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(54) **METHOD AND APPARATUS FOR DISCARDING PACKETS IN A DATA NETWORK HAVING AUTOMATIC REPEAT REQUEST**

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(58) Field of Search 370/389, 394, 370/410, 426, 428, 429, 470, 471, 473, 236; 714/748, 749, 750

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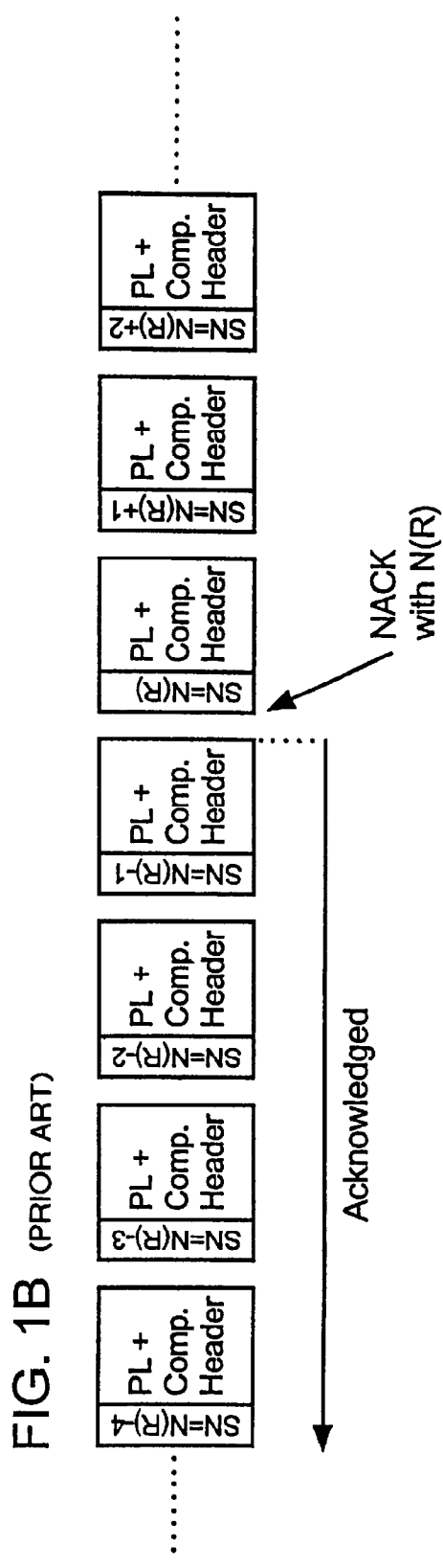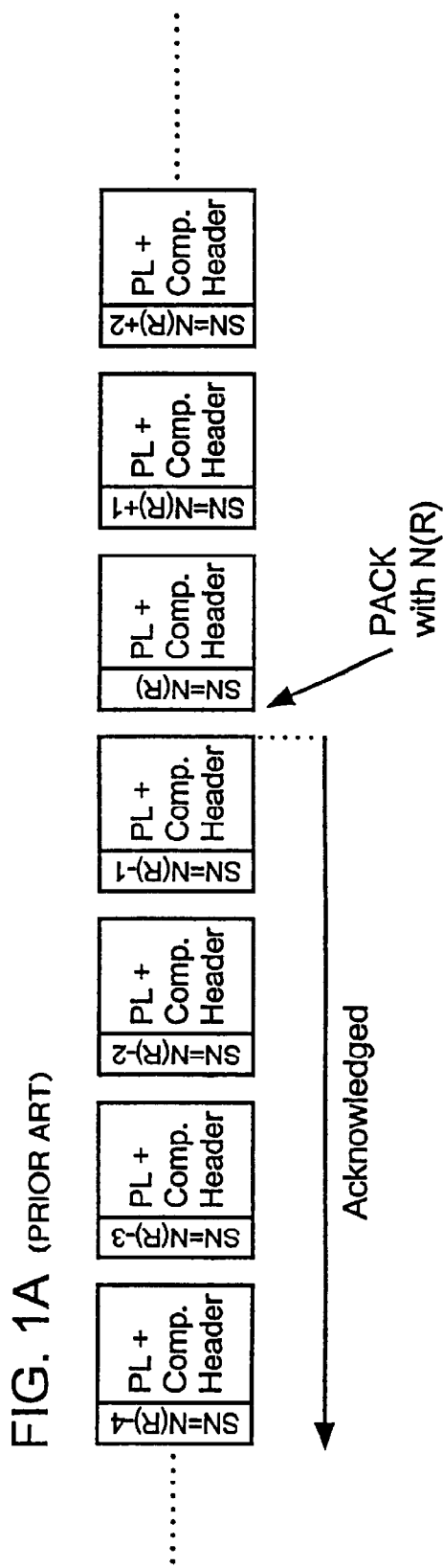Standard Search Report dated Jul. 16, 1999.

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(57) **ABSTRACT**

Techniques are provided for use with automatic repeat request (ARQ) schemes in a data network to minimize a bandwidth used by a receiver and a transmitter in the network to transfer data packets, by discarding outdated packets that have not yet been successfully transferred. In accordance with an embodiment of the invention, a bit is set in the ARQ packet header to force the receiver to accept packets subsequent to one or more erroneous or unreceived packets that have been discarded and not resent. In accordance with another embodiment of the invention, after data packets have been discarded, sequence numbers are reassigned to the non-discarded data packets that are yet to be sent to the receiver, so that a transmitted stream of the non-discarded packets will have consecutive sequence numbers.
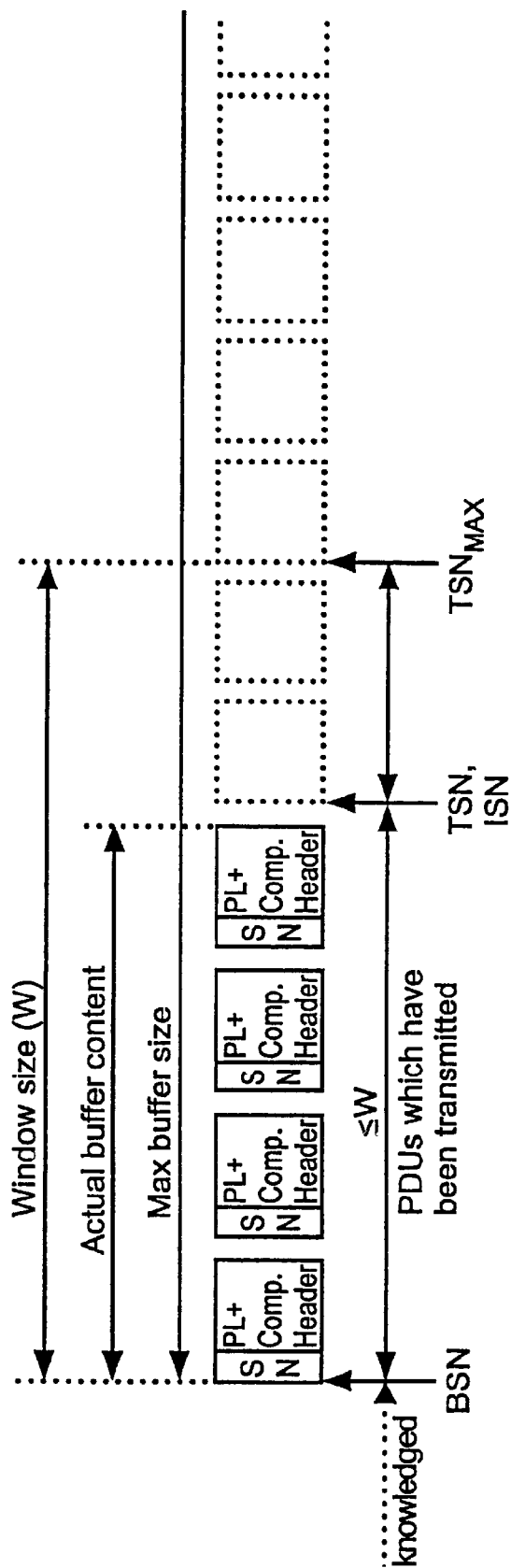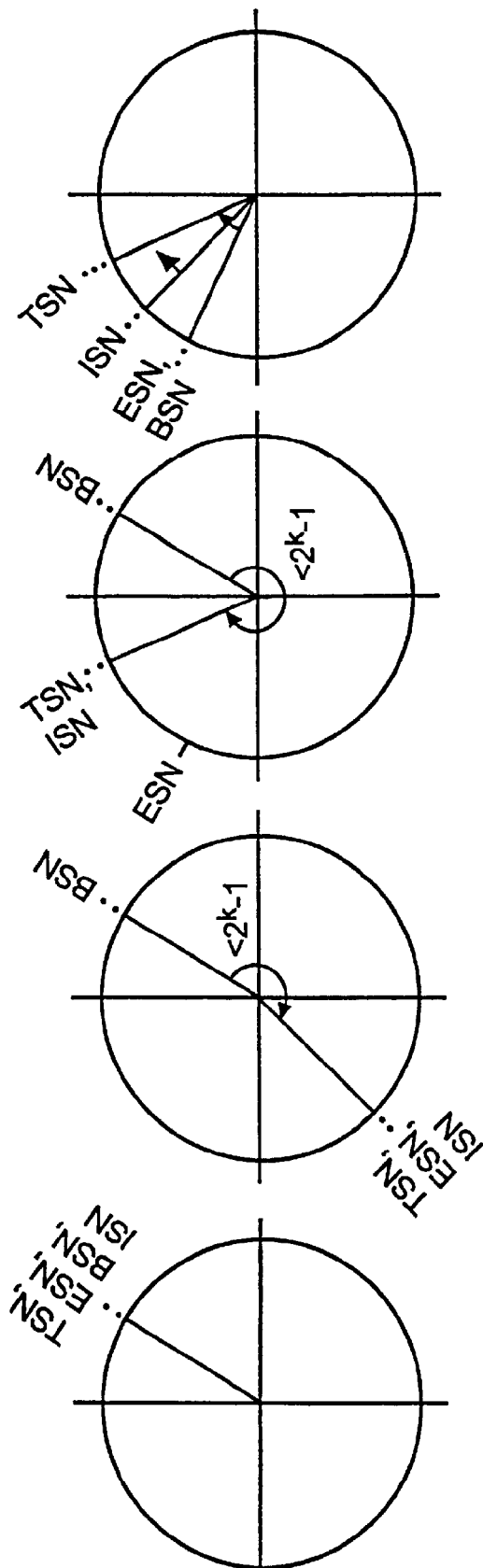
19 Claims, 12 Drawing Sheets

FIG. 1A (PRIOR ART)

SN=N(R)+2	PL + Comp. Header
SN=N(R)+1	PL + Comp. Header
SN=N(R)	PL + Comp. Header
SN=N(R)-1	PL + Comp. Header
SN=N(R)-2	PL + Comp. Header
SN=N(R)-3	PL + Comp. Header
SN=N(R)-4	PL + Comp. Header

PACK with N(R)

Acknowledged

FIG. 1B (PRIOR ART)

SN=N(R)+2	PL + Comp. Header
SN=N(R)+1	PL + Comp. Header
SN=N(R)	PL + Comp. Header
SN=N(R)-1	PL + Comp. Header
SN=N(R)-2	PL + Comp. Header
SN=N(R)-3	PL + Comp. Header
SN=N(R)-4	PL + Comp. Header

NACK with N(R)

Acknowledged

FIG. 2 (PRIOR ART)

Retransmission from N(R) up to TSN. BSN is set to N(R).

FIG. 3D
(PRIOR ART)

Erroneous or lost LLC PDUs. A NACK with N(R)=ESN is issued.

FIG. 3C
(PRIOR ART)

LLC PDUs sent. All are received.

FIG. 3B
(PRIOR ART)

FIG. 3A
(PRIOR ART)

TSN, ESN, ...BSN, ISN

FIG. 4A
(PRIOR ART)

BSN...

$<2^k-1$

TSN, ESN, ...BSN, ISN

LLC PDUs sent.
All are received.

FIG. 4B
(PRIOR ART)

BSN...

$<2^k-1$

TSN, ESN, ...BSN, ISN

PACK issued.

FIG. 4C
(PRIOR ART)

...BSN

$<2^k-1$

TSN, ESN, ...ISN
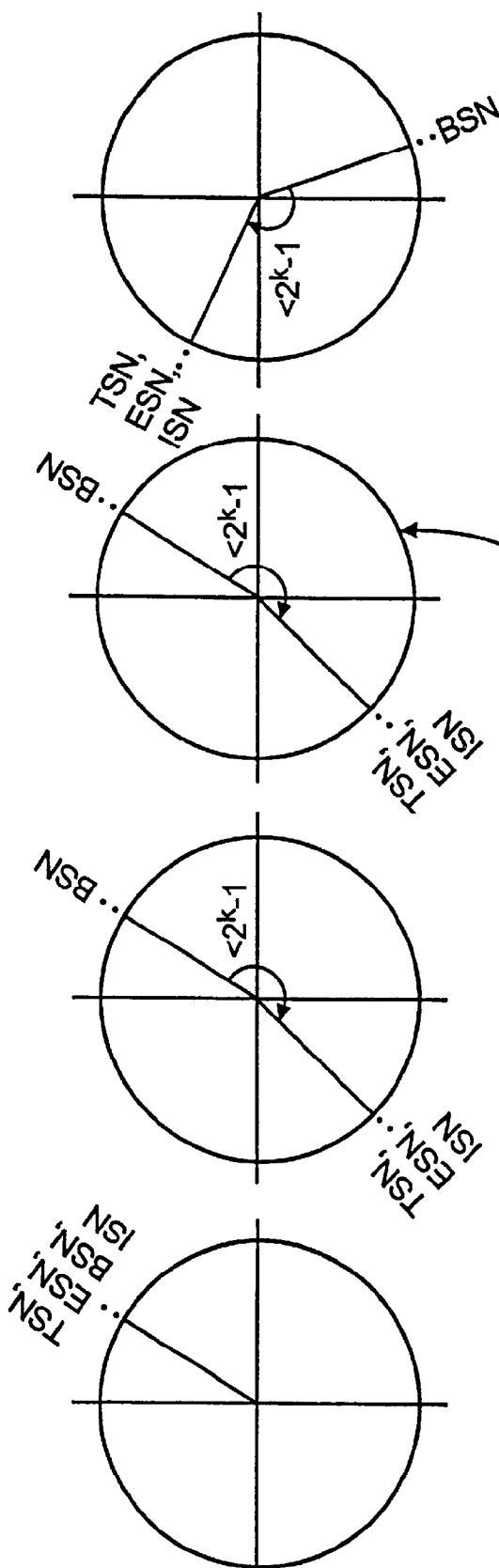
LLC PDUs sent
All are received.
BSN is set to N(R)+1.

FIG. 4D
(PRIOR ART)

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