

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
6 April 2006 (06.04.2006)

PCT

(10) International Publication Number  
WO 2006/035299 A3

- (51) International Patent Classification:  
F28C 1/02 (2006.01) F28C 1/14 (2006.01)
- (21) International Application Number:  
PCT/IB2005/002886
- (22) International Filing Date:  
28 September 2005 (28.09.2005)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
2004/7865 29 September 2004 (29.09.2004) ZA  
2004/7866 29 September 2004 (29.09.2004) ZA

GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

- (71) Applicant and
- (72) Inventor: RUSSEL-SMITH, Kevan, Vaughan [ZA/ZA];  
28 Gemini Street, Sundowner, 2188 JOHANNESBURG (ZA).

(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, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

- (74) Agent: VAN DER WALT, Louis, Stephanus; Adams & Adams, Adams & Adams Place, 1140 Prospect Street, Hatfield, PO Box 1014, 0001 PRETORIA (ZA).

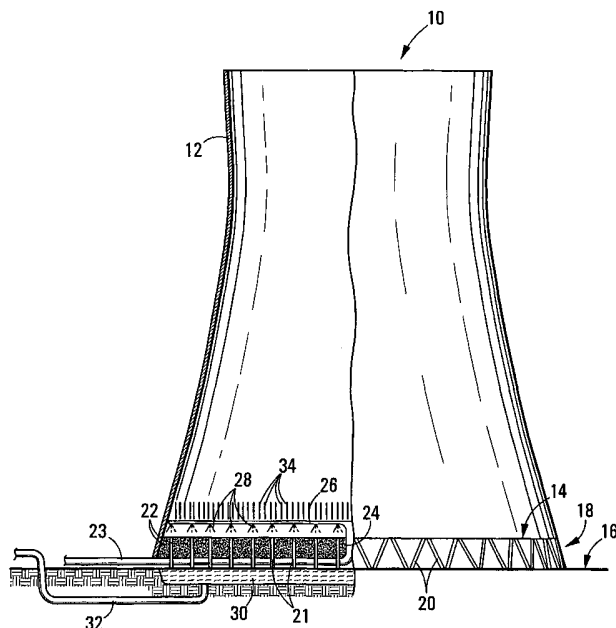
**Declarations under Rule 4.17:**  
— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))  
— of inventorship (Rule 4.17(iv))

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,

**Published:**  
— with international search report  
**(88) Date of publication of the international search report:**  
18 May 2006

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: COOLING TOWER



(57) Abstract: A method of operating an evaporative cooling tower includes contacting water with air in a cooling zone to cool the water and heat the air and cooling the heated air to condense water therefrom, thereby to reduce water loss from the cooling tower. Typically, the cooling of the heated air is by means of evaporative cooling employing a refrigerant.

WO 2006/035299 A3

INTERNATIONAL SEARCH REPORT

Internal application No  
PCT/IB2005/002886

<p><b>A. CLASSIFICATION OF SUBJECT MATTER</b> F28C1/02 F28C1/14</p> <p>According to International Patent Classification (IPC) or to both national classification and IPC</p>																	
<p><b>B. FIELDS SEARCHED</b></p> <p>Minimum documentation searched (classification system followed by classification symbols) F28C</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal</p>																	
<p><b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b></p> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X A</td> <td>US 4 662 902 A (MEYER-PITTRUFF ET AL) 5 May 1987 (1987-05-05) column 1, line 1 - column 4, line 38; figure 1</td> <td>1,5,8,9, 12 20</td> </tr> <tr> <td>X A</td> <td>US 2004/118280 A1 (TINGUEE LARRY B ET AL) 24 June 2004 (2004-06-24) paragraphs '0011! - '0015!; figure 1</td> <td>1-4,12 8,20</td> </tr> <tr> <td>X A</td> <td>US 2003/071373 A1 (HUBBARD BRYAN J ET AL) 17 April 2003 (2003-04-17) paragraphs '0001!, '0083! - '0085!, '0094!, '0095!, '0099!; figures 6,14</td> <td>1,12 8,20</td> </tr> <tr> <td>A</td> <td>CA 2 327 936 A1 (HUDSON PRODUCTS CORPORATION) 10 June 2001 (2001-06-10) page 6, line 23 - page 8, line 28; figures 9,10</td> <td>1,5,12, 13</td> </tr> </tbody> </table> <p style="text-align: center;">----- -/--</p>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X A	US 4 662 902 A (MEYER-PITTRUFF ET AL) 5 May 1987 (1987-05-05) column 1, line 1 - column 4, line 38; figure 1	1,5,8,9, 12 20	X A	US 2004/118280 A1 (TINGUEE LARRY B ET AL) 24 June 2004 (2004-06-24) paragraphs '0011! - '0015!; figure 1	1-4,12 8,20	X A	US 2003/071373 A1 (HUBBARD BRYAN J ET AL) 17 April 2003 (2003-04-17) paragraphs '0001!, '0083! - '0085!, '0094!, '0095!, '0099!; figures 6,14	1,12 8,20	A	CA 2 327 936 A1 (HUDSON PRODUCTS CORPORATION) 10 June 2001 (2001-06-10) page 6, line 23 - page 8, line 28; figures 9,10	1,5,12, 13
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.															
X A	US 4 662 902 A (MEYER-PITTRUFF ET AL) 5 May 1987 (1987-05-05) column 1, line 1 - column 4, line 38; figure 1	1,5,8,9, 12 20															
X A	US 2004/118280 A1 (TINGUEE LARRY B ET AL) 24 June 2004 (2004-06-24) paragraphs '0011! - '0015!; figure 1	1-4,12 8,20															
X A	US 2003/071373 A1 (HUBBARD BRYAN J ET AL) 17 April 2003 (2003-04-17) paragraphs '0001!, '0083! - '0085!, '0094!, '0095!, '0099!; figures 6,14	1,12 8,20															
A	CA 2 327 936 A1 (HUDSON PRODUCTS CORPORATION) 10 June 2001 (2001-06-10) page 6, line 23 - page 8, line 28; figures 9,10	1,5,12, 13															
<p><input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.      <input checked="" type="checkbox"/> See patent family annex.</p>																	
<p>* Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"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</p> <p>"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</p> <p>"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.</p> <p>"&amp;" document member of the same patent family</p>																	
<p>Date of the actual completion of the international search</p> <p style="text-align: center;">24 January 2006</p>		<p>Date of mailing of the international search report</p> <p style="text-align: center;">02/03/2006</p>															
<p>Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016</p>		<p>Authorized officer</p> <p style="text-align: center;">Leclaire, T</p>															

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/IB2005/002886

## C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 25 20 221 A1 (SULZER-ESCHER WYSS GMBH) 11 November 1976 (1976-11-11)  claim 1; figure 1 -----	1,5,8,9, 12,13, 20,21
A	US 6 394 174 B1 (HSIEH YI-JANG) 28 May 2002 (2002-05-28) column 6, line 47 - column 7, line 37; figure 3 -----	1,12

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2005/002886

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4662902	A	05-05-1987	AU 4537085 A DE 3427664 A1 EP 0172403 A1 ES 8609688 A1	30-01-1986 06-02-1986 26-02-1986 16-12-1986
US 2004118280	A1	24-06-2004	NONE	
US 2003071373	A1	17-04-2003	CN 1589387 A DE 10297321 T5 TW 550368 B WO 03040638 A1	02-03-2005 09-12-2004 01-09-2003 15-05-2003
CA 2327936	A1	10-06-2001	NONE	
DE 2520221	A1	11-11-1976	CH 589266 A5 NL 7505976 A	30-06-1977 02-11-1976
US 6394174	B1	28-05-2002	NONE	