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United States Patent [19]

Wu

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[54] **AUTOMATIC DISCOVERY OF NETWORK ELEMENTS**

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[51] Int. Cl.⁵ **G06F 13/00**

[52] U.S. Cl. **395/200**; 364/DIG. 1; 364/284.4; 364/242.94; 364/222.81

[58] Field of Search 364/DIG. 1; 370/54, 370/85.1, 85.12, 85.13, 85.15, 94.1; 395/200, 325, 800

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Primary Examiner—Thomas M. Heckler

[57] **ABSTRACT**

Disclosed is a computer network node discovery system that provides a general way of discovering network elements, or nodes, connected to a computer network, and a specific algorithm for discovering nodes connected to a TCP/IP network, using the SNMP protocol available within the TCP/IP network software. Some nodes on a network, called discovery agents, can convey knowledge of the existence of other nodes on the network. The network discovery system queries these agents and obtains the information they have about other nodes on the network. It then queries each of the nodes obtained to determine if that node is also a discovery agent. In this manner, most of the nodes on a network can be discovered. The process of querying discovery agents to obtain a list of nodes known to the discovery agents is repeated at timed intervals to obtain information about nodes that are not always active. In a TCP/IP network, discovery agents are nodes that respond to queries for an address translation table which translates internet protocol (IP) addresses to physical addresses. The data from each node's address translation table is used to obtain both the IP and the physical address of other nodes on the network. These nodes are then queried to obtain additional information. After all the nodes on a network are discovered, the list of nodes is written to a database where it can be displayed by the network manager or other users of the network.
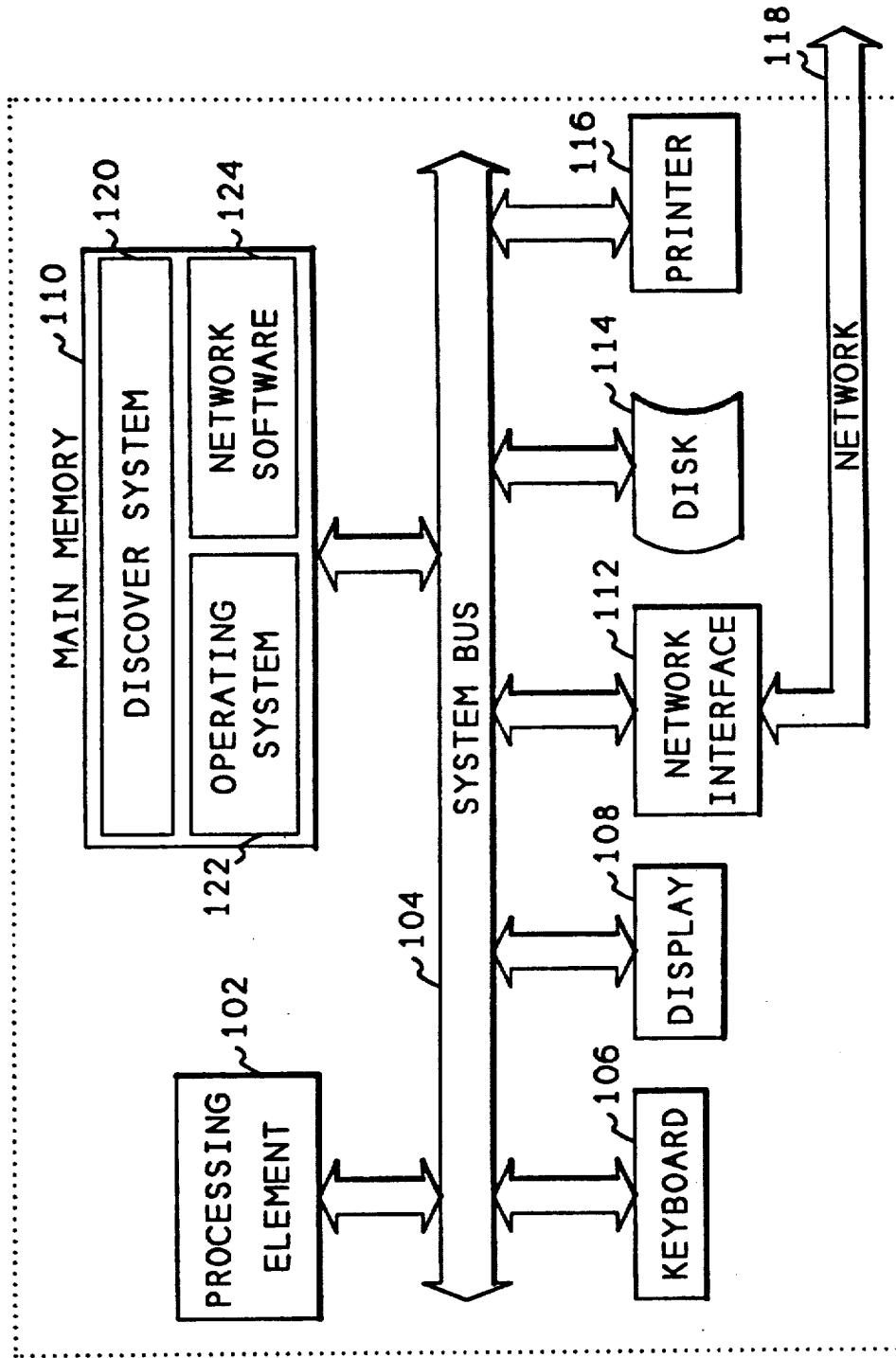
16 Claims, 17 Drawing Sheets
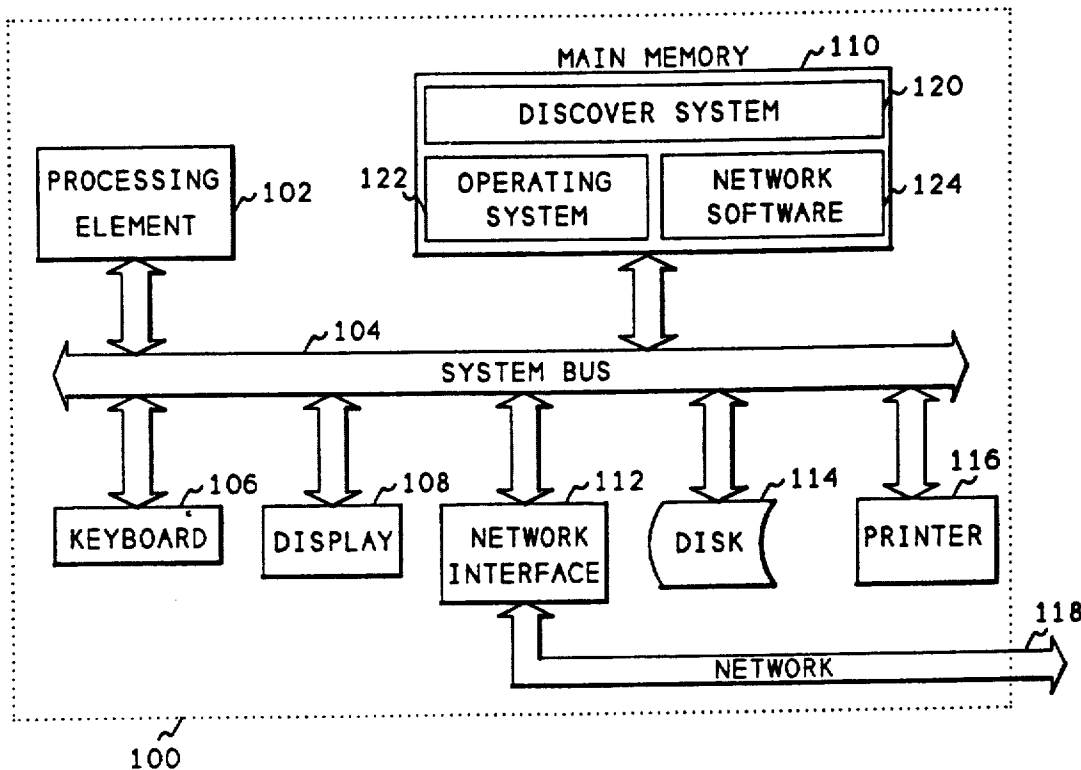
FIG. 1

FIG. 2

FIG. 3

FIG. 4

DOCKET ALARM
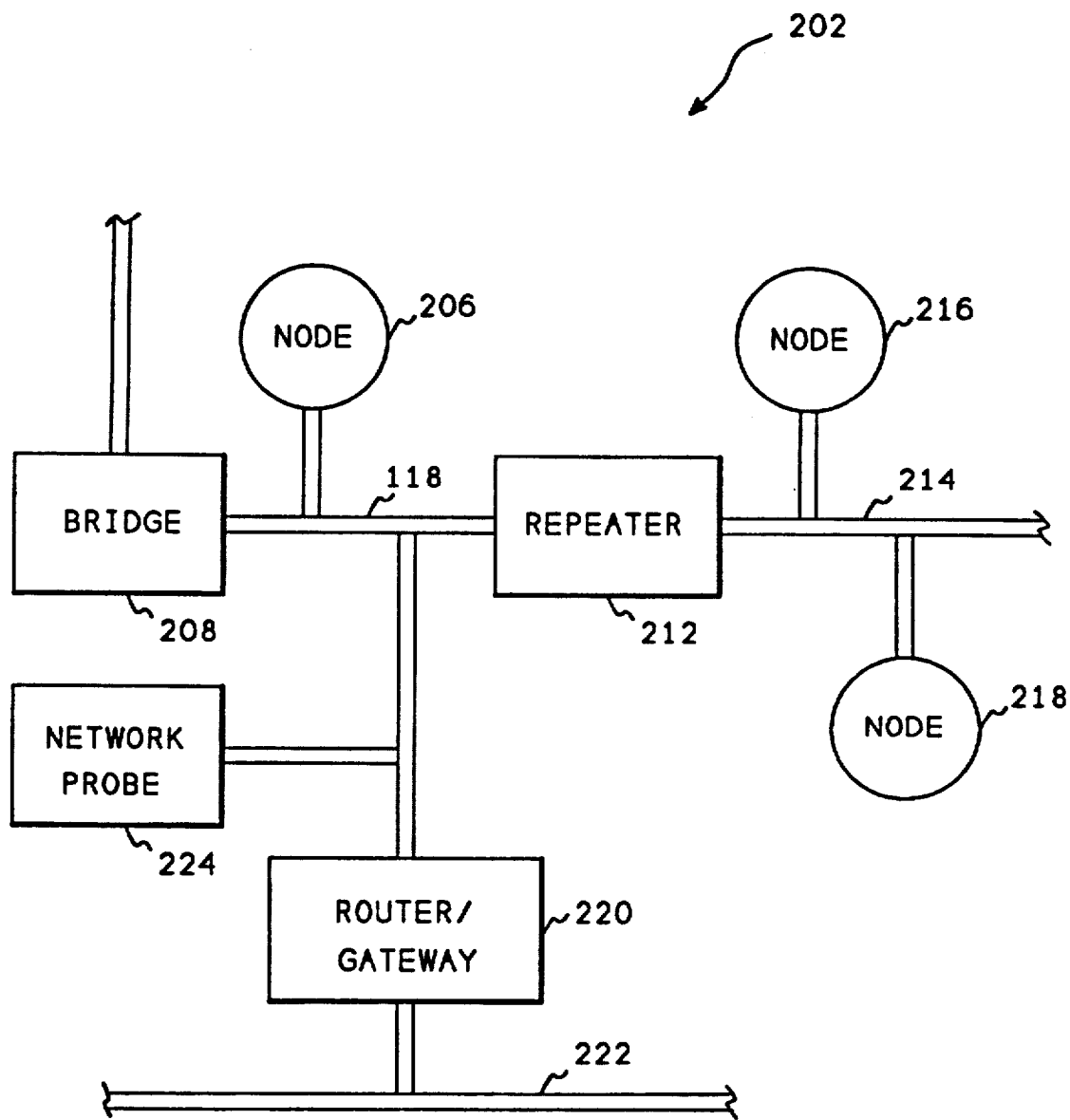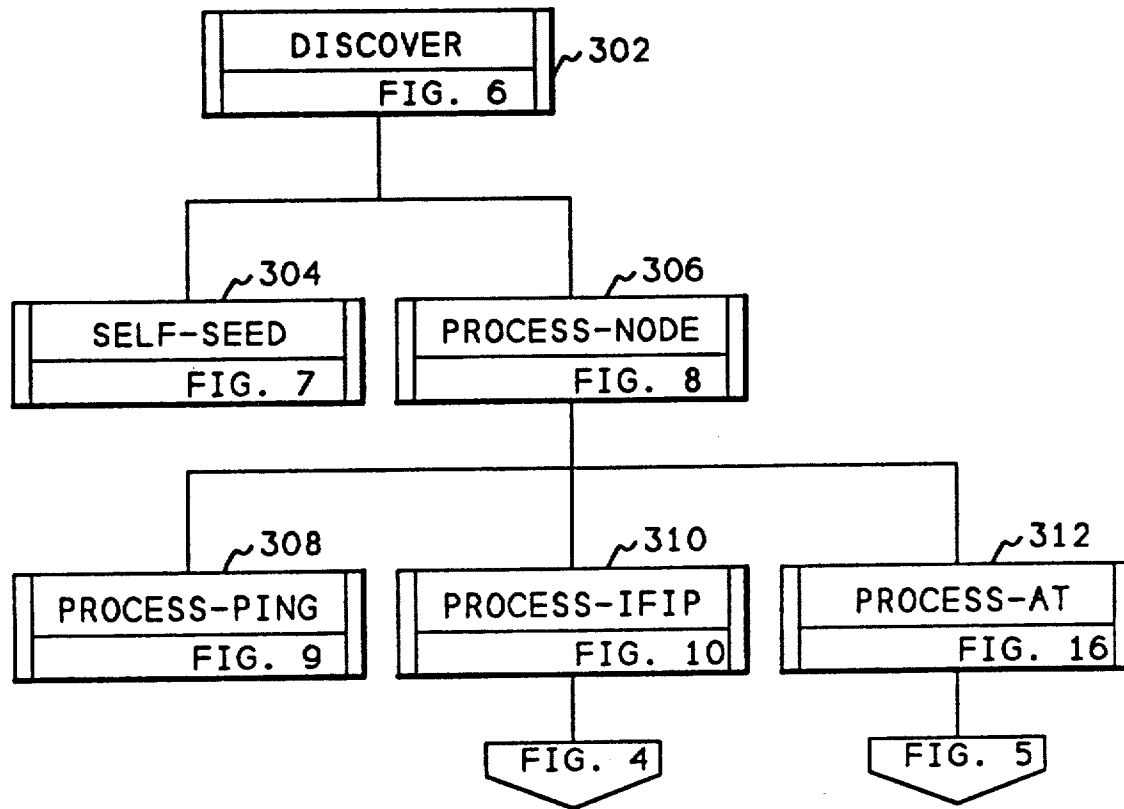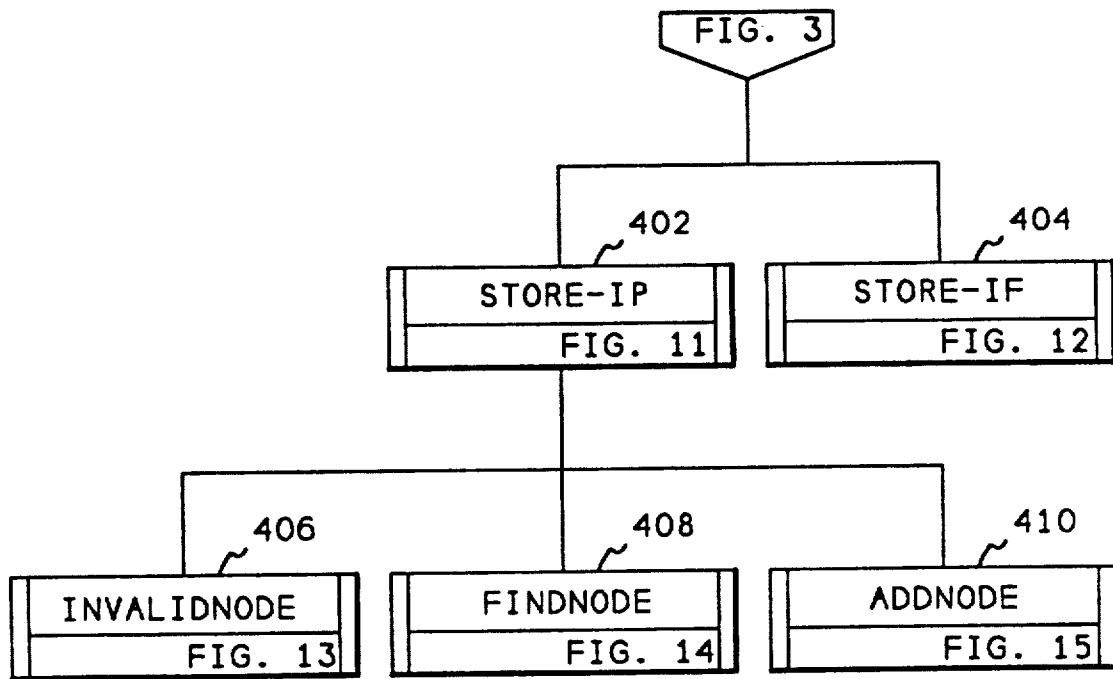
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