

- [54] **METHOD AND APPARATUS FOR SYMBOL SYNCHRONIZATION IN MULTI-LEVEL DIGITAL FM RADIO**
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375/293**
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375/17, 20, 354, 357, 359, 286, 287, 293;
370/100.1, 105.1, 105.2**

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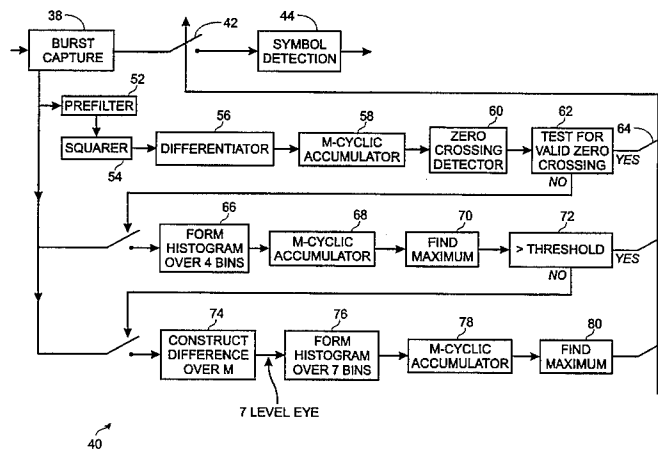
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Assistant Examiner—Hai H. Phan

[57] **ABSTRACT**

A block demodulation method and apparatus that provides for synchronizing bursts of incoming data without a special symbol synchronization word, and minimal frame synchronization overhead. An entire burst, comprising ramp up time, a preamble, guard times, data and ramp down time, is captured and stored in the form of baseband samples of the signal burst. The burst samples are then filtered to reduce pattern jitter. Thereafter, the samples are squared to derive the symbol clock. Then, the samples are differenced and cyclicly accumulated. The cyclicly accumulated samples are examined to find a valid zero crossing. In the event that the aforementioned method does not identify a valid zero crossing, two additional methods for finding a valid zero crossing are employed.

22 Claims, 5 Drawing Sheets



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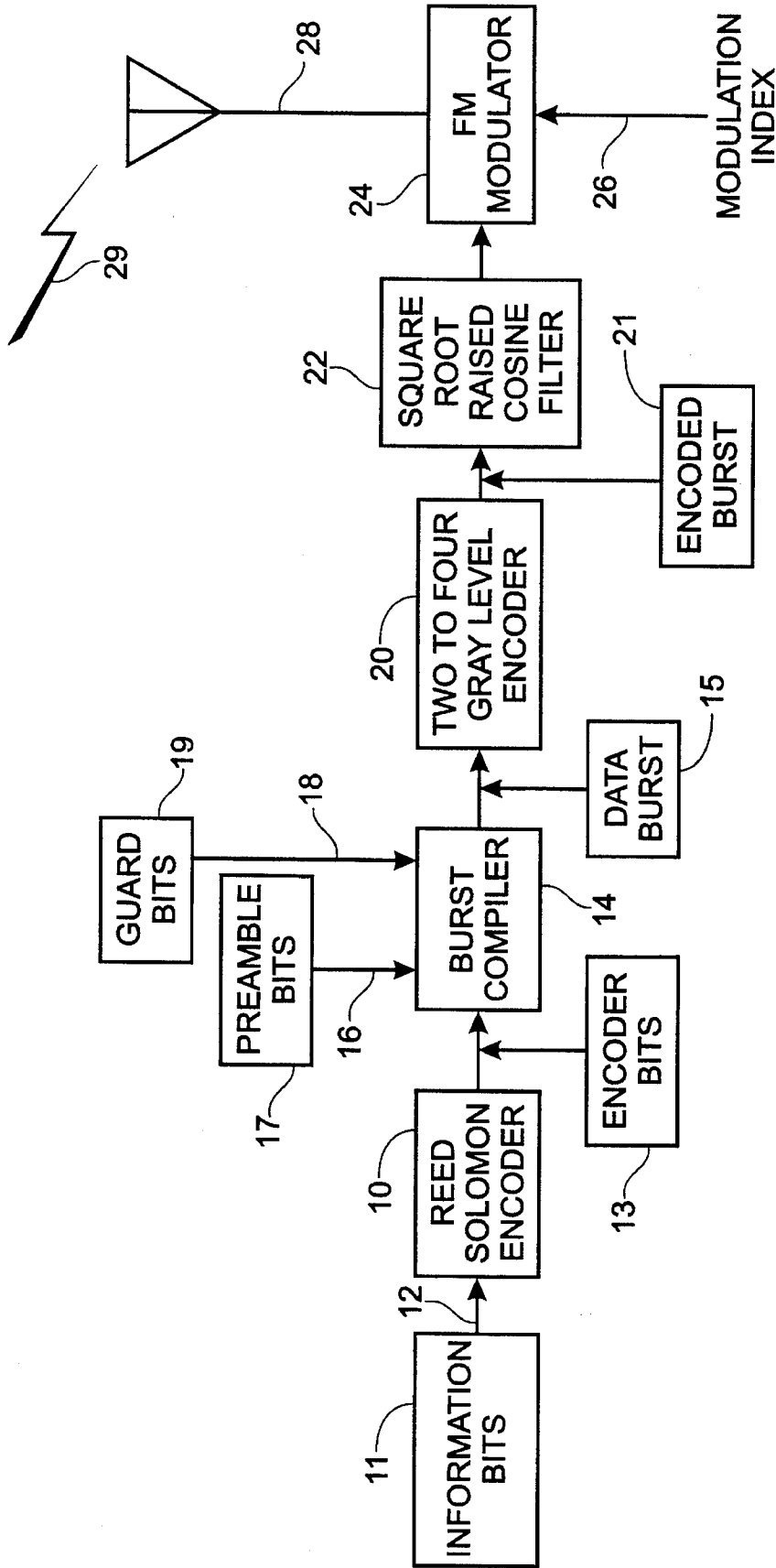


Fig. 1

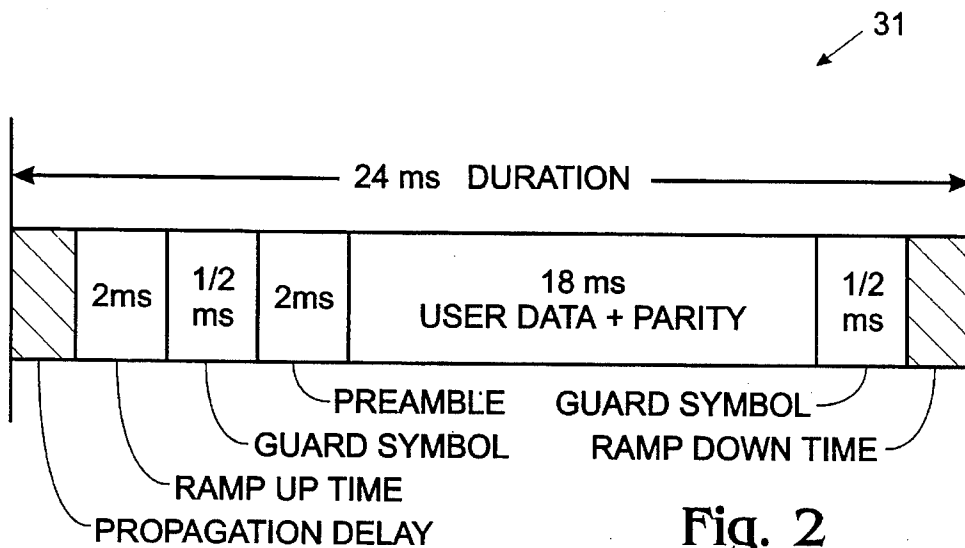


Fig. 2

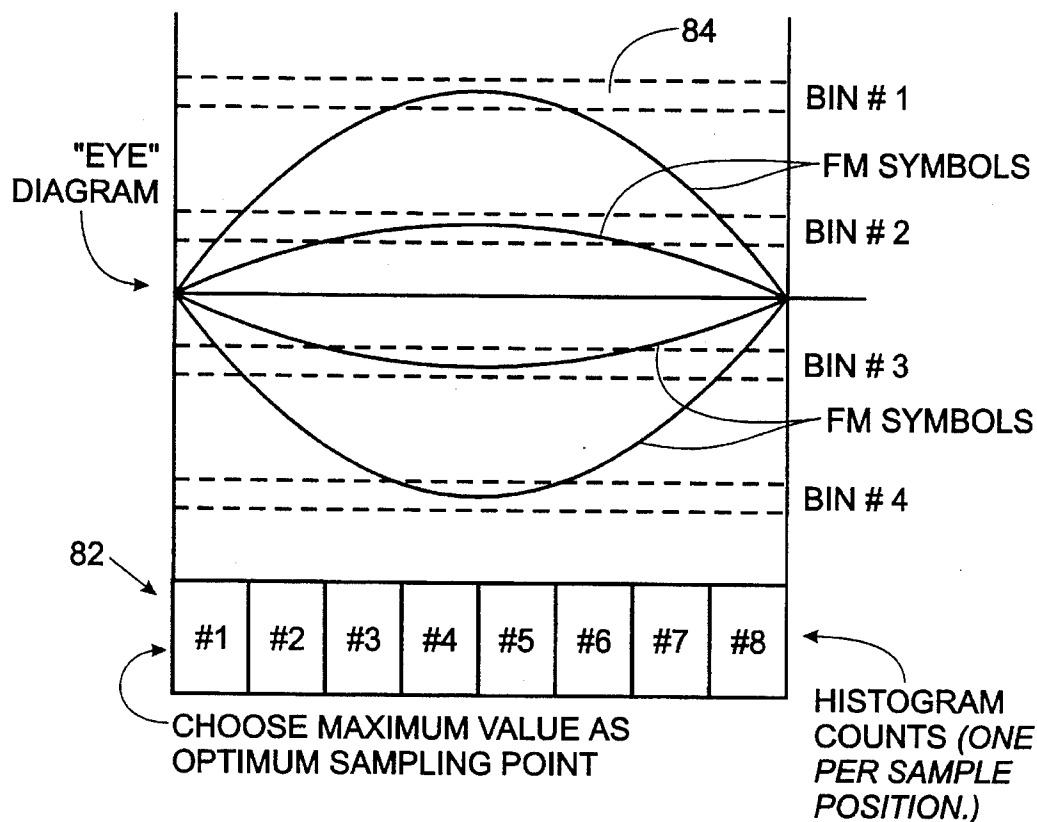


Fig. 5

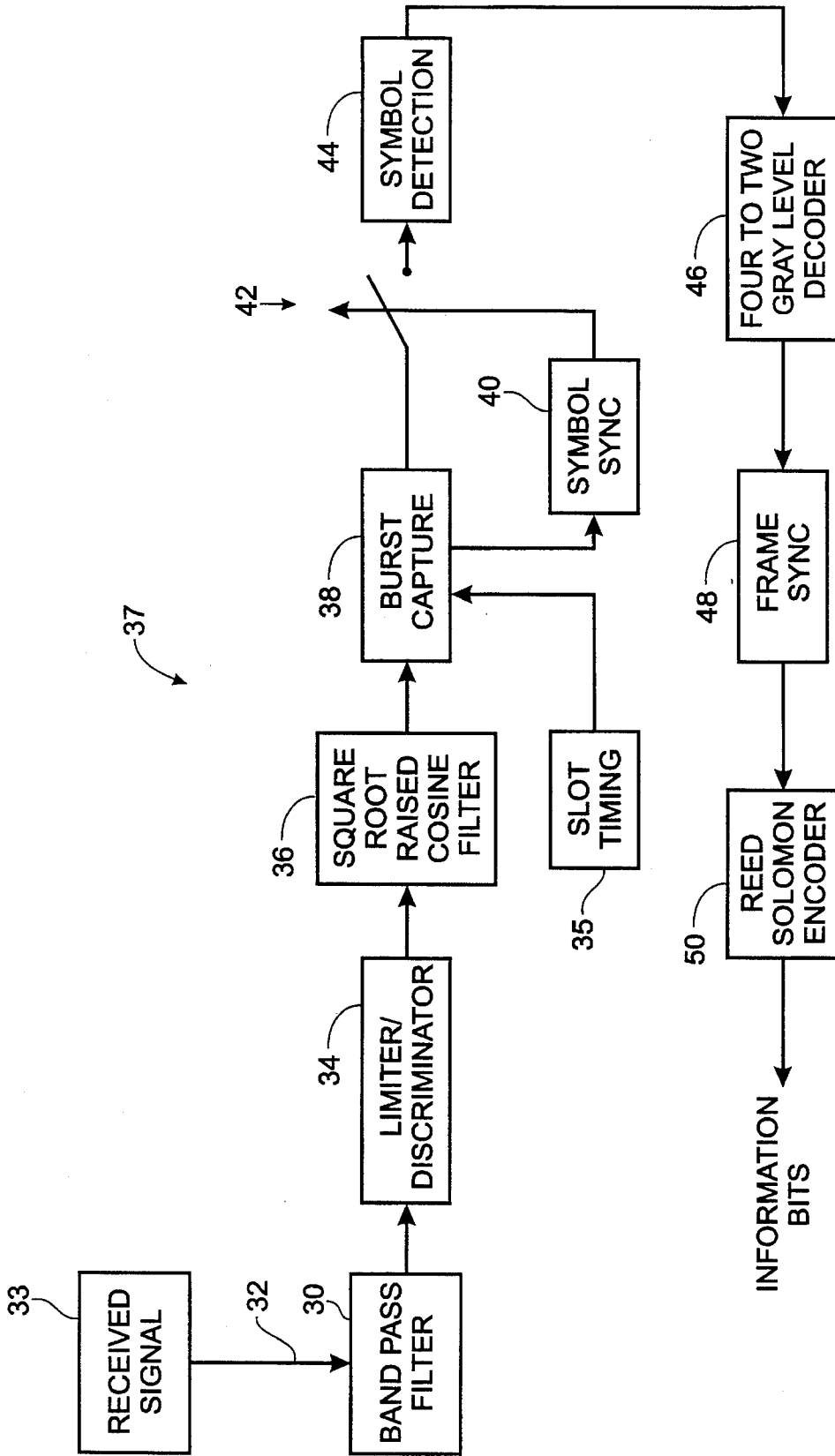


Fig. 3

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