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(54) **WIRELESS PACKET SWITCHED COMMUNICATION SYSTEMS AND NETWORKS USING ADAPTIVELY STEERED ANTENNA ARRAYS**

(52) **U.S. Cl.** 342/378

(57) **ABSTRACT**

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Methods, apparatuses and systems are provided for use in a wireless routing network. One apparatus, for example, includes an adaptive antenna that is configurable to receive a transmission signal from a transmitter and in response transmit corresponding outgoing multi-beam electromagnetic signals exhibiting a plurality of selectively placed transmission peaks and transmission nulls within a far field region of a coverage area. The adaptive antenna may also be configured to selectively receive at least one incoming electromagnetic signal directed through the coverage area. The adaptive antenna includes at least one antenna array and logic. The antenna array has a plurality of antenna elements. The logic is operatively coupled to the antenna array and configured to selectively control the placement of the transmission peaks and transmission nulls within the outgoing multi-beam electromagnetic signals. The logic may also be configured to selectively control the reception of at least one incoming electromagnetic signal. The logic is configured to be responsive to routing information. Such routing information may be dynamically maintained in one or more routing tables.

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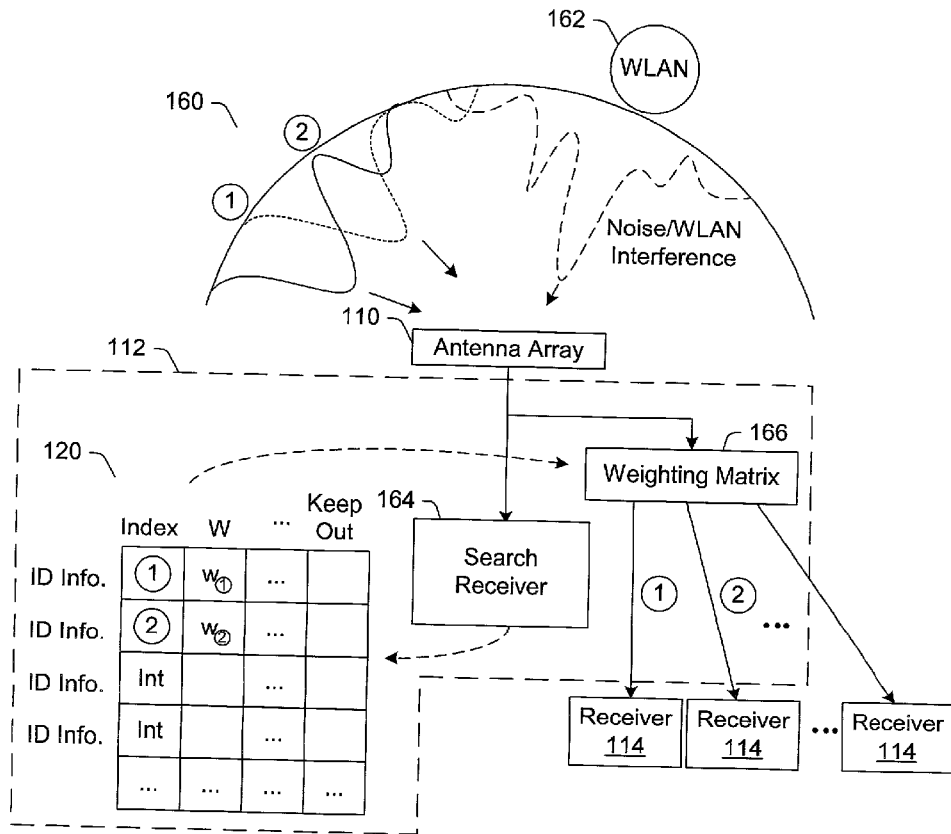
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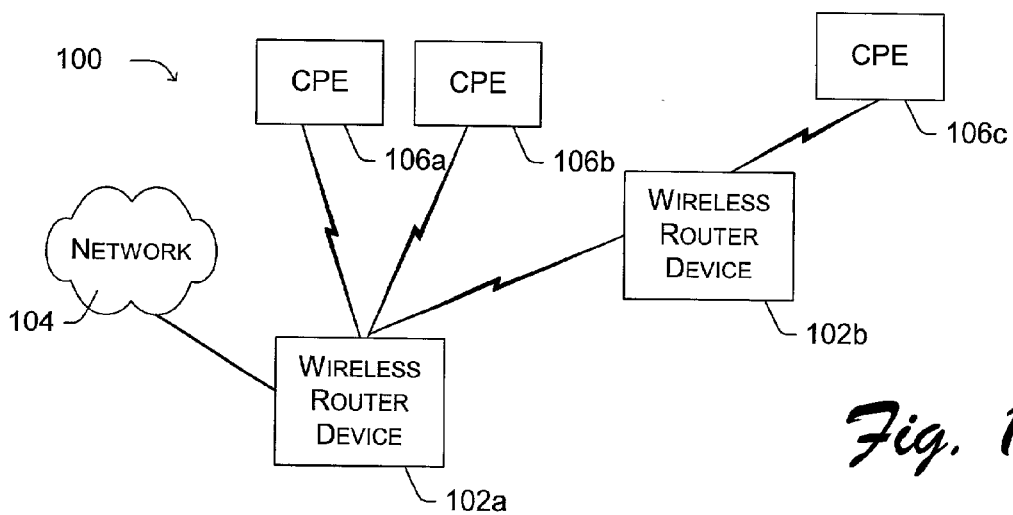


Fig. 1

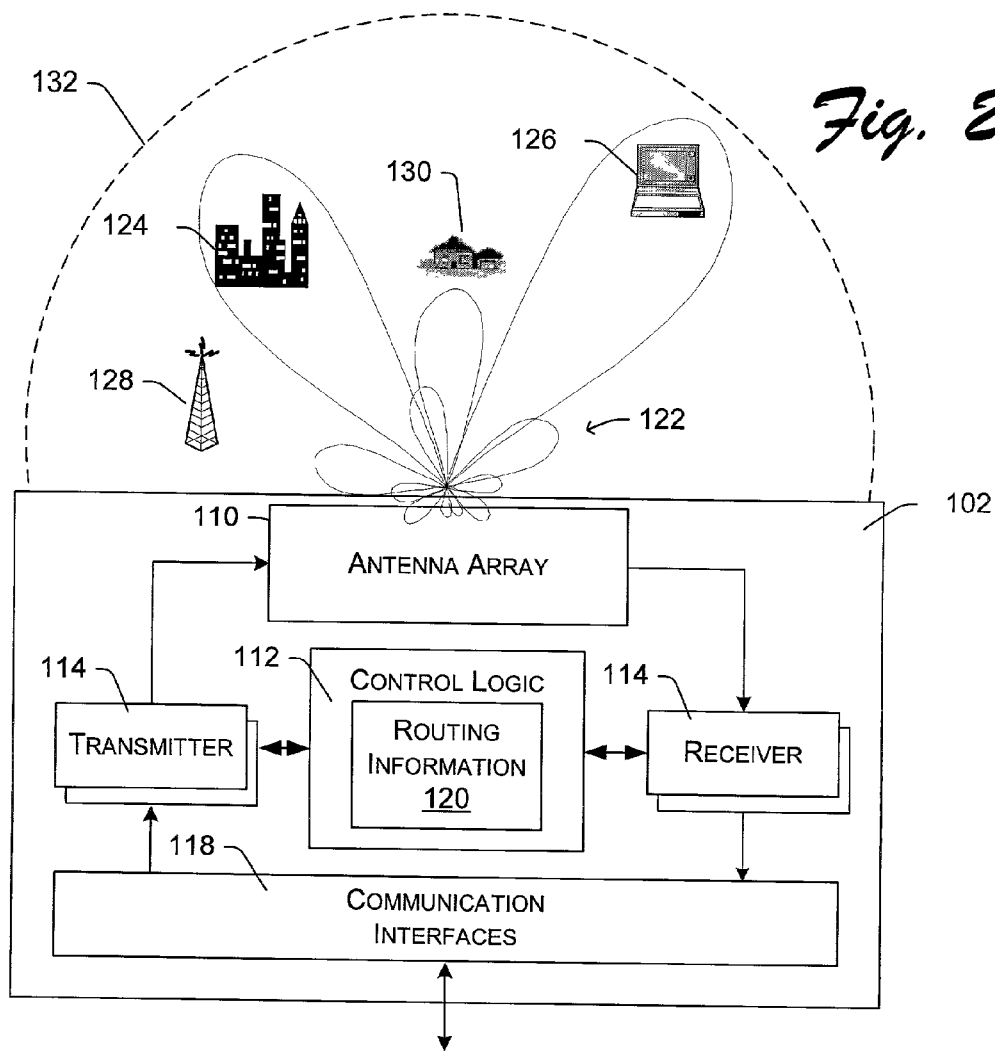


Fig. 2

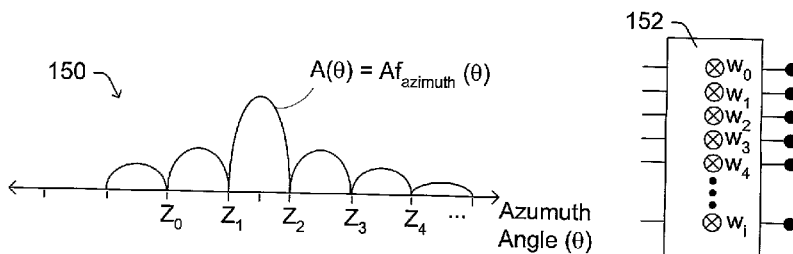


Fig. 3

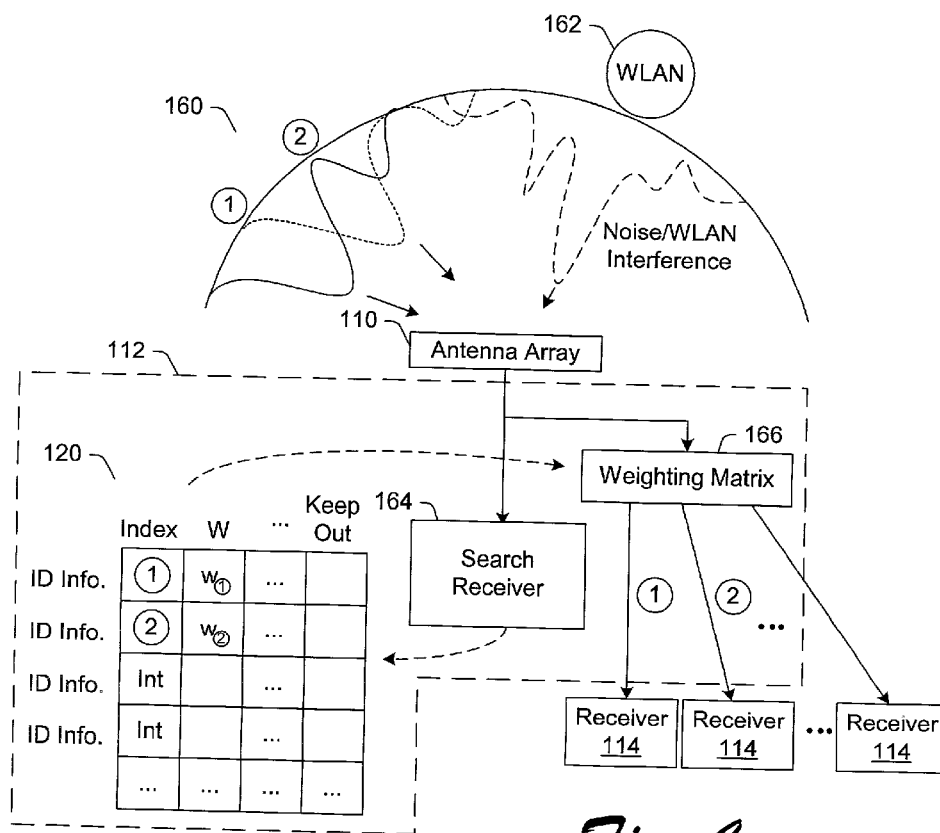


Fig. 4



Fig. 5A

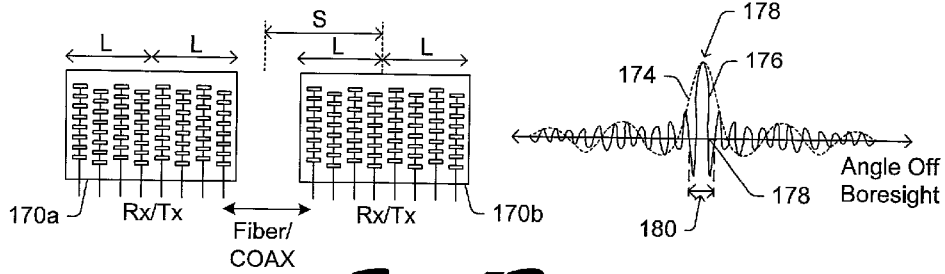


Fig. 5B

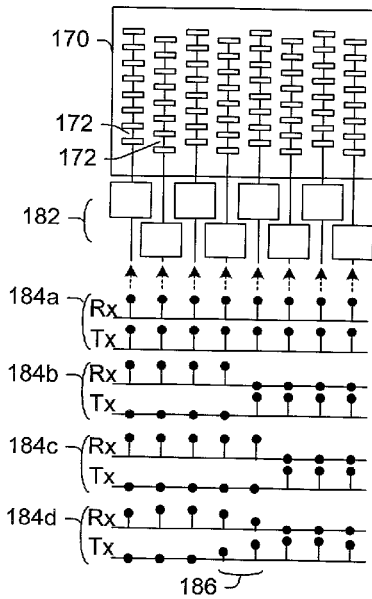


Fig. 5C

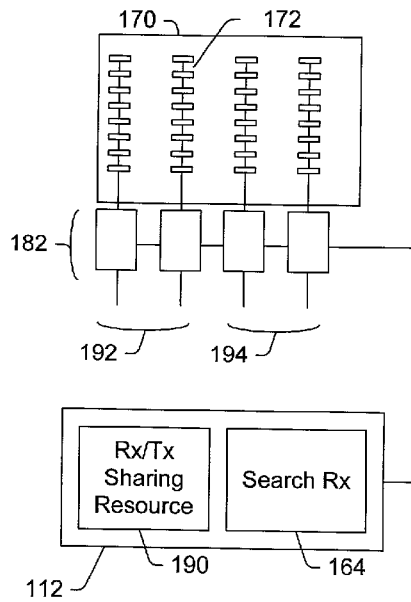
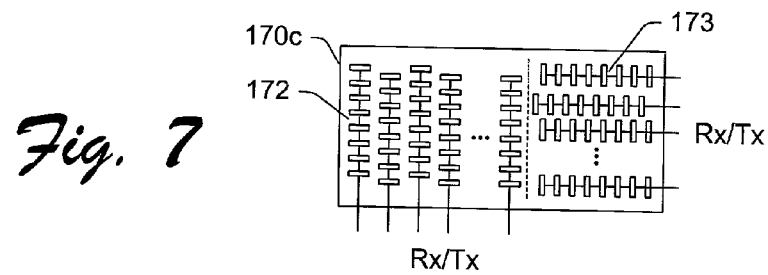
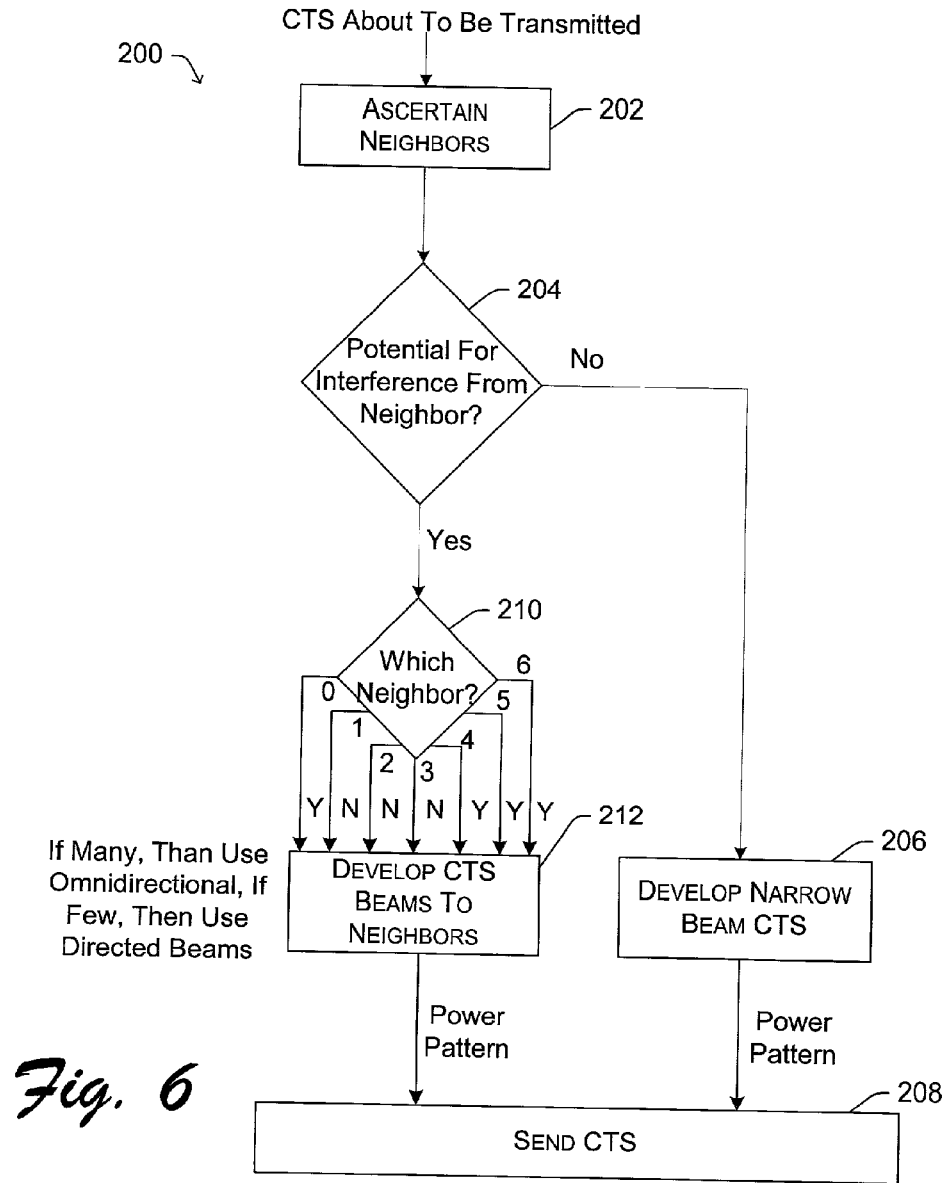


Fig. 5D



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