

[54] **VIDEO TRANSMISSION SYSTEM**

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Related U.S. Application Data

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[51] **Int. Cl.⁴** G04L 9/00

[52] **U.S. Cl.** 380/9; 380/19; 380/46; 380/49; 375/26

[58] **Field of Search** 179/1.5 R, 1.5 M; 358/119, 121, 145, 147; 380/9, 10, 19, 46, 33, 49; 375/26; 381/31

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[57] **ABSTRACT**

A subscriber cable television system uses predominantly digital signal processing techniques and has extremely high security and an increased capacity for transmitting program and customer data to individual decoder units. For ease of data handling, two-channel audio, video, and high capacity program and customer data are multiplexed for transmission on the composite video signal. The decoder unit employs a system timing circuit which precisely synchronizes the sample times on the received composite video signal to the chroma burst, regardless of whether the video information is for a color or black-and-white program. An improved time-warp and segment scrambling method is disclosed along with means for suppressing the undesirable effects of discontinuities in the scrambled video signal. The digital audio is transmitted as scrambled most significant bits in low resolution samples and unscrambled least significant bits in a high resolution remainder sample. The system timing circuit has a horizontal sync detector accommodating variable line length such as is provided by some video recording apparatus. The clock to the horizontal counter is selectively phase-reversed in response to early or late horizontal sync so that the timing resolution is twice the clock period. An improved self-adjusting threshold detector and other means are disclosed for detecting a "20 IEEE" suppressed horizontal sync so that the full range of video modulation may be used more effectively. Circuitry is also disclosed for transmitting the customer and program information in a multi-level correlative signalling format in order to more effectively use the band width of the entire television channel.

7 Claims, 15 Drawing Sheets

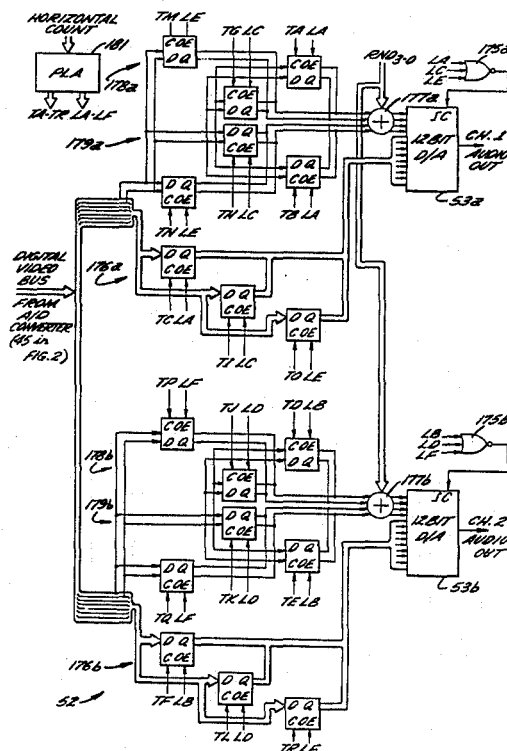


FIG. 1

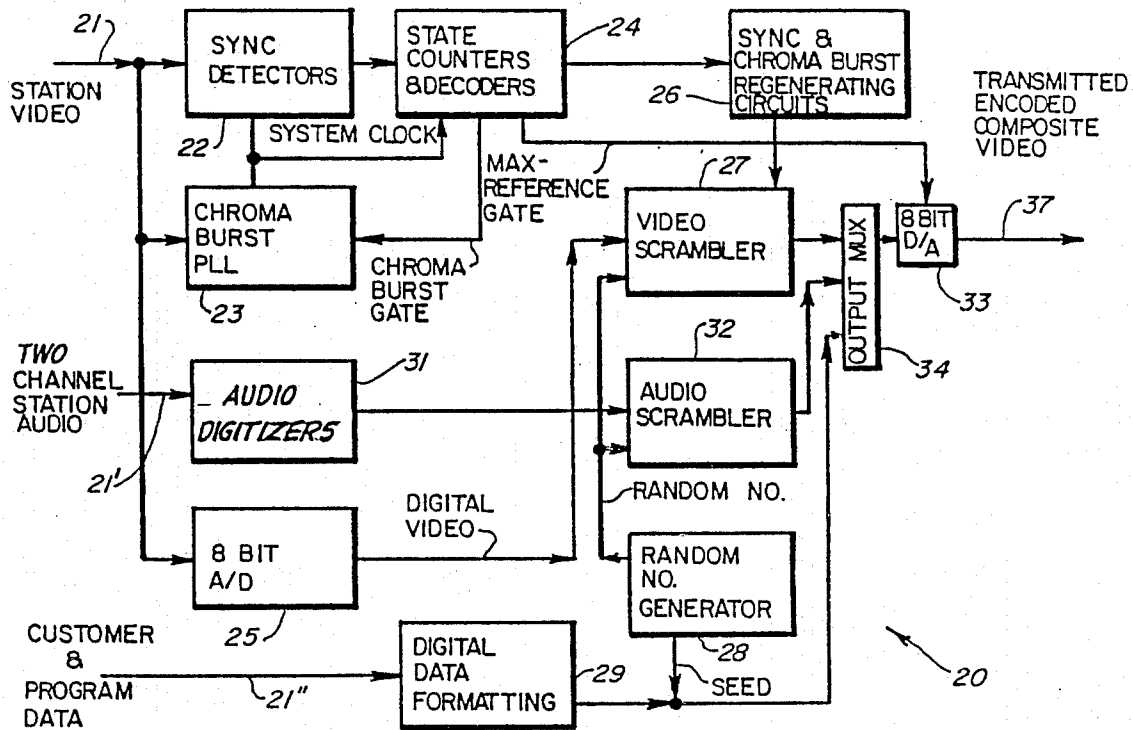
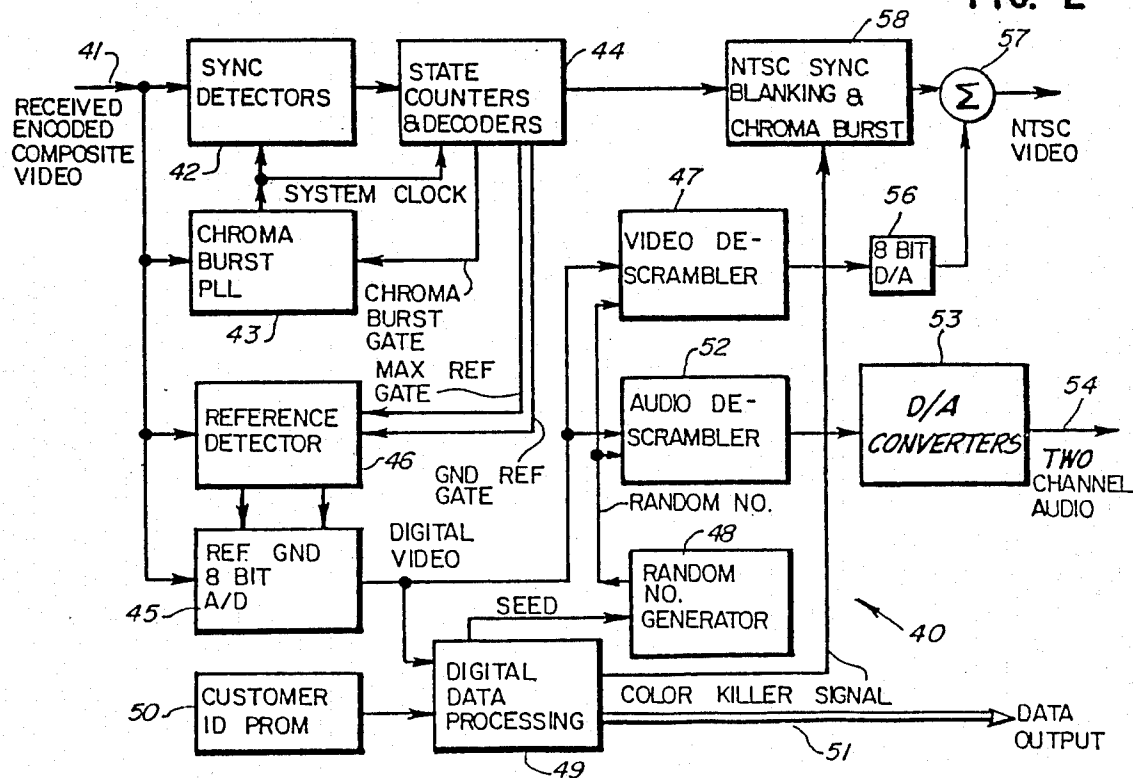


FIG. 2



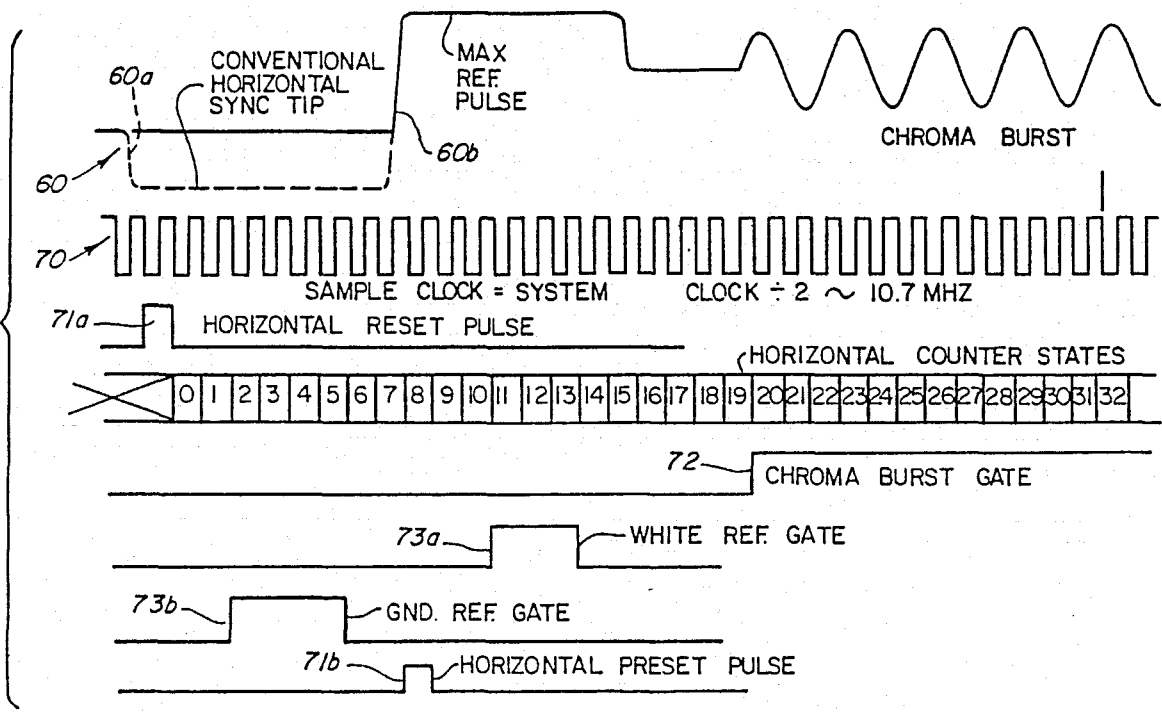


FIG. 5

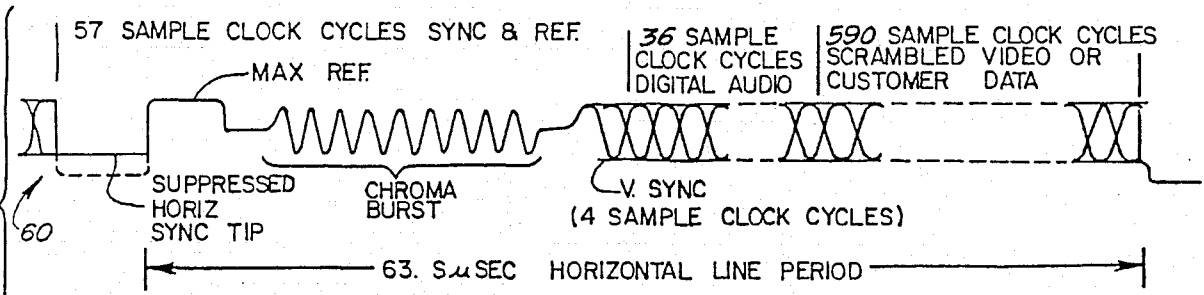
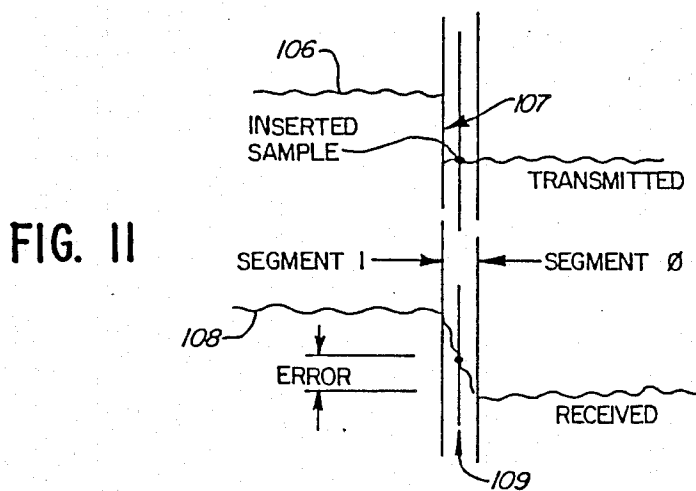
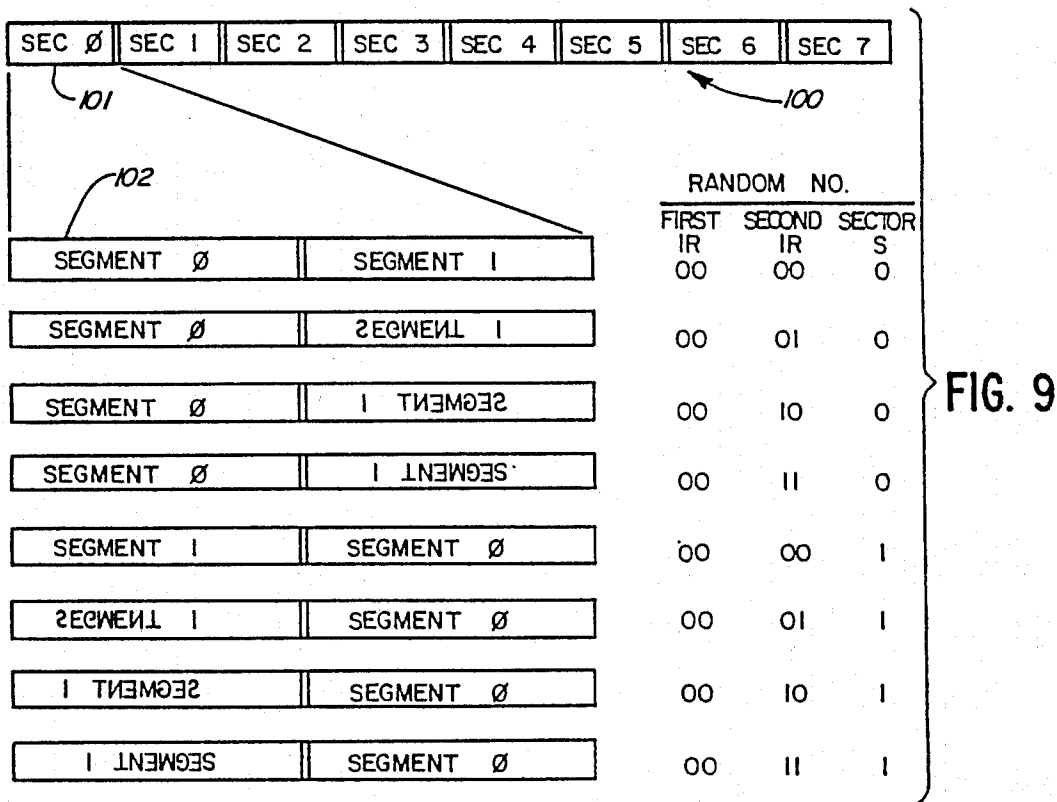
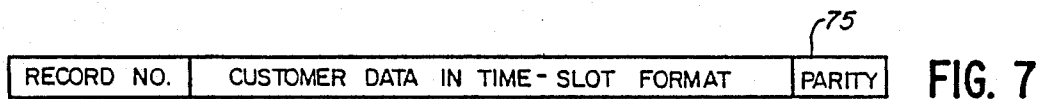
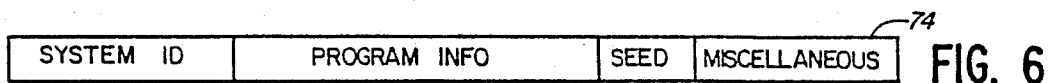


FIG. 3

HORIZONTAL LINE NO.	SCRAMBLED VIDEO OR CUSTOMER DATA
0	HOUSEKEEPING
1	CUSTOMER DATA
...	...
8	IN TIME - SLOT FORMAT (FIELD 0)
9	SCRAMBLED VIDEO (FIELD 0)
...	...
260	CUSTOMER DATA
261	IN TIME - SLOT FORMAT
...	...
270	SCRAMBLED VIDEO (FIELD 1)
271	SCRAMBLED VIDEO (FIELD 1)
...	...
524	SCRAMBLED VIDEO (FIELD 1)

FIG. 4

65



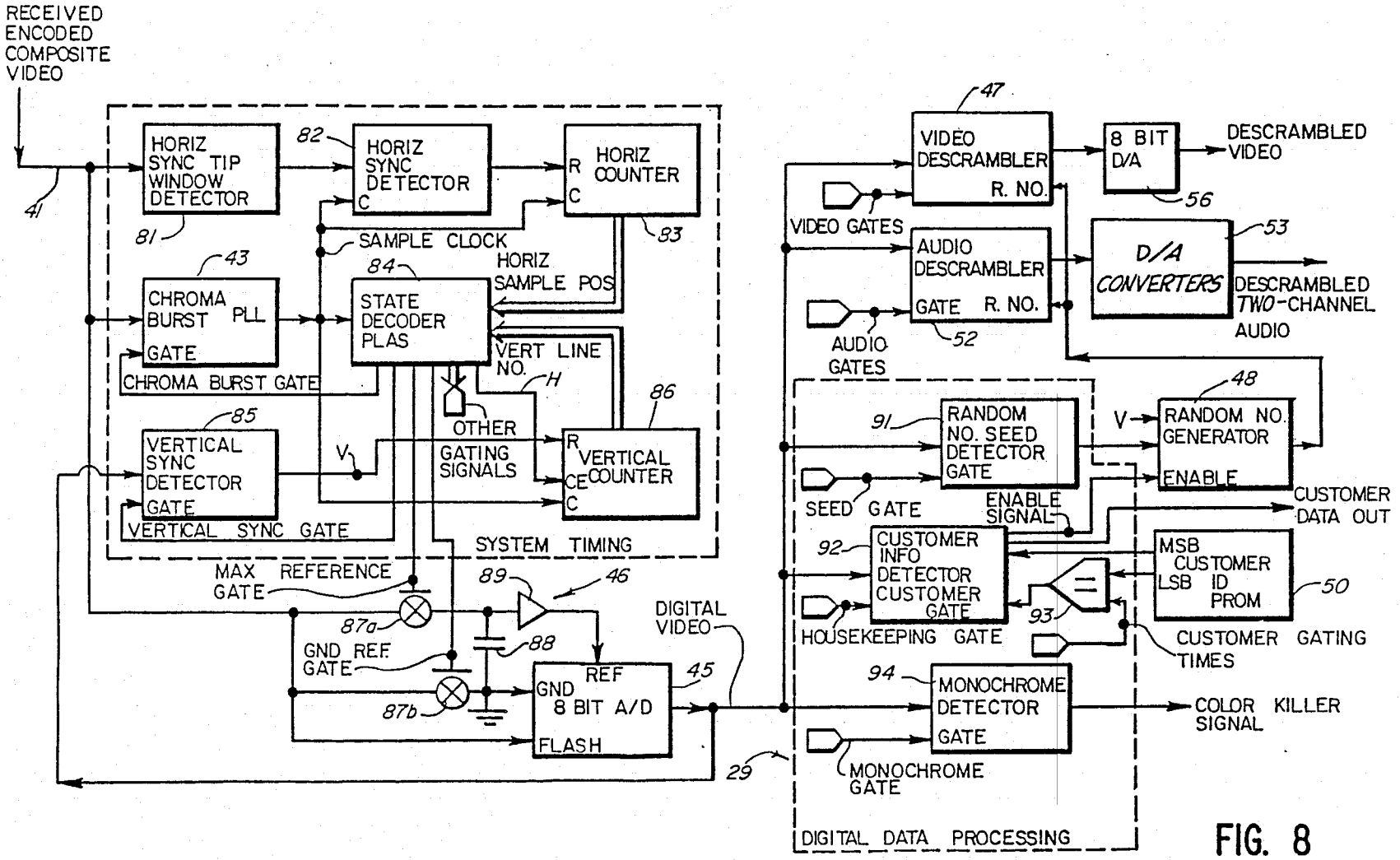


FIG. 8

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