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United States Patent [19]

Francis et al.

[11] **Patent Number:** **5,331,637**[45] **Date of Patent:** **Jul. 19, 1994**[54] **MULTICAST ROUTING USING CORE BASED TREES**[75] Inventors: **Paul T. Francis**, Morristown, N.J.;
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Jonathan A. Crowcroft, London,
both of England[73] Assignee: **Bell Communications Research, Inc.**,
Livingston, N.J.[21] Appl. No.: **100,634**[22] Filed: **Jul. 30, 1993**[51] Int. Cl.⁵ **H04L 12/44; H04J 3/08**[52] U.S. Cl. **370/54; 370/60;**
370/94.3[58] Field of Search 370/94.1, 94.3, 60,
370/54, 16; 340/827[56] **References Cited****U.S. PATENT DOCUMENTS**4,740,954 4/1988 Cotton et al. 370/60
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sity.*Primary Examiner*—Douglas W. Olms*Assistant Examiner*—Min Jung*Attorney, Agent, or Firm*—Leonard C. Suchyta; James
W. Falk[57] **ABSTRACT**

A method for routing multicast packets in a network is disclosed. A node s101 wishing to join a particular multicast group transmits a packet via a sequence of nodes (r101, r102, r104, r107) including a core node r107 on the multicast tree corresponding to the particular multicast group which the node wishes to join. The packet contains a request to join the particular multicast group and the multicast address of the core node r107 of the multicast tree corresponding to the particular multicast group. The packet is received at each node r101, r102, r104, r107 of the sequence of nodes. Each node r101, r102, r104, r107 which receives the packet writes an address of the node s101, r101, r102, r104 from which the packet was received in an entry of a multicast forwarding table maintained thereat which entry is indexed by the multicast address of the core node r107. If the node r101, r102, r104 which received the packet is not on the multicast tree of the particular multicast group, the node r101, r102, r104 writes an address of the next node r102, r104, r107 of the sequence of nodes in the multicast forwarding table entry indexed by the multicast address of the core node r107. The packet is then retransmitted to the next node r102, r104, r107 of the sequence of nodes.

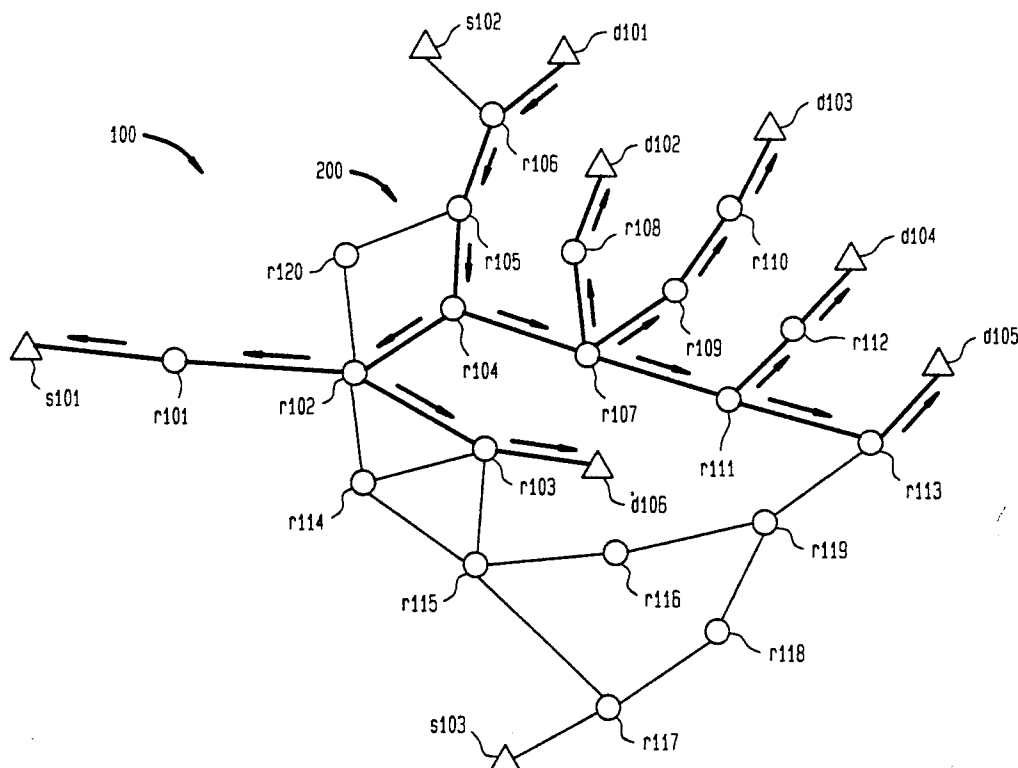
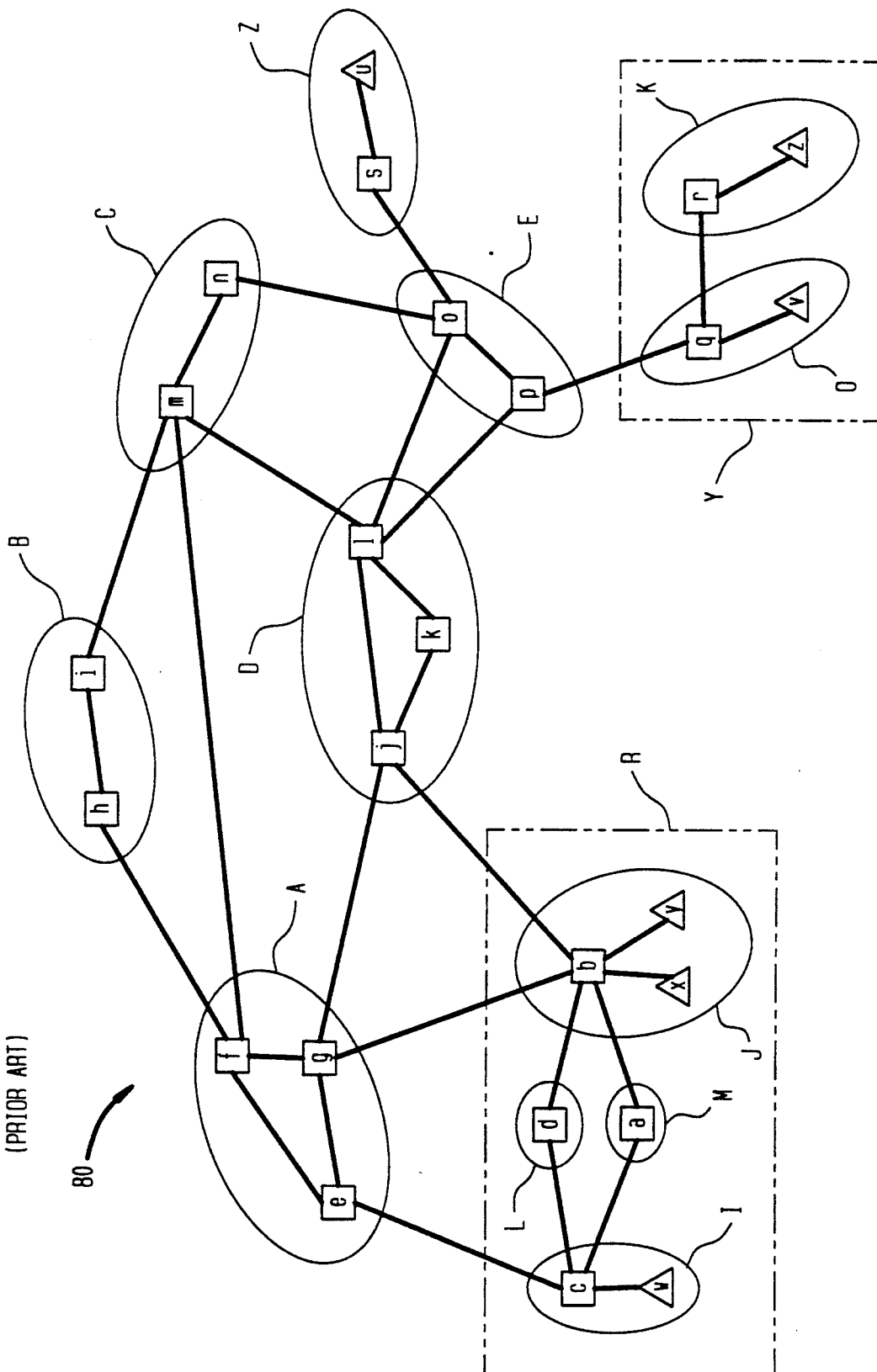
16 Claims, 8 Drawing Sheets

FIG. 1
(PRIOR ART)



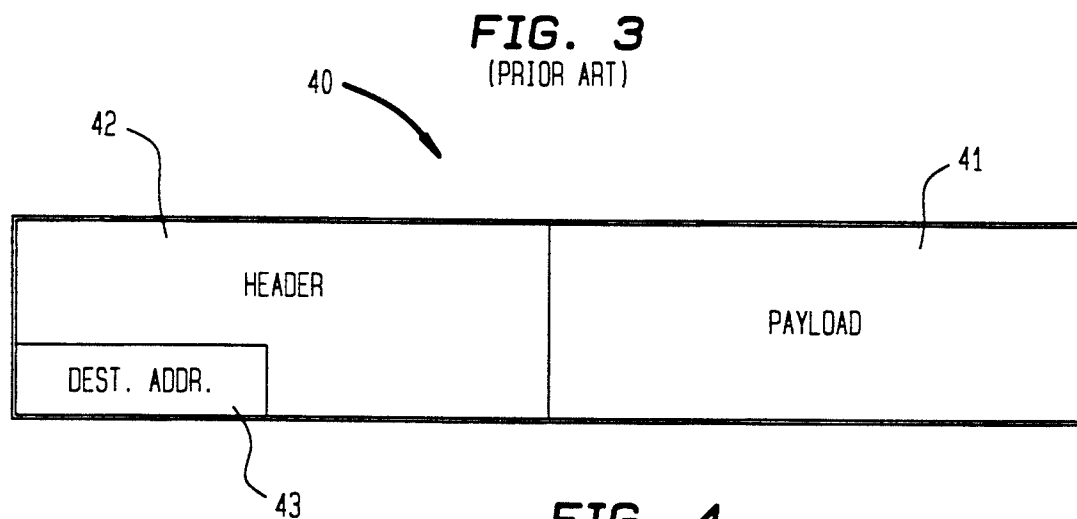
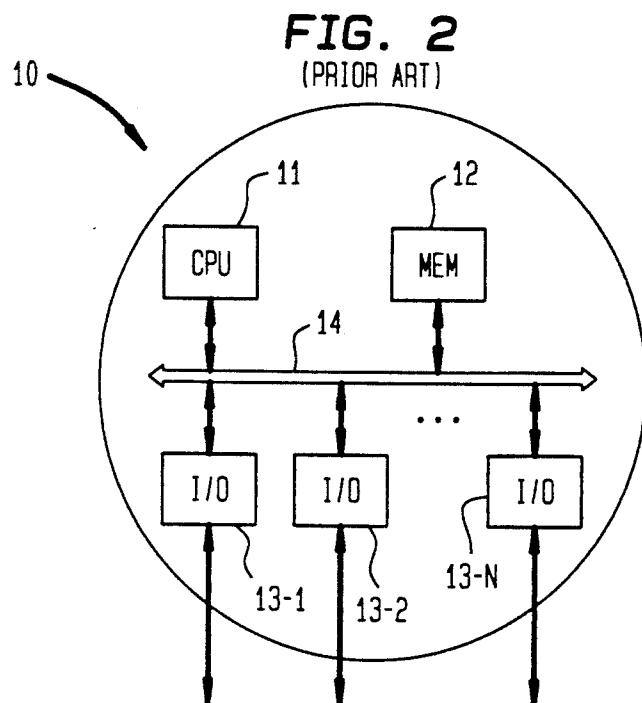


FIG. 4
(PRIOR ART)

INDEX	NEXT NODE
v	c
x	b
y	b
v	b
z	b

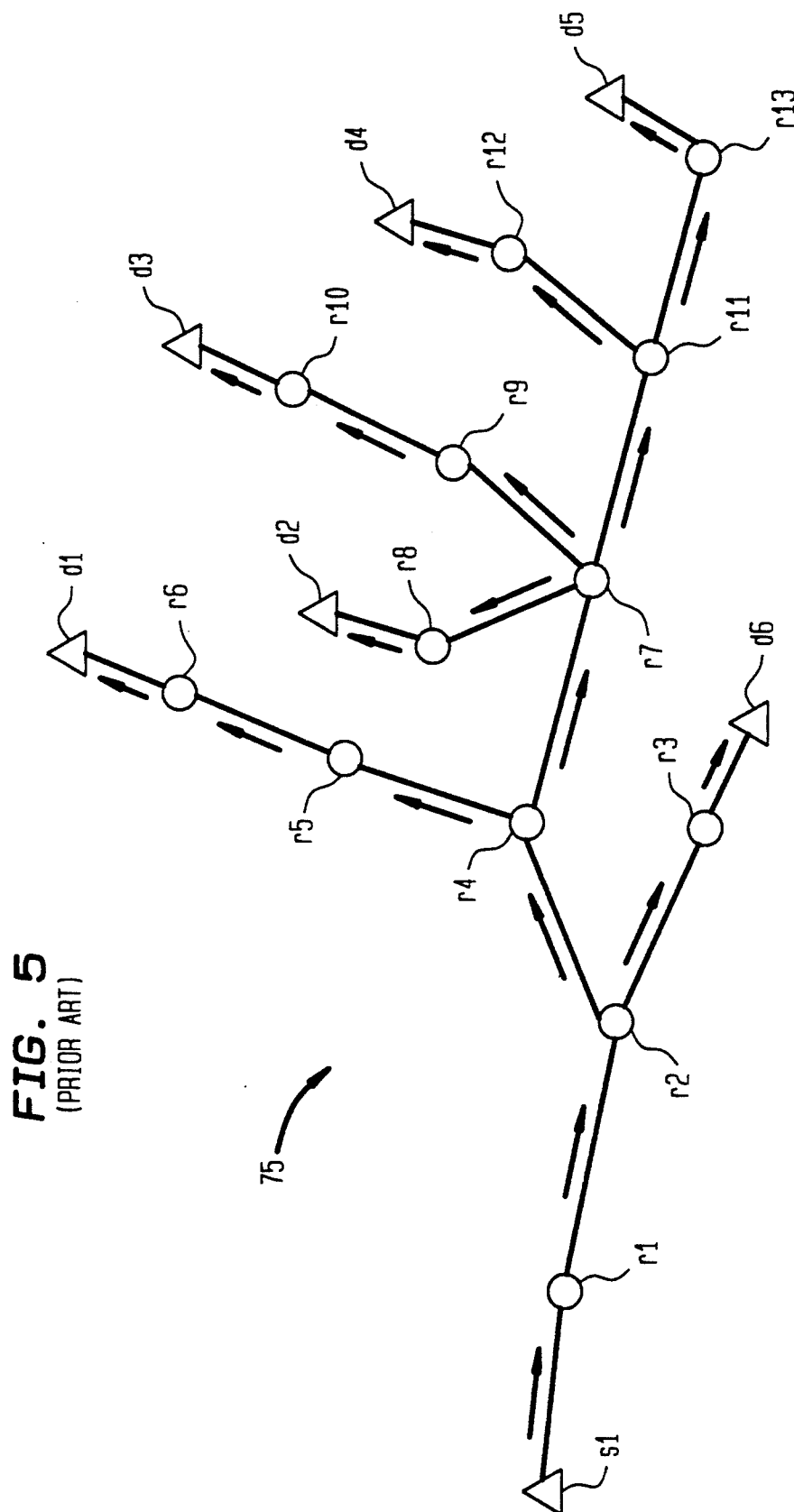
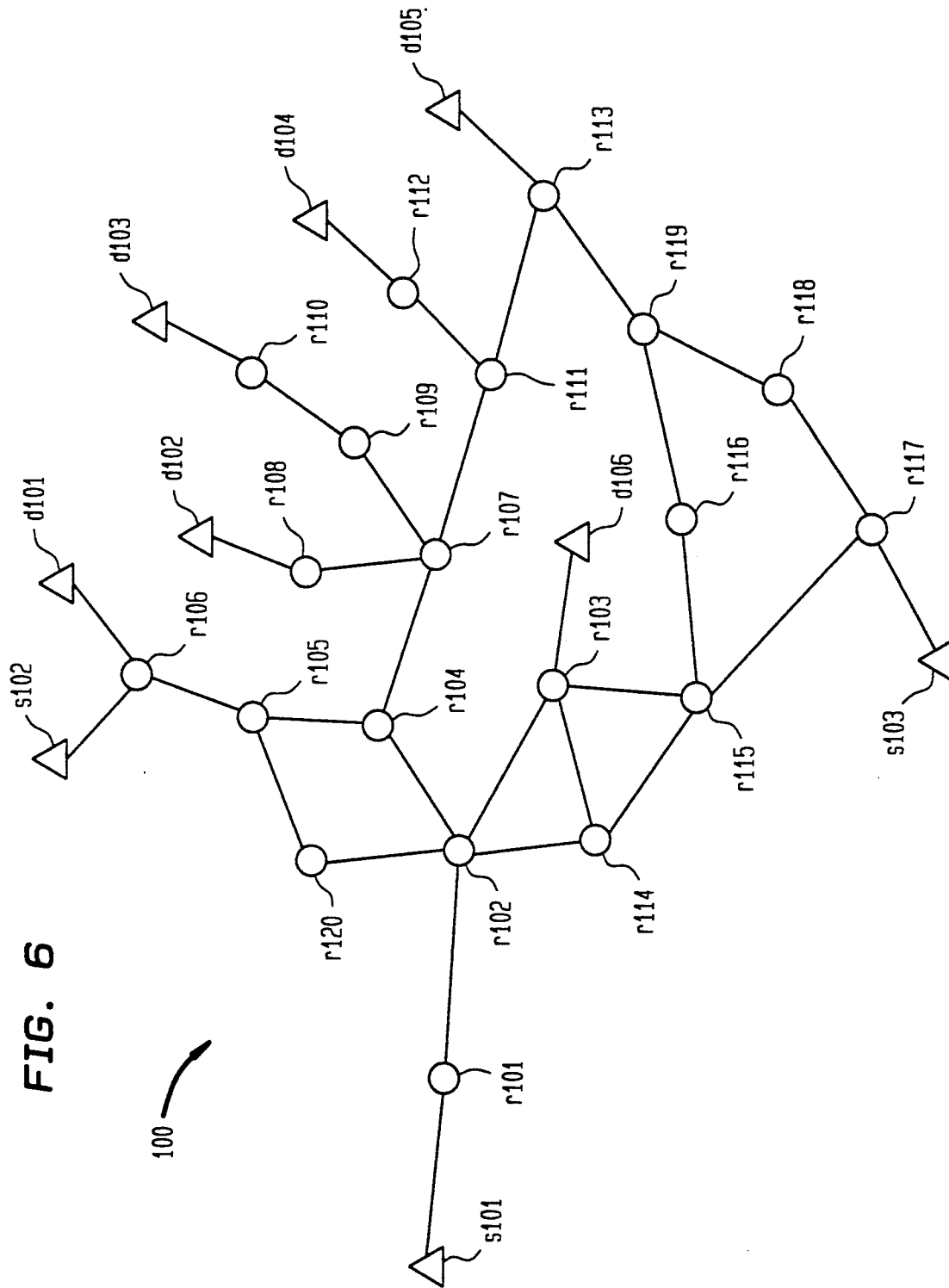


FIG. 6



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