

(19) World Intellectual Property
Organization
International Bureau



(10) International Publication Number

WO 2023/229923 A9

(43) International Publication Date
30 November 2023 (30.11.2023)

WIPO | PCT

(51) International Patent Classification:
H04B 7/185 (2006.01) H04W 4/44 (2018.01)
B64C 39/02 (2023.01)

(71) Applicant: STAR MESH LLC [US/US]; 22 Monterey Drive, Princeton Junction, NJ 08550 (US).

(21) International Application Number:
PCT/US2023/022818

(72) Inventor: SCHLOEMER, Gerald, R.; PO Box 307, Round Lake, IL 60073 (US).

(22) International Filing Date:
19 May 2023 (19.05.2023)

(74) Agent: QUINLAN, David, M.; David M. Quinlan, P.C., P.O. Box 8088, 22 Monterey Drive, Princeton, NJ 08543 (US).

(25) Filing Language: English

(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,

(26) Publication Language: English

(30) Priority Data:
63/345,051 24 May 2022 (24.05.2022) US

(54) Title: SUBORBITAL NODES FOR AERIAL MESH COMMUNICATIONS SYSTEMS

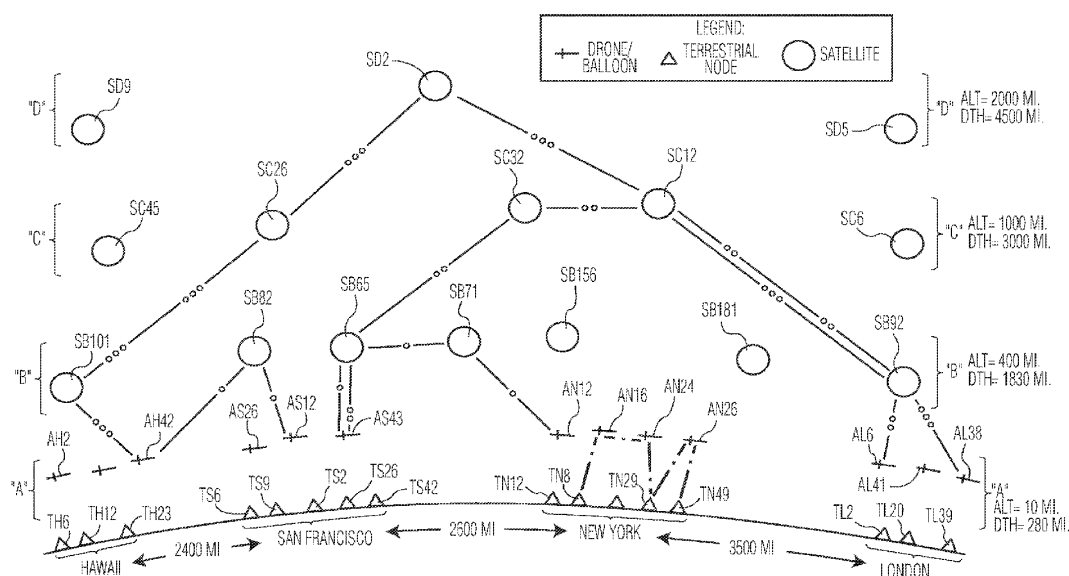


FIG. 14

(57) Abstract: A radio communication system includes non-orbiting aerial nodes providing a radio route between terrestrial nodes. The non-orbiting nodes have a plurality of directional antennas pointing horizontally in multiple directions for sending radio signals to and receiving radio signals from other non-orbiting aerial nodes in a first frequency band, and a plurality of directional antennas pointing toward the surface of the earth for sending radio signals to and receiving radio signals from multiple terrestrial nodes in a second, different frequency band. The aerial nodes include route creation circuitry for creating a radio route between terrestrial nodes via one or more aerial nodes and data transmission circuitry for transmitting data over the route. The non-orbiting nodes can be one-piece lighter-than-air drones, two-piece lighter-than-air drones having suspended communication capsules, heavier-than-air rotary-wing drones with or without lift assist from a lighter-than-air gas, having suspended communication capsules, or balloons with suspended

[Continued on next page]

MA, MD, MG, MK, MN, MU, 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, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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))*

(48) Date of publication of this corrected version:

04 January 2024 (04.01.2024)

(15) Information about Correction:

see Notice of 04 January 2024 (04.01.2024)

communication capsules.