

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
1 May 2003 (01.05.2003)

PCT

(10) International Publication Number
WO 03/036113 A1

(51) International Patent Classification⁷: **F16C 32/06**,
17/12, G11B 19/20

(21) International Application Number: PCT/US02/34644

(22) International Filing Date: 28 October 2002 (28.10.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/350,314 26 October 2001 (26.10.2001) US
10/095,796 11 March 2002 (11.03.2002) US

(71) Applicant: **SEAGATE TECHNOLOGY, LLC** [US/US];
920 Disc Drive, Scotts Valley, CA 95067-0360 (US).

(72) Inventors: **PARSONEAULT, Norbert, Steven**; 130 Zinfandel Circle, Scotts Valley, CA 95066 (US). **HERNDON,**

Troy, Michael; 1508 Jarvis Court, San Jose, CA 95118 (US). **NOTTINGHAM, Robert, Alan**; 1816 Hoorlor Lane, Santa Cruz, CA 95062 (US). **LEBLANC, Jeffry, Arnold**; 6565 Oakridge Road, Aptos, CA 95003 (US). **GRANTZ, Alan, Lydon**; 7330 Viewpoint Poad, Aptos, CA 95003 (US).

(74) Agents: **PATTERSON, B., Todd** et al.; Moser, Patterson & Sheridan, L.L.P., 3040 Post Oak Boulevard, Houston, TX 77056 (US).

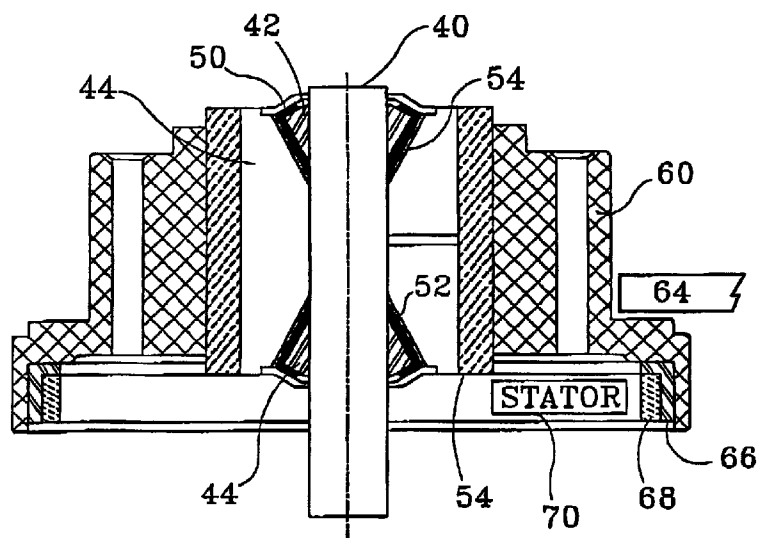
(81) Designated States (*national*): CN, DE, GB, JP, KR, SG.

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FLUID DYNAMIC BEARING THERMAL COMPENSATION



(57) Abstract: A hub and shaft are provided which are mounted for relative rotation by providing two conical bearings spaced apart along the shaft, and a bearing seat facing each conical bearing. Fluid is maintained in the gap between each cone and the facing bearing seat, supporting the cone and seat for relative rotation. The outer surface of the bearing seat is insulated from the remainder of the motor by a thermal insulator which extends at least part way along the outer surface of the seats. This insulator is effective at keeping the bearings warm even in a relatively low temperature environment in which the motor may be used. The insulator may comprise a cylindrical ceramic or similar low thermal conductivity material extending at least part way along the axial distance outside of the bearing cones. Alternatively, an air space may be defined in the outer surface of the bearing seat, extending at least part way between the bearing cones.



WO 03/036113 A1