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Carmichael et al.

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[54] METHOD AND APPARATUS FOR CONTROLLING I/O CHANNELS RESPONSIVE TO AN AVAILABILITY OF A PLURALITY OF I/O DEVICES TO TRANSFER DATA

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Primary Examiner—Christopher B. Shin
Attorney, Agent, or Firm—David K. Lucente

[57] ABSTRACT

An apparatus and method for improving the input/output performance of a computer system under the control of a multi-tasking, multi-threaded operating system. In particular, the invention provides an apparatus and method to chain contiguous DMA scatter gather sub blocks of a PRD table for channel 0 with contiguous DMA scatter gather sub blocks of a PRD table for channel 1, using a single data manager, while maintaining maximum media bandwidth. DMA block transfers are scheduled based on the availability of data from the I/O device's buffer memory, thus minimizing both media or network idle time as well as minimizing I/O bus idle time. Near maximum aggregate bandwidth of multiple I/O buses and their associated devices is obtained. The apparatus and method thus provides significant performance advantages over prior techniques having two I/O channel systems implemented with a single data manager.

7 Claims, 15 Drawing Sheets

[75] Inventors: Richard D. Carmichael, Longmont; Joel M. Ward; Michael A. Winchell, both of Fort Collins, all of Colo.

[73] Assignee: LSI Logic Corporation, Milpitas, Calif.

[21] Appl. No.: 08/702,998

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Related U.S. Application Data

[63] Continuation of application No. 08/407,439, Mar. 17, 1995, abandoned.

[51] Int. Cl. 6 G06F 13/00

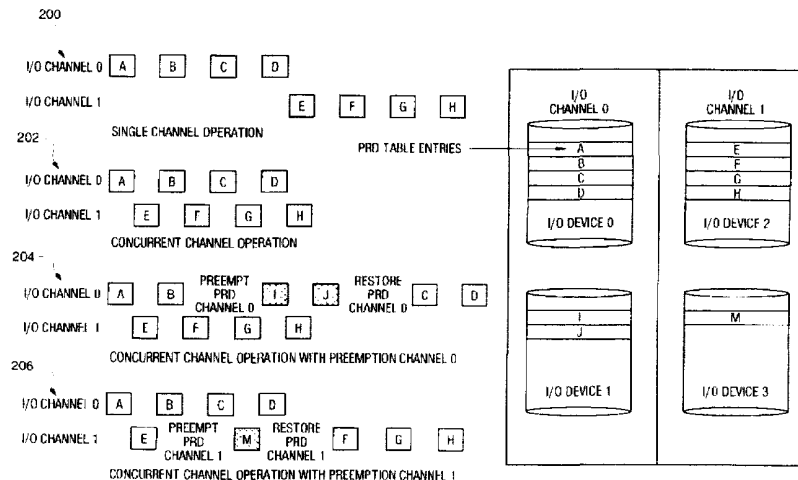
[52] U.S. Cl. 395/845; 395/827; 395/840

[58] Field of Search 395/825, 826, 395/827, 840, 841, 844, 845, 800, 600

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FIG. 1

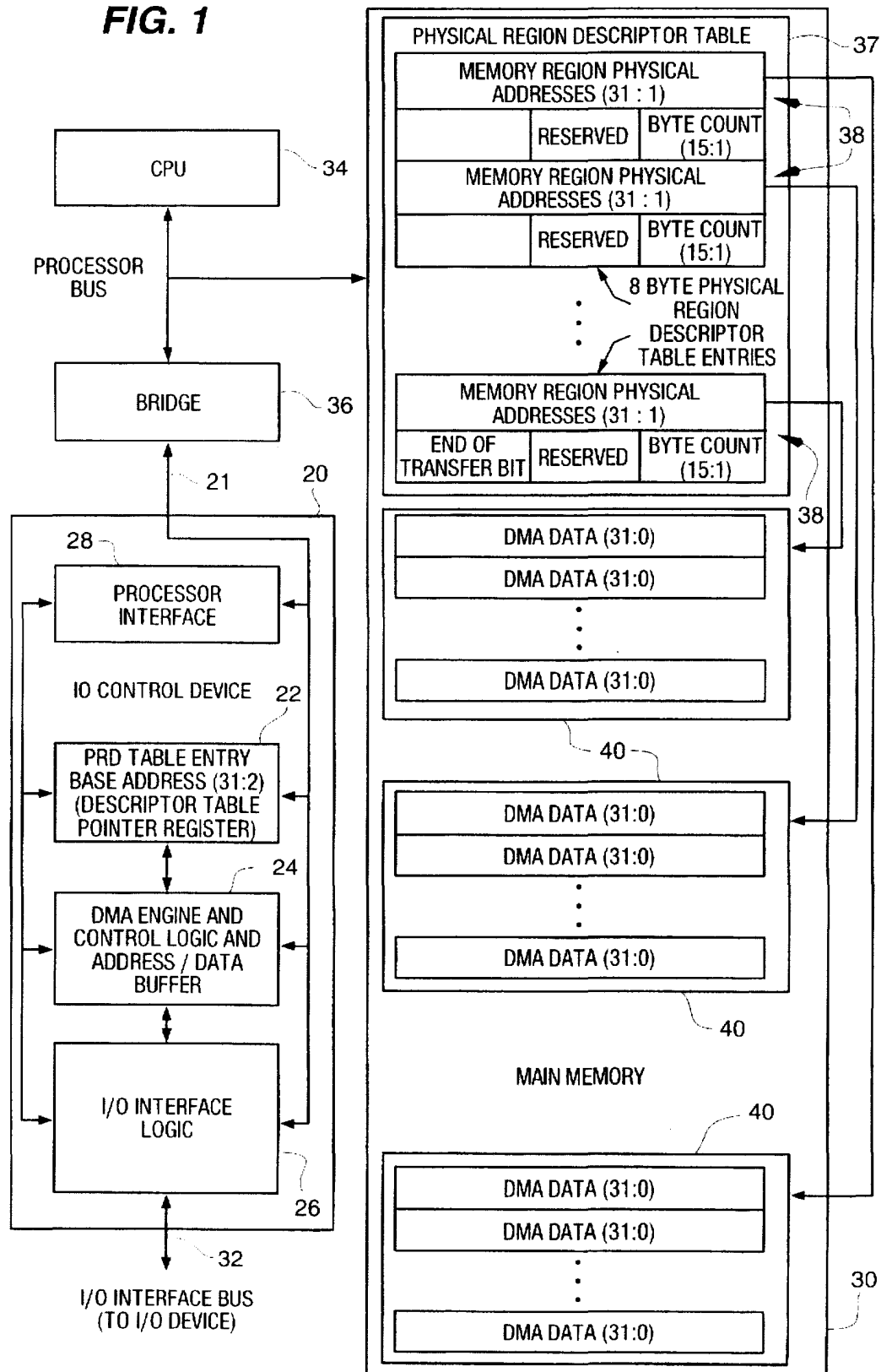
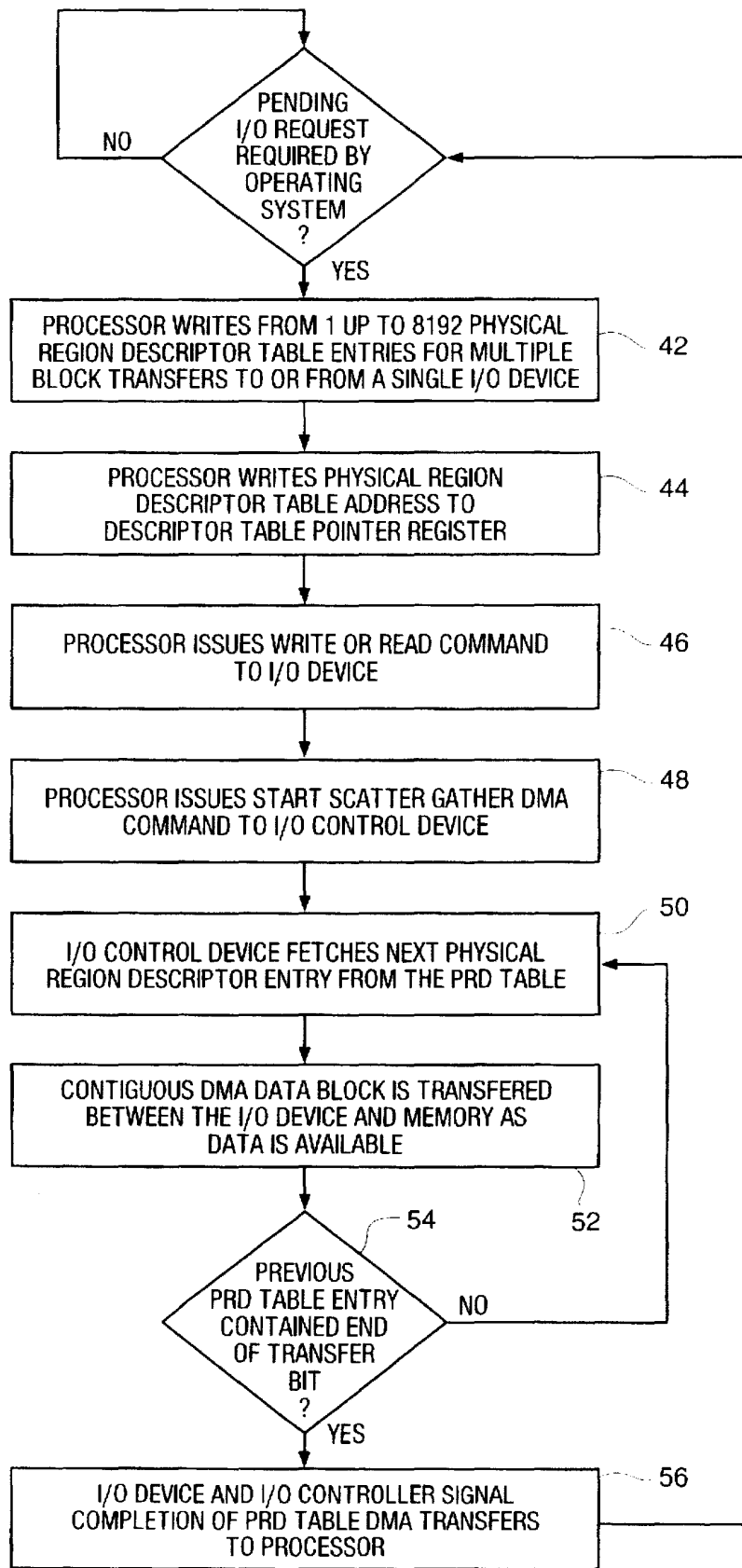
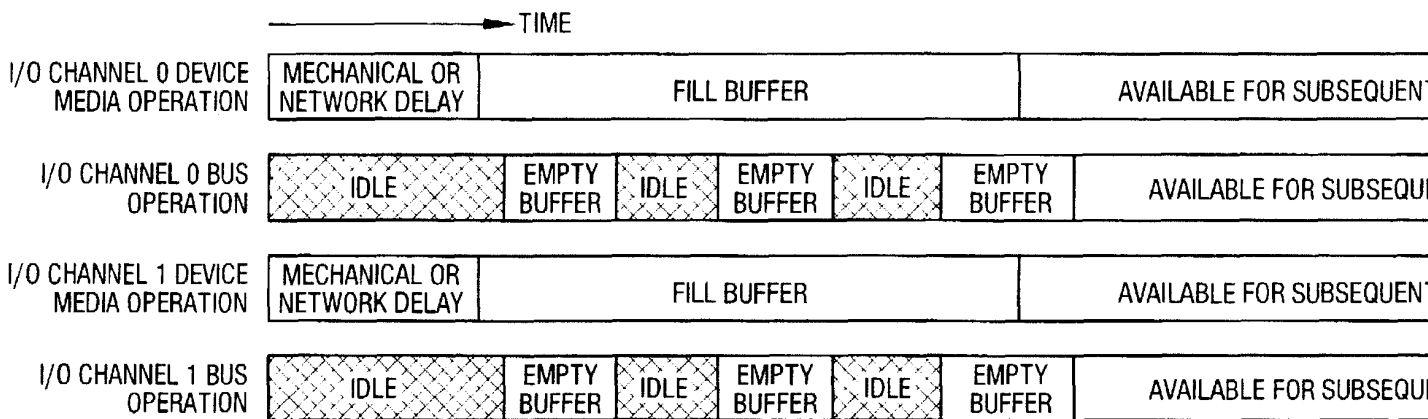
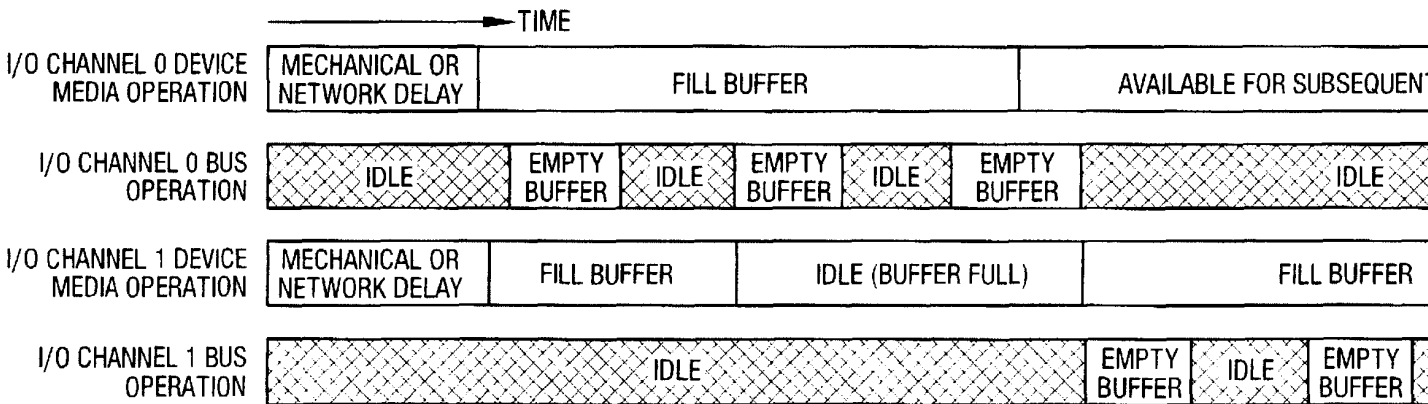


FIG. 2





DUAL DATA MANAGERS, DUAL I/O CHANNELS



SINGLE DATA MANAGER, DUAL I/O CHANNELS

FIG. 3

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