

- [54] **APPARATUS AND METHOD FOR PROVIDING DIGITAL AUDIO ON THE SOUND CARRIER OF A STANDARD TELEVISION SIGNAL**
- [75] Inventor: **Clyde Robbins, Maple Glen, Pa.**
- [73] Assignee: **General Instrument Corporation, New York, N.Y.**
- [21] Appl. No.: **22,380**
- [22] Filed: **Mar. 5, 1987**
- [51] Int. Cl.⁴ **H04N 7/04**
- [52] U.S. Cl. **358/143; 380/10; 380/15**
- [58] Field of Search **380/10, 15; 358/143-145, 86**

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Primary Examiner—Salvatore Cangialosi
Attorney, Agent, or Firm—Kramer, Brufsky & Cifelli

[57] **ABSTRACT**

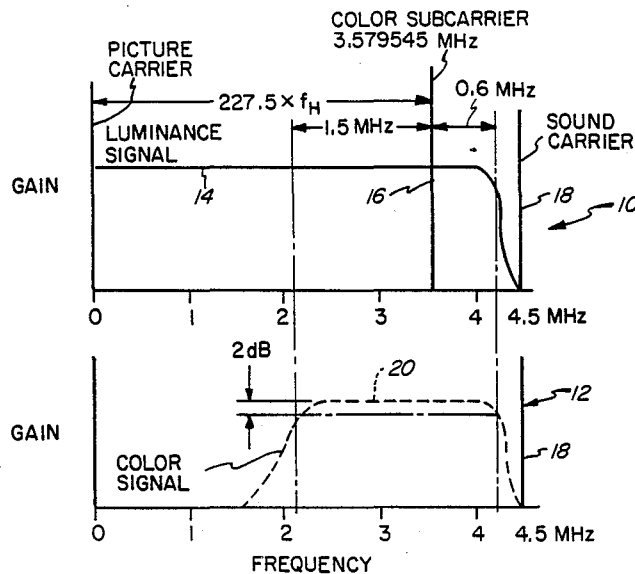
A television transmission system replaces the standard FM audio portion of a television signal with digital audio. Three digital audio channels are time division multiplexed on the sound carrier, using combined multi-phase and AM modulation. The audio signals are digitized using adaptive delta modulation techniques. Video vertical and horizontal framing, as well as the audio carrier phase reference, audio data bit time and frame reference, and various control data is carried using AM modulation. The digital audio information is carried using multi-phase modulation. The composite data stream may be serially encrypted to provide security and prevent unauthorized reproduction of the video and/or audio portions of the television signal.

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47 Claims, 9 Drawing Sheets



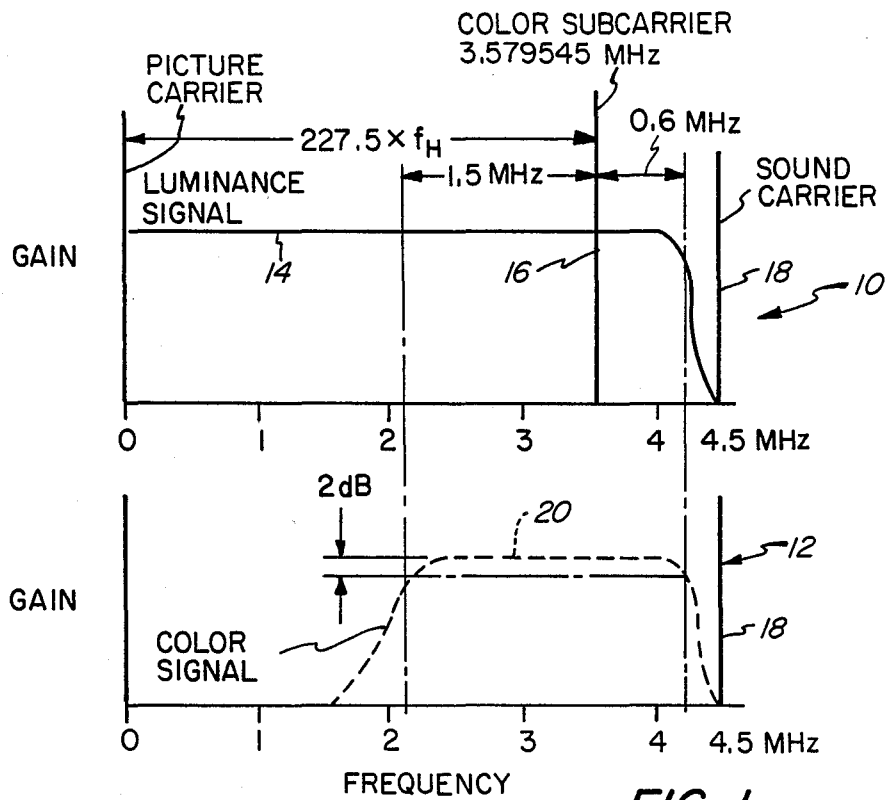


FIG. 1

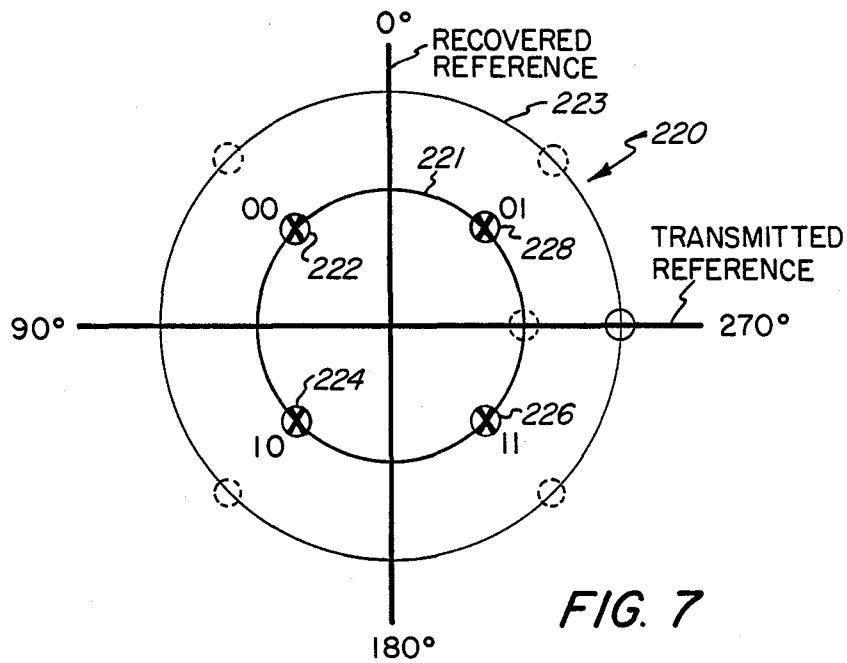


FIG. 7

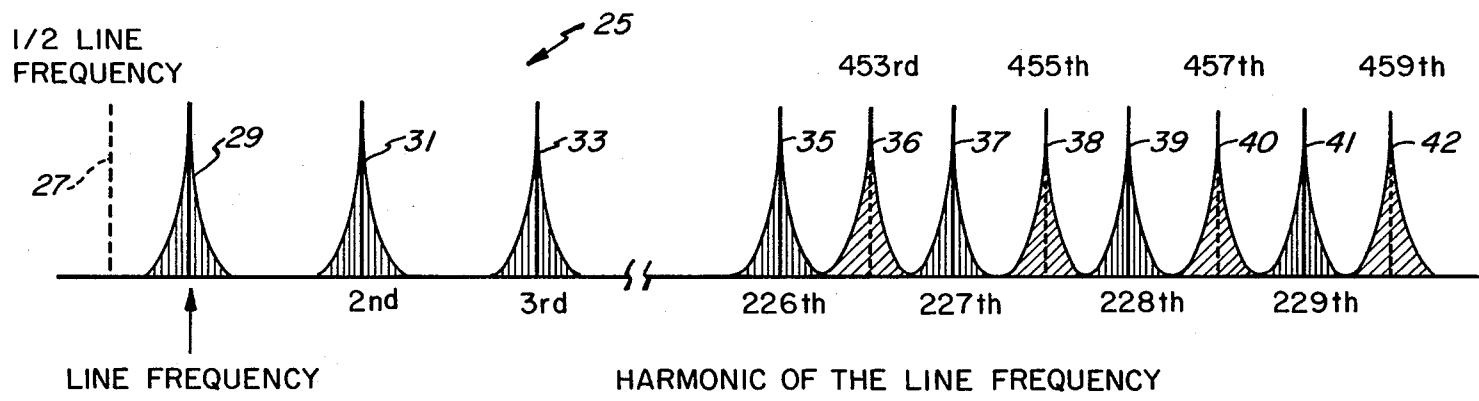
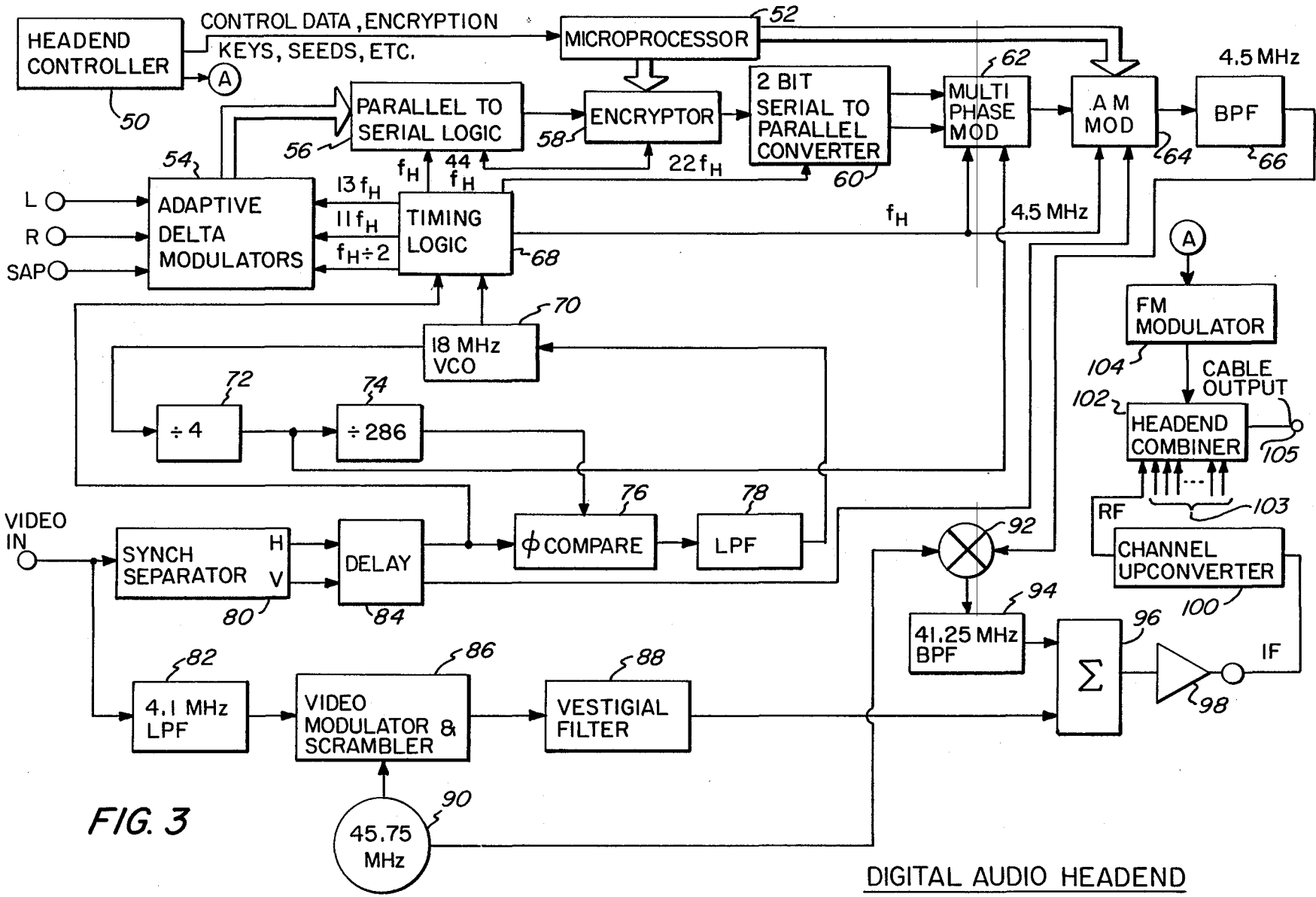


FIG. 2



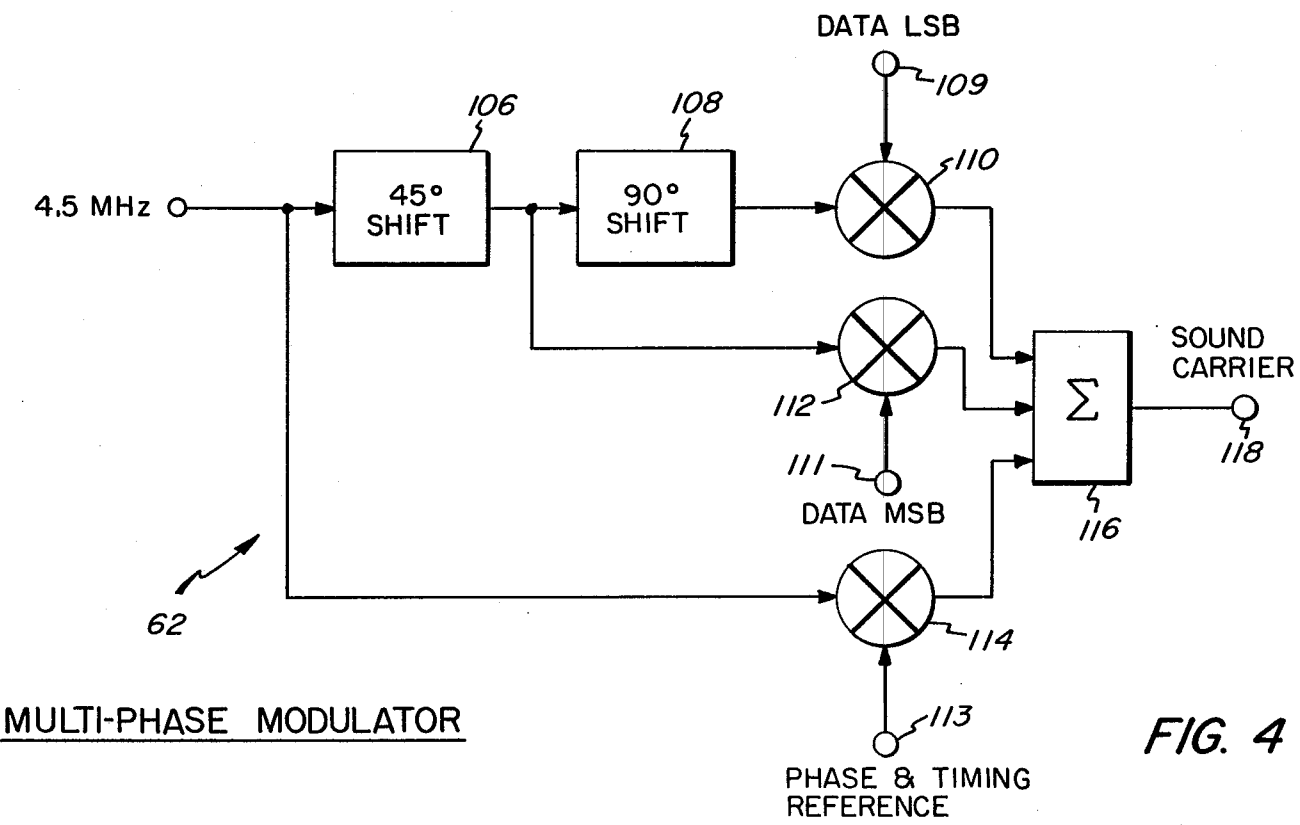


FIG. 4

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