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

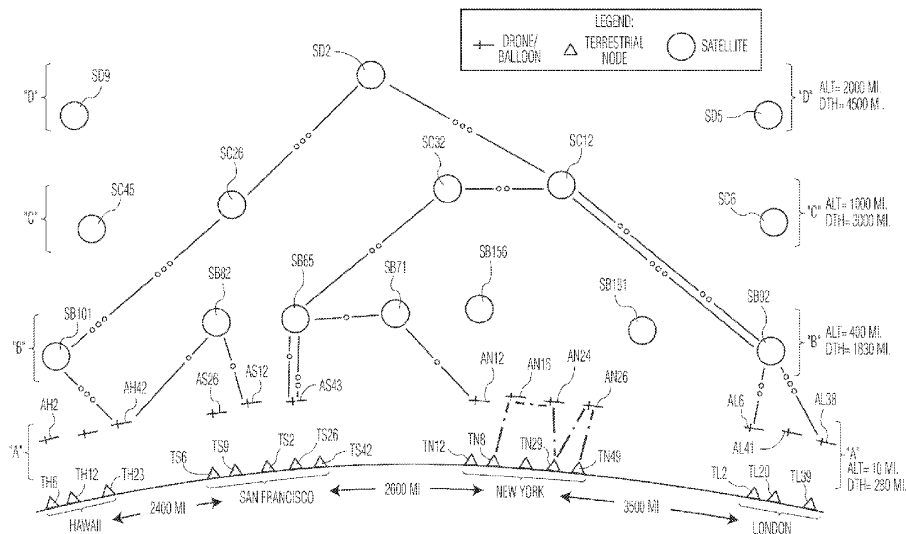


FIG. 14

(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

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communication capsules.