Europäisches Patentamt

European Patent Office

Office européen des brevets



(11) **EP 0 911 517 A3**

(12)

EUROPEAN PATENT APPLICATION

(88) Date of publication A3: 28.07.1999 Bulletin 1999/30

(51) Int. Cl.⁶: **F04B 27/08**, F04B 27/10

(43) Date of publication A2:

28.04.1999 Bulletin 1999/17

(21) Application number: 98111450.7

(22) Date of filing: 22.06.1998

(84) Designated Contracting States:

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

Designated Extension States:

AL LT LV MK RO SI

(30) Priority: 24.10.1997 JP 29196097

(71) Applicant:

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho Aichi-ken (JP) (72) Inventors:

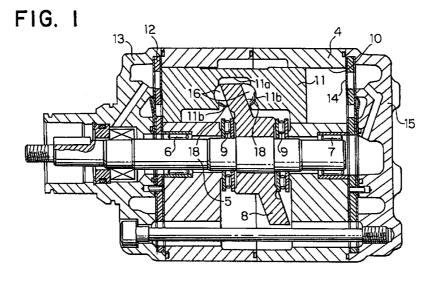
- Ikeda, Hayato
 2 chome, Kariya-shi, Aichi-ken (JP)
- Kato, Masafumi
 2 chome, Kariya-shi, Aichi-ken (JP)
- Kato, Takayuki
 2 chome, Kariya-shi, Aichi-ken (JP)
- (74) Representative:

Pellmann, Hans-Bernd, Dipl.-Ing. et al Patentanwaltsbüro Tiedtke-Bühling-Kinne & Partner Bavariaring 4 80336 München (DE)

(54) Swash plate type compressor

(57) A swash plate type compressor that provides long lasting high lubricating performance to the sliding contact surfaces of a swash plate end shoes. The surface of the swash plate or the shoes on which the swash plate comes in sliding contact with the shoes is provided with an alloy plating layer, in which tin is the main component, as a surface treating layer. An coating layer, in

which molybdenum disulfide is the main component, is formed as a solid lubricant layer on the foregoing plating layer. Preferably, the swash plate is made of aluminum or an aluminum alloy, and its surface is provided with the plating layer and the coating layer. More preferably, the coating layer contains graphite.



EP 0 911 517 A3



EUROPEAN SEARCH REPORT

Application Number EP 98 11 1450

_ , _	Citation of document with ind	lication, where appropriate.	Relevant	CLASSIFICATION OF THE	
Category	of relevant passag		to claim	APPLICATION (Int.Cl.6)	
Y	US 5 056 417 A (KATO 15 October 1991 * the whole document		1,4	F04B27/10	
Υ	PATENT ABSTRACTS OF vol. 096, no. 012, 2 & JP 08 199327 A (T LTD;TOYOTA AUTOM LOO 6 August 1996 * abstract *	26 December 1996 TAIHO KOGYO CO	1,4		
E	PATENT ABSTRACTS OF vol. 098, no. 013, 3 & JP 10 205442 A (1 LTD), 4 August 1998 * abstract *		1 (S		
A	4 February 1986	TORI MITSUHIRO ET AL		TECHNICAL FIELDS SEARCHED (Int.Cl.6)	
A	PATENT ABSTRACTS OF vol. 017, no. 392 (N & JP 05 071528 A (H 23 March 1993 * abstract *	1-1450), 22 July 1993	1	F04B C23C	
A	EP 0 679 809 A (TOK) CO) 2 November 1995 * claims 1,2 *	YO SHIBAURA ELECTRIC	1		
	The present search report has b	een drawn up for all claims			
	Place of search	Date of completion of the search	<u> </u>	Examiner	
THE HAGUE 9		9 June 1999	In	Ingelbrecht, P	
X:pau Y:pau doo A:teo	CATEGORY OF CITED DOCUMENTS rticularly relevant if taken alone rticularly relevant if combined with anoth sument of the same category shotological background in-written disclosure	E : earlier patent after the filing er D : document oit L : document oit	ed in the application ed for other reasons	lished on, or n	

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 98 11 1450

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

09-06-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5056417	A 15-10-1991	JP 1967226 C JP 2130272 A JP 6097033 B	18-09-1995 18-05-1990 30-11-1994
US 4568252	A 04-02-1986	JP 56126686 A JP 1515118 C JP 57049081 A JP 63027554 B JP 1035190 B JP 1570336 C JP 57051976 A JP 1334817 C JP 57051977 A JP 61001636 B BR 8105720 A	03-10-1981 24-08-1989 20-03-1982 03-06-1988 24-07-1989 25-07-1990 27-03-1982 28-08-1986 27-03-1982 18-01-1986 08-09-1982
EP 0679809	A 02-11-1995	JP 7293468 A CN 1118842 A KR 147882 B US 5548973 A	07-11-1995 20-03-1996 17-08-1998 27-08-1996

FORM P0459

_____ พ For more details about this annex : see Official Journal of the European Patent Office, No. 12/82