

- [54] **SCRAMBLING AND UNSCRAMBLING VIDEO SIGNALS IN A PAY TV SYSTEM**
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- [73] Assignee: **Northern Telecom Limited**, Montreal, Canada
- [21] Appl. No.: **246,878**
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- [51] Int. Cl.³ **H04N 7/16**
- [52] U.S. Cl. **358/119; 358/120; 358/123**
- [58] Field of Search **358/119, 120, 122, 123**
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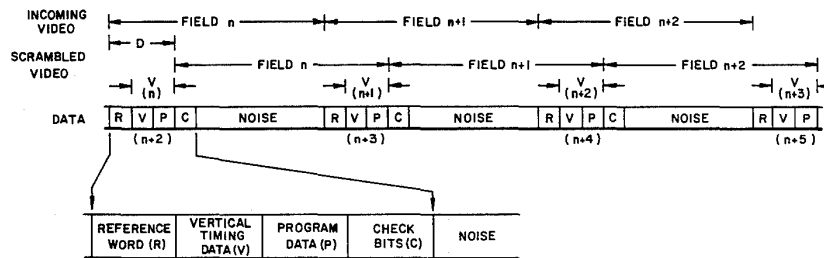
NASA Tech Brief, vol. 3, No. 1, MSC-16843, Spring 1978.

Primary Examiner—S. C. Buczinski
Attorney, Agent, or Firm—R. Haley Haley

[57] **ABSTRACT**

A scrambler scrambles a video signal by replacing its vertical intervals with dummy video signal lines, and separately providing information relating to the timing of the replaced vertical intervals. This information is encoded using an encryption key and is distributed with the scrambled video signal by modulation of the horizontal sync. pulses of the scrambled video signal. An unscrambler derives the information from the horizontal sync. pulses, which it regenerates, and decodes the information and uses it to generate a vertical interval of correct timing to replace the dummy lines of the scrambled video signal, thereby producing an unscrambled video signal reproducible on a conventional TV receiver. The scrambling is further enhanced by varying the number of dummy lines which are used to replace different vertical intervals, thereby producing a video signal of variable field length, which is not susceptible of recording.

16 Claims, 9 Drawing Figures



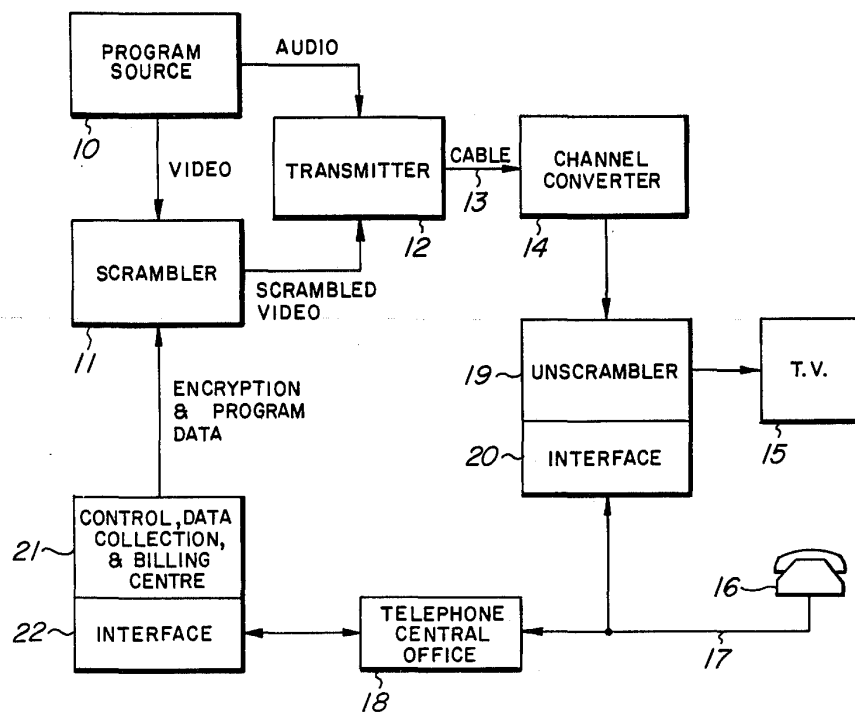


FIG. 1

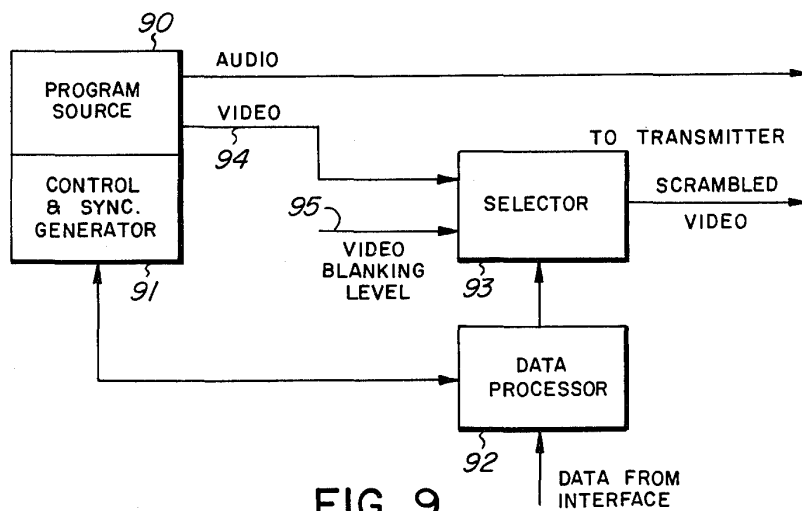


FIG. 9

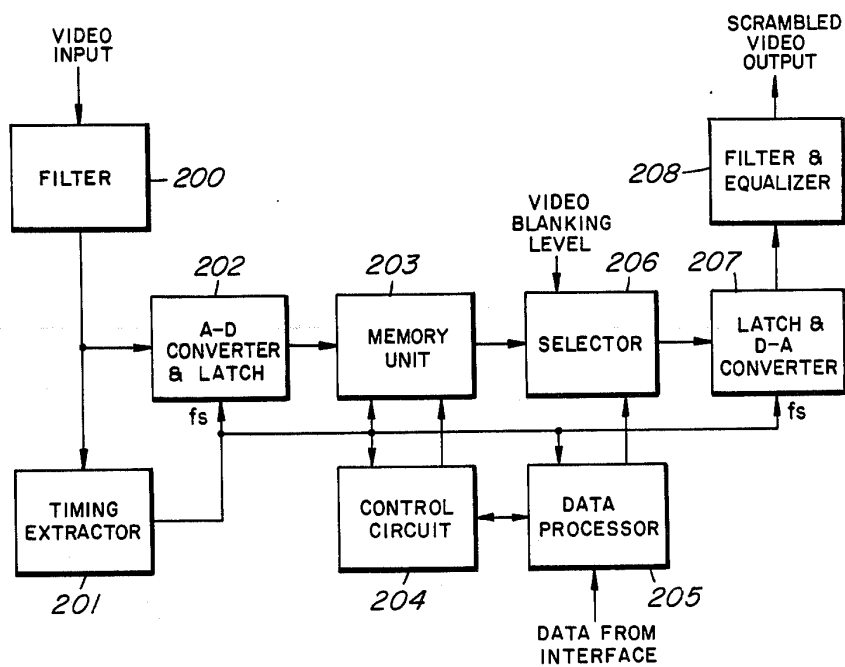


FIG. 2

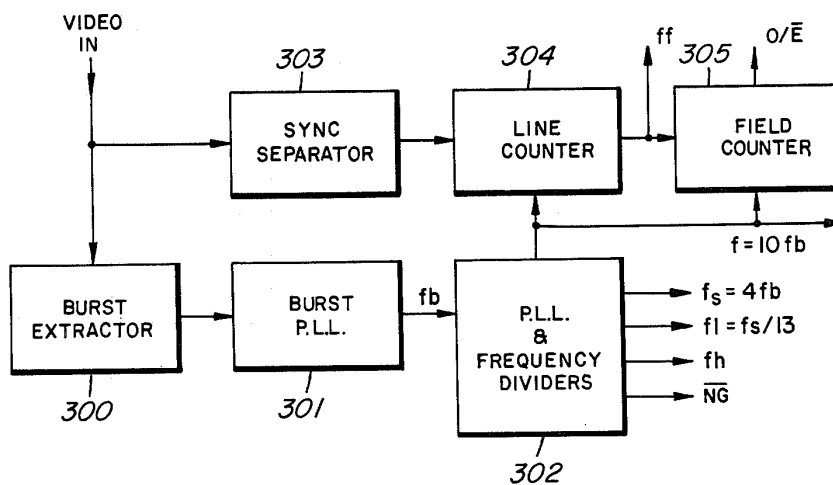


FIG. 3

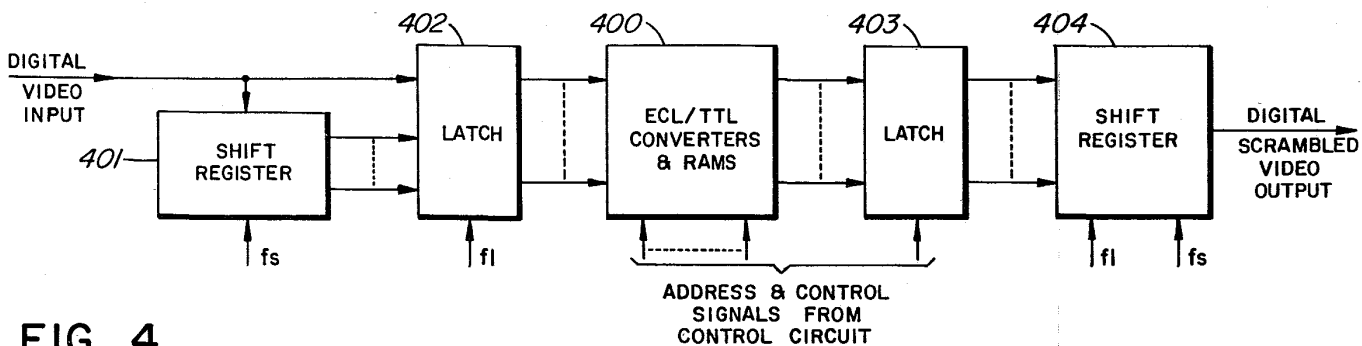


FIG. 4

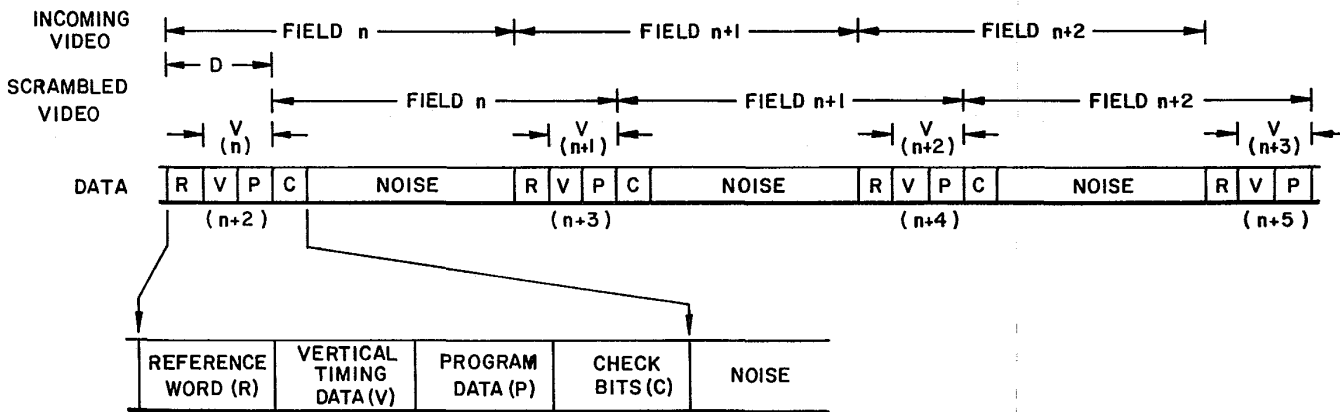


FIG. 7

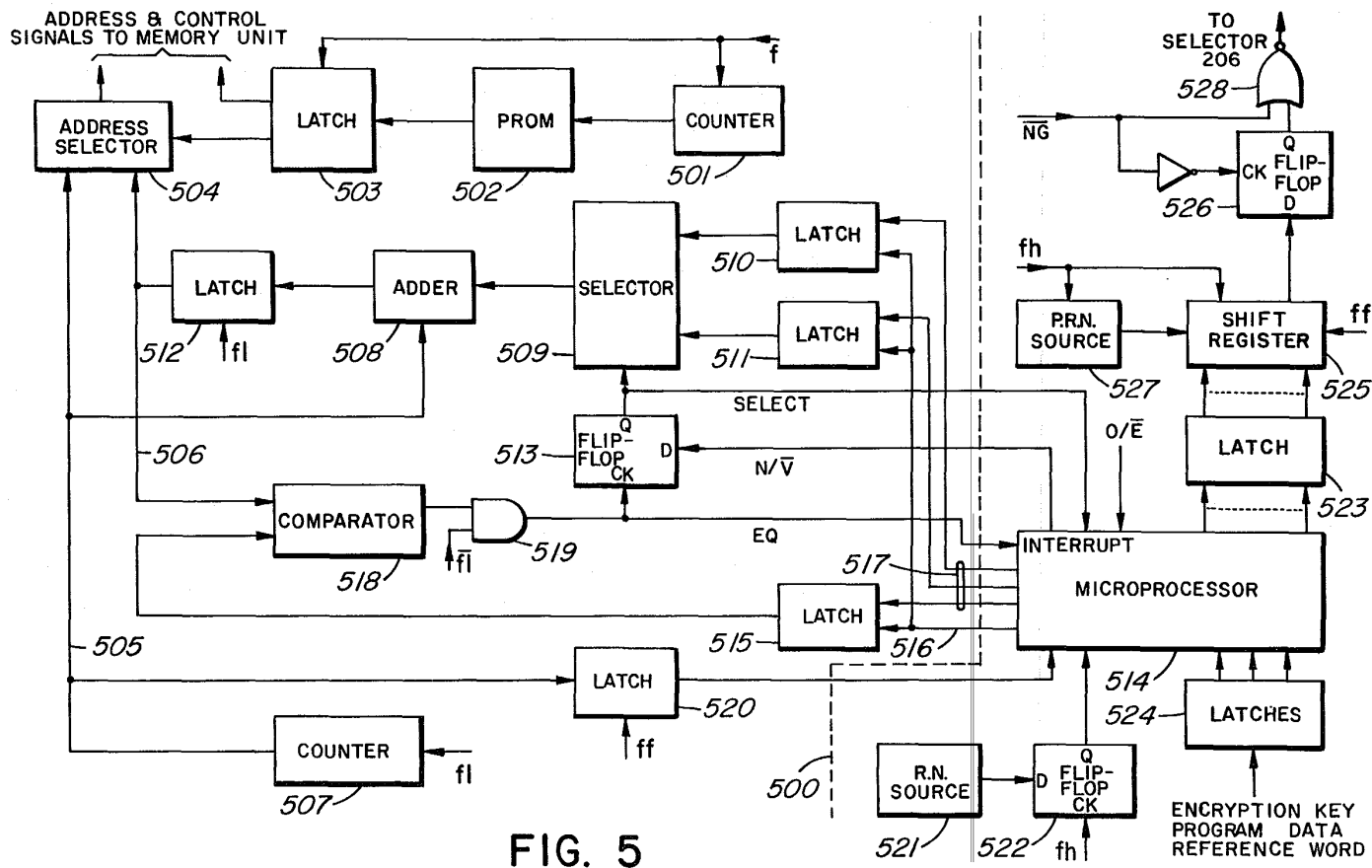


FIG. 5

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