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United States Patent [19]

Lee

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[54] **TREE STRUCTURED VARIABLE PRIORITY ARBITRATION IMPLEMENTING A ROUND-ROBIN SCHEDULING POLICY**

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[73] Assignee: **Bell Communications Research, Inc.**, Livingston, N.J.

[21] Appl. No.: **113,588**

[22] Filed: **Aug. 27, 1993**

Related U.S. Application Data

[63] Continuation of Ser. No. 537,683, Jun. 14, 1990, abandoned.

[51] **Int. Cl.**[5] **G06F 13/37; H04Q 11/00**

[52] **U.S. Cl.** **395/725;** 395/325; 364/242.6; 364/242.8; 364/242.9; 364/DIG. 1; 364/937.01; 364/940.92; 364/940.8; 364/DIG. 2; 340/825.5; 370/54; 370/63

[58] **Field of Search** 395/725, 325; 370/54, 370/63

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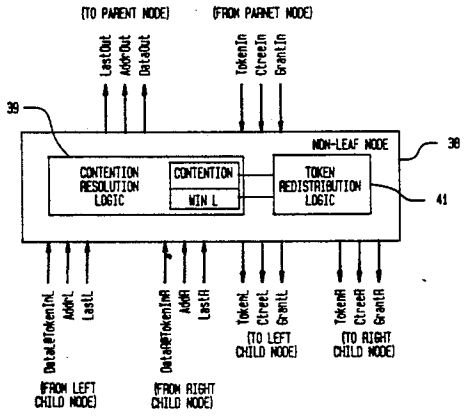
[57] **ABSTRACT**

An inventive arbiter controls access to a resource in a high speed computer or telecommunications network. The arbiter is capable of performing round-robin scheduling for N requests with P possible priority levels with a sublinear time complexity. The high arbitration speed is achieved through use of a tree structure with a token distribution system for implementing the round-robin scheduling policy.

13 Claims, 3 Drawing Sheets



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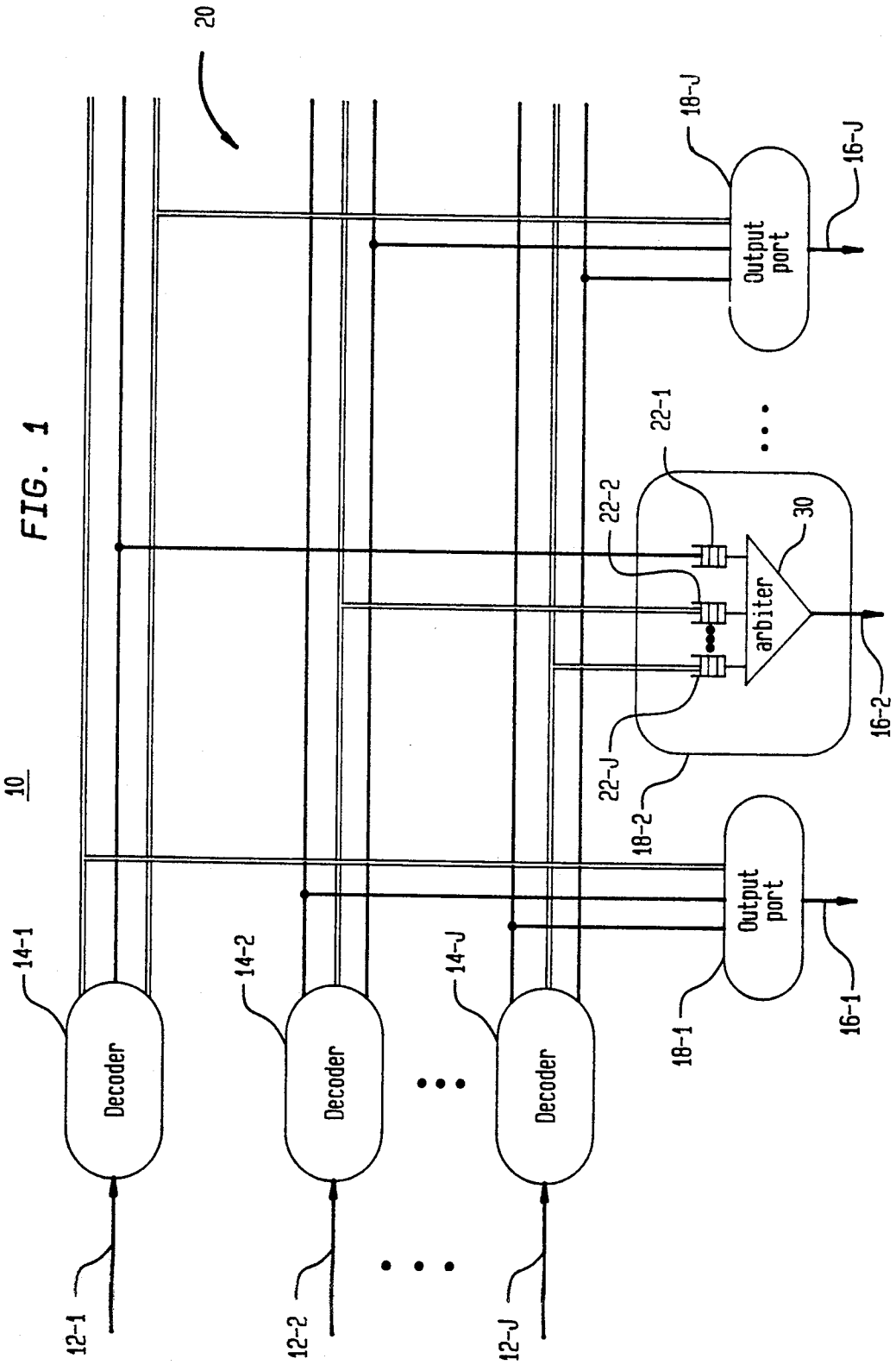


FIG. 1

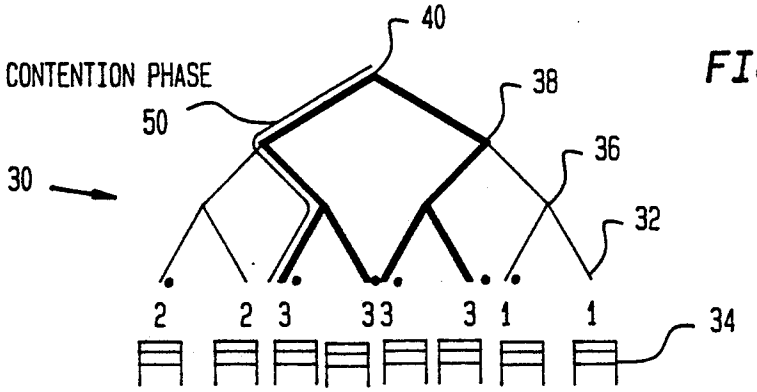


FIG. 2A

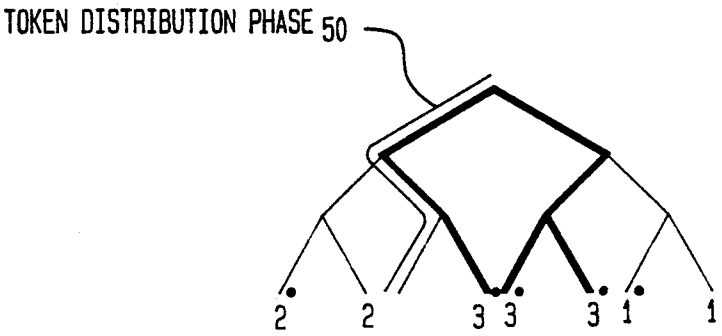


FIG. 2B

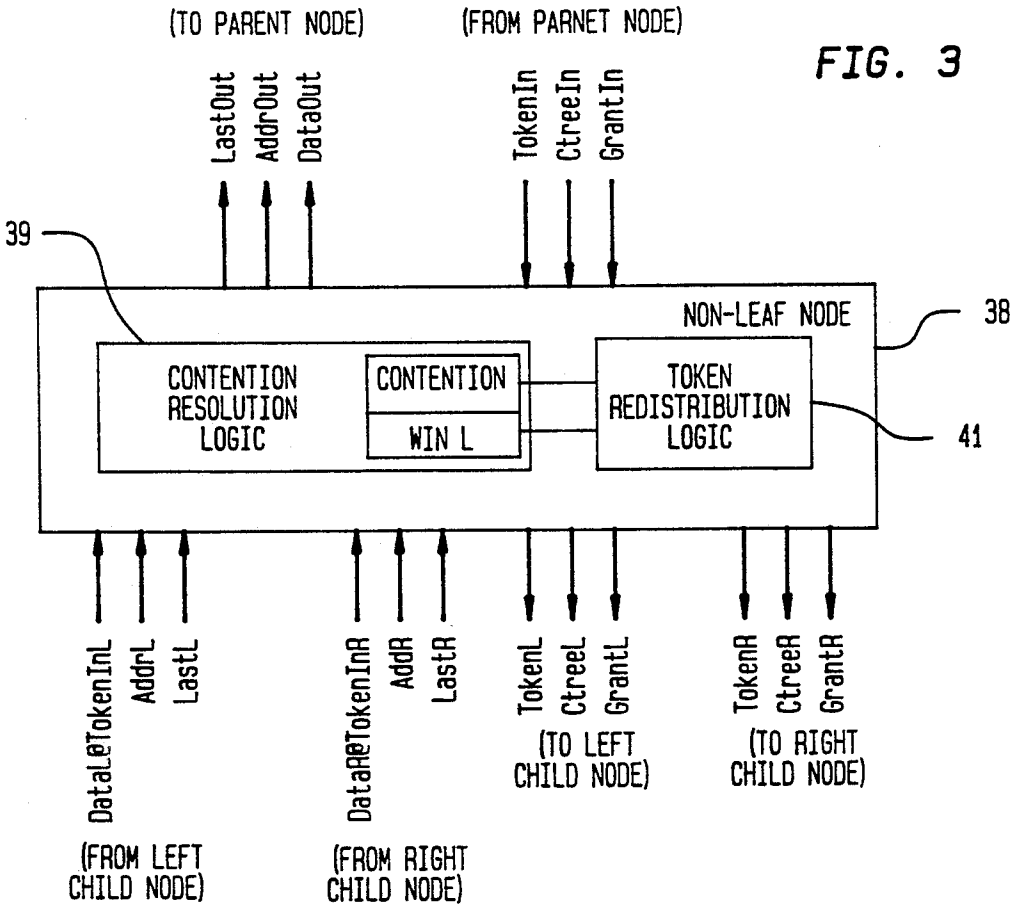
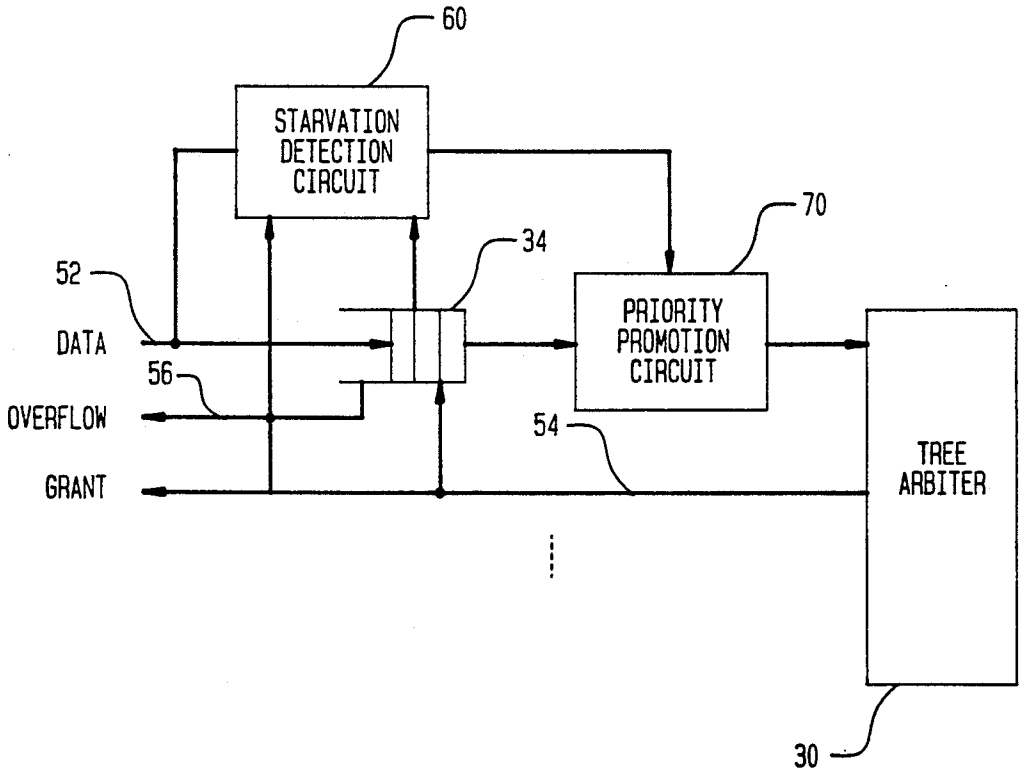


FIG. 3

FIG. 4



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