

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: 83303329.3

(51) Int. Cl.⁴: **B 22 F 3/16**
B 22 F 7/02, B 22 F 5/08

(22) Date of filing: 09.06.83

(30) Priority: 16.06.82 US 388851

(43) Date of publication of application:
28.12.83 Bulletin 83/52

(88) Date of deferred publication of search report: 27.11.85

(84) Designated Contracting States:
BE DE FR GB IT LU NL

(71) Applicant: **IPM CORPORATION**
6400 E. Broad Street
Columbus, Ohio 43213(US)

(72) Inventor: **Reen, Orville W.**
224 Elmtree Road
New Kensington Pennsylvania 15608(US)

(72) Inventor: **Aunkst, Clayton W.**
327 High Avenue
St. Mary's Pennsylvania 15857(US)

(74) Representative: **Shedder, Brian N. et al,**
ERIC POTTER & CLARKSON 27 South Street
Reading Berkshire, RG1 4QU(GB)

(54) **Densification of selected areas of powder metal parts.**

(57) A method of preparing a powder metal body such as a gear having adjacent portions of different densities. In the case of a gear, the gear teeth and the root adjacent the gear teeth are provided with the greater density to give the teeth greater impact and wear resistance. The first step comprises forming a powder metal compact by pressing powder metal in a mold (10) with at least one multiple depth punch (11,14) to produce a compact having a portion of greater length relative to the length of another portion of the compact. The next step is sintering the compact followed by repressing with a punch that applies forces only to the portion of the sintered compact having the greater length.

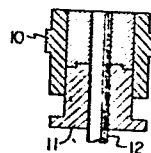


Fig. 1A

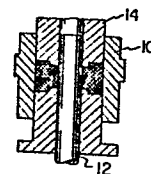


Fig. 1B



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 2)
Y	GB-A-1 148 558 (M. KOEHLER) * Claims 1,3,5; page 2, line 78 - page 3, line 10 *	1-15	B 22 F 3/16 B 22 F 7/02 B 22 F 5/08
Y	FR-A-1 490 434 (FEDERAL MOGUL) * Abstract 1-3,15 *	1-15	
Y	DE-A-1 450 035 (SCHUNK & EBE) * Claims 1-3; page 2, lines 18-31 *	1-15	
A	US-A-3 445 148 (D.E. HARRIS et al.)		
A	GB-A- 610 011 (AMERICAN ELECTRO METAL CORP.)		
			TECHNICAL FIELDS SEARCHED (Int. Cl. 2)
			B 22 F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18-07-1985	Examiner SCHRUIERS H.J.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	