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(54) Title: DIGITAL CONICAL SCANNING

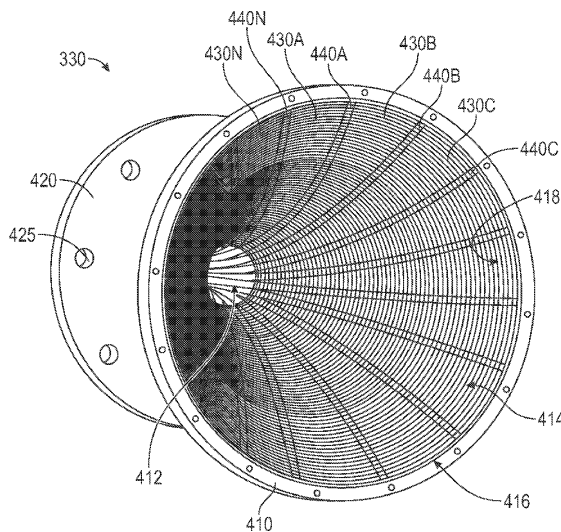


FIG. 4A

(57) **Abstract:** Conical scanning has advantages over other target-tracking techniques in tracking a satellite in low Earth orbit. However, conventional conical scanning requires mechanical movement, which reduces longevity and requires precise manufacturing tolerances. Disclosed embodiments provide non-mechanical conical scanning. In particular, conductive strips of semiconducting material are formed along a radially inner surface of a feed horn from the proximate end to the distal end, with insulating gaps between adjacent conductive strips. A controller, in a plurality of rotational steps, selects a subset of conductive strips, and controls a switch matrix to connect the subset to a first voltage source, while connecting all of the other conductive strips to a second voltage source, to change an electrical property in the subset relative to the other conductive strips. This effects a rotation of the center of the antenna beam around the mechanical center of the antenna.

[Continued on next page]

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