



US006075814A

United States Patent [19]

[11] Patent Number: **6,075,814**

Yamano et al.

[45] Date of Patent: **Jun. 13, 2000**

- [54] **METHOD AND APPARATUS FOR REDUCING SIGNAL PROCESSING REQUIREMENTS FOR TRANSMITTING PACKET-BASED DATA WITH A MODEM**
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- [21] Appl. No.: **08/853,683**
- [22] Filed: **May 9, 1997**
- [51] Int. Cl.⁷ **H04B 1/38**
- [52] U.S. Cl. **375/222; 455/574**
- [58] Field of Search **375/222, 223; 370/311, 318; 455/557, 574, 343**

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[57] ABSTRACT

A modem and method for operating same. A receiver circuit of the modem is coupled to receive a continuous analog signal from a communication channel. This analog signal includes both packet and idle information. The receiver circuit monitors the analog signal to detect the presence of idle information. Upon detecting idle information, the receiver circuit enters a standby mode in which the processing requirements of the receiver circuit are reduced. A burst mode protocol is also provided, in which packets of digital information are modulated by a transmitter circuit of the modem, thereby converting the packets of digital information into analog signal bursts of discrete duration. These analog signal bursts are transmitted from the transmitter circuit to a telephone line. However, the transmitter circuit does not generate any signals between the analog signal bursts. A receiver circuit monitors the telephone line to detect the analog signal bursts. Upon detecting the presence of the analog signal bursts on the telephone line, the receiver circuit demodulates the analog signal bursts using full processing capabilities of the receiver circuit. However, upon detecting the absence of the analog signal bursts on the telephone line, the demodulating function of the receiver circuit is disabled. The burst mode protocol enables multi-drop and multi-cast operation, as well as reducing required DSP resources.

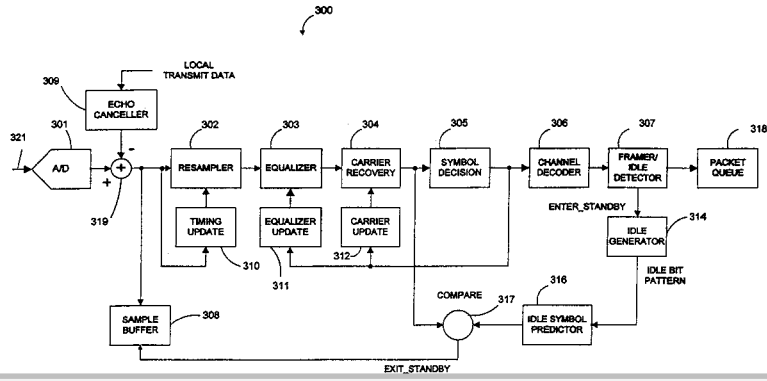
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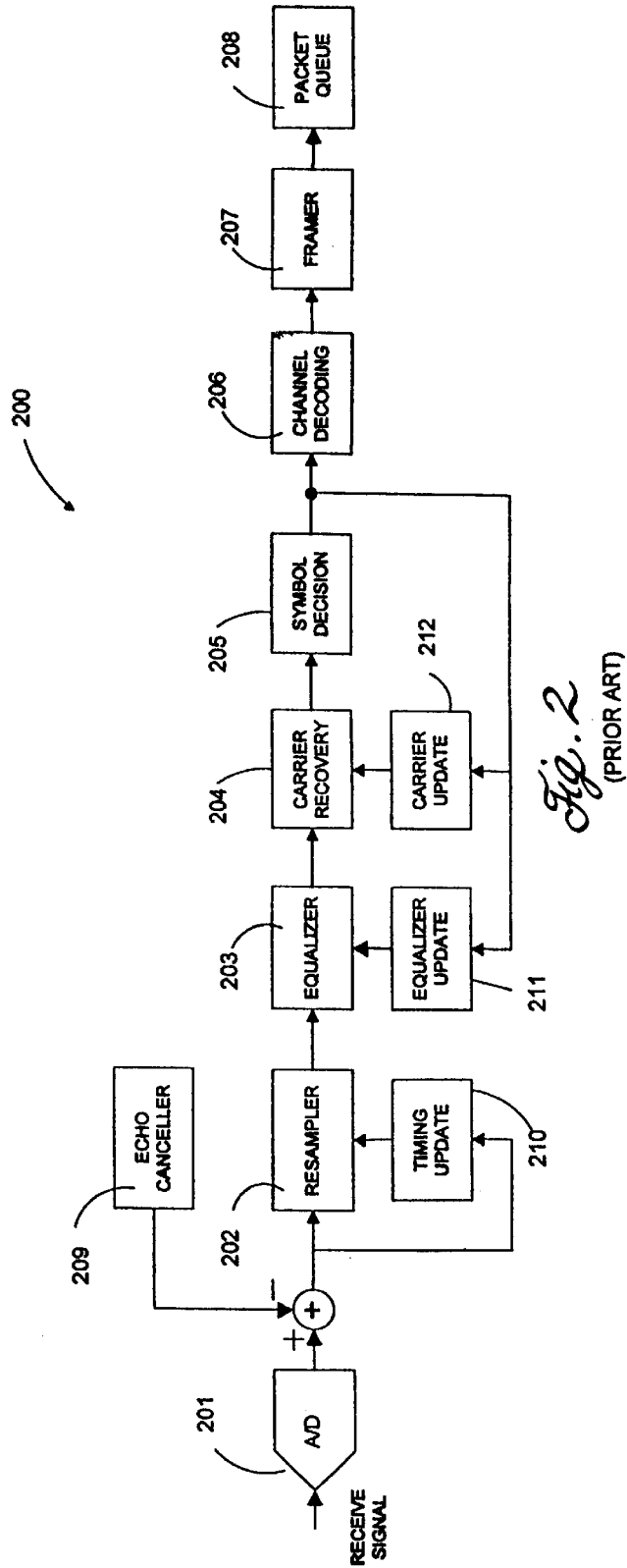
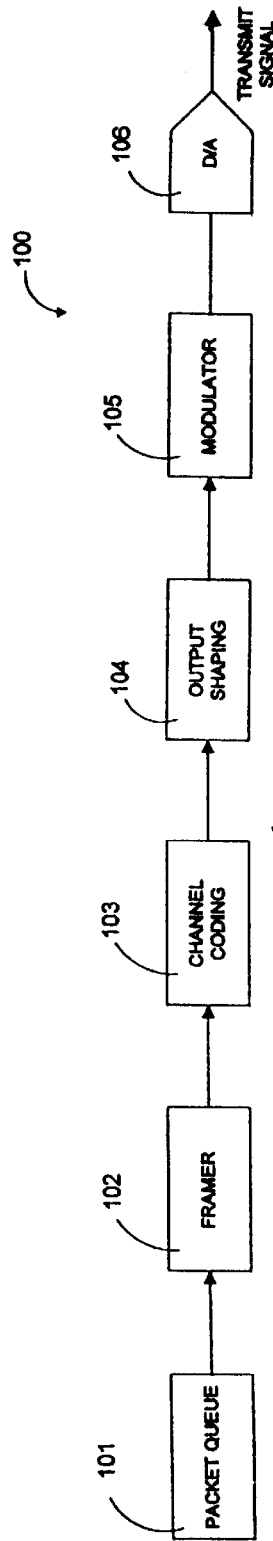
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12 Claims, 9 Drawing Sheets



Apple Exhibit 1104





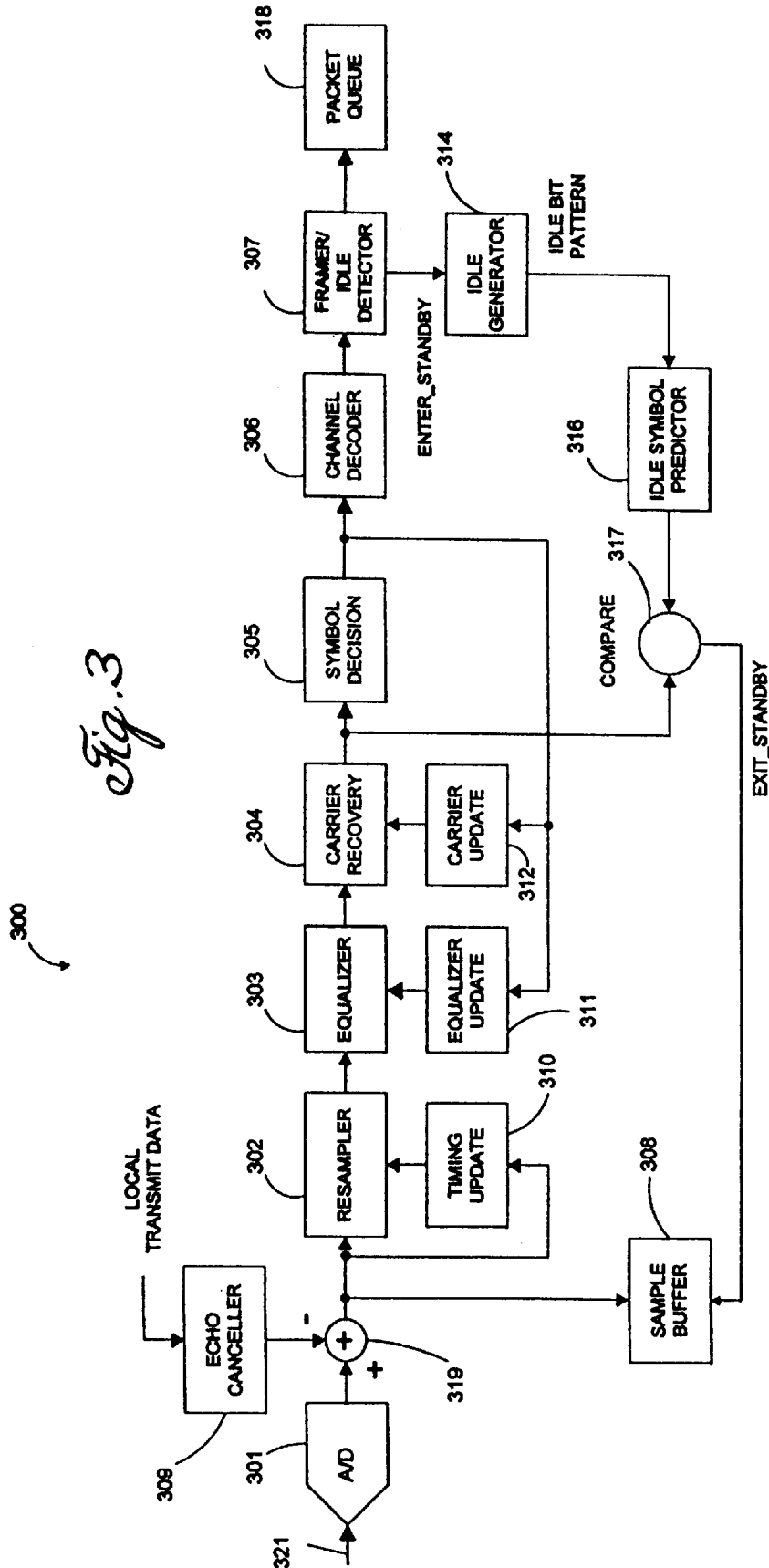
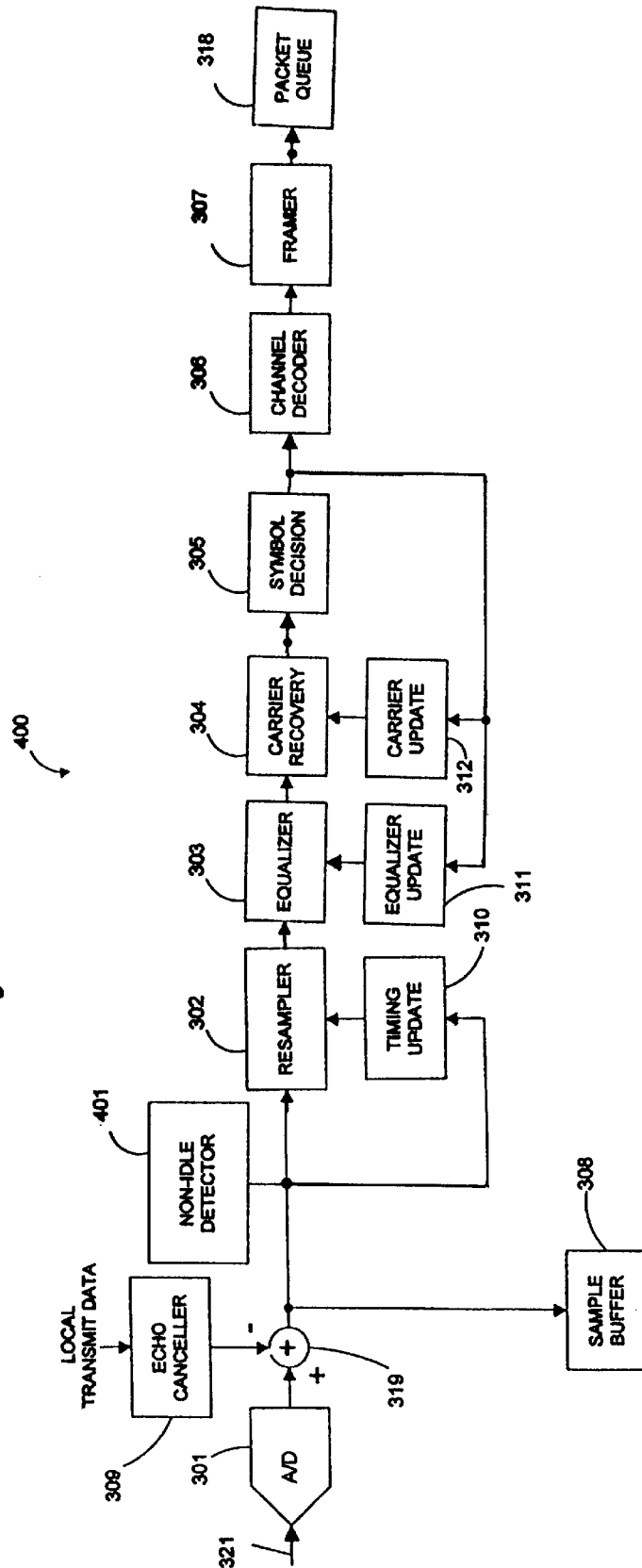


Fig. 4



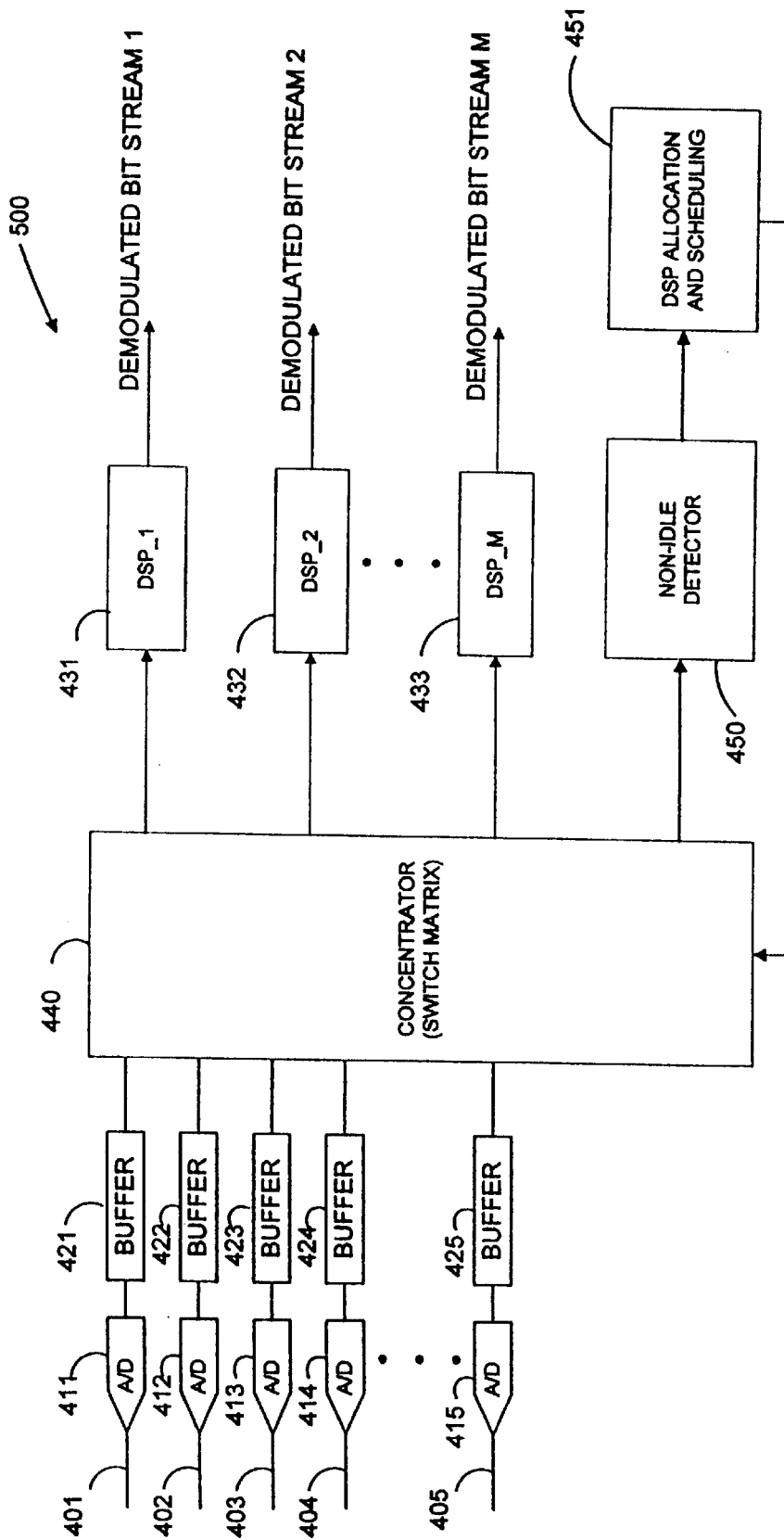


Fig. 5

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