

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
15 June 2023 (15.06.2023)



(10) International Publication Number
WO 2023/108038 A1

(51) International Patent Classification:

F24F 3/14 (2006.01) *F25B 25/00* (2006.01)
F24F 13/22 (2006.01) *B01D 53/26* (2006.01)
F24C 1/00 (2006.01) *B01D 53/06* (2006.01)
F24C 1/14 (2021.01) *F24F 3/12* (2006.01)

(21) International Application Number:

PCT/US2022/081134

(22) International Filing Date:

08 December 2022 (08.12.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/287,609 09 December 2021 (09.12.2021) US

(71) Applicant: MONTANA TECHNOLOGIES LLC
[US/US]; P.O. Box 166, 34361 Innovation Drive, Ronan,
Montana 59864 (US).

(72) Inventor: GABIG, Daniel; 1005 Fifth Street East, Polson,
Montana 59860 (US).

(74) Agent: MCCLURE, QAULEY & RODACK LLP; Attn:
David Rodack, 280 Interstate North Circle, Suite 550, At-
lanta, Georgia 30339 (US).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE,
KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU,
LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG,

(54) Title: LATENT ENERGY HARVESTING

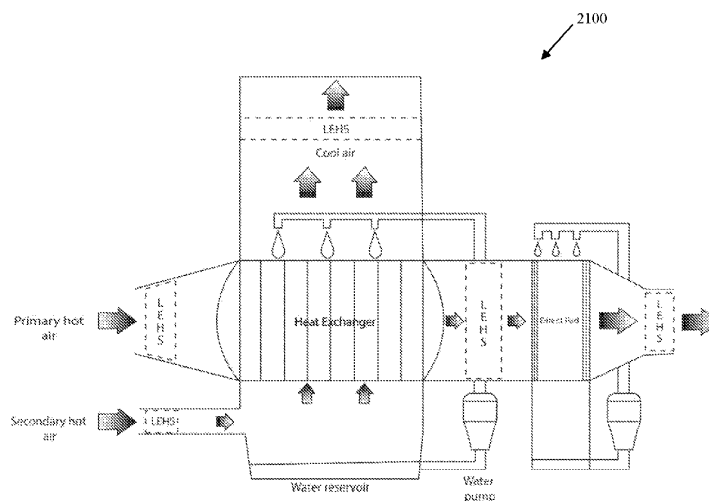


Figure 21

(57) Abstract: At least one direct evaporative cooling system, comprising: a fan or blower that induces an air stream; at least one evaporator installed in the air stream, wherein liquid water is supplied to the at least one evaporator, the at least one evaporator configured to directly evaporatively cool and humidify the air stream; and one or plural latent energy harvesting systems (LEHSs) installed alone or in combination, respectively, in the air stream, wherein when alone, the one LEHS is installed in either the air stream downstream of the at least one evaporator and configured to dehumidify the directly evaporatively cooled and humidified air stream or the air stream upstream of the at least one evaporator and configured to dehumidify the air stream to be directly evaporatively cooled and humidified, and when in combination, the plural LEHSs are installed in the air stream downstream and upstream of the at least one evaporator.

[Continued on next page]

NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS,
RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

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

Published:

- *with international search report (Art. 21(3))*
- *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))*