



United States Patent [19]

Wang et al.

[11] Patent Number: **5,867,230**

[45] Date of Patent: **Feb. 2, 1999**

[54] SYSTEM, DEVICE, AND METHOD FOR STREAMING A MULTIMEDIA FILE ENCODED AT A VARIABLE BITRATE

5,612,742	3/1997	Krause	348/385
5,659,539	8/1997	Porter	348/13
5,768,539	6/1998	Metz	348/385
5,790,543	8/1998	Cloutier	348/423

[75] Inventors: **Feng Chi Wang**, Newton; **Thomas Goetz**, Attleboro; **Krystyna Wieckiewicz**, Plainville, all of Mass.

Primary Examiner—Howard Britton
Attorney, Agent, or Firm—Peter Dichiaro

[73] Assignee: **Motorola Inc.**, Schaumburg, Ill.

[57] **ABSTRACT**

[21] Appl. No.: **885,271**

[22] Filed: **Jun. 30, 1997**

System, Device, And Method For Streaming A Multimedia File Encoded at a Variable Bitrate. The data is encoded at a variable bit rate and formed into packets having a server time stamp. The server time stamps are constructed so that the streaming of the packets will be substantially constant, not variable, and equal to a desired, budgeted bandwidth, such as one corresponding to fully utilizing a modem link. To schedule the sending of packets, the server uses the server time stamp, rather than, for example, the play-back time stamp. By having the data encoded at a variable bit rate, the otherwise-unused capacity, i.e., the capacity not used by the server, can be used to send packets needed in the future. This is accomplished by the server time stamps scheduling packets for transmission that will not be needed until the future.

Related U.S. Application Data

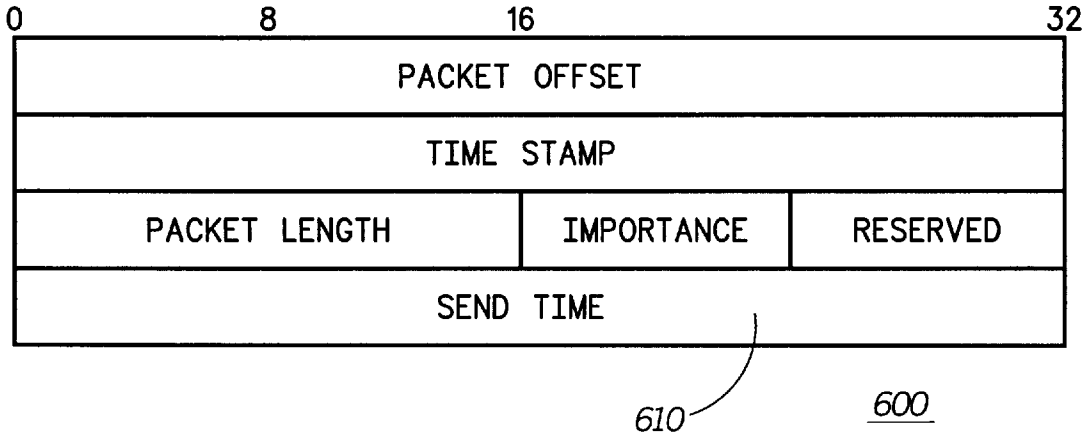
- [63] Continuation-in-part of Ser. No. 711,701, Sep. 6, 1996.
- [51] **Int. Cl.**⁶ **H04N 7/26**; H04N 7/52; H04N 7/56; H04N 7/62
- [52] **U.S. Cl.** **348/845**; 348/423
- [58] **Field of Search** 348/845, 845.2, 348/845.3, 423, 12, 13; H04N 7/26, 7/52, 7/56, 7/62

References Cited

U.S. PATENT DOCUMENTS

5,481,312 1/1996 Cash 348/845.2

2 Claims, 8 Drawing Sheets



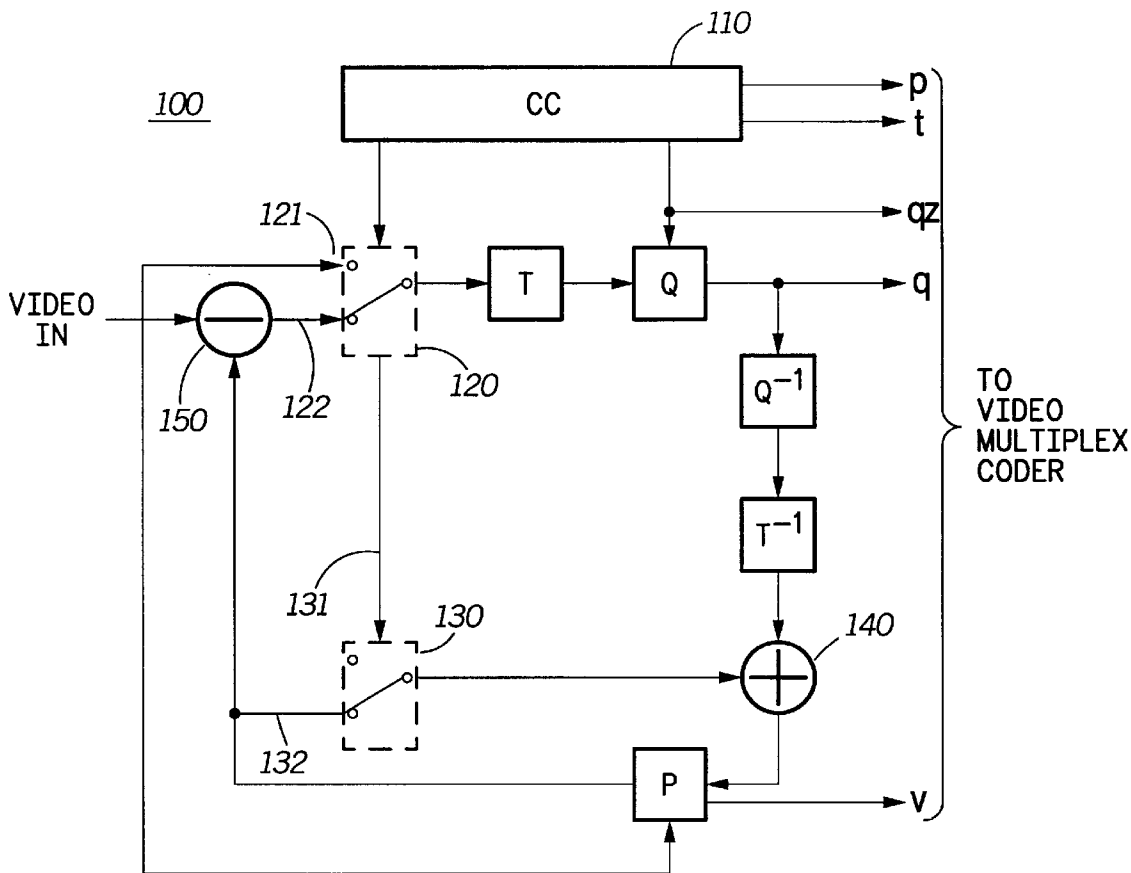


FIG. 1

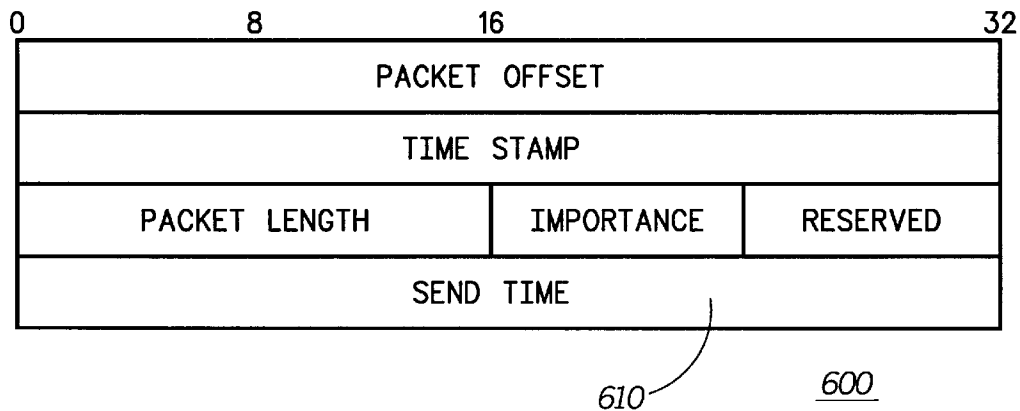


FIG. 6

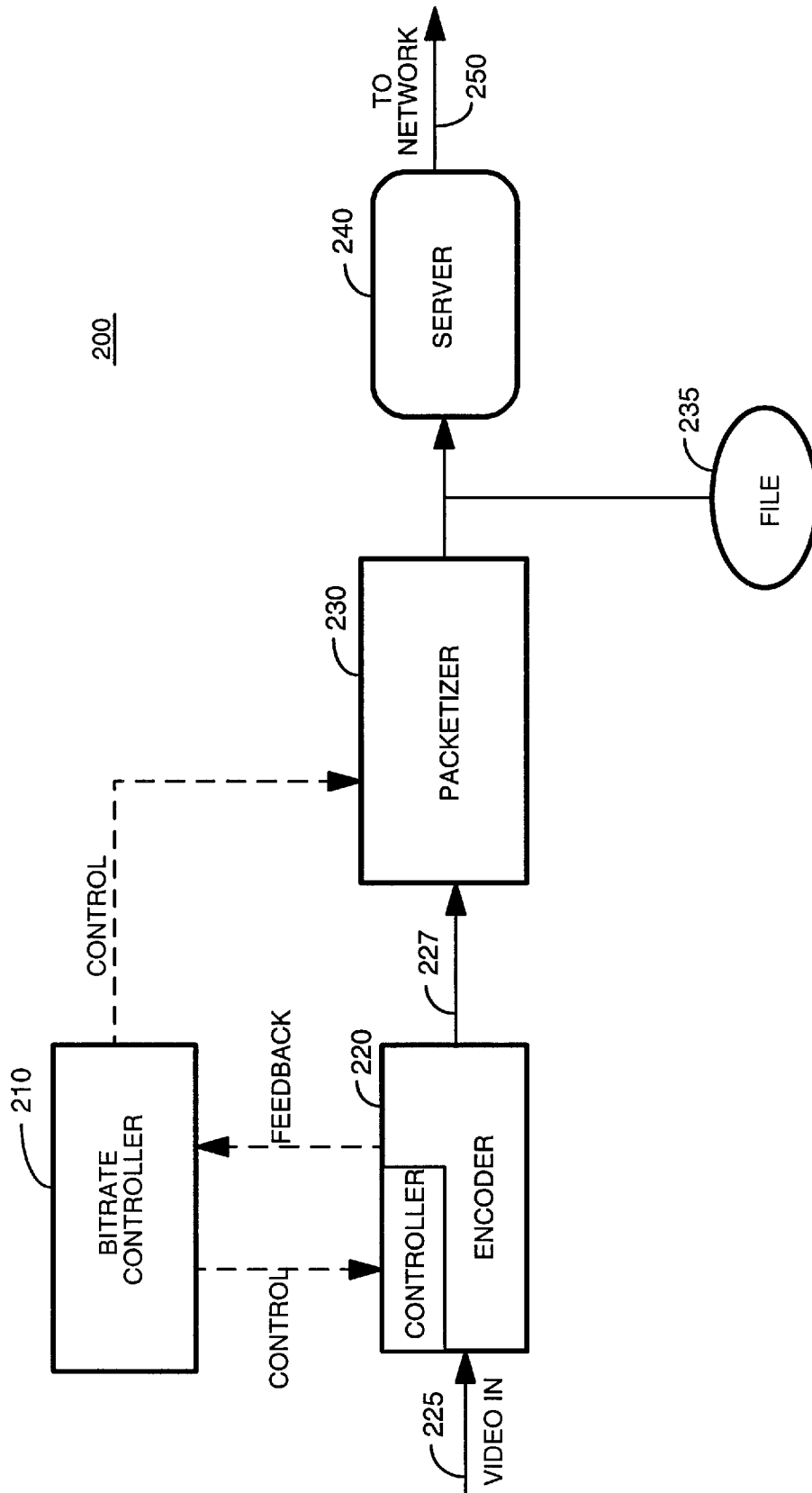


FIG. 2

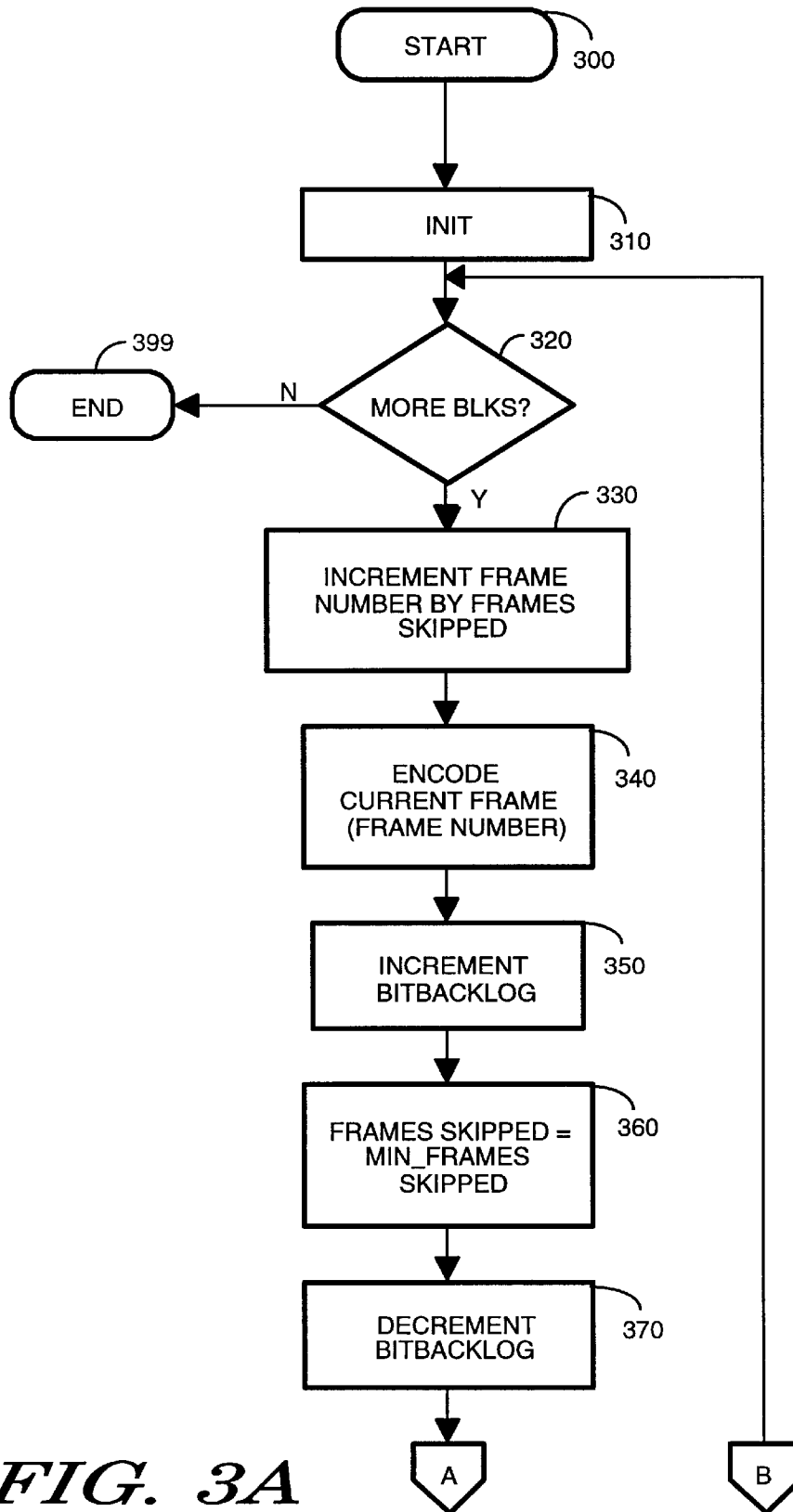


FIG. 3A

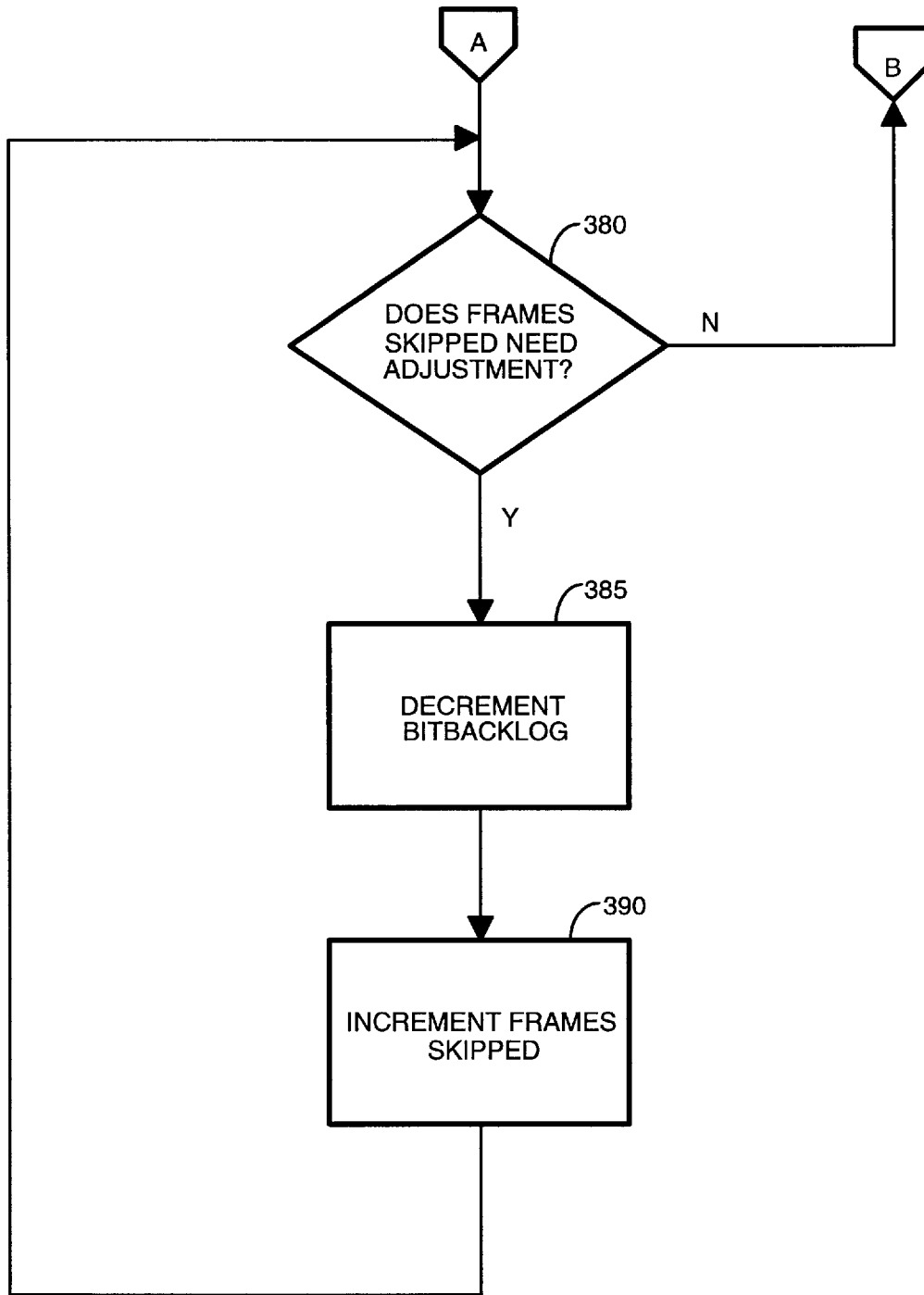


FIG. 3B

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.