

- [54] **DIGITAL VIDEO COMPRESSION SYSTEM AND METHODS UTILIZING SCENE ADAPTIVE CODING WITH RATE BUFFER FEEDBACK**
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- [51] Int. Cl.<sup>3</sup> ..... **H04N 7/12; H04N 9/32; G06F 15/20; G08C 9/00**
- [52] U.S. Cl. .... **358/136; 358/13; 340/347 DD; 364/514; 364/515; 364/582**
- [58] Field of Search ..... **364/514, 515, 576, 582; 358/12, 13, 133, 138, 260, 261; 340/347 DD**

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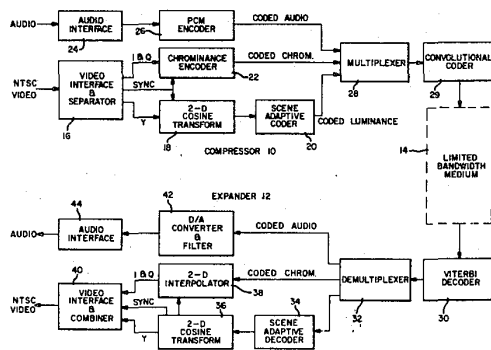
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[57] **ABSTRACT**

A digital video compression system and its methods for compressing digitalized video signals in real time at rates up to NTSC color broadcast rates are disclosed. The system compressor receives digitalized video frames divided into subframes, performs in a single pass a spatial domain to transform domain transformation in two dimensions of the picture elements of each subframe, normalizes the resultant coefficients by a normalization factor having a predetermined compression ratio component and an adaptive rate buffer capacity control component and an adaptive rate buffer capacity control feedback component, to provide compression, encodes the coefficients and stores them in a first rate buffer memory asynchronously at a high data transfer rate from which they are put out at a slower, synchronous rate. The compressor adaptively determines the rate buffer capacity control feedback component in relation to instantaneous data content of the rate buffer memory in relation to its capacity, and it controls the absolute quantity of data resulting from the normalization step so that the buffer memory is never completely emptied and never completely filled. In expansion, the system essentially mirrors the steps performed during compression. An efficient, high speed decoder forms an important aspect of the present invention. The compression system forms an important element of a disclosed color broadcast compression system.

7 Claims, 30 Drawing Figures



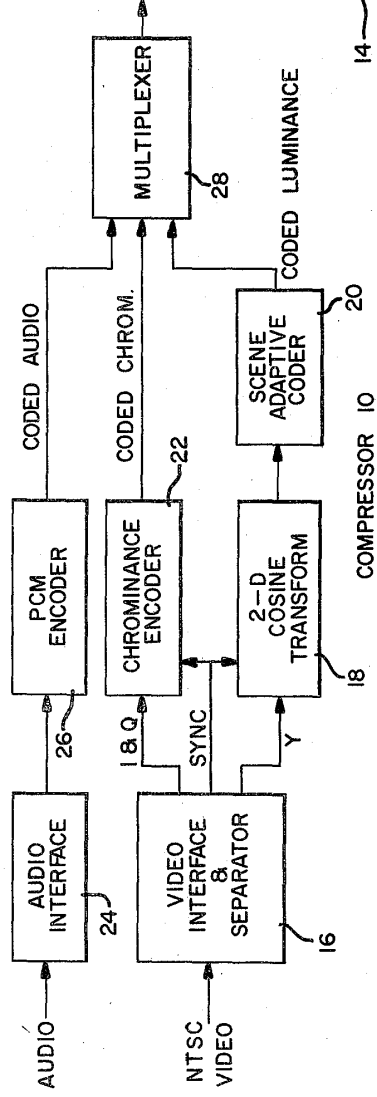
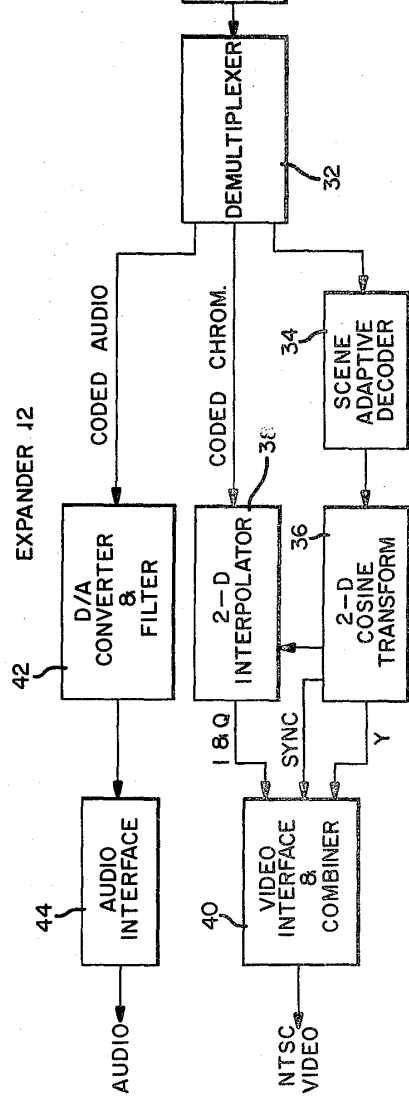


FIG. 1



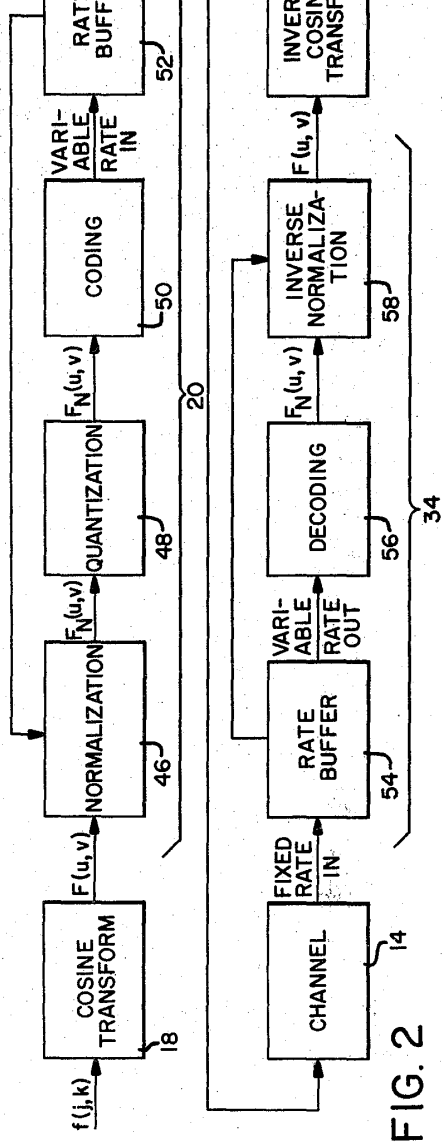


FIG. 2

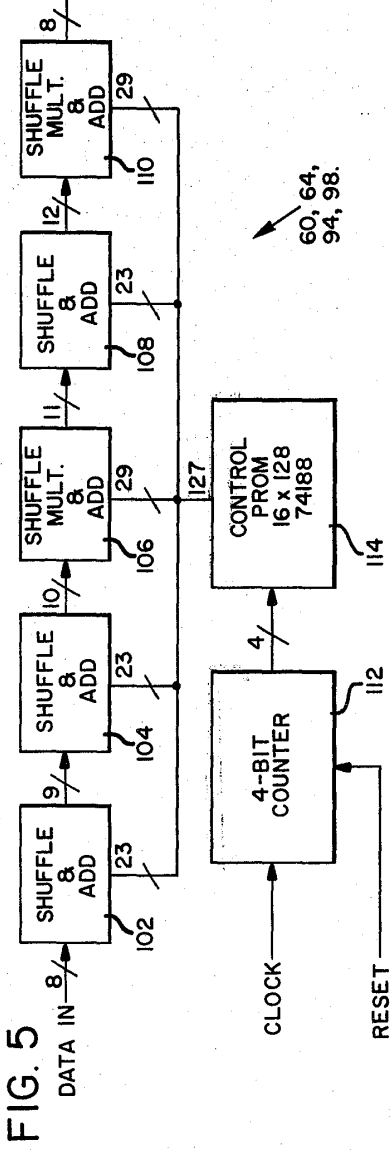


FIG. 5

60, 64, 94, 98.

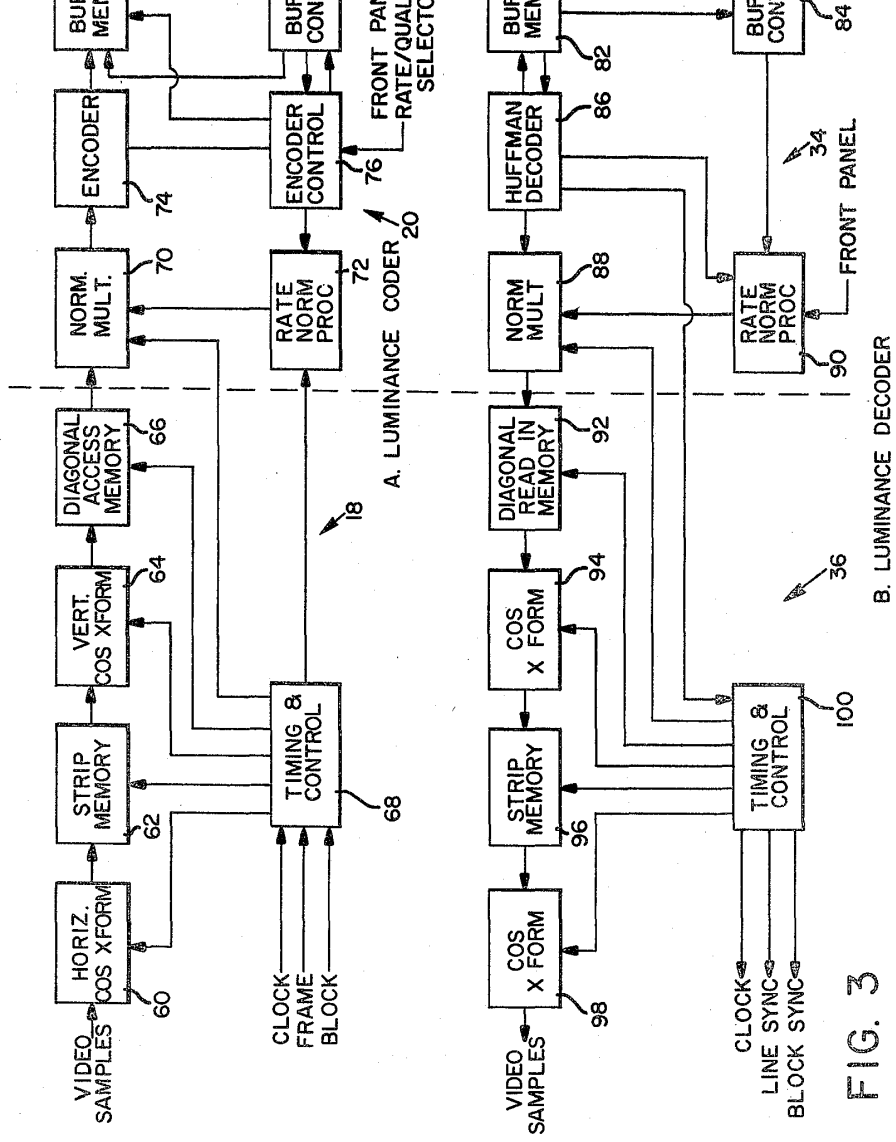
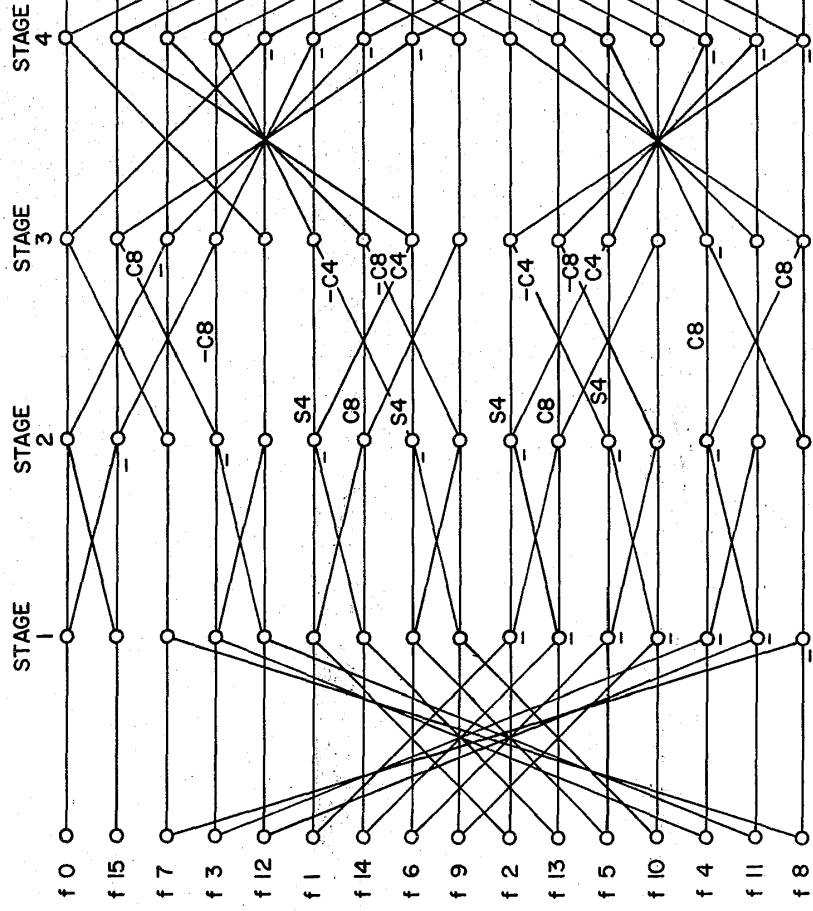


FIG. 3

FIG. 4



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