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(54) **CHEVRON FILM COOLED WALL**

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(58) **Field of Classification Search** ..... 60/752, 60/754, 759, 265, 266; 415/115, 116; 416/96 R, 416/97 R

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,197,443 A 4/1980 Sidenstick
4,529,358 A 7/1985 Papell
4,650,949 A 3/1987 Field
4,653,983 A 3/1987 Vehr
4,664,597 A 5/1987 Auxier et al.
4,672,727 A 6/1987 Field
4,738,588 A 4/1988 Field
4,762,464 A 8/1988 Vertz et al.
5,062,768 A 11/1991 Marriage
5,096,379 A 3/1992 Stroud et al.
6,234,755 B1 5/2001 Bunder et al.
6,307,175 B1 * 10/2001 Blochlinger et al. ... 219/121.71

FOREIGN PATENT DOCUMENTS

EP 1 326 007 A2 7/2003

* cited by examiner

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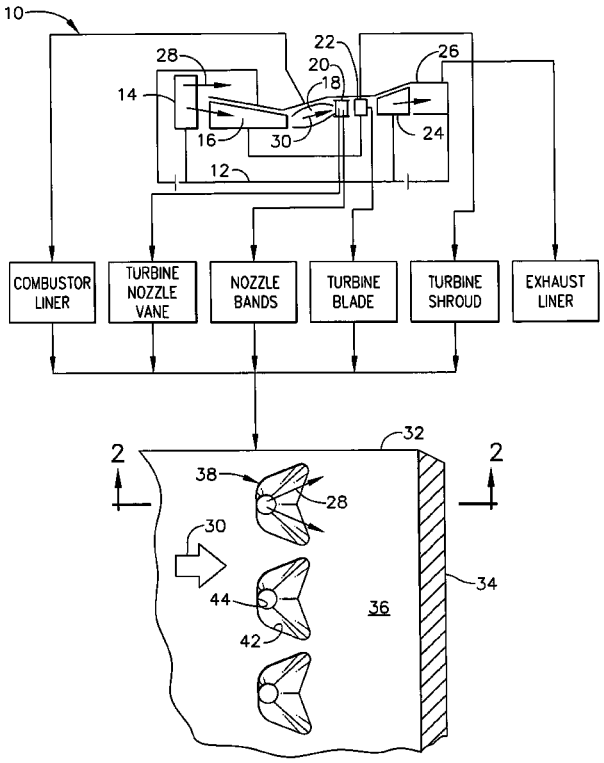
(57) **ABSTRACT**

A wall in a gas turbine engine includes inner and outer surfaces having a row of compound chevron film cooling holes extending therethrough. The chevron holes diverge both longitudinally and laterally between an inlet at the wall inner surface and a chevron outlet at the wall outer surface.

31 Claims, 5 Drawing Sheets