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**Haartsen**

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(54) **MULTI-MEDIA PROTOCOL FOR SLOT-BASED COMMUNICATION SYSTEMS**

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(75) Inventor: **Jacobus Cornelis Haartsen**, Borne (NL)

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*Primary Examiner*—Ricky Ngo  
*Assistant Examiner*—Soon D. Hyun

(73) Assignee: **Telefonaktiebolaget L M Ericsson (publ)**, Stockholm (SE)

(74) *Attorney, Agent, or Firm*—Potomac Patent Group PLLC

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(57) **ABSTRACT**

A method and apparatus are described establishing multi-media communications on a shared communications channel. A first and a second communication unit, such as a master and slave unit, establish a synchronous communications link. Additional synchronous communications links may be established. A first data packet associated with the synchronous communication link is communicated to the second communication unit by including an address. Time slots reserved for the synchronous channel by the first unit are separated by a fixed time interval. One or more additional communications units may communicate over an asynchronous link established between the master and additional units using remaining time slots. Data packets may be communicated to additional units by including addresses associated with each additional units. The synchronous link may be interrupted with the asynchronous link by communicating an asynchronous data packet on a time slot reserved for the synchronous communications link. The asynchronous link may be a Time-Division duplex link for alternately transmitting and receiving on different ones of the remaining time slots. Asynchronous data packets communicated to additional units on remaining time slots. The master unit may poll each additional units for a response packet to the asynchronous data packet. On a Time-Division duplex link, additional units alternately receive the poll from the first communication unit and transmit the response packet on different ones of the remaining time slots.

(21) Appl. No.: **09/348,495**

(22) Filed: **Jul. 7, 1999**

**Related U.S. Application Data**

(60) Provisional application No. 60/109,692, filed on Nov. 24, 1998.

(51) **Int. Cl.**<sup>7</sup> ..... **H04B 7/212**; H04J 3/00; H04L 12/66

(52) **U.S. Cl.** ..... **370/337**; 370/347; 370/349; 370/352; 370/442; 370/493

(58) **Field of Search** ..... 370/471, 352, 370/356, 355, 337, 347, 468, 346, 348, 349, 370/336, 442, 493

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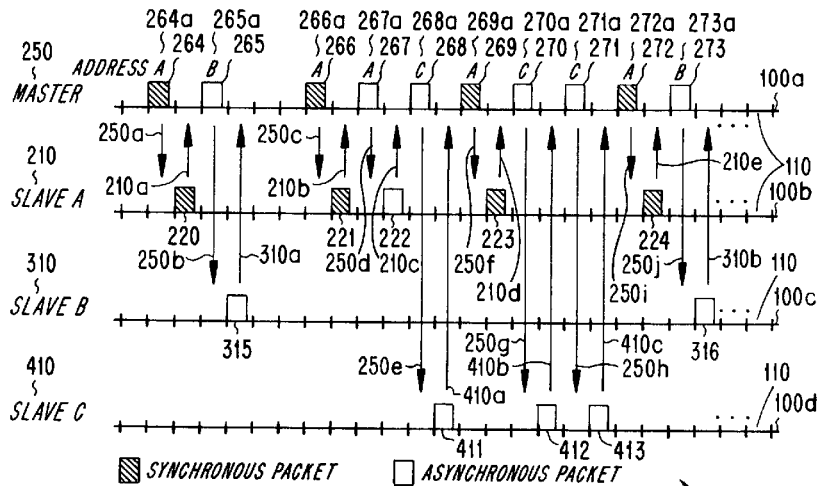
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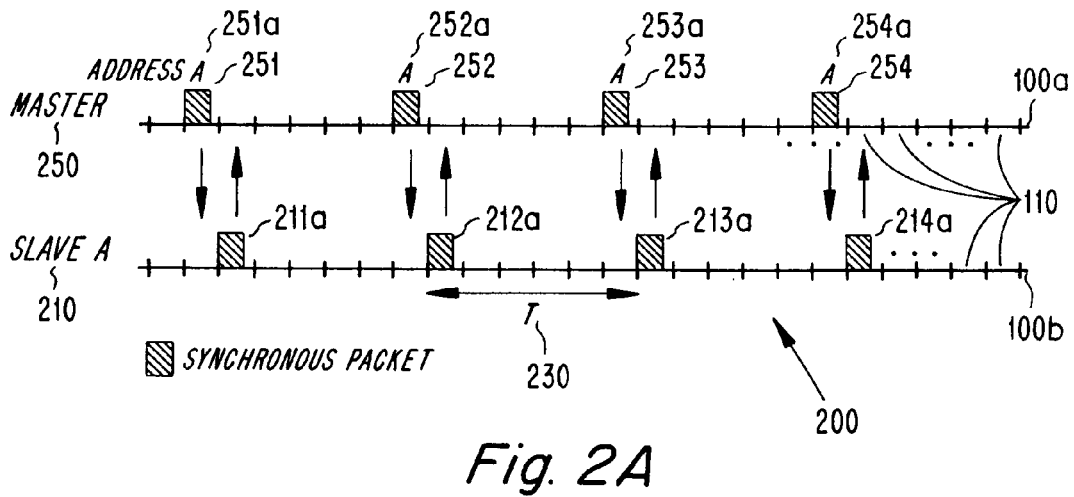
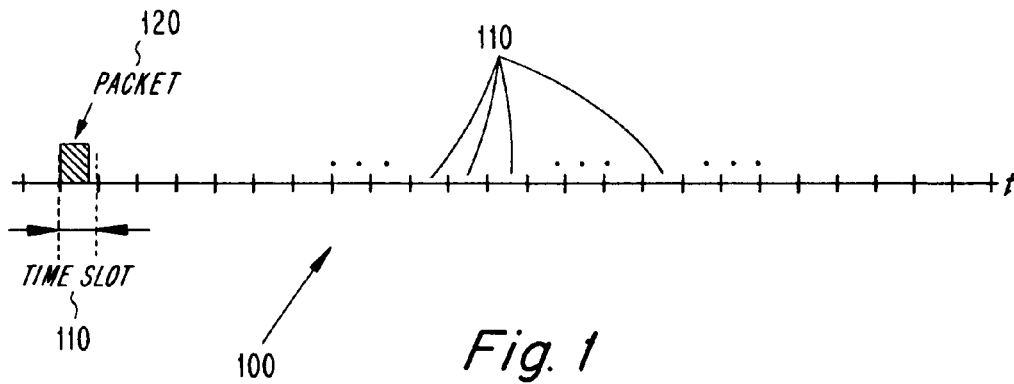
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**26 Claims, 4 Drawing Sheets**





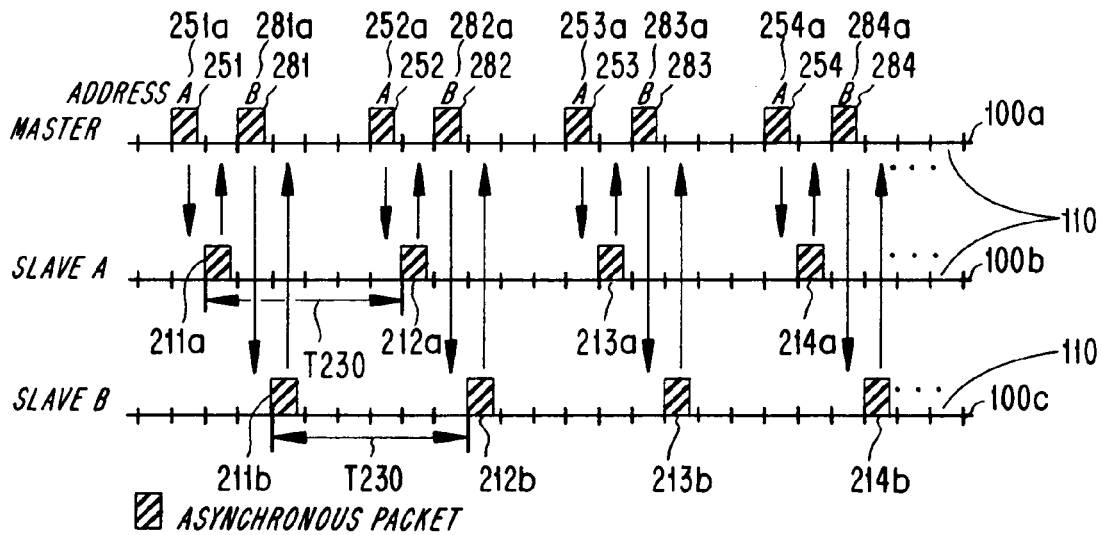
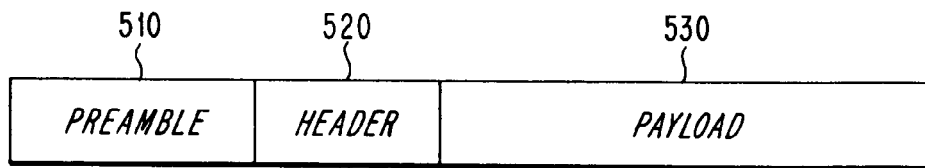


Fig. 2B



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Fig. 2C

Fig. 3

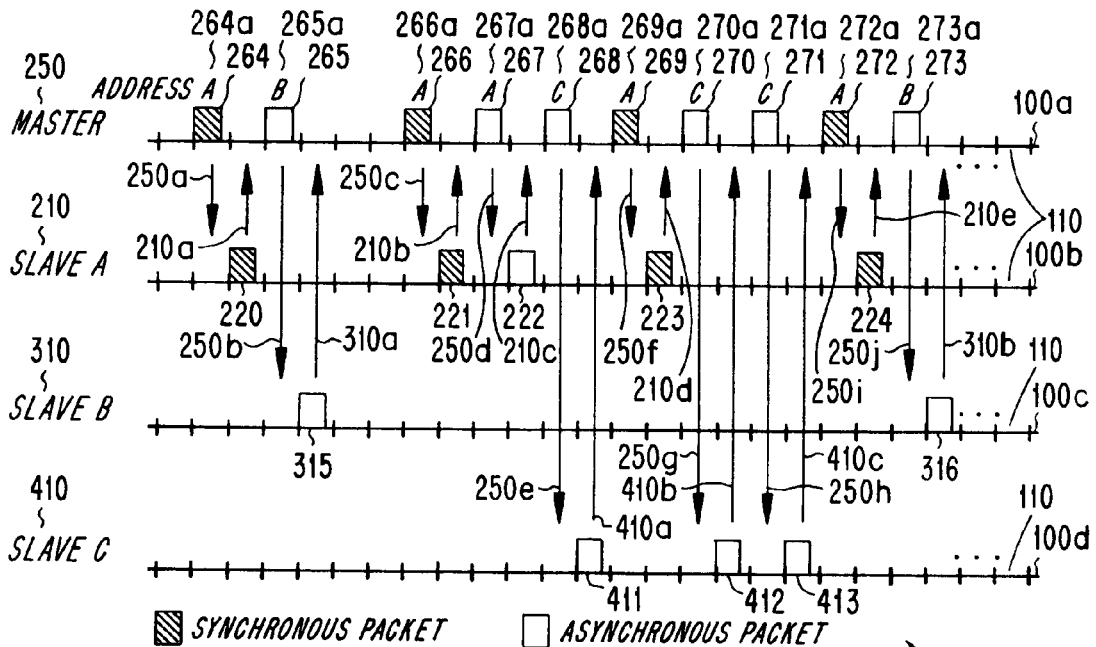
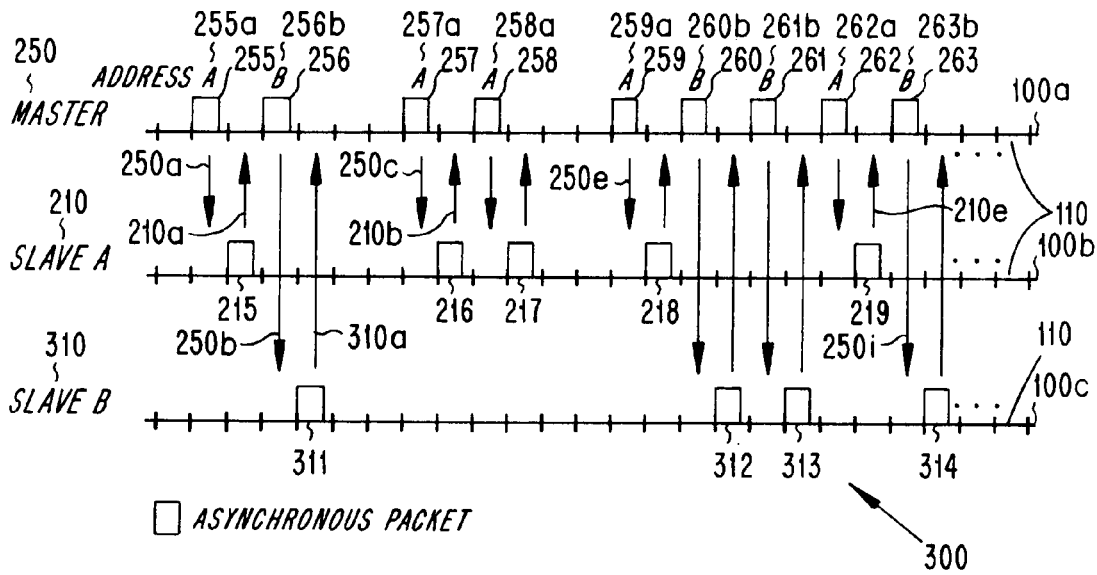


Fig. 4A

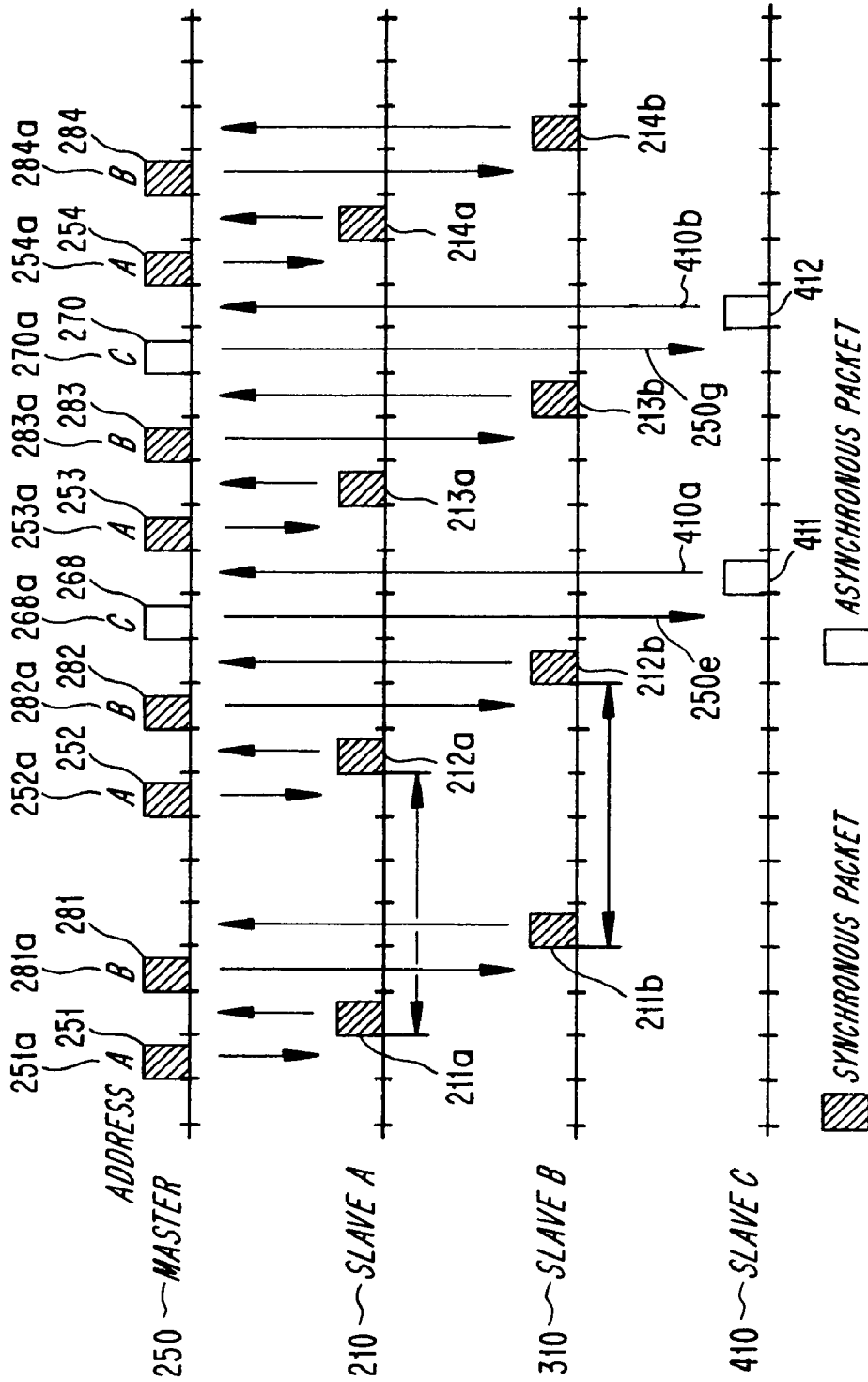


Fig. 4B

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