

Exhibit Q

Part 1



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(54) **NETWORK SUPPORTING ROAMING,
SLEEPING TERMINALS**

(75) Inventors: **Charles D. Gollnick**, Cedar Rapids, IA (US); **Ronald E. Luse**, Marion, IA (US); **John G. Pavek**, Cedar Rapids, IA (US); **Marvin L. Sojka**, Cedar Rapids, IA (US); **James D. Cnossen**, Marion, IA (US); **Arvin D. Danielson**, Cedar Rapids, IA (US); **Ronald L. Mahany**, Cedar Rapids, IA (US); **Mary L. Detweiler**, Parnell, IA (US); **Gary N. Spiess**, Lisbon, IA (US); **Guy J. West**, Cedar Rapids, IA (US); **Amos D. Young**, Cedar Rapids, IA (US); **Robert C. Meier**, Cedar Rapids, IA (US); **Keith K. Cargin, Jr.**, Cedar Rapids, IA (US); **Richard C. Arensdorf**, Ely, IA (US); **Robert G. Geers**, Cedar Rapids, IA (US)

(73) Assignee: **Broadcom Corporation**, Irvine, CA (US)

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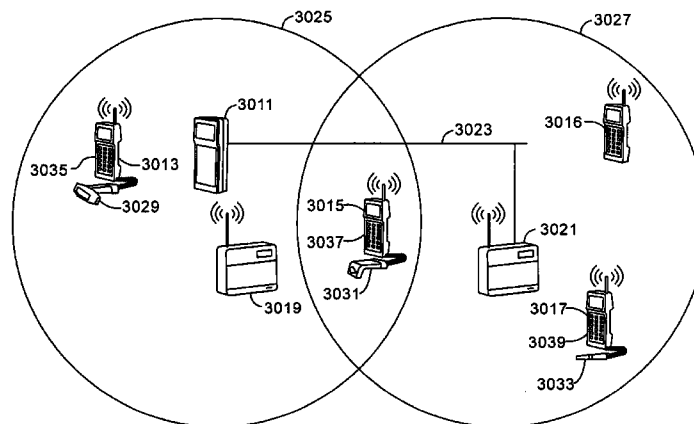
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Primary Examiner—Philip J Sobutka

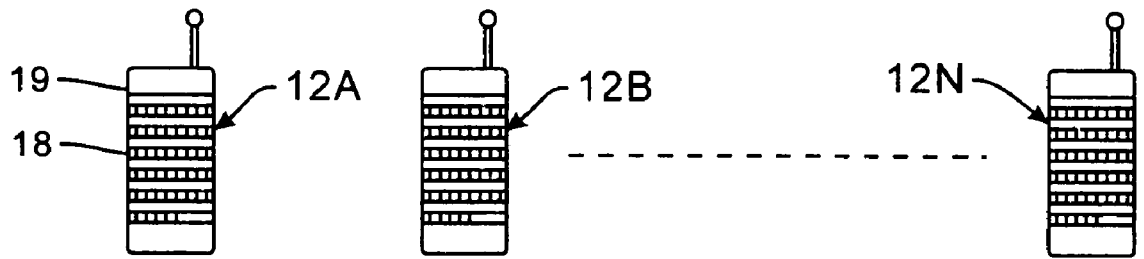
(74) Attorney, Agent, or Firm—McAndrews, Held & Mallow, Ltd.

(57)

ABSTRACT

Improved apparatus for a radio communication system having a multiplicity of mobile transceiver units selectively in communication with a plurality of base transceiver units which, in turn, communicate with one or more host computers for storage and manipulation of data collected by bar code scanners or other collection means associated with the mobile transceiver units. A network controller and an adapter which has a simulcast and sequential mode provide selective interface between host computers and base transceivers. A scheme for routing data through the communication system is also disclosed wherein the intermediate base stations are organized into an optimal spanning-tree network to control the routing of data to and from the RF terminals and the host computer efficiently and dynamically. Additionally, redundant network and communication protocol is disclosed wherein the network utilizes a polling communication protocol which, under heavy loaded conditions, requires that a roaming terminal wishing to initiate communication must first determine that the channel is truly clear by listening for an entire interpoll gap time. In a further embodiment, a criterion used by the roaming terminals for attaching to a given base station reduces conflicts in the overlapping RF regions of adjacent base stations.

203 Claims, 26 Drawing Sheets



Portable Radio
Terminals

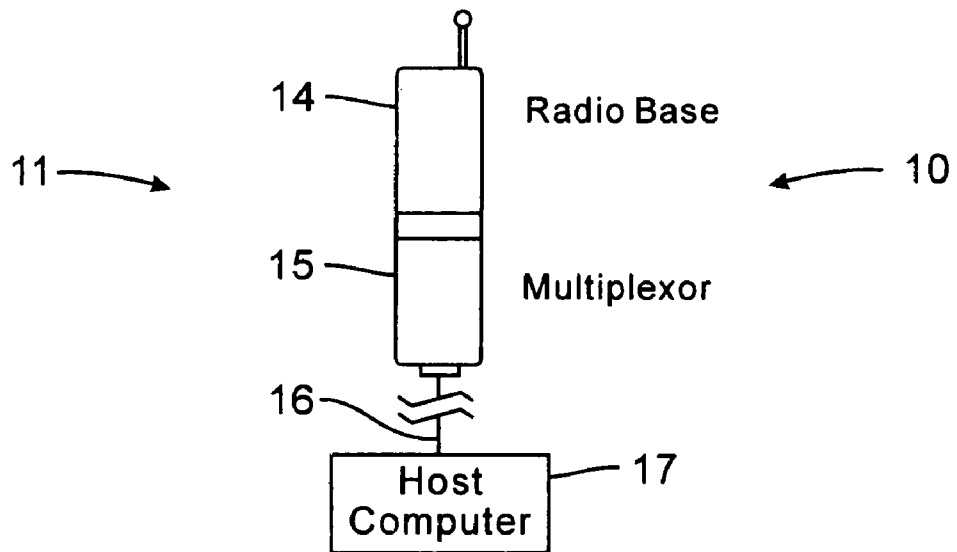


Fig. 1
(Prior Art)

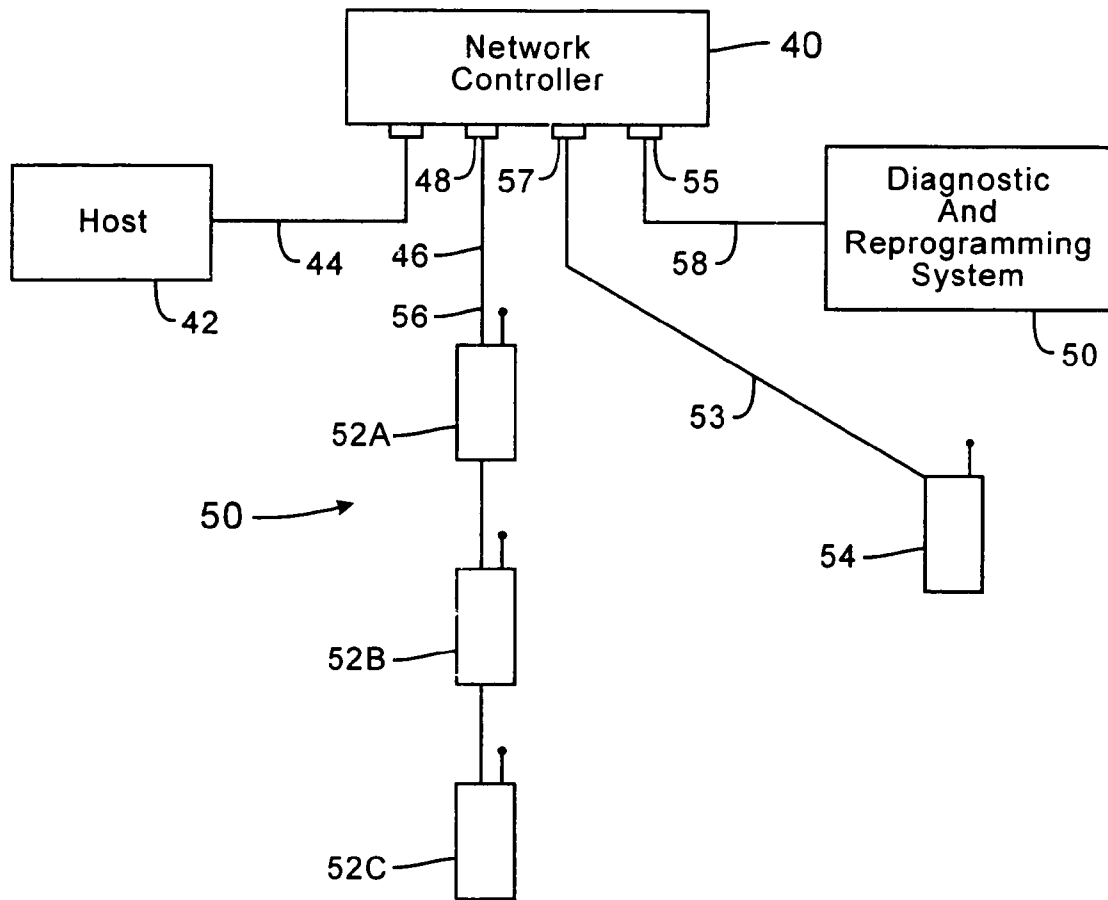


Fig. 3

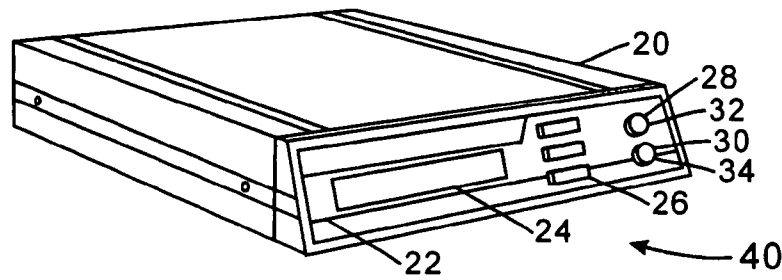


Fig. 2

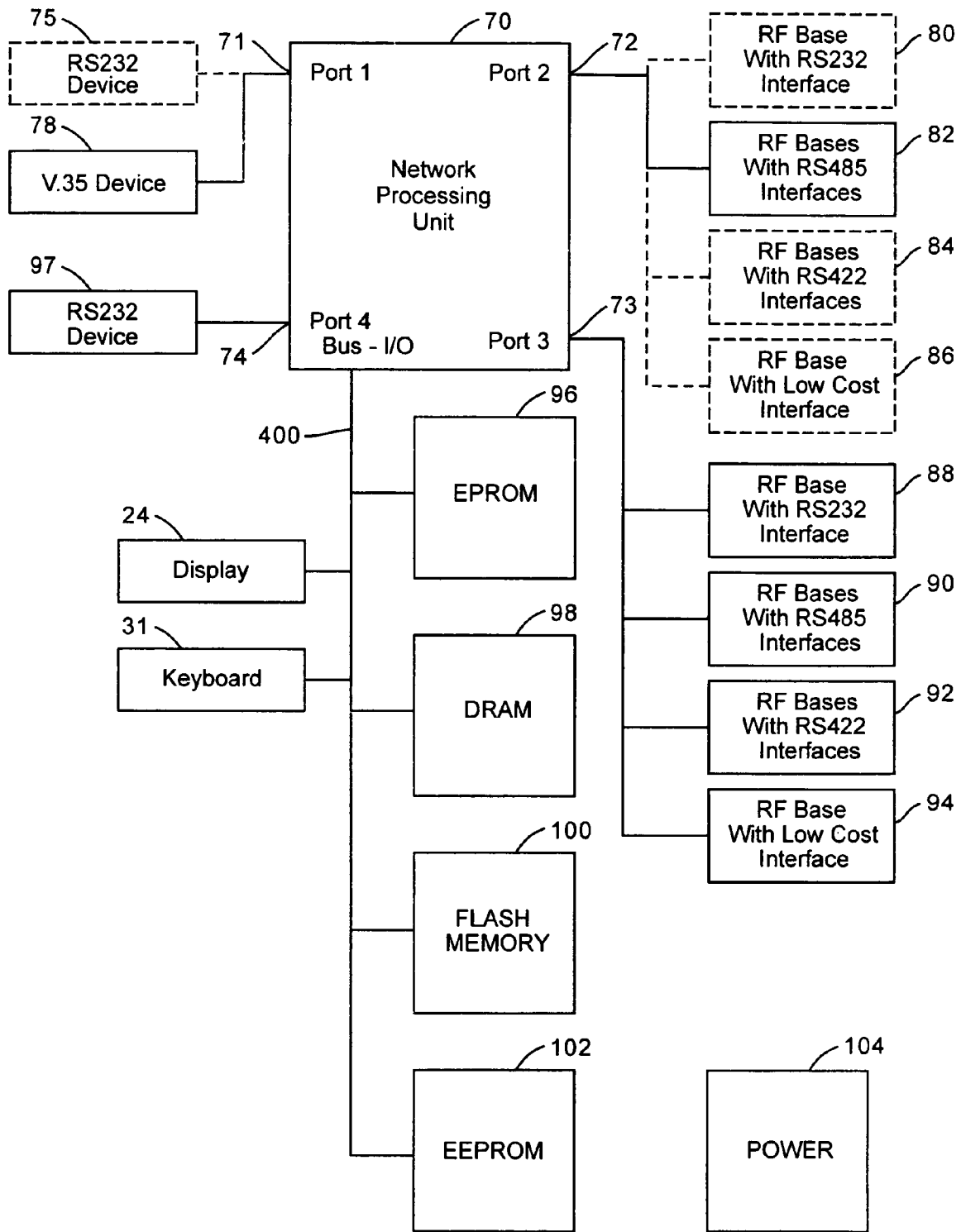


Fig. 4

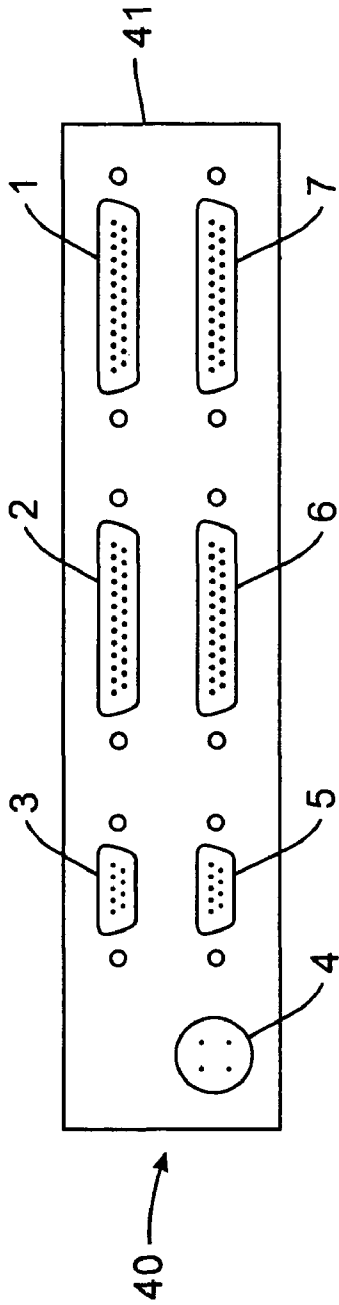


Fig. 5

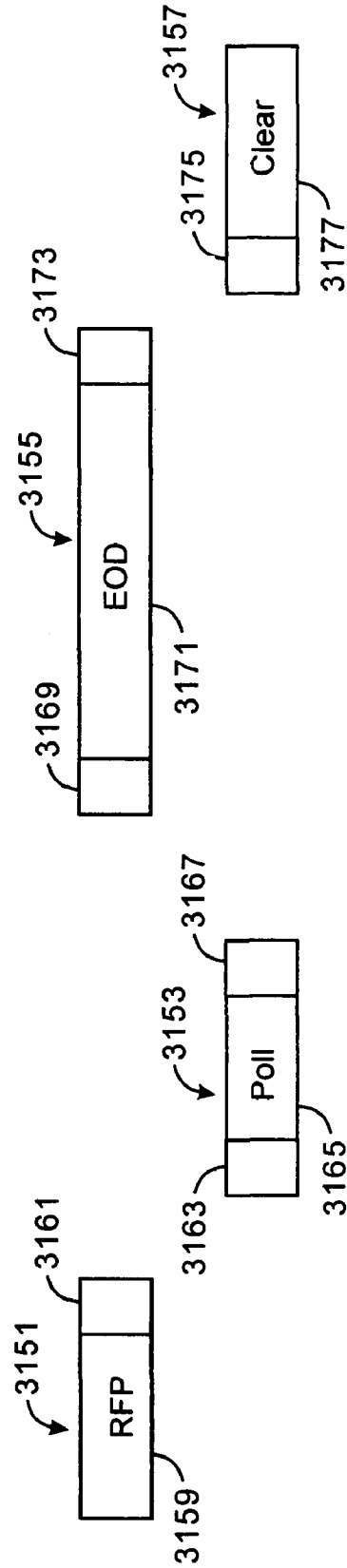


Fig. 20

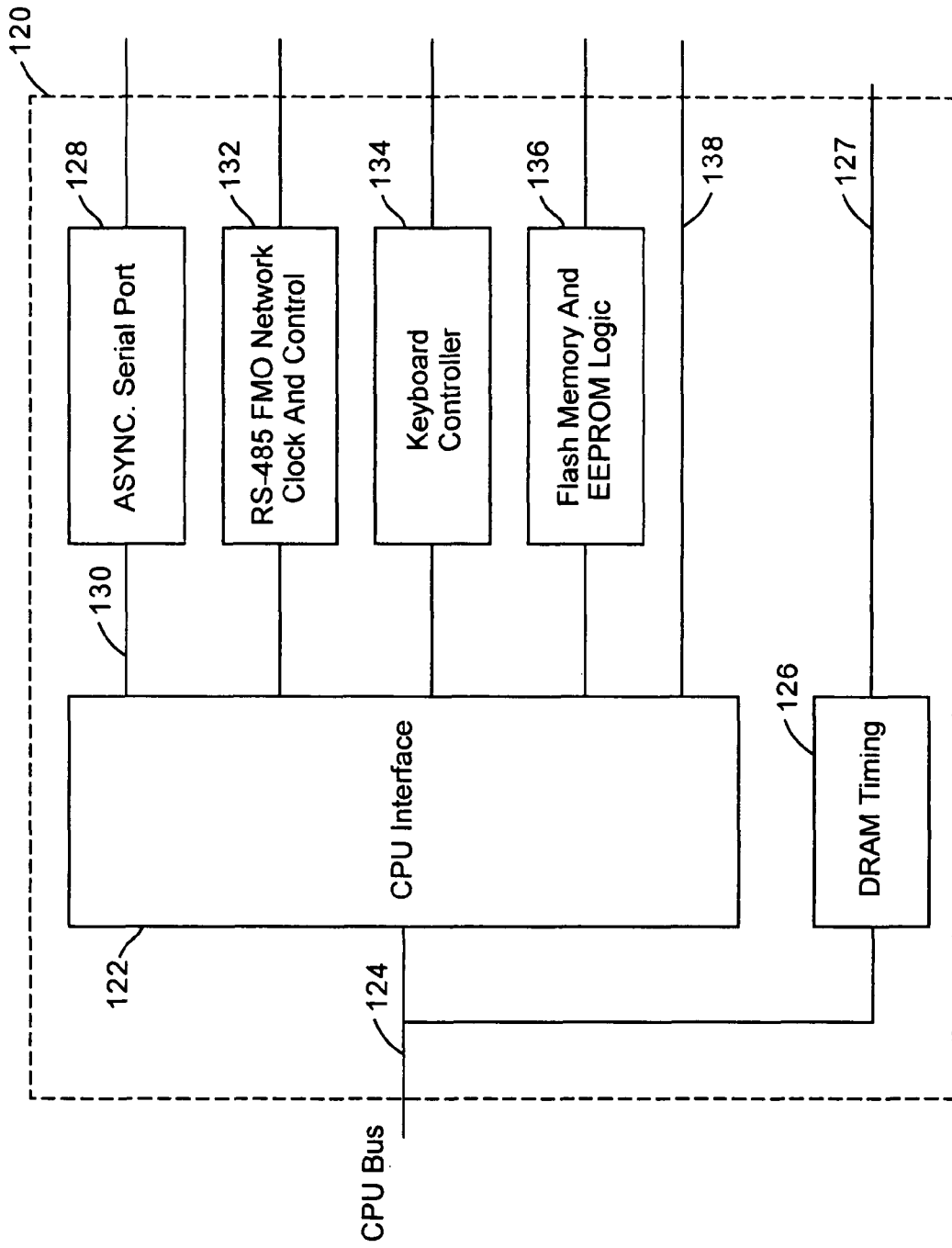


Fig.6

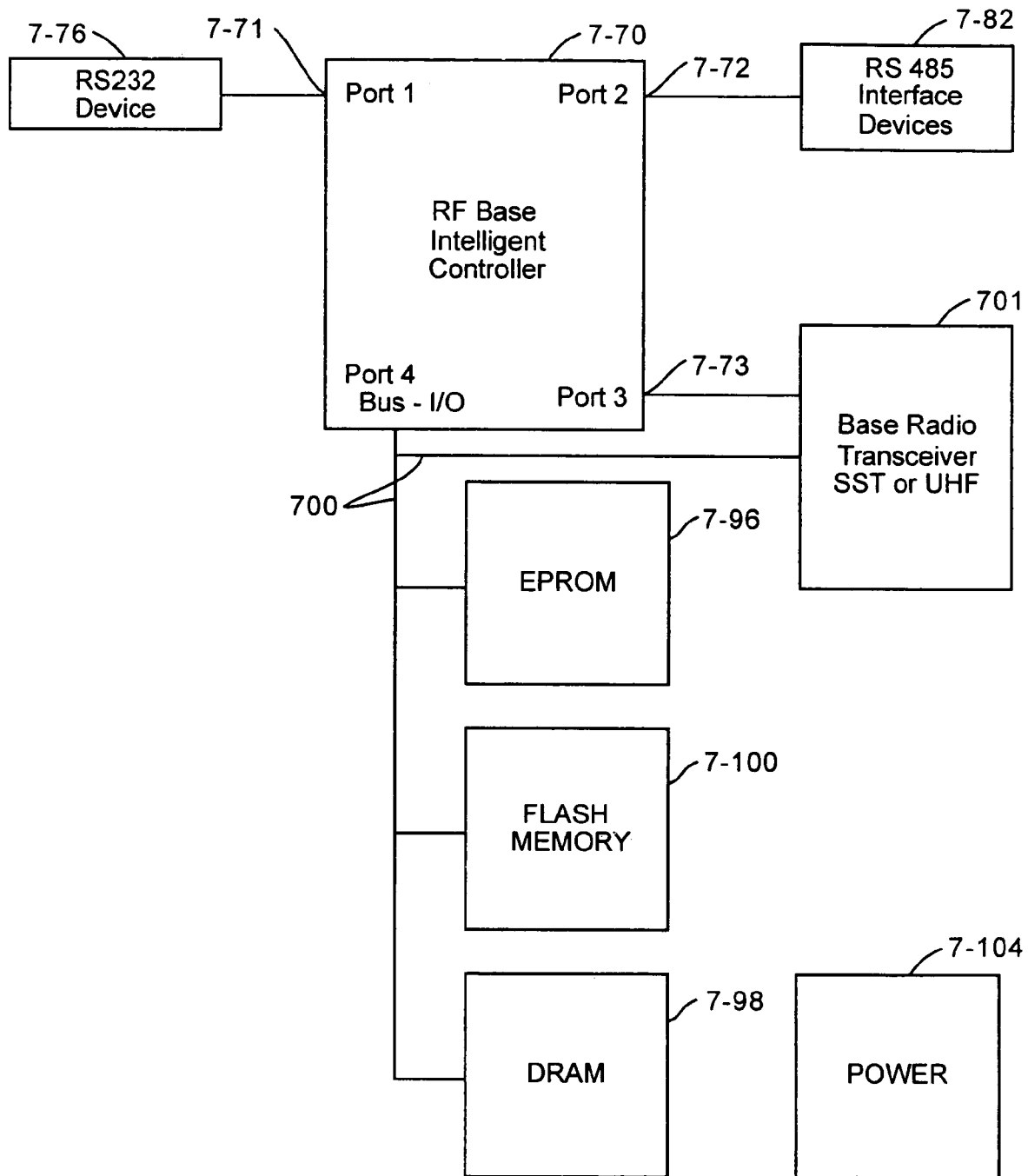


Fig. 7

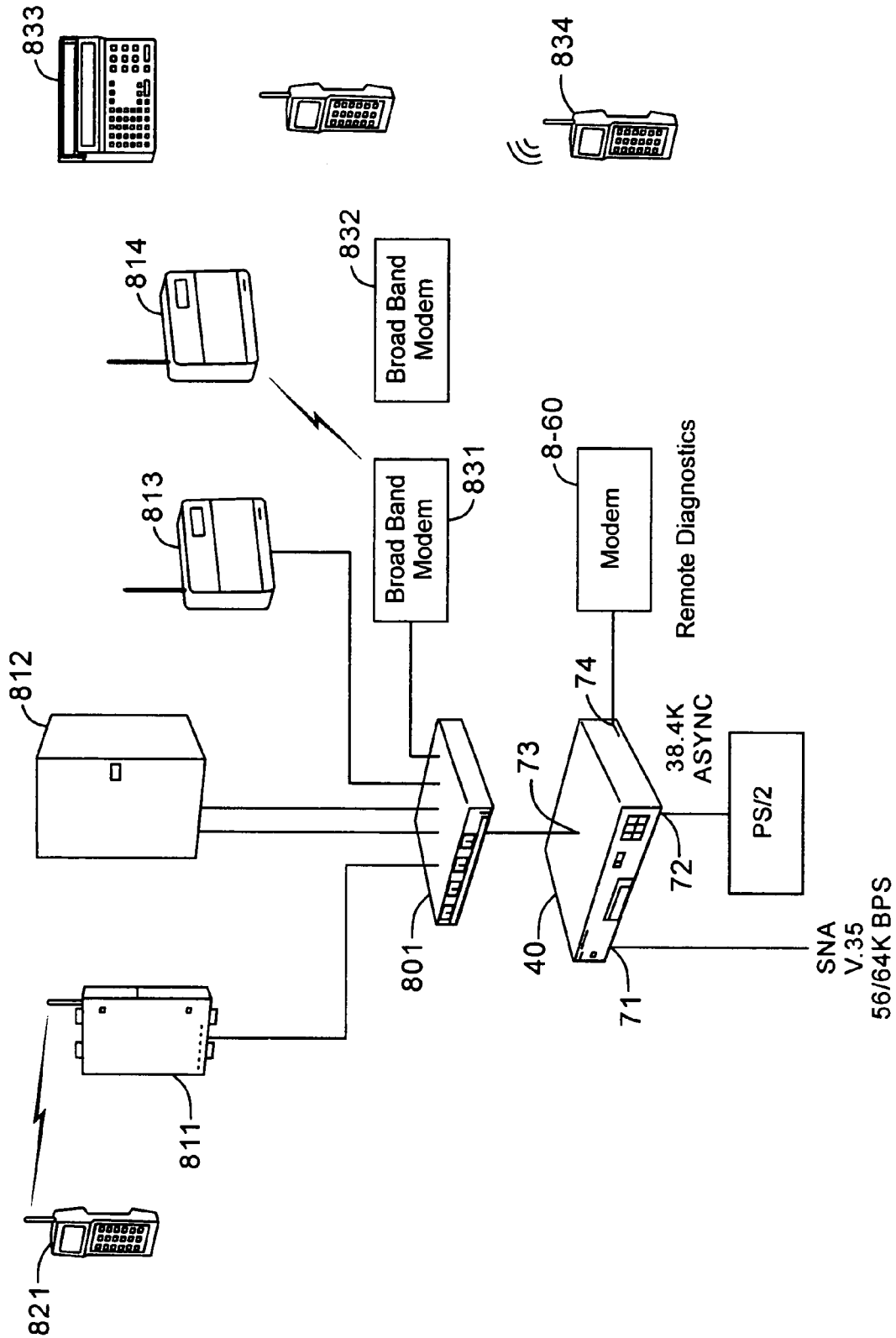


Fig. 8

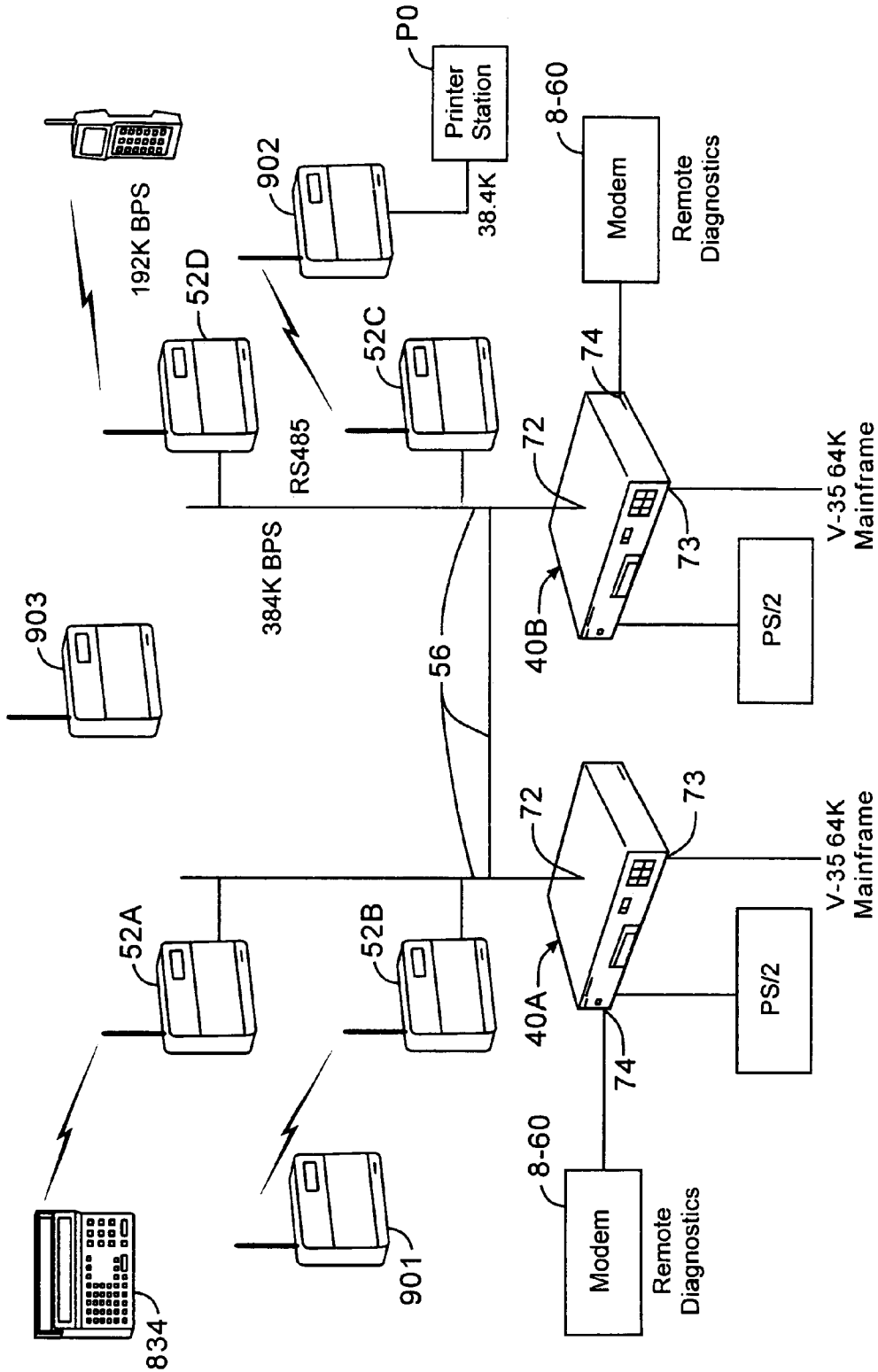


Fig. 9

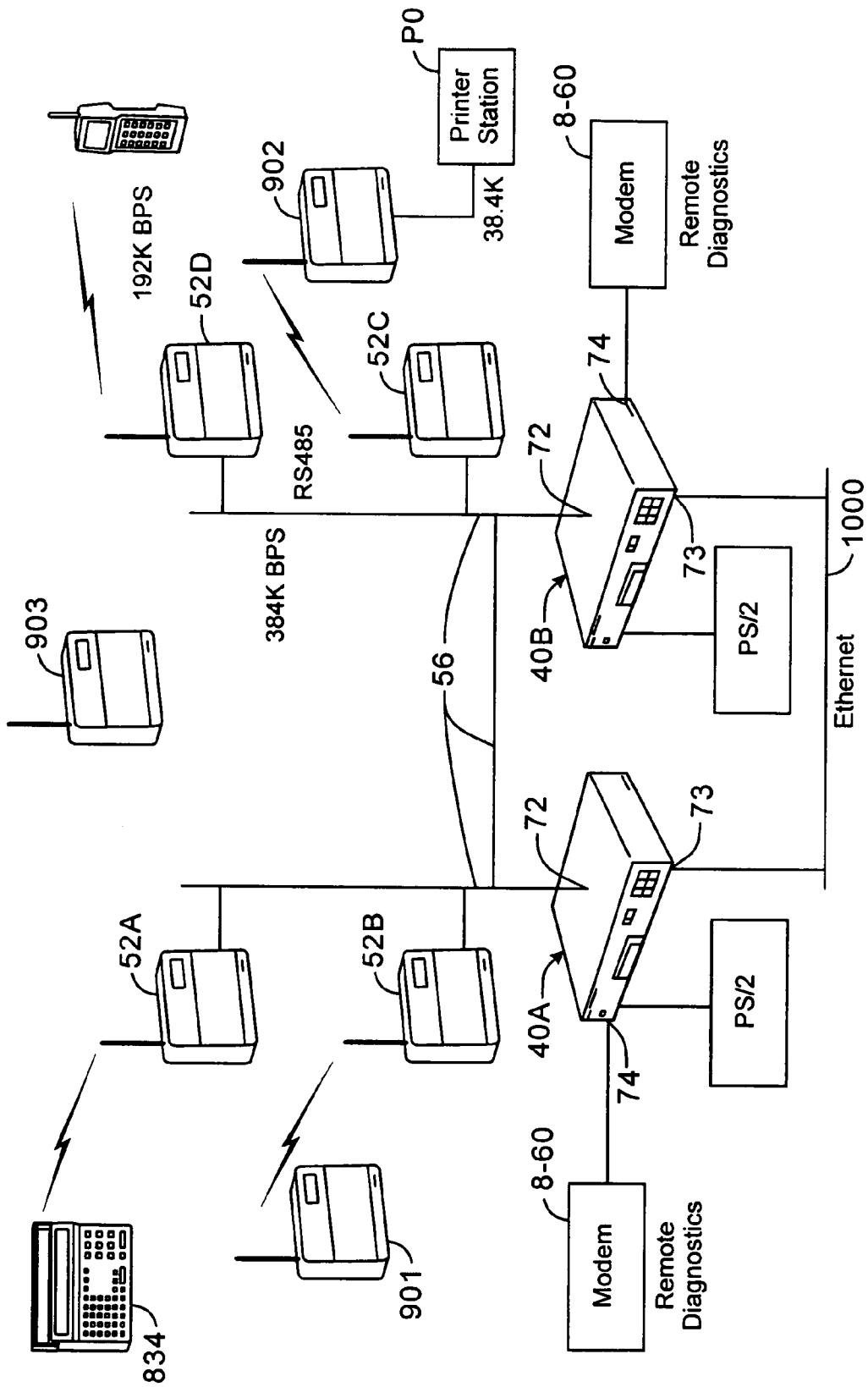


Fig. 10

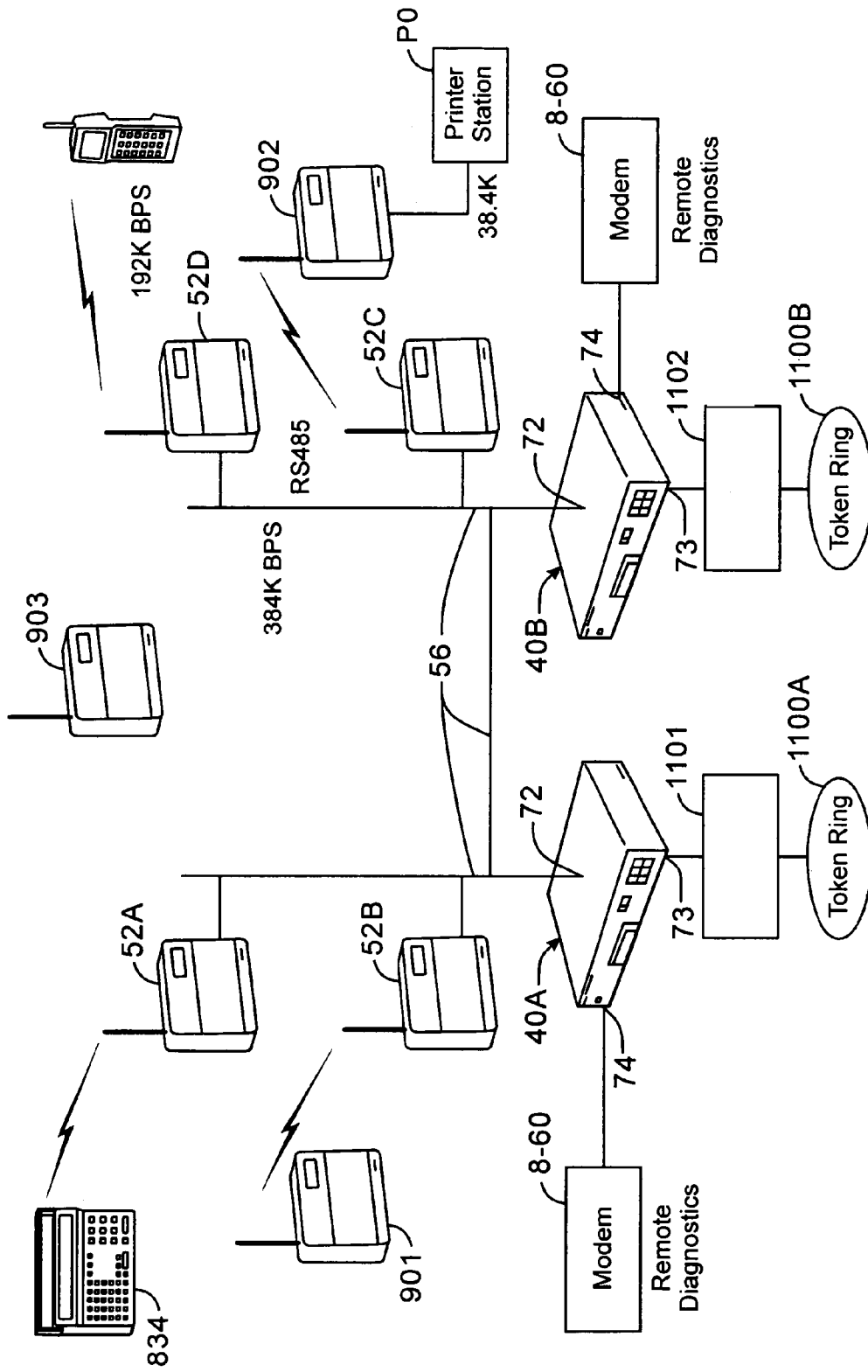


Fig.11

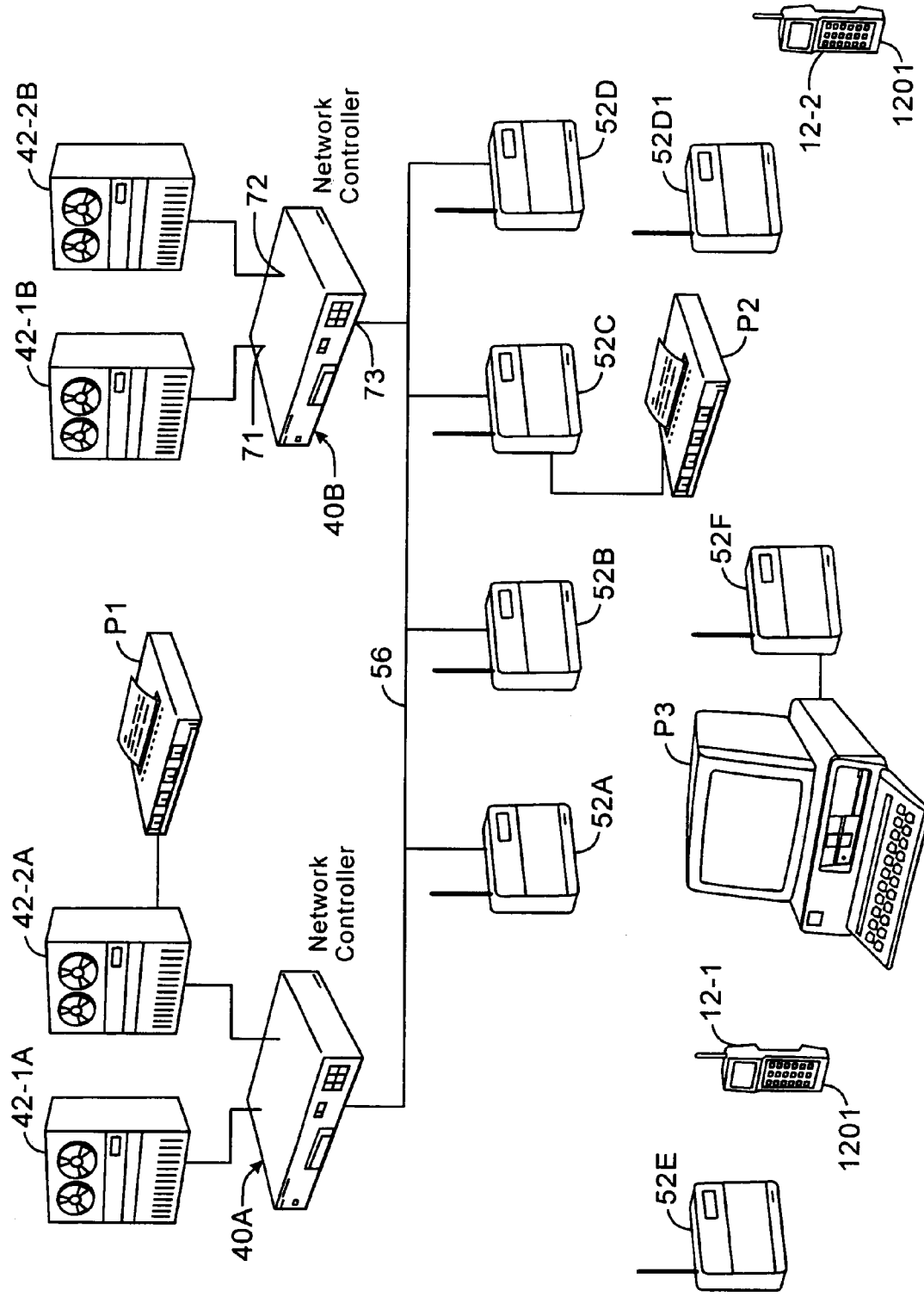


Fig.12

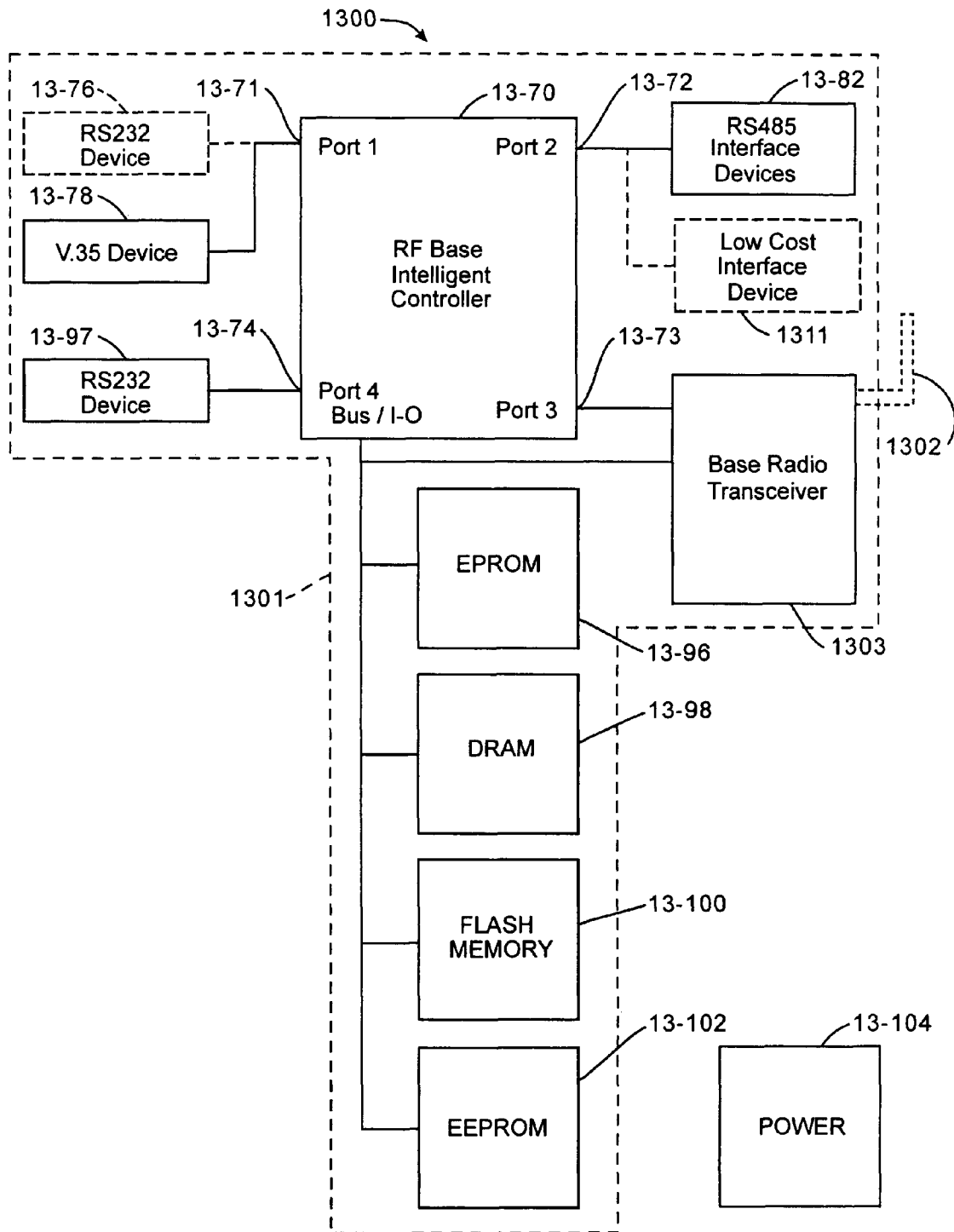


Fig. 13

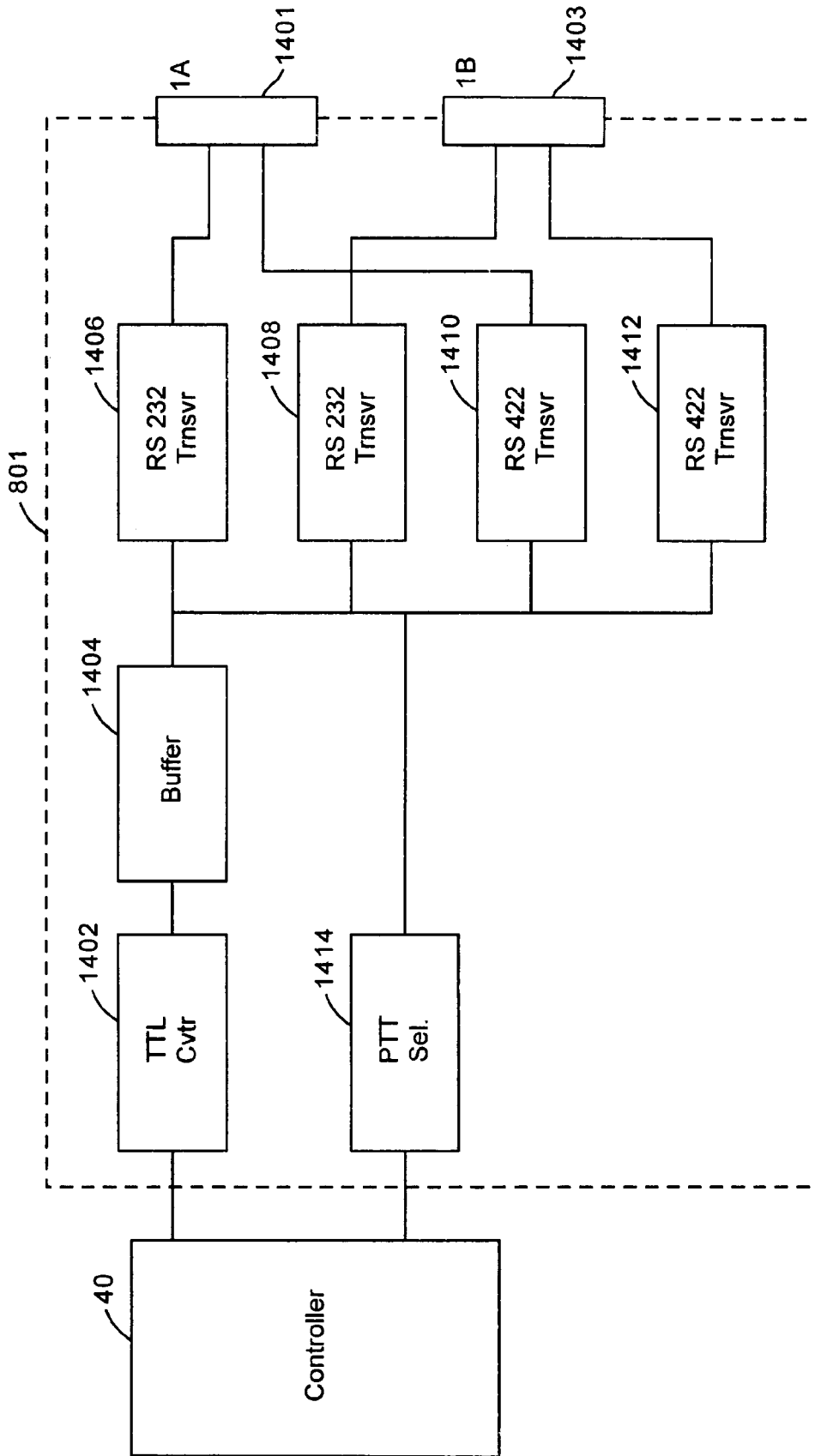


Fig.14

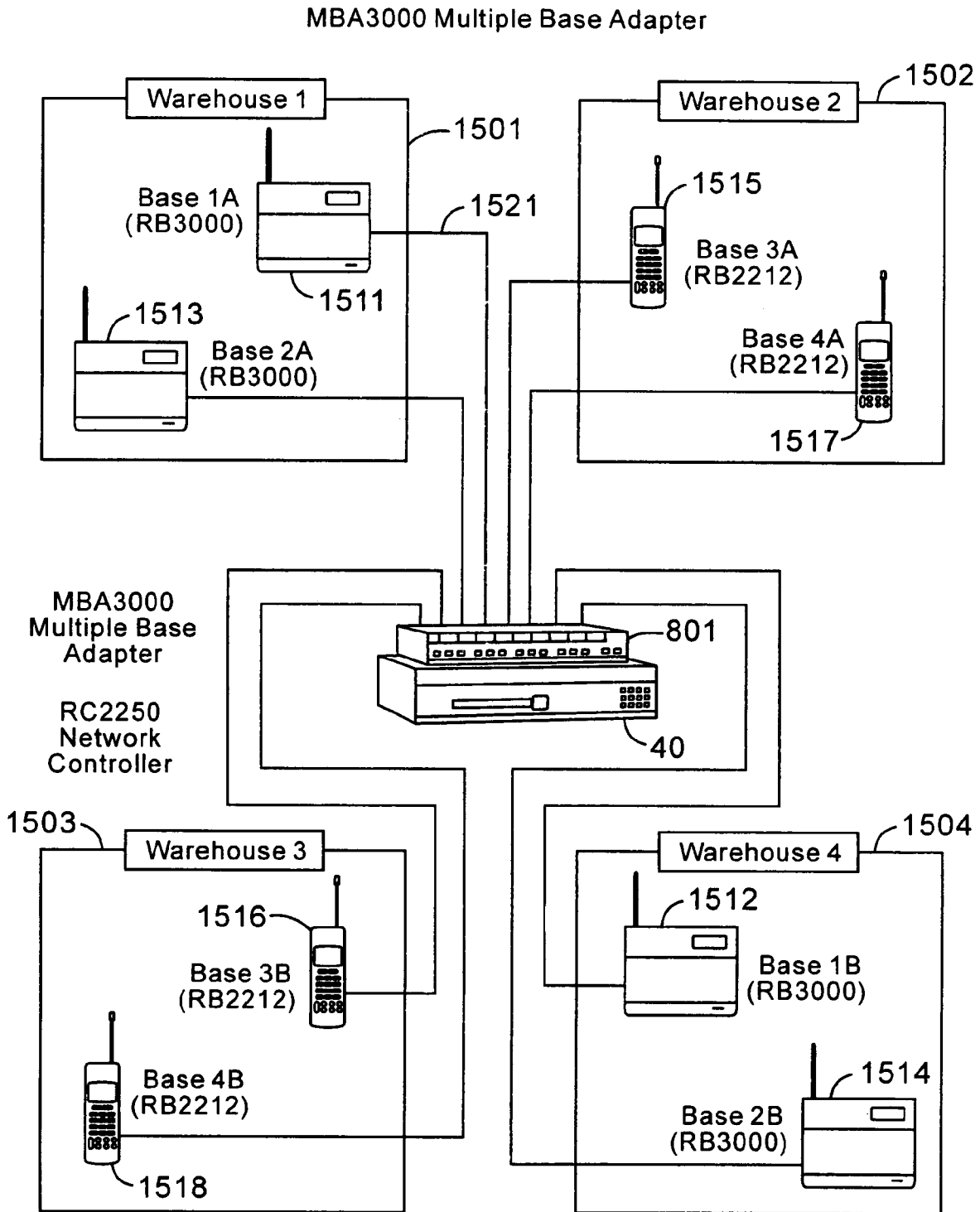


Fig. 15

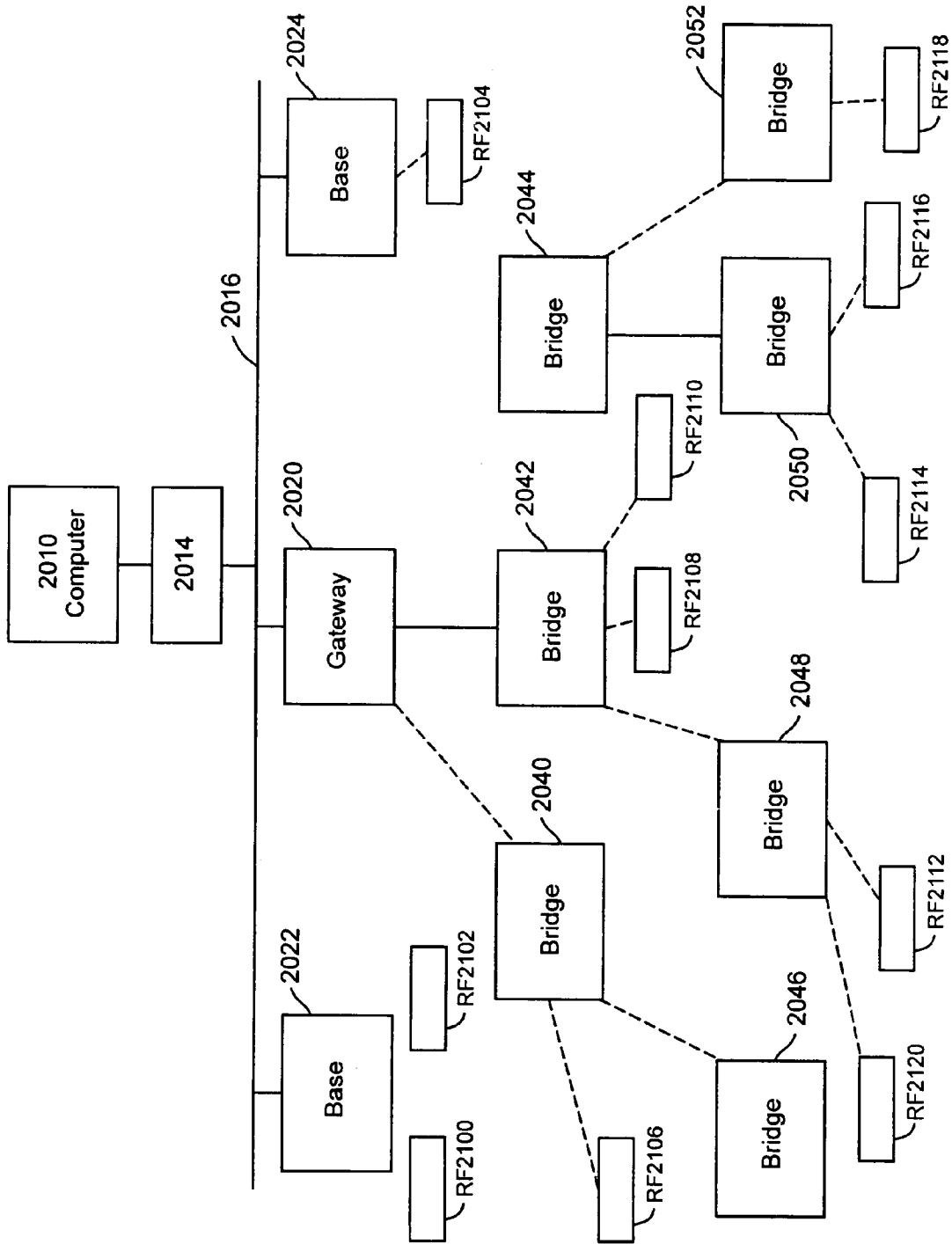


Fig. 16

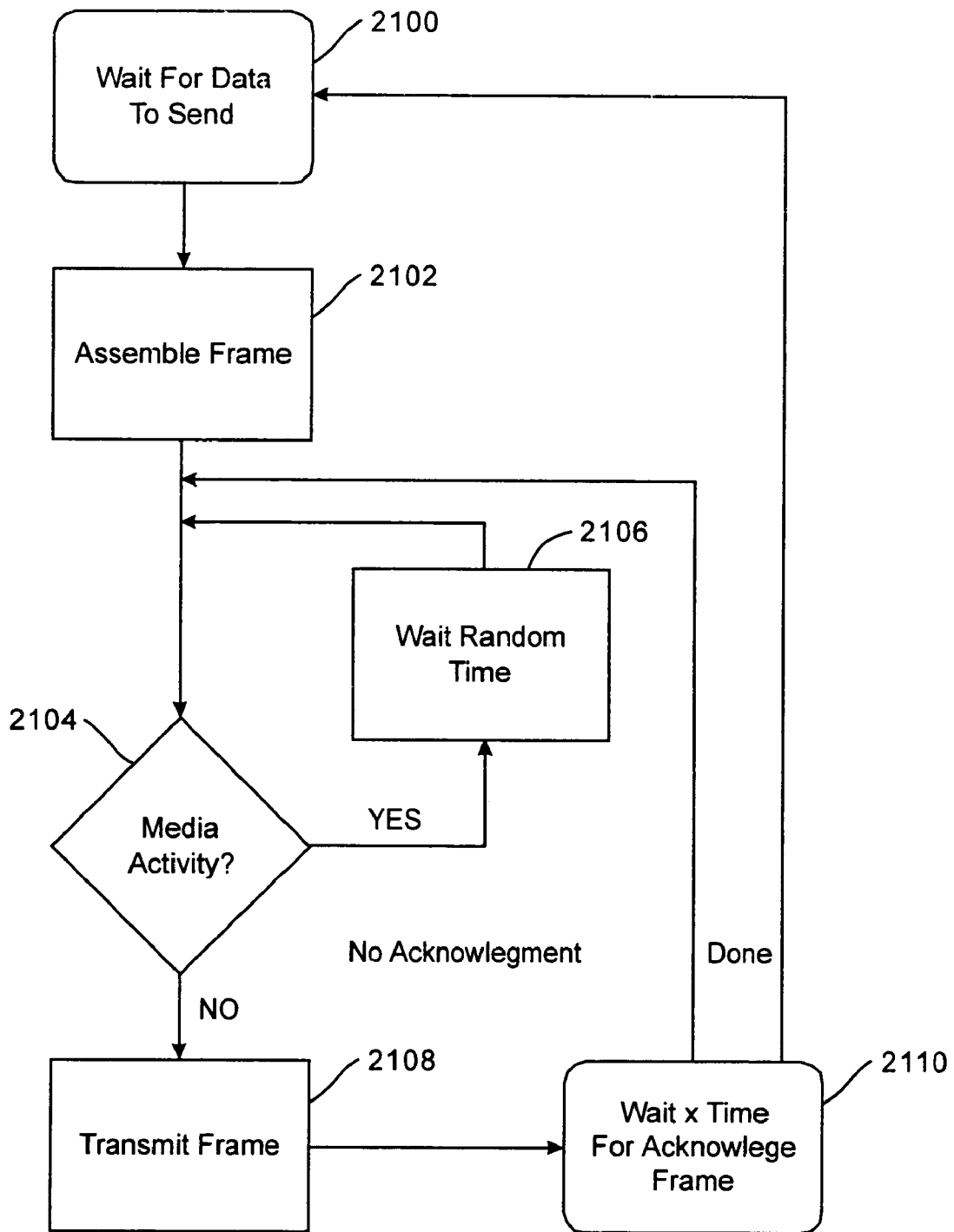


Fig. 17

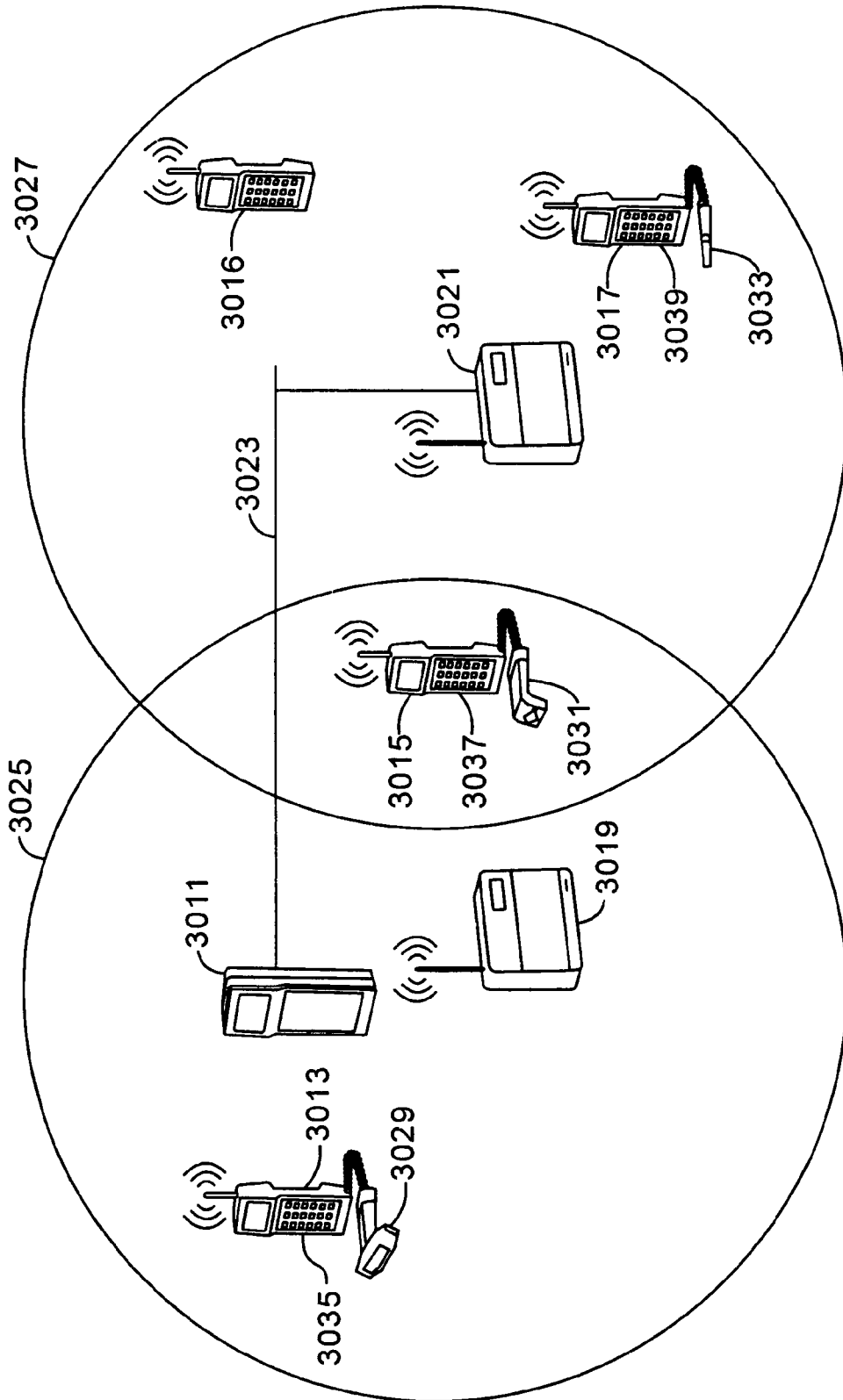


Fig.18

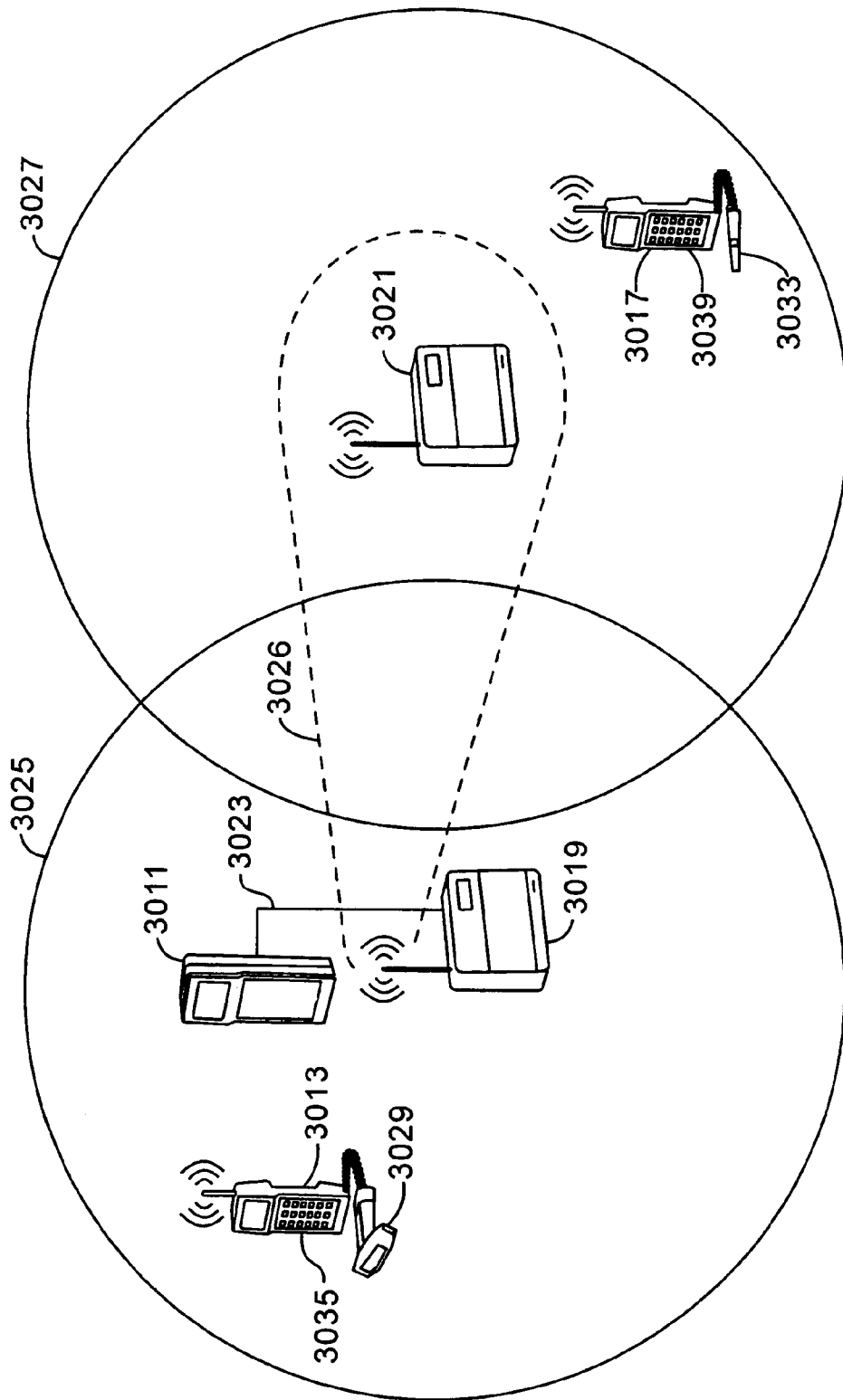


Fig. 18A

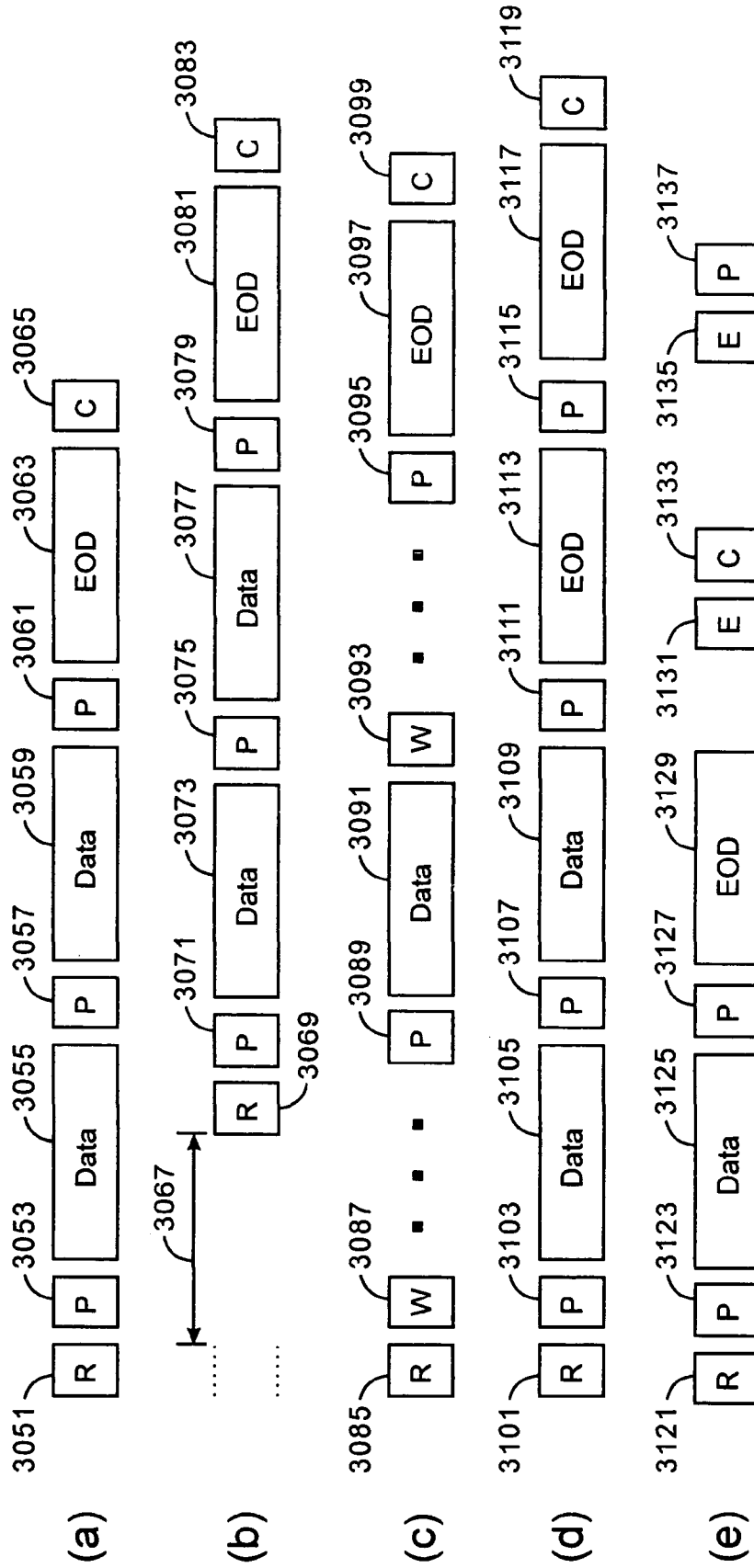


Fig.19

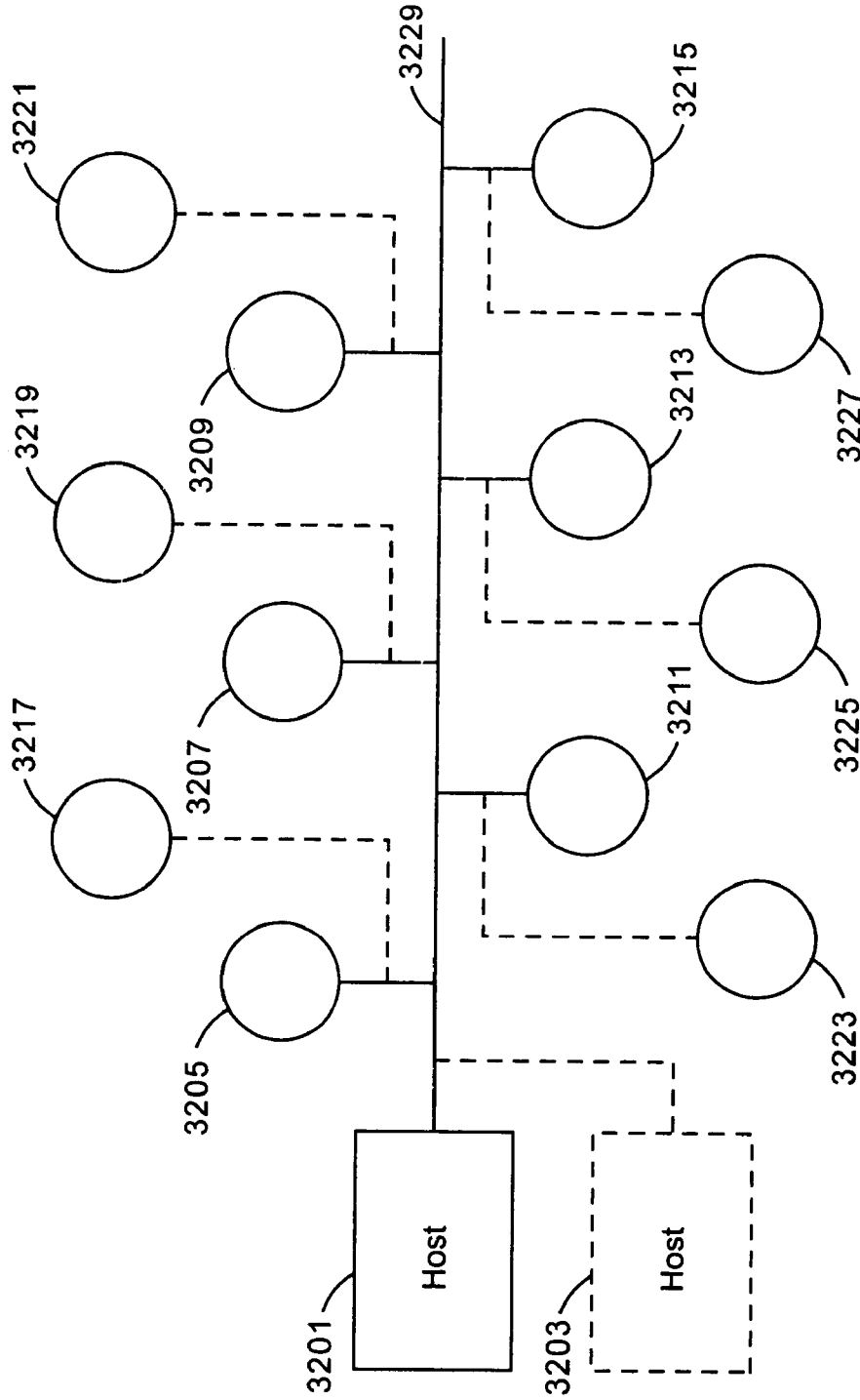


Fig.21

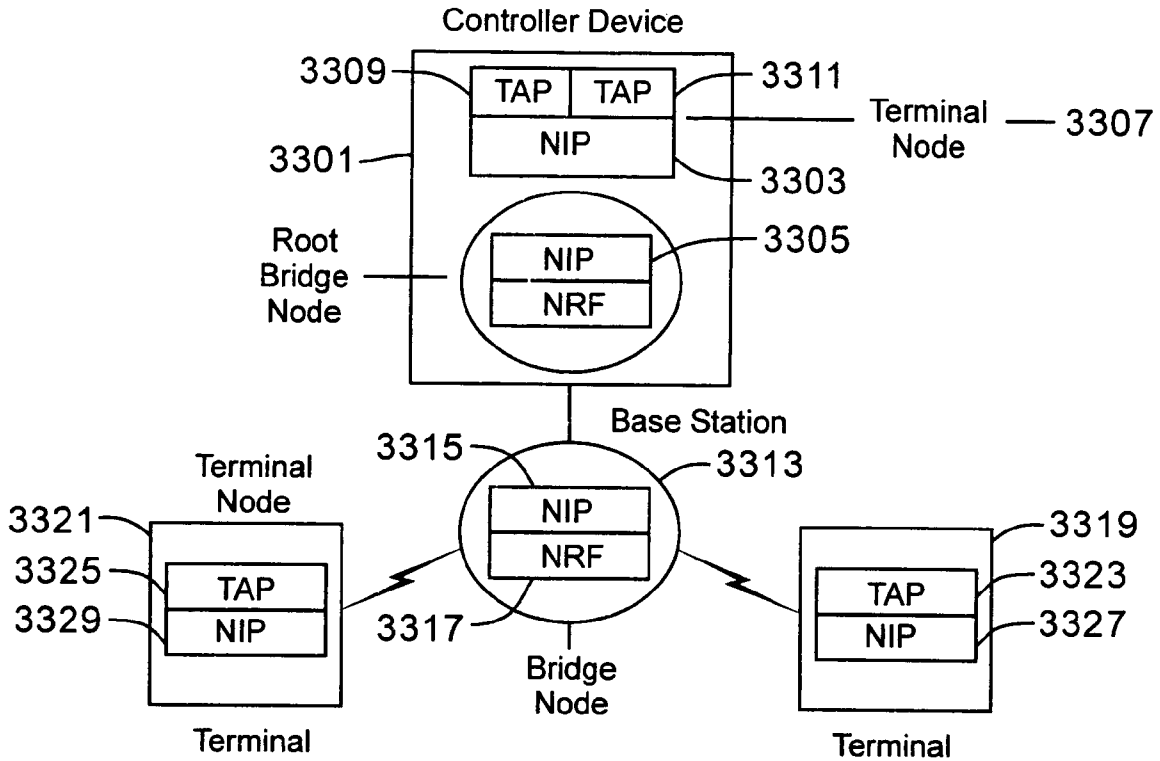


Fig. 22

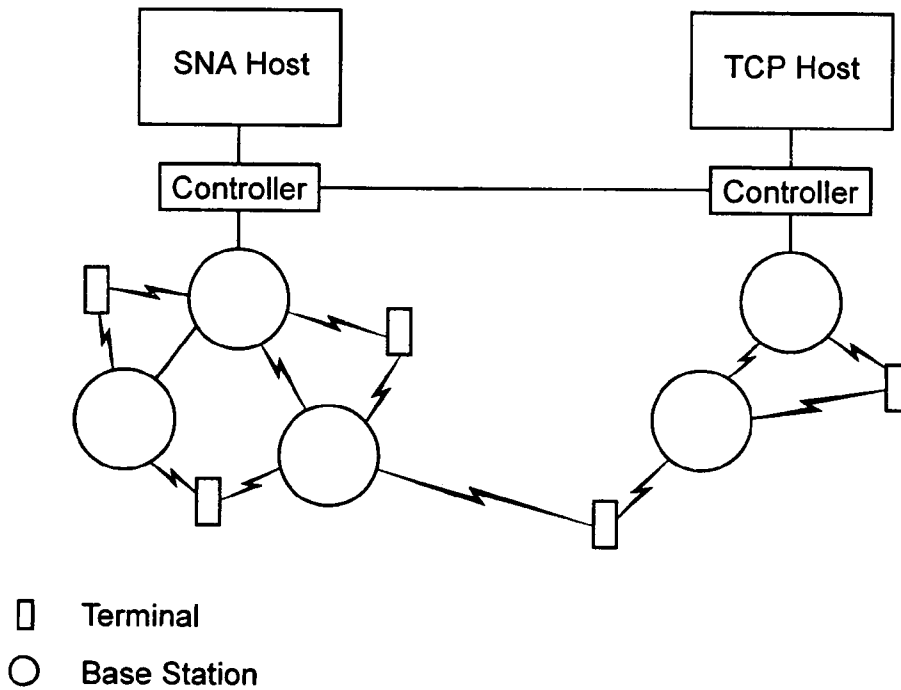


Fig. 23

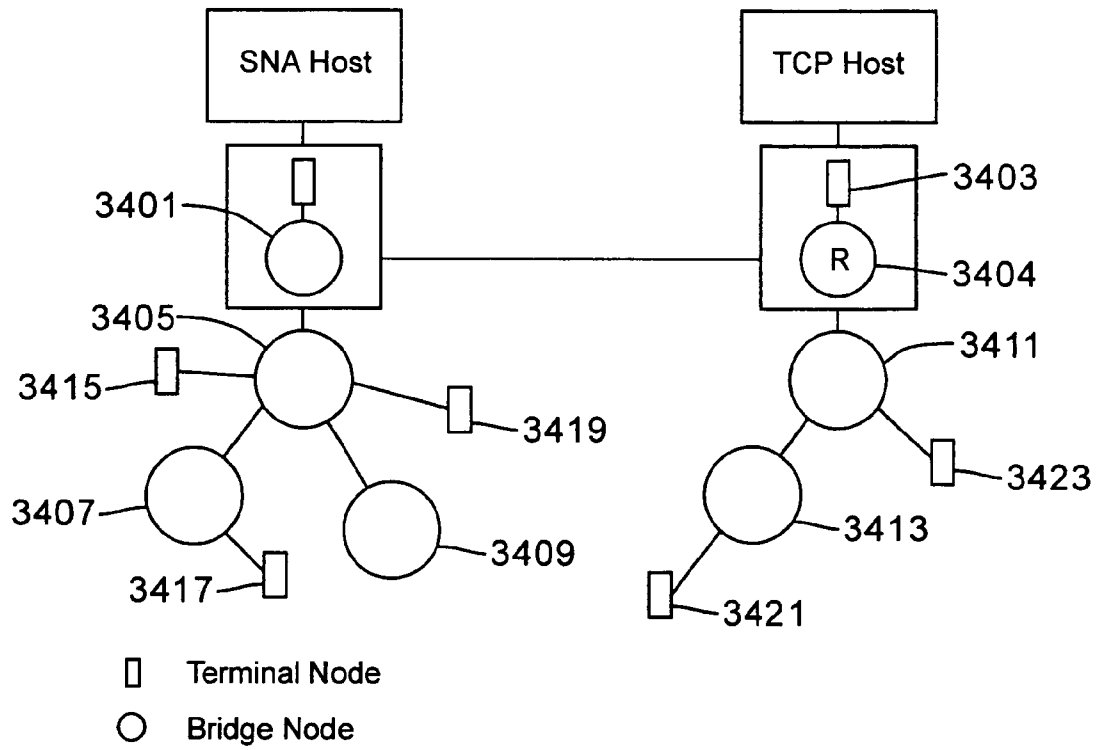


Fig. 24

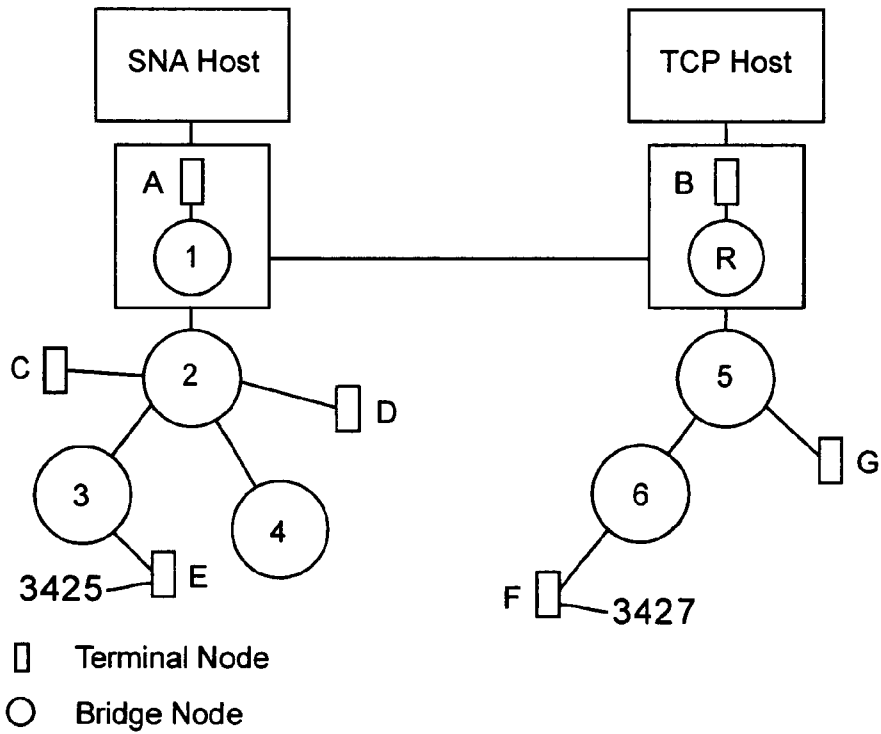


Fig. 25

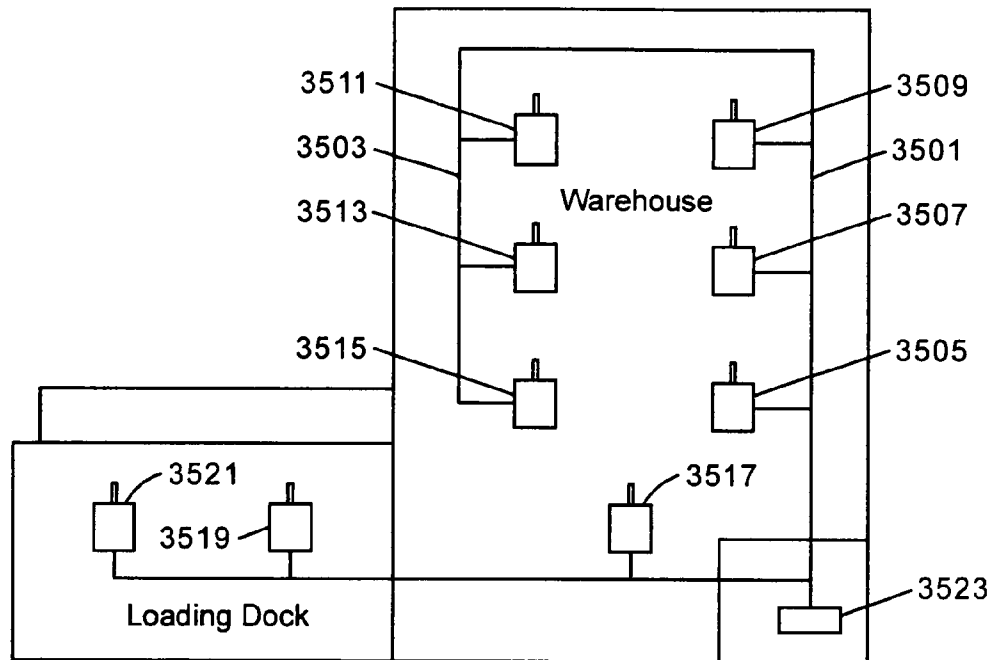


Fig. 26

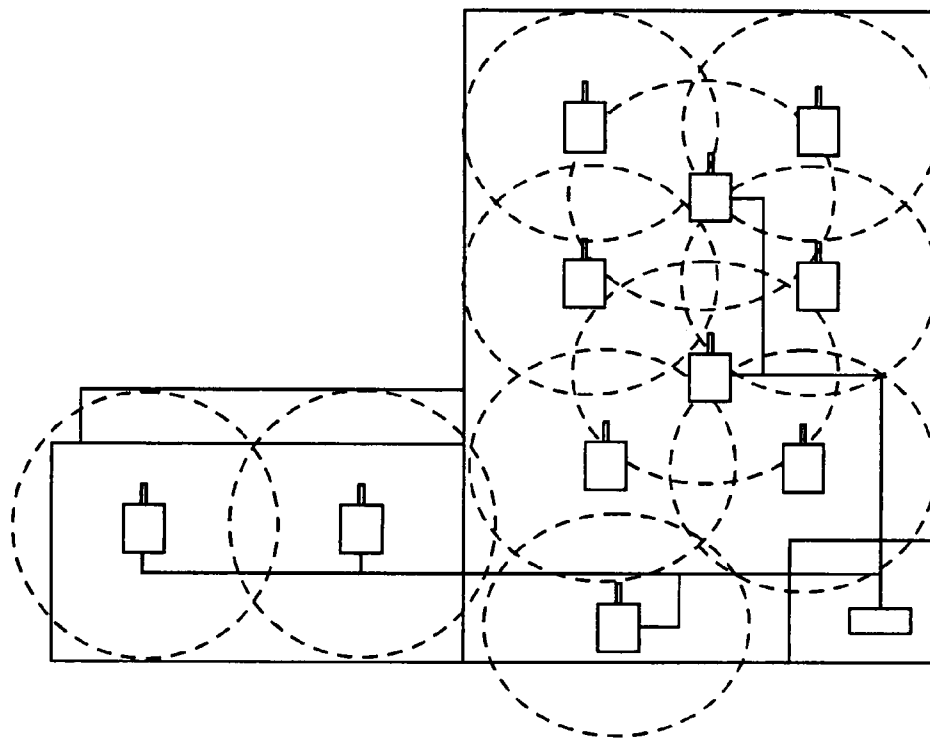


Fig. 27

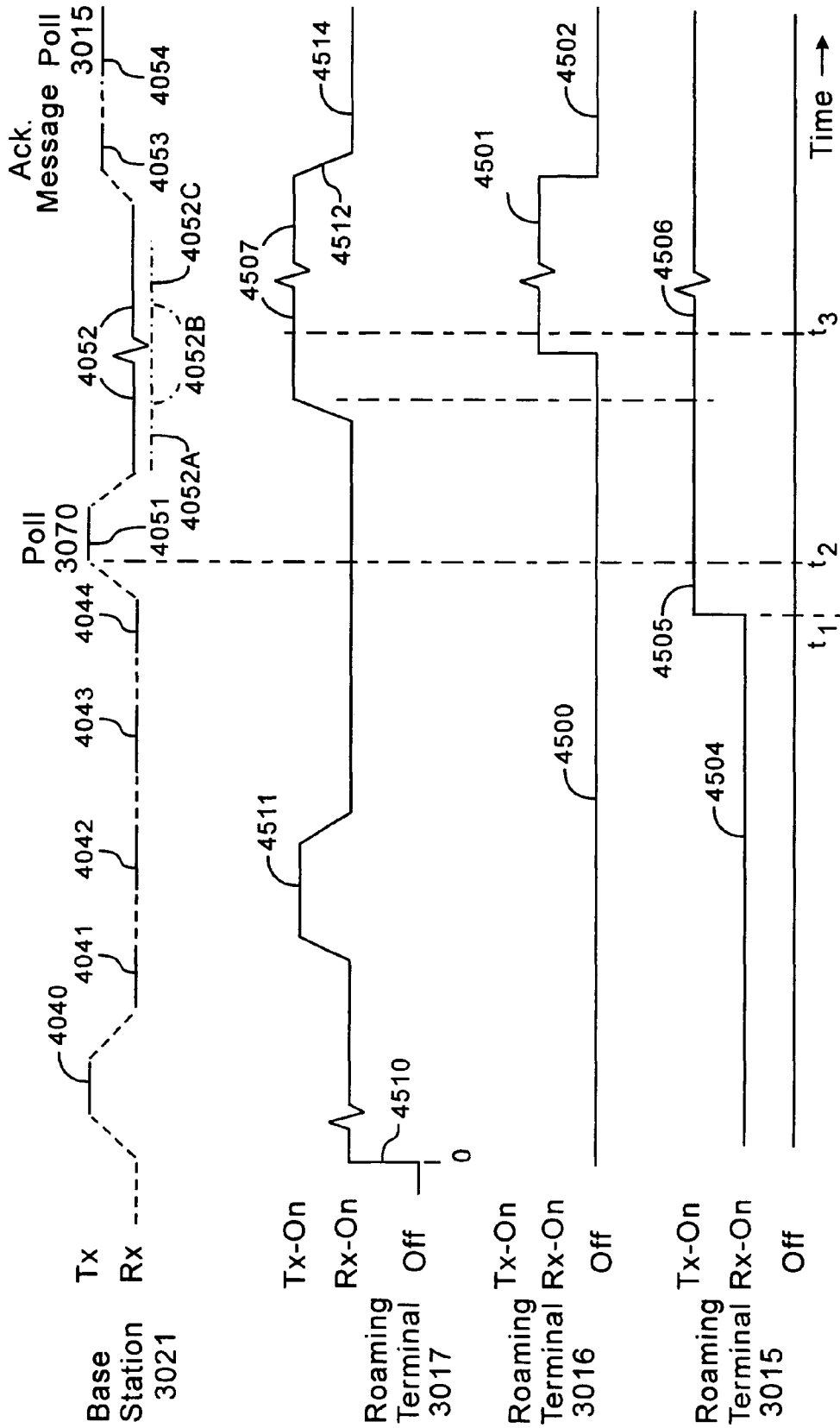
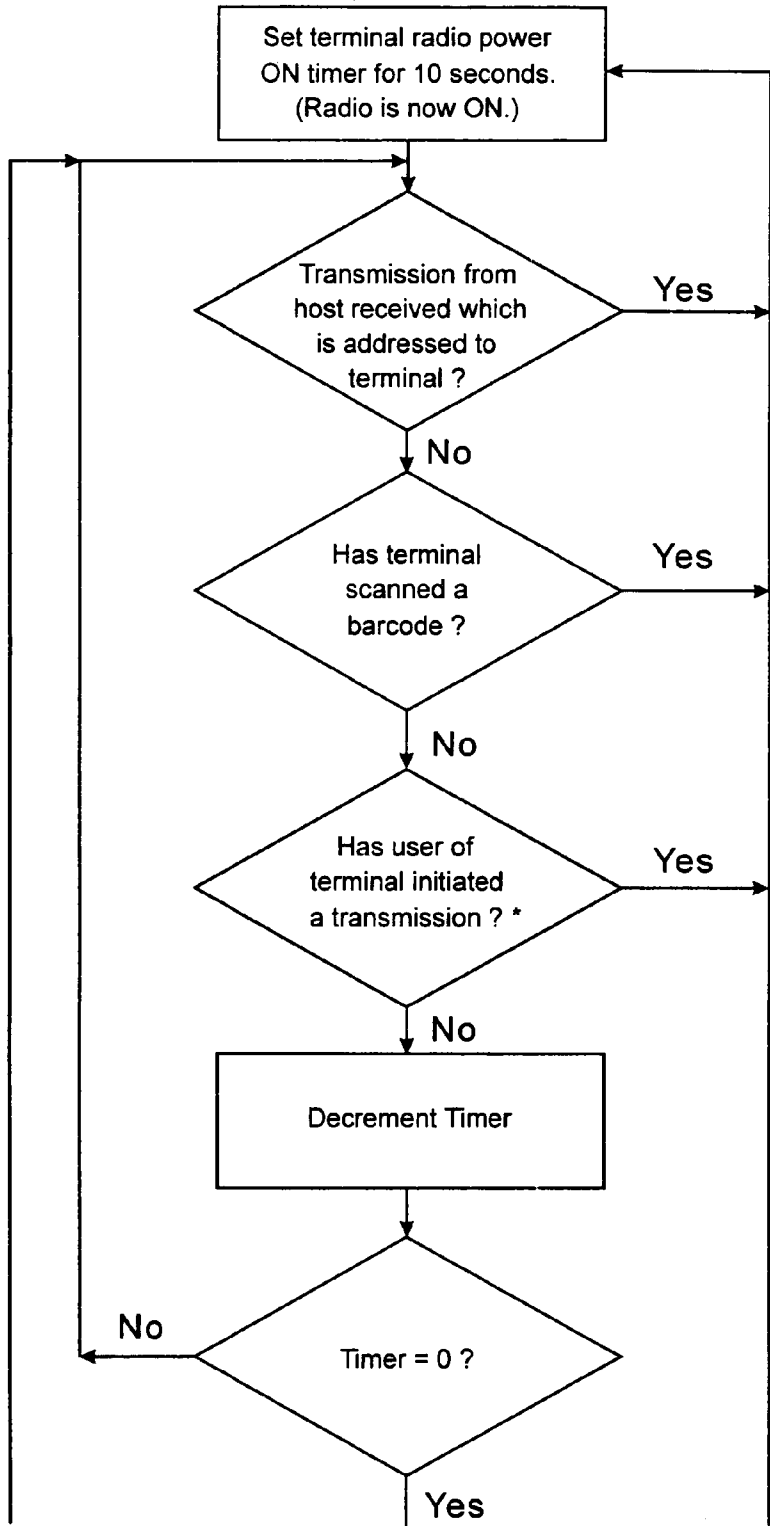


Fig.28



* The user of the terminal initiates a transmission by pressing the 'ENTER' or, depending on the specific software version, any of the function keys. Pressing these keys causes the terminal to power up the radio and send any data entered by the user.

Fig.29

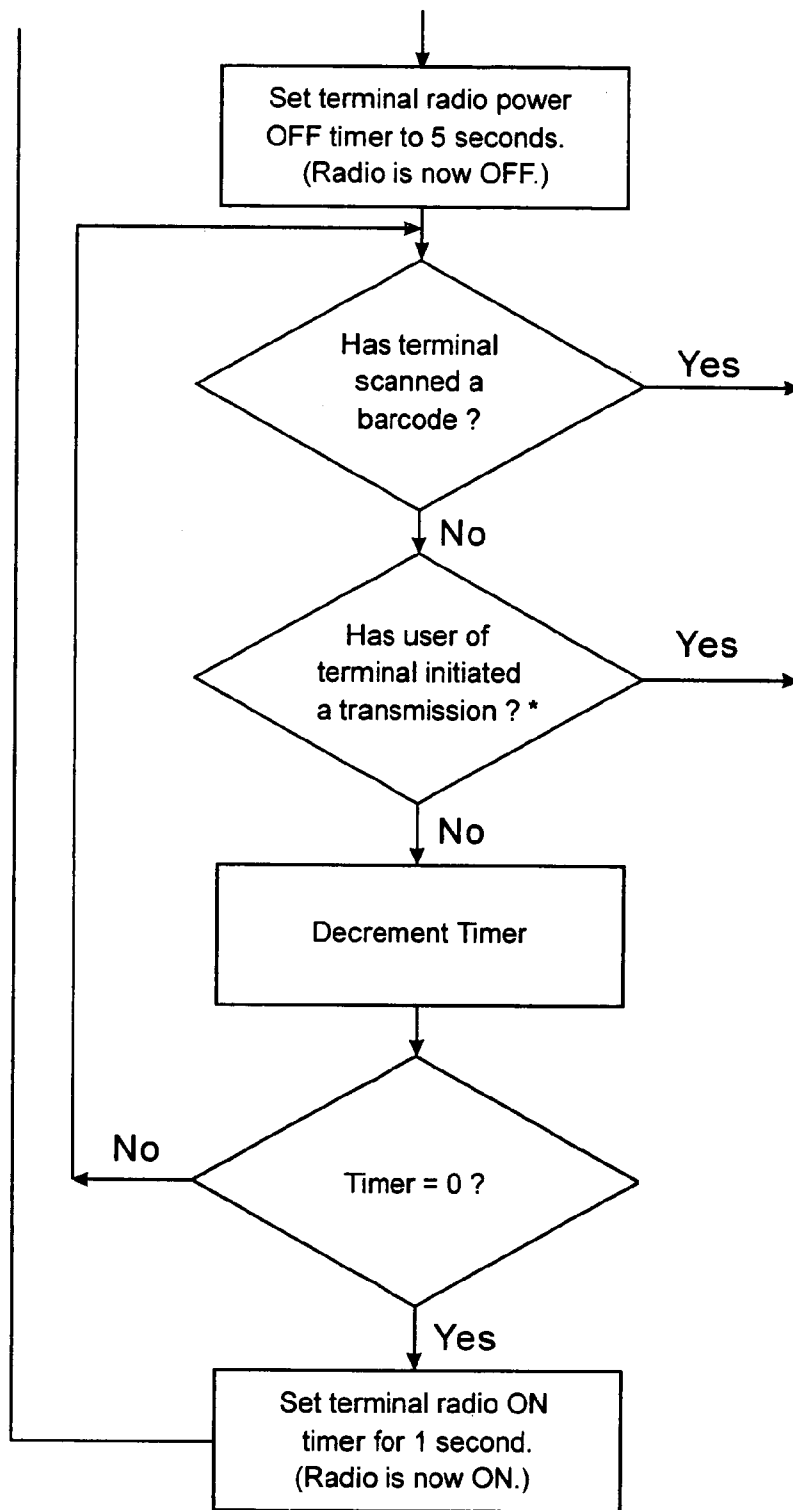


Fig.30