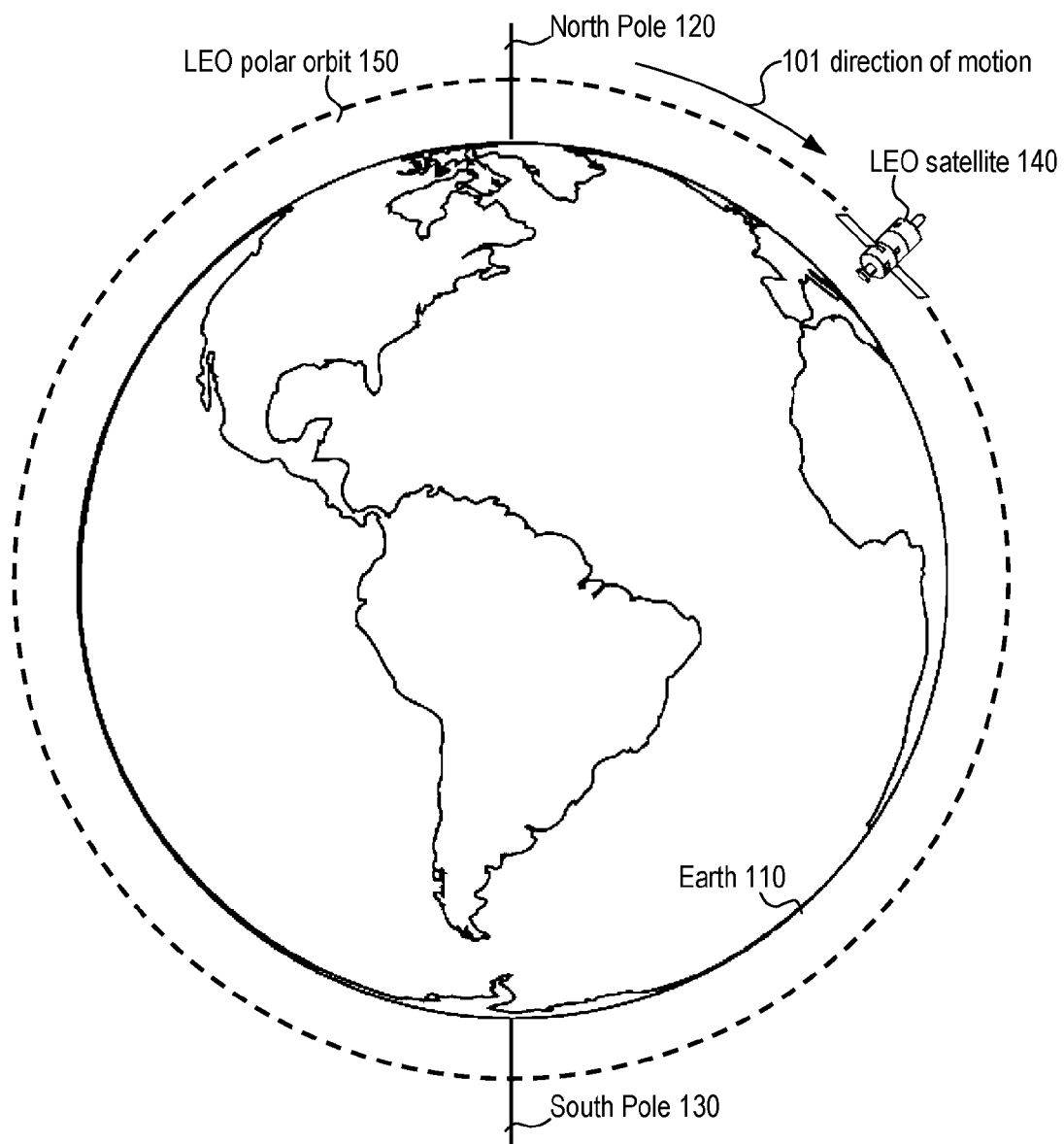


1/19

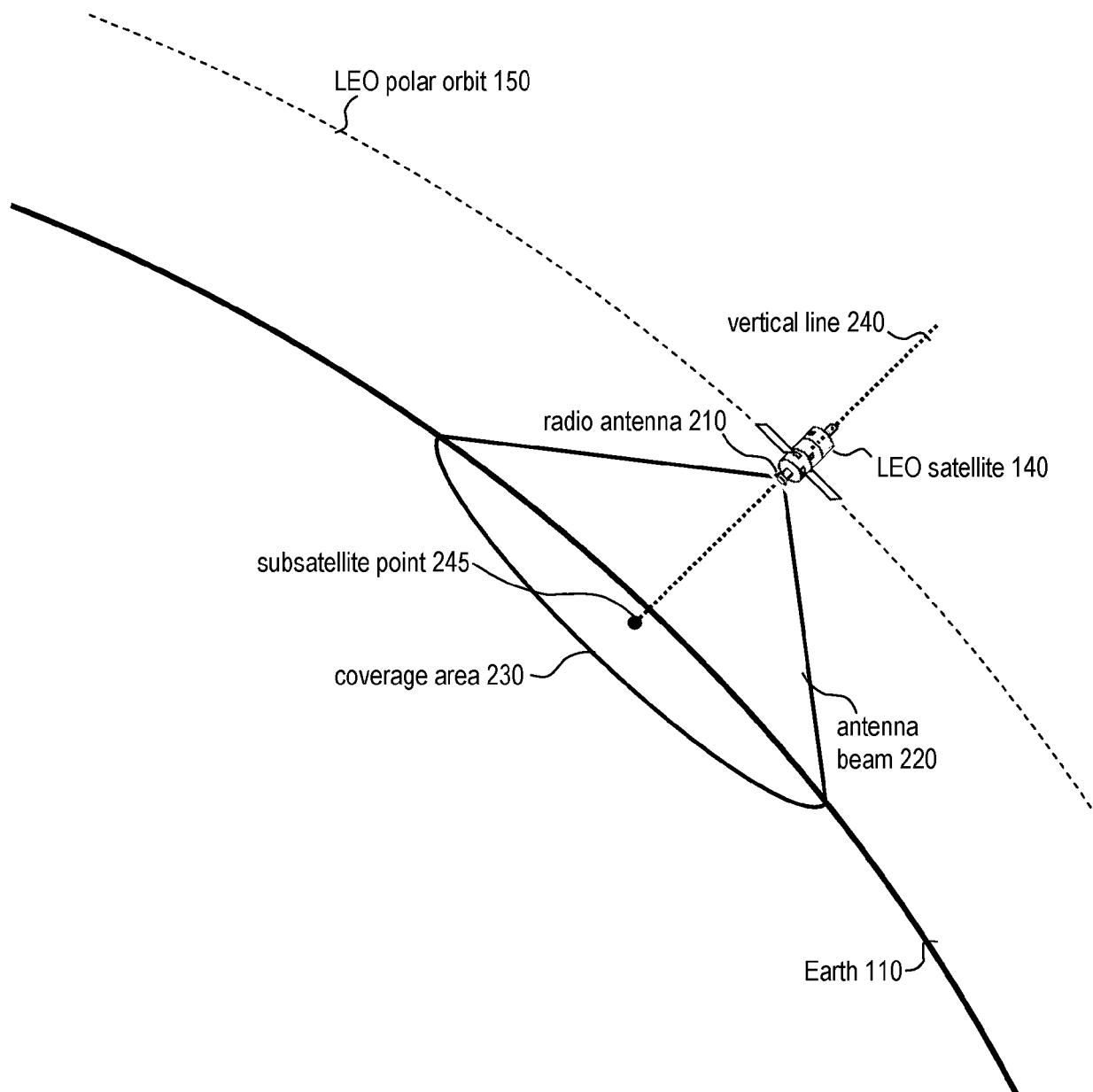
FIG. 1

PRIOR ART

Communication satellite in LEO polar orbit

2/19

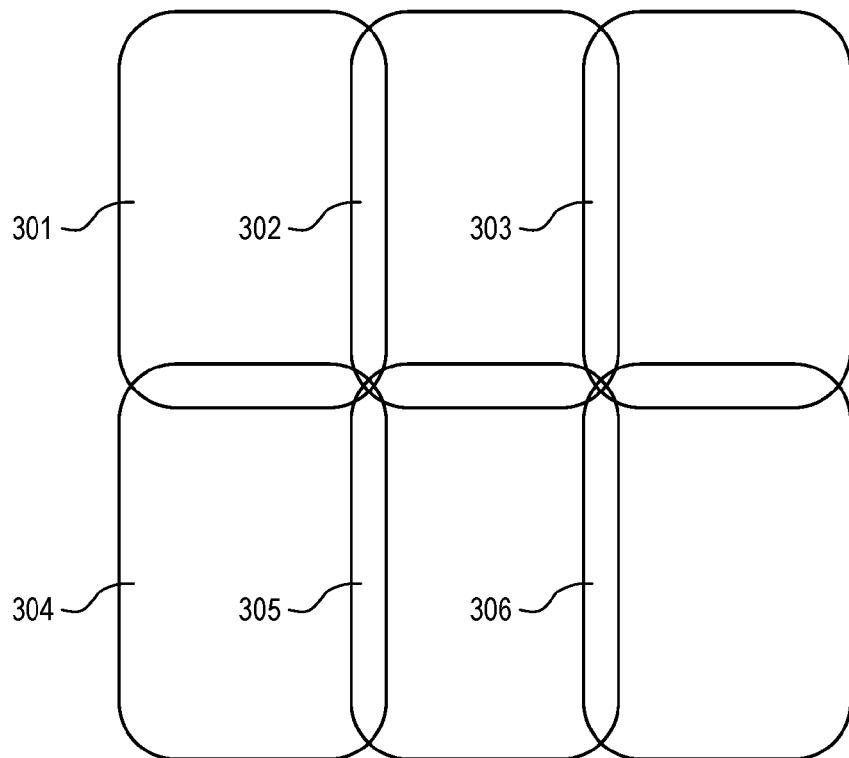
FIG. 2
PRIOR ART
Satellite coverage area and subsatellite point



3/19

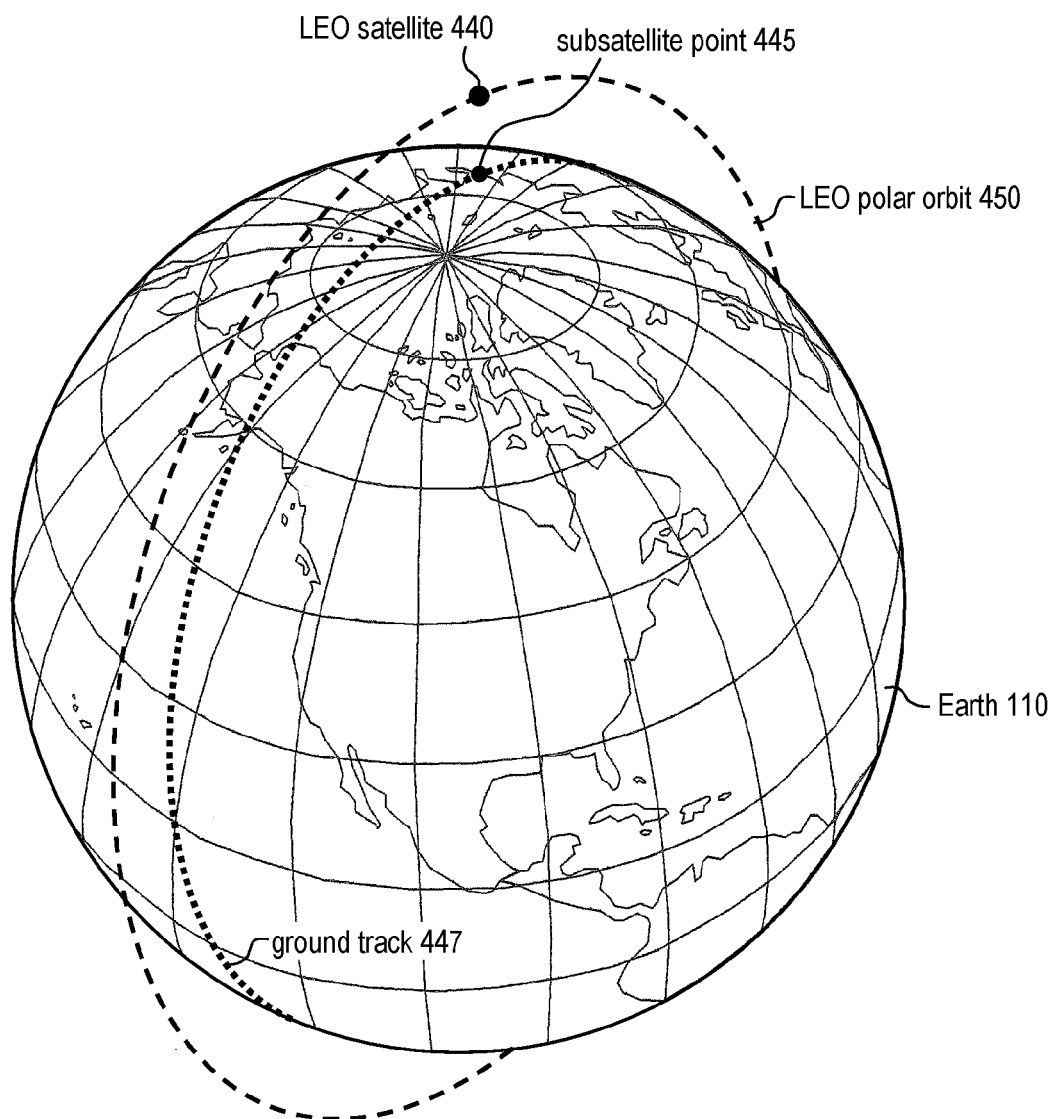
FIG. 3

Tiling with quasi-rectangular coverage areas



4/19

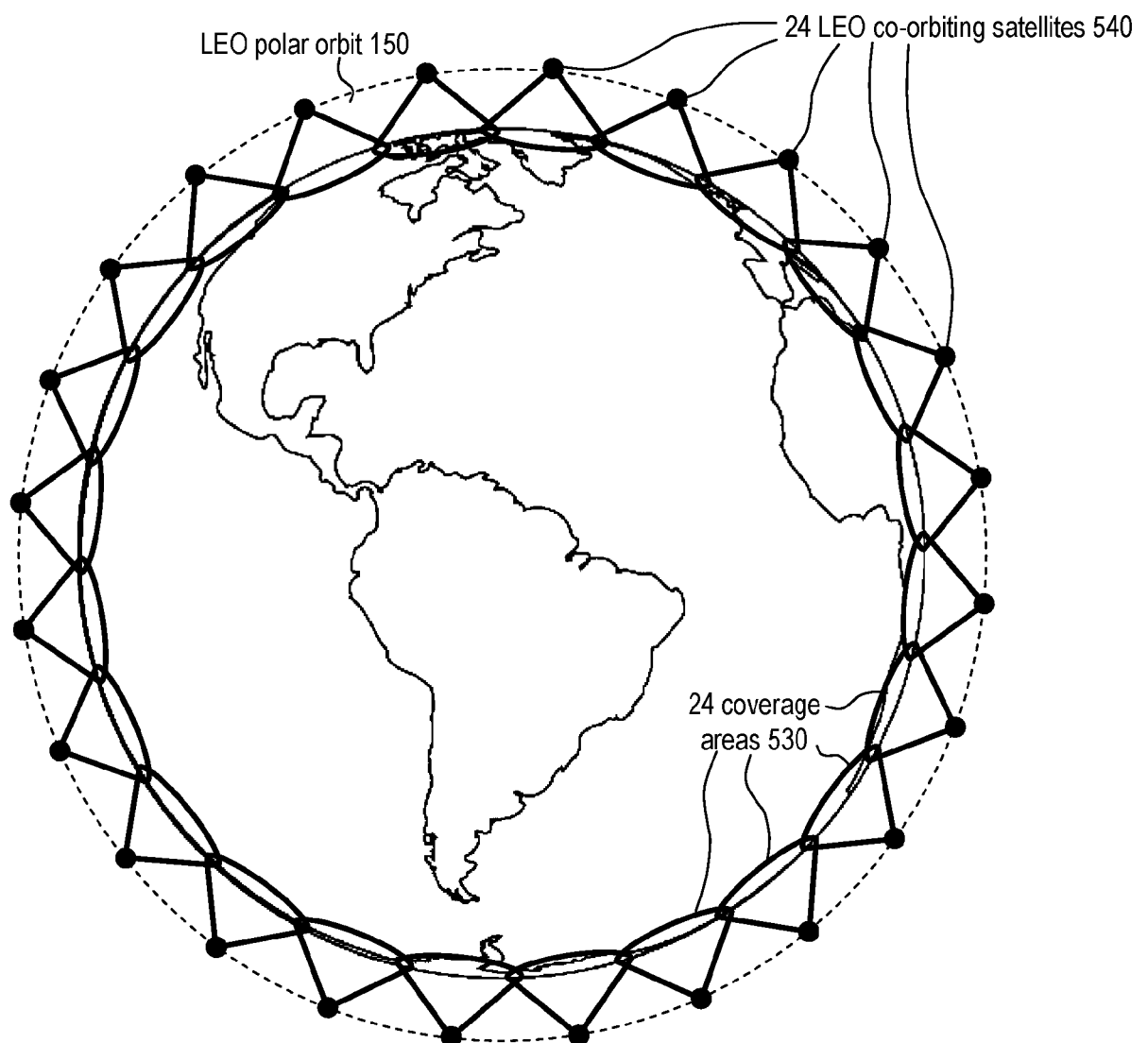
FIG. 4
PRIOR ART
Satellite ground track



5/19

FIG. 5

PRIOR ART

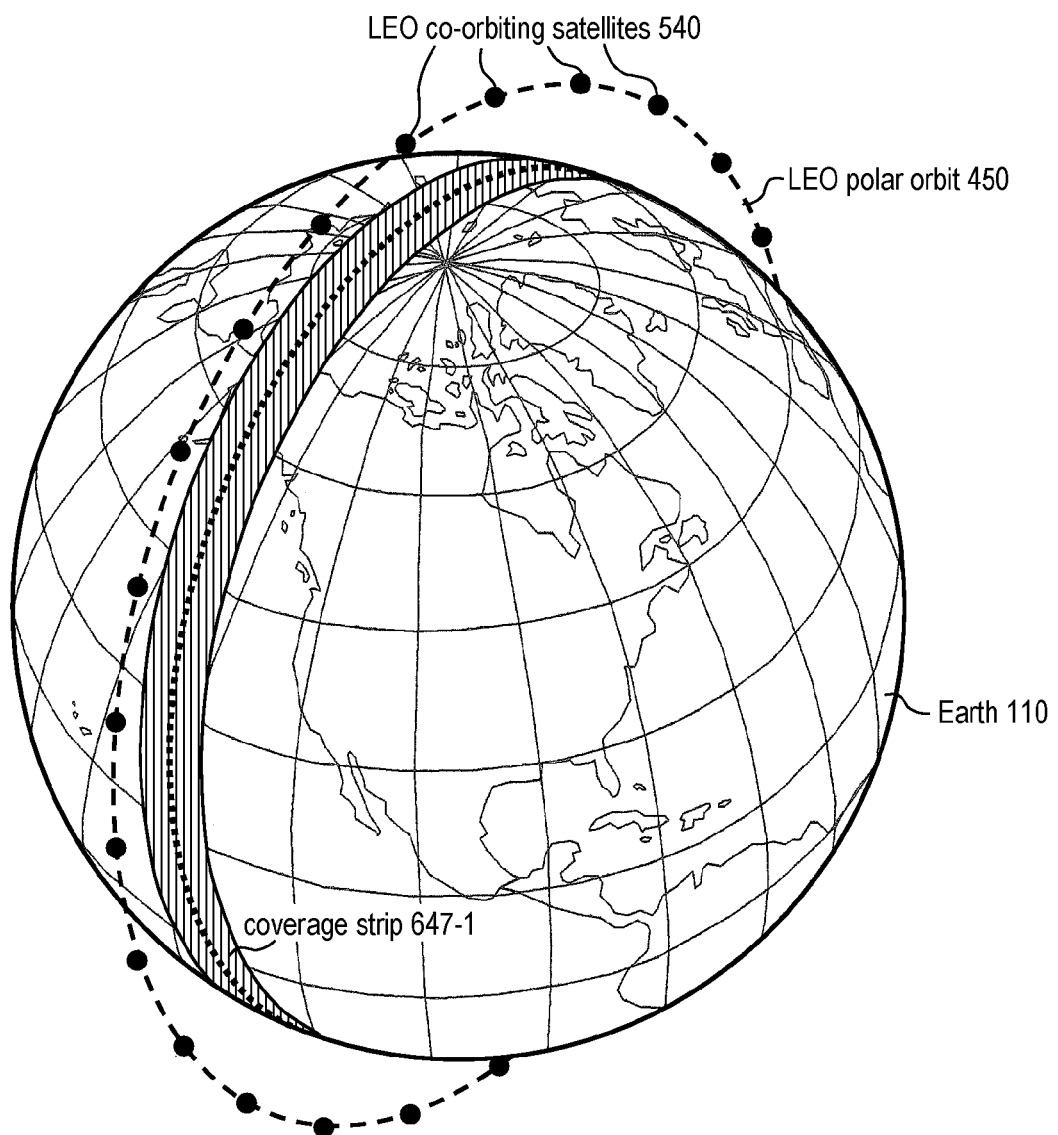
Continuous coverage via multiple co-orbiting satellites

6/19

FIG. 6

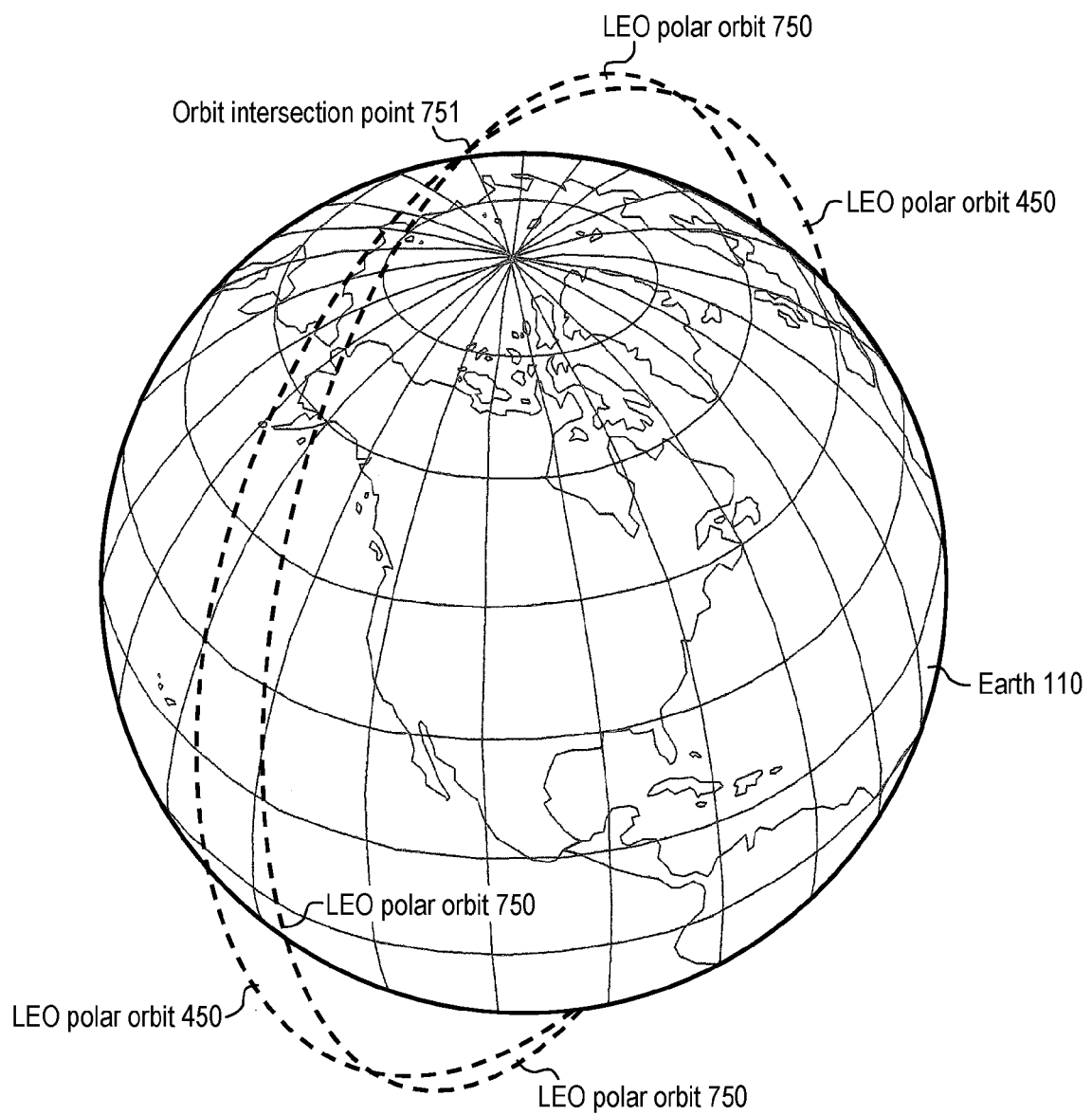
PRIOR ART

Coverage strip of multiple co-orbiting satellites



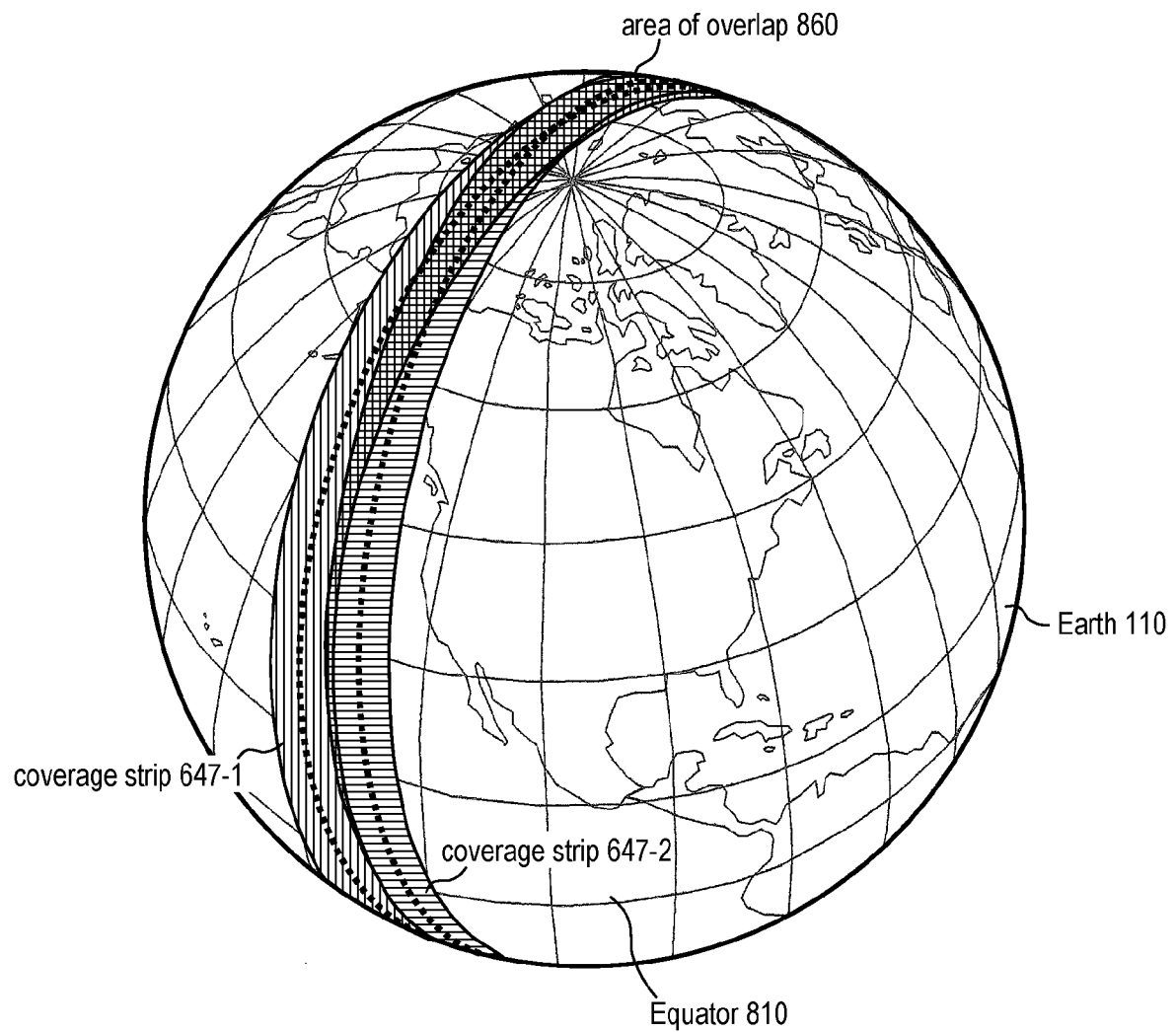
7/19

FIG. 7
PRIOR ART
Multiple orbits for additional coverage



8/19

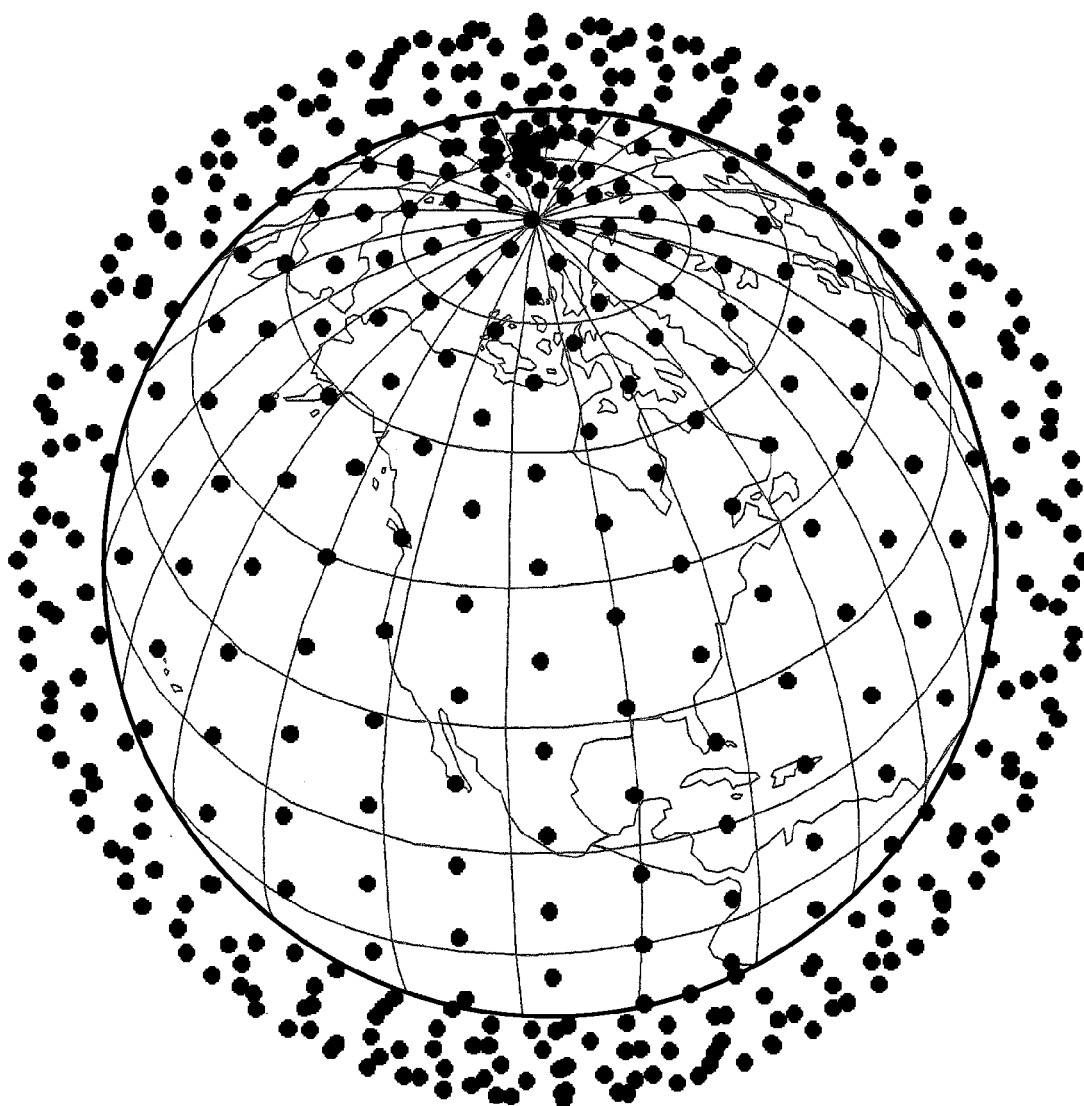
FIG. 8
PRIOR ART
Adjacent coverage strips



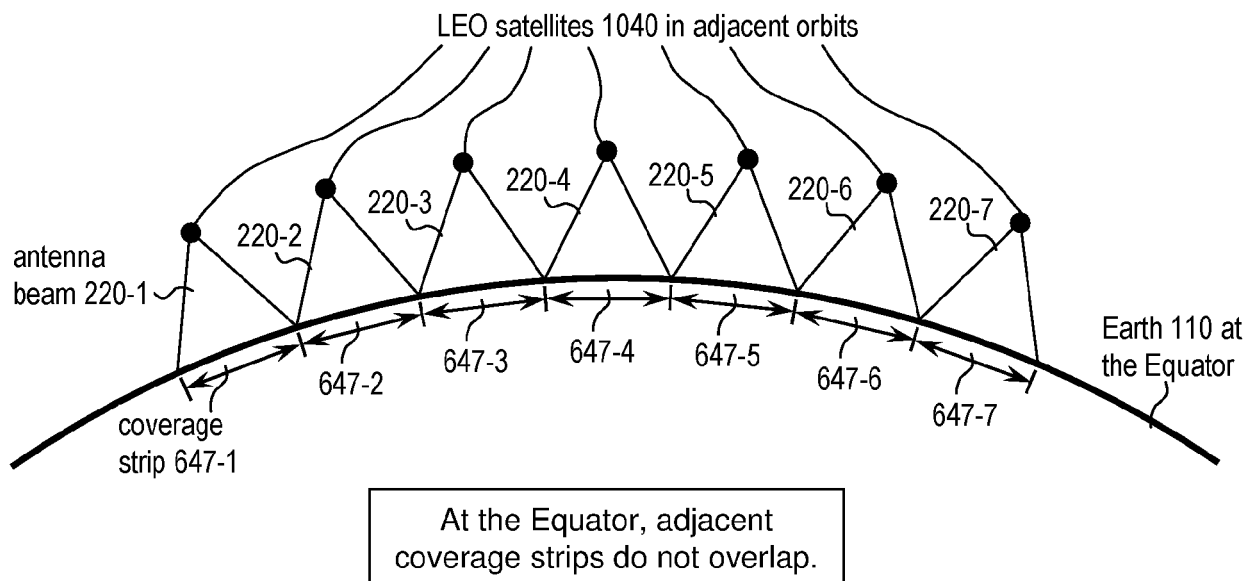
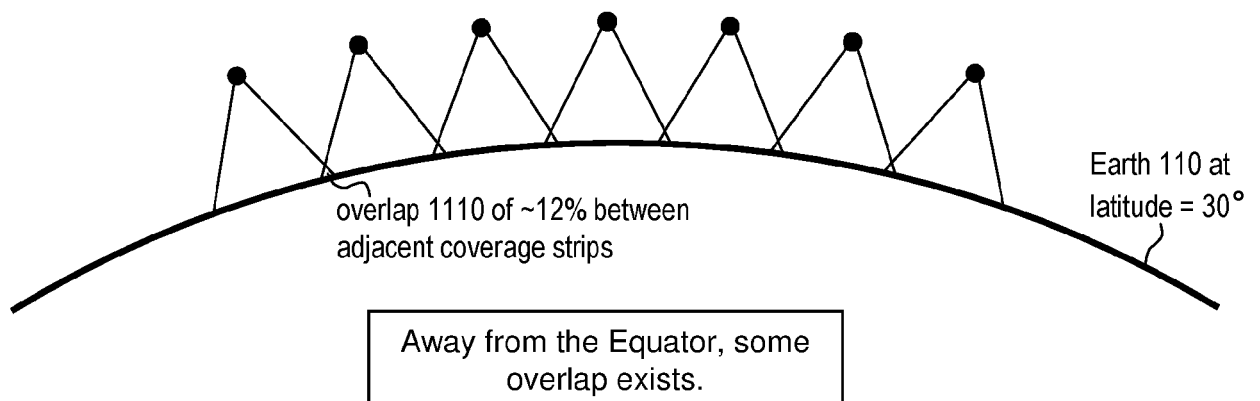
9/19

FIG. 9

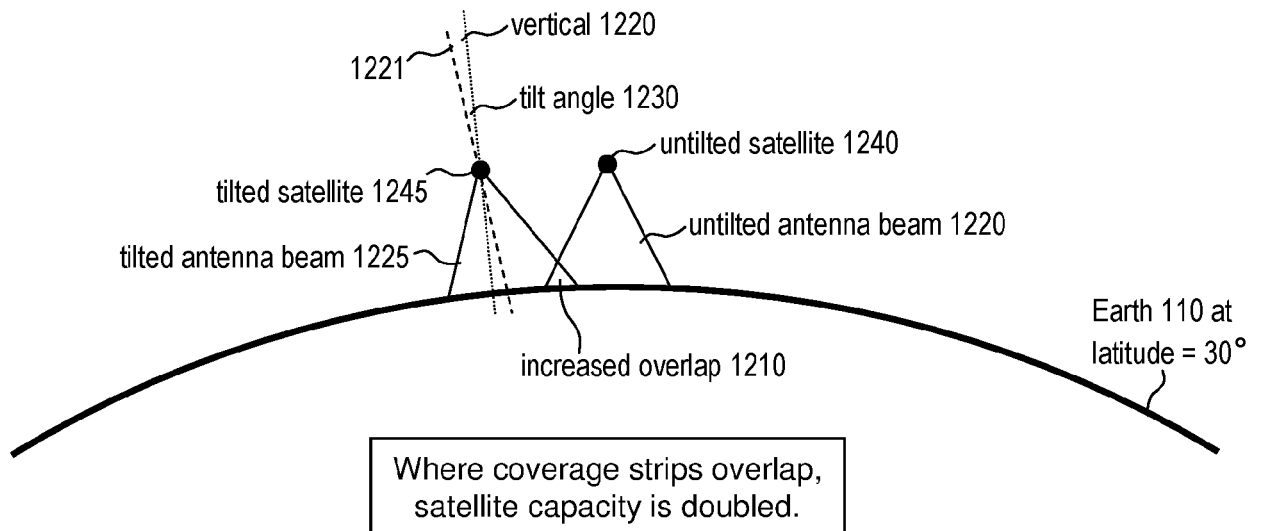
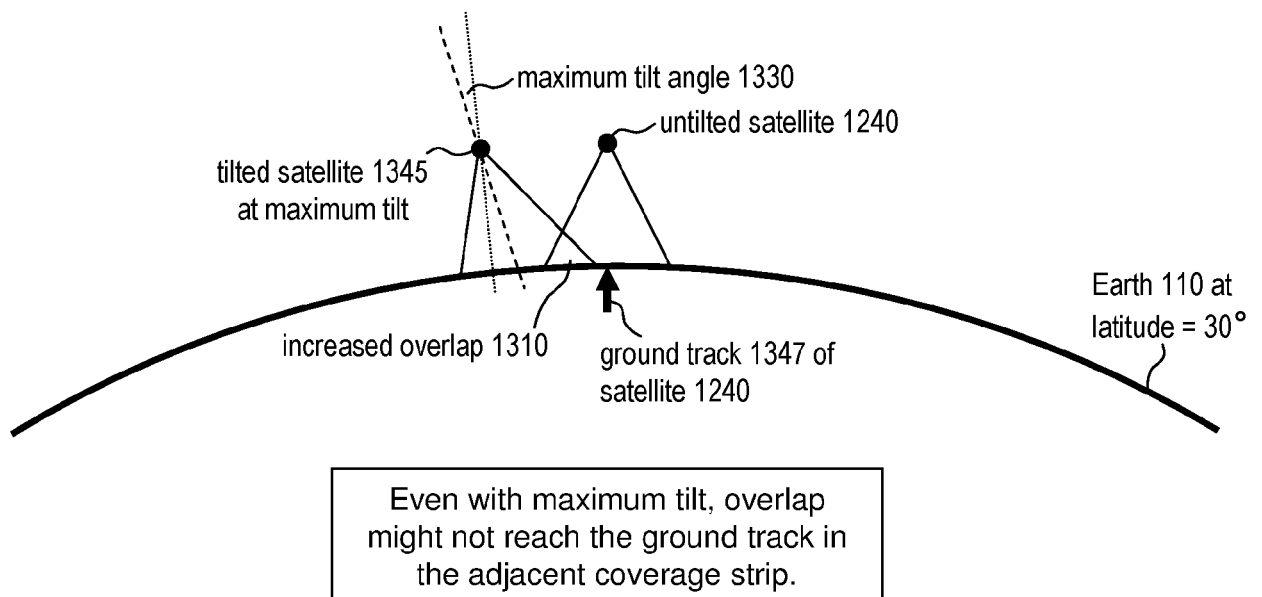
Communication satellite system with 18 LEO
polar orbits and 36 satellites in each orbit



10/19

FIG. 10 Satellite coverage at the Equator**FIG. 11** Satellite coverage at low latitudes (e.g., latitude=30°)

11/19

FIG. 12 Increased overlap via satellite tilting*FIG. 13* Maximum overlap increase

12/19

FIG. 14 increased overlap at mid latitudes (e.g., latitude=40°)

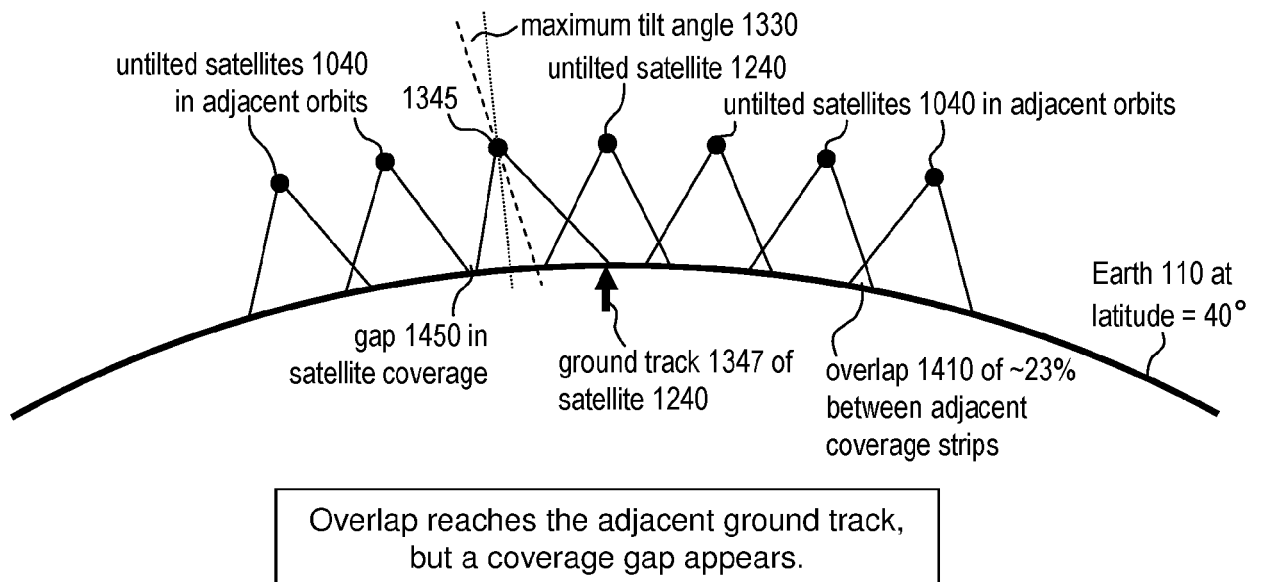
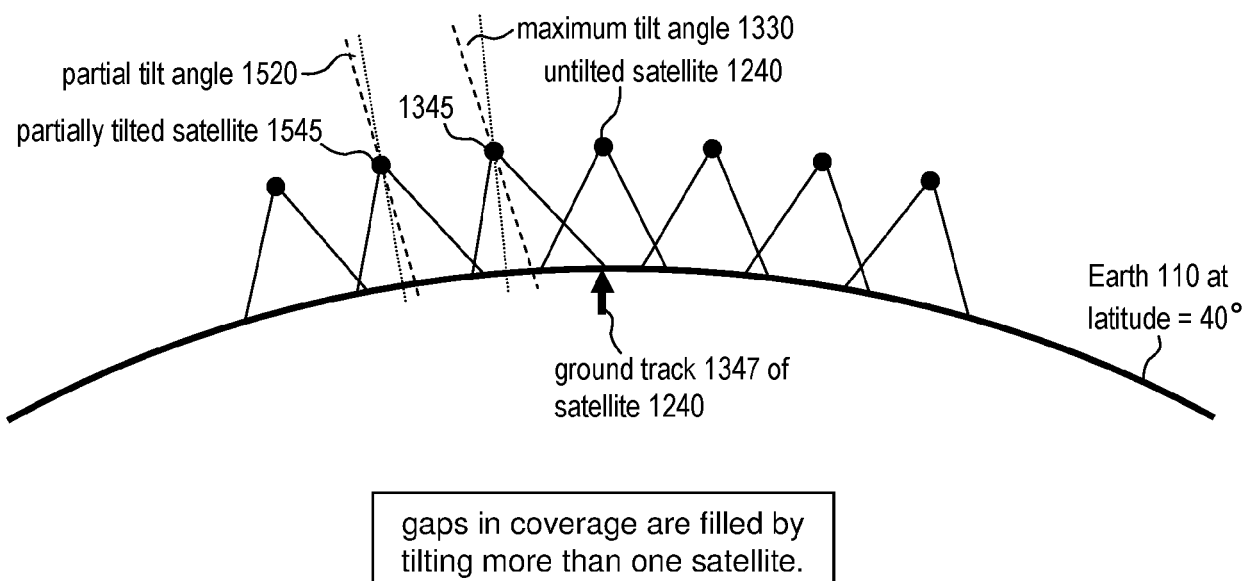


FIG. 15 Progressive tilting of adjacent satellites



13/19

FIG. 16a Continuous double coverage of a designated location – 1st view

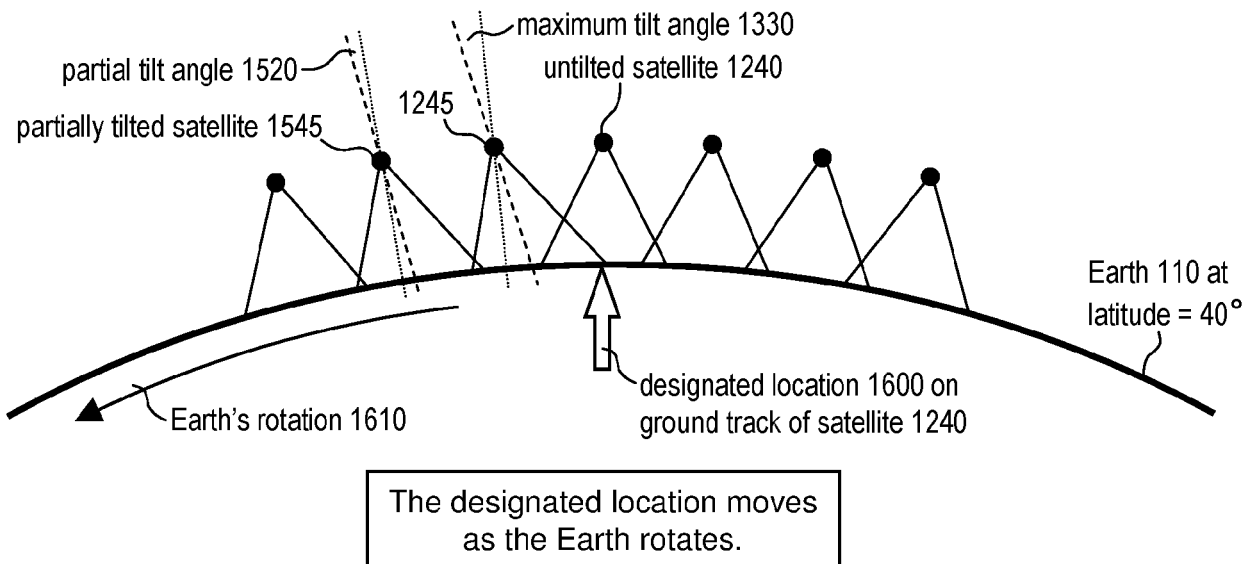
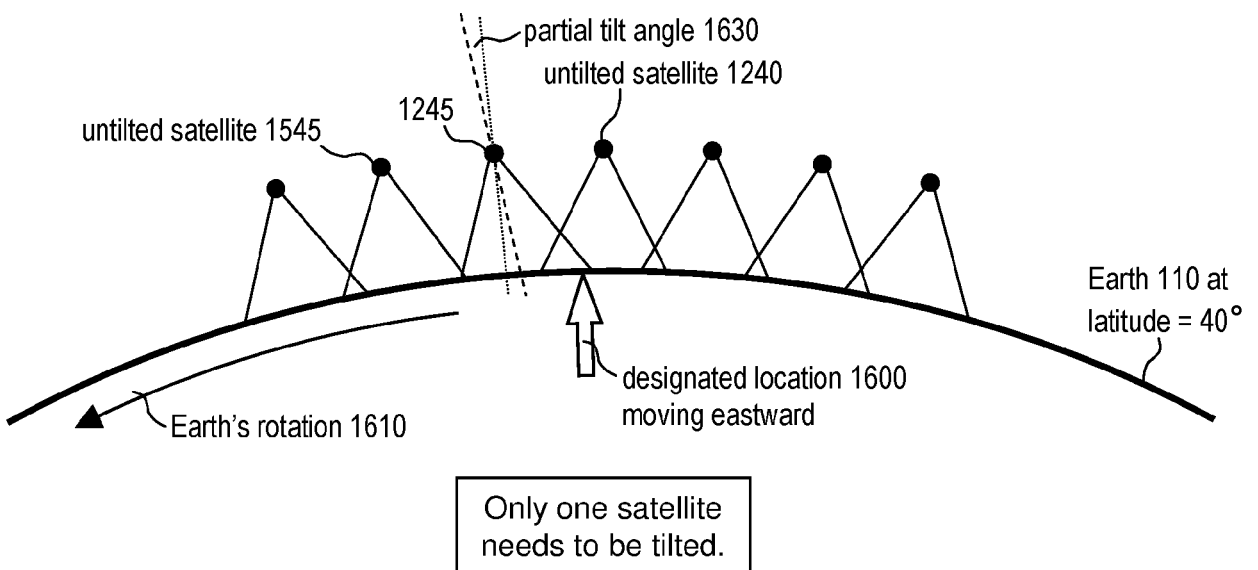


FIG. 16b Continuous double coverage of a designated location – 2nd view



14/19

FIG. 16c Continuous double coverage of a designated location – 3rd view

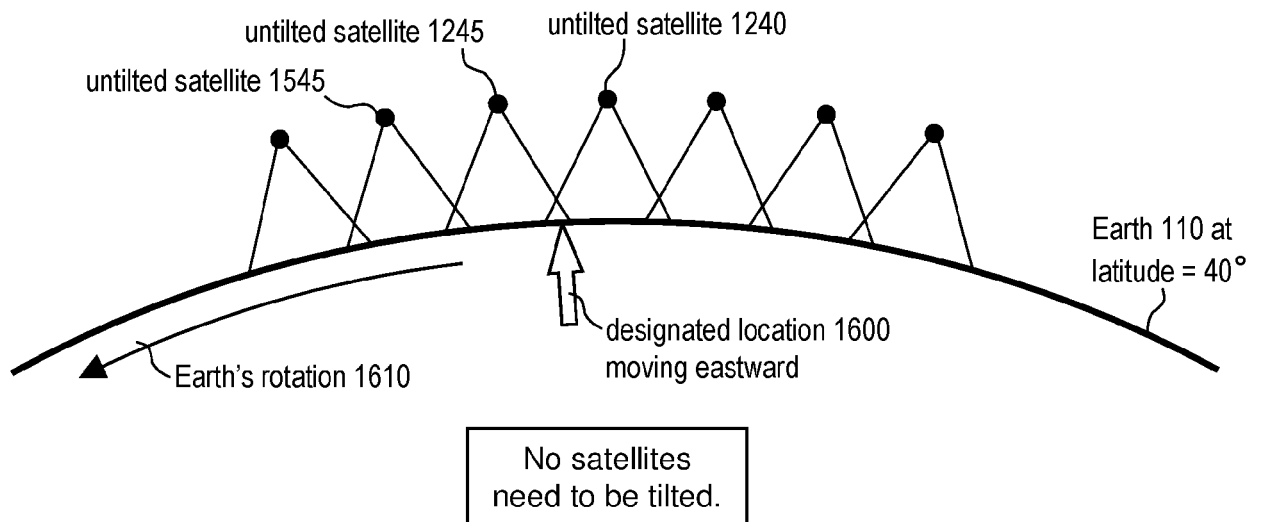
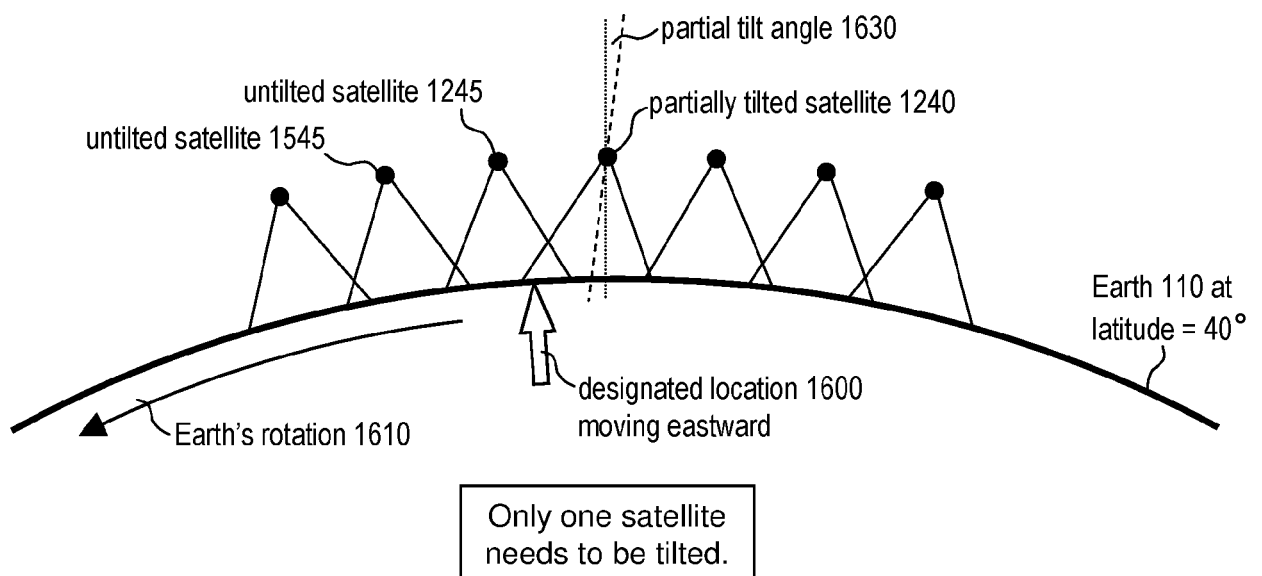
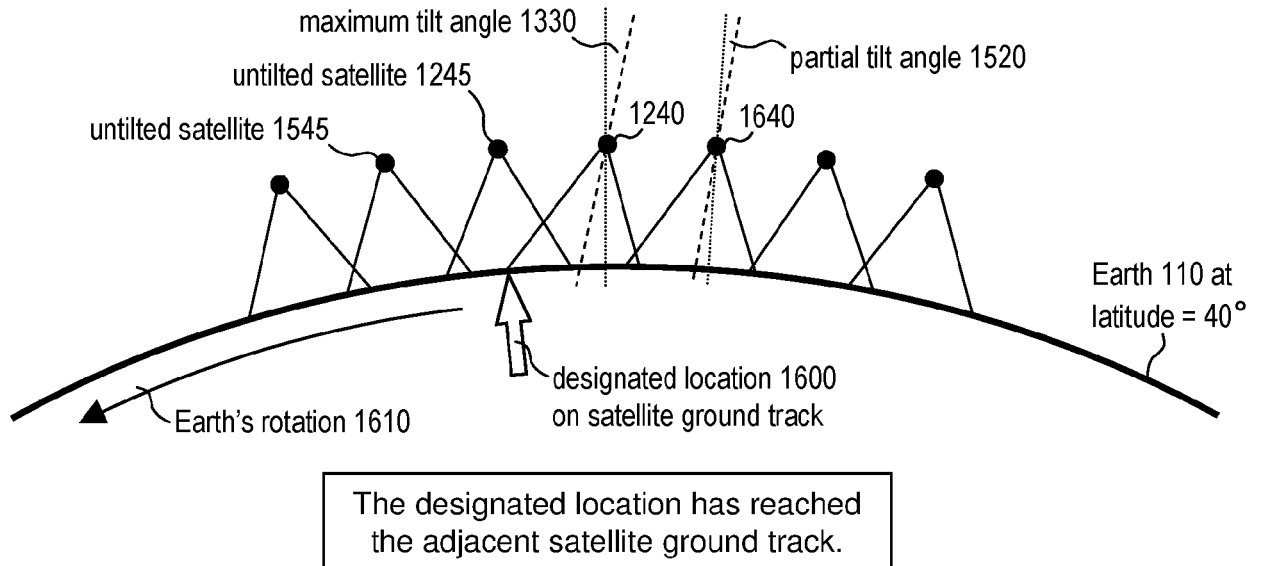
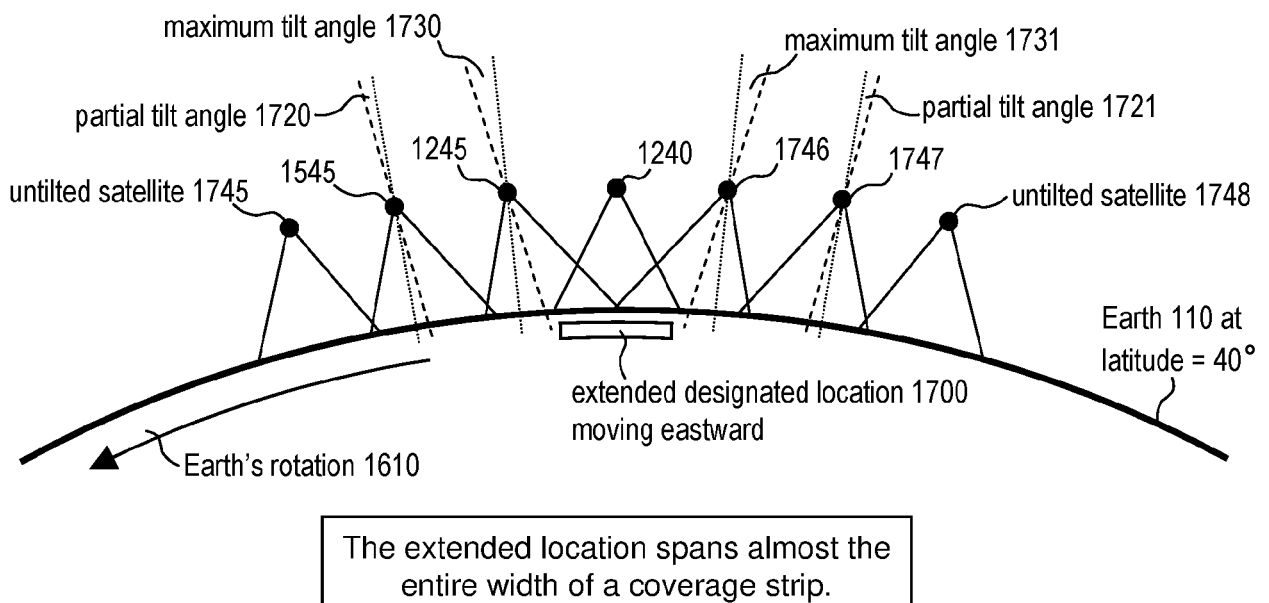


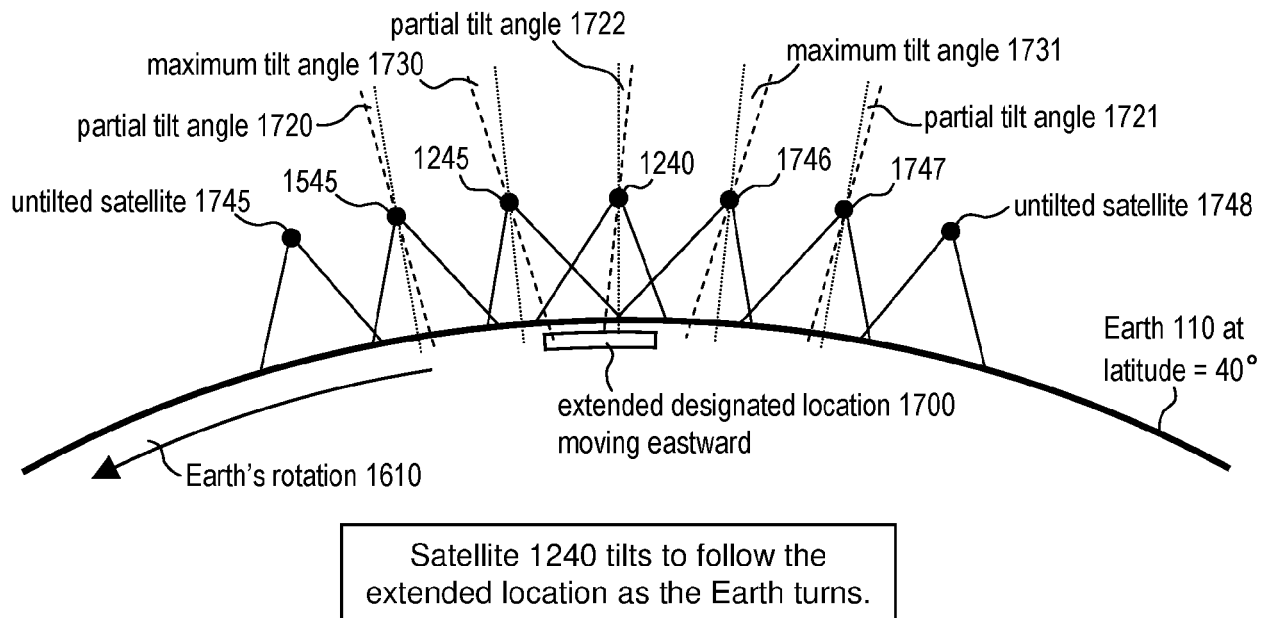
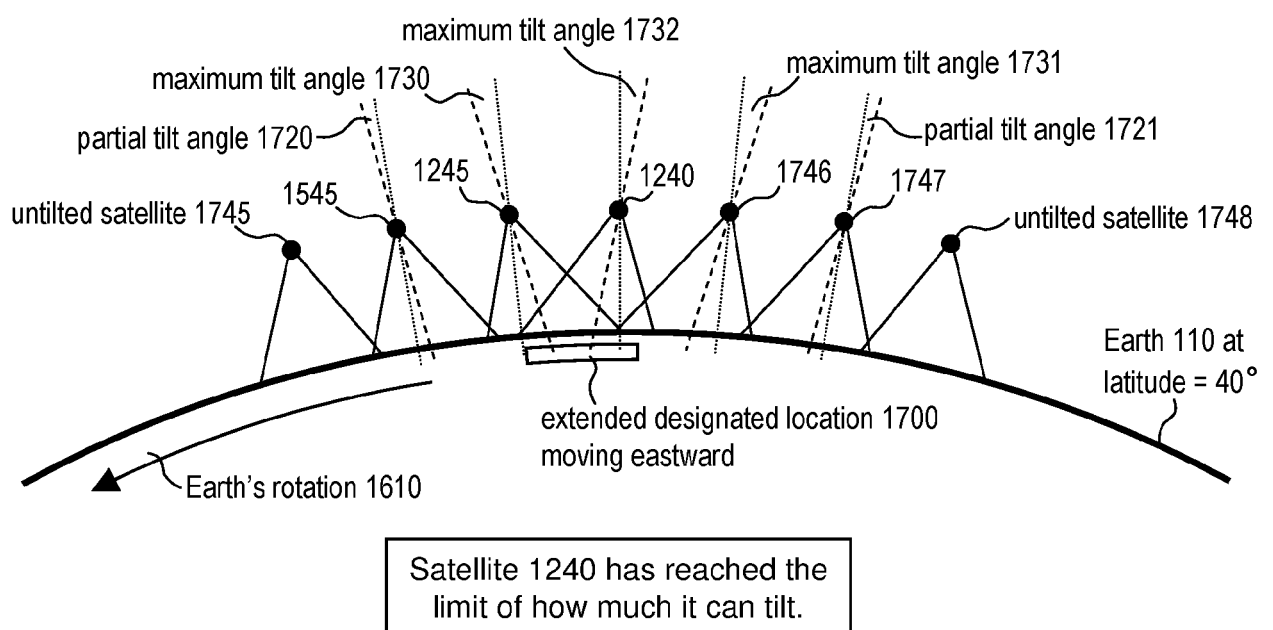
FIG. 16d Continuous double coverage of a designated location – 4th view



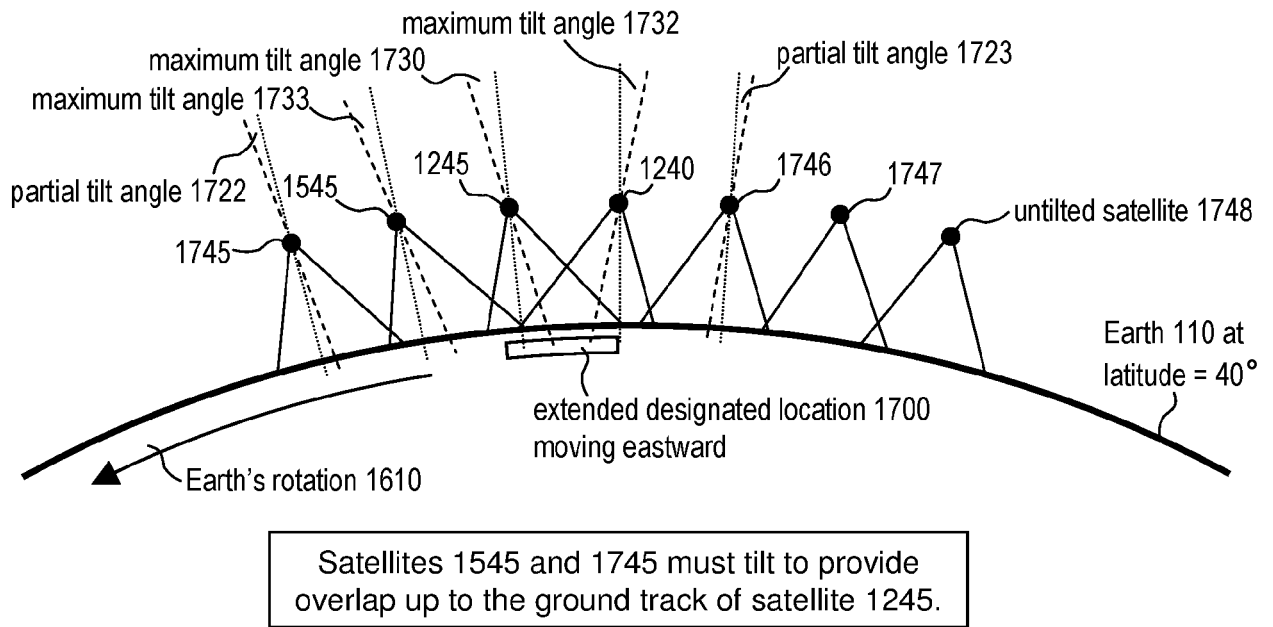
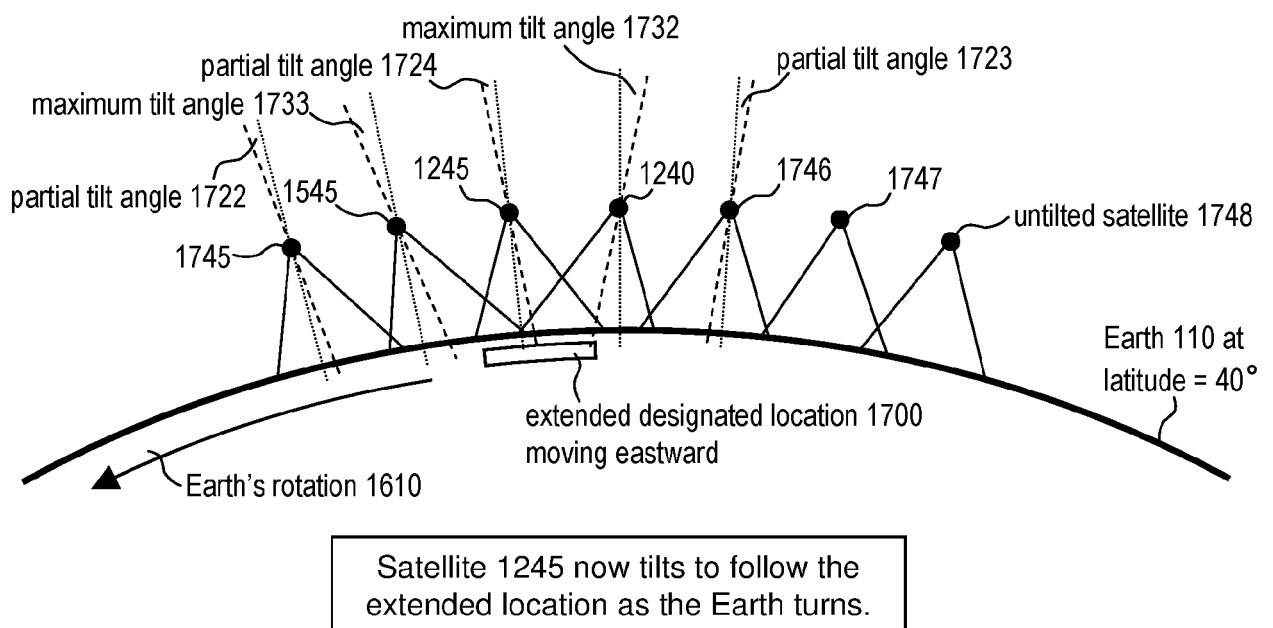
15/19

FIG. 16e Continuous double coverage of a designated location – 5th view*FIG. 17a* Continuous double coverage of a designated extended location – 1st view

16/19

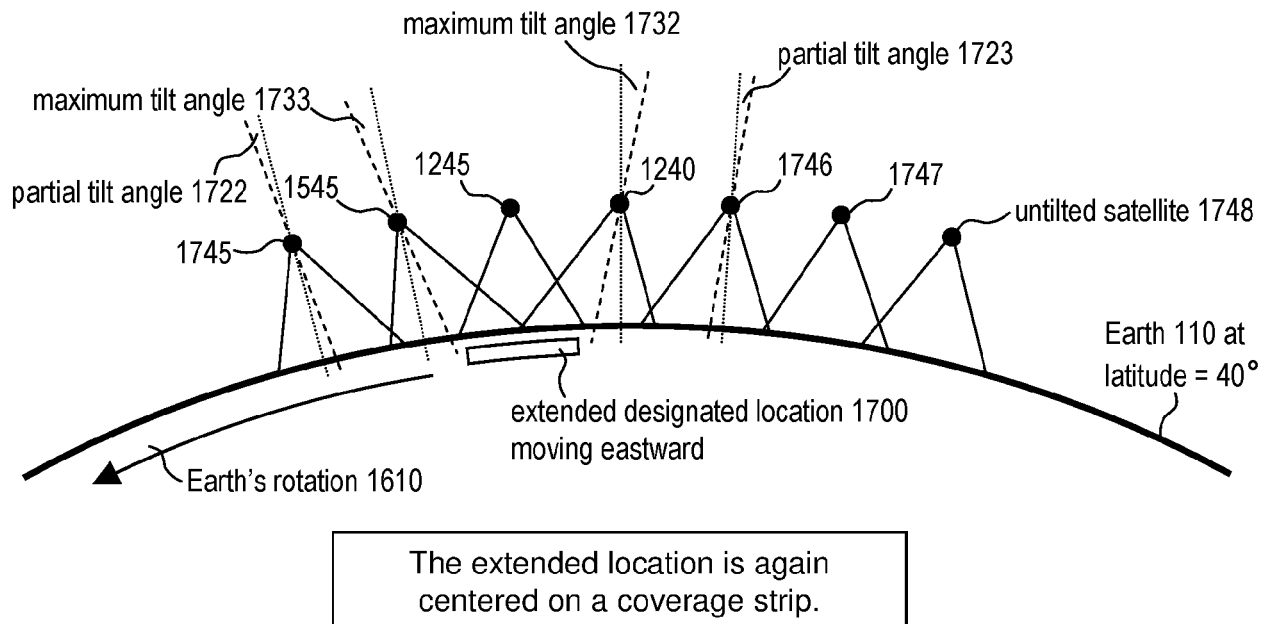
FIG. 17b Continuous double coverage of a designated extended location – 2nd view**FIG. 17c** Continuous double coverage of a designated extended location – 3rd view

17/19

FIG. 17d Continuous double coverage of a designated extended location – 4th view*FIG. 17e* Continuous double coverage of a designated extended location – 5th view

18/19

FIG. 17f Continuous double coverage of a designated extended location – 6th view



19/19

*FIG. 18*Coverage strip altered by satellite rotation maneuver