



US005590331A

# United States Patent [19]

[11] Patent Number: **5,590,331**

Lewis et al.

[45] Date of Patent: **Dec. 31, 1996**

[54] **METHOD AND APPARATUS FOR GENERATING PLATFORM-STANDARD OBJECT FILES CONTAINING MACHINE-INDEPENDENT CODE**

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[73] Assignee: **Sun Microsystems, Inc.**, Mountain View, Calif.

[21] Appl. No.: **363,743**

[22] Filed: **Dec. 23, 1994**

[51] Int. Cl.<sup>6</sup> ..... **G06F 9/45**

[52] U.S. Cl. .... **395/708**

[58] Field of Search ..... **395/700**

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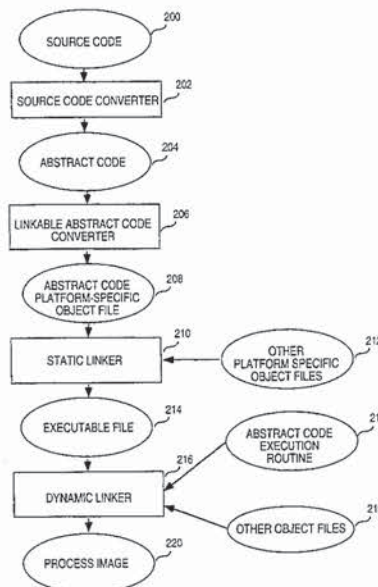
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### [57] ABSTRACT

A method and apparatus for generating a platform-standard object file containing machine-independent abstract code. Source code which defines a procedure is converted into abstract code which makes no assumptions about the platform on which the procedure will be executed. An abstract code platform-standard object file is generated based on the abstract code. The abstract code platform-standard object file includes a list of definitions of any global variables defined in the abstract code, a list of symbol references indicative of any external variables or external procedures referenced in the abstract code, a sequence of machine instructions for calling an execution routine when a client calls the procedure, and the abstract code which defines the procedure. The abstract code is preferably compressed before it is stored in the abstract code platform-standard object file. When a program including the abstract code platform-standard object file is executed, it is dynamically linked to the execution routine. When the procedure is called, the execution routine is invoked. The execution routine executes the procedure by interpreting the abstract code or generating machine-code responsive to the abstract code. The execution routine may be an execution control unit which selects between various execution techniques based on runtime factors, such as the frequency with which the procedure is called.

**21 Claims, 9 Drawing Sheets**



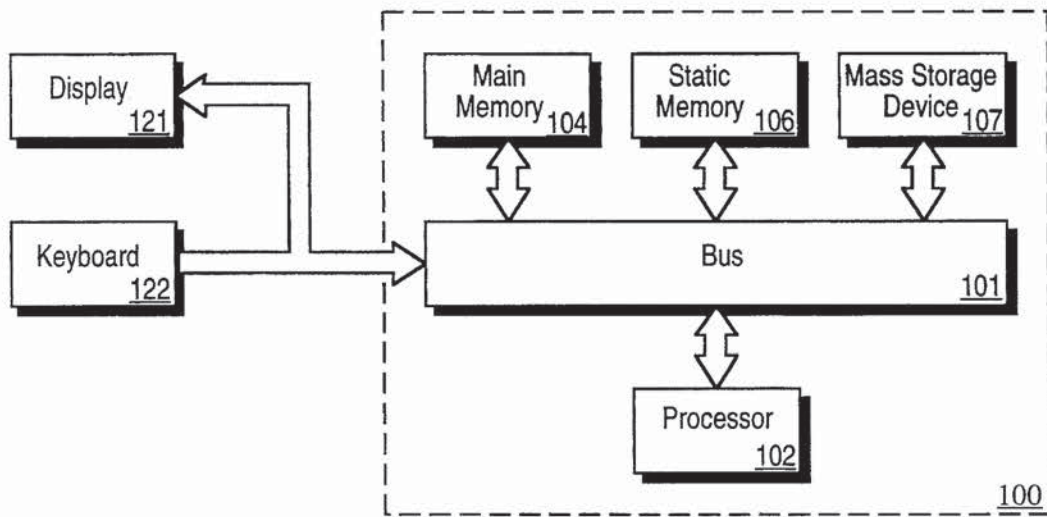


Fig. 1

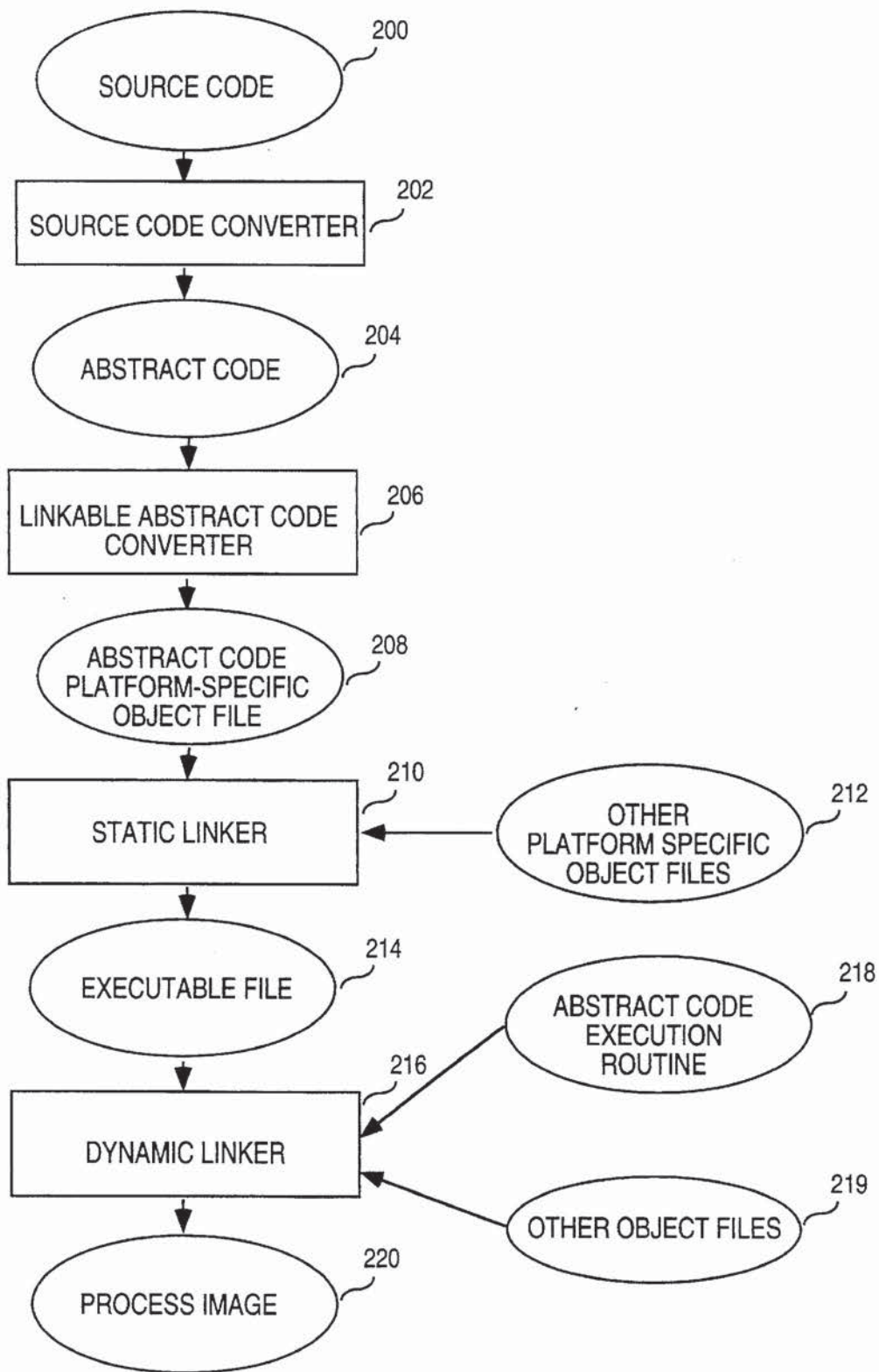


Fig. 2a

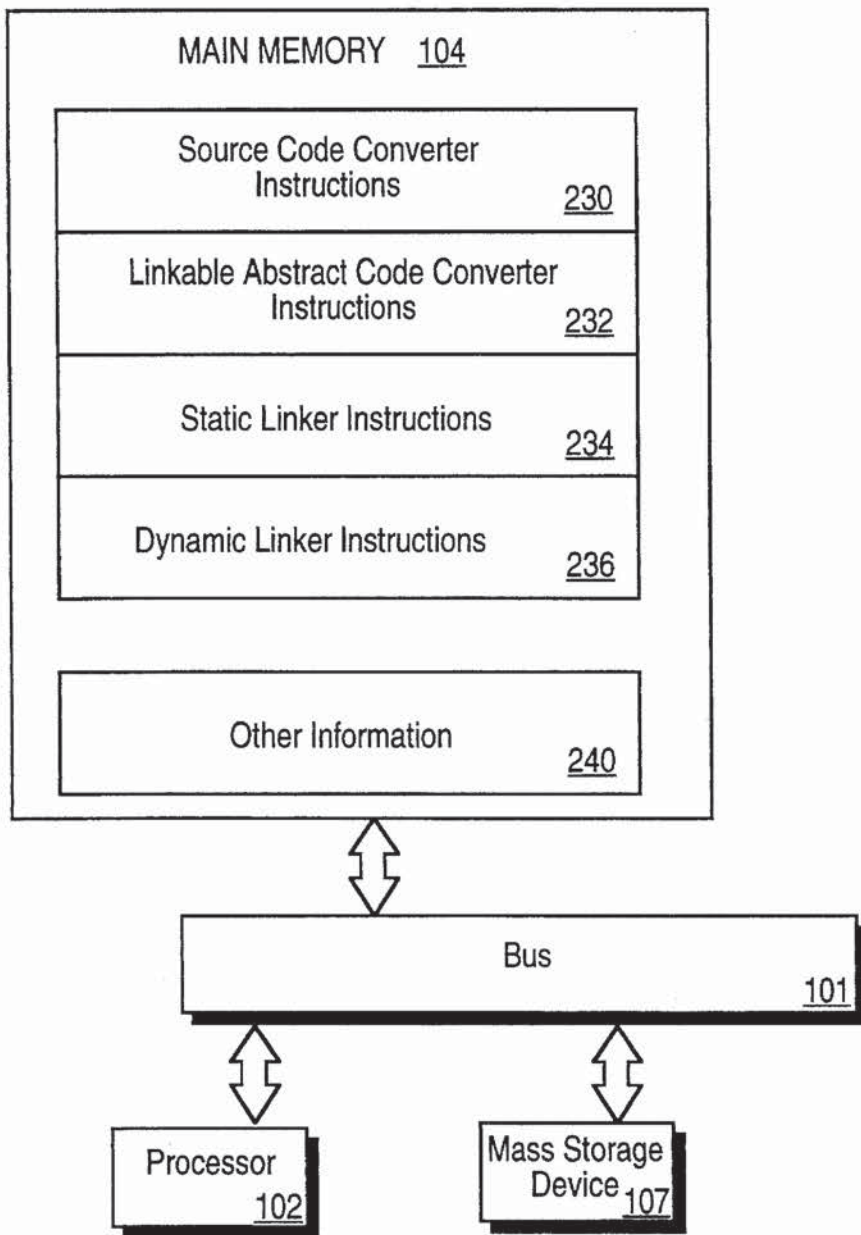


Fig. 2b

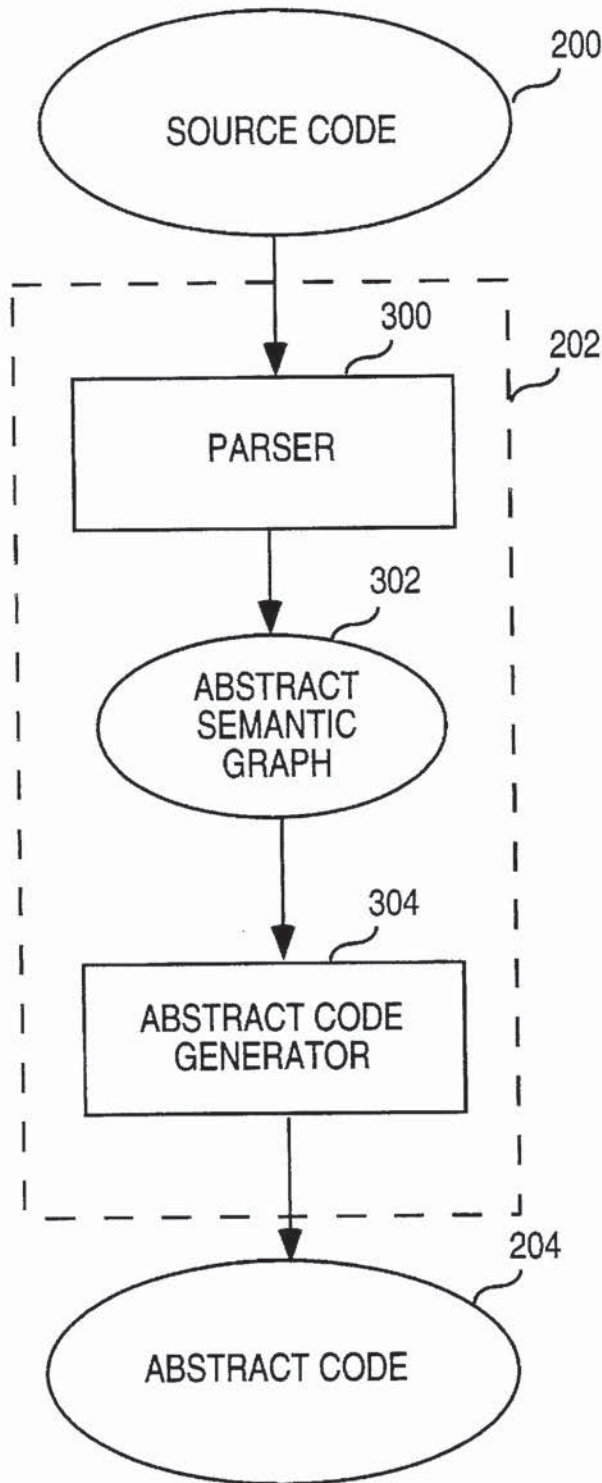


Fig. 3a

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