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## (12) United States Patent

Berkowitz et al.

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### (54) METHOD AND APPARATUS FOR ROAMING IN HIERARCHICAL MOBILE COMMUNICATIONS NETWORK

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U.S.C. 154(b) by 0 days.

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(22) Filed: Jun. 8, 1999

(56)

(51) Int. Cl.<sup>7</sup> ...... H04Q 7/20

(52) **U.S. Cl.** ...... **455/445**; 455/433; 379/201.02

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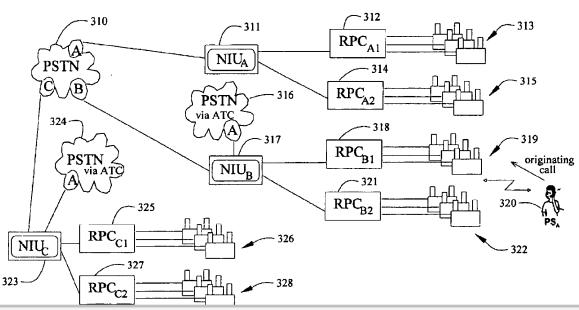
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### (57) ABSTRACT

Communications system comprising a set of interface devices adapted to be coupled to a public switch telephone network (PSTN) and radio transceivers. The interface devices are configured to serve in various geographic regions. The radio transceivers are coupled to the interface devices in the set of interface devices. The radio transceivers are for communication with mobile subscribers. The mobile subscribers each have a home region. The circuitry coupled to the set of interfaces routes a call through a path including an interface device that serves the mobile subscriber's home region, for a call involving the PSTN and a mobile subscriber located outside the mobile subscriber's home region.

### 27 Claims, 9 Drawing Sheets





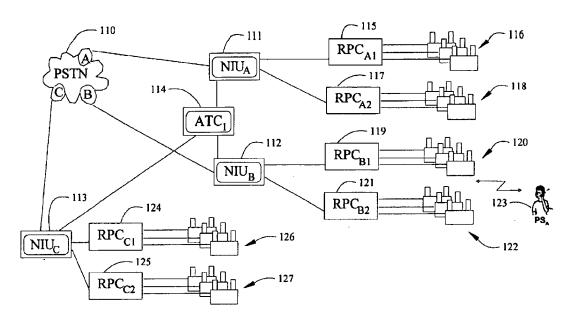


FIG. 1

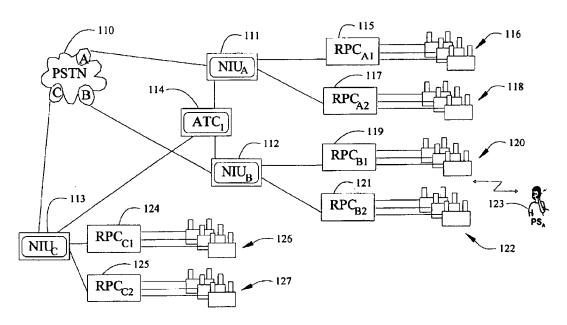


FIG. 2

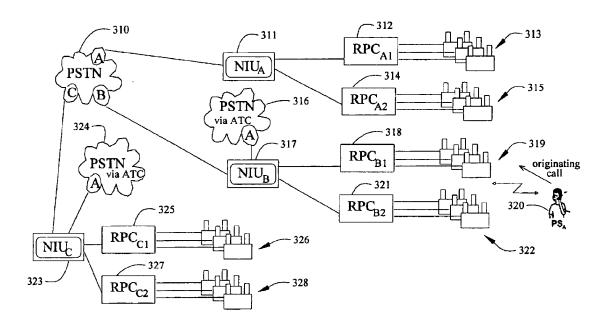


FIG. 3

# location registration

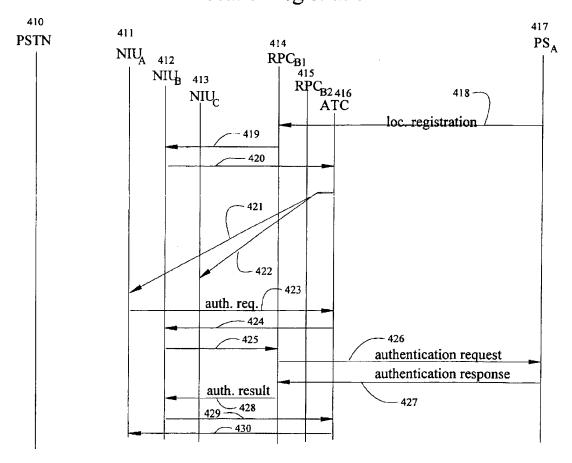


FIG. 4

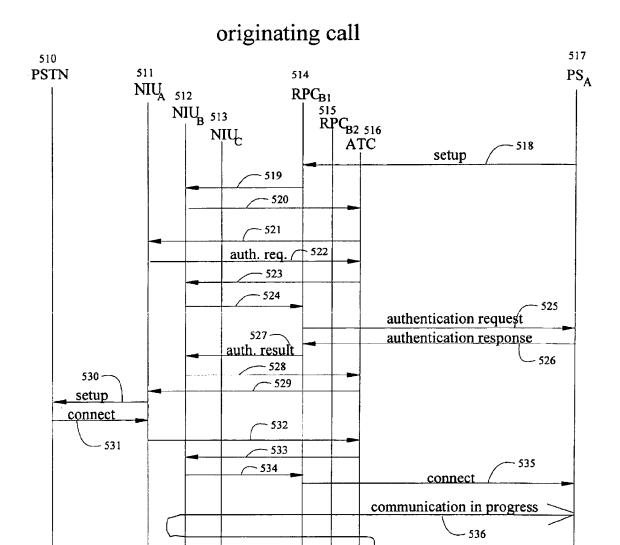


FIG. 5

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