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Wilford et al.

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(54) **ARCHITECTURE FOR HIGH SPEED CLASS OF SERVICE ENABLED LINECARD**

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(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(22) Filed: **Oct. 27, 1999**

(51) **Int. Cl.**⁷ **H04L 12/28**

(52) **U.S. Cl.** **370/392; 370/412**

(58) **Field of Search** 370/392, 389, 370/393, 475, 397, 400, 471, 399, 349, 401, 402, 413, 412; 709/238, 265

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Primary Examiner—Chi Pham

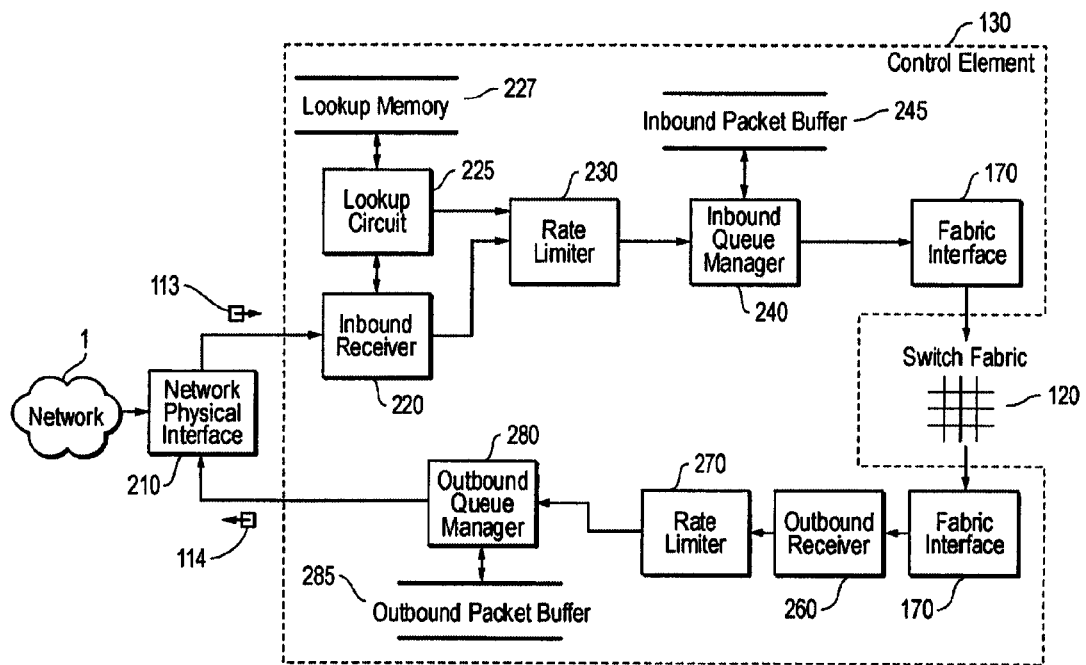
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(57) **ABSTRACT**

A linecard architecture for high speed routing of data in a communications device. This architecture provides low latency routing based on packet priority: packet routing and processing occurs at line rate (wire speed) for most operations. A packet data stream is input to the inbound receiver, which uses a small packet FIFO to rapidly accumulate packet bytes. Once the header portion of the packet is received, the header alone is used to perform a high speed routing lookup and packet header modification. The queue manager then uses the class of service information in the packet header to enqueue the packet according to the required priority. Enqueued packets are buffered in a large memory space holding multiple packets prior to transmission across the device's switch fabric to the outbound linecard. On arrival at the outbound linecard, the packet is enqueued in the outbound transmitter portion of the linecard architecture. Another large, multi-packet memory structure, as employed in the inbound queue manager, provides buffering prior to transmission onto the network.

41 Claims, 31 Drawing Sheets



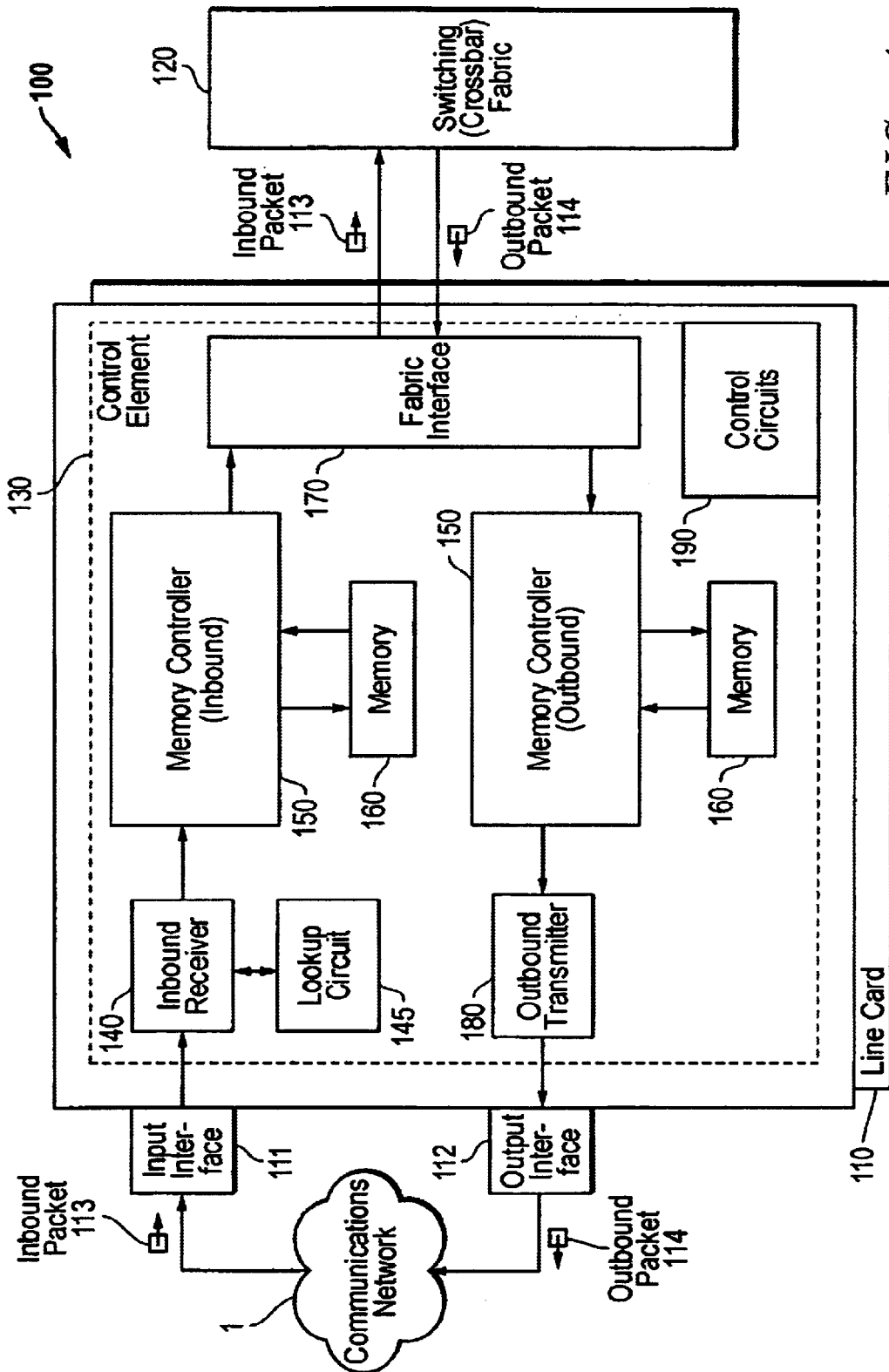


FIG. 1

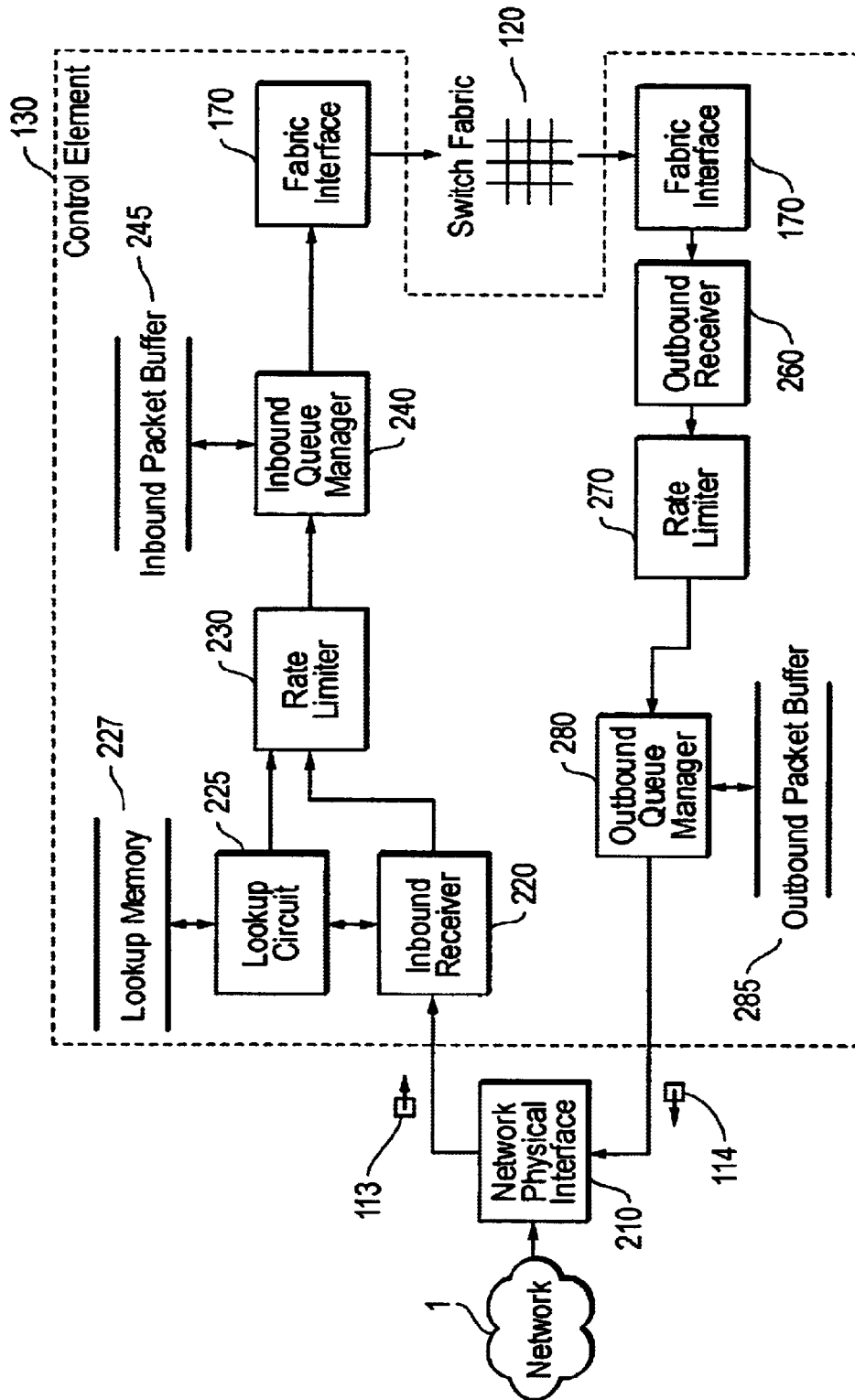


FIG. 2

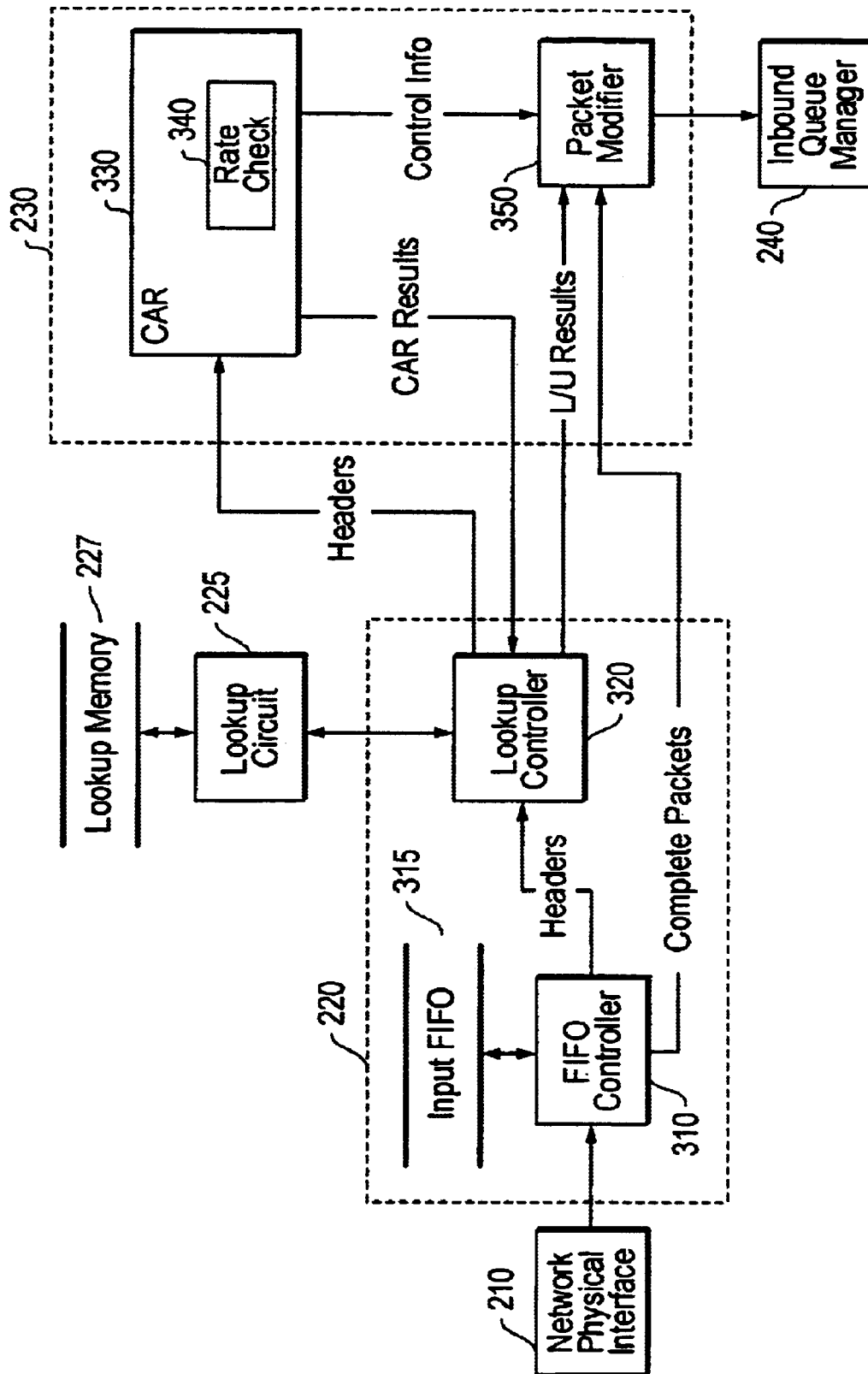


FIG. 3

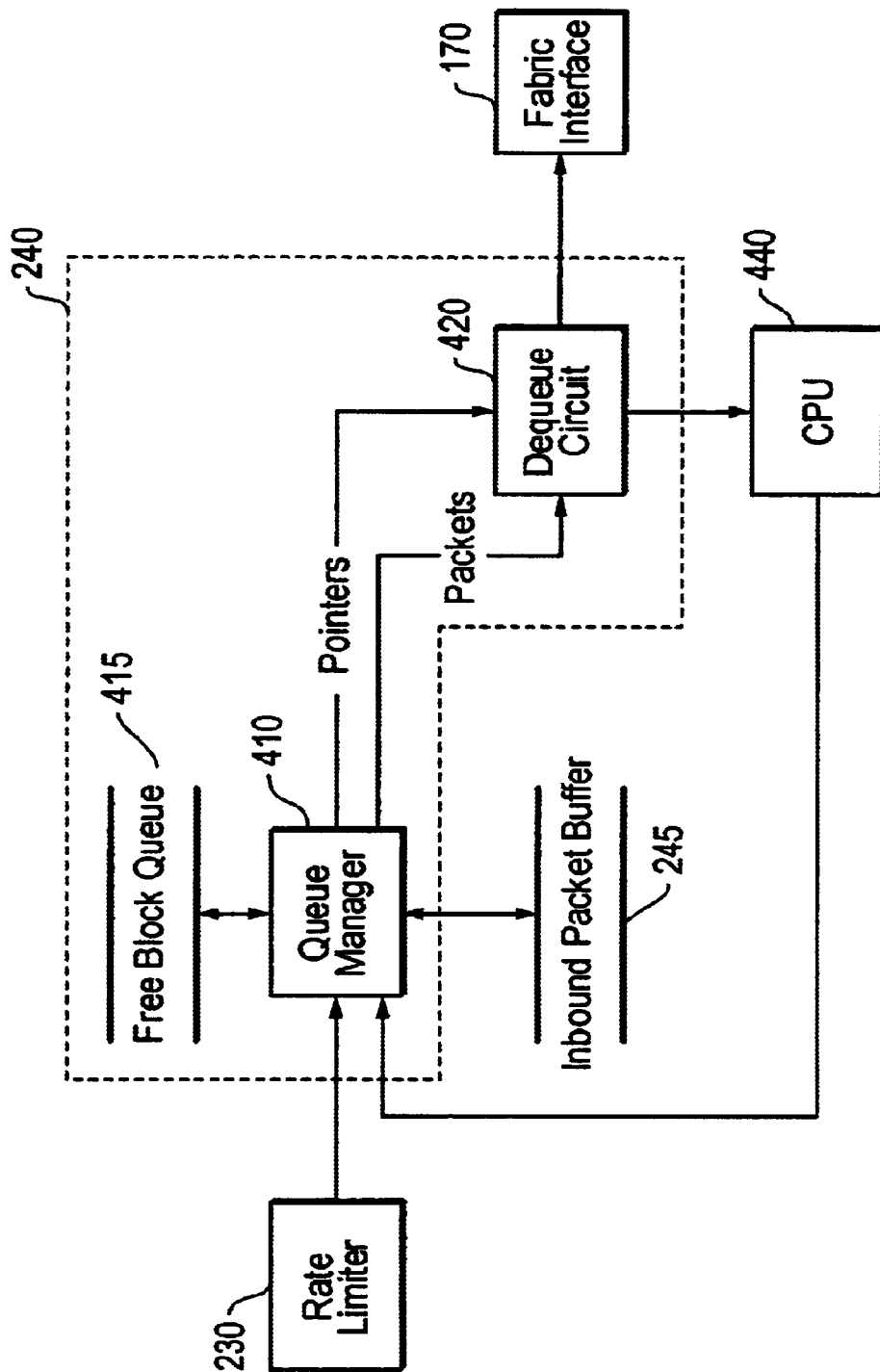


FIG. 4

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