



US005864540A

United States Patent [19]**Bonomi et al.**[11] **Patent Number:** **5,864,540**[45] **Date of Patent:** **Jan. 26, 1999**[54] **METHOD FOR INTEGRATED TRAFFIC SHAPING IN A PACKET-SWITCHED NETWORK**[75] Inventors: **Flavio Giovanni Bonomi**, Palo Alto, Calif.; **Albert Gordon Greenberg**, Millburn; **Jennifer Lynn Rexford**, Summit, both of N.J.[73] Assignee: **AT&T Corp/CSI Zeinet(A Cabletron Co.)**, Middletown, N.J.[21] Appl. No.: **825,990**[22] Filed: **Apr. 4, 1997**[51] **Int. Cl.⁶** **H04J 3/14**[52] **U.S. Cl.** **370/235; 370/413**[58] **Field of Search** 370/229, 230, 370/231, 232, 233, 234, 235, 236, 412, 413, 414, 415, 416, 417, 418, 389, 392, 395, 428, 429, 465, 468[56] **References Cited****U.S. PATENT DOCUMENTS**

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[57] **ABSTRACT**

A scalable integrated traffic shaper for a use in a packet-switched network that regulates multiple connections and prevents lost data by integrating link scheduling and traffic shaping to fairly arbitrate between incoming connections.

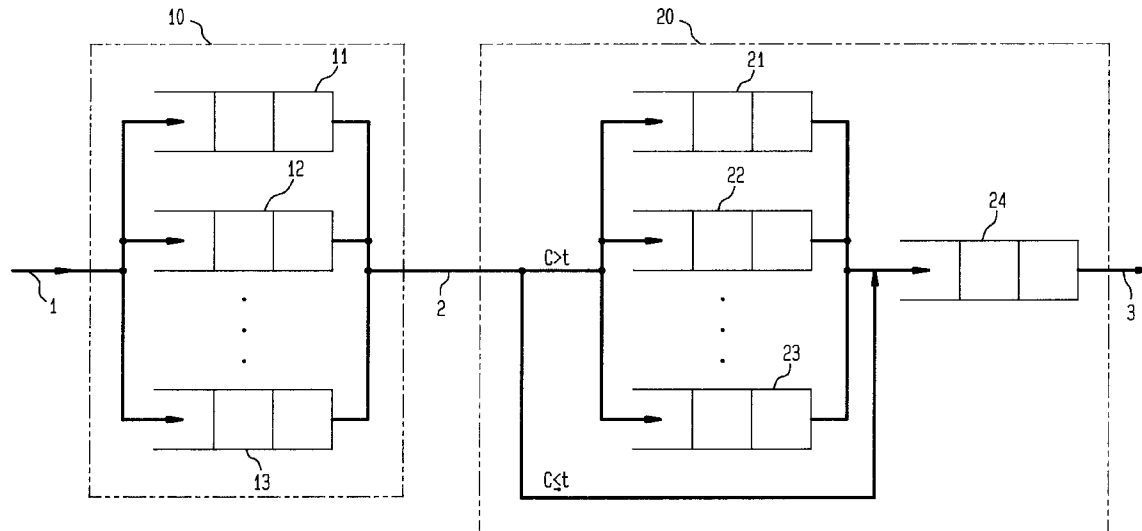
18 Claims, 5 Drawing Sheets

FIG. 1

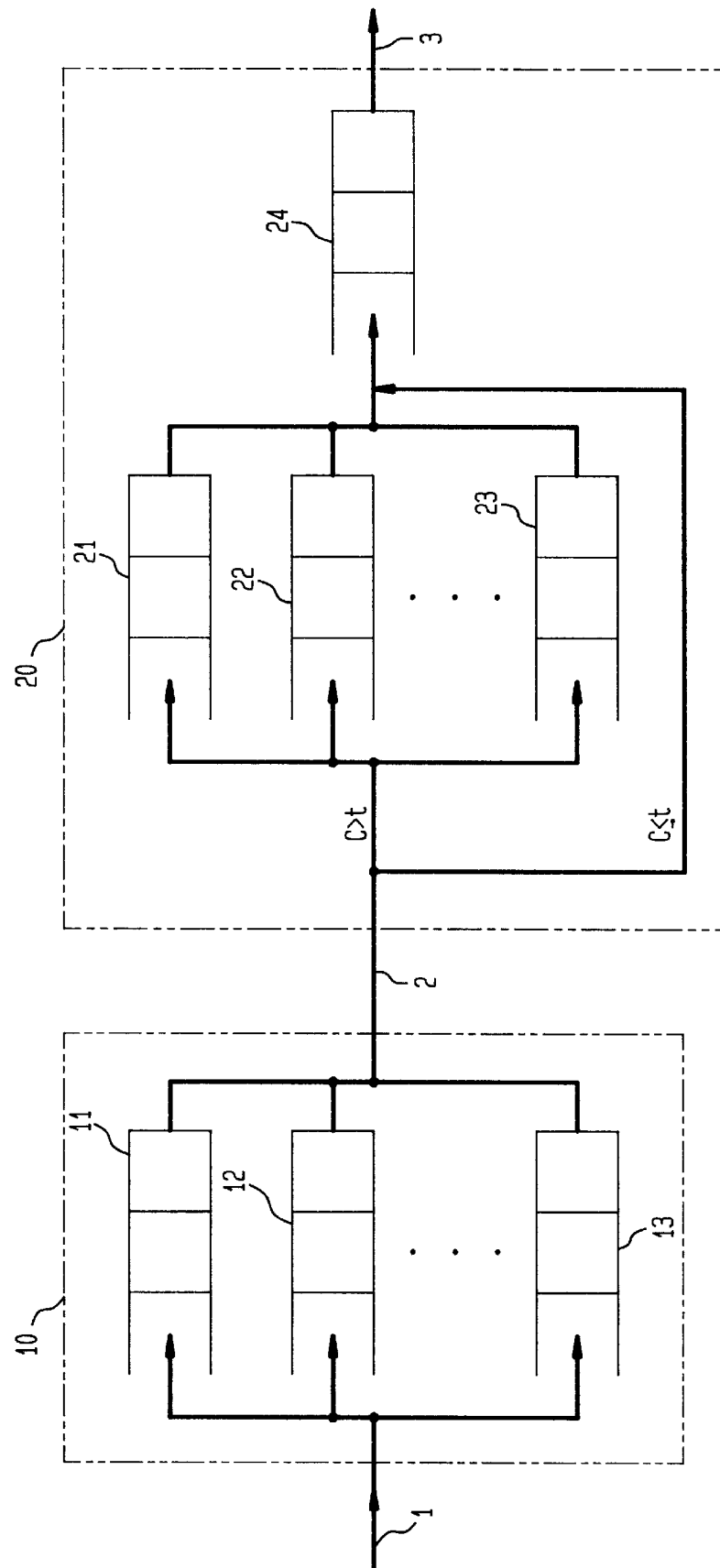


FIG. 2

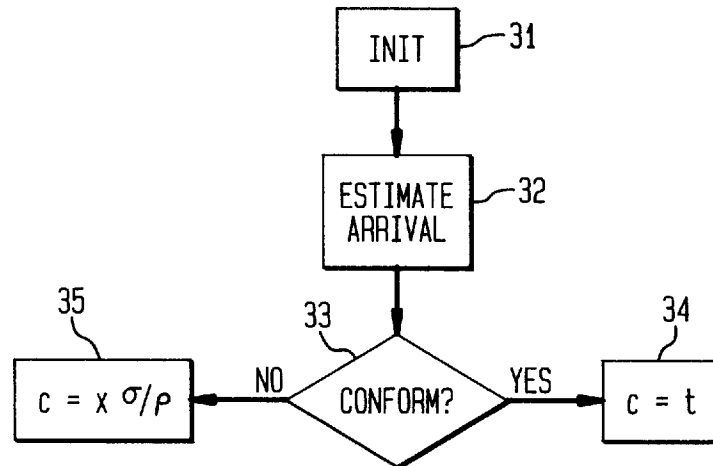


FIG. 3

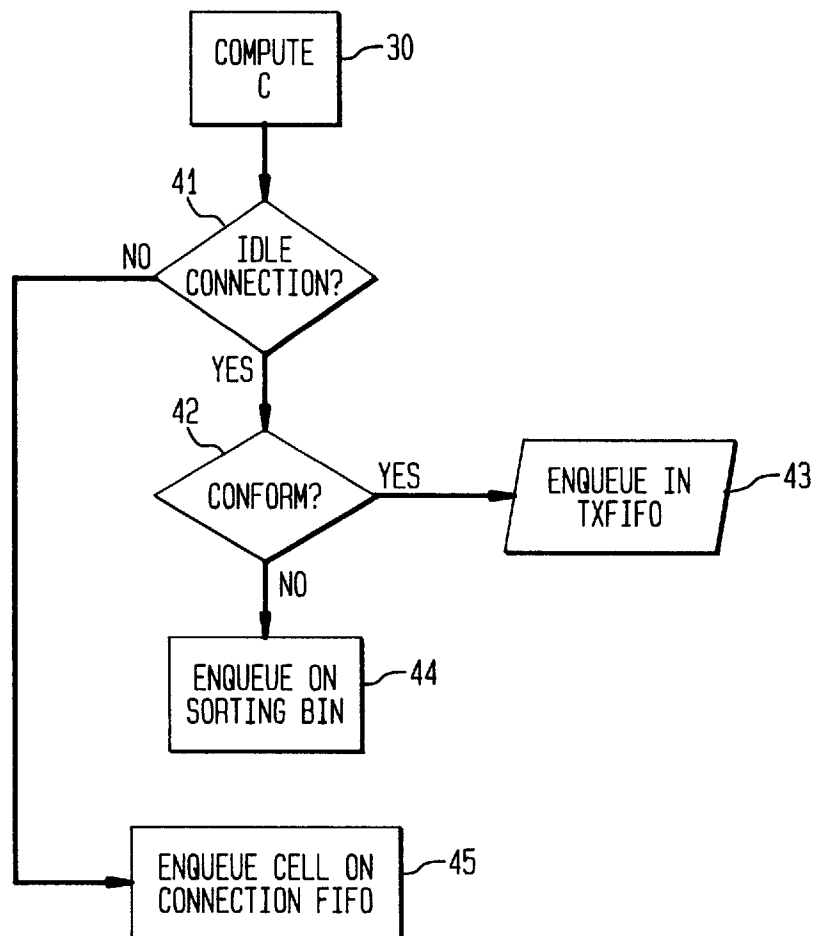
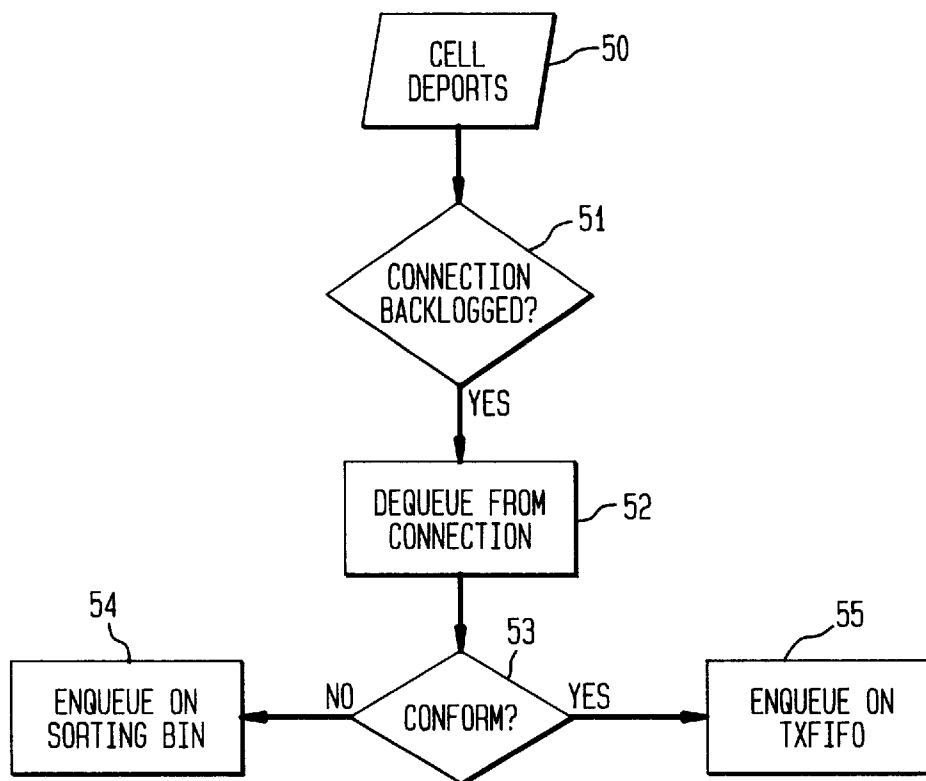
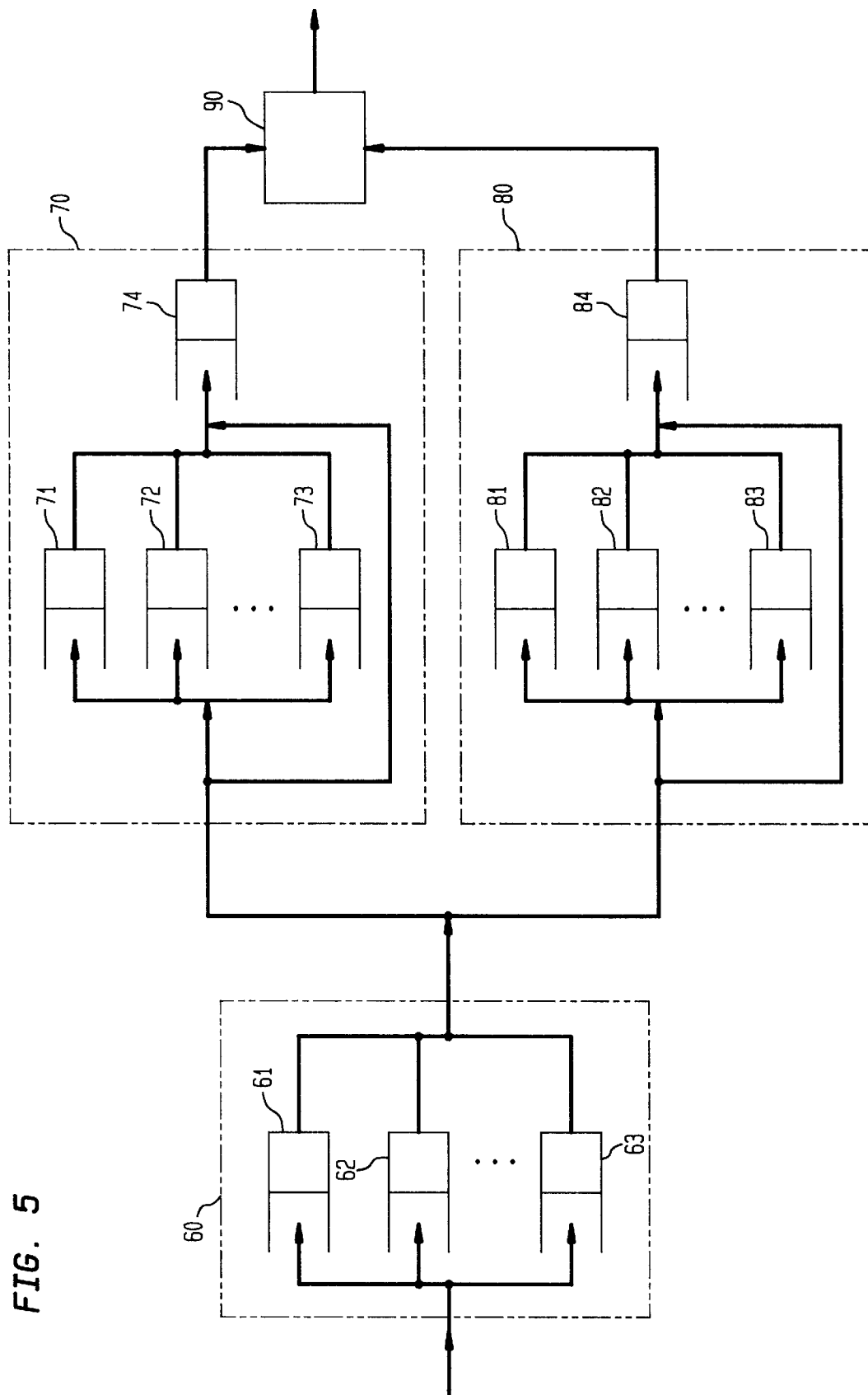


FIG. 4





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