



(51) International Patent Classification:
F04B 39/08 (2006.01) *F04B 39/10* (2006.01)

(21) International Application Number:
PCT/IB2008/053596

(22) International Filing Date:
4 September 2008 (04.09.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/970,830 7 September 2007 (07.09.2007) US

(72) Inventor; and

(71) Applicant : **BASTOS RIBEIRO, Renato** [BR/BR];
933, Pedro Ivo st., Mont'Serrat, 90.450-210 Porto Alegre
(BR).

(74) Agent: **GUERRA NETO, Alberto, J.**; 1113, São Carlos
st., Floresta, 90220-121 Porto Alegre (BR).

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,
CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ,
EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR,
KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME,
MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO,
NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG,
SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ,
TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,
MC, MK, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI
(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,
NE, SN, TD, TG).

Published:

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM, — with international search report (Art. 21(3))

[Continued on next page]

(54) Title: RECIPROCATING PISTON CYLINDER HEAD COVER HAVING AN INTEGRATED FLUID EXCHANGE RO-
TARY DISC VALVE

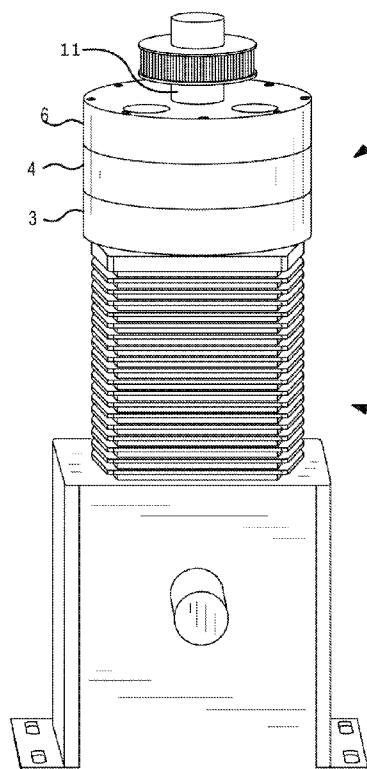


FIG.1

(57) Abstract: A cylinder head cover (2) for a reciprocating compressor cylinder (1) such as an air compressor or internal combustion engine is disclosed. The cover (2) includes a first plate (3) having a first and second channel (19) in a surface of the first plate (3), wherein the first and second channels (19) merge together within the plate (3) at a first opening (18) through the bottom surface of the first plate (3). A second plate (4) is fastened over the first plate (3). The second plate (4) has a pair of bores (7) therethrough each aligned with one of the first and second channels (19) in the first plate (3). A fourth plate (6) is fastened over the second plate (4) forming a cavity between the second (4) and fourth plates (6). The fourth plate (6) has a pair of spaced bores (16) therethrough aligned with the bores (7) through the second plate (4). A rotating third plate (5) is rotatably disposed between the second (4) and fourth (6) plates. This third plate (5) has a pair of spaced bores therethrough for sequentially aligning with one of the pair of bores (7) through the second plate (4). During a full rotation of the third plate (5) each bore through the third plate (5) aligns with each bore (7, 16) through the second (4) and fourth (6) plates.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:
24 June 2010

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 2008/053596

A. CLASSIFICATION OF SUBJECT MATTER

IPC⁸: **F04B 39/08** (2006.01); **F04B 39/10** (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁸: F04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 1774662 A (PARKS) 2 September 1930 (02.09.1930) <i>Fig. 1-7; page 2, lines 27-94;</i> --	1,2,7-11,16,17
A	US 6443717 B1 (BARBER) 3 September 2002 (03.09.2002) <i>Abstract; fig. 1-3; column 3, line 43 - column 4, line 46;</i> --	1,3,4,9,10,12
A	WO 2001/065157 A1 (DOTT. ING. MARIO COZZANI S.R.L.) 7 September 2001 (07.09.2001) <i>Abstract; fig. 1-3,7; page 5, line 9 - page 6, line 13;</i> --	1,2,9,10,11

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
15 April 2010 (15.04.2010)Date of mailing of the international search report
30 April 2010 (30.04.2010)Name and mailing address of the ISA/ AT
Austrian Patent Office
Dresdner Straße 87, A-1200 Vienna

Authorized officer

HÖRZER K.

Facsimile No. +43 / 1 / 534 24 / 535

Telephone No. +43 / 1 / 534 24 / 359

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 2008/053596

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 191502901 A (HILDEBRAND) 1 July 1915 (01.07.1915) <i>Figure; page 1, line 19 - page 2, line 5;</i> -----	1-3,9-12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/IB 2008/053596

Patent document cited in search report			Publication date			Patent family member(s)			Publication date		
US	A	1774662				US	A	1774662			1930-09-02
US	A	6443717				US	B1	6443717			2002-09-03
WO	A	2001065157						none			
GB	A	191502901				GB	A	191502901			1915-07-01