US005242758A

United States Patent [19]

Hitchcock et al.

[11] Patent Number: 5,242,758

[45] Date of Patent: Sep. 7, 1993

[54] GEAR

[75] Inventors: **Keith N. Hitchcock**, Tettenhall; **Geoffrey R. Armstrong**, Newport; **Bernard A. Rickinson**, Bakewell, all of England

[73] Assignee: **Lucas Industries PLC**, Solihull, England

[21] Appl. No.: **727,082**

[22] Filed: **Jul. 9, 1991**

[30] **Foreign Application Priority Data**

Jul. 12, 1990 [GB] United Kingdom 9015381

[51] **Int. Cl.**[5] **B22F 3/00**; C22C 28/00

[52] **U.S. Cl.** **428/547**; 428/551; 75/243; 75/244; 75/246; 420/436; 420/440

[58] **Field of Search** 420/436, 440; 75/243, 75/244, 246; 419/6, 11, 49; 428/547, 551

[56] **References Cited**

U.S. PATENT DOCUMENTS

2,652,520	9/1953	Studders	75/243
3,795,430	3/1974	Farley	384/625
3,992,202	11/1976	Dulis et al.	75/222
4,473,402	9/1984	Ray et al.	75/246
4,729,789	3/1988	Ide et al.	75/244

FOREIGN PATENT DOCUMENTS

0384629	8/1990	European Pat. Off.	20/00
2159746	6/1973	France	1/00
2271300	12/1975	France	19/5
1511734	5/1975	United Kingdom	19/8
2220595	1/1990	United Kingdom	15/00

OTHER PUBLICATIONS

Leone, Frank D., "P/M Parts for Business Machines", pp. 667–670 (publication unknown, date unknown).

Nissel, Ch., "HIP Diffusion Bonding", *Powder Metallurgy International,* vol. 16, No. 3, pp. 113–116, 1984.

"Stellite HS6" (product brochure, best copy available), 3 pp., p. 1 cover, p. 2 properties/applications, p. 3 comparative physical properties (graphs).

World Intellectual Property Organization, International Publication No.: WO 87/06863; International Publication Date: Nov. 19, 1987; Inventors: Turney et al.; Title: "Method of Making Multi-chain Sprockets".

Japanese Patent Abstract, Japanese Patent Application No. JP 84-124738, filed Jun. 18, 1984, to Sugisawa et al., "Abrasion-resistant Sintered Alloys for Hot Tools". This reference may also be found in Chemical Abstracts, Abstract No. 154073D, vol. 104, No. 18, Jan. 6, 1986, Columbus, Ohio.

Japanese Patent Abstract, Japanese Patent Application No. JP 87-14820, filed Jan. 23, 1987, to Takigawa, "Composite Rolls for Heat-resistant Glass"; may also be found in Chemical Abstracts, Abstract No. 42860A, vol. 110, No. 6, Jan. 2, 1989, Columbus, Ohio.

Primary Examiner—Peter A. Nelson
Assistant Examiner—Ngoclan Mai
Attorney, Agent, or Firm—Trexler, Bushnell, Giangiorgi & Blackstone, Ltd.

[57] **ABSTRACT**

A gear having good fatigue strength and corrosion resistance has a body with gear teeth formed of a hot isostatically pressed alloy powder. The alloy is cobalt based and consists of 10 to 35 wt % Cr, 0–22 wt % Ni, 0–20 wt % W, 0–20 wt % Fe, 0–10 wt % V, 0–10 wt % Mo, 0–6 wt % Nb, 0–3 wt % Si, 0–3 wt % C, 0–3 wt % B and 0–1 wt % Mn, the balance, apart from impurities, being cobalt.

6 Claims, 1 Drawing Sheet