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# United States Patent [19]

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Erickson et al.

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[54] **METHOD FOR PERFORMING SEQUENCE OF ACTIONS IN DEVICE CONNECTED TO COMPUTER IN RESPONSE TO SPECIFIED VALUES BEING WRITTEN INTO SNOOPED SUB PORTIONS OF ADDRESS SPACE**

[75] Inventors: **Gene R. Erickson; Douglas E. Hundley**, both of Poway; **P. Keith Muller; Curtis H. Stehley**, both of San Diego, all of Calif.

[73] Assignee: **NCR Corporation**, Dayton, Ohio

[21] Appl. No.: **577,678**

[22] Filed: **Dec. 21, 1995**

[51] Int. Cl.<sup>6</sup> ..... **G06F 15/02**

[52] U.S. Cl. .... **395/829**

[58] Field of Search ..... 395/821, 823, 395/829, 832, 846, 882, 284, 309, 500, 473

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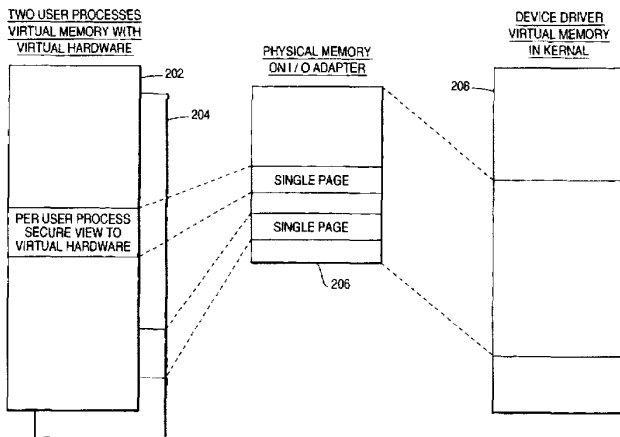
Primary Examiner—Moustafa M. Meky

Attorney, Agent, or Firm—Merchant, Gould, Smith, Edell, Welter & Schmidt

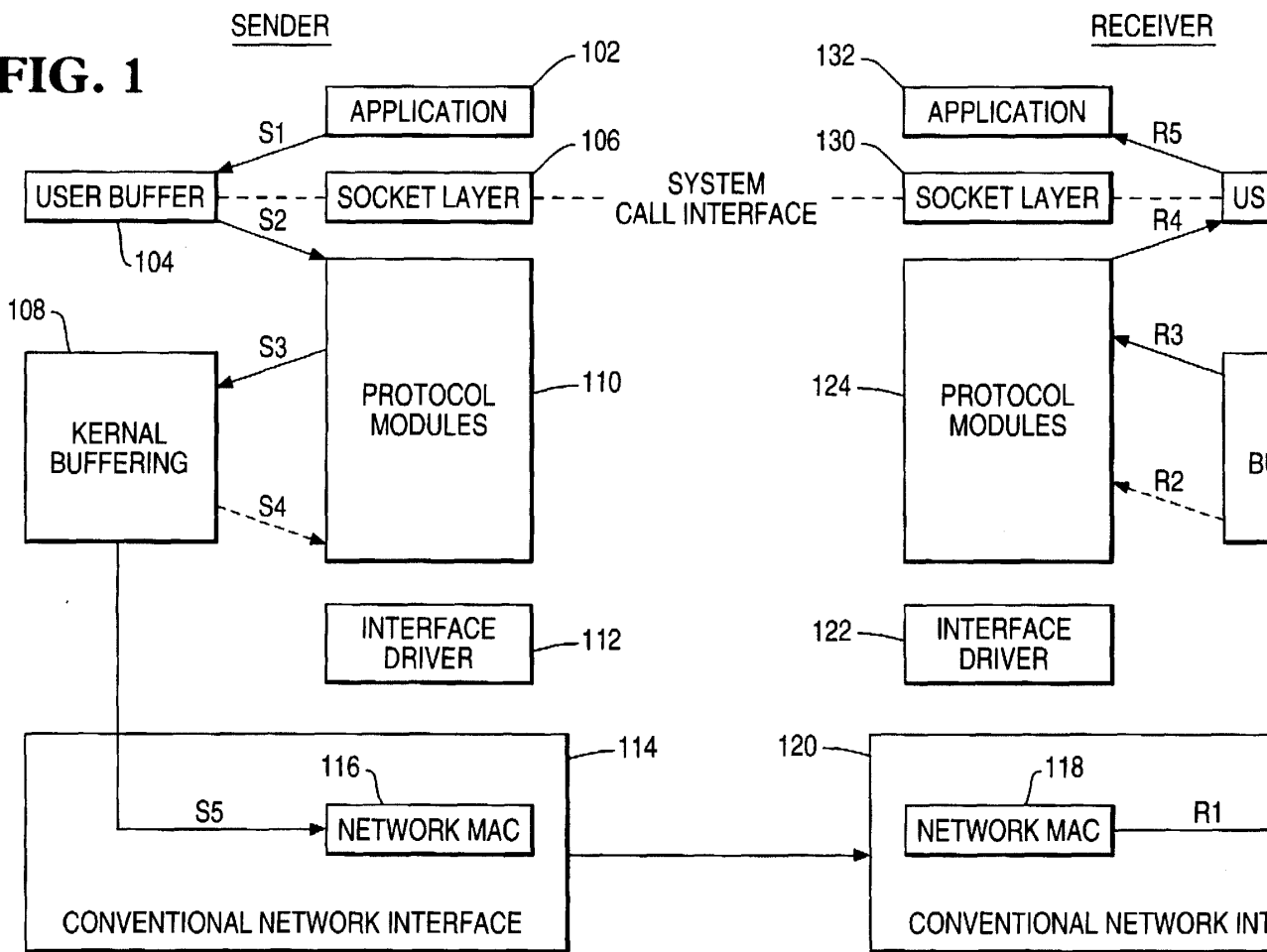
### [57] ABSTRACT

A method of controlling an input/output (I/O) device connected to a computer to facilitate fast I/O data transfers. An address space for the I/O device is created in the virtual memory of the computer, wherein the address space comprises virtual registers that are used to directly control the I/O device. In essence, control registers and/or memory of the I/O device are mapped into the virtual address space, and the virtual address space is backed by control registers and/or memory on the I/O device. Thereafter, the I/O device detects writes to the address space. As a result, a pre-defined sequence of actions can be triggered in the I/O device by programming specified values into the data written into the mapped virtual address space.

**19 Claims, 7 Drawing Sheets**



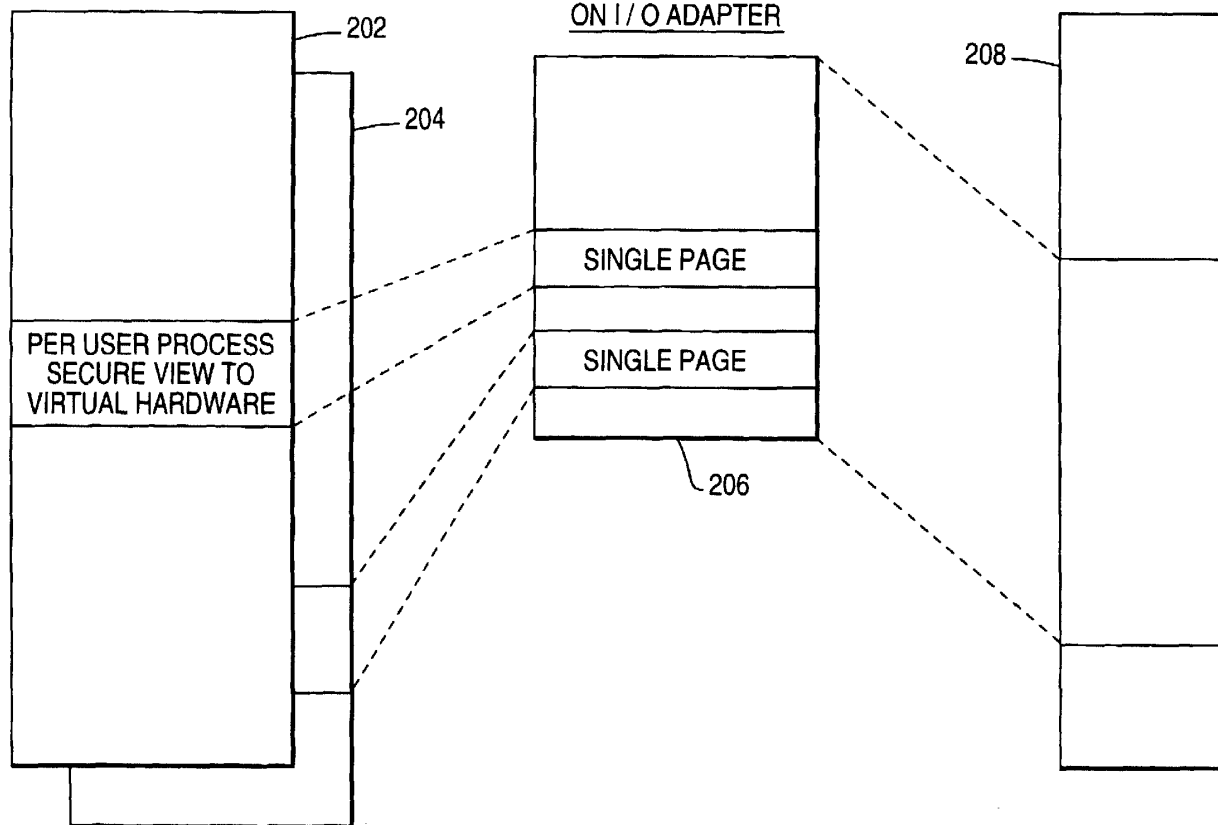
**FIG. 1**



TWO USER PROCESSES  
VIRTUAL MEMORY WITH  
VIRTUAL HARDWARE

**FIG. 2**

DEVICE D  
VIRTUAL M  
IN KER



**FIG. 3**

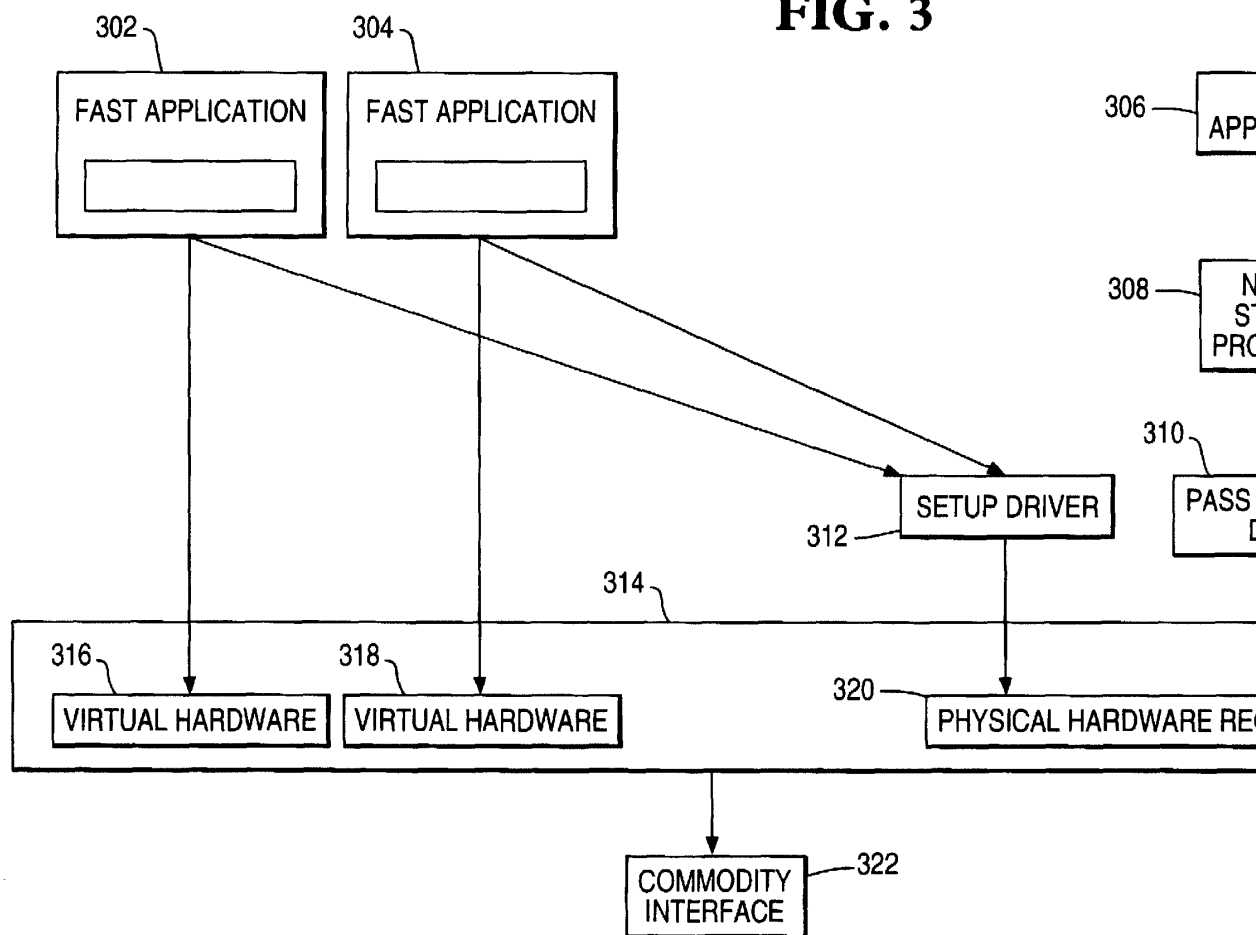
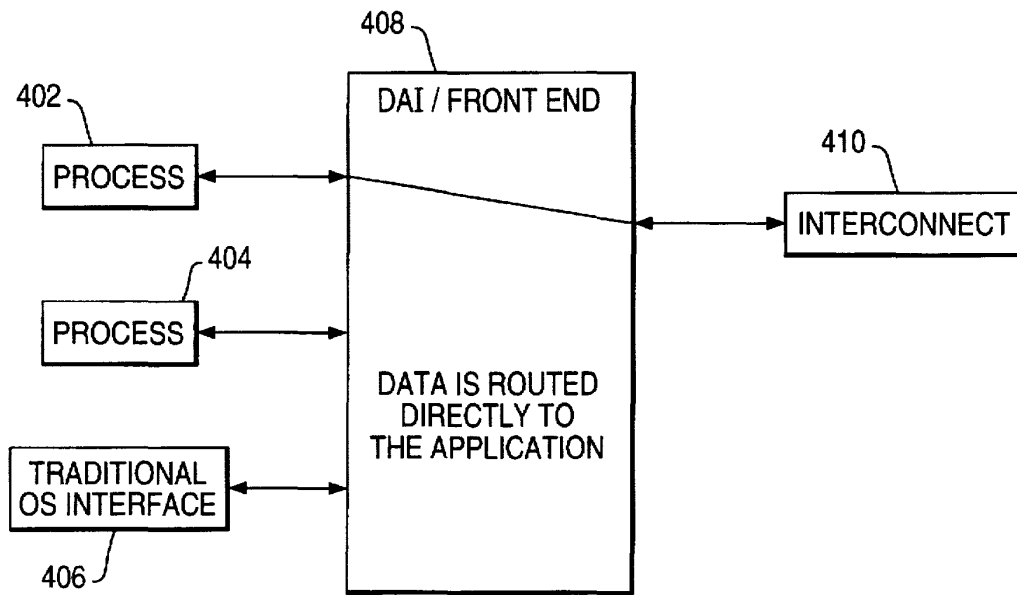


FIG. 4



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