

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
12 January 2023 (12.01.2023)



(10) International Publication Number
WO 2023/283483 A1

- (51) **International Patent Classification:**
F25B 21/02 (2006.01) *F25D 31/00* (2006.01)
- (21) **International Application Number:**
PCT/US2022/036675
- (22) **International Filing Date:**
11 July 2022 (11.07.2022)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
63/220,360 09 July 2021 (09.07.2021) US
- (71) **Applicant: PHONONIC, INC.** [US/US]; 800 Capitola Drive, Suite 7, Durham, North Carolina 27713 (US).
- (72) **Inventors: YADAV, Abhishek;** 1902 Whirlaway Ct., Cary, North Carolina 27519 (US). **EDWARDS, Jesse;** 3501 W. Stone Dr., Wake Forest, North Carolina 27587 (US). **NEWMAN, Devon;** 6725 South Wakefield Way, Salt Lake City, North Carolina 84081 (US). **NYIKA, Sim-**
- barashe;** 106 Corn Crib Ct, Durham, North Carolina 27703 (US).
- (74) **Agent: MACENKO, Marc;** 106 Pinedale Springs Way, Cary, North Carolina 27511 (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, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, 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, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,

(54) **Title:** CONTROL SCHEME FOR BEVERAGE COOLERS OPTIMIZED FOR BEVERAGE QUALITY AND FAST PULL-DOWN TIME

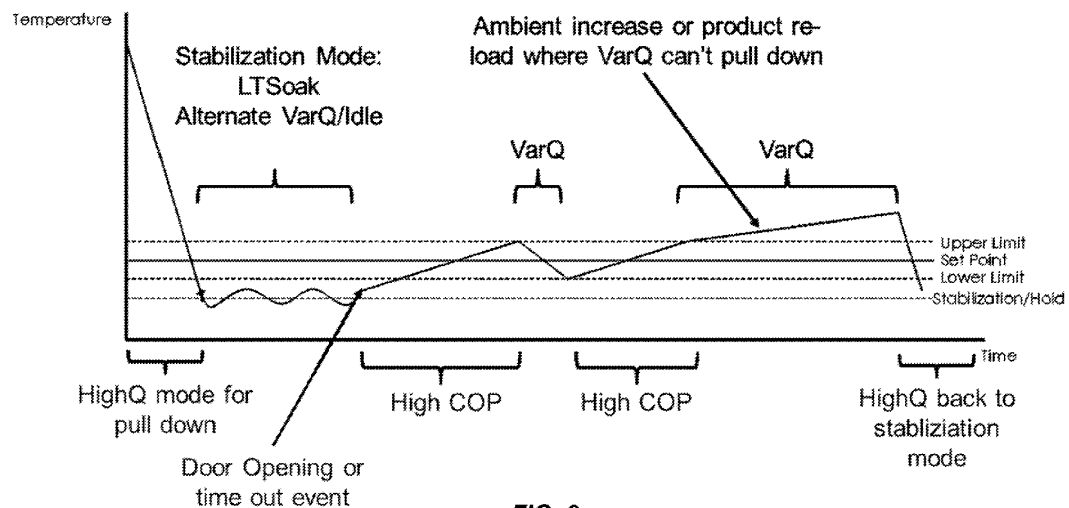


FIG. 2

(57) **Abstract:** Systems and methods for an actively cooled container comprising: a power subsystem; an active cooling subsystem; and a control subsystem are provided. In some embodiments, the control subsystem is configured to: determine that additional cooling is needed; cause the active cooling subsystem to cool the actively cooled container below a lower limit; determine to end the additional cooling; and cause the active cooling subsystem to cool the actively cooled container at or above the lower limit. In this way, the best balance between a fast cooldown time and not damaging (e.g., through freezing) the product load (e.g., beverages), is achieved.

[Continued on next page]

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, 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))*