

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
19 January 2006 (19.01.2006)

PCT

(10) International Publication Number
WO 2006/005133 A1

(51) International Patent Classification⁷: **F25B 15/04**,
F24F 3/14, 5/00, 13/22, F28B 1/00

(21) International Application Number:
PCT/AU2005/001027

(22) International Filing Date: 13 July 2005 (13.07.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2004903841 13 July 2004 (13.07.2004) AU

(71) Applicants and

(72) Inventors: **JONES, Darryl, John** [AU/AU]; 5 The Ave
of Allies, Tanilba Bay, NSW 2319 (AU). **COLLINS,**
Graeme, Allan [AU/AU]; 33 Ferrodale Road, Medowie,
NSW 2318 (AU).

(74) Agent: **BLAKE DAWSON WALDRON PATENT SER-**
VICES; Level 36, Grosvenor Place, 225 George Street,
Sydney, NSW 2000 (AU).

(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,
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, 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.

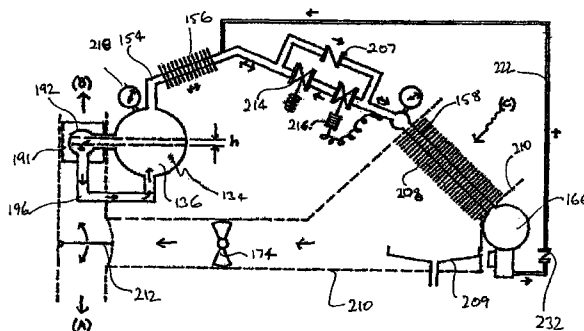
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LT, 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).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: SINGLE CYCLE APPARATUS FOR CONDENSING WATER FROM AMBIENT AIR



(57) Abstract: In one aspect of the present invention there is provided a method for condensing water from ambient air, the method comprising: providing at least one condensation surface for contact with the ambient air; heating a solution of a refrigerant and a fluid, to drive gaseous refrigerant from the solution; cooling the gaseous refrigerant to condense the gaseous refrigerant into liquid refrigerant, and collecting the liquid refrigerant; evaporating refrigerant from the liquid refrigerant such that heat is exchanged between the refrigerant and the condensation surface which is thereby cooled to, or below, the dew point of the water in the ambient air; and contacting the cooled condensation surface with the ambient air to effect condensation of water from the ambient air onto the condensation surface. In another aspect of the present invention there is provided an apparatus for condensing water from ambient air, the apparatus comprising: heating means for heating a solution of a refrigerant and a fluid, to drive evaporation of the refrigerant from the solution to produce gaseous refrigerant; cooling means for cooling the gaseous refrigerant such that the gaseous refrigerant condenses into liquid refrigerant; and an evaporator having at least one condensation surface for contact with the ambient air and being arranged for collecting the liquid refrigerant, and subsequent evaporation of gaseous refrigerant from the liquid refrigerant; wherein the condensation surface is arranged for being cooled to, or below, the dew point of the water in the ambient air by heat exchange between the refrigerant and the condensation surface upon evaporation of the refrigerant from the liquid refrigerant, and thereby effecting condensation of water from the ambient air onto the condensation surface.

WO 2006/005133 A1