



[54] METHOD OF REMOVING GATED CLOCKS FROM THE CLOCK NETS OF A NETLIST FOR TIMING SENSITIVE IMPLEMENTATION OF THE NETLIST IN A HARDWARE EMULATION SYSTEM

[58] Field of Search ..... 364/578-580, 364/232.3, 927.81; 371/16.2, 22.1, 22.2, 23, 27; 340/825.22, 825.06, 825.88, 825.89, 825.83, 825.84; 307/465, 468, 219, 303; 357/45; 395/500; 365/201; 370/13, 14, 17

[75] Inventors: Wei-Jin Dai, Cupertino; Louis Galbiati, III, Mountain View; Joseph Varghese, Sunnyvale; Dam V. Bui, Milpitas; Stephen P. Sample, Mountain View, all of Calif.

[56] References Cited

U.S. PATENT DOCUMENTS

4,306,286 12/1981 Cocke et al. .... 364/200
4,578,761 3/1986 Gray ..... 364/481
4,656,580 4/1987 Hitchcock, Sr. et al. .... 364/200
5,109,353 4/1992 Sample et al. .... 364/578

[73] Assignee: Quickturn Design Systems, Inc., Mountain View, Calif.

Primary Examiner—Ellis B. Ramirez
Assistant Examiner—Craig Steven Miller
Attorney, Agent, or Firm—Lyon & Lyon

[21] Appl. No.: 844

[57] ABSTRACT

An emulation system and method that reduces or eliminates the number of timing errors such as hold time violations when implementing a netlist description of an integrated circuit. The emulation system comprises a plurality of reprogrammable logic circuits and a plurality of reprogrammable interconnect circuits. The netlist description is optimized to reduce the number of timing violations by removing the occurrences of gated clocks from the netlist, partitioning the netlist description by taking into account the occurrence of timing violations and ensuring that retain state nets are implemented properly.

[22] Filed: Feb. 26, 1993

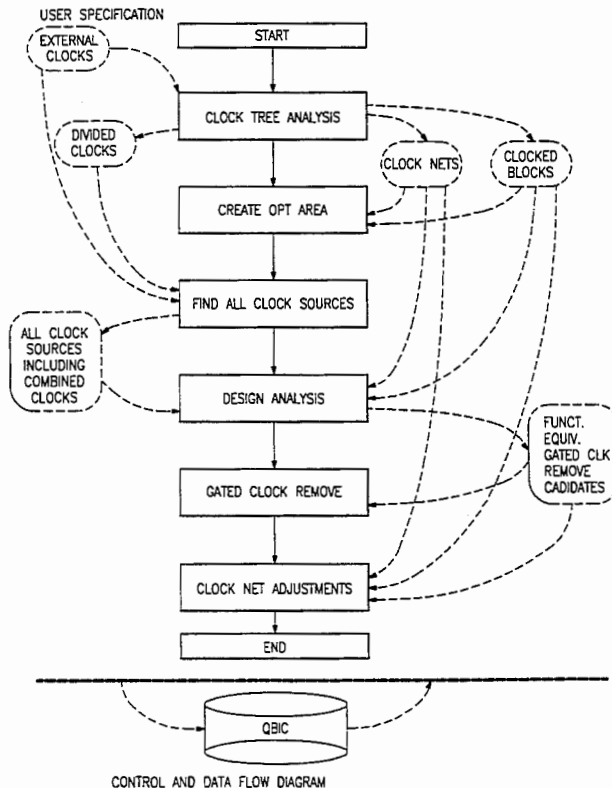
Related U.S. Application Data

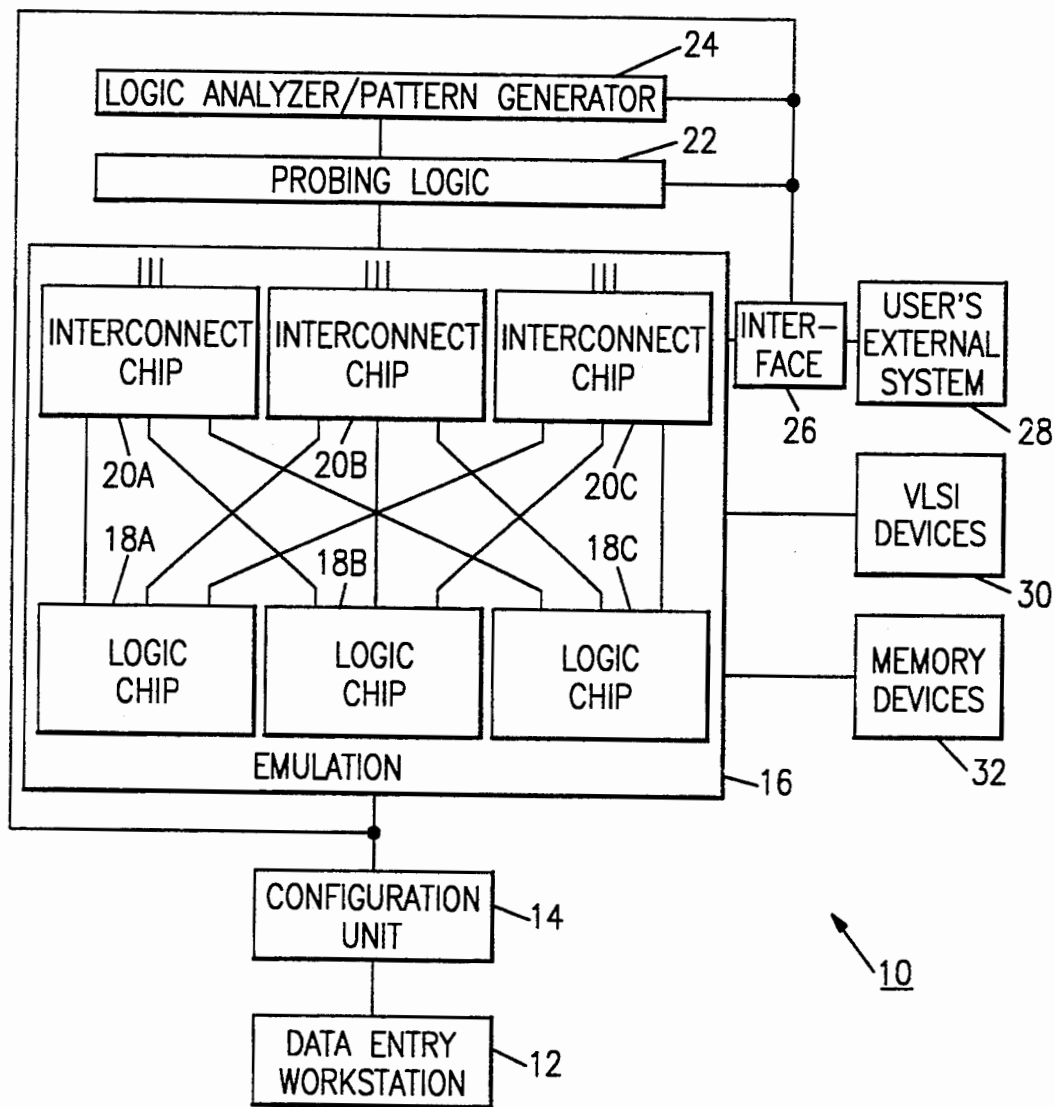
[63] Continuation-in-part of Ser. No. 13,025, Jan. 29, 1993, abandoned.

[51] Int. Cl.<sup>6</sup> ..... G06G 7/48; G06F 17/00

[52] U.S. Cl. .... 364/578; 364/580; 371/222

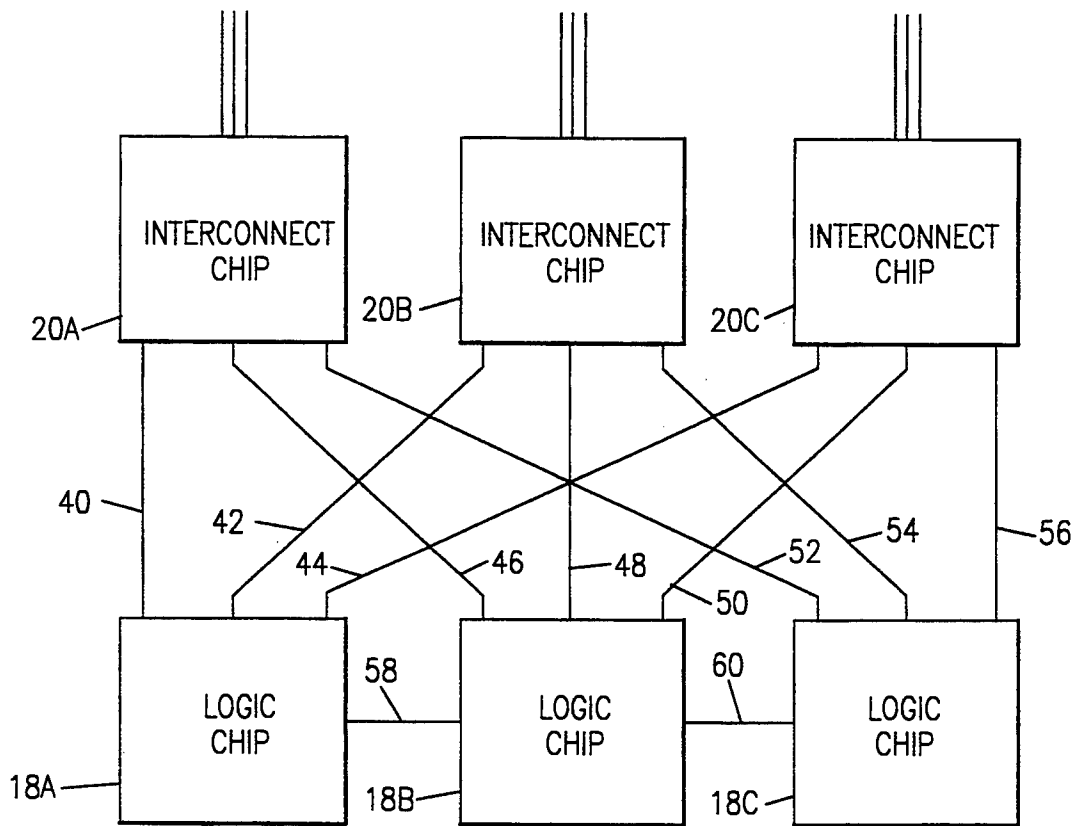
2 Claims, 78 Drawing Sheets





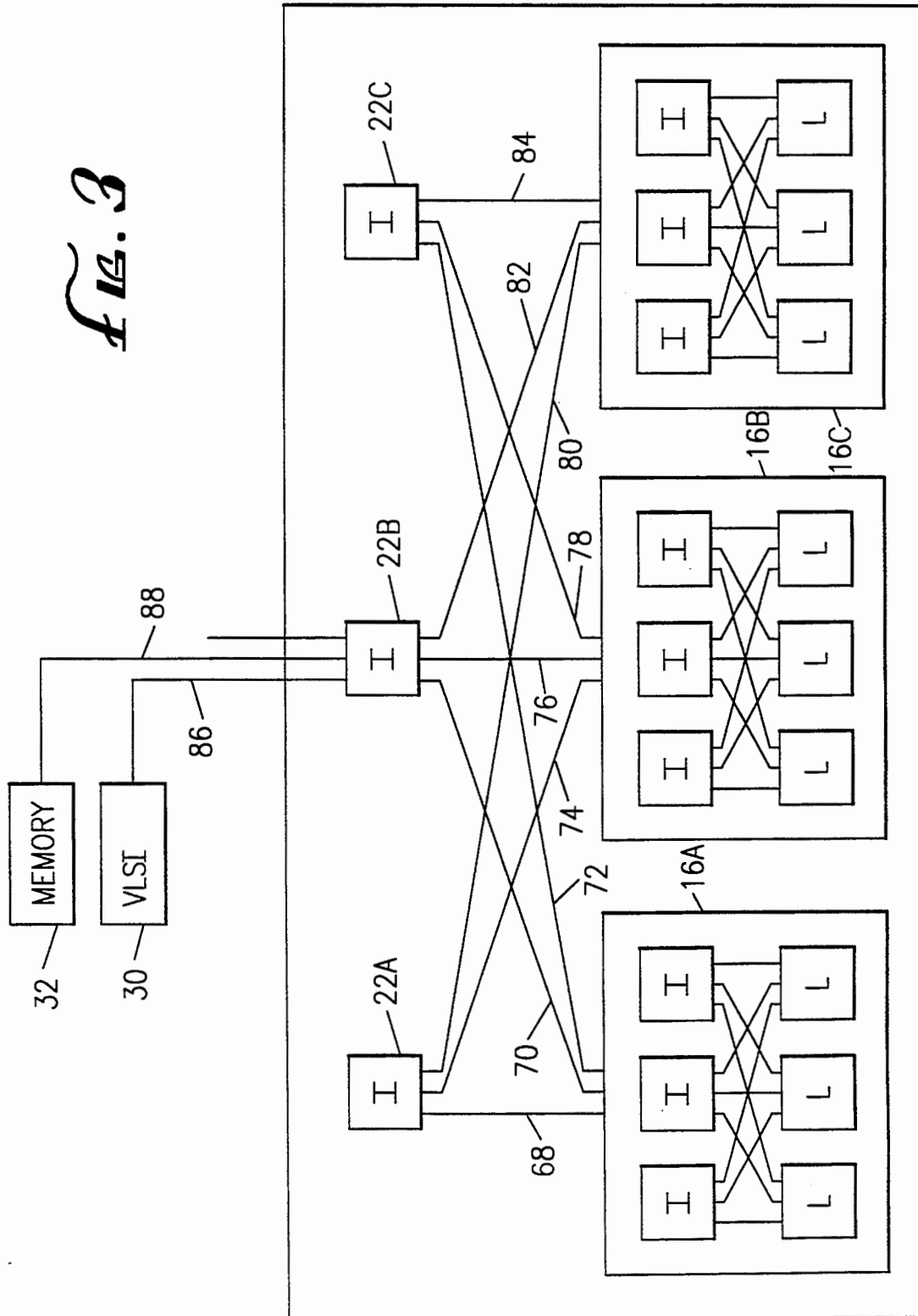
*FIG. 1*

CONNECTIONS TO EXTERNAL SIGNALS



*FIG. 2*

FIG. 3



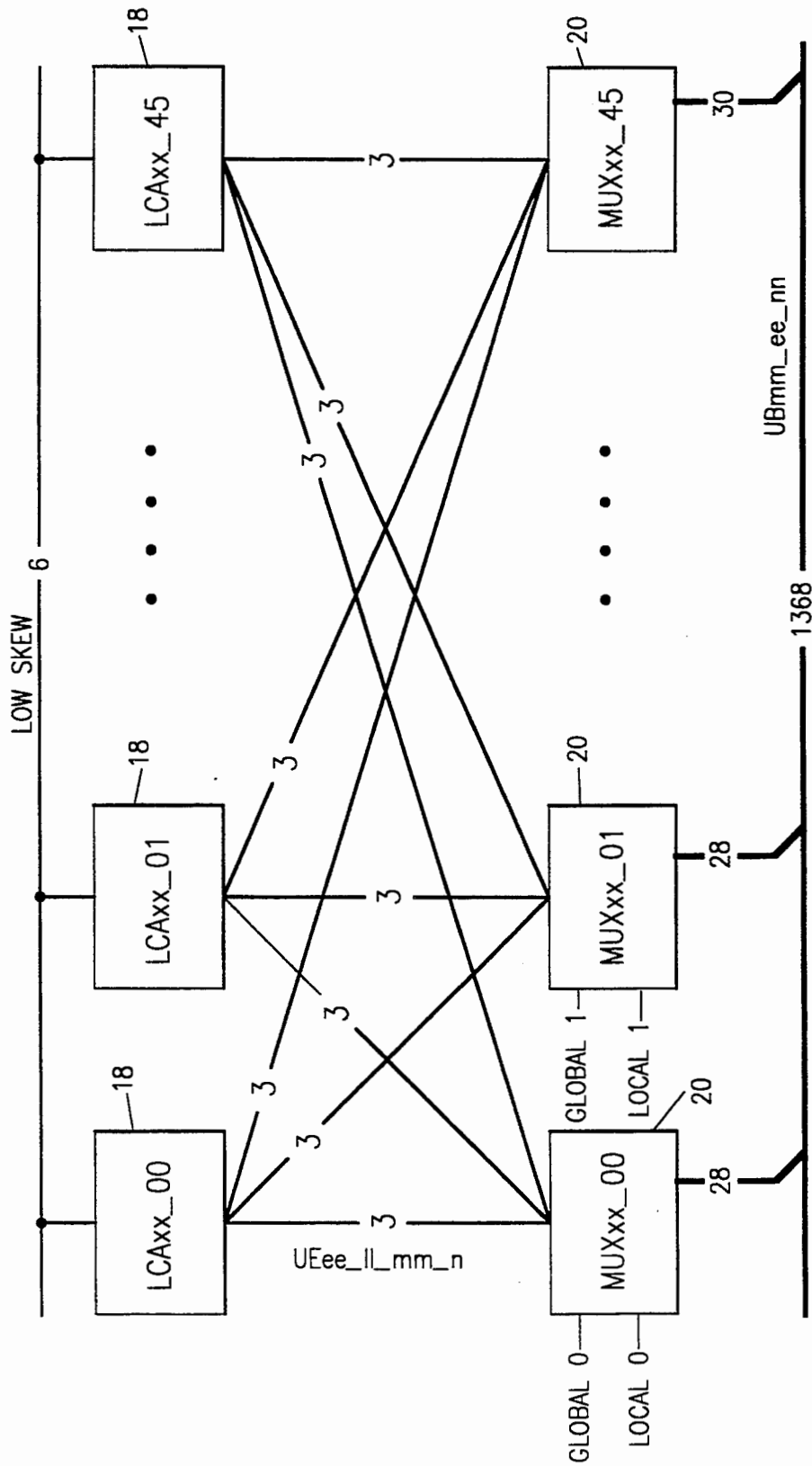


FIG. 4

# 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.