

[54] LOCAL AREA COMMUNICATION NETWORK UTILIZING A ROUND ROBIN ACCESS SCHEME WITH IMPROVED CHANNEL UTILIZATION

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[52] U.S. Cl. 370/85; 370/93; 370/94

[58] Field of Search 370/85, 94, 93, 95, 370/86, 87, 88, 89; 340/825.05, 825.5

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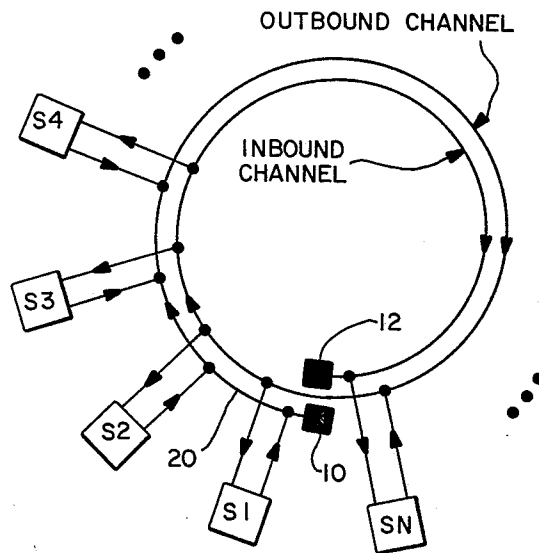
Primary Examiner—Douglas W. Olms
Attorney, Agent, or Firm—Flehr, Hohbach, Test, Albritton & Herbert

[57] ABSTRACT

Disclosed is a local area communication network based

upon a broadcast communication system comprising an inbound channel and an outbound channel, a plurality of stations connected to both the inbound and the outbound channels, transmitting on the outbound channel which utilizes an access protocol where the the access protocol used by the stations connected to the bus is a distributed algorithm and is based upon a conflict-free round robin (RR) access scheme. The time required to switch from one active user to the next in a round is minimized (on the order of carrier detection time, and is independent of the end-to-end network propagation delay. This improvement is particularly significant when the channel data rate is so high, or the end-to-end propagation delay is so large, or the packet size is so small as to render the end-to-end propagation delay a significant fraction of, or larger than, the transmission time of a packet. Moreover, some features of the present invention make it particularly suitable for voice applications. In view of integrating voice and data, a voice/data protocol is described which allows it to meet the bandwidth requirement and maximum packet delay constraint for voice communication at all times, while guaranteeing a minimum bandwidth requirement for data traffic. The voice/data protocol constitutes a highly adaptive allocation scheme of channel bandwidth, which allows data users to steal the bandwidth unused by the voice application.

66 Claims, 20 Drawing Figures



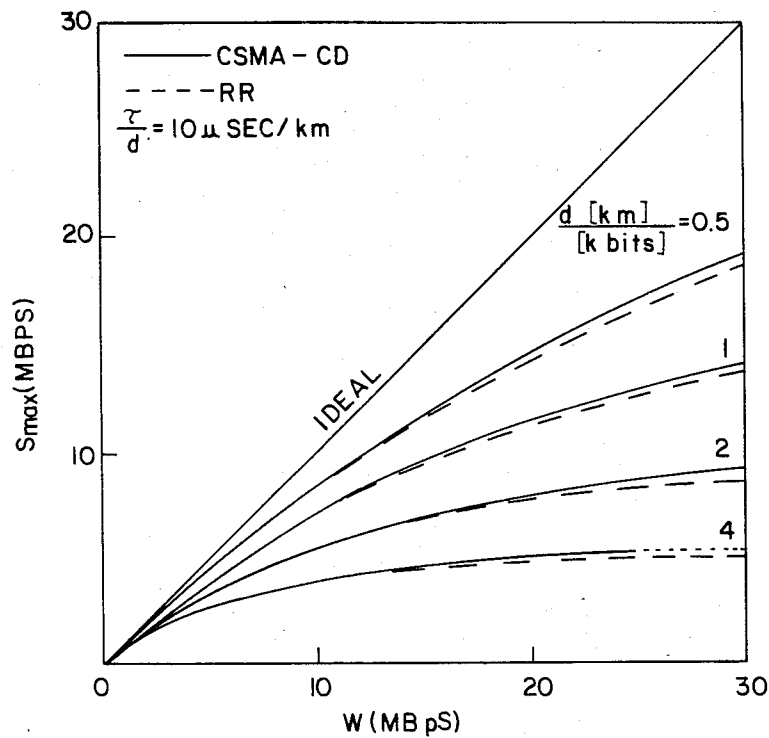


FIG.— 1

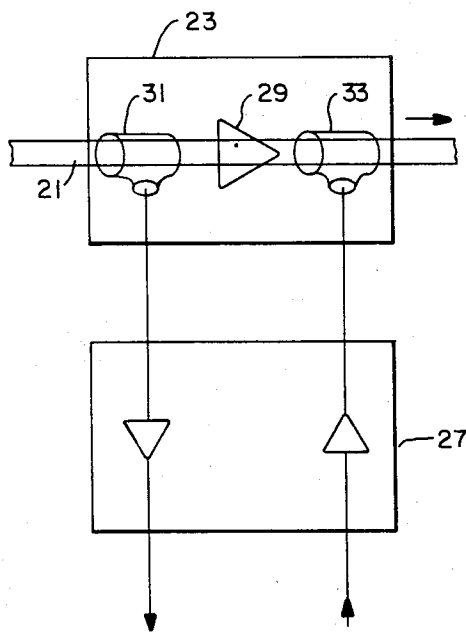


FIG.— 2A

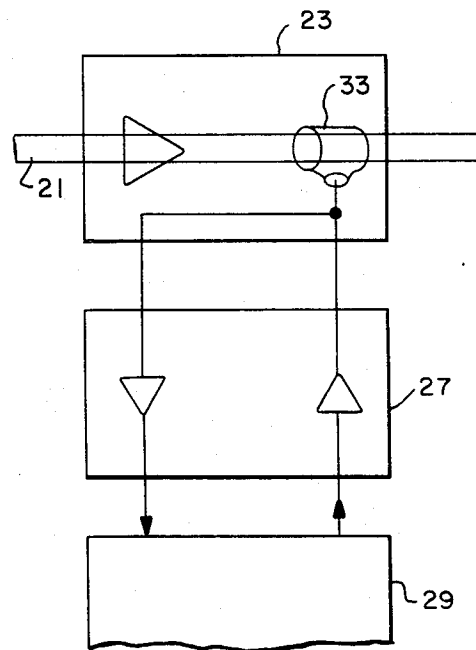


FIG.— 2B

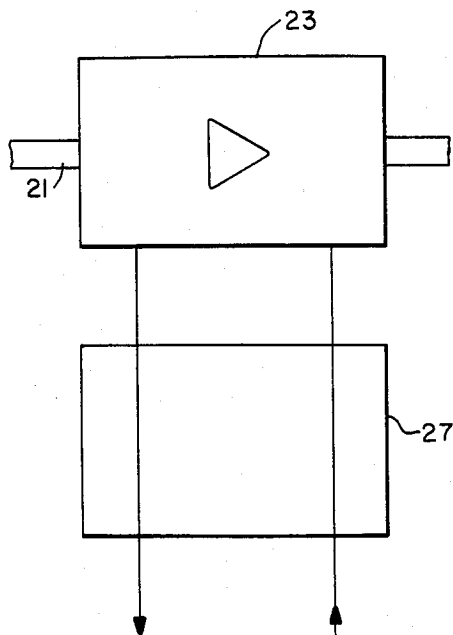


FIG. - 2C

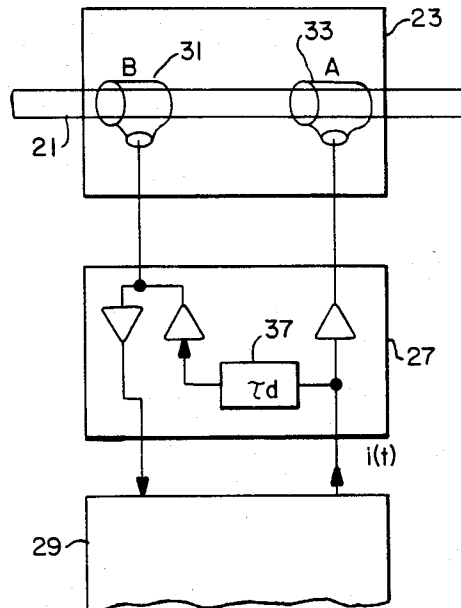


FIG. - 2D

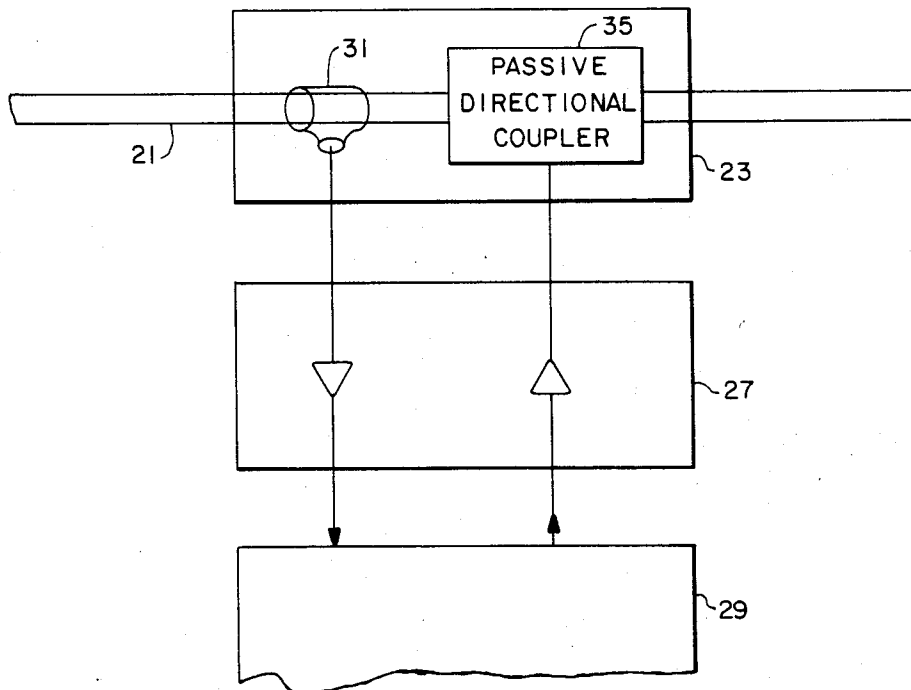


FIG. - 2E

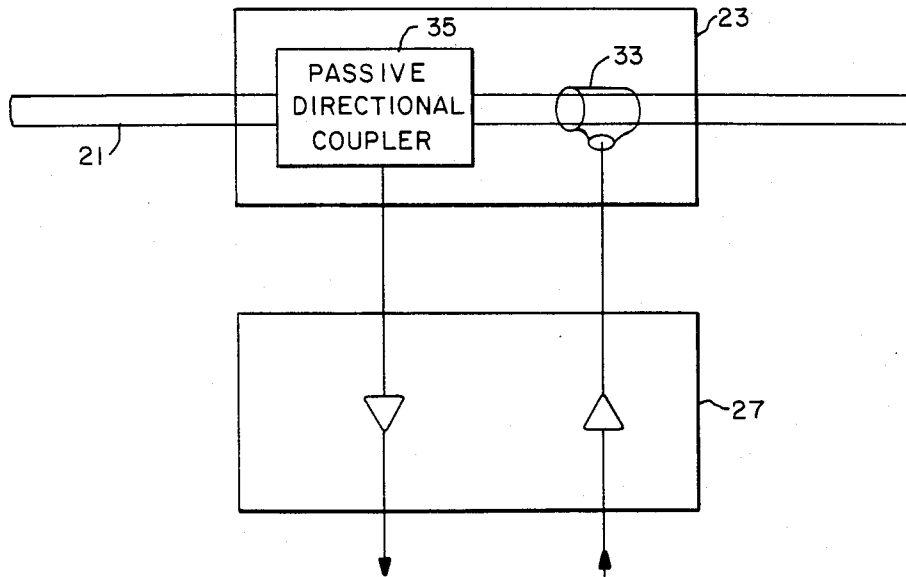


FIG. — 2F

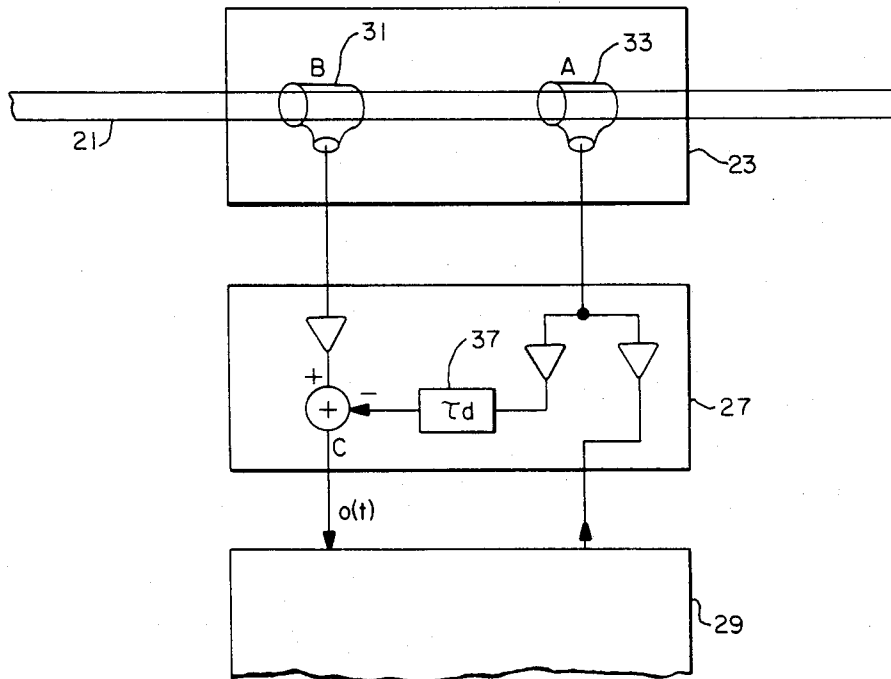


FIG. — 2G

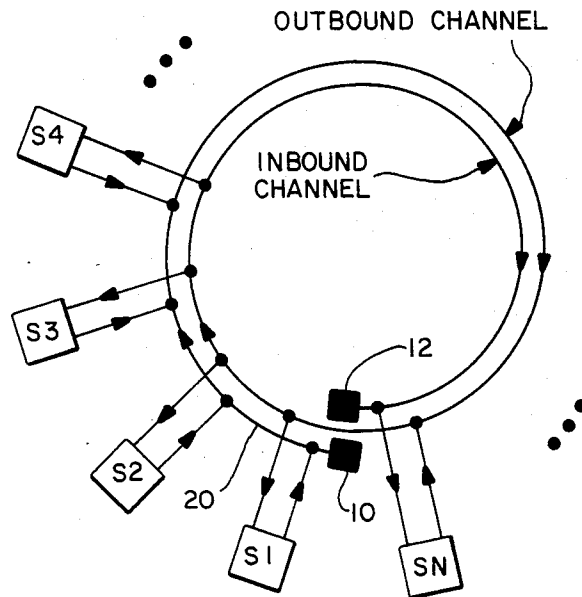


FIG.-3A

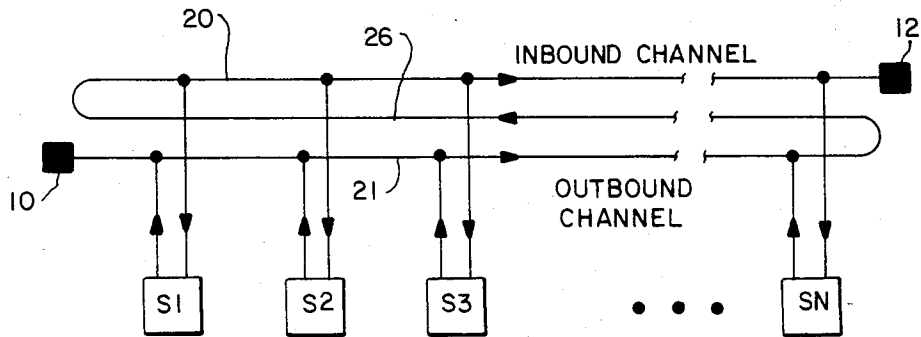


FIG.-3B

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