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Gaither et al.

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(54) **METHOD AND APPARATUS FOR
VIRTUALIZING FILE ACCESS OPERATIONS
AND OTHER I/O OPERATIONS**

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(52) **U.S. Cl.** **707/1; 707/1; 707/2; 707/10;
707/101; 707/200; 707/204; 707/206; 711/114;
711/3; 709/100**

(58) **Field of Search** **707/1, 205, 2,
707/10, 101, 200, 204, 103, 206; 711/117,
120, 6, 114, 3, 102, 103, 147, 202; 370/395,
399; 709/203, 236, 310, 100, 227, 321**

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Primary Examiner—Thomas G. Black

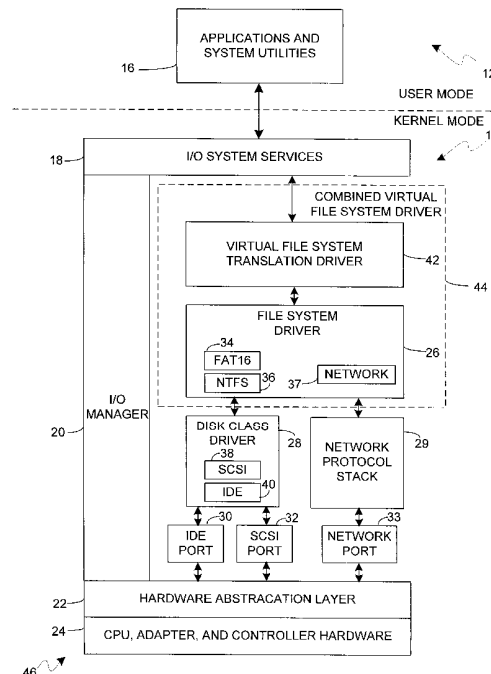
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(57) **ABSTRACT**

A method and apparatus virtualizes file access operations and other I/O operations in operating systems by performing string substitutions upon a file paths or other resource identifiers to convert the virtual destination of an I/O operation to a physical destination. In accordance with the present invention, a virtual file system translation driver is interposed between a file system driver and applications and system utilities. The virtual file system translation driver receives file access requests from the applications and system utilities, and translates the file path to virtualize the file system. In a first embodiment, the file system is partially virtualized and a user can see both the virtual file paths and the physical file paths. In second and third embodiments, the file system is completely virtualized from the point of view of the applications and system utilities. In the second embodiment, a user may start with a physical file system, and virtualize the file system by installing the virtual file system translation driver. When the driver is initially installed, all virtual file paths will be considered to translate to identically named physical file paths by default. In the third embodiment, virtual translations are automatically generated for all file paths when files and directories are created, and virtual file paths may bear limited, or no resemblance to physical file paths.

1 Claim, 7 Drawing Sheets



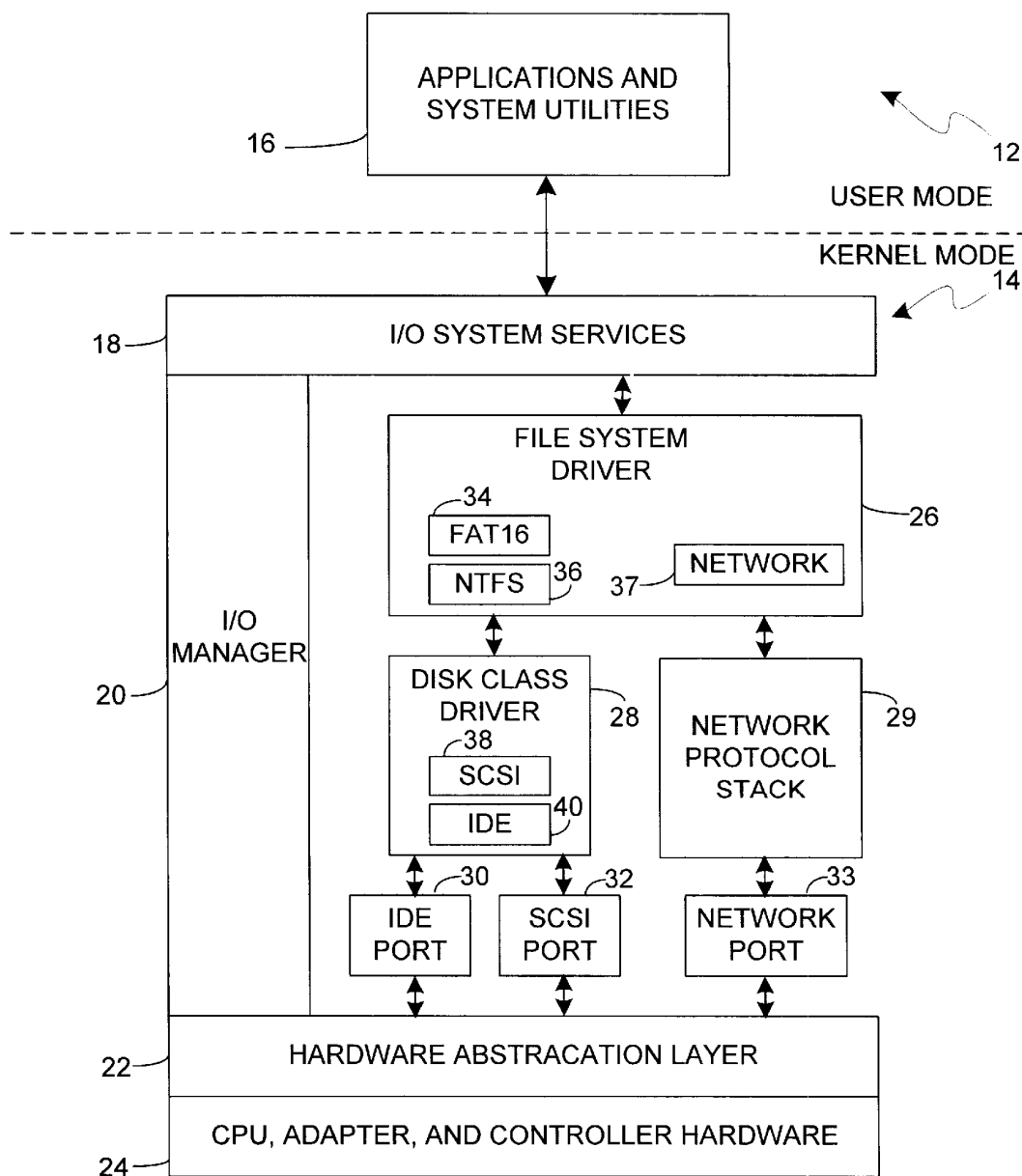


FIG. 1
(PRIOR ART)

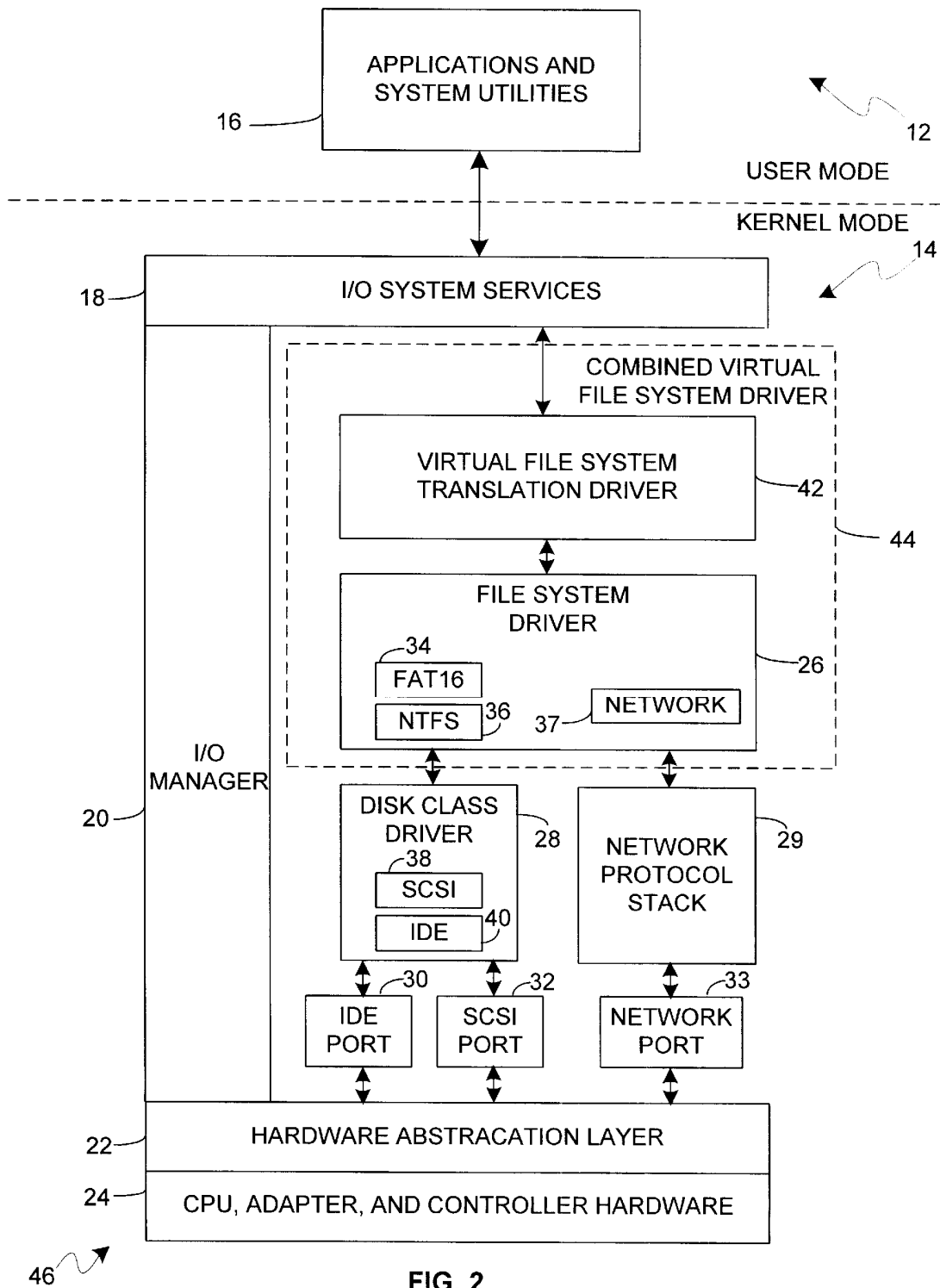


FIG. 2

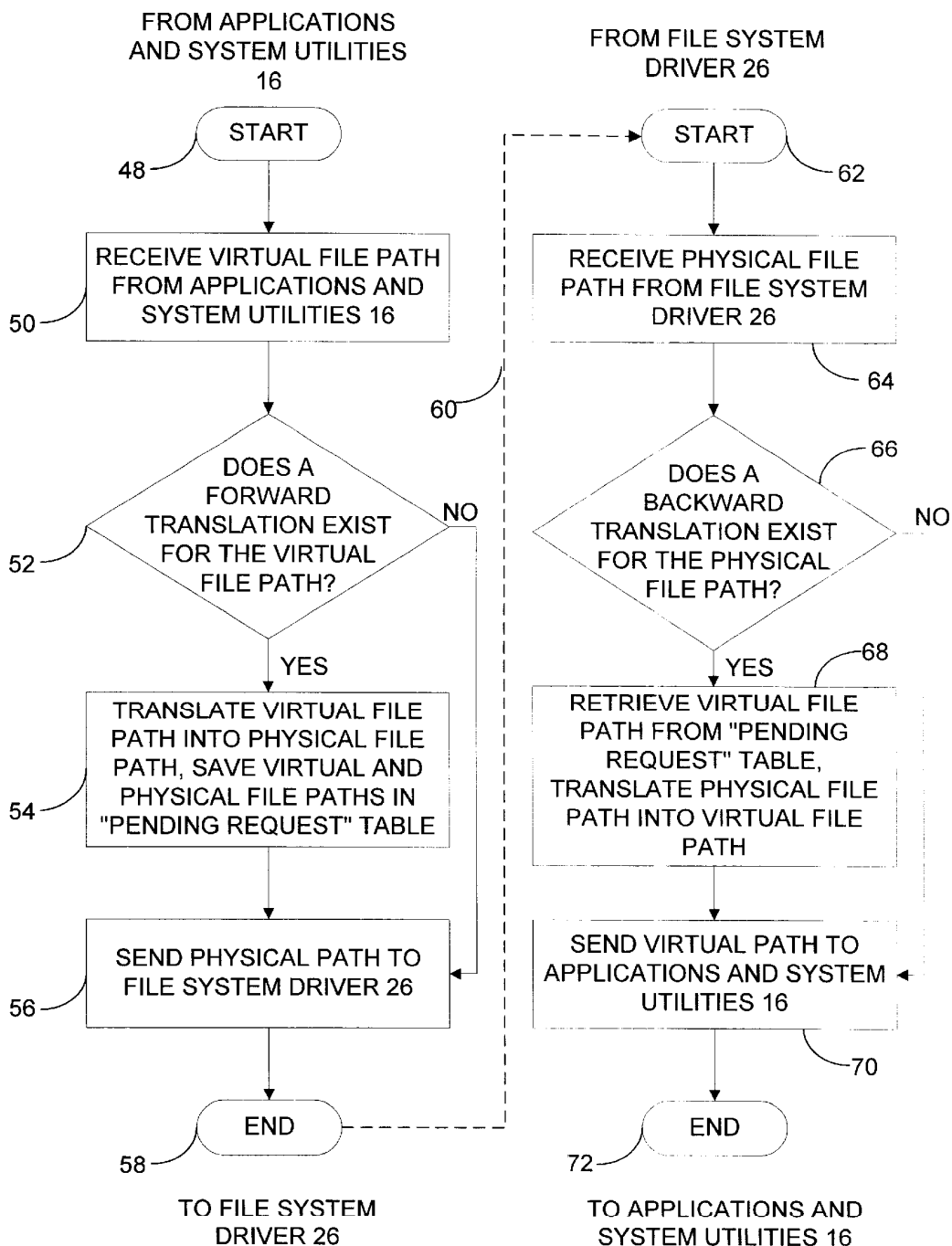
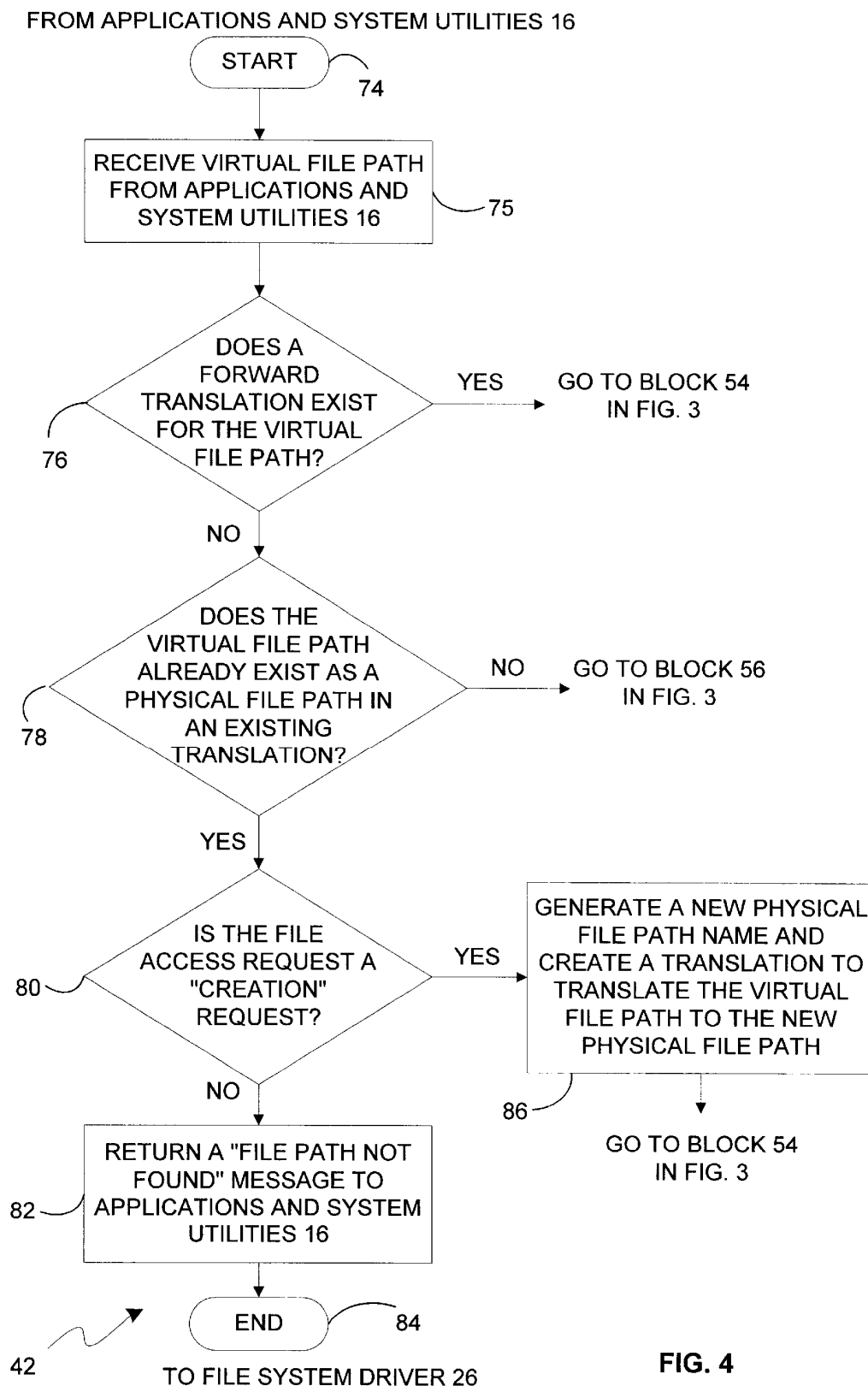


FIG. 3



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