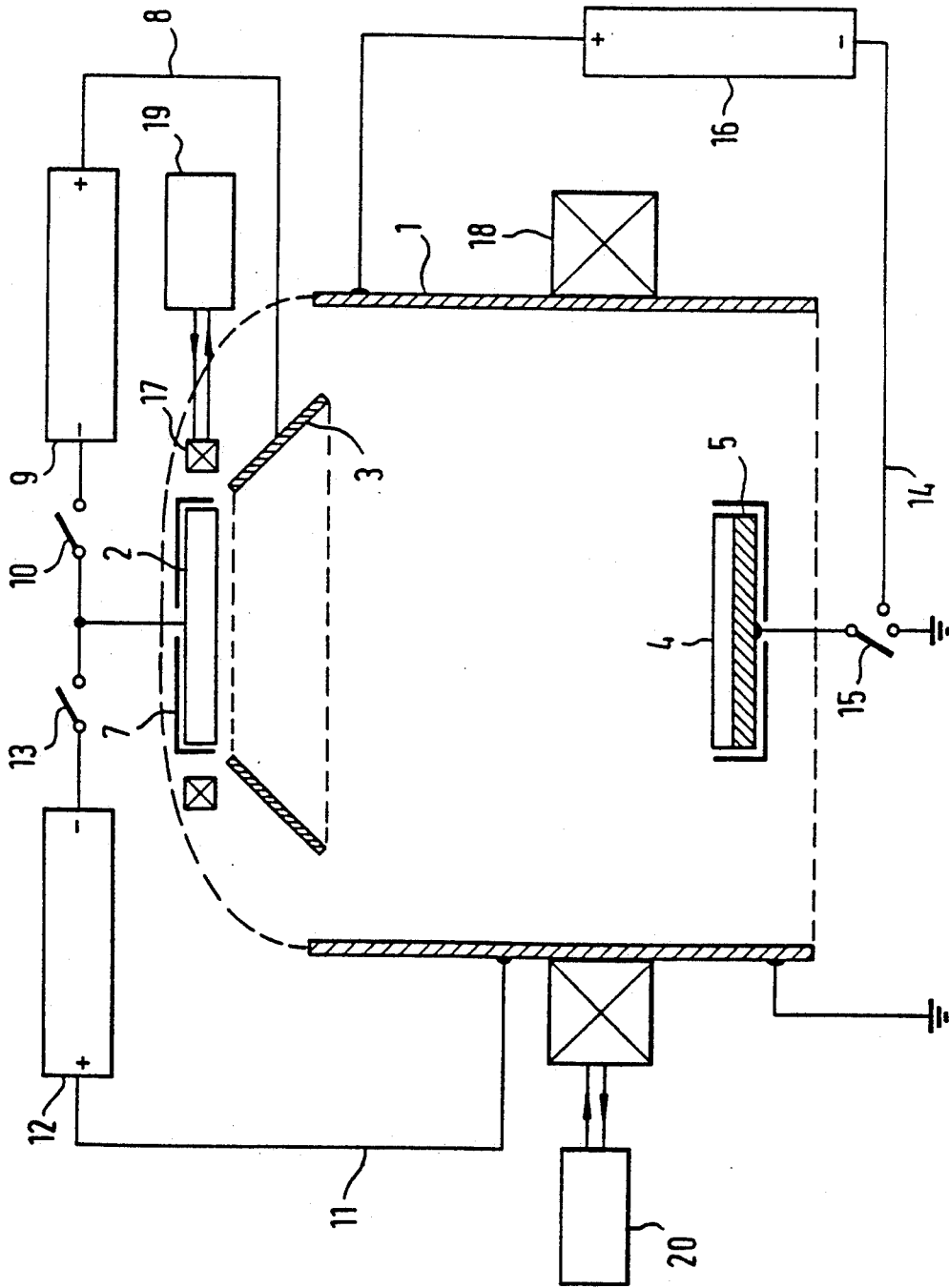


Fig. 4 (PRIOR ART)

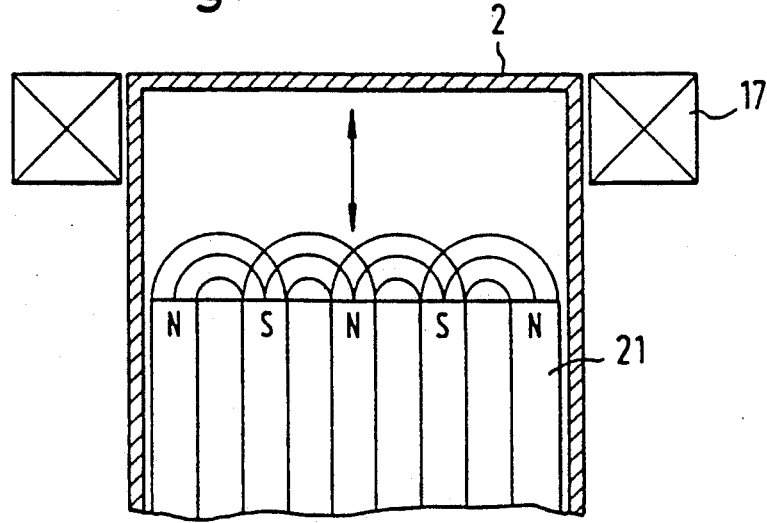
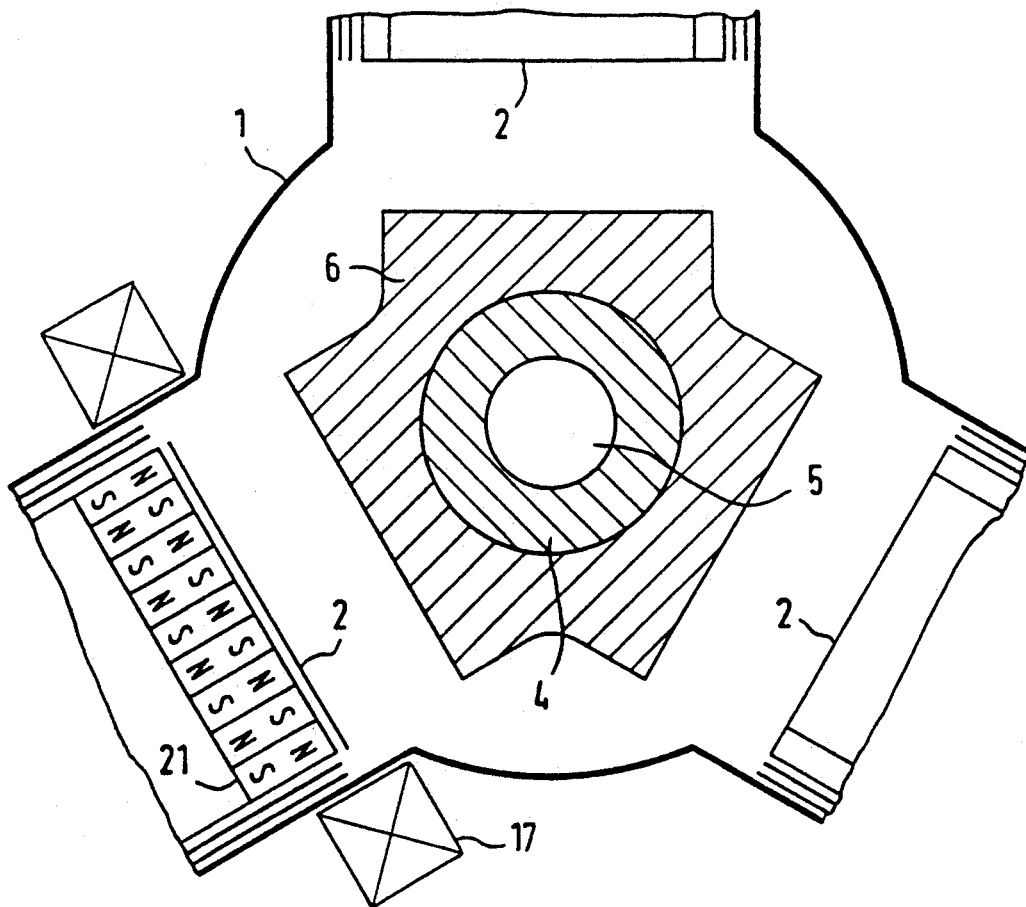


Fig. 5



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