

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
02 April 2020 (02.04.2020)



(10) International Publication Number
WO 2020/068150 A1

(51) International Patent Classification:

F24F 1/0323 (2019.01) F24F 3/06 (2006.01)
F24F 1/0375 (2019.01) F24F 13/06 (2006.01)

(21) International Application Number:

PCT/US2019/000048

(22) International Filing Date:

27 September 2019 (27.09.2019)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/737,251 27 September 2018 (27.09.2018) US
62/741,690 05 October 2018 (05.10.2018) US

(72) Inventor; and

(71) Applicant: VOYSEY, Keith, Stanley [US/US]; 27900
Mount Rainier Way, Yorba Linda, CA 92887 (US).

(74) Agent: BRENEMAN, William; 3150 Commonwealth Av-
enue, Alexandria, VA 22305 (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, CZ, DE, DJ, DK, DM, DO,
DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN,
HR, HU, ID, IL, IN, IR, IS, 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, SM, ST, SV, SY, TH, TJ, TM, TN,
TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(54) Title: SYSTEM, APPARATUS AND HYBRID VAV DEVICE WITH MULTIPLE HEATING COILS

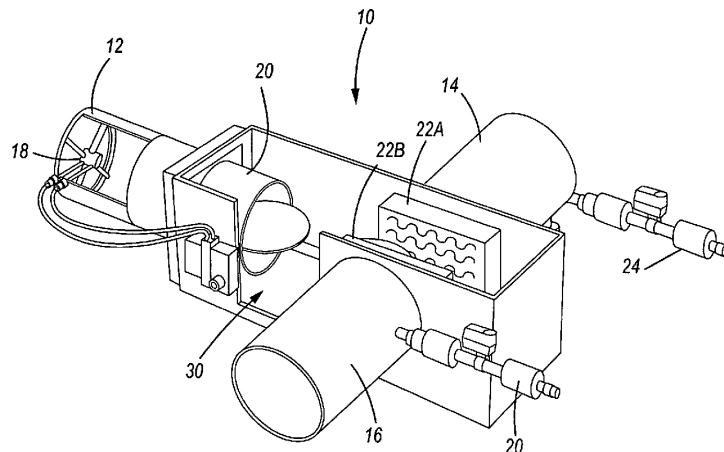


FIG. 4A

(57) Abstract: An energy efficient hybrid variable air volume terminal system with multiple heating coils to enhance temperature control in each individual room in a plurality of rooms. The hybrid variable air volume terminal system includes a novel hybrid variable air volume box that has one inlet duct and a plurality of outlet ducts coupled to the novel hybrid variable air volume box. Each outlet duct has a heating coil operably connected thereto which can be operably connected to any number of the plurality of rooms to provide an energy efficient building management system. In certain embodiments, either an actual or a virtual thermostat is operably connected to the hybrid variable air volume terminal system to control the operation of the system remotely. In certain embodiments, the hybrid variable air volume terminal system comprises an automated air balance system or an automated space control damper and demand response control system to control and/or vary the amount of air flow.

[Continued on next page]

(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, 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).

Declarations under Rule 4.17:

— *of inventorship (Rule 4.17(iv))*

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))*